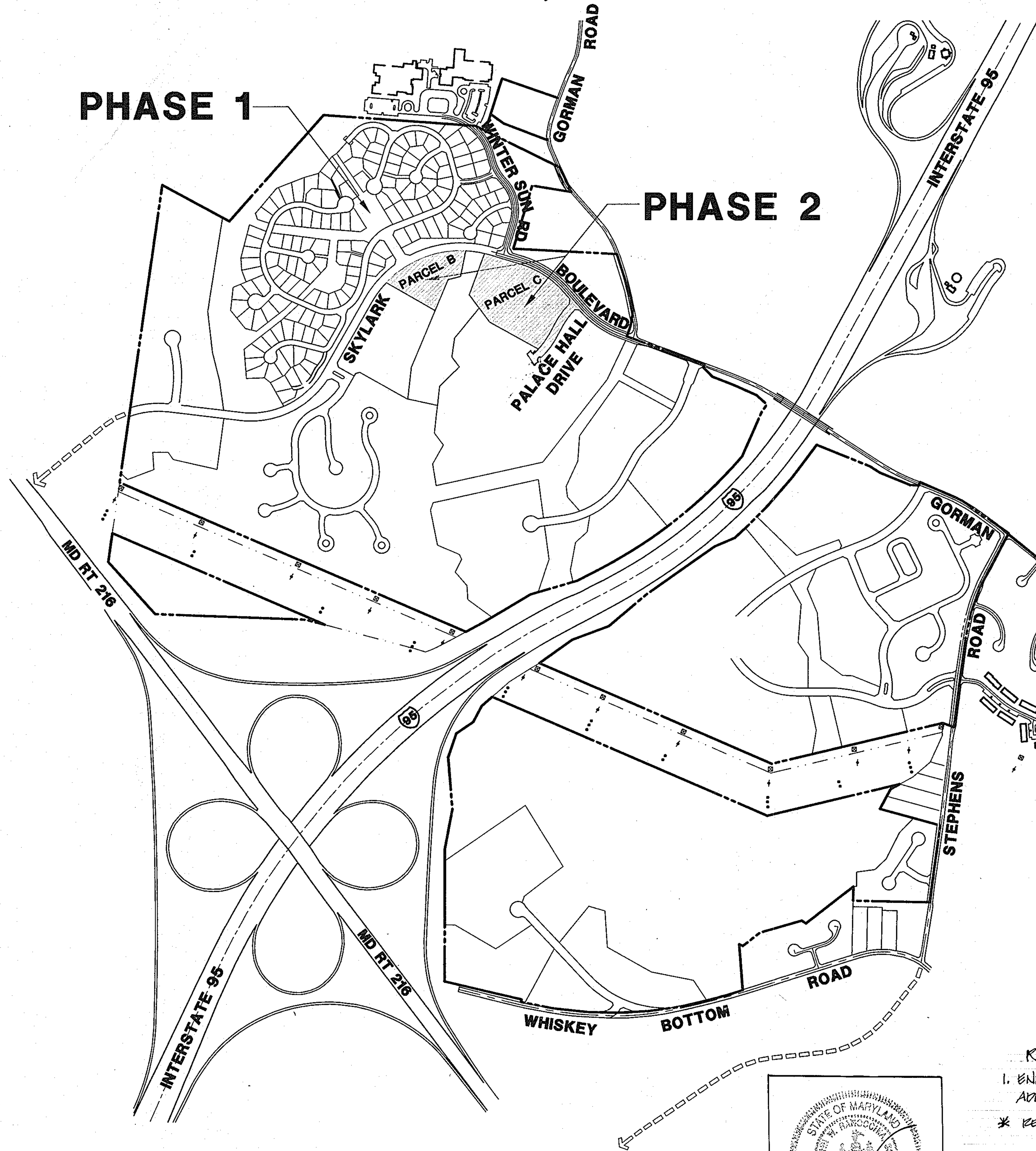
FINAL PLANS

EMERSON SECTION 2
PHASE 2
(FORMERLY KEY PROPERTY)
HOWARD COUNTY, MARYLAND

GENERAL NOTES

1. OPEN SPACE AREAS MAY CONTAIN ACTIVE RECREATION FACILITIES AS ALLOWED IN THE APPROVED DEVELOPMENT CRITERIA.
2. STREAM BUFFERS ARE DETERMINED BY LAND USE ADJOINING THE OPEN SPACE. EMPLOYMENT USE = 50' BUFFER FROM ANY STREAM. RESIDENTIAL USES = 50' BUFFER FOR INTERMITTENT STREAMS AND 75' BUFFER FOR PERENNIAL STREAMS.
3. PHASING FOR THIS PROJECT IS ACCORDANCE WITH THE DECISION AND ORDER FOR ZONING CASE ZB-979M AND THE DECISION AND ORDER FOR PB-339 (COMPREHENSIVE SKETCH PLAN S-99-12).
4. ON SEPTEMBER 3, 1998 THE ZONING BOARD GRANTED APPROVAL OF ZB-979M FOR THE PRELIMINARY DEVELOPMENT PLAN AND DEVELOPMENT CRITERIA FOR 516 ACRES OF LAND RE-ZONED AS PEC-MXD-3 AND R-SC-MXD-3.
5. PARCEL C AND D MAY BE RESUBDIVIDED FOR RSEIDENTIAL USES, IN ACCORDANCE WITH THE APPROVED COMPREHENSIVE SKETCH PLAN (S-99-12) AND DEVELOPMENT CRITERIA.
6. DEVELOPMENT FOR THIS PHASE 2, FILE NO. 01-145, WILL BE DONE IN ACCORDANCE WITH THE DEVELOPMENT CRITERIA APPROVED WITH COMPREHENSIVE SKETCH PLAN S-99-12(PB-339).
7. PROJECT BACKGROUND:
   - LOCATION: ADC MAP 19 H7
   - TAX MAP: 47 PART OF PARCELS P.837, P.3, P.462
   - ZONING: MXD
   - ELECTION DISTRICT: 6
   - GROSS AREA OF TRACT: 12.658 AC.
   - PRELIMINARY PLAN FILE NUMBER AND APPROVAL DATE: P-00-16 (11/15/00)
8. SEE COUNTY FILE NOS. ZB-979 M, PB-339, S-99-12, P-00-16
9. TOPOGRAPHY SHOWN HAS A 2' CONTOUR INTERVAL AND WAS OBTAINED THROUGH AERIAL PHOTOGRAPHY DURING THE SUMMER OF 1998.
10. PUBLIC WATER AND SEWER TO BE UTILIZED. (MIDDLE PATUXENT DRAINAGE AREA) SITE IS IN METROPOLITAN DISTRICT. WATER AND SEWER CONSTRUCTION FOR THIS SUBDIVISION IS TO BE IN ACCORDANCE WITH HOWARD COUNTY CONSTRUCTION INSPECTION DIVISION DPW CONTRACT NO. 44-3875-D
11. QUALITY & QUANTITY STORMWATER MANAGEMENT FOR SECTION 2, PHASE 2 IS PROVIDED BY ONE WET POND FACILITY ON HOA LOT 174 EMERSON SECTION 2 PHASE 1B, DPZ FILE NO.F01-137. THE WET POND FACILITY WILL BE PRIVATELY OWNED AND MAINTAINED BY SAID HOA. ACCESS TO THE SWM FACILITY IS VIA PALACE HALL DRIVE. THE SUBDIVISION IS IN THE PATUXENT RIVER SUB-BASIN AND IS A CLASS ONE WATERSHED.
12. THE FLOODPLAIN STUDY HAS BEEN PREPARED BY DAFT, MCCUNE & WALKER INC. STUDY WILL BE RESUBMITTED AS OF MARCH 2001.
13. PREVIOUSLY EXISTING WETLAND AREA WAS FILLED-IN AS APPROVED UNDER WP-02-78 (SEE INFORMATION FOR RED-LINE REVISION #1).
14. THE PROPOSED DEVELOPMENT IS IN COORDINATION WITH THE APFO STUDY FOR THIS DEVELOPMENT
15. GEOTECHNICAL REPORT PREPARED BY ROBERT B. BALTER, INC.
16. HORIZONTAL AND VERTICAL CONTROL BASED ON HOWARD COUNTY CONTROL STATIONS 475A, ELEV. 315.905 AND 47E4, ELEV. 338.909.
17. LIGHT POLES AND FIXTURES FOR STREET LIGHTS SHALL BE IN ACCORDANCE WITH THE LATEST HOWARD COUNTY DESIGN MANUAL, VOL. III, ROADS AND BRIDGES.
18. SEE SOILS MAP #33.
19. NO SLOPES OF 25% OR GREATER EXIST ON SITE.
20. ALL CONSTRUCTION SHALL BE IN ACCORDANCE WITH THE LATEST STANDARDS AND SPECIFICATIONS OF HOWARD COUNTY.
21. THE CONTRACTOR SHALL NOTIFY THE DEPARTMENT OF PUBLIC WORKS/CONSTRUCTION INSPECTION DIVISION AT (410) 313-1880 AT LEAST FIVE (5) DAYS PRIOR TO THE START OF WORK.
22. THE CONTRACTOR SHALL NOTIFY "MISS UTILITY" AT 1-800-257-7777 AT LEAST 48 HOURS PRIOR TO ANY EXCAVATION WORK.
23. FOR TYPES OF STORM DRAINS, REFER TO THE STANDARD DETAILS OF HOWARD COUNTY DESIGN MANUAL VOL. IV.
24. TRENCH COMPACTION FOR STORM DRAINS WITHIN ROADS AND STREET RIGHTS-OF-WAY LIMITS SHALL BE IN ACCORDANCE WITH "HOWARD COUNTY DESIGN MANUAL", VOL. IV, STANDARD G-2.01.
25. EXISTING UTILITIES ARE BASED ON PLANS OF RECORD. THE CONTRACTOR MUST DETERMINE THE EXACT LOCATION AND ELEVATION OF MAINS BY DIGGING TEST PITS, BY HAND, AT ALL UTILITY CROSSINGS, WELL IN ADVANCE OF CONSTRUCTION.
26. SAG AND CREST VERTICAL CURVES WERE DESIGNED IN ACCORDANCE WITH "HOWARD COUNTY DESIGN MANUAL", VOL. III.
27. CONCRETE SIDEWALK RAMPS SHALL BE PROVIDED AT ALL INTERSECTIONS AND AS INDICATED ON THE PLANS. THE RAMP SHALL CONFORM TO THE AMERICANS WITH DISABILITIES ACT (ADA) 1992.
28. SEDIMENT CONTROL SHALL BE PROVIDED IN ACCORDANCE WITH THE REQUIREMENTS OF THE "1994 MARYLAND STANDARDS AND SPECIFICATION FOR SOIL EROSION AND SEDIMENT CONTROL."
29. STREET TREES SHOWN ARE TENTATIVE AND ARE TO BE USED FOR BOND PURPOSES ONLY. THE FINAL LOCATION AND VARIETY OF TREES MAY VARY TO ACCOMMODATE FIELD CONDITIONS AND BUILDERS LANDSCAPE PROGRAM.
30. STREET TREES SHALL BE PLANTED A MINIMUM OF FIVE (5) FEET FROM STORM DRAIN, WATERLINE, SEWER PIPE, AND MANHOLES; ALSO A MINIMUM OF TWENTY (20) FEET FROM STREET LIGHTS.
31. TRAFFIC CONTROL DEVICES, MARKINGS, AND SIGNING SHALL BE IN ACCORDANCE WITH THE LATEST EDITION OF THE MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES (MUTCD).
    - A. STOP SIGNS R1-1, 30" X 30" OCTAGON
    - B. STOP AHEAD SIGNS, W3-1A, 30" X 30" DIAMOND
    - C. SPEED LIMIT SIGNS R2-1, 24" X 30" RECTANGULAR
32. THIS PROJECT WILL BE LANDSCAPED IN ACCORDANCE WITH THE HOWARD COUNTY LANDSCAPE MANUAL, ADOPTED MARCH 12, 19 AND THE APPROVED DEVELOPMENT CRITERIA.
33. THE WETLAND DISTURBANCE ASSOCIATED WITH THE CONSTRUCTION OF PALACE HALL DRIVE HAS BEEN DETERMINED TO BE NECESSARY, IN ACCORDANCE WITH SECTION 16.166 OF THE SUBDIVISION REGULATIONS.
34. THE PROJECT IS IN CONFORMANCE WITH THE LATEST HOWARD COUNTY STANDARDS UNLESS WAIVERS HAVE BEEN APPROVED.
35. THE CUMULATIVE FOREST CONSERVATION OBLIGATION FOR EMERSON, SECTION 2, PHASES 1-2 HAS BEEN SATISFIED BY 16.77 ACRES OF RETENTION AND 5.03 ACRES OF REFORESTATION. NO F.C. EASEMENTS ARE CREATED ON THIS PLAN / PLAT FOR PHASE 2.
36. THE PLATS FOR PHASE 1A (F-01-136) AND PHASE 1B (F-01-137) MUST BE RECORDED PRIOR TO RECORDATION OF THE PLAT FOR THIS PHASE, BECAUSE PUBLIC ROAD FRONTAGE AND FOREST CONSERVATION EASEMENTS TO SUPPORT THIS PHASE ARE CREATED BY PHASE 1A AND 1B RESPECTIVELY.



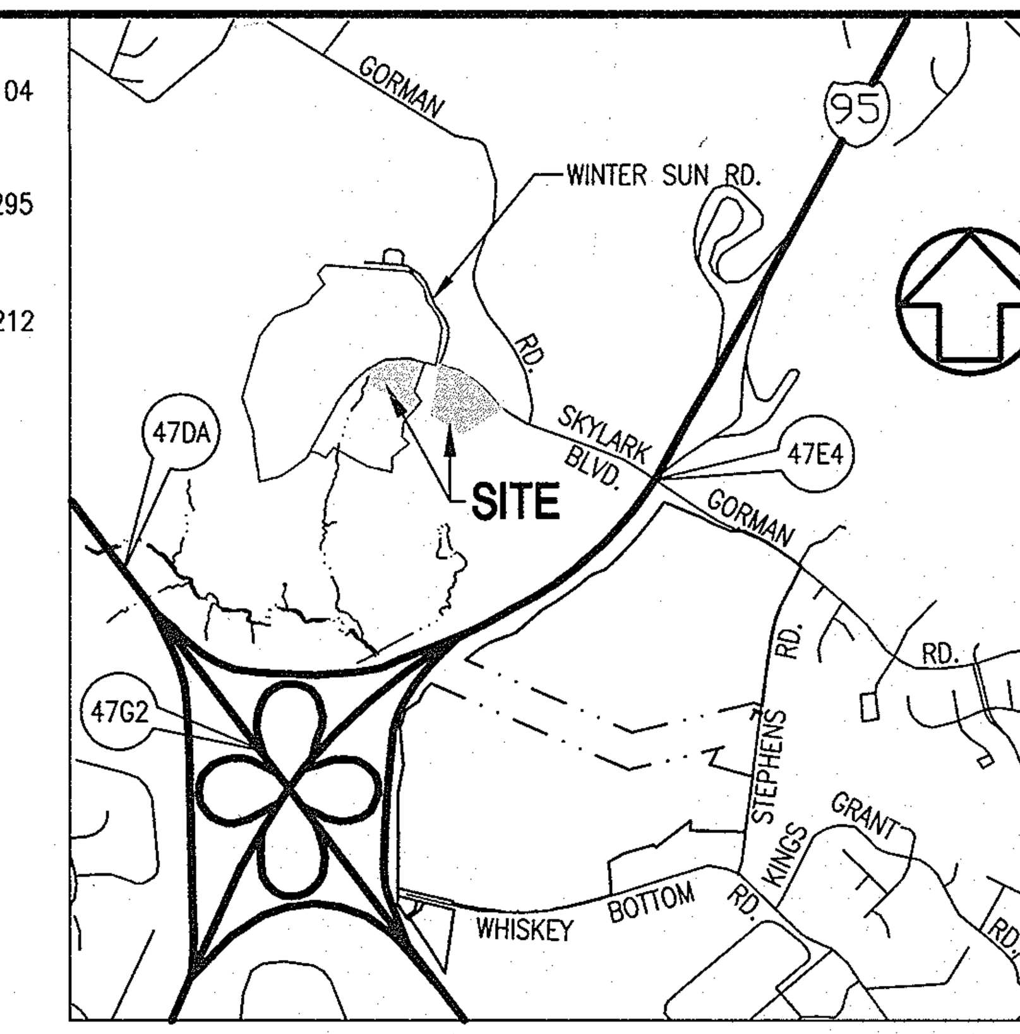
SCALE: 1" = 600'

BENCHMARKS

47DA NORTHING 163191.9104 EASTING 4112865759 ELEVATION 315.905 FT.

47E4 NORTHING 163326.2295 EASTING 413136.2550 ELEVATION 338.909 FT.

47G2 NORTHING 162440.1212 EASTING 4118539279 ELEVATION 364.210 FT.



VICINITY MAP
SCALE: 1" = 2000'

STATE OF MARYLAND RICHARD F. LANE No. 301 REGISTERED PROPERTY LINE SURVEYOR

SHANABERGER & LANE
8726 TOWN & COUNTRY BLVD.
SUITE 201
ELLICOTT CITY, MARYLAND 21043

ROAD & STORM DRAIN AS-BUILT

RED-LINE REVISION #1
REASON FOR REVIEW

I. TO REVISE THE PLANS FOR GRADING, EROSION & SEDIMENT CONTROL ASSOCIATED WITH FILLING AN AREA WITHIN THE LIMITS OF PARCEL 'C' THAT WAS DELINEATED AS WETLANDS.
   A. APPROVALS PURSUANT TO WETLANDS FILLING REQUIRED & GRANTED:
      1. ARMY CORPS OF ENGINEERING PERMIT NO. 01-64079.
      2. WAIVER PETITION NO.: WP-02-78.
         REQUEST: TO WAIVE SECTION 16,116 a (1) TO ALLOW GRADING WITHIN A WETLAND AND WETLAND BUFFER AREA TO FILL-IN THE SUBJECT WETLAND AREA AND THEREBY ELIMINATE THE WETLANDS.
         ACTION: APPROVED APRIL 3, 2002.
         CONDITIONS OF APPROVAL:
         a. THE PETITIONER SHALL RED-LINE THE EXISTING APPROVED ROAD CONSTRUCTION PLANS FOR F-01-145 TO SHOW THE GRADING REVISIONS AND RE-RECORD THE PLAT TO DELETE THE EXISTING WETLAND AREA FROM PARCEL 'C'.
         b. THE PETITIONER SHALL COMPLY WITH THE CONDITIONS OF APPROVAL STIPULATED WITH ARMY CORPS OF ENGINEERS PERMIT.

II. MINOR CHANGES & ADDITIONS TO PLAN SHEETS 2, 3 & 9.

III. REVISED GENERAL NOTES AND FOREST CONSERVATION TRACKING CHART AND ADDED FOREST CONSERVATION WORKSHEET.

REASONS FOR RED-LINE REVISION #3 *

1. END PALACE HALL DRIVE @ STA. 6+25± ADD TEE TURN-AROUND. ELIMINATE CUL-DE-SAC

* REVISION #2 IS CURRENTLY BEING PROCESSED

STATE OF MARYLAND JOHN W. HANCOCK JR. REGISTERED PROFESSIONAL ENGINEER 11-5-03

THIS SEAL FOR REVISION #3 ONLY
REVISION #3 BY DMW, INC., 200 EAST PENNSYLVANIA AVE., TOWSON, MD 21286

●✳ 250 WATT H.P.S. VAPOR PENDANT FIXTURE (SAG) MOUNTED AT 30' ON A BRONZE FIBERGLASS POINT USING A 12' ARM

STREET LIGHT INFORMATION

~~TYPE 3 – 100 WATT "MODERN" HPS VAPOR POST TOP FIXTURE (BRONZE) ON A 14-FOOT BRONZE FIBERGLASS POLE.~~

STREET LIGHT SCHEDULE (see 2 of 12)

SHEET #	STREET NAME	LOCATION	OFFSET	TYPE
~~2 OF 11~~	~~PALACE HALL DRIVE~~	~~℄ 4+50~~	~~26'LT.~~	~~3~~
2 OF 11	PALACE HALL DRIVE	LP 2+99	4'RT.	~~3~~ ✕
2 OF 11	"	3+25	18'RT	✕
2 OF 11	"	6+73	0'	✕

SHEET INDEX

DPZ FILE 01-145

APPROVED: HOWARD COUNTY DEPARTMENT OF PUBLIC WORKS

CHIEF, BUREAU OF HIGHWAYS — DATE 12-13-01

APPROVED: HOWARD COUNTY DEPARTMENT OF PLANNING & ZONING

CHIEF, DIVISION OF LAND DEVELOPMENT — DATE 12/17/01

CHIEF, DEVELOPMENT ENGINEERING DIVISION MK — DATE 12/14/01

DATE	NO.	REVISION
8.15.02	1	FILL PLACEMENT IN WETLANDS. CHANGES & ADDITIONS. REVISED TRACKING CHART.

OWNER / DEVELOPER:
THE HOWARD RESEARCH & DEVELOPMENT CORPORATION
THE ROUSE BUILDING
10275 LITTLE PATUXENT PARKWAY
COLUMBIA, MARYLAND 21044
PHONE: (410) 992-6370

PROJECT: **EMERSON SECTION 2 PHASE 2**

AREA: TAX MAP NO. 47 P/O PARCEL P.837 P. 3. P. 482
ELECTION DISTRICT No.6 HOWARD COUNTY, MARYLAND

TITLE: **COVER SHEET**

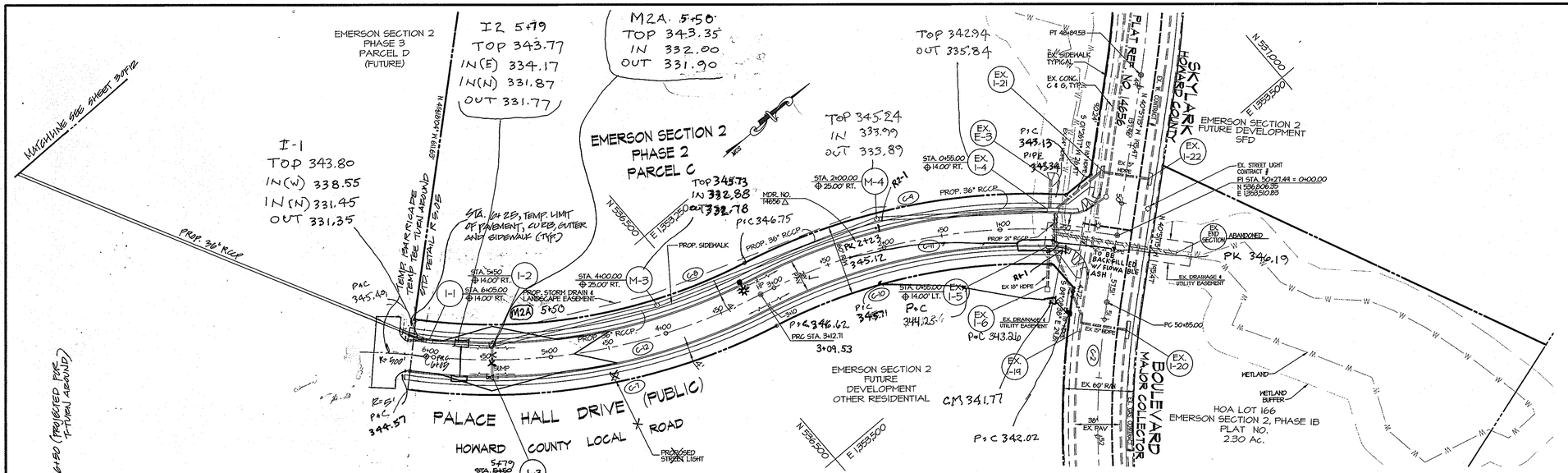
MRA
MORRIS & RITCHIE ASSOCIATES, INC.
ENGINEERS, PLANNERS, SURVEYORS AND LANDSCAPE ARCHITECTS
110 WEST ROAD SUITE 245
TOWSON, MARYLAND 21204
(410) 821-1690
FAX (410) 821-1748

8/28/01 DATE

STATE OF MARYLAND DONALD MILLER No. 16581 PROFESSIONAL ENGINEER

PROJECT NO.: 9927
SCALE: AS SHOWN
DATE: AUGUST 24, 2001
DRAWN BY: MLS
DESIGNED BY: TAM
REVIEW BY: DNM
DRAWING NO. 1 OF 12

F-01-145



CURVE TABLE

CURVE	ARC	CHORD BEARING	RADIUS	DELTA	CHORD	TANGENT
C-1	188.50'	S25°02'19"E	60.00'	180°00'00"	120.00'	–
C-2	349.51'	N55°15'29"W	700.00'	28°36'28"	360.72'	178.48'
C-3	48.02'	S79°16'49"W	60.00'	45°51'20"	46.75'	25.38'
C-4	23.45'	S75°20'28"W	25.00'	53°44'01"	22.60'	12.67'
C-5	55.81'	S29°42'12"W	60.00'	53°17'54"	53.82'	30.11'
C-6	20.18'	S26°10'36"W	25.00'	46°14'43"	19.64'	10.68'
C-7	331.81'	N31°15'21"E	530.00'	36°05'14"	328.32'	172.65'
C-8	289.26'	N30°50'36"E	470.00'	35°15'44"	284.71'	149.37'
C-9	283.22'	S28°31'16"W	530.00'	30°37'04"	279.86'	145.08'
C-10	241.62'	S27°56'22"W	470.00'	29°27'16"	238.96'	123.54'
C-11	312.71'	S31°07'45"W	500.00'	35°50'01"	307.64'	161.66'
C-12	451.60'	S39°05'13"W	500.00'	51°44'57"	436.40'	242.51'
C-13	163.36'	S25°02'19"E	52.00'	180°00'00"	104.00'	–
C-14	45.07'	S81°10'27"W	52.00'	49°38'35"	43.66'	24.07'
C-15	40.99'	S76°39'42"W	40.00'	58°42'41"	39.22'	22.50'
C-16	52.84'	N27°14'32"E	52.00'	58°13'14"	50.60'	28.95'
C-17	34.98'	N23°11'05"E	40.00'	50°06'18"	33.88'	18.70'

* ADJUSTED

* BASED ON REVISION #2 GRADE (IN FOR REVIEW)

ROAD PROFILE

INTERSECTION DETAIL

SCALE 1" = 20'

SW PROFILE

11/5/03	3	END PALACE HALL DR. @ STA. 6+25, ADD TEE-TURN AROUND, ELIMINATE CUL-DE-SAC
DATE	NO.	REVISION

DPZ FILE 01-145

NW PROFILE

APPROVED: HOWARD COUNTY DEPARTMENT OF PUBLIC WORKS

Andrew M. Doncke 12-13-01

CHIEF, BUREAU OF HIGHWAYS HS DATE

APPROVED: HOWARD COUNTY DEPARTMENT OF PLANNING & ZONING

Cindy Hamilton 12/17/01

CHIEF, DIVISION OF LAND DEVELOPMENT HB DATE

12/14/01

CHIEF, DEVELOPMENT ENGINEERING DIVISION MK DATE

8.15.02	1	END L.P. & I-3 LABEL
DATE	NO.	REVISION

OWNER / DEVELOPER:

THE HOWARD RESEARCH & DEVELOPMENT CORPORATION
THE ROUSE BUILDING
10275 LITTLE PATUXENT PARKWAY
COLUMBIA, MARYLAND 21044
PHONE: (410) 992-6370

PROJECT: **EMERSON SECTION 2**
PHASE 2

AREA TAX MAP NO. 47 P/O PARCEL P.837 P. 3. P. 482

ELECTION DISTRICT No.6 HOWARD COUNTY, MARYLAND

TITLE **ROAD CONSTRUCTION PLAN**
PALACE HALL DRIVE

MORRIS & RITCHIE ASSOCIATES, INC.
ENGINEERS, PLANNERS, SURVEYORS AND LANDSCAPE ARCHITECTS

110 WEST ROAD SUITE 245
TOWSON, MARYLAND 21204
(410) 821-1690
FAX (410) 821-1748

8/28/01
DATE

DONALD MITTEN No. 16581

PROFESSIONAL ENGR. NO. 16581

PROJECT NO.: 11494	
SCALE: 1" - 50'	
DATE: AUGUST 24, 2001	
DRAWN BY: MLS	
DESIGNED BY: TAM	
REVIEW BY: DNM	
DRAWING NO. 2 OF 12	

F-01-145

* ADJUSTED

LINEAR PROFILE

TYPICAL SECTION
PALACE HALL DRIVE

CURB RETURN PROFILES

SCALE: HORIZ. 1" = 20'
VERT. 1" = 2'

SHANABERGER & LANE
8726 TOWN & COUNTRY BLVD.
SUITE 201
ELLICOTT CITY, MARYLAND 21043

RICHARD F. LANE No. 301

℄ PALACE HALL DRIVE

Richard F. Lane #301

ROAD & STORM DRAIN AS-BUILT

TYPICAL HALF SECTION
CUL-DE-SAC

JOHN N. ZANOS No. 10833

11-5-03

THIS SEAL FOR REVISION #3 ONLY

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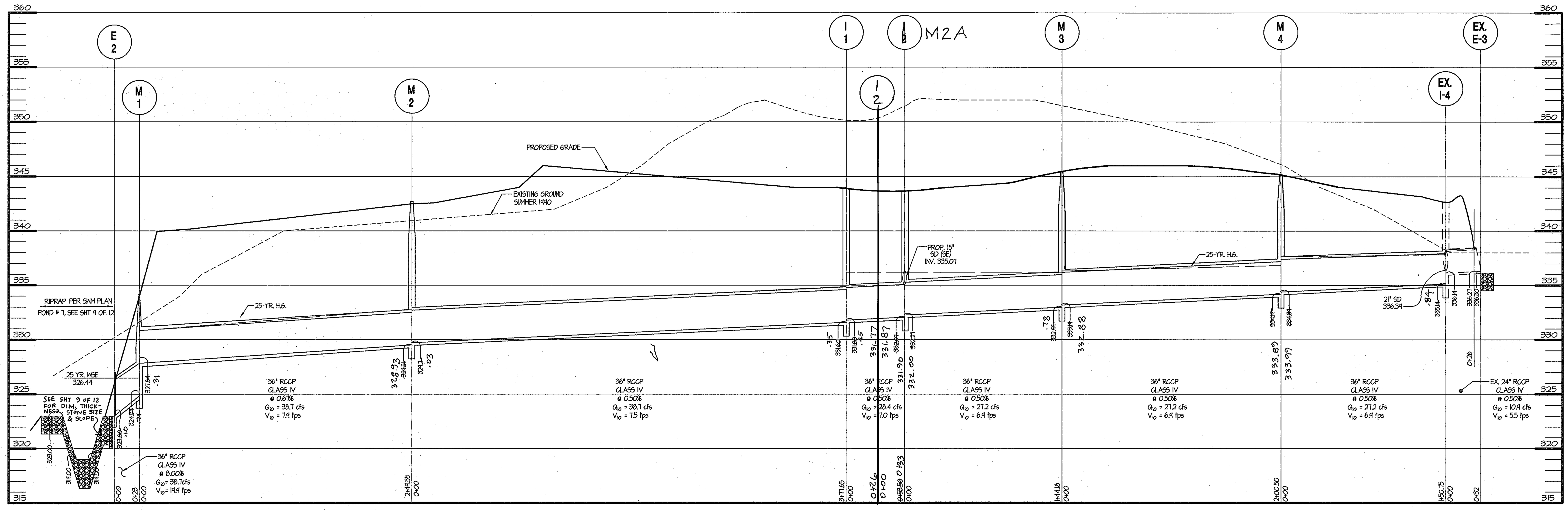
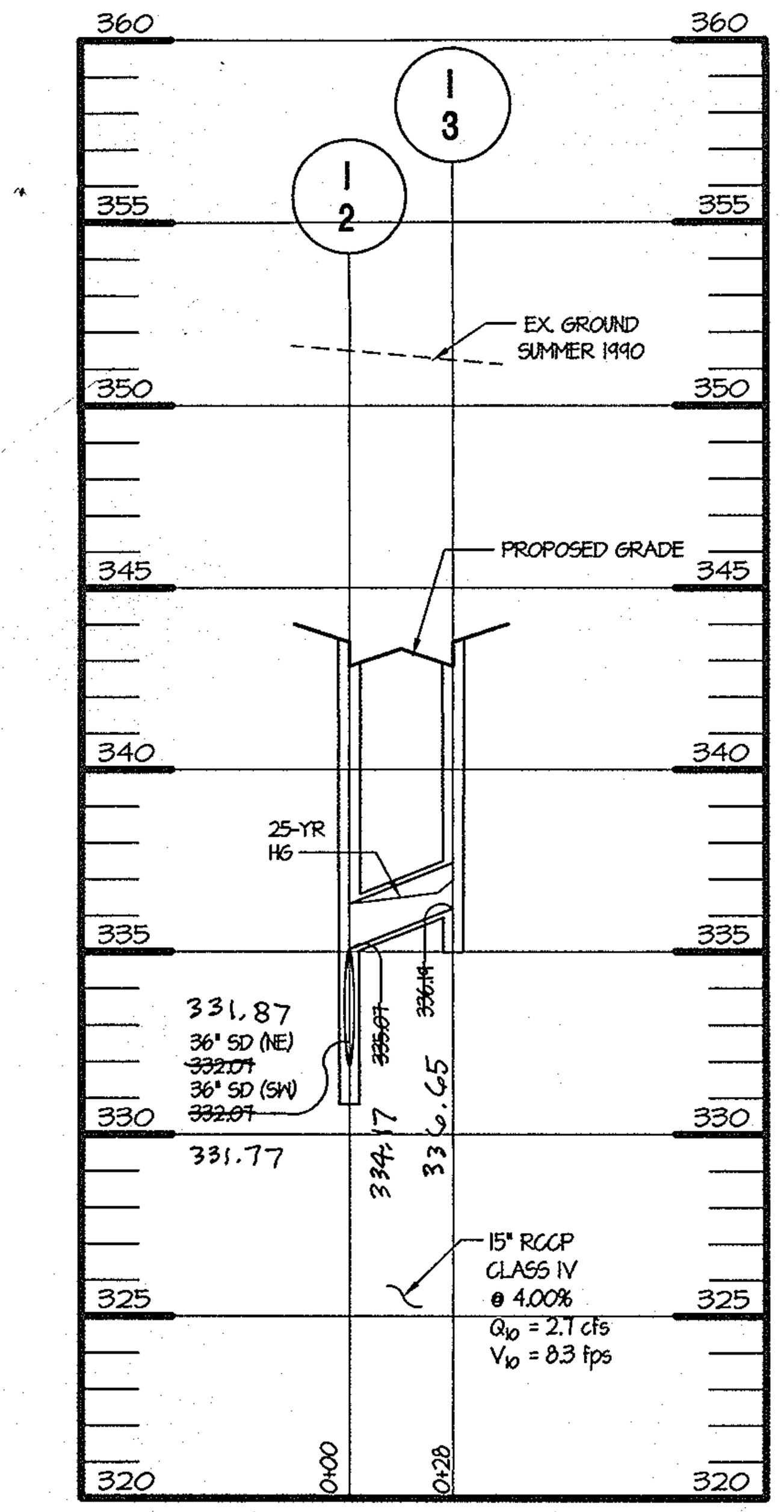
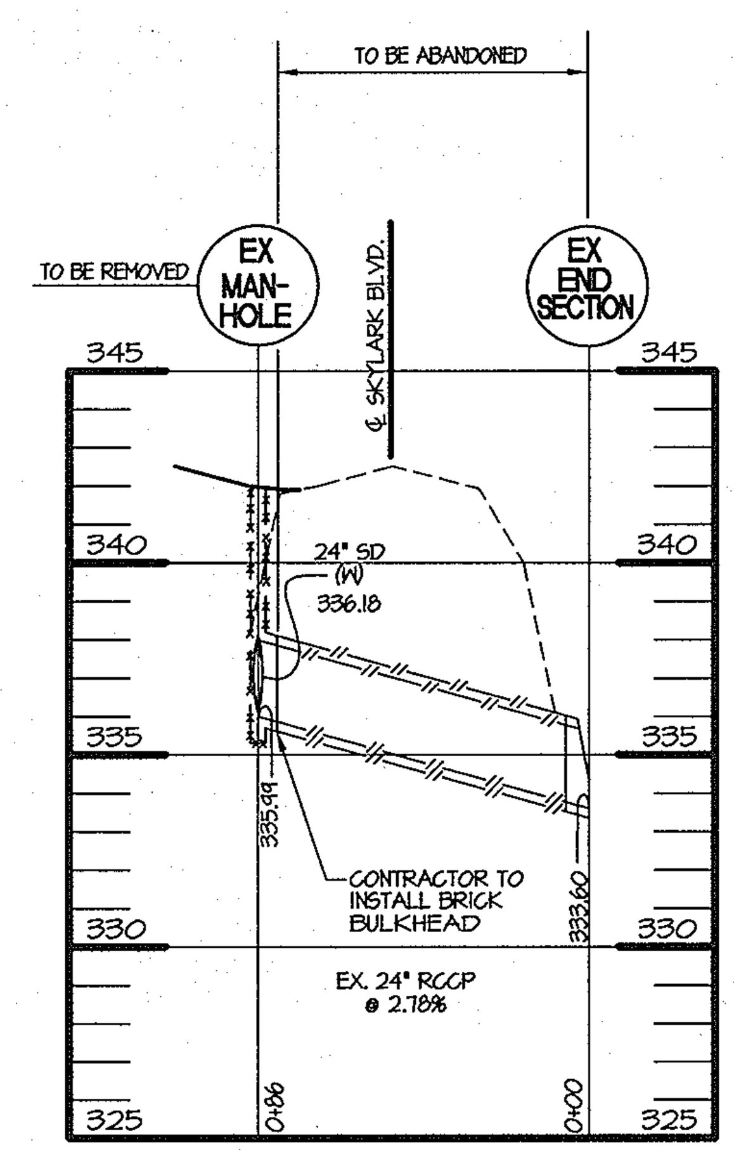


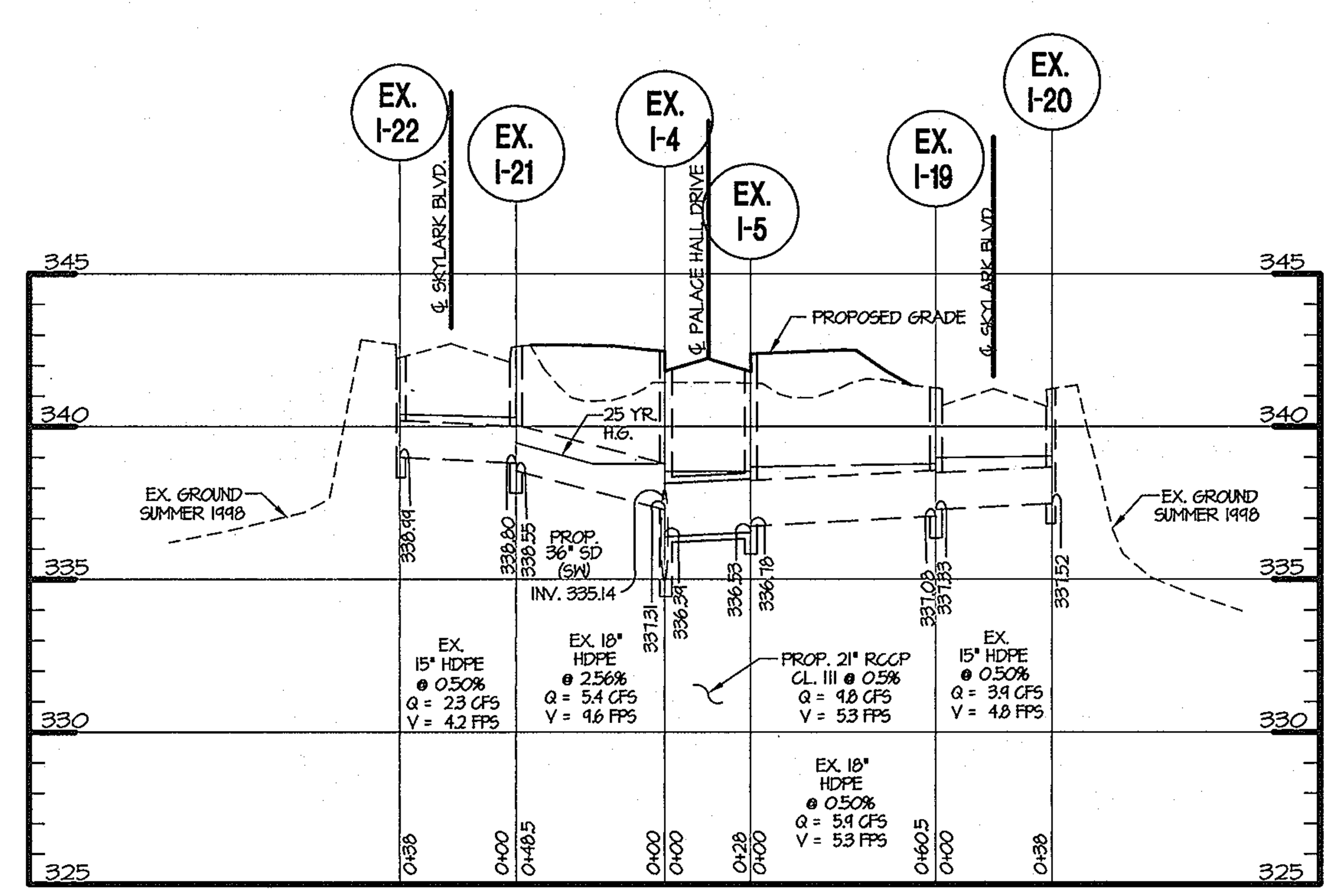
STORM DRAIN PROFILE

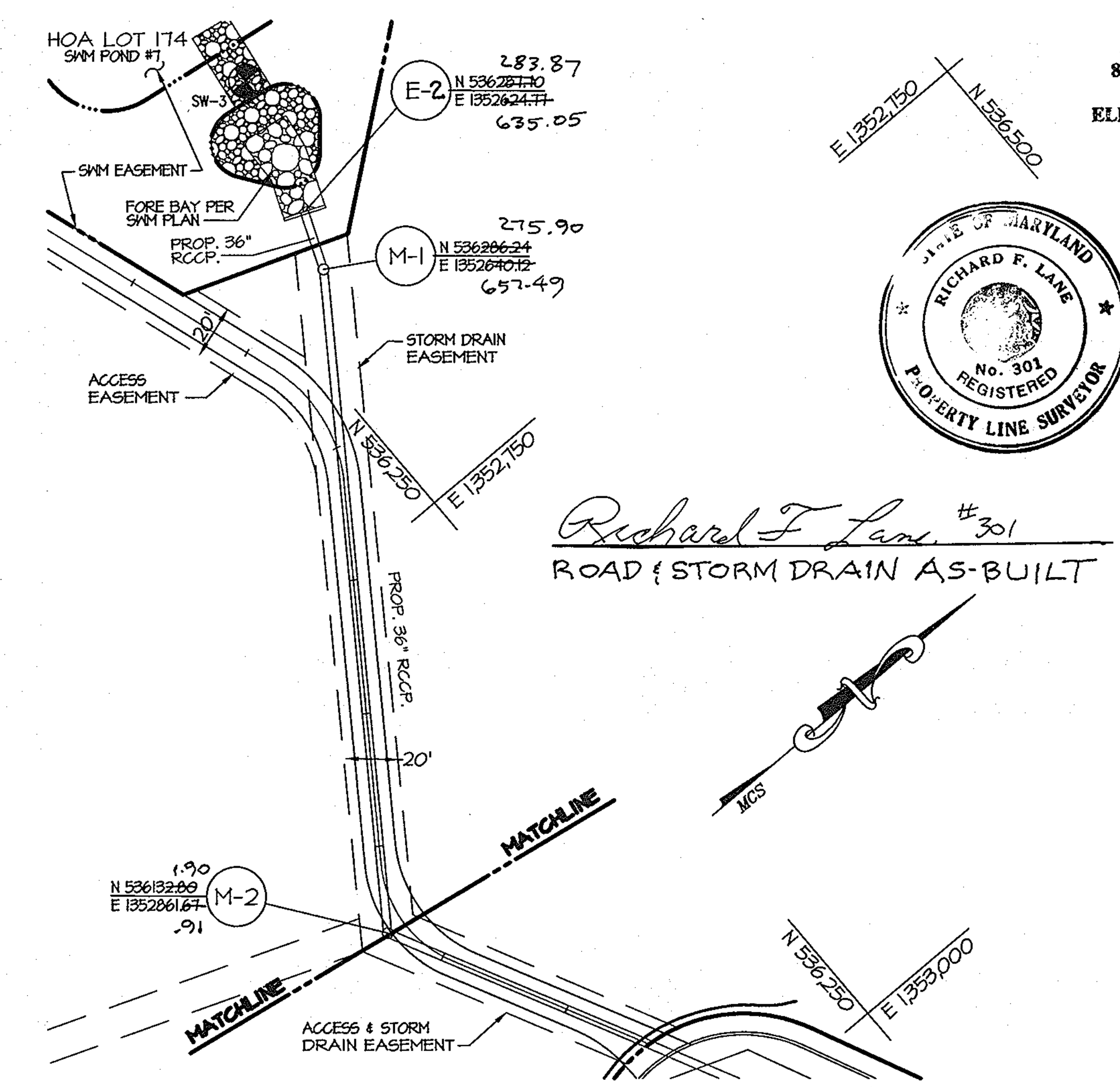
SCALE: HOR. 1" = 50' VERT. 1" = 5'



PIPE SCHEDULE		
SIZE	CLASS	LENGTH
15"	4	28'
21"	3	28'
36"	4	1210'







SHANABERGER & LANE
8726 TOWN & COUNTRY BLVD.
SUITE 201
ELLICOTT CITY, MARYLAND 21043

Richard F. Lane #301
ROAD & STORM DRAIN AS-BUILT

DPZ FILE 01-145

APPROVED: HOWARD COUNTY DEPARTMENT OF PUBLIC WORKS

CHIEF, BUREAU OF HIGHWAYS — DATE 12-13-01

APPROVED: HOWARD COUNTY DEPARTMENT OF PLANNING & ZONING

CHIEF, DIVISION OF LAND DEVELOPMENT — DATE 12/17/01

CHIEF, DEVELOPMENT ENGINEERING DIVISION MK — DATE 12/14/01

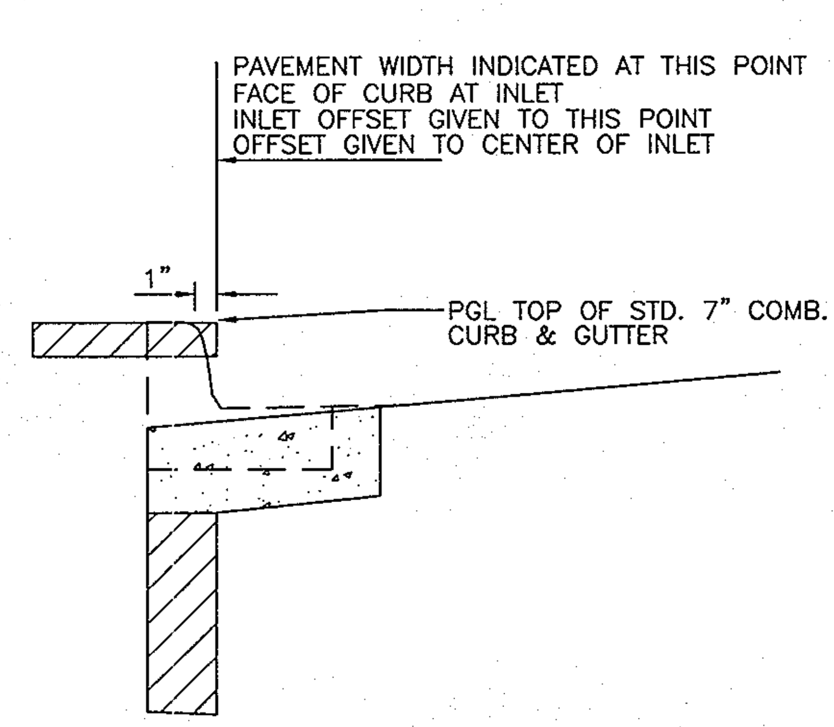
DATE	NO.	REVISION
8-15-02	1	INVERTS M-1 & E-2 IN STR. SCHED, LABEL E-2, IN PLAN, CORRECT PROP. GRADE IN PROFILE

OWNER / DEVELOPER:
THE HOWARD RESEARCH & DEVELOPMENT CORPORATION
THE ROUSE BUILDING
10275 LITTLE PATUXENT PARKWAY
COLUMBIA, MARYLAND 21044
PHONE: (410) 992-6370

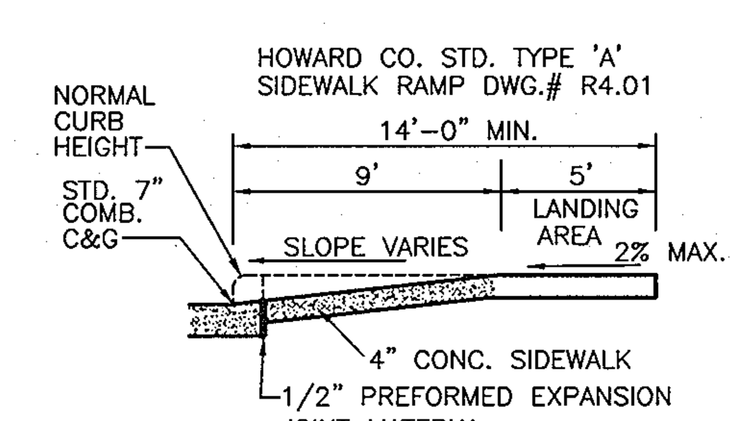
PROJECT: **EMERSON SECTION 2 PHASE 2**

AREA TAX MAP NO. 47 P/O PARCEL P.837 P. 3. P. 482
ELECTION DISTRICT No.6 HOWARD COUNTY, MARYLAND

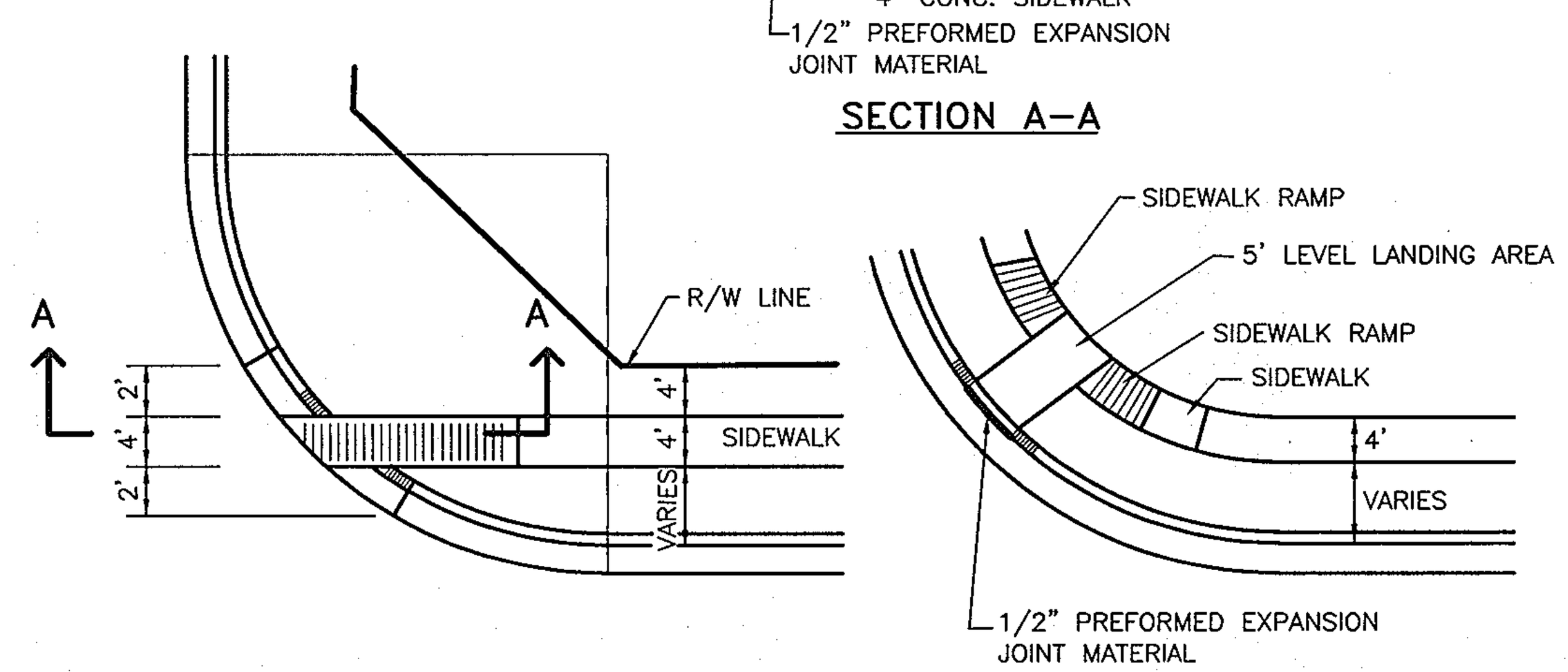
TITLE **STORM DRAIN PLAN AND PROFILES**



STORM DRAIN INLET STAKEOUT DETAIL
NOT TO SCALE



SECTION A–A



PLAN

HANDICAPPED RAMP
NOT TO SCALE

STRUCTURE SCHEDULE					
No.	TYPE	SIZE	INV. OUT	TOP ELEV	REMARKS
M-1	SHALLOW	60" 324.71	~~324.84~~	334.20 (.16)	HOWARD CO. STD. DETAIL #G-5.13
M-2	STD.	60" 328.83	~~329.51~~	342.~~10~~ (1.23)	HOWARD CO. STD. DETAIL #G-5.13
M-3	STD.	60" 332.78	~~332.49~~	345.~~56~~ (.73)	HOWARD CO. STD. DETAIL #G-5.13
M-4	STD.	60" 333.89	~~334.19~~	345.2~~8~~4	HOWARD CO. STD. DETAIL #G-5.13
M2A			331.90 (.10)	343.35	
E-2	TYPE 'C' HEADWALL	36"	~~323.00~~	-	HOWARD CO. STD. DETAIL #SD 5.21

INLET SCHEDULE					
No.	TYPE	Q (cfs)	INV. OUT	TOP ELEV.	REMARKS
I-1	DBL. 'S' COMBIN.	2.98	~~331.60~~ (OUT 331.35)	343.80 ✓	HOWARD CO. STD. DETAIL #SD-4.34
I-2	DBL. 'S' COMBIN.	2.30	~~332.07~~ (OUT 331.77)	343.~~50~~ .80	HOWARD CO. STD. DETAIL #SD-4.34
I-3	DBL. 'S' COMBIN.	2.72	336.~~14~~ (.65)	343.~~50~~ .80	HOWARD CO. STD. DETAIL #SD-4.34

* INV. OF OPENINGS
** Q (cfs) IS BASED ON 10yr STORM
NOTE: INLET TOP ELEV. = TOP OF CURB (PGL)

MORRIS & RITCHIE ASSOCIATES, INC.
ENGINEERS, PLANNERS, SURVEYORS AND LANDSCAPE ARCHITECTS
110 WEST ROAD SUITE 245
TOWSON, MARYLAND 21204
(410) 821-1690
FAX (410) 821-1748

8/28/01 DATE

PROFESSIONAL ENGR. NO. 16581

PROJECT NO.: 11494	
SCALE: 1" = 50'	
DATE: AUGUST 24, 2001	
DRAWN BY: MLS	
DESIGNED BY: TAM	
REVIEW BY: DNM	
DRAWING NO. 3 OF 12	

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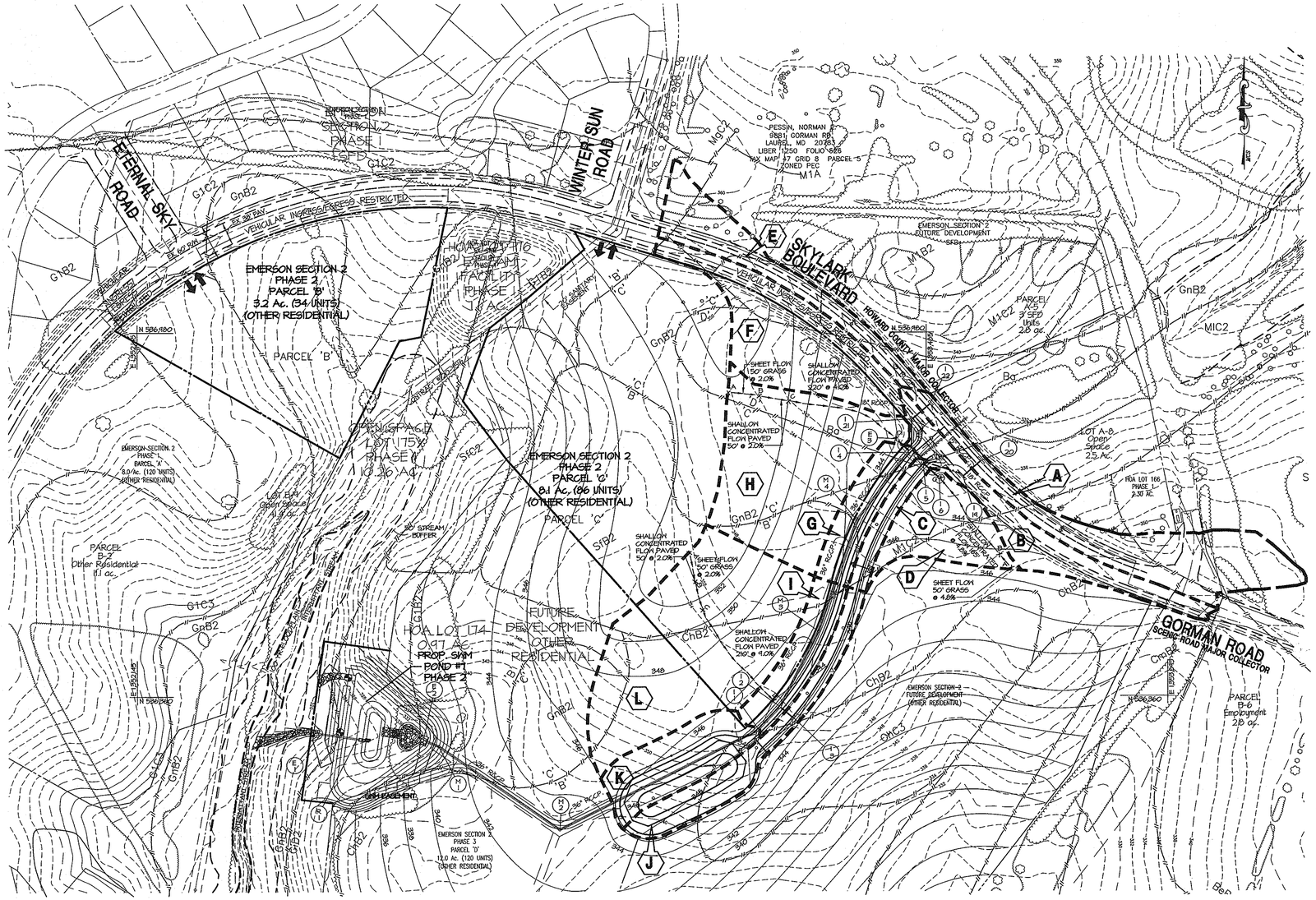
F-01-145

NOTE: GRADING SHOWN HEREON IS CONCEPTUAL ONLY FOR THE PURPOSE OF STORM DRAIN SIZING.

Symbol	Soils Legend	Hydrologic Soil Group	Hydric Soils	Possible Hydric Inclusions
AgC2	Aura gravelly loam/ 5 to 10% slopes	B		
Ba	Baile silt loam	D	X	
BeB2	Beltsville silt loam/ 1 to 5% slopes	C		X
ChB2	Chester silt loam/ 3 to 8% slopes	B		
ChC2	Chester silt loam/ 8 to 15% slopes	B		
ChC3	Chester silt loam/ 8 to 15% slopes	B		
CmB2	Chilum silt loam/ 1 to 5% slopes	C		
GlB2	Glenelg loam/ 3 to 8% slopes	B		
GlC2	Glenelg loam/ 8 to 15% slopes	B		
GlC3	Glenelg loam/ 8 to 15% slopes	B		
GlD2	Glenelg loam/ 15 to 25% slopes	B		
GnB2	Glenville silt loam/ 3 to 8% slopes	C		X
MlB2	Manor loam/ 3 to 8% slopes	B		
MlC2	Manor loam/ 8 to 15% slopes	B		
SfB2	Sassafras gravelly sandy loam, 1 to 5% slopes	B		
SfC2	Sassafras gravelly sandy loam, 5 to 10% slopes	B		



LOCATION		AREA	ACRES		COEFF.	CA	SUMP CA	Σ CA	TIME CONC.–MIN.			INTEN. "I"	INTEN. "I"	Q=C.I.A.	PIPE n = .014				REMARKS
From	To		Sub.	Total	"C"				Inlet	Drain	Total	Adjusted	10 Year	C.F.S.	Size	Slope	Vel.	Lgth.	
						0.00	0.00				0.0	.00	0.00	.00	"			'	
						0.00	0.00				0.0	.00	0.00	.00	"			'	
–	I-20	A	0.98		.46	0.45	0.00		6.0		6.0	.00	8.00	3.60	"			'	
I-20	I-19	A		.98				0.45	6.0	0.0	6.0	.00	8.00	3.60	15 "	0.36%	2.9	38 '	
–	I-19	B	1.30		.34	0.44	0.00		10.0		10.0	.00	6.60	2.90	"			'	
						0.00	0.00				0.0	.00	0.00	.00	"			'	
I-19	I-5	A–B		2.28				0.89	10.0	0.0	10.0	.00	6.60	5.87	18 "	0.36%	3.3	61 '	
–	I-5	C	0.18		.58	0.10	0.00		5.0		5.0	.00	8.50	.85	"			'	
I-6	I-5	D	0.71		.72	0.51	0.00		6.6		6.6	.00	7.76	3.96	18 "	0.16%	2.2	36 '	
I-5	I-4	A–D		3.17				1.50	10.0	0.3	10.3	.00	6.51	9.77	21 "	0.44%	4.1	28 '	
–	I-22	E	0.57		.52	0.30	0.00		7.0		7.0	.00	7.60	2.28	"			'	
						0.00	0.00				0.0	.00	0.00	.00	"			'	
I-22	I-21	E		.57				0.30	7.0	0.0	7.0	.00	7.60	2.28	15 "	0.14%	1.9	38 '	
–	I-21	F	1.72		.30	0.52	0.00		10.0		10.0	.00	6.60	3.43	"			'	
						0.00	0.00				0.0	.00	0.00	.00	"			'	
I-21	I-4	E–F		2.29				0.82	10.0	0.0	10.0	.00	6.60	5.41	18 "	0.31%	3.1	49 '	
–	I-4	G	0.38		.66	0.25	0.00		5.0		5.0	.00	8.50	2.13	"			'	
I-5	I-4	A–D	3.17		.47	1.50	0.00		10.3		10.3	.00	6.51	9.77	21 "	0.44%	4.1	28 '	
				5.84				2.57	10.3	0.1	10.4	.00	6.48	16.65	"			'	
E-3	I-4	H	2.25		.72	1.62	0.00		9.6		9.6	.00	6.72	10.89	24 "	0.27%	3.5	32 '	
						0.00	0.00				0.0	.00	0.00	.00	"			'	
I-4	I-2	A–H		8.09				4.19	10.4	0.0	10.4	.00	6.48	27.15	36 "	0.19%	3.8	495 '	
–	I-2	I	0.41		.67	0.27	0.00		5.0		5.0	.00	8.50	2.30	"			'	
I-3	I-2	J	0.58		.55	0.32	0.00		5.0		5.0	.00	8.50	2.72	15 "	0.21%	2.2	28 '	
I-2	I-1	A–J		9.08				4.78	10.4	2.1	12.5	.00	5.93	28.35	36 "	0.21%	4.0	54 '	
–	I-1	K	0.55		.63	0.35	0.00		5.0		5.0	.00	8.50	2.98	"			'	
FUT	I-1	L	2.02		.72	1.45	0.00		9.0		9.0	.00	6.90	10.01	"			'	
I-1	E-2	A–L		11.65				6.58	12.5	0.2	12.7	.00	5.88	38.69	36 "	0.39%	5.5	692 '	
						0.00	0.00				0.0	.00	0.00	.00	"			'	
						0.00	0.00				0.0	.00	0.00	.00	"			'	

DPZ FILE 01-145

DRAINAGE AREAS

AREA=0.98 C=0.46 — A — MX-D % IMP
AREA=1.30 C=0.34 — B — MX-D % IMP
AREA=0.18 C=0.58 — C — MX-D 61% IMP
AREA=0.71 C=0.72 — D — MX-D 85% IMP
AREA=0.51 C=0.52 — E — MX-D % IMP
AREA=1.72 C=0.30 — F — MX-D % IMP
AREA=0.38 C=0.66 — G — MX-D 84% IMP
AREA=2.25 C=0.72 — H — MX-D 85% IMP
AREA=0.41 C=0.67 — I — MX-D 61% IMP
AREA=0.58 C=0.55 — J — MX-D 55% IMP
AREA=0.55 C=0.63 — K — MX-D 76% IMP
AREA=2.02 C=0.72 — L — MX-D 85% IMP

LEGEND

- TIME OF CONCENTRATION PATH (A X → TC → B X)
- PROPERTY LINE
- STORMWATER MANAGEMENT EASEMENT
- INTERIM SWM DRAINAGE AREA
- DRAINAGE AREA DIVIDE
- SOILS LINE
- 230 EXISTING CONTOUR
- 230 MASS GRADING CONTOUR

APPROVED: HOWARD COUNTY DEPARTMENT OF PUBLIC WORKS
CHIEF, BUREAU OF HIGHWAYS — DATE 12-13-01

APPROVED: HOWARD COUNTY DEPARTMENT OF PLANNING & ZONING
CHIEF, DIVISION OF LAND DEVELOPMENT — DATE 12/17/01
CHIEF, DEVELOPMENT ENGINEERING DIVISION MK — DATE 12/14/01

DATE	NO.	REVISION

OWNER / DEVELOPER:
THE HOWARD RESEARCH & DEVELOPMENT CORPORATION
THE ROUSE BUILDING
10275 LITTLE PATUXENT PARKWAY
COLUMBIA, MARYLAND 21044
PHONE: (410) 992-6370

PROJECT: **EMERSON SECTION 2 PHASE 2**

AREA — TAX MAP NO. 47 — P/O PARCEL P.837 P. 3. P. 482
ELECTION DISTRICT No.6 — HOWARD COUNTY, MARYLAND

TITLE **STORM DRAIN DRAINAGE AREA MAP**

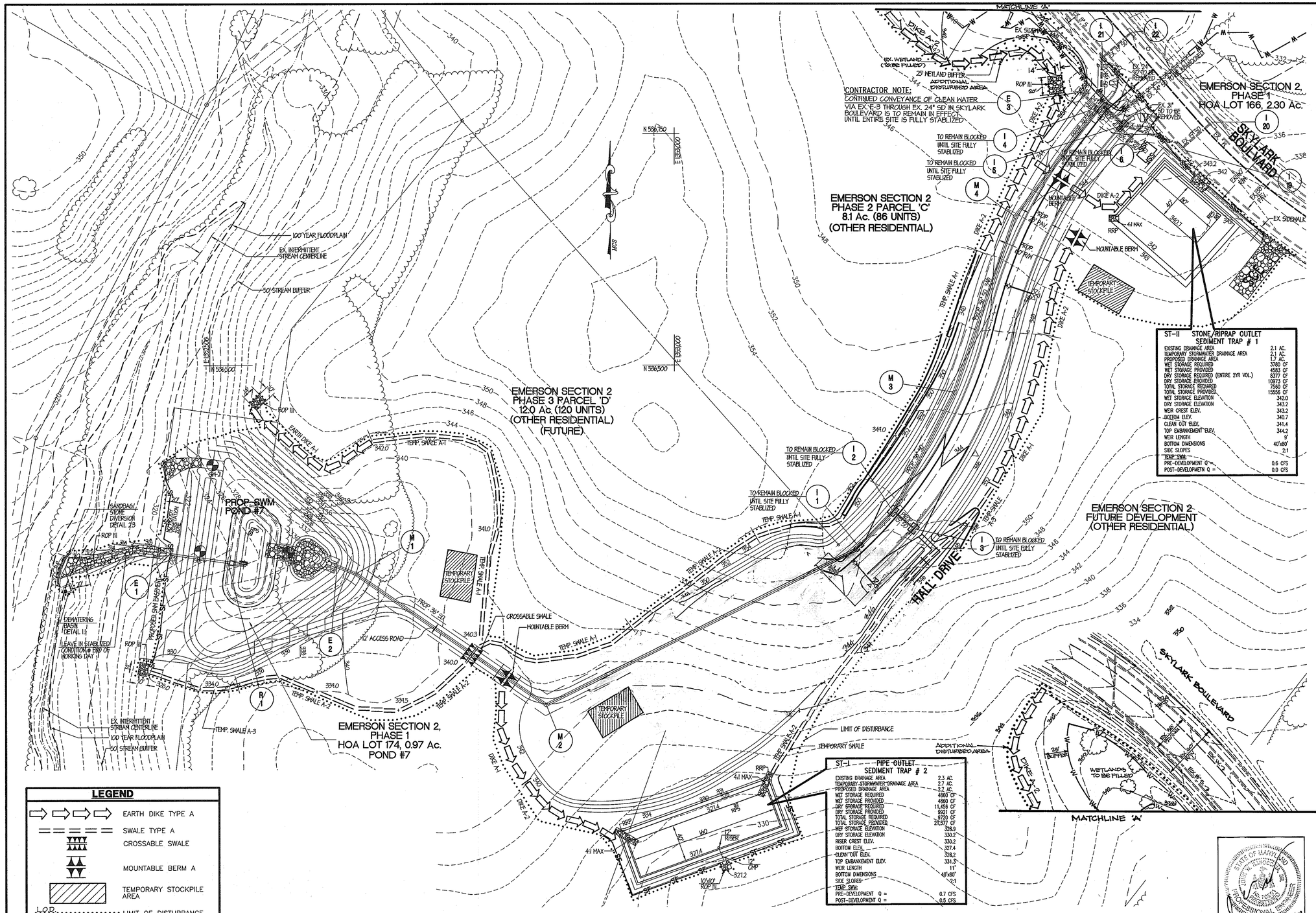
MORRIS & RITCHIE ASSOCIATES, INC.
ENGINEERS, PLANNERS, SURVEYORS AND LANDSCAPE ARCHITECTS
110 WEST ROAD SUITE 245
TOWSON, MARYLAND 21204
(410) 821-1690
FAX (410) 821-1748

8/20/01 DATE
STATE OF MARYLAND — DONALD MITCHELL — No. 16581 — PROFESSIONAL ENGINEER
PROFESSIONAL ENGR. NO. 16581

PROJECT NO.:	11494
SCALE:	1" – 100'
DATE:	AUGUST 24, 2001
DRAWN BY:	MLS
DESIGNED BY:	TAM
REVIEW BY:	DNM
DRAWING NO.	4 OF 12

F-01-145

P:\11494\PLOT\phase_2_const\SHO4-11494DAMAP.dwg AUG 22, 2001 TIME: 12:57 PM



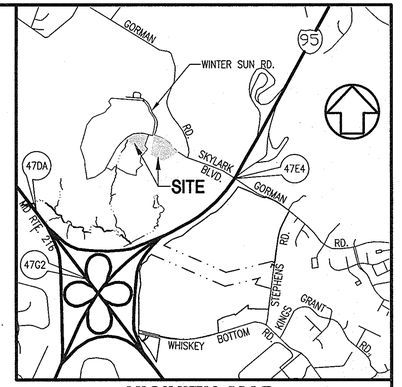
LEGEND

- EARTH DIKE TYPE A
- SWALE TYPE A
- CROSSABLE SWALE
- MOUNTABLE BERM A
- TEMPORARY STOCKPILE AREA
- L.O.D. — LIMIT OF DISTURBANCE
- SSF SSF — SUPER SILT FENCE
- SF SF — SILT FENCE
- RRP — RIPRAP INFLOW PROTECTION
- SCE — STABLIZED CONSTRUCTION ENTRANCE
- WETLANDS
- 25' WETLANDS BUFFER
- CURB INLET BLOCKING
- RPS — REMOVABLE PUMPING STATION

PLAN

SCALE: 1" = 50'

VICINITY MAP



SCALE: 1" = 2000'

BENCHMARKS

47DA NORTHING 163191.9104
EASTING 4112865759
ELEVATION 315.905 FT.

47E4 NORTHING 163326.2295
EASTING 413136.2550
ELEVATION 338.909 FT.

47G2 NORTHING 162440.1212
EASTING 4118539279
ELEVATION 364.210 FT.

DATE	NO.	REVISION
11/6/01	3	END PALACE HALL DR. @ STA. 0+25, ADD TEE-
		TURN AROUND, ELIMINATE CUL-DE-SAC
DATE	NO.	REVISION

DPZ FILE 01-145

APPROVED: HOWARD COUNTY DEPARTMENT OF PUBLIC WORKS

CHIEF, BUREAU OF HIGHWAYS — DATE 12-13-01

APPROVED: HOWARD COUNTY DEPARTMENT OF PLANNING & ZONING

CHIEF, DIVISION OF LAND DEVELOPMENT — DATE 12/7/01

CHIEF, DEVELOPMENT ENGINEERING DIVISION — DATE 12/14/01

DATE	NO.	REVISION
8-15-02	1	FILL IN WETLANDS, ADDITIONAL DIKE, SSSF, &
		DISTURBANCE, MOVED ROP III.

OWNER / DEVELOPER:

THE HOWARD RESEARCH & DEVELOPMENT CORPORATION
THE ROUSE BUILDING
10275 LITTLE PATUXENT PARKWAY
COLUMBIA, MARYLAND 21044
PHONE: (410) 992-6370

PROJECT: **EMERSON SECTION 2 PHASE 2**

AREA — TAX MAP NO. 47 — P/O PARCEL P.837 P. 3. P. 482

ELECTION DISTRICT No.6 — HOWARD COUNTY, MARYLAND

TITLE **GRADING AND SEDIMENT CONTROL PLAN**

MORRIS & RITCHIE ASSOCIATES, INC.
ENGINEERS, PLANNERS, SURVEYORS AND LANDSCAPE ARCHITECTS
110 WEST ROAD SUITE 245
TOWSON, MARYLAND 21204
(410) 821-1690
FAX (410) 821-1748

8/28/01 DATE

PROFESSIONAL ENGR. NO. 16581

PROJECT NO.:	11494
SCALE:	1" – 50'
DATE:	AUGUST 24, 2001
DRAWN BY:	MLS
DESIGNED BY:	TAM
REVIEW BY:	DNM
DRAWING NO.	5 OF 12

UTILITY NOTE:

1. CONTRACTOR SHOULD ONLY OPEN THAT SECTION OF TRENCH THAT CAN BE BACKFILLED AND STABLIZED EACH DAY. IF THE TRENCH MUST REMAIN OPEN LONGER THAN ONE DAY, SILT FENCE SHALL BE PLACED BELOW (DOWN SLOPE) THE TRENCH.
2. PLACE ALL EXCAVATED MATERIAL ON THE UPHILL SIDE OF THE TRENCH.
3. ANY SEDIMENT CONTROLS DISTURBED BY UTILITY CONSTRUCTION SHALL BE REPAIRED IMMEDIATELY.

ENGINEER'S CERTIFICATION

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

SIGNATURE — DATE 8/28/01

REVIEWED FOR HOWARD SCD AND MEETS TECHNICAL REQUIREMENTS — 12/6/01 DATE

USDA-NATURAL RESOURCES CONSERVATION SERVICE

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

HOWARD S.C.D. — 12/6/01 DATE

OWNER'S CERTIFICATION

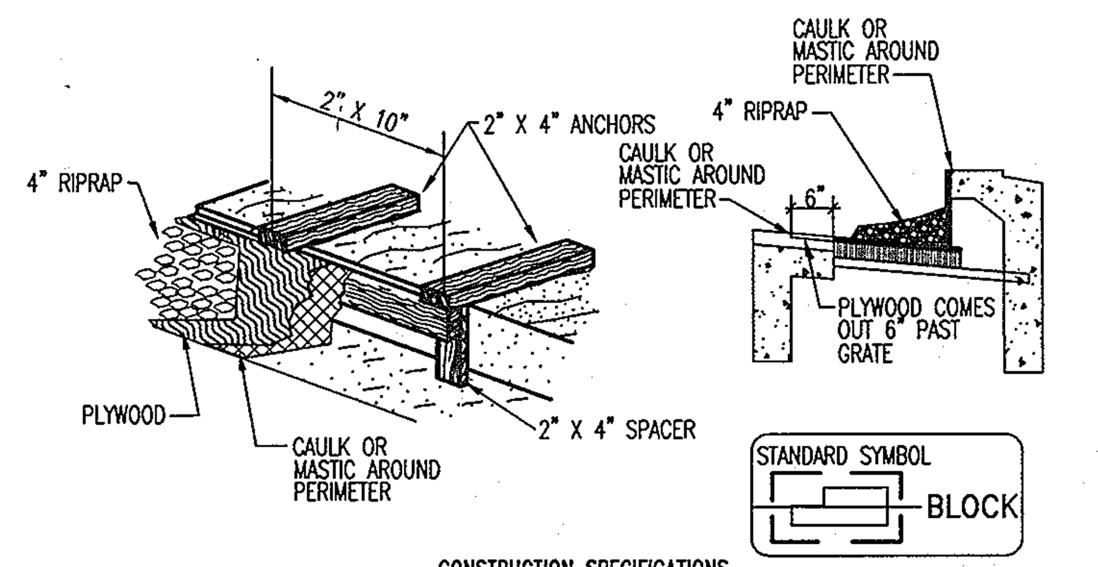
"I/WE CERIFY THAT ALL DEVELOPMENT AND CONSTRUCTION WILL BE DONE ACCORDING TO THIS PLAN, AND THAT ANY RESPONSIBLE PERSONNEL INVOLVED IN THE CONSTRUCTION PROJECT WILL HAVE A CERTIFICATE OF ATTENDANCE AT A DEPARTMENT OF THE ENVIROMENT APPROVED TRAINING PROGRAM FOR THE CONTROL OF SEDIMENT AND EROSION BEFORE BEGINNING THE PROJECT. I ALSO AUTHORIZE PERIODIC ON-SITE INSPECTION BY THE HOWARD SOIL CONSERVATION DISTRICT."

SIGNATURE — DATE 08/28/01

THIS SEAL FOR REVISION #3 ONLY — 11-5-03

F-01-145

P:\11494\PLOT\phase_2_const\SH05-11494SC1.dwg AUG 22, 2001 TIME: 12:56 PM

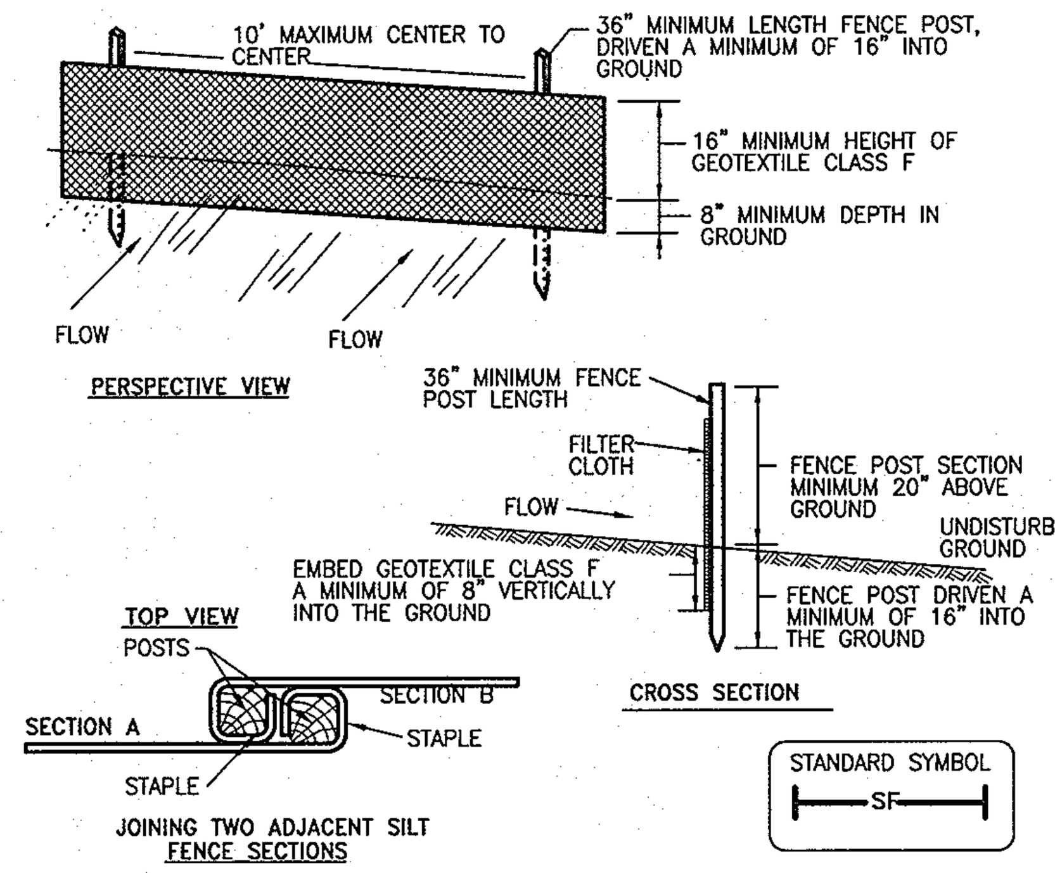


CONSTRUCTION SPECIFICATIONS

1. ATTACH A CONTINUOUS PIECE OF PLYWOOD MEASURING THROAT LENGTH PLUS 6" AS SHOWN ON THE STANDARD DRAWINGS.
2. PLACE A CONTINUOUS PIECE OF 2 x 10 THE SAME LENGTH AS THE PLYWOOD.
3. INSTALL CAULK AND SECURELY NAIL THE 2 x 10 TO THE PLYWOOD.
4. CAULK OR MASTIC TO BE CONTINOUS AROUND PERIMETER OF INLET OPENING.
5. PLACE THE ASSEMBLY AGAINST THE INLET THROAT AND APPLY 4" RIPRAP STONE 4–6" THICK ON THE PLYWOOD TO SECURE IT ON THE OPENING.

CURB INLET BLOCKING

NOT TO SCALE



CONSTRUCTION SPECIFICATIONS

1. FENCE POSTS SHALL BE A MINIMUM OF 36" LONG DRIVEN 16" MINIMUM INTO THE GROUND. WOOD POSTS SHALL BE 1–1/2" X 1–1/2" SQUARE (MINIMUM) CUT, OR 1 3/4" DIA. (MINIMUM) ROUND AND SHALL BE OF SOUND QUALITY HARDWOOD. STEEL POSTS WILL BE STANDARD T OR U SECTION WEIGHING NOT LESS THAN 1.00 POUND 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 FT2/ MINUTE (MAX.)	TEST: MSMT 322
FILTERING EFFICIENCY	75% (MIN.)	TEST: MSMT 322

3. WHERE ENDS OF GEOTEXTILE FABRIC COME TOGETHER, THEY SHALL BE OVERLAPPED, FOLDED AND STAPLED TO PREVENT SEDIMENT BYPASS.

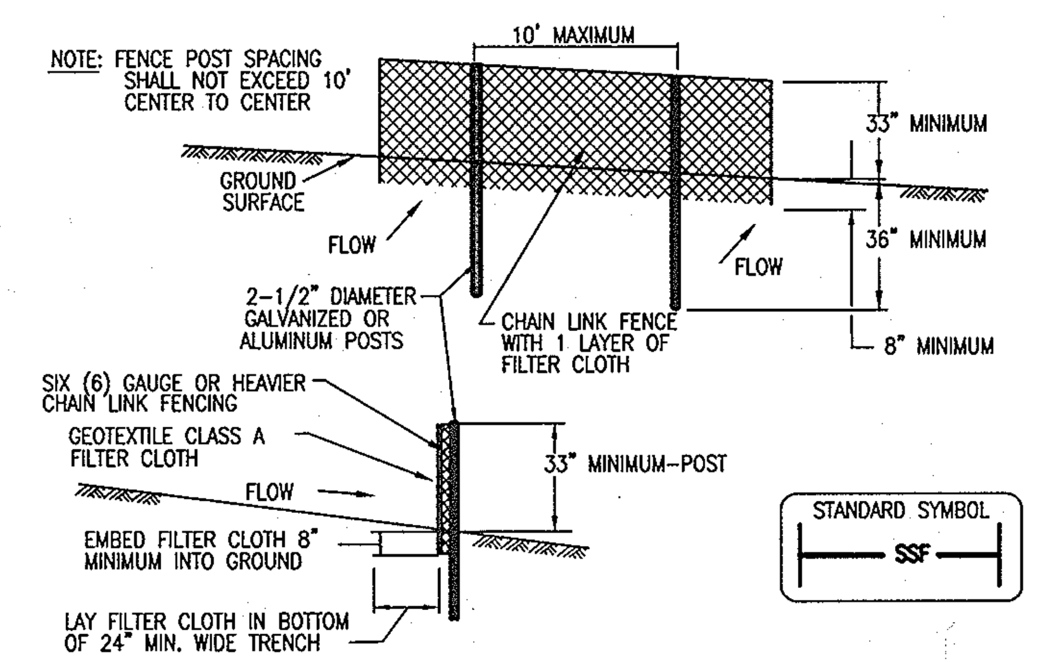
4. SILT FENCE SHALL BE INSPECTED AFTER EACH RAINFALL EVENT AND MAINTAINED WHEN BULGES OCCUR OR WHEN SEDIMENT ACCUMULATION REACHES 50% OF THE FABRIC HEIGHT.

CLASS	APPARENT OPENING SIZE MM. MAX.	GRAB TENSILE LB. MIN. STRENGTH	BURST STRENGTH PSI MIN.
F (SILT FENCE)	0.40 – 0.80*	90	190

* US STD. SIEVE CW–02215

SILT FENCE

NOT TO SCALE

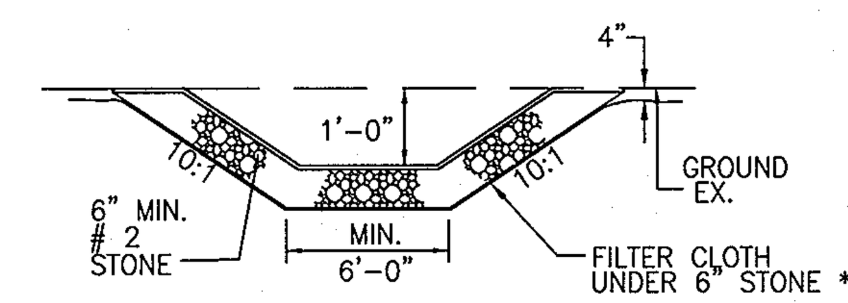


CONSTRUCTION SPECIFICATIONS

1. FENCING SHALL BE 42" IN HEIGHT AND CONSTRUCTED IN ACCORDANCE WITH THE LATEST MARYLAND STATE HIGHWAY (SHA) DETAILS FOR CHAIN LINK FENCING. THE (SHA) SPECIFICATIONS FOR A 6' FENCE SHALL BE USED, SUBSTITUTING 42" FABRIC AND 6' LENGTH POSTS.
2. THE POSTS DO NOT NEED TO BE SET IN CONCRETE.
3. CHAIN LINK FENCE SHALL BE FASTENED SECURELY TO THE FENCE POSTS WITH WIRE TIES OR STAPLES. THE LOWER TENSION WIRE, BRACE AND TRUSS RODS, DRIVE ANCHORS AND POST CAPS ARE NOT REQUIRED EXCEPT ON THE ENDS OF THE FENCE. THE CHAIN LINK FENCING SHALL BE SIX (6) GAUGE OR HEAVIER.
4. FILTER CLOTH SHALL BE FASTENED SECURELY TO THE CHAIN LINK FENCE WITH TIES SPACED EVERY 24" AT THE TOP AND MID SECTION.
5. FILTER CLOTH SHALL BE EMBEDDED A MINIMUM OF 8" INTO THE GROUND.
6. WHEN TWO SECTIONS OF GEOTEXTILE FABRIC ADJOIN EACH OTHER, THEY SHALL BE OVERLAPPED BY 6" AND FOLDED.
7. MAINTENANCE SHALL BE PERFORMED AS NEEDED AND SILT BUILDUPS REMOVED WHEN "BULGES" DEVELOP IN THE SILT FENCE, OR WHEN SILT REACHES 50% OF THE FENCE HEIGHT.

SUPER SILT FENCE (MODIFIED)

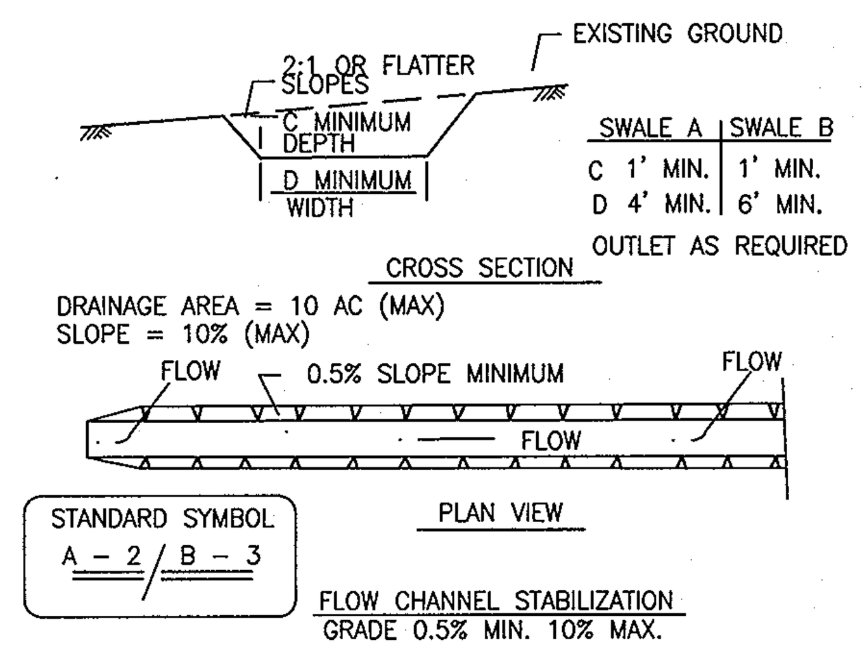
NOT TO SCALE



*FILTER CLOTH SHALL BE GEOTEXTILE CLASS 'C' OR BETTER

CROSSABLE SWALE

NOT TO SCALE



STANDARD SYMBOL A – 2 / B – 3

PLAN VIEW

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

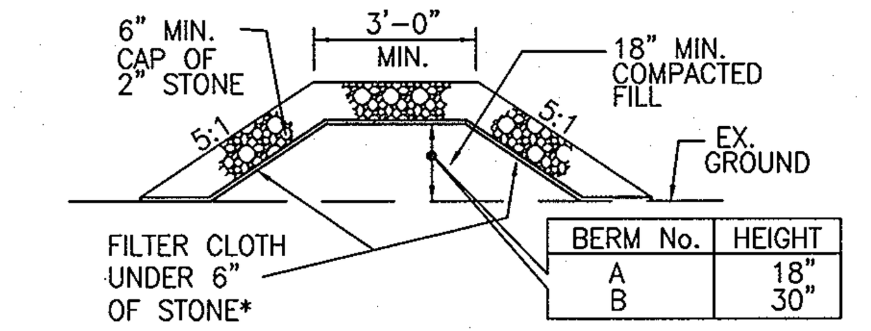
1. SEED AND COVER WITH STRAW MULCH.
2. SEED AND COVER WITH EROSION CONTROL MATTING OR LINE WITH SOD.
3. 4"–7" STONE OR RECYCLED CONCRETE EQUIVALENT PRESSED INTO SOIL IN A MINIMUM 7" LAYER.

CONSTRUCTION SPECIFICATIONS

1. ALL TEMPORARY SWALES SHALL HAVE UNINTERRUPTED POSITIVE GRADE TO AN OUTLET. SPOT ELEVATIONS MAY BE NECESSARY FOR GRADES LESS THAN 1%.
2. RUNOFF DIVERTED FROM A DISTURBED AREA SHALL BE CONVEYED TO A SEDIMENT TRAPPING DEVICE.
3. RUNOFF DIVERTED FROM AN UNDISTURBED AREA SHALL OUTLET DIRECTLY INTO AN UNDISTURBED STABILIZED AREA AT A NON–EROSIVE VELOCITY.
4. ALL TREES, BRUSH, STUMPS, OBSTRUCTIONS, AND OTHER OBJECTIONAL MATERIAL SHALL BE REMOVED AND DISPOSED OF SO AS NOT TO INTERFERE WITH THE PROPER FUNCTIONING OF THE SWALE.
5. THE SWALE 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, IF NECESSARY, 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 SWALE.
8. INSPECTION AND MAINTENANCE MUST BE PROVIDED PERIODICALLY AND AFTER EACH RAIN EVENT.

TEMPORARY SWALE

NOT TO SCALE

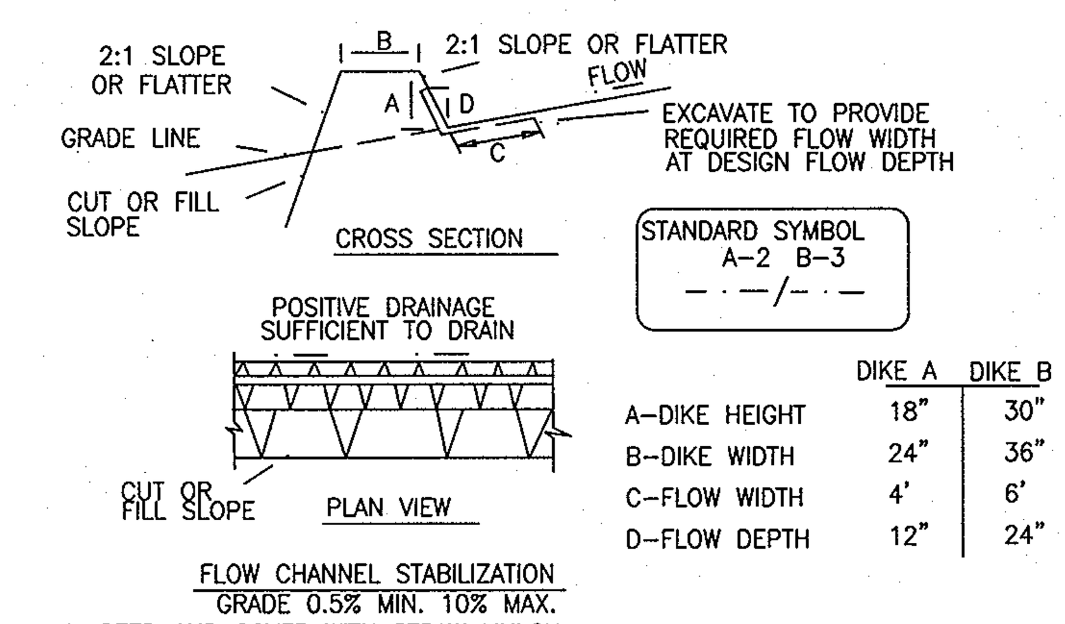


BERM No.	HEIGHT
A	18"
B	30"

*FILTER CLOTH SHALL BE GEOTEXTILE CLASS 'C' OR BETTER

MOUNTABLE BERM

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"

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

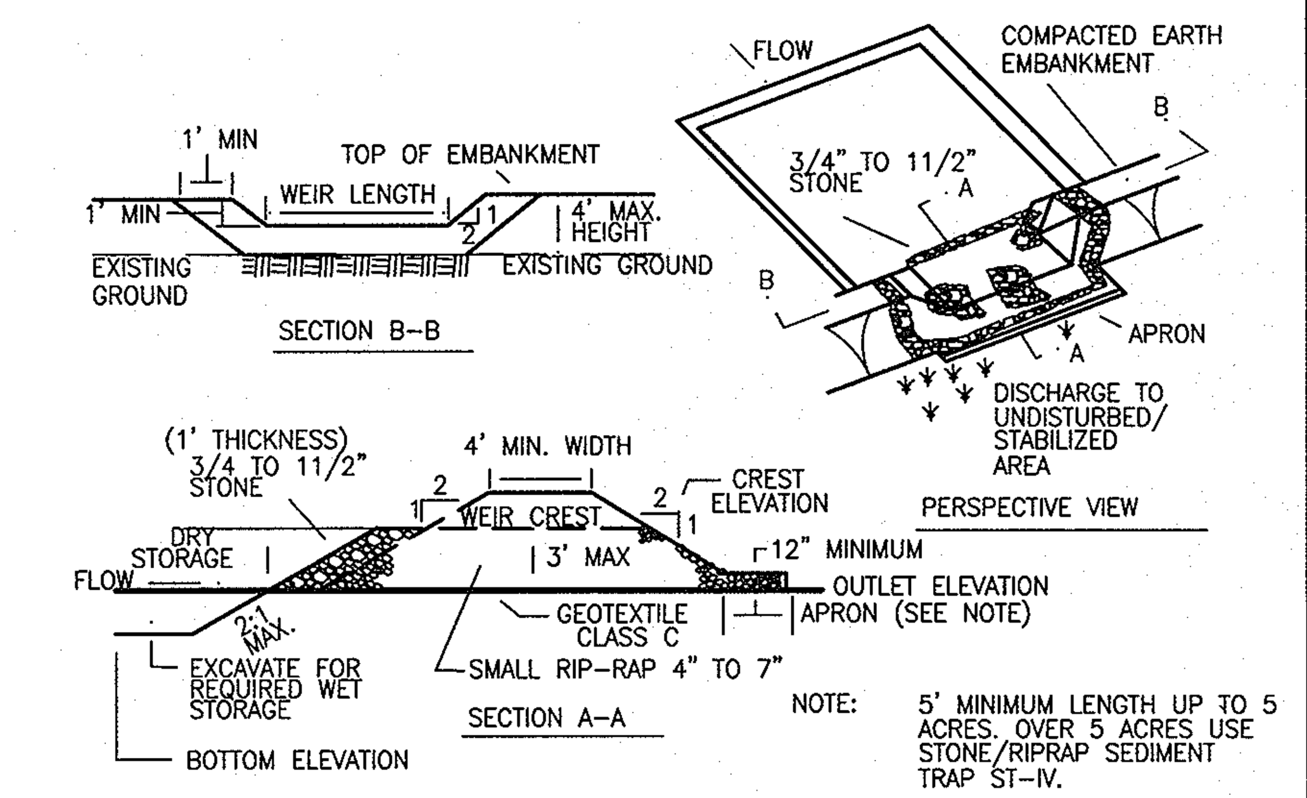
1. SEED AND COVER WITH STRAW MULCH.
2. SEED AND COVER WITH EROSION CONTROL MATTING OR LINE WITH SOD.
3. 4" – 7" STONE OR RECYCLED CONCRETE EQUIVALENT PRESSED INTO THE SOIL 7" MINIMUM

CONSTRUCTION SPECIFICATIONS

1. ALL TEMPORARY EARTH DIKES SHALL HAVE UNINTERRUPTED POSITIVE GRADE TO AN OUTLET. SPOT ELEVATIONS MAY BE NECESSARY FOR GRADES LESS THAN 1%.
2. RUNOFF DIVERTED FROM A DISTURBED AREA SHALL BE CONVEYED TO A SEDIMENT TRAPPING DEVICE.
3. RUNOFF DIVERTED FROM AN UNDISTURBED AREA SHALL OUTLET DIRECTLY INTO AN UNDISTURBED, STABILIZED AREA AT A NON–EROSIVE VELOCITY.
4. ALL TREES, BRUSH, STUMPS, OBSTRUCTIONS, AND OTHER OBJECTIONAL MATERIAL SHALL BE REMOVED AND DISPOSED OF SO AS NOT TO INTERFERE WITH THE PROPER FUNCTIONING OF THE DIKE.
5. THE DIKE SHALL BE EXCAVATED OR SHAPED TO LINE, GRADE AND CROSS SECTION AS REQUIRED TO MEET THE CRITERIA SPECIFIED HEREIN AND BE FREE OF BANK PROJECTIONS OR OTHER IRREGULARITIES WHICH WILL IMPEDE NORMAL FLOW.
6. FILL SHALL BE COMPACTED BY EARTH MOVING EQUIPMENT.
7. ALL EARTH REMOVED AND NOT NEEDED FOR CONSTRUCTION SHALL BE PLACED SO THAT IT WILL NOT INTERFERE WITH THE FUNCTIONING OF THE DIKE.
8. INSPECTION AND MAINTENANCE MUST BE PROVIDED PERIODICALLY AND AFTER EACH RAIN EVENT.

EARTH DIKE

NOT TO SCALE



NOTE: 5' MINIMUM LENGTH UP TO 5 ACRES. OVER 5 ACRES USE STONE/RIPRAP SEDIMENT TRAP ST–IV.

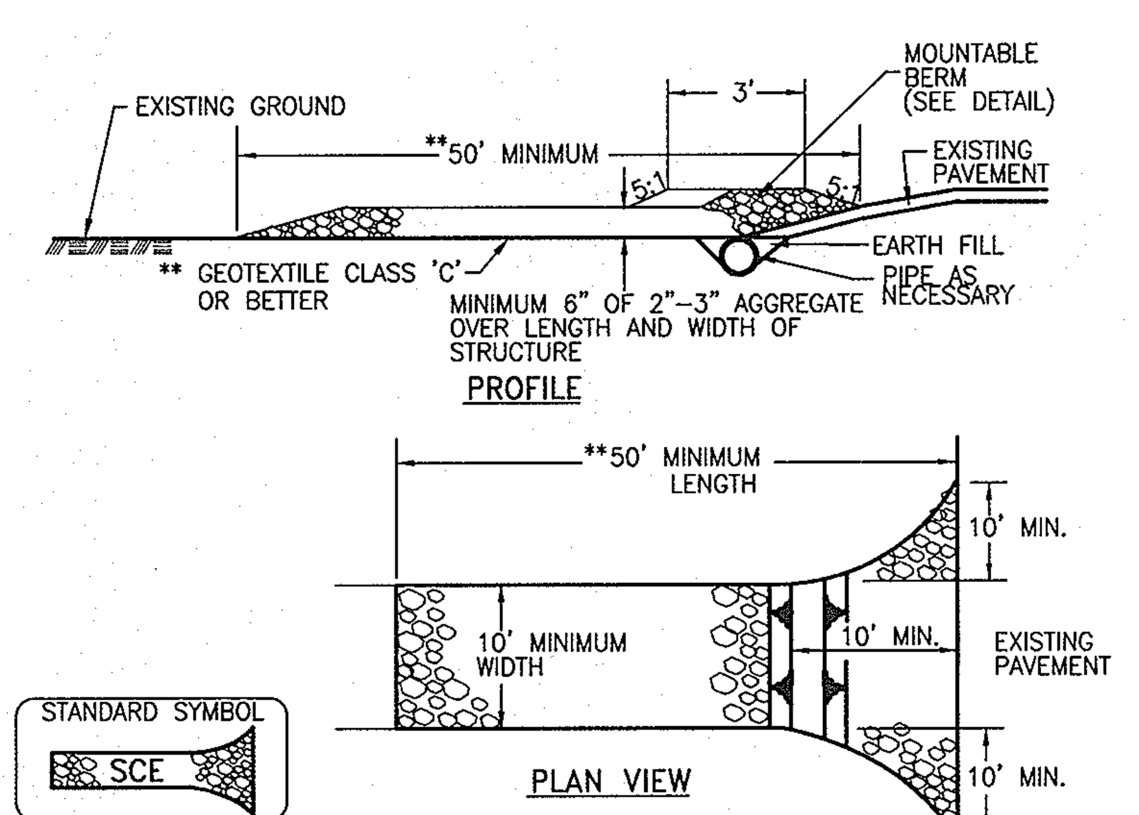
CONSTRUCTION SPECIFICATIONS

1. AREA UNDER EMBANKMENT SHALL BE CLEARED, GRUBBED AND STRIPPED OF ANY VEGETATION AND ROOT MAT. THE POOL AREA SHALL BE CLEARED.
2. THE FILL MATERIAL FOR THE EMBANKMENT SHALL BE FREE OF ROOTS AND OTHER WOODY VEGETATION AS WELL AS OVER–SIZED STONES, ROCKS, ORGANIC MATERIAL OR OTHER OBJECTIONABLE MATERIAL. THE EMBANKMENT SHALL BE COMPACTED BY TRAVERSING WITH EQUIPMENT WHILE IT IS BEING CONSTRUCTED.
3. ALL CUT AND FILL SLOPES SHALL BE 2:1 OR FLATTER.
4. THE STONE USED IN THE OUTLET SHALL BE SMALL RIP–RAP 4" TO 7" IN SIZE WITH A 1' THICK LAYER OF 3/4" TO 11/2" WASHED AGGREGATE PLACED ON THE UPSTREAM FACE OF THE OUTLET. STONE FACING SHALL BE AS NECESSARY TO PREVENT CLOGGING. GEOTEXTILE CLASS C MAY BE SUBSTITUTED FOR THE STONE FACING BY PLACING IT ON THE INSIDE FACE OF THE STONE OUTLET.
5. SEDIMENT SHALL BE REMOVED AND TRAP RESTORED TO ITS ORIGINAL DIMENSIONS WHEN THE SEDIMENT HAS ACCUMULATED TO ONE HALF OF THE WET STORAGE DEPTH OF THE TRAP. REMOVED SEDIMENT SHALL BE DEPOSITED IN A SUITABLE AREA AND IN SUCH A MANNER THAT IT WILL NOT ERODE.
6. THE STRUCTURE SHALL BE INSPECTED PERIODICALLY AND AFTER EACH RAIN AND REPAIRS MADE AS NEEDED.
7. CONSTRUCTION OF TRAPS SHALL BE CARRIED OUT IN SUCH A MANNER THAT SEDIMENT POLLUTION IS ABATED. ONCE CONSTRUCTED, THE TOP AND OUTSIDE FACE OF THE EMBANKMENT SHALL BE STABILIZED WITH SEED AND MULCH. POINTS OF CONCENTRATION INFLOW SHALL BE PROTECTED IN ACCORDANCE WITH GRADE STABILIZATION STRUCTURE CRITERIA. THE REMAINDER OF THE INTERIOR SLOPES SHOULD BE STABILIZED (ONE TIME) WITH SEED AND MULCH UPON TRAP COMPLETION AND MONITORED AND MAINTAINED EROSION FREE DURING THE LIFE OF THE TRAP.
8. THE STRUCTURE SHALL BE DEWATERED BY APPROVED METHODS, REMOVED AND THE AREA STABILIZED WHEN THE DRAINAGE AREA HAS BEEN PROPERLY STABILIZED.
9. REFER TO SECTION D FOR SPECIFICATIONS CONCERNING TRAP DEWATERING.
10. MINIMUM TRAP DEPTH SHALL BE MEASURED FROM THE WEIR ELEVATION.
11. THE ELEVATION OF THE TOP OF ANY DIKE DIRECTING WATER INTO THE TRAP MUST EQUAL OR EXCEED THE ELEVATION OF THE TRAP EMBANKMENT.
12. GEOTEXTILE CLASS C SHALL BE PLACED OVER THE BOTTOM AND SIDES OF THE OUTLET CHANNEL PRIOR TO THE PLACEMENT OF STONE. SECTIONS OF FILTER CLOTH MUST OVERLAP AT LEAST 1' WITH THE SECTION NEAREST THE ENTRANCE PLACED ON TOP. THE FILTER CLOTH SHALL BE EMBEDDED AT LEAST 6" INTO EXISTING GROUND AT THE ENTRANCE OF THE OUTLET CHANNEL.
13. OUTLET – AN OUTLET SHALL BE PROVIDED, INCLUDING A MEANS OF CONVEYING THE DISCHARGE IN AN EROSION FREE MANNER TO AN EXISTING STABLE CHANNEL.

STONE OUTLET SEDIMENT TRAP - ST-II

NOT TO SCALE

DPZ FILE 01-145

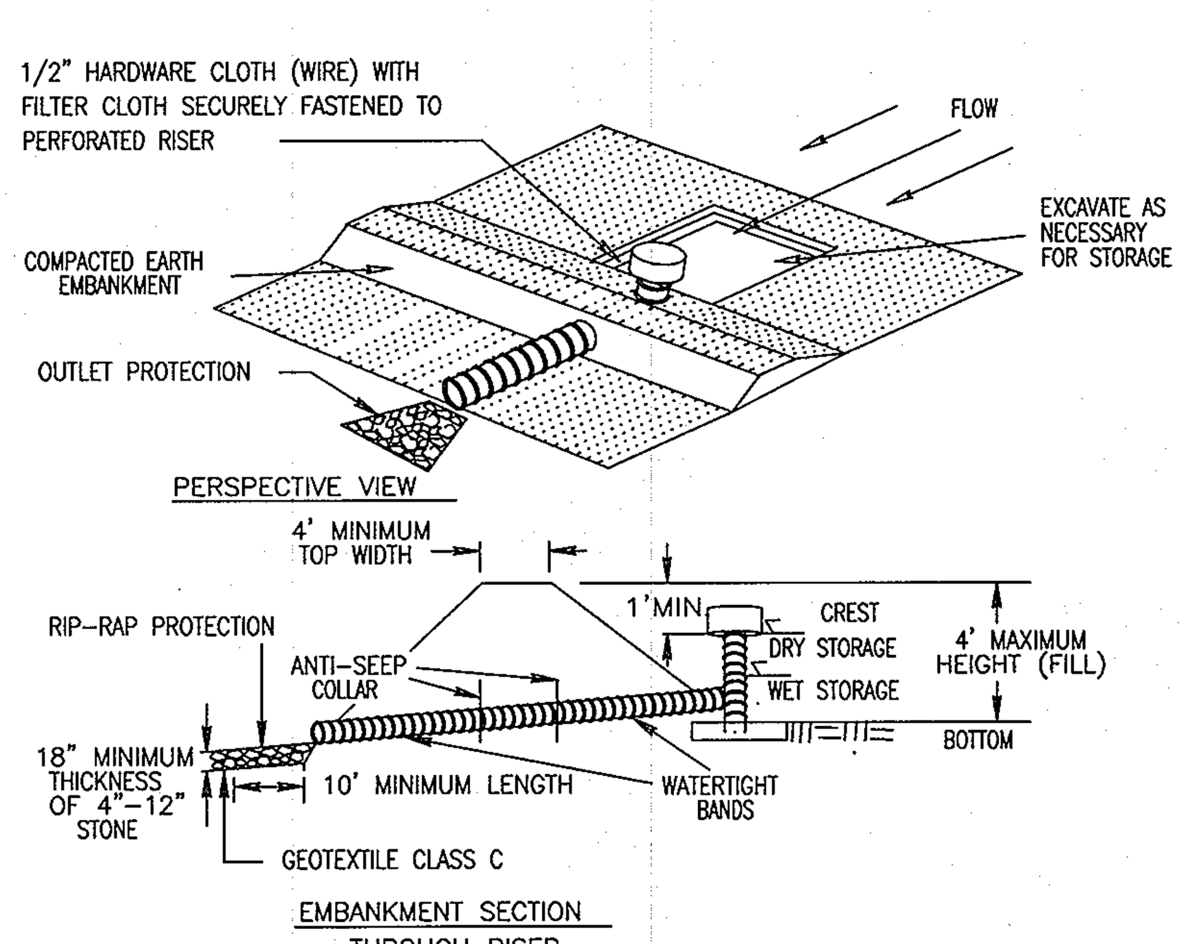


CONSTRUCTION SPECIFICATION

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

NOT TO SCALE



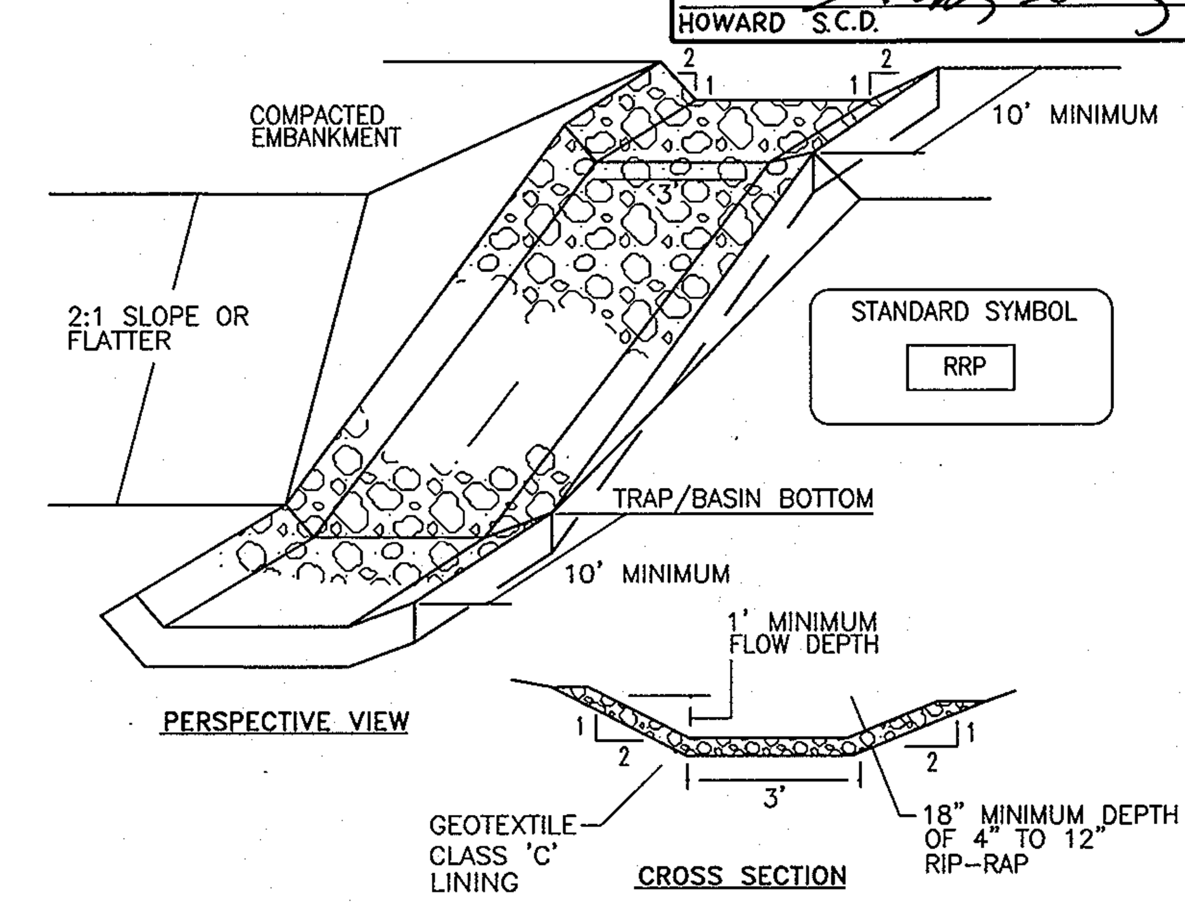
NOTE: RISER EMBEDDED 9" INTO CONCRETE OR 1/4" STEEL PLATE ATTACHED TO RISER WITH A CONTINUOUS WELD ON BOTTOM AND 2' OF STONE PLACED ON STEEL PLATE TWICE THE RISER DIAMETER (MIN.)

PIPE OUTLET SEDIMENT TRAP - ST I

NOT TO SCALE

CONSTRUCTION SPECIFICATIONS

1. THE AREA UNDER THE EMBANKMENT SHALL BE CLEARED, GRUBBED AND STRIPPED OF ANY VEGETATION AND ROOT MAT. THE POOL AREA SHALL BE CLEARED.
2. THE FILL MATERIAL FOR THE EMBANKMENT SHALL BE FREE OF ROOTS OR OTHER WOODY VEGETATION AS WELL AS OVERSIZED STONES, ROCKS, ORGANIC MATERIAL OR OTHER OBJECTIONABLE MATERIAL. THE EMBANKMENT SHALL BE COMPACTED BY TRAVERSING WITH EQUIPMENT WHILE IT IS BEING CONSTRUCTED.
3. THE TOTAL TRAP VOLUME AS MEASURED FROM THE BOTTOM TO RISER CREST ELEVATION SHALL BE 3600 CUBIC FEET PER ACRE OF DRAINAGE AREA (SEE TABLE 9). THE TOP OF EMBANKMENT MUST BE ¢ 1' ABOVE THE RISER CREST ELEVATION.
4. SEDIMENT SHALL BE REMOVED AND THE TRAP RESTORED TO ITS ORIGINAL DIMENSIONS WHEN THE SEDIMENT HAS ACCUMULATED TO ONE HALF OF THE WET STORAGE DEPTH OF THE TRAP (900CF/AC). THE SEDIMENT SHALL BE DEPOSITED IN A SUITABLE AREA AND IN SUCH A MANNER THAT IT WILL NOT ERODE.
5. THE STRUCTURE SHALL BE INSPECTED PERIODICALLY AND AFTER EACH RAIN AND REPAIRS MADE AS NECESSARY.
6. CONSTRUCTION OPERATIONS SHALL BE CARRIED OUT IN SUCH A MANNER THAT EROSION AND WATER POLLUTION ARE ABATED. ONCE CONSTRUCTED, THE TOP AND OUTSIDE FACE OF THE EMBANKMENT SHALL BE STABILIZED WITH SEED AND MULCH. POINTS OF CONCENTRATED INFLOW SHALL BE PROTECTED IN ACCORDANCE WITH GRADE STABILIZATION STRUCTURE CRITERIA. THE REMAINDER OF THE INTERIOR SLOPES SHOULD BE STABILIZED (ONE TIME) WITH SEED AND MULCH UPON TRAP COMPLETION AND MONITORED AND MAINTAINED EROSION FREE DURING THE LIFE OF THE TRAP.
7. THE STRUCTURE SHALL BE REMOVED AND AREA STABILIZED WHEN THE DRAINAGE AREA HAS BEEN PROPERLY STABILIZED.
8. ALL CUT AND FILL SLOPES SHALL BE 2:1 OR FLATTER.
9. ALL PIPE CONNECTIONS SHALL BE WATERTIGHT.
10. ABOVE THE WET STORAGE ELEVATION, THE RISER SHALL BE PERFORATED WITH 1/2" WIDE BY 6" LONG SLITS OR 1" DIAMETER HOLES SPACED 6" VERTICALLY AND HORIZONTALLY. NO PERFORATIONS WILL BE ALLOWED WITHIN 6" OF THE HORIZONTAL BARREL.
11. THE RISER SHALL BE WRAPPED WITH 1/2" HARDWARE CLOTH (WIRE) THEN WRAPPED WITH GEOTEXTILE CLASS E. THE FILTER CLOTH SHALL EXTEND 6" ABOVE THE HIGHEST SLIT AND 6" BELOW THE LOWEST SLIT. WHERE ENDS OF FILTER CLOTH COME TOGETHER, THEY SHALL BE OVERLAPPED, FOLDED AND FASTENED TO PREVENT BYPASS. FILTER CLOTH SHALL BE REPLACED AS NECESSARY TO PREVENT CLOGGING.
12. STRAPS OR CONNECTING BANDS SHALL BE USED TO HOLD THE FILTER CLOTH AND WIRE FABRIC IN PLACE. THEY SHALL BE PLACED AT THE TOP AND BOTTOM OF THE CLOTH.
13. FILL MATERIAL AROUND THE PIPE SPILLWAY SHALL BE HAND COMPACTED IN 4" LAYERS. A MINIMUM OF 2' OF HAND–COMPACTED BACKFILL SHALL BE PLACED OVER THE PIPE SPILLWAY BEFORE CROSSING IT WITH CONSTRUCTION EQUIPMENT.
14. THE RISER SHALL BE ANCHORED WITH EITHER A CONCRETE BASE OR STEEL PLATE BASE TO PREVENT FLOTATION. CONCRETE BASES SHALL BE AT LEAST TWICE THE RISER DIAMETER AND 12" DEEP WITH THE RISER EMBEDDED 9". STEEL PLATE BASES SHALL BE AT LEAST TWICE THE RISER DIAMETER, 1/4" MINIMUM THICKNESS AND ATTACHED TO THE BOTTOM OF THE RISER BY A CONTINUOUS WELD TO FORM A WATERTIGHT CONNECTION. THEN PLACE 2' OF STONE, GRAVEL OR TAMPED EARTH ON THE PLATE.
15. ANTI SEEP COLLARS SHALL BE CONSTRUCTED IN ACCORDANCE WITH PLANS (REF. TABLE 16 AND DETAILS 13 AND 14).
16. CONCENTRIC TRASH RACK AND ANTI–VORTEX DEVICE DESIGN DETAILS ARE ON DETAIL 16.
17. REFER TO SECTION D FOR DEWATERING REQUIREMENTS OF SEDIMENT TRAPS.
18. OUTLET – AN OUTLET SHALL BE PROVIDED, WHICH INCLUDES A MEANS OF CONVEYING THE DISCHARGE IN AN EROSION FREE MANNER TO AN EXISTING STABLE CHANNEL.
19. WHERE DISCHARGE OCCURS AT THE PROPERTY LINE, LOCAL ORDINANCES AND DRAINAGE EASEMENT REQUIREMENTS SHALL BE MET.



CONSTRUCTION SPECIFICATIONS

1. RIP–RAP LINED INFLOW CHANNELS SHALL BE 1' IN DEPTH, HAVE A TRAPEZOIDAL CROSS SECTION WITH 2:1 OR FLATTER SIDE SLOPES AND 3' (MIN.) BOTTOM WIDTH. THE CHANNEL SHALL BE LINED WITH 4" TO 12" RIP– RAP TO A DEPTH OF 18".
2. FILTER CLOTH SHALL BE INSTALLED UNDER ALL RIP–RAP. FILTER CLOTH SHALL BE GEOTEXTILE CLASS C.
3. ENTRANCE AND EXIT SECTIONS SHALL BE INSTALLED AS SHOWN ON THE DETAIL SECTION.
4. RIP–RAP USED FOR THE LINING MAY BE RECYCLED FOR PERMANENT OUTLET PROTECTION IF THE BASIN IS TO BE CONVERTED TO A STORMWATER MANAGEMENT FACILITY.
5. GABION INFLOW PROTECTION MAY BE USED IN LIEU OF RIP–RAP INFLOW PROTECTION.
6. RIP–RAP SHOULD BLEND INTO EXISTING GROUND.
7. RIP–RAP INFLOW PROTECTION SHALL BE USED WHERE THE SLOPE IS BETWEEN 4:1 AND 10:1, FOR SLOPES FLATTER THAN 10:1 USE EARTH DIKE OR TEMPORARY SWALE LINING CRITERIA.

RIP-RAP INFLOW PROTECTION

NOT TO SCALE

REVIEWED FOR HOWARD SCD AND MEETS TECHNICAL REQUIREMENTS — 12/2/01 DATE
USDA–NATURAL RESOURCES CONSERVATION SERVICE

THIS DEVELOPMENT PLAN IS APPROVED FOR SOIL EROSION AND SEDIMENT CONTROL BY THE HOWARD SOIL CONSERVATION DISTRICT. APPROVED: — 12/2/01
HOWARD S.C.D.

APPROVED: HOWARD COUNTY DEPARTMENT OF PUBLIC WORKS
CHIEF, BUREAU OF HIGHWAYS — 12-13-01 DATE

APPROVED: HOWARD COUNTY DEPARTMENT OF PLANNING & ZONING
CHIEF, DIVISION OF LAND DEVELOPMENT — 12/17/01 DATE
CHIEF, DEVELOPMENT ENGINEERING DIVISION MK — 12/14/01 DATE

DATE	NO.	REVISION

OWNER / DEVELOPER:
THE HOWARD RESEARCH & DEVELOPMENT CORPORATION
THE ROUSE BUILDING
10275 LITTLE PATUXENT PARKWAY
COLUMBIA, MARYLAND 21044
PHONE: (410) 992–6370

PROJECT: EMERSON SECTION 2 PHASE 2

AREA: TAX MAP NO. 47 P/O PARCEL P.837 P. 3. P. 482
ELECTION DISTRICT No.6 HOWARD COUNTY, MARYLAND

TITLE: SEDIMENT CONTROL DETAILS

MRA — MORRIS & RITCHIE ASSOCIATES, INC.
ENGINEERS, PLANNERS, SURVEYORS AND LANDSCAPE ARCHITECTS
110 WEST ROAD SUITE 245
TOWSON, MARYLAND 21204
(410) 821-1690
FAX (410) 821-1748

8/28/01
STATE OF MARYLAND — PROFESSIONAL ENGINEER (seal)

PROJECT NO.: 11494
SCALE: AS SHOWN
DATE: AUGUST 24, 2001
DRAWN BY: MLS
DESIGNED BY: TAM
REVIEW BY: DNM
DRAWING NO. 6 OF 12

F-01-145

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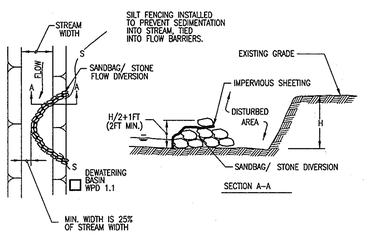

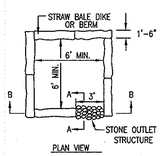

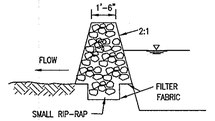

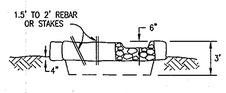

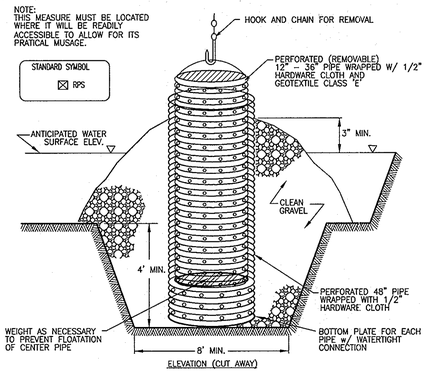

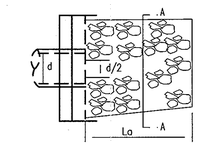

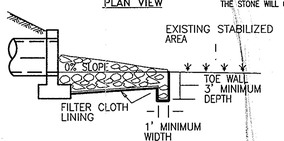

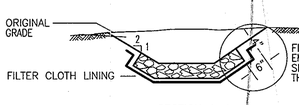

SEDIMENT CONTROL GENERAL NOTES

1. A MINIMUM OF 48 HOURS NOTICE MUST BE GIVEN TO THE HOWARD COUNTY DEPARTMENT OF INSPECTIONS, LICENSES AND PERMITS, SEDIMENT CONTROL DIVISION PRIOR TO THE START OF ANY CONSTRUCTION (313-1855).
2. ALL VEGETATIVE AND STRUCTURAL PRACTICES ARE TO BE INSTALLED ACCORDING TO THE PROVISIONS OF THIS PLAN AND ARE TO BE IN CONFORMANCE WITH THE "1994 MARYLAND STANDARDS AND SPECIFICATIONS FOR SOIL EROSION AND SEDIMENT CONTROL" AND REVISIONS THERETO.
3. FOLLOWING INITIAL SOIL DISTURBANCE OR RE-DISTURBANCE, PERMANENT OR TEMPORARY STABILIZATION SHALL BE COMPLETED WITHIN:
   A. SEVEN CALENDAR DAYS FOR ALL PERIMETER SEDIMENT CONTROL STRUCTURES, DIKES, PERIMETER SLOPES AND ALL SLOPES STEEPER THAN 3:1.
   B. FOURTEEN 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. I, 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, SODS, TEMPORARY SEEDING AND MULCHING (SECTION G). 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: 12.79 Ac.
   AREA DISTURBED: 7.15 Ac.
   AREA TO BE VEGETATIVLY STABILIZED: 5.78 Ac.
   AREA TO BE PAVED: 1.37 Ac.
   TOTAL CUT: 10,968 Cu. Yds.
   TOTAL FILL: 10,438 Cu. Yds.
   OFF-SITE WASTE/BORROW AREA LOCATION WASTE- N/A EXCESS 24% OF TOTAL
8. ANY SEDIMENT CONTROL PRACTICE WHICH IS DISTURBED BY GRADING ACTIVITY FOR PLACEMENT OF UTILITIES MUST BE REPAIRED ON THE SAME DAY OF DISTURBANCE.
9. ADDITIONAL SEDIMENT CONTROLS MUST BE PROVIDED, IF DEEMED NECESSARY BY THE HOWARD COUNTY SEDIMENT CONTROL INSPECTOR.
10. ON ALL SITES WITH DISTURBED AREAS IN EXCESS OF 2 ACRES. APPROVAL OF THE INSPECTION AGENCY SHALL BE REQUESTED UPON COMPLETION OF INSTALLATION OF PERIMETER EROSION AND SEDIMENT CONTROLS, BUT BEFORE PROCEEDING WITH ANY OTHER EARTH DISTURBANCE OR GRADING. OTHER BUILDING OR GRADING INSPECTION APPROVALS MAY NOT BE AUTHORIZED UNTIL THIS INITIAL APPROVAL BY THE INSPECTION AGENCY IS MADE.
11. TRENCHES FOR THE CONSTRUCTION OF UTILITIES IS LIMITED TO THREE PIPE LENGTHS OR THAT WHICH SHALL BE BACK-FILLED AND STABILIZED WITHIN ONE WORKING DAY, WHICHEVER IS SHORTER.

SEQUENCE OF CONSTRUCTION

OPERATION	NO. OF DAYS
1. CLEAR AND GRUB FOR AND INSTALL STABILIZED CONSTRUCTION ENTRANCE.	1
2. CLEAR AND GRUB FOR AND INSTALL POND #1, SEE SEQUENCE OF OPERATIONS ON SHEET 8 OF 11.	30
3. CLEAR AND GRUB FOR AND INSTALL PERIMETER CONTROLS FOR THE CONSTRUCTION OF PALACE HALL DRIVE: INCLUDES; DIKE AND SWALE FOR THE DIVERSION OF CLEAN WATER (NORTHWEST SIDE OF PALACE HALL DRIVE), TRAPS 1 & 2 AND ASSOCIATED EARTH DIKES W/ MOUNTABLE BERMS, EXISTING INLETS I-4 & I-5 TO BE BLOCKED, AND SUPER SILT FENCES.	7
4. AFTER RECIEVING GRADING PERMIT AND WITH THE PERMISSION OF THE SEDIMENT CONTROL INSPECTOR, MASS GRADE SITE.	15
5. AS SITE IS BROUGHT TO GRADE INSTALL UTILITIES. THE PROPOSED 21" STORM DRAIN BETWEEN I-4 AND I-5 IS TO BE DEFERRED UNTIL S.O.C. STEP 8. INLETS I-1 THROUGH I-5 ARE TO BE BLOCKED AND FLOW CONVEYED TO TRAPS UNTIL THE DRAINAGE AREAS ARE FULLY STABILIZED. CLEAN WATER IS TO BE CONVEYED VIA EX. E-3 THROUGH EX 24" STORM DRAIN IN PALACE HALL DRIVE UNTIL SITE IS FULLY STABILIZED.	10
7. FINE GRADE SITE. INSTALL PAVING SUBBASE, CONCRETE COMBINATION CURB AND GUTTER BITUMINOUS CONCRETE PAVING AND CONCRETE PAVING. PLEASE NOTE THAT SOME SECTIONS OF CURB MAY BE LEFT OUT FOR CONVEYANCE OF DRAINAGE TO TRAPS UNTIL SITE IS STABILIZED. ALSO SOME PERMANENT PAVING MAY NOT BE INSTALLED UNTIL STORM DRAIN SYSTEM IS COMPLETED.	7
8. PERMANENTLY STABILIZE AND LANDSCAPE SITE. WHEN SITE IS FULLY STABILIZED AND WITH THE APPROVAL OF THE SEDIMENT CONTROL INSPECTOR; DURING A DRY FORCAST PERIOD REMOVE EX 21" STORM DRAIN BETWEEN EX I-4 AND I-5 AND CONSTRUCT PROPOSED 21" STORM DRAIN IN THE SAME LOCATION. CONSTRUCT PROPOSED BRICK BULKHEAD AT EXISTING 24" STORM DRAIN IN SKYLARK BOULEVARD. COMPLETE THE BALANCE OF PAVING.	5
9. WITH THE PERMISSION OF THE SEDIMENT CONTROL INSPECTOR, REMOVE THE BLOCKING FROM EX INLETS I-1 THROUGH I-5 AND COMPLETE ANY REMAINING PAVING AND CURB WORK. THE STORM DRAIN SYSTEM MAY BE CONSIDERED OPERATIONAL AT THIS POINT.	1
10. WITH THE PERMISSION OF THE SEDIMENT CONTROL INSPECTOR, REMOVE SEDIMENT AND EROSION CONTROL MEASURES AND DEVICES. PERMANENTLY STABILIZE ANY REDISTURBED AREAS.	5

ELEVATION (CUT AWAY)

CONSTRUCTION SPECIFICATIONS

1. THE OUTER PIPE SHOULD BE 48" DIA. OR SHALL, IN ANY CASE, BE AT LEAST 4" GREATER IN DIAMETER THAN THE CENTER PIPE. THE OUTER PIPE SHALL BE WRAPPED WITH 1/2" HARDWARE CLOTH TO PREVENT BACKFILL MATERIAL FROM ENTERING THE PERFORATIONS.
2. AFTER INSTALLING THE OUTER PIPE, BACKFILL AROUND OUTER PIPE WITH 2" AGGREGATE OR CLEAN GRAVEL.
3. THE INSIDE STAND PIPE (CENTER PIPE) SHOULD BE CONSTRUCTED BY PERFORATING A CORRUGATED OR PVC PIPE BETWEEN 12" AND 36" IN DIAMETER. THE PERFORATIONS SHALL BE 1/2" X 6" SLITS OR 1" DIAMETER HOLES 6" ON CENTER. THE CENTER PIPE SHALL BE WRAPPED WITH 1/2" HARDWARE CLOTH FIRST, THEN WRAPPED AGAIN WITH GEOTEXTILE CLASS E
4. THE CENTER PIPE SHOULD EXTEND 12" TO 18" ABOVE THE ANTICIPATED WATER SURFACE ELEVATION OR RISER CREST ELEVATION WHEN DEWATERING A BASIN.

REMOVABLE PUMPING STATION

NOT TO SCALE

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I. PERMANENT SEEDING NOTES

APPLY TO GRADED OR CLEARED AREAS NOT SUBJECT TO IMMEDIATE FURTHER DISTURBANCE WHERE A PERAMENT LONG-LIVED VEGETATIVE COVER IS NEEDED.

A. SEEDBED PREPARATION: LOOSEN UPPER THREE INCHES OF SOIL BY RAKING, DISCING, OR OTHER ACCEPTABLE MEANS BEFORE SEEDING.

B. SOIL AMENDMENTS: IN LIEU OF SOIL TEST RECOMMENDATIONS, USE ONE OF THE FOLLOWING:

1. PREFERRED: APPLY TWO TONS PER ACRE DOLOMITIC LIMESTONE (92 LBS./1000 SQ. FT.) AND 600 LBS. PER ACRE 10-10-10 FERTILIZER (14 LBS./1000 SQ. FT.). BEFORE SEEDING, HARROW OR DISC INTO UPPER THREE INCHES OF SOIL. AT TIME OF SEEDING, APPLY 400 LBS. PER ACRE 30-0-0 UREAFOR FERTILIZER (9LBS./1000 SQ. FT.)
2. ACCEPTABLE: APPLY TWO TONS PER ACRE DOLOMITIC LIMESTONE (92 LBS./1000 SQ. FT.) AND 1000 LBS. PER ACRE 10-10-10 FERTILIZER (23 LBS./SQ. FT.) BEFORE SEEDING, HARROW OR DISC INTO UPPER THREE INCHES OF SOIL.

C. SEEDING: FOR PERIODS MARCH 1 THROUGH APRIL 30, AND AUGUST 1 THROUGH OCTOBER 15, SEED WITH 60 LB. PER ACRE (1.4 LBS/1000 SQ. FT.) OF KENTUCKY 31 TALL FESCUE. FOR THE PERIOD MAY 1 THROUGH JULY 31, SEED WITH 60 LBS. OF KENTUCKY 31 TALL FESCUE PER ACRE AND 2 LBS. PER ACRE) 0.05 LBS./1000 SQ. FT.) OF WEEPING LOVEGRASS. DURING THE PERIOD OCTOBER 16 THROUGH FEBRUARY 28, PROTECT SITE BY:

1. OPTION 1: TWO TONS PER ACRE OF WELL ANCHORED STRAW MULCH AND SEED AS SOON AS POSSIBLE IN SPRING.
2. OPTION 2: USE SOD.
3. OPTION 3: SEED WITH 60 LBS./ACRE KENTUCKY 31 TALL FESCUE AND MULCH WITH TWO TONS/ACRE WELL ANCHORED STRAW.

D. MULCHING: APPLY 1 1/2 TO 2 TONS PER ACRE (70-90) LBS./1000 SQ. FT. OF UNROTTED SMALL GRAIN STRAW IMMEDIATELY AFTER SEEDING. ANCHOR MULCH IMMEDIATELY AFTER APPLICATION USING MULCH ANCHORING TOOL OR 218 GALLONS PER ACRE (5 GAL/1000 SQ. FT.) OF EMULSIFIED ASPHALT ON FLAT AREAS. ON SLOPES 8 FEET OR HIGHER, USE 348 GALLONS PER ACRE (8 GAL./1000 SQ. FT.) FOR ANCHORING.

E. MAINTENANCE: TO BE CONSISTANT INSPECT ALL SEEDED AREAS AND MAKE NEEDED REPAIRS, REPLACEMENTS, AND RESEEDINGS.

II. TEMPORARY SEEDING NOTES

APPLY TO GRADED OR CLEARED AREAS LIKELY TO BE REDISTURBED WHERE A SHORT-TERM VEGETATIVE COVER IS NEEDED.

A. SEEDBED PREPARATION: LOOSEN UPPER THREE INCHES BY DISCING, RAKING, OR OTHER ACCEPTABLE MEANS BEFORE SEEDING.

B. SOIL AMENDMENTS: APPLY 600 LBS./ACRE (14 LBS./1000 SQ. FT.) OF 10-10-10 FERTILIZER.

C. SEEDING: FOR PERIODS MARCH 1 THROUGH APRIL 30, AND FROM AUGUST 15 THROUGH NOVEMBER 15, SEED WITH 2 1/2 BU./ACRE OF ANNUAL RYE (3.2 LBS. PER 1000 SQ. FT.) FOR THE PERIOD MAY 1 THRU AUGUST 14, SEED WITH 3 LBS PER ACRE OF WEEPING LOVEGRASS (0.07 LBS./1000 SQ. FT.). FOR THE PERIOD NOVEMBER 16 THROUGH FEBRUARY 28, PROTECT SITE BY APPLYING TWO TONS PER ACRE OF WELL ANCHORED STRAW MULCH AND SEED AS SOON AS POSSIBLE IN THE SPRING, OR USE SOD.

D. MULCHING: APPLY 1 1/2 TO 2 TONS PER ACRE (70-90) LBS./1000 SQ. FT. OF UNROTTED SMALL GRAIN STRAW IMMEDIATELY AFTER SEEDING. ANCHOR MULCH IMMEDIATELY AFTER APPLICATION USING MULCH ANCHORING TOOL OR 218 GALLONS PER ACRE (5 GAL/1000 SQ. FT.) OF EMULSIFIED ASPHALT ON FLAT AREAS. ON SLOPES 8 FEET OR HIGHER, USE 348 GALLONS PER ACRE (8 GAL./1000 SQ. FT.) FOR ANCHORING.

CONSTRUCTION SPECIFICATIONS

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

NOTE: FILTER CLOTH SHALL BE GEOTEXTILE CLASS C

ROCK OUTLET PROTECTION III

NOT TO SCALE

STANDARD AND SPECIFICATIONS FOR TOPSOIL

DEFINITION

PLACEMENT OF TOPSOIL OVER A PREPARED SUBSOIL PRIOR TO ESTABLISHMENT OF PERMANENT VEGETATION.

PURPOSE

TO PROVIDE A SUITABLE SOIL MEDIUM FOR VEGETATIVE GROWTH. SOILS OF CONCERN HAVE LOW MOISTURE CONTENT, LOW NUTRIENT LEVELS, LOW PH, MATERIALS TOXIC TO PLANTS, AND/OR UNACCEPTABLE SOIL GRADATION.

CONDITIONS WHERE PRACTICE APPLIES

I. THIS PRACTICE IS LIMITED TO AREAS HAVING 2:1 OR FLATTER SLOPES WHERE:
   A. THE TEXTURE OF THE EXPOSED SUBSOIL/PARENT MATERIAL IS NOT ADEQUATE TO PRODUCE VEGETATIVE GROWTH.
   B. THE SOIL MATERIAL IS SO SHALLOW THAT THE ROOTING ZONE IS NOT DEEP ENOUGH TO SUPPORT PLANTS OR FURNISH CONTINUING SUPPLIES OF MOISTURE AND PLANT NUTRIENTS.
   C. THE ORIGINAL SOIL TO BE VEGETATED CONTAINS MATERIAL TOXIC TO PLANT GROWTH.
   D. THE SOIL IS SO ACIDIC THAT TREATMENT WITH LIMESTONE IS NOT FEASIBLE.

II. FOR THE PURPOSE OF THESE STANDARDS AND SPECIFICATIONS, AREAS HAVING SLOPES STEEPER THAN 2:1 REQUIRE SPECIAL CONSIDERATION AND DESIGN FOR ADEQUATE STABILIZATION. AREAS HAVING SLOPES STEEPER THAN 2:1 SHALL HAVE THE APPROPRIATE STABILIZATION SHOWN ON THE PLANS.

CONSTRUCTION MATERIAL SPECIFICATIONS

I. TOPSOIL SALVAGED FROM THE EXISTING SITE MAY BE USED PROVIDED THAT IT MEETS THE STANDARDS AS SET FORTH IN THESE SPECIFICATIONS. TYPICALLY, THE DEPTH OF TOPSOIL TO BE SALVAGED FOR A GIVEN SOIL TYPE CAN BE FOUND IN THE REPRESENTATIVE SOIL PROFILE SECTION IN THE SOIL SURVEY PUBLISHED BY USDA - SCS IN COOPERATION WITH MARYLAND AGRICULTURAL EXPERIMENTAL STATION.

II. TOPSOIL SPECIFICATIONS -SOIL TO BE USED AS TOPSOIL MUST MEET THE FOLLOWING:
   1. TOPSOIL SHALL BE A LOAM, SANDY LOAM, CLAY LOAM, SILT LOAM, SANDY CLAY LOAM, LOAMY SAND. OTHER SOILS MAY BE USED IF RECOMMENDED BY AN AGRONOMIST OR SOIL SCIENTIST AND APPROVED BY THE APPROPRIATE APPROVAL AUTHORITY. REGARDLESS, TOPSOIL SHALL NOT BE A MIXTURE OF CONTRASTING TEXTURED SUBSOILS AND SHALL CONTAIN LESS THAN 5% BY VOLUME OF CINDERS, STONES, SLAG, COARSE FRAGMENTS, GRAVEL, STICKS, ROOTS, TRASH, OR OTHER MATERIALS LARGER THAN 1 1/2" IN DIAMETER.
   2. TOPSOIL MUST BE FREE OF PLANTS OR PLANT PARTS SUCH AS BERMUDA GRASS, QUACKGRASS, JOHNSONGRASS, NUTSEDGE, POISON IVY, THRISTLE, OR OTHERS AS SPECIFIED.
   3. WHERE THE SUBSOIL IS EITHER HIGHLY ACIDIC OR COMPOSED OF HEAVY CLAYS, GROUND LIMESTONE SHALL BE SPREAD AT THE RATE OF 4 TONS/ACRES (200 - 400 POUNDS PER 1,000 SQ. FT.) PRIOR TO THE PLACEMENT OF TOPSOIL. LIME SHALL BE DISTURBED UNIFORMLY OVER DESIGNATED AREAS AND WORKED INTO THE SOIL IN CONJUNCTION WITH TILLAGE OPERATIONS AS DESCRIBED IN THE FOLLOWING PROCEDURES.

III. FOR SITES HAVING DISTURBED AREAS UNDER 5 ACRES:
   1. PLACE TOPSOIL (IF REQUIRED) AND APPLY SOIL AMENDMENTS AS SPECIFIED IN 20.0 VEGETATIVE STABILIZATION - SECTION I - VEGETATIVE STABILIZATION METHODS AND MATERIALS.

IV. FOR SITES HAVING DISTURBED AREAS OVER 5 ACRES:
   1. ON SOIL MEETING TOPSOIL SPECIFICATIONS, OBTAIN TEST RESULTS DICTATING FERTILIZER AND LIME AMENDMENTS REQUIRED TO BRING THE SOIL INTO COMPLIANCE WITH THE FOLLOWING:
   A. PH FOR TOPSOIL SHALL BE BETWEEN 6.0 AND 7.5. IF THE TESTED SOIL DEMONSTRATES A PH OF LESS THAN 6.0, SUFFICIENT LIME SHALL BE PRESCRIBED TO RAISE THE PH TO 6.5 OR HIGHER.
   B. ORGANIC CONTENT OF TOPSOIL SHALL BE NOT LESS THAN 1.5% BY WEIGHT.
   C. TOPSOIL HAVING SOLUBLE SALT CONTENT GREATER THAN 500 PARTS PER MILLION SHALL NOT BE USED.
   D. NO SOD OR SEED SHALL BE PLACED ON SOIL WHICH HAS BEEN TREATED WITH SOIL STERILANTS OR CHEMICALS USED FOR WEED CONTROL UNIT SUFFICIENT TIME HAS ELAPSED (14 DAYS MIN.) TO PERMIT DISSIPATION OF PHYTO-TOXIC MATERIALS.

NOTE: TOPSOIL SUBSTITUTES OR AMENDMENTS, AS RECOMMENDED BY A QUALIFIED AGRONOMIST OR SOIL SCIENTIST AND APPROVED BY THE APPROPRIATE APPROVAL AUTHORITY, MAY BE USED IN LIEU OF NATURAL TOPSOIL.

   2. PLACE TOPSOIL (IF REQUIRED) AND APPLY SOIL AMENDMENTS AS SPECIFIED IN 20.0 VEGETATIVE STABILIZATION -SECTION I - VEGETATIVE STABILIZATION METHODS AND MATERIALS.

V. TOPSOIL APPLICATION
   1. WHEN TOPSILING, MAINTAIN NEEDED EROSION AND SEDIMENT CONTROL PRACTICES SUCH AS DIVERSIONS, GRADE STABILIZATION STRUCTURES, EARTH DIKES, SLOPE SILT FENCE AND SEDIMENT TRAPS AND BASINS.
   2. GRADES ON THE AREAS TO BE TOPSOILED, WHICH HAVE BEEN PREVIOUSLY ESTABLISHED, SHALL BE MAINTAINED, ALBEIT 4"-8" HIGHER IN ELEVATION.
   3. TOPSOIL SHALL BE UNIFORMLY DISTRIBUTED IN A 4"-8" LAYER AND LIGHTLY COMPACTED TO A MINIMUM THICKNESS OF 4". SPREADING SHALL BE PERFORMED IN SUCH A MANNER THAT SODDING OR SEEDING CAN PROCEED WITH A MINIMUM OF ADDITIONAL SOIL PREPARATION AND TILLAGE. ANY IRREGULARITIES IN THE SURFACE RESULTING FROM TOPSOILING OR OTHER OPERATIONS SHALL BE CORRECTED IN ORDER TO PREVENT THE FORMATION OF DEPRESSIONS OR WATER POCKETS.
   4. TOPSOIL SHALL NOT BE PLACED WHILE THE TOPSOIL OR SUBSOIL IS IN A FROZEN OR MUDDY CONDITION, WHEN THE SUBSOIL IS EXCESSIVELY WET OR IN A CONDITION THAT MAY OTHERWISE BE DETRIMENTAL TO PROPER GRADING AND SEEDBED PREPARATION.

DUST CONTROL SPECIFICATIONS

TEMPORARY METHODS:

1. MULCHES - SEE STANDARDS FOR VEGETATIVE STABILIZATION WITH MULCHES ONLY. MULCH SHOULD BE CRIMPED OR TACKED TO PREVENT BLOWING.
2. VEGETATIVE COVER - SEE STANDARDS FOR TEMPORARY VEGETATIVE COVER.
3. TILLAGE - TO ROUGHEN SURFACE AND BRING CLODS TO THE SURFACE. THIS IS AN EMERGENCY MEASURE WHICH SHOULD BE USED BEFORE SOIL BLOWING STARTS. BEGIN PLOWING ON WINDWARD SIDE OF SITE. CHISEL-TYPE PLOWS SPACED ABOUT 12 INCHES APART. SPRING TOOTHED HARROWS AND SIMILAR PLOWS ARE EXAMPLES OF EQUIPMENT WHICH MAY PRODUCE THE DESIRED EFFECT.
4. IRRIGATION-THIS IS GENERALLY DONE AS AN EMERGENCY TREATMENT. SITE IS SPRINKLED WITH WATER UNTIL THE SURFACE IS MOIST. REPEAT AS NEEDED. AT NO TIME SHOULD THE SITE BE IRRIGATED TO THE POINT THE RUNOFF BEGINS TO FLOW.
5. BARRIERS-SOLID BOARD FENCES, SNOW FENCES, BURLAP FENCES, STRAW BALES, AND SIMILAR MATERIAL CAN BE USED TO CONTROL AIR CURRENTS AND SOIL BLOWING. BARRIERS PLACED AT RIGHT ANGLES TO PREVAILING CURRENTS AT INTERVALS OF ABOUT 10 TIMES THEIR HEIGHT ARE EFFECTIVE IN CONTROLLING SOIL BLOWING.
6. CALCIUM CHLORIDE-APPLY AT RATES THAT WILL KEEP SURFACE MOIST, MAY NEED RETREATMENT.

PERMANENT METHODS:

1. PERMANENT VEGETATION-SEE STANDARDS FOR PERMANENT VEGETATIVE COVER, AND PERMANENT STABILIZATION WITH SOD. EXISTING TREES OR LARGE SHRUBS MAY AFFORD VALUABLE PROTECTION IF LEFT IN PLACE.
2. TOPSOILING-COVERING WITH LESS EROSIVE SOIL MATERIALS. SEE STANDARDS FOR TOPSOILING.
3. STONE-COVER SURFACE WITH CRUSHED STONE OR COARSE GRAVEL.

I. DESCRIPTION

THE WORK SHALL CONSIST OF INSTALLING FLOW DIVERSIONS FOR THE PURPOSE OF EROSION CONTROL WHEN CONSTRUCTION ACTIVITIES TAKE PLACE WITHIN THE STREAM CHANNEL SUCH AS BANK STABILIZATION OR BRIDGE ABUTMENT CONSTRUCTION.

II. MATERIAL SPECIFICATIONS

1. SANDBAGS: SANDBAGS SHALL CONSIST OF MATERIALS WHICH ARE RESISTANT TO ULTRA-VIOLET RADIATION, TEARING AND PUNCTURE AND WOVEN TIGHTLY ENOUGH TO PREVENT LEAKAGE OF FILL MATERIAL (i.e., SAND, FINE GRAVEL, ETC.).
2. STONE: STONE SHALL BE WASHED AND HAVE A MINIMUM DIAMETER OF 6 INCHES.
3. SHEETING: SHEETING SHALL CONSIST OF POLYETHYLENE OR OTHER MATERIAL WHICH IS IMPERVIOUS AND RESISTANT TO PUNCTURE AND TEARING.

III. CONSTRUCTION REQUIREMENTS

1. ALL EROSION AND SEDIMENT CONTROL DEVICES SHALL BE INSTALLED AS THE FIRST ORDER OF WORK.
2. THE DIVERSION STRUCTURE SHALL BE INSTALLED FROM UPSTREAM TO DOWNSTREAM.
3. THE HEIGHT OF THE DIVERSION STRUCTURE SHALL BE ONE HALF THE DISTANCE FROM THE STREAM BED TO THE STREAM BANK PLUS ONE FOOT, AS INDICATED ON THE CROSS-SECTION VIEW.
4. ALL EXCAVATED MATERIALS SHALL BE DISPOSED OF IN A SCD APPROVED DISPOSAL AREA OUTSIDE THE 100-YEAR FLOODPLAIN UNLESS OTHERWISE APPROVED ON THE PLANS BY THE WRA.
5. ALL DEWATERING OF THE CONSTRUCTION AREA SHALL BE PUMPED TO A DEWATERING BASIN PRIOR TO RE-ENTERING THE STREAM.
6. SHEETING SHALL BE OVERLAPPED SUCH THAT THE UPSTREAM PORTION COVERS THE DOWNSTREAM PORTION WITH AT LEAST AN 18 INCH OVERLAP.
7. SEDIMENT CONTROL DEVICES ARE TO REMAIN IN PLACE UNTIL ALL DISTURBED AREAS ARE STABILIZED IN ACCORDANCE WITH AN APPROVED SEDIMENT AND EROSION CONTROL PLAN AND THE INSPECTING AUTHORITY APPROVES THEIR REMOVAL.

SANDBAG / STONE DIVERSION

NOT TO SCALE

I. DESCRIPTION

THE WORK SHALL CONSIST OF THE CONSTRUCTION OF A DEWATERING BASIN FOR THE PURPOSE OF RECEIVING SEDIMENT-LADEN WATER PUMPED FROM A CONSTRUCTION SITE TO ALLOW FILTRATION BEFORE THE WATER RE-ENTERS THE WATERWAY.

II. MATERIAL SPECIFICATIONS

1. RIPRAP: RIPRAP SHALL CONSIST OF 4-8 INCH WASHED STONE OR GRAVEL.
2. FILTER FABRIC: THE FILTER CLOTH SHALL BE A WOVEN OR NONWOVEN FABRIC CONSISTING ONLY OF CONTINUOUS CHAIN POLYMERIC FILAMENTS OR YARNS OF POLYESTER. THE FABRIC SHALL BE INERT TO COMMONLY ENCOUNTERED CHEMICALS, HYDROCARBONS, MILDEW AND ROT RESISTANT. NO. 6 STONE (ASSHTO 57) MAY BE USED ON THE INNER-FACE FOR FILTERING INSTEAD OF FABRIC.
3. STRAW BALES: STRAW BALES SHALL MEET THE CRITERIA AS SPECIFIED IN THE MARYLAND STANDARDS AND SPECIFICATIONS FOR SOIL EROSION AND SEDIMENT CONTROL.

III. CONSTRUCTION REQUIRMENTS

1. THE CONTRACTOR SHALL INSTALL ALL SEDIMENT AND EROSION CONTROL DEVICES AS THE FIRST ORDER OF BUSINESS.
2. EXCAVATED MATERIALS SHALL BE STORED SUCH THAT SEDIMENTS ARE PREVENTED FROM ENTERING THE WATERWAY i.e., SEDIMENT PERIMETER CONTROLS MAY BE NECESSARY.
3. EXCAVATED SUBSOIL AND TOPSOIL SHALL BE KEPT SEPARATE AND REPLACED IN THEIR NATURAL ORDER.
4. ANY DEWATERING OF THE CONSTRUCTION AREA SHALL BE FILTERED THROUGH A DEWATERING BASIN PRIOR TO ENTERING THE WATERWAY.
5. THE DEWATERING BASIN SHALL BE EXCAVATED TO A MINIMUM DEPTH OF 3 FEET.
6. ONCE THE DEWATERING BASIN BECOMES FILLED TO ONE HALF OF THE EXCAVATED DEPTH, ACCUMULATED SEDIMENT SHALL BE REMOVED AND DISPOSED OF IN A SCD APPROVED DISPOSAL AREA OUTSIDE THE 100 YEAR FLOODPLAIN UNLESS OTHERWISE APPROVED ON THE PLANS BY THE WRA.
7. SEDIMENT CONTROL DEVICES ARE TO REMAIN IN PLACE UNTIL ALL DISTURBED AREAS ARE STABILIZED AND THE INSPECTING AUTHORITY APPROVES THEIR REMOVAL. ALL GROUND CONTOURS SHALL BE RETURNED TO THEIR ORIGINAL CONDITION UNLESS SPECIFICALLY APPROVED OTHERWISE BY THE ADMINISTRATION.

DEWATERING BASINS

NOT TO SCALE

REVIEWED FOR HOWARD SCD
AND MEETS TECHNICAL REQUIREMENTS
12/2/01
USDA-NATURAL RESOURCES CONSERVATION SERVICE
DATE

THIS DEVELOPMENT PLAN IS APPROVED FOR SOIL EROSION AND SEDIMENT CONTROL. HOWARD SOIL CONSERVATION DISTRICT. APPROVED.
12/2/01
HOWARD S.C.D.
DATE

DPZ FILE 01-145

APPROVED: HOWARD COUNTY DEPARTMENT OF PUBLIC WORKS
12-13-01
CHIEF, BUREAU OF HIGHWAYS HS
DATE

APPROVED: HOWARD COUNTY DEPARTMENT OF PLANNING & ZONING
12/17/01
CHIEF, DIVISION OF LAND DEVELOPMENT HB
DATE

12/14/01
CHIEF, DEVELOPMENT ENGINEERING DIVISION MK
DATE

DATE	NO.	REVISION
8-15-02	1	REVISED SITE ANALYSIS

OWNER / DEVELOPER:

THE HOWARD RESEARCH & DEVELOPMENT CORPORATION
THE ROUSE BUILDING
10275 LITTLE PATUXENT PARKWAY
COLUMBIA, MARYLAND 21044
PHONE: (410) 992-6370

PROJECT: **EMERSON SECTION 2**
PHASE 2

AREA TAX MAP NO. 47 P/O PARCEL P.837 P. 3. P. 482
ELECTION DISTRICT No.6 HOWARD COUNTY, MARYLAND

TITLE **SEDIMENT CONTROL NOTES & SPECIFICATIONS**

MORRIS & RITCHIE ASSOCIATES, INC.
ENGINEERS, PLANNERS, SURVEYORS AND LANDSCAPE ARCHITECTS
110 WEST ROAD SUITE 245
TOWSON, MARYLAND 21204
(410) 821-1690
FAX (410) 821-1748

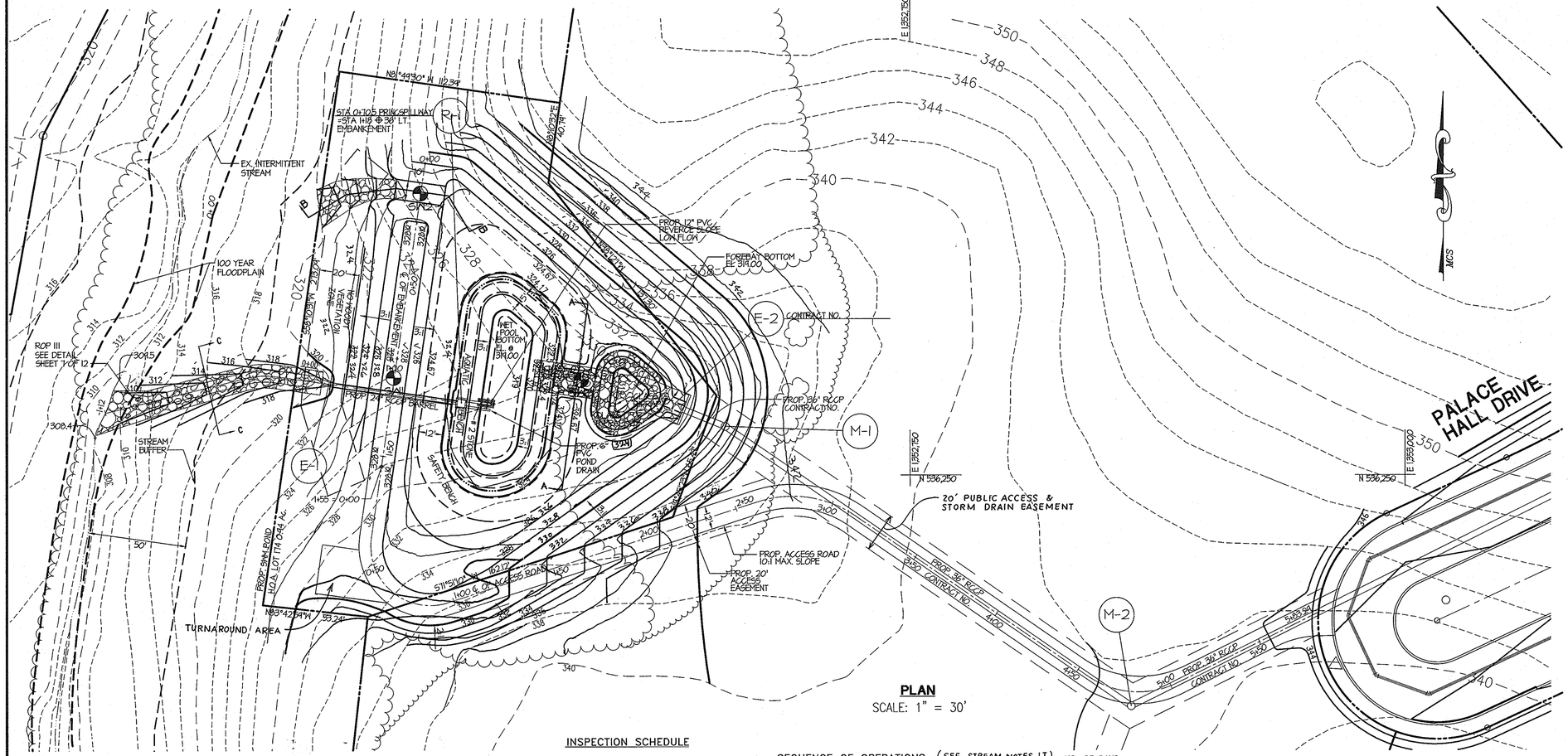
8/28/01
DATE

DONALD MITTEN No. 16581

PROFESSIONAL ENGR. NO. 16581

PROJECT NO.: 11494
SCALE: NONE
DATE: AUGUST 24, 2001
DRAWN BY: MLS
DESIGNED BY: TAM
REVIEW BY: DNM
DRAWING NO. 7 OF 12

F-01-145



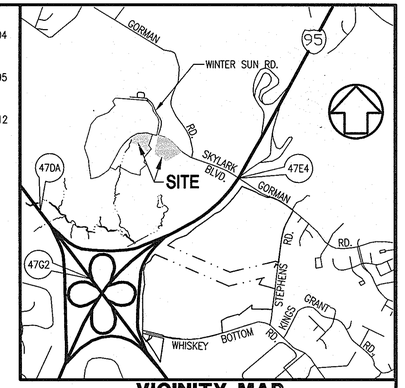
PLAN
SCALE: 1" = 30'

BENCHMARKS

475A NORTHING: 163191.9104
EASTING: 4112865759
ELEVATION: 315.905 FT.

47E4 NORTHING: 163326.2295
EASTING: 413136.2550
ELEVATION: 338.909 FT.

47G2 NORTHING: 162440.1212
EASTING: 4118539279
ELEVATION: 364.210 FT.



VICINITY MAP
SCALE: 1" = 2000'

SHANABERGER & LANE
8726 TOWN & COUNTRY BLVD.
SUITE 201
ELLICOTT CITY, MARYLAND 21043

STATE OF MARYLAND — RICHARD F. LANE — NO. 301 — REGISTERED PROPERTY LINE SURVEYOR

Richard F. Lane #301

ROAD & STORM DRAIN AS-BUILT

STREAM NOTES:

1. NOTIFY MDE'S WATER MANAGEMENT ADMINISTRATION INSPECTION & COMPLIANCE SECTION AT (410) 631-3510 AT LEAST FIVE DAYS PRIOR TO BEGINNING ANY WORK IN STREAMS OR 100-YEAR FLOODPLAINS, AND AGAIN WITHIN FIVE DAYS OF COMPLETION OF ANY IN-STREAM WORK.
2. IN-STREAM WORK PROHIBITTED FROM MARCH 1 THRU JUNE 15, INCLUSIVE, FOR A USE I STREAM.

GENERAL NOTES

1. UNLESS OTHERWISE NOTED, ALL CONSTRUCTION AND WORKMANSHIP SHALL BE IN ACCORDANCE WITH:
   A. THE HOWARD COUNTY DESIGN MANUAL VOLUME I AND THE MARYLAND STORMWATER DESIGN MANUAL VOLUMES 1 & 2.
   B. MARYLAND SOIL CONSERVATION MARYLAND SERVICE STANDARDS AND SPECIFICATIONS POND CODE 378, JANUARY, 2000.
   C. MARYLAND DEPARTMENT OF TRANSPORTATION STATE HIGHWAY ADMINISTRATION, 1993, STANDARD SPECIFICATIONS FOR CONSTRUCTION AND MATERIALS.
2. THIS SITE LIES WITHIN THE PATUXENT RIVER WATERSHED WHICH IS DESIGNATED CLASS I RECREATIONAL WATERS BY THE STATE OF MARYLAND.
3. THE FACILITY IS PRIVATE AND MAINTENANCE RESPONSIBILITY WILL BE THAT OF THE HOME OWNERS ASSOCIATION.
4. STORMWATER QUANTITY MANAGEMENT IS NOT REQUIRED FOR THE 2 AND 10 YEAR STORMS.
5. THE PROPOSED STORMWATER MANAGEMENT POND SHOWN HEREON IS A WET POND.
6. RIPRAP OUTFALL CONSTRUCTION IN WATERWAY/ 100 YEAR FLOODPLAIN TO BE IN ACCORDANCE WITH MDE PERMIT NO. _____.

MD. 378 SMALL POND SPEC QUALIFIER

ALL STORMWATER MANAGEMENT AND WATER QUALITY FACILITIES ARE TO BE BUILT TO THE SOIL CONSERVATION SERVICE STANDARDS AND SPECIFICATIONS FOR SMALL PONDS NO. 378 AND/OR THE MARYLAND DEPARTMENT OF NATURAL RESOURCES WATER RESOURCES ADMINISTRATION STANDARDS AND SPECIFICATIONS FOR INFILTRATIONS PRACTICES.

NOTICE: OWNER & CONTRACTOR

'ENGINEER-IN-CHARGE' SHALL BE NOTIFIED TWO (2) WEEKS IN ADVANCE OF CONSTRUCTION. FACILITY CONSTRUCTION MUST BE MONITORED AND INSPECTED FOR AS-BUILT CERTIFICATION.

AS BUILT CERTIFICATION

I HEREBY CERTIFY THAT THE FACILITY SHOWN ON THIS PLAN WAS CONSTRUCTED AS SHOWN ON THE "AS BUILT" PLANS AND MEETS THE APPROVED PLANS AND SPECIFICATIONS.

_____
SIGNATURE OF ENGINEER DATE

_____
PRINT NAME TITLE

CERTIFY MEANS TO STATE OR DECLARE A PROFESSIONAL OPINION BASED upon onsite inspections and material tests which are conducted DURING CONSTRUCTION. THE ONSITE INSPECTION AND MATERIAL TESTS ARE THOSE INSPECTIONS AND TESTS DEEMED SUFFICIENT AND APPROPRIATE BY COMMONLY ACCEPTED ENGINEERED STANDARDS. CERTIFY DOES NOT MEAN OR IMPLY A GUARANTEE BY THE ENGINEER NOR DOES AN ENGINEER'S CERTIFICATION RELIEVE ANY OTHER PARTY FROM MEETING REQUIREMENTS IMPOSED BY CONTRACT, EMPLOYMENT, OR OTHER MEANS, INCLUDING MEETING COMMONLY ACCEPTED INDUSTRY PRACTICES.

LEGEND

PROPERTY LINE
EXISTING GROUND
PROPOSED GRADE
PERMANENT WET POOL
EX. STORM DRAIN PIPE
PROPOSED SPOT ELEV. *360.2
SOIL BORING
RIPRAP
PROPOSED 42" FENCE
EXISTING WOODS

NOTE: TREES, SHRUBS AND OTHER WOODY VEGETATION NOT ALLOWED WITHIN FIFTY (50) FEET OF THE INLET STRUCTURE AND NOT ALLOWED WITHIN FIFTEEN (15) FEET OF ANY PORTION OF THE EMBANKMENT.

INSPECTION SCHEDULE

A. INSPECTION SCHEDULE AND REPORTS
1. THE DEVELOPER SHALL NOTIFY THE COUNTY AT LEAST 48 HOURS COMMENCING ANY WORK IN CONJUNCTION WITH THE STORMWATER MANAGEMENT PLAN AND UPON COMPLETION OF A PROJECT WHEN A FINAL INSPECTION WILL BE CONDUCTED.
2. INSPECTIONS SHALL BE CONDUCTED BY THE DEPARTMENT OF PUBLIC WORKS OR ITS AUTHORIZED REPRESENTATIVE. WRITTEN INSPECTION REPORTS SHALL BE MADE OF THE PERIODIC INSPECTIONS NECESSARY DURING CONSTRUCTION OF STORMWATER MANAGEMENT SYSTEMS TO ENSURE COMPLIANCE WITH THE APPROVED PLAN.
3. WRITTEN INSPECTION REPORTS SHALL INCLUDE:
   A. THE DATE AND LOCATION OF THE INSPECTION;
   B. WHETHER CONSTRUCTION WAS IN COMPLIANCE WITH THE APPROVED STORMWATER MANAGEMENT PLAN;
   C. ANY VARIATIONS FROM THE APPROVED CONSTRUCTION SPECIFICATIONS; AND
   D. ANY VIOLATIONS THAT EXIST.
4. THE OWNER/DEVELOPER AND ON-SITE PERSONNEL SHALL BE NOTIFIED IN WRITING WHEN VIOLATIONS ARE OBSERVED. WRITTEN NOTIFICATION SHALL DESCRIBE THE NATURE OF THE VIOLATION AND THE REQUIRED CORRECTIVE ACTION.
5. NO WORK SHALL PROCEED UNTIL THE COUNTY INSPECTS AND APPROVES THE WORK PREVIOUSLY COMPLETED AND FURNISHES THE DEVELOPER WITH THE RESULTS OF THE INSPECTION REPORTS AFTER COMPLETION OF EACH REQUIRED INSPECTION.

B. INSPECTION REQUIREMENTS DURING CONSTRUCTION
1. AT A MINIMUM, REGULAR INSPECTIONS SHALL BE MADE AND DOCUMENTED AT THE FOLLOWING SPECIFIED STAGES OF CONSTRUCTION:
   A. PONDS
      (I) UPON COMPLETION OF EXCAVATION TO SUB-FOUNDATION AND WHEN REQUIRED, INSTALLATION OF STRUCTURAL SUPPORTS OR REINFORCEMENT FOR STRUCTURES, INCLUDING BUT NOT LIMITED TO CORE TRENCHES FOR STRUCTURAL EMBANKMENTS, INLET AND OUTLET STRUCTURES, ANTI-SEEP COLLARS OR FILTER DIAPHRAGMS, WATERTIGHT CONNECTORS ON PIPES, AND TRENCHES FOR ENCLOSED STORM DRAIN FACILITIES;
      (II) DURING PLACEMENT OF STRUCTURAL FILL, CONCRETE, AND INSTALLATION OF PIPING AND CATCH BASINS;
      (III) DURING BACKFILL OF FOUNDATIONS AND TRENCHES;
      (IV) DURING EMBANKMENT CONSTRUCTION; AND
      (V) UPON COMPLETION OF FINAL GRADING AND ESTABLISHMENT OF PERMANENT

NOTE: NO WORK SHALL PROCEED UNTIL THE ENGINEER INSPECTS AND APPROVES THE WORK PREVIOUSLY COMPLETED.

MAINTENANCE SCHEDULE

1. THE FACILITY SHALL BE INSPECTED ANNUALLY, IN ACCORDANCE WITH THE CHECKLIST AND REQUIREMENTS CONTAINED WITHIN USDA, SCS "STANDARDS AND SPECIFICATIONS FOR PONDS" (MD-378). THE POND OWNER SHALL BE RESPONSIBLE FOR THE SAFETY OF THE POND AND THE CONTINUED OPERATION, SURVEILLANCE, INSPECTION, AND MAINTENANCE THEREOF.
2. VEGETATED COVER SHALL BE MAINTAINED AT ALL TIMES.
3. RILLS ON THE SLOPES OF THE DAM AND WASHED IN THE EARTH SPILLWAY SHALL BE FILLED WITH SUITABLE MATERIAL AND THOROUGHLY COMPACTED. THESE AREAS SHALL BE RESEEDED OR RESODDED, LIMED, AND FERTILIZED AS NEEDED.
4. ALL APPURTENANCES SHALL BE KEPT FREE OF TRASH.
5. SEDIMENT REMOVAL IN THE FOREBAY SHALL OCCUR NEW WHEN 50% OF THE TOTAL FOREBAY CAPACITY HAS BEEN LOST.
6. VEGETATION GROWING ON THE EMBANKMENT TOP AND FACES OF THE FOREBAY OR BASIN IS NOT ALLOWED TO EXCEED 18 INCHES IN HEIGHT AT ANY TIME.
7. SEDIMENTS EXCAVATED FROM STORMWATER PONDS THAT DO NOT RECEIVE RUNOFF FROM DESIGNATED HOTSPOTS ARE NOT CONSIDERED TOXIC OR HAZARDOUS MATERIAL AND CAN BE SAFELY DISPOSED BY EITHER LAND APPLICATION OR LAND FILLING. SEDIMENT TESTING MAY BE REQUIRED PRIOR TO SEDIMENT DISPOSAL WHEN A HOTSPOT LAND USE IS PRESENT.
8. SEDIMENT REMOVED FROM STORMWATER PONDS SHOULD BE DISPOSED OF ACCORDING TO CURRENT EROSION AND SEDIMENT CONTROL REGULATIONS.

SEQUENCE OF OPERATIONS (SEE STREAM NOTES LT.)

	NO. OF DAYS
1. NOTIFY CERTIFYING ENGINEER (410-821-1690) AT LEAST 5 DAYS PRIOR TO COMMENCING CONSTRUCTION OF POND TO ENSURE THAT THE KEY COMPONENTS OF THE POND WILL BE INSPECTED DURING CONSTRUCTION AND THAT THE "AS-BUILT" MAY BE ACCOMPLISHED LATER.	N/A
2. THE CONTRACTOR SHALL OBTAIN A COPY OF THE GEOTECHNICAL EVALUATION AND SEEPAGE ANALYSIS PRIOR TO COMMENCING CONSTRUCTION.	N/A
3. NOTIFY HOWARD COUNTY DEPARTMENT OF INSPECTIONS LICENSES AND PERMITS (410-313-1655) AT LEAST 48 HOURS PRIOR TO BEGINNING WORK ON SITE.	2
4. WITH THE PERMISSION OF THE SEDIMENT CONTROL INSPECTOR, CLEAR, GRUB FOR, AND INSTALL SEDIMENT CONTROL DEVICES FOR CONSTRUCTION OF POND AND OUTFALLS. THIS WOULD INCLUDE SILT FENCE, TEMPORARY SWALES AND EARTH DIKES (CLEAN WATER DIVERSIONS) AND ASSOCIATED RIP RAP OUTFALL PROTECTION. THIS WOULD NOT INCLUDE SANDBAG DIVERSION & DEWATERING BASIN.	4
5. EXCAVATE FOR CUTOFF TRENCH. BASED ON THE SUBSURFACE INVESTIGATION THE RELATIVELY IMPERVIOUS SOILS CONFORMING TO THE UNIFIED SOILS CLASSIFICATION CH, SC, CH OR CL WERE NOT ENCOUNTERED IN THE AREA OF THE POND. A DETAILED SEE PAGE ANALYSIS WAS PERFORMED FOR THE POND SITE. AS A RESULT OF THE ANALYSIS THE ON-SITE SILTS AND SILTY SANDS WERE CONSIDERED TO BE SUITABLE FOR USE AS CUTOFF TRENCH MATERIALS. THE EMBANKMENT CONSTRUCTION MUST BE SUPERVISED BY A GEOTECHNICAL ENGINEER.	2
6. BACKFILL AND COMPACT CUTOFF TRENCH IN 8" LIFTS WITH APPROVED MATERIAL TO PIPE GRADE LEVEL.	2
7. INSTALL CONCRETE RISER.	2
8. INSTALL SANDBAG DIVERSION AND DEWATERING BASIN. CONSTRUCT AND STABILIZE THE OUTFALL CHANNEL, WORKING FROM DOWNSTREAM TO UP STREAM AND LEAVING IN STABLIZED CONDITION AT END OF WORKING DAY.	3
9. INSTALL BARREL W/ CONCRETE CRADLE, ANTI-SEEP COLLARS, AND CONCRETE END SECTION. INSTALL SUMP PIT WITHIN THE FACILITY.	2
10. ATTACH TEMPORARY DRAW-DOWN DEVICE TO THE POND DRAIN.	0
11. BACKFILL AND COMPACT AROUND BARREL AND ANTI-SEEP COLLARS, MAKING SURE THAT THERE ARE NO VOIDS AND THAT BACKFILL AND COMPACTION ARE DONE IN 4" LIFTS.	1/2
12. PIPE SYSTEM MAY NOW ACCEPT FLOW FROM POND (1.8 ACRES) WORK AREA ONLY. NO FLOW IS ALLOWED TO ENTER FROM STORM DRAIN SYSTEM UPSTREAM FROM E-2 UNTIL SITE IS FULLY STABILIZED.	0
13. CONSTRUCT CORE AND EMBANKMENT TO FINAL GRADE BUILDING UP WITH PROPER COMPACTION AND APPROVED MATERIAL.	5
14. COMPLETE GRADING IN THE REMAINDER OF THE POND AREA.	3
15. CONSTRUCT EMERGENCY SPILLWAY PER PLAN.	1/2
16. INSTALL FOREBAY AND ASSOCIATED EARTH BERM.	1
17. VEGETATIVELY STABILIZE ALL DISTURBED AREAS.	1
18. WHEN THE SITE IS FULLY STABLIZED AND WITH THE PERMISSION OF THE SEDIMENT CONTROL INSPECTOR REMOVE THE TEMPORARY DRAW-DOWN DEVICE. INSTALL THE BAR GUARD ON THE POND DRAIN AND THE REVERSE SLOPE DRAIN. STABILIZE ANY REDISTURBED AREAS. THE POND MAY NOW RECIEVE FLOW FROM THE STORM DRAIN SYSTEM UP STREAM OF E-2.	2
19. AN AS-BUILT SURVEY AND PROFESSIONAL ENGINEER'S CERTIFICATION IS TO BE COMPLETED WITHIN 30 DAYS OF CONSTRUCTION.	30

CONTRACTOR'S "AS-BUILT" NOTE

AS-BUILT PLANS AND CERTIFICATION ARE REQUIRED FOR THIS STORMWATER MANAGEMENT FACILITY. THESE MUST BE PREPARED AND SEALED BY A REGISTERED PROFESSIONAL ENGINEER.
THE STORMWATER MANAGEMENT PERMIT SECURITY WILL NOT BE RELEASED UNTIL THE AS-BUILT PLAN AND CERTIFICATION ARE APPROVED BY HOWARD COUNTY.

IN ORDER TO PREPARE THE REQUIRED AS-BUILT PLANS AND CERTIFICATION, THIS STORMWATER MANAGEMENT FACILITY MUST BE INSPECTED BY THE ENGINEER AT SPECIFIC STAGES DURING CONSTRUCTION AS REQUIRED BY THE CURRENT HOWARD COUNTY STORMWATER MANAGEMENT POLICY AND DESIGN MANUAL. THE CONTRACTOR SHALL NOTIFY THE ENGINEER AT LEAST TEN (10) WORKING DAYS PRIOR TO STARTING ANY WORK SHOWN ON THESE PLANS.

HYDROLOGY SUMMARY

1. VOLUME SUMMARY WET POND DESIGN

A. WATER QUALITY VOLUME (WQ.) INCLUDING FOREBAY
   VOLUME REQUIRED: 0.15 Ac-FT.
   VOLUME PROVIDED : 0.26 Ac.-FT.
B. FOREBAY VOLUME
   VOLUME REQUIRED : 0.02 Ac-FT.
   VOLUME PROVIDED : 0.05 Ac-FT.
C. RECHARGE VOLUME (REV)
   VOLUME REQUIRED : 0.02 Ac-FT.
   VOLUME PROVIDED : 0.02 Ac-FT.
D. CHANNEL PROTECTION VOLUME
   VOLUME REQUIRED : 0.19 Ac-FT.
   VOLUME PROVIDED : 0.29 Ac-FT.

2. MANAGEMENT TO BE PROVIDED: WATER QUALITY (WET POND), QUANTITY: CHANNEL PROTECTION VOLUME (EXTENDED DETENTION)

LOCATION:	PATUXENT RIVER WATERSHED
DRAINAGE AREA:	12.07 ACRES (TO SWM POND #7)
TYPE OF FACILITY:	EMBANKMENT / EXCAVATION POND - EXTENDED DETENTION
STRUCTURE CLASS:	" A "
STORAGE HEIGHT PRODUCT:	10.6 AC-FT ^{2}
MAX. HEIGHT OF FILL:	6.0 FT.
FREEBOAD REQUIRED:	1.0 FT.
FREEBOAD PROVIDED:	1.0 FT.
PRINCIPAL SPILLWAY CAPACITY AT 100 YEAR STORM :	40.22 cfs

3. STORM ROUTING SUMMARY

DESIGN STORM	PROPOSED SWM FACILITY INFLOW	PROPOSED SWM FACILITY DISCHARGE	WATER SURFACE ELEV. W/ IN FACILITY	STORAGE VOLUME PROVIDED IN FACILITY
	cfs	cfs	ft	ac.-ft.
10 YEAR	60.8	41.6	326.25	0.5214
100 YEAR	88.3	66.7	327.06	0.8533

CONSULTANT'S HAZARD CLASS CERTIFICATION

"I CERTIFY THAT THIS POND MEETS ALL REQUIREMENTS FOR HAZARD CLASS A. [REQUIREMENTS AS STATED IN THE SOIL CONSERVATION SERVICE- MARYLAND STANDARDS AND SPECIFICATIONS FOR POND, CODE 378, JANUARY, 2000.] ALL NECESSARY INVESTIGATIONS AND COMPUTATIONS HAVE BEEN PERFORMED TO VERIFY THIS FINDING. A COPY OF SAID INFORMATION HAS BEEN SUPPLIED TO S.C.S./H.O.S.C.D."

Donald N Mitten 16581 8/28/01
SIGNATURE MD LICENSE NO. DATE

DONALD N. MITTEN
PRINT NAME

DPZ FILE 01-145

APPROVED: HOWARD COUNTY DEPARTMENT OF PUBLIC WORKS

Andrew M. Daneke 12-13-01
CHIEF, BUREAU OF HIGHWAYS DATE

APPROVED: HOWARD COUNTY DEPARTMENT OF PLANNING & ZONING

Cindy Carrier 12/17/01
CHIEF, DIVISION OF LAND DEVELOPMENT DATE

Chad Edmondson 12/14/01
CHIEF, DEVELOPMENT ENGINEERING DIVISION DATE

DATE	NO.	REVISION
8-15-02	1	REVISED POND DRAIN SIZE

OWNER / DEVELOPER:
THE HOWARD RESEARCH & DEVELOPMENT CORPORATION
THE ROUSE BUILDING
10275 LITTLE PATUXENT PARKWAY
COLUMBIA, MARYLAND 21044
PHONE: (410) 992-6370

BY THE DEVELOPER
I/WE CERTIFY THAT ALL DEVELOPMENT AND/OR CONSTRUCTION WILL BE DONE ACCORDING TO THIS PLAN, AND THAT ANY RESPONSIBLE PERSONNEL INVOLVED IN THE CONSTRUCTION PROJECT WILL HAVE A CERTIFICATE OF ATTENDANCE AT A DEPARTMENT OF THE ENVIRONMENT APPROVED TRAINING PROGRAM FOR THE CONTROL OF SEDIMENT AND EROSION BEFORE BEGINNING THE PROJECT. I SHALL ENGAGE A REGISTERED PROFESSIONAL ENGINEER TO SUPERVISE POND CONSTRUCTION AND PROVIDE THE HOWARD SOIL CONSERVATION DISTRICT WITH AN "AS-BUILT" PLAN OF THE POND WITHIN 30 DAYS OF COMPLETION. I ALSO AUTHORIZE PERIODIC ON-SITE INSPECTIONS BY THE HOWARD SOIL CONSERVATION DISTRICT.

DEVELOPER JOSEPH NECKER 08/29/01 DATE

BY THE ENGINEER:
I CERTIFY THAT THIS PLAN FOR POND CONSTRUCTION, EROSION AND SEDIMENT CONTROL REPRESENTS A PRACTICAL AND WORKABLE PLAN BASED ON MY PERSONAL KNOWLEDGE OF THE SITE CONDITIONS. THIS PLAN WAS PREPARED IN ACCORDANCE WITH THE REQUIREMENTS OF THE HOWARD SOIL CONSERVATION DISTRICT. I HAVE NOTIFIED THE DEVELOPER THAT HE/SHE MUST ENGAGE A REGISTERED PROFESSIONAL ENGINEER TO SUPERVISE POND CONSTRUCTION AND PROVIDE THE HOWARD SOIL CONSERVATION DISTRICT WITH AN "AS-BUILT" PLAN OF THE POND WITHIN 30 DAYS OF COMPLETION.

Donald N Mitten 8/28/01
ENGINEER : DONALD N. MITTEN DATE

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

U.S.D.A. NATURAL RESOURCES CONSERVATION SERVICE 12/2/01 DATE

THESE PLANS FOR SMALL POND CONSTRUCTION, SOIL EROSION AND SEDIMENT CONTROL MEET THE REQUIREMENTS OF THE HOWARD SOIL CONSERVATION DISTRICT.

HOWARD SOIL CONSERVATION DISTRICT 12/2/01 DATE

PROJECT: **EMERSON SECTION 2 PHASE 2**

AREA TAX MAP NO. 47 P/O PARCEL P.837 P. 3, P. 482
ELECTION DISTRICT No.6 HOWARD COUNTY, MARYLAND

TITLE **STORMWATER MANAGEMENT PLAN POND #7**

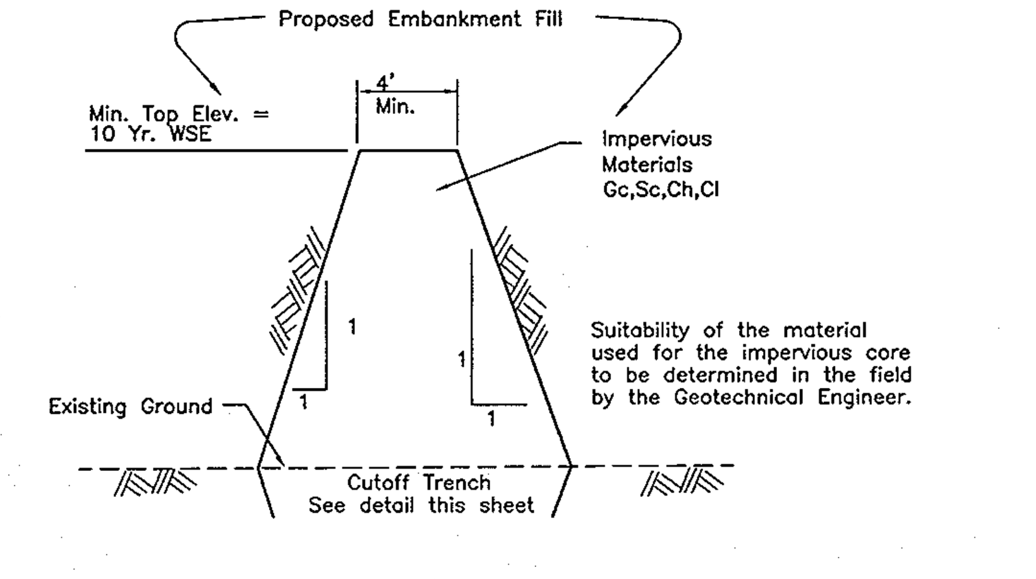
MORRIS & RITCHIE ASSOCIATES, INC.
ENGINEERS, PLANNERS, SURVEYORS AND LANDSCAPE ARCHITECTS
110 WEST ROAD SUITE 245
TOWSON, MARYLAND 21204
(410) 821-1690
FAX (410) 821-1748

8/28/01 — STATE OF MARYLAND — DONALD NEIL MITTEN — 16581 — PROFESSIONAL ENGINEER

PROJECT NO.:	11494
SCALE:	AS SHOWN
DATE:	AUGUST 24, 2001
DRAWN BY:	MLS
DESIGNED BY:	TAM
REVIEW BY:	DNM
PROFESSIONAL ENGR. NO.	16581
DRAWING NO.	8 OF 12

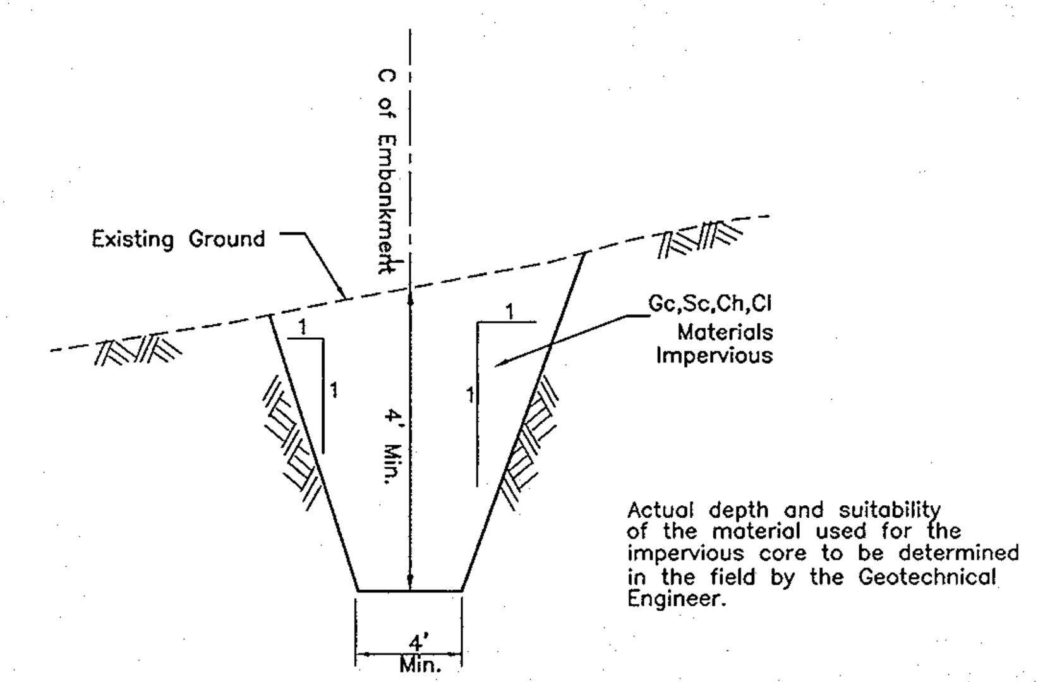
P:\11494\PLOT\phase_2_const\SHO8-11494SWMPLAN.dwg AUG 22, 2001 TIME: 12:54 PM

F-01-145



IMPERVIOUS CORE

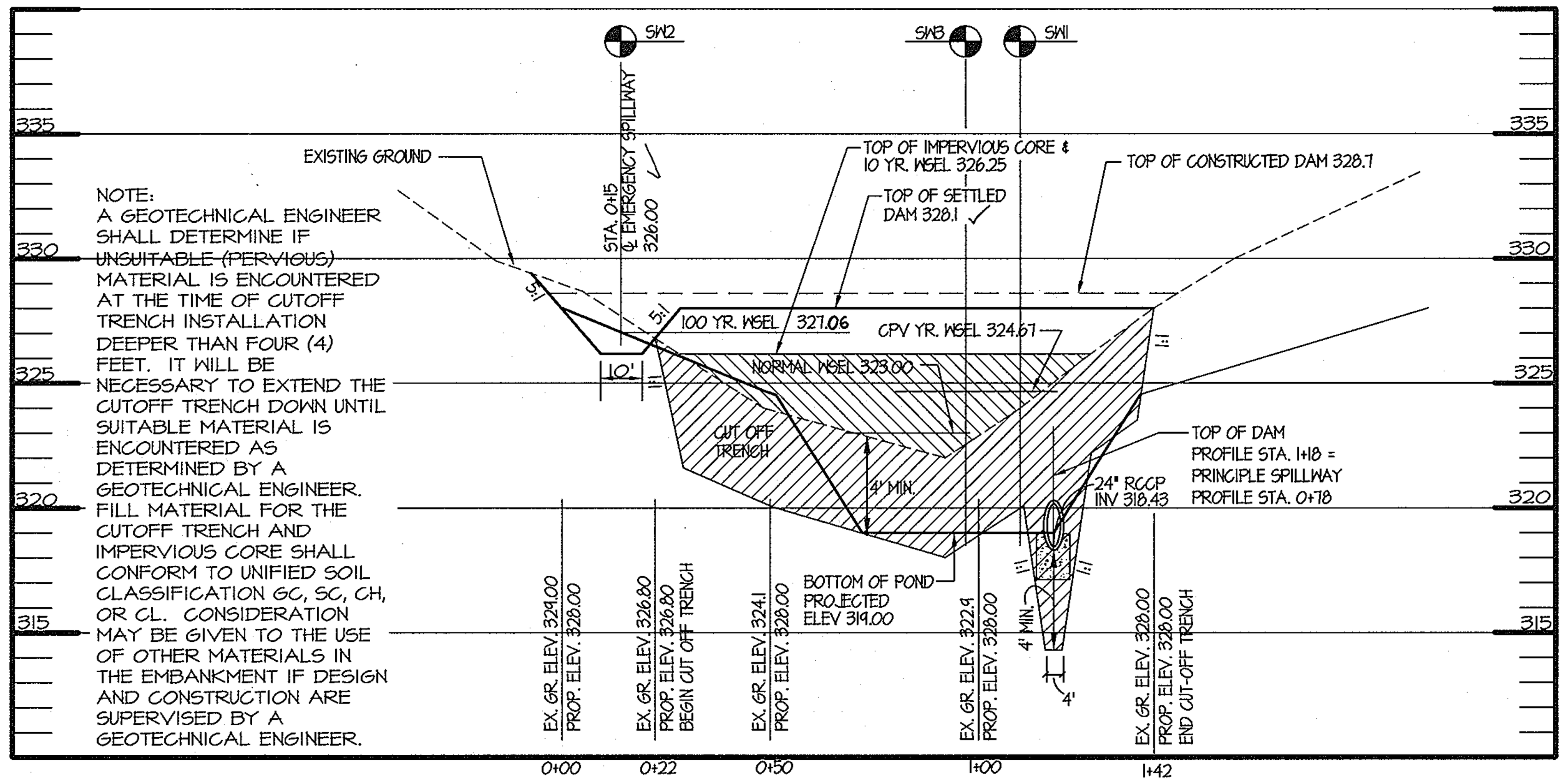
NOT TO SCALE



CUTOFF TRENCH

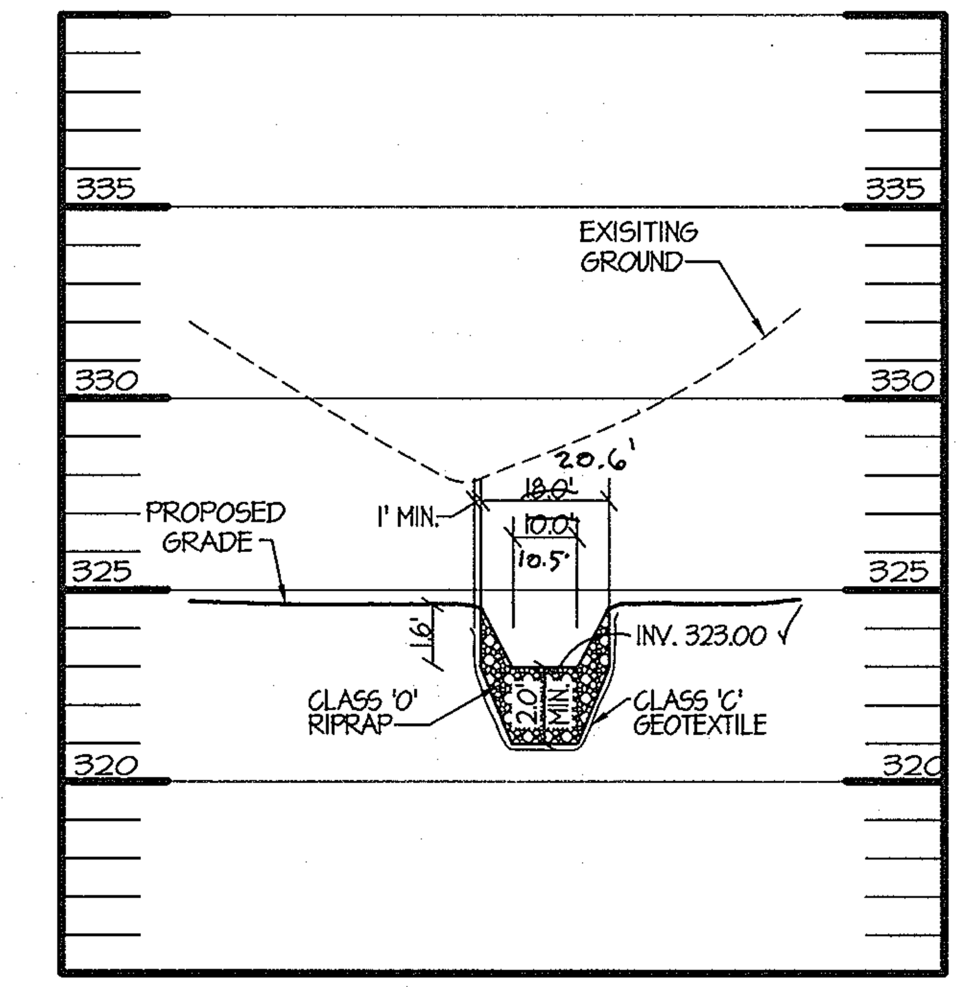
NOT TO SCALE

MD 378–Jan 00 Specs



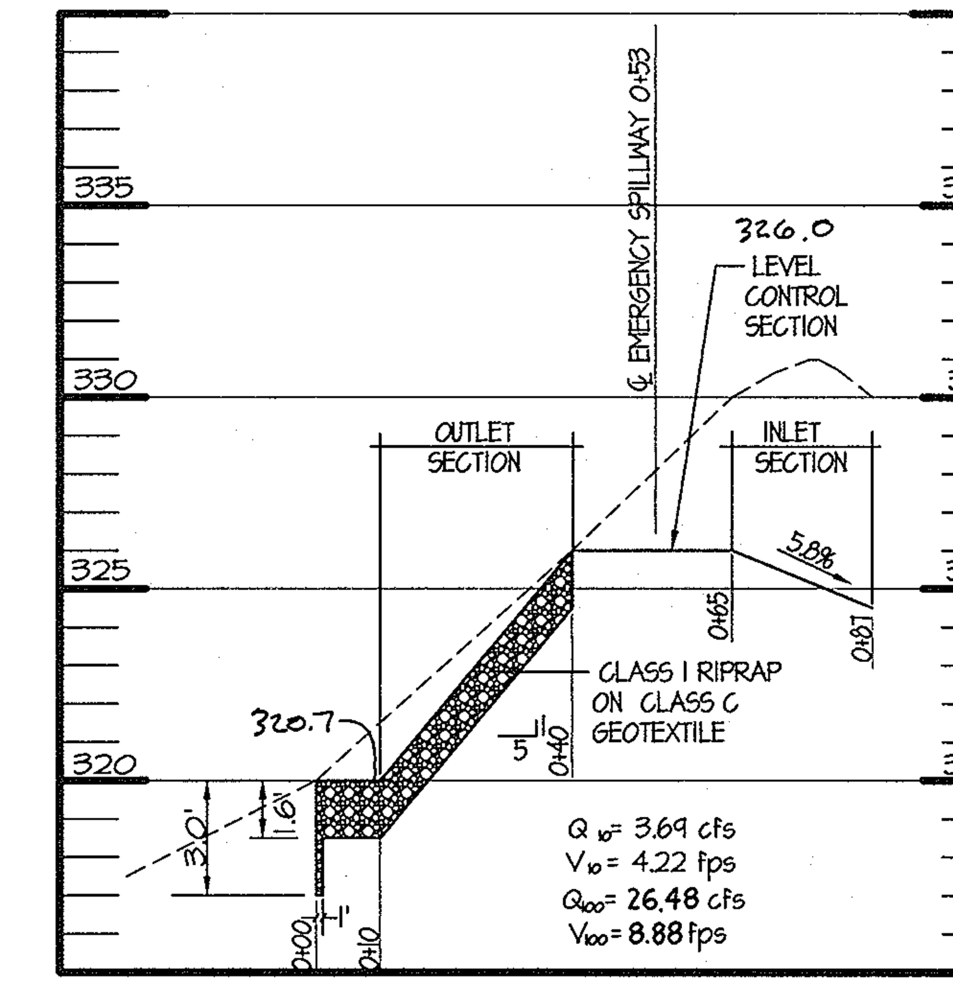
POND #1
CENTERLINE OF DAM PROFILE

SCALE: Hor. : 1" = 30'
Vert. : 1" = 5'



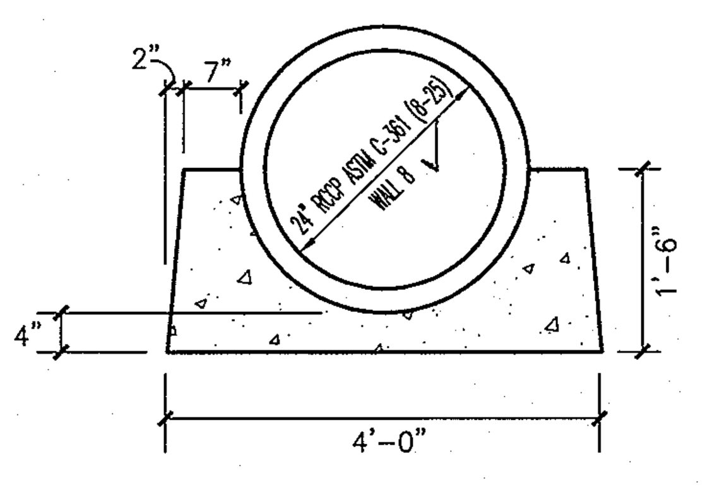
WEIR FROM FOREBAY
SECTION 'A-A' FROM PLAN

SCALE: Hor. : 1" = 30'
Vert. : 1" = 5'



EMERGENCY SPILLWAY PROFILE
SECTION 'B-B' FROM PLAN

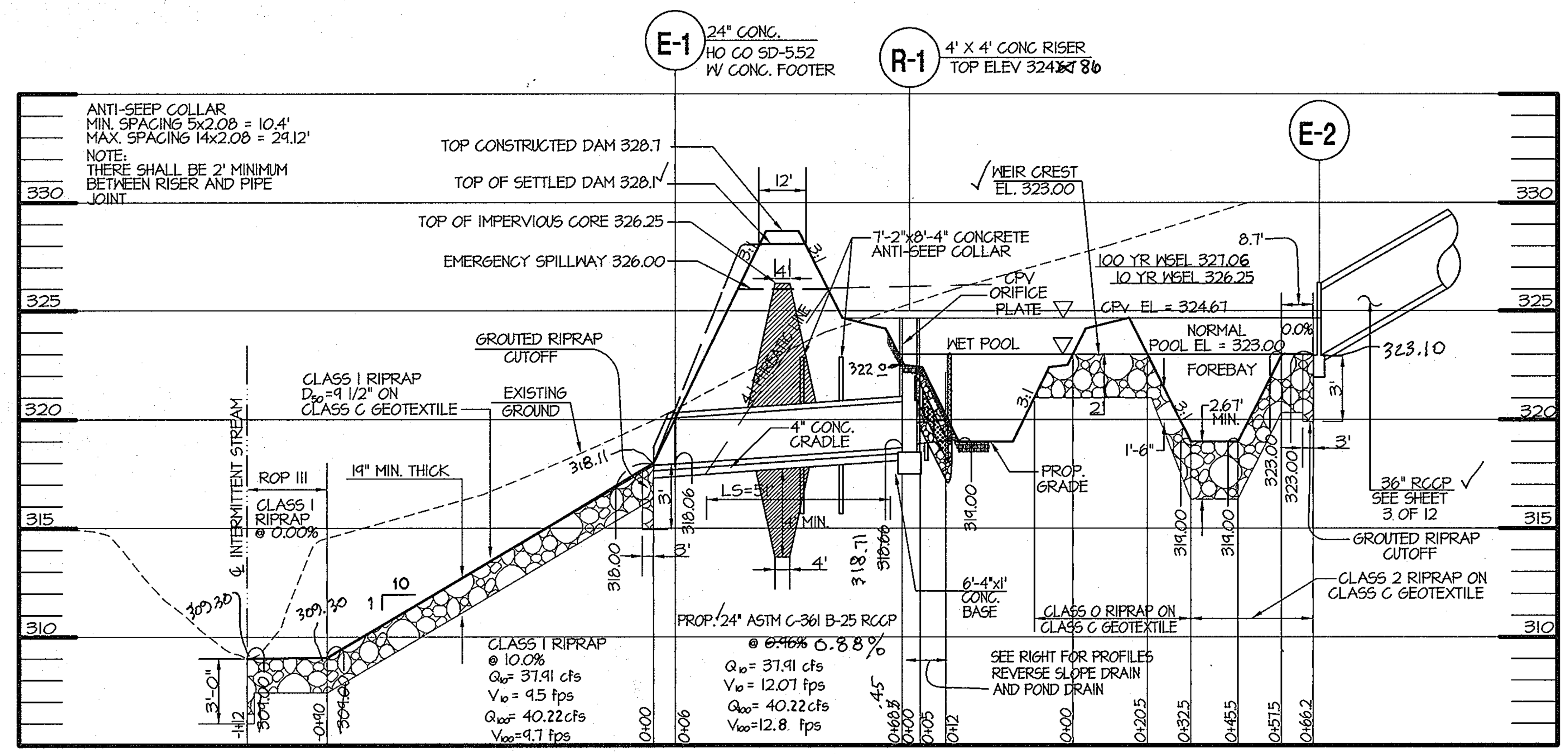
SCALE: Hor. : 1" = 30'
Vert. : 1" = 5'



NOTES:
1. CRADLE TO BE CONTINUOUS ALONG PIPE.
2. CONCRETE FOR CRADLE TO BE MIX No. 3.

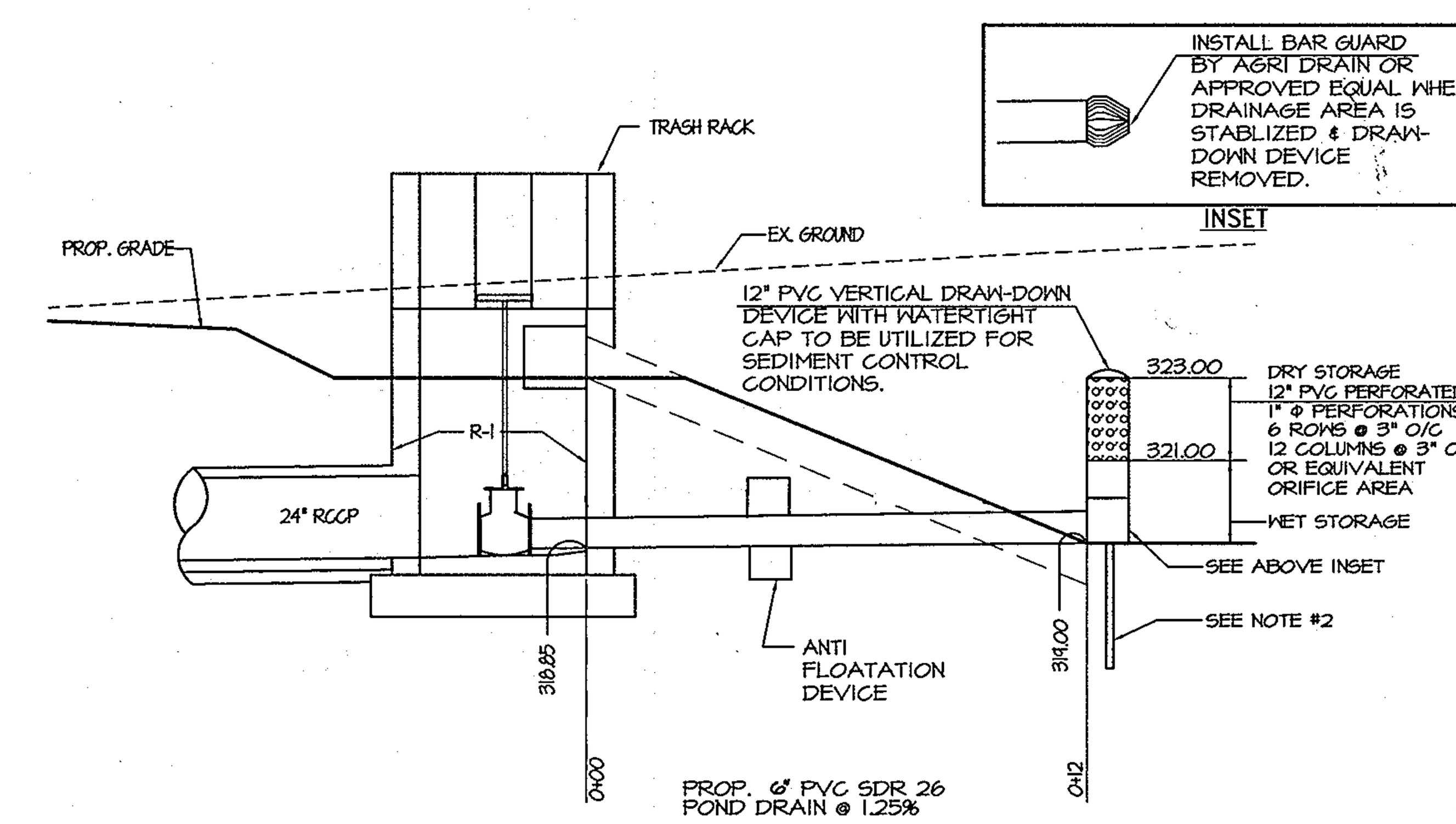
CONCRETE CRADLE DETAIL

NOT TO SCALE



POND #1
PRINCIPAL SPILLWAY PROFILE

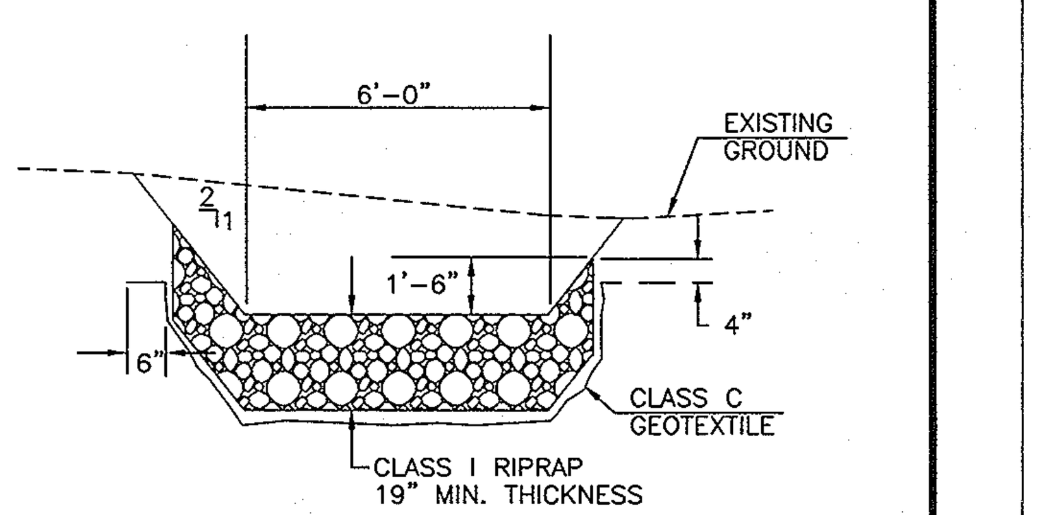
SCALE: Hor. : 1" = 30'
Vert. : 1" = 5'



PROFILE POND DRAIN AND TEMPORARY DRAW-DOWN DEVICE

SCALE 1/4" – 1'–0"

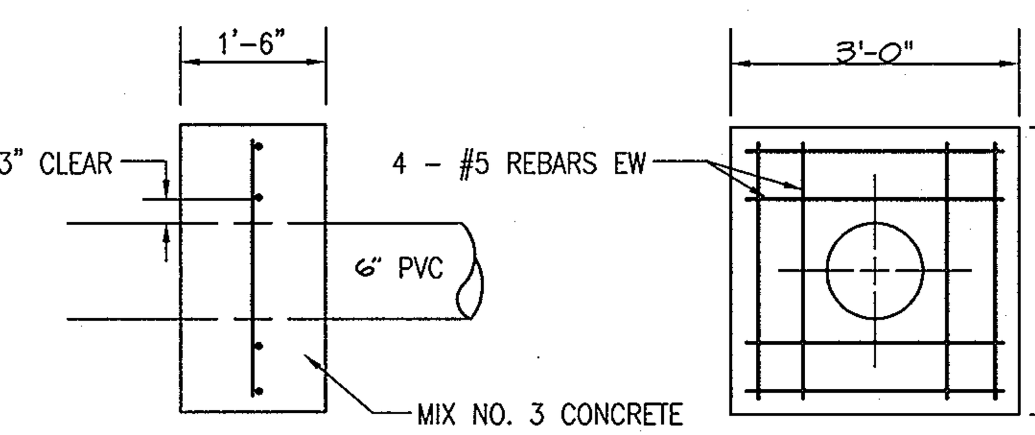
NOTES:
1. THE PERFORATED PORTION OF THE DRAW-DOWN DEVICE IS TO BE WRAPPED WITH 1/2" HARDWARE CLOTH AND GEOTEXTILE FABRIC SHALL MEET THE SPECIFICATIONS FOR GEOTEXTILE CLASS E.
2. PROVIDE SUPPORT OF DRAW-DOWN DEVICE BY STAKING BOTH SIDES OF IT WITH EITHER 1" STEEL ANGLE OR 2"x2" SQUARE WOODEN OR 2" ROUND WOODEN POST. SET THE POSTS A MINIMUM OF 3' INTO THE GROUND AND JOIN THEM TO THE DEVICE BY WRAPPING THEM WITH 12 GAUGE MINIMUM WIRE.



RIPRAP OUTFALL FROM E-1 TO STREAM
(SECTION 'C-C' FROM PLAN)

SCALE 1/4" – 1'–0"

DPZ FILE 01-145



ELEVATION
SCALE: 1"= 2'

SECTION A-A
SCALE: 1"= 2'

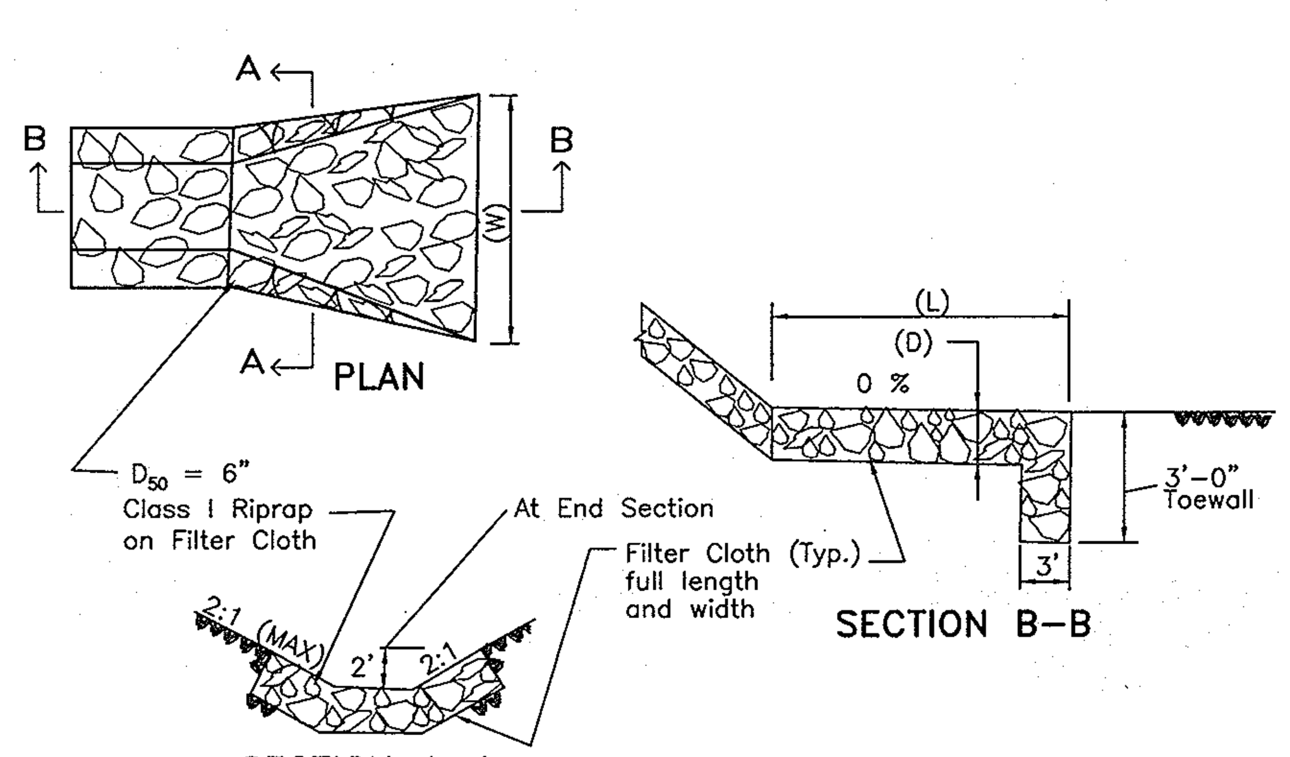
ANTI-FLOTATION DETAIL

N.T.S.

SHANABERGER & LANE
8726 TOWN & COUNTRY BLVD.
SUITE 201
ELLICOTT CITY, MARYLAND 21043

STATE OF MARYLAND — RICHARD F. LANE — No. 301 REGISTERED PROPERTY LINE SURVEYOR

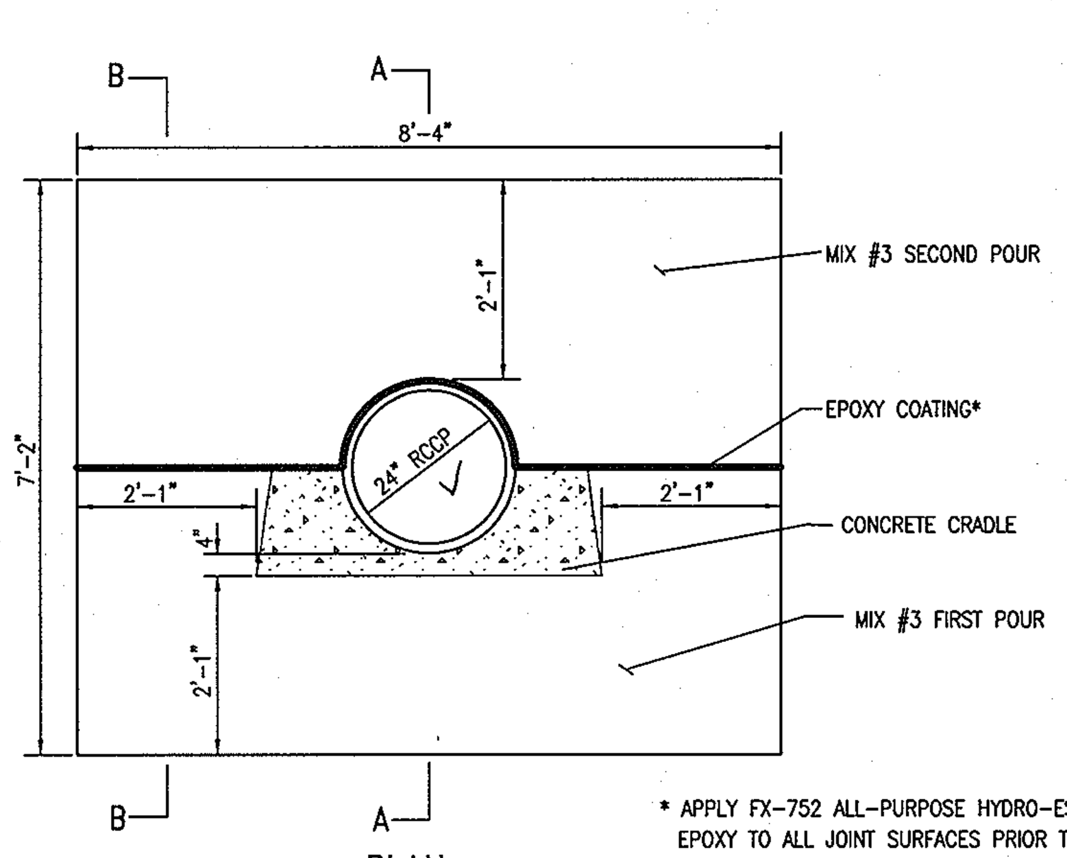
Richard F. Lane #301
ROAD & STORM DRAIN AS-BUILT



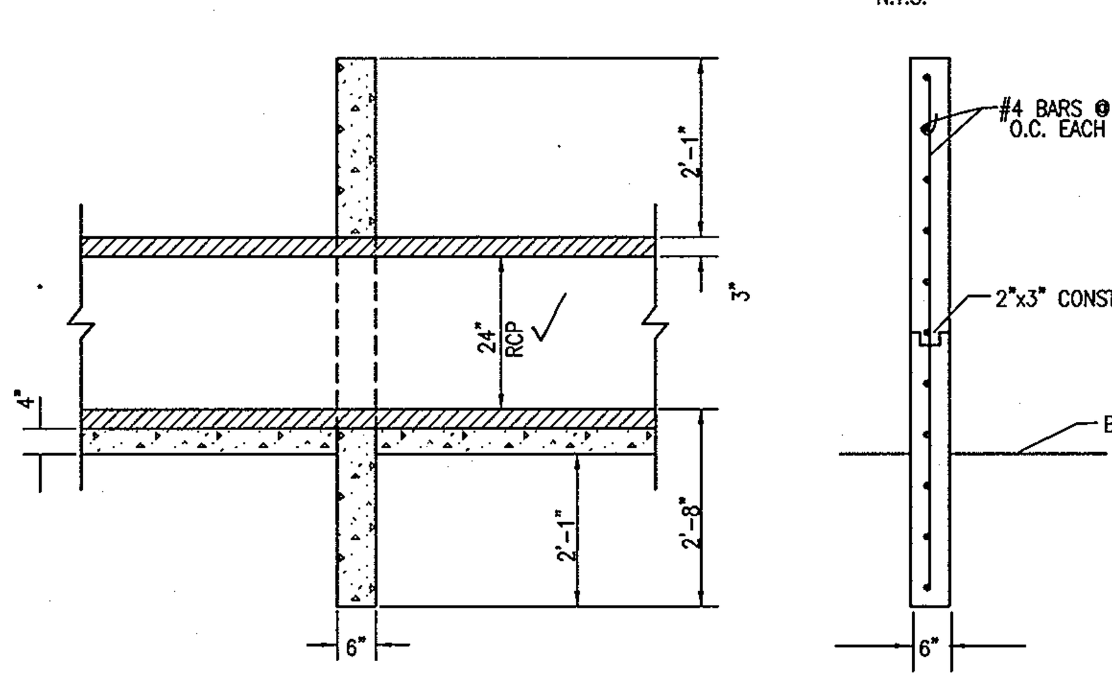
STRUCTURE	D50	LENGTH (L)	WIDTH (W)	THICKNESS (D)
AT STREAM	9 1/2"	22'	24'	19"

RIPRAP OUTFALL PROTECTION

NOT TO SCALE

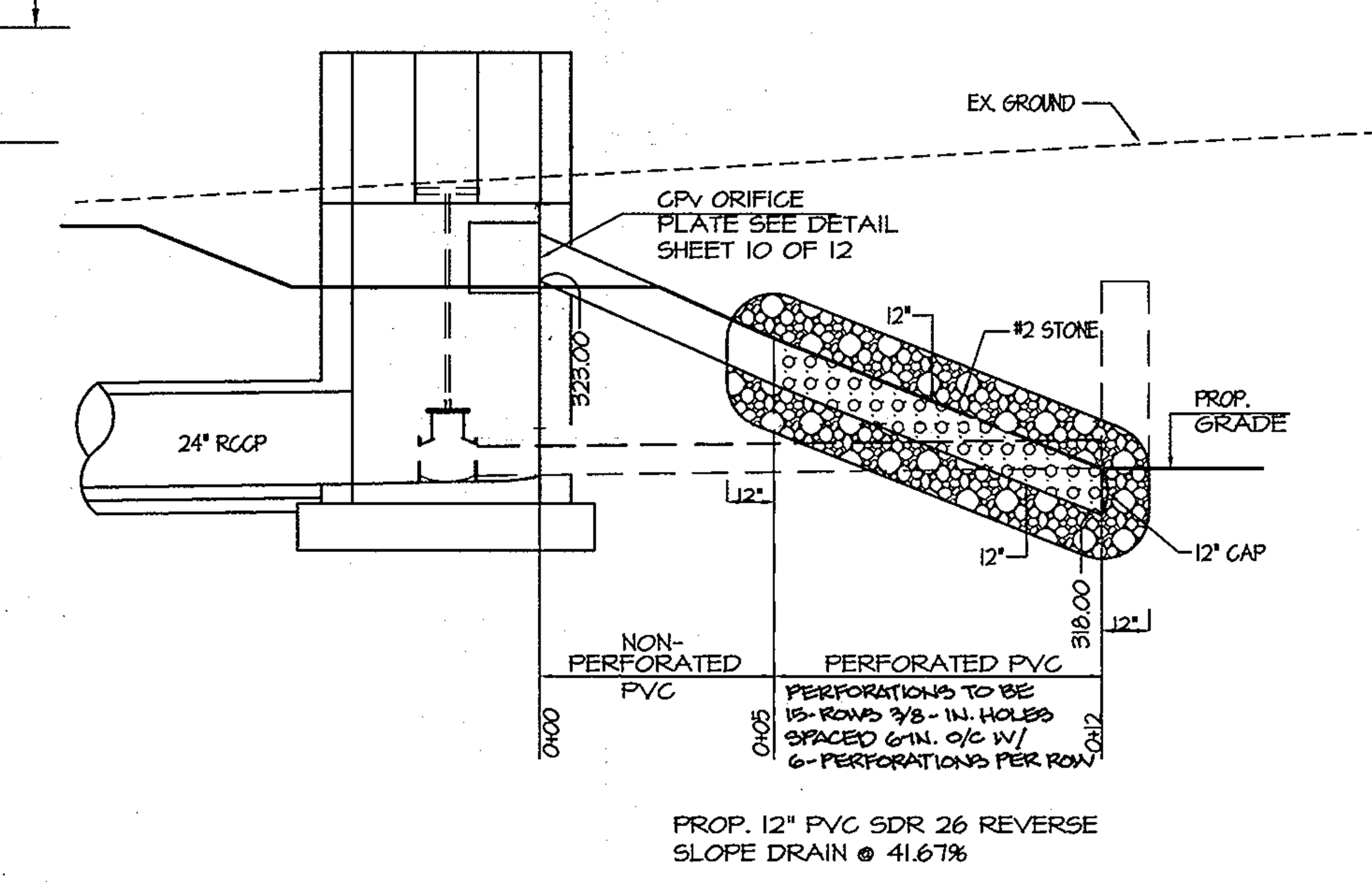


* APPLY FX-752 ALL-PURPOSE HYDRO-ESTER EPOXY TO ALL JOINT SURFACES PRIOR TO SECOND CONCRETE COLLAR POUR.



REINFORCED CONCRETE ANTI-SEEP COLLAR

N.T.S.



PROFILE REVERSE SLOPE DRAIN

SCALE 1/4" – 1'–0"

APPROVED: HOWARD COUNTY DEPARTMENT OF PUBLIC WORKS

CHIEF, BUREAU OF HIGHWAYS — 12-13-01 DATE

APPROVED: HOWARD COUNTY DEPARTMENT OF PLANNING & ZONING

CHIEF, DIVISION OF LAND DEVELOPMENT — 12/11/01 DATE

CHIEF, DEVELOPMENT ENGINEERING DIVISION — 12/14/01 DATE

DATE	NO.	REVISION
8-15-02	1	CALLOUT PERFORATION ARRANGEMENT / REVERSE SLOPE DRAIN, SIZE POND DRAIN

OWNER / DEVELOPER:
THE HOWARD RESEARCH & DEVELOPMENT CORPORATION
THE ROUSE BUILDING
10275 LITTLE PATUXENT PARKWAY
COLUMBIA, MARYLAND 21044
PHONE: (410) 992–6370

PROJECT: EMERSON SECTION 2 PHASE 2

AREA: TAX MAP NO. 47 — P/O PARCEL P.837 P. 3. P. 482
ELECTION DISTRICT No.6 — HOWARD COUNTY, MARYLAND

TITLE: **STORMWATER MANAGEMENT PROFILES, SPECIFICATIONS, & DETAILS**

MORRIS & RITCHIE ASSOCIATES, INC.
ENGINEERS, PLANNERS, SURVEYORS AND LANDSCAPE ARCHITECTS
110 WEST ROAD SUITE 245
TOWSON, MARYLAND 21204
(410) 821-1690
FAX (410) 821-1748

8/28/01 DATE

STATE OF MARYLAND — DONALD MITTEN — PROFESSIONAL ENGINEER

PROFESSIONAL ENGR. NO. 16581

PROJECT NO.: 11494	
SCALE: AS SHOWN	
DATE: AUGUST 24, 2001	
DRAWN BY: MLS	
DESIGNED BY: TAM	
REVIEW BY: DNM	
DRAWING NO. 9 OF 12	

F-01-145

STORMWATER MANAGEMENT CONSTRUCTION SPECIFICATIONS

I. SITE PREPARATION

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

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

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

II. EARTH FILL

A. MATERIAL

The fill material shall be taken from approved designated borrow areas. It shall be free of roots, stumps, wood, rubbish, stones greater than 6", frozen or other objectionable materials. Fill material for the center of the embankment and cut off trench shall conform to Unified Soil Classification GC, SC, CH, or CL and must have at least 30% passing # 200 sieve. Consideration may be given to the use of other materials in the embankment if design and construction are supervised by a geotechnical engineer. Materials used in the outer shell of the embankment must have the capability to support vegetation of the quality required to prevent erosion of the embankment.

B. 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.

C. 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.

Minimum required density 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.(standard proctor)

III. CUT OFF TRENCH AND IMPERVIOUS CORE

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 equipment, rollers or hand tampers to assure maximum density and minimum permeability.

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

IV. STRUCTURE BACKFILL

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

Structure backfill may be flowable fill meeting the requirements of Maryland Department of Transportation State Highway Administration Standard Specifications for construction and materials, Section 313 as modified. The mixture shall have a 100–200 PSI; 28 day unconfined compressive strength. The flowable fill shall have a minimum pH of 4.0 and a minimum resistivity of 2,000 ohm-cm. Material shall be placed such that a minimum of 6" (measured perpendicular to the outside of the pipe) of flowable fill shall be under (bedding), over and, on the sides of the pipe. It only needs to extend up to the spring line for rigid conduits. Average slump of the fill shall be 7" to assure flowability of the material. Adequate measures shall be taken (sand bags, etc.) to prevent floating the pipe. When using flowable fill, all metal pipe shall be bituminous coated. Any adjoining soil 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 shall completely fill all voids adjacent to the flowable fill zone. At no time during the backfilling operation shall driven equipment be allowed to operate closer than four feet, measured horizantally, to any part of a structure. Under no circumstances shall equipment be driven over any part of a structure or pipe unless there is a compacted fill of 24" or greater over the structure or pipe. Backfill material outside the structural backfill (flowable fill) zone shall be of the type and quality conforming to that specified for the core of the embankment or other embankment materials.

V. PIPE CONDUITS

All pipes shall be circular in cross section.

A. REINFORCED CONCRETE PIPE

1. Materials – Reinforced concrete pipe shall have bell and spigot joints with rubber gaskets and shall equal or exceed ASTM Specification C-361.
2. Bedding – Reinforced concrete pipe conduits shall be laid in a concrete bedding/cradle for their entire length. This bedding/cradle shall consist of high slump concrete placed under the pipe and up the sides of the pipe at least 50% of its outside diameter with a minimum thickness of 6 inches. Where a concrete cradle is not needed for structural reasons, flowable fill may be used as described in the "structure Backfill" section of this standard. Gravel bedding is not permitted.
3. Laying pipe – Bell and spigot pipe shall be placed with the bell end upstream. Joints shall be made in accordance with recommendations of the manufacturer of the material. After the joints are sealed for the entire line, the bedding shall be placed so that all spaces under the pipe are filled. Care shall be exercised to prevent any deviation from the original line and grade of the pipe. The first joint must be located within 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.

B. PLASTIC PIPE

1. Materials
   Materials-PVC pipe shall be PVC-1120 or PVC-1220 conforming to ASTM D-1785 or ASTM D-2241. Corrugated High Density Polyethylene (HDPE) pipe, couplings and fittings shall conform to the following: 4"-10" inch pipe shall meet the requirements of AASHTO M252 Type S, and 12" through 24" inch shall meet the requirements of AASHTO M294 S.
2. Joints and connections to anti-seep collars shall be completely watertight.
3. Bedding– The pipe shall be firmly and uniformly bedded throughout its entire length. Where rock or soft, spongy or other unstable soil is encountered, all such material shall be removed and replaced with suitable earth compacted to provide adequate support.
4. Backfilling shall conform to Structure Backfill
5. Other details (anti-seep collars, valves, etc.) shall be as shown on the drawings.

C. CORRUGATED METAL PIPE

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

VI. CONCRETE STRUCTURES

A. CONCRETE

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

VII. STABILIZATION

All borrow areas shall be graded to provide 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, mulching or sodding in accordance with the Natural Resources conservation Service. Standard and Specifications for critical area Planting (MD 342) or as shown on the accompanying drawings.

A. SOD

1. Specifications – Sod shall be "K-31" Tall Fescue or Kentucky Bluegrass/Red Fescue mixture or approved equal. Class of turfgrass sod shall be Maryland or Virginia state certified or approved sod.
2. Site Preparation – Where soil is acidic or composed of heavy clays, ground limestone shall be spread at the rate of 100 lbs./1000 sq. ft. In all soils 5-10-5 fertilizer or approved equal shall be applied at the rate of 30 lbs/1000 sq.ft. Fertilizer shall be uniformly applied and mixed into the top 3" of soil with the required lime. Slow release nitrogen, at the rate of 3.5 lbs/1000 sq. ft., shall be applied to the prepared soil immediately prior to sod installation. This material shall be approximately one-third immediately available and two-thirds water insoluble nitrogen. Urea formaldehyde (UF) and isobutylidene (IBDU) meet these standards.
3. Sod Installation – The first row of sod shall be laid in a straight line with subsequent rows place parallel to and tightly wedged against each other. Lateral joints shall be staggered to promote more uniform growth and strength. Insure that sod is not stretched or overlapped and that all joints are butted tight in order to prevent voids which would cause air drying of the roots. On sloping areas where erosion may be a problem, sod shall be laid with long edges parallel to the contour and with staggered joints. Secure the sod by tamping and pegging or other approved methods. As sodding is completed in any one section, the entire area shall be rolled or tamped to insure solid contact of roots with the soil surface. Sod shall be watered immediately after rolling or tamping until the underside of the new sod pad and solid surface below the sod are thoroughly wet. The operation of laying, tamping and irrigating for any piece of sod shall be completed within eight hours.

B. PERMANENT SEEDING

All disturbed areas shall be stabilized as follows:

1. Seedbed Preparation – Loosen upper 3 inches of soil by raking, discing or other acceptable means before seeding.
2. Soil Amendments – Apply 2 tons per acre dolomitic limestone (92 lbs./1000) sq. ft.), 600 lbs. per acre 10-10-10 fertilizer (14 lbs./1000 sq. ft.) and 400 lbs. per acre of 30-0-0 ureaform fertilizer (9.2 lbs./100 sq. ft.). Harrow or disc lime and fertilizer into upper three inches of soil. At time of seeding, apply 400 lbs per acre (9.2 lbs./1000 sq. ft.) of 30-0-0 ureaform fertilizer and 500 lbs. per acre (11.5 lbs./1000 sq.ft.) of 10-10-10 fertilizer.
3. Seeding – For the period March 1 through April 30 seed with 40 lbs. per acre Kentucky 31 Hard Fescue and 15 lbs. per acre inoculated Crownvetch. For the period May 1 through July 31 seed with 60 lbs. per acre Kentucky 31 Hard Fescue and 2 lbs. per acre Inoculated Weeping Lovegrass. For the period of August 1 through October 15 seed with 40 lbs. per acre Kentucky 31 Hard Fescue and 20 lbs. per acre inoculated Interstate Serica lespedeza. During the period of October 16 through February 28, protect site by: Option (1) – 2 tons per acre of well anchored straw mulch and seed as soon as possible in the spring. Option (2) – use sod. Option (3) – seed with 60 lbs. per acre Kentucky 31 Hard Fescue and mulch with 2 tons per acre well anchored straw. For the period of May 1 through February 28, inoculated Crownvetch shall be applied during the subsequent period of March 1 through April 30 at the rate of 15 lbs. per acre.
4. Mulching – Apply 1.5 to 2 tons per acre of unrotted small grain straw immediately after seeding. Anchor mulch immediately after application using 218 gallons per acre of emulsified asphalt on flat areas. On slope 8 feet or higher, use 348 gallons per acre for anchoring.
5. Maintenance – Inspect all seeded areas and make needed repairs, replacements and reseeding.

C. TEMPORARY SEEDING

1. Seedbed Preparation – Loosen upper 3 inches of soil by discing, raking or other acceptable means before seeding.
2. Soil Amendments – Apply 600 lbs. per acre of 10-10-10 fertilizer. Where soil is acidic or composed of heavy clays, ground limestone shall be applied at the rate of 2 tons per acre (92 lbs./1000 sq.ft.).
3. Seeding – For periods March 1 through April 30, and from August 15 through November 15, seed with 2.5 bushels per acre annual rye. For the period May 1 through August 14, seed with 3 lbs. per acres of weeping lovegrass. For the period November 16 through February 28, protect site by applying 2 tons per acre of well anchored straw mulch and seed as soon as possible in the spring or use sod.
4. Mulching – Same as permanent seeding.

VIII. EROSION AND SEDIMENT CONTROL

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

IX. FENCING

Fencing shall be 42" high chain fence constructed in accordance with the latest Maryland State Highway Administration Standard Details 615.02 and 615.03. The specifications for a 6'-0" fence shall be used, substituting 42" fabric and 6'-8" line posts. Gate shall be constructed in accordance with State Highway Administration Standard Detail 692.01 with 42" fabric. Fabric for fence and gate shall conform to ASSHTO Designation M181.74. Dark vinyl coating is required for the fence posts and wire fabric in accordance with the Landscape Manual adopted by Resolution 56-90, October 1, 1990.

X. ROCK RIPRAP

Rock riprap shall meet the requirements of Maryland Department of Transportation, State Highway Administration standard specifications for construction and materials, Section 311.

XI. FILTER CLOTH

1. Geotextile shall be placed under all riprap and shall meet the requirements of Maryland Department of transportation, State Highway Administration Standard Specifications for construction and Materials, Section 921.09, class c.

XII. GABIONS

1. Gabions to be PVC coated. Class IV. Section H.24, Maryland Standard Specifications and Details for Soil Erosion and Sediment Control..

XIII. INSPECTION

The contractor shall notify the engineer at least 5 working days prior to starting any work shown on these plans so that stormwater management pond may be inspected during construction.

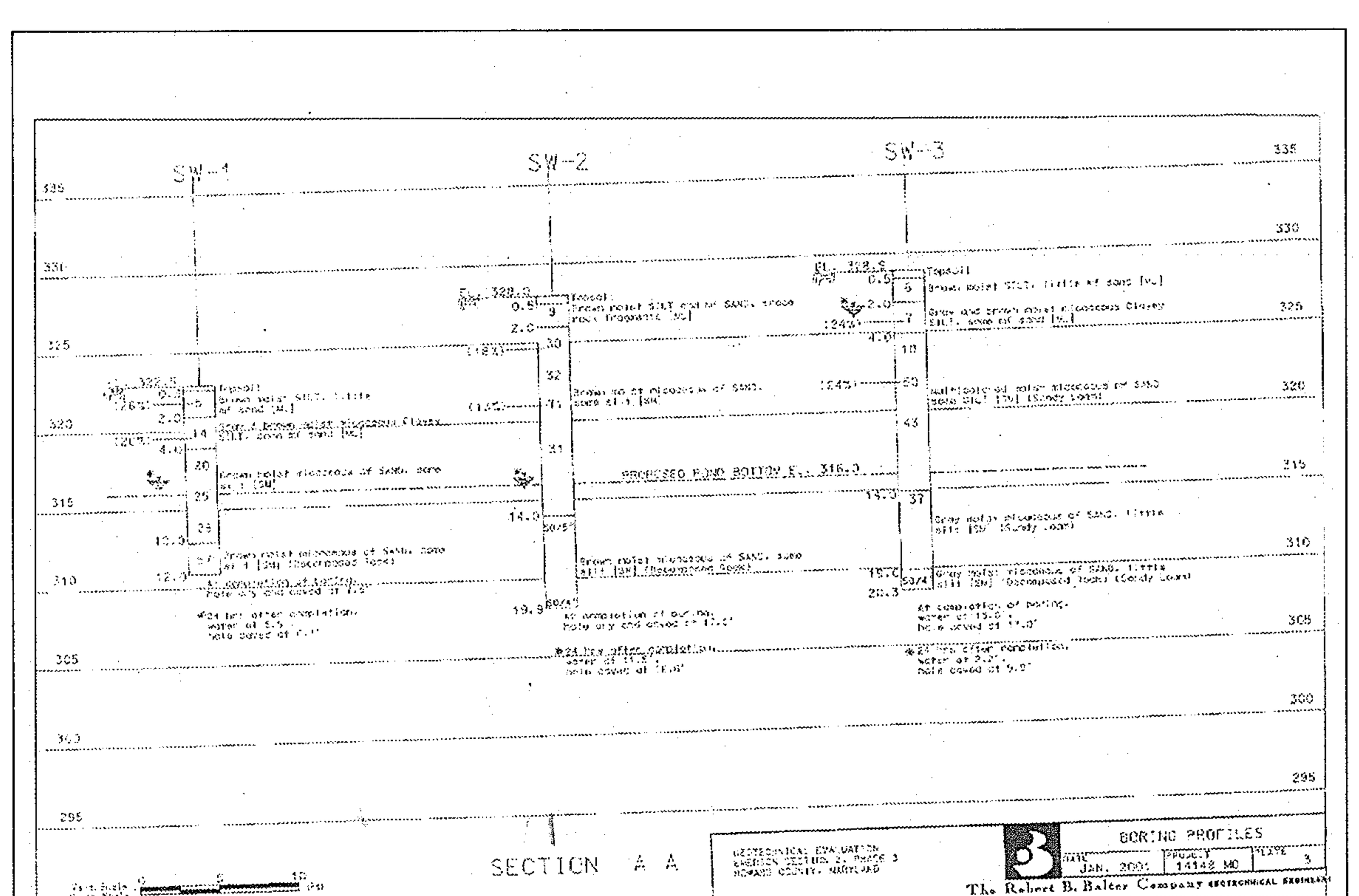
XIV. CARE OF WATER DURING CONSTRUCTION

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 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.

XV. REFERENCES

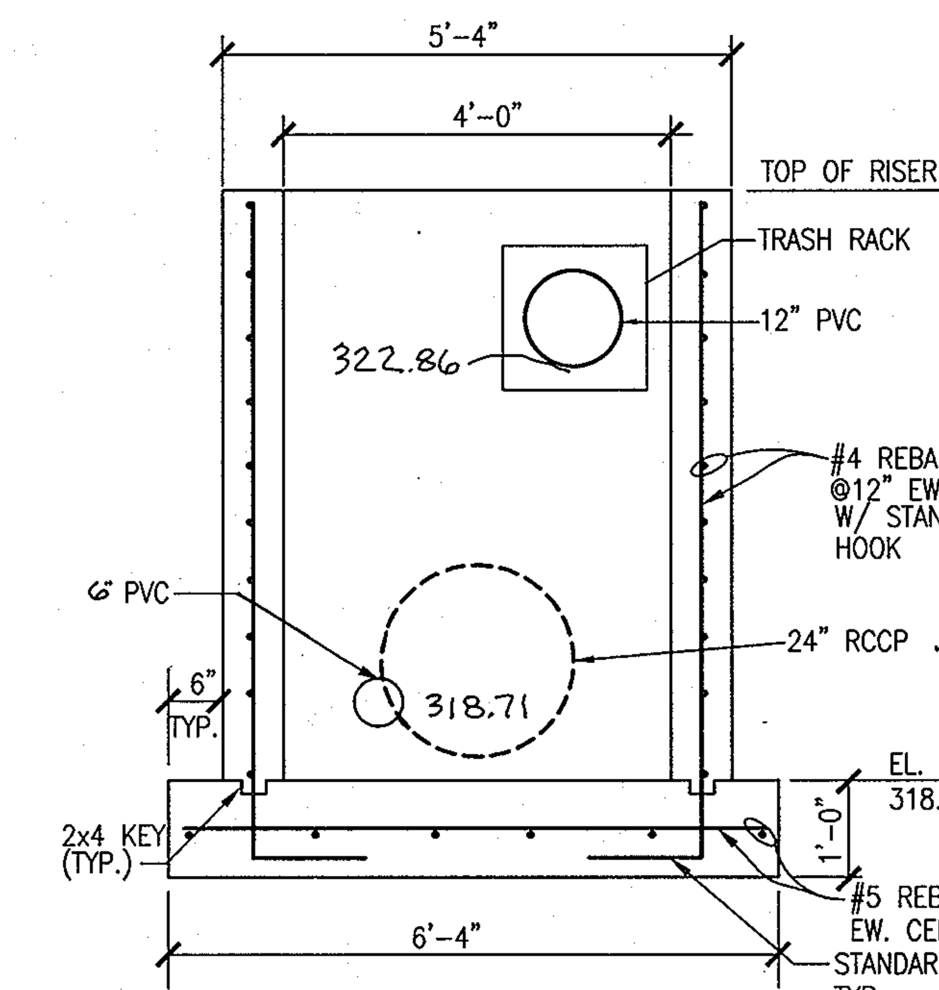
Unless otherwise noted, all materials and construction practices shall conform to the following:

1. "Standard Specifications and Details for Construction" of the Howard County, Maryland, Department of Public Works, as amended.
2. "Standard Specifications for Construction and Materials", 1993, of the Maryland State Highway Administration, as amended.
3. "Standard and Specifications for Ponds" of the Soil Conservation Service of Maryland (MD-378), January 2000 and as amended.

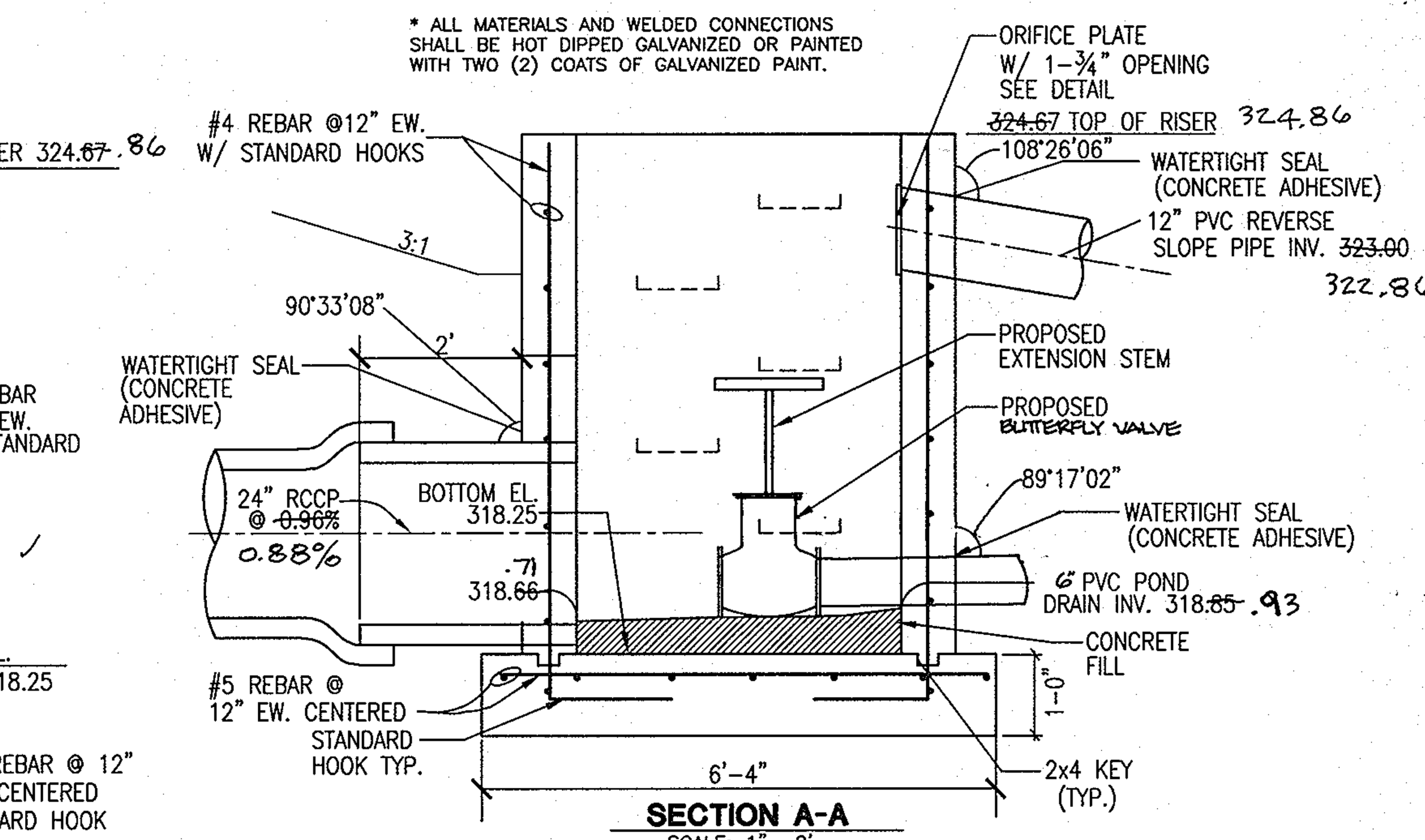


STRUCTURAL NOTES

1. SPREAD FOOTING FOUNDATIONS
   A. THE BOTTOM OF ALL RISER FOOTINGS SHALL BE A MINIMUM OF 2'-6" BELOW FINISH GRADE FOR FROST PROTECTION.
   B. ALL FOOTINGS HAVE BEEN DESIGNED FOR AN ASSUMED NET ALLOWABLE SOIL BEARING PRESSURE OF 2500 PSF. THE ALLOWABLE SOIL BEARING PRESSURE SHALL BE FIELD VERIFIED BY A REGISTERED GEOTECHINCAL ENGINEER AND APPROVED PRIOR TO PLACING FOUNDATIONS. SHOULD THE ACTUAL SOIL BEARING PRESSURE BE LESS THAN 2500 PSF, THE CONTRACTOR SHALL IMMEDIATELY NOTIFY THE ENGINEER.
   C. ALL FILL PLACED UNDER SPREAD FOOTINGS SHALL BE COMPACTED TO A DRY DENSITY OF AT LEAST 95 PERCENT OF MAXIMUM DRY DENSITY AS DETERMINED BY ASTM D 698.
   D. ALL EXCAVATION AND BACKFILLING OPERATIONS WITHIN THE STRUCTURE FOOTPRINT, INCLUDING ALL COMPACTION TESTS AND INSPECTIONS, SHALL BE DONE UNDER THE DIRECTION AND SUPERVISION OF A REGISTERED GEOTECHNICAL ENGINEER.
   E. THE CONTRACTOR SHALL NOTIFY THE ENGINEER OF ALL FOUNDATION AND SOIL CONDITIONS WHICH DIFFER FROM THOSE ANTICIPATED OR INDICATED IN THE CONTRACT DOCUMENTS.
   F. ALL EXISTING SOIL CONTAINING GRAVEL, CONSTRUCTION OR DEMOLITION DEBRIS, ORGANIC SUBSTANCES, OR OTHER FOREIGN OBJECTS SHALL BE REMOVED FROM THE REGION WITHIN THE FOOTPRINT OF THE STRUCTURE.
2. CAST IN PLACE CONCRETE
   A. ALL CONCRETE CONSTRUCTION SHALL CONFORM TO THE "SPECIFICATIONS FOR STRUCTURAL CONCRETE FOR BUILDINGS (ACI 301)"; AND TO THE "BUILDING CODE REQUIREMENTS FOR REINFORCED CONCRETE (ACI 318)".
   B. IN ADDITION TO THE ABOVE, ALL CONCRETE WORK SHALL CONFORM TO THE FOLLOWING:
      1. RECOMMENDED PRACTICE FOR HOT WEATHER CONCRETING (ACI 305).
      2. RECOMMENDED PRACTICE FOR COLD WEATHER CONCRETING (ACI 306).
      3. RECOMMENDED PRACTICE FOR CONCRETE FORMWORK (ACI 347).
      4. CONCRETE SHALL MEET THE REQUIREMENTS OF MDOT, STATE HIGHWAY ADMINSTRATION STANDARD SPECIFICATIONS FOR CONSTRUCTION AND MATERIALS, SECTION 414, NO. 3.
   C. ALL CONCRETE EXPOSED TO PUBLIC VIEW SHALL CONFORM TO THE REQUIREMENTS FOR ARCHITECTURAL CONCRETE CONTAINED IN ACI 301.
   D. ALL CONCRETE, UNLESS NOTED OTHERWISE, SHALL BE STONE AGGREGATE CONCRETE HAVING A MINIMUM 28 DAY COMPRESSIVE STRENGTH OF 3500 PSI. ALL CONCRETE EXPOSED TO WEATHER SHALL HAVE AN AIR ENTERTAINMENT OF 5 % – 8%. NO ADMIXTURES CONTAINING CALCIUM CHLORIDE SHALL BE PERMITTED. MAXIMUM AGGREGATE SIZE SHALL BE 1", AND MAXIMUM SLUMP SHALL BE 4", 3" FOR SLABS ON GRADE. ALL CONCRETE, EXCEPT FOOTINGS, SHALL CONTAIN A WATER REDUCING ADMIXTURE. PORTLAND CEMENT SHALL CONFORM TO ASTM C 150 AND NORMAL WEIGHT AGGREGATES SHALL CONFORM TO ASTM C 33.
   E. ALL REINFORCING BARS SHALL BE NEW BILLET STEEL CONFORMING TO ASTM A 615 GRADE 60. ALL WELDED WIRE FABRIC (W.W.F.) SHALL CONFORM TO ASTM A 185. LAP ALL REINFORCING BARS A MINIMUM OF 36 BAR DIAMETERS AND ALL W.W.F. A MINIMUM OF TWO FULL GRIDS, UNLESS OTHERWISE INDICATED.
   F. ALL REINFORCING SHALL BE DETAILED, FABRICATED AND PLACED IN ACCORDANCE WITH THE CRSI "MANUAL OF STANDARD PRACTICE", ACI 315" DETAILS AND DETAILING OF CONCRETE REINFORCEMENT", ACI SP 66 "DETAILING MANUAL".
   G. ALL CONCRETE MIX DESIGNS, INCLUDING CEMENT CONTENT, WATER CEMENT RATIO, FINE AND COARSE AGGREGATE CONTENT AND ALL ADMIXTURES, SHALL BE REVIEWED BY ENGINEER PRIOR TO PLACING FIRST CONCRETE.
   H. ALL CONCRETE SHALL BE SAMPLED AND TESTED BY THE TESTING AGENCY. THE CONTRACTOR SHALL NOTIFY THE TESTING AGENCY 48 HOURS PRIOR TO THE PLACING OF ANY CONCRETE.
   I. THE CONCRETE STRUCTURE SHALL NOT SUPPORT THE DESIGN LIVE LOAD FOR A MINIMUM OF 28 DAYS AND ALL SHORING AND RESHORING REQUIRED TO SUPPORT THE CONCRETE STRUCTURE DURING CONSTRUCTION SHALL BE DESIGNED AND PROVIDED BY THE CONTRACTOR. SHOP DRAWINGS, SIGNED AND SEALED BY A REGISTERED ENGINEER IN THE STATE OF MARYLAND, SHALL BE SUBMITTED FOR REVIEW. SHOP DRAWINGS SHALL INDICATE THE TYPE, EXTENT, SIZE, AND LOCATION OF ALL SHORING AND RESHORING AS WELL AS THE SEQUENCE OF CONSTRUCTION.
   J. MINIMUM COVER FOR ALL REINFORCING SHALL BE AS FOLLOWS UNLESS OTHERWISE INDICATED:
      FOUNDATIONS 3 INCHES
      WALLS BELOW GRADE 3 INCHES
   K. THE GENERAL CONTRACTOR SHALL SUBMIT PLANS SHOWING ALL PENETRATIONS THROUGH THE FRAMED CONCRETE SLABS. THE OPENINGS SHALL BE ACCURATELY LOCATED AND DIMENSIONED.
   I. ALL EXPOSED CORNERS OF CONCRETE STRUCTURE SHALL BE CHAMFERED WITH 3/4" X 3/4" MILLED CHAMFER STRIPS.



SECTION B-B
SCALE: 1"= 2'

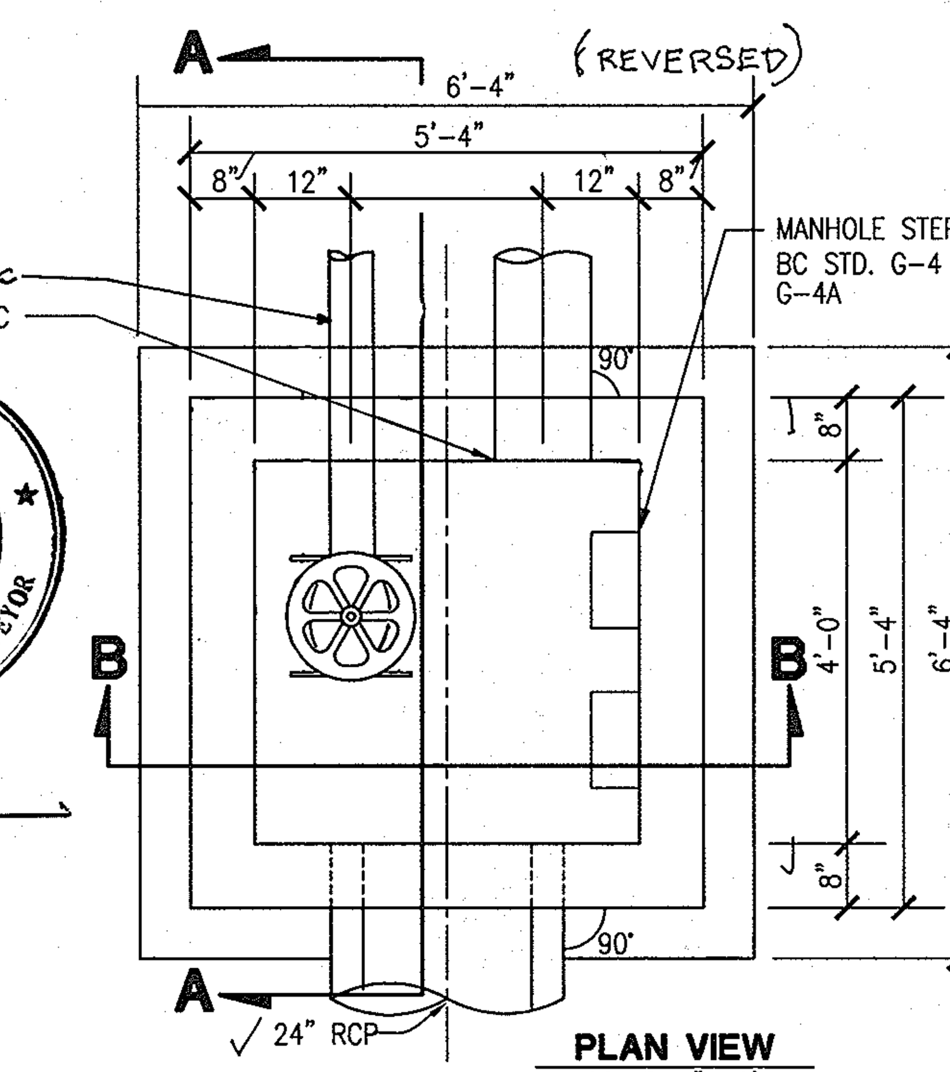


SECTION A-A
SCALE: 1"= 2'

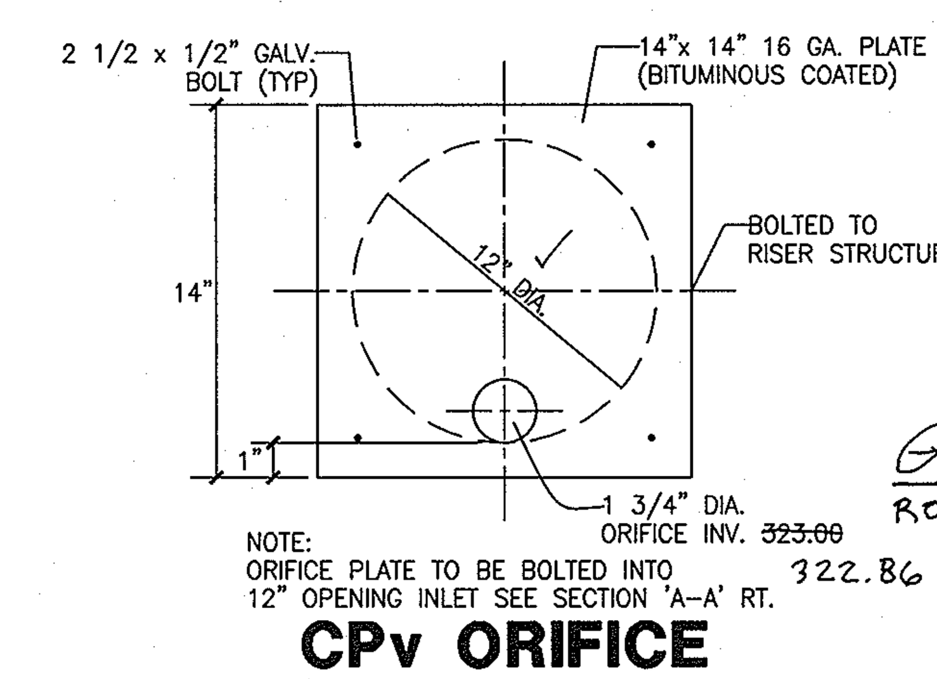
CONCRETE RISER DETAIL (R-1)

SCALE: 1"= 2'

NOTES:
1. RISER SHALL BE POURED IN PLACE (SEE STRUCTURAL NOTES THIS SHEET)
2. CONTRACTOR SHALL PROVIDE WATER TIGHT SEAL AT ALL JOINTS AND CONNECTIONS AT THE STRUCTURE.



PLAN VIEW
SCALE: 1"= 2'



NOTE:
ORIFICE PLATE TO BE BOLTED INTO 12" OPENING INLET SEE SECTION 'A-A' RT.

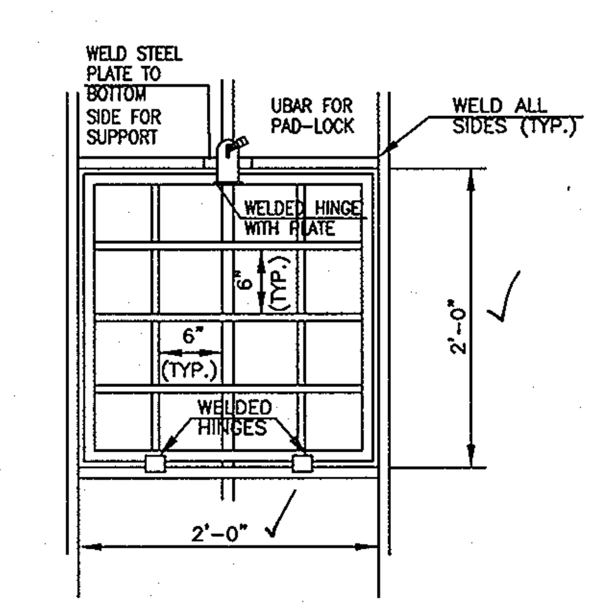
CPv ORIFICE PLATE DETAIL

NOT TO SCALE

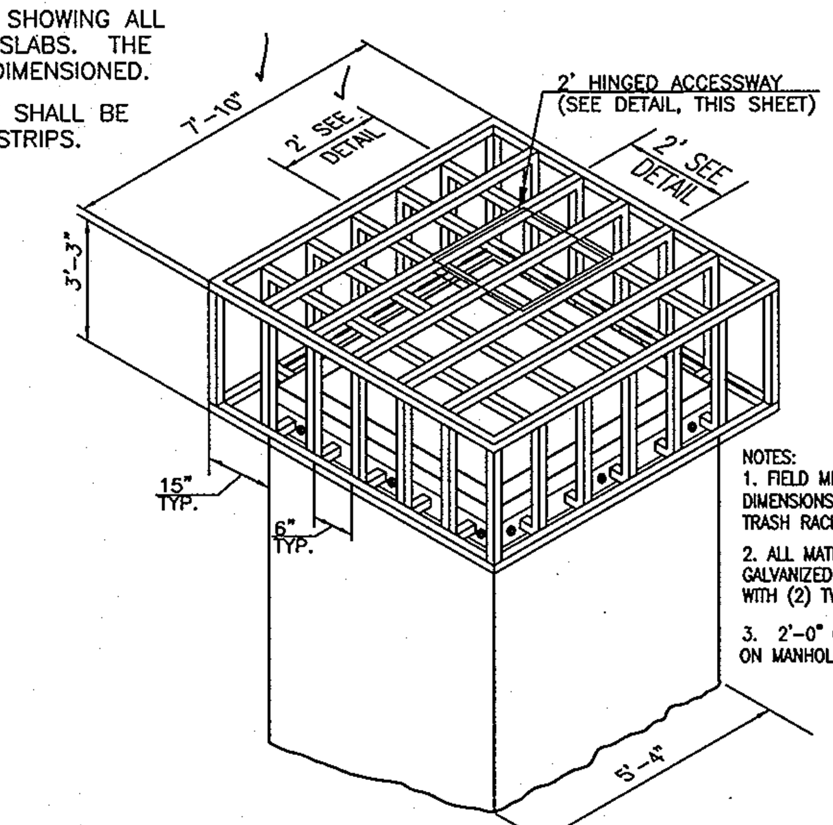
SHANABERGER & LANE
8726 TOWN & COUNTRY BLVD
SUITE 201
ELLICOTT CITY, MARYLAND 210..

STATE OF MARYLAND RICHARD F. LANE No. 301 REGISTERED PROPERTY LINE SURVEYOR

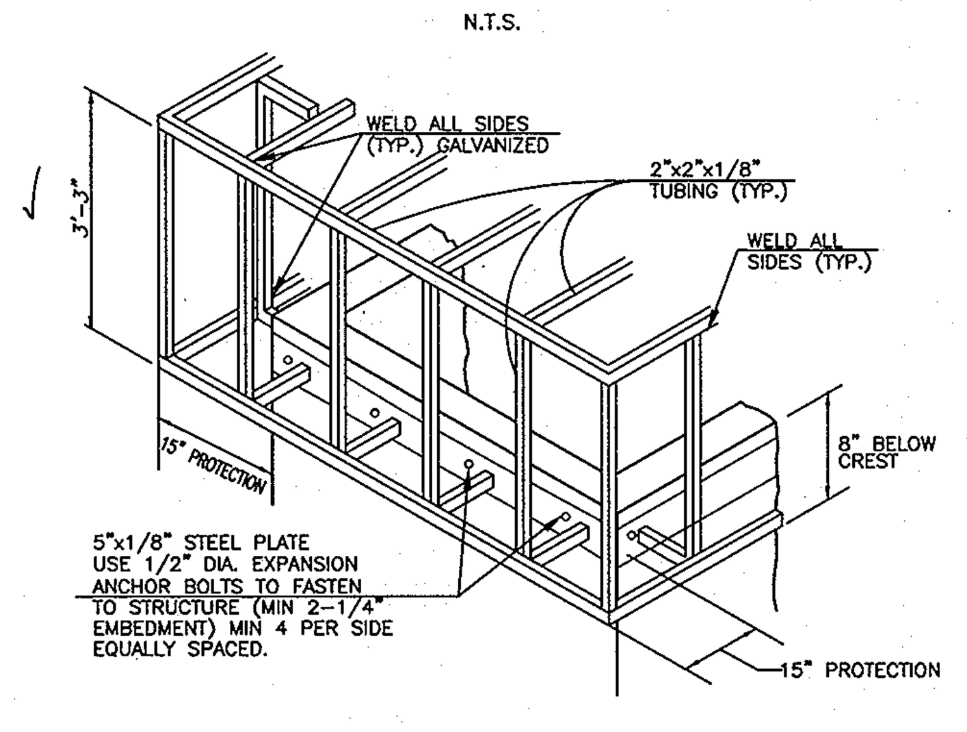
Richard F. Lane #301
ROAD/STORMDRAIN AS-BUILT



OPENING DETAIL
N.T.S.



TOP TYPICAL TRASH RACK DETAIL
N.T.S.



FASTENING DETAIL
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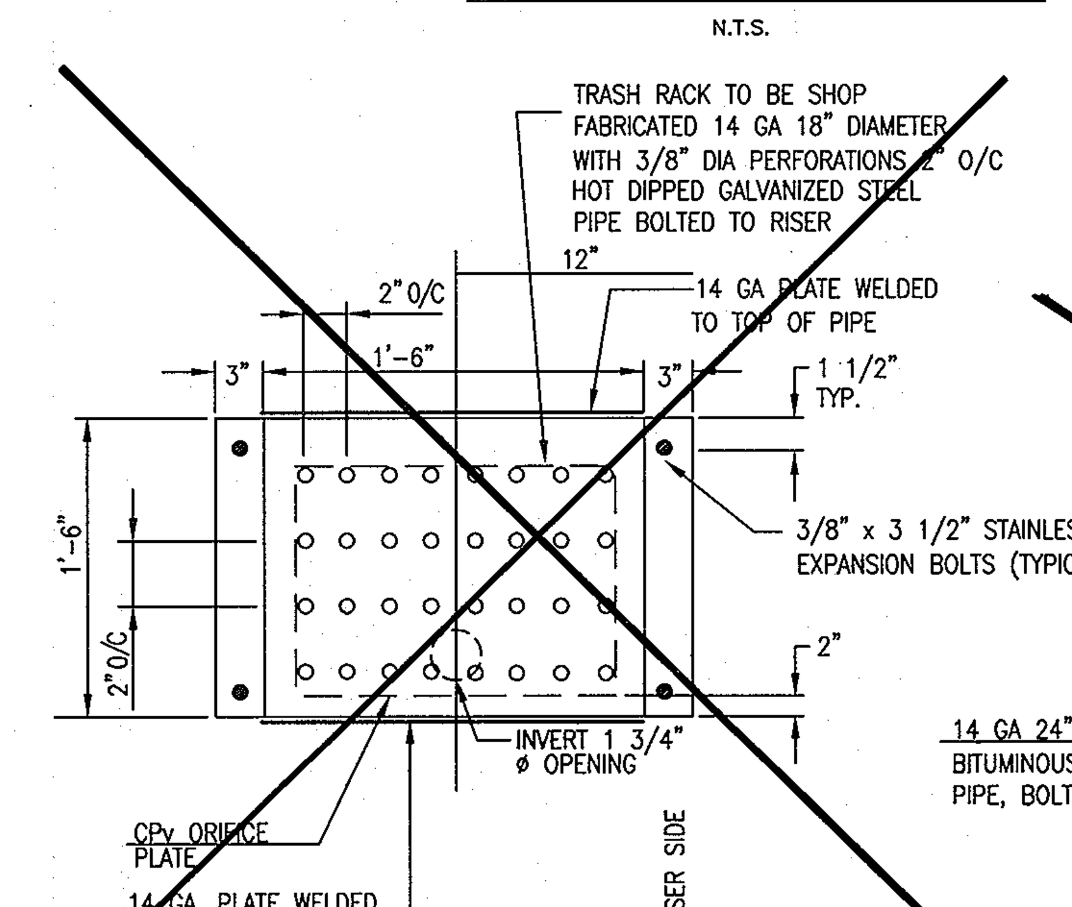
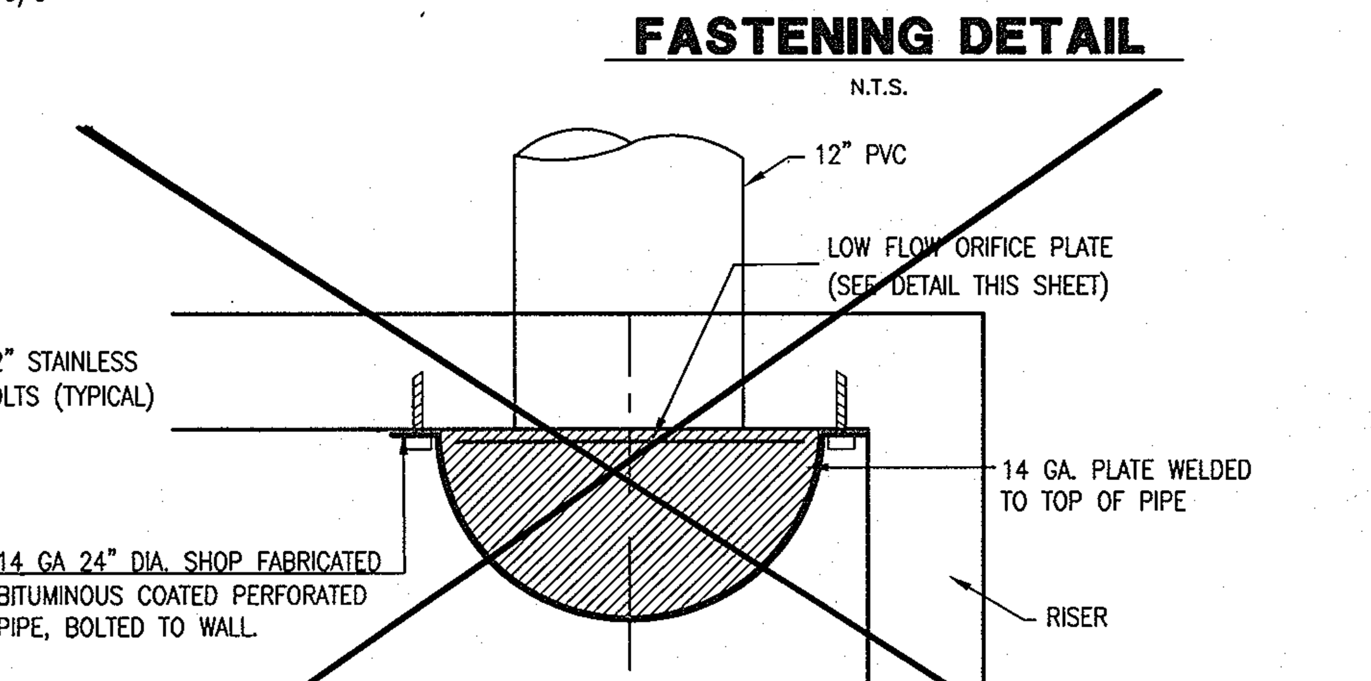


FRONT



TOP CPv ORIFICE TRASH RACK DETAIL
N.T.S.

DPZ FILE 01-145

APPROVED: HOWARD COUNTY DEPARTMENT OF PUBLIC WORKS
[signature] 12-13-01
CHIEF, BUREAU OF HIGHWAYS — DATE

APPROVED: HOWARD COUNTY DEPARTMENT OF PLANNING & ZONING
[signature] 12/17/01
CHIEF, DIVISION OF LAND DEVELOPMENT — DATE
[signature] 12/14/01
CHIEF, DEVELOPMENT ENGINEERING DIVISION MK — DATE

DATE	NO.	REVISION
8-15-02	1	CHANGE FROM GATE TO BUTTERFLY VALVE, SIZE POND DRAIN, DELETE CPv ORIFICE TRASH RACK.

OWNER / DEVELOPER:
THE HOWARD RESEARCH & DEVELOPMENT CORPORATION
THE ROUSE BUILDING
10275 LITTLE PATUXENT PARKWAY
COLUMBIA, MARYLAND 21044
PHONE: (410) 992-6370

PROJECT:

AREA TAX MAP NO. 47 P/O PARCEL P.837 P. 3. P. 482
ELECTION DISTRICT No.6 HOWARD COUNTY, MARYLAND

TITLE **STORMWATER MANAGEMENT SPECIFICATIONS**

MORRIS & RITCHIE ASSOCIATES, INC.
ENGINEERS, PLANNERS, SURVEYORS AND LANDSCAPE ARCHITECTS
TOWSON, MARYLAND 21204
(410) 821-1690
FAX (410) 821-1748

8/28/01
DATE
STATE OF MARYLAND DONALD MITTEN No. 16581 PROFESSIONAL ENGINEER
PROFESSIONAL ENGR. NO. 16581

PROJECT NO.: 11494
SCALE: NONE
DATE: AUGUST 24, 2001
DRAWN BY: MLS
DESIGNED BY: TAM
REVIEW BY: DNM
DRAWING NO. 10 OF 12

F-01-145

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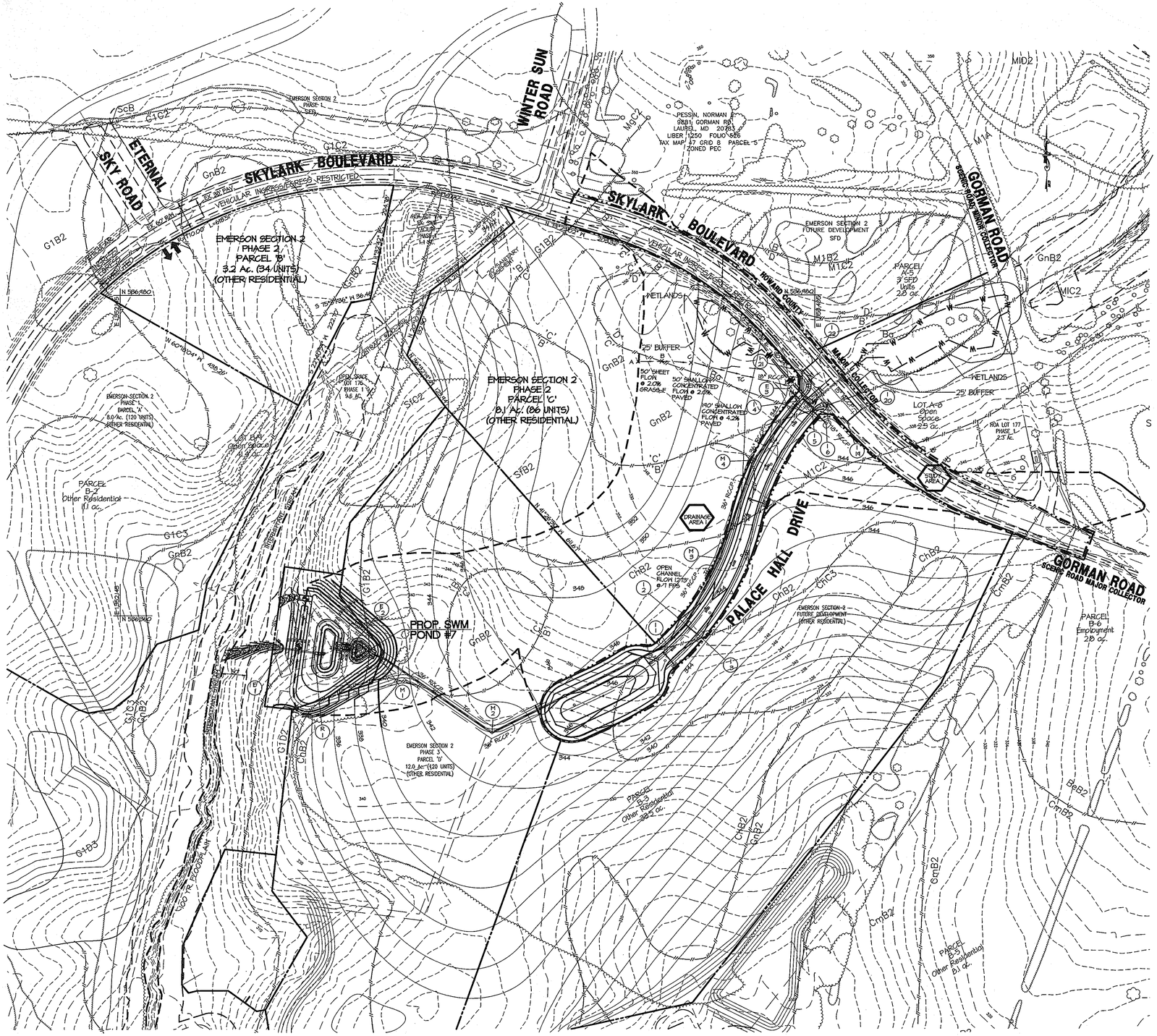
NOTE: GRADING SHOWN HEREON IS CONCEPTUAL ONLY FOR THE PURPOSE OF ESTABLISHING A DRAINAGE AREA

Symbol	Soils Legend	Hydrologic Soil Group	Hydric Soils	Possible Hydric Inclusions
AgC2	Aura gravelly loam/ 5 to 10% slopes	B		
Ba	Baile silt loam	D	X	
BeB2	Beltsville silt loam/ 1 to 5% slopes	C		X
ChB2	Chester silt loam/ 3 to 8% slopes	B		
ChC2	Chester silt loam/ 8 to 15% slopes	B		
ChC3	Chester silt loam/ 8 to 15% slopes	B		
CmB2	Chilum silt loam/ 1 to 5% slopes	C		
GlB2	Glenelg loam/ 3 to 8% slopes	B		
GlC2	Glenelg loam/ 8 to 15% slopes	B		
GlC3	Glenelg loam/ 8 to 15% slopes	B		
GlD2	Glenelg loam/ 15 to 25% slopes	B		
GnB2	Glenville silt loam/ 3 to 8% slopes	C		X
MlB2	Manor loam/ 3 to 8% slopes	B		
MlC2	Manor loam/ 8 to 15% slopes	B		
SfB2	Sassafras gravelly sandy loam, 1 to 5% slopes	B		
SfC2	Sassafras gravelly sandy loam, 5 to 10% slopes	B		



LEGEND

A X —→ TC —→ X B	TIME OF CONCENTRATION PATH
————·· ————	BOUNDARY LINE
— — — — — — —	STORMWATER MANAGEMENT EASEMENT
▬ ·· ▬ ·· ▬ ·· ▬	STUDY AREA USED FOR SWM POND DESIGN BASED ON MDE 2000 MARYLAND STORMWATER DESIGN MANUAL
▬ ▬ ▬ ▬ ▬ ▬ ▬	DRAINAGE AREA TO POND USED FOR ROUTING THE 10 & 100 YEAR STORMS

DRAINAGE AREAS

A=3.17 A.C. (0.00495 mi²) STUDY AREA I MX-D
RCN = 83 58% IMP
HSG B-85.8%
HSG C-1.3%
HSG D-12.9%

A=12.07A.C. (0.01886 mi²) DRAINAGE AREA I MX-D
RCN = 91 80.56% IMP
HSG B-80.7%
HSG C-7.3%
HSG D-12.0%

DPZ FILE 01-145

APPROVED: HOWARD COUNTY DEPARTMENT OF PUBLIC WORKS
12-13-01
CHIEF, BUREAU OF HIGHWAYS — DATE

APPROVED: HOWARD COUNTY DEPARTMENT OF PLANNING & ZONING
Cindy Hamilton 12/17/01
CHIEF, DIVISION OF LAND DEVELOPMENT — DATE
12/14/01
CHIEF, DEVELOPMENT ENGINEERING DIVISION MK — DATE

DATE	NO.	REVISION

OWNER / DEVELOPER:
THE HOWARD RESEARCH & DEVELOPMENT CORPORATION
THE ROUSE BUILDING
10275 LITTLE PATUXENT PARKWAY
COLUMBIA, MARYLAND 21044
PHONE: (410) 992-6370

PROJECT: **EMERSON SECTION 2 PHASE 2**

AREA TAX MAP NO. 47 P/O PARCEL P.837 P. 3. P. 482
ELECTION DISTRICT No.6 HOWARD COUNTY, MARYLAND

TITLE **STORMWATER MANAGEMENT DRAINAGE AREA MAP POND #7**

MORRIS & RITCHIE ASSOCIATES, INC.
ENGINEERS, PLANNERS, SURVEYORS AND LANDSCAPE ARCHITECTS
110 WEST ROAD SUITE 245
TOWSON, MARYLAND 21204
(410) 821-1690
FAX (410) 821-1748

8/28/01
DATE

DONALD MITTEN No. 16581

PROFESSIONAL ENGR. NO. 16581

PROJECT NO.: 11494	
SCALE: 1" – 100'	
DATE: AUGUST 24, 2001	
DRAWN BY: MLS	
DESIGNED BY: TAM	
REVIEW BY: DNM	
DRAWING NO. 11 OF 12	

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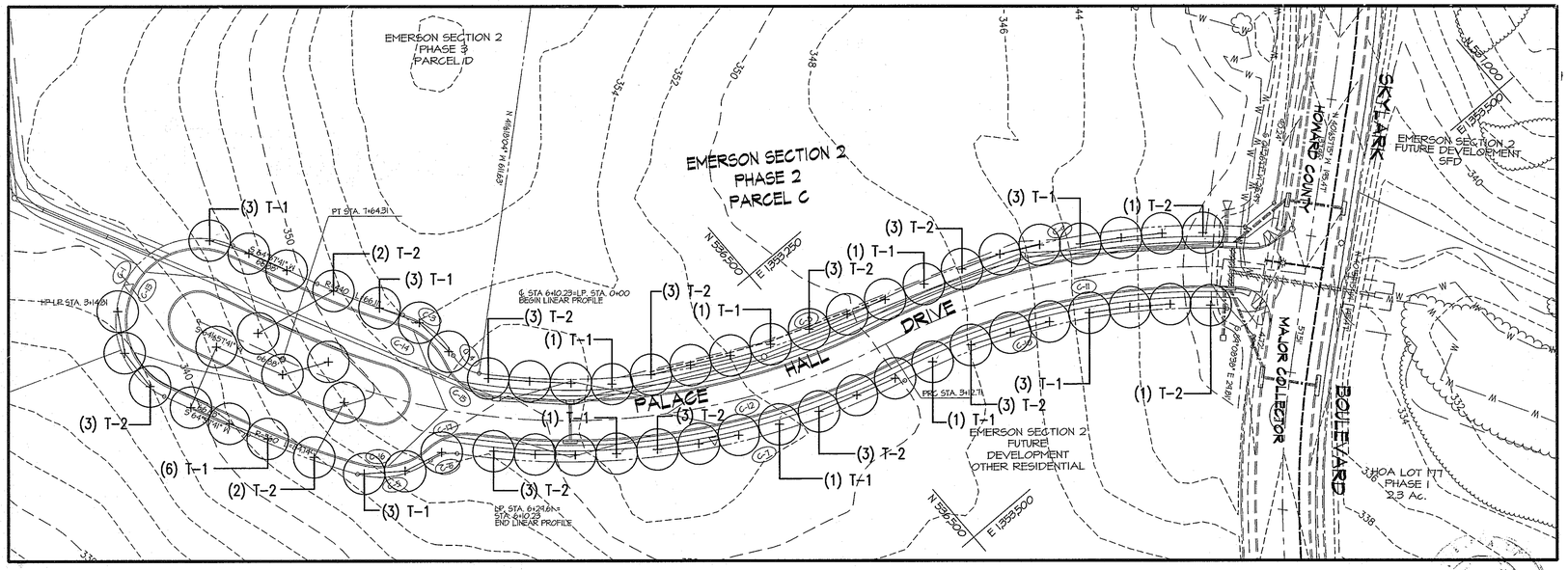
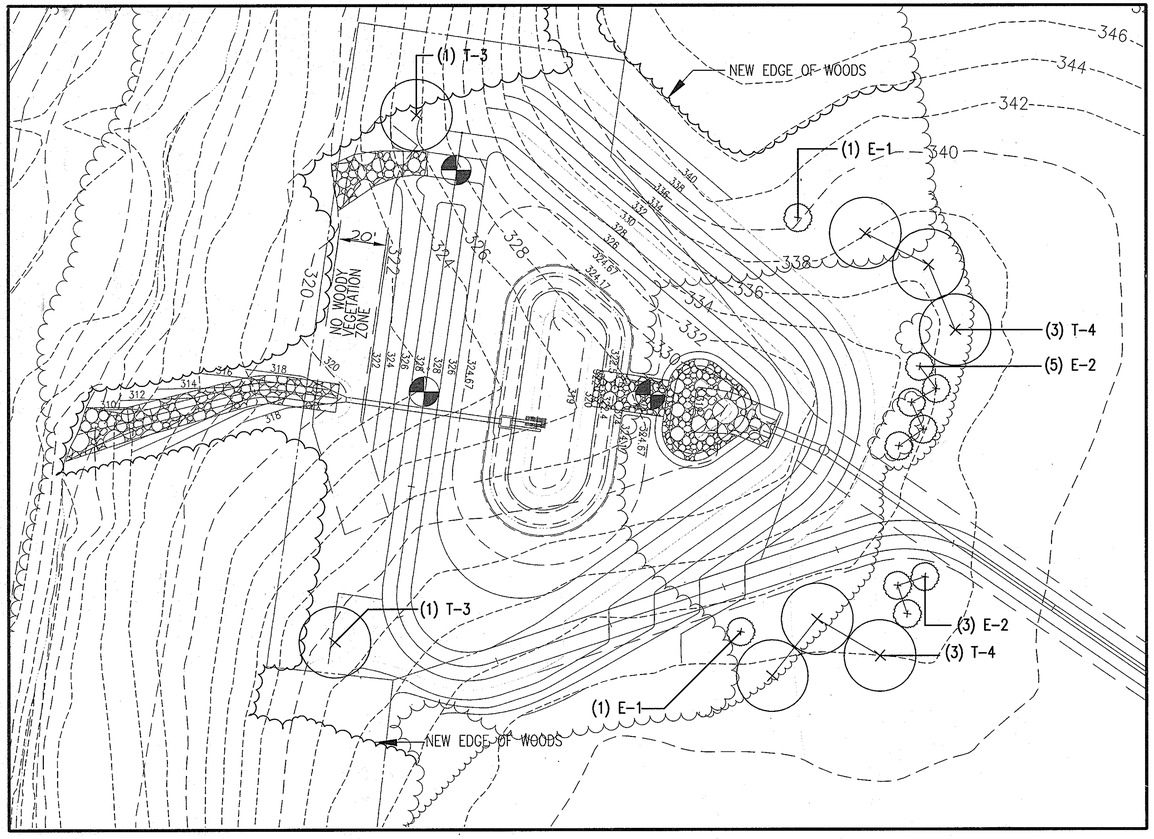


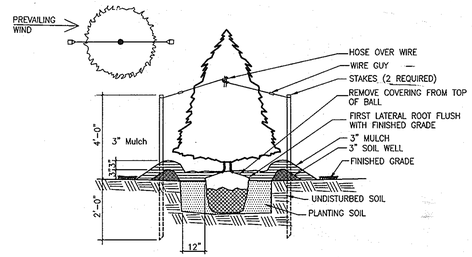
STREET PLANTING DETAIL

SCALE: 1"=50'



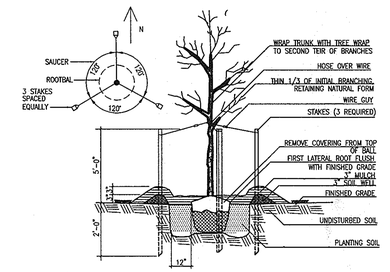
STORMWATER MANAGEMENT POND #7 PLANTING DETAIL

SCALE: 1"=50'



EVERGREEN TREE DETAIL

EVRGRNDL.DWG Not to Scale



DECIDUOUS TREE DETAIL

Not to Scale

PLANT LIST

KEY	QUANTITY	BOTANICAL NAME/ COMMON NAME	SIZE	ROOT	REMARKS
T-1	27	Acer rubrum 'RED SUNSET' Red Sunset Maple	2 1/2" -3"	B & B	LIMB UP 8'-10'
T-2	33	Fraxinus pennsylvanica 'PATMORE' Patmore Seedless Ash	2 1/2" -3"	B & B	
T-3	2	Nyssa sylvatica Black Gum	2 1/2" -3"	B & B	
T-4	6	Quercus rubra Red Oak	2 1/2" -3"	B & B	
E-1	2	Picea abies Norway Spruce	6' - 8'	B & B	
E-2	8	Pinus Strobus Eastern White Pine	6' - 8'	B & B	

SCHEDULE D

STORMWATER MANAGEMENT AREA LANDSCAPING

Linear Feet of Perimeter	910'
Number of Trees Required Shade Trees Evergreen Trees	 8 10
Credit for Existing Vegetation (No, Yes and %)	Yes (535' ex. wood) 59%+/-
Credit for Other Landscaping (No, Yes and %)	No
Number of Trees Provided Shade Trees Evergreen Trees Other Trees (2:1 substitution)	 8 10 0

NOTES:

1. NO PERIMETER BUFFERS ARE REQUIRED FOR PARCELS B AND C BECAUSE ALL ADJOINING PROPERTIES ARE PART OF THE SAME DEVELPMENT. REQUIREMENTS FOR PARKING AREAS, RESIDENTIAL INTERNAL LANDSCAPING, OR BUFFERS ALONG ROADS WILL BE ADDRESSED WITH THE FUTURE RESUBDIVISION PLATS OR SITE DEVELOPMENT PLANS.
2. FINANCIAL SURETY FOR THE REQUIRED LANDSCAPING MUST BE POSTED AS PART OF THE DPW DEVELOPERS AGREEMENT OR GRADING PERMIT (AS APPLICABLE) IN THE AMOUNT OF $3,900.00 (8 SHADE TREES @ $300.00 ea., 10 EVERGREEN TREES @ $150.00 ea.)
   THIS AMOUNT REPRESENTS THE REQUIRED LANDSCAPING OBLIGATIONS FOR PHASE TWO SWM PLANTING REQUIREMENTS.

LANDSCAPE CALCULATIONS:

INTERIOR ROAD:
REQUIRED PLANTING:
1,780 LINEAR FEET OF RIGHT-OF-WAY
@ 1 STREET TREE/30 L.F. = 60 SHADE TREES
PLANTS PROVIDED:
30 FEET ON CENTER SHADE TREES = 60
(MAINTENANCE EASEMENT REQUIRED)

FOREST CONSERVATION CALCULATIONS

BASIC SITE DATA	PHASE 2 ACRES
GROSS SITE AREA	118.9
AREA WITHIN 100 YEAR FLOODPLAIN	3.5
NET TRACT AREA	115.4
LAND USE CATEGORY	MPD
INFORMATION FOR CALCULATIONS	
A. NET TRACT AREA	115.4
B. REFORESTATION THRESHOLD (15%xA)	17.3
C. AFFORESTATION MINIMUM (15%xA)	17.3
D. EXISTING FOREST ON NET TRACT AREA	24.8
E. FOREST AREAS TO BE CLEARED	8.03
F. FOREST AREAS TO BE RETAINED	16.77
REFORESTATION CALCULATIONS	
A. NET TRACT AREA	115.4
B. REFORESTATION THRESHOLD (15%xA)	17.31
C. EXISTING FOREST ON NET TRACT AREA	24.8
D. FOREST AREAS TO BE CLEARED	8.03
E. FOREST AREAS TO BE RETAINED	16.77
F. FOREST AREAS TO BE CLEARED ABOVE REFORESTATION THRESHOLD	7.49
G. FOREST AREAS CLEARED BELOW REFORESTATION THRESHOLD	0.54
H. FOREST AREAS RETAINED ABOVE REFORESTATION THRESHOLD	0.0
CLEARING BELOW THE THRESHOLD	
IF FOREST AREAS TO BE RETAINED ARE LESS THAN REFORESTATION THRESHOLD	
IF E IS LESS THAN B THE FOLLOWING CALCULATIONS APPLY	
REFORESTATION FOR CLEARING ABOVE THRESHOLD F x 1/4	1.87
REFORESTATION FOR CLEARING BELOW THRESHOLD G x 2	1.08
TOTAL REFORESTATION REQUIRED (F x 1/4) + (G x 2)	2.95
CREDIT FOR RETENTION ABOVE CONSERVATION THRESHOLD	0.0
REFORESTATION REQUIRED	2.95
REFORESTATION PROVIDED	5.05
POTENTIAL FUTURE REFORESTATION	3.41
TOTAL	8.46

FOREST CONSERVATION TRACKING CHART

Phase Number	Gross Area	Floodplain Area	Net Tract Area	Ex. Forest Area	Forest * cleared	Forest retained	Refor./Affor. required	Refor./Affor. provided	Excess Refor./Affor.	Future Forest Clearing	Future Refor./Affor.	Comments
2/1A&1B	106.20	3.50	102.70	24.70	7.93	16.77	0.61	5.03	4.42	4.48	3.41	
2/2	118.90	3.50	115.40	24.80	8.03	16.77	2.95	5.05	2.08	3.20	3.41	SEE NOTE A
~~TOTAL~~												

THE TABULATIONS SHOWN ABOVE FOR EACH PHASE WILL REFLECT CUMULATIVE TOTALS FOR THIS PHASE AND ALL PREVIOUS PHASES.
* THE FOREST CLEARED INCLUDES THE ACREAGE OF POSSIBLE FUTURE FOREST CLEARING.
A. 1.20 ACRES OF FUTURE FOREST CLEARING SHOWN ON F-01-151 WAS CLEARED FOR SWM ON OPEN SPACE LOT 174

DEVELOPER'S/BUILDER'S CERTIFICATE

I/WE CERTIFY THAT THE LANDSCAPING SHOWN ON THIS PLAN WILL BE DONE ACCORDING TO THE PLAN, SECTION16.124 OF THE HOWARD COUNTY CODE AND THE HOWARD COUNTY LANDSCAPE MANUAL. I/WE FURTHER CERTIFY THAT UPON COMPLETION A CERTIFICATION OF LANDSCAPE INSTALLATION, ACCOMPANIED BY AN EXECUTED ONE YEAR GUARANTEE OF PLANT MATERIALS, WILL BE SUBMITTED TO THE DEPARTMENT OF PLANNING AND ZONING.

NAME _____ 8/28/01 DATE

APPROVED: HOWARD COUNTY DEPARTMENT OF PUBLIC WORKS

CHIEF, BUREAU OF HIGHWAYS _____ 12-13-01 DATE

APPROVED: HOWARD COUNTY DEPARTMENT OF PLANNING & ZONING

CHIEF, DIVISION OF LAND DEVELOPMENT _____ 12/7/01 DATE

CHIEF, DEVELOPMENT ENGINEERING DIVISION _____ 12/14/01 DATE

DATE	NO.	REVISION
08/14/01	2	PER COMMENTS, SL.
06/14/01	1	PER COMMENTS, SL.
8/15/02	3	REVISED FOREST CONSERVATION TRACKING CHART ADDED FOREST CON. WORKSHEET

OWNER / DEVELOPER:
THE HOWARD RESEARCH & DEVELOPMENT CORPORATION
THE ROUSE BUILDING
10275 LITTLE PATUXENT PARKWAY
COLUMBIA, MARYLAND 21044
PHONE: (410) 992-6370

PROJECT: **EMERSON SECTION 2 PHASE 2**

AREA TAX MAP NO. 47 P/O PARCEL P.837 P. 3. P. 482
ELECTION DISTRICT No.6 HOWARD COUNTY, MARYLAND

TITLE **LANSCAPE PLAN**

MORRIS & RITCHIE ASSOCIATES, INC.
ENGINEERS, PLANNERS, SURVEYORS AND LANDSCAPE ARCHITECTS
110 WEST ROAD SUITE 245
TOWSON, MARYLAND 21204
(410) 821-1690
FAX (410) 821-1748

8/28/01 DATE

STATE OF MARYLAND — JAMES VINCENT LEMON — No. 1044 — LANDSCAPE ARCHITECT

PROJECT NO.: 11494
SCALE: AS SHOWN
DATE: AUGUST 24, 2001
DRAWN BY: SL
DESIGNED BY: SL
REVIEW BY: DNM
DRAWING NO. 12 OF 12

F-01-145

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