SHEET INDEX	
SHEET No.	SHEET
1	TITLE SHEET
2	DEERFIELD DRIVE PLAN & PROFILE
3	SPRINGWAY ROAD PLAN & PROFILE
4	STREET TREE, GRADING AND SEDIMENT CONTROL PLAN
5	DRAINAGE AREA AND LANDSCAPE PLAN
6	STORMDRAIN PROFILES AND DETAILS
7	STORMDRAIN PROFILES & DETAILS
8	SEDIMENT CONTROL NOTES AND DETAILS
9	S.W.M. DETAILS
10	S.W.M. DETAILS
11	FOREST CONSERVATION PLAN
12	FOREST CONSERVATION PLAN (DETAILS)

FINAL ROAD CONSTRUCTION, GRADING AND WATER QUALITY PLANS FOR

SPRING RIDGE

LOTS 1 THRU 26

TAX MAP NO. 18 PARCEL NOS. 56 AND 76

SECOND ELECTION DISTRICT
HOWARD COUNTY, MARYLAND

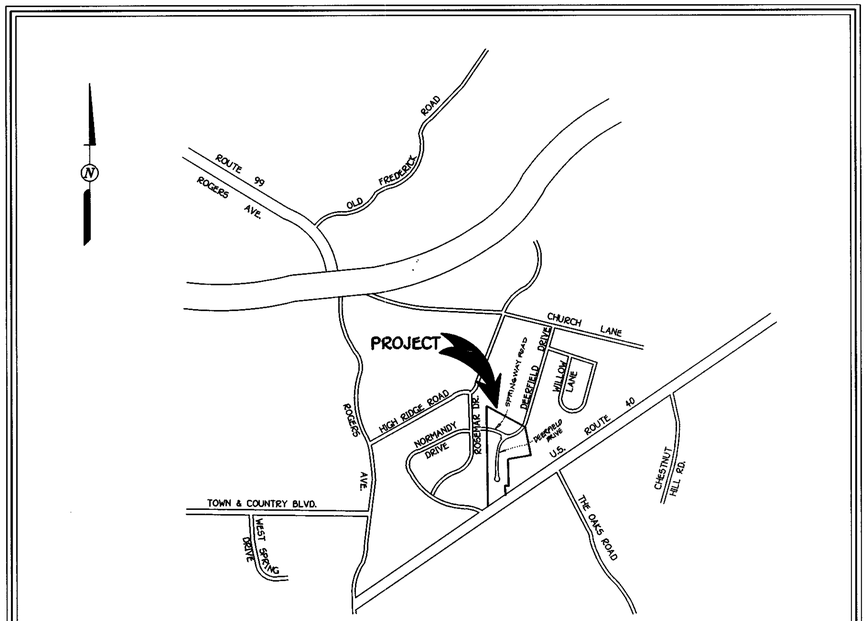
APPROVED: DEPARTMENT OF PUBLIC WORKS
CHIEF, BUREAU OF HIGHWAYS — DATE 9-16-98

APPROVED: DEPARTMENT OF PLANNING AND ZONING
CHIEF, DIVISION OF LAND DEVELOPMENT — DATE 9/18/98
CHIEF, DEVELOPMENT ENGINEERING DIVISION — DATE 9/16/98

STREET LIGHT CHART				
DWG. No.	STREET NAME	STATION	OFF-SET	FIXTURE/POLE TYPE
3	SPRINGWAY ROAD	5+30	21'L.	150-WATT HPS VAPOR PENDANT FIXTURE (CUTOFF) MOUNTED ON A 25-FOOT GALVANIZED STEEL POLE
2	DEERFIELD DRIVE	L.P. STA. 1+05	3'	100-WATT "TRADITIONAIRE" HPS VAPOR POST TOP FIXTURE ON A 14-FOOT BLACK FIBERGLASS POLE

TRAFFIC CONTROL SIGNS				
STREET NAME	STATION	OFFSET	POSTED SIGN	SIGN CODE
SPRINGWAY ROAD	0+35	16'L	STOP	R1-1
SPRINGWAY ROAD	5+25.99	13.5'R	STOP	R1-1
DEERFIELD DRIVE	13+15	16' R	SPEED LIMIT	R2-1
DEERFIELD DRIVE	16+05	16' L	SPEED LIMIT	R2-1

ROAD CLASSIFICATION CHART		
ROAD NAME	CLASSIFICATION	R/W WIDTH
SPRINGWAY ROAD	LOCAL ROAD	50'
DEERFIELD DRIVE	CUL-DE-SAC	50'



VICINITY MAP
SCALE: 1" = 1200'

GENERAL NOTES

1. UNLESS OTHERWISE NOTED, ALL CONSTRUCTION IS TO BE IN ACCORDANCE WITH THE FOLLOWING:
   a. HOWARD COUNTY STANDARD SPECIFICATION AND DETAILS FOR CONSTRUCTION.
   b. MARYLAND STATE HIGHWAY ADMINISTRATION STANDARD SPECIFICATIONS FOR CONSTRUCTION AND MATERIALS, AS AMENDED
   c. SOIL CONSERVATION SERVICE 1983 MARYLAND STANDARD AND SPECIFICATIONS FOR SOIL EROSION AND SEDIMENT CONTROL.
   d. SOIL CONSERVATION SERVICE 1993 MARYLAND STANDARDS AND SPECIFICATION FOR POND CONSTRUCTION (CODE 378)
2. 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.
3. THE CONTRACTOR SHALL NOTIFY "MISS UTILITY" AT 1-800-257-7777 AT LEAST 48 HOURS PRIOR TO ANY EXCAVATION.
4. TOPOGRAPHY SHOWN HEREON IS FROM AERIAL MAPS PROVIDED BY PHOTO SCIENCE ON A 2' CONTOUR INTERVAL APRIL 13, 1989.
5. THIS HORIZONTAL AND VERTICAL DATUM SHOWN ARE BASED ON THE FOLLOWING NAD'83 HOWARD COUNTY CONTROL STATIONS:
   HOWARD COUNTY MONUMENT NO. 18G1 — N 589984.957, E 1367750.236 — ELEV. = 408.54'
   HOWARD COUNTY MONUMENT NO. 24C2 — N 588640.315, E 1366038.133 — ELEV. = 354.93'
   BENCHMARK *1 : CROSS CUT AT SOUTHWEST CORNER INLET AT END OF DEERFIELD DRIVE (SET BY FISHER, COLLINS AND CARTER, INC.)
6. NOISE STUDY WAS PROVIDED BY WILDMAN ENVIRONMENTAL SERVICES AND APPROVED ON APRIL 24, 1998.
7. FOREST CONSERVATION PLAN WAS PROVIDED BY ECO-SCIENCE PROFESSIONALS, DATED OCTOBER 17, 1997.
8. 100 Yr. FLOODPLAIN DOES NOT EXIST ON THE SITE.
9. THE WETLANDS STUDY WAS PREPARED BY ECO SCIENCE PROFESSIONALS, INC. ON OCTOBER 17, 1997 UNDER P-98-15.
10. THE TRAFFIC STUDY WAS PROVIDED BY The Traffic Group ON MARCH 17, 1995 & APPROVED ON OCTOBER 11, 1995.
11. THE SOILS INVESTIGATION REPORT WAS PREPARED BY HILLIS-CARNES ENGINEERING ASSOC. ON SEPTEMBER 25, 1997.
12. THE SKETCH PLAN S-95-22 WAS APPROVED ON 10/11/95. PRELIMINARY PLANS P-98-15 WERE APPROVED ON 4/24/98.
13. 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 THER PLACEMENT OF ANY ASPHALT.
14. 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)."
15. A MINIMUM SPACING OF 20' SHALL BE MAINTAINED BETWEEN ANY STREET LIGHT AND ANY TREE.
16. PUBLIC WATER AND PRIVATE SEWER WILL BE USED WITHIN THIS DEVELOPMENT.
17. EXISTING UTILITIES ARE BASED ON CONTRACT * 563-W-D, 117-S.
18. A MINIMUM 20' SPACING SHALL BE PROVIDED BETWEEN ANY STREET LIGHT AND ANY TREE.

OWNER AND DEVELOPER

CHATEAU SPRING RIDGE, INC.
9505 COLUMBIA 100 PARKWAY
COLUMBIA, MARYLAND 21045

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

F.C.C.* 30515FINAL TITLE SHEET.DWG

STATE OF MARYLAND — JAYESH VITTHALBHAI PANCHOLI — No. 21601 — REGISTERED PROFESSIONAL ENGINEER

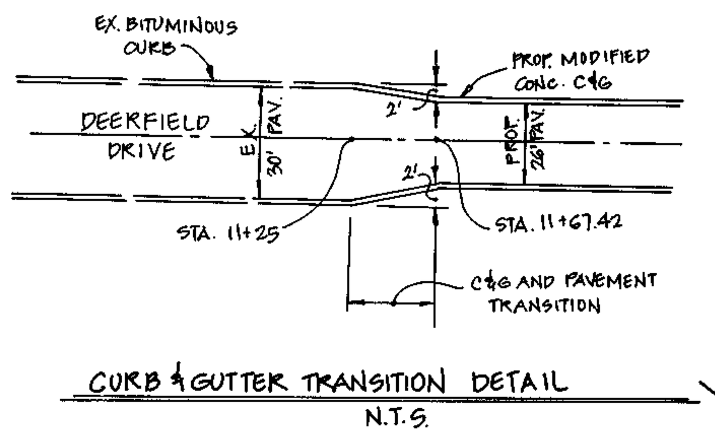
Jayesh Pancholi — 7-6-98
JAYESH V. PANCHOLI — DATE

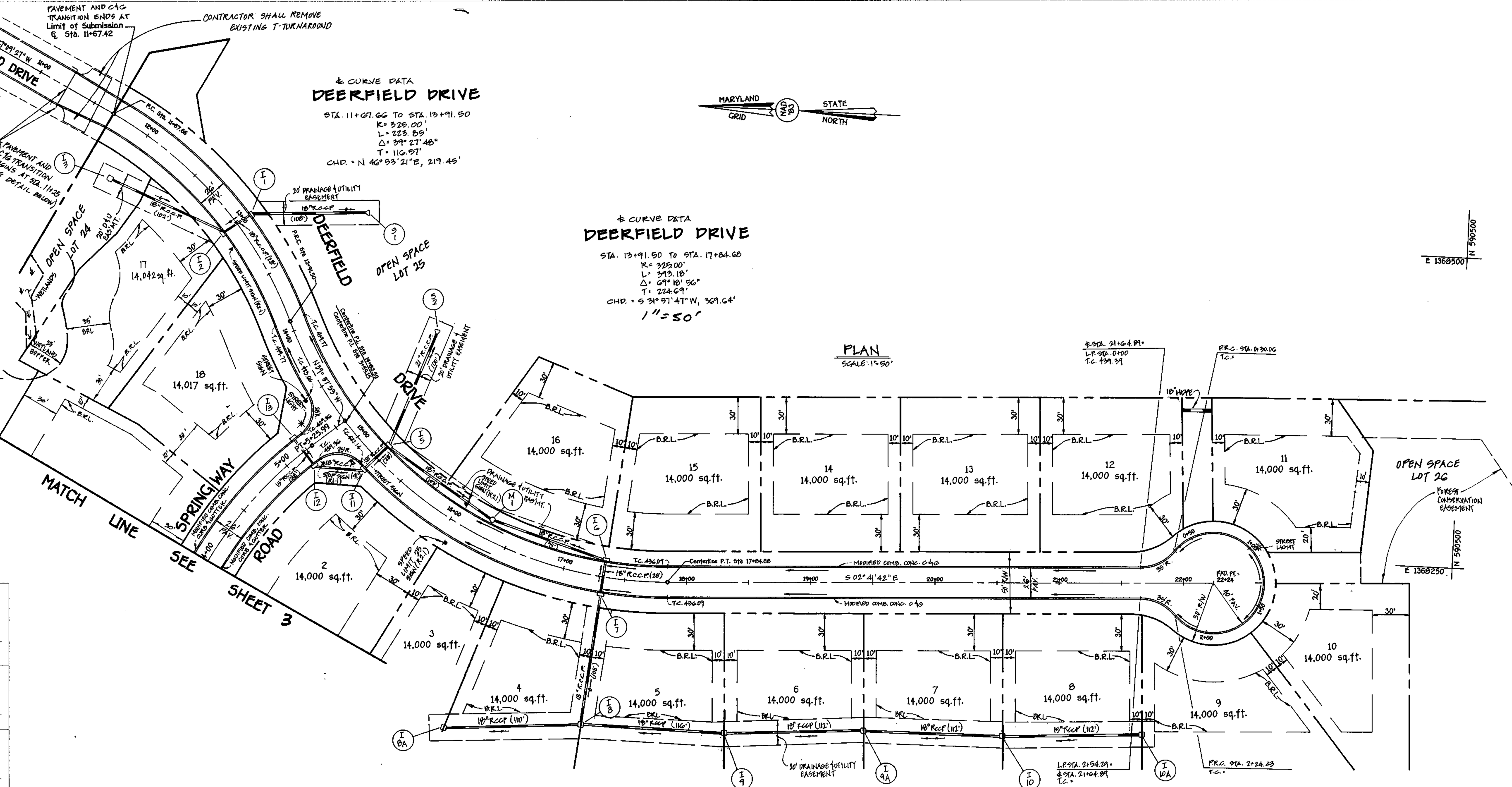
SPRING RIDGE

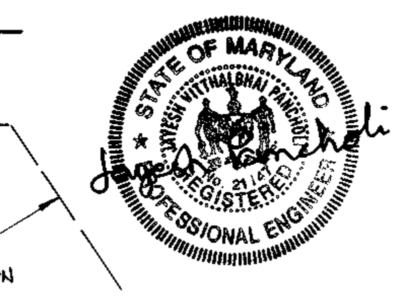
LOTS 1 THRU 26
ZONED: R-20
TAX MAP No. 18 PARCEL Nos. 56 and 76
SECOND ELECTION DISTRICT HOWARD COUNTY, MARYLAND
SCALE: AS SHOWN DATE:
SHEET 1 OF 12

F-98-155

REVISIONS	
DATE	DESCRIPTION
11-30-98	REVISE S.D. ALIGNMENT FROM I8A TO I10A







APPROVED: DEPARTMENT OF PLANNING AND ZONING

CHIEF, DIVISION OF LAND DEVELOPMENT — DATE 9/18/98

APPROVED: DEPARTMENT OF PLANNING AND ZONING

CHIEF, DEVELOPMENT ENGINEERING DIVISION — DATE 9/16/98

APPROVED: HOWARD COUNTY DEPARTMENT OF PUBLIC WORKS

CHIEF, BUREAU OF HIGHWAYS — DATE 9-16-98

SPRING RIDGE

LOTS 1 THRU 26

SECOND ELECTION DISTRICT — HOWARD COUNTY, MARYLAND

DEERFIELD DRIVE

PLAN AND PROFILE

OWNER/DEVELOPER

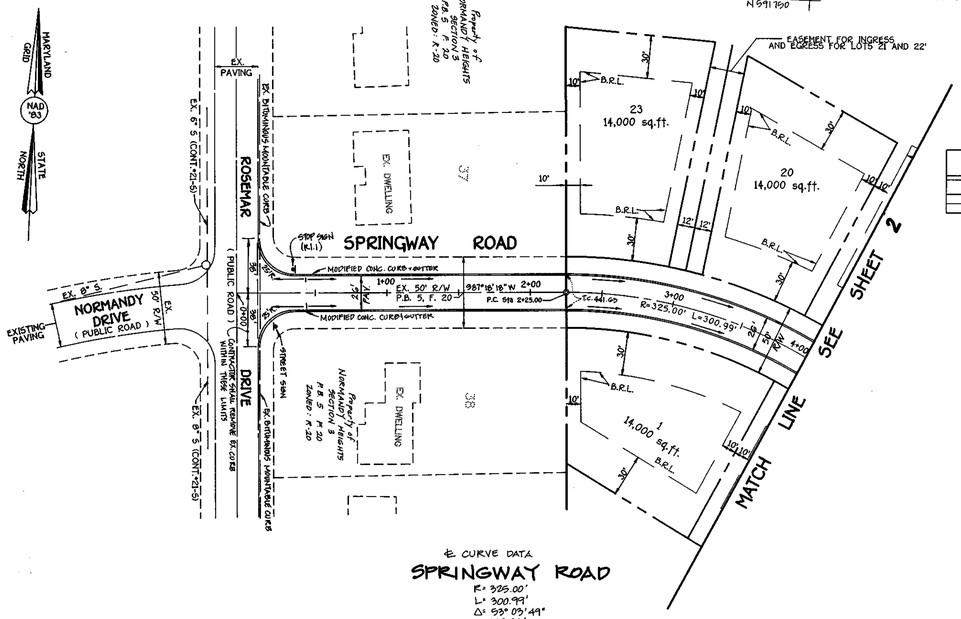
CHATEAU SPRING RIDGE, INC.
8805 COLUMBIA 100 PARKWAY, SUITE 100
COLUMBIA, MARYLAND 21045

SCALE: AS SHOWN	DATE:	DWG. NO. 2 OF 12
DES. J.V.P.	DRN. J.A.U.	CHK. J.V.P.

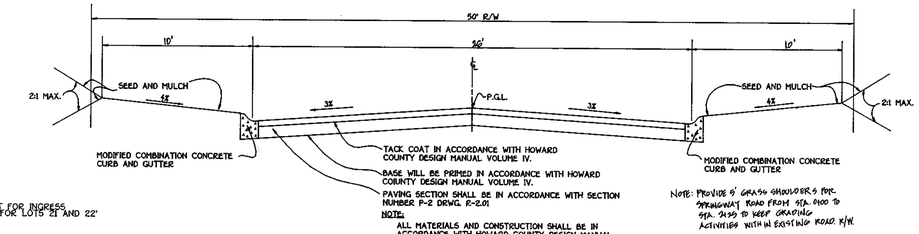
FISHER, COLLINS & CARTER, INC.
CIVIL ENGINEERING CONSULTANTS & LAND SURVEYORS
CENTENNIAL SQUARE OFFICE PARK - 10272 BALTIMORE NATIONAL PIKE
ELLICOTT CITY, MARYLAND 21042
(410) 461 - 2855

F-98-155

E 1367500
N 591750



N 591750 E 1362500



TYPICAL ROADWAY SECTION (LOCAL ROAD AND CUL-DE-SAC)

NO SCALE

ROADWAY INFORMATION CHART

ROAD NAME	CLASSIFICATION	DESIGN SPEED	ZONING	℄ STATION LIMITS	R/W	PAVING SECTION
SPRINGWAY RAOD	LOCAL ROAD	30 M.P.H.	R-20	0+00 TO 5+59.15	50'	P-2
DEERFIELD DRIVE	CUL-DE-SAC	30 M.P.H.	R-20	11+54 TO 21+64.89	50'	P-2

APPROVED: DEPARTMENT OF PLANNING AND ZONING

Cindy Hamilton 9/18/98
CHIEF, DIVISION OF LAND DEVELOPMENT AND RESEARCH — DATE

APPROVED: DEPARTMENT OF PLANNING AND ZONING

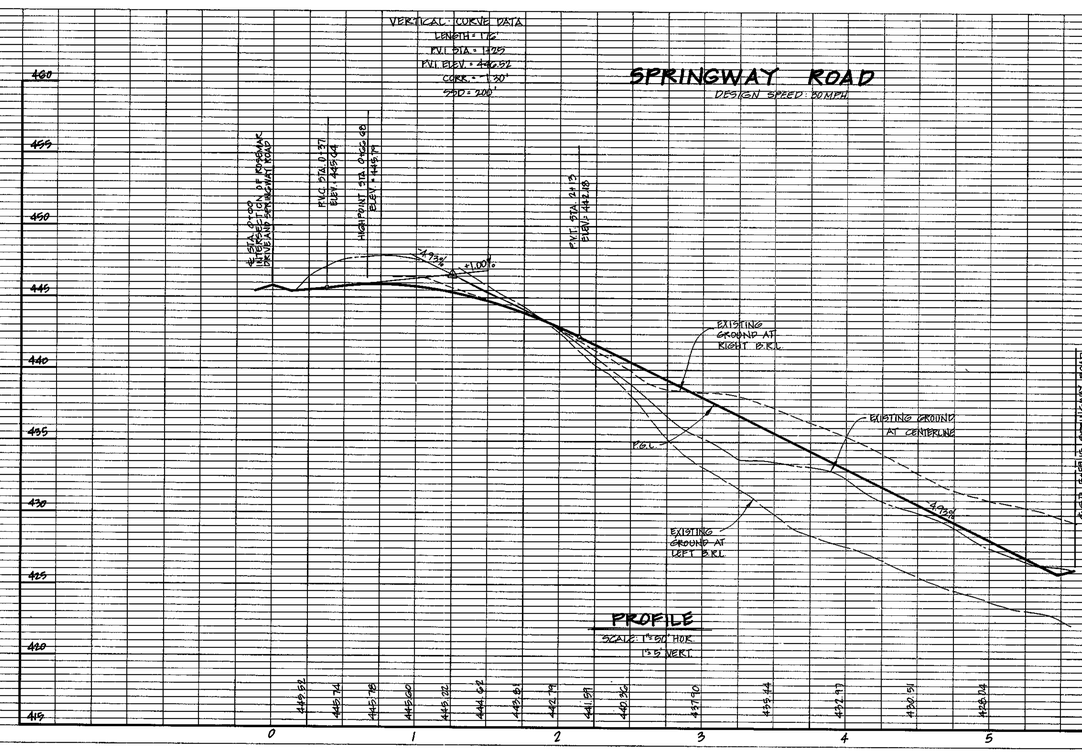
9/16/98
CHIEF, DEVELOPMENT ENGINEERING DIVISION — DATE

APPROVED: HOWARD COUNTY DEPARTMENT OF PUBLIC WORKS

Chester M. Davis 9-16-98
CHIEF, BUREAU OF HIGHWAYS — DATE

E 1367500
N 591250

℄ CURVE DATA
SPRINGWAY ROAD
R= 325.00'
L= 300.99'
Δ= 53°03'49"
T= 162.26'
CHD= N 66°09'48" W, 290.35'
1"=50'



PROFILE

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

SPRING RIDGE
LOTS 1 THRU 26

SECOND ELECTION DISTRICT — HOWARD COUNTY, MARYLAND

SPRINGWAY ROAD
PLAN AND PROFILE

OWNER/DEVELOPER
CHATEAU SPRING RIDGE, INC.
8809 COLUMBIA 100 PARKWAY, SUITE 100
COLUMBIA, MARYLAND 21045

SCALE: AS SHOWN	DATE:	DWG. NO. 3 OF 12
DES. J.V.P.	DRN. J.A.U.	CHK. J.V.P.

STATE OF MARYLAND — JAMES A. UNDERWOOD — No. 21706 — REGISTERED PROFESSIONAL ENGINEER

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

F-98-166

STREET TREE SCHEDULE

SYMBOL	BOTANICAL AND COMMON NAME	SIZE	COMMENTS
	ACER RUBRUM 'OCTOBER GLORY' RED MAPLE	2 1/2-3" CAL.	40' APART ON PUBLIC R/W
	PLATANUS OCCIDENTALIS 'BLOODSOON' LONDON PLANETREE	2 1/2-3" CAL.	40' APART ON PUBLIC R/W

NOTE: STREET TREE SPECIES INDICATED ABOVE MAY BE CHANGED TO A COUNTY ACCEPTABLE EQUIVALENT PER THE LANDSCAPE MANUAL, APPENDIX 'B'.

TOTAL NUMBER OF STREET TREES:

-59 STREET TREES

-39 STREET TREES

LEGEND

Symbol	Description
	Existing Contour 2' Interval
	Existing Contour 10' Interval
	Proposed Contour 2' Interval
	Proposed Contour 10' Interval
+ 624	Spot Elevation
-SF-SF-	Silt Fence
	Earth Dike
-X-X-	Tree Protection
	Existing Tree Line
L.O.D.	Limit Of Disturbance
	PERMANENT PROTECTIVE SIGNAGE AT FOREST CONSERVATION AREA
	Proposed Tree Line

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 — 5-15-98 Date

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 — 9/3/98 Date

Reviewed For Howard County Soil Conservation District And Meets Technical Requirements.

U.S.D.A. - Natural Resources Conservation Service — 9/16/98 Date

Approved: This Development Is Approved For Erosion And Sediment Control By The Howard Soil Conservation District.

District Howard Soil Conservation Dist. — 9/15/98 Date

Approved: Department Of Planning And Zoning

Chief, Division Of Land Development — 9/18/98 Date

Chief, Development Engineering Division — 9/16/98 Date

Approved: Howard County Department Of Public Works

Chief, Bureau Of Highways — 9-16-98 Date

NOTE: SEE SHEET 9 OF 12 FOR SEQUENCE OF CONSTRUCTION.

STREET TREE, GRADING AND SEDIMENT CONTROL PLAN

SPRING RIDGE

LOTS 1 thru 26

ZONED: R-20

TAX MAP No. 18 PARCEL No. 56 & 76 GRID 19

2nd ELECTION DISTRICT HOWARD COUNTY, MARYLAND

Scale: 1" = 50'

DATE:

SHEET 4 OF 12

F-98-155

REVISIONS	
DATE	DESCRIPTION
11-30-98	REV. ALIGNMENT OF SO FROM IBA TO IDA

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

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OWNER AND DEVELOPER
CHATEAU SPRING RIDGE, INC.
8009 COLUMBIA 100 PARKWAY, SUITE 100
COLUMBIA, MARYLAND 21045

DRAINAGE AREA DATA

STRUCTURE NO.	DRAINAGE AREA	AREA	'C'	ZONED	% IMP.
I-1	A	0.12	0.53	R-20	43
I-2	B	0.29	0.41	R-20	33
I-3	C	0.72	0.43	R-20	25
I-5	E	0.22	0.48	R-20	34
I-6	F	0.80	0.36	R-20	34
I-7	G	1.07	0.39	R-20	33
I-8	H	0.45	0.38	R-20	23
I-9	I	0.71	0.36	R-20	23
I-10	J	0.94	0.36	R-20	23
I-11	K	1.68	0.43	R-20	35
I-12	L	0.67	0.43	R-20	36
I-13	M	0.78	0.46	R-20	38
I-8A	O	0.26	0.43	R-20	35
I-9A	P	0.18	0.36	R-20	23
I-10A	Q	0.42	0.42	R-20	23

STREET TREE SCHEDULE

SYMBOL	BOTANICAL AND COMMON NAME	SIZE	COMMENTS
	ACER RUBRUM 'OCTOBER GLORY' RED MAPLE	2 1/2-3" CAL.	40' APART ON PUBLIC R/W
	PLATANUS OCCIDENTALIS 'BLOODSOON' LONDON PLANETREE	2 1/2-3" CAL.	40' APART ON PUBLIC R/W

NOTE: STREET TREE SPECIES INDICATED ABOVE MAY BE CHANGED TO A COUNTY ACCEPTABLE EQUIVALENT PER THE LANDSCAPE MANUAL, APPENDIX 'B'.

TOTAL NUMBER OF STREET TREES:

-59 STREET TREES

-28 STREET TREES

LEGEND

Symbol	Description
-------	Existing Contour 2' Interval
—— ——	Existing Contour 10' Interval
-------	Proposed Contour 2' Interval
———	Proposed Contour 10' Interval
+ 624	Spot Elevation
-SF-SF-	Silt Fence
- - - - -	Earth Dike
-X-X-	Tree Protection
	Existing Tree Line
L.O.D.	Limit Of Disturbance
(S)	Proposed Street Tree
	Proposed Tree Line

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 — Date: 9-3-98

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."

Richard Agnel — 9/3/98

Signature Of Developer — Date

Reviewed For Howard County Soil Conservation District And Meets Technical Requirements

U.S.D.A. - Natural Resources Conservation Service — Date

Approved: This Development Is Approved For Erosion And Sediment Control By The Howard Soil Conservation District.

District Howard Soil Conservation Dist. — Date

Approved: Department Of Planning And Zoning

Cindy Carrotta — 9/15/98

Chief, Division Of Land Development — Date

9/16/98

Chief, Development Engineering Division — Date

Approved: Howard County Department Of Public Works

Andrew M. Doucke — 9-16-98

Chief, Bureau Of Highways — Date

NOTE: SEE SHEET 7 OF 12 FOR SCHEDULES A AND D LANDSCAPING CHARTS.

DRAINAGE AREA MAP AND LANDSCAPE PLAN
SPRING RIDGE
LOTS 1 thru 26

ZONED: R-20

TAX MAP No. 18 PARCEL No. 56 & 76 GRID No 13

2nd ELECTION DISTRICT HOWARD COUNTY, MARYLAND

Scale: 1" = 50'

DATE:

SHEET 5 OF 12

REVISION	
DATE	DESCRIPTION
11-20-98	REVI ALIGNMENT OF S.D. FROM I8A TO I.10A

*SEE SHEET 7 OF FOR PERIMETER LANDSCAPE CHART.

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

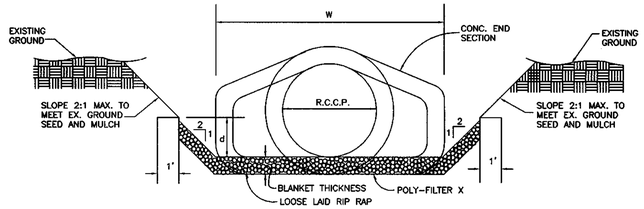
"g:\drawings\30515\spr-fp02"

OWNER AND DEVELOPER
CHATEAU SPRING RIDGE, INC.
8609 COLUMBIA 100 PARKWAY, SUITE 100
COLUMBIA, MARYLAND 21045

F-98-155

STRUCTURE SCHEDULE

STRUCTURE NO.	TOP ELEVATION	INV.IN	INV.OUT	ROAD NAME	ROAD STA.	OFFSET	TYPE	REMARKS
I-1	@ T/C = 414.05	409.18	408.93	DEERFIELD DRIVE	13+01	12'L	A-5 INLET	S.D. 4.40
I-2	@ T/C = 414.05	409.71	409.46	DEERFIELD DRIVE	13+01	12'R	A-5 INLET	S.D. 4.40
I-3	THROAT EL. = 414.60	410.98	410.73	———	———	N 545519.938 E 1368510.091	D INLET	S.D. 4.39
I-8A	THROAT EL. = 436.16		422.60	———	———	N 545506.317 E 1368081.783	D INLET	S.D. 4.39
I-5	@ T/C = 427.39	421.78 / 423.00	421.53	DEERFIELD DRIVE	15+22	12'L	A-5 INLET	S.D. 4.40
I-6	@ T/C = 435.00	429.64	429.39	DEERFIELD DRIVE	17+33	12'L	A-10 INLET	S.D. 4.41
I-7	@ T/C = 435.00	430.17	429.92	DEERFIELD DRIVE	17+33	12'R	A-10 INLET	S.D. 4.41
I-8	THROAT EL. = 433.17	431.50	431.25	———	———	N 545174.102 E 1367888.161	D INLET	S.D. 4.39
I-9	THROAT EL. = 436.89	432.91	432.66	———	———	N 545197.735 E 1367693.982	D INLET	S.D. 4.39
I-10	THROAT EL. = 438.34	436.60	436.40	———	———	N 545052.185 E 1367697.916	D INLET	S.D. 4.39
I-11	@ T/C = 427.91	422.31	422.06	DEERFIELD DRIVE	15+22	12'R	A-10 INLET	S.D. 4.41
I-12	@ T/C = 427.15	422.97	422.72	SPRINGWAY ROAD	5+18	12'R	A-10 INLET	S.D. 4.41
I-13	@ T/C = 427.19		423.25	SPRINGWAY ROAD	5+18	12'L	A-10 INLET	S.D. 4.41
I-9A	THROAT EL. = 437.39	434.28	434.03	———	———	N 545196.309 E 1368098.649	D INLET	S.P. 4.41
I-10A	THROAT EL. = 439.98		436.77	———	———	N 545 362.307 E 1368 109.180	D INLET	S.P. 4.41
M-1		428.00	427.75	DEERFIELD DRIVE	16+30	16'L	STD. MANHOLE	G. 5.01
S-1	409.50	———	408.00	———	———	———	CONC. END SECTION	S.D. 5.52
S-2	409.75	———	408.00	———	———	N 545138.834 E 1367867.358 N 545138.949 E 1367869.933	CONC. END SECTION	S.D. 5.52



RIP RAP CHANNEL DETAIL

NO SCALE

RIP-RAP CHANNEL DESIGN DATA

STRUCTURE	AREA	WETTED PERIMETER	R	R 2/3	S	S 1/2	W	d	N	V (F.P.S.)	Q (C.F.S.)	RIP-RAP SIZE d_{50}	RIP-RAP SIZE d_{MAX}	BLANKET THICKNESS	Q_{10}(CFS)	SIZE
S-1	7.375F	9.34'	0.789'	0.854	0.009	0.0707	4.5'	1.1'	0.035	2.57	18.94	9.5"	19"	19"	17.2	21"
S-2	4.48SF	7.98'	0.99'	0.703	0.005	0.0707	4.0'	0.8'	0.035	2.12	9.50	9.5"	19"	19"	8.7	15"

APPROVED: DEPARTMENT OF PUBLIC WORKS

CHIEF, BUREAU OF HIGHWAYS — DATE 9-16-98

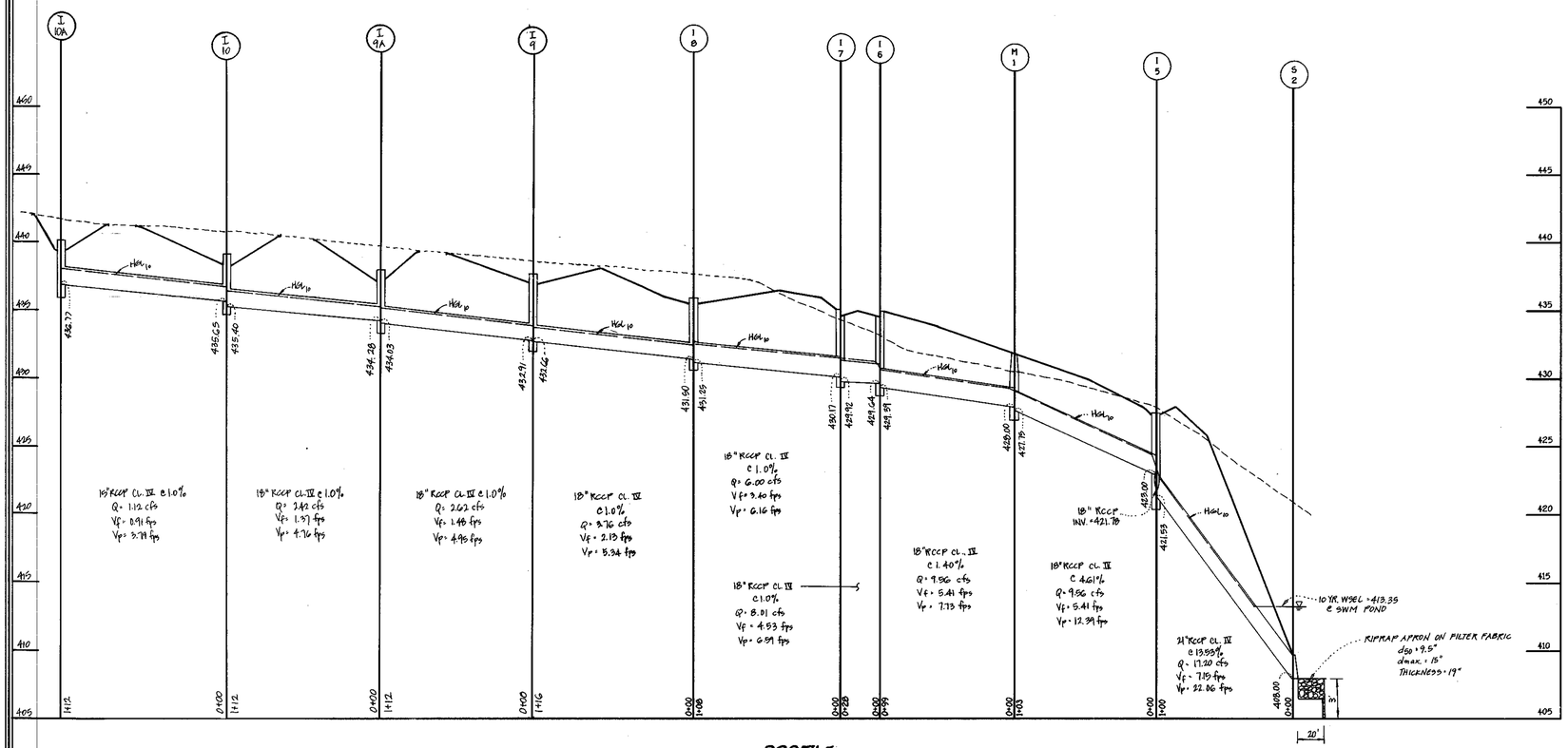
APPROVED: DEPARTMENT OF PLANNING AND ZONING

CHIEF, DIVISION OF LAND DEVELOPMENT — DATE 9/15/98

CHIEF, DEVELOPMENT ENGINEERING DIVISION — DATE 9/16/98

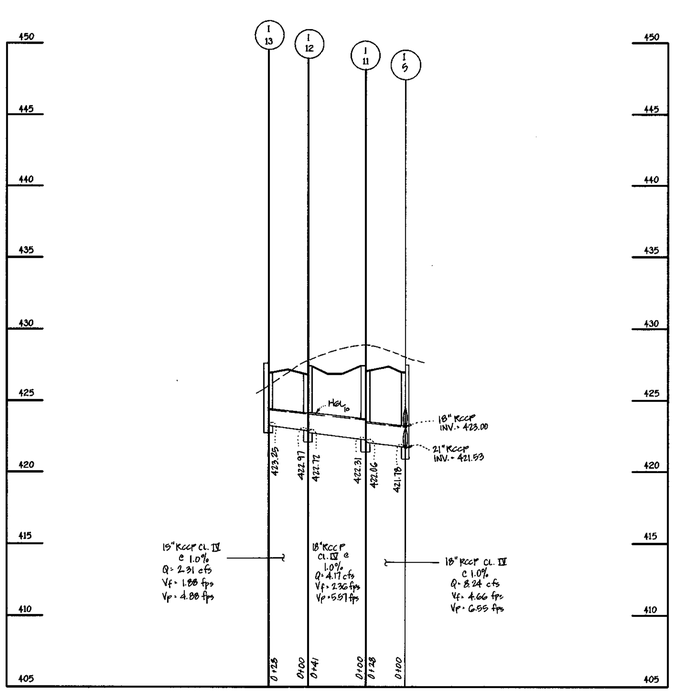
CONSTRUCTION SPECIFICATIONS FOR RIP-RAP OUTFALLS

1. 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.
2. The rock or gravel shall conform to the specified grading limits when installed respectively in the riprap or filter.
3. Filter cloth shall be protected from punching, cutting or tearing. Any damage other than an occasional shall 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.
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 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.



PROFILE

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



STORM DRAIN PROFILES

SPRING RIDGE

LOTS 1 thru 26

ZONING: R-20
TAX MAP NO. : 18 PARCEL NO. : 56 & 76 GRID: 19
SECOND ELECTION DISTRICT HOWARD COUNTY, MARYLAND
SCALE: AS SHOWN DATE: MARCH, 1998
SHEET 6 OF 12

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

30515stormprofiles.dwg

REVISIONS	
DATE	DESCRIPTION
11-30-98	REV. S.D. PROFILE I-8 TO I-10A & STRUCTURE SCHEDULE

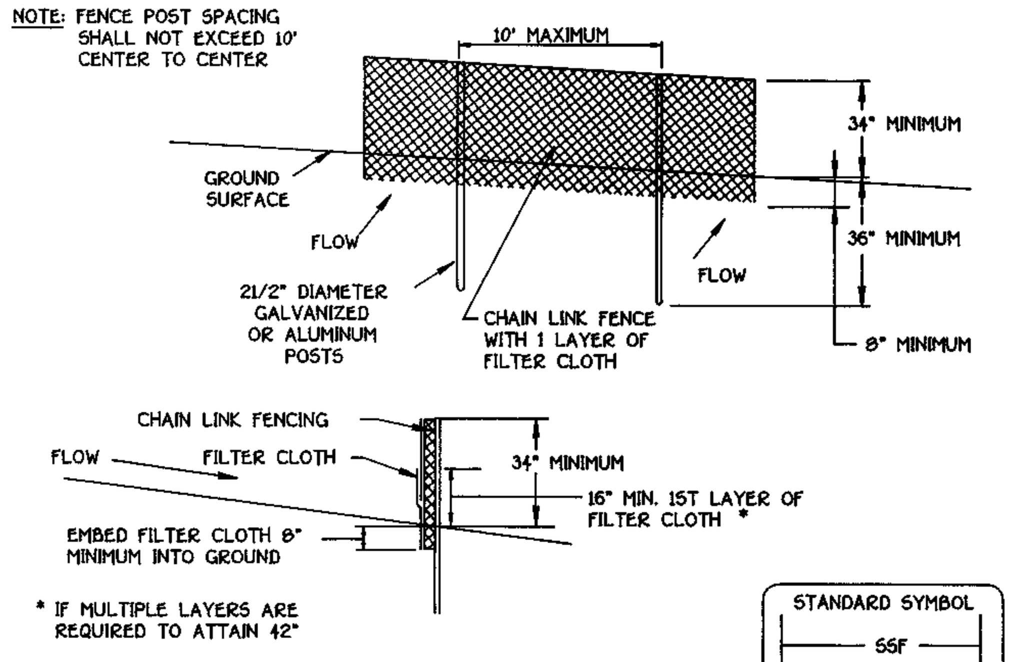
STATE OF MARYLAND — DONALD WAYNE FISHER — REGISTERED PROFESSIONAL ENGINEER

OWNER AND DEVELOPER

CHATEAU SPRING RIDGE, INC.
8809 COLUMBIA 100 PARKWAY, SUITE 100
COLUMBIA, MARYLAND 21045

F-98-155

SUPER SILT FENCE



Construction Specifications

1. Fencing shall be 42" in height and constructed in accordance with the latest Maryland State Highway Details for Chain Link Fencing. The specification for a 6' fence shall be used, substituting 42" fabric and 6' length posts.

2. Chain link fence shall be fastened securely to the fence posts with wire ties. The lower tension wire, brace and truss rods, drive anchors and post caps are not required except on the ends of the fence.

3. Filter cloth shall be fastened securely to the chain link fence with ties spaced every 24" at the top and mid section.

4. Filter cloth shall be embedded a minimum of 8" into the ground.

5. When two sections of filter cloth adjoin each other, they shall be overlapped by 6" and folded.

6. Maintenance shall be performed as needed and silt buildups removed when "bulges" develop in the silt fence, or when silt reaches 50% of fence height

7. Filter cloth 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:

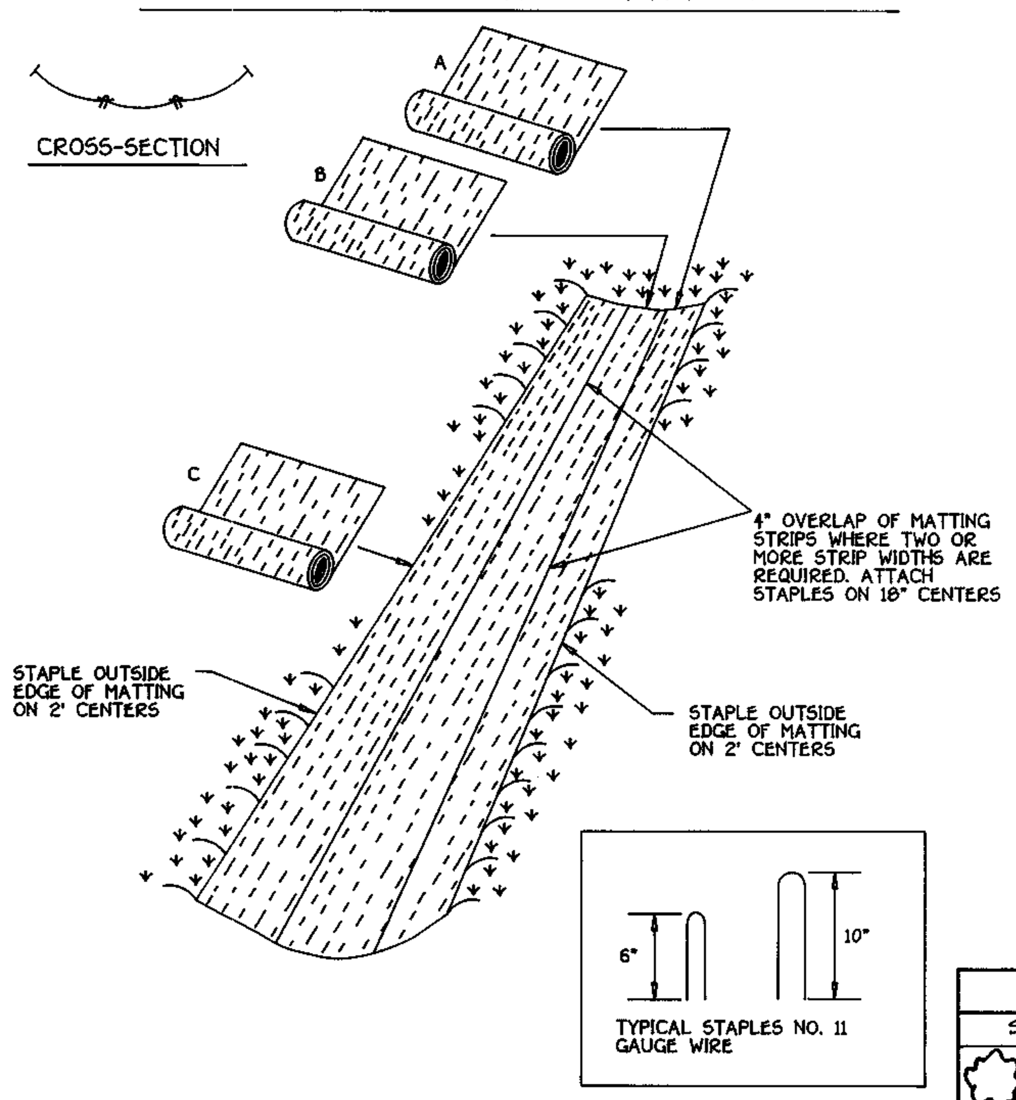
Tensile Strength	50 lbs/in (min.)	Test: MSMT 509
Tensile Modulus	20 lbs/in (min.)	Test: MSMT 509
Flow Rate	0.3 gal/ft /minute (max.)	Test: MSMT 322
Filtering Efficiency	75% (min.)	Test: MSMT 322

SUPER SILT FENCE

Design Criteria

Slope	Slope Steepness	Slope Length (maximum)	Silt Fence Length (maximum)
0 - 10%	0 - 10:1	Unlimited	Unlimited
10 - 20%	10:1 - 5:1	200 feet	1,500 feet
20 - 33%	5:1 - 3:1	100 feet	1,000 feet
33 - 50%	3:1 - 2:1	100 feet	500 feet
50% +	2:1 +	50 feet	250 feet

EROSION CONTROL MATTING



EROSION CONTROL MATTING

Construction Specifications

1. Key-in the matting by placing the top ends of the matting in a narrow trench, 6" in depth. Backfill the trench and tamp firmly to conform to the channel cross-section. Secure with a row of staples about 4" down slope from the trench. Spacing between staples is 6".

2. Staple the 4" overlap in the channel center using an 18" spacing between staples.

3. Before stapling the outer edges of the matting, make sure the matting is smooth and in firm contact with the soil.

4. Staples shall be placed 2' apart with 4 rows for each strip, 2 outer rows, and 2 alternating rows down the center.

5. Where one roll of matting ends and another begins, the end of the top strip shall overlap the upper end of the lower strip by 4", shiplap fashion. Reinforce the overlap with a double row of staples spaced 6" apart in a staggered pattern on either side.

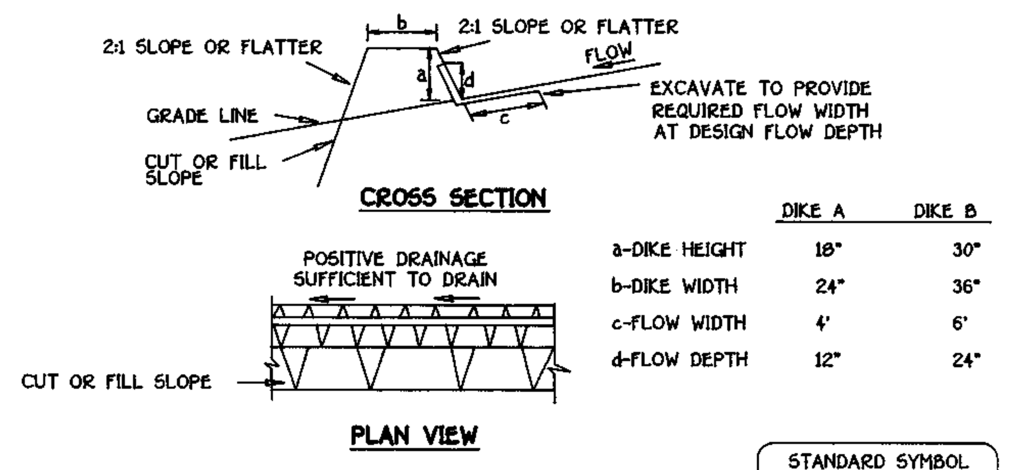
6. The discharge end of the matting liner should be similarly secured with 2 double rows of staples.

Note: If flow will enter from the edge of the matting then the area effected by the flow must be keyed-in.

APPROVED: DEPARTMENT OF PUBLIC WORKS	
(signature) CHIEF, BUREAU OF HIGHWAYS	9-16-98 DATE
APPROVED: DEPARTMENT OF PLANNING AND ZONING	
(signature) CHIEF, DIVISION OF LAND DEVELOPMENT	9/18/98 DATE
(signature) CHIEF, DEVELOPMENT ENGINEERING DIVISION	9/16/98 DATE

EARTH DIKE

NOT TO SCALE



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

STANDARD SYMBOL A-2 B-3

FLOW CHANNEL STABILIZATION

GRADE 0.5% MIN. 10% MAX.

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

Construction Specifications

1. All temporary earth dikes shall have uninterrupted positive grade to an outlet. Spot elevations may be necessary for grades less than 1%.
2. Runoff diverted from a disturbed area shall be conveyed to a sediment trapping device.
3. Runoff diverted from an undisturbed area shall outlet directly into an undisturbed, stabilized area at a non-erosive velocity.
4. All trees, brush, stumps, obstructions, and other 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 normal flow.
6. Fill shall be compacted by earth moving equipment.
7. All earth removed and not needed for construction shall be placed so that it will not interfere with the functioning of the dike.
8. Inspection and maintenance must be provided periodically and after each rain event.

PLANT LIST

SYMBOLS	BOTANICAL & COMMON NAME	SIZE	QTY.
(shade tree symbols)	QUERCUS PALUSTRIS "SOVEREIGN" SOVEREIGN PIN OAK	2½"-3" CALIPER	58
(evergreen symbols)	PINUS NIGRA "AUSTRIAN PINE"	6'-8' HIGH	18

"THIS PLAN HAS BEEN PREPARED IN ACCORDANCE WITH THE PROVISIONS OF SECTION 16.124 OF THE HOWARD COUNTY CODE AND THE LANDSCAPE MANUAL." FINANCIAL SURETY FOR THE REQUIRED LANDSCAPING HAS BEEN POSTED AS PART OF THE D.P.W. DEVELOPER'S AGREEMENT IN THE AMOUNT OF $19,800.00.

NOTE: A MIN. SPACING OF 20' SHALL BE MAINTAINED BETWEEN ANY STREET LIGHT AND ANY TREE.

NOTE: FOR S.W.M. AREA LANDSCAPING CHART, SEE SHEET 1. SCHEDULE D

SHADE TREE (12 TREES) / EVERGREEN TREE (16 TREES) — S.W.M. LANDSCAPING TREES

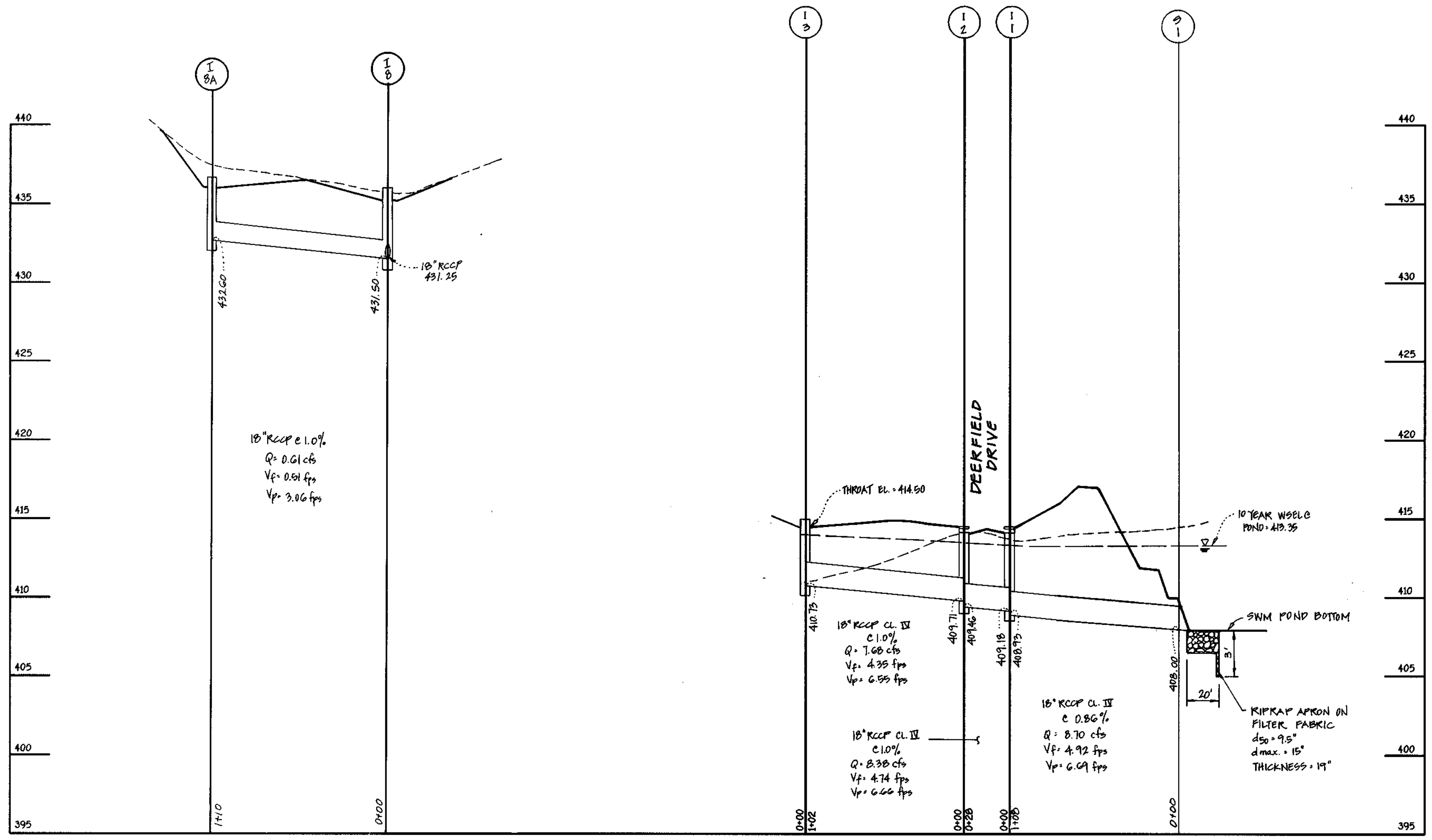
FOR PERIMETER LANDSCAPING CHART, SEE SHEET 1 SCHEDULE A

SHADE TREE (46 TREES) / EVERGREEN TREE (2 TREE) — PERIMETER LANDSCAPING TREES

SCHEDULE A PERIMETER LANDSCAPE EDGE

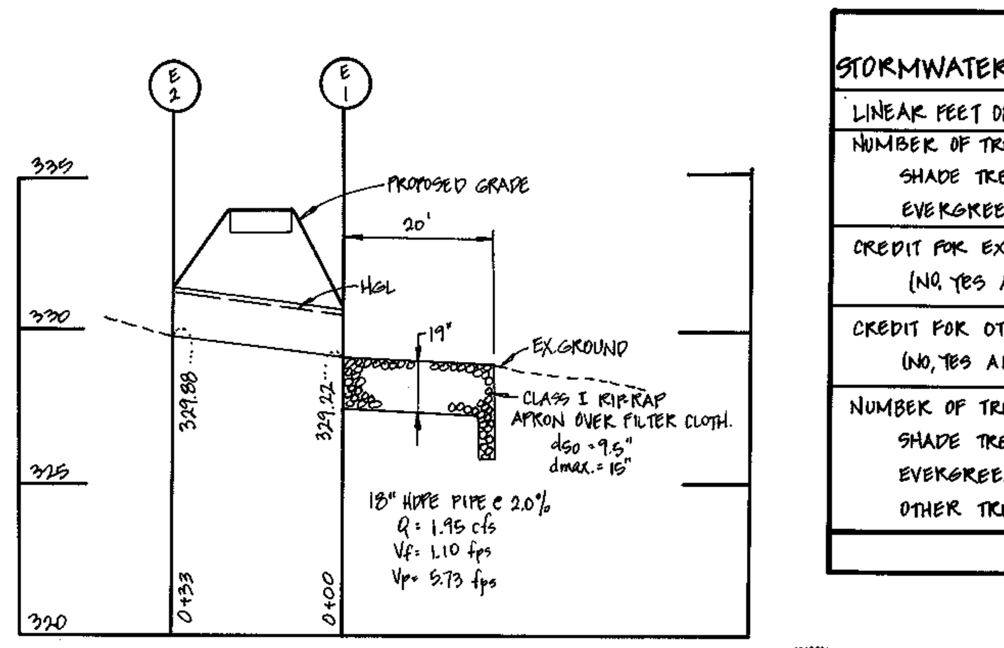
PERIMETER	P-1	P-2	P-3	P-4	P-5	P-6	P-7
CATEGORY	Adjacent to Perimeter Properties	Adjacent to Perimeter Properties	Adjacent to Perimeter Properties	Adjacent to Roadway	Adjacent to Perimeter Properties	Adjacent to Perimeter Properties	Adjacent to Perimeter Properties
LANDSCAPE TYPE	A	A	A	B	A	A	A
LINEAR FEET OF PERIMETER	587'	315'	1250'	358'	610'	350'	414'
CREDIT FOR EXISTING VEGETATION (YES, NO, LINEAR FEET) (DESCRIBE BELOW IF NEEDED)	YES, 170'	NO	YES 280'	YES 285'	NO	NO	YES, 414'
CREDIT FOR WALL, FENCE OR BERM (YES, NO, LINEAR FEET) (DESCRIBE IF NEEDED)	NO	NO	NO	NO	NO	NO	NO
NUMBER OF PLANTS REQUIRED							
SHADE TREES	7	5	16	2	10	6	-
EVERGREEN TREES	-	-	-	2	-	-	-
SHRUBS	-	-	-	-	-	-	-

SHADE TREE - 'ACER RUBRUM' (RED MAPLE) 2½-3" CAL.
EVERGREEN TREE - 'PINUS STROBUS' (EASTERN WHITE PINE) 6'-8' HT.



PROFILE

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



PROFILE

SCALE: 1"=30' HORIZ.
1"=5' VERT.

SCHEDULE D STORMWATER MANAGEMENT AREA LANDSCAPING

LINEAR FEET OF PERIMETER	P8 = 800'
NUMBER OF TREES REQUIRED	BASED ON 800' - 180' = 620'
SHADE TREES	12
EVERGREEN TREES	16
CREDIT FOR EXISTING VEGETATION (NO, YES AND %)	YES, 180'
CREDIT FOR OTHER LANDSCAPING (NO, YES AND %)	NO
NUMBER OF TREES PROVIDED	
SHADE TREES	12
EVERGREEN TREES	16
OTHER TREES (2:1 SUBSTITUTION)	
LANDSCAPE TYPE 'B'	

REVISIONS	
DATE	DESCRIPTION
11-30-98	ADD S.D. PROFILE I8-I8A AND E1-E2

STATE OF MARYLAND — JAYESH VITTHALBHAI PANCHOLI — No. 21147 — REGISTERED PROFESSIONAL ENGINEER

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

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OWNER AND DEVELOPER

CHATEAU SPRING RIDGE, INC.
8805 COLUMBIA 100 PARKWAY, SUITE 100
COLUMBIA, MARYLAND 21045

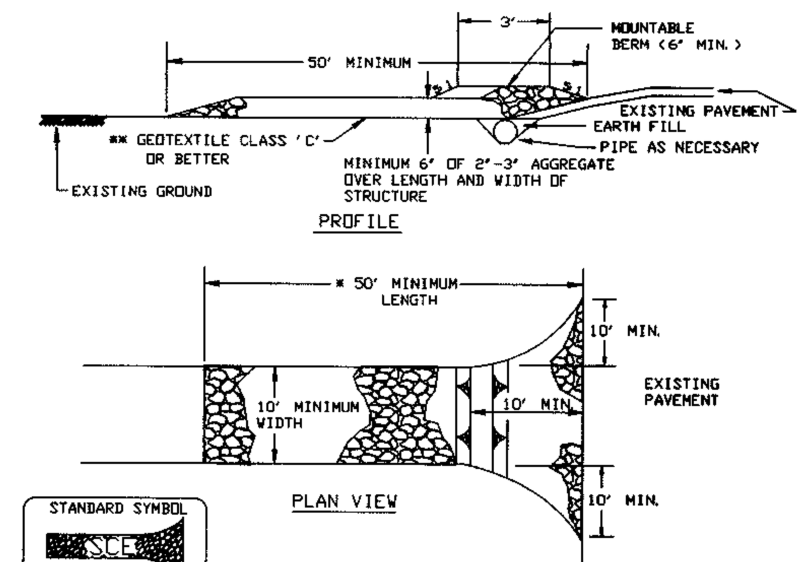
STORM DRAIN PROFILES AND DETAILS

SPRING RIDGE

LOTS 1 thru 26

ZONING: R-20
TAX MAP NO. : 18 PARCEL NO. : 56 & 76 GRID: #19
SECOND ELECTION DISTRICT HOWARD COUNTY, MARYLAND
SCALE: AS SHOWN DATE: MARCH, 1998
SHEET 7 OF 12

F-98-155



Construction Specification

1. Length - minimum of 50' (*30' for single residence lot).

2. Width - 10' minimum, should be flared at the existing road to provide a turning radius.

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

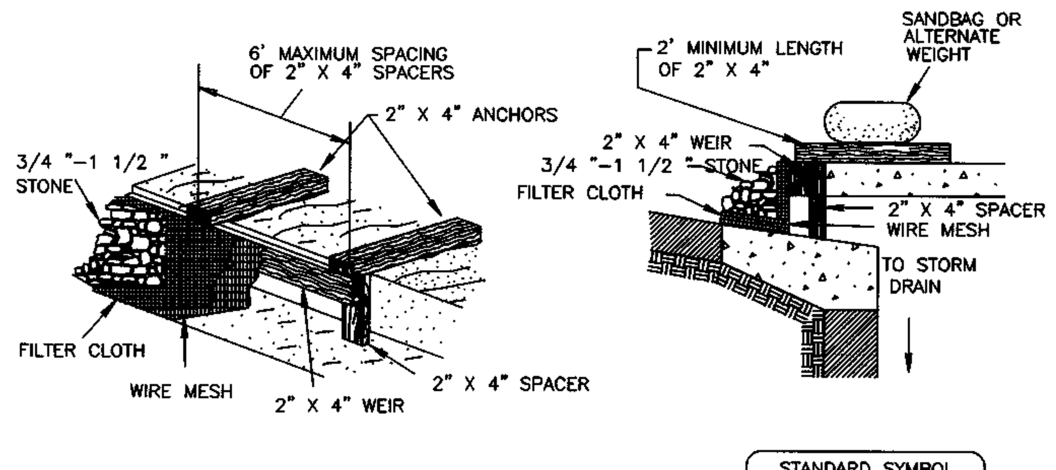
4. Stone - crushed aggregate (2" to 3") or reclaimed or recycled concrete equivalent shall be placed at least 6" deep over the length and width of the entrance.

5. Surface Water - all surface water flowing to or diverted toward construction entrances shall be piped through the entrance, maintaining positive drainage. Pipe installed through the stabilized construction entrance shall be protected with a mountable berm with 5:1 slopes and a minimum of 6" of stone over the pipe. Pipe has to be sized according to the drainage. When the SCE is located at a high spot and has no drainage to convey a pipe will not be necessary. Pipe should be sized according to the amount of runoff to be conveyed. A 6" minimum will be required.

6. Location - A stabilized construction entrance shall be located at every point where construction traffic enters or leaves a construction site. Vehicles leaving the site must travel over the entire length of the stabilized construction entrance.

STABILIZED CONSTRUCTION ENTRANCE - 2

NOT TO SCALE



MAX. DRAINAGE AREA = 1/4 ACRE

Construction Specifications

1. 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.

2. 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.

3. 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).

4. 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.

5. The assembly shall be placed so that the end spacers are a minimum 1' beyond both ends of the throat opening.

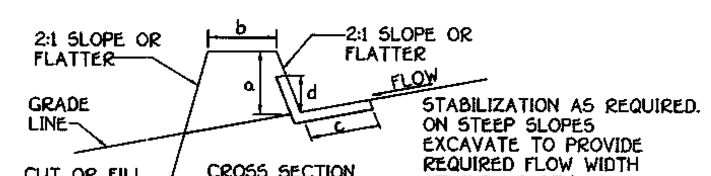
6. Form the 1/2 " x 1/2 " wire mesh and the geotextile fabric to the concrete gutter and against the face of the curb on both sides of the inlet. Place clean 3/4 " x 1 1/2 " stone over the wire mesh and geotextile in such a manner to prevent water from entering the inlet under or around the geotextile.

7. This type of protection must be inspected frequently and the filter cloth and stone replaced when clogged with sediment.

8. Assure that storm flow does not bypass the inlet by installing a temporary earth or asphalt dike to direct the flow to the inlet.

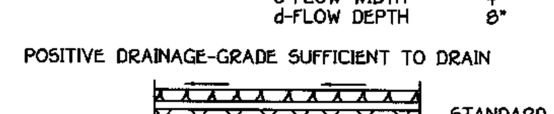
STANDARD CURB INLET PROTECTION

NOT TO SCALE



	DIKE A (5 ac. or less)	DIKE B (5-10 ac.)
a-DIKE HEIGHT	18"	36"
b-DIKE WIDTH	24"	36"
c-FLOW WIDTH	4'	6'
d-FLOW DEPTH	8"	15"

POSITIVE DRAINAGE-GRADE SUFFICIENT TO DRAIN



CONSTRUCTION SPECIFICATIONS

1. ALL DIKES SHALL BE COMPACTED BY EARTH-MOVING EQUIPMENT.
2. ALL DIKES SHALL HAVE POSITIVE DRAINAGE TO AN OUTLET.
3. TOP WIDTH MAY BE WIDER AND SIDE SLOPES MAY BE FLATTER IF DESIRED TO FACILITATE CROSSING BY CONSTRUCTION TRAFFIC.
4. FIELD LOCATION SHOULD BE ADJUSTED AS NEEDED TO UTILIZE A STABILIZED SAFE OUTLET.
5. EARTH DIKES SHALL HAVE AN OUTLET THAT FUNCTIONS WITH A MINIMUM OF EROSION. RUNOFF SHALL BE CONVEYED TO A SEDIMENT BASIN WHERE EITHER THE DIKE CHANNEL OR THE DRAINAGE AREA ABOVE THE DIKE ARE NOT ADEQUATELY STABILIZED.
6. 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.

FLOW CHANNEL STABILIZATION

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; SOD; 2" STONE
3	5.1-8.0%	SEED WITH JUTE, OR SOD; 2" STONE	LINED RIP-RAP 4"-8"
4	8.1-20%	LINED RIP-RAP 4"-8"	ENGINEERING DESIGN

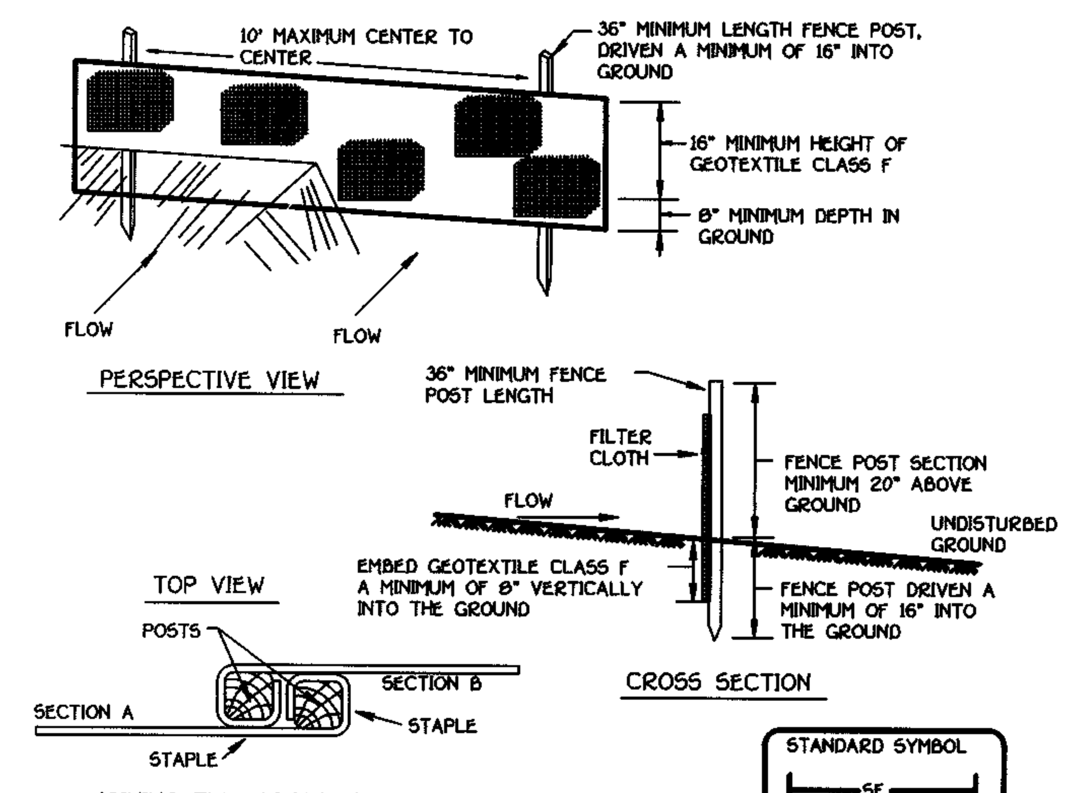
A. STONE TO BE 2 INCH STONE, OR RECYCLED CONCRETE EQUIVALENT, IN A LAYER AT LEAST 3 INCHES IN THICKNESS AND BE PRESSED INTO THE SOIL WITH CONSTRUCTION EQUIPMENT.
B. RIP-RAP TO BE 4-8 INCHES IN A LAYER AT LEAST 8 INCHES THICKNESS AND PRESSED INTO THE SOIL.
C. APPROVED EQUIVALENTS CAN BE SUBSTITUTED FOR ANY OF THE ABOVE MATERIALS.

7. PERIODIC INSPECTION AND REQUIRED MAINTENANCE MUST BE PROVIDED AFTER EACH RAIN EVENT.

EARTH DIKE

NOT TO SCALE

DETAIL 22 - SILT FENCE



Construction Specifications

1. Fence posts shall be a minimum of 36" long driven 16" minimum into the ground. Wood posts shall be 11/2" x 11/2" square (minimum) cut, or 13/4" diameter (minimum) round and shall be of sound quality hardwood. Steel posts will be standard T or U section weighting not less than 1.00 pond per linear foot.

2. Geotextile shall be fastened securely to each fence post with wire ties or staples at top and mid-section and shall meet the following requirements for Geotextile Class F:

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

3. Where ends of geotextile fabric come together, they shall be overlapped, folded and stapled to prevent sediment bypass.

4. Silt Fence shall be inspected after each rainfall event and maintained when bulges occur or when sediment accumulation reached 50% of the fabric height.

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 SOIL CONSERVATION DISTRICT OR THEIR AUTHORIZED AGENTS, AS ARE DEEMED NECESSARY".

SIGNATURE OF DEVELOPER — 9/3/98 DATE

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 — 5-15-98 DATE

REVIEW FOR HOWARD COUNTY SOIL CONSERVATION DISTRICT AND MEETS TECHNICAL REQUIREMENTS.

U.S.D.A. NATURAL RESOURCES CONSERVATION SERVICE — 9/9/98 DATE

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

APPROVED:

HOWARD SOIL CONSERVATION DISTRICT — 9/9/98 DATE

APPROVED: DEPARTMENT OF PLANNING AND ZONING

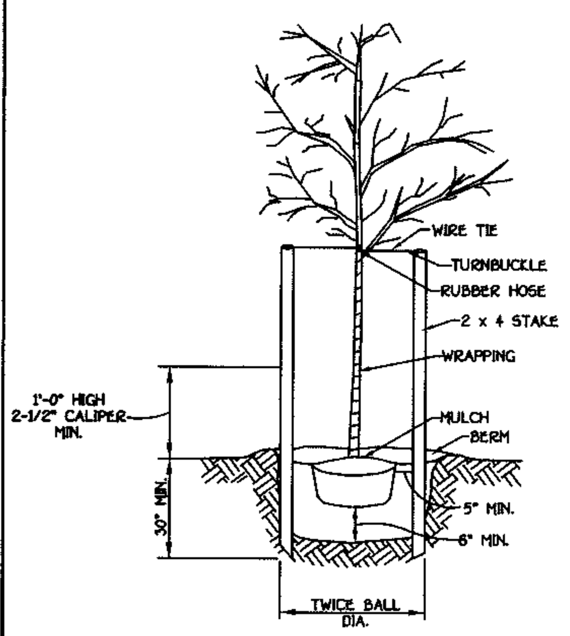
CHIEF, DIVISION OF LAND DEVELOPMENT — 9/18/98 DATE

APPROVED: DEPARTMENT OF PLANNING AND ZONING

CHIEF, DEVELOPMENT ENGINEERING DIVISION — 9/16/98 DATE

APPROVED: HOWARD COUNTY DEPARTMENT OF PUBLIC WORKS

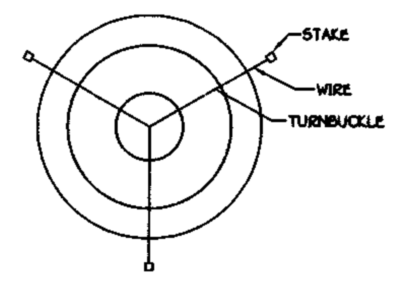
CHIEF, BUREAU OF HIGHWAYS — 9-16-98 DATE



NOTE: REMOVE BURLAP FROM TOP 1/3 OF BALL

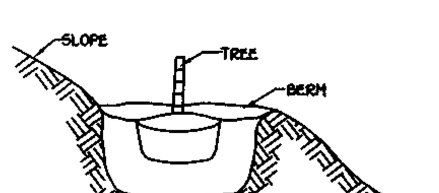
TREE PLANTING

NOT TO SCALE



STAKING DETAIL

NOT TO SCALE



GRADING FOR PLANTING ON SLOPES

NOT TO SCALE

SEDIMENT CONTROL NOTES

1) A MINIMUM OF 48 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 (313-1855).
2) ALL VEGETATIVE AND STRUCTURAL PRACTICES ARE TO BE INSTALLED ACCORDING TO THE PROVISIONS OF THIS PLAN AND ARE TO BE IN CONFORMANCE WITH THE 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.
4) 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.
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.
6) ALL SEDIMENT CONTROL STRUCTURES ARE TO REMAIN IN PLACE AND ARE TO BE MAINTAINED IN OPERATIVE CONDITION UNTIL PERMISSION FOR THEIR REMOVAL HAS BEEN OBTAINED FROM THE HOWARD COUNTY SEDIMENT CONTROL INSPECTOR.
7) SITE ANALYSIS:

TOTAL AREA OF SITE	38.87	ACRES
AREA DISTURBED	14.06	ACRES
AREA TO BE ROOFED OR PAVED	3.15	ACRES
AREA TO BE VEGETATIVELY STABILIZED	4.78	ACRES
TOTAL CUT	15,500	CU.YDS.
TOTAL FILL	15,500	CU.YDS.
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.

20.0 STANDARDS AND SPECIFICATIONS
FOR
VEGETATIVE STABILIZATION
DEFINITION

Using vegetation as cover for barren soil to protect it from forces that cause erosion.

PURPOSE

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 run-off to downstream areas, and improving wildlife habitat and visual resources.

CONDITIONS WHERE PRACTICE APPLIES

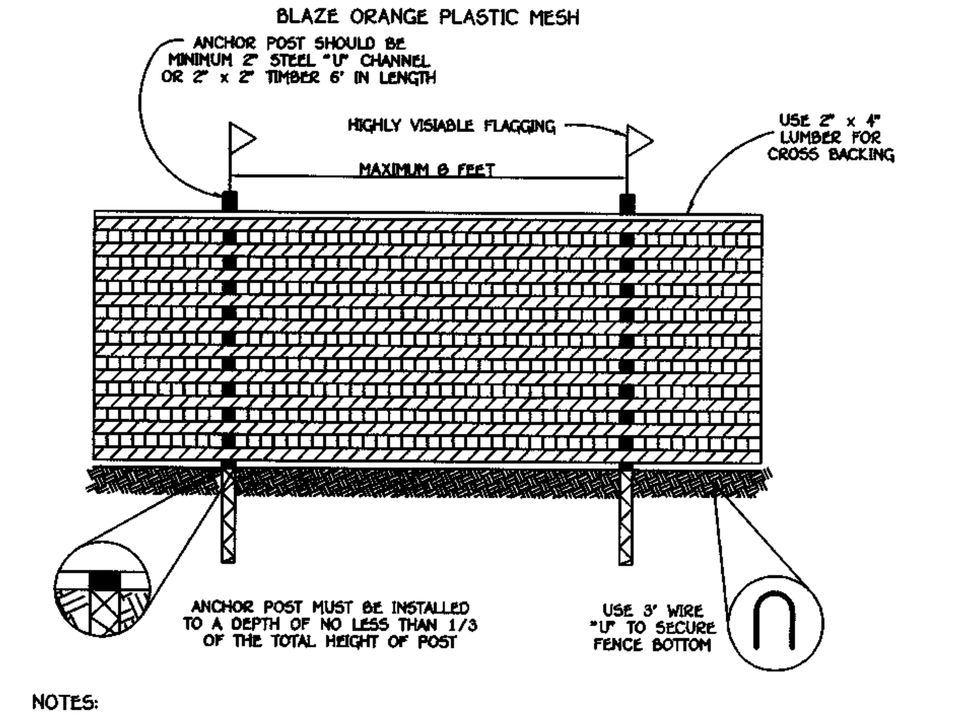
This practice shall be used on denuded areas as specified on the plans and may be used on highly erodible or critically eroding areas. This specification is divided into Temporary Seeding, to quickly establish vegetative cover for short duration (Up to one year), and Permanent Seeding, for long term 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 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.
B. Soil Amendments (Fertilizer and Lime Specifications)
   i. Soil tests must be performed to determine the exact ratios and application rates for both lime and fertilizer 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 98-100% will pass through a #20 mesh sieve.
   iv. Incorporate lime and fertilizer into the top 3-5" of soil by disking or other suitable means.
C. 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. 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.
      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 pH shall be between 6.0 and 7.0.
         2. Soluble salts shall be less than 500 parts per million (ppm).
         3. The soil shall contain less than 40% clay, but enough fine grained 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.
      b. 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 topsoil from sliding down a slope.
      c. Apply soil amendments as per soil test or as included on the plans.
      d. 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.
D. Seed Specifications
   i. All seed must meet the requirements of the Maryland State Seed Law. All seed shall be subject to re-testing by a recognized seed laboratory. All seed used shall have been tested within the 6 months immediately preceding the date of sowing such material on this job.
   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 nitrogen-fixing bacteria prepared specifically for the species. Inoculants 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 possible until used. Temperatures above 75°-80° F. can weaken bacteria and make the inoculant less effective.
E. Methods of Seeding
   i. Hydroseeding: Apply seed uniformly with hydroseeder (slurry 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. Do not use burnt or hydrated lime when hydroseeding.
      c. Seed and fertilizer shall be mixed on site and seeding shall be done immediately and without interruption.
   ii. Dry Seeding: This includes use of conventional drop or broadcast spreaders.
      a. 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 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. Drill 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.
F. 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 Maryland Seed Law.
   ii. Wood Cellulose Fiber Mulch (WCFM)
      a. WCFM shall consist of specially prepared wood cellulose processed into a uniform fibrous physical state.
      b. WCFM shall be dyed green or contain a green dye in the package that will provide an appropriate color to facilitate visual inspection of the uniformly spread slurry.
      c. WCFM, including dye, shall contain no germination or growth inhibiting factors.
      d. WCFM materials shall be manufactured and processed in such a manner that the wood cellulose fiber mulch will remain in uniform suspension in water under agitation and will blend with seed, fertilizer and other additives to form a homogeneous slurry. 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 seedlings.
      e. WCFM material shall contain no elements or compounds at concentration levels that will be phytol-toxic.
      f. WCFM must conform to the following physical requirements: fiber length to approximately 10 mm. , diameter approximately 1 mm., pH range of 4.0 to 8.5, ash content of 1.6% maximum and water holding capacity of 90% minimum.
   Note: Only sterile straw mulch should be used in areas where one species of grass is desired.
G. Mulching Seeded Areas - Mulch shall be applied to all seeded areas immediately after seeding.
   i. 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 accordance with these specifications.
   ii. When straw mulch is used, it shall be spread over all seeded areas at the rate of 2 tons/acre. Mulch shall be applied to a uniform loose depth of between 1" and 2". Mulch applied shall achieve a uniform distribution and depth so that the soil surface is not exposed. If a mulch anchoring tool is to be used, the rate should be increased to 2.5 tons/acre.
   iii. Wood cellulose fiber used as a mulch shall be applied at a net dry weight of 1,500 lbs. per acre. The wood cellulose fiber shall be mixed with water, and the mixture shall contain a maximum of 50 lbs. of wood cellulose fiber per 100 gallons of water.
H. Securing Straw Mulch (Mulch Anchoring): Mulch anchoring shall be performed immediately following mulch application to minimize loss by wind or water. This may be done by one of the following methods (listed by preference), depending upon size of area and erosion hazard:
   i. A mulch anchoring tool is a tractor drawn implement designed to punch and anchor mulch into the soil surface a minimum of two (2) inches. This practice is most effective on large areas, but is limited to flatter slopes where equipment can operate safely. If used on sloping land, this practice should be used on the contour if possible.
   ii. Wood cellulose fiber may be used for anchoring straw. The fiber binder shall be applied at a net dry weight of 750 pounds/acre. The wood cellulose fiber shall be mixed with water and the mixture shall contain a maximum of 50 pounds of wood cellulose fiber per 100 gallons 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.
   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.
I. Incremental Stabilization - Cut Slopes
   i. 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'.
   ii. Construction sequence (Refer to Figure 3 below):
      a. Excavate and stabilize all temporary swales, side ditches, or berms that will be used to convey runoff from the excavation.
      b. Perform Phase 1 excavation, dress, and stabilize.
      c. Perform Phase 2 excavation, dress and stabilize. Overseed Phase 1 areas as necessary.
      d. 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 int he operation of completing the operation out of the seeding season will necessitate the application of temporary stabilization.
J. Incremental Stabilization of Embankments - Fill Slopes
   i. Embankments shall be constructed in lifts as prescribed on the plans.
   ii. 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-erosive 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. Overseed previously seeded areas as necessary.
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.



NOTES:

1. FOREST PROTECTION DEVICE ONLY.
2. RETENTION AREA WILL BE SET AS PART OF THE REVIEW PROCESS.
3. BOUNDARIES OF RETENTION AREA SHOULD BE STAKED AND FLAGGED PRIOR TO INSTALLING DEVICE.
4. ROOT DAMAGE SHOULD BE AVOIDED.
5. PROTECTIVE SIGNAGE MAY ALSO BE USED.
6. DEVICE SHOULD BE MAINTAINED THROUGHOUT CONSTRUCTION.

TREE PROTECTION DETAIL

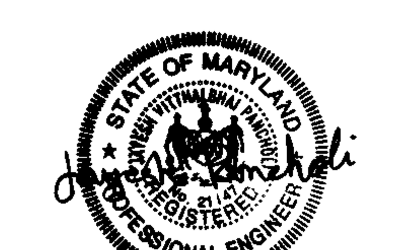
NOT TO SCALE

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

30515 SED CONTROL DETAIL SHT.DWG

OWNER/DEVELOPER

CHATEAU CRIST, INC.
8805 COLUMBIA 100 PARKWAY, SUITE 100
COLUMBIA, MARYLAND 21045



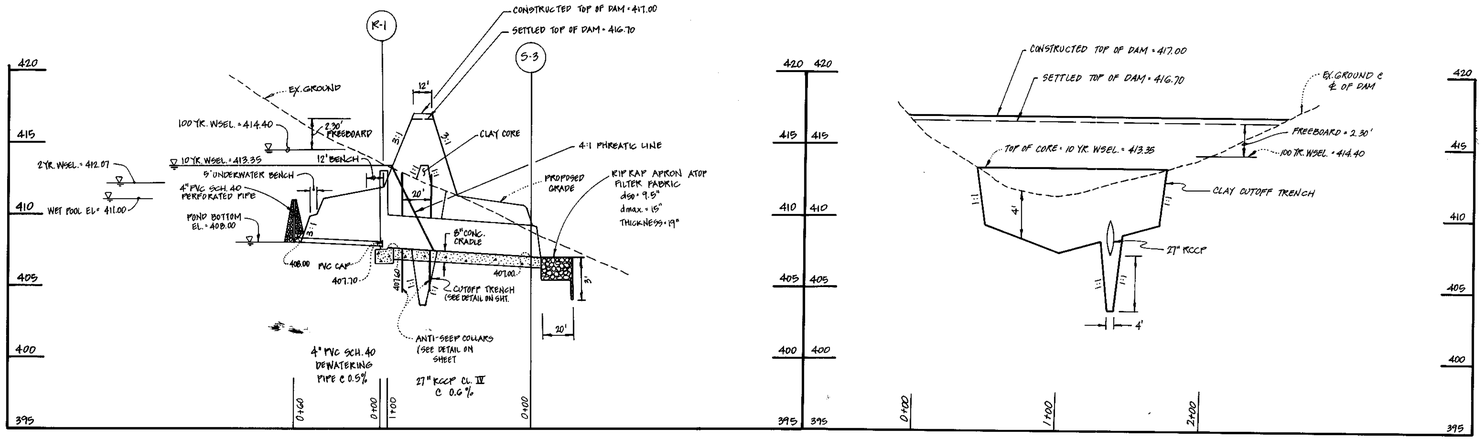
SEDIMENT CONTROL NOTES AND DETAILS

SPRING RIDGE

LOTS 1 THRU 26

ZONING: R-20
TAX MAP NO. : 18 PARCELS : 56 AND 76
SECOND ELECTION DISTRICT HOWARD COUNTY,MARYLAND
SCALE: AS SHOWN DATE: MAY, 1998
SHEET 8 OF 12

F-98-155



OWNER AND MAINTENANCE SCHEDULE OF HOME OWNERS ASSOCIATION OWNED AND MAINTAINED STORMWATER MANAGEMENT FACILITY WET POND.

HOMEOWNERS ASSOCIATION'S MAINTENANCE RESPONSIBILITIES:

1. TOP AND SIDE SLOPES OF THE EMBANKMENT SHALL BE MOWED A MIN. OF TWO (2) TIMES A YEAR, ONCE IN JUNE AND ONCE IN SEPTEMBER. OTHER SIDE SLOPES AND MAINTENANCE ACCESS SHOULD BE MOWED AS NEEDED.
2. DEBRIS AND LITTER SHALL BE REMOVED DURING REGULAR MOWING OPERATIONS AND AS NEEDED.
3. WHEN DEEMED NECESSARY FOR AESTHETIC REASONS, SEDIMENT SHOULD BE REMOVED FROM THE POND. APPROVAL FROM THE DEPARTMENT OF PUBLIC WORKS IS NEEDED.

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 — Date: 9-3-98

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 — Date: 9/2/98

Reviewed For Howard County Soil Conservation District And Meets Technical Requirements.

U.S.D.A. - Natural Resources Conservation Service — Date: 9/9/98

Approved: This Development Is Approved For Erosion And Sediment Control By The Howard Soil Conservation District.

District Howard Soil Conservation Dist. — Date: 9/9/98

Approved: Department Of Planning And Zoning

Chief, Division Of Land Development — Date: 9/18/98

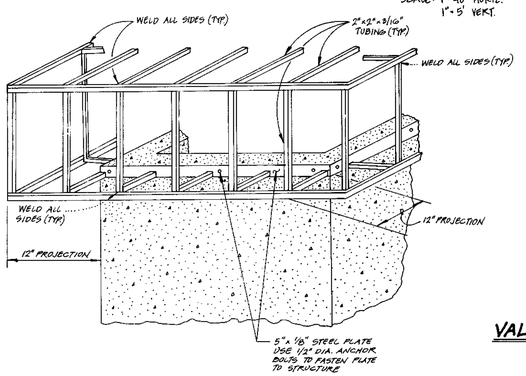
Chief, Development Engineering Division — Date: 9/16/98

Approved: Howard County Department Of Public Works

Chief, Bureau Of Highways — Date: 9-16-98

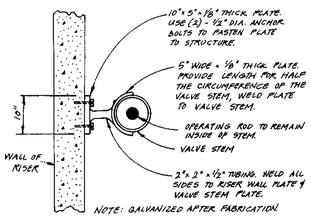
PRINCIPAL SPILLWAY SECTION

SCALE: 1" = 40' HORIZ. 1" = 5' VERT.



FASTENING DETAIL

NO SCALE

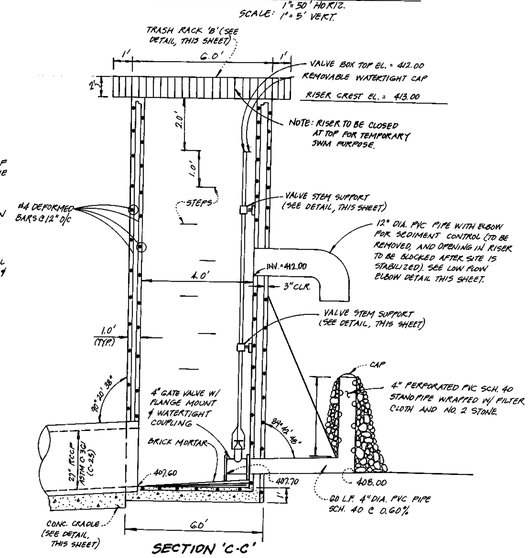


VALVE STEM SUPPORT DETAIL

NO SCALE

PROFILE THRU ℄ OF DAM

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



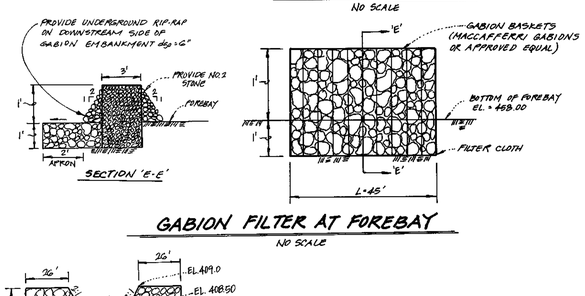
SECTION 'C-C'

RISER DETAIL

NO SCALE

RISER DETAIL

NO SCALE

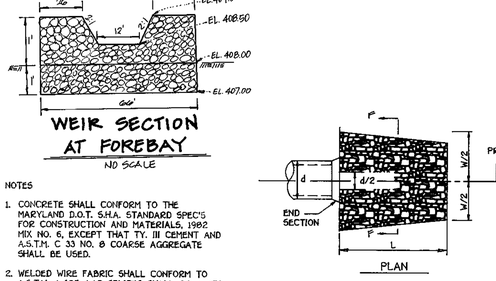


RISER DETAIL

NO SCALE

GABION FILTER AT FOREBAY

NO SCALE

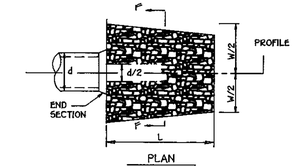


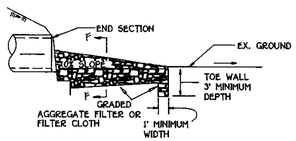
WEIR SECTION AT FOREBAY

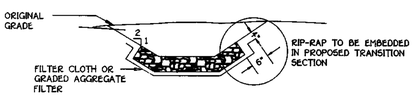
NO SCALE

NOTES

1. CONCRETE SHALL CONFORM TO THE MARYLAND D.O.T. S.H.A. STANDARD SPEC'S FOR CONSTRUCTION AND MATERIALS, 1982 MIX NO. 6, EXCEPT THAT TY. III CEMENT AND A.S.T.M. C 33 NO. 8 COARSE AGGREGATE SHALL BE USED.
2. WELDED WIRE FABRIC SHALL CONFORM TO A.S.T.M. A-185, LAP SPLICES SHALL BE A MIN. OF 1-1/2 TRANSVERSE WIRE SPACES. WIRE CAGES SHALL BE TACK WELDED TO PRODUCE A RIGID UNIT.
3. ALL PIPES CONNECTING TO RISER SHALL HAVE WATERTIGHT CONNECTIONS.
4. RISER SHALL BE CONSTRUCTED IN ONE PIECE.







RIP RAP OUTLET DETAIL

SEQUENCE OF CONSTRUCTION

1. OBTAIN GRADING PERMIT. (1 DAY)
2. NOTIFY "MISS UTILITY" 48 HOURS BEFORE BEGINNING ANY WORK AT 1-800-257-7777. NOTIFY HOWARD COUNTY OFFICE OF CONSTRUCTION/INSPECTION DIVISION (410)313-1870, 24 HOURS BEFORE STARTING ANY WORK. (1 DAY)
3. INSTALL SEDIMENT CONTROL MEASURES, STONE CONSTRUCTION ENTRANCE, EARTH DIKES, TREE PROTECTION FENCE AND SILT FENCE. STABILIZE TRAPS AND DIKES WITH TEMPORARY SEEDING. INSTALL TEMPORARY CLEAN WATER DIVERSION PIPES. (1 WEEK)
4. GRADE SITE TO SUBGRADE. STABILIZE AND INSTALL STORM DRAINS AND STORM WATER MANAGEMENT POND.
5. INSTALL INLET PROTECTIONS. (2 WEEK)
6. 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.
7. INSTALL ROAD BASE COURSE. (4 DAYS)
8. REMOVE SEDIMENT FROM ROADWAYS AND DRESS STONE CONSTRUCTION ENTRANCE AS REQUIRED AND STABILIZE ALL DISTURBED AREAS. (2 DAYS)
9. REMOVE INLET PROTECTIONS AND FLUSH STORM DRAIN SYSTEM TO REMOVE ANY TRAPPED SEDIMENT.
10. APPLY TACK COAT TO SUB-BASE AND LAY SURFACE COURSE. (4 DAYS)
11. REMOVE ALL SEDIMENT CONTROL MEASURES UPON SEDIMENT CONTROL INSPECTORS APPROVAL. (2 DAYS)
12. ALL AREAS DISTURBED DUE TO THE REMOVAL OF SEDIMENT CONTROL MEASURES SHALL BE GRADED AND STABILIZED BY PERMANENT SEEDING.

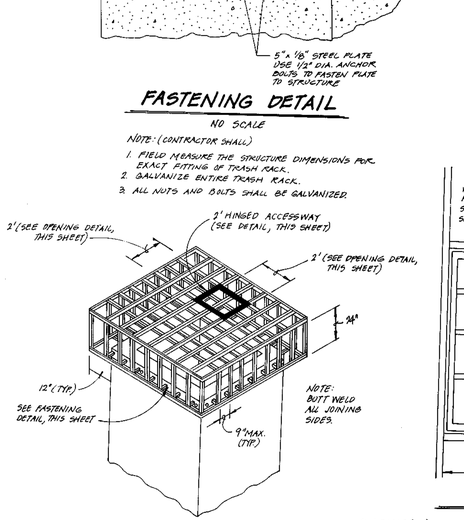
OPERATION AND MAINTENANCE SPECIFICATIONS

I HEREBY CERTIFY THAT I WILL OPERATE AND MAINTAIN THE COMPLETED POND IN ACCORDANCE WITH THE FOLLOWING:

1. PERIODIC INSPECTIONS OF THE FACILITY WILL BE MADE TO IDENTIFY POTENTIAL PROBLEMS THAT MAY AFFECT ITS SAFETY. THESE INSPECTIONS WILL BE MADE AFTER PERIODS OF HEAVY RAINFALL AND AT LEAST TWICE ANNUALLY. INSPECTION REPORTS SHALL BE KEPT UNTIL THE NEXT SUBSEQUENT INSPECTION. INSPECTION ITEMS TO BE LOOKED AT INCLUDE:
   - A.) SPILLWAY AND OUTLET WORKS;
   - B.) RIP-RAP;
   - C.) VEGETATIVE COVER;
   - D.) CRACKS IN THE FILL;
   - E.) SLOPE FAILURES; AND
   - F.) SEEPAGE AND OTHER SIGNS OF DISTRESS.
2. PROBLEMS IDENTIFIED DURING INSPECTIONS WILL BE PROMPTLY CORRECTED. MAJOR PROBLEMS WILL BE BROUGHT TO THE ATTENTION OF THE SOIL CONSERVATION DISTRICT AND THE DAM SAFETY DIVISION OF THE MARYLAND WATER RESOURCES ADMINISTRATION. AS A VERY MINIMUM, GRASSY VEGETATION WILL BE MAINTAINED IN A DENSE AND HEALTHY STATE, AND WOODY VEGETATION WILL NOT BE PERMITTED TO GROW ON THE EMBANKMENT.

OPERATION MAINTENANCE AND INSPECTION

INSPECTION OF POND(S) SHOWN HEREON SHALL BE PERFORMED AT LEAST ANNUALLY, IN ACCORDANCE WITH THE CHECKLIST AND REQUIREMENTS CONTAINED WITHIN USDA, SCS "STANDARDS AND SPECIFICATIONS FOR PONDS" (MD-378). THE POND OWNER(S) AND ANY HEIRS, SUCCESSORS, OR ASSIGNS SHALL BE RESPONSIBLE FOR THE SAFETY OF THE POND AND THE CONTINUED OPERATION, SURVEILLANCE, INSPECTION, AND MAINTENANCE, THEREOF. THE POND OWNER(S) SHALL PROMPTLY NOTIFY THE SOIL CONSERVATION DISTRICT OF ANY UNUSUAL OBSERVATIONS THAT MAY BE INDICATIONS OF DISTRESS SUCH AS EXCESSIVE SEEPAGE, TURBID SEEPAGE, SLIDING OR SLUMPING.



TRASH RACK 'B'

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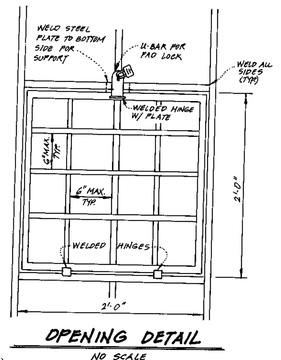

OPENING DETAIL

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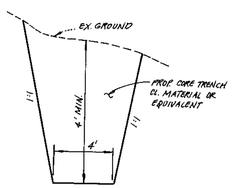

CUT-OFF TRENCH DETAIL

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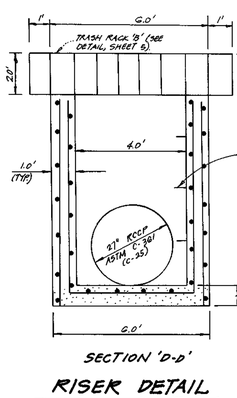
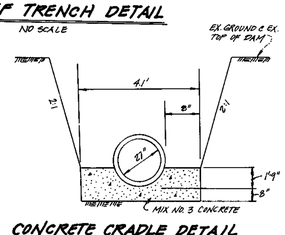


SECTION 'D-D'

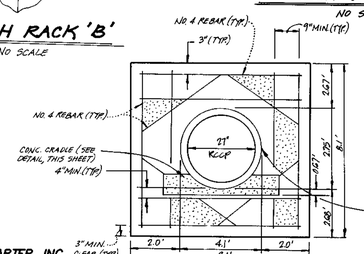
RISER DETAIL

NO SCALE



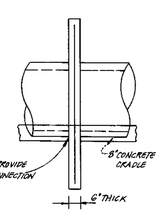
CONCRETE CRADLE DETAIL

NO SCALE



ANTI-SEEP COLLAR DETAIL

NO SCALE



NOTE: ANTI-SEEP COLLAR SHALL BE LOCATED 2' MIN. FROM PIPE JOINTS.

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

OWNER/DEVELOPER

CHATEAU CRIST, INC.
8805 COLUMBIA 100 PARKWAY, SUITE 100
COLUMBIA, MARYLAND 21045

STATE OF MARYLAND — JAMES RICHARD ENGLE — REGISTERED PROFESSIONAL ENGINEER

STORMWATER MANAGEMENT DETAILS
SPRING RIDGE
LOTS 1 THRU 26

ZONING : "R-20"

TAX MAP No. 18 PARCELS 56 AND 76

SECOND ELECTION DISTRICT HOWARD COUNTY, MARYLAND

SCALE: AS SHOWN DATE:

SHEET 9 OF 12

30515swmdetails1.dwg

F-98-155

MD 378 POND SPECIFICATIONS

Site Preparation

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

Areas to be covered by the reservoir will be cleared of all trees, brush, logs, fences, rubbish and other objectionable material unless otherwise designated on the plans. Trees, brush and stumps shall be cut approximately level with the ground surface. For dry stormwater management ponds, a minimum of a 50 foot radius around the inlet structure shall be cleared.

All cleared and grubbed material shall be disposed of outside and below the limits of the dam and reservoir as directed by the owner or his representative. When specified, a sufficient quantity of topsoil will be stockpiled in a suitable location for use on the embankment and other designated areas.

Earth Fill

Material-The fill material shall be taken from approved designated borrow areas. It shall be free of roots, stumps, wood, rubbish, stones greater than 6", frozen or other objectionable materials. Fill material for the center of the embankment and cut off trench shall conform to Unified Soil Classification GC, SC, CH, or CL Consideration may be given to the use of other materials in the embankment if design and construction are supervised by a geotechnical engineer.

Placement - Areas on which fill is to be placed shall be scarified prior to placement of fill. Fill materials shall be placed in maximum 8 inch thick (before compaction) layers which are to be continuous over the entire length of the fill. The most permeable borrow material shall be placed in the downstream portions of the embankment The principal spillway must be installed concurrently with fill placement and not excavated into the embankment.

Compaction - The movement of the hauling and spreading equipment over the fill shall be controlled so that the entire surface of each lift shall be traversed by not less than one tread track of the equipment or compaction shall be achieved by a minimum of four complete passes of a sheepsfoot, rubber tired or vibratory roller. Fill material shall contain sufficient moisture such that the required degree of compaction will be obtained with the equipment used. The fill material shall contain sufficient moisture so that if formed into a ball it will not crumble yet not be so wet that water can be squeezed out.

Where a minimum required density is specified, it shall not be less than 95% of maximum dry density with a moisture content within +2% of the optimum. Each layer of fill shall be compacted as necessary to obtain that density, and is to be certified by the Engineer at the time of construction. All compaction is to be determined by AASHTO Method T-99.

Cut Off Trench - The cutoff trench shall be excavated into impervious material along or parallel to the centerline of the embankment as shown on the plans. The bottom width of the trench shall be governed by the equipment used for excavation, with the minimum width being four feet. The depth shall be at least four feet below existing grade or as shown on the plans. The side slopes of the trench shall be 1 to 1 or flatter. The backfill shall be compacted with construction equipment, rollers or hand tampers to assure maximum density and minimum permeability.

Structure Backfill

Backfill adjacent to pipes or structures shall be of the type and quality conforming to that specified for the adjoinng fill material. The fill shall be placed in horizontal layers not to exceed four inches in thickness and compacted by hand tampers or other manually directed compaction equipment. The material needs to fill completely all spaces under and adjacent to the pipe. At no time during the backfilling operation shall driven equipment be allowed to operate closer than four feet, measured horizontally, to any part of a structure. Under no circumstances shall equipment be driven over any part of a concrete structure or pipe, unless there is a compacted fill of 24' or greater over the structure or pipe,

Pipe Conduits

All pipes shall be circular in cross section.

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

1. Materials - (Steel Pipe) - This pipe and its appurtenances shall be galvanized and fully bituminous coated and shall conform to the requirements of AASHTO Specification M-190 Type A with watertight coupling bands. Any bituminous coating damaged or otherwise removed shall be replaced with cold applied bituminous coating compound. Steel pipes with polymeric coatings shall have a minimum coating thickness of 0.01 inch (10 mil) on both sides of the pipe. The following coatings or an approved equal may be used: Nexon, Plasli-Cote, Blac-Klad, and Beth-Cu-Loy. Coated corrugated steel pipe shall meet the requirements of AASHTO M-245 and M-246.

Materials - (Aluminum Coated Steel Pipe) - This pipe and its appunertenances shall conform to the requirements of AASHTO Specification M-274 with watertight coupling bands or flanges. Any aluminum coating damaged or otherwise removed shall be replaced with cold applied bituminous coating compound.

Materials - (Aluminum Pipe) - This pipe and its appurtenances shall conform to the requirements of AASHTO Specification M-196 or M-211 with watertight coupling bands or flanges. Aluminum surfaces that are to be in contact with concrete shall be painted with one coat of zinc chromate primer. Hot dip galvanized bolts may be used for connections. The pH of the surrounding soils shall be between 4 and 9.

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

3. Connections - All connections with pipes must be completely watertight. The drain pipe or barrel connection to the riser shall be welded all around when the pipe and riser are metal. Anti-seep collars shall be connected to the pipe in such a manner as to be completely watertight. Dimple bands are not considered to be watertight.

All connections shall use a rubber or neoprene gasket when joining pipe sections. The end of each pipe shall be re-rolled an adequate number of corrugations to accommodate the band width. The following type connections are acceptable for pipes less than 24" in diameter. Flanges on both ends of the pipe, a 12" wide standard lap type band with 12" wide by 3/8" thick closed cell circular neoprene gasket: and a 12" wide hugger type band with O-ring gaskets having a minimum diameter of 1/2" greater than the corrugation depth. Pipes 24" in diameter and larger shall be connected by a 24" long annular corrugated band using rods and lugs. A 12" wide by 3/8" thick closed cell circular neoprene gasket will be installed on the end of each pipe for a total of 24".

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

4. Bedding - The pipe shall be firmly and uniformly bedded throughout its entire length. Where rock or soft. spongy or other unstable soil is encountered, all such material shall be removed and replaced with suitable earth compacted to provide adequate support.

5. Backfilling shall conform to "Structure Backfill".

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

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

1. Materials - Reinforced concrete pipe shall have bell and spigot joints with rubber gaskets and shall equal or exceed ASTM Designation C-361.

2. Bedding - All reinforced concrete pipe conduits shall be laid in a concrete bedding for their entire length. This bedding shall consist of high slump concrete placed under the pipe and up the sides of the pipe at least 10% of its outside diameter with a minimum thickness of 3 inches, or as shown on the drawings.

3. Laying pipe - Bell and spigot pipe shall be placed with the bell end upstream. Joints shall be made in accordance with recommendations of the manufacturer of the material. After the joints are sealed for the entire line, the bedding shall be placed so that all spaces under the pipe are filled. Care shall be exercised to prevent any deviation from the original line and grade of the pipe. The first joint must be located within 2 feet from the riser.

4. Backfilling shall conform to "Structure Backfill".

5. Other details (anti-seep collars, valves, etc.) shall be as shown on the drawings.

Polyvinyl Chloride (PVC) Pipe - All of the following criteria shall apply for polyvinyl chloride (PVC) pipe:

1. Materials-PVC pipe shall be PVC-1120 or PVC-1220 conforming to ASTM D-1785 or ASTM D-2241.

2. Joints and connections to anti-seep collars shall be completely watertight.

3. Bedding - The pipe shall be firmly and uniformly bedded throughout its entire length. Where rock or soft spongy or other unstable soil is encountered, all such material shall be removed and replaced with suitable earth compacted to provide adequate support.

4. Backfilling shall conform to "Structure Backfill".

5. Otherdetails (anti-seep collars ,valves, etc.) shall be as shown on the drawings.

Concrete

Concrete shall meet the requirements of Maryland Department of Transportation, State Highway Administration Standard Specifications for Construction and Materials, Section 608; Mix No. 3.

Rock Riprap

Rock riprap shall meet the requirements of Maryland Department of Transporation, State Highway Administration Standard Specifications for Construction and Materials, Section 905.

The riprap shall be placed to the required thickness in one operation. The rock shall be delivered and placed in a manner that will insure the riprap in place shall reasonably homogeneous with the larger rocks uniformly distributed and firmly in contact one to another with the smaller rocks filling the voids between the larger rocks. Filter cloth shall be placed under all riprap and shall meet the requirements of Maryland Department of Transportation, State Highway Administration Standard Specifications for Construction and Materials, Section 919.12.

Care of Water during Construction

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

Stabilization

All borrow areas shall be graded to provide proper drainage and left in a sightly condition. All exposed surfaces of the embankment, spillway, spoil and borrow areas, and berms shall be stabilized by seeding, liming, fertilizing and mulching in accordance with the Maryland Soil Conservation Service Standards and Specifications for Critical Area Planting (MD-342) or as shown on the accompanying drawings.

Erosion And Sediment Control

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

BORING NO. B-297

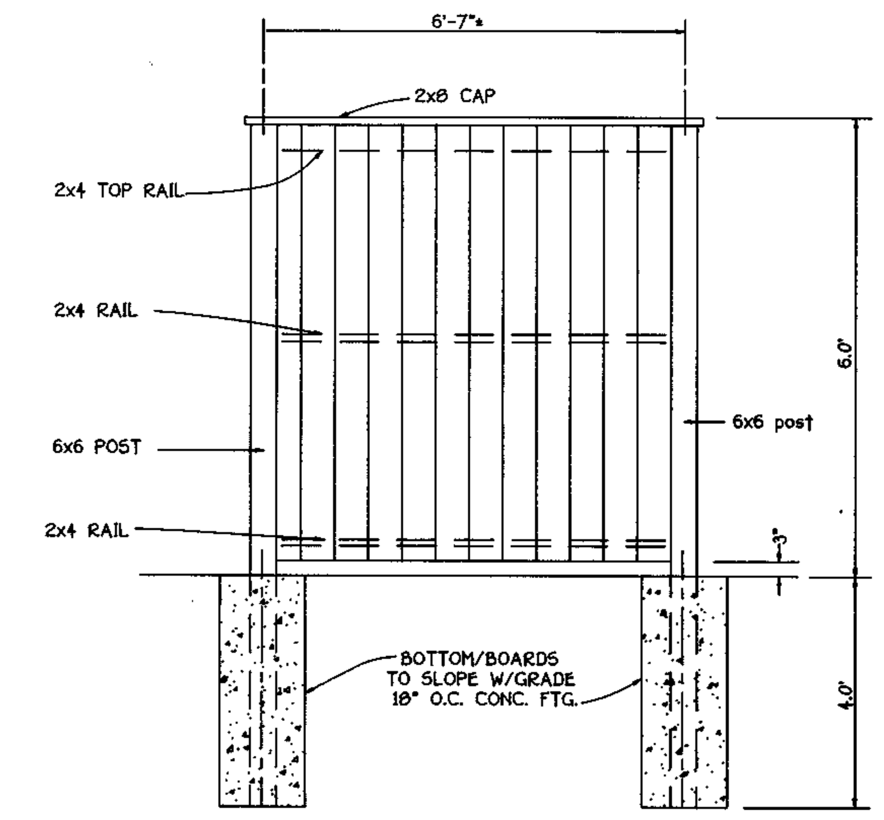
ELEVATION	DEPTH	DESCRIPTION OF MATERIALS	REMARKS
		light brown/gray, dry to moist, medium dense fine silty sand with trace fine gravel (SM) USDA - Loamy Sand	10" topsoil; Groundwater encountered at 14.0' while drilling
445.0	4.5		
		brown, moist, medium dense, micaceous fine sandy silt (ML) USDA - Loam	caved to 13.5' at completion; caved to 11.0' after 24 hours
439.5	9.5		
		brown, yellow, green, moist, stiff silt with trace fine sand and clay (ML-MH) USDA - Clay Loam	
437.0	15.0		
		bottom of hole at 15.0'	

BORING NO. B-298

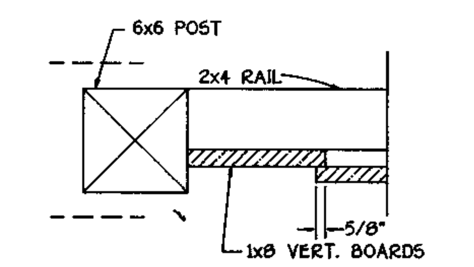
ELEVATION	DEPTH	DESCRIPTION OF MATERIALS	REMARKS
		brown, dry, medium dense, fine silty sandy with trace gravel (Possible Fill)	11" topsoil
445.0	2.0		
		brown, gray, white, moist to very moist, loose to medium dense, micaceous fine sandy silt (ML) USDA - Sandy Loam	no groundwater encountered while drilling; caved at 13.5' at completion; caved at 10.0' after 24 hours
439.5	15.0		
		bottom of hole at 15.0'	

BORING NO. B-299

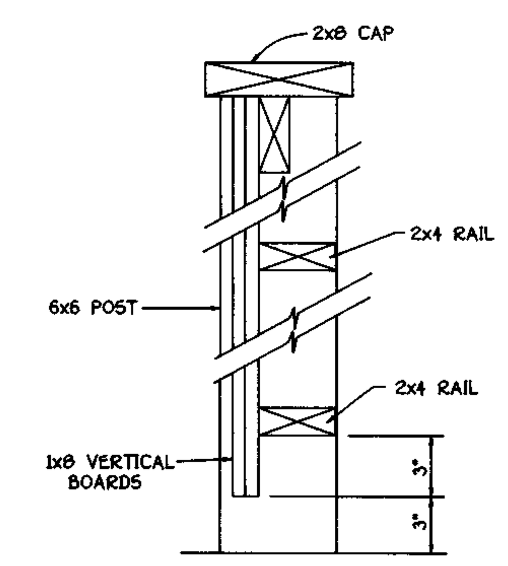
ELEVATION	DEPTH	DESCRIPTION OF MATERIALS	REMARKS
		brown, dry, medium dense, fine silty sand with trace gravel and root matter (SM)	10" topsoil
445.0	2.0		
		brown, moist, medium dense, fine silty sand with mica (SM) USDA -Loamy Sand	No groundwater encountered while drilling
439.5	4.5		
		brown, yellow, green, moist to very moist stiff, silty with some clay and trace fine sand (MH) USDA -Clay	caved to 13.5' at completion
437.0	15.0		
		bottom of hole at 15.0'	



ELEVATION



PLAN SECTION



VERTICAL SECTION

NOISE BARRIER DETAIL

NOT TO SCALE

Planting Schedule

Forest Conservation Easement #1 (0.2acres)

Qty.	Species	Size	Spacing
10	Acer rubrum - Red maple	2-3' whip	**
10	Cornus florida - Flowering dogwood	2-3' whip	**
5	Juniperus virginiana - Red cedar	2-3' whip	**
16	Liriodendron tulipifera - Poplar	2-3' whip	**
8	Prunus serotina - Black cherry	3-4' whip	**
10	Quercus rubra - Red Oak	3-4' whip	**
6	Sassafras albidum - Sassafras	2-4' whip	**
5	Viburnum prunifolium - Blackhaw	18-24"b.t.	**

Forest Conservation Easement #2 (0.5acres)

Qty.	Species	Size	Spacing
5	Acer rubrum - Red maple	1" cal.	##
8	Liriodendron tulipifera - Tulip poplar	1" cal.	##
25	Acer rubrum - Red maple	2-3' whip	**
12	Cornus florida - Flowering dogwood	2-3' whip	**
10	Juniperus virginiana - Red cedar	2-3' whip	**
30	Liriodendron tulipifera - Poplar	2-3' whip	**
14	Prunus serotina - Black cherry	3-4' whip	**
16	Quercus rubra - Red Oak	3-4' whip	**
12	Sassafras albidum - Sassafras	2-4' whip	**
14	Viburnum prunifolium - Blackhaw	18-24"b.t.	**

KEY:

cal. - caliper whip - may be container grown or bareroot b.t. branched transplant

- one inch caliper trees shall be spaced around perimeter of FCE easement in random pattern. Planting locations shown as

** - whips and shrubs shall be planted, on average, at a spacing of 11 feet on center, not in a grid pattern. Limited clumping of shrubs is permitted.

Planting/Soil Specifications

1. Planting of nursery stock shall take place between March 15th and April 30th.
2. A twelve (12) inch layer of topsoil shall be spread over all forestation areas impacted by site grading to assure a suitable planting area. Disturbed areas shall be seeded and stabilized as per general construction plan for project. Planting areas not impacted by site grading shall have no additional topsoil installed.
3. All bareroot planting stock shall have their root systems dipped into an anti-desicant gel prior to planting.
4. Plants shall be installed so that the top of root mass is level with the top of existing grade. Backfill in the planting pits shall consist of 3 parts existing soil to 1 part pine fines or equivalent.
5. Fertilizer shall consist of Agriform 22-8-2, or equivalent, applied as per manufacturer's specifications.
6. A two (2) inch layer of hardwood mulch shall be placed over the root area of all plantings.
7. Plant material shall be transported to the site in a tarped or covered truck. Plants shall be kept moist prior to planting.
8. All non-organic debris associated with the planting operation shall be removed from the site by the contractor.

Sequence of Construction

1. Sediment control and tree protection devices shall be installed in accordance with general construction plan for site. Site shall be graded in accordance with general construction plans.
2. Proposed forestation areas impacted by site grading shall be topsoiled and stabilized as per #2 of Planting/Soil Specifications for project.
3. Plants shall be installed as per Plant Schedule and the Planting/Soil Specifications for the project.
4. Upon completion of the planting, signage shall be installed as per the Forest Protection Devices shown on the Forest Conservation Plan.
5. Plantings shall be maintained and guaranteed in accordance with the Maintenance and Guarantee requirements for project.

Maintenance of Plantings

1. Maintenance of plantings shall last for a period of 24 months.
2. All plant material shall be watered twice a month during the 1st growing season. Watering may be more or less frequent depending on weather conditions. During second growing season, once a month during May-September, if needed.
3. Invasive exotics and noxious weeds will be removed from forestation areas. Old field successional species will be retained.
4. Plants will be examined a minimum two times during the growing season for serious plant pests and diseases. Serious problems will be treated with the appropriate agent.
5. Dead branches will be pruned from plantings.

Guarantee Requirements

1. A 75 percent survival rate of forestation plantings will be required at the end of the 24 month maintenance period. All plant material below the 75 percent threshold will be replaced at the beginning of the next growing season. After one growing season, plant material shall be maintained at 90% survival threshold.
2. The contractor will not be liable for plant loss due to theft or vandalism.

Surety for Reforestation

1. The developer shall post a surety (bond, letter of credit) to ensure that reforestation plantings are completed. Upon acceptance of the plantings by the County, the bond shall be released.

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.

Jayesh Panchal [signature] — Signature Of Engineer — 9-3-98 Date

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."

Michael Agrusti [signature] — Signature Of Developer — 9-3-98 Date

Reviewed For Howard County Soil Conservation District And Meets Technical Requirements.

Cheryl Simmons [signature] — U.S.D.A. - Natural Resources Conservation Service — 9/9/98 Date

Approved: This Development Is Approved For Erosion And Sediment Control By The Howard Soil Conservation District.

John R Robertson [signature] — District Howard Soil Conservation Dist. — 9/9/98 Date

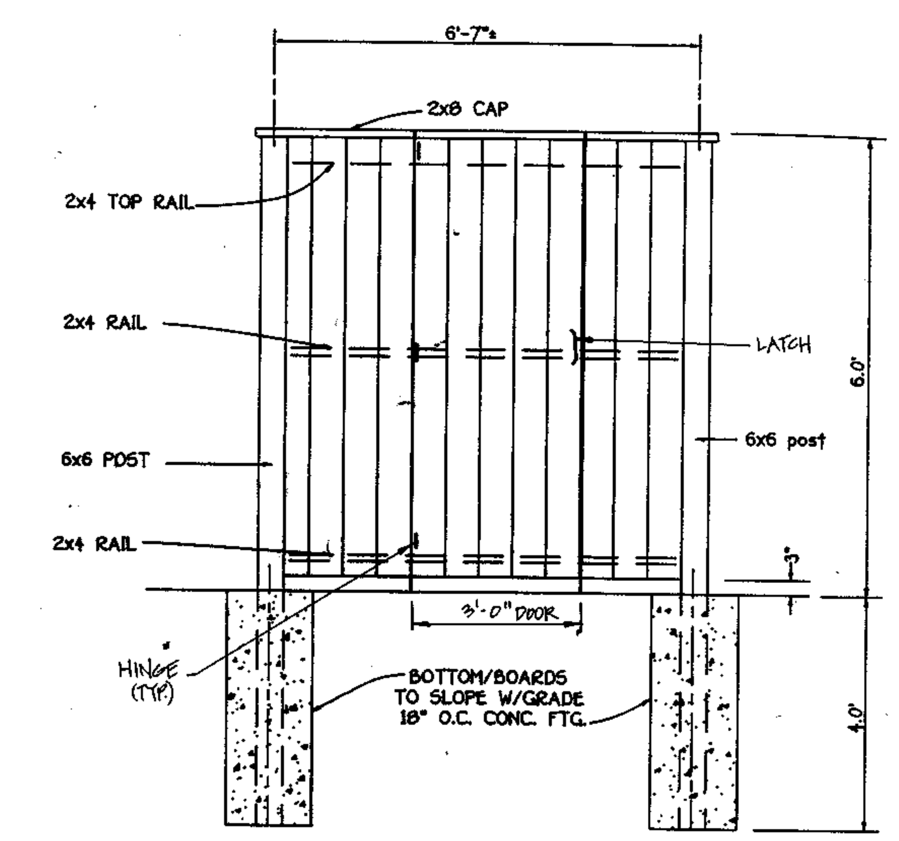
Approved: Department Of Planning And Zoning

Cindy Hamilton [signature] — Chief, Division Of Land Development — 9/18/98 Date

[signature] — Chief, Development Engineering Division — 9/16/98 Date

Approved: Howard County Department Of Public Works

[signature] — Chief, Bureau Of Highways — 9-16-98 Date



ELEVATION @ DOOR OPENING

NO SCALE

OWNER/DEVELOPER

CHATEAU CREST, INC.
8805 COLUMBIA 100 PARKWAY, SUITE 100
COLUMBIA, MARYLAND 21045

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

30515swmdetails.dwg

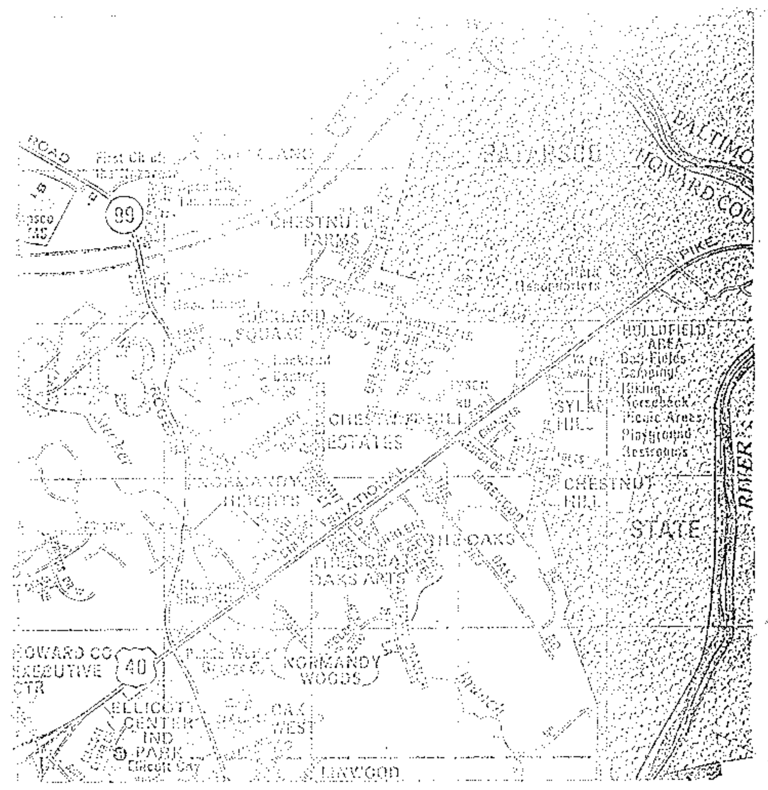
STORMWATER MANAGEMENT DETAILS

SPRING RIDGE

LOTS 1 THRU 26

ZONING : "R-20"
TAX MAP No. 18 PARCELS 56 AND 76
SECOND ELECTION DISTRICT HOWARD COUNTY, MARYLAND
SCALE: AS SHOWN DATE:
SHEET 10 OF 12

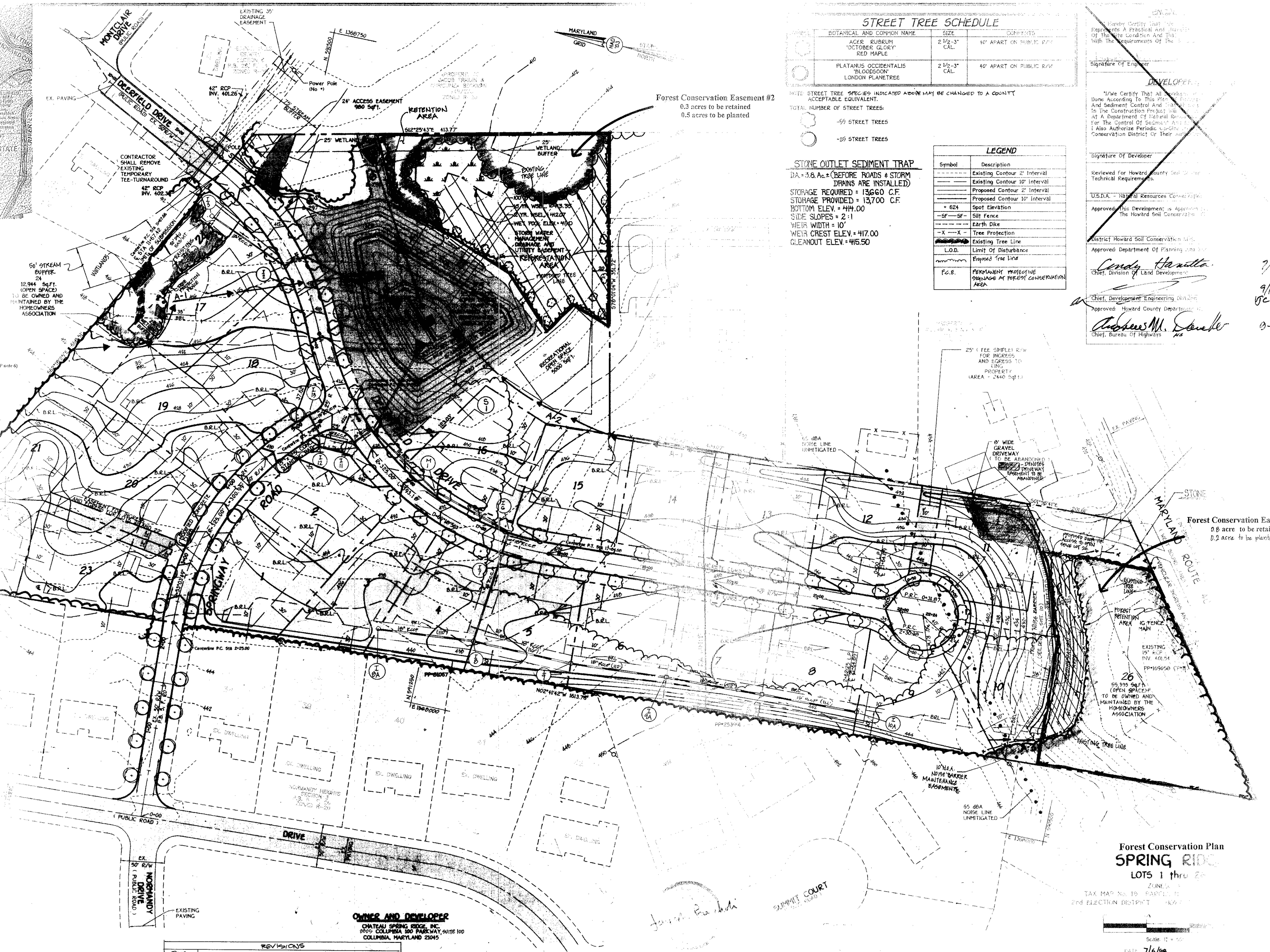
F-98-155



Site Vicinity Map
Scale 1"=2,000'

FCP LEGEND

- Existing Contours
- Proposed Contours
- Forest to be Retained
- Limits of Forest Conservation Easement
- Reforestation Areas
- Temporary Protective Fencing/LOD (see FCP note 6)
- FCE Permanent Protective Signage



Forest Conservation Easement #2
0.3 acres to be retained
0.5 acres to be planted

Forest Conservation Easement #1
0.8 acre to be retained
0.2 acre to be planted

STREET TREE SCHEDULE

SYMBOL	BOTANICAL AND COMMON NAME	SIZE	COMMENTS
	ACER RUBRUM 'OCTOBER GLORY' RED MAPLE	2 1/2-3" CAL.	40' APART ON PUBLIC R/W
	PLATANUS OCCIDENTALIS 'BLOODSOON' LONDON PLANETREE	2 1/2-3" CAL.	40' APART ON PUBLIC R/W

NOTE: STREET TREE SPECIES INDICATED ABOVE MAY BE CHANGED TO A COUNTY ACCEPTABLE EQUIVALENT.

TOTAL NUMBER OF STREET TREES:
- 59 STREET TREES
- 25 STREET TREES

STONE OUTLET SEDIMENT TRAP

D.A. = 3.8 Ac.± (BEFORE ROADS & STORM DRAINS ARE INSTALLED)
STORAGE REQUIRED = 13,660 C.F.
STORAGE PROVIDED = 13,700 C.F.
BOTTOM ELEV. = 414.00
SIDE SLOPES = 2:1
WEIR WIDTH = 10'
WEIR CREST ELEV. = 417.00
CLEANOUT ELEV. = 415.50

LEGEND

Symbol	Description
- - - - - -	Existing Contour 2' Interval
—— ——	Existing Contour 10' Interval
————	Proposed Contour 2' Interval
————	Proposed Contour 10' Interval
+ 624	Spot Elevation
-SF—SF-	Silt Fence
— — — —	Earth Dike
-X —X -	Tree Protection
	Existing Tree Line
L.O.D.	Limit Of Disturbance
	Proposed Tree Line
F.C.E.	PERMANENT PROTECTIVE SIGNAGE AT FOREST CONSERVATION AREA

ENGINEER

I Hereby Certify That This Plan Represents A Practical And Workable Plan Of The Site Condition And That It Is In Accordance With The Requirements Of The ...

Signature Of Engineer

DEVELOPER

"I/We Certify That All Development ... Done According To This Plan Of Erosion And Sediment Control And That ... In The Construction Project Will ... At A Department Of Natural Resources ... For The Control Of Sediment And ... I Also Authorize Periodic On-Site ... Conservation District Or Their Authorized ...

Signature Of Developer

Reviewed For Howard County Soil Conservation ... Technical Requirements.

U.S.D.A. - Natural Resources Conservation ...

Approved: This Development is Approved ... The Howard Soil Conservation ...

District Howard Soil Conservation Dist.

Approved: Department Of Planning And Zoning

Cindy Hamilton 7/18/98
Chief, Division Of Land Development

9/16/98
Chief, Development Engineering Division

Approved: Howard County Department Of ...

Andrew M. Donahue 9-16-98
Chief, Bureau Of Highways

MD DNR Qualified Professional
USACOE Wetland Delineator
Certification #WDCP93MD0510044B2
John P. Canoles

Eco-Science Professionals, Inc.
CONSULTING ECOLOGISTS

OWNER AND DEVELOPER
CHATEAU SPRING RIDGE, INC.
8805 COLUMBIA 100 PARKWAY, SUITE 100
COLUMBIA, MARYLAND 21045

REVISIONS	
DATE	DESCRIPTION
11-30-98	REV. SD. FROM I8A - I10A, REV. 75' STR. BUFFER TO 50' STRM. BUFFER

See Sheet 12 for FCP notes, planting schedule, specifications, and details

Forest Conservation Plan
SPRING RIDGE
LOTS 1 thru 26
ZONED ...
TAX MAP No. 18 PARCEL ...
2nd ELECTION DISTRICT HOWARD ...

Scale: 1" = 50'
DATE 7/6/98
SHEET 11 OF 12

F-98-155

Planting Schedule

Forest Conservation Easement #1 (0.2 acres)

Qty.	Species	Size	Spacing
10	Acer rubrum - Red maple	2-3' whip	**
10	Cornus florida - Flowering dogwood	2-3' whip	**
5	Juniperus virginiana - Red cedar	2-3' whip	**
16	Liriodendron tulipifera - Poplar	2-3' whip	**
8	Prunus serotina - Black cherry	3-4' whip	**
10	Quercus rubra - Red Oak	3-4' whip	**
6	Sassafras albidum - Sassafras	2-4' whip	**
9	Viburnum prunifolium - Blackhaw	18-24"b.t.	**

Forest Conservation Easement #2 (0.5acres)

Qty.	Species	Size	Spacing
5	Acer rubrum - Red maple	1" cal.	##
8	Liriodendron tulipifera - Tulip poplar	1" cal.	##
25	Acer rubrum - Red maple	2-3' whip	**
12	Cornus florida - Flowering dogwood	2-3' whip	**
10	Juniperus virginiana - Red cedar	2-3' whip	**
30	Liriodendron tulipifera - Poplar	2-3' whip	**
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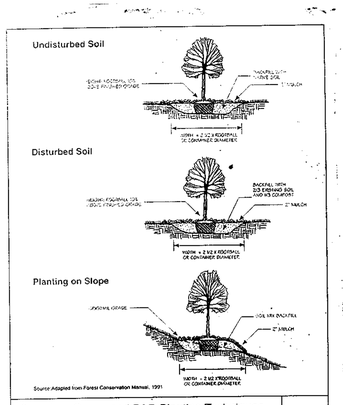
12	Sassafras albidum - Sassafras	2-4' whip	**
14	Viburnum prunifolium - Blackhaw	18-24"b.t.	**

KEY:
cal. - caliper whip - may be container grown or bareroot b.t. branched transplant

- one inch caliper trees shall be spaced around perimeter of FCE easement in random pattern. Planting locations shown as -

** - whips and shrubs shall be planted, on average, at a spacing of 11 feet on center, not in a grid pattern. Limited clumping of shrubs is permitted.



Container Grown and B&B Planting Techniques

Planting/Soil Specifications

1. Planting of nursery stock shall take place between March 15th and April 30th.
2. A twelve (12) inch layer of topsoil shall be spread over all forestation areas impacted by site grading to ensure a suitable planting area. Disturbed areas shall be seeded and stabilized as per general construction plan for project. Planting areas not impacted by site grading shall have no additional topsoil installed.
3. All bareroot planting stock shall have their root systems dipped into an anti-desicant gel prior to planting.
4. Plants shall be installed so that the top of root mass is level with the top of existing grade. Backfill in the planting pits shall consist of 3 parts existing soil to 1 part pine fines or equivalent.
5. Fertilizer shall consist of Agriform 22-8-2, or equivalent, applied as per manufacturer's specifications.
6. A two (2) inch layer of hardwood mulch shall be placed over the root area of all plantings.
7. Plant material shall be transported to the site in a tarped or covered truck. Plants shall be kept moist prior to planting.
8. All non-organic debris associated with the planting operation shall be removed from the site by the contractor.

Sequence of Construction

1. Sediment control and tree protection devices shall be installed in accordance with general construction plan for site. Site shall be graded in accordance with general construction plans.
2. Proposed forestation areas impacted by site grading shall be topsoiled and stabilized as per #2 of Planting/Soil Specifications for project.
3. Plants shall be installed as per Plant Schedule and the Planting/Soil Specifications for the project.
4. Upon completion of the planting, signage shall be installed as per the Forest Protection Devices shown on the Forest Conservation Plan.
5. Plantings shall be maintained and guaranteed in accordance with the Maintenance and Guarantee requirements for project.

Maintenance of Plantings

1. Maintenance of plantings shall last for a period of 24 months.
2. All plant material shall be watered twice a month during the 1st growing season. Watering may be more or less frequent depending on weather conditions. During second growing season, once a month during May-September, if needed.
3. Invasive exotics and noxious weeds will be removed from forestation areas. Old field successional species will be retained.
4. Plants will be examined a minimum two times during the growing season for serious plant pests and diseases. Serious problems will be treated with the appropriate agent.
5. Dead branches will be pruned from plantings.

Guarantee Requirements

1. A 75 percent survival rate of forestation plantings will be required at the end of the 24 month maintenance period. All plant material below the 75 percent threshold will be replaced at the beginning of the next growing season. After one growing season, plant material shall be maintained at 90% survival threshold.
2. The contractor will not be liable for plant loss due to theft or vandalism.

Surety for Reforestation

1. The developer shall post a surety (bond, letter of credit) to ensure that reforestation plantings are completed. Upon acceptance of the plantings by the County, the bond shall be released.

Permanent Protective Signage

FOREST CONSERVATION AREA

Unauthorized disturbance of vegetation is prohibited. Violators subject to penalties under the Howard County Forest Conservation Act of 1992.

Trees for Your Future

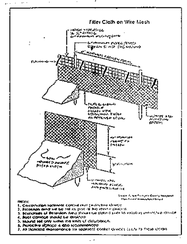
APPROVED: DEPARTMENT OF PUBLIC WORKS
CHIEF, BUREAU OF HIGHWAYS — DATE 9-16-98

APPROVED: DEPARTMENT OF PLANNING AND ZONING
CHIEF, DIVISION OF LAND DEVELOPMENT — DATE 9/15/98
CHIEF, DEVELOPMENT ENGINEERING DIVISION — DATE 9/16/98

FCP NOTES

1. Any Forest Conservation Easement (FCE) area shown hereon is subject to protective covenants which may be found in the Land Records of Howard County which restrict the disturbance and use of these areas.
2. Forested areas occurring outside of the FCE shall not be considered part of the FCE and shall not be subject to protective land covenants.
3. Limits of disturbance shall be restricted to areas outside the limit of temporary fencing or the FCE boundary, whichever is greater.
4. There shall be no clearing, grading, construction or disturbance of vegetation in the Forest Conservation Easement, except as permitted by Howard County DPZ.
5. No stockpiles, parking areas, equipment cleaning areas, etc. shall occur within areas designated as Forest Conservation Easements.
6. Temporary fencing shall be used to protect forest resources during construction. The fencing shall be placed along all FCE boundaries which occur within 15 feet of the proposed limits of disturbance.
7. Permanent signage shall be placed 50-100' apart along the boundaries of all areas included in Forest Conservation Easements.
8. The outstanding forestation obligation for this project shall be met through these of an offsite planting area, payment into the fee-in-lieu fund, or a combination thereof.

Temporary Protective Fencing



FOREST DATA	Acres
Gross Area:	13.5
Net Tract Area (NTA):	13.5
Existing Forest (NTA):	7.2
Afforestation Threshold:	2.0
Reforestation Threshold:	2.7
Forest to be Cleared (NTA):	6.1
Forest to be Retained (NTA):	1.1
Reforestation Required:	4.3
Onsite Forestation Proposed:	0.7
Outstanding FCE Obligation:	3.6
Fee-in-lieu Cost:	$ 47,044.00

STATE OF MARYLAND — JOHN FITZHUGH LEWIS — No. 21146 — REGISTERED PROFESSIONAL ENGINEER

Forest Conservation Plan
SPRING RIDGE
LOTS 1 thru 26
ZONED: R-20
TAX MAP No. 18 PARCEL No. 56 & 76
2nd ELECTION DISTRICT HOWARD COUNTY, MARYLAND

0' 50' 100' 150'
Scale: 1" = 50'

DATE: October 11, 1997
SHEET 12 OF 12

Revised 7/6/98

F-98-155

Eco-Science Professionals, Inc.
CONSULTING ECOLOGISTS
P.O. Box 5006 Glen Arm, MD 21057 (410) 592-6752

MD DNR Qualified Professional
USACOE Wetland Delineator
Certification # WPCP930MD0610904482
John F. Qualm