	SHEET INDEX
SHEET No.	DESCRIPTION
1	TITLE SHEET
2	BEXLEY DRIVE PLAN AND PROFILE, ENFIELD DRIVE PLAN & CROYDON COURT PLAN
3	ENFIELD DRIVE & CROYDON COURT PROFILES AND TYPICAL ROADWAY SECTIONS
4	STREET TREE, GRADING AND SEDIMENT CONTROL PLAN
5	LANDSCAPE PLAN
6	DRAINAGE AREA MAP
7	STORM DRAIN PROFILES
B	SEDIMENT CONTROL NOTES AND DETAILS
9	SEDIMENT CONTROL NOTES AND DETAILS
10	FOREST CONSERVATION PLAN
11	FOREST CONSERVATION NOTES AND DETAILS

# FINAL ROAD CONSTRUCTION, GRADING AND SEDIMENT CONTROL PLANS

# GTW'S WAVERLY WOODS SECTION 10

LOTS 1 - 19, 21 - 33 & 35 - 58

(A SUBDIVISION OF PART OF THE PROPERTY OF GTW JOINT VENTURE, LIBER 2222, FOLIO 36)

ZONED R-SA-8

# TAX MAP No. 16 PART OF PARCEL No. 20 GRID NO. 5

ROAD	<b>CLASSIFICATION</b>	CHART
ROAD	CLASSIFICATION	R/W WIDTH
BEXLEY DRIVE	PUBLIC ACCESS STREET	50'
BEXLEY DRIVE	PUBLIC ACCESS PLACE	40'
ENFIELD DRIVE	PUBLIC ACCESS PLACE	40'
CROYDON COURT	PUBLIC ACCESS PLACE	40'

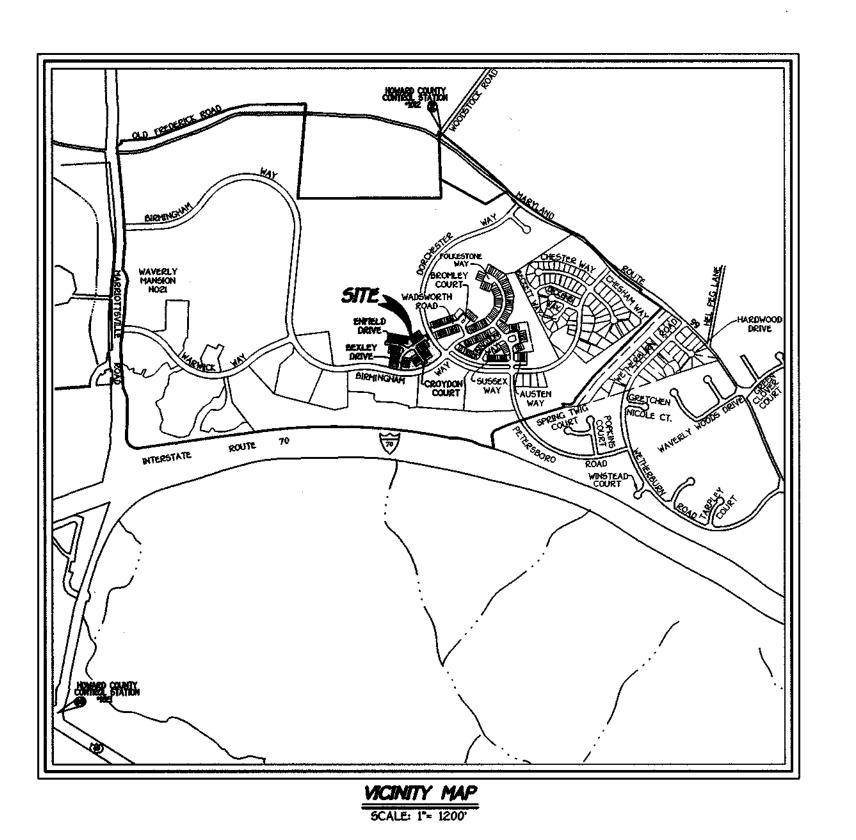
TRA	VFFIC (	CONT	ROL SIGNS	2
STREET NAME	C.L. STATION	OFFSET	POSTED SIGN	SIGN CODE
BEXLEY DRIVE	0+37	13°L	5TOP	RI-I
CROYDON COURT	0+27	13'L	5TOP	R11
ENFIELD DRIVE	0+45	13°L	5TOP	R1-i
BEXLEY DRIVE	2+00	13°R	SPEED LIMIT 25 MPH	R2-1

	STREET LIGHT CHART							
DWG. No.	STREET NAME	STATION	OFF- SET	FIXTURE/POLE TYPE				
3	BEXLEY DRIVE	C.L. 5TA. 0+35	27 <b>'</b> R	150-WATT H.P.S. VAPOR PENDANT (CUT-OFF) MOUNTED AT 30' ON A GALVANIZED STEEL POLE USING A 6' ARM				
3	BEXLEY DRIVE	C.L. 5TA. 3+04	28'L	100-WATT "TRADITIONAIRE" H.P.S. VAPOR FIXTURE POST TOP FIXTURE MOUNTED ON A 14-FOOT BLACK FIBERGLASS POLE.				
3	BEXLEY DRIVE	C.L. 5TA. 6+23	16"L	100-WATT "TRADITIONAIRE" H.P.S. VAPOR FIXTURE POST TOP FIXTURE MOUNTED ON A 14-FOOT BLACK FIBERGLASS POLE.				
3	ENFIELD DRIVE	C.L. 5TA. 2+04	16'R	100-WATT "TRADITIONAIRE" H.P.S. VAPOR FIXTURE POST TOP FIXTURE MOUNTED ON A 14-FOOT BLACK FIBERGLASS POLE.				
3	CROYDON COURT	C.L. 5TA. 0+27	24°L	100-WATT "TRADITIONAIRE" H.P.S. VAPOR FIXTURE POST TOP FIXTURE MOUNTED ON A 14-FOOT BLACK FIBERGLASS POLE.				
3	CROYDON COURT	C.L. 5TA. 2+55	16'L	100-WATT "TRADITIONAIRE" H.P.S. VAPOR FIXTURE POST TOP FIXTURE MOUNTED ON A 14-FOOT BLACK FIBERGLASS POLE.				

FISHER, COLLINS & CARTER, INC.

<u>IVIL ENGINEERING CONSULTANTS & LAND SURVEYORS</u>

-/DRAWINGS2/GTW/30670 510/FINAL/30670TITLESHEET2.DWG



THIRD ELECTION DISTRICT HOWARD COUNTY, MARYLAND

Λ	CHANGE TITLE BLOCKS TO "LOTS 1-19, 21-33 & 35-50"	5-16-00
NO.	DESCRIPTION	DATE
	REVISIONS	

OWNER / DEVELOPER WAVERLY WOODS DEVELOPMENT CORPORATION C/O LAND DESIGN AND DEVELOPMENT, INC. 8000 MAIN STREET ELLICOTT CITY, MARYLAND 21043



# GTW'S WAVERLY WOODS SECTION 10

LOTS 1-19, 21-33 8 35-58 (A SUBDIVISION OF PART OF THE PROPERTY OF GTW JOINT VENTURE, LIBER 2222, FOLIO 36)

ZONED R-SA-8 TAX MAP No. 16 PART OF PARCEL No. 20 GRID NO. 5 THIRD ELECTION DISTRICT HOWARD COUNTY, MARYLAND DATE: SEPTEMBER 21, 1999 SHEET I OF 11

HOWARD COUNTY CONTROL STATIONS: HOWARD COUNTY MONUMENT 1012

9. GTW PARKING TABULATION:

R-SA-8 (SECTION 5)

R-5A-8 (SECTION 6) 60 UNITS (190-80) 2 SPACES P 2 UNITS (199-174) 2:(71 = 142

GENERAL NOTES

EX. POND 1, (F95-174) THE 5.W.M. REPORT IS PROVIDED BY MILDENBERG ASSOCIATES, INC. (APPROVED 3/26/96) 8. THIS HORIZONTAL AND VERTICAL DATUM SHOWN ARE BASED ON THE FOLLOWING NAD'83 £ 1345336.7580

NUMBER OF PARKING SPACES SECTION 10 TABULATION REQUIRED | PROVIDED NUMBER OF PARKING SPACES: FOR R-5A-8 ZONING REQUIRED

PROVIDED GARAGE UNITS: 2 X 23 - 46 SPACES COURT UNITS: 2 X 30 - 60 SPACES

11-24-99

10. AREA TABULATION:

SECTION 10 TOTAL NUMBER OF BUILDABLE LOTS TO BE RECORDED. TOTAL NUMBER OF OPEN SPACE LOTS TO BE RECORDED. TOTAL NUMBER OF LOTS TO BE RECORDED. . . . TOTAL AREA OF BUILDABLE LOTS TO BE RECORDED TOTAL AREA OF OPEN SPACE LOTS TO BE RECORDED TOTAL AREA OF LOTS TO BE RECORDED. TOTAL AREA OF ROADWAY TO BE RECORDED. TOTAL AREA TO BE RECORDED

PROPERTY IS LOCATED WITHIN METROPOLITAN DISTRICT.

11. THE NOISE STUDY FOR GTW WAS PROVIDED BY WILDMAN ENVIRONMENTAL SERVICES, INC. ON NOVEMBER 1, 1994. 12. FOREST STAND DELINEATION AND PRELIMINARY FOREST CONSERVATION PLAN WAS PROVIDED BY ENVIRONMENTAL SYSTEMS

13. THERE IS NO 100 YEAR FLOODPLAIN WITHIN SECTION 10.

14. THE WETLANDS STUDY FOR GTW WAS PREPARED BY ENVIRONMENTAL SYSTEMS ANALYSIS, INC. ON 9/5/91 AND APPROVED ON 11/30/93. SEE NOTE NO. 20.

15. THE TRAFFIC STUDY FOR GTW WAS PREPARED BY THE TRAFFIC GROUP AND APPROVED ON JULY 14, 1994.

528 SPACES | 570 SPACES

1. ALL ASPECTS OF THE PROJECT ARE IN CONFORMANCE WITH THE LATEST HOWARD COUNTY STANDARDS

3. THIS PLAN IS SUBJECT TO ZONING BOARD CASE No. ZB929-M WHICH APPROVED ON MARCH 22, 1993 A REQUEST TO REZONE 602.18 ACRES OF RURAL LAND INTO THE MIXED USE AREAS. TOPOGRAPHY SHOWN HEREON IS FROM AERIAL MAPS FLOWN WITH 2 FOOT CONTOUR INTERVALS PREPAREI

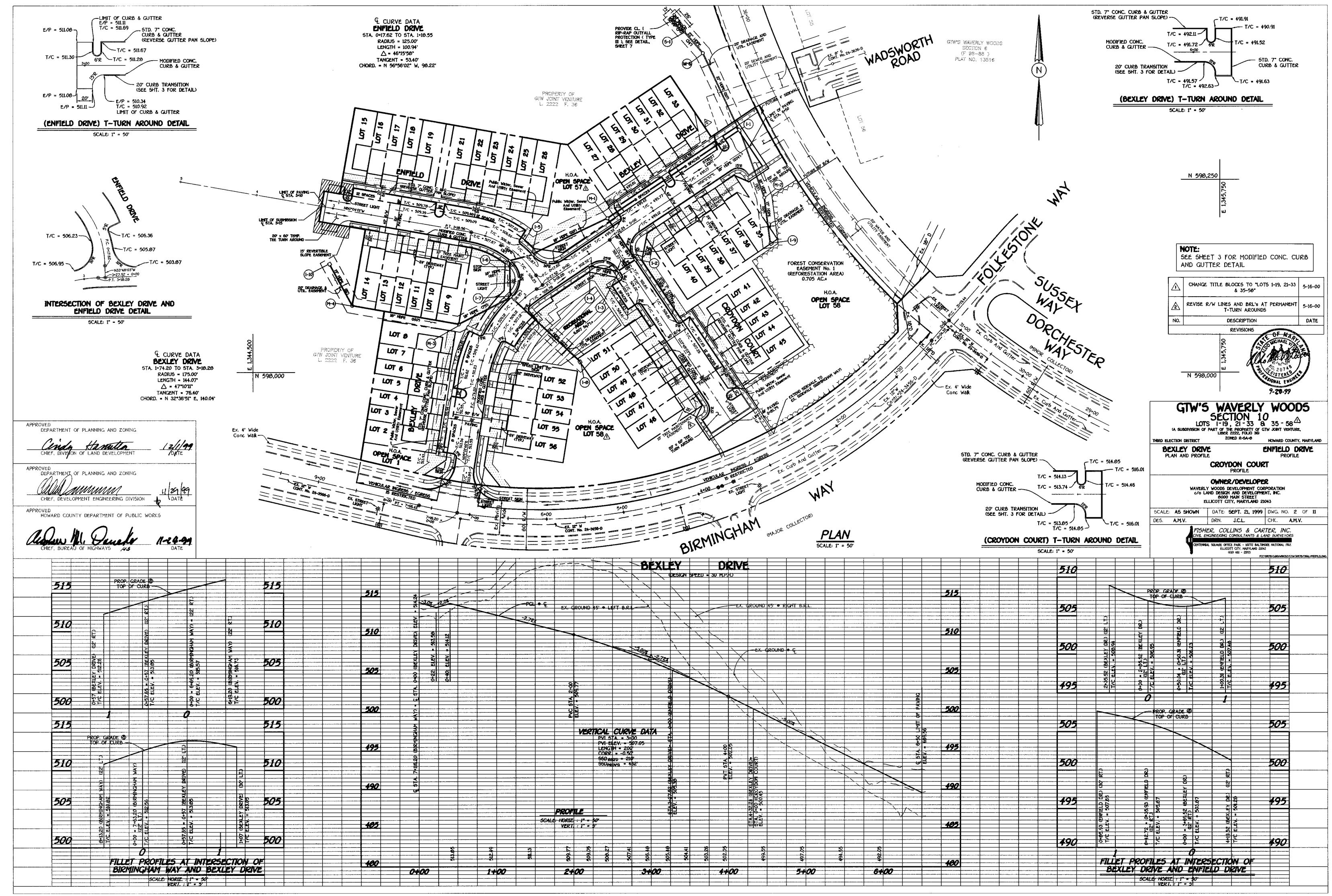
2. LOCATION: MARYLAND ROUTE 99 ON THE NORTH; EASTERN BOUNDARY OF LANDFILL ON THE WEST: INTERSTATE 70 TO THE SOUTH; AND WAVERLY WOODS SECTION 6 SUBDIVISION TO THE EAST.

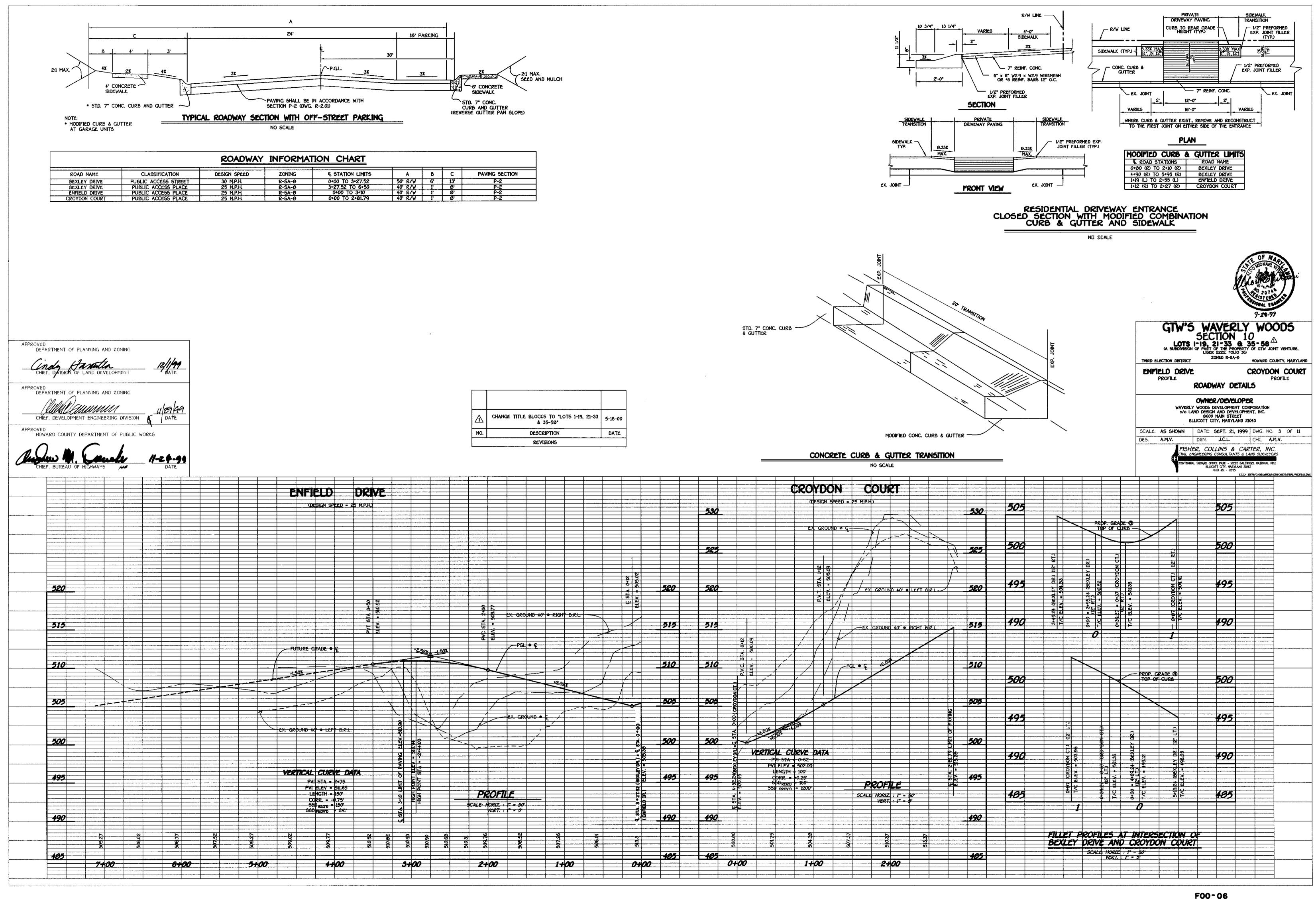
16. THE SOILS INVESTIGATION REPORT WAS PREPARED BY I.T.E., Inc. ON JUNE 26, 1994. 17. THE SKETCH PLAN NO. 5 94-07, WAS APPROVED ON 11/30/93. THE PRELIMINARY PLAN P 99-12 WAS APPROVED ON 3/22/99.

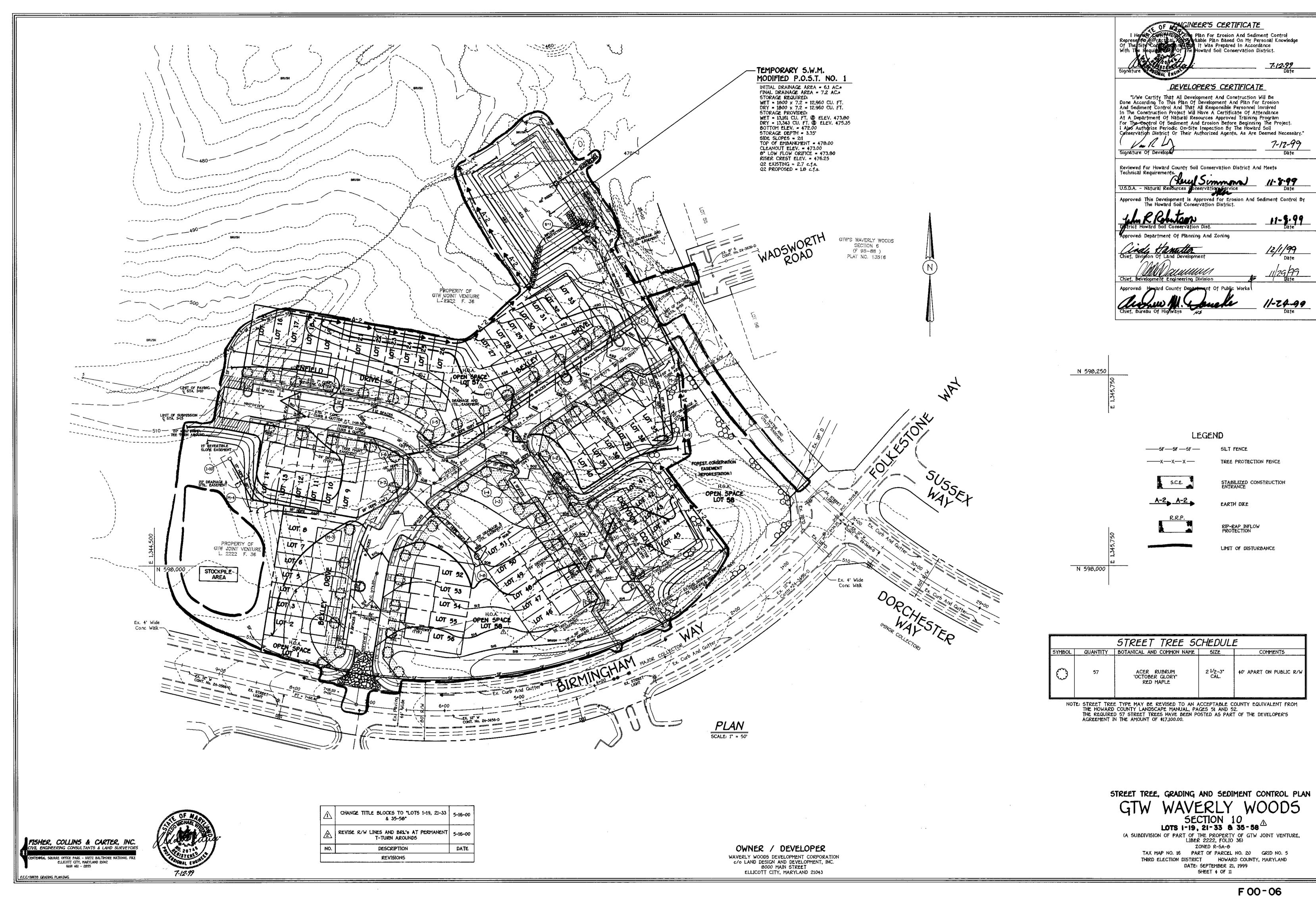
	RECREATIO	NAL OPEN	SPACE CHART		
ZONING	SECTION	No. Of UNITS	RECREATIONAL OPEN SPACE PER UNIT	TOTAL RECREATIONAL OPEN SPACE REQUIRED	TOTAL RECREATIONAL OPEN SPACE PROVIDED
	SECTION 4, AREA 1	6		1,200 5q.Ft.	0 5q.Ft.
	SECTION 5	128	200 Sq.Ft./UNIT	25,600 5q.F†.	46,105 5q.Ft.
R-5A-8	SECTION 6	71		14,200 54.F†.	4,235 5q.F†.
	SECTION 10	53		10,600 Sq.Ft.	6,007 Sq.Ft.
TOTAL		250		51.600 Sa.Ft.	56.347 Sa.Ft.

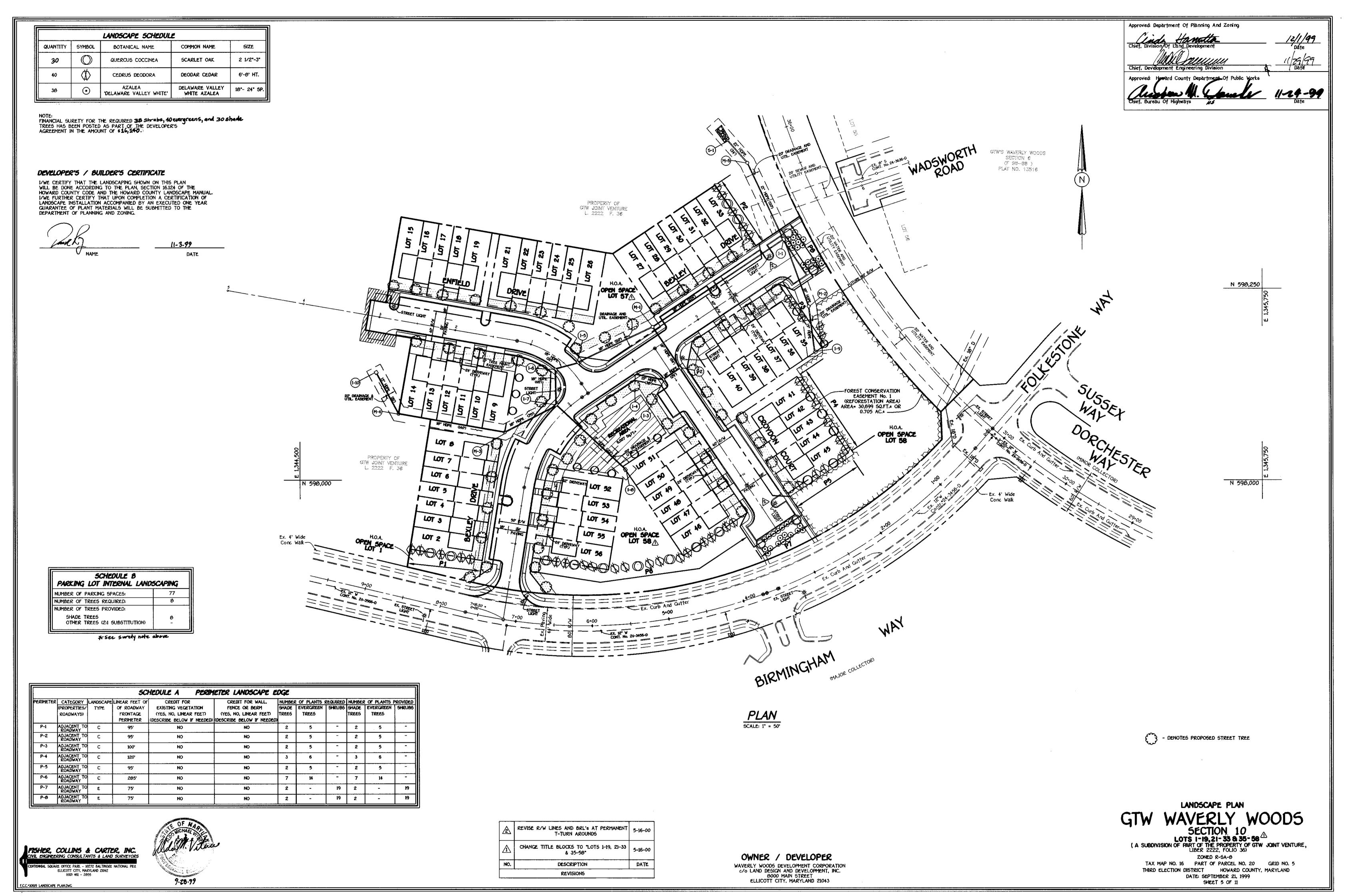
19. OPEN SPACE LOTS 1, 57 AND 58 ARE TO BE DEDICATED TO "H.O.A."

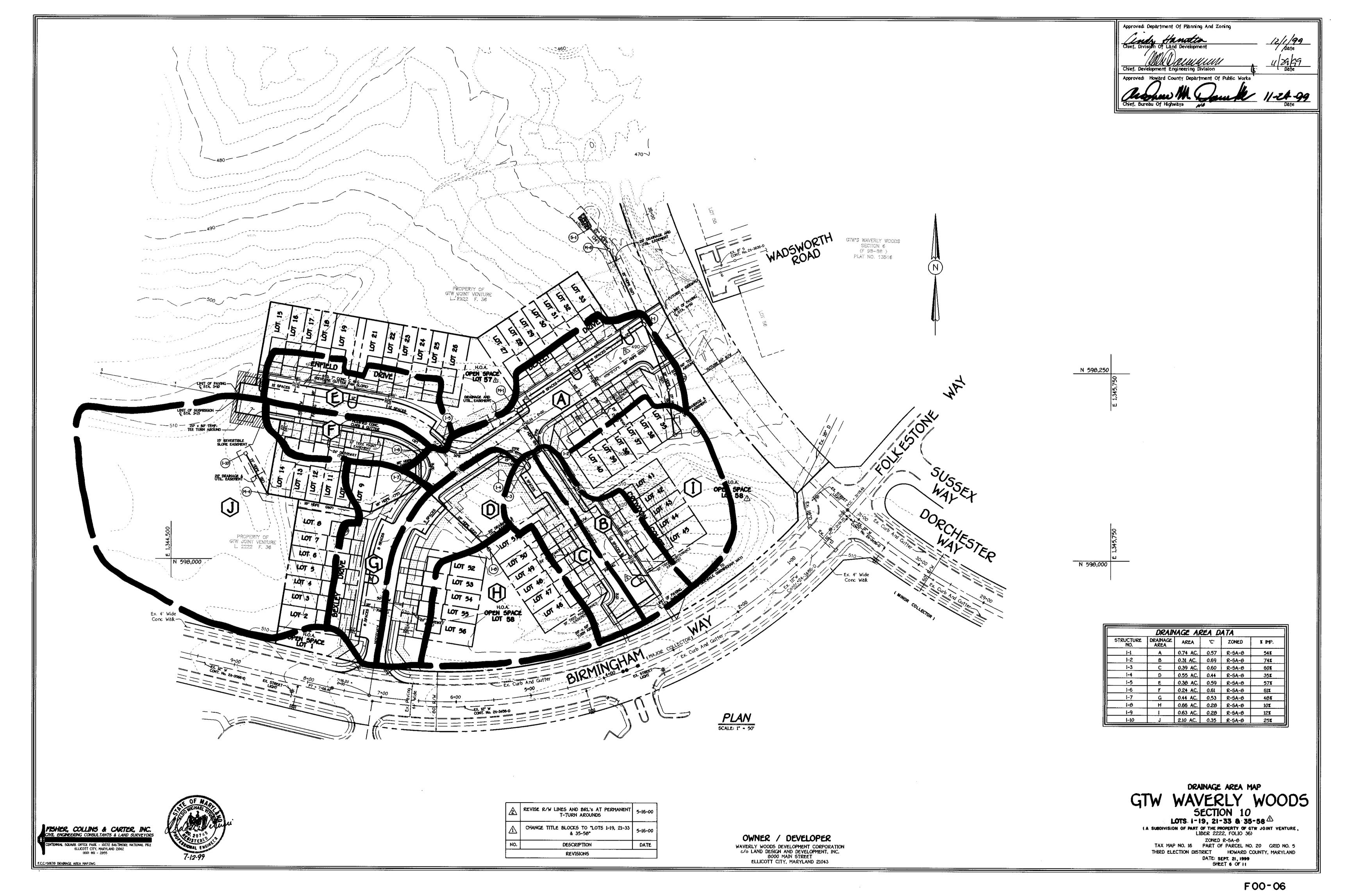
20. WP95-23 WAS APPROVED ON 1-23-95 FOR DISTURBANCES TO WETLANDS, FLOODPLAIN, STREAMS, OR THEIR BUFFERS, IN CERTAIN AREAS THROUGHOUT THE WAVERLY WOODS PROJECT. ONE PARTICULAR AREA, APPROVED FOR DISTURBANCE, was along proposed dorchester way, approximately 350' north of the intersection with prop. Birmingham WAY. THIS DISTURBANCE WAS FOR THE CONSTRUCTION OF DORCHESTER WAY ONLY. THE PROPOSED TEMPORARY S.W.M. facility, drainage pipe and rip-rap outfall shown on sheet no. 4, would likely disturb the wetlands. This DISTURBANCE WILL BE ALLOWED DUE TO THE FACT THAT THE WETLANDS ARE ALREADY APPROVED FOR GREATER

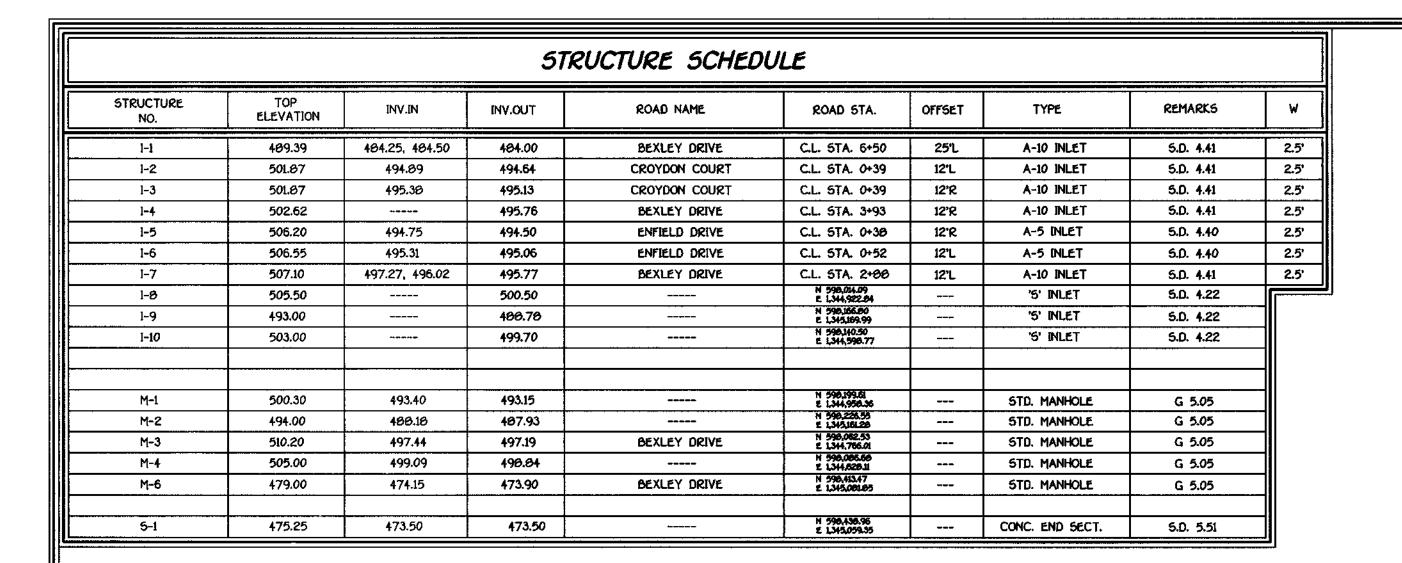


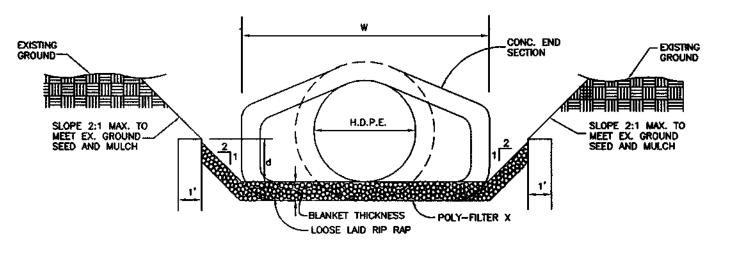












# RIP RAP CHANNEL DETAIL

				RIP-R		UNNEL	DESK	an ov	<u>ITA</u>	<u></u>				
STRUCTURE	AREA	WETTED PERIMETER	R	R 2/3	s	S 1/2	w	đ	Z	V (f.p.s.)	Q (c.f.s.)	Par - R/ D 50	P SIZE	BLANKET THICKNESS
5-1	8.68	14.45	0.6004	0.7116	.0050	.0707	13.0	0.65	0.04	1.87	16.23	9.5*	15"	19*

EX. GROUND ---(NOVEMBER, 1998)

PROP. GRADE -

10 YR. HGL

10" HDPE @ 1.00% Q10 = 5.11 c.f.s. Vf = 2.89 f.p.s. Vp = 5.9 f.p.s.

CONSTRUCTION SPECIFICATIONS FOR RIP-RAP OUTFALLS

- The subgrade for the filter, riprop 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 riprop or filter.
- 3. Filter cloth shall be protected from punching, cutting or tearing. Any damage other than an occasional shall hale 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.
- 4. 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 spails 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.

515

510

<u>505</u>

500

495

490

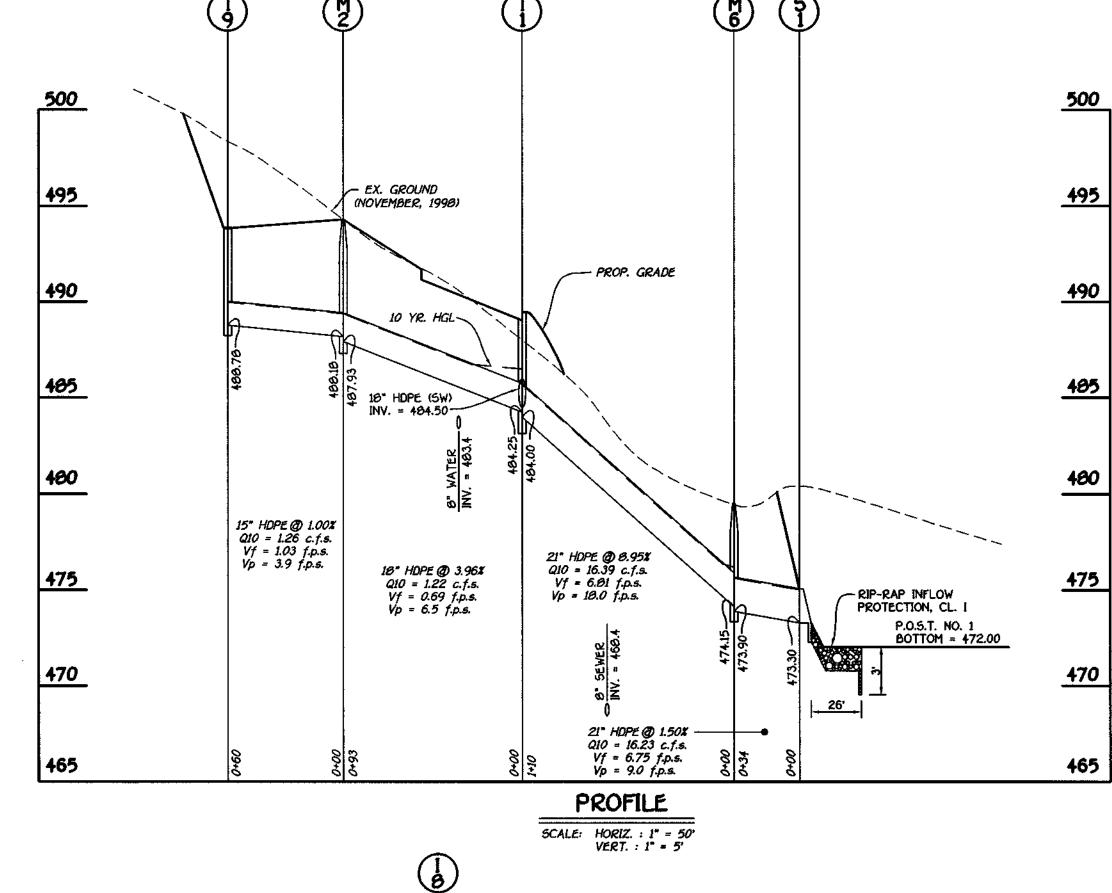
485

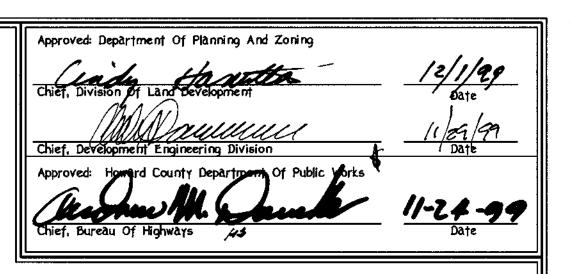
460

INV. = 497.27

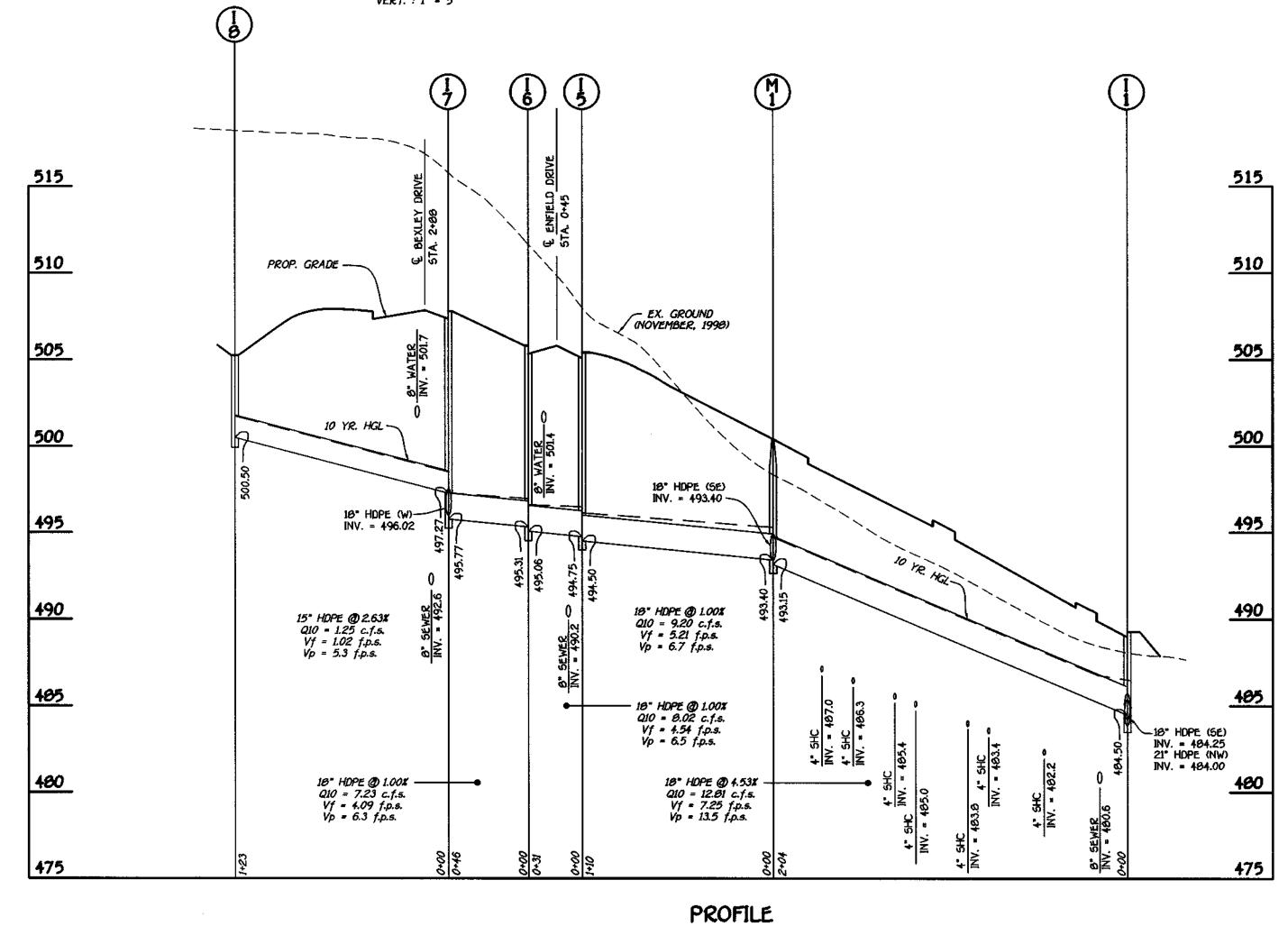
-18" HDPE (N)

INV. = 495.77





PIPE 5CHEDULE			
SIZE	CLA55	LENGTH	
15*	HDPE	282'	
16*	HDPE	787°	
21"	HDPE	144'	





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

FISHER, COLLINS & CARTER, INC. CIVIL ENGINEERING CONSULTANTS & LAND SURVEYORS

15" HDPE @ 1.00% Q10 = 5.16 c.f.s. Vf = 4.20 f.p.s. Vp = 5.6 f.p.s.

510

505

500

495

490

485

480

F.C.C.\*30678 STORMORAIN PROFILES.DWG



10 YR. HGL -

10" HDPE @ 1.56% Q10 = 4.95 c.f.s. Vf = 2.80 f.p.s. Vp = 6.9 f.p.s.

510 505 505 - EX. GRÒUND (NOVEMBER, 1998) PROP. GRADE -500 500 O YR. HGL -495 INV. = 493.15 18" HDPE (SW) INV. = 493.40 490 15° HOPE @ 1.00% Q10 = 1.49 c.f.s. Vf = 1.21 f.p.s. Vp = 4.1 f.p.s. 405 485 18" HDPE @ 1.00% -Q10 = 2.96 c.f.s. Vf = 1.60 f.p.s. Vp = 5.1 f.p.s. 480 480 10\* HDPE @ 1.94% Q10 = 4.00 c.f.s. Vf = 2.31 f.p.s. Vp = 7.2 f.p.s. 475 470

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

> > OWNER / DEVELOPER WAVERLY WOODS DEVELOPMENT CORPORATION c/o LAND DESIGN AND DEVELOPMENT, INC. 8000 MAIN STREET

ELLICOTT CITY, MARYLAND 21043

CHANGE TITLE BLOCKS TO LOTS 1-19, 21-33 5-16-00 & 35-5**6\*** DESCRIPTION DATE REVISIONS

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

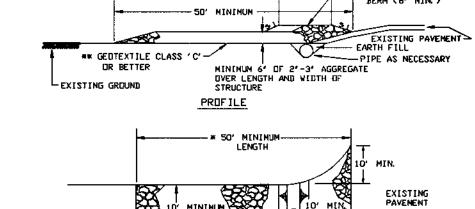
STORMDRAIN PROFILES GTW'S WAVERLY WOODS

SECTION 10

LOTS 1-19, 21-33 & 35-58

(A SUBDIVISION OF PART OF THE PROPERTY OF GTW JOINT VENTURE, LIBER 2222, FOLIO 36) ZONED R-SA-8

TAX MAP NO. 16 PART OF PARCEL NO. 20 GRID NO. 5 THIRD ELECTION DISTRICT HOWARD COUNTY, MARYLAND DATE: SEPTEMBER 21, 1999 SHEET 7 OF 11



MINIHUM STANDARD SYMBOL SCE Construction Specification

1. Length - minimum of 50' (=30' for single residence lot). minimum, should be flared at the existing road to provide a turning

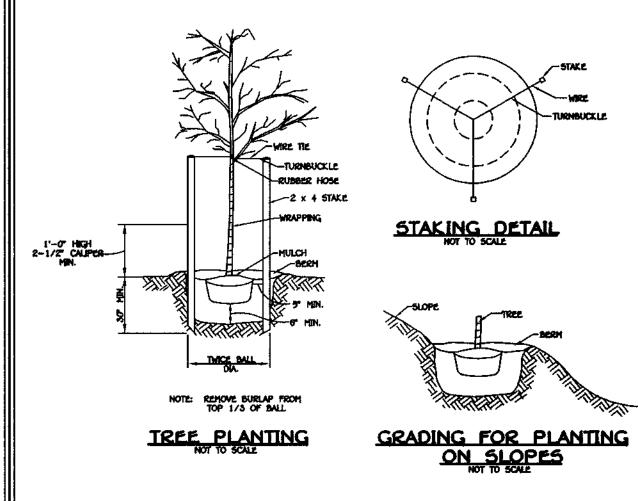
3, Geotextile fabric (filter cloth) shall be placed over the existing ground prior to placing stone. \*\*The plan approval authority may not require single family

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

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 bern 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

# STABILIZED CONSTRUCTION ENTRANCE - 2 NOT TO SCALE



# SEDIMENT CONTROL NOTES

A MINIMUM OF 40 HOURS NOTICE MUST BE GIVEN TO THE HOWARD COUNTY DEPARTMENT OF INSPECTIONS, LISCENSES AND PERMITS, SEDIMENT CONTROL DIVISION PRIOR TO THE START OF ANY CONSTRUCTION (313-1055).

ALL VEGETATIVE AND STRUCTURAL 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.

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.

GRADING NECESSARY TO INSTALL STORM DRAINS, SEDIMENT TRAP AND EARTH DIKES TO BE PERFORMED FIRST. REMAINDER OF THE GRADING TO BE PERFORMED AFTER STORM DRAINS, SEDIMENT TRAP AND EARTH DIKES ARE INSTALLED.

ALL SEDIMENT TRAPS/BASINS SHOWN MUST BE FENCED AND WARNING 5) ALL DISTURBED AREAS MUST BE FENCED AND WARNING CHAPTER 12, 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 (SEC. 51), SOD (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

O BE MAINTAINED IN OPERATIVE CONDITION UNTIL PERMISSION FOR THEIR REMOVAL HAS BEEN OBTAINED FROM THE HOWARD COUNTY SEDIMENT

TOTAL AREA OF SITE 6.363 ACRES AREA DISTURBED 5.260 ACRES AREA TO BE ROOFED OR PAVED 3.400 ACRES AREA TO BE VEGETATIVELY STABILIZED 1.000 ACRES 6,300 CU.YDS. TOTAL CUT 8,300 CU.YDS. TOTAL FILL

OFFSITE WASTE/BORROW AREA LOCATION N/A CU.YDS. 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

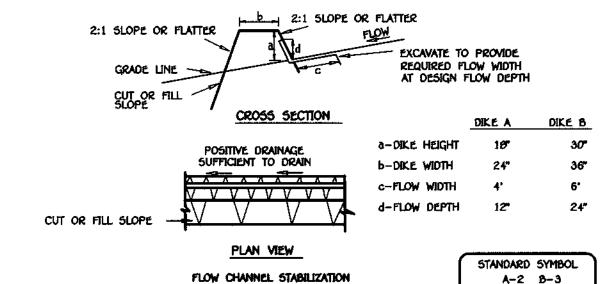
NECESSARY BY THE HOWARD COUNTY SEDIMENT CONTROL INSPECTOR. 10) ON ALL SITES WITH DISTURBED AREAS IN EXCESS OF 2 ACRES. APPROVAL OF THE INSPECTION AGENCY SHALL BE REQUESTED UPON COMPLETION OF INSTALLATION OF PERIMETER EROSION AND SEDIMENT CONTROLS, BUT BEFORE PROCEEDING WITH ANY OTHER EARTH DISTURBANCE 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 LENGHTS OR THAT WHICH SHALL BE BACK-FILLED AND STABILIZED WITHIN ONE WORKING DAY, WHICHEVER IS SHORTER.



F.C.C. 30670 SED CON DETAILSLOWG





. 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

**→** -/**→** -

GRADE 0.5% MIN. 10% MAX.

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 n undisturbed, stabilized area at a non-erosive velocity.

4. All trees, brush, stumps, obstructions, and other objectionable 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

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.

EARTH DIKE

# 20.0 STANDARDS AND SPECIFICATIONS VEGETATIVE STABILIZATION

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 crude and more likely to allow infiltration of rainfall, thereby reducing sediment loads and run-off 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 Oup 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 stockpile 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, seedbed preparation, seeding, mulching and vegetative establishment to prevent large quantities of sediment and associated chemicals and nutrients from washing into surface waters.

SECTION 1 - VEGETATIVE STABILIZATION METHODS AND MATERIALS

A. Site Preparation

i. Install erosion and sediment control structures (either temporary of permanent) such as diversions. grade stabilization structures, berms, waterways, or sediment control basins. ii. Perform all grading operations at right angles to the slope. Final grading and shaping is not usually

necessary for temporary seeding.

iii. Schedule required soil tests to determine soil amendment composition and application rates for sites having disturbed area 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 tertilizer on sites having disturbed areas over 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.

ii. 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 warrantee of the producer.

iii. 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 sleve, incorporate lime and fertilizer into the top 3-5" of soil by disking or other suitable means.

iv. Incorporate lime and fertilizer into the top 3-5" of soil by disking or other suitable means.
Seedbed Preparation

i. Temporary Seeding

a. Seedbed 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. Stoped areas (greater than 3:D should be tracked leaving the surface in an irregular condition with ridges running parallel to the contour of the slope.
b. Apply fertilizer and lime as prescribed on the plans.
c. In corporate lime and fertilizer into the top 3-5" of soil by disking or other suitable means.
ii. Permanent Seeding
a. Minimum soil conditions required for permanent vegetative establishment:
1. Soil pit shall be between 6.0 and 7.0.
2. Soluble saits shall be less than 500 parts per million (opm).
3. The soil shall contain less than 40% clay, but enough fine grained material 030% silt plus clay; to provide the capacity to hold a moderate amount of moisture. An exception is if lovegrass or

material (30% silt plus clay) to provide the capacity to hold a moderate amount of moisture. An exception is if lovegrass or serecia lespedezas is to be planted, then a sandy soil (30% silt plus clay) would be acceptable.

4. Soil shall contain 1.5% minimum organic matter by weight.

5. Soil must contain sufficient pore space to permit adequate root penetration.

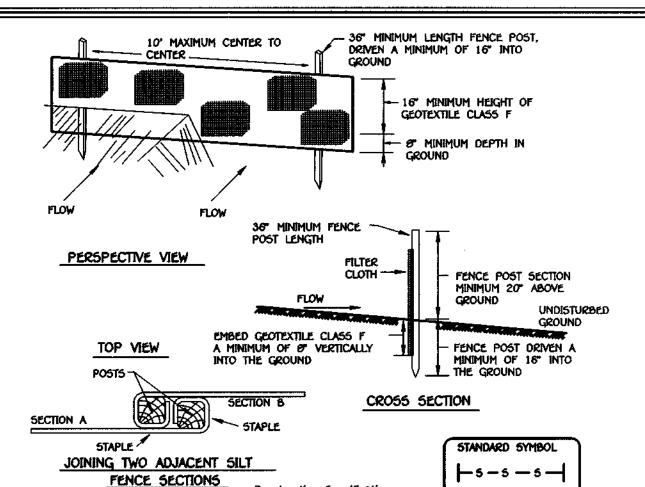
6. If these conditions cannot be met by soils on site, adding topsoil is required in accordance with Section 21 Standard and Specification for Topsoil.

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 to the surface area and to create horizontal erosion check slots to prevent sliding down a slope.

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.

Mix soil amendments into the top 3-5" of topsoil by disking or other suitable means. Lawn 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 seedbed 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. Seedbed loosening may not be necessary on newly disturbed areas.



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:

Test: M5MT 509 Tensile Strength 50 (bs/in (min.) Tensile Modulus 20 lbs/in (min.) Test: M5MT 509 Test: M5MT 322 0.3 gal ff / minute (maxf) Test: M5MT 322 *75%* (min.)

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.

# DETAIL 22 - SILT FENCE

NOT TO SCALE

Note: Seed tags shall be made available to the inspector to verify type and rate of seed used.

ii. Inoculant — The inoculant for treating legume seed in the seed mixtures shall be a pure culture of nitrogentising bacteria prepared specifically for the species. Inoculant shall not be used later than the date indicated on the container. Add fresh inoculant as directed on package. Use four times the recommended rate when hydroseeding. Note: It is very important to keep inoculant as cool as possib until used. Temperatures above 75°-80° f. can weaken bacteria and make the inoculant less effective.

E. Methods of Seeding: Apply seed uniformly with hydroseeder (surry includes seed and fertilizer), broadcast or drop seeded, or a cultipacker seeder.

a. If fertilizer is being applied at the time of seeding, the application rates amounts will not exceed the following: nitrogen; maximum of 100 lbs. per acre total of soluble nitrogen; P205 (phosphorous): 200 lbs/ac; K20 (potassium): 200 lbs/ac.

b. Lime - use only ground agricultural limestone, (Up to 3 tons per acre may be applied by hydroseeding). Normally, not more than 2 tons are applied by hydroseeding at any one time. Oo not use burm or hydrated lime when hydroseeding.

c. Seed and fertilizer shall be mixed on site and seeding shall be done immediately and without interruption.

without interruption.

Seeding: This includes use of conventional drop or broadcast spreaders.

Seed spread dry shall be incorporated into the subsoil at the rates prescribed on the Temporary or Permanent Seeding Summaries or Tables 265 or 26. The seeded area to provide good seed to soil contact.

Temporary or Permanent Seeding Summaries or Tables 265 or 26. The seeded area shall then be rolled with a weighted roller to provide good seed to soil contact.

b. Where practical, seed should be applied in two directions perpendicular to each other. Apply half the seeding rate in each direction.

iii. Orill or Cultipacker Seeding: Mechanized seeders that apply and cover seed with soil.

a. Cultipacking seeders are required to bury the seed in such a fashion as to provide at least 1/4 inch of soil covering. Seedbed must be firm after planting.

b. Where practical, seed should be applied in two directions perpendicular to each other. Apply half the seeding rate in each direction.

Much Sectifications (in order of preference)

Apply half the second rate in each direction.

Mulch Specifications (In order of preference)

i. Straw shall consist of thoroughly threshed wheat, rye or oat straw, reasonable bright in color, and shall not be musty, moldy, caked, decayed, or excessively dusty and shall be free of noxious weed seeds as specified in the haryland Seed Law.

ii. Wood Cellulose Fiber Mulch (WCFH)

a. WCFM shall consist of specially prepared wood cellulose processed into a uniform fibrous physical state.

10. Wood Cellulose Fiber Mulch (WCPT)

2. WCPM shall consist of specially prepared wood cellulose processed into a uniform fibrous physical state.

3. WCPM shall be dyed green or comtain a green dye in the package that will provide an appropriate color to facilitate visual inspection of the uniformly spead sturry.

3. WCPM, including dye, shall contain no germination or growth inhibiting factors.

4. WCPM, including dye, shall contain no germination or growth inhibiting factors.

5. WCPM, including dye, shall contain no germination or growth inhibiting factors.

6. WCPM including shall be manufactured and processed in such a manner that the wood cellulose fiber mulch will remain in uniform suspension in water under adjitation and will bend with seed, fertilizer and other additives to form a homogeneous sturry.

7. The mulch material shall form a blotter-like ground cover, on application, having moisture absorption and percolation properties and shall cover and hold grass seed in contact with, the soil without inhibiting the growth of the grass seedings.

8. WCPM mater conform to the following physical requirements: fiber length to approximately 10 mm., diameter approximately 1 mm., pd grain information in election and the physical properties of the grass seedings.

9. WCPM mater conform to the following physical requirements: fiber length to expendent the physical properties of the grass of 4.0 to 6.5, ash content of 15x maximum and water holding chapacity of 9x innimum.

10. Note: Only sterile straw match should be used in areas where one species of grass is desired.

11. If grading is completed outside of the seeding season, mulch along shall be applied as prescribed in this section and maintained until the seeding season returns and seeding can be performed in the section and maintained until the seeding season returns and seeding can be performed in the section and maintained until the seeding season returns and seeding can be performed in the section and maintained until the seeding season returns and seed

of water.

iii. Application of liquid binders should be heavier at the edges where wind catches mulch, such as in valleys and crest of banks. The remainder of area should be appear uniform after binder application. Synthetic binders - such as Acrylic DLR (Agro-Tack), DCA-70 Petroset, Terra Tax II, Terra Tack AR or other approved equal may be used at rates recommended by the manufacturer to anchor mulch.

V. Lichtweicht plastic matter manufacturer are the catalled and the standard second second

iv. Lightweight plastic netting may be stapled over the mulch according to manufacturer's recommendations. Netting is usually available in rolls 4' to 15' feet wide and 300 to 3,000 feet long.

Incremental Stabilization - Cut Slopes

i. All cuts slopes shall be dressed, prepared, seeded and mulched as the work progresses. Slopes shall be excavated and etabilized in equal increments not to exceed 15'.

ii. 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.

Overseed Phase 1 areas as

necessary.

Perform final phase excavation, dress and stabilize. Overseed previously seeded areas as necessary.

Note: 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.

J. Incremental Stabilization of Embankments - Fill Slopes

Embarkments shall be constructed in lifts as prescribed on the plans.

ii. Slopes shall be constructed in lifts as prescribed on the plans.

iii. Slopes shall be stabilized immediately when the vertical height of the multiple lifts reaches

15°, or when the grading operation ceases as prescribed in the plans.

iii. 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-crosive manner to a sediment trapping device.

iv. Construction sequence: Refer to Figure 4 (below).

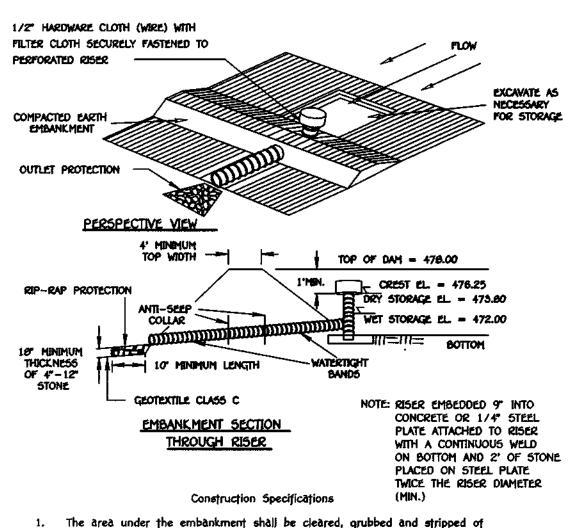
a. Excavate and stabilize all temporary swales, side ditches, or berms that will be used to divert runoff around the fill. Construct slope silt fence on low side of fill as shown in Figure 5, unless other methods shown on the plans address this area.

b. Place Phase 1 embankment, dress and stabilize.

c. Place Phase 2 embankment, dress and stabilize.

d. Place final phase embankment, dress and stabilize.

Note: 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.



The area under the embankment shall be cleared, grubbed and stripped of

any vegetation and root mat. The pool area shall be cleared. 2. The fill material for the embankment shall be free of roots or other woody vegetation as well as oversized stones, rocks, organic material, or other objectionable material. The embankment shall be compacted by traversing with equipment while it is being constructed.

The total trap volume as measured from the bottom to riser crest elevation shall be 3600 cubic feet per acre of drainage area (see Table 9). The top of embankment must be 1' above the riser crest elevation.

Sediment shall be removed and the trap restored to its original dimensions when the sediment has accumulated to one half of the wet storage depth of the trap (900cf/ac). The sediment shall be deposited in a suitable area and in such a manner that it will not erode.

5. The structure shall be inspected periodically and after each rain and repairs made as necessary.

6. Construction operations shall be carried out in such a manner that erosion and water pollution are abated. Once constructed, the top and outside face of the embankment shall be stabilized with seed and mulch. Points of concentrated inflow shall be protected in accordance with Grade Stabilization Structure criteria. The remainder of the interior slopes should be stabilized (one time) with seed and mulch upon trap completion and monitored and maintained erosion free during the life of the trap.

7. The structure shall be removed and area stabilized when the drainage area has been properly stabilized.

8. All cut and fill slopes shall be 2:1 or flatter.

9. All pipe connections shall be watertight

10. Above the wet storage elevation, the riser shall be perforated with 1/2" wide by 6" long slits or 1" diameter holes spaced 6" vertically and horizontally. No perforations will be allowed within 6" of the horizontal barrel.

11. The riser shall be wrapped with 1/2" hardware cloth (wire) then wrapped with Geotextile Class E. The filter cloth shall extend 6" above the highest slit and 6" below the lowest slit. Where ends of filter cloth come together, they shall be overlapped, folded and fastened to prevent bypass. cloth shall be replaced as necessary to prevent clogging.

12. Straps or connecting bands shall be used to hold the filter cloth and wire fabric in place. They shall be placed at the top and bottom of the cloth

13. Fill material around the pipe spillway shall be hand compacted in 4" layers. A minimum of 2' of hand-compacted backfill shall be placed over the pipe spillway before crossing it with construction equipment.

14. The riser shall be anchored with either a concrete base or steel plate base to prevent flotation. Concrete bases shall be at least twice the riser diameter and 12" deep with the riser embedded 9". Steel plate bases shall be at least twice the riser diameter, 1/4" minimum thickness and attached to the bottom of the riser by a continuous weld to form a watertight connection. Then place 2' of stone, gravel or tamped earth

15. Anti seep collars shall be constructed in accordance with plans (ref. table 16 and Details 13 and 14).

16. Concentric trash rack and anti-vortex device design details are on Detail 16.

17. Refer to Section D for dewatering requirements of sediment traps

18. Outlet - An outlet shall be provided, which includes a means of conveying

the discharge in an erosion free manner to an existing stable channel. 19. Where discharge occurs at the property line, local ordinances and drainage easement requirements shall be met.

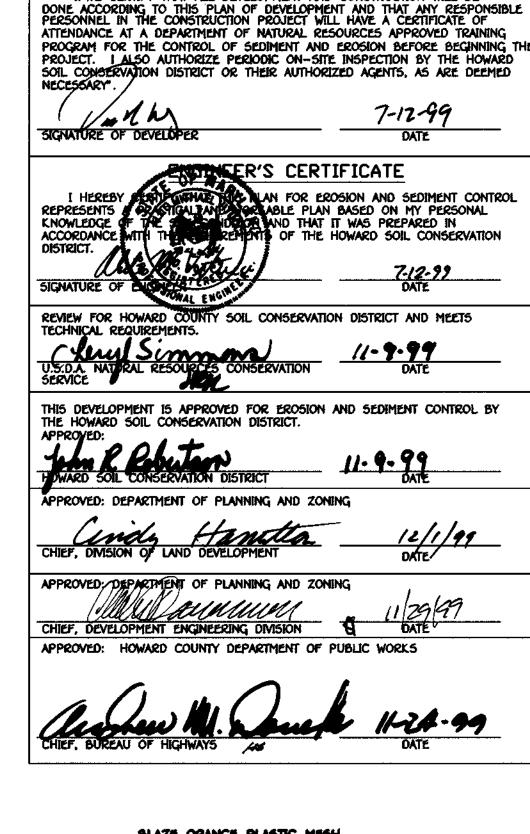
# PIPE OUTLET SEDIMENT TRAP - ST |

OWNER / DEVELOPER

WAVERLY WOODS DEVELOPMENT CORPORATION

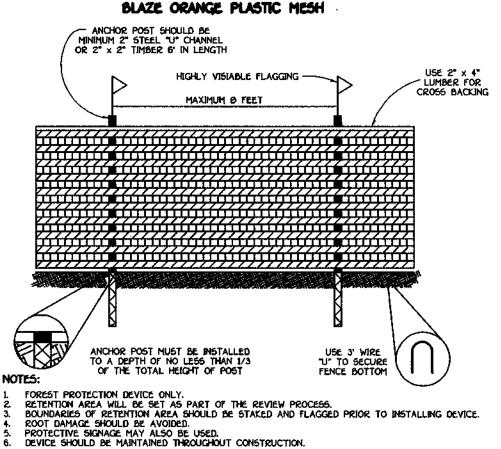
C/O LAND DESIGN AND DEVELOPMENT, INC. 8000 MAIN STREET ELLICOTT CITY, MARYLAND 21043

NOT TO SCALE



DEVELOPER'S CERTIFICATE

"I/WE CERTIFY THAT ALL DEVELOPMENT AND CONSTRUCTION WILL BE



TREE PROTECTION DETAIL

NOT TO SCALE

CHANGE TITLE BLOCKS TO "LOTS 1-19, 21-33 5-16-00 & 35-50" DATE DESCRIPTION REVISIONS

SEDIMENT CONTROL NOTES AND DETAILS WAVERLY WOODS

SECTION 10 LOTS 1-19, 21-33 & 35-58 LA SUBDIVISION OF PART OF THE PROPERTY OF GTW JOINT VENTURE, LIBER 222, FOLIO 36)

ZONED R-SA-8 TAX MAP NO. 16 PART OF PARCEL NO. 20 GRID NO. 5 THIRD ELECTION DISTRICT HOWARD COUNTY, MARYLAND DATE: SEPT. 21, 1999

SHEET 8 OF II

## STANDARDS AND SPECIFICATIONS FOR TOPSOIL

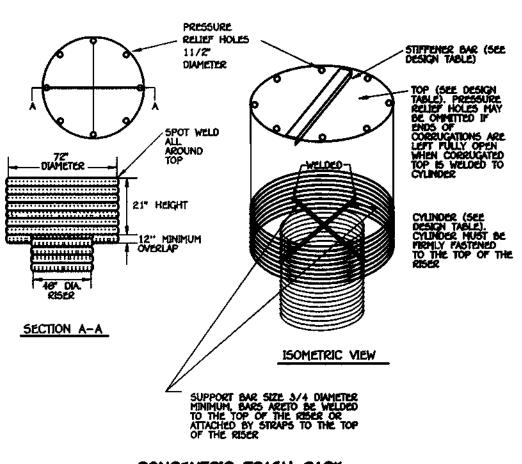
Placement of topsoil over a prepared subsoil prior to establishment of permanent vegetation.

To provide a suitable soil medium for vegetative growth. Solis of concern have low moisture content, low nutrient levels, low pH, naterials toxic to plants, and/or unacceptable soil gradation. Conditions Where Practice Applies

- This practice is limited to areas having 211 or flatter slopes where:
  - a. The texture of the exposed subsoll/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.
- For the purpose of these Standards and Specifications, areas having slopes steeper than 24 require special consideration and design for adequate stabilization. Areas having slopes steeper than 24 shall have the appropriate stabilization shown on the plans. Construction and Material Specifications
- 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 Experimental Station.
- 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 11/2" 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 the subsoil is either highly acidic or composed of heavy clays, ground linestone 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. Line shall be distributed uniformly over designated areas and worked into the soil in conjunction with tiliage operations as described in the following procedures.
- For sites havinc, disturbed areas under 5 acresi
- I. Place topsoil (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 Topsoil specifications, obtain test results dictating fertilizer and line 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 line shall be perscribed to raise the pH to 6.5 or higher.
- b. Erganic 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: Topspil substitutes or amendments, as recommended by a qualified agronomist or soil scientist and approved by the appopriate approval authority, may be used in lieu of natural topsoil.

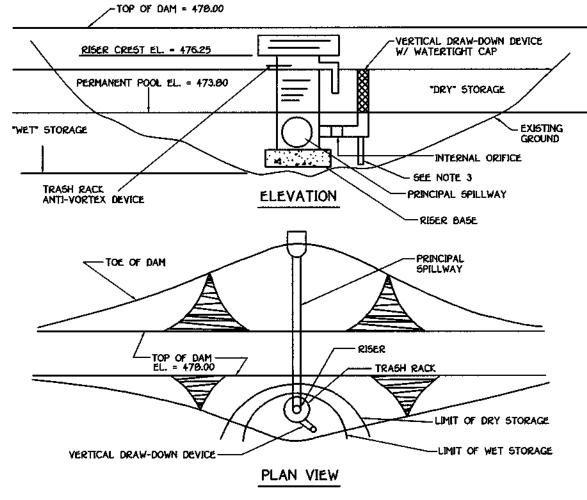
- II. Place topsoil (if required) and apply soil amendments as specified in 20.0 Vegetative Stabilization Section I Vegetative Stabilization Methods and Materials.
- - I. When topsoiling, maintain needed erosion and sediment control practices such as diversions,
    Grade Stabilization Structures, Earth Dikes, Slope Silt Fence and Sediment Traps and Basins.
- ii. Grades on the areas to be topsolled, 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 sadding or seedine can proceed with a minimum of additional soil preparation and tiliage. 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. Topsail shall not be placed while the topsail 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 line and commercial fertilizer, composted studge and amendments may be applied as specified below i. Composted Sludge Naterial 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:
- 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
- b. Composted sludge shall contain at least I 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 I ton/1,000 square feet.
- iv. 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 line application rate.
- References: Guideline Specifications, Soil PreparantioSodding,. ND-VA, Pub. #I, Cooperative Extension Service, University of Maryland and Virginia Polytechnic Institutes. Revised 1973.



CONCENTRIC TRASH RACK AND ANTI-VORTEX DEVICE

NOT TO SCALE

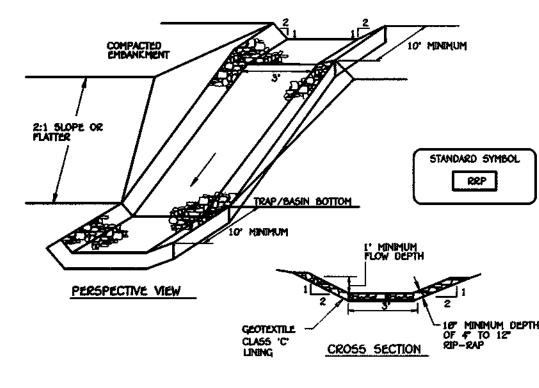
CHANGE TITLE BLOCKS TO "LOTS 1-19, 21-33 5-16-00 & 35-58° DESCRIPTION DATE **REVISIONS** 



# CONSTRUCTION SPECIFICATIONS

- 1. PERFORATIONS IN THE DRAW-DOWN DEVICE MAY NOT EXTEND INTO THE WET STORAGE.
- 2. THE TOTAL AREA OF THE PERFORATIONS MUST BE GREATER THAN 2 TIMES THE AREA OF THE INTERNAL ORIFICE.
- 3. THE PERFORATED PORTION OF THE DRAW-DOWN DEVICE SHALL BE WRAPPED WITH 1/2" HARDWARE CLOTH AND GEOTEXTILE FABRIC. THE GEOTEXTILE FABRIC SHALL MEET THE SPECIFICATIONS FOR GEOTEXTILE CLASS E.
- 4. PROVIDE SUPPORT OF DRAW-DOWN DEVICE TO PREVENT SAGGING AND FLOATATION. AN ACCEPTABLE PREVENTATIVE MEASURE IS TO STAKE BOTH SIDES OF DRAW-DOWN DEVICE WITH 1" STEEL ANGLE, OR 1" BY 4" SQUARE OR 2" ROUND WOODEN POSTS SET 3" MINIMUM INTO THE GROUND THEN JOINING THEM TO THE DEVICE BY WRAPPING WITH 12 GAUGE MINIMUM WIRE.

BASIN DRAWDOWN SCHEMATIC VERTICAL DRAW-DOWN DEVICE NOT TO SCALE

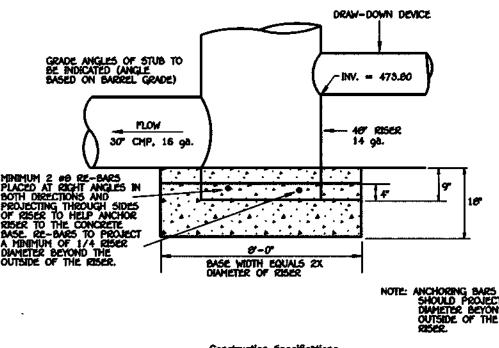


## Construction Specifications

1. 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 fined with 4" to 12" rip- rap to a depth of 18".

- 2. Filter cloth shall be installed under all rip-rap. Filter cloth shall be Geotextile Class C.
- 3. Entrance and exit sections shall be installed as shown on the detail
- 4. Rip-rap used for the lining may be recycled for permanent outlet protection if the basin is to be converted to a stormwater management
- 5. Gabion Inflow Protection may be used in lieu of Rip—rap Inflow
- 6. Rip-rap should blend into existing ground.
- 7. Rip-rap inflow Projection 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

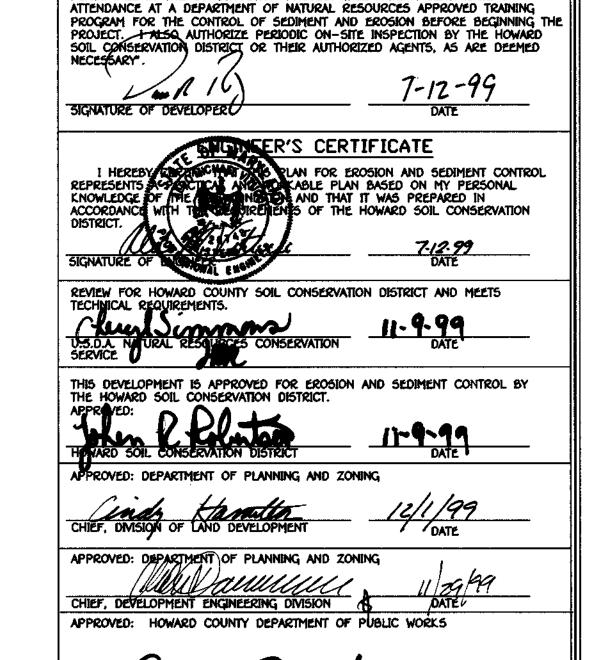
RIP-RAP INFLOW PROTECTION NOT TO SCALE



Construction Specifications

- The riser shall have a base attached with a watertight connection and shall have sufficient weight to prevent flotation of the riser. Two approved bases for risers 10° or less in height are: 1. A concrete base 18° thick with the riser embedded 9° in the base.
- 2. A 1/4" minimum thickness steel plate attached to the riser by a continuous weld around the circumference of the riser to form a waterlight connection. The plate shall have 2' of stone, gravel, or compacted earth placed on it to prevent flotation. In either case, each side of the square base shall be twice the riser diameter.
- Note: For risers greater than ten feet high computations shall be made to design a base which will prevent floatation. The minimum factor of safety shall be 1.20 (downward forces = 1.20 x upward forces).

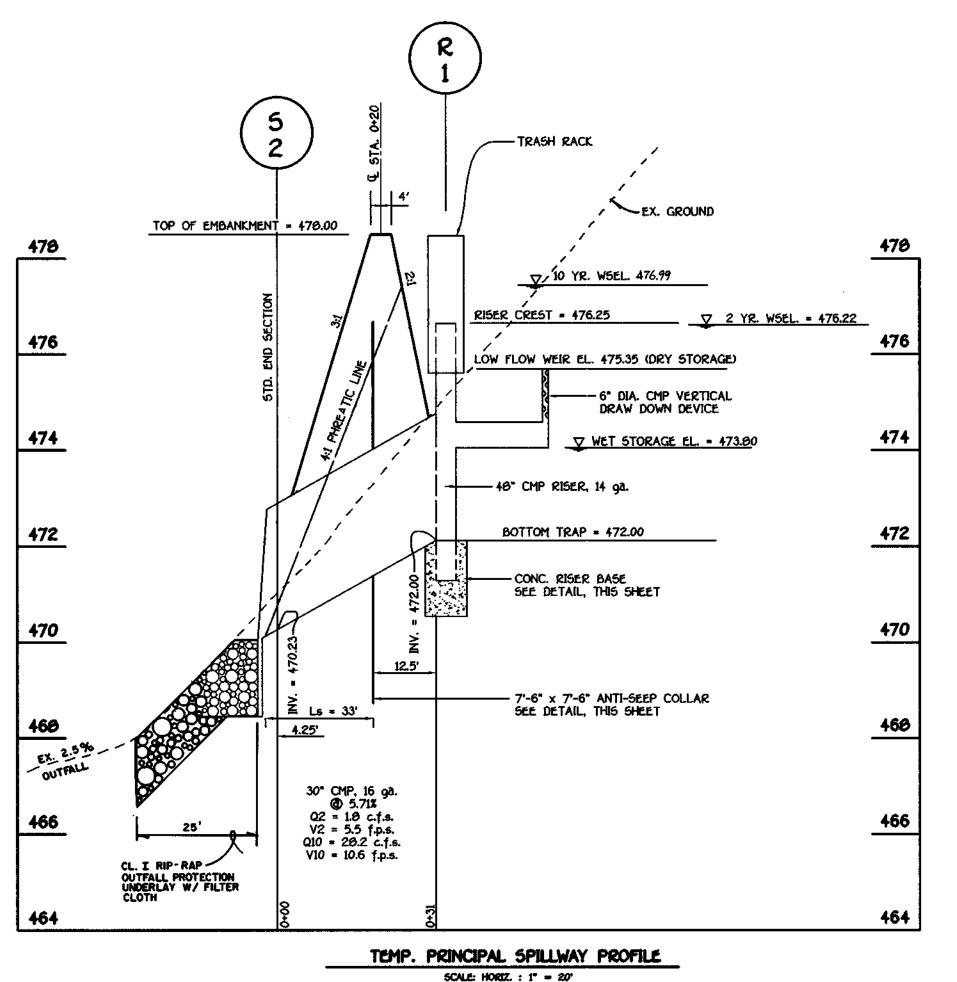
RISER BASE DETAIL NOT TO SCALE

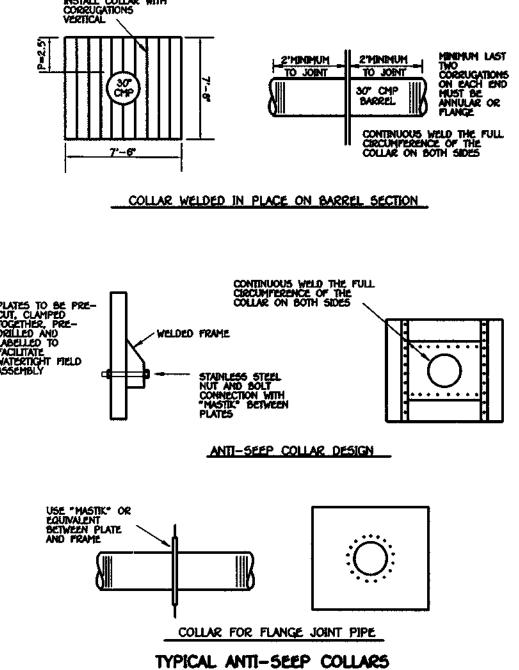


DEVELOPER'S CERTIFICATE

\*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





NOT TO SCALE

# SEQUENCE OF CONSTRUCTION

# 1. OBTAIN A GRADING PERMIT.

- 2. NOTIFY "MISS UTILITY" AT LEATS 40 HOURS BEFORE BEGINNING ANY WORK AT 1-800-257-7777. NOTIFY THE HOWARD COUNTY OFFICE OF CONSTRUCTION/INSPECTION AT 410-313-1330 24 HOURS BEFORE STRATING WORK.
- 3. CLEAR AND GRUB FOR SEDIMENT CONTROL MEASURES AND PHASE I CONSTRUCTION ONLY. INSTALL STABILIZED CONSTRUCTION ENTRANCE. (2 weeks)
- 4. INSTALL REMAINING SEDIMENT CONTROL MEASURES, SEDIMENT TRAPS, EARTH DIKES, PIPE SLOPE DRAINS FOR CLEAN WATER DIVIERSION AND SILT FENCE AS INDICATED ON THE PLANS. NO BLASTING WILL BE PERMITTED FOR THE EXCAVATION OF THE PROPOSED TRAPS. WHERE NECESSARY, RIPPING AND JACK HAMMERING SHOULD BE UTILIZED IN THE EXCAVATION OF EACH FACILITY. (2 weeks)
- 5. OBTAIN PERMISSION OF THE SEDIMENT CONTROL INSPECTOR PRIOR TO PROCEED.
- 6. BEGIN PHASE I OF CONSTRUCTION. a. CONSTRUCT THE STORMWATER MANAGEMENT FACILITY ALONG WITH THE ACCESS ROAD. ALSO CONSTRUCT PART OF THE STORM DRAIN SYSYTEM FROM 5-2 TO M-7 AND FROM M-5
- TO M-12 AS SHOWN ON THE ATTACHED PLANS. ( 6 weeks) b. INSURE FULL, PERMANENT STABILIZATION OF THE SWM FACILITY. c. ONCE PHASE I WORK IS COMPLETE AND STABILIZED, OBTAIN PERMISSION FROM THE
- INSPECTOR TO PROCEED WITH THE REMAINING SITE WORK. 7. CLEAR AND GRUB FOR THE REMAINDER OF SITE. (1 week)
- 8. GRADE SITE TO PROPOSED SUBGRADE AND INSTALL REMAINING STORM SYSTEM EXCEPT FOR THOSE RUNS ASSOCIATED WITH THE SEDIMENT TRAPS. STABILZE ALL ROADWAY DITCH SLOPES IMMEDIATELY UPON COMPLETION OF GRADING AS SHOWN ON THESE PLANS. (4 weeks) 9. 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. REMOVE SEDIMENTS FROM ALL TRAPS WHEN CLEANOUT ELEVATIONS

ARE REACHED. ALL SEDIMENTS MUST BE PLACED UPSTREAM OF AN APPROVED TRAP

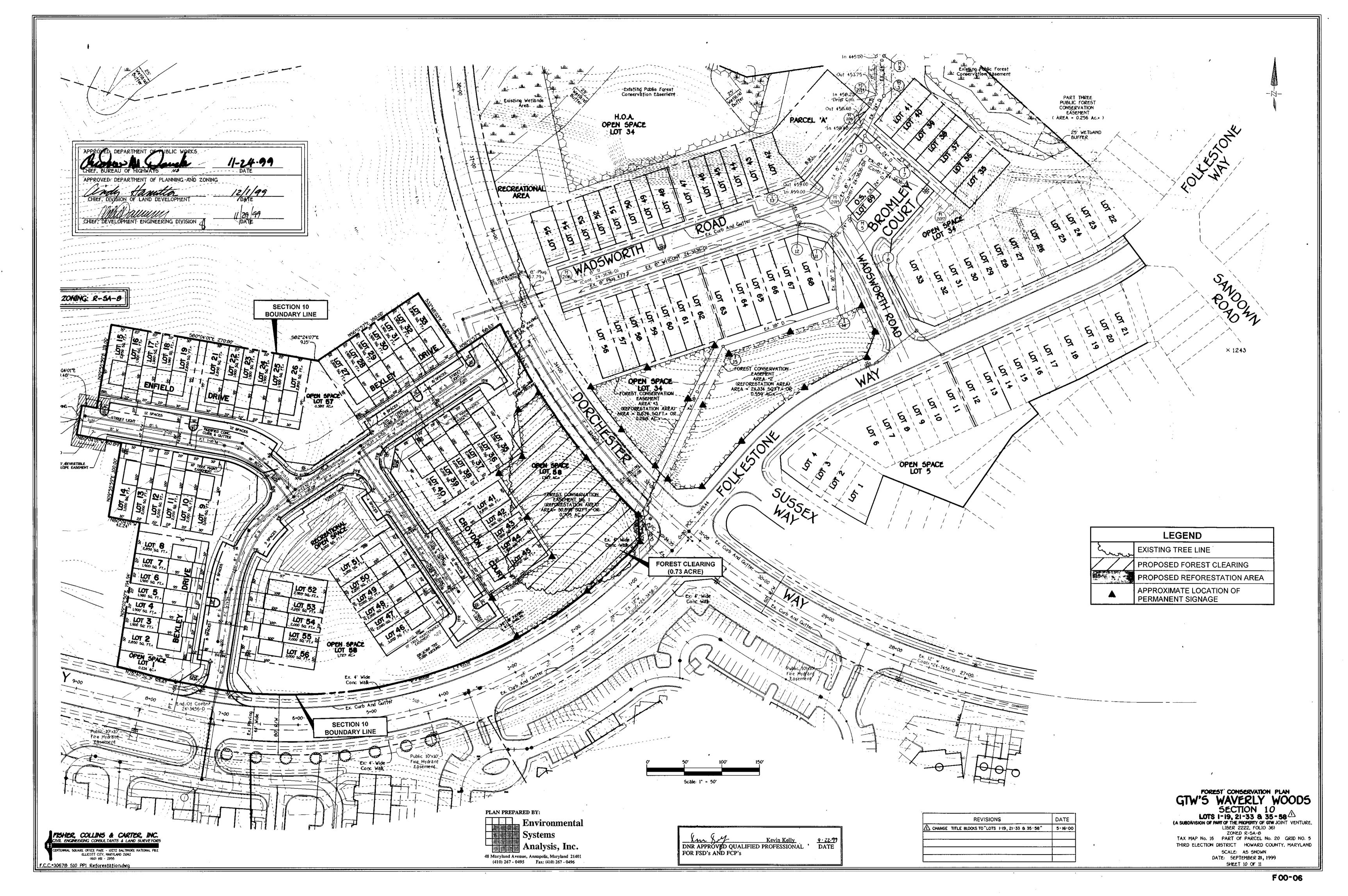
- DEVICE. (1 week) 10. INSTALL BASE COURSE FOR THE PROPOSED ROADS. (1 week)
- 11. STABILZE ALL DISTURBED AREAS AND OBTAIN PERMISSION FROM THE SEDIMENT CONTROL INSPECTORS TO PROCEED.
- 12. APPLY TACK COAT TO SUB-BASE AND LAY SURFACE COURSE. (I week)
- 13. WHEN ALL CONTRIBUTING AREAS TO THE SEDIMENT CONTROL DEVICES AND TRAPS FOR THE INITIAL GRADING PHASE HAVE BEEN STABILIZED AND WITH THE PERMISSION OF THE SEDIMENT CONTROL INSPECTOR, THE DEVICE MAY BE REMOVED AND/OR BACKFILLED AND THE REMAINING AREAS BROUGHT TO FINAL GRADE. THIS WOULD ALSO INCLUDE THE REMOVAL OF TEMPORARY STORM DRAIN OUTFALLS AT THE TRAPS FINAL STORM DRAIN RUN CONNECTIONS. STABILIZE ALL REMAINING AREAS IN ACCORDANCE WITH PERMANENT SEEDING NOTES. (2 weeks)
- 14. NOTIFY HOWARD COUNTY OFFICE OF INSPECTIONS AND PERMITS FOR A FINAL INSPECTION OF THE COMPLETED PROJECT.

SEDIMENT CONTROL NOTES AND DETAILS SECTION 10

LOTS 1-19, 21-33 & 35-58 ( A SUBDIVISION OF PART OF THE PROPERTY OF GTW JOINT VENTURE LIBER 2222, FOLIO 36) ZONED R-SA-8

PART OF PARCEL NO. 20 GRID NO. 5 TAX MAP NO. THIRD ELECTION DISTRICT HOWARD COUNTY, MARYLAND DATE: SEPT. 21, 1999 SHEET 9 OF II

OWNER / DEVELOPER WAVERLY WOODS DEVELOPMENT CORPORATION c/o land design and development, inc. 8000 main street ELLICOTT CITY, MARYLAND 21043



### NARRATIVE

The Waverly Woods Property is a 682 acre tract which contains a combination of commercially and residentially zoned property. The site is to be slowly developed in a series of phases. A Preliminary Forest Conservation Plan was prepared for the property in August of 1993. In February of 1996, this plan was revised and approved by the Howard County Department of Planning and Zoning. Since that time, Final Borest Conservation Plans have been prepared for each development section as they are phased in. These Final Forest Conservation Plans have included revised Forest Conservation Worksheets to reflect changes in forest clearing and forest preservation from the 1996 Preliminary Plan.

This Final Forest Conservation Plan has been prepared for Waverly Woods Section 10, a residential section of the development. Like the previous Final FCP's, the reforestation requirement for Section 10 has been calculated on a percentage basis (see "Section 10 Forest Conservation Calculations" on this sheet). To meet the reforestation requirements for Section 10, on-site reforestation is proposed.

### **GENERAL NOTES**

- This forest conservation plan has been prepared in accordance with the requirements set forth by the Howard County Forest Conservation Act. The preparation of this plan, the notes and details were prepared using the guidelines of the Howard County Forest Conservation Manual.
- Base sheet information was provided by Fisher, Collins and Carter, Inc. All appropriate bonds shall be posted prior to the issuance of any permits per Howard County Forest Conservation Act. These bonds will be retained as surety until all required activities have
- been satisfied. Reforestation planting and related work must be performed by a contractor who is knowledgeable and experienced in reforestation planting techniques and proper plant handling.

### FOREST PROTECTION MEASURES

- As all of the existing forest within Waverly Woods Section 10 will be cleared, there are no forest preservation areas which require protection prior to construction.
- A total of 1.532 acres of reforestation will be provided in accordance with this plan. 0.705 acres will be located within Waverly Woods Section 10. The balance of reforestation will be located on Wayerly Woods Open Space Lot #34 which is located within Section 6. These reforestation areas will be permanently protected by means of a conservation easement which will be recorded at record plat.
- It is the responsibility of the present Owner to educate the new occupants or owners in Sections 6 and 10 about the proper use of these reforestation areas, the need for the Owner/Developer to carry out the post-construction management program, and the eventual transfer of long-term
- responsibilities to the new owners or occupants. A signed agreement detailing the post-construction management program shall be submitted for approval as part of the developers agreements for the project. The agreement shall include bonding covering all costs of the necessary protection and management activities required by the post-construction program.

### REFORESTATION

- Names of plant material listed conform with names accepted by the nursery trade. The contractor is to provide stock true to botanical name. Varieties will not be accepted unless specified or approved by the owner's representative.
- Plant stock shall meet or exceed the selection, sizing, transportation, and protection requirements contained in the latest edition of the American Standard for Nursery Stock published by the American Association of Nurserymen.
- Balled and burlapped (B&B) plants shall be dug with firm root balls free of noxious weeds. There should be no excess soil on top of the root ball or around the trunk.
- Caliper of tree stock shall be taken 6" above the ground level. If leafed-out, all plant stock shall appear healthy with no foliage spots, discoloration, wilting or
- other evidence of the presence of disease or insects. If any specified material can not be located or is unavailable, requests for substitutions shall be
- submitted to the owner's representative for approval. Source Quality Control - plant materials are subject to inspection and approval upon delivery for
- conformity to specification requirements (i.e., size, quality, and variety). Such approval shall not impair the right of inspection by the owner's representative during the progress of work and/or the right of rejection due to damage suffered in handling or transportation. Rejected plants shall be removed immediately from the site and replaced with acceptable plant material.

# **Product Specifications**

# Fertilizer:

- Granular, packet or pellet form with a minimum analysis of 10% nitrogen, 6% phosphorus and 4% potassium (10-6-4). 35% to 80% of the total nitrogen shall be in a slow release form.
- Leaf Compost thoroughly shredded, well-composted leaf material, free of trash Composted Sewage Sludge - approved, screened, polymer-dewatered sewage sludge with a pH of 6.2 - 7.2
- Backfill Mixture: Backfill for all stock shall be 3/4 existing soil mixed with 1/4 organic material. If any other additives are found to be needed at the time of planting, the landscape contractor shall notify the Owner or Owner's representative for approval.
- Mulch shall be dark brown, uniform sized, composted, shredded hardwood bark or pine bark with less than 10% sapwood or approved equal.
- Tree Support Stakes: Stakes shall be 2"x2" hardwood or approved equal.
- Support Wire: Wire shall be 14 gauge galvanized steel or approved equal.

# Pre-Planting Specifications

- The recommended planting period is September 15th to November 15th. Planting may also be undertaken from March 15th to June 15th. Planting outside of this planting window may only be conducted with the approval of the owner's representative.
- Planting shall not take place in sub-freezing temperatures, when the soil is too wet or too dry, or under any environmental constraints generally accepted by the Landscape Contractor's Association (Maryland, District of Columbia, and Virginia) as unsuitable for planting.
- All planting areas shall be stabilized prior to planting to minimize soil erosion. While soil stabilization and seeding are not part of these plan documents, the use of Tall Fescue (Festuca arundinacea) to stabilize reforestation areas shall be strictly forbidden.
- Planting areas shall be free of noxious weeds prior to planting. If noxious weeds are present, they should be removed or treated with a herbicide (e.g., "Roundup") according to the manufacturer's
- The landscape contractor must notify the owner's representative 48 hours prior to the start of construction to arrange a pre-planting meeting. Failure to notify the owner's representative may result in the rejection of all planting.
- Planting should occur within 24 hours of plant material delivery to the site. Plant materials left unplanted for more than 24 hours shall be protected from direct sun and weather and kept moist. Plant material shall not be left unplanted for more than 2 weeks.
- When conditions detrimental to plant growth are encountered (e.g., rubble fill, poor drainage, obstructions), the landscape contractor shall notify the owner's representative before planting.
- The landscape contractor is responsible for the location of all existing underground utilities. Repair of utilities during planting shall be at the landscape contractor's expense.

### **Planting Specifications**

- Planting shall be conducted according to the latest edition of the Landscape Specification Guidelines published by the Landscape Contractors Association (Maryland, District of Columbia,
- and Virginia) and as specified below. Plants shall installed in a random pattern over the entire planting area. "Random" refers to both the plant species and plant spacing. Grid patterns with uniform spacing will be rejected.
- Excavation for the planting of B&B plant material shall be accomplished using manual methods (e.g., shovels, planting bars, dibble bars, or mattocks) or with a tree spade. Walls of the tree pit shall be dug vertical or sloping outward in heavy soils. Walls shall be

Tree pit shall be dug deep enough to allow 1/8 of the rootball to be above the existing grade. The

- scarified after digging. Tree pit shall be 9" larger than the rootball of the tree on every side.
- bottom of the root ball shall rest on undisturbed existing soil or well-compacted backfill. Place the tree in the pit by lifting and lowering the rootball. DO NOT LIFT THE TREE BY THE TRUNK OR BRANCHES. Set tree straight and in the center of the pit. Cut and remove rope and or wire from the top 50% of the rootball. Remove any and all plastic or synthetic film from
- the rootball. Pull burlap back to the edge. Backfill the sides of the tree pit halfway with the "Backfill Mixture" (see "Product Specifications" above). Mix granular fertilizer in with backfill mixture unless composted sewage sludge is used-
- fertilizer is unnecessary if composted material is used. Tamp backfill material as pit is filled being careful not to overcompact the top 2/3 of the backfill.
- Do not cover the top of the rootball with soil. 10. Form a saucer around the outer rim of the tree pit above existing grade. Mulch top of root ball and saucer to a minimum depth of 2" and a maximum depth of 3". DO NOT PLACE MULCH AGAINST THE TRUNK
- 11. Thoroughly water the interior of the tree saucer until it is filled. Watering shall be undertaken even if it is raining. A second watering may be necessary to insure saturation of the rootball and elimination of the air pockets.
- Prune any and all tree branches that are dead, diseased, damaged, or conflicting.
- Remove all tags, labels, strings, and wire from the trees. The decision to stake trees shall be made on an individual basis and should not be required for all
- 15. If staking is necessary, space stakes evenly and around the outside of the rootball and drive firmly
- into the ground making certain not to drive the stake into the rootball. Cut hose long enough to loop around the trunk of the tree and place high enough on the trunk to provide optimum support.
- Thread the wire through the hose, pull the two ends 2' beyond the stake, and twist the wire at the
- hose to hold it in place. 18. Wind both ends of the wire around the stake twice, 2" to 6" from the top of the stake. Allow 1"
- to 3" of sway in the tree. Cut off the excess wire. Remove stakes, wire, and hose after one year.
- 20. Install permanent signs identifying the reforestation areas (see detail on this sheet) along the appropriate boundary lines of the forest conservation easements. These devices shall be freestanding. Do not attach to planted trees.

- The landscape contractor shall guarantee that seventy-five percent (75%) of the plants will remain alive and in a healthy, vigorous condition for a period of two years following planting except in the case of damage by vandalism, fire, animal predation, or other events beyond the landscape contractor's ability to control. Drought is not considered beyond the landscape contractor's ability to control unless the County and/or State prohibit watering by landscape contractors.
- The landscape contractor shall perform the recommended management tasks listed in the "Two Year Post Construction Management Plan" (see below) as necessary to ensure the required survival rate of the plants. This management shall include the removal of any tree stakes, wire, and hose after one year.
- At the end of the warranty period, the landscape contractor and the owner's representative will perform a final inspection of the plant material. Plant losses exceeding 75% of the original quantity during this inspection shall be removed from the site and replaced by the landscape contractor on a one time basis.
- A tree shall be considered dead when the main leader has died back, or 25% of the crown is dead. Plant material replacements shall be of the same type, size and variety as specified in this plan or as approved by the owner's representative. Any substitutions must be plants that are native to the Mid-Atlantic region of the United States. Plants shall be furnished, planted and mulched as specified herein and at the expense of the landscape contractor.

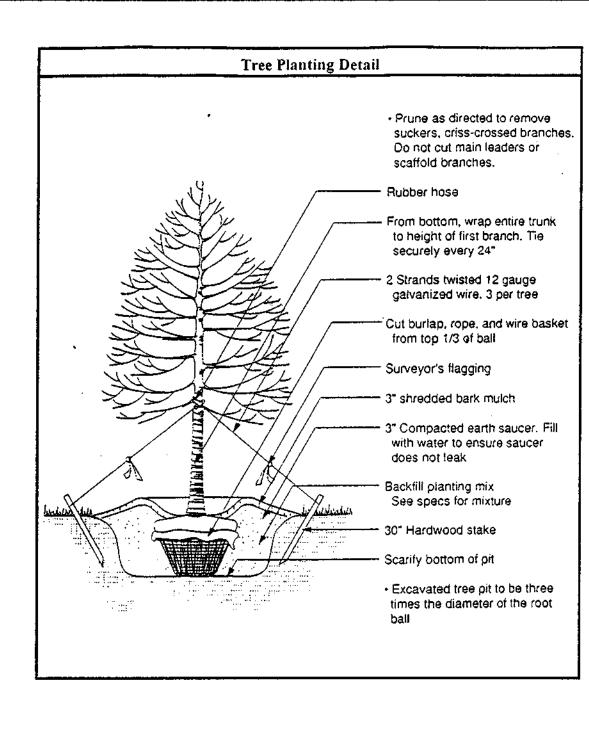
# FOREST MANAGEMENT PROGRAM

# Two Year Post-Construction Management Plan

- The required two year management of the reforestation areas is the responsibility of the Owner. Management may include the following: watering, fertilizing, pruning, removal of dead material
- and the control of pests and competing vegetation. Inspect the retorestation areas for a period of two years per the Howard County Forest Conservation Manual, to monitor the health and vigor of the plantings and specify actions needed to correct existing problems. The following inspection schedule shall be carried out: Year 1 & 2: Two Inspections per year - inspect at the beginning of the growing season (May or
- June) and the end of the growing season (September or October). At the end of the second year the survival rate shall be a minimum of 75% of the total number of trees planted under the approved Forest Conservation Plan. If the survival rate is below 75%, additional trees must be planted in order to ensure a 75% survival rate at the end of the subsequent
- A signed agreement detailing these post-construction activities shall be submitted for approval as part of the developer's agreements for the project. The agreement shall also include bonding covering all costs of the necessary protection and management activities required by the post-
- construction program. At the end of the management period the Owner or Owner's representative shall convey to the administrator of the Howard County Forest Conservation Program certification that the required reforestation survival rate has been achieved.

# Long Term Management Plan

- All reforestation areas shall be protected by conservation easements which will be recorded at record plat (refer to the latest edition of the Howard County Forest Conservation Manual for activities permitted within the forest conservation easement).
- The periodic removal of vines and or other invasive and non-native vegetation along the perimeter of the forest conservation area may be conducted to control the intrusion and development of such vegetation and maintain forest productivity.
- Woody vegetation located within 20' from the forest perimeter susceptible to windthrow and dead or diseased trees along the forest perimeter shall be selectively thinned if potentially hazardous.



WAVERLY WOODS SECTION 10 REFORESTATION  MASTER PLANTING SCHEDULE						
Qty	Botanical Name	Common Name	Size	Condition		
27	Acer rubrum	Red Maple	2.5" Cal.	B&B		
15	Cercis canadensis	Redbud	2.5" Cal.	B&B		
33	Liriodendron tulipifera	Tulip Poplar	2.5" Cal.	B&B		
20	Quercus coccinea	Scarlet Oak	2.5" Cal.	B&B		
20	Ouercus rubra	Red Oak	2.5" Cal.	B&B		

REFORESTATION AREA #1 (0.70 acre)				
Qty	Botanical Name	Common Name		
10	Acer rubrum	Red Maple		
8	Cercis canadensis	Redbud		
15	Liriodendron tulipifera	Tulip Poplar		
10	Quercus coccinea	Scarlet Oak		
10	Ouercus rubra	Red Oak		

,	REFORESTATION AREA #2 (0.56 acre)					
Qty	Botanical Name	Common Name				
. 11	Acer rubrum	Red Maple				
5	Cercis canadensis	Redbud				
12_	Liriodendron tulipifera	Tulip Poplar				
7	Quercus coccinea	Scarlet Oak				
7	Quercus rubra	Red Oak				

	Ouercus ruoru	KEU WAK
· · · · · · · · · · · · · · · · · · ·	REFORESTATION AREA	#3 (0.27 acre)
Qty	Botanical Name	Common Name
6	Acer rubrum	Red Maple
22	Cercis canadensis	Redbud
6	Liriodendron tulipifera	Tulip Poplar
3	Quercus coccinea	Scarlet Oak
2	Quarcus ruhra	Red Oak

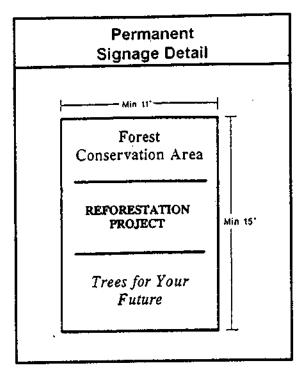
	Preliminary	Revised Per	Revised Per	Revised Per	Revised Per
Input Parameter:	FCP	Section 4	Section 5 :	Section 6	Section 10
Tract Area	291 90	291.90	291 90	291.90	291.90
100-Year Floodplain Area	4.10	4.68	4.81	4.81	4.8
Other ROW/Easements to be Excluded from Net Tract Area	2.04	2.04	2,09	2.09	2.0
Disturbance within Floodplain to be added to Net Tract Area	0.00	2.32	2.32	2.32	2.3
Existing Forest Area within Net Tract Area	103.00	103,00	103,00	103.00	103.0
Afforestation Threshold Percentage	0.15	0.15	0.15	0.15	0.1
Conservation Threshold Percentage	0.20	0.20	0.20	0.20	0.2
Total Area of Forest to be Cleared	63,55	66,83	68.23	69.17	69.1
Calculated Parameters:					
Net Tract Area	285.76	287.50	287.32	287.32	287.3
Afforestation Threshold	42,86	43.13	43.10	43.10	43.1
Conservation Threshold	57,15	57.50	57.46	57.46	57.4
Area of Forest Above Afforestation Threshold	60,14	59.88	59.90	59.90	39,9
Area of Forest Above Conservation Threshold	45.85	45.50	45.54	45.54	45.5
Break Even Point	66,32	66,60	66.57	66.57	66.5
Clearing Permitted with no Mitigation	36,68	36,40	36.43	36.43	36.4
Total Area of Forest to be Retained	37.45	36.17	34 77	33.83	33.1
Reforestation for Clearing Above Conservation Threshold	11.46	11,38	11.38		11.3
Reforestation for Clearing Below the Conservation Threshold	39,40	42.66	45.39	47.27	47.2
Credit for Retention Above the Conservation Threshold	0.00	0 00	0.00		0.0
Total Reforestation Required	50 87	54 04	56.77	1	58,6
Total Afforestation Required	0.00	0.00	0.00		0 (
TOTAL Afforestation/Reforestation Required	50.87	54.04	56.77	58.65	58,€

### SECTION 10 FOREST CONSERVATION CALCULATIONS

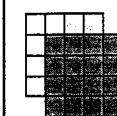
Forest Preservation in Section 10 Development	0
Forest Clearing in Section 10 Development	0.73
Total Forest Clearing within Residentially Zoned Areas of Waverly Woods	69,
Percentage of Forest Clearing Within Section 10 Development	1.0
Total Reforestation Required for Waverly Woods Residential Development	58.
Reforestation for Section 10 Development	0.6

### **Calculation Notes**

- The columns presented in the "Forest Conservation Worksheet" contain the forest conservation calculations for all proposed development on residentially zoned property at Waverly Woods. The "Preliminary FCP" column contains the residential development forest conservation worksheet numbers from the Preliminary Forest Conservation Plan dated August 9, 1993 and revised on February 26, 1996. The subsequent columns contain "clearing" and "net tract area" changes resulting from differences between the Preliminary and Final residential development plans. Approximately 12 residential development sections are anticipated.
- Section 10 accounts for 1.06% or 0.62 acres of the 58.65 acres of reforestation currently required for residential development on the Waverly Woods property. A total of 0.70 acre of reforestation will be performed within Section 10 and an additional 0.83 acre of reforestation will be performed within Section 6 in accordance with these plans. 0.62 acre of this reforestation will be used to satisfy the reforestation requirement for Section 10. The balance of reforestation, 0.91 acre, will be applied to subsequent residential phases. Including this plan, a total of 8.86 acres of on-site reforestation and 8.11 acres of off-site reforestation (see January 1996 Final FCP for Waverly Woods Section 4. Areas 1 and 2) has been planned to date for the Waverly Woods residentially zoned property. A halance of 41.68 acres of reforestation remains to be performed in subsequent
- The forest conservation calculations on these plans do not include the Waverly Woods Golf Course easement areas except where clearing is performed for residential development (e.g., storm water management facilities). A separate Forest Conservation Plan will be prepared for the golf course and a column will be added to the Waverly Woods Residential Forest Conservation Worksheet at a later date to account for those golf course areas lying within residentially zoned portions of the



PLAN PREPARED BY:



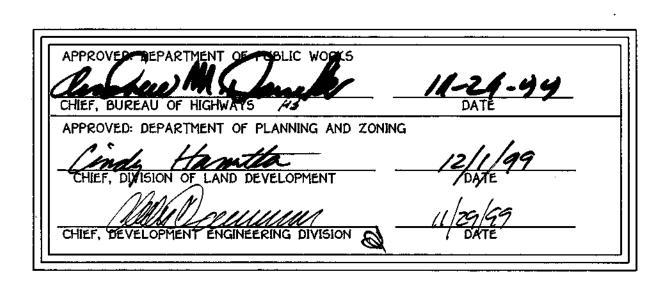
Environmental **Systems** Analysis, Inc. 48 Maryland Avenue, Annapolis, Maryland 21401

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PISHER COLLINS & CARTER, INC. ENGINEERING CONSULTANTS & LAND SURVEYORS OFFICE PARK - 10272 BALTIMORE NATIONAL PIKE ELLICOTT CITY, MARYLAND 21012

**REVISIONS** CHANGE TITLE BLOCKS TO "LOTS 1-19, 21-33 & 35-58" 5-16-00

Kevin Kelly DNR APPROVED QUALIFIED PROFESSIONAL FOR FSD's AND FCP's



FOREST CONSERVATION PLAN **DETAIL SHEET GTW'S WAVERLY WOODS** SECTION 10

LOTS 1-19, 21-33 & 35-58 Howard County, Maryland No Scale September 1999

SHEET II OF II