

- GENERAL NOTES**
1. ALL STORM DRAIN & PAVING SHALL BE CONSTRUCTED IN ACCORDANCE WITH THE LATEST DETAILS AND SPECIFICATIONS OF HOWARD CO. & MD.S.H.A.
 2. TYPES OF STORM DRAIN STRUCTURES REFER TO THE STANDARD DETAILS OF HOWARD COUNTY & MD. S.H.A.
 3. TRENCH COMPACTION FOR STORM DRAINS WITHIN ROADS OR STREET RIGHT OF WAY LIMITS SHALL BE IN ACCORDANCE WITH THE LATEST HOWARD CO. ROAD CODE.
 4. INFORMATION CONCERNING UNDERGROUND UTILITIES WAS OBTAINED FROM AVAILABLE RECORDS, BUT THE CONTRACTOR MUST DETERMINE THE EXACT LOCATION AND ELEVATION OF THE MAINS BY DIGGING TEST PITS, BY HAND, AT ALL UTILITY CROSSINGS, WELL IN ADVANCE OF CONSTRUCTION.
 5. ALL UTILITY COMPANIES SHALL BE NOTIFIED 24 HRS. IN ADVANCE OF CONSTRUCTION.
 6. ALL TRAFFIC CONTROL SERVICES, PARKING AND SIGNING TO BE DONE IN ACCORDANCE WITH THE "MANUAL OF UNIFORM TRAFFIC CONTROL DEVICES", 1971 EDITION.
 7. SAG AND CREST VERTICAL CURVES WERE DESIGNED IN ACCORDANCE WITH HOWARD COUNTY DESIGN MANUAL VOLUME III, ROADS & BRIDGES.
 8. PROVIDE CONCRETE SIDE WALK RAMP IN CURBS, WHERE SHOWN IN PLAN (MAX 12:1 SLOPE; SEE HOWARD CO. STD. DETAILS, R-4.01)
 9. MINIMUM COVER OF 12" SHALL BE PROVIDED OVER STORM DRAIN PIPES IN ALL AREAS NOT BEING FINAL GRADED BY THESE PLANS.
 10. DESIGN SPEED: 30 M.P.H.
 11. STREET LIGHTS SHALL BE 175 WATT MODERN MERCURY VAPOR LAMP POST TOP FIXTURES ON 14 FT. GRAY FIBERGLASS POLES.
 12. HORIZONTAL AND VERTICAL DATUM BASED ON HO.CO. 3243011 & 3243010
 13. THE CONTRACTOR SHALL PROVIDE ACCESS TO THE EXISTING HOME SITE (LOT 34) DURING ALL PHASES OF CONSTRUCTION.
 14. EXISTING TOPOGRAPHY AS SHOWN HEREON WAS TAKEN FROM PLANS PROVIDED BY OWNER.

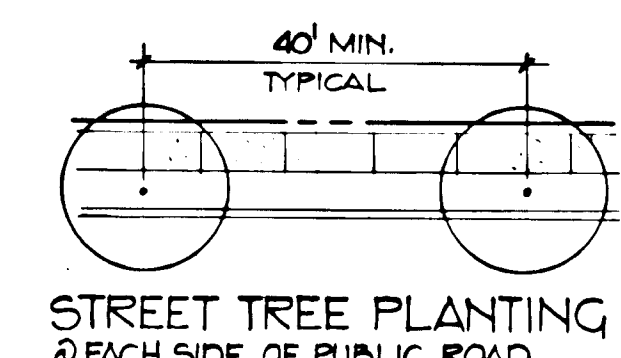
CURVE DATA

SOUTH CURB TRANSITION
 R = 400.00
 ARC LENGTH = 508.235'
 $\Delta = 72^\circ 47' 58''$
 TAN = 294.902'
 CHD LENGTH = 474.731'
 CHD BEARING = $51^\circ 50' 03''$ W

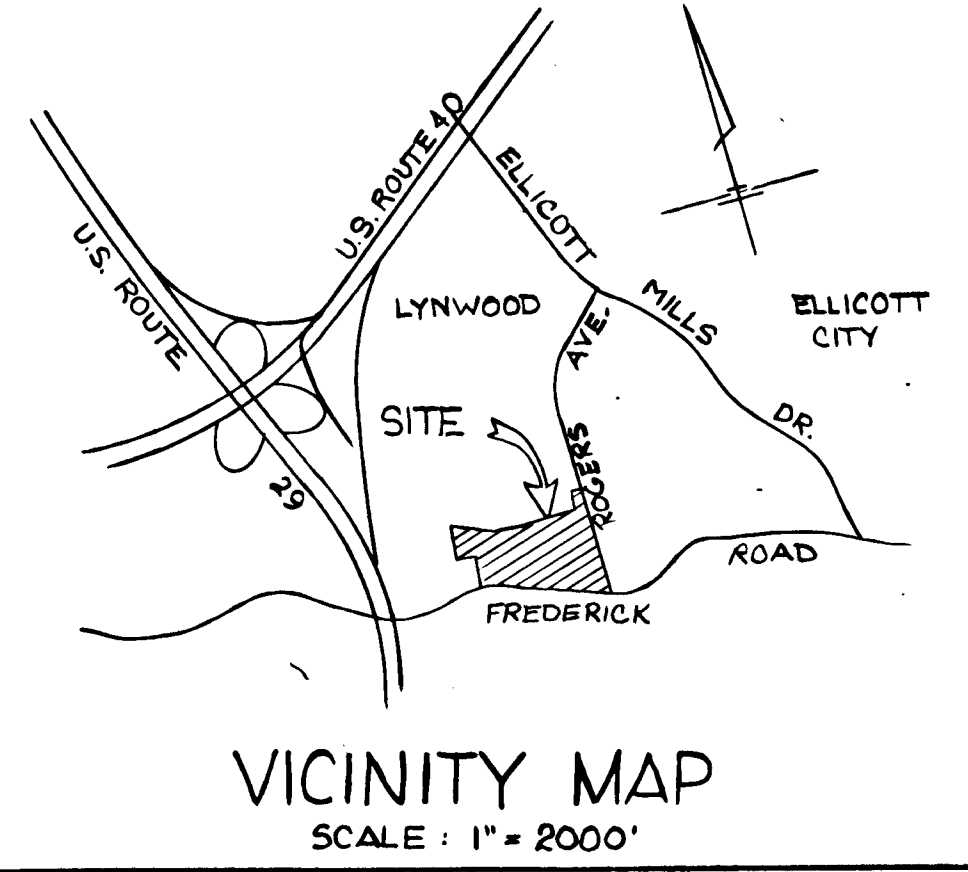
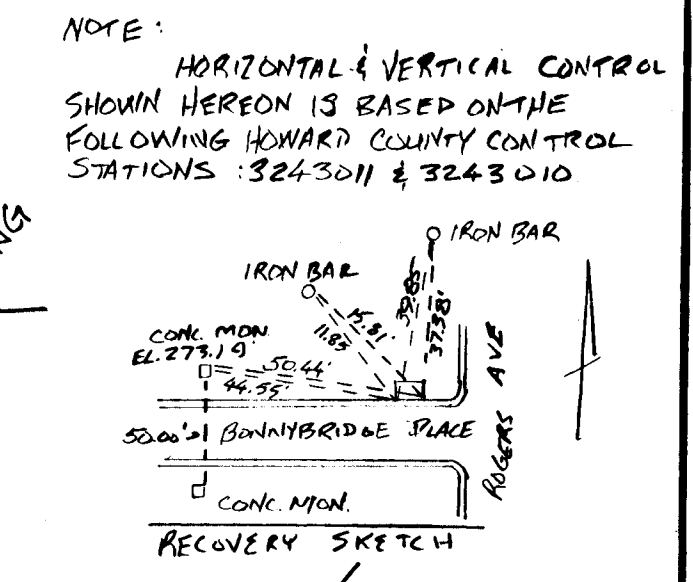
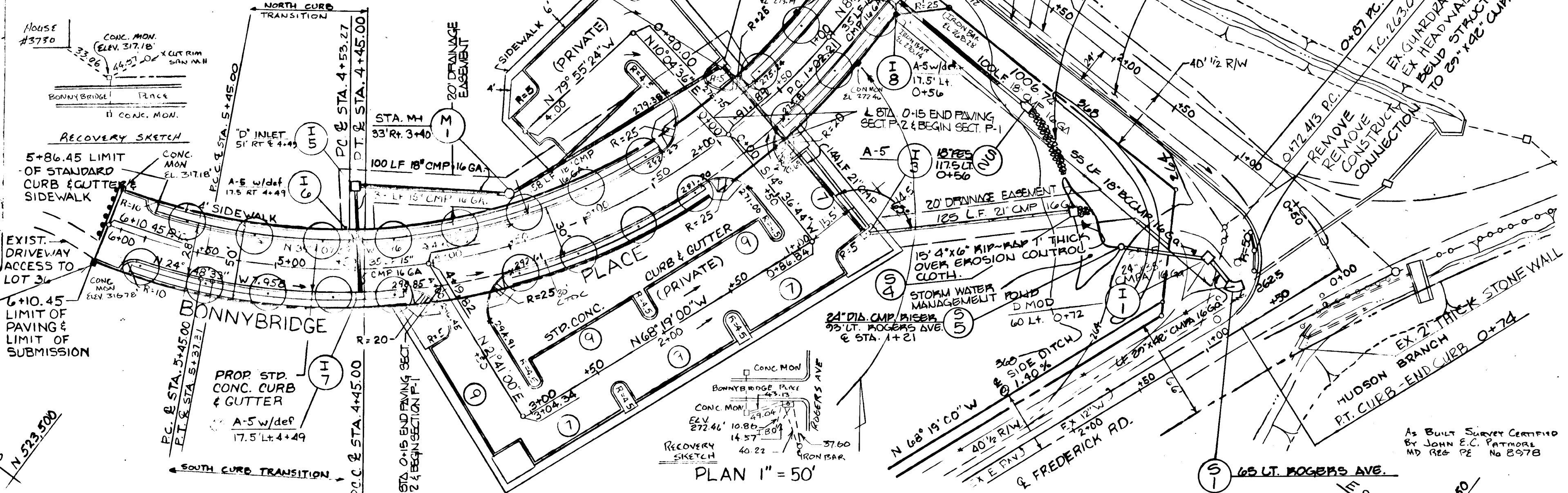
NORTH CURB TRANSITION
 R = 382.833
 ARC LENGTH = 457.08'
 $\Delta = 71^\circ 19' 26''$
 TAN = 248.105'
 CHD LENGTH = 495.459'
 CHD BEARING = $N 31^\circ 58' 16''$ W

DATE	
BY	
REVISION	
NO.	
DATE	
BY	
REVISION	
NO.	
DATE	
BY	
REVISION	
NO.	

DATE	
BY	
REVISION	
NO.	
DATE	
BY	
REVISION	
NO.	
DATE	
BY	
REVISION	
NO.	



NOTE: STREET TREE TYPICAL PLAN PER SECTION 16.131 OF THE HOWARD COUNTY CODE.



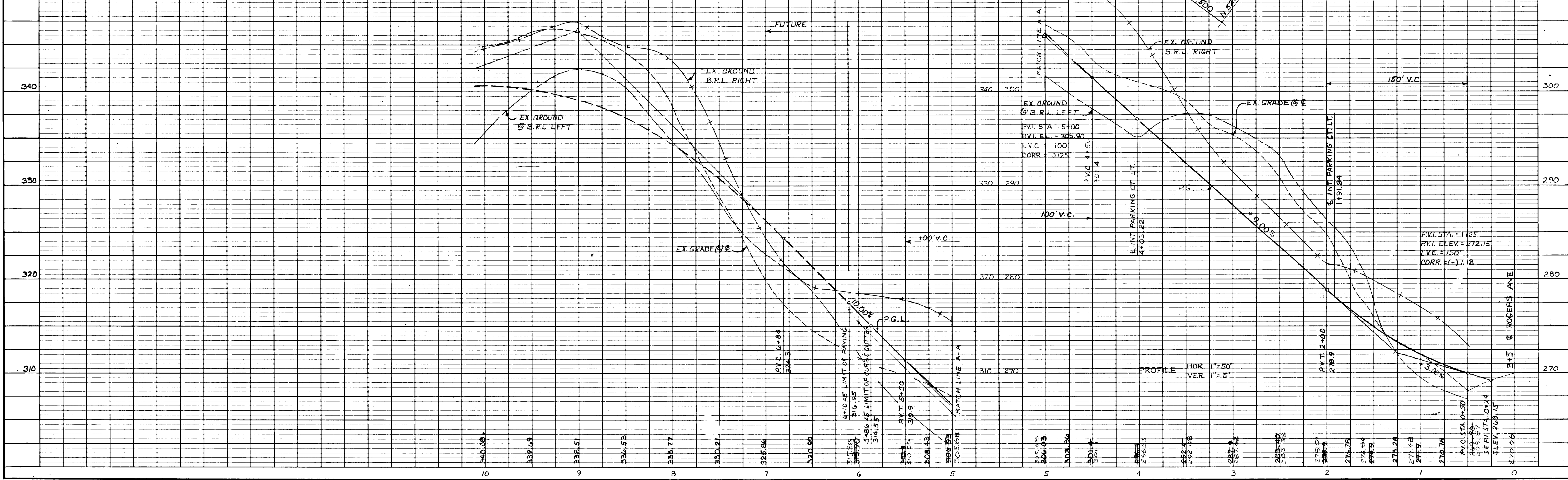
APPROVED: *William E. Reilly* 1-9-84
 Chief, Bureau of Engineering Date

APPROVED: *John W. Musachiano* 1-6-84
 Chief, Division of Land Development & Zoning Administration Date

EVANS, HAGAN & HOLDEFER, INC.
 ENGINEERS, LAND PLANNERS & SURVEYORS
 1052 WEST STREET / LAUREL, MD. 20707
 (301) 725-0665 / 792-8086

Rodolph Mair
 DATE: 9/20/83 SCALE: AS SHOWN

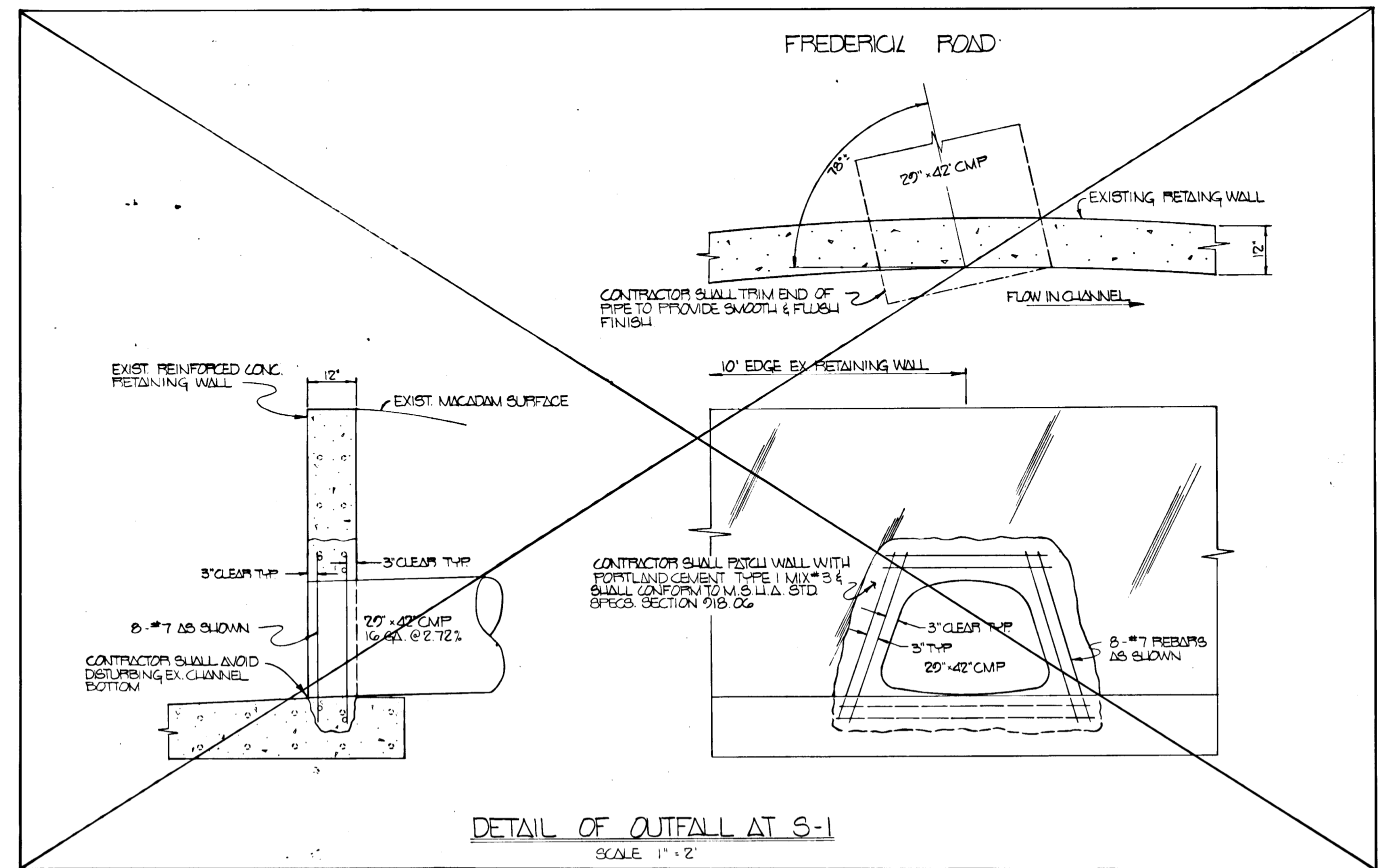
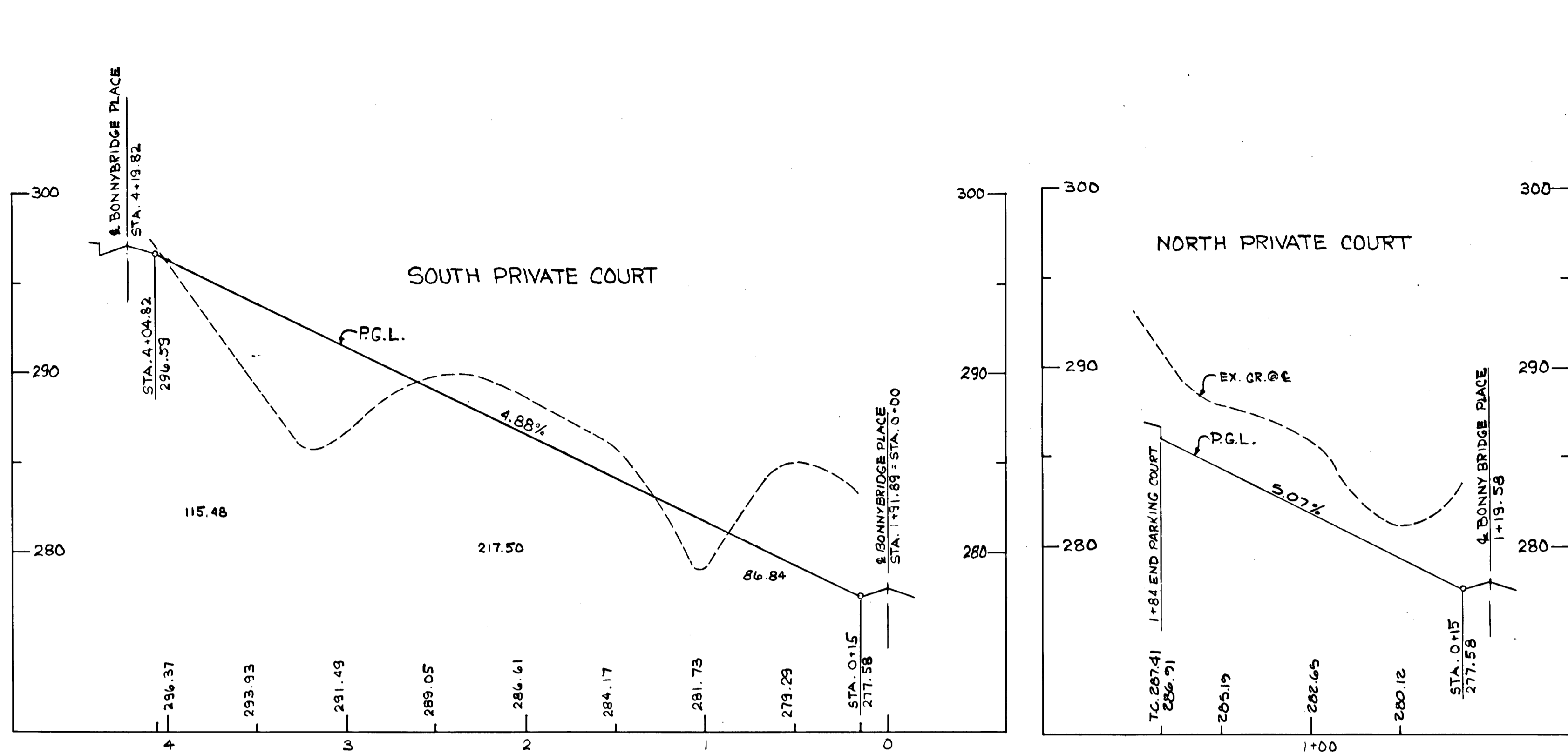
DESIGNED	A.C.	ROAD PLAN AND PROFILE	SCALE
DRAWN	S.K.	SECTION 1 AREA 1	AS SHOWN
CHECKED	R.M.	2 ND ELECTION DISTRICT	DRAWING
DATE	9/20/83	FOR: BEECH CREEK ASSOCIATES	1 of 7
		P.O. Box 919	JOB NO
		Columbia, Maryland 21044	L-003
			FILE NO



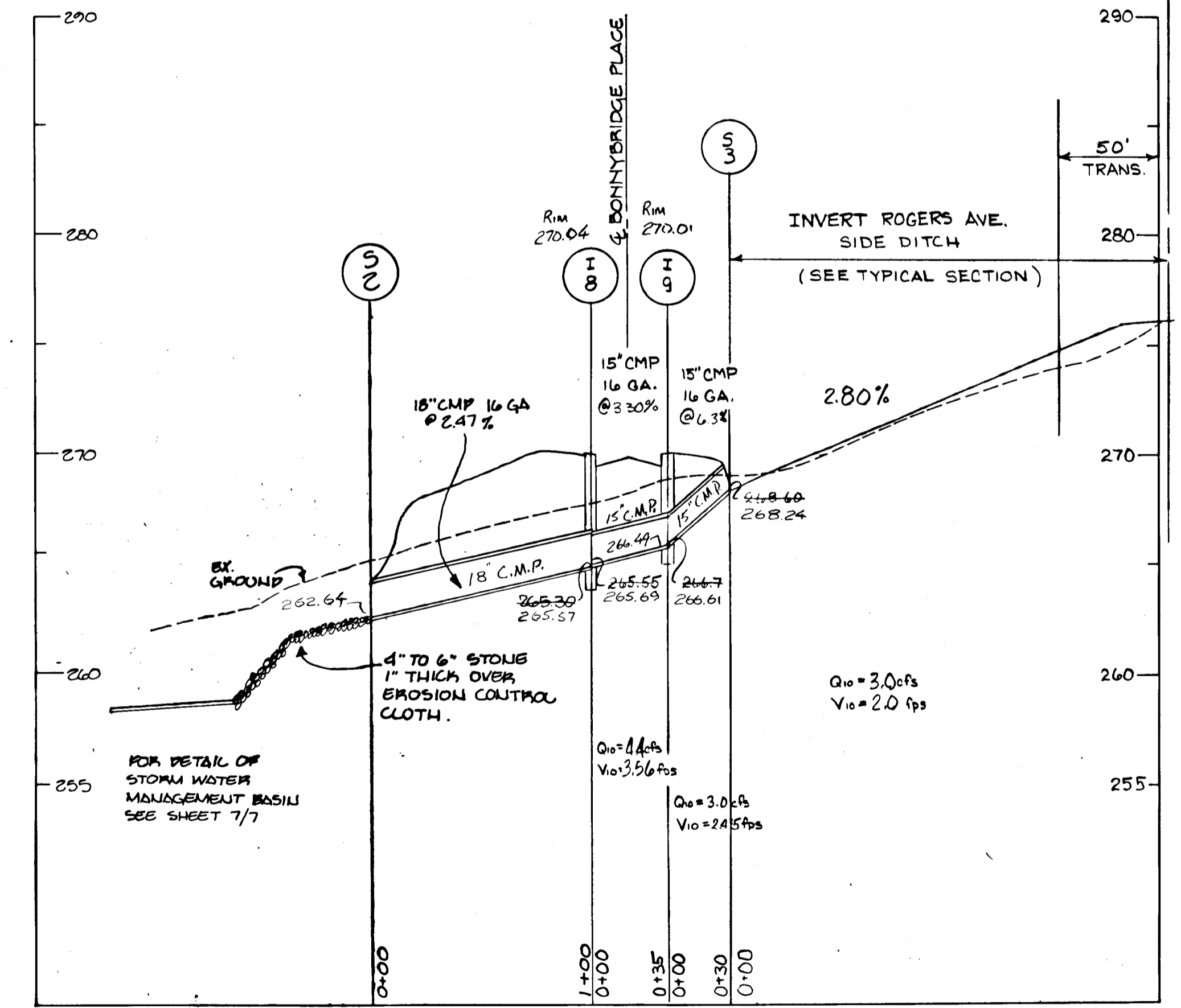
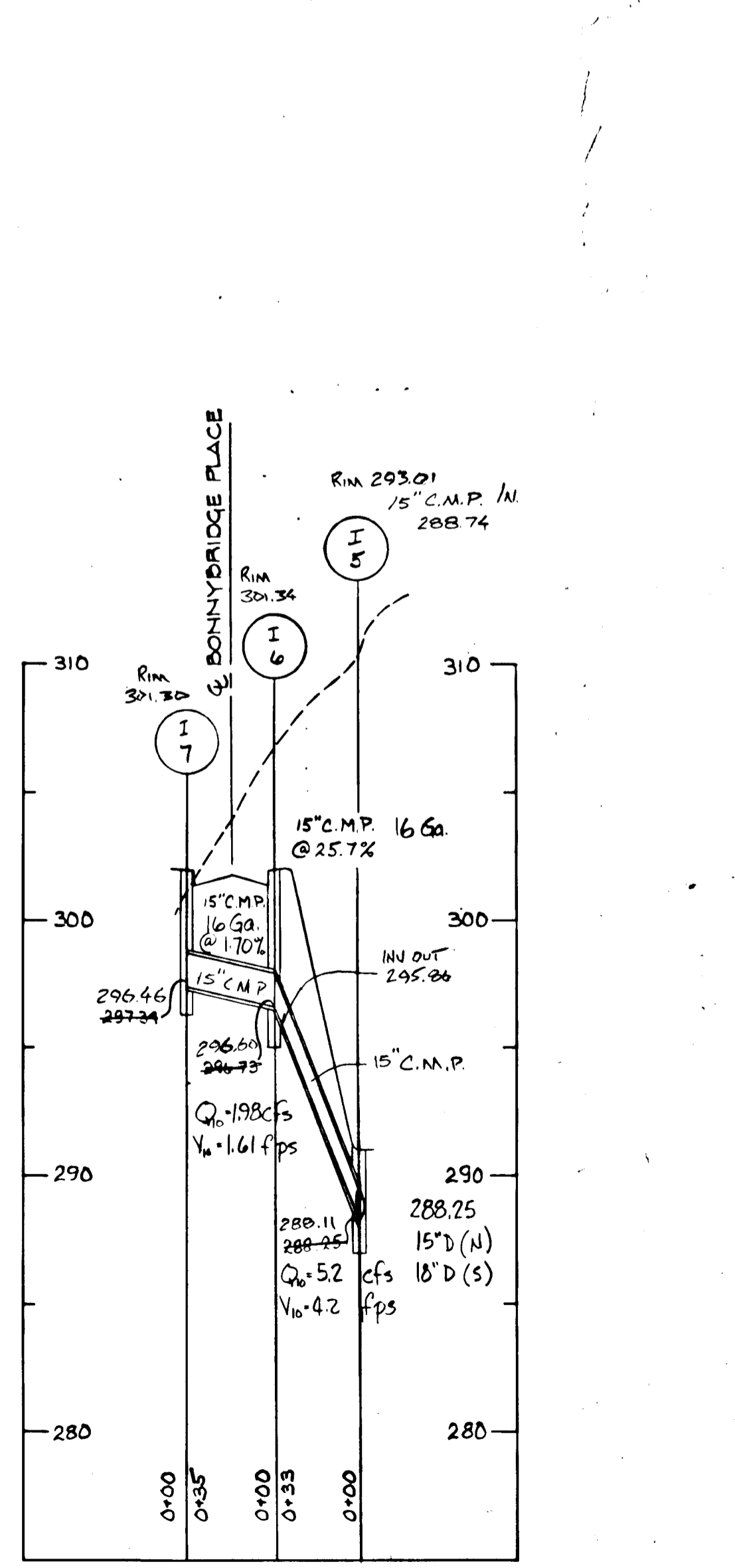
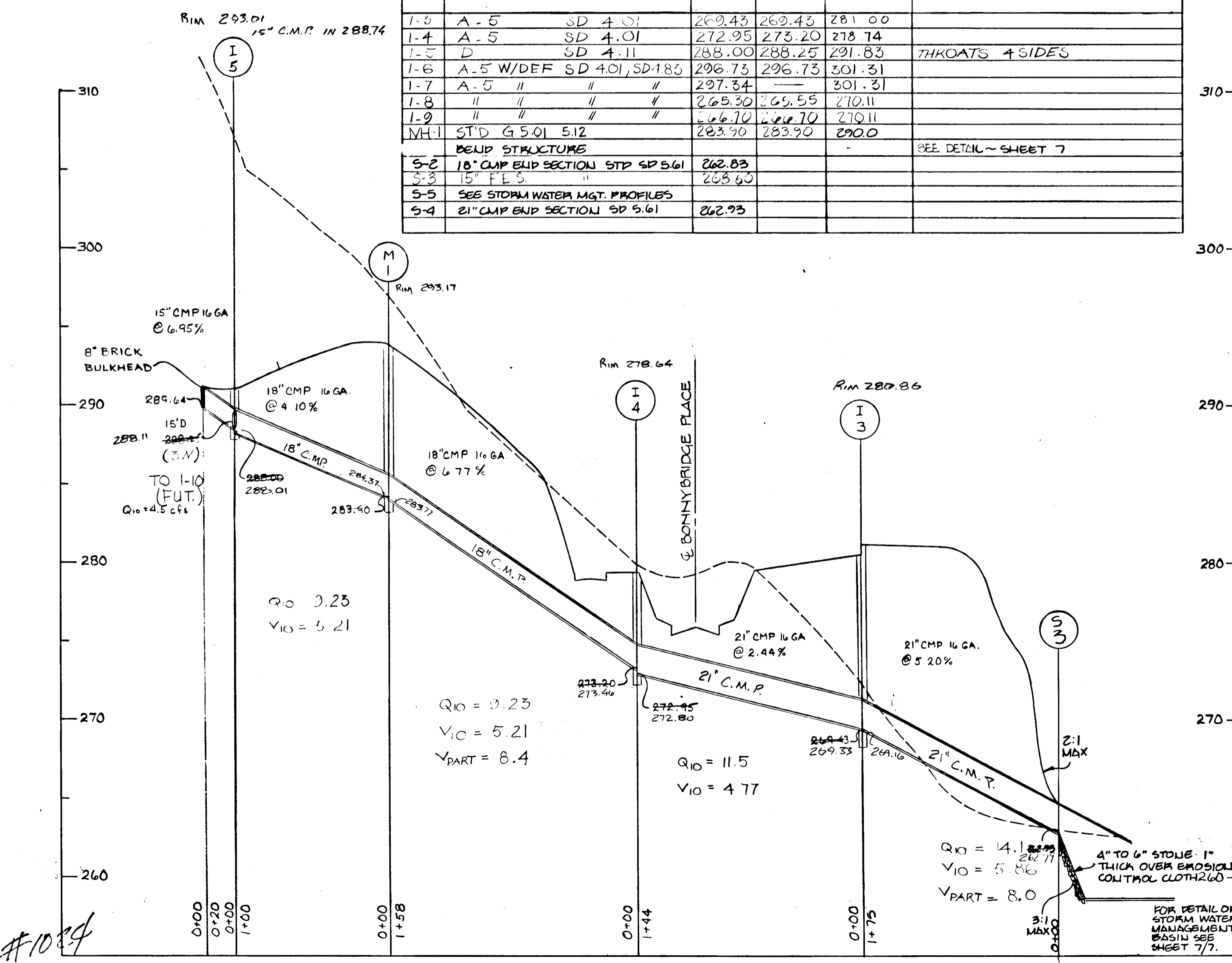
DATE	
BY	
REVISION	
NO.	
DATE	
BY	
REVISION	
NO.	
DATE	
BY	
REVISION	
NO.	

#1024

F-84-54



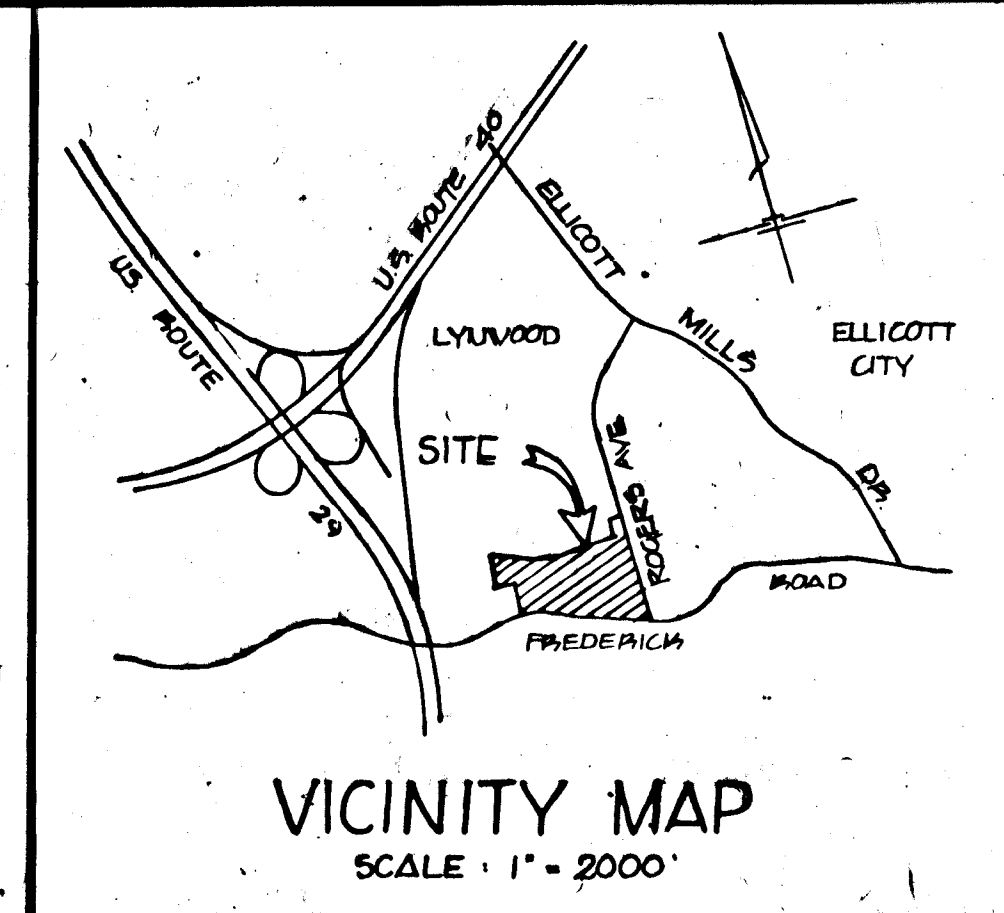
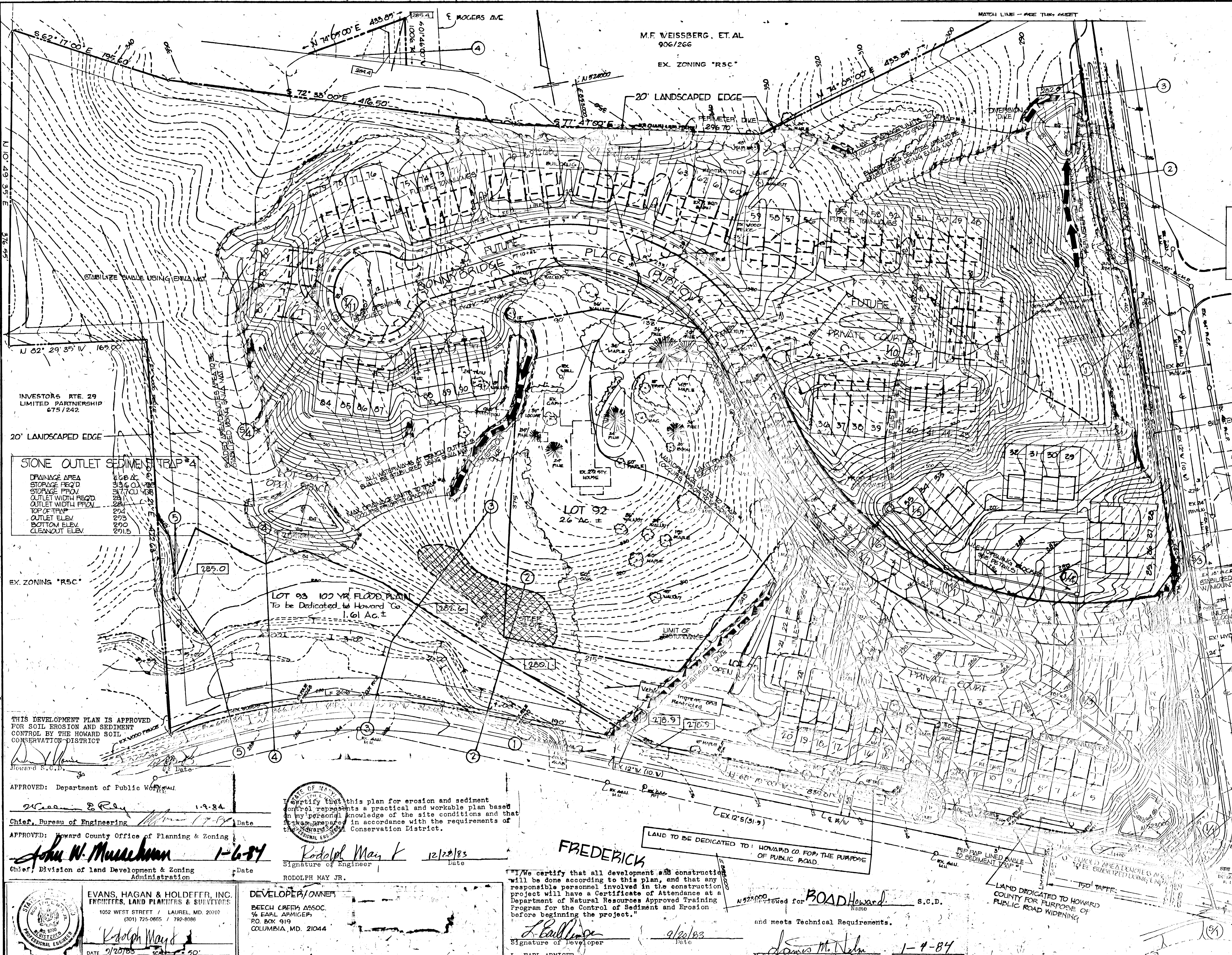
PROPOSED STRUCTURE SCHEDULE					
NO	TYPE	INV. IN	INV. OUT	TOP ELEV.	REMARKS
1-1	MOD 'D' - SD 4.11	258.95	258.95	262.53	THROATS 3 SW - 201.7 W = 42"
1-3	A-5 SD 4.01	262.43	262.43	281.00	
1-4	A-5 SD 4.01	272.95	273.20	278.74	
1-5	D SD 4.11	288.00	288.25	291.83	THROATS 4 SIDES
1-6	A-5 W/DEF SD 4.01, SD 1.83	296.73	296.73	301.31	
1-7	A-5 " " " "	297.34		301.31	
1-8	" " " "	265.30	265.55	270.11	
1-9	" " " "	266.70	266.70	270.11	
MH-1	STD G 5.01 5.12	283.90	283.90	290.0	
BEND STRUCTURE					
5-2	18" CMP END SECTION STP 5.61	262.83			SEE DETAIL - SHEET 7
5-3	15" FLS " "	263.63			
5-5	SEE STORM WATER MGT. PROFILES				
5-4	21" CMP END SECTION SP 5.61	262.93			



APPROVED: *[Signature]* 1-9-84
 Chief, Bureau of Engineering
 APPROVED: *[Signature]* 1-6-84
 Chief, Division of Land Development & Zoning Administration
 DESIGNED: A.C.
 DRAWN: S.K.
 CHECKED: R.M.
 DATE: 9/20/83
 FOR: BEECH CREEK ASSOCIATES
 P.O. Box 919
 Columbia, Maryland 21044

EVANS, HAGAN & HOLDEFER, INC.
 SURVEYORS AND CIVIL ENGINEERS
 8013 BELAIR ROAD / BALTIMORE, MD. 21236
 (301) 668-1501
 639 POPLAR STREET / CAMBRIDGE, MD. 21613 / (301) 228-3350
 111 JOHN STREET / WESTMINSTER, MD. 21157 / (301) 848-1760
 DATE: 9/20/83
 SCALE: AS SHOWN
 DRAWING: 2 of 7
 JOB NO: L-003
 FILE NO: []
 Drwg. No. []

5+91 @ ROGERS AVE.
 LIMIT OF CONST.
 MATCH INVERT WITH EX.
 CONC. SIDE DITCH



STONE OUTLET SEDIMENT TRAP #3

DRAINAGE AREA	2.41 AC
STORAGE FEED	161.5 CU YDS
STORAGE FLOW	185.0 CU YDS
OUTLET WIDTH FLOW	5.7
OUTLET WIDTH FEED	14.5
OUTLET ELEV.	282.7
BOTTOM ELEV.	279.0
CLEANOUT ELEV.	280.5

STONE OUTLET SEDIMENT TRAP #4

DRAINAGE AREA	1.68 AC
STORAGE FEED	33.6 CU YDS
STORAGE FLOW	37.7 CU YDS
OUTLET WIDTH FLOW	2.8
OUTLET WIDTH FEED	2.2
TOP OF TRAP	293
OUTLET ELEV.	293
BOTTOM ELEV.	290
CLEANOUT ELEV.	291.5

TRIP RAP OUTLET SEDIMENT TRAP #2

DRAINAGE AREA	5.64 AC
STORAGE FEED	377.9 CU YDS
STORAGE FLOW	384.0 CU YDS
OUTLET WIDTH FLOW	14
OUTLET WIDTH FEED	14
TOP OF BEAM	283.5
OUTLET ELEV.	286.0
BOTTOM OF TRAP	288.5
CLEANOUT ELEV.	281.0

TRIP RAP OUTLET SEDIMENT TRAP #1

DRAINAGE AREA	5.7 AC
STORAGE FEED	381.9 CU YDS
STORAGE FLOW	420 CU YDS
OUTLET WIDTH FLOW	14
OUTLET WIDTH FEED	14
TOP OF BEAM	283.0
OUTLET ELEV.	285.5
BOTTOM OF TRAP	288.0
CLEANOUT ELEV.	280.5

THIS DEVELOPMENT PLAN IS APPROVED FOR SOIL EROSION AND SEDIMENT CONTROL BY THE HOWARD SOIL CONSERVATION DISTRICT

APPROVED: Department of Public Works
William E. Reilly 1-9-84
 Chief, Bureau of Engineering
 APPROVED: Howard County Office of Planning & Zoning
John W. Muschman 1-6-84
 Chief, Division of Land Development & Zoning Administration

I certify that this plan for erosion and sediment control represents a practical and workable plan based on my personal knowledge of the site conditions and that it was prepared in accordance with the requirements of the Howard County Soil Conservation District.
Rodolph May Jr. 12/28/83
 Signature of Engineer
 RODOLPH MAY JR.

"I/we certify that all development and construction will be done according to this plan, 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."
L. Earl Armiger 1/2/84
 Signature of Developer
 L. EARL ARMIGER

LAND TO BE DEDICATED TO: HOWARD CO. FOR THE PURPOSE OF PUBLIC ROAD.

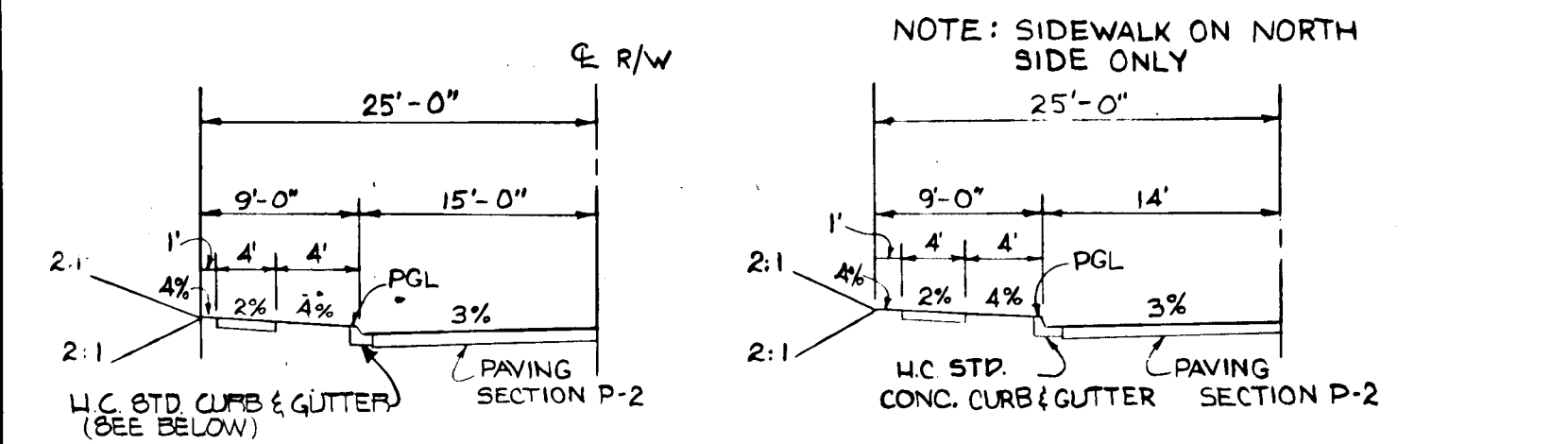
LAND DEDICATED TO HOWARD COUNTY FOR PURPOSE OF PUBLIC ROAD WIDENING

EVANS, HAGAN & HOLDEFFER, INC.
 ENGINEERS, LAND PLANNERS & SURVEYORS
 1052 WEST STREET / LAUREL, MD. 20707
 (301) 725-0665 / 782-8086
Rodolph May Jr.
 DATE: 9/20/83 SCALE: 1" = 50'

DEVELOPER/OWNER
BEACH CREEK ASSOC.
 54 EARL ARMIGER
 P.O. BOX 919
 COLUMBIA, MD. 21044

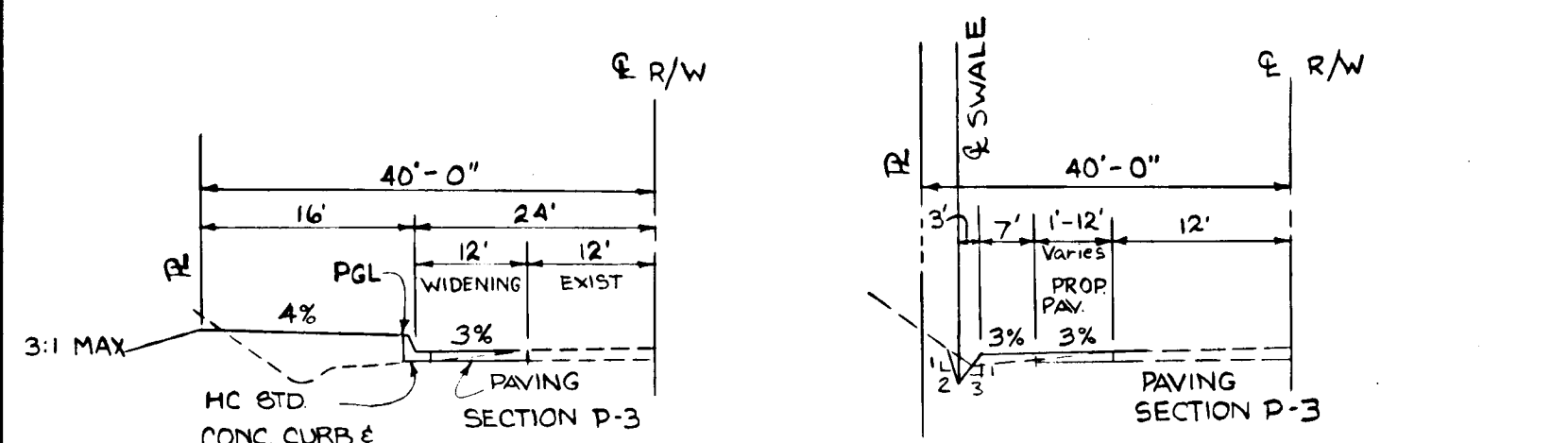
FREDERICK
 and meets Technical Requirements.
James M. Nelson 1-9-84
 Signature of Developer
 U.S. Soil Conservation Service

GRADING & SEDIMENT CONTROL PLAN



TYPICAL HALF SECTION
BONNYBRIDGE PL 0+24 TO 4+25 - STR G&G
LOCAL STREET DESIGN SPEED 30 MPH

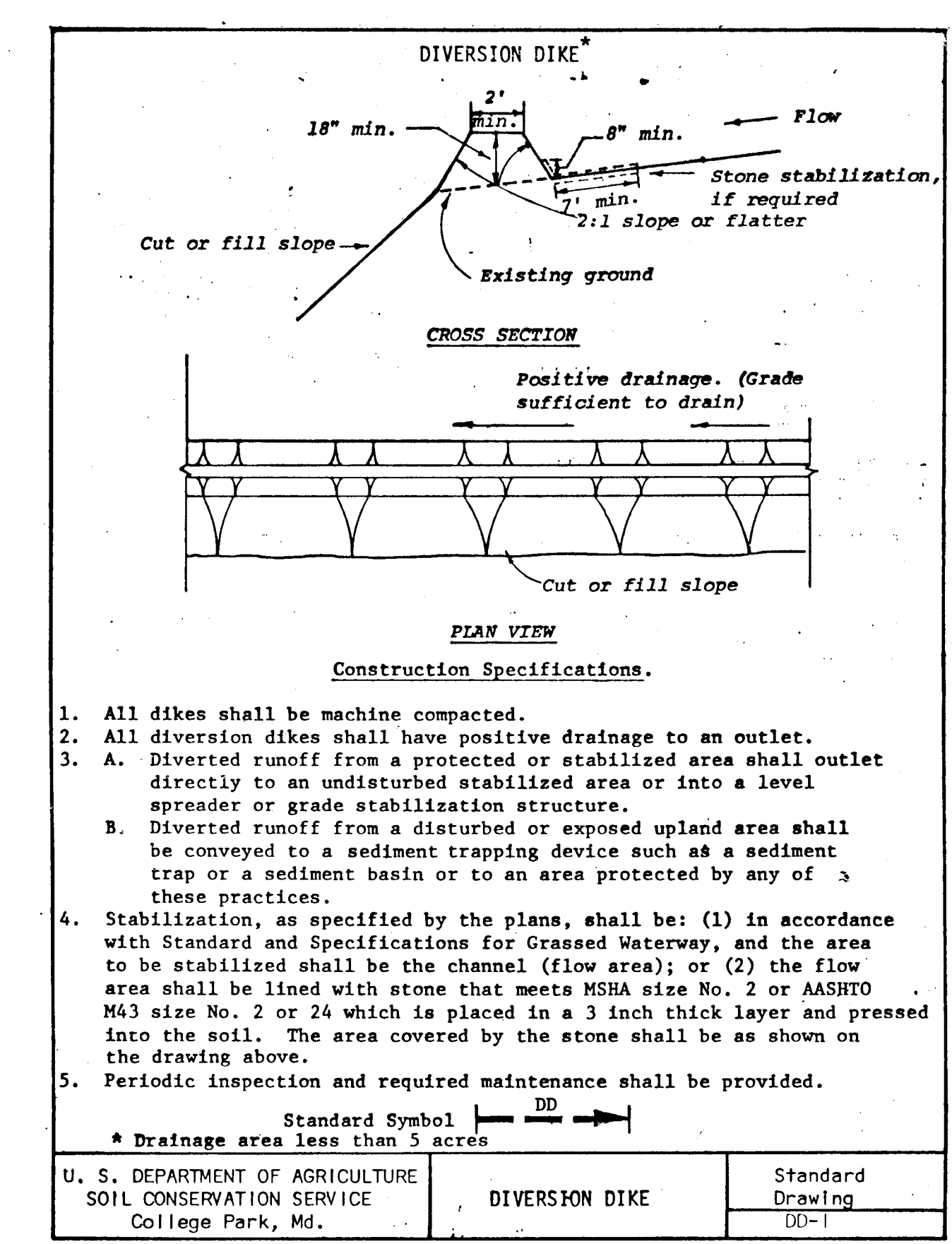
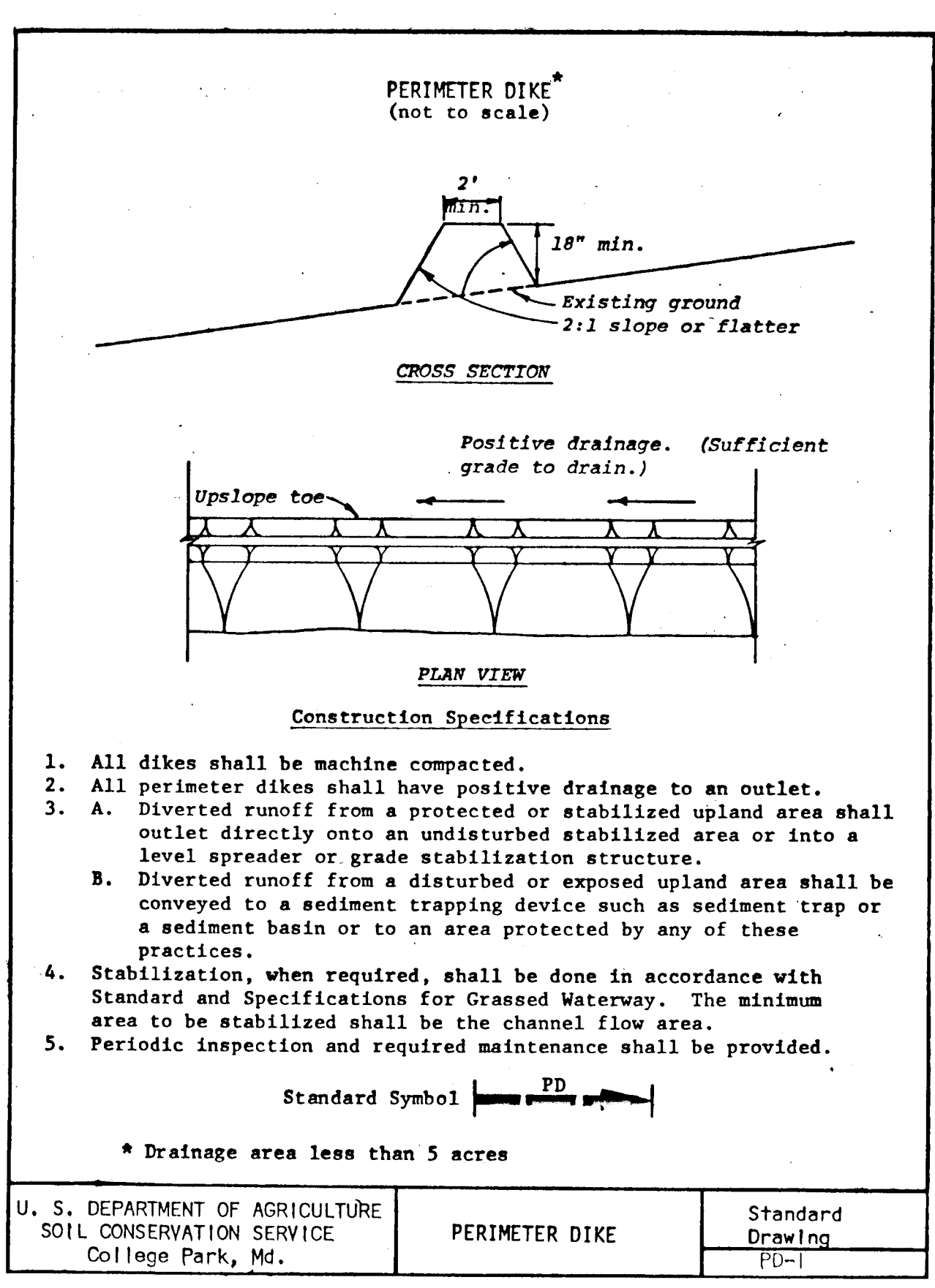
TYPICAL HALF SECTION
BONNYBRIDGE PL 4+45 TO 6+10.45 - STR C.E.G.
CUL-DE-SAC DESIGN SPEED 30 MPH



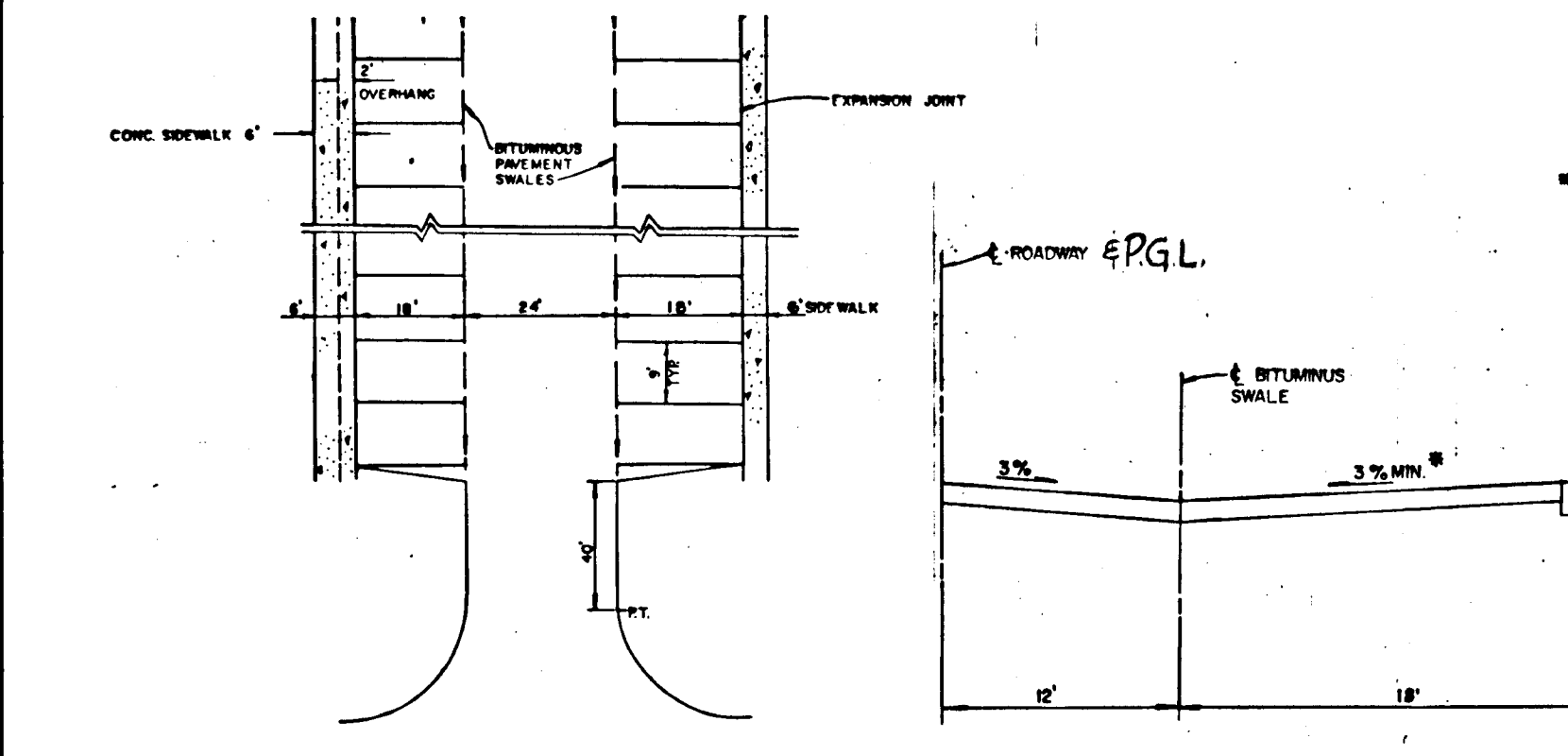
TYPICAL HALF SECTION
ROGERS AVE.
MAJOR COLLECTOR
DESIGN SPEED 40 MPH

FREDERICK RD. SIDE DITCH

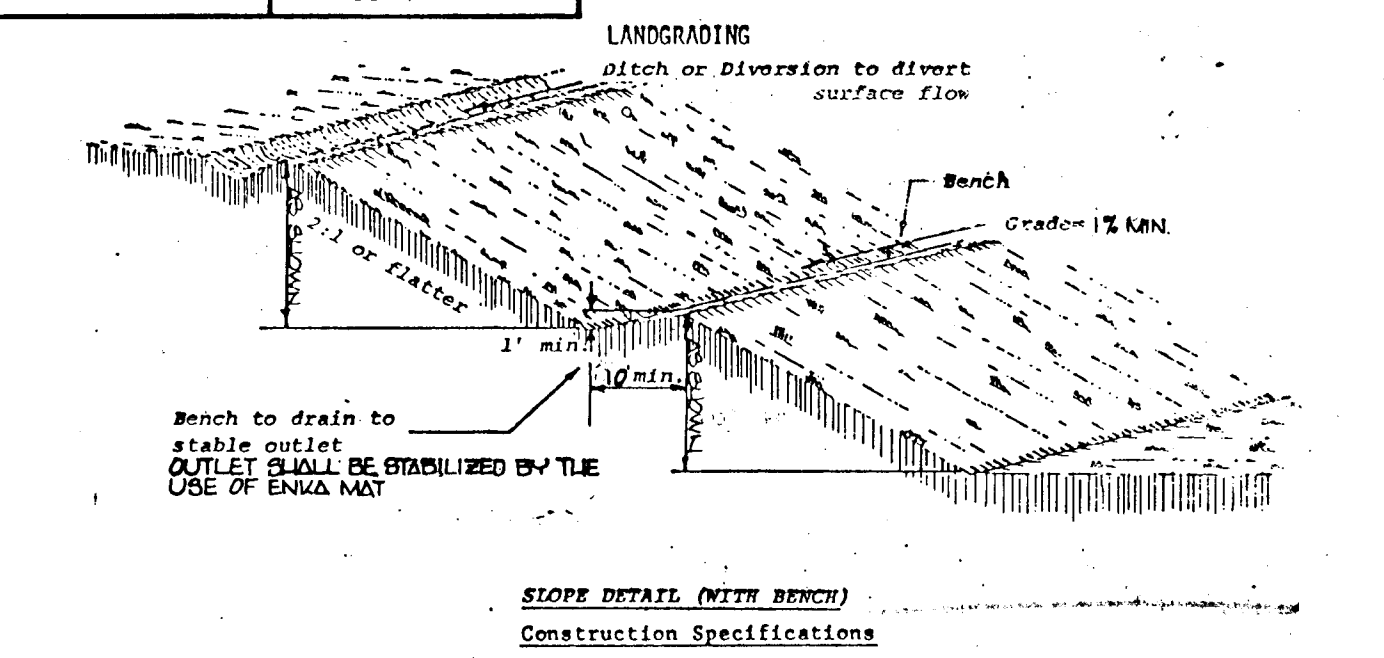
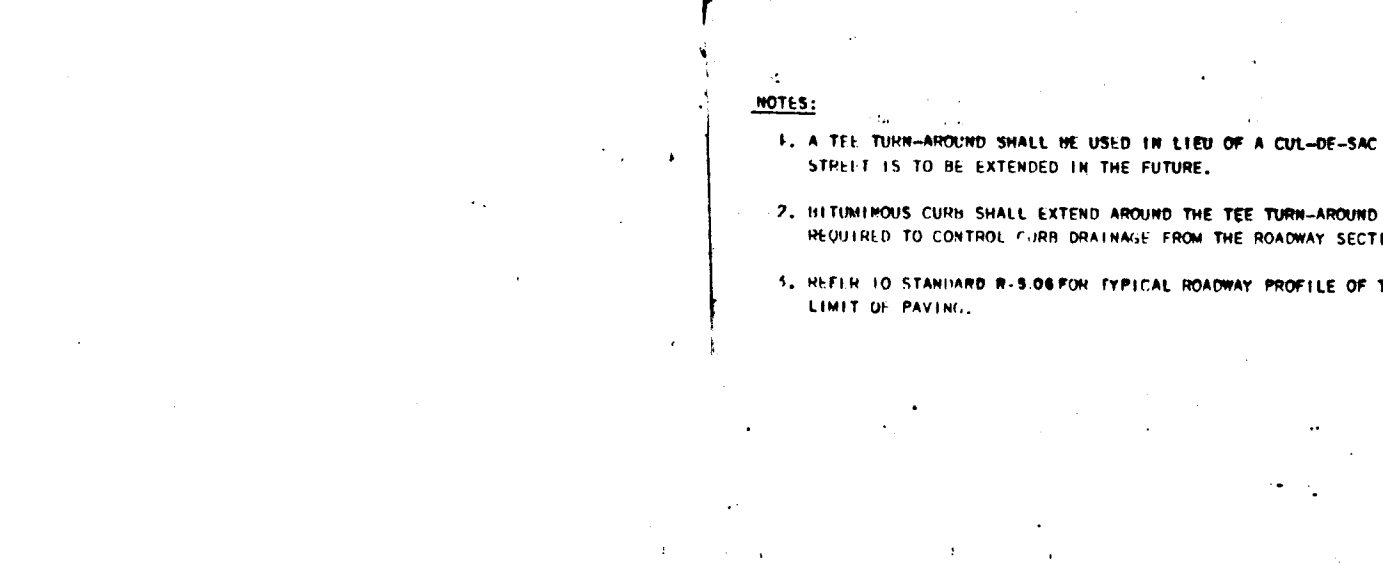
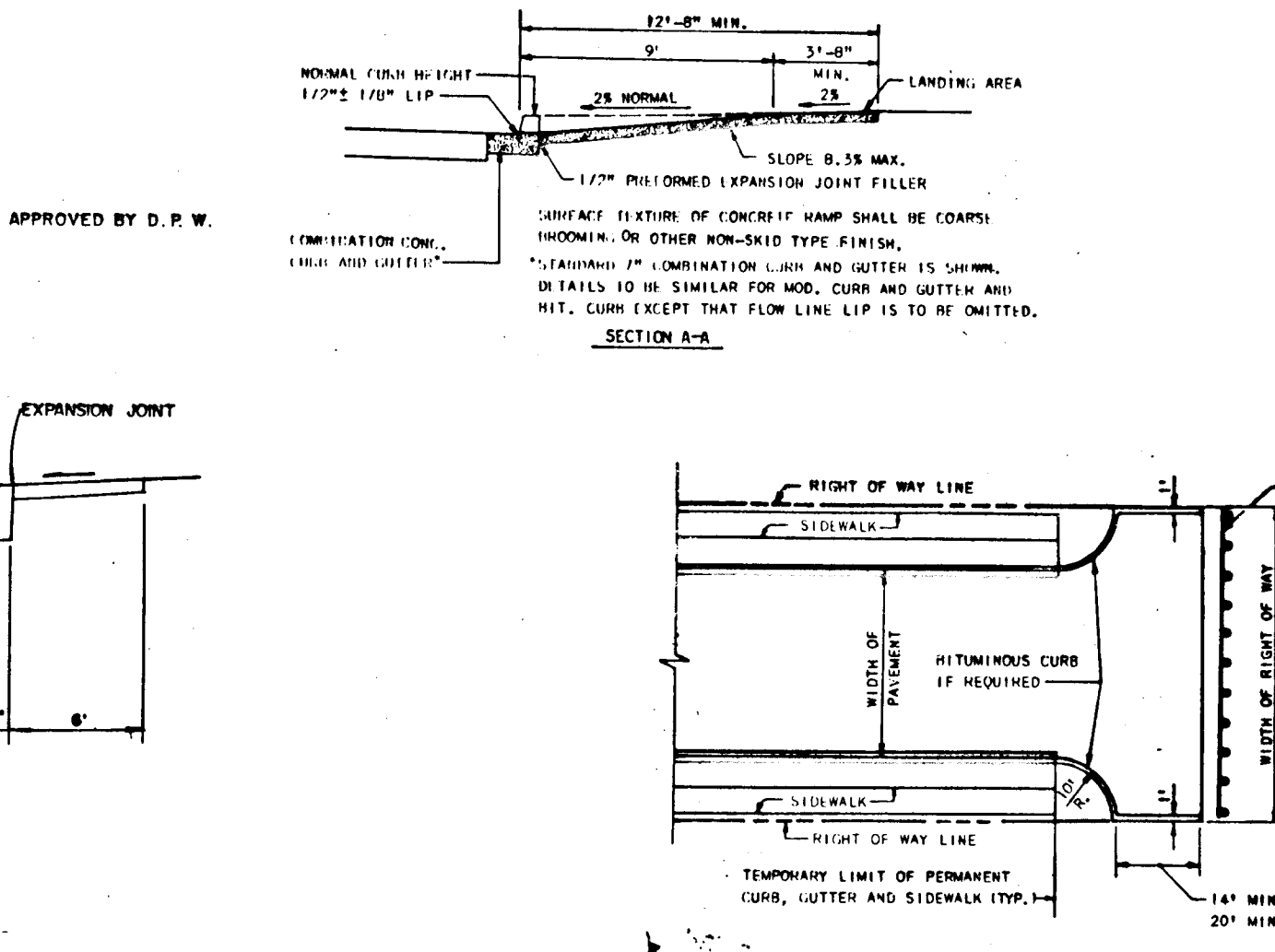
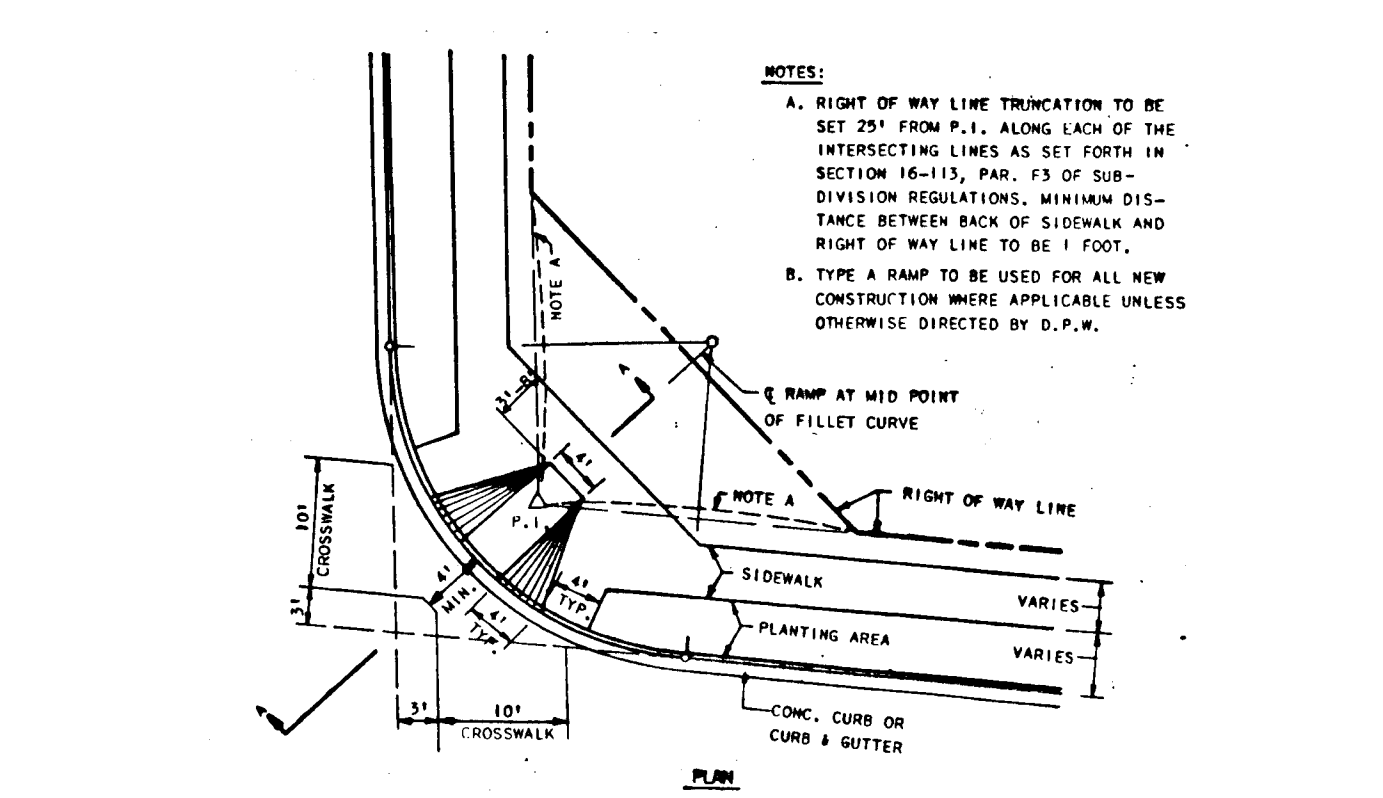
SECTION NUMBER	ROAD AND STREET CLASSIFICATION	PAVEMENT MATERIALS	
		FULL DEPTH BIT. CONC. ALTERNATE	GRANULAR BASE ALTERNATES
P-1	PARKING AREAS AND TRAVELWAYS APARTMENTS AND COMMERCIAL-INDUSTRIAL ZONES WITH NO HEAVY TRUCKS	1" BIT. CONC. SURFACE 4" BIT. CONC. BASE	1" BIT. CONC. SURFACE 2" BIT. CONC. BASE 3" CRUSHER RUN BASE COURSE OR 4" BENS GRADED STABILIZED AGGREGATE BASE COURSE
P-2	RESIDENTIAL ZONES LOCAL CUL-DE-SAC STS. ALLEYS AND PRIVATE ROADS SERVING INDIVIDUAL APARTMENTS AND COMMERCIAL-INDUSTRIAL ZONES WITH NO MORE THAN 10 HEAVY TRUCKS PER DAY	1 1/2" BIT. CONC. SURFACE 5" BIT. CONC. BASE	1 1/2" BIT. CONC. SURFACE 2 1/2" BIT. CONC. BASE 8" CRUSHER RUN BASE COURSE (2 COMPRES) OR 6" BENS GRADED STABILIZED AGGREGATE BASE COURSE
P-3	RESIDENTIAL ZONES MINOR AND MAJOR COLLECTORS COMMERCIAL, INDUSTRIAL ZONES LOCAL AND CUL-DE-SAC STREETS ALLEYS PARKING AREAS APARTMENTS AND COMMERCIAL-INDUSTRIAL ZONES WITH MORE THAN 10 HEAVY TRUCKS PER DAY	1 1/2" BIT. CONC. SURFACE 5" BIT. CONC. BASE	1 1/2" BIT. CONC. SURFACE 2 1/2" BIT. CONC. BASE 8" CRUSHER RUN BASE COURSE OR 4 1/2" DENSE GRADED STABILIZED AGGREGATE BASE COURSE



TYPICAL SECTIONS
PRIVATE COURTS



SOUTH PRIVATE COURT
-TYPICAL SECTION-
FOR GRADING OF NORTH PRIVATE COURT SEE SHEET 3.



- Construction Specifications
- All graded or disturbed areas including slopes shall be protected during clearing and construction in accordance with the approved sediment control plan until they are permanently stabilized.
 - All sediment control practices and measures shall be constructed, applied and maintained in accordance with the approved sediment control plan and the "Standards and Specifications for Soil Erosion and Sediment Control in Developing Areas".
 - Topsoil required for the establishment of vegetation shall be stockpiled in amount necessary to complete finished grading of all exposed areas.
 - Areas to be filled shall be cleared, grubbed and stripped of topsoil to remove trees, vegetation, roots or other objectionable material.
 - Areas which are to be topsoiled shall be scarified to a minimum depth of three inches prior to placement of topsoil.
 - All fill shall be compacted as required to reduce erosion, slippage, settlement, subsidence or other related problems. Fill intended to support buildings, structures and conduits, etc., shall be compacted in accordance with local requirements or codes.
 - All fill to be placed and compacted in layers not to exceed 6 inches in thickness.
 - Except for approved landfills, fill material shall be free of brush, rubbish, rocks, logs, stumps, building debris and other objectionable materials that would interfere with or prevent construction of satisfactory fills.
 - Frozen materials or soft, mucky or highly compressible materials shall not be incorporated into fills.
 - Fill shall not be placed on a frozen foundation.
 - All benches shall be kept free of sediment during all phases of development.
 - Seeps or springs encountered during construction shall be handled in accordance with the Standard and Specifications for Subsurface Drain or other approved method.
 - All graded areas shall be permanently stabilized immediately following finished grading.
 - Stockpiles, borrow areas and spoil areas shall be shown on the plans and shall be subject to the provisions of this Standard and Specifications.

#1024

THIS DEVELOPMENT PLAN IS APPROVED FOR SOIL EROSION AND SEDIMENT CONTROL BY THE HOWARD SOIL CONSERVATION DISTRICT

Reviewed for Howard Name Howard S.C.D.

and meets Technical Requirements.

James M. Hahn Signature of Engineer Date 1-4-84

U.S. Soil Conservation Service

I certify that this plan for erosion and sediment control represents a practical and workable plan based on my personal knowledge of the site conditions and that it was prepared in accordance with the requirements of the Howard Soil Conservation District.

Rodolph May Jr. Signature of Engineer Date 12/18/83

L. EARL ARMIGER Signature of Developer Date

"I/we certify that all development and construction will be done according to this plan, 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."

APPROVED: John W. Muschler 1-6-84
Chief, Division of Land Development & Zoning Administration Date

DESIGNED: A.C. CONSTRUCTION DETAILS SCALE AS SHOWN

DRAWN: S.K. BRAEBROOKE DRAWING 407

CHECKED: R.M. 2nd ELECTION DISTRICT JOB NO. L-003

DATE: 9/20/83 FOR: BEECH CREEK ASSOCIATES PG. 8 of 9 Columbia, Maryland 21044 FILE NO.

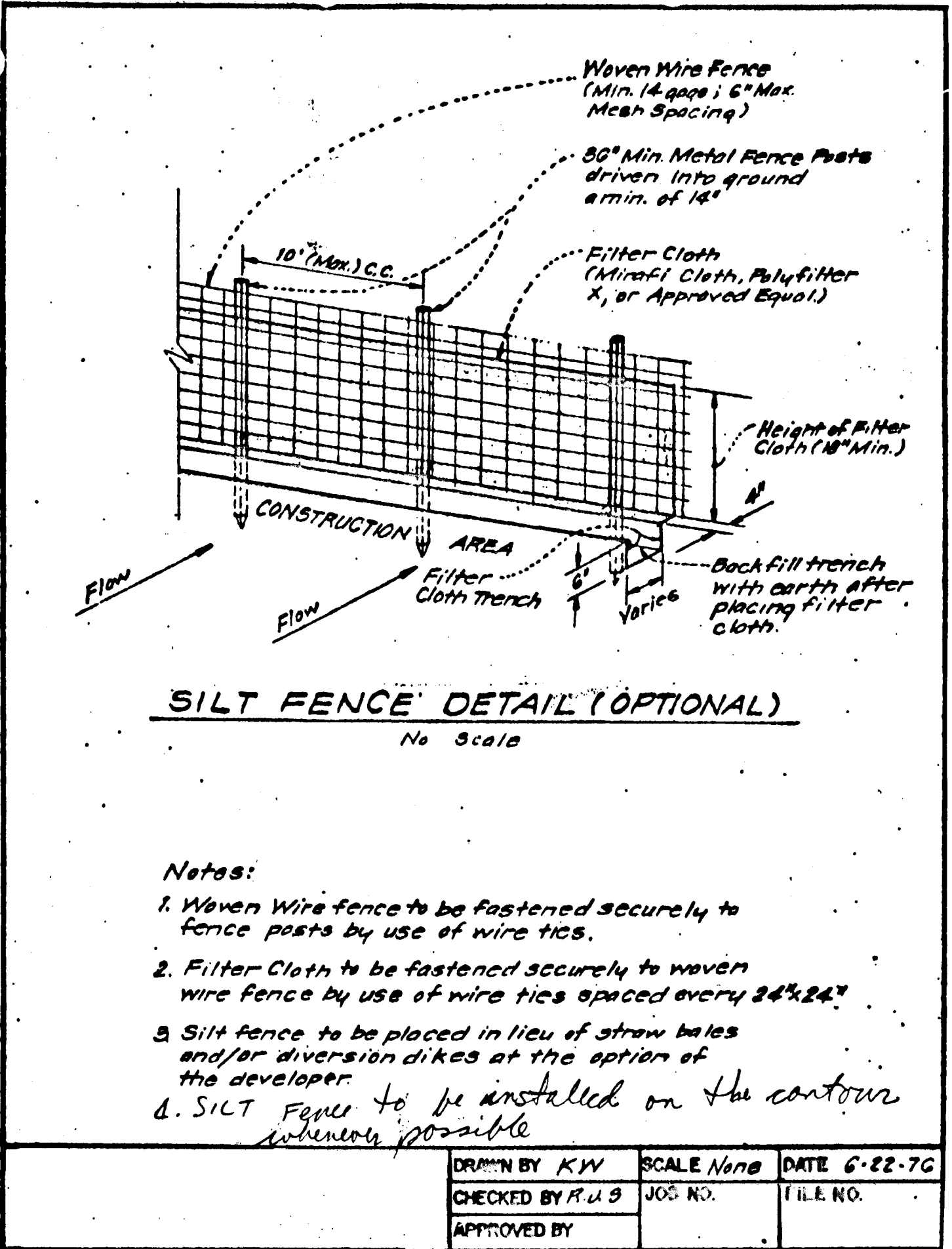
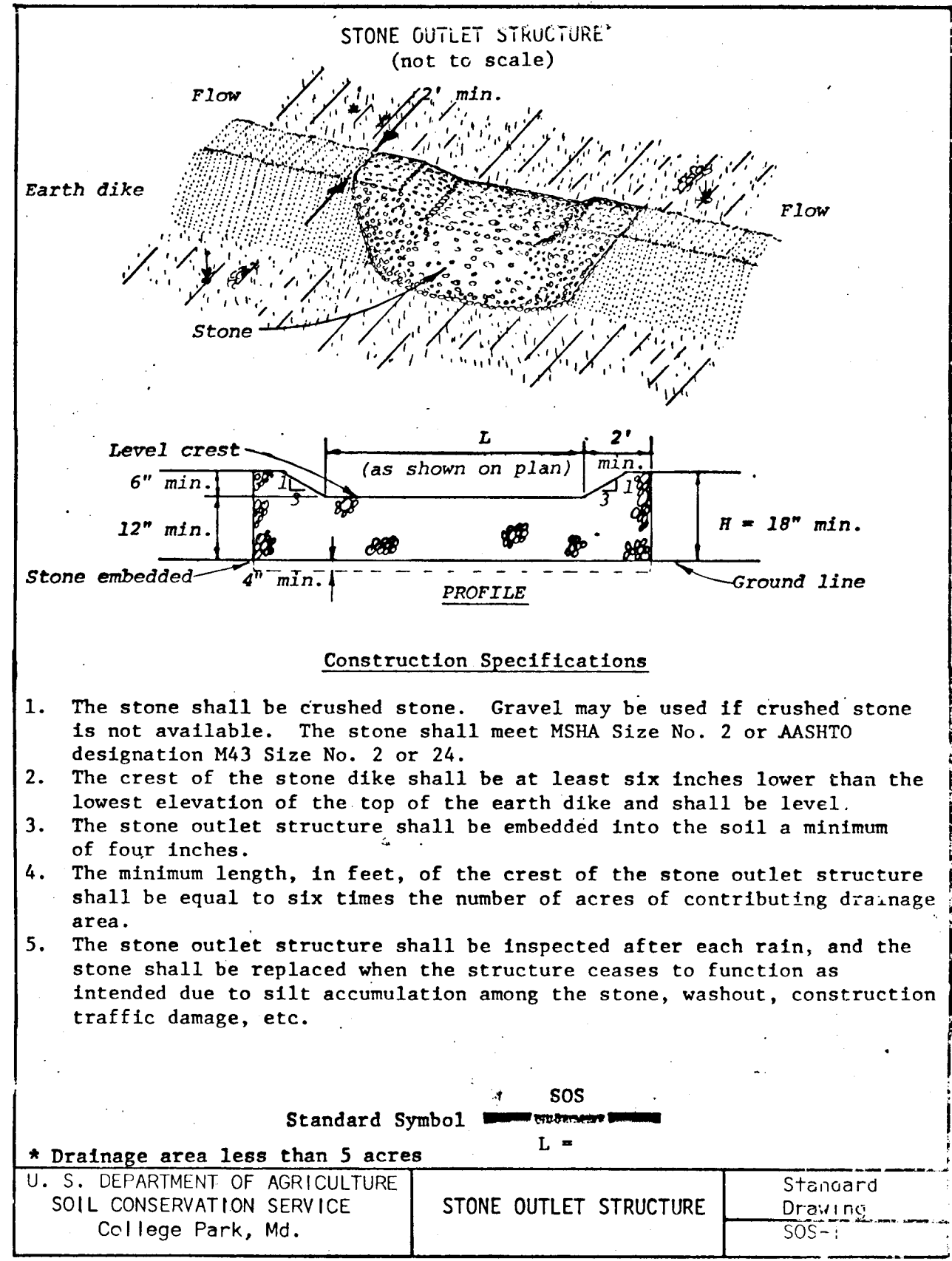
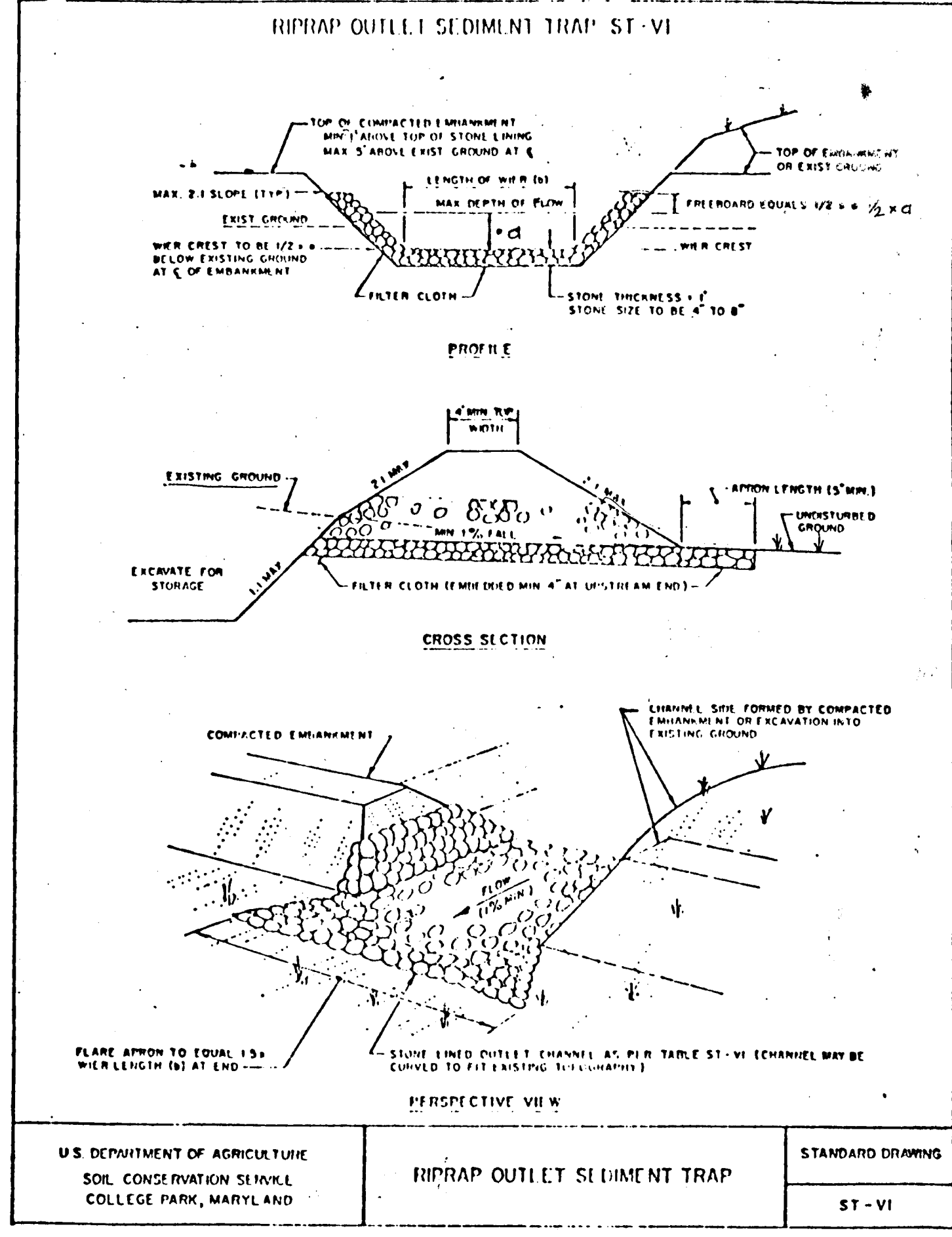
EVANS, HAGAN & HOLDEFER, INC.

DATE REVISION BY SURVEYORS AND CIVIL ENGINEERS

8013 BELAIR ROAD / BALTIMORE, MD. 21236 (301) 668-1501

539 POPLAR STREET / CAMBRIDGE, MD. 21613 / (301) 228-3350 111 JOHN STREET / WESTMINSTER, MD. 21157 / (301) 848-1790

DATE: 9/20/83 SCALE: N.T.S.



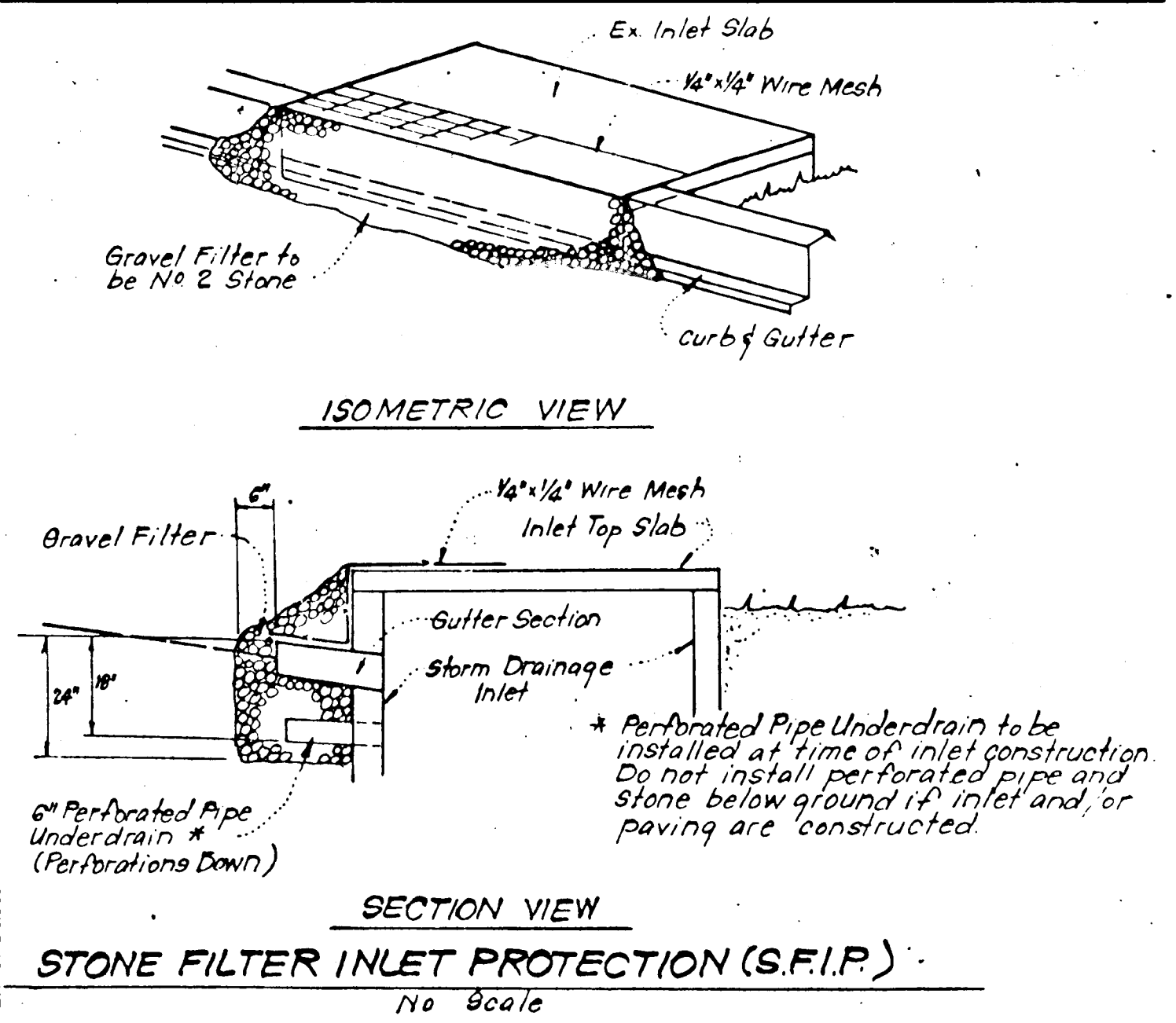
13 ANY AREA NOT ACTIVELY GRADED FOR A PERIOD OF 30 DAYS SHALL BE STABILIZED

GENERAL NOTES

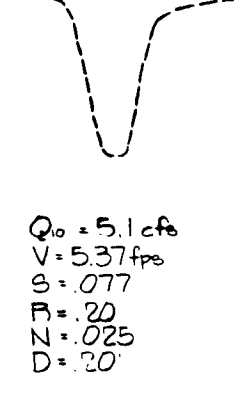
- Grading permits shall be obtained prior to installation of sediment control and grading.
- All sediment and erosion control measures will be installed and stabilized according to this plan prior to any other grading, clearing or disturbance of the existing surface of the site. See note No. 6 for stabilization except that the seed mixture will be annual rye applied at a rate of 1.4 lbs./1,000 s.f.
- Notify the Bureau of Inspections and Permits at least 24 hours before starting any work.
- All sediment control practices to conform to the "Standards and Specifications for Soil Erosion and Sediment Control in Developing Areas" and shall be adjusted to meet actual field conditions.
- Stabilization of disturbed ground to be done as soon after construction as possible.
- All disturbed area to be stabilized in accordance with the following specifications:
 - Seed - certified 85% germination applied at the rate of 3 lbs./1,000 s.f. Mixture - 40% Kentucky Blue, 20% Chewing Fescue, 20% Kentucky 31 and 20% annual rye.
 - Fertilizer - 10-10-10 applied at a rate of 23 lbs./1,000 s.f. Ground Agricultural Lime or Dolomitic Lime applied at a rate of 90 lbs./1,000 s.f.
 - Mulch - weed free grain straw applied at a rate of 70-90 lbs./1,000 s.f. Mulch shall be secured to the ground by any approved method i.e., asphalt tacks, chemical binder, etc.
 - All sod used shall be Maryland State certified.
- All structural sediment control measures are to remain in place until permission for their removal has been obtained from the Bureau of Inspections and Permits.
- On-site inspection and maintenance of all sediment control measures including clean-out of sediment traps and dikes, and proper establishment of all planned vegetative measure will be the responsibility of the developer or his representative on the site, on a continuing day to day basis.
- It will be the developers responsibility to provide additional sediment and erosion control devices to protect stabilized areas during construction.
- The contractor shall keep all public roads free of sediment deposits left from traffic leaving construction site.
- Site Analysis:
 - Total Area: 2333 Acres
 - Area To Be Paved: 1.76 Acres
 - Area To Be Seeded: 11.72 Acres
 - Area Undisturbed: 9.85 Acres
- THE CONTRACTOR SHALL PROVIDE ACCESS TO THE EXISTING HOME SITE (LOT 36) DURING ALL PHASES OF CONSTRUCTION.

SEQUENCE OF CONSTRUCTION

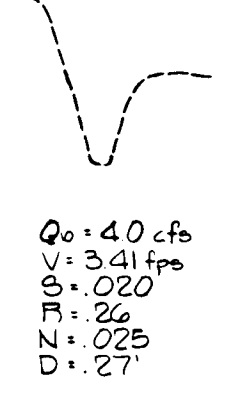
- Phase I Notify the Bureau Of Inspections and Permits at least 24 hours before starting any work.
- Phase II Clear for and construct sediment control as shown.
- Phase III Clear remaining area to be disturbed.
- Phase IV Rough grade site and construct roads to subgrade, maintain driveway access to existing dwelling.
- Phase V Construct storm drain system, except I-9 to S-3, and through sediment trap #2. All inlet openings shall be blocked and remain so until all contributing areas have been stabilized.
- Phase VI Construct water and sanitary sewer systems; Construct all remaining utilities.
- Phase VII Construct curb and gutter, fine grade and stabilize graded areas, base course paving except for roadside swale and deceleration lane north of Bonny Bridge Place and Rogers Avenue intersection.
- Phase VIII Remove inlet opening blocking from all inlets. Construct storm drain system from I-9 to S-3. Remove existing 18" headwall and bulkhead existing 18" R.C.P.
- Phase IX Remove existing concrete ditch and construct roadside swale and deceleration lane north of intersection of Bonny Bridge Place and Rogers Avenue.
- Phase X Upon sediment control inspector's approval remove all sediment control devices and stabilize all remaining disturbed areas immediately.
- Phase XI Construct remaining portion of storm drain system.
- Phase XII Maintenance



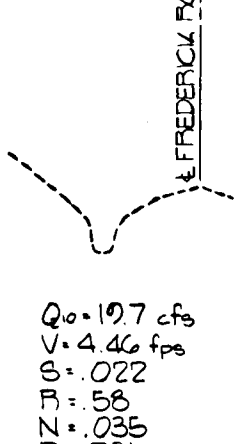
SECTION B-B



SECTION A-A



SECTION C-C



Reviewed for Howard S.C.D.
 Name
 and meets Technical Requirements.

James M. Helm 1-4-84
 U.S. Soil Conservation Service Date

THIS DEVELOPMENT PLAN IS APPROVED FOR SOIL EROSION AND SEDIMENT CONTROL BY THE HOWARD SOIL CONSERVATION DISTRICT

Howard S.C.D. 2-30-83
 Date

I certify that this plan for erosion and sediment control represents a practical and workable plan based on my personal knowledge of the site conditions and that it was prepared in accordance with the requirements of the Howard Soil Conservation District.

Rodolph May Jr. 12-28-83
 Signature of Engineer Date
 RODOLPH MAY JR.

"I/we certify that all development and construction will be done according to this plan, 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."

L. Earl Armiger 9/2/83
 Signature of Developer Date
 L. EARL ARMIGER

#1024

APPROVED: John W. Muschman 1-6-84
 Chief, Bureau of Engineering Date

APPROVED: John W. Muschman 1-6-84
 Chief, Division of Land Development & Zoning Administration Date

DESIGNED: A.C. CONSTRUCTION DETAILS SCALE AS SHOWN

DRAWN: S.K. DRAWING 5 of 7

CHECKED: R.M. JOB NO. 2-003

DATE: 9-12-83 FOR: BEECH CREEK ASSOCIATES P.O. Box 919 Columbia, Maryland 21044

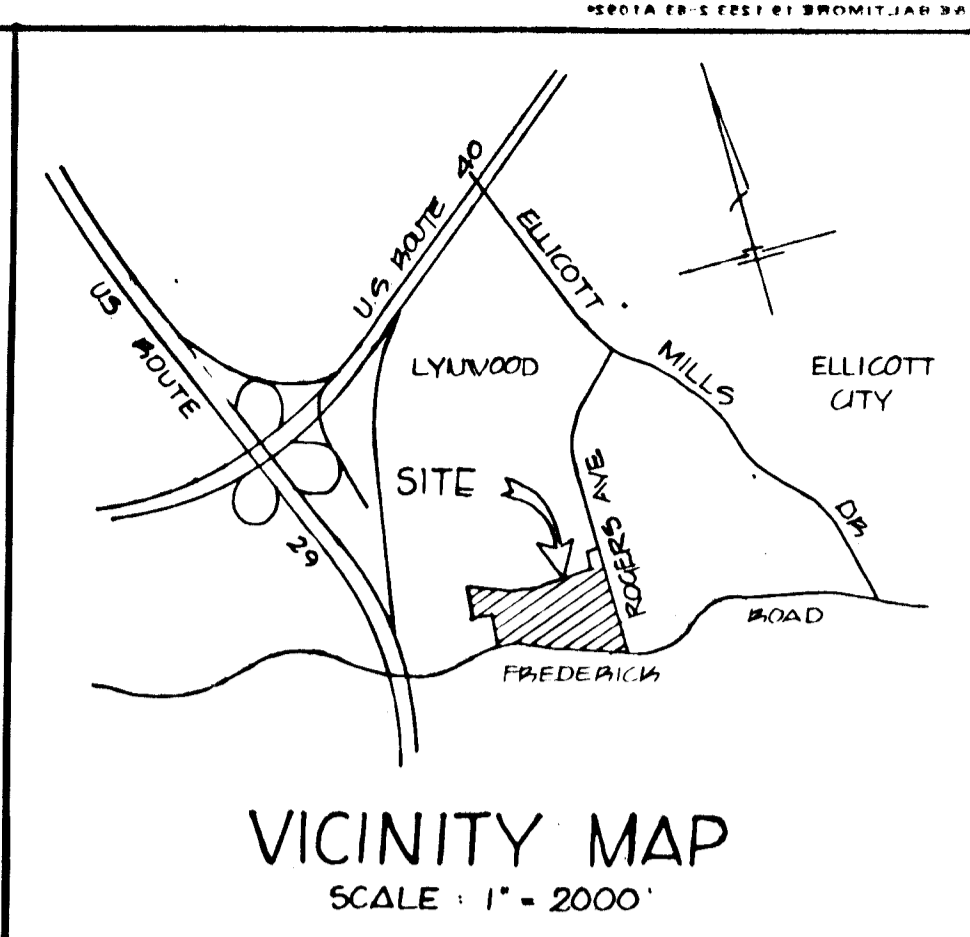
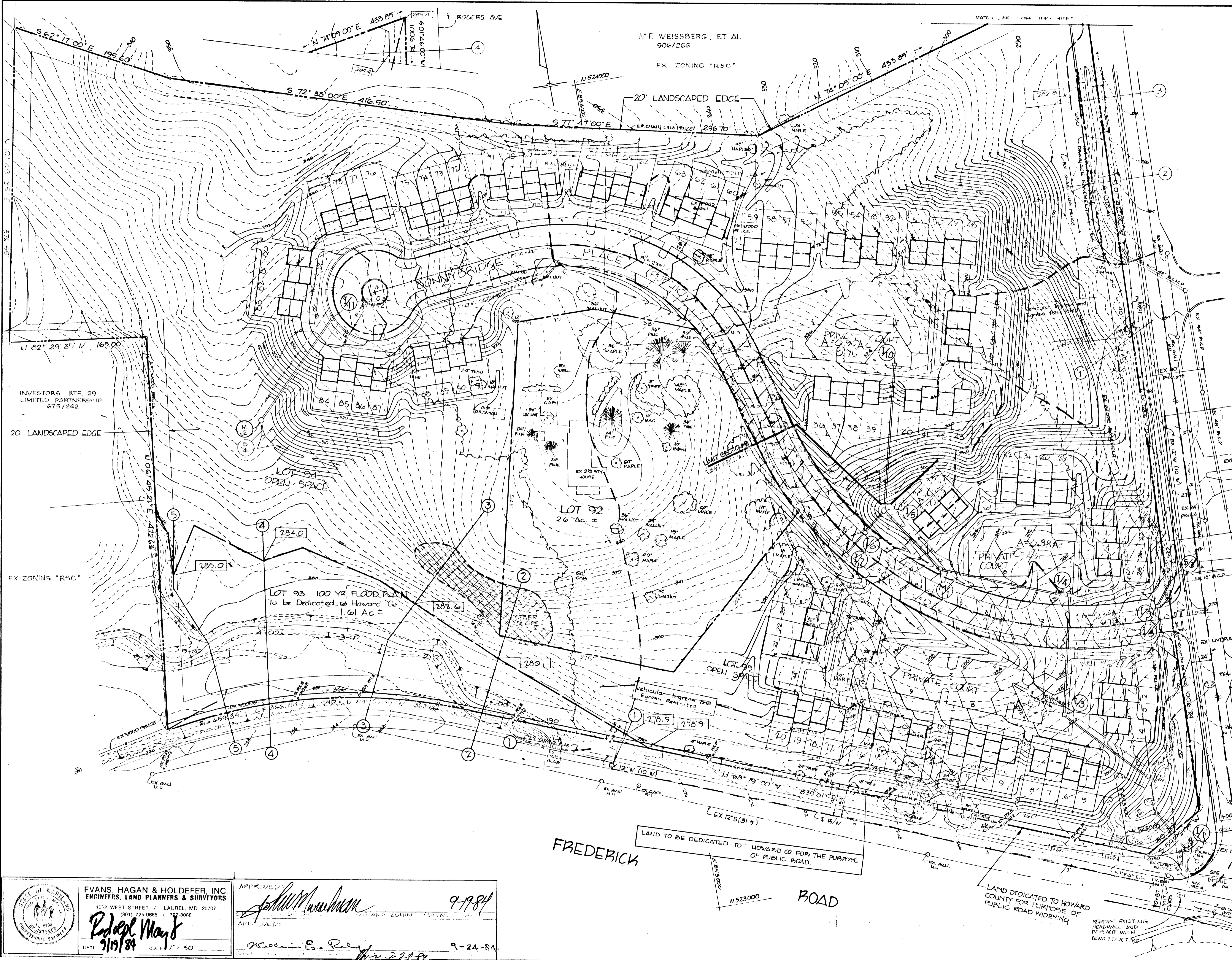
EVANS, HAGAN & HOLDEFER, INC.

DATE: 9/12/83 REVISION: BY: SCALE: AS SHOWN

SURVEYORS AND CIVIL ENGINEERS
 8013 BELAIR ROAD / BALTIMORE, MD. 21236 (301) 668-1601

539 POPLAR STREET / CAMBRIDGE, MD. 21613 / (301) 228-3250
 111 JOHN STREET / WESTMINSTER, MD. 21157 / (301) 848-1790

Rodolph May Jr.
 DATE: 9/12/83 SCALE: AS SHOWN



TYPICAL LOT SIZE
UNLESS OTHERWISE NOTED ON PLAN

25'	20'	20'	25'
2000 sq. ft.	1600 sq. ft.	1600 sq. ft.	2000 sq. ft.
80'	20'	20'	25'

RUSTY RIM RD.

SMITH AVE.

ROGERS AVE.

FREDERICK

ROAD

DRAINAGE AREA MAP
BRAEBROOKE
SECTION 1
TAX MAP 24 AREA 1 PARCEL 129
ELECTION DISTRICT #2
HOWARD COUNTY, MARYLAND
SCALE: 1" = 50'
DATE: FEB. 1984

EVANS, HAGAN & HOLDEFER, INC.
ENGINEERS, LAND PLANNERS & SURVEYORS
1052 WEST STREET / LAUREL, MD 20707
(301) 725-0665 / 702-8086

Robert M. Hagan
DATE: 9/19/84 SCALE: 1" = 50'

APPROVED: *[Signature]* 9-19-84

APPROVED: *[Signature]* 9-24-84

LAND TO BE DEDICATED TO: HOWARD CO FOR THE PURPOSE OF PUBLIC ROAD

LAND DEDICATED TO HOWARD COUNTY FOR PURPOSE OF PUBLIC ROAD WIDENING

REMOVE EXISTING HEADWALL AND REPAIR WITH BEND STRUCTURE

CONSTRUCTION SPECIFICATIONS:

I. 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.

II. FILL

Material

The fill material shall be taken from approved designated borrow area or areas. It shall be free from 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 at least 10 percent above the design elevation (including freeboard) unless otherwise 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 6-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 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.

Core Trench

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 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 core 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 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. 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, spotty 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. Acceptable Construction Criteria

The following items should be considered in reviewing As-Built plans to determine if it is acceptable:

1. The pipe and riser diameter, materials, and elevations must be correct.
2. The number, size and location of the anti-seep collars must be correct.
3. The emergency spillway exit slope may be 1-2% steeper, but no flatter than the design, and no narrower than the design.
4. The top of fill elevation must be no less than the design elevation plus the allowance for settlement.

5. The top width and side slopes must be equal to or flatter than the design.

6. There must be the proper relation between the elevations of the principal spillway crest, the emergency spillway crest, and the top of dam. All of these elevations should be greater than or equal to the design elevations.

7. The structure must have an acceptable outlet as provided in the plans.

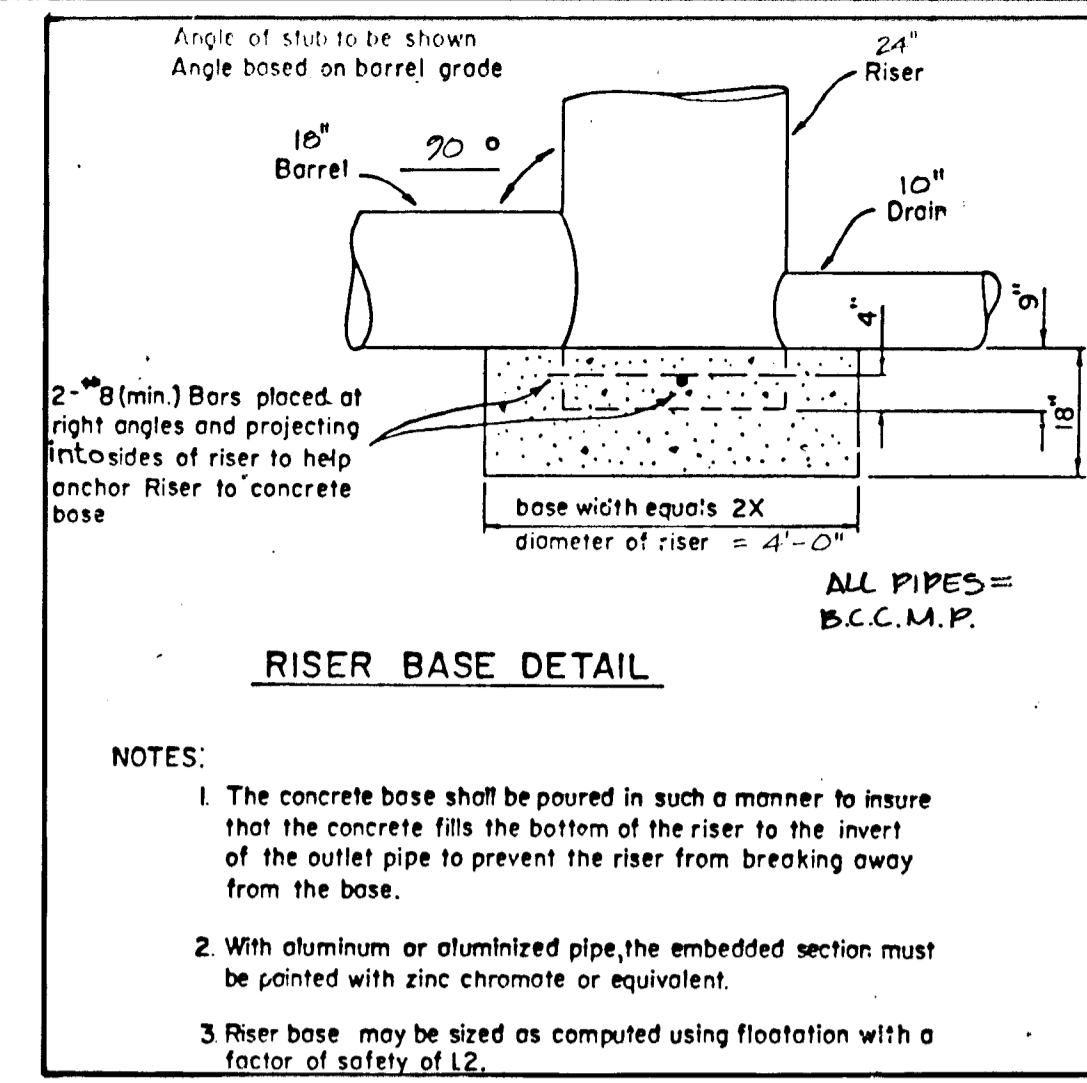
Any major change or deviation from the original plan must be redesigned and revised plans submitted to the approving soil conservation district prior to the performance of the work.

V. CONCRETE

Concrete shall meet minimum requirements set forth in Maryland State Highway Administration Specifications for Materials, Highways, Bridges, and Incidental Structures, Article 20.07 (Portland Cement Concrete Mixtures), Class A-1, or P-1.

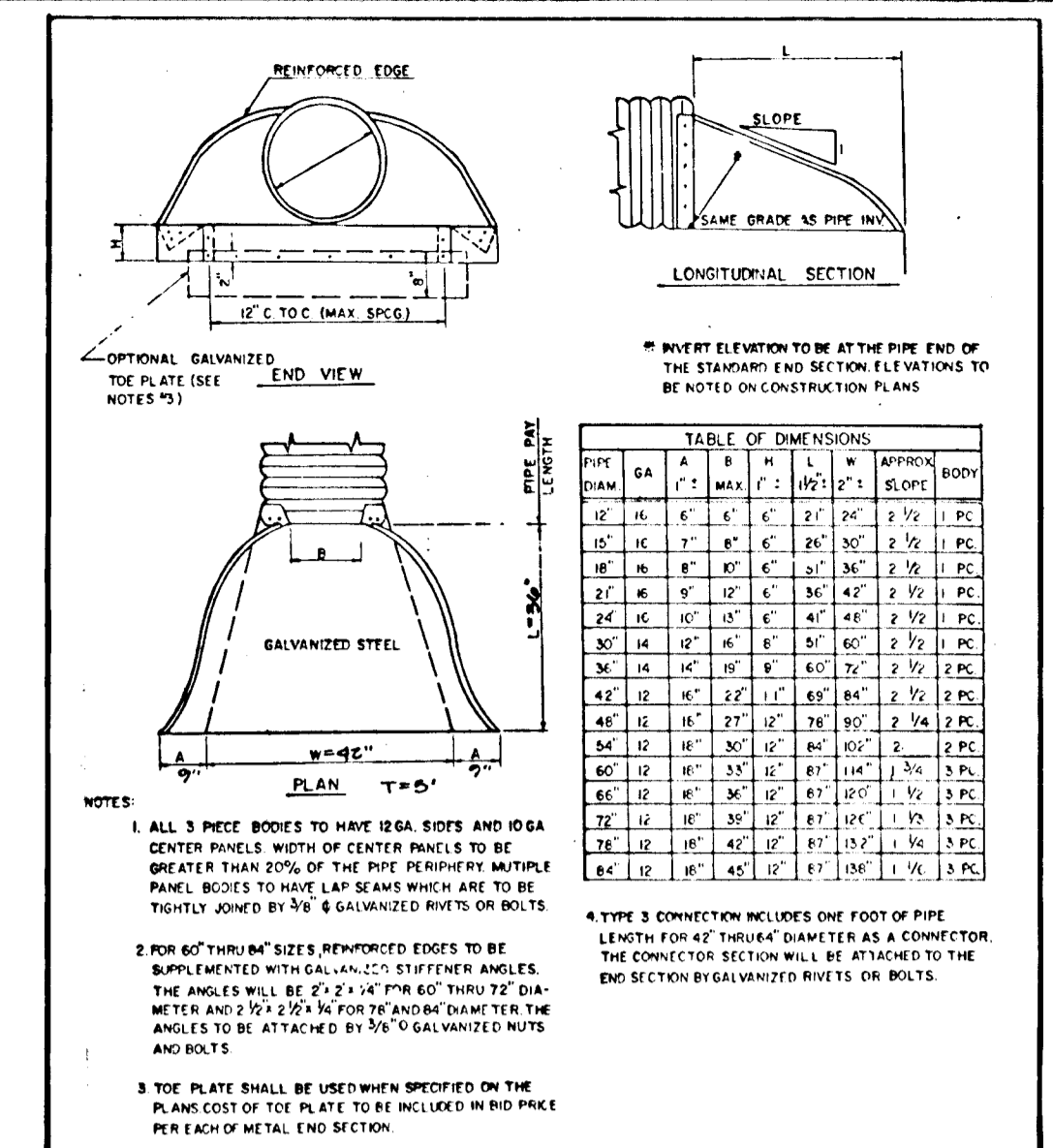
VI. STABILIZATION

All borrow areas shall be graded to provide proper drainage and left in a slightly condition. All exposed surfaces of the embankment, spillway and borrow areas shall be stabilized by seeding and applying straw mulch in accordance with Standards and Specifications for Soil Erosion and Sediment Control in Urbanizing Areas immediately after finish grading.



RISER BASE DETAIL - SWM BASIN

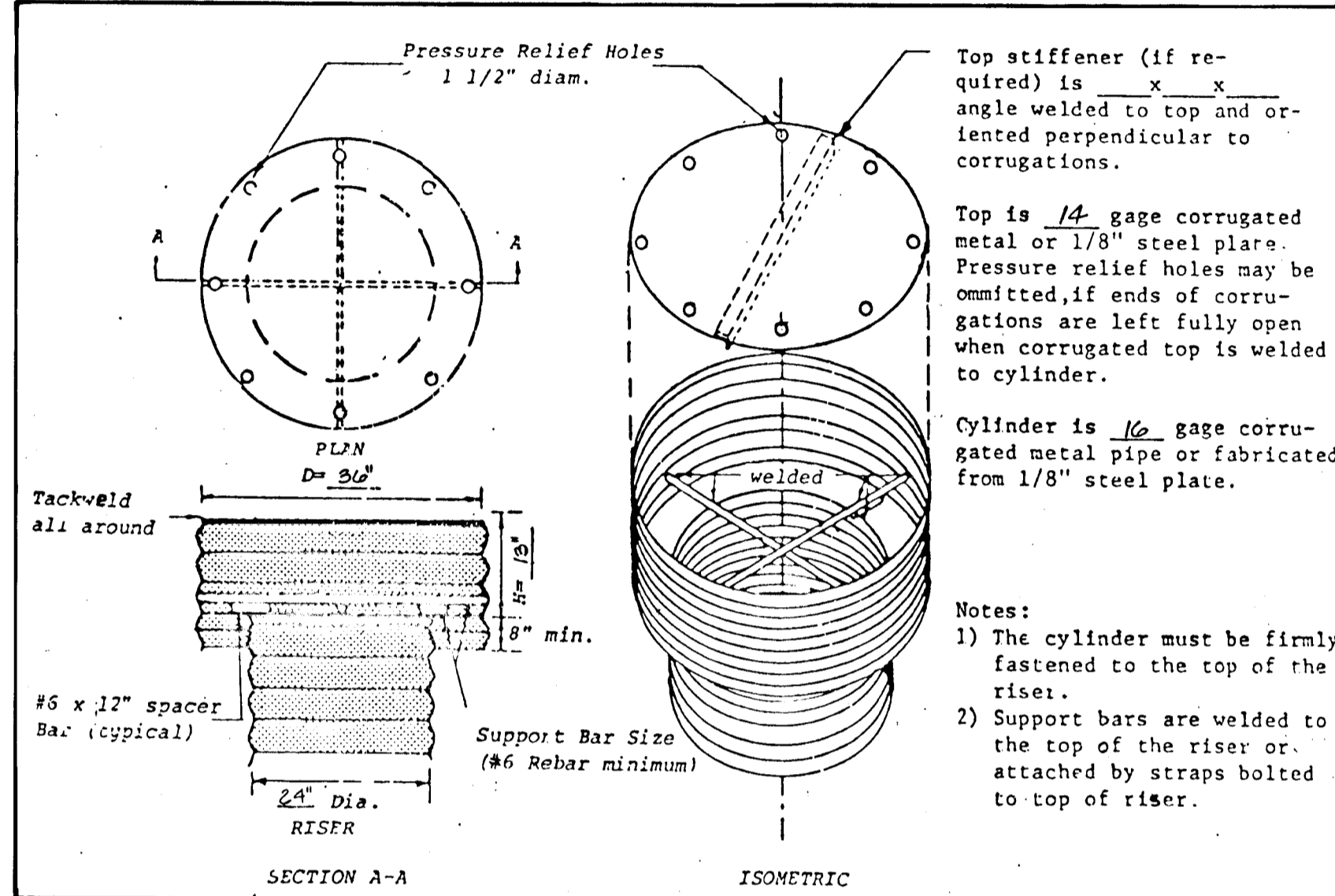
NOTES:
 1. The concrete base shall be poured in such a manner to insure that the concrete fills the bottom of the riser to the invert of the outlet pipe to prevent the riser from breaking away from the base.
 2. With aluminum or aluminized pipe, the embedded section must be painted with zinc chromate or equivalent.
 3. Riser base may be sized as computed using floatation with a factor of safety of 1.2.



METAL END SECTION CIRCULAR METAL PIPE

NOTES FOR COLLARS:
 1. All materials to be in accordance with construction and construction material specifications.
 2. When specified on the plans, coating of collars shall be in accordance with construction and construction material specifications.
 3. Unassembled collars shall be marked by painting or tagging to identify matching pairs.
 4. The lap between the two half sections and between the pipe and connecting band shall be caulked with asphalt mastic at time of installation and construction material specifications.
 5. Each collar shall be furnished with two 1/2 inch diameter rods with standard tank lugs for connecting collars to pipe.

ANTI-SEEP COLLAR



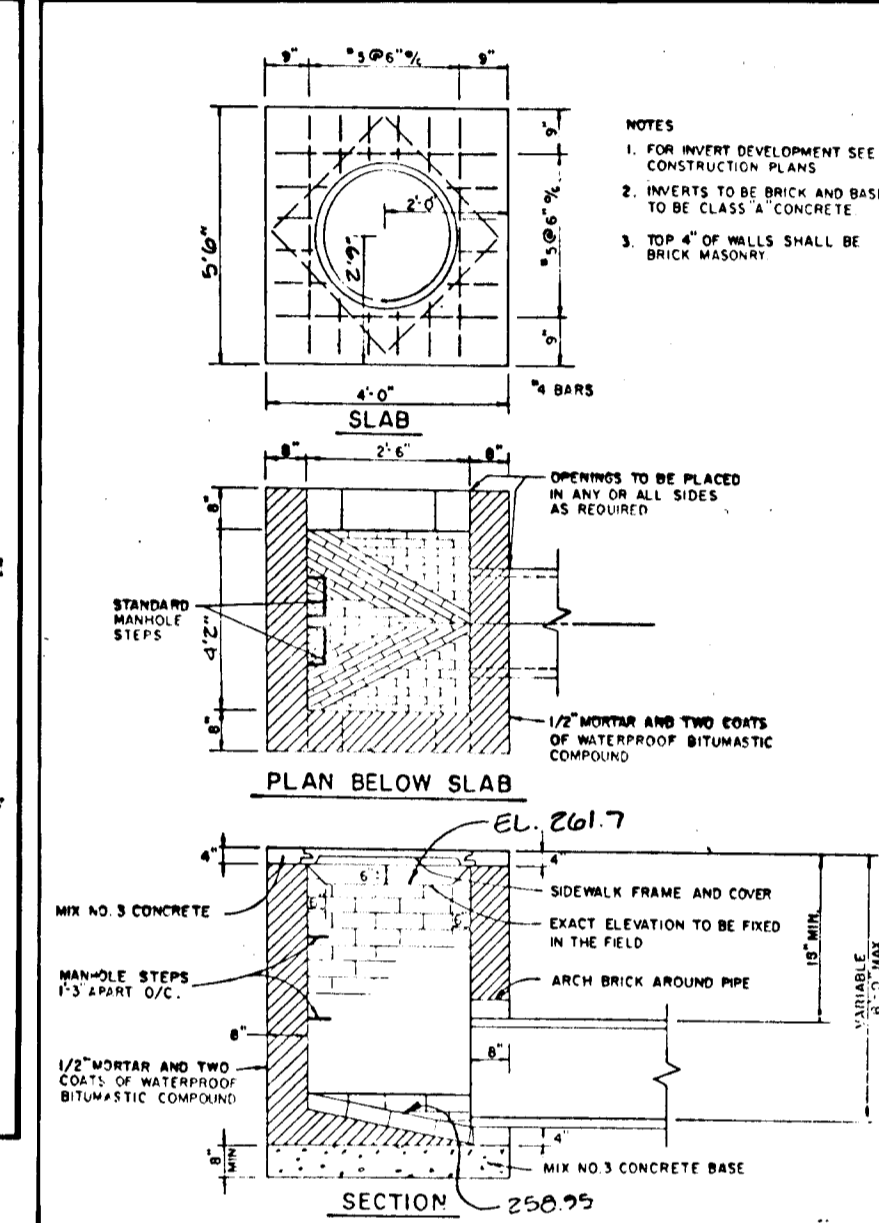
CONCENTRIC TRASH-RACK AND ANTI-VORTEX DEVICE

THESE PLANS FOR SMALL POND CONSTRUCTION MEET THE REQUIREMENTS OF THE HOWARD COUNTY SOIL CONSERVATION DISTRICT.

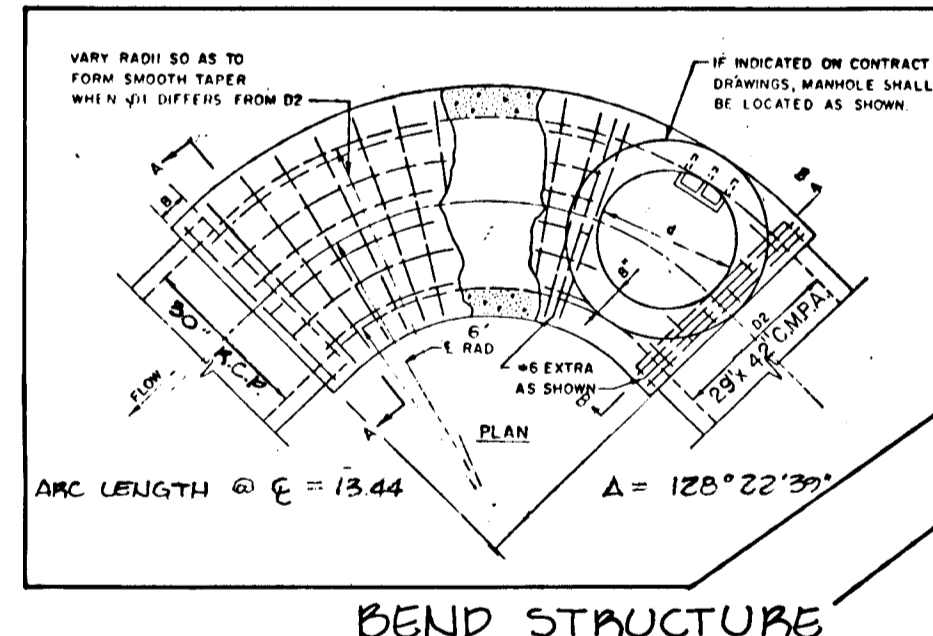
HOWARD COUNTY SOIL CONSERVATION DIST. DATE

THESE PLANS HAVE BEEN REVIEWED FOR HOWARD COUNTY SOIL CONSERVATION DISTRICT AND MEET THE TECHNICAL REQUIREMENTS FOR SMALL POND CONSTRUCTION.

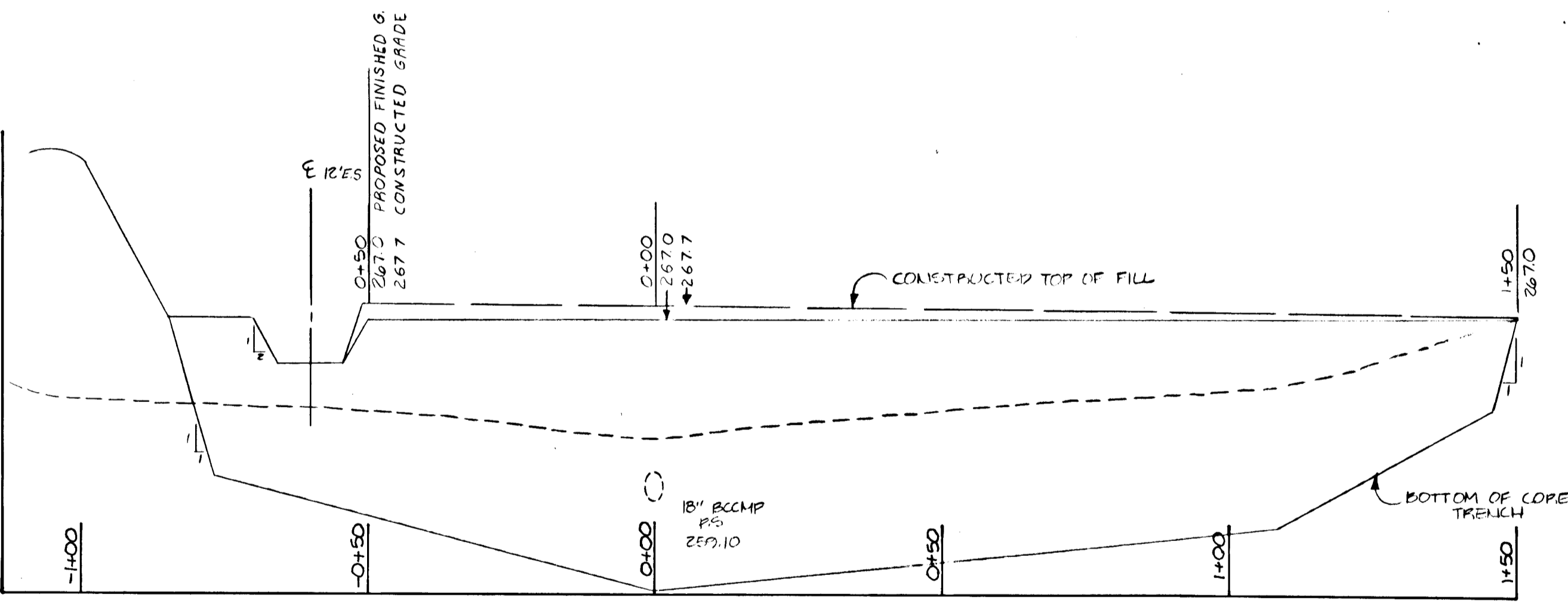
U.S. SOIL CONSERVATION SERVICE DATE



MODIFIED 'D' INLET

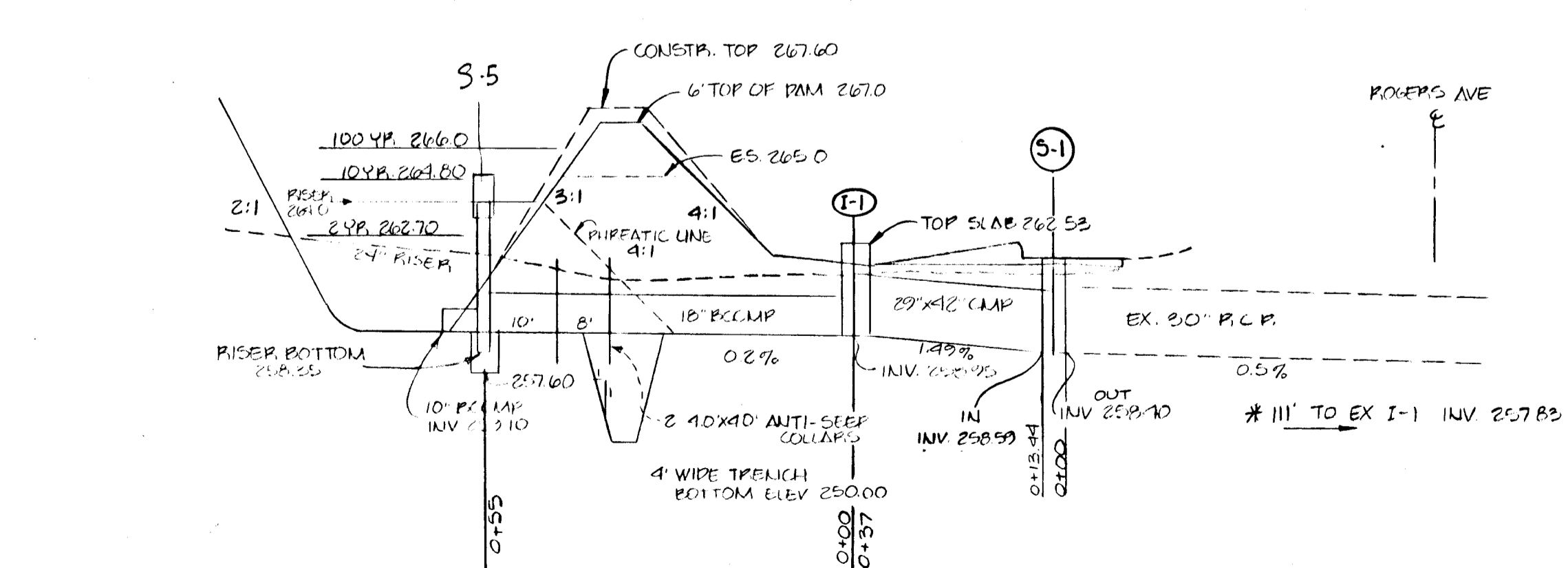


BEND STRUCTURE



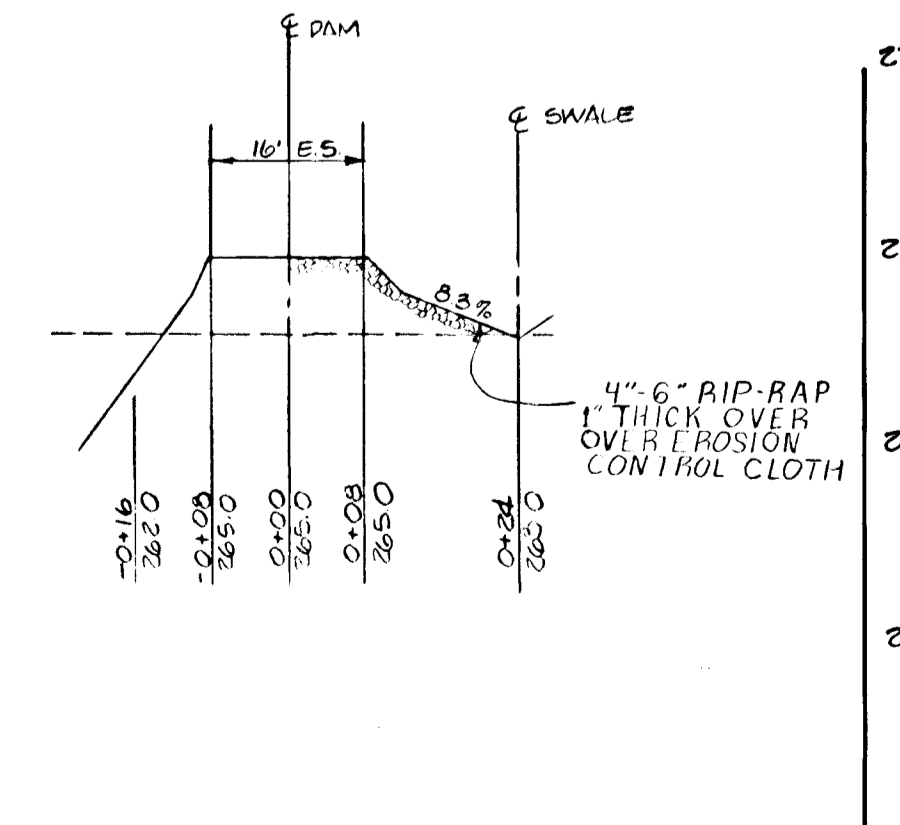
SECTION THRU P. SPILLWAY

VERT. 1"=5'
 HORIZ. 1"=20'



SECTION THRU P. SPILLWAY

SCALE:
 VERT. 1"=5'
 HORIZ. 1"=20'



SECTION THRU E. SPILLWAY

ENGINEER'S CERTIFICATION

I HEREBY CERTIFY THAT THIS PLAN FOR A POND REPRESENTS A PRACTICAL AND WORKABLE PLAN BASED ON MY PERSONAL KNOWLEDGE OF THE SITE CONDITIONS AND THAT IT WAS PREPARED IN ACCORDANCE WITH REQUIREMENTS OF THE HOWARD COUNTY SOIL CONSERVATION DISTRICT.

R. Joseph May Jr.
 REGISTERED PROFESSIONAL ENGINEER
 9/19/84 DATE

DEVELOPER'S CERTIFICATION

I HEREBY CERTIFY THAT ALL DEVELOPMENT AND CONSTRUCTION WILL BE DONE ACCORDING TO THIS PLAN OF DEVELOPMENT AND PLAN FOR A POND. I ALSO AUTHORIZE PERIODIC ON-SITE INSPECTION BY HOWARD COUNTY SOIL CONSERVATION DISTRICT OR THEIR AUTHORIZED AGENTS AS ARE DEEMED NECESSARY. DEVIATIONS FROM THESE PLANS WILL NOT BE MADE UNLESS AUTHORIZED BY THE HOWARD COUNTY SOIL CONSERVATION DISTRICT.

K. Eullinger
 L. EARL DAMIGER
 9.19.84 DATE

APPROVED: *[Signature]* 9-18-84
 CHIEF, DIVISION OF LAND DEVELOPMENT & ZONING ADMINISTRATION DATE

APPROVED: *[Signature]* 9-21-85
 CHIEF, BUREAU OF ENGINEERING DATE

DESIGNED BY: A.P.L.
 DRAWN BY: P.W.B.
 CHECKED BY: R.L.M.

DATE: FOR: BEECH CREEK ASSOCIATES
 110 BOX 210
 COLUMBIA, MARYLAND 21044

SCALE: AS SHOWN
 DRAWING: 7 OF 7
 JOB NO: 00003
 FILE NO:

EVANS, HAGAN & HOLDEFFER, INC.
 ENGINEERS, LAND PLANNERS & SURVEYORS
 1052 WEST STREET / LAUREL, MD 20707
 (301) 725-0865

530 POPLAR STREET / CAMBRIDGE, MD 21613 (301) 228-3350
 111 JOHN STREET / WESTMINSTER, MD 21157 (301) 848-1190
 8011 WOODBINE ROAD / BALTIMORE, MD 21236 (301) 668-1501

R. Joseph May Jr.
 9/19/84 SCALE