SHEET INDEX	
NO	DESCRIPTION
1	TITLE SHEET
2	PLAN AND PROFILE OF MANSION LANE
3	GRADING AND SEDIMENT CONTROL PLAN
4	PROFILES AND DETAIL SHEET
5	SEDIMENT CONTROL DETAIL SHEET
6	STORM DRAIN PROFILES & NOTES
7	HEADWALL NOTES AND DETAILS

ROADWAYS, STORM DRAINS AND STORMWATER MANAGEMENT

TROY HILL CORPORATE CENTER PHASE III B

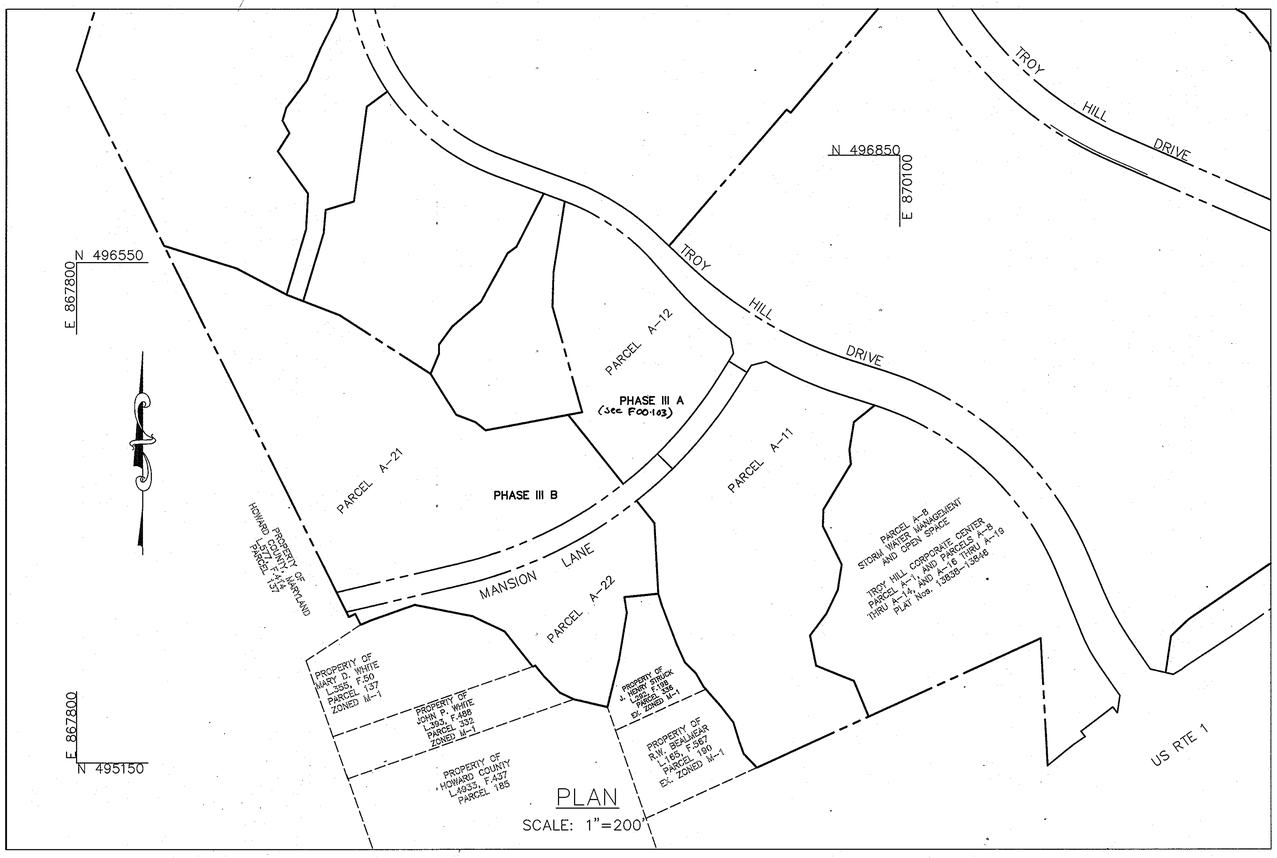
1st ELECTION DISTRICT

HOWARD COUNTY, MARYLAND

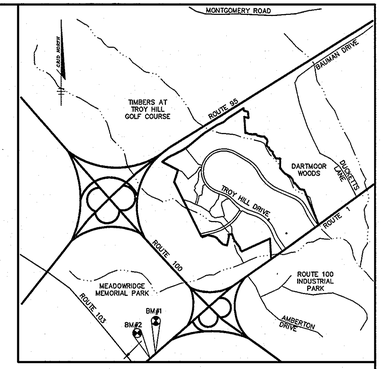
GENERAL NOTES

1. ALL CONSTRUCTION SHALL BE IN ACCORDANCE WITH THE HOWARD COUNTY DESIGN MANUAL, VOL. IV "STANDARD SPECIFICATIONS AND DETAILS FOR CONSTRUCTION" PLUS MSHA STANDARDS AND SPECIFICATIONS, IF APPLICABLE.
2. THE CONTRACTOR SHALL NOTIFY THE DEPARTMENT OF PUBLIC WORKS/BUREAU OF ENGINEERING/ CONSTRUCTION INSPECTION DIVISION AT (410) 313-1880 AT LEAST FIVE (5) WORKING DAYS PRIOR TO THE START OF WORK.
3. THE CONTRACTOR SHALL NOTIFY "MISS UTILITY" AT 1-800-257-7777 AY LEAST 48 HOURS PRIOR TO ANY EXCAVATION WORK BEING DONE.
4. TRAFFIC CONTROL DEVICES, MARKINGS, AND SIGNING SHALL BE IN ACCORDANCE WITH THE LATEST EDITION OF THE MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES (MUTCD). ALL STREET AND REGULATORY SIGNS SHALL BE IN PLACE PRIOR TO THE PLACEMENT OF ANY ASPHALT.
5. STREET LIGHT PLACEMENT AND THE TYPE OF FIXTURE AND POLE SHALL BE IN ACCORDANCE WITH THE HOWARD COUNTY DESIGN MANUAL, VOLUME III (1993) AND AS MODIFIED BY "GUIDELINES FOR STREET LIGHTS IN RESIDENTIAL DEVELOPMENTS, (JANUARY 1998)."

   A MINIMUM SPACING OF 20' SHALL BE MAINTAINED BETWEEN ANY STREET LIGHT AND ANY TREE.
6. THE EXISTING TOPOGRAPHY IS TAKEN FROM SDP-98-149 MAXIMUM TWO FOOT CONTOUR INTERVALS.
7. THE COORDINATES SHOWN HEREON ARE BASED UPON THE HOWARD COUNTY GEODETIC CONTROL WHICH IS BASED UPON THE MARYLAND STATE PLANE COORDINATE SYSTEM. HOWARD COUNTY MONUMENT NOS. 37IA AND 43B2 WERE USED FOR THIS PROJECT.
8. WATER IS PUBLIC. CONTRACT NO. 14-3873-D
9. SEWER IS PUBLIC. SEWER DRAINAGE AREA: SHALLOW RUN CONTRACT NO. 14-3873-D.
10. THE STORMWATER MANAGEMENT FOR THIS SITE IS PROVIDED BY PRIVATELY MAINTAINED CLASS 'A' EXTENDED DETENTION FACILITY.
11. APPROXIMATE LOCATION OF EXISTING UTILITIES ARE SHOWN. THE CONTRACTOR SHALL TAKE ALL NECESSARY PRECAUTIONS TO PROTECT THE EXISTING UTILITIES AND MAINTAIN UNINTERRUPTED SERVICE. ANY DAMAGE INCURRED DUE TO CONTRACTOR'S OPERATION SHALL BE REPAIRED IMMEDIATELY AT THE CONTRACTOR'S EXPENSE. EXISTING UTILITIES ARE SHOWN BASED ON THE BEST AVAILABLE INFORMATION.
12. THE WETLANDS DELINEATION STUDY FOR THIS PROJECT IS FROM F-98-169
13. THE BOUNDARY FOR THIS PROJECT IS BASED ON F-98-169
14. SUBJECT PROPERTY ZONED M-1PER 10-18-93 COMPREHENSIVE ZONING PLAN.
15. ALL ELEVATIONS SHOWN ARE BASED ON THE U.S.C. AND G.S. MEAN SEA LEVEL DATUM, 1929.
16. SEE DEPARTMENT OF PLANNING AND ZONING FILE NO'S.: S-90-05, P-90-23, F-91-24, F-98-136, F-98-169, WP-98-91, SDP-98-143, SDP-98-149, F-00-103
17. THE CONTRACTOR SHALL TEST PIT EXISTING UTILITIES AT LEAST (5) DAYS BEFORE STARTING WORK SHOWN ON THESE DRAWINGS.
18. CONTRACTOR IS SOLELY RESPONSIBLE FOR CONSTRUCTION MEANS, METHODS, TECHNIQUES, SEQUENCES, PROCEDURES, AND SAFETY PRECAUTIONS AND PROGRAMS.
19. PIPE SHALL NOT BE INSTALLED BY THE CONTRACTOR UNTIL THE LENGTH CALLED FOR AT EACH STATION HAS BEEN APPROVED BY THE ENGINEER IN THE FIELD.
20. NO PIPE SHALL BE LAID UNTIL LINES OF EXCAVATION HAVE BEEN BROUGHT WITHIN 6" OF FINISHED GRADE.
21. ALL STORM DRAIN PIPE BEDDING SHALL BE CLASS 'C' AS SHOWN IN FIG. 11.4, VOLUME 1 OF HOWARD COUNTY DESIGN MANUAL UNLESS OTHERWISE NOTED.
22. ALL INLETS SHALL BE CONSTRUCTED IN ACCORDANCE WITH HOWARD COUNTY STANDARDS.
23. ALL PIPE ELEVATIONS SHOWN ARE INVERT ⌒ ELEVATIONS.
24. STORM DRAIN TRENCHES WITHIN ROAD RIGHT OF WAY SHALL BE BACKFILLED AND COMPACTED IN ACCORDANCE WITH THE HOWARD COUNTY DESIGN MANUAL, VOLUME IV, i.e., STANDARD SPECIFICATIONS AND DETAILS FOR CONSTRUCTION, LATEST AMENDMENTS.
25. PROFILE STATIONS SHALL BE ADJUSTED AS NECESSARY TO CONFORM TO PLAN DIMENSIONS.
26. DESIGNED TRAFFIC SPEED IN ACCORDANCE WITH THE AMERICAN ASSOCIATION OF STATE HIGHWAY OFFICIAL STANDARD:
    ALL 60' RIGHT OF WAYS 30 M.P.H.
27. ALL FILL AREAS WITHIN ROADWAY AND UNDER STRUCTURES TO BE COMPACTED TO A MINIMUM OF 95% COMPACTION OF AASHTO T180.
28. ALL STREET CURB RETURNS SHALL HAVE 25' RADII UNLESS OTHERWISE NOTED.
29. ALL STREET LIGHTS SHALL BE LOCATED BETWEEN 2'-0" AND 4'-0" BEHIND FACE OF CURB.
30. STREET TREES (46) LOCATION, TYPE AND NUMBER OF TREES SHOWN ON THIS PLAN ARE TENTATIVE AND ARE USED FOR BOND PURPOSES ONLY. THE FINAL LOCATION AND VARIETY OF TREES MAY VARY TO ACCOMODATE FIELD CONDITIONS INCLUDING 20' CLEARANCE OF ANY STREET LIGHT AND BUILDERS LANDSCAPE PROGRAMS. BOND RELEASE IS CONTINGENT UPON SECTION 16.131 OF THE HOWARD COUNTY SUBDIVISION REGULATIONS, AS APPROVED BY THE DEPARTMENT OF PLANNING AND ZONING.
31. TRAFFIC STUDY FOR TROY HILL CORPORATE CENTER PREVIOUSLY PREPARED BY INTEGRATED TRANSPORTATION SOLUTIONS AND APPROVED BY HOWARD COUNTY AS PART OF F-91-24.
32. THE PRELIMINARY PLAN P-90-23 WAS SIGNED ON 8/19/91. THEREFORE, THIS SUBDIVISION IS EXEMPT FROM THE REQUIREMENTS FOR PERIMETER LANDSCAPING AND FOREST CONSERVATION.
33. THE 100 YEAR FLOODPLAIN IS BASED ON STUDY PREPARED BY VIKA, INC., DATED JANUARY, 1991. AS SHOWN ON PLAT #11813, F-98-169.



PLAN
SCALE: 1"=200'



VICINITY MAP
SCALE: 1" = 2000'

AS-BUILT CONTROL BENCHMARKS

BM#1 ELEV. 195.728
HOWARD COUNTY SURVEY CONTROL STATION: 37IA
N 553315.1578 E 1379982.11995

BM#2 ELEV. 209.665
HOWARD COUNTY SURVEY CONTROL STATION: 43B2
N 551655.0086 E 1378176.9408

(COORDINATES ARE NAD83)

STATE OF MARYLAND — CHRISTOPHER J. REID — No. 19949 — REGISTERED PROFESSIONAL ENGINEER

AS BUILT CERTIFICATE

CHRISTOPHER J. REID #19949 — 8.27.02 DATE

APPROVED : HOWARD COUNTY DEPARTMENT OF PUBLIC WORKS.

CHIEF, BUREAU OF HIGHWAYS — 7-20-00 DATE

APPROVED : HOWARD COUNTY DEPARTMENT OF PLANNING AND ZONING.

CHIEF, DIVISION OF LAND DEVELOPMENT — 7/26/00 DATE

CHIEF, DEVELOPMENT ENGINEERING DIVISION — 7/28/00 DATE

DATE	NO.	REVISION

OWNER/DEVELOPER

TROY HILL BUSINESS PARK PARTNERSHIP
C/O MANEKIN CORPORATION
7165 COLUMBIA GATEWAY DRIVE
COLUMBIA, MARYLAND 21046

PROJECT
TROY HILL CORPORATE CENTER PHASE III B

AREA
TAX MAP 37 ZONED M-1
1st ELECTION DISTRICT
HOWARD COUNTY, MARYLAND

TITLE
TITLE SHEET

RIEMER MUEGGE & ASSOCIATES INC
ENGINEERING ● ENVIRONMENTAL SERVICES ● PLANNING ● SURVEYING
8818 Centre Park Drive, Columbia, MD 21046
tel 410.997.9900 fax 410.997.9282

STATE OF MARYLAND — ARTHUR E. MUEGGE — No. 8707 — REGISTERED PROFESSIONAL ENGINEER

DATE

ARTHUR E. MUEGGE #8707

DESIGNED BY :	C.J.R.
DRAWN BY :	KCB
PROJECT NO :	98357 RD1-B.DWG
DATE :	JULY 12, 2000
SCALE :	AS SHOWN
DRAWING NO.	1 OF 7

AS-BUILT 8-26-02 F-00-130

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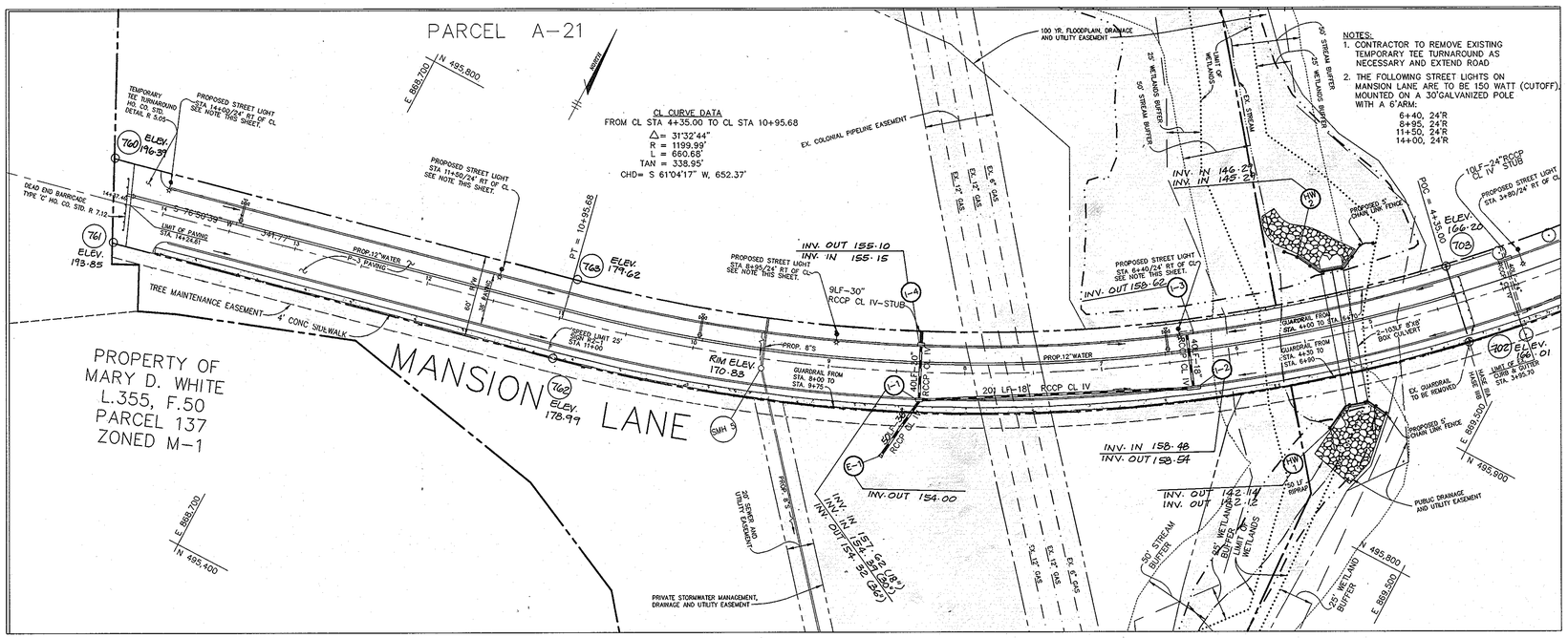
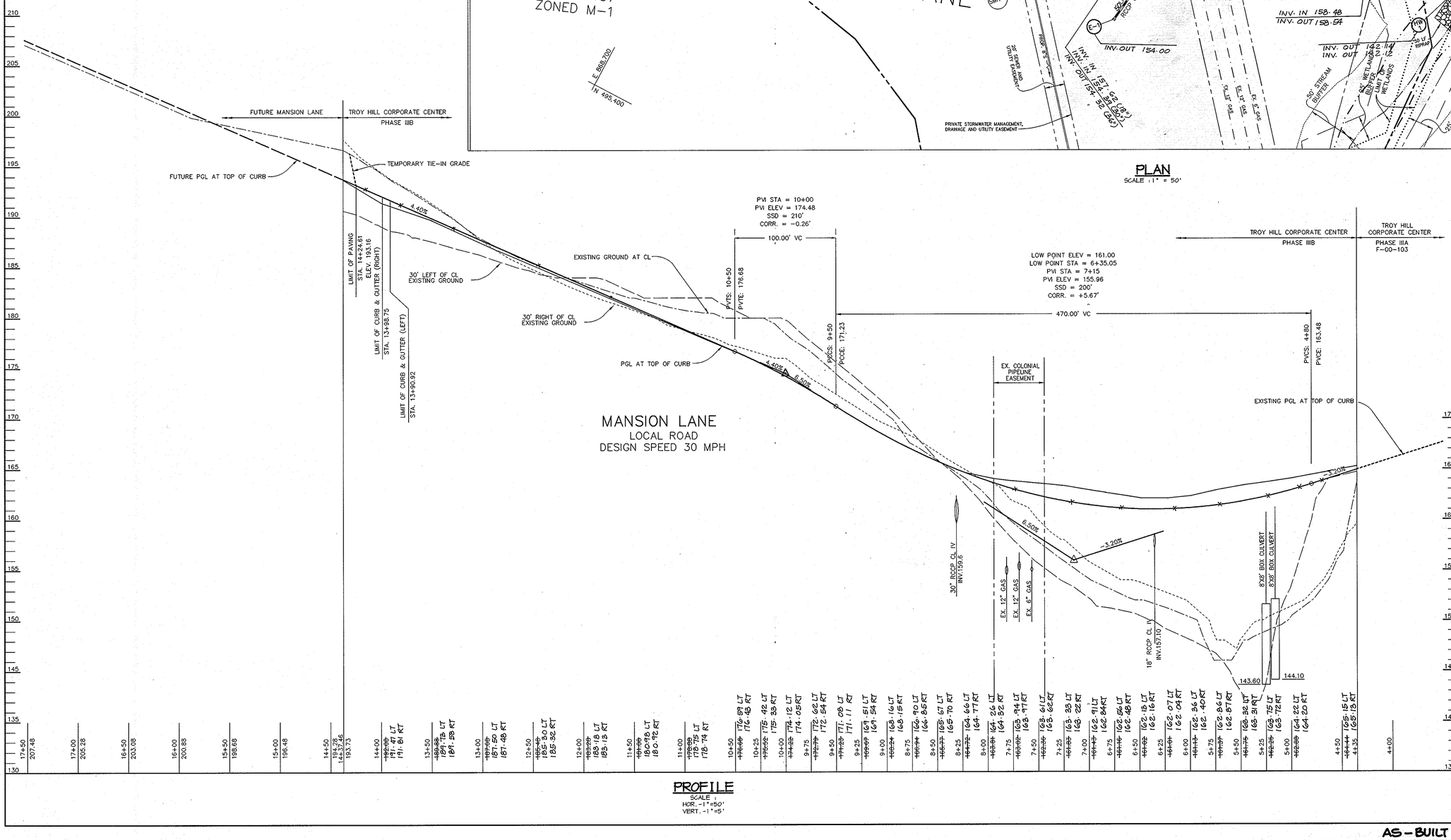


PLAN
SCALE :1" = 50'



PROFILE
SCALE :
HOR.-1"=50'
VERT.-1"=5'

NOTES:
1. CONTRACTOR TO REMOVE EXISTING TEMPORARY TEE TURNAROUND AS NECESSARY AND EXTEND ROAD
2. THE FOLLOWING STREET LIGHTS ON MANSION LANE ARE TO BE 150 WATT (CUTOFF), MOUNTED ON A 30'GALVANIZED POLE WITH A 6'ARM:
   6+40, 24'R
   8+95, 24'R
   11+50, 24'R
   14+00, 24'R

AS-BUILT CERTIFICATE

CHRISTOPHER J. REID # 19949 — DATE 8.27.02

APPROVED : HOWARD COUNTY DEPARTMENT OF PUBLIC WORKS.

CHIEF, BUREAU OF HIGHWAYS — DATE 7-20-00

APPROVED : HOWARD COUNTY DEPARTMENT OF PLANNING AND ZONING.

CHIEF, DIVISION OF LAND DEVELOPMENT — DATE 7/26/00

CHIEF, DEVELOPMENT ENGINEERING DIVISION — DATE 7/20/00

DATE	NO.	REVISION
10.24.02	2	REMOVED STREET TREES, TREE PLANTING DETAIL AND PLANT LIST.
3.20.02	1	DELETED SWM OUTFALL AND 20' DRAINAGE & UTILITY EASEMENT.

OWNER/DEVELOPER

TROY HILL BUSINESS PARK PARTNERSHIP
C/O MANEKIN CORPORATION
7165 COLUMBIA GATEWAY DRIVE
COLUMBIA, MARYLAND 21046

PROJECT
TROY HILL CORPORATE CENTER
PHASE III B

AREA
TAX MAP 37 ZONED M-1
1st ELECTION DISTRICT
HOWARD COUNTY, MARYLAND

TITLE
PLAN AND PROFILE
MANSION LANE

RIEMER MUEGGE & ASSOCIATES INC
ENGINEERING • ENVIRONMENTAL SERVICES • PLANNING • SURVEYING
8818 Centre Park Drive, Columbia, MD 21045
tel 410.997.8900 fax 410.997.9282

DATE

ARTHUR E. MUEGGE #8707

DESIGNED BY :	C.J.R.
DRAWN BY :	K.C.B.
PROJECT NO :	98357 'RD2-B.DWG
DATE :	JULY 12, 2000
SCALE :	AS SHOWN
DRAWING NO.	2 OF 7

AS-BUILT 8-26-02 F-00-130

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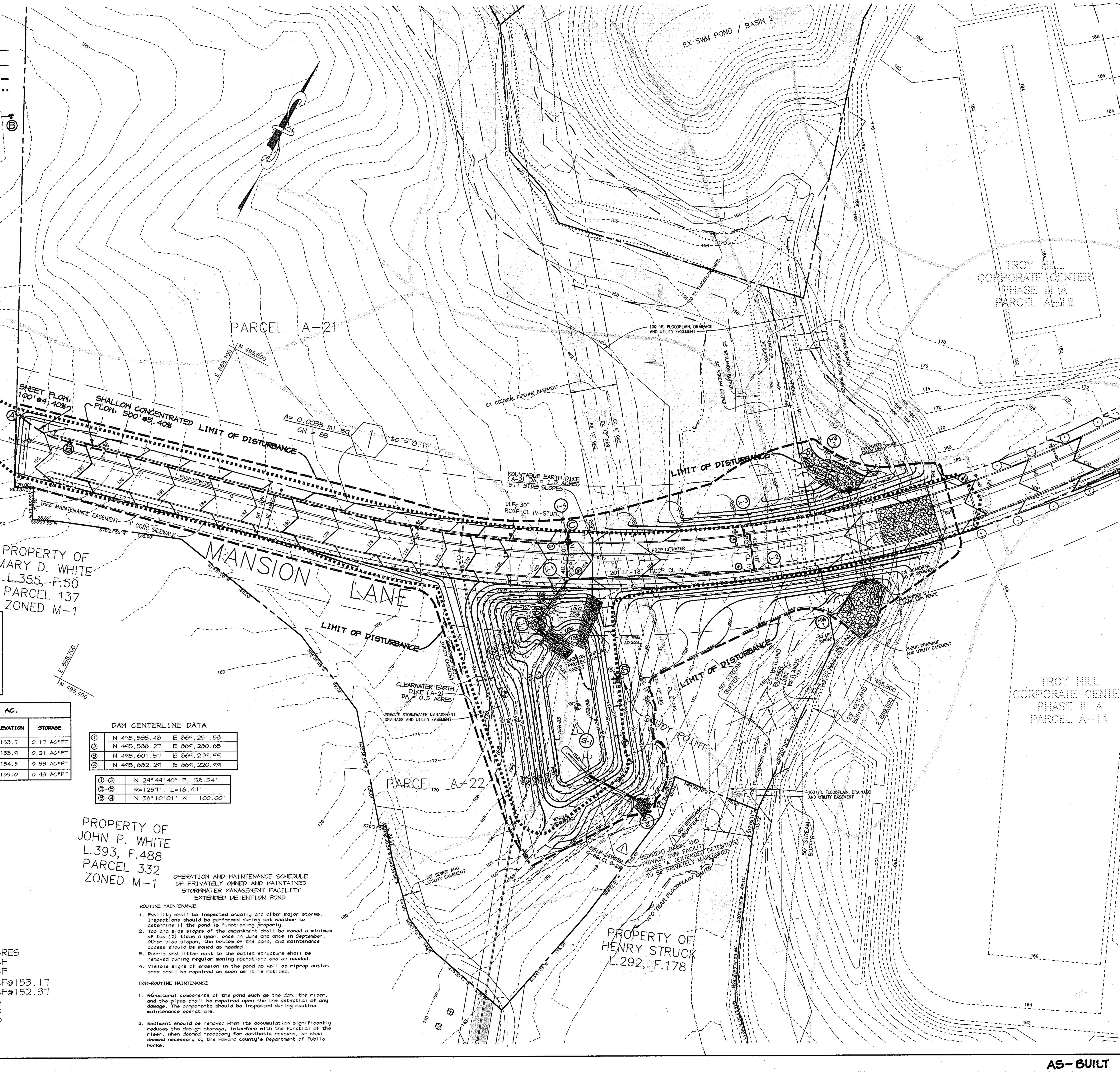
LEGEND

SILT FENCE	—SF—
SUPER SILT FENCE	—SSF—
LIMIT OF DISTURBANCE	— — —
DRAINAGE AREA DIVIDE	········
CLEAR WATER DIKE	→ → →
TIME OF CONCENTRATION	Ⓐ — — Ⓑ



PROPERTY OF
JOHN P. WHITE
L.393, F.488
PARCEL 332
ZONED M-1

DRAINAGE AREA DATA

INLET NO.	DRAINAGE AREA (AC.)	"C" FACTOR	% IMP.
I-1	0.45	.86	100
I-2	0.32	.86	100
I-3	0.31	.86	100
I-4	0.49	.86	100

SWM SUMMARY CHART SWMF DA: 2.24 AC.

STORM	EXISTING PEAK DISCHARGE AT STUDY POINT 1	PEAK INFLOW TO POND	PEAK DISCHARGE OUT OF POND	PROPOSED PEAK DISCHARGE AT STUDY POINT 1	ELEVATION	STORAGE
1 YR.	0.3 CFS	4.1 CFS	0.1 CFS	0.5 CFS	153.7	0.17 AC*FT
2 YR.	0.8 CFS	5.7 CFS	0.3 CFS	1.6 CFS	153.9	0.21 AC*FT
10 YR.	3.4 CFS	10.7 CFS	2.2 CFS	21.2 CFS	154.5	0.33 AC*FT
100 YR.	7.2 CFS	16.3 CFS	11.6 CFS	44.8 CFS	155.0	0.43 AC*FT

DAM CENTERLINE DATA

①	N 495,535.48	E 869,251.53
②	N 495,586.27	E 869,280.65
③	N 495,601.57	E 869,279.99
④	N 495,682.29	E 869,220.99

①-②	N 29°49'40" E, 58.54'
②-③	R=1257', L=16.47'
③-④	N 36°10'01" W 100.00'

SEDIMENT BASIN

DRAINAGE AREA	2.2 ACRES
STOR. REQ'D (WET STOR.)	4032 CF
STOR. REQ'D (DRY STOR.)	4032 CF
STOR. PROV. (WET STOR.)	4032 CF@153.17
STOR. PROV. (DRY STOR.)	4032 CF@152.37
CREST ELEVATION	153.75
TOP OF DAM	158.00
BOTTOM ELEVATION	152.00
SIDE SLOPES	4:1
DEPTH	6'

OPERATION AND MAINTENANCE SCHEDULE
OF PRIVATELY OWNED AND MAINTAINED
STORMWATER MANAGEMENT FACILITY
EXTENDED DETENTION POND

ROUTINE MAINTENANCE

1. Facility shall be inspected anually and after major storms. Inspections should be performed during wet weather to determine if the pond is functioning properly.
2. Top and side slopes of the embankment shall be mowed a minimum of two (2) times a year, once in June and once in September. Other side slopes, the bottom of the pond, and maintenance access should be mowed as needed.
3. Debris and litter next to the outlet structure shall be removed during regular mowing operations and as needed.
4. Visible signs of erosion in the pond as well as riprap outlet area shall be repaired as soon as it is noticed.

NON-ROUTINE MAINTENANCE

1. Structural components of the pond such as the dam, the riser, and the pipes shall be repaired upon the the detection of any damage. The components should be inspected during routine maintenance operations.
2. Sediment should be removed when its accumulation significantly reduces the design storage, interfere with the function of the riser, when deemed necessary for aesthetic reasons, or when deemed necessary by the Howard County's Department of Public Works.

BY THE DEVELOPER :

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 THE ENVIRONMENT APPROVED TRAINING PROGRAM FOR THE CONTROL OF SEDIMENT AND EROSION BEFORE BEGINNING THE PROJECT. I ALSO AUTHORIZE PERIODIC ON-SITE INSPECTIONS BY THE HOWARD SOIL CONSERVATION DISTRICT.

DEVELOPER 7.12.00 DATE

BY THE ENGINEER :

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.

ENGINEER 7.12.00 DATE

THESE PLANS HAVE BEEN REVIEWED FOR THE HOWARD SOIL CONSERVATION DISTRICT AND MEET THE TECHNICAL REQUIREMENTS FOR SOIL EROSION AND SEDIMENT CONTROL.

NATURAL RESOURCES CONSERVATION SERVICE 7/25/00 DATE

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

HOWARD SOIL CONSERVATION DISTRICT 7/25/00 DATE

AS BUILT CERTIFICATE

CHRISTOPHER J. REID # 19949 8.27.02 DATE

APPROVED : HOWARD COUNTY DEPARTMENT OF PUBLIC WORKS.

CHIEF, BUREAU OF HIGHWAYS 7-20-00 DATE

APPROVED : HOWARD COUNTY DEPARTMENT OF PLANNING AND ZONING.

CHIEF, DIVISION OF LAND DEVELOPMENT 7/28/00 DATE

CHIEF, DEVELOPMENT ENGINEERING DIVISION 7/28/00 DATE

DATE	NO.	REVISION
3.20.02	1	DELETED 20' DRAINAGE & UTILITY EASEMENT, MODIFIED SWM OUTFALL ALIGNMENT.

OWNER/DEVELOPER

TROY HILL BUSINESS PARK PARTNERSHIP
C/O MANEKIN CORPORATION
7165 COLUMBIA GATEWAY DRIVE
COLUMBIA, MARYLAND 21046

PROJECT
TROY HILL CORPORATE CENTER
PHASE III B

AREA
TAX MAP 37 ZONED M-1
1st ELECTION DISTRICT
HOWARD COUNTY, MARYLAND

TITLE
GRADING AND SEDIMENT CONTROL PLAN

RIEMER MUEGGE & ASSOCIATES INC
ENGINEERING • ENVIRONMENTAL SERVICES • PLANNING • SURVEYING
8818 Centre Park Drive, Columbia, MD 21045
tel 410.997.8900 fax 410.997.9282

DATE
ARTHUR E. MUEGGE #8707

DESIGNED BY : C.J.R.
DRAWN BY : KCB
PROJECT NO : 98357 RD3-B.DWG
DATE : JULY 12, 2000
SCALE : 1" = 50'
DRAWING NO. 3 OF 7

AS-BUILT 8-26-02 F-00-130

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MD-378 STANDARDS AND SPECIFICATIONS

SPECIFICATIONS

These specifications are appropriate to all ponds within the scope of the Standard for practice MD-378. All references to ASTM and AASHTO specifications apply to the most recent version.

SITE PREPARATION

Areas designated for borrow areas, embankment, and structural works shall be cleared, grubbed and stripped of topsoil. All trees, vegetation, roots and other objectionable material shall be removed. Channel banks and sharp breaks shall be sloped to no steeper than 1:1. All trees shall be cleared and grubbed within 15 feet of the toe of the embankment.

Areas to be covered by the reservoir will be cleared of all trees, brush, logs, fences, rubbish and other objectionable material unless otherwise designated on the plans. Trees, brush and stumps shall be cut approximately level with the ground surface. For dry stormwater management ponds, a minimum of a 25 foot radius around the inlet structure shall be cleared.

All cleared and grubbed material shall be disposed of outside and below 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.

EARTH FILL

Material - The fill material shall be taken from approved designated borrow areas. It shall be free of roots, stumps, wood, rubbish, stones greater than 6", frozen or other objectionable materials. Fill material for the center of the embankment, and cut off trench shall conform to Unified Soil Classification GC, SC, CH, or CL and must have at least 30% passing the #200 sieve. Consideration may be given to the use of other materials in the embankment if designed by a geotechnical engineer. Such special designs must have construction supervised by a geotechnical engineer.

Placement - Areas on which fill is to be placed shall be scarified prior to placement of fill. Fill materials shall be placed in maximum 8-inch thick (before compaction) layers which are to be continuous over the entire length of the fill. The most permeable borrow material shall be placed in the downstream portions of the embankment. The principal spillway must be installed concurrently with fill placement and not excavated into 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 tire or vibratory roller. Fill material shall contain sufficient moisture such that the required degree of compaction will be obtained with the equipment used. The fill material shall contain sufficient moisture so that if formed into a ball it will not crumble yet not be so wet that water can be squeezed out.

When required by the reviewing agency the mimimum required density shall not be ess than 95% of maximum dry density with a moisture content within +/- 2% of the optimum. Each layer of fill shall be compacted as necessary to obtain that density, and is to be certified by the Engineer at the time of construction. All compaction is to be determined by AASHTO Method T-99 (Standard Proctor).

Cutoff Trench - The cutoff trench shall be excavated into impervious material 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 below existing grade or as shown on the plans. The side slopes of the trench shall be 1 to 1 or flatter. The backfill shall compacted with construction equipment, rollers, or hand tampers to assure maximum density and maximum permeability.

Embankment Core - The core shall be parallel to the centerline of the embankment as shown on the plans. The top width of the core shall be a minimum of four feet. The height shall extend up to at least the 10 year water elevation or as shown on the plans. The side slopes shall be 1 to 1 or flatter. The core shall be compacted with construction equipment, rollers, or hand tampers to assure maximum density and minimum permeability. In addition, the core shall be placed concurrently with the outer shell of the embankment.

STRUCTURE BACKFILL

Backfill adjacent to pipes or structures 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 manually directed 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 equipment be driven over any part of a concrete structure or pipe, unless there is a compacted fill of 24" or greater over the structure or pipe.

Structure backfill may be flowable fill meeting the requirements of Maryland Department of Transportation, State Highway Administration Standard Specifications for Construction and Materials, Section 313 as modified. The mixture shall have a 100-200 psi; 28 day unconfined compressive strength. The flowable fill shall have a minimum pH of 4.0 and a minimum resistivity of 2000 ohm-cm. Material shall be placed such that a minimum of 6" (measured perpendicular to the pipe) of flowable fill shall be under (bedding), over and, on the sides of the pipe. It only needs to extend up to the spring line for rigid conduits. Average slump of the fill shall be 7" to assure flowability of the material. Adequate measures shall be taken (sand bags, etc.) to prevent floating the pipe. When using flowable fill, all metal pipe shall be bituminous coated. Any adjoinig soil fill shall be placed in horizontal layers not to exceed four inched in thickness and compacted by hand tampers or other manually directed compaction equipment. The material shall completely fill all voids adjacent to the flowable fill zone. 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 equipment be driven over any part of a structure or pipe unless there is a compacted fill of 24" or greater over the structure or pipe. Backfill material outside the structural backfill (flowable fill) zone shall be of the type and quality conforming to that specified for the core of the embankment or other embankment materials.

PIPE CONDUITS

All pipes shall be circular in cross section.

Corrugated Metal Pipe - All of the following criteria shall apply for corrugated metal pipe:

1. Materials - (Polymer Coated steel pipe) - Steel pipes with polymeric coatings shall have a minimum coating thickness of 0.01 inch (10mil) on both sides of the pipe. This pipe and its appurtenances shall conform to the requirements of AASHTO Specifications M-245 & M-246 with watertight coupling bands or flanges.

   Materials - (Aluminum Coated Steel Pipe) - This pipe and its appurtenances shall conform to the requirements of AASHTO Specifications M-274 with watertight coupling bands or flanges. Aluminum Coated Steel Pipe, when used with flowable fill or when soil and/or water conditions warrant the need for increased durability, shall be fully bituminous coated per requirements of AASHTO Specification M-190 Type A. Any aluminum coating damaged or otherwise removed shall be replaced with cold applied bituminous coating compound. Aluminum surfaces that are to be in contact with concrete shall be painted with one coat of zinc chromate primer or two coats of asphalt.

   Materials - (Aluminum Pipe) - This pipe and its appurtenances shall conform to to the requirements of AASHTO Specifications M-196 or M-211 with watertight coupling bands or flanges. Aluminum Pipe, when used with flowable fill or when soil and/or water conditions warrant the need for increased durability, shall be fully bituminous coated per requirements of AASHTO Specification M-190 Type A. Aluminum surfaces that are to be in contact with concrete shall be painted with one coat of zinc chromate primer or two coats of asphalt. Hot dip galvanized bolts mat be used for connections. the pH of the surrounding soils shall be betwwen 4 and 9.

2. Coupling bands, anti-seep collars, end sections, etc., must be composed of the same material and coted as the pipe. Metals must be insulated from dissimilar materials with use of rubber or plastic insulating materials at at least 24 mils in thickness.

3. 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. Anti-seep collars shall be connected to the pipe in such a manner as to be completely watertight. Dimple bands are not considered to be watertight.

   All connections shall use a rubber or neoprene gasket when joining pipe sections. The end of each pipe shall be re-rolled an adequate number of corrugations to accommodate the band width. The following type connections are acceptable for pipes less than 24" in diameter; flanges on both ends of the pipe with a circular 3/8 inch closed cell neoprene gasket, prepunched to the flange bolt circle, sandwiched between adjacent flanges; a 12 inch wide standard lap type band with 12 inch wide by 3/8 inch thick closed cell circular neoprene gasket; and a 12 inch wide hugger type band with o-ring gaskets having a minimum diameter of 1/2 inch greater than the corrugation depth. Pipes 24 inches in diameter and larger shall be connected by a 24 inch long annular corrugated band using a minimum of 4 (four) rods and lugs, 2 on each connecting pipe ends. A 24 inch wide by 3/8 inch thick closed cell circular neoprene gasket will be installed with 12 inch on the end of each pipe. Flanged joints with 3/8 inch closed cell gaskets the full width of the flange is also acceptable.

   Helically corrugated pipe shall have either continuously welded seams or have lock seams with internal caulking or a neoprene bead.

4. 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.
5. Backfilling shall conform to "Structure Backfill."
6. Other details (anti-seep collars, valves, etc.) shall be as shown on the drawings.

Reinforced Concrete Pipe - All of the following criteria shall apply for reinforced concrete pipe:

1. Materials - Reinforced concrete pipe shall have bell and spigot joints with rubber gaskets and shall equal or exceed ASTM Designation C-361.
2. Bedding - All reinforced concrete pipe conduits shall be laid in a concrete bedding/cradle for their entire length. This bedding/cradle shall consist of high slump concrete placed under the pipe and up the side of the pipe at least 50% of its outside diameter with a minimum thickness of 6 inches. Where a concrete cradle is not needed for structural reasons, flowable fill may be used as described in the "Structure Backfill" section of this stanard. Gravel bedding is not permitted.
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. The first joint must be located within 4 feet from the riser.
4. Backfilling shall conform to "Structure Backfill."
5. Other details (anti-seep collars, valves, etc.) shall be as shown on the drawings.

Plastic Pipe - The following criteria shall apply for pipe:

1. Materials - PVC pipe shall be PVC-1120 or PVC-1220 conforming to ASTM D-1785 or ASTM D-2241. Corrugated High Density Polyethylene (HDPE) pipe, couplings and fittings shall conform to the following: 4 - 10 inch pipe shall meet the requirements of AASHTO M252 Type S, and 12" through 24" shall meet the requirements of AASHTO M294 Type S.
2. Joints and connections to anti-seep collars shall 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. Backfilling shall conform to Structure "Backfill".
5. Other details (anti-seep collars, valves, etc.) shall be as shown on the drawings.

CONCRETE

Concrete shall meet the requirements of Maryland Department of Transportation, State Highway Administration Standard Specifications for Construction and Materials, Section 414, Mix No. 3.

ROCK RIPRAP

Rock riprap shall meet the requirements of Maryland Department of Transportation, State Highway Administration Standard Specifications for Construction and Materials, Section 311.

Geotextile shall be placed under all riprap and shall meet the requirements of Maryland Department of Transportation, State Highway Administration Standard Specifications for Construction and Materials, Section 921.09, Class C.

CARE OF WATER DURING CONSTRUCTION

All work on permanent structures shall be carried out in areas free from water. The Contractor shall construct and maintain all temporary dikes, levees, cofferdams, drainage channels, and stream diversions necessary to protect the areas to be occupied by the permanent works. The contractor shall also furnish, install, operate, and maintain all necessary pumping and other equipment required for removal of water from the various parts of the work and for maintaining the excavations, foundation, and other parts of the work free from water as required or directed by the engineer for constructing each part of the work. After having served their purpose, all temporary protective works shall be removed or leveled and graded to the extent required to prevent obstruction in any degree whatsoever of the flow of water to the spillway or outlet works and so as not to interfere in any way with the operation or maintenance of the structure. Stream diversions shall be maintained until the full flow can be passed through the permanent works. The removal of water from the required excavation and the foundation shall be accomplished in a manner and to the extent that will maintain stability of the excavated slopes and bottom of required excavations and will allow satisfactory performance of all construction operations. During the placing and compacting of material in required excavations, the water level at the locations being refilled shall be maintained below the bottom of the excavation at such locations which may require draining the water to sumps from which the water shall be pumped.

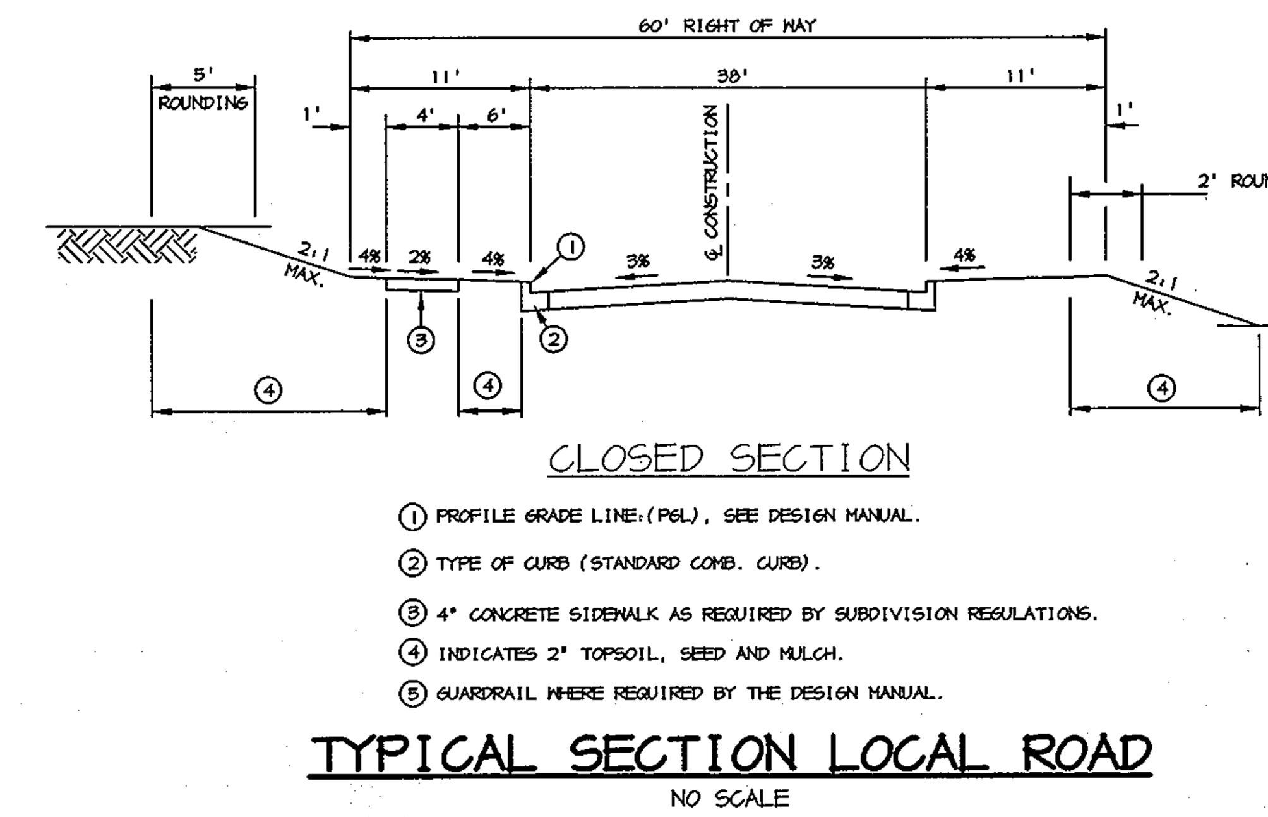
STABILIZATION

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, liming, fertilizing and mulching in accordance with the Natural Resources Conservation Service Standards and Specifications for Critical Area Planting (MD-342) or as shown on the accompanying drawings.

EROSION AND SEDIMENT CONTROL

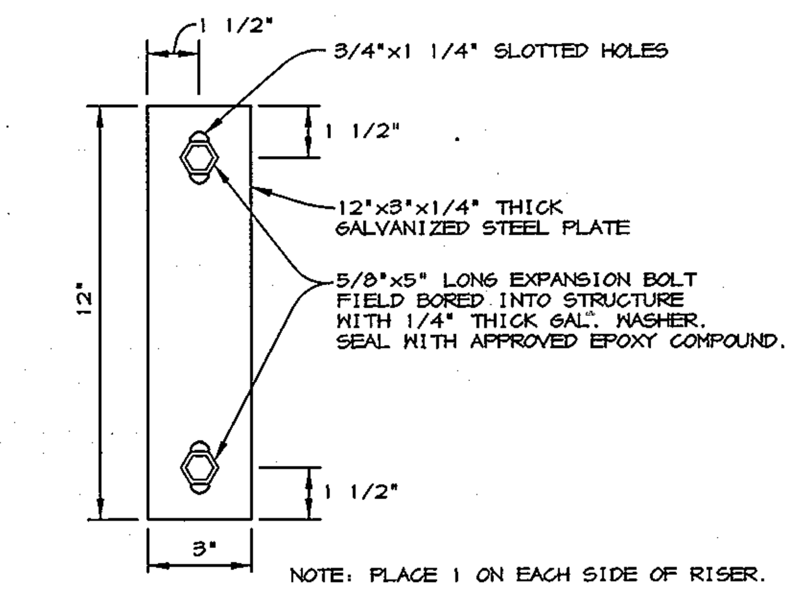
Construction operations will be carried out in such a manner that erosion will be controlled and water and air pollution minimized. State and local laws concerning pollution abatement will be followed. Construction plans shall detail erosion and sediment control measures.

Refer to the 2000 MARYLAND STANDARDS AND SPECIFICATIONS FOR SOIL EROSION AND SEDIMENT CONTROL for rate and methods not covered.



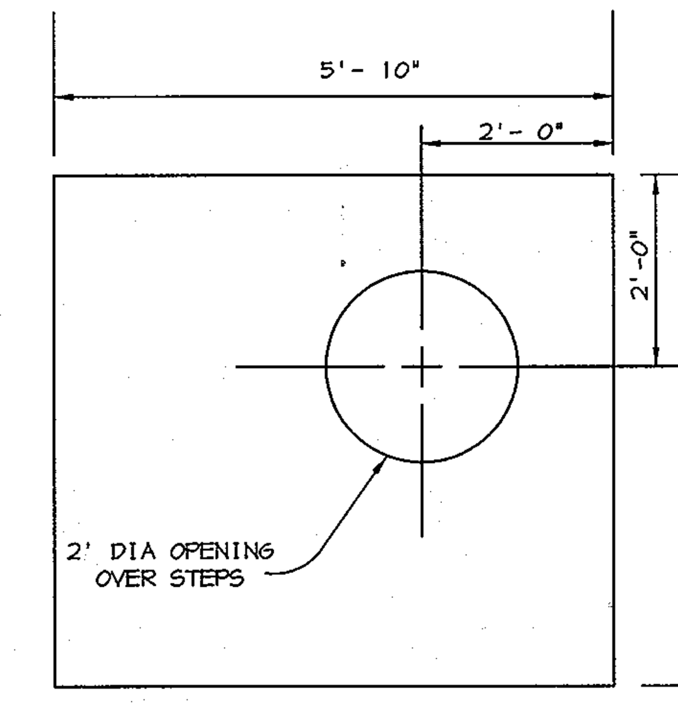
TYPICAL SECTION LOCAL ROAD

NO SCALE



RISER JOINT FASTENER

NO SCALE



S-1 TOP VIEW

S-1 RISER STRUCTURE NOTES:

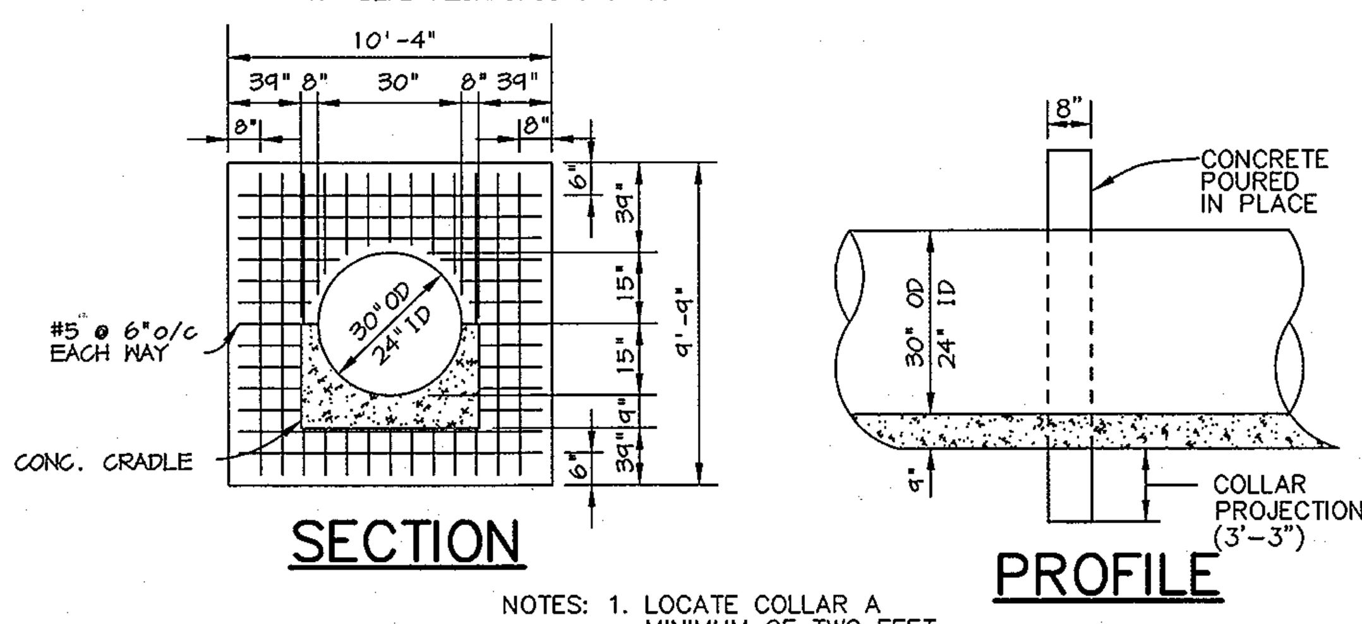
1. RISER TO BE PREFABRICATED. SHOP DRAWINGS FOR THIS PRECAST CONCRETE STRUCTURE SHALL MEET THE MINIMUM ASTM REQUIREMENTS FOR PRECAST STRUCTURES. A SHOP DRAWING SHALL BE SUBMITTED TO THE ENGINEER PRIOR TO FABRICATION AND SHALL BE SIGNED AND SEALED BY A MARYLAND REGISTERED PROFESSIONAL ENGINEER.
2. CONCRETE SHALL BE MSHA MIX NO. 3 (fc=3,500 psi MINIMUM)
3. REFER TO HOWARD COUNTY STD. G-5.21 FOR MANHOLE STEP DETAILS.
4. RISER JOINT(S) TO BE FASTENED IF RISER IS FABRICATED IN SECTIONS. SEE DETAIL THIS SHEET. THE RISER JOINTS SHALL BE WATERTIGHT.
5. A TWO FOOT STUB OF THE 30" RCP SHALL BE PRECAST WITH THE RISER. ALL PIPE CONNECTIONS SHALL PROVIDE RUBBER GASKETS FOR WATERTIGHTNESS.
6. RISER SHALL BE PLACED ON A FIRMLY COMPACTED SUBGRADE APPROVED BY A GEOTECHNICAL ENGINEER.
7. FILTER FABRIC TO BE WRAPPED AROUND STRUCTURE UP TO PROPOSED GRADE.
8. WHEN POND IS CONVERTED INTO A PERMANENT FACILITY, TEMPORARY DRAW-DOWN DEVICE SHALL BE REPLACED WITH PERMANENT DEWATERING DEVICE.

REMOVABLE TRASH RACK NOTES:

1. STEEL TO CONFORM TO ASTM A-36. #5 BARS TO BE SMOOTH. 1/2" DIAMETER ANCHOR BOLTS. SEE DETAIL FOR SPACING.
2. ALL REBAR TO BE WELDED AT ALL INTERSECTIONS.
3. ALL BENDS TO BE 2" RADIUS. 2" x 1/8" STEEL PLATE AND 1/2" DIAMETER ANCHOR BOLTS TO BE USED FOR TRASH RACK FRAME.
4. GALVANIZE TRASH RACK AFTER FABRICATION AND PAINT BATTLESHIP GRAY.

TOP SLAB NOTES:

1. TOP SLAB TO BE SEPARATE FROM RISER STRUCTURE.
2. REFER TO HOWARD COUNTY STD. G-5.52 FOR MANHOLE FRAME & COVER.
3. CONCRETE TO BE MIX NO. 3
4. SLAB REINFORCING SHALL HAVE 2" MINIMUM COVER.



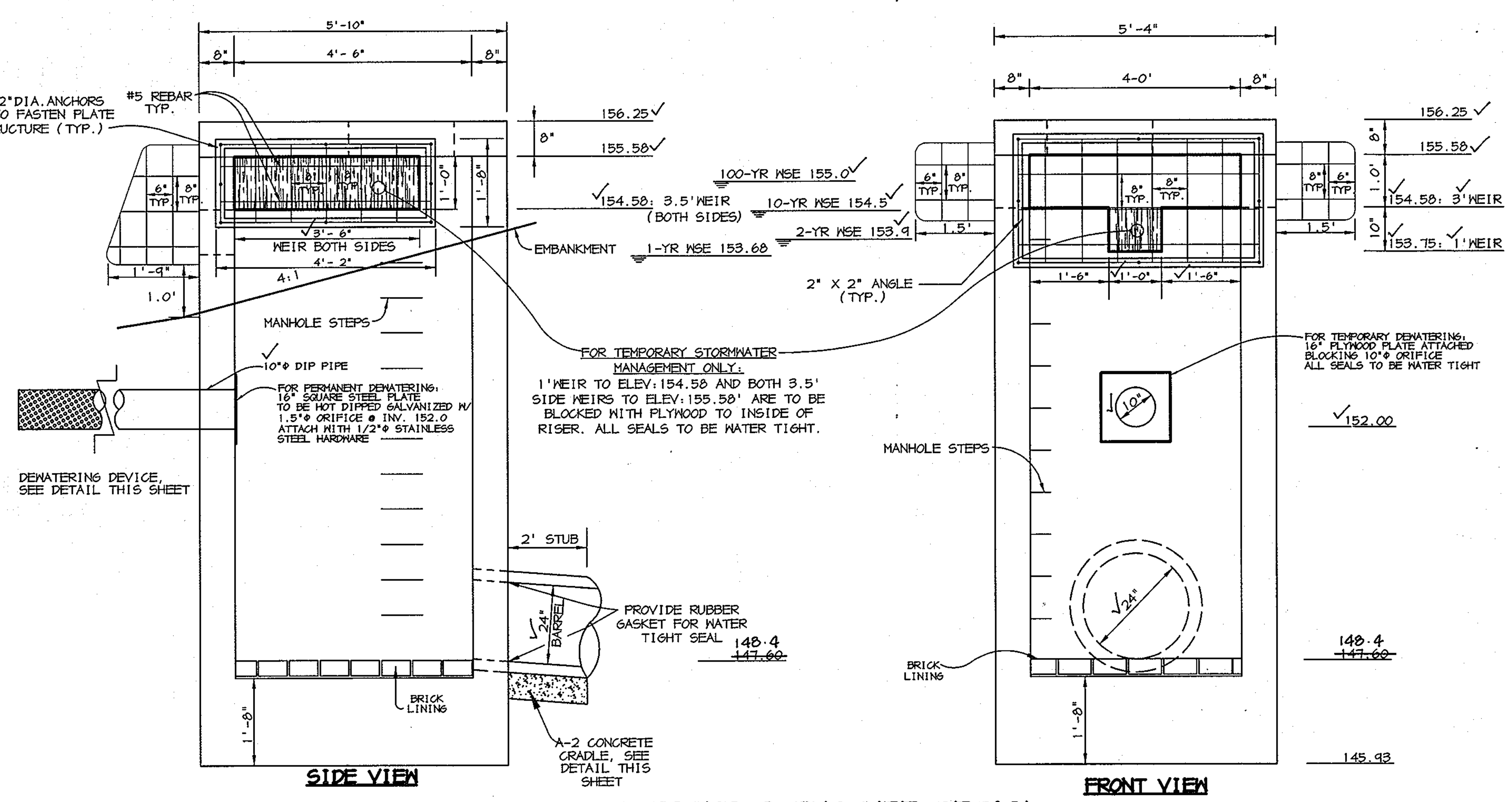
SECTION

PROFILE

NOTES:
1. LOCATE COLLAR A MINIMUM OF TWO FEET FROM PIPE JOINT.
2. COLLAR/PIPE CONNECTION SHALL BE WATERTIGHT.
3. PROVIDE AN ASPHALT JOINT FILLER. MATERIAL SHALL BE PLACED BETWEEN ALL CONCRETE SURFACES EXCEPT BETWEEN PIPE AND CRADLE.

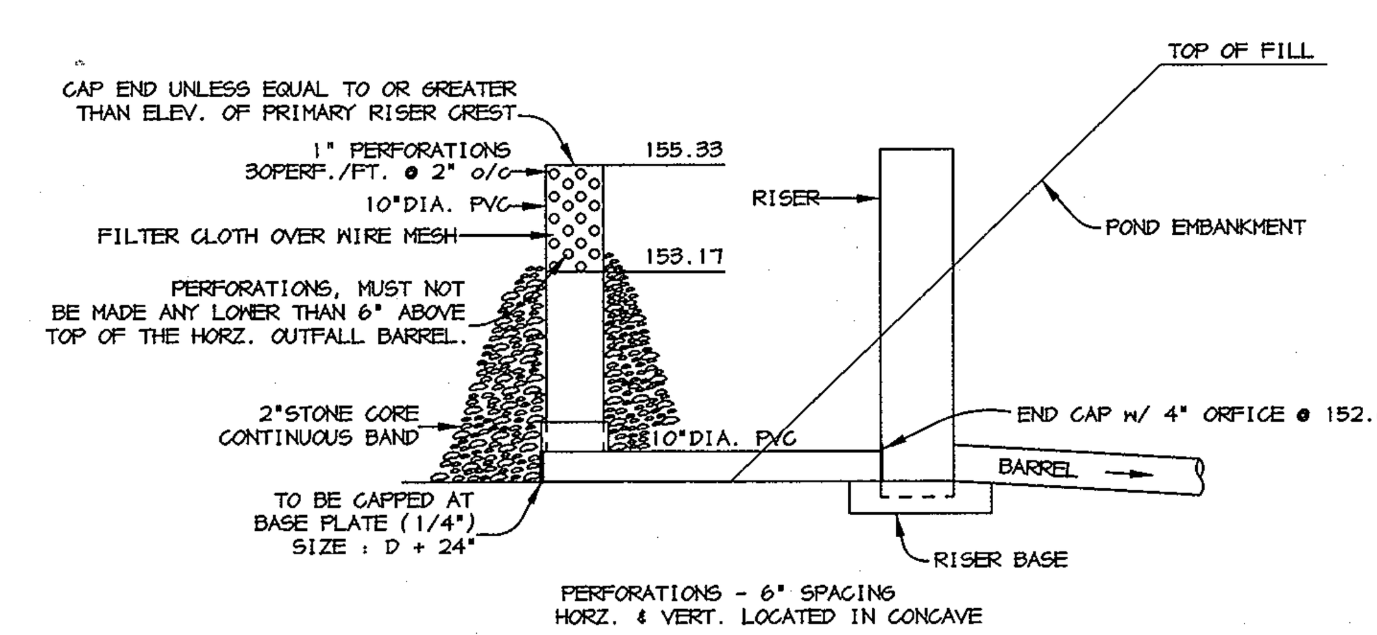
√CONCRETE ANTI-SEEP COLLAR

NO SCALE



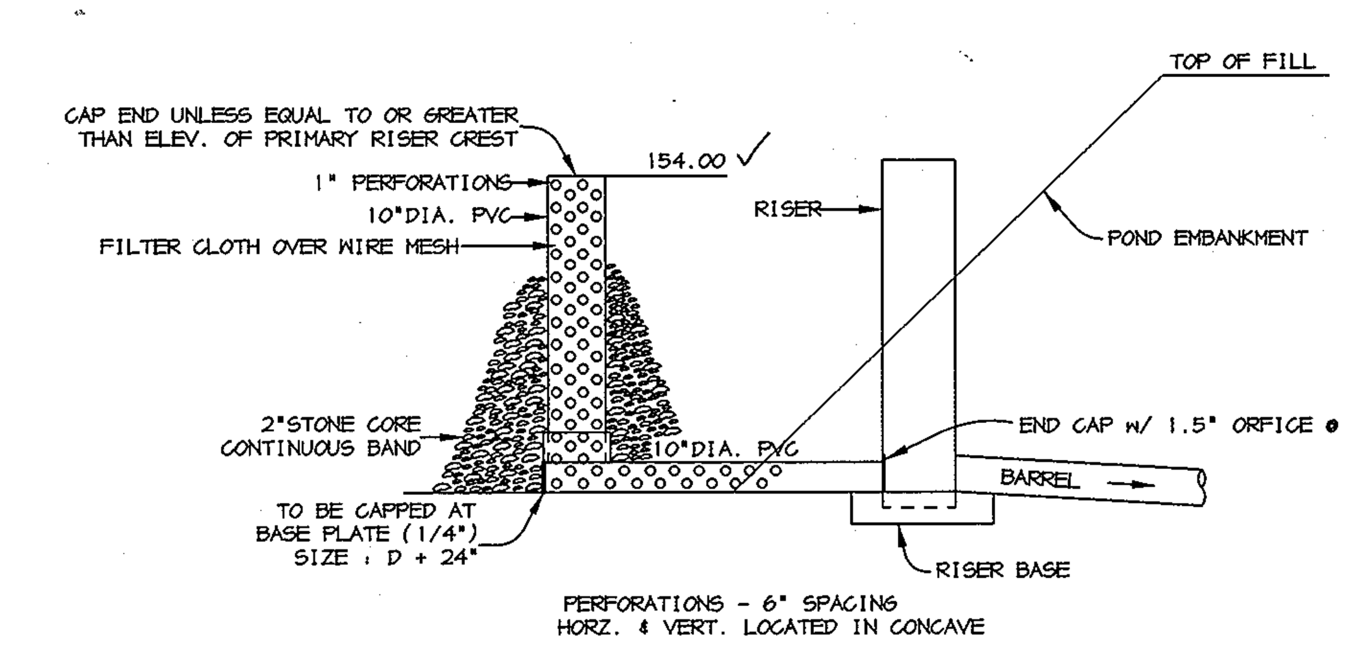
S-1 RISER STRUCTURE DETAIL

SCALE: 1"=2'



TEMPORARY DRAW-DOWN DEVICE

NO SCALE



√PERMANENT DEWATERING DEVICE

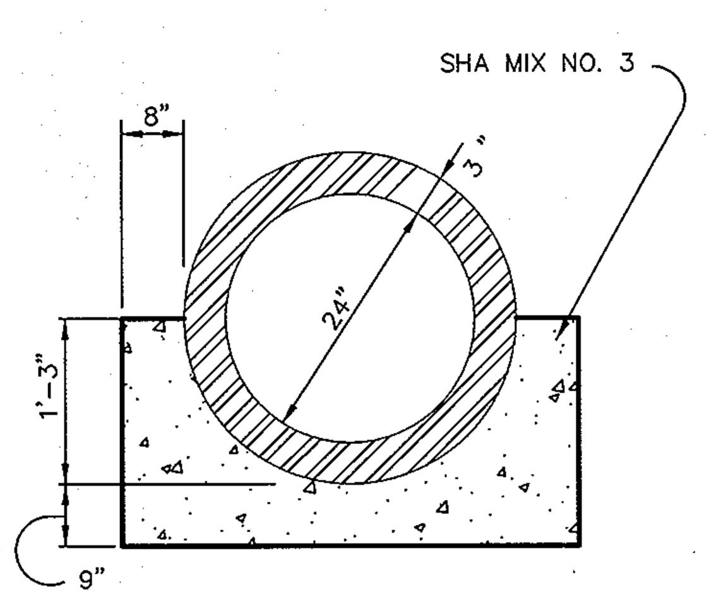
NO SCALE

GABION WALL NOTES

1. Geotextile Class C shall be installed under all gabion baskets.
2. The stone used to fill the gabion baskets shall be 4" – 7".
3. Gabions shall be installed in accordance with manufacturers recommendations.
4. Gabion Inflow Protection shall be used where concentrated flow is present on slopes steeper than 4:1.
5. Gabions to be PVC coated.
6. Gabions to be fastened together.
7. Compact forebay embankment to MD 378 Standards using GC, SC, CH and/or CL soils.
8. Contractor shall place 10 mil. (min.) vinyl sheeting along upstream buried face of gabions w/4' overlap and buried 12" into adjacent soil.

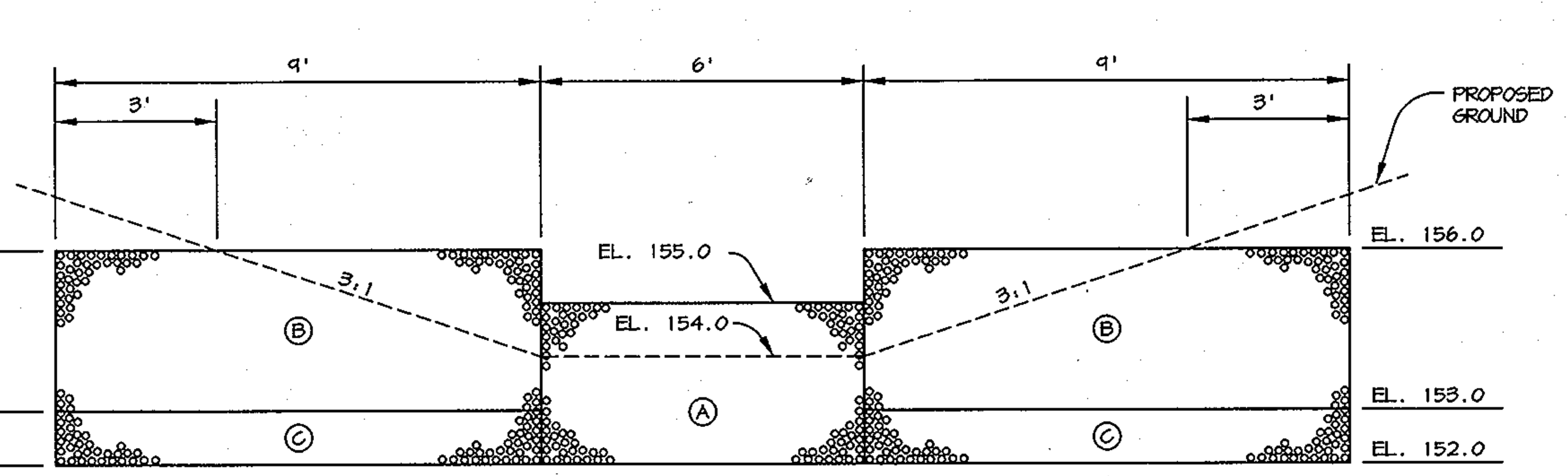
GABION SCHEDULE

LETTER DESIGNATION	NO. OF GABIONS	GABION DIMENSIONS
A	1	6'x3'x3'
B	2	9'x3'x3'
C	2	9'x3'x1'



CONCRETE CRADLE

NO SCALE



FOREBAY GABION WALL SECTION

SCALE: 1"=4'

BY THE DEVELOPER :

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 THE ENVIRONMENT APPROVED TRAINING PROGRAM FOR THE CONTROL OF SEDIMENT AND EROSION BEFORE BEGINNING THE PROJECT. I ALSO AUTHORIZE PERIODIC ON-SITE INSPECTIONS BY THE HOWARD SOIL CONSERVATION DISTRICT.

DEVELOPER 7.12.00 DATE

BY THE ENGINEER :

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.

ENGINEER 7.12.00 DATE

THESE PLANS HAVE BEEN REVIEWED FOR THE HOWARD SOIL CONSERVATION DISTRICT AND MEET THE TECHNICAL REQUIREMENTS FOR SOIL EROSION AND SEDIMENT CONTROL.

NATURAL RESOURCES CONSERVATION SERVICE 7/25/00 DATE

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

HOWARD SOIL CONSERVATION DISTRICT 7/25/00 DATE

BUILT CERTIFICATE

CHRISTOPHER J. REID # 19949 8.27.02 DATE

APPROVED : HOWARD COUNTY DEPARTMENT OF PUBLIC WORKS.

CHIEF, BUREAU OF HIGHWAYS 7-20-00 DATE

APPROVED : HOWARD COUNTY DEPARTMENT OF PLANNING AND ZONING.

CHIEF, DIVISION OF LAND DEVELOPMENT 7/26/00 DATE

CHIEF, DEVELOPMENT ENGINEERING DIVISION 7/28/00 DATE

DATE	NO.	REVISION

OWNER/DEVELOPER

TROY HILL BUSINESS PARK PARTNERSHIP
C/O MANEKIN CORPORATION
7165 COLUMBIA GATEWAY DRIVE
COLUMBIA, MARYLAND 21046

PROJECT TROY HILL CORPORATE CENTER PHASE III B

AREA TAX MAP 37 ZONED M-1
1st ELECTION DISTRICT
HOWARD COUNTY, MARYLAND

TITLE PROFILES AND DETAIL SHEET

RIEMER MUEGGE & ASSOCIATES INC
ENGINEERING • ENVIRONMENTAL SERVICES • PLANNING • SURVEYING
8818 Centre Park Drive, Columbia, MD 21045
tel 410.997.8900 fax 410.997.9282

DATE

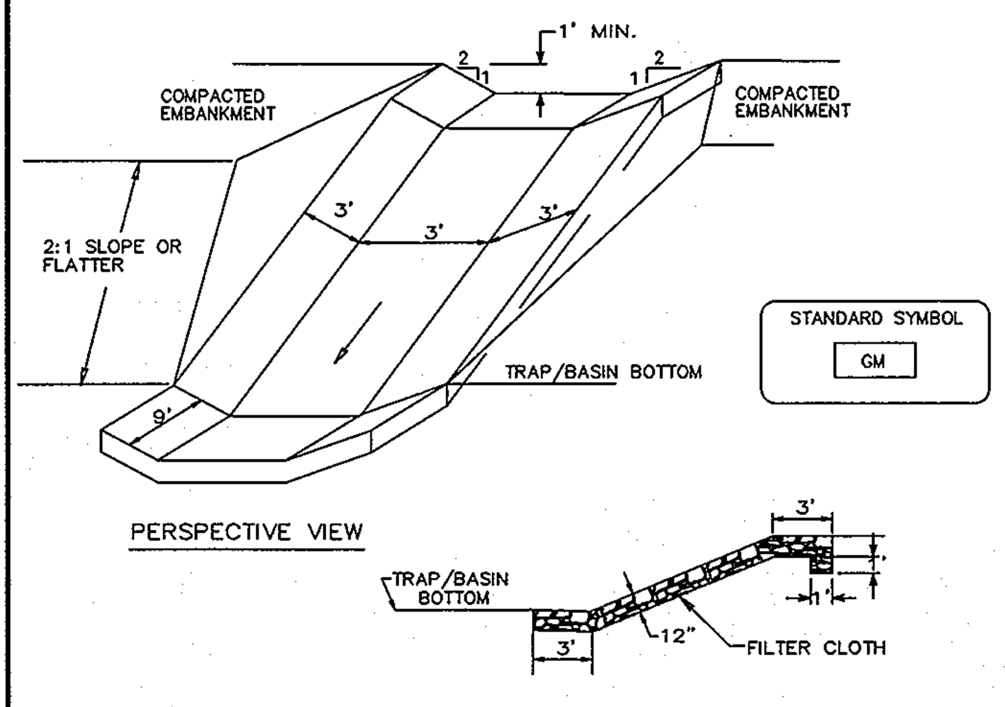
ARTHUR E. MUEGGE #8707

DESIGNED BY : C.J.R.
DRAWN BY : KCB
PROJECT NO : 98357 RD5B.DWG
DATE : JULY 12, 2000
SCALE : AS SHOWN
DRAWING NO. 4 OF 7

AS-BUILT 8-26-02 F-00-130

F:\PROJECT\98357\RD5B.dwg Wed Jul 12 13:20:07 2000 RIEMER MUEGGE & ASSOCIATES, INC.

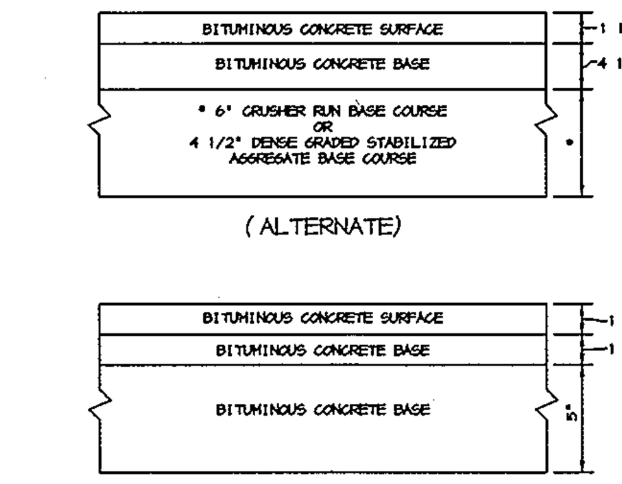
DETAIL 6 – GABION×INFLOW PROTECTION



Construction Specifications

1. Gabion inflow protection shall be constructed of 9' x 3' x 9" gabion baskets forming a trapezoidal cross section 1' deep, with 2:1 side slopes, and a 3' bottom width.
2. Geotextile Class C shall be installed under all gabion baskets.
3. The stone used to fill the gabion baskets shall be 4" – 7".
4. Gabions shall be installed in accordance with manufacturers recommendations.
5. Gabion Inflow Protection shall be used where concentrated flow is present on slopes steeper than 4:1.

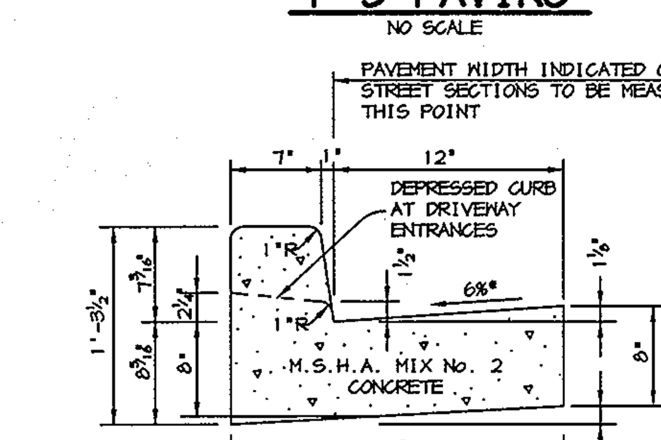
U.S. DEPARTMENT OF AGRICULTURE SOIL CONSERVATION SERVICE	PAGE 8 - X - 2	MARYLAND DEPARTMENT OF ENVIRONMENT WATER MANAGEMENT ADMINISTRATION



HOWARD COUNTY DESIGN MANUAL VOLUME IV- STANDARD SPECIFICATIONS AND DETAILS FOR CONSTRUCTION (DRAWING R-2.01)

P-3 PAVING

NO SCALE



HOWARD COUNTY DESIGN MANUAL, VOLUME IV, STANDARD SPECIFICATIONS AND DETAILS FOR CONSTRUCTION (DRAWING R-3.01).

* GUTTER PAN AT THE MEDIAN EDGE OF INTERMEDIATE ARTERIALS OR THE HIGH SIDE OF SUPERELEVATED SECTIONS SHALL BE SLOPED AT THE SAME RATE AS THE PAVEMENT.

STANDARD 7" COMBINATION CURB AND GUTTER

NO SCALE

Depth	BORING B-1
0'–4'	BROWN, MOIST, CLAYEY SILT AND MF SAND, TR GRAVEL, TR ROOTS (CL) (TOPSOIL)
4'–5'	GRAY, MOIST, SAND. SOME SILT, LITTLE ROCK FRAGMENTS (SM) DECOMPOSED ROCK
5'–14.5'	GRAY AND BROWN, MOIST SAND AND CLAYEY SILT, LITTLE ROCK FRAGMENTS (SM) (DECOMPOSED ROCK)
14.5'–14.8'	BROWN, WET SILT AND CLAY AND MF SAND (CL) (DECOMPOSED ROCK)
14.8'–15.3'	GRAY, MOIST CF SAND, AND CLAYEY SILT, LITTLE ROCK FRAGMENTS (SM) GRAY, MOIST CF SAND, AND CLAYEY
15.3'–15.7'	ROCK

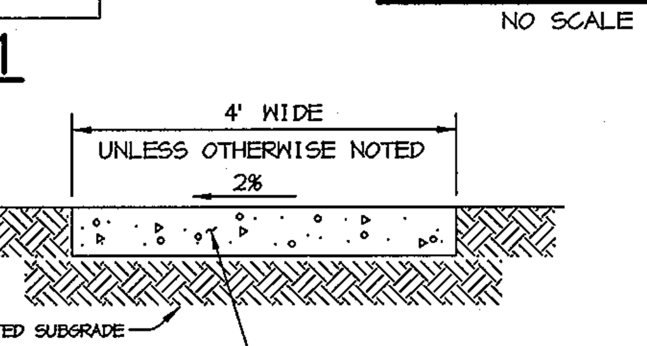
BORING B-1

NO SCALE

Depth	BORING B-2
0'–4'	BROWN, MOIST SAND AND GRAVEL SOME SILT AND CLAY, TR ROOTS (SC) TOPSOIL
4'–6.6'	GREEN GRAY MOIST SILT, LITTLE MF SAND (ML) (DECOMPOSED ROCK)
6.6'–8'	GRAY AND BROWN, MOIST SILT SOME MF SAND, TR ROCK FRAGMENTS (ML) (DECOMPOSED ROCK)
8'–13.5'	GREEN GRAY MOIST SILT, LITTLE SAND (ML) (DECOMPOSED ROCK)
13.5'–13.9'	ROCK

BORING B-2

NO SCALE



NOTES:
PROVIDE LATITUDINAL EXPANSION JOINTS AT 15' O.C. (MAX.)
PROVIDE CONTRACTION (DUMMY) JOINT AT 5' O.C. INTERVALS BETWEEN EXPANSION JOINTS. SIDEWALK TO BE SCRIBED IN 5' MAX. SQUARES.

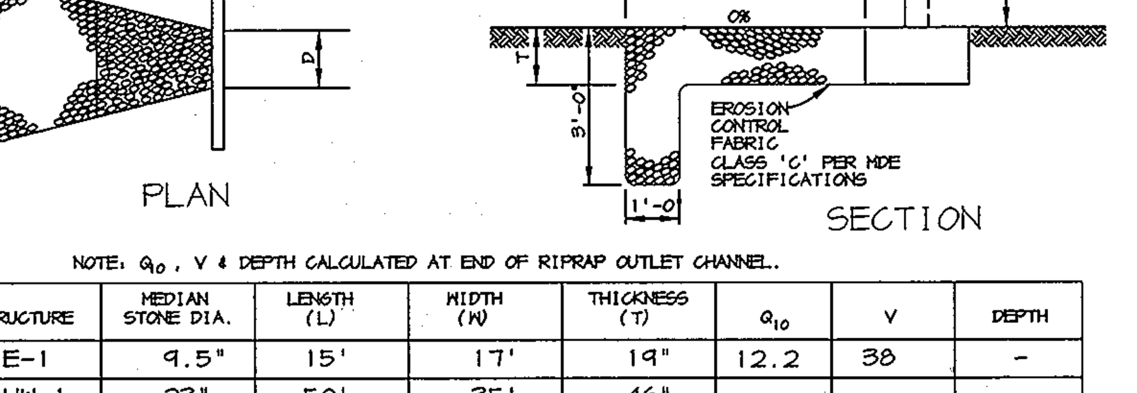
SIDEWALK DETAIL

NO SCALE

SEQUENCE OF CONSTRUCTION

1. OBTAIN GRADING PERMIT.
2. INSTALL STABILIZED CONSTRUCTION ENTRANCE, AND SUPER SILT FENCE FOR CULVERT CONSTRUCTION, SEE SHEET 7. (2 DAYS)
3. WITH PERMISSION OF HOWARD COUNTY DILP SEDIMENT CONTROL INSPECTOR AND MDE INSTALL BOX CULVERTS AND POUR HEADWALLS.
4. UPON COMPLETION OF CULVERTS, CONTRACTOR MUST OBTAIN PERMISSION FROM HOWARD COUNTY DILP SEDIMENT CONTROL INSPECTOR AND MDE PRIOR TO DIVERTING STREAM WITH RIPRAP. INSTALL GUARDRAILS AS SHOWN ON PLANS. (3 WEEKS)
5. AS SOON AS CULVERT IS ABLE TO SUPPORT CONSTRUCTION TRAFFIC TO CROSS STREAM, INSTALL SILT FENCE, EARTH DIKES AND BEGIN INSTALLATION OF SEDIMENT BASIN/SWMF. (3 WEEKS)
6. UPON PERMISSION OF HOWARD COUNTY DILP SEDIMENT CONTROL INSPECTOR, BEGIN GRADING OF MANSION LANE. (2 WEEKS)
7. AS SUBGRADE ELEVATIONS ARE ESTABLISHED, INSTALL UTILITIES, WATER AND STORM DRAINS. ONCE STORM DRAINS ARE FUNCTIONAL, REMOVE MOUNTABLE EARTH DIKE. (2 WEEKS)
8. INSTALL CURB AND GUTTER, LIGHT POLES, THEN PAVE. (2 WEEKS)
9. APPLY TOPSOIL AND STABILIZE DISTURBED AREAS AS NECESSARY IN ACCORDANCE WITH PERMANENT SEEDING NOTES. (1 DAY)
10. INSTALL STREET TREES, SIGNAGE AND SIDEWALKS. (5 DAYS)
11. UPON APPROVAL OF HOWARD COUNTY DILP SEDIMENT CONTROL INSPECTOR, REMOVE ALL REMAINING SEDIMENT CONTROL DEVICES AND CONVERT SEDIMENT BASIN TO PERMANENT STORM WATER MANAGEMENT FACILITY IN THE FOLLOWING STEPS.
    a. CLEAN STORM DRAIN INLETS AND FLUSH OUT PIPES. (1 DAY)
    b. PUMP OUT STANDING WATER IN BASIN USING PUMPING STATION. (1 DAY)
    c. REMOVE ACCUMULATED SEDIMENT. (2 DAYS)
    d. REMOVE DRAW DOWN DEVICES, PLYWOOD AND ORIFICE PLATES. (1 DAY)
    e. INSTALL PERMANENT DRAW DOWN DEVICES AND ORIFICE PLATES. (1 DAY)
    f. INSTALL RIP-RAP. (1 DAY)
    g. STABILIZE REMAINING DISTURBED AREAS IN ACCORDANCE WITH PERMANENT SEEDING NOTES. (2 DAYS)

NOTES:
1. TEMPORARY DEWATERING MAY BE NECESSARY DURING EXCAVATION OF THE CORE TRENCH.
2. GEOTECHNICAL ENGINEER TO BE PRESENT DURING CORE TRENCH MATERIAL INSTALLATION.
3. IF FILL MATERIAL IS ENCOUNTERED AT THE BOTTOM OF THE CORE TRENCH EXCAVATION, THE CORE TRENCH SHOULD BE EXTENDED SO THAT IT PENETRATES 1 FOOT MINIMUM INTO ORIGINAL GROUND.



NOTE: Q_{10}, V & DEPTH CALCULATED AT END OF RIPRAP OUTLET CHANNEL.

STRUCTURE	MEDIAN STONE DIA.	LENGTH (L)	WIDTH (W)	THICKNESS (T)	Q_{10}	V	DEPTH
E-1	9.5"	15'	17'	19"	12.2	38	-
HW-1	23"	50'	35'	46"	-	-	-
HW-2	23"	65'	23'	46"	-	-	-

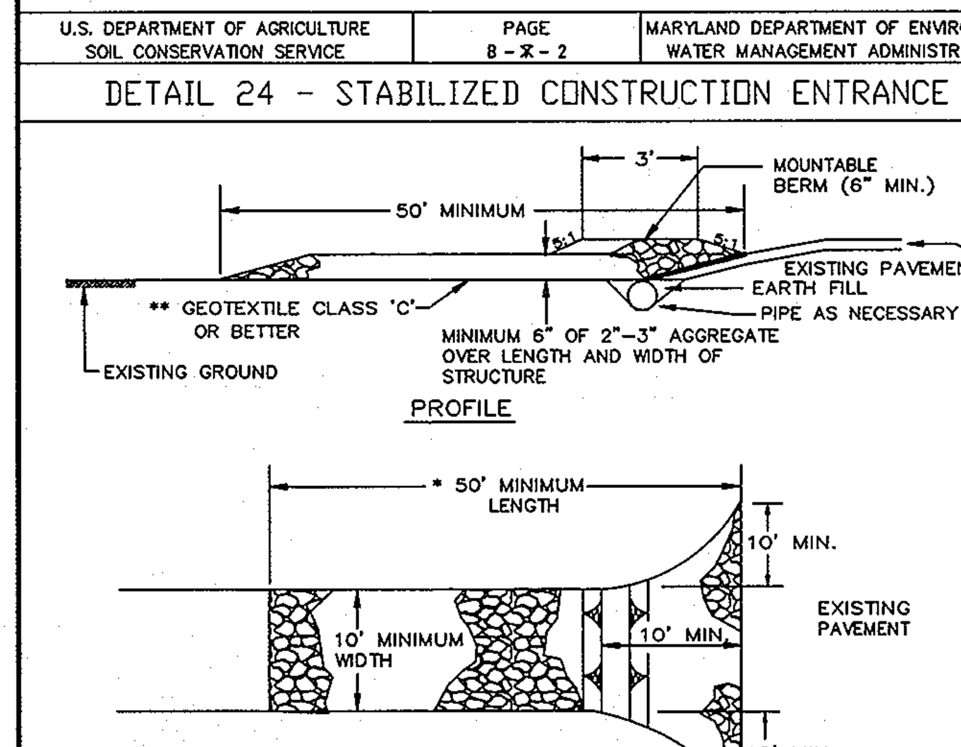
RIPRAP OUTLET PROTECTION DETAIL

NO SCALE

CONSTRUCTION SPECIFICATIONS

1. THE SUBGRADE FOR THE FILTER, RIP-RAP, OR GABION SHALL BE PREPARED TO THE REQUIRED LINES AND GRADES. ANY FILL REQUIRED IN THE SUBGRADE SHALL BE COMPACTED TO A DENSITY OF APPROXIMATELY THAT OF THE SURROUNDING UNDISTURBED MATERIAL.
2. THE ROCK OR GRAVEL SHALL CONFORM TO THE SPECIFIED GRADING LIMITS WHEN INSTALLED RESPECTIVELY IN THE RIP-RAP OR FILTER.
3. GEOTEXTILE CLASS C OR BETTER SHALL BE PROTECTED FROM PUNCHING, CUTTING, OR TEARING. ANY DAMAGE OTHER THAN AN OCCASIONAL SMALL HOLE SHALL BE REPAIRED BY PLACING ANOTHER PIECE OF GEOTEXTILE FABRIC OVER THE DAMAGED WHETHER FOR REPAIRS OR FOR JOINING TWO PIECES OF GEOTEXTILE FABRIC SHALL BE A MINIMUM OF ONE FOOT.
4. STONE FOR THE RIP-RAP OR GABION OUTLETS MAY BE PLACED BY EQUIPMENT. THEY SHALL BE CONSTRUCTED TO THE FULL COURSE THICKNESS IN ONE OPERATION AND AND IN SUCH A MANNER AS TO AVOID DISPLACEMENT OF UNDERLYING MATERIALS. THE STONE FOR RIP-RAP OR GABION OUTLETS SHALL BE DELIVERED AND PLACED IN A MANNER THAT WILL ENSURE THAT IT IS REASONABLY HOMOGENOUS WITH THE SMALLER STONES AND SPALLS FILLING THE VOIDS BETWEEN THE LARGER STONES. RIP-RAP SHALL BE PLACED IN A MANNER TO PREVENT DAMANGE TO THE FILTER BLANKET OR GEOTEXTILE FABRIC. HAND PLACEMENT WILL BE REQUIRED TO THE EXTENT NECESSARY TO PREVENT DAMAGE TO THE PERMANENT WORKS.
5. THE STONE SHALL BE PLACED SO THAT IT BLENDS IN WITH THE EXISTING GROUND. IF THE STONE IS PLACED TOO HIGH THEN THE FLOW WILL BE FORCED OUT OF THE CHANNEL AND SCOUR ADJACENT TO THE STONE WILL OCCUR.

DETAIL 24 – STABILIZED CONSTRUCTION ENTRANCE

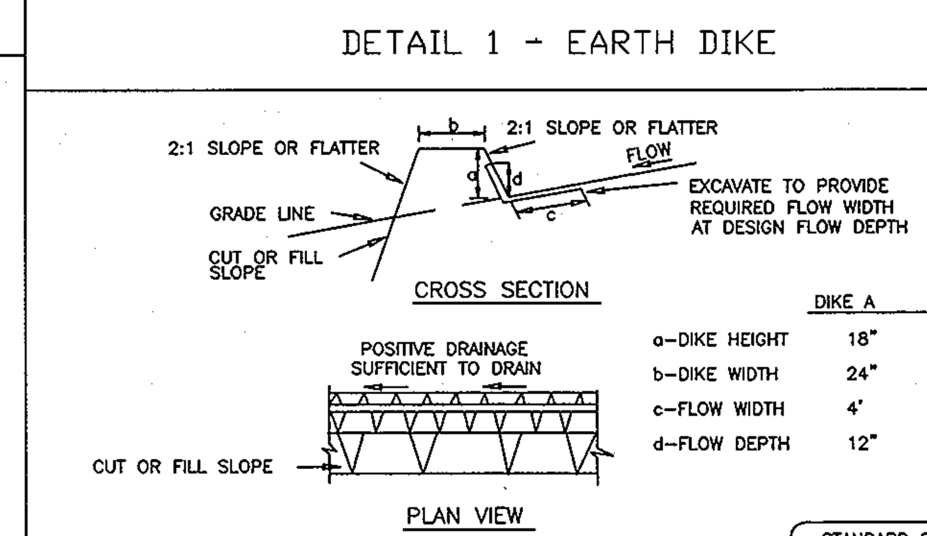


Construction Specification

1. Length – minimum of 50' (*30' for single residence lot).
2. Width – 10' minimum, should be flared at the existing road to provide a turning radius.
3. Geotextile fabric (filter cloth) shall be placed over the existing ground prior to placing stone. **The plan approval authority may not require single family residences to use geotextile.
4. Stone – crushed aggregate (2" to 3") or reclaimed or recycled concrete equivalent shall be placed at least 6" deep over the length and width of the entrance.
5. Surface Water – all surface water flowing to or diverted toward construction entrances shall be piped through the entrance, maintaining positive drainage. Pipe installed through the stabilized construction entrance shall be protected with a mountable berm with 5:1 slopes and a minimum of 6" of stone over the pipe. Pipe has to be sized according to the drainage. When the SCE is located at a high spot and has no drainage to convey a pipe will not be necessary. Pipe should be sized according to the amount of runoff to be conveyed. A 6" minimum will be required.
6. Location – A stabilized construction entrance shall be located at every point where construction traffic enters or leaves a construction site. Vehicles leaving the site must travel over the entire length of the stabilized construction entrance.

U.S. DEPARTMENT OF AGRICULTURE SOIL CONSERVATION SERVICE	PAGE F - 17 - 3	MARYLAND DEPARTMENT OF ENVIRONMENT WATER MANAGEMENT ADMINISTRATION

DETAIL 1 – EARTH DIKE



	DIKE A	DIKE B
a-DIKE HEIGHT	18"	30"
b-DIKE WIDTH	24"	36"
c-FLOW WIDTH	4'	6'
d-FLOW DEPTH	12"	24"

FLOW CHANNEL STABILIZATION
GRADE 0.5% MIN. 10% MAX.

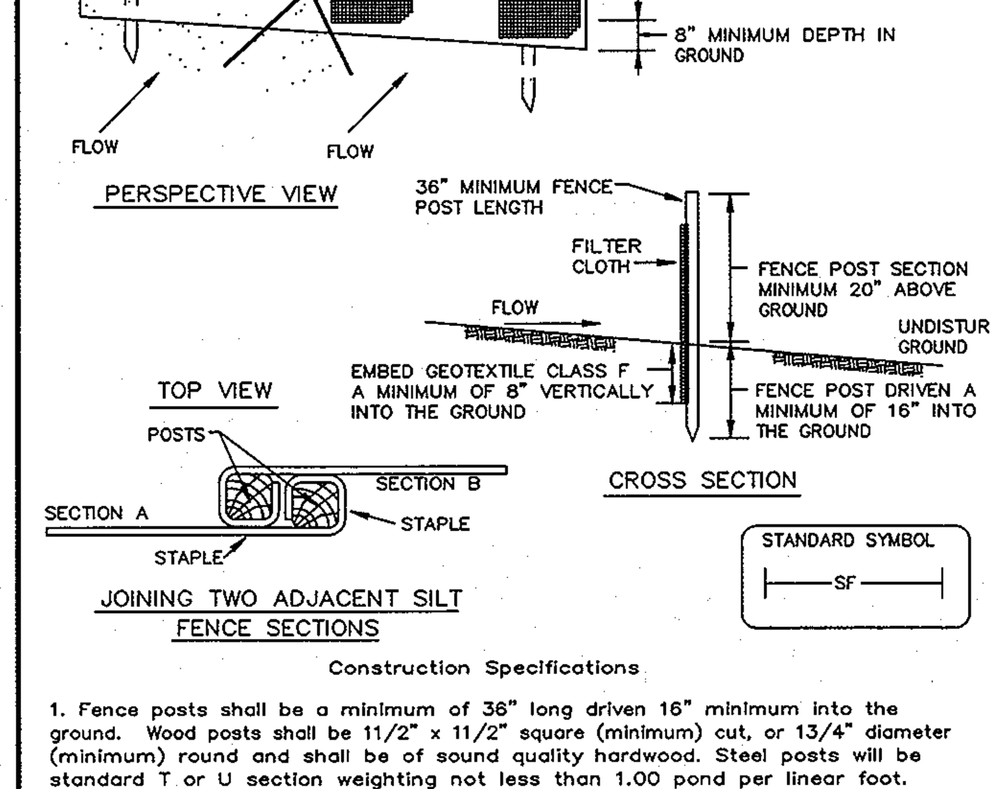
1. Seed and cover with straw mulch.
2. Seed and cover with Erosion Control Matting or line with sod.
3. 4" – 7" stone or recycled concrete equivalent pressed into the soil 7" minimum

Construction Specifications

1. All temporary earth dikes shall have uninterrupted positive grade to an outlet. Spot elevations may be necessary for grades less than 1%.
2. Runoff diverted from a disturbed area shall be conveyed to a sediment trapping device.
3. Runoff diverted from an undisturbed area shall outlet directly into an undisturbed, stabilized area at a non-erosive velocity.
4. All trees, brush, stumps, obstructions, and other objectional material shall be removed and disposed of so as not to interfere with the proper functioning of the dike.
5. The dike shall be excavated or shaped to line, grade and cross section as required to meet the criteria specified herein and be free of bank projections or other irregularities which will impede normal flow.
6. Fill shall be compacted by earth moving equipment.
7. All earth removed and not needed for construction shall be placed so that it will not interfere with the functioning of the dike.
8. Inspection and maintenance must be provided periodically and after each rain event.

U.S. DEPARTMENT OF AGRICULTURE SOIL CONSERVATION SERVICE	PAGE A - 1 - 6	MARYLAND DEPARTMENT OF ENVIRONMENT WATER MANAGEMENT ADMINISTRATION

DETAIL 22 – SILT FENCE



Construction Specifications

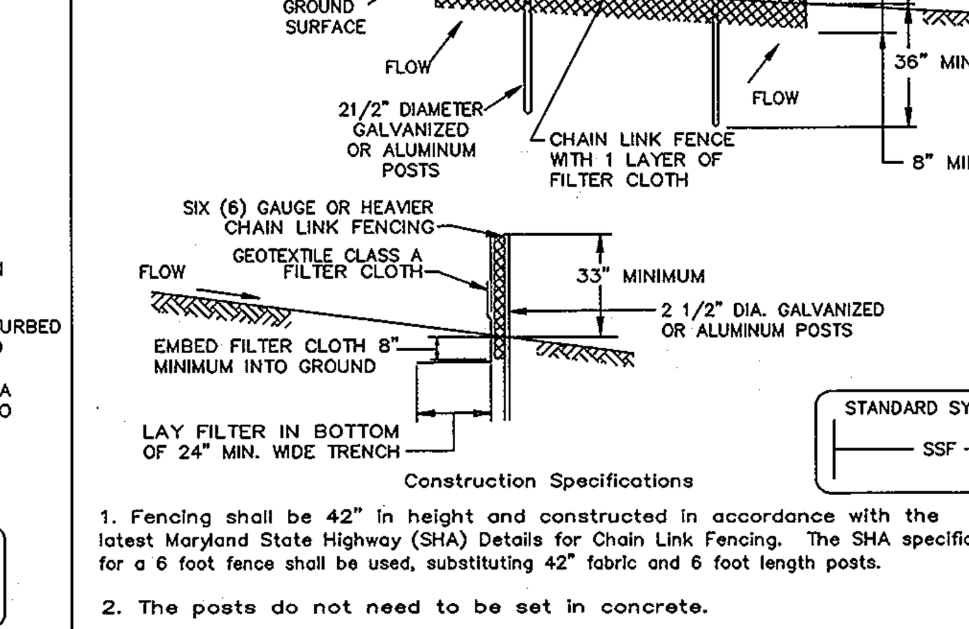
1. Fence posts shall be a minimum of 36" long driven 16" minimum into the ground. Wood posts shall be 11/2" x 11/2" square (minimum) cut, or 13/4" diameter (minimum) round and shall be of sound quality hardwood. Steel posts will be standard T or U section weighting not less than 1.00 pond per linear foot.
2. Geotextile shall be fastened securely to each fence post with wire ties or staples at top and mid-section and shall meet the following requirements for Geotextile Class F:

Tensile Strength	50 lbs/in (min.)	Test: MSMT 509
Tensile Modulus	20 lbs/in (min.)	Test: MSMT 509
Flow Rate	0.3 gal ft ²/ minute (max.)	Test: MSMT 322
Filtering Efficiency	75% (min.)	Test: MSMT 322

3. Where ends of geotextile fabric come together, they shall be overlapped, folded and stapled to prevent sediment bypass.
4. Silt Fence shall be inspected after each rainfall event and maintained when bulges occur or when sediment accumulation reached 50% of the fabric height.

U.S. DEPARTMENT OF AGRICULTURE SOIL CONSERVATION SERVICE	PAGE E - 15 - 3	MARYLAND DEPARTMENT OF ENVIRONMENT WATER MANAGEMENT ADMINISTRATION

DETAIL 33 – SUPER SILT FENCE



Construction Specifications

1. Fencing shall be 42" in height and constructed in accordance with the latest Maryland State Highway (SHA) Details for Chain Link Fencing. The SHA specifications for a 6 foot fence shall be used, substituting 42" fabric and 6 foot length posts.
2. The posts do not need to be set in concrete.
3. Chain link fence shall be fastened securely to the fence posts with wire ties or staples. The lower tension wire, brace and truss rods, drive anchors and post caps are not required except on the ends of the fence. The chain link fencing shall be six (6) gauge or heavier.
4. Filter cloth shall be fastened securely to the chain link fence with ties spaced every 24" at the top and mid section.
5. Filter cloth shall be embedded a minimum of 8" into the ground.
6. When two sections of geotextile fabric adjoin each other, they shall be overlapped by 6" and folded.
7. Maintenance shall be performed as needed and silt buildups removed when "bulges" develop in the silt fence, or when silt reaches 50% of fence height

U.S. DEPARTMENT OF AGRICULTURE SOIL CONSERVATION SERVICE	PAGE H - 26 - 3	MARYLAND DEPARTMENT OF ENVIRONMENT WATER MANAGEMENT ADMINISTRATION

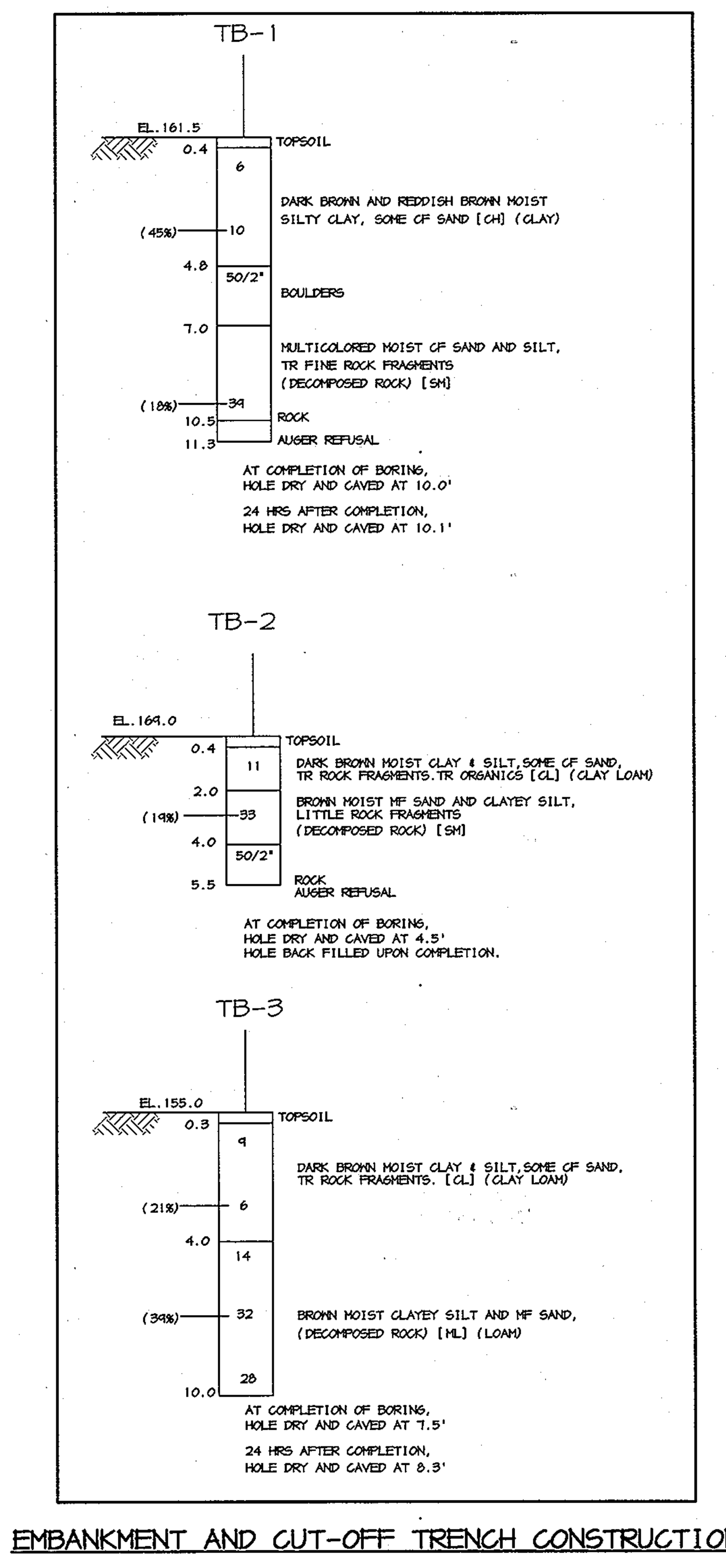
STANDARD SEDIMENT CONTROL NOTES

1. A MINIMUM OF 48 HOURS NOTICE MUST BE GIVEN TO THE HOWARD COUNTY DEPARTMENT OF INSPECTIONS, LICENSES AND PERMITS, SEDIMENT CONTROL DIVISION PRIOR TO THE START OF ANY CONSTRUCTION (313-1855).
2. ALL VEGETATIVE AND STRUCTURAL PRACTICES ARE TO BE INSTALLED ACCORDING TO THE PROVISIONS OF THIS PLAN AND ARE TO BE IN CONFORMANCE WITH THE 1994 MARYLAND STANDARDS AND SPECIFICATIONS FOR SOIL EROSION AND SEDIMENT CONTROL AND REVISIONS THERETO.
3. FOLLOWING INITIAL SOIL DISTURBANCE OR RE-DISTURBANCE, PERMANENT OR TEMPORARY STABILIZATION SHALL BE COMPLETED WITHIN: A) 7 CALENDAR DAYS FOR ALL PERIMETER SEDIMENT CONTROL STRUCTURES, DIKES, PERIMETER SLOPES, AND ALL SLOPES STEEPER THAN 3:1, B) 14 DAYS AS TO ALL OTHER DISTURBED OR GRADED AREAS ON THE PROJECT SITE.
4. ALL SEDIMENT TRAPS/BASINS SHOWN MUST BE FENCED AND WARNING SIGNS POSTED AROUND THE PERIMETER IN ACCORDANCE WITH VOL. 1, CHAPTER 7, OF THE HOWARD COUNTY DESIGN MANUAL, STORM DRAINAGE.
5. ALL DISTURBED AREAS MUST BE STABILIZED WITHIN THE TIME PERIOD SPECIFIED ABOVE IN ACCORDANCE WITH THE 1994 MARYLAND STANDARDS AND SPECIFICATIONS FOR SOIL EROSION AND SEDIMENT CONTROL FOR PERMANENT SEEDING, SOD, TEMPORARY SEEDING, AND MULCHING (SEC. 6.). TEMPORARY STABILIZATION WITH MULCH ALONE SHALL ONLY BE DONE WHEN RECOMMENDED SEEDING DATES DO NOT ALLOW FOR PROPER GERMINATION AND ESTABLISHED OF GRASSES.
6. ALL SEDIMENT CONTROL STRUCTURES ARE TO REMAIN IN PLACE AND ARE TO BE MAINTAINED IN OPERATIVE CONDITION UNTIL PERMISSION FOR THEIR REMOVAL HAS BEEN OBTAINED FROM THE HOWARD COUNTY SEDIMENT CONTROL INSPECTOR.
7. SITE ANALYSIS:

TOTAL AREA OF SITE	17.575 ACRES
AREA DISTURBED	3.68 ACRES
AREA TO BE ROOFED OR PAVED	1.00 ACRES
AREA TO BE VEGETATIVELY STABILIZED	2.68 ACRES
TOTAL CUT	11219 CU. YARDS
TOTAL FILL	12453 CU. YARDS

OFFSITE WASTE/BORROW AREA LOCATION TO HAVE APPROVED GRADING PERMIT.

8. ANY SEDIMENT CONTROL PRACTICE WHICH IS DISTURBED BY GRADING ACTIVITY FOR PLACEMENT OF UTILITIES MUST BE REPAIRED ON THE SAME DAY OF DISTURBANCE.
9. ADDITIONAL SEDIMENT CONTROLS MUST BE PROVIDED, IF DEEMED NECESSARY BY THE HOWARD COUNTY SEDIMENT CONTROL INSPECTOR.
10. ON ALL SITES WITH DISTURBED AREAS IN EXCESS OF 2 ACRES, APPROVAL OF THE INSPECTION AGENCY SHALL BE REQUESTED UPON COMPLETION OF INSTALLATION OF PERIMETER EROSION AND SEDIMENT CONTROLS, BUT BEFORE PROCEEDING WITH ANY OTHER EARTH DISTURBANCE OR GRADING. OTHER BUILDING OR GRADING INSPECTION APPROVALS MAY NOT BE AUTHORIZED UNTIL THIS INITIAL APPROVAL BY THE INSPECTION AGENCY IS MADE.
11. TRENCHES FOR THE CONSTRUCTION OF UTILITIES IS LIMITED TO THREE PIPE LENGTHS OR THAT WHICH SHALL BE BACK-FILLED AND STABILIZED WITHIN ONE WORKING DAY, WHICHEVER IS SHORTER.
12. SITE GRADING WILL BEGIN ONLY AFTER ALL PERIMETER SEDIMENT CONTROL MEASURES HAVE BEEN INSTALLED AND ARE IN A FUNCTIONING CONDITION.
13. SEDIMENT WILL BE REMOVED FROM TRAPS WHEN ITS DEPTH REACHES CLEAN OUT ELEVATION SHOWN ON THE PLANS.
14. CUT AND FILL QUANTITIES PROVIDED UNDER SITE ANALYSIS DO NOT REPRESENT BID QUANTITIES. THESE QUANTITIES DO NOT DISTINGUISH BETWEEN TOPSOIL, STRUCTURAL FILL OR EMBANKMENT MATERIAL, NOR DO THEY REFLECT CONSIDERATION OF UNDERCUTTING OR REMOVAL OF UNSUITABLE MATERIAL. THE CONTRACTOR SHALL FAMILIARIZE HIMSELF WITH SITE CONDITIONS WHICH MAY AFFECT THE WORK.



EMBANKMENT AND CUT-OFF TRENCH CONSTRUCTION

THE SITE SHOULD BE STRIPPED OF TOPSOIL AND ANY OTHER UNSUITABLE MATERIALS FROM THE EMBANKMENT OR STRUCTURE AREA IN ACCORDANCE WITH SOIL CONSERVATION GUIDELINES. AFTER STRIPPING OPERATIONS HAVE BEEN COMPLETED, THE EXPOSED SUBGRADE MATERIALS SHOULD BE PROOFROLLED WITH A LOADED DUMP TRUCK OR SIMILAR EQUIPMENT IN THE PRESENCE OF A GEOTECHNICAL ENGINEER OR HIS REPRESENTATIVE. FOR AREAS THAT ARE NOT ACCESSIBLE TO A DUMP TRUCK, THE ENGINEER OR HIS REPRESENTATIVE UTILIZING A DYNAMIC CONE PENETROMETER. ANY EXCESSIVELY SOFT OR LOOSE MATERIALS IDENTIFIED BY PROOFROLLING OR PENETROMETER TESTING SHOULD BE EXCAVATED TO SUITABLE FIRM SOIL, AND THEN GRADES RE-ESTABLISHED BY BACKFILLING WITH SUITABLE SOIL.
A REPRESENTATIVE OF A REGISTERED GEOTECHNICAL ENGINEER MUST BE PRESENT TO MONITOR PLACEMENT AND COMPACTION OF FILL FOR THE EMBANKMENT AND CUT-OFF TRENCH. IN ACCORDANCE WITH MARYLAND SOIL CONSERVATION SPECIFICATION 378 SOILS CONSIDERED SUITABLE FOR THE CENTER OF EMBANKMENT AND CUT-OFF TRENCH SHALL CONFORM TO THE UNITED SOIL CLASSIFICATION GC, SC, CH, OR CL. ALL FILL MATERIALS MUST BE PLACED AND COMPACTED IN ACCORDANCE WITH MDSCS 378 SPECIFICATIONS.

21.0 STANDARD AND SPECIFICATIONS FOR TOPSOIL

Definition

Placement of topsoil over a prepared subsoil prior to establishment of permanent vegetation.

Purpose

To provide a suitable soil medium for vegetative growth. Soils of concern have low moisture content, low nutrient levels, low pH, materials toxic to plants, and/or unacceptable soil gradation.

Conditions Where Practice Applies

I. This practice is limited to areas having 2:1 or flatter slopes where:
  a. The texture of the exposed subsoil/parent material is not adequate to produce vegetative growth.
  b. The soil material is so shallow that the rooting zone is not deep enough to support plants or furnish continuing supplies of moisture and plant nutrients.
  c. The original soil to be vegetated contains material toxic to plant growth.
  d. The soil is so acidic that treatment with limestone is not feasible.

II. For the purpose of these Standards and Specifications, areas having slopes steeper than 2:1 require special consideration and design for adequate stabilization. Areas having slopes steeper than 2:1 shall have the appropriate stabilization shown on the plans.

Construction and Material Specifications

I. Topsoil salvaged from the existing site may be used provided that it meets the standards as set forth in these specifications. Typically, the depth of topsoil to be salvaged for a given soil type can be found in the representative soil profile section in the Soil Survey published by USDA-SCS in cooperation with Maryland Agricultural Experimentation Station.

II. Topsoil Specifications – Soil to be used as topsoil must meet the following:
  I. Topsoil shall be a loam, sandy loam, clay loam, silt loam, sandy clay loam, loamy sand. Other soils may be used if recommended by an agronomist or soil scientist and approved by the appropriate approval authority. Regardless, topsoil shall not be a mixture of contrasting textured subsoils and shall contain less than 5% by volume of cinders, stones, slag, coarse fragments, gravel, sticks, roots, trash, or other materials larger than 1½" in diameter.
  II. Topsoil must be free of plants or plant parts such as bermuda grass, quackgrass, Johnsongrass, nutsedge, poison ivy, thistle, or others as specified.
  III. Where subsoil is either highly acidic or composed of heavy clays, ground limestone shall be spread at the rate of 4-8 tons/acre (200-400 pounds per 1,000 square feet) prior to the placement of topsoil. Lime shall be distributed uniformly over designated areas and worked into the soil in conjunction with tillage operations as described in the following procedures.

II. For sites having disturbed areas under 5 acres:
  I. Place topsoil (if required) and apply soil amendments as specified in 20.0 Vegetative Stabilization – Section I – Vegetative Stabilization Methods and Materials.

III. For sites having disturbed areas over 5 acres:
  I. On soil meeting Topsoil specifications, obtain test results dictating fertilizer and lime amendments required to bring the soil into compliance with the following:
    a. pH for topsoil shall be between 6.0 and 7.5. If the tested soil demonstrates a pH of less than 6.0, sufficient lime shall be prescribed to raise the pH to 6.5 or higher.
    b. Organic content of topsoil shall be not less than 1.5 percent by weight.
    c. Topsoil having soluble salt content greater than 500 parts per million shall not be used.
    d. No sod or seed shall be placed on soil which has been treated with soil sterilants or chemicals used for weed control until sufficient time has elapsed (14 days min.) to permit dissipation of phyto-toxic materials.

Note: Topsoil substitutes to amendments, as recommended by a qualified agronomist or soil scientist and approved by the appropriate approval authority may be used in lieu of natural topsoil.

  II. Place topsoil (if required) and apply soil amendments as specified in 20.0 Vegetative Stabilization – Section I – Vegetative Stabilization Methods and Materials.

V. Topsoil Application
  I. When topsoiling, maintain needed erosion and sediment control practices such as diversions, Grade Stabilization Structures, Earth Dikes, Slope Silt Fence and Sediment Traps and Basins.
  II. Grades on the areas to be topsoiled, which have been previously established, shall be maintained, albeit 4" - 8" higher in elevation.
  III. Topsoil shall be uniformly distributed in a 4" - 8" layer and lightly compacted to a minimum thickness of 4". Spreading shall be performed in such a manner that sodding or seeding can proceed with a minimum of additional soil preparation and tillage. Any irregularities in the surface resulting from topsoiling or other operations shall be corrected in order to prevent the formation of depressions or water pockets.
  Iv. Topsoil shall not be placed while the topsoil or subsoil is in a frozen or muddy condition, when the subsoil is excessively wet or in a condition that may otherwise be detrimental to proper grading and seedbed preparation.

VI. Alternative for Permanent Seeding – Instead of applying the full amounts of lime and commercial fertilizer, composted sludge and amendments may be applied as specified below:
  I. Composted Sludge Material for use as a soil conditioner for sites having disturbed areas over 5 acres shall be tested to prescribe amendments and for site having disturbed areas under 5 acres shall conform to the following requirements:
    a. Composted sludge shall be supplied by, or originate from, a person or persons that are permitted (at the time of acquisition of the compost) by the Maryland Department of the Environment under COMAR 26.04.06.
    b. Composted sludge shall contain at least 1 percent nitrogen, 1.5 percent phosphorus, and 0.2 percent potassium and have a pH of 7.0 to 8.0. If compost does not meet these requirements, the appropriate constituents must be added to meet the requirements prior to use.
    c. Composted sludge shall be applied at a rate of 1 ton/1,000 square feet.
    d. Composted sludge shall be amended with a potassium fertilizer applied at the rate of 4 lb/1,000 square feet, and 1/3 the normal lime application rate.

References: Guideline Specifications, Soil Preparation and Sodding. MD-VA, Pub. #1, Cooperative Extension Service, University of Maryland and Virginia Polytechnic Institutes. Revised 1973.

TEMPORARY SEEDING NOTES

Apply to graded or cleared areas likely to be redisturbed where a short-term vegetative cover is needed.

Seedbed Preparation : Loosen upper three inches of soil by raking, discing or other acceptable means before seeding, if not previously loosened.

Soil Amendments : Apply 600 lbs. per acre 10-10-10 fertilizer (14 lbs. per 1000 sq.ft.).

Seeding : For periods March 1 thru April 30 and from August 15 thru November 15, seed with 2-1/2 bushels per acre of annual rye (3.2 lbs. per 1000 sq.ft.). For the period May 1 thru August 14, seed with 3 lbs. per acre of weeping lovegrass (0.07 lbs. per 1000 sq.ft.). For the period November 16 thru February 28, protect site by applying 2 tons per acre of well anchored straw mulch and seed as soon as possible in the spring, or use sod.

Mulching : Apply 1-1/2 to 2 tons per acre (70 to 90 lbs. per 1000 sq.ft.) of unrotted small grain straw immediately after seeding. Anchor mulch immediately after application using mulch anchoring tool or 218 gal. per acre (5 gal. per 1000 sq.ft.) of emulsified asphalt on flat areas. On slopes, 8 ft. or higher, use 347 gal. per acre (8 gal. per 1000 sq.ft.) for anchoring.

Refer to the 1994 MARYLAND STANDARDS AND SPECIFICATIONS FOR SOIL EROSION AND SEDIMENT CONTROL for rate and methods not covered.

PERMANENT SEEDING NOTES

Apply to graded or cleared areas not subject to immediate further disturbance where a permanent long-lived vegetative cover is needed.

Seedbed Preparation : Loosen upper three inches of soil by raking, discing or other acceptable means before seeding, if not previously loosened.

Soil Amendments : In lieu of soil test recommendations, use one of the following schedules :

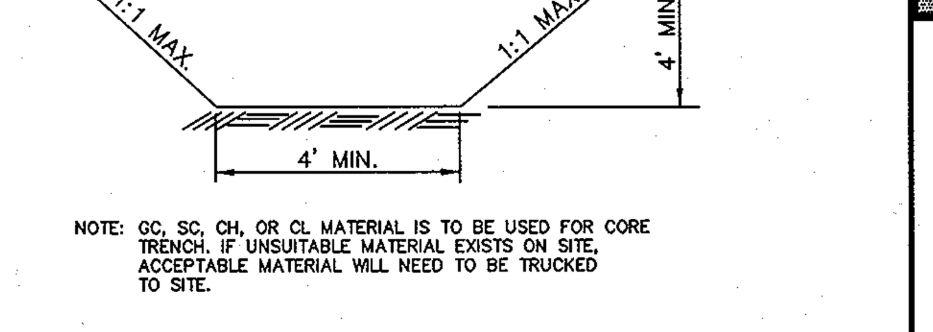
1) Preferred – Apply 2 tons per acre dolomitic limestone (92 lbs. per 1000 sq.ft.) and 600 lbs. per acre 10-10-10 fertilizer (14 lbs. per 1000 sq.ft.) before seeding. Harrow or disc into upper three inches of soil. At time of seeding, apply 400 lbs. per acre 30-0-0 ureaform fertilizer (9 lbs. per 1000 sq.ft.).
2) Acceptable – Apply 2 tons per acre dolomitic limestone (92 lbs. per 1000 sq.ft.) and 1000 lbs. per acre 10-10-10 fertilizer (23 lbs. per 1000 sq.ft.) before seeding. Harrow or disc into upper three inches of soil.

Seeding : For the period March 1 thru April 30 and from August 1 thru October 15, seed with 60 lbs. per acre (1.4 lbs. per 1000 sq.ft.) of Kentucky 31 Tall Fescue. For the period May 1 thru July 31, seed with 60 lbs. Kentucky 31 Tall Fescue per acre and 2 lbs. per acre (0.05 lbs. per 1000 sq.ft.) of weeping lovegrass. During the period October 16 thru February 28, protect site by one of the following options :

1) 2 tons per acre of well-anchored mulch straw and seed as soon as possible in the spring.
2) Use sod.
3) Seed with 60 lbs. per acre Kentucky 31 Tall Fescue and mulch with 2 tons per acre well anchored straw.

Mulching : Apply 1-1/2 to 2 tons per acre (70 to 90 lbs. per 1000 sq.ft.) of unrotted small grain straw immediately after seeding. Anchor mulch immediately after application using mulch anchoring tool or 218 gal. per acre (5 gal. per 1000 sq.ft.) of emulsified asphalt on flat areas. On slopes, 8 ft. or higher, use 347 gal. per acre (8 gal. per 1000 sq.ft.) for anchoring.

Maintenance : Inspect all seeded areas and make needed repairs, replacements and reseedings.



NOTE: GC, SC, CH, OR CL MATERIAL IS TO BE USED FOR CORE TRENCH. IF UNSUITABLE MATERIAL EXISTS ON SITE, ACCEPTABLE MATERIAL WILL NEED TO BE TRUCKED TO SITE.

CORE TRENCH DETAIL

NO SCALE

BY THE DEVELOPER :

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 THE ENVIRONMENT APPROVED TRAINING PROGRAM FOR THE CONTROL OF SEDIMENT AND EROSION BEFORE BEGINNING THE PROJECT. I ALSO AUTHORIZE PERIODIC ON-SITE INSPECTIONS BY THE HOWARD SOIL CONSERVATION DISTRICT.

DEVELOPER 7.12.00 DATE

BY THE ENGINEER :

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.

ENGINEER 7.12.00 DATE

THESE PLANS HAVE BEEN REVIEWED FOR THE HOWARD SOIL CONSERVATION DISTRICT AND MEET THE TECHNICAL REQUIREMENTS FOR SOIL EROSION AND SEDIMENT CONTROL.

NATURAL RESOURCES CONSERVATION SERVICE 7/25/00 DATE

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

HOWARD SOIL CONSERVATION DISTRICT 7/25/00 DATE

AS-BUILT CERTIFICATE

CHRISTOPHER J. REID # 19949 8.27.02 DATE

APPROVED : HOWARD COUNTY DEPARTMENT OF PUBLIC WORKS.

CHIEF, BUREAU OF HIGHWAYS 7-20-00 DATE

APPROVED : HOWARD COUNTY DEPARTMENT OF PLANNING AND ZONING.

CHIEF, DIVISION OF LAND DEVELOPMENT 7/26/00 DATE

CHIEF, DEVELOPMENT ENGINEERING DIVISION 7/28/00 DATE

DATE	NO.	REVISION

OWNER/DEVELOPER

TROY HILL BUSINESS PARK PARTNERSHIP
C/O MANEKIN CORPORATION
7165 COLUMBIA GATEWAY DRIVE
COLUMBIA, MARYLAND 21046

PROJECT
TROY HILL CORPORATE CENTER
PHASE III B

AREA
TAX MAP 37 ZONED M-1
1st ELECTION DISTRICT
HOWARD COUNTY, MARYLAND

TITLE
SEDIMENT CONTROL DETAIL SHEET

RIEMER MUEGGE & ASSOCIATES INC
ENGINEERING • ENVIRONMENTAL SERVICES • PLANNING • SURVEYING
8818 Centre Park Drive, Columbia, MD 21045
tel 410.997.8900 fax 410.997.9282

DATE
ARTHUR E. MUEGGE #8707

DESIGNED BY : C.J.R.
DRAWN BY : KCB
PROJECT NO : 98357 RD6B.DWG
DATE : JULY 12, 2000
SCALE : AS SHOWN
DRAWING NO. 5 OF 7

AS-BUILT 8-26-02 F-00-130

F:\PROJECT\98357\RD6B.dwg Wed Jul 12 13:20:58 2000 RIEMER MUEGGE & ASSOCIATES, INC.

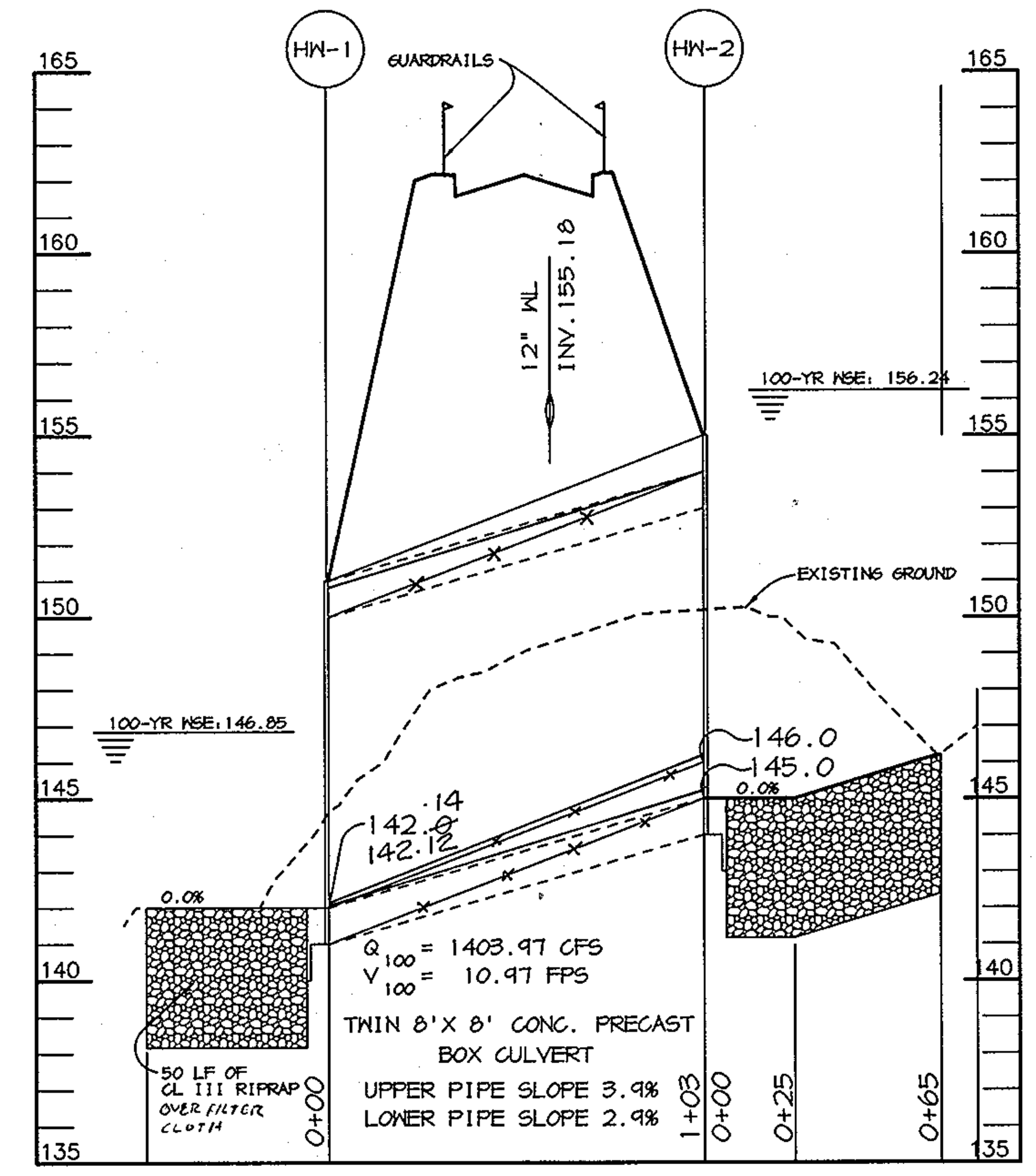
PIPE SCHEDULE

PIPE SIZE	TOTAL LENGTH	TYPE
18"	241 LF	RCCP CL IV
⚠1 24"	55 LF	ASTM CL B-25
30"	49 LF	RCCP CL IV
36"	50 LF	RCCP CL IV
8'x8'	206 LF	RCCP CL IV

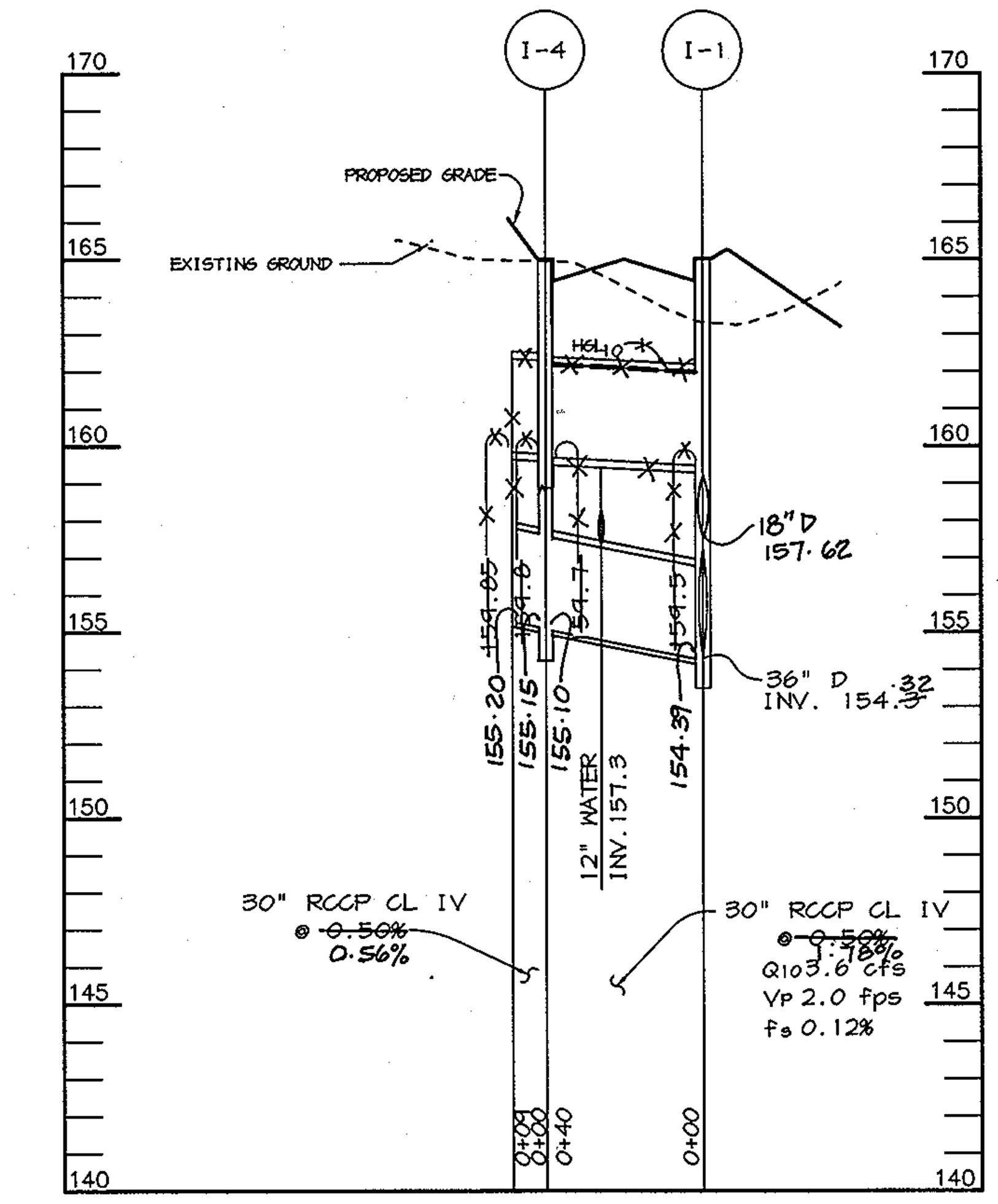
STRUCTURE SCHEDULE

STRUCTURE	TYPE	LOCATION	INV. IN	INV. OUT	TOP	REMARKS
I-1	A-5	* N 495747.92 E 869131.42	154.39 ~~159.5~~ (30") ~~155.8~~ (18")	154.32 ~~154.3~~ (36")	164.87 ~~165.00~~	HOCO STD. DETAIL SD 4.40
I-2	A-10	* N 495849.53 E 869304.41	157.62 ~~157.8~~ (18")	158.54 ~~156.4~~ (18")	161.99 ~~161.00~~	HOCO STD. DETAIL SD 4.02
I-3	A-10	* N 495880.61 E 869282.54	158.48	158.62 ~~157.2~~ (18")	162.01 ~~161.00~~	HOCO STD. DETAIL SD 4.02
I-4	A-5	* N 495782.16 E 869114.93	155.15 ~~154.8~~ (30")	155.10 ~~154.7~~ (30")	164.98 ~~165.00~~	HOCO STD. DETAIL SD 4.40
E-1	24" CONC. END SECTION	* N 495,696 E 869,126	-	154.0 ✓	-	HOCO STD. DETAIL SD 5.51
HW-1	TYPE 'A'	* N 495,893.56 E 869,416.49		142.14 142.12	-	HOCO STD. DETAIL SD 5.11 (MODIFIED)
HW-2	HEADWALL	* N 495,972.71 E 869,353.64	146.29 145.29	145.0 146.0	-	HOCO STD. DETAIL SD 5.11 (MODIFIED)
S-1	CONTROL STRUCTURE	* N 495,655 E 869,213	152.26 ~~152.0~~	148.39 147.6 147.87	156.25 ✓	SEE DETAIL SHEET 6
⚠1 E-2	24" CONC. END SECTION	SEE PLAN	—	148.0	—	HOCO STD. DETAIL SD 5.51

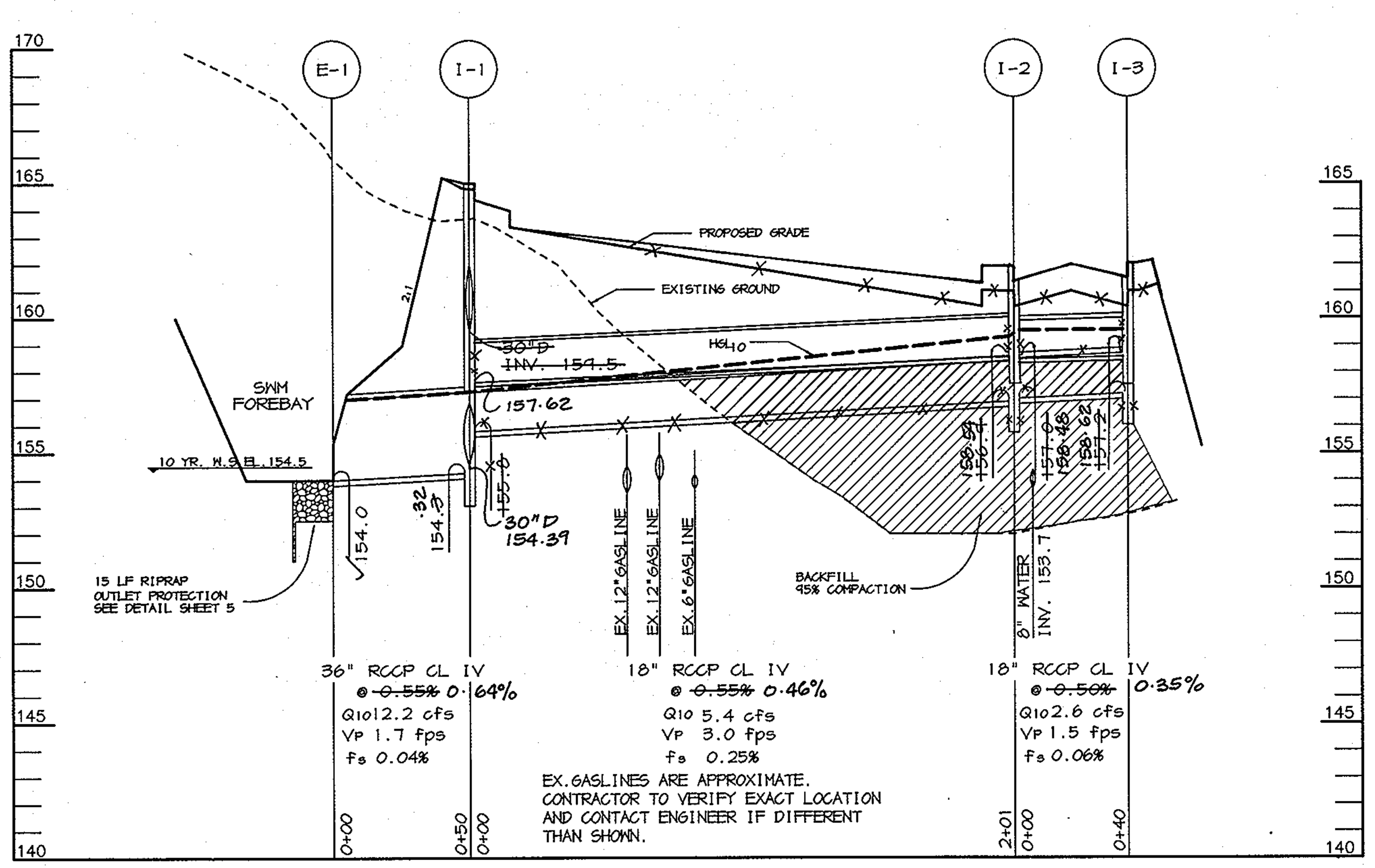
NOTES: * LOCATION OF "S" & WQ FACILITY INLETS AND MANHOLES IS AT CENTER OF TOP COVER; FOR "A" INLETS LOCATION IS GIVEN FOR CENTER OF THROAT OPENING AT FACE OF CURB;
FOR END SECTIONS AND HEADWALLS THE LOCATION IS CENTER OF THROAT OPENING AT FACE OF STRUCTURE.
TOP ELEVATION IS TOP OF CURB/GRATE/RIM.



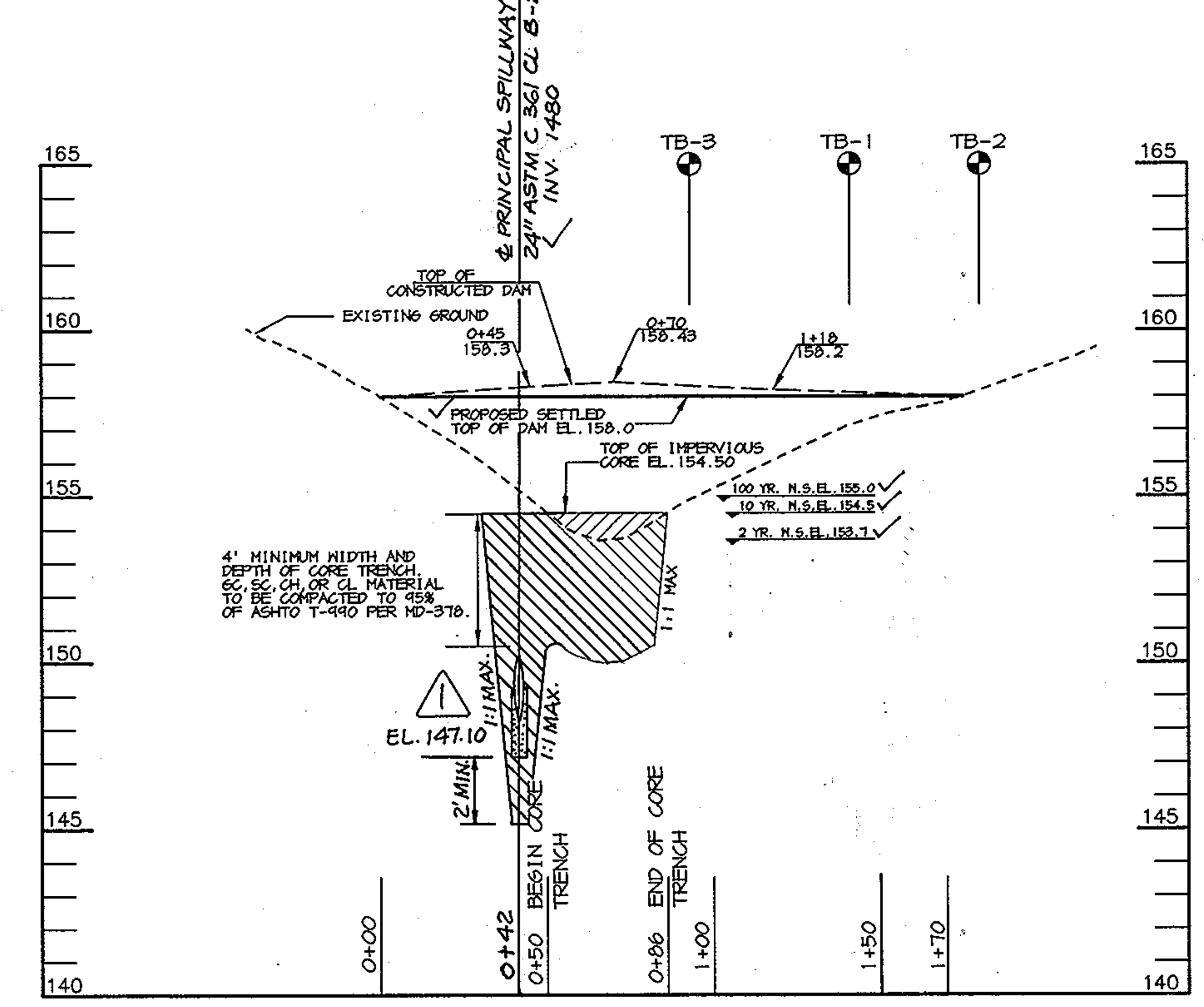
TWIN 8'X8' BOX CULVERT
SCALE : HOR. - 1"=50' VERT. - 1"=5'



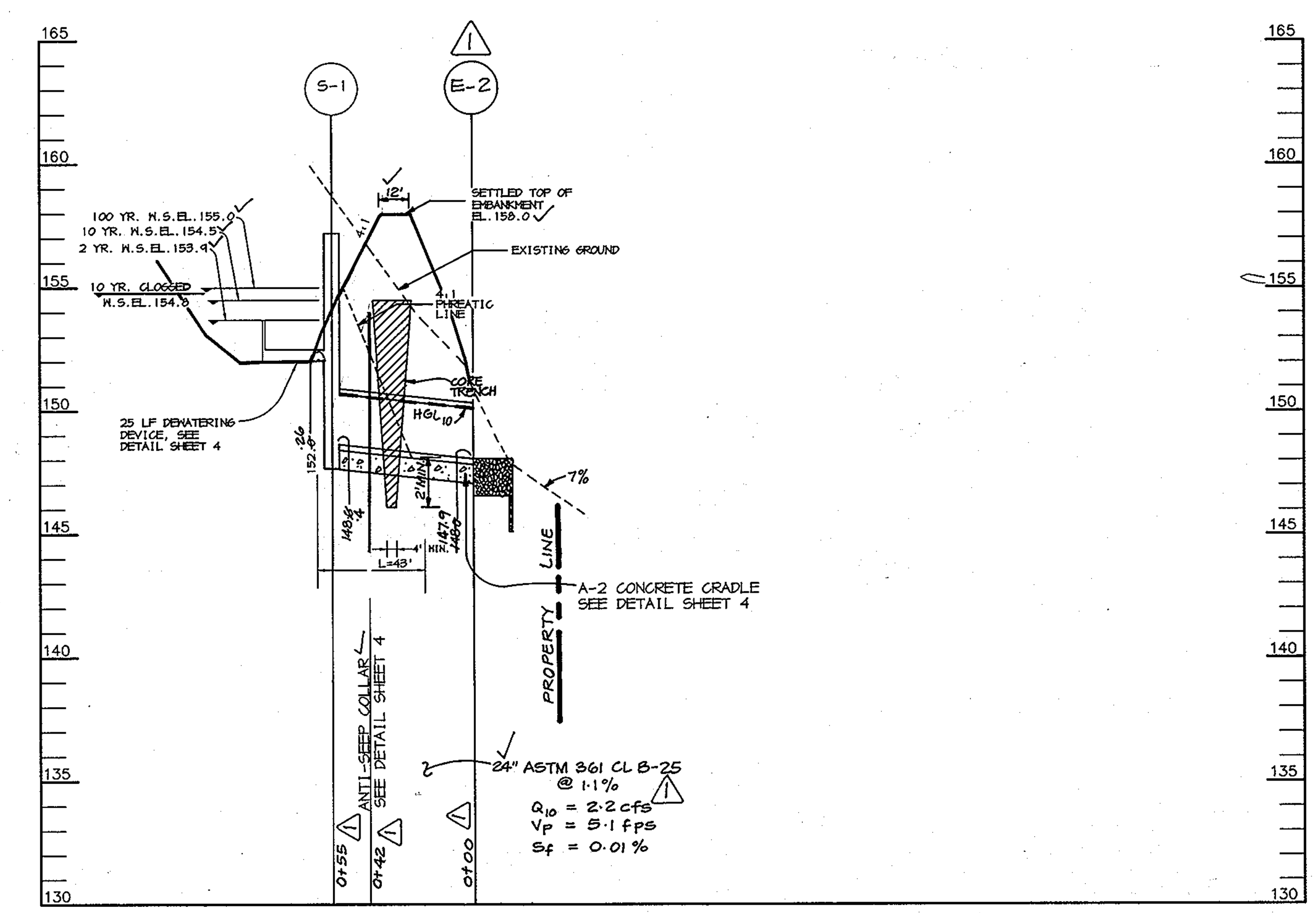
STORMDRAIN PROFILE
SCALE : HOR. - 1"=50' VERT. - 1"=5'



STORM DRAIN PROFILE
SCALE : HOR. - 1"=50' VERT. - 1"=5'



PROFILE ALONG EMBANKMENT CENTERLINE
SCALE : HOR. - 1"=50' VERT. - 1"=5'



PRINCIPAL SPILLWAY PROFILE
SCALE : HOR. - 1"=50' VERT. - 1"=5'

BY THE DEVELOPER :

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 THE ENVIRONMENT APPROVED TRAINING PROGRAM FOR THE CONTROL OF SEDIMENT AND EROSION BEFORE BEGINNING THE PROJECT. I ALSO AUTHORIZE PERIODIC ON-SITE INSPECTIONS BY THE HOWARD SOIL CONSERVATION DISTRICT.

DEVELOPER — DATE 7.12.00

BY THE ENGINEER :

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.

ENGINEER — DATE 7.12.00

THESE PLANS HAVE BEEN REVIEWED FOR THE HOWARD SOIL CONSERVATION DISTRICT AND MEET THE TECHNICAL REQUIREMENTS FOR SOIL EROSION AND SEDIMENT CONTROL.

NATURAL RESOURCES CONSERVATION SERVICE — DATE 7/25/00

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

HOWARD SOIL CONSERVATION DISTRICT — DATE 7/25/00

AS BUILT CERTIFICATE

CHRISTOPHER J. REID # 19949 — DATE 8.27.02

APPROVED : HOWARD COUNTY DEPARTMENT OF PUBLIC WORKS.

CHIEF, BUREAU OF HIGHWAYS — 7-20-00

APPROVED : HOWARD COUNTY DEPARTMENT OF PLANNING AND ZONING.

CHIEF, DIVISION OF LAND DEVELOPMENT — DATE 7/26/00

CHIEF, DEVELOPMENT ENGINEERING DIVISION — DATE 7/28/00

DATE	NO.	REVISION
3.20.02	⚠1	MODIFIED STRUCTURE AND PIPE SCHEDULES, PROFILES ALONG EMBANKMENT CENTERLINE AND PRINCIPAL SPILLWAY.

OWNER/DEVELOPER

TROY HILL BUSINESS PARK PARTNERSHIP
C/O MANEKIN CORPORATION
7165 COLUMBIA GATEWAY DRIVE
COLUMBIA, MARYLAND 21046

PROJECT
TROY HILL CORPORATE CENTER
PHASE III B

AREA
TAX MAP 37 ZONED M-1
1st ELECTION DISTRICT
HOWARD COUNTY, MARYLAND

TITLE
STORM DRAIN PROFILES AND NOTES

RIEMER MUEGGE & ASSOCIATES INC
ENGINEERING • ENVIRONMENTAL SERVICES • PLANNING • SURVEYING
8818 Centre Park Drive, Columbia, MD 21045
tel 410.997.8900 fax 410.997.9282

DATE

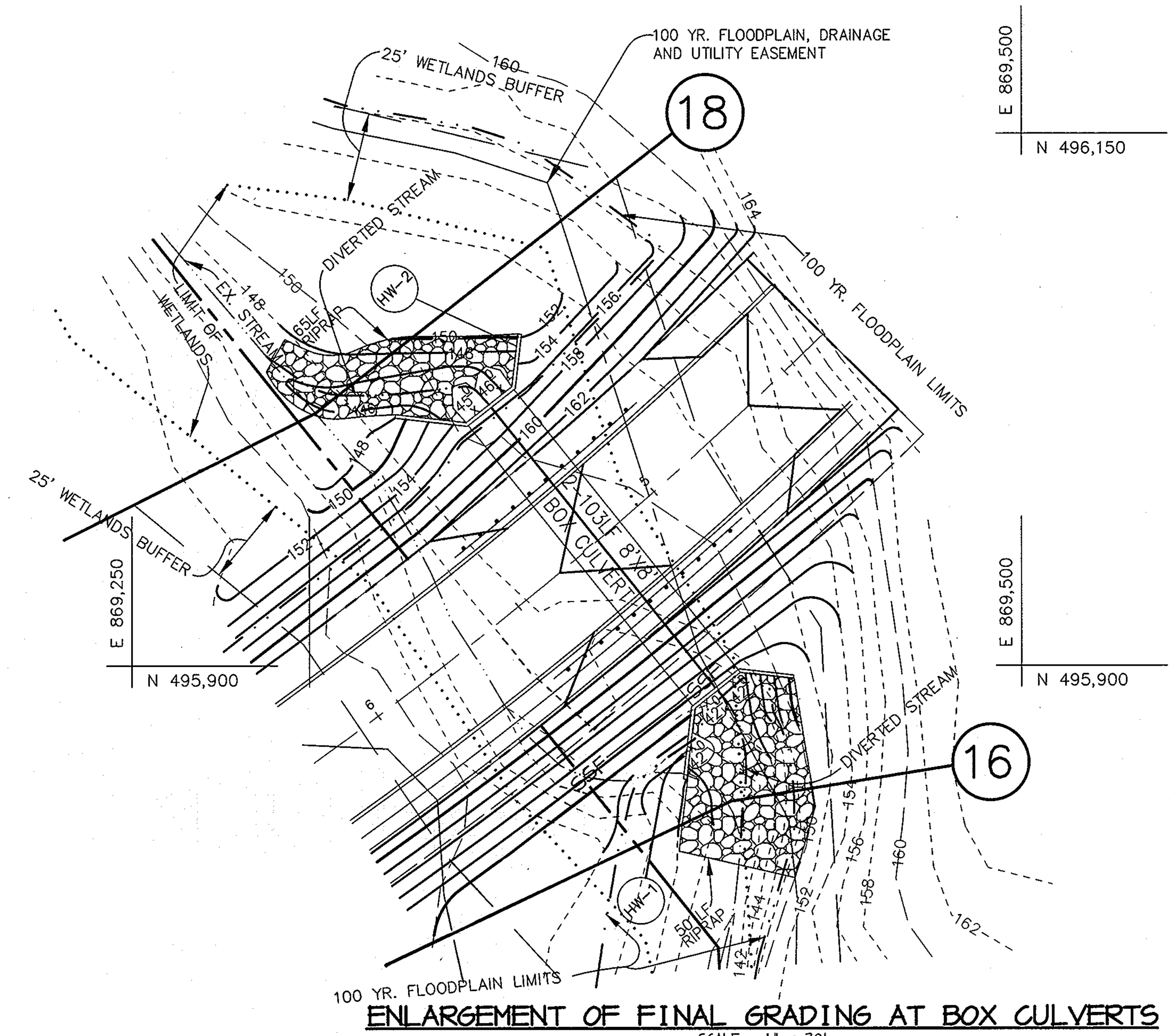
ARTHUR E. MUEGGE #8707

DESIGNED BY : C.J.R.
DRAWN BY : DAM
PROJECT NO : 98357 RD7B.DWG
DATE : JULY 12, 2000
SCALE : AS SHOWN
DRAWING NO. 6 OF 7

AS-BUILT 8-26-02 F-00-130

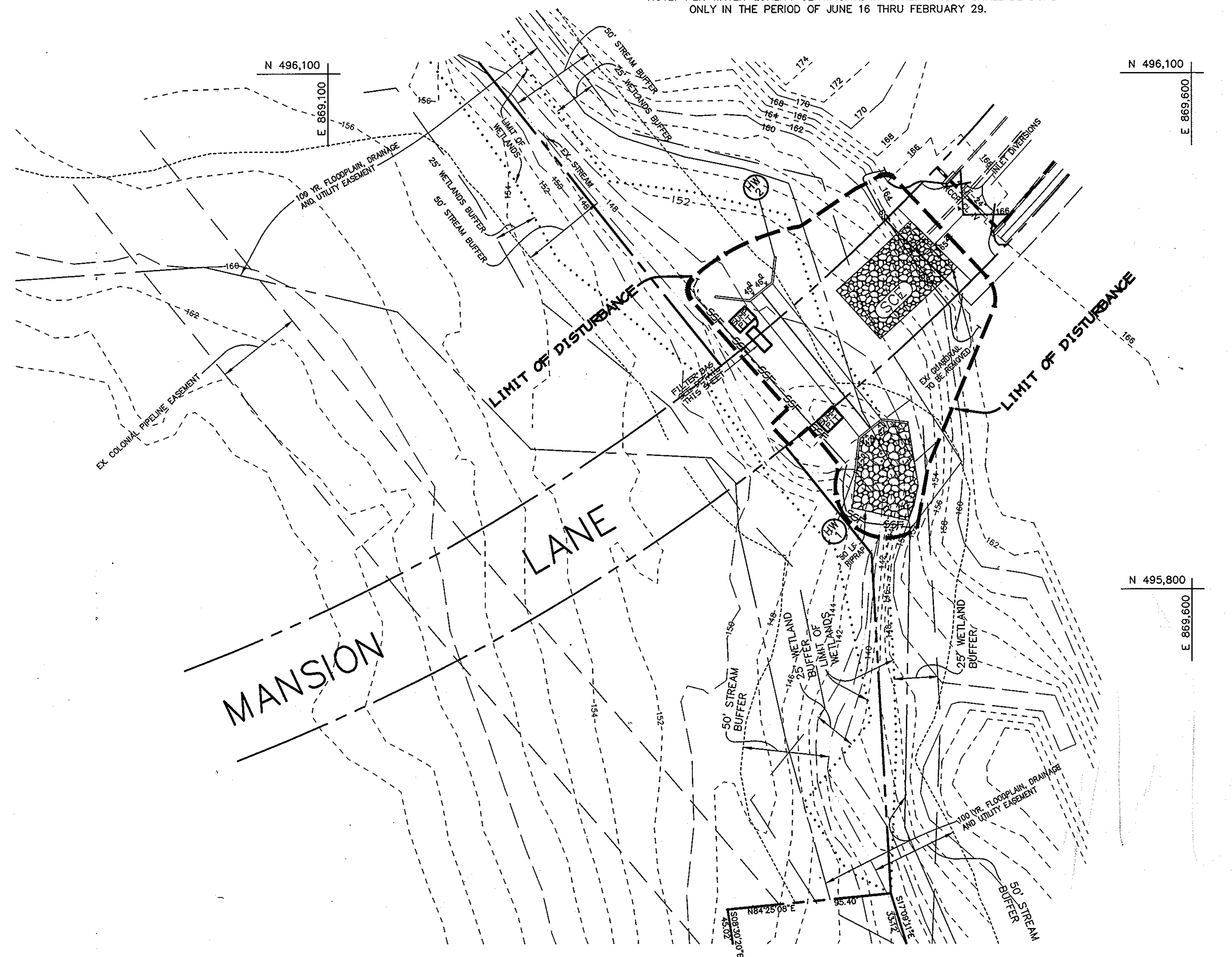
F:\PROJECT\98357\RD7B.dwg Wed Jul 12 13:23:14 2000 RIEMER MUEGGE & ASSOCIATES, INC.

NOTE: PER WATER QUALITY CERTIFICATE IN-STREAM WORK SHALL BE DONE ONLY IN THE PERIOD OF JUNE 16 THRU FEBRUARY 29.



ENLARGEMENT OF FINAL GRADING AT BOX CULVERTS

SCALE : 1" = 30'



INITIAL SEDIMENT CONTROL PHASE FOR BOX CULVERT

SCALE : 1" = 50'

HEADWALL GENERAL NOTES

SPECIFICATIONS

ASTM C789-90 STANDARD SPECIFICATION FOR PRECAST REINFORCED REINFORCED CONCRETE BOX SECTIONS

ASSHTO STANDARD SPECIFICATIONS FOR HIGHWAY BRIDGES

HS 20 VEHICLE LOADING

SOIL WEIGHT 120 LBS./Ft^3

CONCRETE

CULVERT CONCRETE STRENGTH 5000 PSI.

HEADWALL AND WINGWALL CONCRETE 3500 PSI.

REINFORCING STEEL

STEEL WELDED WIRE FABRIC SHALL CONFORM TO ASTM A 497 WITH STRESS AT 65000 PSI. REINFORCING STEEL SHALL CONFORM TO ASTM A 615, GRADE 60.

ALL SPLICES NOT SHOWN, SHALL BE LAPPED AS PER BAR LAP CHARTS.

MINIMUM COVER FOR ANY BAR SHALL BE 1-½" UNLESS OTHERWISE NOTED, WITH WITH THE EXCEPTION OF BARS AT THE BOTTOM OF ALL FOOTINGS SHALL HAVE A 3' MINIMUM COVER.

CHAMFER

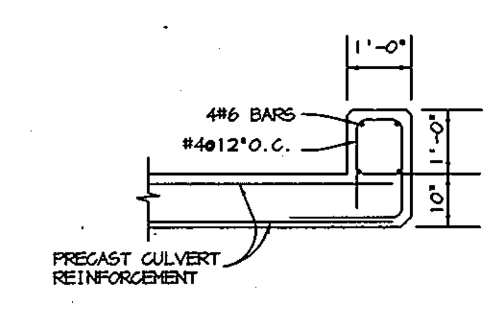
ALL EXPOSED CORNERS OF CONCRETE ON HEADWALLS SHALL BE CHAMFERED WITH ¾" BY ¾" MILLED CHAMFERED STRIPS, EXCEPT ON UNEXPOSED FOOTINGS OR WHERE INDICATED BY THE FOLLOWING NOTATION ON THE PLANS "DO NOT CHAMFER". SOFFIT ON CULVERT ENTRANCE AND EXIT TO HAVE 2"X 2" CHAMFER.

JOINTS

JOINTS BETWEEN PRECAST SECTIONS TO BE SEALED WITH MASTIC 305 OR SIMILAR.

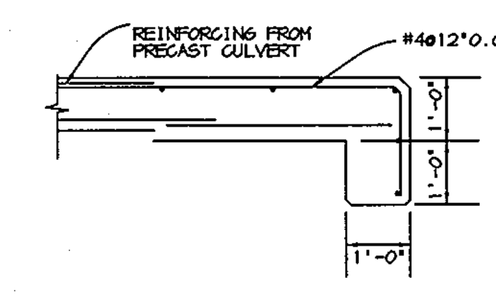
FIRST AND LAST PRECAST SECTION TO HAVE 12" OF WELDED WIRE FABRIC REINFORCEMENT EXPOSED TO ALLOW CAST IN PLACE HEADWALLS TO BE TIED INTO PRECAST UNITS.

THE SPACE BETWEEN THE PRECAST BOX CULVERTS TO BE GROUTED.



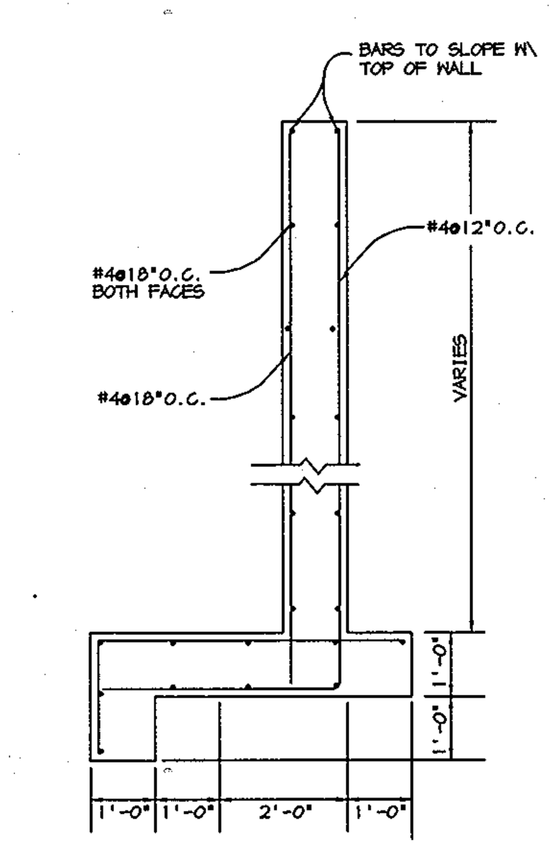
SECTION B-B

SCALE : 1" = 3'



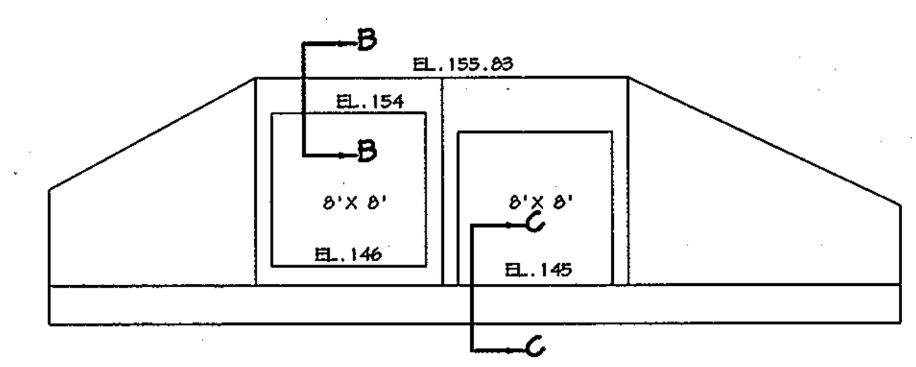
SECTION C-C

SCALE : 1" = 3'



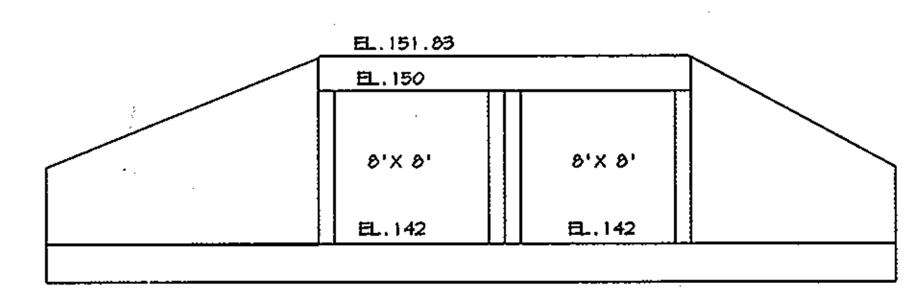
SECTION A-A

SCALE : 1" = 3'



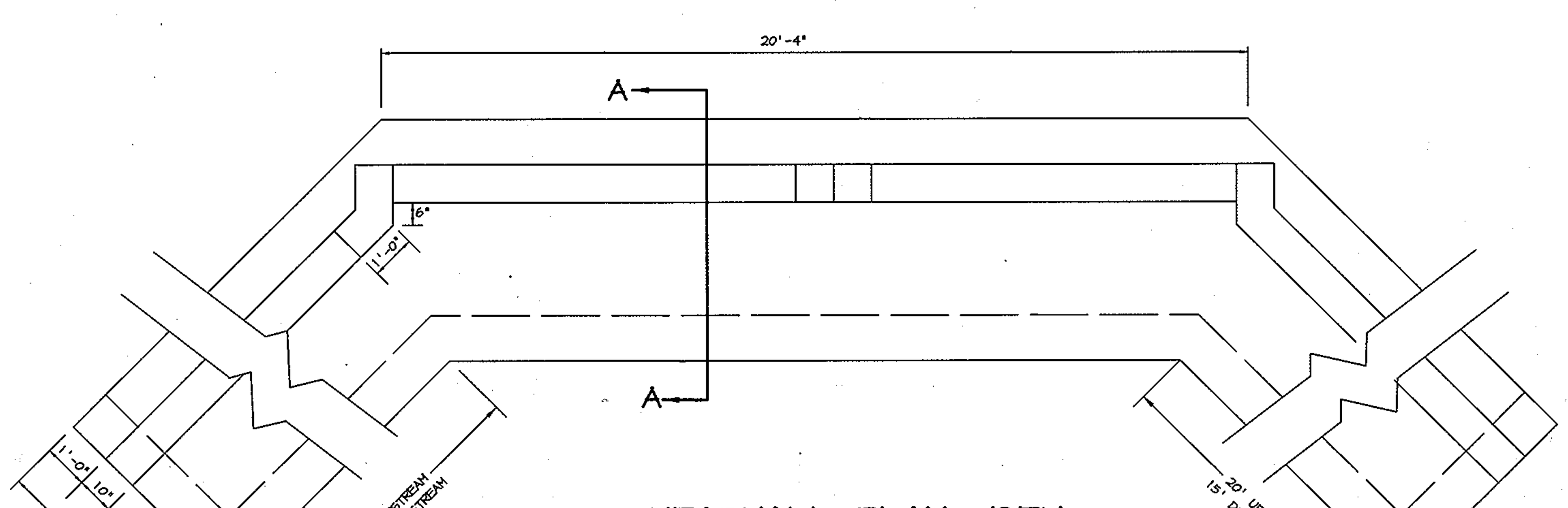
UP STREAM

SCALE : 1" = 5'



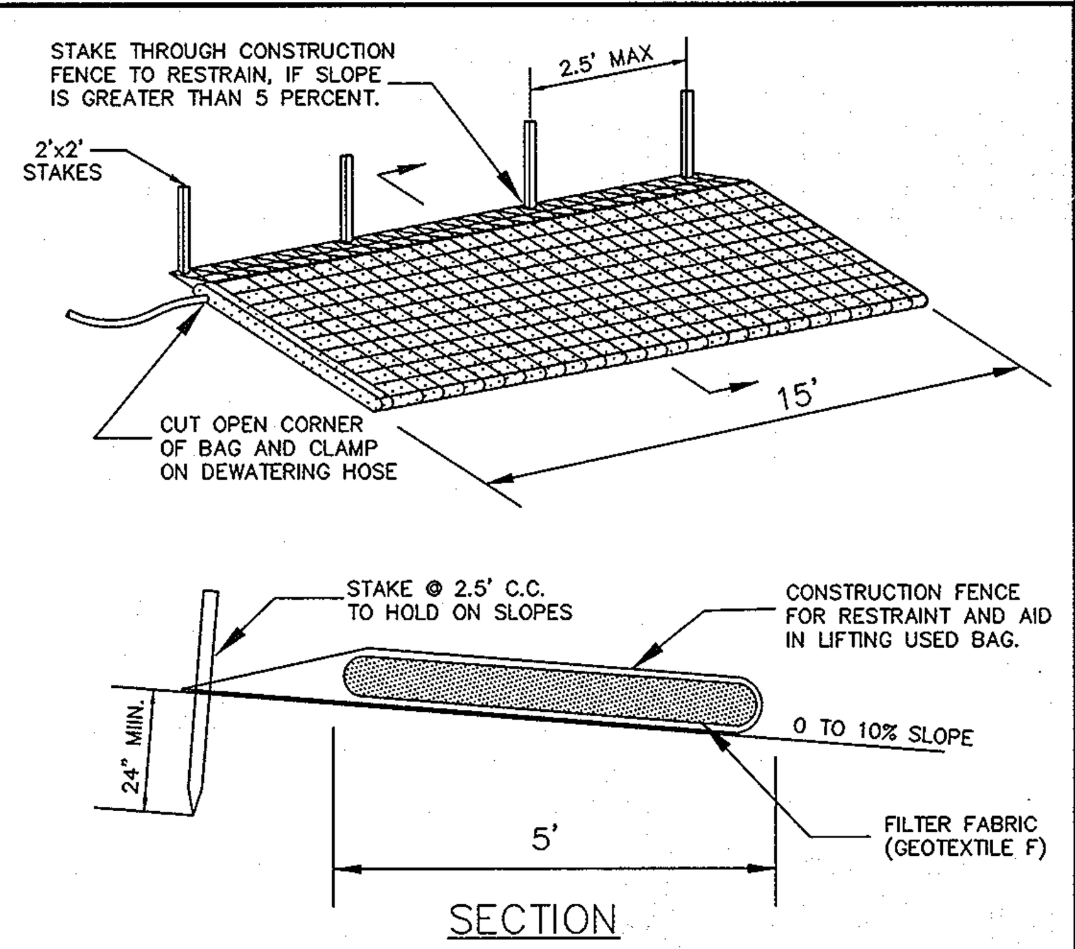
DOWN STREAM

SCALE : 1" = 5'



HEADWALL PLAN VIEW

SCALE : 1" = 3'



SECTION

NOTES;

1. FILTER BAG SHALL BE PLACED ON A SLOPING OR LEVEL WELL GRADED VEGETATED SITE SUCH THAT WATER WILL FLOW AWAY FROM DEVICE AND ANY WORK AREA.
2. WIDTH AND LENGTH SHALL BE AS SHOWN.
3. THE FILTER BAG MUST BE STAKED IN PLACE AND SECURED TO THE PUMP DISCHARGE LINE.
4. FILTER BAG SHALL NOT BE USED FOR DISCHARGE FLOWS GREATER THAN 300 GPM.
5. DEVICE SHALL BE REMOVED AND DISPOSED OF AFTER BAG IS FILLED WITH SEDIMENT. SEDIMENT FROM BAG SHALL BE SPREAD IN AN UPLAND AREA.
6. FILTER FABRIC SHALL MEET THE FOLLOWING REQUIREMENTS FOR GEOTEXTILE CLASS F;

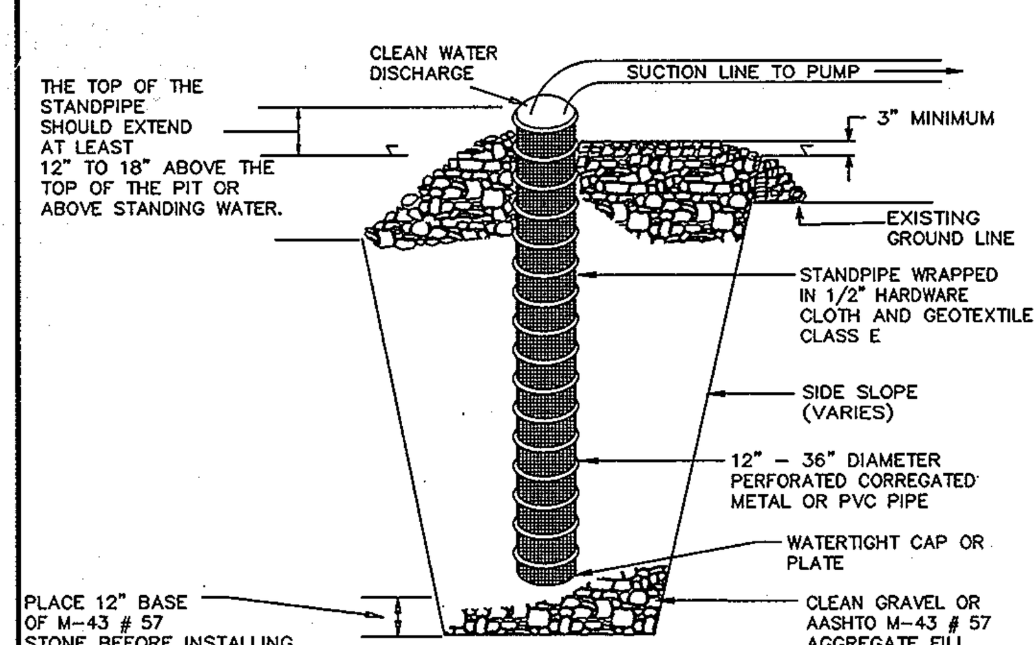
TENSILE STRENGTH	50 LBS/IN (MIN.)	TEST: MSMT 509
TENSILE MODULUS	20 LBS/IN (MIN.)	TEST: MSMT 509
FLOW RATE	0.3 GAL/FT^2/MINUTE (MAX.)	TEST: MSMT 322
FILTER EFFICIENCY	75% (MIN.)	TEST: MSMT 322

FILTER BAG

TEMPORARY EROSION CONTROL MEASURE (FB)

DRAWN BY: K.C.B.
CHECKED BY:
SCALE: NONE
FB

DETAIL 20B – SUMP PIT



CROSS SECTION

STANDARD SYMBOL

☒ SP

Construction Specifications

1. Pit dimensions are variable, with the minimum diameter being 2 times the standpipe diameter.

2. The standpipe should be constructed by perforating a 12" to 24" diameter corrugated or PVC pipe. Then wrapping with 1/2" hardware cloth and Geotextile Class E. The perforations shall be 1/2" x 6" slits or 1" diameter holes.

3. A base of filter material consisting of clean gravel or #57 stone should be placed in the pit to a depth of 12". After installing the standpipe, the pit surrounding the standpipe should then be backfilled with the same filter material.

4. The standpipe should extend 12" to 18" above the lip of the pit or the riser crest elevation (basin dewatering only) and the filter material should extend 3" minimum above the anticipated standing water elevation.

U.S. DEPARTMENT OF AGRICULTURE SOIL CONSERVATION SERVICE	PAGE D – 18 – 2	MARYLAND DEPARTMENT OF ENVIRONMENT WATER MANAGEMENT ADMINISTRATION

F:\PROJECT\HOCO\BLOCKS\FILTER_BAG

BY THE DEVELOPER :

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 THE ENVIRONMENT APPROVED TRAINING PROGRAM FOR THE CONTROL OF SEDIMENT AND EROSION BEFORE BEGINNING THE PROJECT. I ALSO AUTHORIZE PERIODIC ON-SITE INSPECTIONS BY THE HOWARD SOIL CONSERVATION DISTRICT.

DEVELOPER — DATE 7-12-00

BY THE ENGINEER :

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.

ENGINEER — DATE 7-12-00

THESE PLANS HAVE BEEN REVIEWED FOR THE HOWARD SOIL CONSERVATION DISTRICT AND MEET THE TECHNICAL REQUIREMENTS FOR SOIL EROSION AND SEDIMENT CONTROL.

NATURAL RESOURCES CONSERVATION SERVICE — DATE 7/25/00

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

HOWARD SOIL CONSERVATION DISTRICT — DATE 7/25/00

AS-BUILT CERTIFICATE

CHRISTOPHER J. REID # 19949 — DATE 8-27-02

APPROVED : HOWARD COUNTY DEPARTMENT OF PUBLIC WORKS.

CHIEF, BUREAU OF HIGHWAYS — 7-20-00

APPROVED : HOWARD COUNTY DEPARTMENT OF PLANNING AND ZONING.

CHIEF, DIVISION OF LAND DEVELOPMENT — DATE 7/26/00

CHIEF, DEVELOPMENT ce ENGINEERING DIVISION — DATE 7/28/00

DATE	NO.	REVISION
3-2002	1	MODIFIED HEADWALL DETAIL

OWNER/DEVELOPER

TROY HILL BUSINESS PARK PARTNERSHIP
C/O MANEKIN CORPORATION
7165 COLUMBIA GATEWAY DRIVE
COLUMBIA, MARYLAND 21046

PROJECT

TROY HILL CORPORATE CENTER PHASE III B

AREA

TAX MAP 37 ZONED M-1
1st ELECTION DISTRICT
HOWARD COUNTY, MARYLAND

TITLE

PHASING PLANS AND HEADWALL NOTES & DETAILS

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DRAWING NO. 7 OF 7

F:\PROJECT\98357\RDBB.DWG Wed Jul 12 13:23:53 2000 RIEMER MUEGGE & ASSOCIATES, INC.

AS-BUILT 8-26-02 F-00-130