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# FINAL ROAD CONSTRUCTION, GRADING AND STORM WATER MANAGEMENT PLANS FOR G.T.W.'S WAVERLY WOODS SECTION 8 BIRMINGHAM WAY ZONING: R-SA-8, PEC & B-1 TAX MAP NO. 16 PARCEL NO. 21 THIRD ELECTION DISTRICT HOWARD COUNTY, MARYLAND

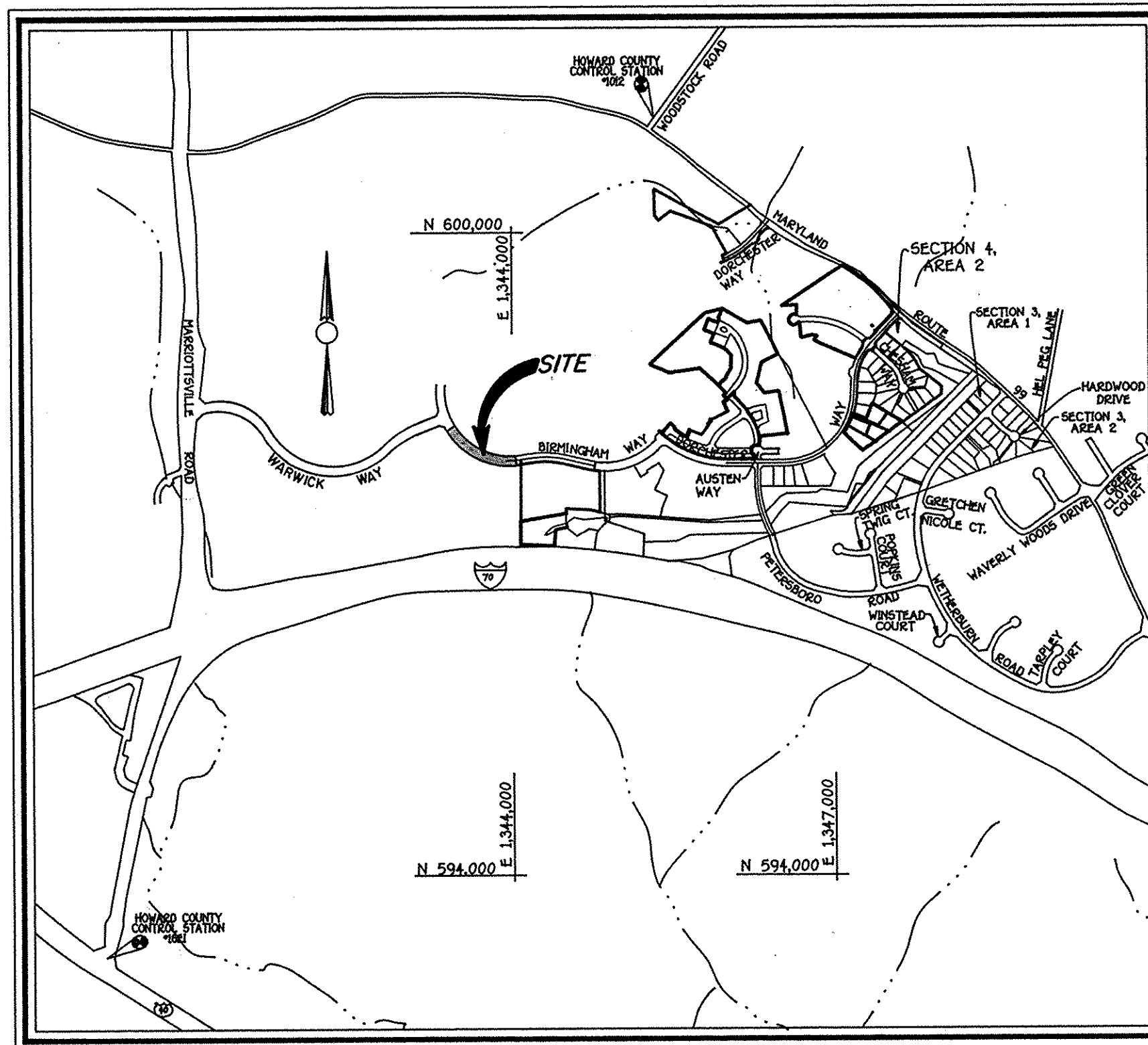
APPROVED: DEPARTMENT OF PUBLIC WORKS  
*Charles U. Crovo, Sr.* 12-30-97  
 CHIEF, BUREAU OF HIGHWAYS 105 DATE

APPROVED: DEPARTMENT OF PLANNING AND ZONING  
*Cindy Hamilton* 1/9/98  
 CHIEF, DIVISION OF LAND DEVELOPMENT AND RECREATION 119 DATE

*John D. ...* 1/7/98  
 CHIEF, DEVELOPMENT ENGINEERING DIVISION 61 DATE

STREET LIGHT CHART			
STREET NAME	STATION	OFF-SET	FIXTURE/POLE TYPE
BIRMINGHAM WAY	19+70	26'L	150-WATT HPS VAPOR PENDANT FIXTURE (CUTOFF) MOUNTED ON A 30 FOOT GALVANIZED STEEL POLE
BIRMINGHAM WAY	19+50	22'L	150-WATT HPS VAPOR PENDANT FIXTURE (CUTOFF) MOUNTED ON A 30 FOOT GALVANIZED STEEL POLE

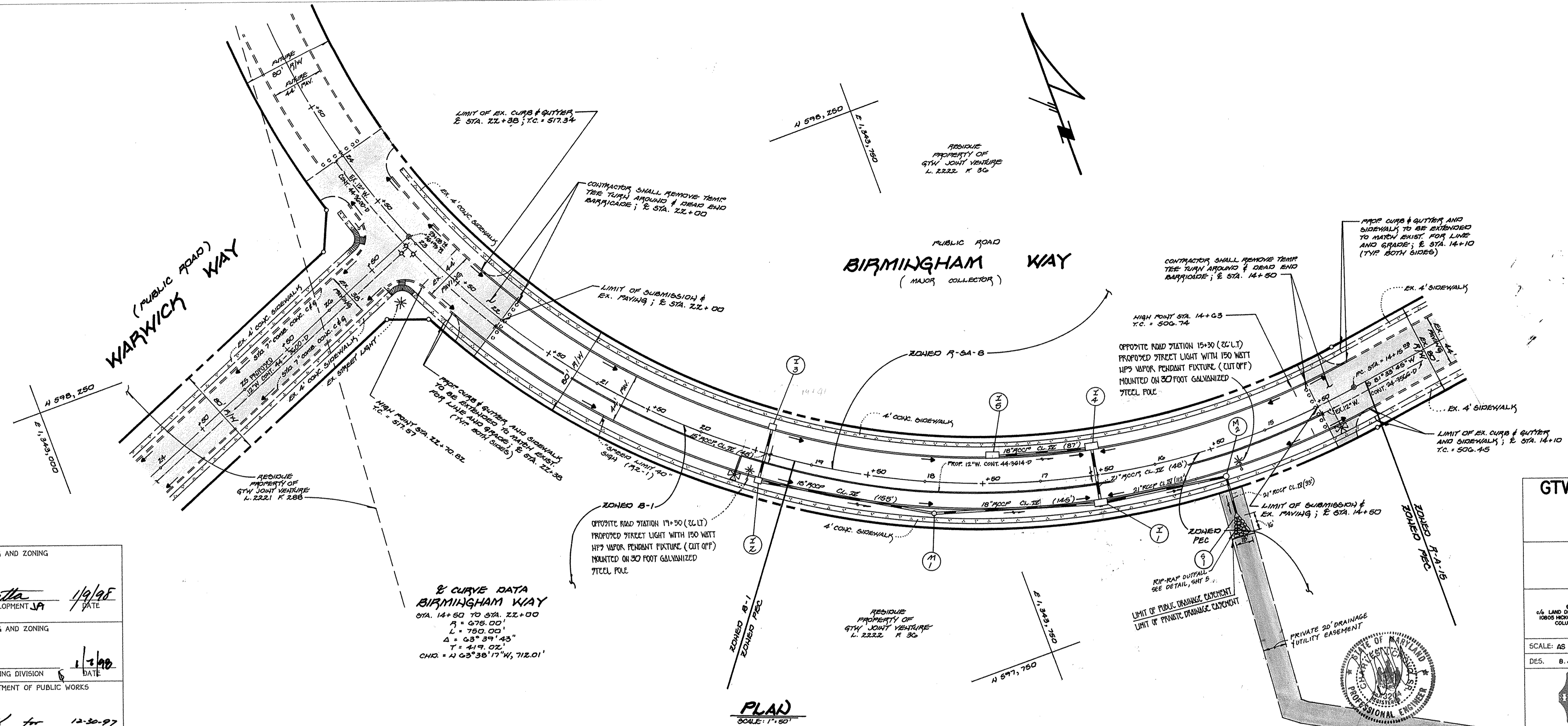
TRAFFIC CONTROL SIGNS				
STREET NAME	STATION	OFFSET	POSTED SIGN	SIGN CODE
BIRMINGHAM WAY	20+80	26'L	SPEED LIMIT 40	R2-1



VICINITY MAP  
SCALE: 1" = 1200'

### GENERAL NOTES

- UNLESS OTHERWISE NOTED, ALL CONSTRUCTION IS TO BE IN ACCORDANCE WITH THE FOLLOWING:
    - HOWARD COUNTY STANDARD SPECIFICATION AND DETAILS FOR CONSTRUCTION VOLUME IV.
    - MARYLAND STATE HIGHWAY ADMINISTRATION STANDARD SPECIFICATIONS FOR CONSTRUCTION AND MATERIALS, AS AMENDED.
    - SOIL CONSERVATION SERVICE 1983 MARYLAND STANDARD AND SPECIFICATIONS FOR SOIL EROSION AND SEDIMENT CONTROL.
    - SOIL CONSERVATION SERVICE 1993 MARYLAND STANDARDS AND SPECIFICATION FOR POND CONSTRUCTION (CODE 370)
    - EXISTING UTILITIES ARE BASED ON FIELD RUN TOPOGRAPHY.
  - THE CONTRACTOR SHALL NOTIFY THE DEPARTMENT OF PUBLIC WORKS, DIVISION OF CONSTRUCTION INSPECTION AT 410-313-1880 AT LEAST (5) WORKING DAYS PRIOR TO THE START OF CONSTRUCTION.
  - THE CONTRACTOR SHALL NOTIFY "THIS UTILITY" AT 1-800-257-7777 AT LEAST 48 HOURS PRIOR TO ANY EXCAVATION.
  - 2 FOOT COUNTOUR TOPOGRAPHY AND EXISTING CONDITIONS BASED ON AERIAL TOPOGRAPHIC SURVEY PREPARED BY PHOTO-SCIENCE, INC. FLOWN ON FEBRUARY 2, 1989.
  - STORMWATER MANAGEMENT FOR THIS DEVELOPMENT WAS PROVIDED UNDER F-96-197 AND APPROVED.
  - HORIZONTAL AND VERTICAL DATUMS BASED ON HOWARD COUNTY CONTROL STATIONS NO. 1012 AND NO. 16E1  
 HOWARD COUNTY MONUMENT 1012 N 600050.177 ELEV. = 445.577  
 E 1344100.0  
 HOWARD COUNTY MONUMENT 16E1 N 593250.9322 ELEV. = 509.924  
 E 1340192.710
  - NOISE STUDY WAS PROVIDED BY Wildman Environmental Services, Inc. AND APPROVED ON NOV. 1, 1994.
  - FOREST DELINEATION WAS PROVIDED BY ENVIRONMENTAL SYSTEMS ANALYSIS, INC. AND APPROVED ON 11-30-93.
  - THE 100 YR. FLOODPLAIN AS SHOWN ON THESE PLANS ARE BASED ON THE ENCLOSED FLOODPLAIN STUDY THAT WAS PROVIDED BY Milderburg Associates, Inc. STUDY WAS APPROVED AT PRELIMINARY STAGE ON 3-3-95.
  - THE WETLANDS STUDY WAS PREPARED BY Exploration Research, Inc. AND WAS COMPILED ON 9/5/94.
  - THE TRAFFIC STUDY WAS PROVIDED BY The Traffic Group AND APPROVED ON 7-14-94.
  - THE SOILS INVESTIGATION REPORT WAS PREPARED BY I.T.E., Inc. ON JUNE 28, 1994.
- THE SKETCH PLAN S 94-07 WAS APPROVED ON 11/30/93.
  - TRAFFIC CONTROL DEVICES, MARKINGS AND SIGNING SHALL BE IN ACCORDANCE WITH THE LATEST EDITION OF THE MANUAL OF UNIFORM TRAFFIC CONTROL DEVICES (MUTCD). ALL STREET AND REGULATORY SIGNS SHALL BE IN PLACE PRIOR TO THE PLACEMENT OF ANY ASPHALT.
  - 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 (JUNE, 1993)."
  - A MINIMUM SPACING OF 20' SHALL BE MAINTAINED BETWEEN ANY STREET LIGHT AND ANY TREE.
  - PUBLIC WATER AND PUBLIC SEWER WILL BE USED WITHIN THIS DEVELOPMENT. CONTRACT NO. 44-3614-D. DRAINAGE AREA IS THE LITTLE PATUXENT.
  - EXISTING UTILITIES ARE BASED ON CONTRACT NO. 24-1962-D AND CONTRACT NO. 44-3614-D.
  - PERMITS APPLICABLE FOR THIS SUBDIVISION ARE AS FOLLOWS:  
 WETLAND PERMIT AUTHORIZATION NO. - CENAB-OP-RP(G.T.W. PROPERTY) 91-0921-5  
 MDE WATER QUALITY CERTIFICATION NO. - 91-WQ-0488 AND MDE WATER MANAGEMENT ADMINISTRATION LETTER OF RECEIPT TRACKING NO.'S - 199100921 AND 199191509 (91-WC-0812).
  - TOTAL AREA OF SUBMISSION = 1.377 AC.  
 A. TOTAL AREA ZONED B-1 = 0.270 AC.  
 B. TOTAL AREA ZONED R-SA-B = 0.668 AC.  
 C. TOTAL AREA ZONED PEC = 0.439 AC.
  - TABULATION  
 A. TOTAL AREA OF ROADWAY = 1.377 AC.



**2 CURVE DATA  
BIRMINGHAM WAY**  
 STA. 14+50 TO STA. 22+00  
 $R = 678.00'$   
 $L = 750.00'$   
 $\Delta = 68^{\circ}39'43''$   
 $T = 419.02'$   
 $CHD. = N 63^{\circ}38'17'' W, 712.01'$

**PLAN**  
 SCALE: 1" = 50'

**GTW'S WAVERLY WOODS**  
 SECTION 8  
 BIRMINGHAM WAY  
 ZONING: R-SA-8, PEC & B-1  
 THIRD ELECTION DISTRICT  
 HOWARD COUNTY, MARYLAND

**BIRMINGHAM WAY**  
 PLAN & PROFILE

**OWNER**  
 GTW JOINT VENTURE  
 66 LAND DESIGN AND DEVELOPMENT, INC.  
 1200 HICKORY RIDGE ROAD, SUITE 212  
 COLUMBIA, MARYLAND 21044

**DEVELOPER**  
 WAVERLY WOODS DEVELOPMENT CORPORATION  
 66 LAND DESIGN AND DEVELOPMENT, INC.  
 1200 HICKORY RIDGE ROAD, SUITE 212  
 COLUMBIA, MARYLAND 21044

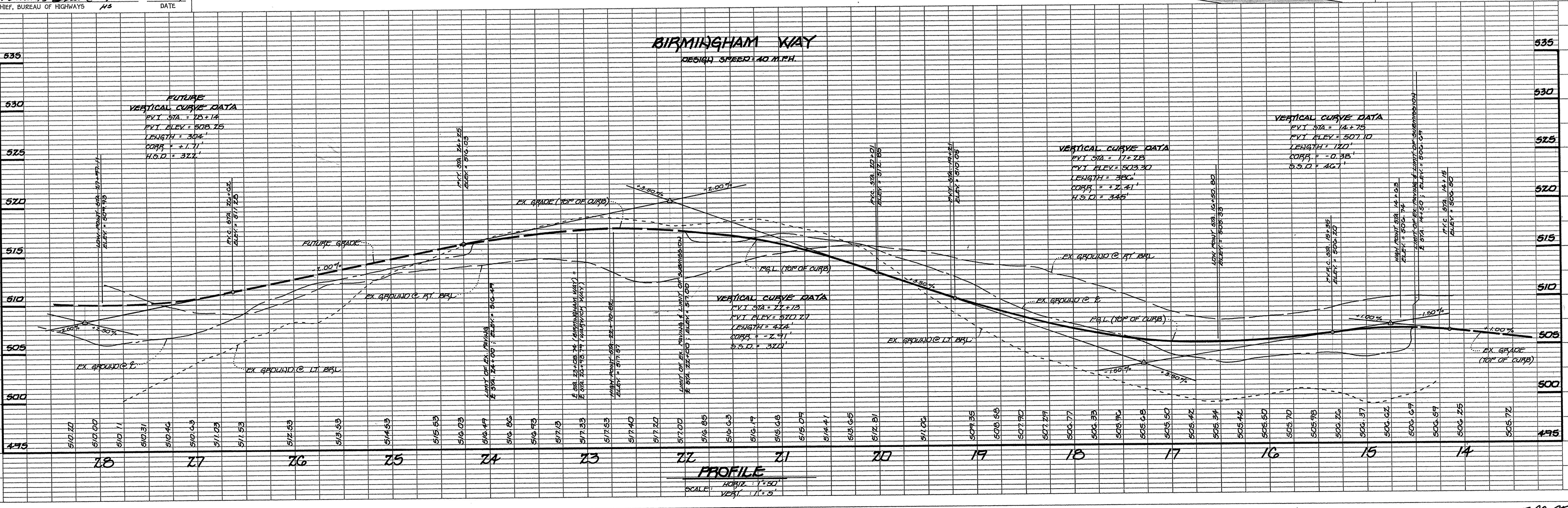
SCALE: AS SHOWN DATE: AUG. 29, 1997 DWG. NO. 2 OF 7  
 DES. B. J. K. DRN. J. C. L. CHK. C. J. C.

**FISHER, COLLINS & CARTER, INC.**  
 CIVIL ENGINEERING CONSULTANTS & LAND SURVEYORS  
 CENTENNIAL SQUARE OFFICE PARK - 10272 BALTIMORE NATIONAL PkE  
 ELLICOTT CITY, MARYLAND 21114  
 (410) 481-0295

APPROVED: DEPARTMENT OF PLANNING AND ZONING  
*Candy Hammita* 1/9/98  
 CHIEF, DIVISION OF LAND DEVELOPMENT, PLANNING AND RESEARCH DATE

APPROVED: DEPARTMENT OF PLANNING AND ZONING  
*Muhammad* 1/3/98  
 CHIEF, DEVELOPMENT ENGINEERING DIVISION DATE

APPROVED: HOWARD COUNTY DEPARTMENT OF PUBLIC WORKS  
*Howard Schick Jr* 12-30-97  
 CHIEF, BUREAU OF HIGHWAYS HS DATE



**PROFILE**  
 HORIZ. SCALE: 1" = 50'  
 VERT. SCALE: 1" = 5'

STREET TREE SCHEDULE			
SYMBOL	BOTANICAL AND COMMON NAME	SIZE	COMMENTS
+	QUERCUS COCCINEA (SCARLET OAK)	2 1/2" - 3" CALIPERS	40' APART ON PUBLIC R/W

NOTE: STREET TREES ARE ONLY A RECOMMENDATION. THIS MAY BE REVISED TO A COUNTY ACCEPTABLE EQUIVALENT.  
TOTAL NUMBER OF TREES: 40 STREET TREES

**ENGINEER'S CERTIFICATE**  
I HEREBY CERTIFY THAT THIS PLAN FOR EROSION AND SEDIMENT CONTROL REPRESENTS A PRACTICAL AND WORKABLE PLAN BASED ON MY PERSONAL KNOWLEDGE OF THE SITE CONDITION AND THAT IT WAS PREPARED IN ACCORDANCE WITH THE REQUIREMENTS OF THE HOWARD SOIL CONSERVATION DISTRICT.  
SIGNATURE OF ENGINEER: *[Signature]* DATE: 8/29/97

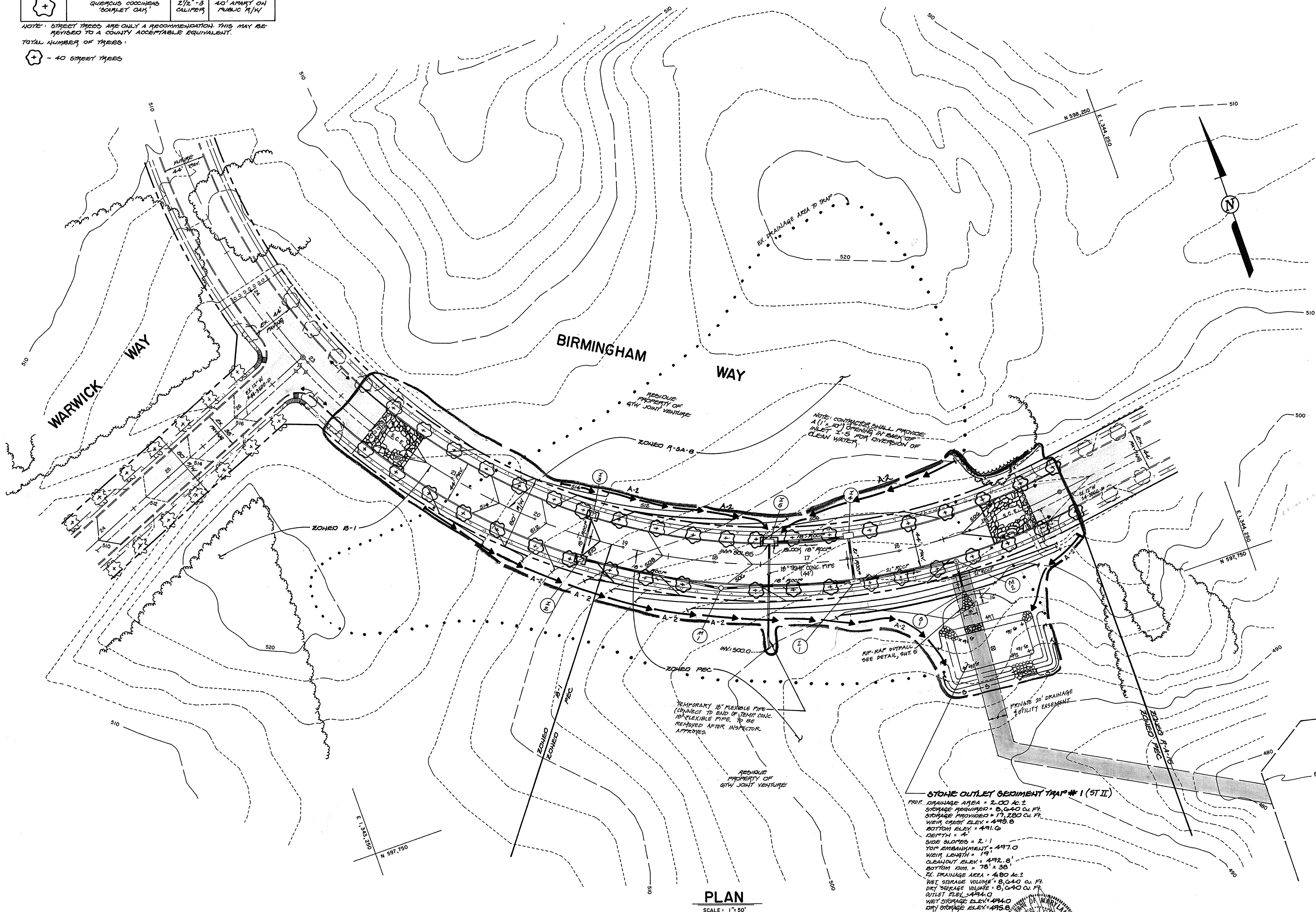
**DEVELOPER'S CERTIFICATE**  
I/WE CERTIFY THAT ALL DEVELOPMENT AND CONSTRUCTION WILL BE DONE ACCORDING TO THIS PLAN OF DEVELOPMENT AND PLAN FOR EROSION AND SEDIMENT CONTROL AND THAT ALL RESPONSIBLE PERSONNEL INVOLVED IN THE CONSTRUCTION PROJECT WILL HAVE A CERTIFICATE OF ATTENDANCE AT A DEPARTMENT OF NATURAL RESOURCES APPROVED TRAINING PROGRAM FOR THE CONTROL OF SEDIMENT AND EROSION BEFORE BEGINNING THE PROJECT. I ALSO AUTHORIZE PERIODIC ON-SITE INSPECTION BY THE HOWARD SOIL CONSERVATION DISTRICT OR THEIR AUTHORIZED AGENTS, AS ARE DEEMED NECESSARY.  
SIGNATURE OF DEVELOPER: *[Signature]* DATE: 8/29/97

REVIEWED FOR HOWARD COUNTY SOIL CONSERVATION DISTRICT AND MEETS TECHNICAL REQUIREMENTS.  
SIGNATURE: *[Signature]* DATE: 10/10/97  
U.S.D.A. - NATURAL RESOURCES CONSERVATION SERVICE

THIS DEVELOPMENT IS APPROVED FOR EROSION AND SEDIMENT CONTROL BY THE HOWARD SOIL CONSERVATION DISTRICT.  
APPROVED: *[Signature]* DATE: 12/6/97  
DISTRICT HOWARD SOIL CONSERVATION DISTRICT

APPROVED: DEPARTMENT OF PLANNING AND ZONING  
*[Signature]* DATE: 1/9/98  
CHIEF, DIVISION OF LAND DEVELOPMENT AND RESEARCH

APPROVED: HOWARD COUNTY DEPARTMENT OF PUBLIC WORKS  
*[Signature]* DATE: 12-30-97  
CHIEF, BUREAU OF HIGHWAYS



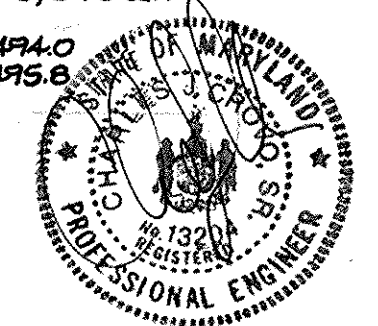
**LEGEND**

— S — S —	SILT FENCE
— X — X —	TREE PROTECTION FENCE
— A-1 — A-1 —	EARTH DIKE
—	LIMIT OF DISTURBANCE
[Hatched Box]	STABILIZED CONSTRUCTION ENTRANCE
[Square]	INLET PROTECTION
[Star]	EX. STREET TREE
[Star]	PROP. STREET TREE
—	PROP. DRAINAGE TO TRAP
•••••	EX. DRAINAGE TO TRAP
□	RPS (SUMM. PIT)

**FISHER, COLLINS & CARTER, INC.**  
CIVIL ENGINEERING CONSULTANTS & LAND SURVEYORS  
CENTRAL SQUARE OFFICE PARK • 10270 BALTIMORE NATIONAL FREE  
ELLSWORTH CITY, MARYLAND 21042  
410 461 - 2205

**OWNER**  
GTW JOINT VENTURE  
C/O LAND DESIGN AND DEVELOPMENT, INC.  
10805 HICKORY RIDGE ROAD  
SUITE 215  
COLUMBIA, MARYLAND 21044

**DEVELOPER**  
WAVERLY WOODS DEVELOPMENT CORPORATION  
C/O LAND DESIGN AND DEVELOPMENT, INC.  
10805 HICKORY RIDGE ROAD  
SUITE 215  
COLUMBIA, MARYLAND 21044



**STREET TREE, GRADING AND SEDIMENT CONTROL PLAN**  
**GTW'S WAVERLY WOODS SECTION 8**  
BIRMINGHAM WAY  
ZONING: R-SA-B, PEC & B-1  
THIRD ELECTION DISTRICT  
HOWARD COUNTY, MARYLAND  
DATE: AUGUST 29, 1997  
SHEET 3 OF 7

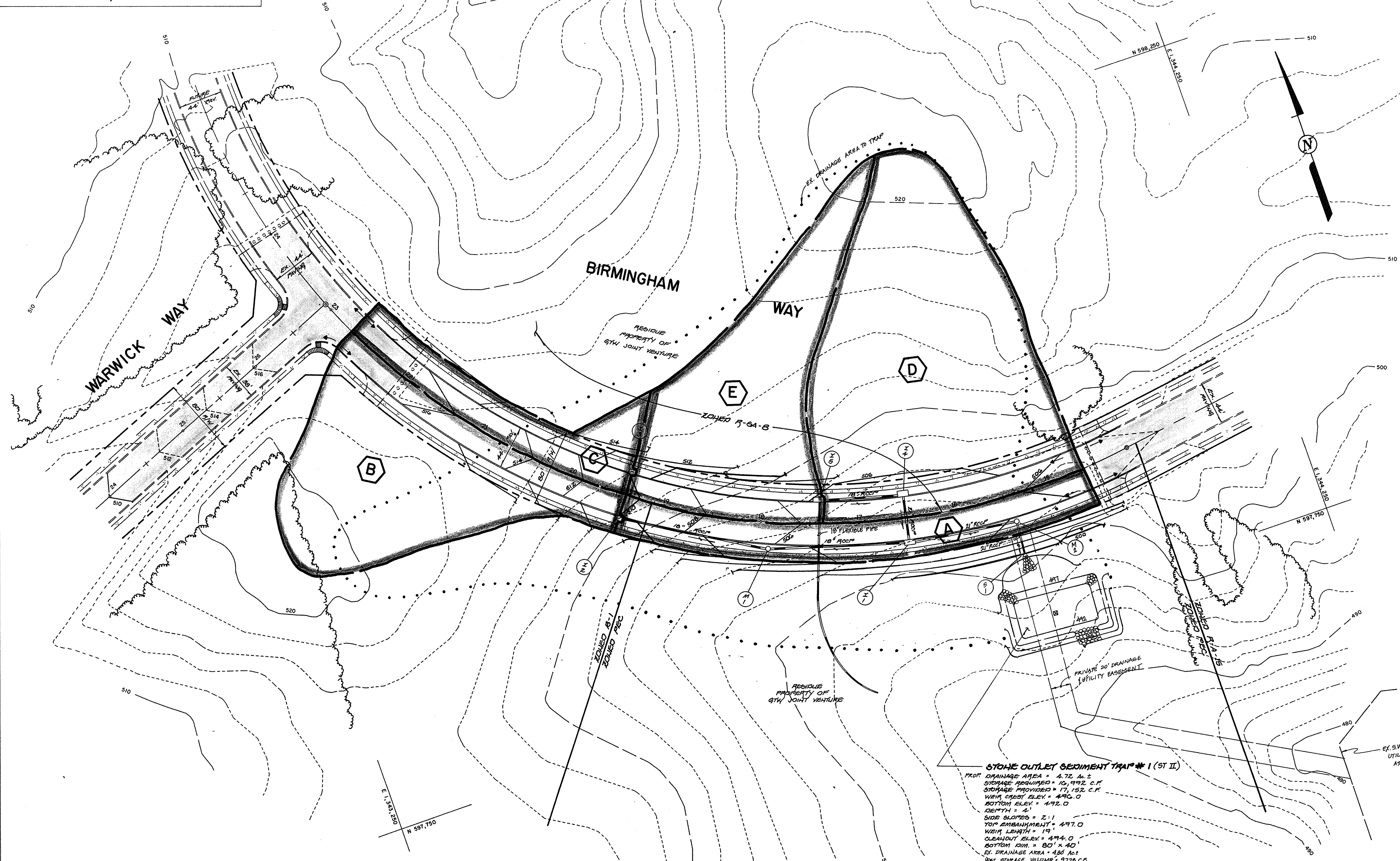
*Cinda Hamilton* 4/9/98  
 CHIEF, DIVISION OF LAND DEVELOPMENT AND RECREATION DATE

*Chris Damann* 1/7/98  
 CHIEF, DEVELOPMENT ENGINEERING DIVISION DATE

APPROVED: HOWARD COUNTY DEPARTMENT OF PUBLIC WORKS

*Howard S. H. for* 12-20-97  
 CHIEF, BUREAU OF HIGHWAYS DATE

DRAINAGE AREA DATA					
STRUCTURE NO.	DRAINAGE AREA	AREA	'C'	ZONING	% IMP
I - 1	A	0.44 Ac.	0.66	PEC	59%
I - 2	B	1.03 Ac.	0.35	PEC	15%
I - 3	C	0.36 Ac.	0.52	R-SA-B	39%
I - 4	D	1.63 Ac.	0.30	R-SA-B	7%
I - 5	E	0.94 Ac.	0.32	R-SA-B	11%



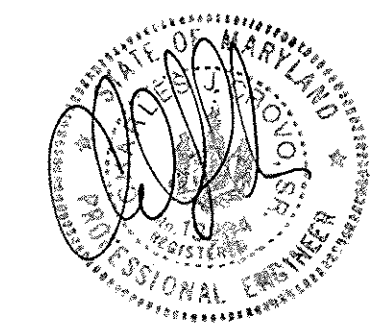
**STONE OUTLET SEDIMENT TRAP #1 (ST II)**  
 PROF. DRAINAGE AREA = 4.72 Ac.±  
 STORAGE REQUIRED = 10,992 C.F.  
 STORAGE PROVIDED = 11,150 C.F.  
 W/M CRUST ELEV. = 490.0  
 BOTTOM ELEV. = 492.0  
 DEPTH = 4'  
 SIDE SLOPES = 2:1  
 TOP EMBANKMENT = 497.0  
 W/M LENGTH = 19'  
 CLEANOUT ELEV. = 494.0  
 BOTTOM CHM. = 30' x 40'  
 EX. DRAINAGE AREA = 4.85 Ac.±  
 NET STORAGE VOLUME = 9728 C.F.  
 DRY STORAGE VOLUME = 15,760 C.F.  
 OUTLET DIA. = 48"±

**PLAN**  
 SCALE: 1" = 50'

**FISHER, COLLINS & CARTER, INC.**  
 CIVIL ENGINEERING CONSULTANTS & LAND SURVEYORS  
 COTTAGE SQUARE OFFICE PARK - 18075 BALTIMORE NATIONAL PIKE  
 ELICOTT CITY, MARYLAND 21041  
 410.481.2005

**OWNER**  
 GTW JOINT VENTURE  
 C/O LAND DESIGN AND DEVELOPMENT, INC.  
 10805 HICKORY RIDGE ROAD  
 SUITE 215  
 COLUMBIA, MARYLAND 21044

**DEVELOPER**  
 WAVERLY WOODS DEVELOPMENT CORPORATION  
 C/O LAND DESIGN AND DEVELOPMENT, INC.  
 10805 HICKORY RIDGE ROAD  
 SUITE 215  
 COLUMBIA, MARYLAND 21044



**DRAINAGE AREA MAP**  
**GTW'S WAVERLY WOODS**  
 SECTION 8  
 BIRMINGHAM WAY  
 ZONING: R-SA-B, PEC B B-1  
 THIRD ELECTION DISTRICT  
 HOWARD COUNTY, MARYLAND  
 DATE: AUGUST 25, 1997  
 SHEET 4 OF 7

APPROVED: DEPARTMENT OF PLANNING AND ZONING

*Conda Hamilton* 1/2/98  
 CHIEF, DIVISION OF LAND DEVELOPMENT  
 DATE

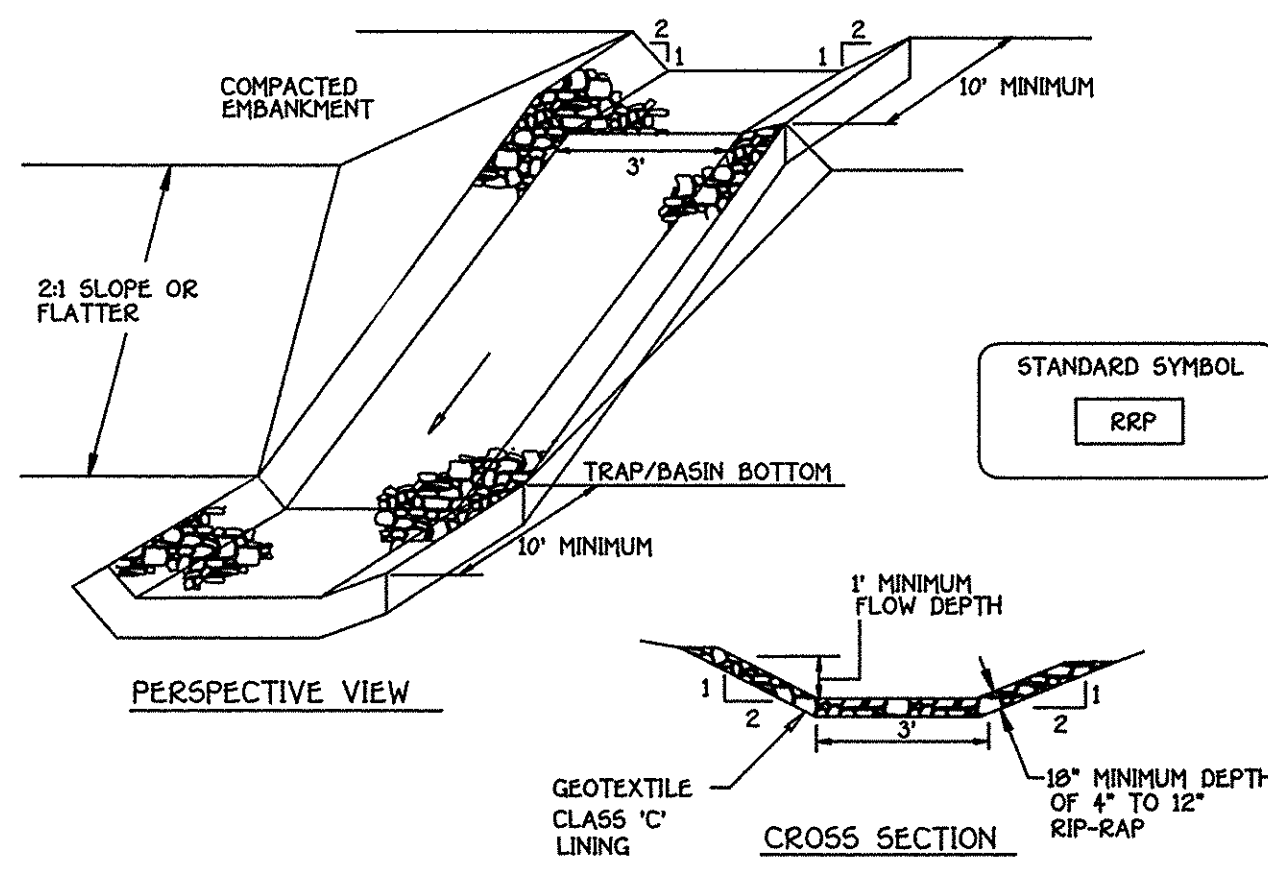
*Mark Damstra* 1/7/98  
 CHIEF, DEVELOPMENT ENGINEERING DIVISION  
 DATE

APPROVED: HOWARD COUNTY DEPARTMENT OF PUBLIC WORKS

*Howard Shick* 12-22-97  
 CHIEF, BUREAU OF HIGHWAYS  
 DATE

**RIP-RAP INFLOW PROTECTION**

NOT TO SCALE



**Construction Specifications**

- Rip-rap lined inflow channels shall be 1' in depth, have a trapezoidal cross section with 2:1 or flatter side slopes and 3' (min) bottom width. The channel shall be lined with 4" to 12" rip-rap to a depth of 18".
- Filter cloth shall be installed under all rip-rap. Filter cloth shall be Geotextile Class C.
- Entrance and exit sections shall be installed as shown on the detail section.
- Rip-rap used for the lining may be recycled for permanent outlet protection if the basin is to be converted to a stormwater management facility.
- Gabion Inflow Protection may be used in lieu of Rip-rap Inflow Protection.
- Rip-rap should blend into existing ground.
- Rip-rap Inflow Protection shall be used where the slope is between 4:1 and 10:1, for slopes flatter than 10:1 use Earth Dike or Temporary Swale lining criteria.

**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**

- This practice is limited to areas having 2:1 or flatter slopes where:
  - The texture of the exposed subsoil/parent material is not adequate to produce vegetative growth.
  - 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.
  - The original soil to be vegetated contains material toxic to plant growth.
  - The soil is so acidic that treatment with limestone is not feasible.
- 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**

- Topsail salvaged from the existing site may be used provided that it meets the standards as set forth in these specifications. Typically, the depth of topsail 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 Experimental Station.
- Topsail Specifications - Soil to be used as topsail must meet the following:
  - Topsail 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, topsail 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 1 1/2" in diameter.
  - Topsail must be free of plants or plant parts such as bermuda grass, quackgrass, Johnsongrass, nutsedge, poison ivy, thistle, or others as specified.
  - Where the 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 topsail. Limestone shall be distributed uniformly over designated areas and worked into the soil in conjunction with tillage operations as described in the following procedures.
- For sites having disturbed areas under 5 acres:
  - Place topsail (if required) and apply soil amendments as specified in 20.0 Vegetative Stabilization - Section I - Vegetative Stabilization Methods and Materials.
- For sites having disturbed areas over 5 acres:
  - On soil meeting Topsail specifications, obtain test results dictating fertilizer and lime amendments required to bring the soil into compliance with the following:

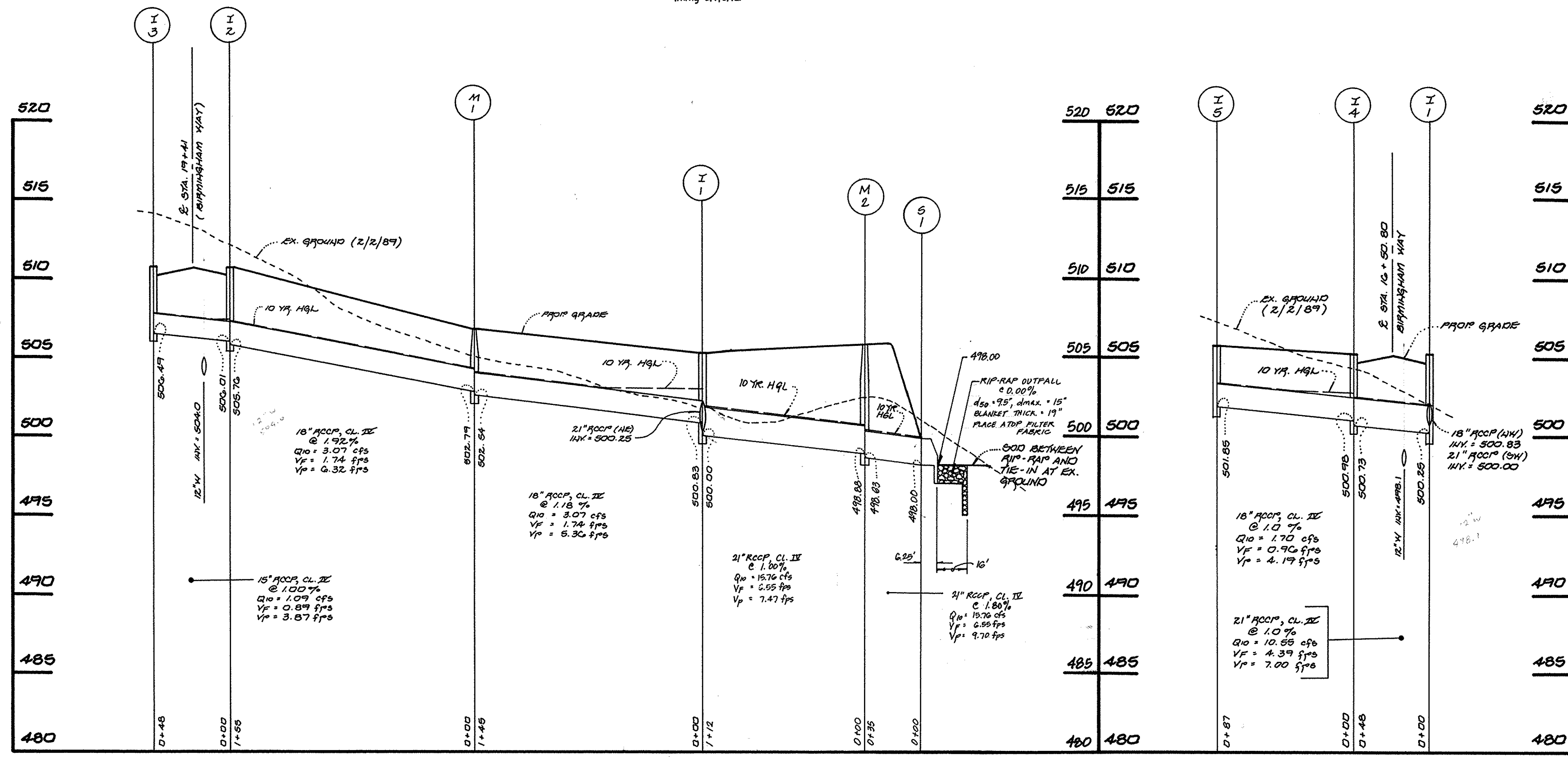
- pH for topsoil shall be between 6.0 and 7.5. If the tested soil demonstrates a pH of less than 6.0, sufficient lime shall be prescribed to raise the pH to 6.5 or higher.
- Organic content of topsoil shall be not less than 1.5 percent by weight.
- Topsail having soluble salt content greater than 500 parts per million shall not be used.
- 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: Topsail substitutes or amendments, as recommended by a qualified agronomist or soil scientist and approved by the appropriate approval authority, may be used in lieu of natural topsail.

**VI. Topsoil Application**

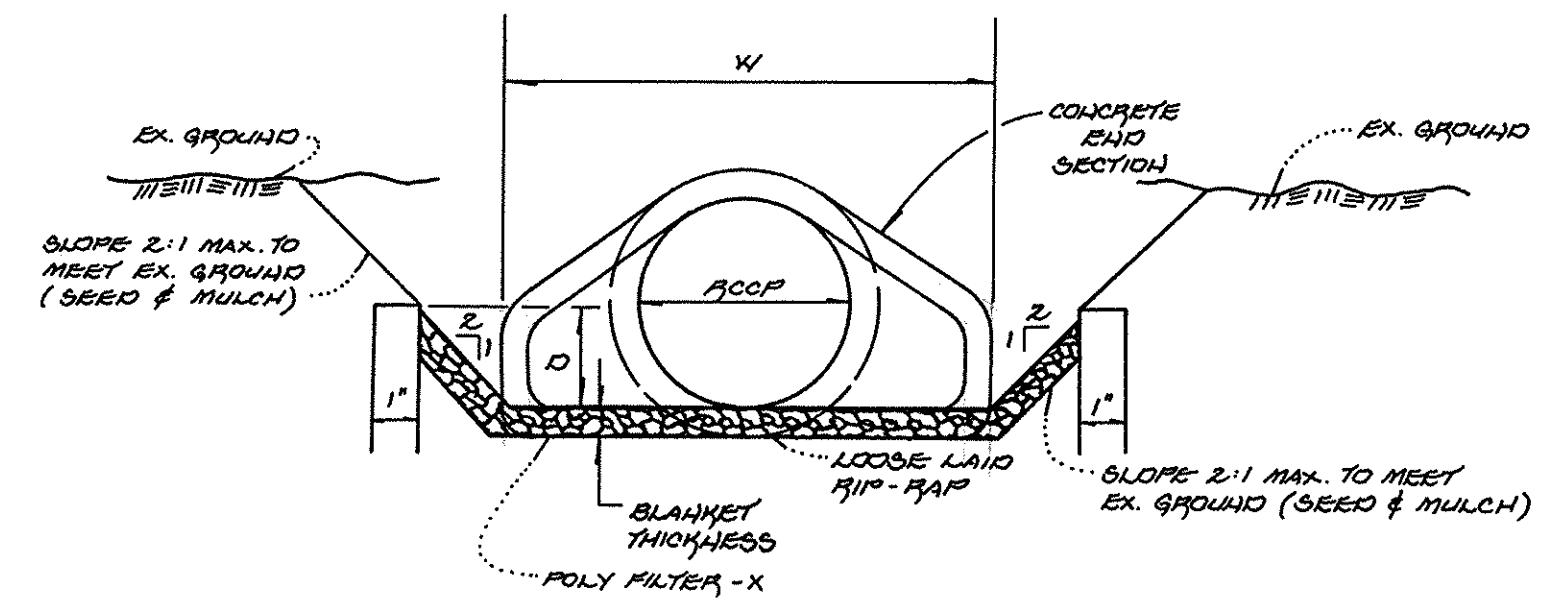
- When topsoiling, maintain needed erosion and sediment control practices such as diversions, Grade Stabilization Structures, Earth Dikes, Slope Silt Fence and Sediment Traps and Basins.
- Grades on the areas to be topsoiled, which have been previously established, shall be maintained, albeit 4" - 8" higher in elevation.
- Topsail 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 seedling 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.
- Topsail 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.
- 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:
  - 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 sites having disturbed areas under 5 acres shall conform to the following requirements:
    - 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 CDMAR 26.04.06.
    - 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 9.0. If compost does not meet these requirements, the appropriate constituents must be added to meet the requirements prior to use.
    - Composted sludge shall be applied at a rate of 1 ton/1,000 square feet.
  - 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/Sodding, MD-VA, Pub. #1, Cooperative Extension Service, University of Maryland and Virginia Polytechnic Institutes. Revised 1973.



**CONSTRUCTION SPECIFICATIONS FOR RIP-RAP OUTFALLS**

- The subgrade for the filter, riprap 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.
- The rock or gravel shall conform to the specified grading limits when installed respectively in the riprap or filter.
- Filter cloth shall be protected from punching, cutting or tearing. Any damage other than an occasional small hole shall be repaired by placing another piece of cloth over the damaged part or by completely replacing the cloth. All overlaps whether for repairs or for joining two pieces of cloth shall be a minimum of one foot.
- Stone for the riprap or gabion outlets may be placed by equipment. Both shall each be constructed to the full course thickness in one operation and in such a manner as to avoid displacement of underlying materials. The stone for riprap or gabion outlets shall be delivered and placed in a manner that will insure that it is reasonably homogenous with the smaller stones and spalls filling the voids between the larger stones. Riprap shall be placed in a manner to prevent damage to the filter blanket or filter cloth. Hand placement will be required to the extent necessary to prevent damage to the permanent works.



**RIP-RAP OUTFALL DETAIL**  
(NO SCALE)

RIP-RAP CHANNEL DESIGN DATA											
STRUCTURE	AREA	WETTED PERIMETER	n	n <sup>2/3</sup>	Q	Q <sup>1/2</sup>	W	D	H	V	CL
	(SQ FT)	(FT)			(CFS)	(CFS)	(FT)	(FT)	(FT)	(FT)	(FT)
0-1	4.40 AC.	9.3299	0.7709	0.8407	.005	.0707	4.5'	1.08'	.04	2.21	18.89
											4.5" 15" 19"

**FISHER, COLLINS & CARTER, INC.**  
 CIVIL ENGINEERING CONSULTANTS & LAND SURVEYORS  
 CENTRAL SQUARE OFFICE PARK - 10272 BALTIMORE NATIONAL PIKE  
 ELLETTT CITY, MARYLAND 21042  
 (410) 461-2255

**OWNER**  
 GTW JOINT VENTURE  
 c/o LAND DESIGN AND DEVELOPMENT, INC  
 10805 HICKORY RIDGE ROAD  
 SUITE 215  
 COLUMBIA, MARYLAND 21044

**DEVELOPER**  
 WAVERLY WOODS DEVELOPMENT CORPORATION  
 c/o LAND DESIGN AND DEVELOPMENT, INC  
 10805 HICKORY RIDGE ROAD  
 SUITE 215  
 COLUMBIA, MARYLAND 21044



**STORM DRAIN PROFILES**  
**GTW'S WAVERLY WOODS**  
 SECTION 8  
 BIRMINGHAM WAY  
 ZONING: R-24-6, REC 8 B-1  
 THIRD ELECTION DISTRICT  
 HOWARD COUNTY, MARYLAND  
 DATE: AUGUST 29, 1997  
 SHEET 5 OF 7

F-98/35

*Cande Hamilton* 1/9/88  
 CHIEF, DIVISION OF LAND DEVELOPMENT AND RESEARCH DATE

*John D. ...* 1/7/88  
 CHIEF, DEVELOPMENT ENGINEERING DIVISION DATE

APPROVED: HOWARD COUNTY DEPARTMENT OF PUBLIC WORKS

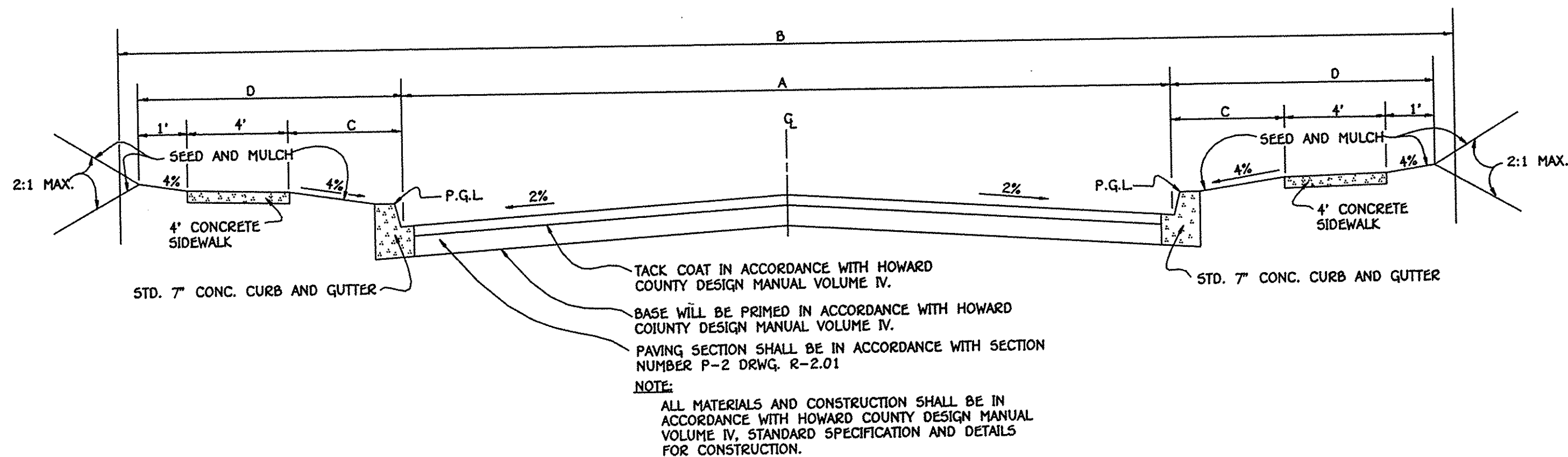
*Howard ...* 12-30-92  
 CHIEF, BUREAU OF HIGHWAYS DATE

**SEQUENCE OF CONSTRUCTION**

- OBTAIN A GRADING PERMIT (1 DAY).
- NOTIFY "MISS UTILITY" 48 HOURS BEFORE BEGINNING ANY WORK AT 1-800-257-7777. NOTIFY THE HOWARD COUNTY OFFICE OF CONSTRUCTION / INSPECTION DIVISION AT (410) 313-1870, 24 HOURS BEFORE STARTING ANY WORK. (1 DAY)
- INSTALL SEDIMENT CONTROL MEASURES, TREE PROTECTION DEVICES, AND STONE CONSTRUCTION ENTRANCES. (1 WEEK)
- CLEAR AND GRUB FOR CONSTRUCTION OF ROAD AND STORM DRAINS. PRIOR TO CLEARING AND GRUBBING SITE, SEDIMENT CONTROL INSPECTOR MUST BE NOTIFIED FOR PERMISSION TO PROCEED. GRADE SITE TO SUBGRADE, STABILIZE AND INSTALL STORM DRAINS. BLOCK 1-5 AND INSTALL 18" FLEXIBLE PIPE FOR CLEAN WATER DRAINAGE. (2 WEEKS)
- STABILIZE THE GRADED AREA, INSTALL INLET PROTECTION. THE CONTRACTOR SHALL INSPECT AND PROVIDE NECESSARY MAINTENANCE ON ALL SEDIMENT AND EROSION CONTROL STRUCTURES SHOWN HEREON AFTER EACH RAINFALL AND ON A DAILY BASIS. (2 DAYS)
- INSTALL PAVING, CURB AND GUTTER PLUS ROAD BASE COURSE. (1 WEEK)
- UPON APPROVAL OF THE SEDIMENT CONTROL INSPECTOR, REMOVE ALL SEDIMENT CONTROL MEASURES NOT NEEDED AND FLUSH STORM DRAIN SYSTEM TO REMOVE TRAPPED SEDIMENT. REMOVE 18" FLEXIBLE PIPE, CLOSE OPENING AT 1-5 AND OPEN INLET TO FLOW THROUGH SYSTEM. (2 DAYS)
- BEFORE REMOVING ALL SEDIMENT CONTROL DEVICES AND DIVERSIONS, THE SEDIMENT CONTROL INSPECTOR MUST BE NOTIFIED FOR PERMISSION TO PROCEED.
- ALL DISTURBED AREAS DUE TO REMOVAL OF SEDIMENT CONTROL MEASURES SHALL BE GRADED AND STABILIZED BY PERMANENT SEEDING. (2 DAYS)

**STRUCTURE SCHEDULE**

STRUCTURE NO.	TOP ELEVATION	INV. IN	INV. OUT	ROAD NAME	ROAD STA.	OFFSET	TYPE	REMARKS	"W"
I-1	505.33	500.83, 500.25	500.00	BIRMINGHAM WAY	C.L. STA. 16+50.80	24'L	A-10	S.D. 4.41	4'
I-2	510.74	506.01	505.76	BIRMINGHAM WAY	C.L. STA. 19+41	24'L	A-5	S.D. 4.40	3'
I-3	510.74	-----	506.49	BIRMINGHAM WAY	C.L. STA. 19+41	24'R	A-5	S.D. 4.40	3'
I-4	505.33	500.98	500.73	BIRMINGHAM WAY	C.L. STA. 16+50.80	24'R	A-10	S.D. 4.41	3'
I-5	505.85	-----	501.85	BIRMINGHAM WAY	C.L. STA. 17+40	24'R	A-10	S.D. 4.41	3'
M-1	506.79	502.79	502.54	BIRMINGHAM WAY	C.L. STA. 17+90	26.5'L	STD. MANHOLE	G - 5.11	
M-2	506.85	498.85	498.69	BIRMINGHAM WAY	C.L. STA. 15+42	26.5'L	STD. MANHOLE	G - 5.11	
S-1	499.75	498.00	498.00	BIRMINGHAM WAY	C.L. STA. 15+42	60'L	CONC. END SECTION	S.D. 5.51	

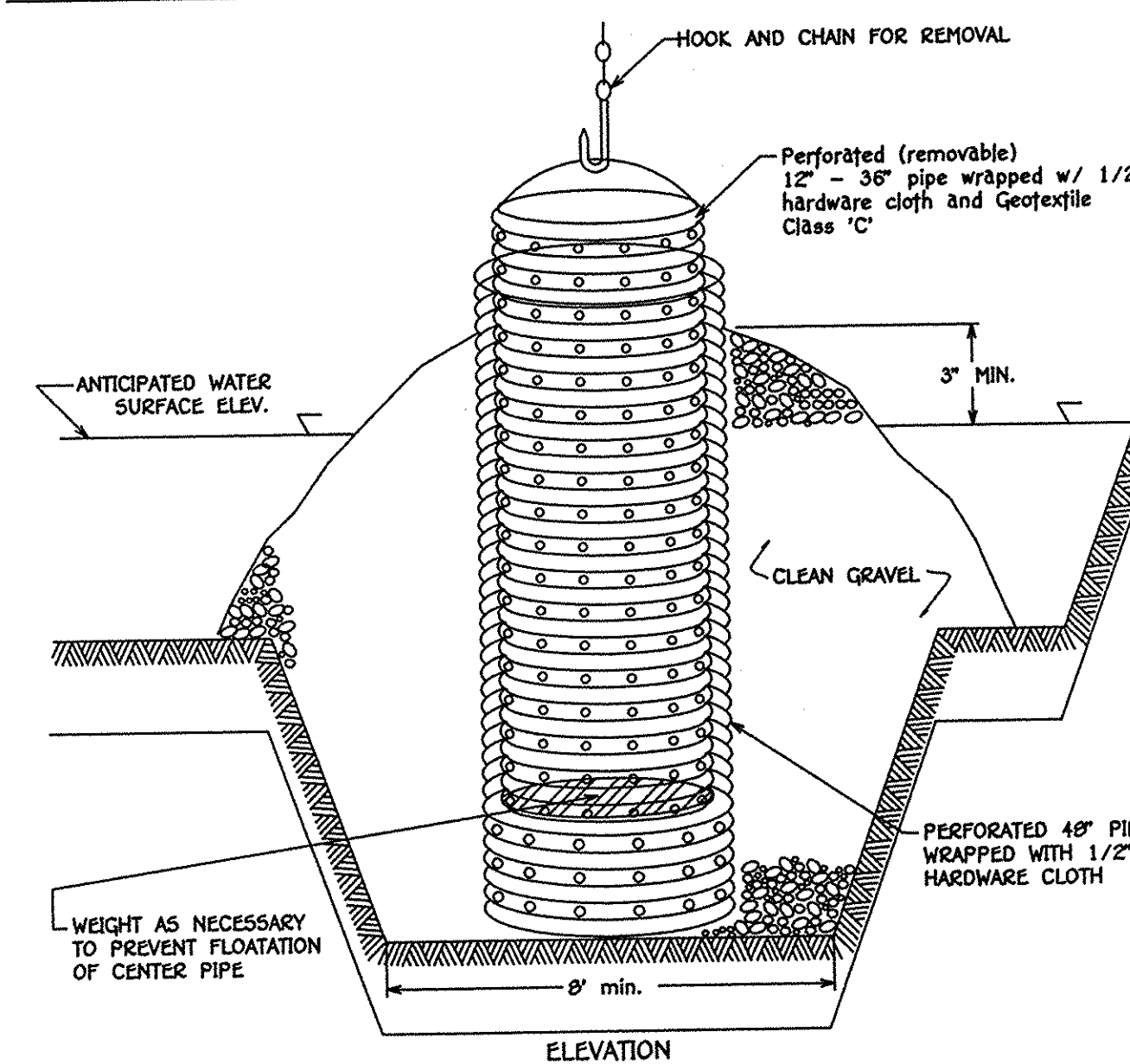


**TYPICAL ROADWAY SECTION**

NO SCALE

ROAD NAME	CLASSIFICATION	C.L. STA. TO C.L. STA.	A	B	C	D	PAVING SECTION	DESIGN SPEED
BIRMINGHAM WAY	MAJOR COLLECTOR	14+50 TO 22+00	44'	80'	9'	14'	P-3	40 M.P.H.

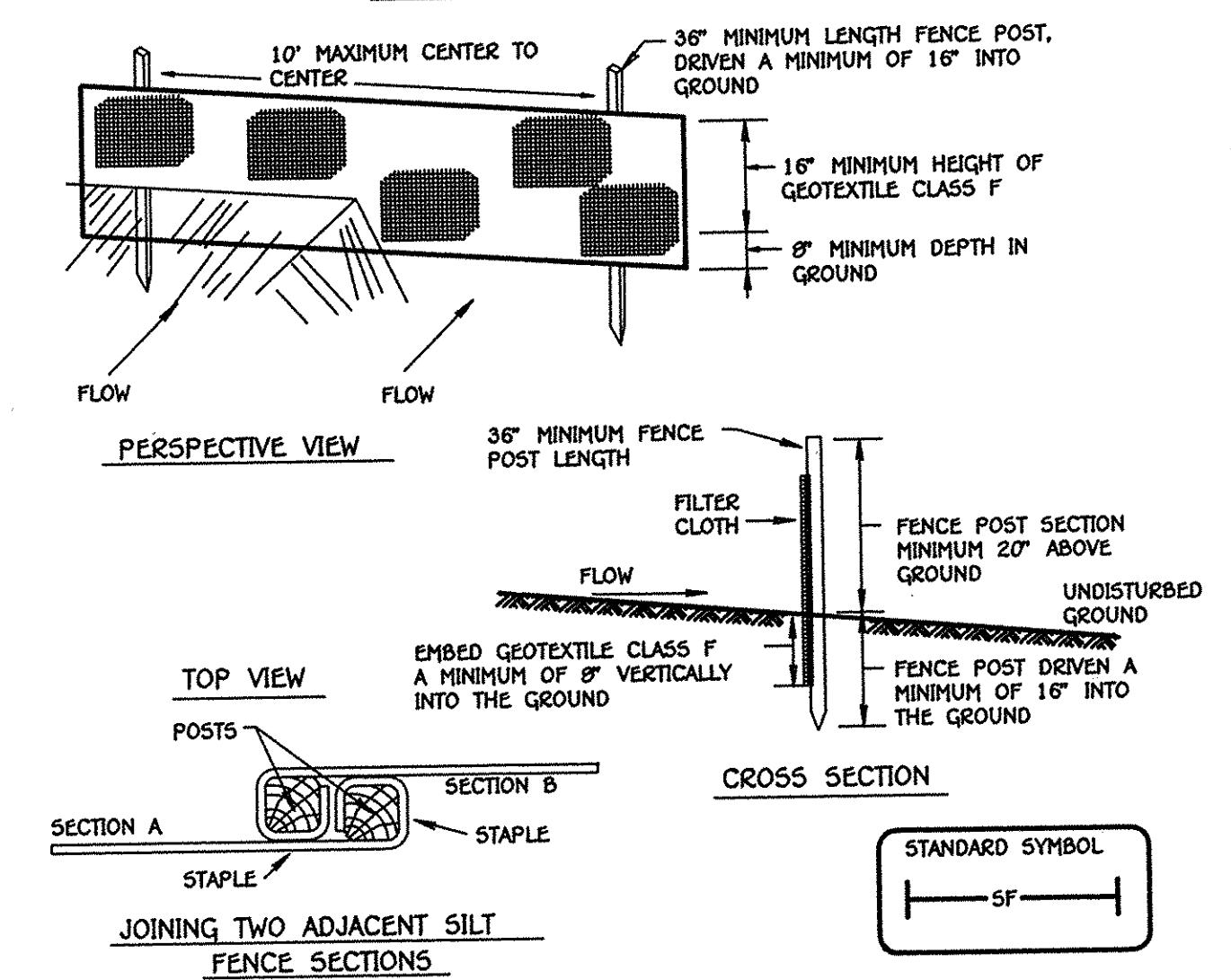
**DETAIL 20A - REMOVABLE PUMPING STATION**



**Construction Specifications**

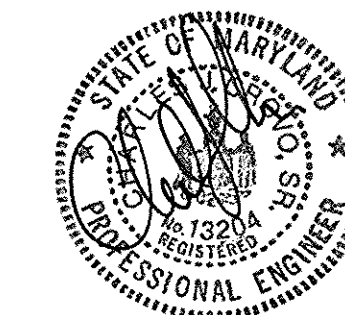
- The outer pipe should be 48" dia. or shall, in any case, be at least 4" greater in diameter than the center pipe. The outer pipe shall be wrapped with 1/2" hardware cloth to prevent backfill material from entering the perforations.
- After installing the outer pipe, backfill around outer pipe with 2" aggregate or clean gravel.
- The inside stand pipe (center pipe) should be constructed by perforating a corrugated or PVC pipe between 12" and 36" in diameter. The perforations shall be 1/2" x 6" slots or 1" diameter holes 6" on center. The center pipe shall be wrapped with 1/2" hardware cloth first, then wrapped again with Geotextile Class C.
- The center pipe should extend 12" to 18" above the anticipated water surface elevation or riser crest elevation when dewatering a basin.

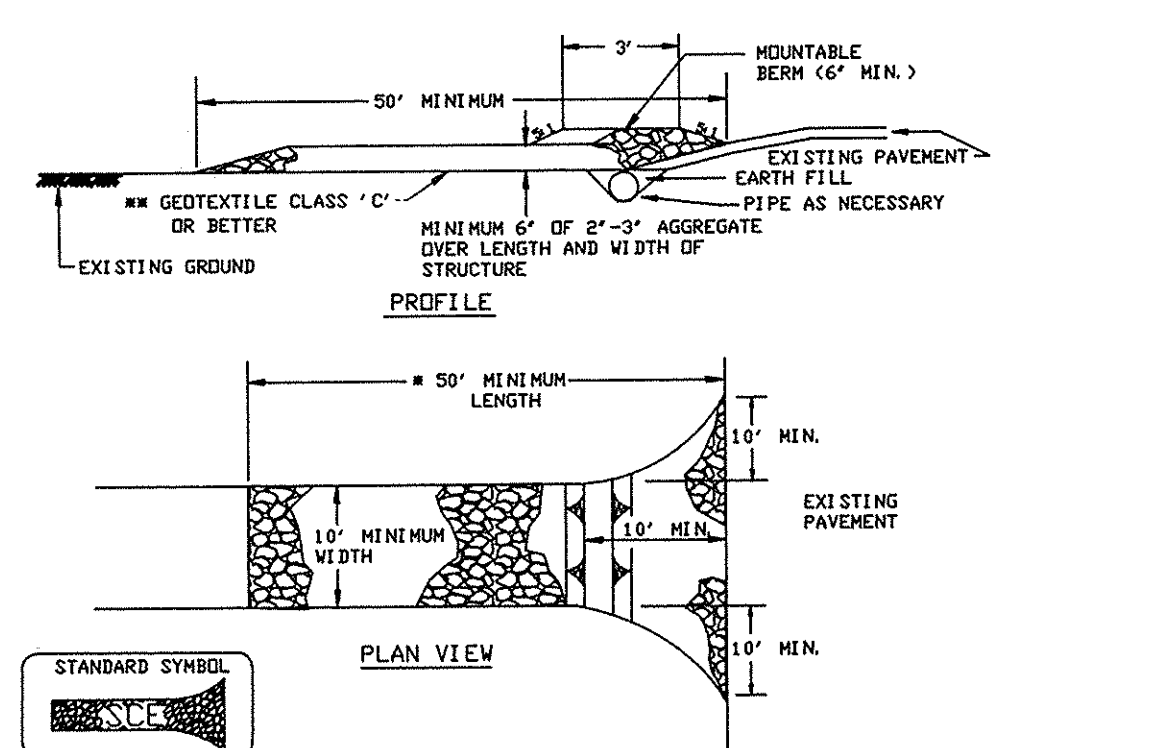
**DETAIL 22 - SILT FENCE**



**Construction Specifications**

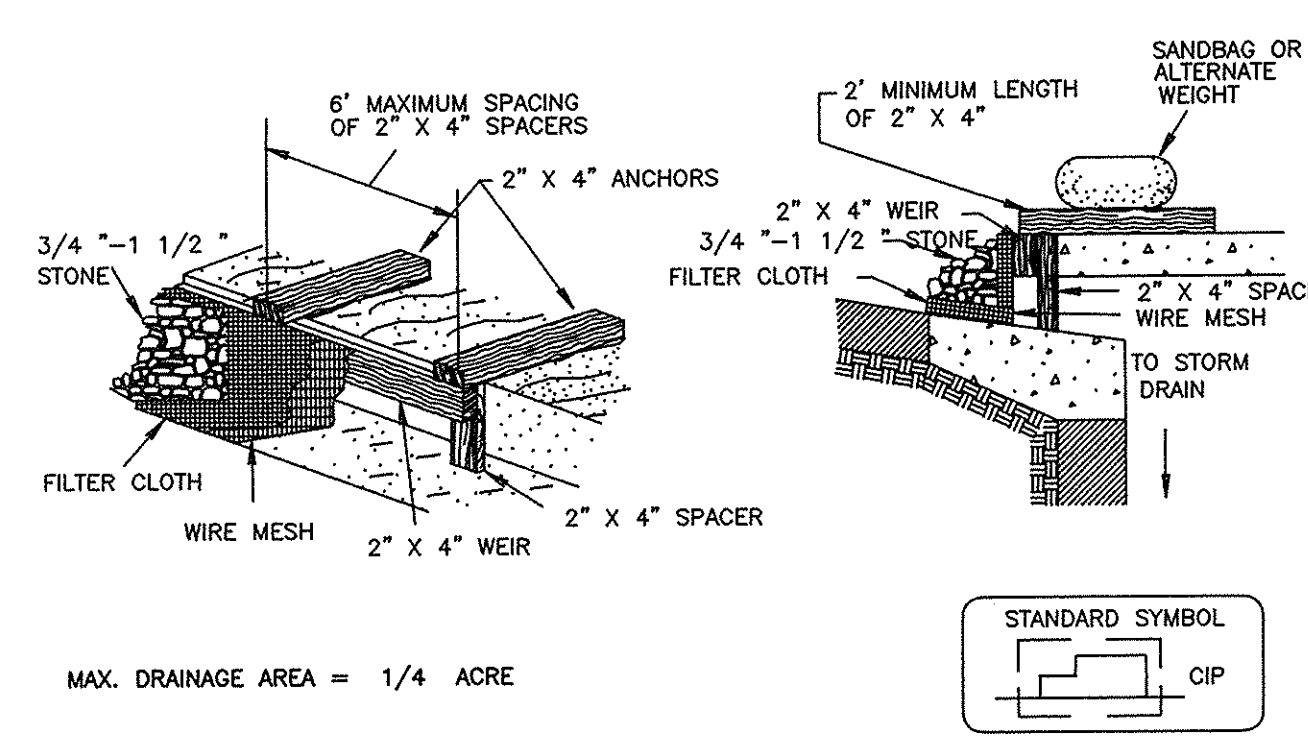
- Fence posts shall be a minimum of 36" long driven 16" minimum into the ground. Wood posts shall be 1 1/2" x 1 1/2" square (minimum) cut, or 1 3/4" diameter (minimum) round and shall be of sound quality hardwood. Steel posts will be standard T or U section weighting not less than 1.00 pound per linear foot.
- 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 / minute (max) Test: MSMT 322  
 Filtering Efficiency 75% (min.) Test: MSMT 322
- Where ends of geotextile fabric come together, they shall be overlapped, folded and stapled to prevent sediment bypass.
- Silt Fence shall be inspected after each rainfall event and maintained when bulges occur or when sediment accumulation reached 50% of the fabric height.



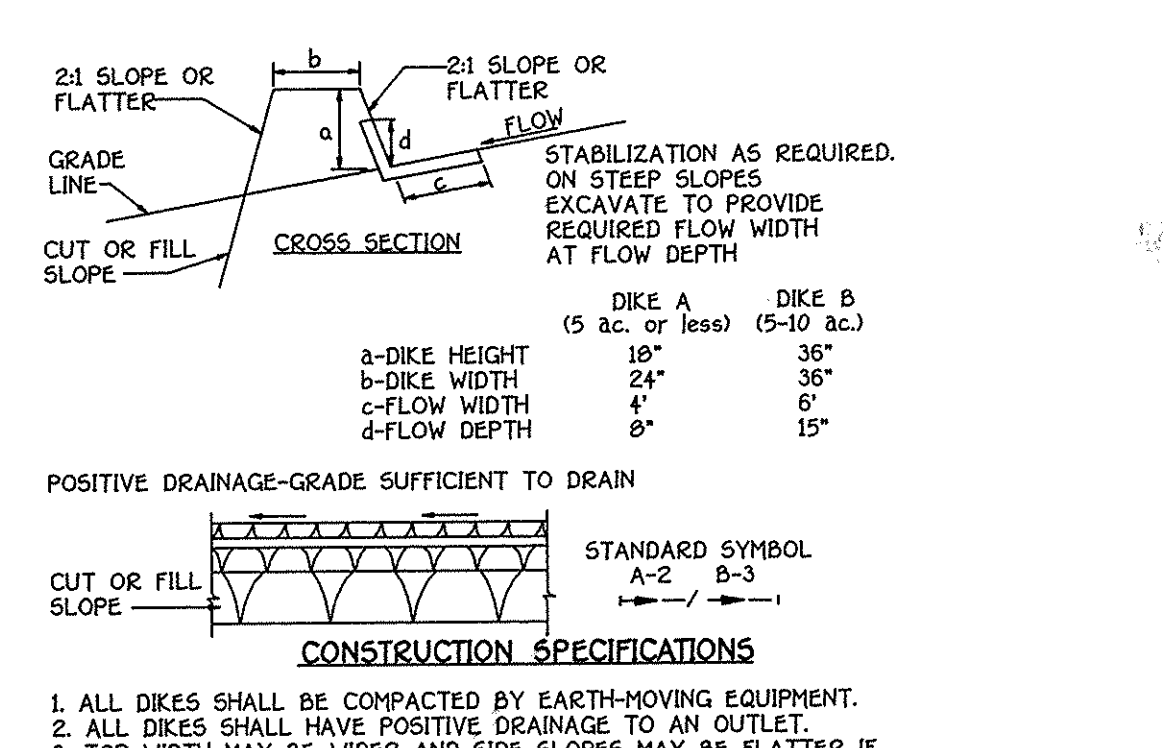


- Length - minimum of 50' (40' for single residence lots).
- Width - 10' minimum, should be flared at the existing road to provide a turning radius.
- Geotextile fabric (filter cloth) shall be placed over the existing ground prior to placement of aggregate. The geotextile shall be placed in a manner leaving no drainage to the amount of runoff to be conveyed. A 6' minimum will be required.
- Location - A stabilized construction entrance shall be located at every point where construction on a lot enters or leaves a construction site. The site must travel over the entire length of the stabilized construction entrance.

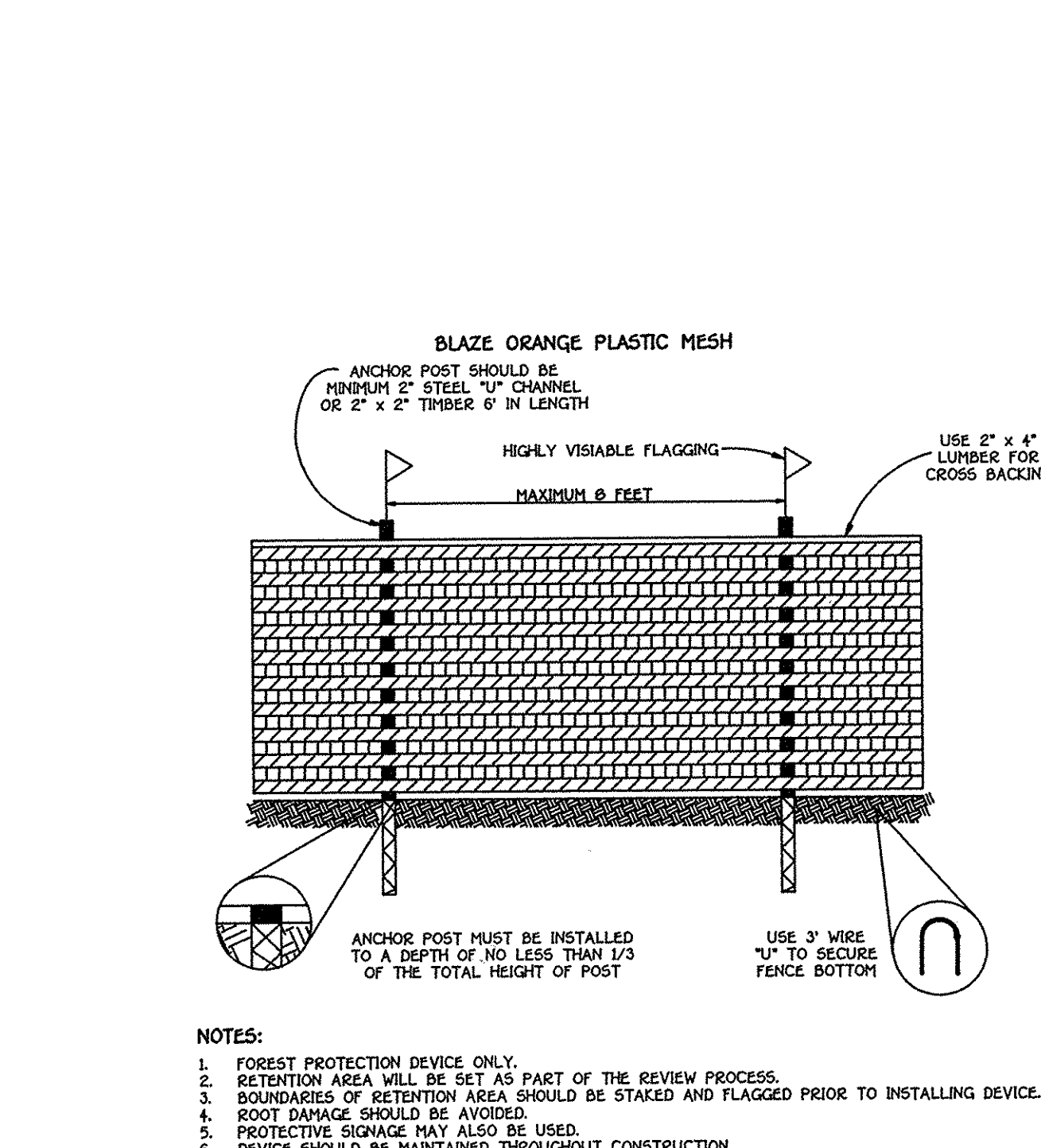
**STABILIZED CONSTRUCTION ENTRANCE - 2**  
NOT TO SCALE



- Construction Specifications**
- Attach a continuous piece of wire mesh (30" minimum width by throat length plus 4") to the 2" x 4" weir (measuring throat length plus 2") as shown on the standard drawing.
  - Place a continuous piece of Geotextile Class E the same dimensions as the wire mesh over the wire mesh and securely attach it to the 2" x 4" weir.
  - Securely nail the 2" x 4" weir to a 9" long vertical spacer to be located between the weir and the inlet face (max. 4' apart).
  - Place the assembly against the inlet throat and nail (minimum 2' lengths of 2" x 4" to the top of the weir at spacer locations). These 2" x 4" anchors shall extend across the inlet top and be held in place by sandbags or alternate weight.
  - The assembly shall be placed so that the end spacers are a minimum 1' beyond both ends of the throat opening.
  - Form the 1/2" x 1/2" wire mesh and the geotextile fabric to the concrete gutter and against the face of the curb on both sides of the inlet. Place chain 3/4" x 1 1/2" stone over the wire mesh and geotextile in such a manner to prevent water from entering the inlet under or around the geotextile.
  - This type of protection must be inspected frequently and the filter cloth and stone replaced when clogged with sediment.
  - Assure that storm flow does not bypass the inlet by installing a temporary earth or asphalt dike to direct the flow to the inlet.

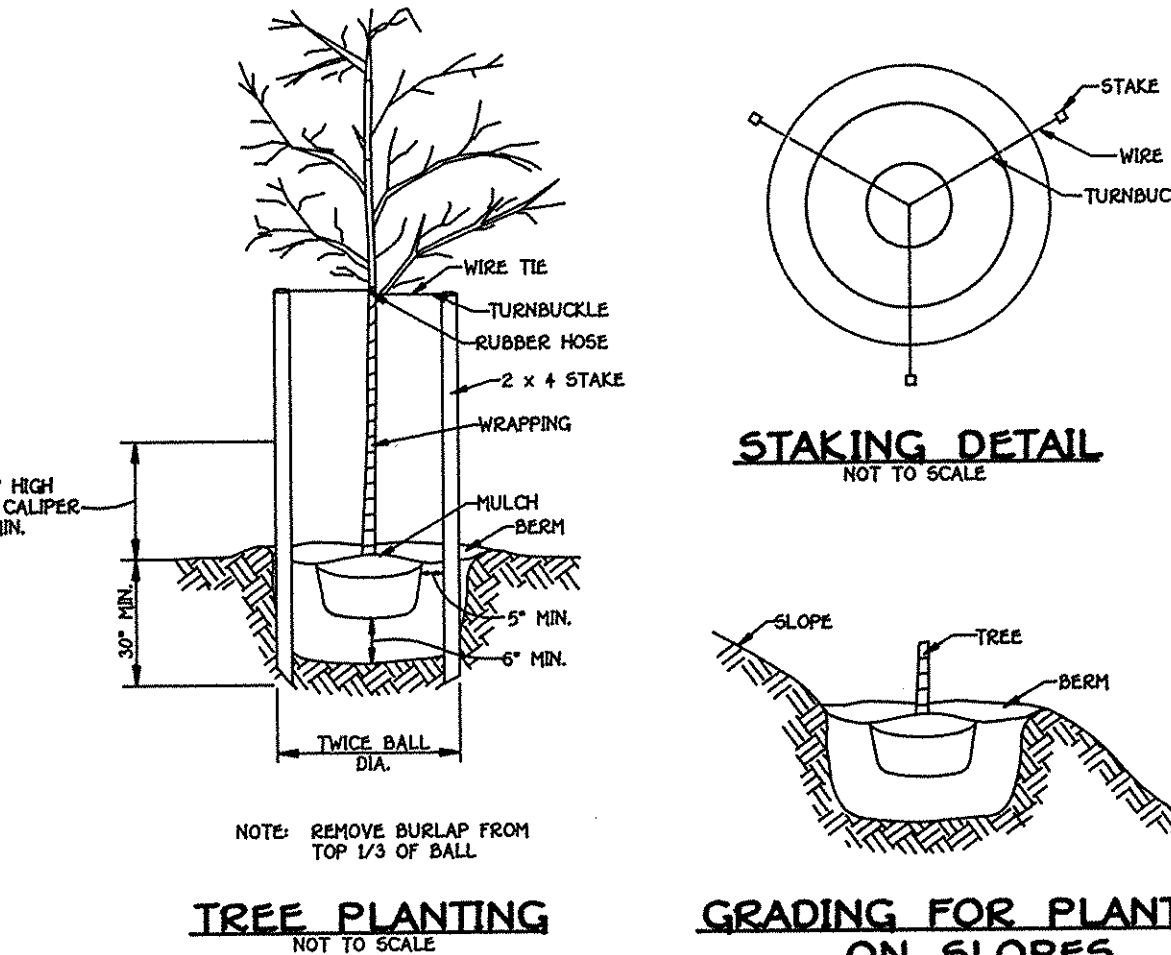


- CONSTRUCTION SPECIFICATIONS**
- ALL DIKES SHALL BE COMPACTED BY EARTH-MOVING EQUIPMENT.
  - ALL DIKES SHALL HAVE POSITIVE DRAINAGE TO AN OUTLET.
  - TOP WIDTH MAY BE WIDER AND SIDE SLOPES MAY BE FLATTER IF DESIRED TO FACILITATE CROSSING BY CONSTRUCTION TRAFFIC.
  - FIELD LOCATION SHOULD BE ADJUSTED AS NEEDED TO UTILIZE A STABILIZED SAFE OUTLET.
  - EARTH DIKES SHALL HAVE AN OUTLET THAT FUNCTIONS WITH A MINIMUM OF EROSION. RUNOFF SHALL BE CONVEYED TO A SEDIMENT BASIN ABOVE EITHER THE DIKE CHANNEL OR THE DRAINAGE AREA ABOVE THE DIKE ARE NOT ADEQUATELY STABILIZED.
  - STABILIZATION SHALL BE (A) IN ACCORDANCE WITH STANDARD SPECIFICATIONS FOR SEED AND STRAW MULCH OR STRAW MULCH IF NOT IN SEEDING SEASON, (B) FLOW CHANNEL AS PER THE CHART BELOW.
- | TYPE OF TREATMENT | CHANNEL GRADE | DIKE A                           | DIKE B                                       |
|-------------------|---------------|----------------------------------|--|
| 1                 | 5-3.0%        | SEED AND STRAW MULCH             | SEED AND STRAW MULCH                         |
| 2                 | 3.1-5.0%      | SEED AND STRAW MULCH             | SEED USING JUTE, OR EXCELSIOR; 500; 2" STONE |
| 3                 | 5.1-8.0%      | SEED WITH JUTE, OR 500; 2" STONE | LINED RIP-RAP 4"-8"                          |
| 4                 | 8.1-20%       | LINED RIP-RAP 4"-8"              | ENGINEERING DESIGN                           |
- FLOW CHANNEL STABILIZATION**
- STONE TO BE 2 INCH STONE, OR RECYCLED CONCRETE EQUIVALENT, IN A LAYER AT LEAST 3 INCHES IN THICKNESS AND BE PRESSED INTO THE SOIL WITH CONSTRUCTION EQUIPMENT.
  - RIP-RAP TO BE 4-8 INCHES IN A LAYER AT LEAST 6 INCHES THICKNESS AND PRESSED INTO THE SOIL.
  - APPROVED EQUIVALENTS CAN BE SUBSTITUTED FOR ANY OF THE ABOVE MATERIALS.
- PERIODIC INSPECTION AND REQUIRED MAINTENANCE MUST BE PROVIDED AFTER EACH RAIN EVENT.**



**TREE PROTECTION DETAIL**  
NOT TO SCALE

- NOTES:**
- FOREST PROTECTION DEVICE ONLY.
  - RETENTION AREA WILL BE SET AS PART OF THE REVIEW PROCESS.
  - BOUNDARIES OF RETENTION AREA SHOULD BE STAKED AND FLAGGED PRIOR TO INSTALLING DEVICE.
  - ROOT DAMAGE SHOULD BE AVOIDED.
  - PROTECTIVE SIGNAGE MAY BE USED.
  - DEVICE SHOULD BE MAINTAINED THROUGHOUT CONSTRUCTION.



**TREE PLANTING**  
NOT TO SCALE

- GRADING FOR PLANTING ON SLOPES**  
NOT TO SCALE
- STAKING DETAIL**  
NOT TO SCALE
- SEDIMENT CONTROL NOTES**
- A MINIMUM OF 48 HOURS NOTICE MUST BE GIVEN TO THE HOWARD COUNTY DEPARTMENT OF INSPECTIONS, LICENSING AND PERMITS, SEDIMENT CONTROL DIVISION PRIOR TO THE START OF ANY CONSTRUCTION (313-1855).
  - ALL VEGETATIVE PRACTICES ARE TO BE INSTALLED ACCORDING TO THE PROVISIONS OF THIS PLAN AND ARE TO BE IN CONFORMANCE WITH THE MOST CURRENT MARYLAND STANDARDS AND SPECIFICATIONS FOR SOIL EROSION AND SEDIMENT CONTROL AND REVISIONS THERETO.
  - FOLLOWING INITIAL SOIL DISTURBANCE OR RE-DISTURBANCE, PERMANENT OR TEMPORARY STABILIZATION SHALL BE COMPLETED WITHIN: a) 7 CALENDAR DAYS FOR ALL PERMETER SEDIMENT CONTROL STRUCTURES, DIKES, PERMETER SLOPES AND ALL SLOPES STEEPER THAN 3:1, b) 14 DAYS TO ALL OTHER DISTURBED OR GRADED AREAS ON THE PROJECT SITE.
  - ALL SEDIMENT TRAPS/BASINS SHOWN MUST BE FENCED AND WARNING SIGNS POSTED AROUND THEIR PERIMETER IN ACCORDANCE WITH VOL. 1, CHAPTER 12, OF THE HOWARD COUNTY DESIGN MANUAL, STORM DRAINAGE.
  - 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 (SEC. 51), 500 (SEC. 54), TEMPORARY SEEDING (SEC. 50), AND MULCHING (SEC. 52). TEMPORARY STABILIZATION WITH MULCH ALONE CAN ONLY BE DONE WHEN RECOMMENDED SEEDING DATES DO NOT ALLOW FOR PROPER GERMINATION AND ESTABLISHMENT OF GRASSES.
  - 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.
  - SITE ANALYSIS**  
TOTAL AREA OF SITE: 1,377 ACRES  
AREA DISTURBED: 2,638 ACRES  
AREA TO BE COFFED OR PAVED: 0.910 ACRES  
AREA TO BE VEGETATIVELY STABILIZED: 0.090 ACRES  
TOTAL CUT: 2,548 CU.YDS.  
TOTAL FILL: 2,548 CU.YDS.  
OFFSITE WASTE/BORROW AREA LOCATION: N/A
  - ANY SEDIMENT CONTROL PRACTICE WHICH IS DISTURBED BY GRADING ACTIVITY FOR PLACEMENT OF UTILITIES MUST BE REPAIRED ON THE SAME DAY OF DISTURBANCE.
  - ADDITIONAL SEDIMENT CONTROLS MUST BE PROVIDED, IF DEEMED NECESSARY BY THE HOWARD COUNTY SEDIMENT CONTROL INSPECTOR.
  - ON ALL SITES WITH DISTURBED AREAS IN EXCESS OF 2 ACRES, APPROX. 12% 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.
  - 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.

**STANDARD CURB INLET PROTECTION**  
NOT TO SCALE

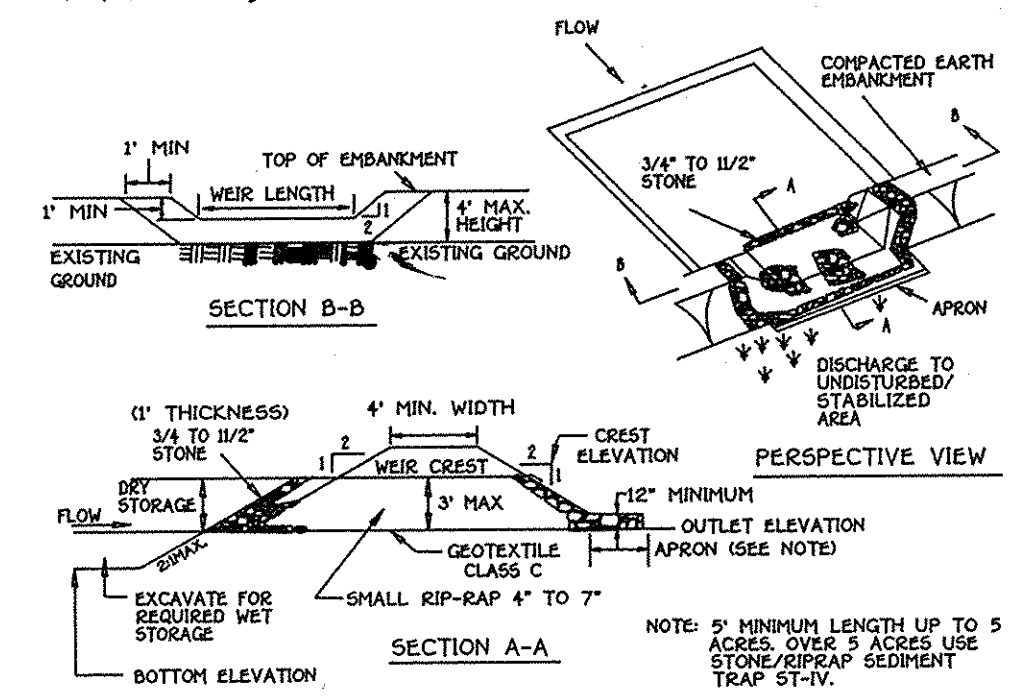
- 20.0 STANDARDS AND SPECIFICATIONS FOR VEGETATIVE STABILIZATION DEFINITION**
- Using vegetation as cover for barren soil to protect it from forces that cause erosion. Vegetative stabilization specifications are used to promote the establishment of vegetation on exposed soil. When soil is stabilized with vegetation, the soil is less likely to erode and more likely to allow infiltration of rainfall, thereby reducing sediment loads and runoff to downstream areas, and improving wildlife habitat and visual resources.
- CONDITIONS WHERE PRACTICE APPLIES**
- This practice shall be used on denuded areas as specified on the plans and may be used on highly erodible or critically eroding areas. This specification is divided into Temporary Seeding, to quickly establish vegetative cover for short duration (up to one year), and Permanent Seeding, for long term vegetative cover. Examples of applicable areas for Temporary Seeding are temporary Soil Stockpiles, cleared areas being left idle between construction phases, earth dikes, etc. and for Permanent Seeding are lawns, dams, cut and fill slopes and other areas at final grade, former stockpiles and staging areas, etc.
- EFFECTS ON WATER QUALITY AND QUANTITY**
- Planting vegetation in disturbed areas will have an effect on the water budget, especially on volumes and rates of runoff, infiltration, evaporation, transpiration, percolation, and groundwater recharge. Vegetation, over time, will increase organic matter content and improve the water holding capacity of the soil and subsequent plant growth. Vegetation will help reduce the movement of sediment, nutrients, and other chemicals carried by runoff to receiving waters. Plants will also help protect groundwater supplies by assimilating those substances present within the root zone. Sediment control devices must remain in place during grading, seeded preparation, seeding, mulching and vegetative establishment to prevent large quantities of sediment and associated chemicals and nutrients from washing into surface waters.

**EARTH DIKE**  
NOT TO SCALE

- SECTION 1 - VEGETATIVE STABILIZATION METHODS AND MATERIALS**
- Site Preparation**
    - Install erosion and sediment control structures (either temporary or permanent) such as diversions, grade stabilization structures, berms, waterways, or sediment control basins.
    - Perform all grading operations at right angles to the slope. Final grading and shaping is not usually necessary for temporary seeding.
    - Schedule required soil tests to determine soil amendment composition and application rates for sites having disturbed areas over 5 acres.
  - Soil Amendments (Fertilizer and Lime Specifications)**
    - Soil tests must be performed to determine the exact ratios and application rates for both lime and fertilizer sites with less than 5 acres. Soil analysis may be performed by the University of Maryland or a recognized commercial laboratory. Soil samples taken for engineering purposes may also be used for chemical analyses.
    - Fertilizers shall be uniform in composition, free flowing and suitable for accurate application by approved equipment. Manure may be substituted for fertilizer with prior approval from the appropriate approval authority. Fertilizers shall all be delivered to the site fully labeled according to the applicable state fertilizer laws and shall bear the name, trade name or trademark and warranty of the producer.
    - Lime materials shall be ground limestone (hydrated or burnt lime) may be substituted which contains at least 50% total oxides (calcium oxide plus magnesium oxide). Limestone shall be ground to such fineness that at least 50% will pass through a #100 mesh sieve and 90-100% will pass through a #20 mesh sieve.
    - Incorporate lime and fertilizer into the top 3-5" of soil by disking or other suitable means.
  - Seeded Preparation**
    - Temporary Seeding**
      - Seeded preparation shall consist of loosening soil to a depth of 3" to 5" by means of suitable agricultural or construction equipment, such as disc harrows or chisel plows or rippers mounted on construction equipment. After the soil is loosened it should not be rolled or dragged smooth, but left in the roughened condition. Sloped areas (greater than 3:1) should be tracked leaving the surface in an irregular condition with ridges running parallel to the contour of the slope.
      - Apply fertilizer and lime as prescribed on the plans.
      - Incorporate lime and fertilizer into the top 3-5" of soil by disking or other suitable means.
    - Permanent Seeding**
      - Minimum soil conditions required for permanent vegetative establishment: a. Soil pH shall be between 6.0 and 7.0. b. Soluble salts shall be less than 500 parts per million (ppm). c. The soil shall contain less than 40% clay, but enough fine grained material (50% silt plus clay) to provide sufficient moisture to hold a moderate amount of moisture. An exception is if legumes or sericea lespedezas is to be planted, then a sandy soil (60% silt plus clay) would be acceptable.
      - Soil shall contain 1% minimum organic matter by weight.
      - Soil must contain sufficient pore space to permit adequate root penetration.
      - If these conditions cannot be met by soils on site, adding topsoil is required in accordance with Section 21 Standard and Specification for Topsoil.
      - Areas previously graded in conformance with the drawings shall be maintained in a true and even grade, then scarified or otherwise loosened to a depth of 3-5" to permit bonding of the topsoil to the surface area and to create horizontal erosion check slots to prevent topsoil from sliding down a slope.
      - Apply soil amendments as per soil test or as included on the plans. Lawn soil amendments into the top 3-5" of topsoil only.
      - Soil amendments into the top 3-5" of topsoil only. Areas should be raked to smooth the surface, remove large objects like stones and branches, and ready the area for seed and application. Where site conditions will not permit normal seeded preparation, loosen surface soil by dragging with a heavy chain or other equipment to roughen the surface. Steep slopes (steeper than 3:1) should be tracked by a dozer leaving the soil in an irregular condition with ridges running parallel to the contour of the slope. The top 1-3" of soil should be loose and friable. Seeded preparation may not be necessary on newly disturbed areas.

**Incremental Stabilization - Cut Slopes**

- All cuts slopes shall be dressed, prepared, seeded and mulched as the work progresses. Slopes shall be excavated and stabilized in equal increments not to exceed 15'.
  - Construction sequence (Refer to Figure 3 below):
    - Excavate and stabilize all temporary swales, side ditches, or berms that will be used to convey runoff from the excavation.
    - Perform Phase 1 excavation, dress, and stabilize.
    - Perform Phase 2 excavation, dress and stabilize.
    - Perform final phase excavation, dress and stabilize. Overseed previously seeded areas as necessary.
- Notes:** Once excavation has begun the operation should be continuous from grubbing through the completion of grading and placement of topsoil (if required) and permanent seed and mulch. Any interruptions in the operation of completing the operation out of the seeding season will necessitate the application of temporary stabilization.
- Incremental Stabilization - Fill Slopes**
    - Embankments shall be constructed in lifts as prescribed on the plans.
    - Slopes shall be stabilized immediately when the vertical height of the multiple lifts reaches 15', or when the grading operation ceases as prescribed on the plans.
    - At the end of each day, temporary berms and pipe slope drains should be constructed along the top edge of the embankment to intercept surface runoff and convey it down the slope in a non-erosive manner to a sediment trapping device.
    - Construction sequence: (Refer to Figure 4 below):
      - Excavate and stabilize all temporary swales, side ditches, or berms that will be used to divert runoff around the fill. Construct slope silt fence on low side of fill as shown in Figure 5, unless other methods shown on the plans address this area.
      - Place Phase 1 embankment, dress and stabilize.
      - Place Phase 2 embankment, dress and stabilize. Overseed previously seeded areas as necessary.
      - Place final phase embankment, dress and stabilize. Overseed previously seeded areas as necessary.
- Notes:** Once the placement of fill has begun the operation should be continuous from grubbing through the completion of grading and placement of topsoil (if required) and permanent seed and mulch. Any interruptions in the operation or completing the operation out of the seeding season will necessitate the application of temporary stabilization.



**DETAIL 9 - STONE OUTLET SEDIMENT TRAP - ST II**

- Construction Specifications**
- Area under embankment shall be cleared, grubbed and stripped of all vegetation and root mats. The pool area shall be cleared.
  - The fill material for the embankment shall be free of roots and other woody vegetation as well as over-sized stones, rocks, organic materials, or other objectionable material. The embankment shall be compacted by traversing with equipment while it is being constructed.
  - All cut and fill slopes shall be 2:1 or flatter.
  - The stone used in the outlet shall be small rip-rap 4" to 7" in size with a 1" thick layer of 3/4" to 1 1/2" washed aggregate placed beneath the stone. Stone facing shall be compacted by traversing with equipment while it is being constructed. Geotextile Class C may be substituted for the stone facing by placing it on the inside face of the stone outlet.
  - Sediment shall be removed and trap restored to its original dimensions when the sediment has accumulated to one half of the wet storage depth of the trap. Removed sediment shall be deposited in a suitable area and in such a manner that it will not erode.

**DEVELOPER'S CERTIFICATE**

I/WE CERTIFY THAT ALL DEVELOPMENT AND CONSTRUCTION WILL BE DONE ACCORDING TO THIS PLAN OF DEVELOPMENT AND THAT ANY RESPONSIBLE PERSONNEL IN THE CONSTRUCTION PROJECT WILL HAVE A CERTIFICATE OF ATTENDANCE AT A DEPARTMENT OF NATURAL RESOURCES APPROVED TRAINING PROGRAM FOR THE CONTROL OF SEDIMENT AND EROSION BEFORE BEGINNING THE PROJECT. I ALSO AUTHORIZE PERIODIC ON-SITE INSPECTION BY THE HOWARD COUNTY SOIL CONSERVATION DISTRICT OR THEIR AUTHORIZED AGENTS, AS ARE DEEMED NECESSARY.

**ENGINEER'S CERTIFICATE**

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

**DEVELOPER:** Donald R. Kauer, Jr. 8/24/97  
**ENGINEER:** [Signature] 8/24/97

**REVIEW FOR HOWARD COUNTY SOIL CONSERVATION DISTRICT AND MEETS TECHNICAL REQUIREMENTS.** 12/18/97  
**U.S.D.A. NATIONAL RESOURCES CONSERVATION SERVICE**

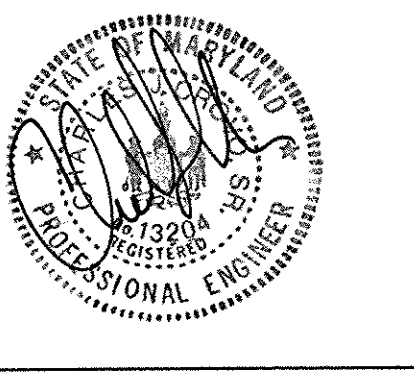
**THIS DEVELOPMENT IS APPROVED FOR EROSION AND SEDIMENT CONTROL BY THE HOWARD COUNTY SOIL CONSERVATION DISTRICT.** 12/18/97  
**HOWARD COUNTY SOIL CONSERVATION DISTRICT**

**APPROVED: DEPARTMENT OF PLANNING AND ZONING** 1/9/98  
**APPROVED: DEPARTMENT OF PLANNING AND ZONING** 1/7/98  
**APPROVED: HOWARD COUNTY DEPARTMENT OF PUBLIC WORKS** 12-30-97

**FISHER, COLLINS & CARTER, INC.**  
CIVIL ENGINEERING CONSULTANTS & LAND SURVEYORS  
CENTENNIAL SQUARE OFFICE PARK - 10272 BALTORE NATIONAL PIKE  
ELICOTT CITY, MARYLAND 21042  
(410) 461 - 2855

**OWNER**  
GTW JOINT VENTURE  
470 LAND DESIGN AND DEVELOPMENT  
10605 HICKORY RIDGE ROAD  
COLUMBIA, MARYLAND 21044

**DEVELOPER**  
WAVERLY WOODS DEVELOPMENT CORPORATION  
470 LAND DESIGN AND DEVELOPMENT  
10605 HICKORY RIDGE ROAD  
COLUMBIA, MARYLAND 21044



**SEDIMENT CONTROL NOTES AND DETAILS**  
**GTW'S WAVERLY WOODS**  
SECTION 8  
BIRMINGHAM WAY  
ZONING: R-SA-8, PEC 8-B-1  
THIRD ELECTION DISTRICT HOWARD COUNTY, MARYLAND  
SCALE: AS SHOWN DATE: AUG. 29, 1997  
SHEET 7 OF 7

F.98-25