FINAL PLAN
EMERSON
SECTION 2, PHASE 1-A

6th ELECTION DISTRICT HOWARD COUNTY, MARYLAND

GENERAL NOTES

1. All construction shall be in accordance with the latest standards and specifications of Howard County plus MSHA standards and specifications if applicable.

2. The contractor shall notify the Department of Public Works/Bureau of Engineering/Construction Inspection division at 410-313-1880 at least five (5) working days prior to the start of work.

3. The contractor shall notify "Miss Utility" at 1-800-257-7777 at least 48 hours prior to any excavation work being done.

4. Traffic control devices, markings and signing shall be in accordance with the latest edition of the Manual of Uniform Traffic Control Devices (MUTCD). All street and regulatory signs be in place prior to the placement of any asphalt.

5. Street light placement and the type of fixture and pole shall be in accordance with the Howard County Design Manual, Volume III (1993) and as modified by "Guidelines for Street Lights in Residential Developments (June 1993)." A minimum spacing of 20' shall be light and any tree.

6. The existing topography is taken from aerial survey with 2' contour intervals prepared by Air Survey Corporation dated 4-3-98

7. The coordinates shown hereon are based upon the Howard County Geodetic Control which is based upon the Maryland State Plane Coordinate System. Howard County Monument Nos. 29G4 and 29G5 were used for this project.

8. Existing utilities are based on Existing Construction Plans (contract no.30-3294-D), Field verified Manholes and proposed plans provided by MRA Engineers and GLW Engineers.

9. The traffic study for this project was prepared by Wells and Associates, and was approved on September 29, 2000.

10. Sidewalk ramps shall meet current ADA requirements.

11. Project background information:

Subdivision Name: Emerson, Section 2
Tax Map: 47
Section/Area: Section 2, Phase 1-A
Lot./Parcel: P/O: P.837, P.3, P.462
Zoning: MXD
Election District: 6th
Total Tract Area: 8.20 acres
Section 2, Phase 1-A
Preliminary Plan Approval Date : 11-21-00
Open Space Lots: 4
File Numbers: ZB-979M, PB-339, S-99-12, and P00-15

12. All sidewalks at intersections to have handicaps ramps, See detail on sheet 7 of 24.

13. Street trees shall be planted at least 5' from any inlet structure.

14. All Forest Conservation obligations for the Development of Emerson Section 2, Phase 1A will be satisfied in Section 2, Phase 1 B (F-01-137).

15. Stormwater Management for this project will be addressed with the installation of three Stormwater Management Facilities which will control the runoff per the latest approved Design Standards.

16. THE STORMWATER MANAGEMENT PONDS WILL BE OWNED BY THE H.O.A.

17. MAINTENANCE RESPONSIBILITY, ROUTINE AND NON-ROUTINE SCHEDULE IS SHOWN ON SHEET 24, NOTE 17.

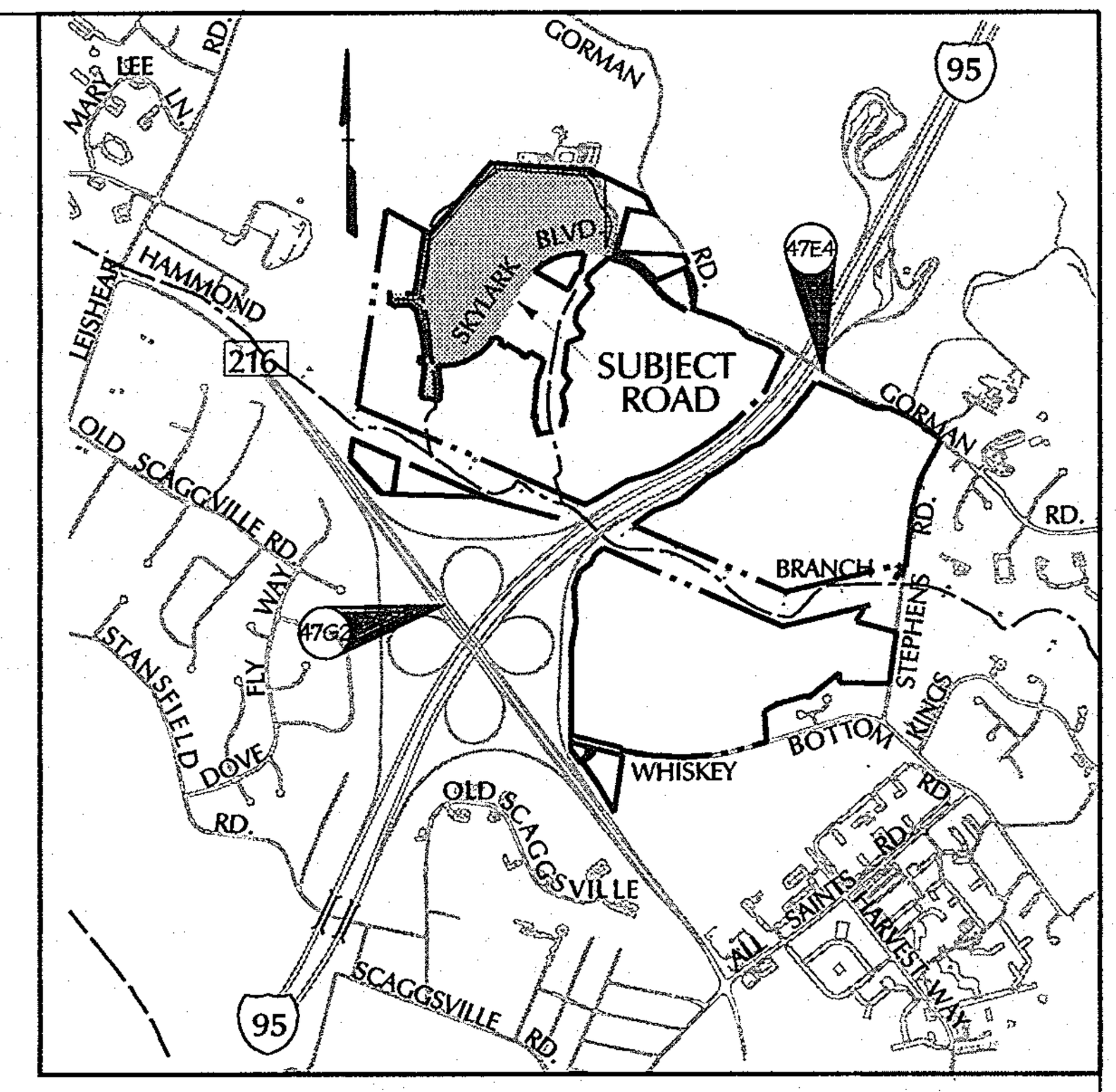
BENCHMARK

DESCRIPTION

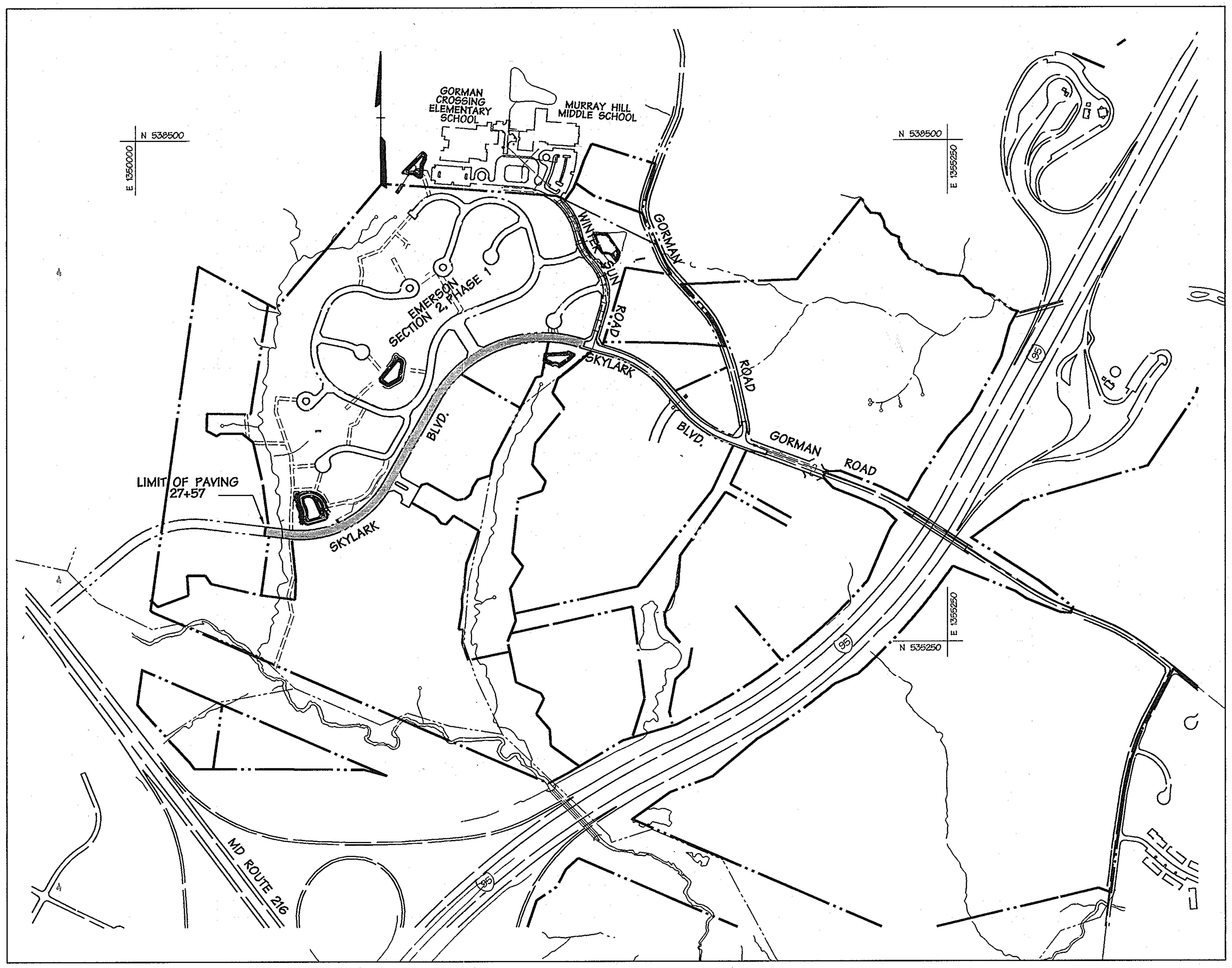
COORDINATES IN MARYLAND NAD83(91) (HORIZONTAL) AND NGVD29 (VERTICAL) DATUMS.

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

47G2 NORTHING: 162440.1212
EASTING: 418539279
ELEVATION: 364.210ft.



LOCATION MAP
SCALE: 1"=2000'



VICINITY MAP
SCALE: 1"=500'

NO.	DESCRIPTION
1	TITLE SHEET
2	ROAD CONSTRUCTION PLAN SKYLARK BOULEVARD (EAST)
3	ROAD CONSTRUCTION PLAN SKYLARK BVLD. ℄ STA. 44+50 (EAST) - 10+00 (WEST)
4	ROAD CONSTRUCTION PLAN SKYLARK BOULEVARD ℄ STA. 10+00 - 20+00
5	ROAD CONSTRUCTION PLAN SKYLARK BOULEVARD ℄ STA. 20+00 - 27+57
6	PROPOSED CULVERT PLAN & PROFILE
7	DRAINAGE AREA MAP
8	STORM DRAIN PROFILES
9	ROAD CONSTRUCTION DETAILS
10	EROSION & SEDIMENT CONTROL DRAINAGE AREA MAP
11	EROSION & SEDIMENT CONTROL PLAN
12	EROSION & SEDIMENT CONTROL PLAN
13	EROSION & SEDIMENT CONTROL PLAN
14	EROSION & SEDIMENT CONTROL DETAILS
15	EROSION & SEDIMENT CONTROL DETAILS
16	EROSION & SEDIMENT CONTROL DETAILS
17	STORM WATER MANAGEMENT DRAINAGE AREA MAP
18	BASIN I / SWM I GRADING PLAN
19	BASIN I / SWM I DETAILS
20	BASIN II / SWM II GRADING PLAN
21	BASIN II / SWM II DETAILS
22	BASIN VI / SWM VI GRADING PLAN
23	BASIN VI / SWM VI DETAILS
24	SWM GENERAL DETAILS & SPECIFICATIONS
25	SOIL BORINGS
26	LANDSCAPE PLAN
27	LANDSCAPE DETAILS

APPROVED: HOWARD COUNTY DEPARTMENT OF PUBLIC WORKS.

CHIEF, BUREAU OF HIGHWAYS. HJ 10-29-01
DATE

APPROVED: HOWARD COUNTY DEPT. OF PLANNING & ZONING

CHIEF, DEVELOPMENT ENGINEERING DIVISION MK 10/31/01
DATE

CHIEF, DIVISION OF LAND DEVELOPMENT HB 11/6/01
DATE

~~DIRECTOR~~ ~~DATE~~

Date	No.	Revision Description

EMERSON
FORMERLY KEY PROPERTY
SECTION 2, PHASE 1A

OWNER/DEVELOPER:
THE HOWARD RESEARCH & DEVELOPMENT CORPORATION
10275 Little Patuxent Parkway
Columbia, Maryland 21044

DMW
Daft·McCune·Walker, Inc.
200 East Pennsylvania Avenue
Towson, Maryland 21286
(410) 296-3333
Fax 296-4705

A Team of Land Planners, Landscape Architects, Engineers, Surveyors & Environmental Professionals

SUBDIVISION NAME	SECTION/AREA	LOT/PARCEL #
EMERSON SECTION 2	PHASE IA	P/O P.837, P.3, P.462

PLAT# OR L/F	BLOCK #	ZONE	TAX/ZONE MAP	ELECT. DISTRICT	CENSUS TRACT
L.572, F.430 L.1129, F.48	2,7,8,9,13, 14,15,20 & 21	MXD	47	6 TH	-

WATER CODE	SEWER CODE
-	-

TITLE
TITLE SHEET

Des By MAT/JDC	Scale AS SHOWN	Proj. No. 95054.F
Drn By KMF/WHJ	Date 9-26-01	1 of 27
Chk By	Approved	

9/25/01
Date

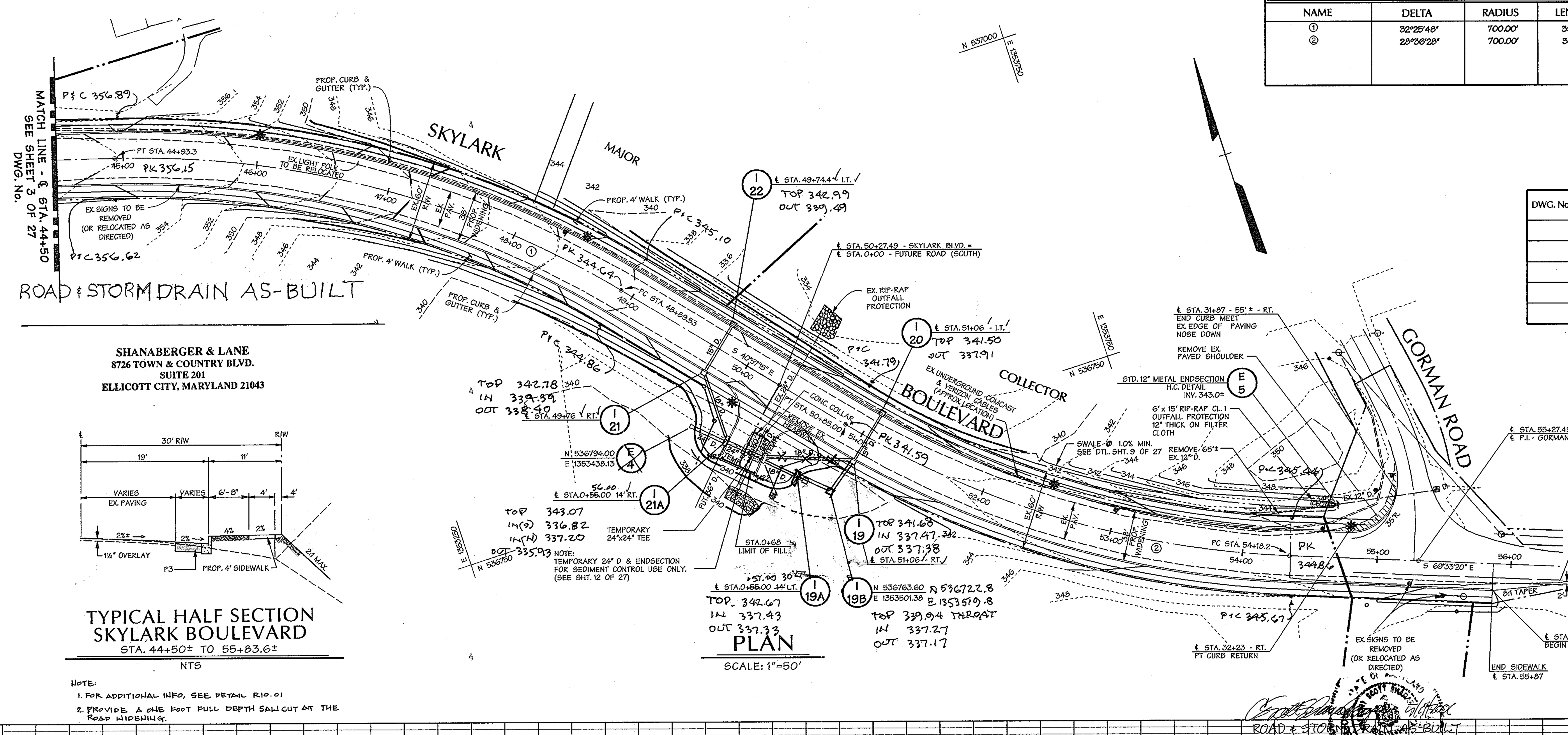
Professional Engr. No. 10551

ROAD & STORM DRAIN AS-BUILT
7/11/2006.

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

F-01-136

Tue Sep 25 11:20:26 2001n:\95054\final\95054f.rcv



NOTE:
1. FOR ADDITIONAL INFO, SEE DETAIL R10.01
2. PROVIDE A ONE FOOT FULL DEPTH SAWCUT AT THE ROAD WIDENING.

CURVE DATA

NAME	DELTA	RADIUS	LENGTH	TANGENT	CHORD
①	32°25'48"	700.00'	396.21'	203.57'	
②	28°36'28"	700.00'	349.51'	178.48'	

STREET LIGHT LEGEND

✱ 250 WATT HIGH PRESSURE SODIUM (HPS) VAPOR, PENDANT (SAG) MOUNTED AT 30' ON A BRONZE FIBERGLASS POLE USING A 12' ARM

STREET LIGHT TABLE

DWG. No.	STREET NAME	STATION	OFF-SET	FIXTURE / POLE TYPE	COMMENTS
	SKYLARK BLVD.	54+80	24' LT	✱	Angle to center of intersection
	SKYLARK BLVD.	52+50	23' LT	✱	
	SKYLARK BLVD.	50+03	29' RT	✱	
	SKYLARK BLVD.	48+50	23' LT	✱	
	SKYLARK BLVD.	46+00	23' LT	✱	

STREET SIGN LEGEND

- 24" X 30" RECTANGLE, R2-1, SPEED LIMIT 25
- 30" X 30" OCTAGON, R1-1, STOP SIGN

APPROVED: HOWARD COUNTY DEPARTMENT OF PUBLIC WORKS.
CHIEF, BUREAU OF HIGHWAYS. — DATE 10-29-01

APPROVED: HOWARD COUNTY DEPT. OF PLANNING & ZONING
CHIEF, DEVELOPMENT ENGINEERING DIVISION MK — DATE 10/31/01
CHIEF, DIVISION OF LAND DEVELOPMENT HB — DATE 11/6/01

Date	No.	Revision Description

EMERSON

FORMERLY KEY PROPERTY
SECTION 2, PHASE 1A

OWNER/DEVELOPER:
THE HOWARD RESEARCH & DEVELOPMENT CORPORATION
10275 Little Patuxent Parkway
Columbia, Maryland 21044

DMW
Daft·McCune·Walker, Inc.
200 East Pennsylvania Avenue
Towson, Maryland 21286
(410) 296-3333
Fax 296-4705
A Team of Land Planners, Landscape Architects, Engineers, Surveyors & Environmental Professionals

SUBDIVISION NAME	SECTION/AREA	LOT/PARCEL #
EMERSON SECTION 2	PHASE IA	P/O P.837, P.3, P.462

PLAT# OR L/F	BLOCK #	ZONE	TAX/ZONE MAP	ELECT. DISTRICT	CENSUS TRACT
L.572, F.430 L.1129, F.48	2,7,8,9,13, 14,15,20 & 21	MXD	47	6 TH	-

WATER CODE	SEWER CODE
-	-

TITLE
ROAD CONSTRUCTION PLAN
SKYLARK BOULEVARD (EAST)

Des By	MAT/JDC	Scale	1"=50'	Proj. No.	95054.F
Drn By	KMF/WHJ	Date	9-26-01	2 of 27	
Chk By		Approved			

F-01-136

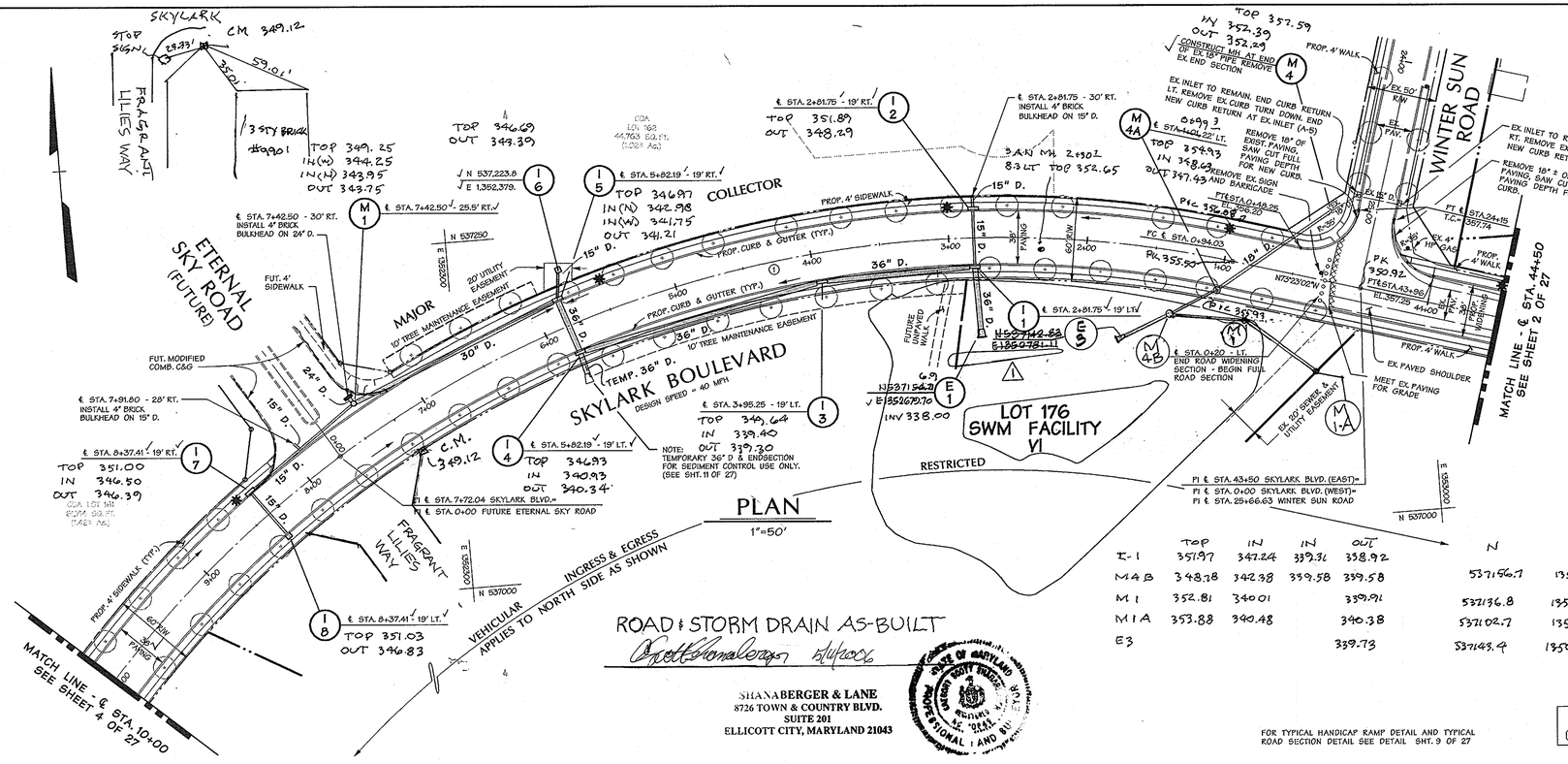
CURVE DATA

NAME	DELTA	RADIUS	LENGTH	TANGENT	CHORD	
①	77°01'12"	800.00'	1075.0'	636.58'	S68°06'22"W	996.24'

APPROVED: HOWARD COUNTY DEPARTMENT OF PUBLIC WORKS.
CHIEF, BUREAU OF HIGHWAYS. HS — 10-29-01 DATE

APPROVED: HOWARD COUNTY DEPT. OF PLANNING & ZONING
CHIEF, DEVELOPMENT ENGINEERING DIVISION MK — 10/31/01 DATE
CHIEF, DIVISION OF LAND DEVELOPMENT HB — 11/6/01 DATE
~~DIRECTOR~~ ~~DATE~~

Date	No.	Revision Description
1/22/02	⚠1	STORM DRAIN OUTFALL



	TOP	IN	IN	OUT	N	E
I-1	351.97	347.24	339.31	338.92	537156.7	1352815.3
M4B	348.78	342.38	339.58	339.58	537136.8	1352881.9
M1	352.81	340.01		339.91	537102.7	1352916.4
M1A	353.88	340.48		340.38	537143.4	1352784.0
E3				339.73		

AS-BUILT

ROAD & STORM DRAIN AS-BUILT
5/4/2006

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

FOR TYPICAL HANDICAP RAMP DETAIL AND TYPICAL ROAD SECTION DETAIL SEE DETAIL SHT. 9 OF 27

STREET LIGHT LEGEND

✱ 250 WATT HIGH PRESSURE SODIUM (HPS) VAPOR, PENDANT (SAG) MOUNTED AT 30' ON A BRONZE FIBERGLASS POLE USING A 12' ARM

STREET LIGHT TABLE

DWG. No.	STREET NAME	STATION	OFF-SET	FIXTURE / POLE TYPE	COMMENTS
	SKYLARK BLVD.	1+00	23' RT	✱	Angle to center of intersection
	SKYLARK BLVD.	3+00	23' RT	✱	
	SKYLARK BLVD.	5+50	23' RT	✱	
	SKYLARK BLVD.	8+50	23' RT.	✱	
	SKYLARK BLVD.	43+75	34' LT.	✱	

STREET SIGN LEGEND

▯ 24" X 30" RECTANGLE, R2-1, SPEED LIMIT 25
⬡ 30" X 30" OCTAGON, R1-1, STOP SIGN

9/25/01
Date

Professional Engr. No. 10551

EMERSON
FORMERLY KEY PROPERTY
SECTION 2, PHASE 1A

OWNER/DEVELOPER:
THE HOWARD RESEARCH & DEVELOPMENT CORPORATION
10275 Little Patuxent Parkway
Columbia, Maryland 21044

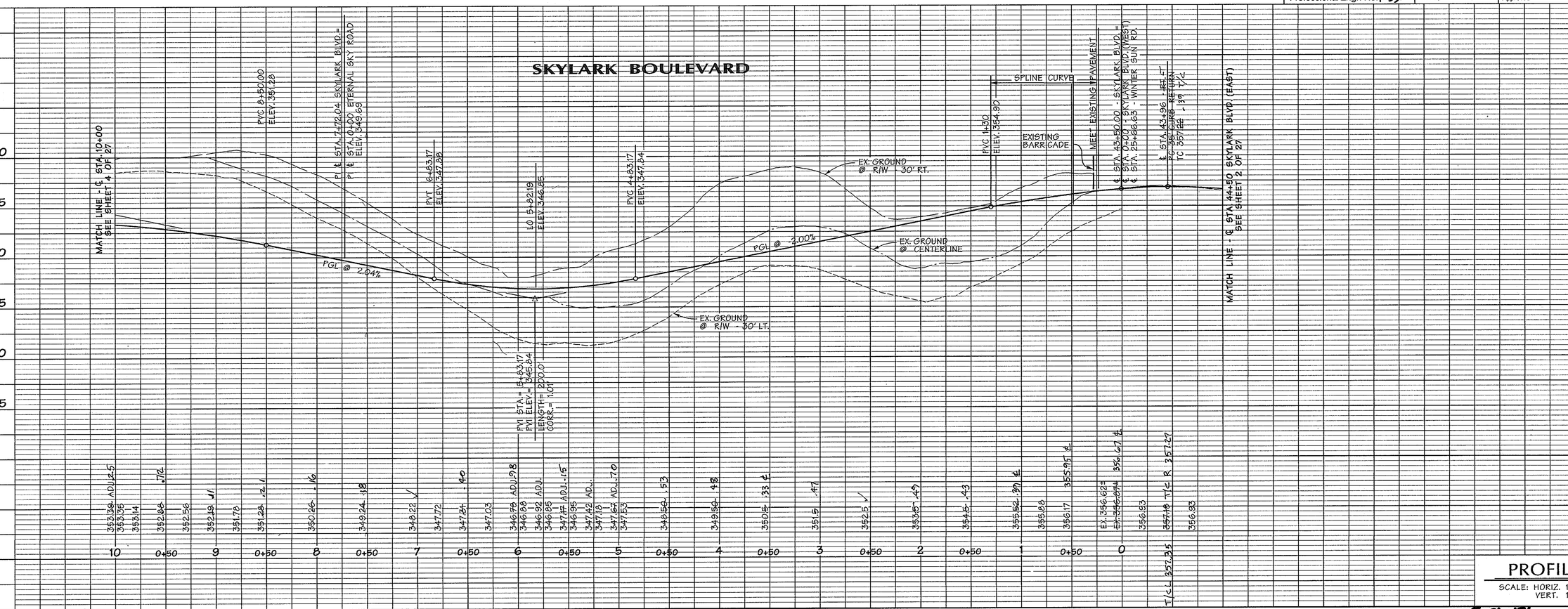
DMW
Daft·McCune·Walker, Inc.
200 East Pennsylvania Avenue
Towson, Maryland 21286
(410) 296-3333
Fax 296-4705

A Team of Land Planners, Landscape Architects, Engineers, Surveyors & Environmental Professionals

SUBDIVISION NAME		SECTION/AREA		LOT/PARCEL #	
EMERSON SECTION 2		PHASE I		P/O P. 837, P. 3, P. 462	
PLAT# OR L/F	BLOCK #	ZONE	TAX/ZONE MAP	ELECT. DISTRICT	CENSUS TRACT
L. 572, F. 430 L. 1129, F. 48	2, 7, 8, 9, 13, 14, 15, 20 & 21	MXD	47	6 TH	-
WATER CODE		SEWER CODE			
-		-			

TITLE
ROAD CONSTRUCTION PLAN
SKYLARK BOULEVARD
℄ STA. 44+50 (East) – 10+00 (West)

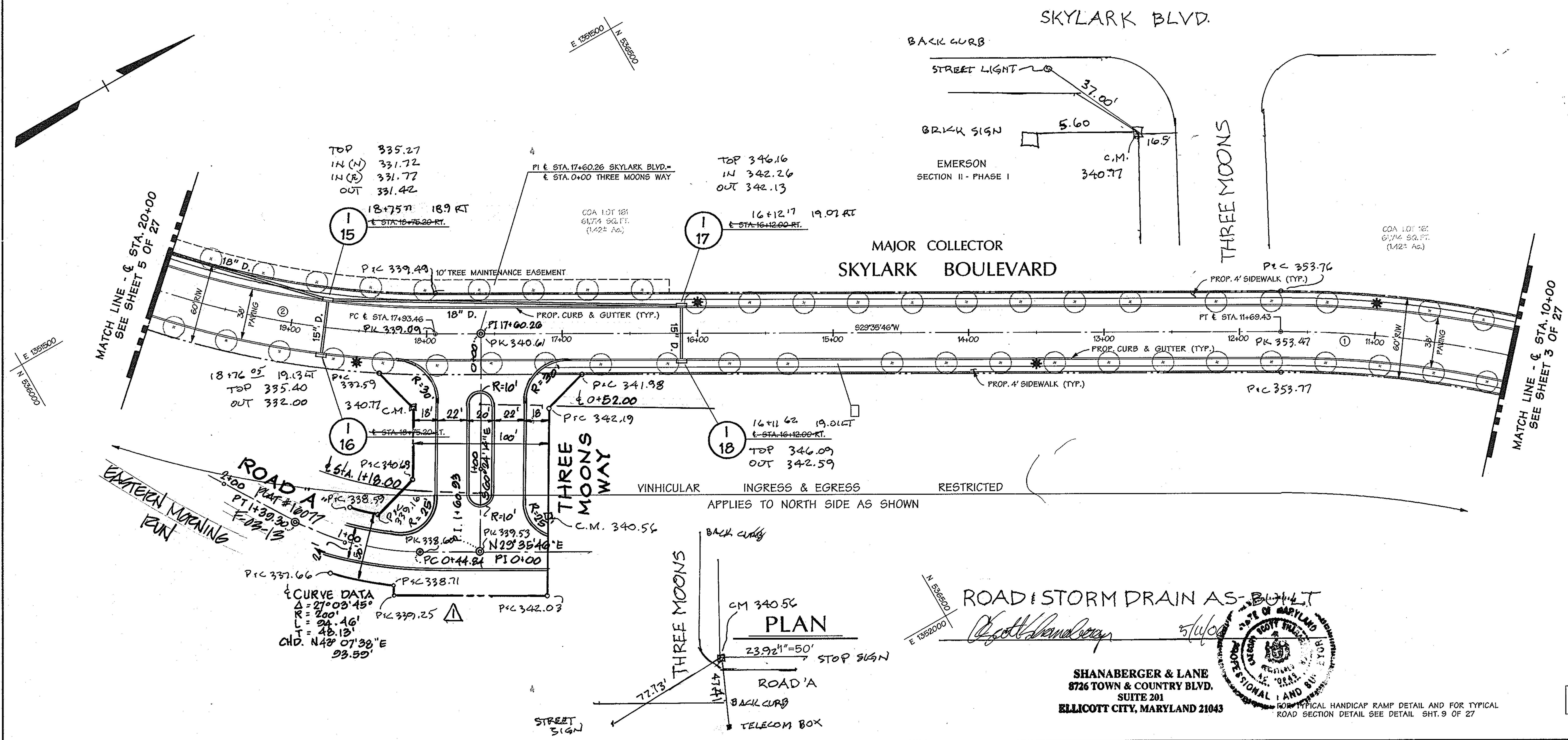
Des By	MAT/JDC	Scale	1"=50'	Proj. No.	95054.F
Drn By	WHJ/MSS	Date	9-26-01	3 of 27	
Chk By		Approved			



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

F-01-136.

Tue Sep 25 11:24:26 2001n:\95054\final\95054f.rd1



CURVE DATA

NAME	DELTA	RADIUS	LENGTH	TANGENT	CHORD	
①	77°01'12"	800.00'	1075.0'	636.58'	S68°06'22"W	996.24'
②	67°20'25"	650.00'	763.95'	433.01'	S63°15'59"W	720.73'

APPROVED: HOWARD COUNTY DEPARTMENT OF PUBLIC WORKS.

CHIEF, BUREAU OF HIGHWAYS. HS — DATE 10-29-01

APPROVED: HOWARD COUNTY DEPT. OF PLANNING & ZONING

CHIEF, DEVELOPMENT ENGINEERING DIVISION MK — DATE 10/31/01

CHIEF, DIVISION OF LAND DEVELOPMENT HG — DATE 11/6/01

~~DIRECTOR~~ ~~DATE~~

Date	No.	Revision Description
4/4/02	1	ADDED THREE MOONS WAY

STREET LIGHT LEGEND

✱ 250 WATT HIGH PRESSURE SODIUM (HPS) VAPOR, PENDANT (SAG) MOUNTED AT 30' ON A BRONZE FIBERGLASS POLE USING A 12' ARM

STREET LIGHT TABLE

DWG. No.	STREET NAME	STATION	OFF-SET	FIXTURE / POLE TYPE	COMMENTS
	SKYLARK BLVD.	11+00	23' RT.	✱	
	SKYLARK BLVD.	13+50	23' LT.	✱	
	SKYLARK BLVD.	16+00	23' RT.	✱	
	SKYLARK BLVD.	18+50	23' LT.	✱	

STREET SIGN LEGEND

- 24" X 30" RECTANGLE, R2-1, SPEED LIMIT 25
- 30" X 30" OCTAGON, R1-1, STOP SIGN

9-25-01
Date

Professional Engr. No. 10551

EMERSON

FORMERLY KEY PROPERTY
SECTION 2, PHASE 1A

OWNER/DEVELOPER:

THE HOWARD RESEARCH & DEVELOPMENT CORPORATION
10275 Little Patuxent Parkway
Columbia, Maryland 21044

Daft·McCune·Walker, Inc.
200 East Pennsylvania Avenue
Towson, Maryland 21286
(410) 296-3333
Fax 296-4705

A Team of Land Planners, Landscape Architects, Engineers, Surveyors & Environmental Professionals

SUBDIVISION NAME	SECTION/AREA	LOT/PARCEL #
EMERSON SECTION 2	PHASE I	P/O P.837, P.3, P.462

PLAT# OR L/F	BLOCK #	ZONE	TAX/ZONE MAP	ELECT. DISTRICT	CENSUS TRACT
L.572, F.430 L.1129, F.46	2, 7, 8, 9, 13, 14, 15, 20 & 21	MXD	47	6 TH	-

WATER CODE	SEWER CODE
-	-

TITLE

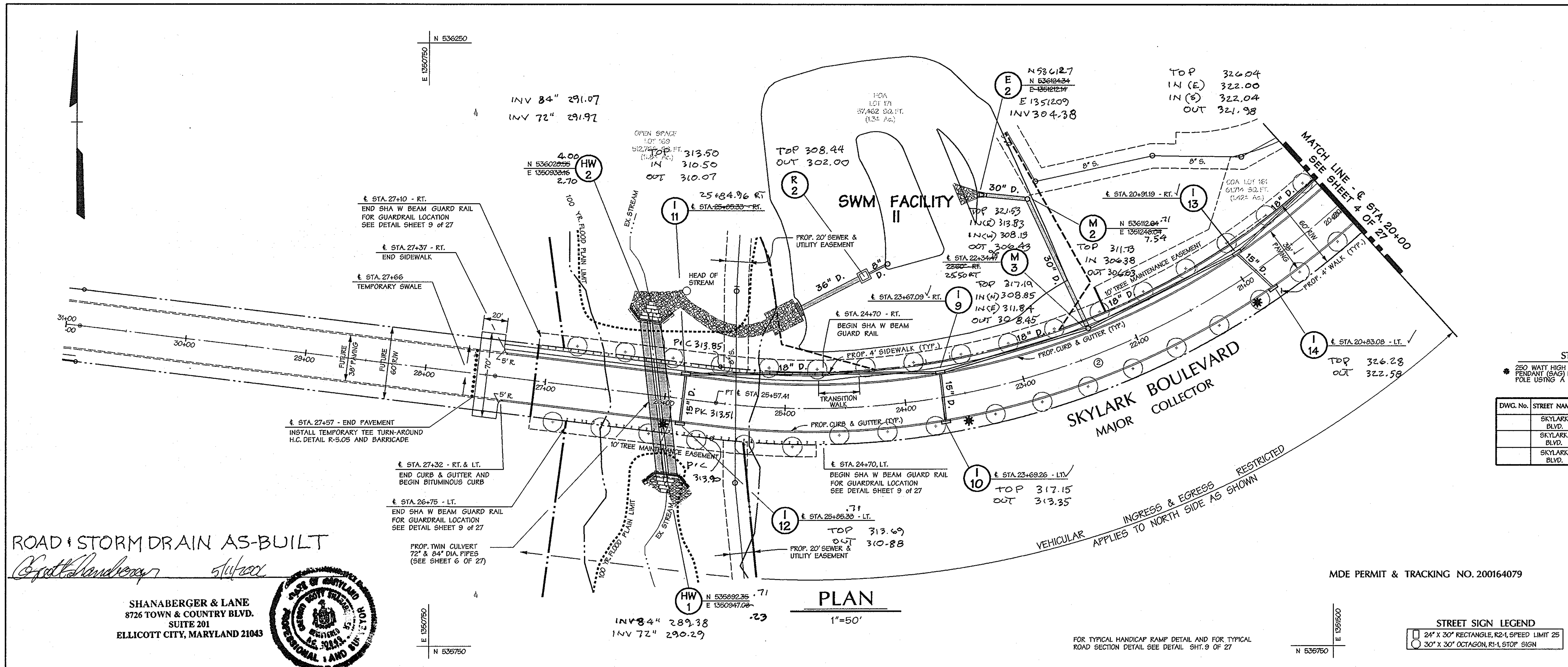
ROAD CONSTRUCTION PLAN
SKYLARK BOULEVARD
℄ STA. 10+00 – 20+00

Des By	MAT/JDC	Scale	1"=50'	Proj. No.	95054.F
Drn By	WHJ/MSS	Date	9-26-01		4 of 27
Chk By		Approved			

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

F-01-136

CURVE DATA					
NAME	DELTA	RADIUS	LENGTH	TANGENT	CHORD
②	67°20'25"	650.00'	763.95'	433.01'	S63°15'59"W 720.73'



MDE PERMIT & TRACKING NO. 200164079

FOR TYPICAL HANDICAP RAMP DETAIL AND FOR TYPICAL ROAD SECTION DETAIL SEE DETAIL SHT. 9 OF 27

STREET LIGHT LEGEND

✱ 250 WATT HIGH PRESSURE SODIUM (HPS) VAPOR, PENDANT (BAG) MOUNTED AT 30' ON A BRONZE FIBERGLASS POLE USING A 12' ARM

STREET LIGHT TABLE

DWG. No.	STREET NAME	STATION	OFF-SET	FIXTURE / POLE TYPE	COMMENTS
	SKYLARK BLVD.	21+00	23' LT	✱	
	SKYLARK BLVD.	23+50	23' LT	✱	
	SKYLARK BLVD.	26+00	23' LT	✱	

STREET SIGN LEGEND

- ▢ 24" X 30" RECTANGLE, R2-1, SPEED LIMIT 25
- ◯ 30" X 30" OCTAGON, R1-1, STOP SIGN

APPROVED: HOWARD COUNTY DEPARTMENT OF PUBLIC WORKS

CHIEF, BUREAU OF HIGHWAYS — DATE 10-29-01

APPROVED: HOWARD COUNTY DEPT. OF PLANNING & ZONING

CHIEF, DEVELOPMENT ENGINEERING DIVISION — DATE 10/31/01

CHIEF, DIVISION OF LAND DEVELOPMENT — DATE 11/6/01

Date	No.	Revision Description

EMERSON

FORMERLY KEY PROPERTY
SECTION 2, PHASE 1A

OWNER/DEVELOPER:

THE HOWARD RESEARCH & DEVELOPMENT CORPORATION
10275 Little Patuxent Parkway
Columbia, Maryland 21044

DMW
Daft-McCune-Walker, Inc.
200 East Pennsylvania Avenue
Towson, Maryland 21286
(410) 296-3333
Fax 296-4705

A Team of Land Planners, Landscape Architects, Engineers, Surveyors & Environmental Professionals

Date 9/25/01

Professional Engr. No. 10551

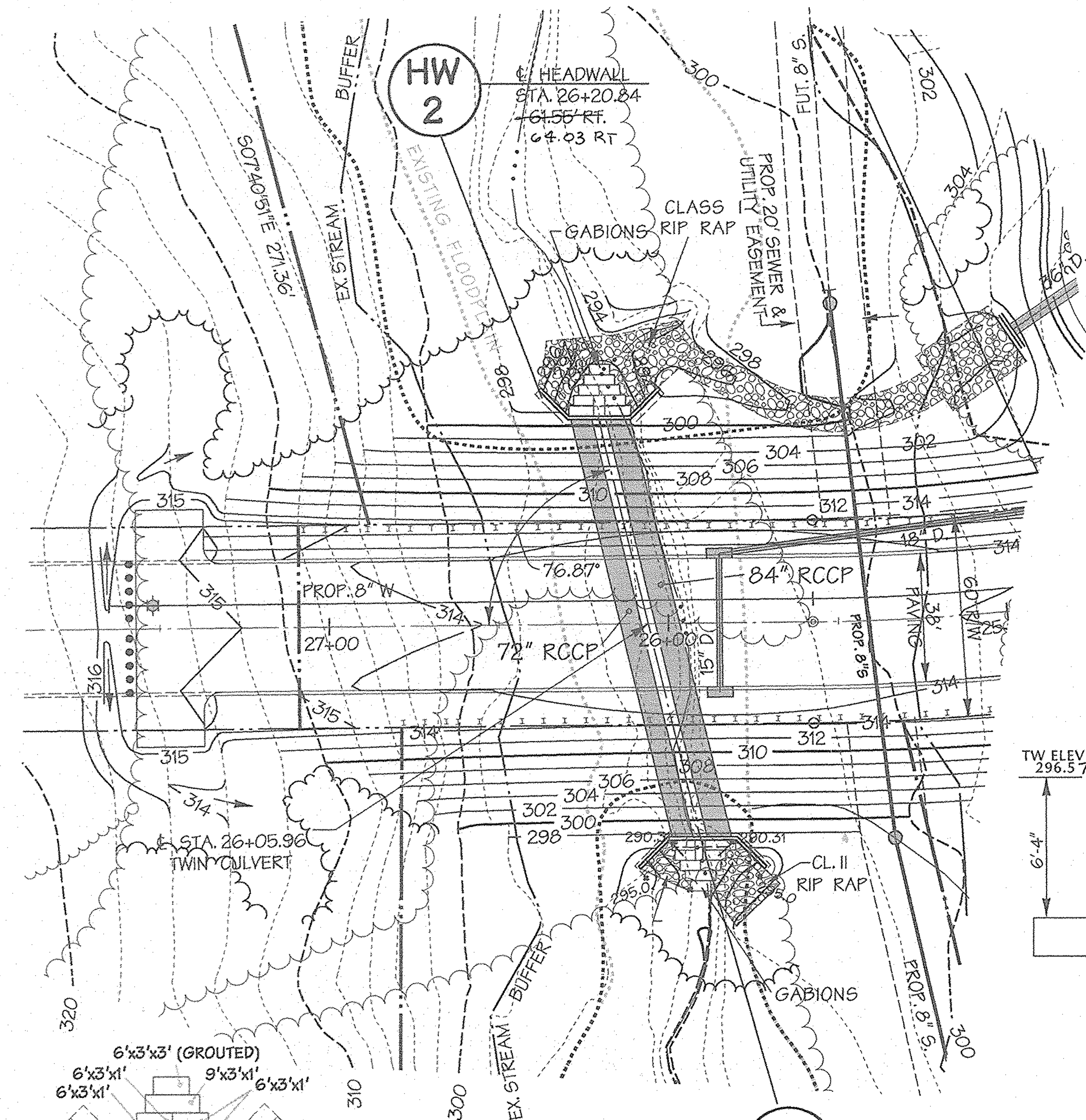
SUBDIVISION NAME: EMERSON SECTION 2 — SECTION/AREA: PHASE 1A — LOT/PARCEL #: P/O P. 837, P. 3, P. 462
ZONE: MXD — TAX/ZONE MAP: 47 — ELECT. DISTRICT: 6 TH

TITLE: ROAD CONSTRUCTION PLAN
SKYLARK BOULEVARD
℄ STA. 20+00 - 27+57

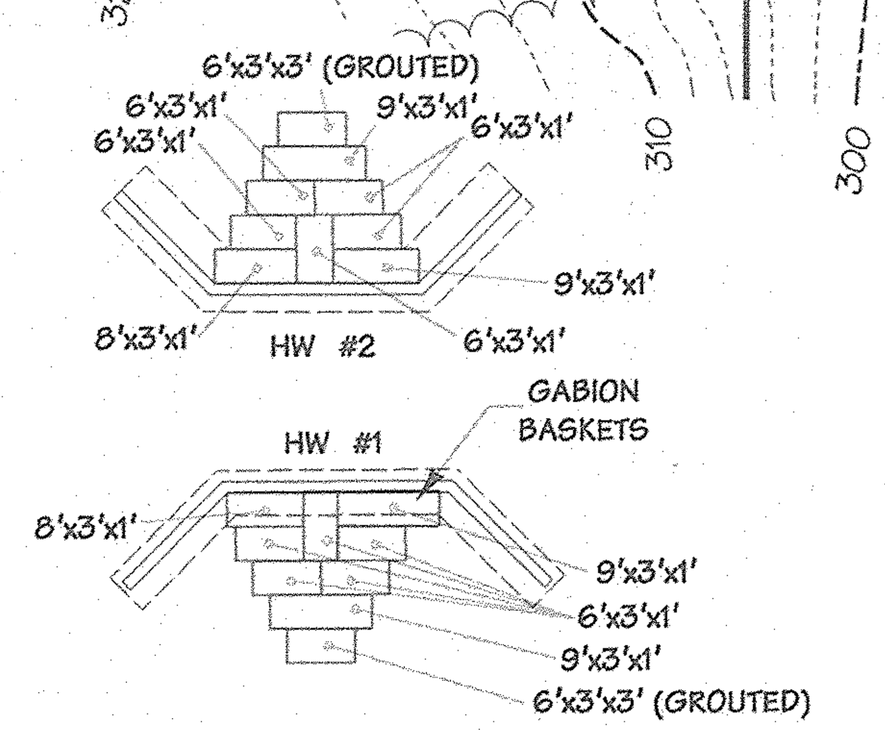
Des By	MAT/JDC	Scale	1"=50'	Proj. No.	95054.F
Drn By	WHJ/MSS	Date	9-26-01		5 of 27
Chk By		Approved			

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

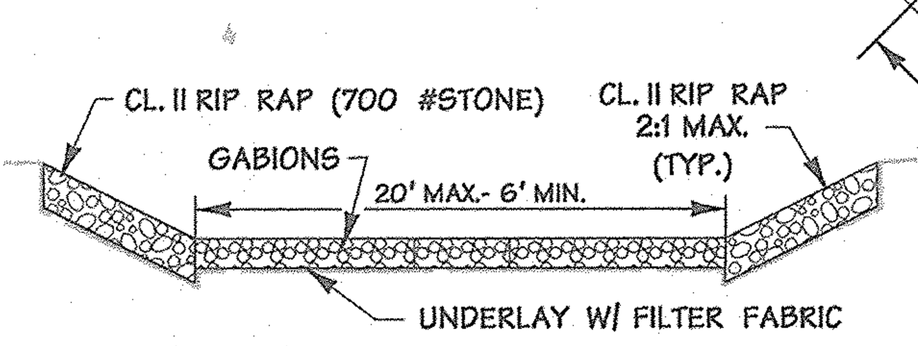
F-01-136



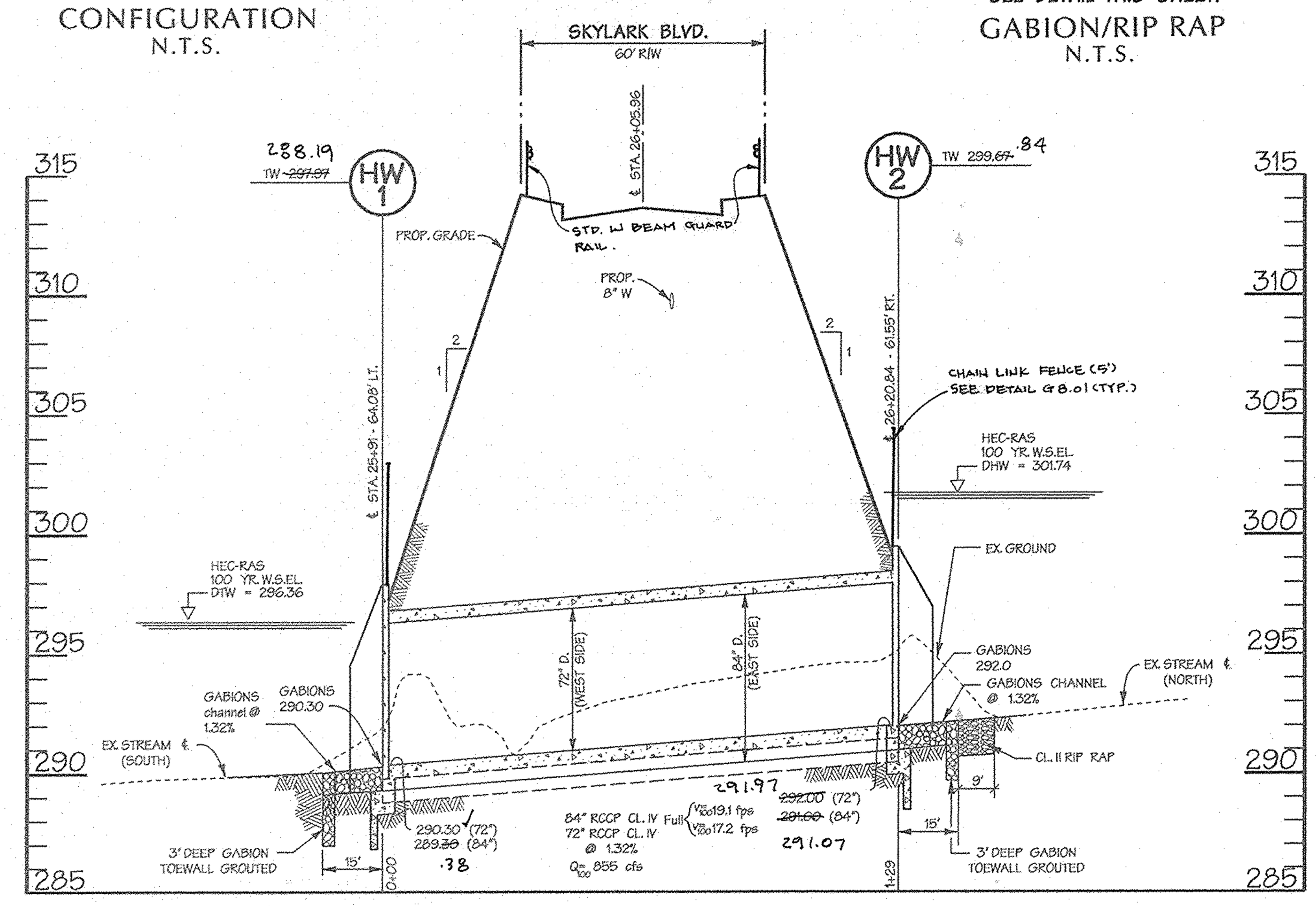
PLAN
SCALE: 1"=30'



GABION BASKET CONFIGURATION
N.T.S.



GABION/RIP RAP
N.T.S.



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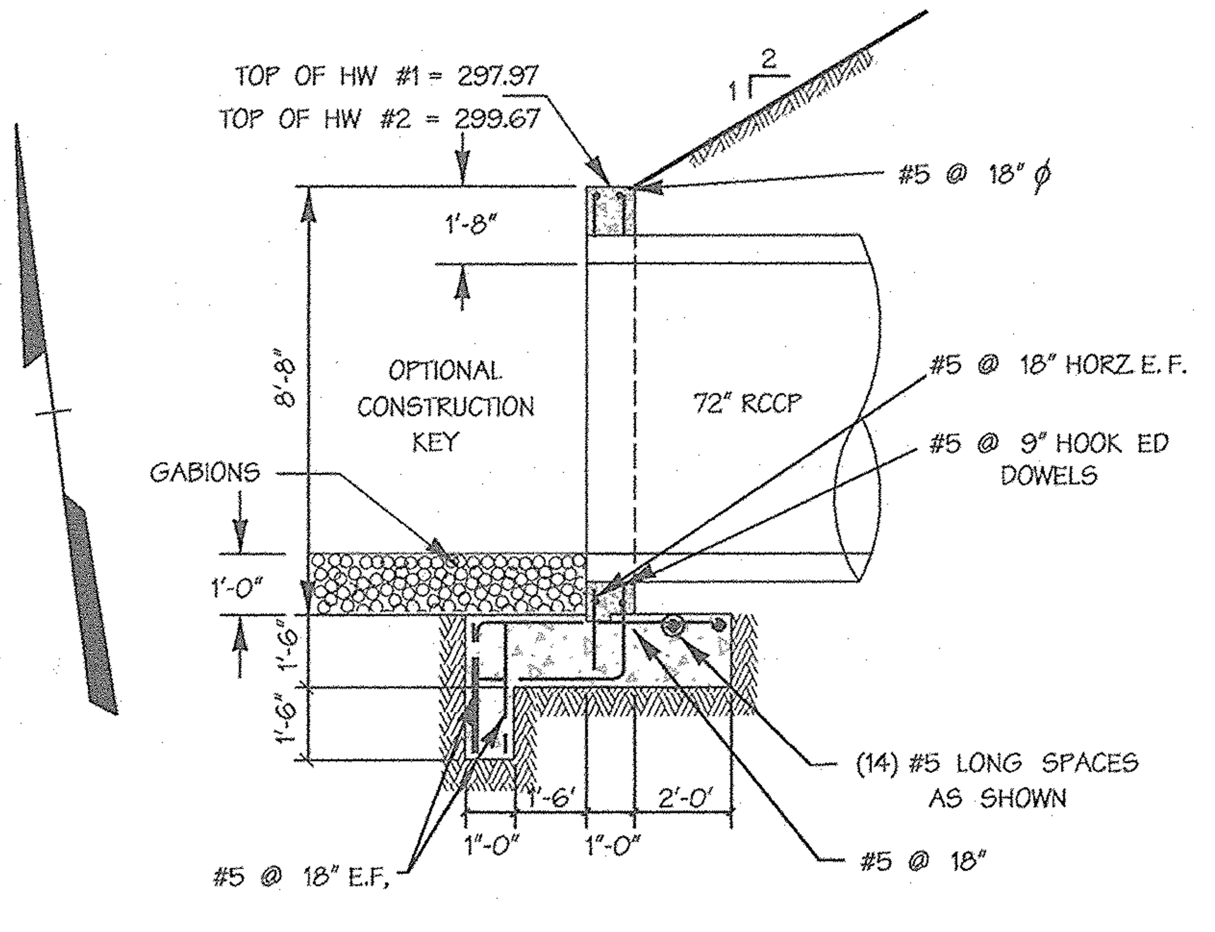
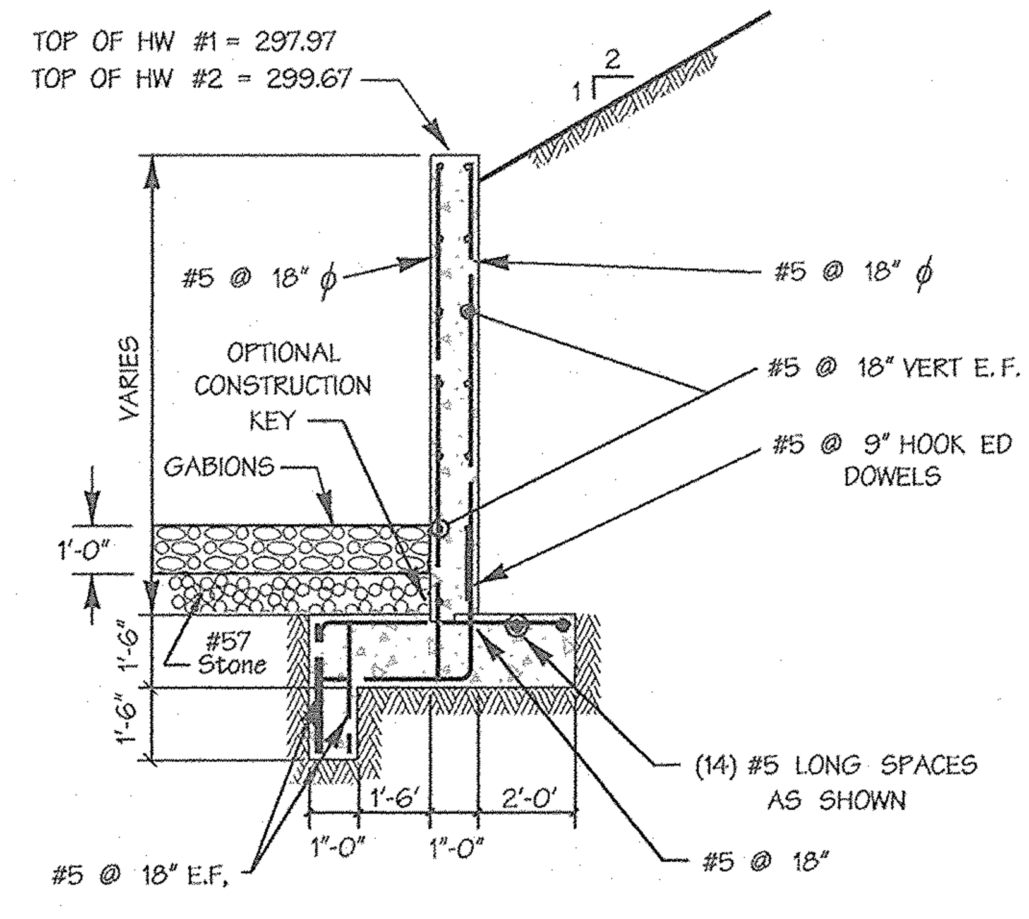
SCALE: HORIZ. 1"=30'
VERT. 1"=5'



SECTION "A-A"
SCALE: ¼"= 1'-0"



SECTION "B-B"
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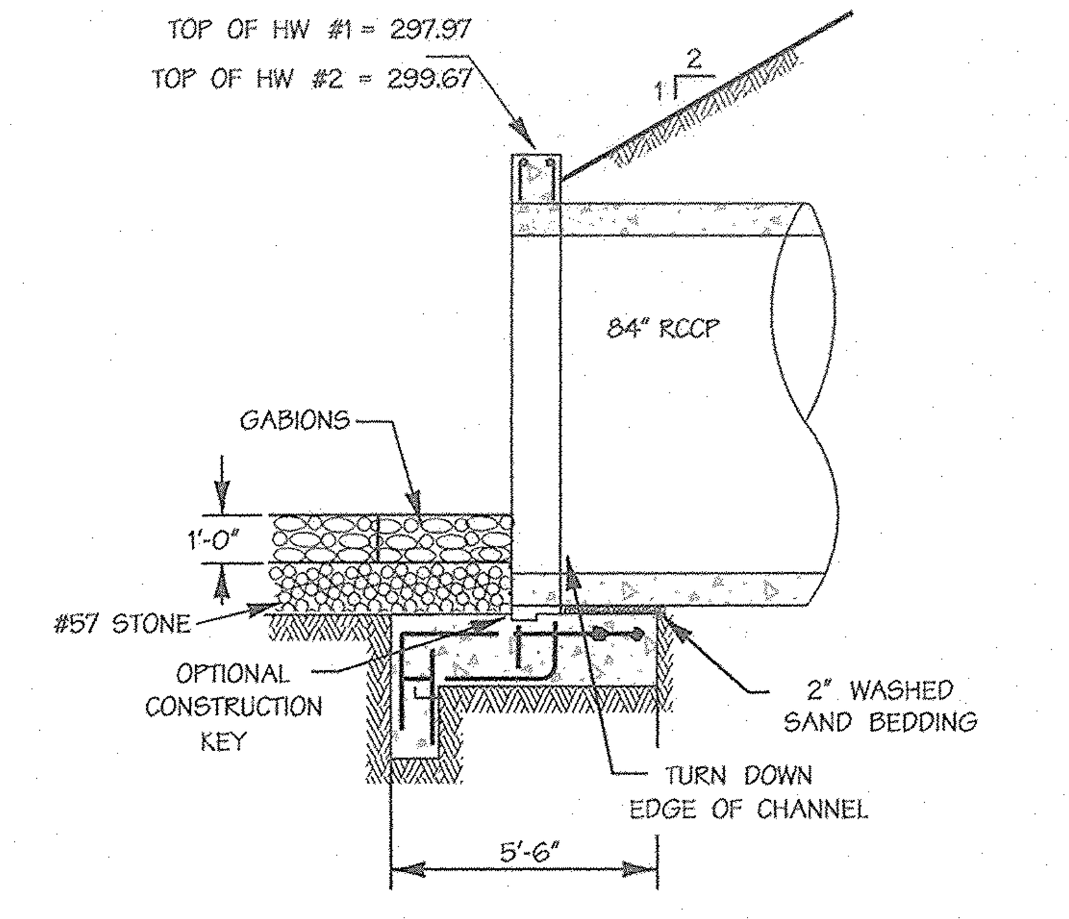

SECTION "C-C"
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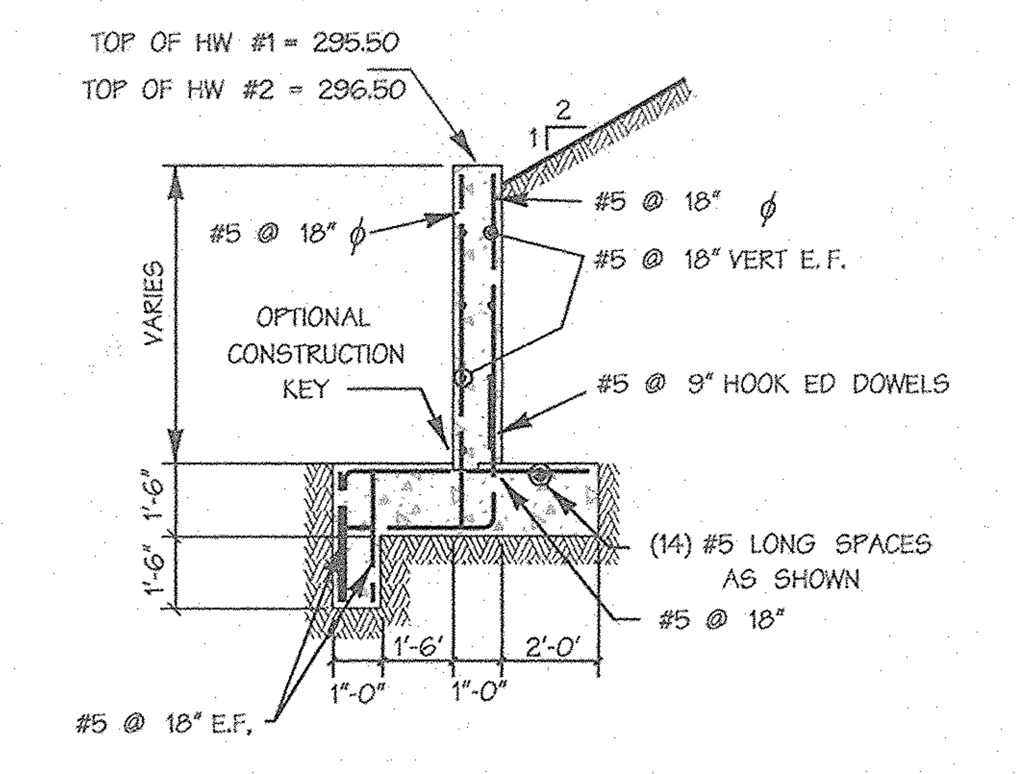
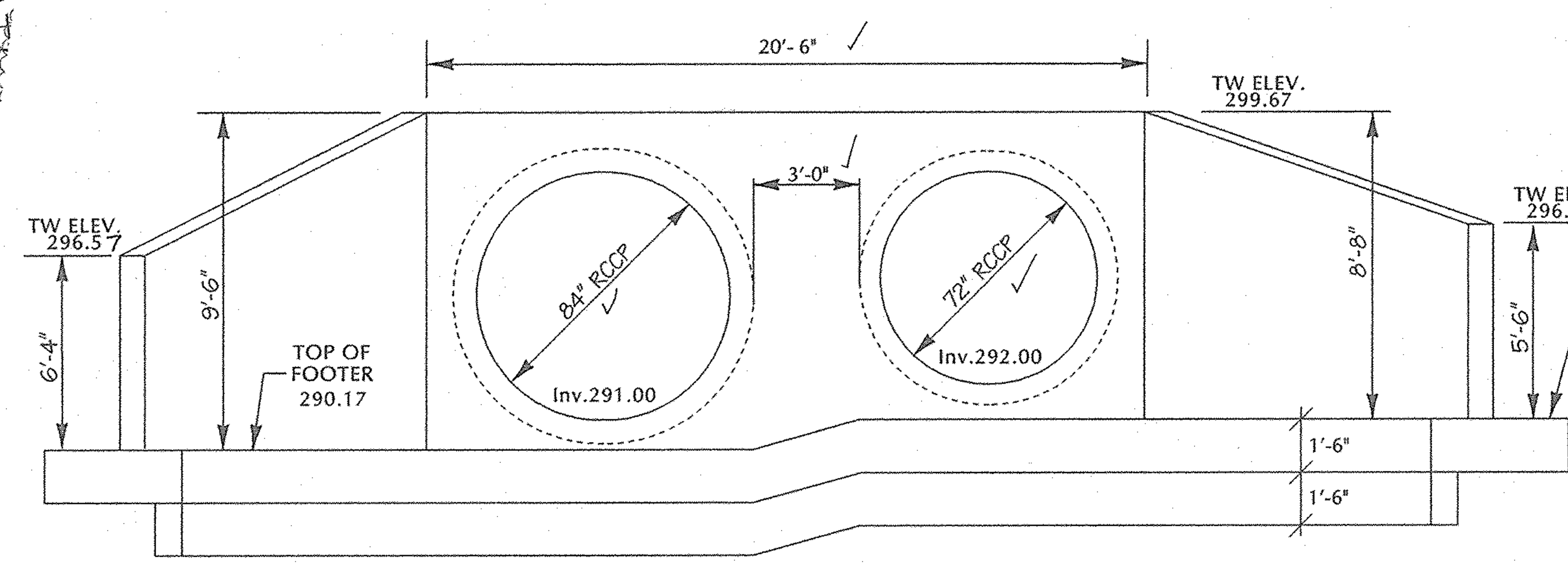
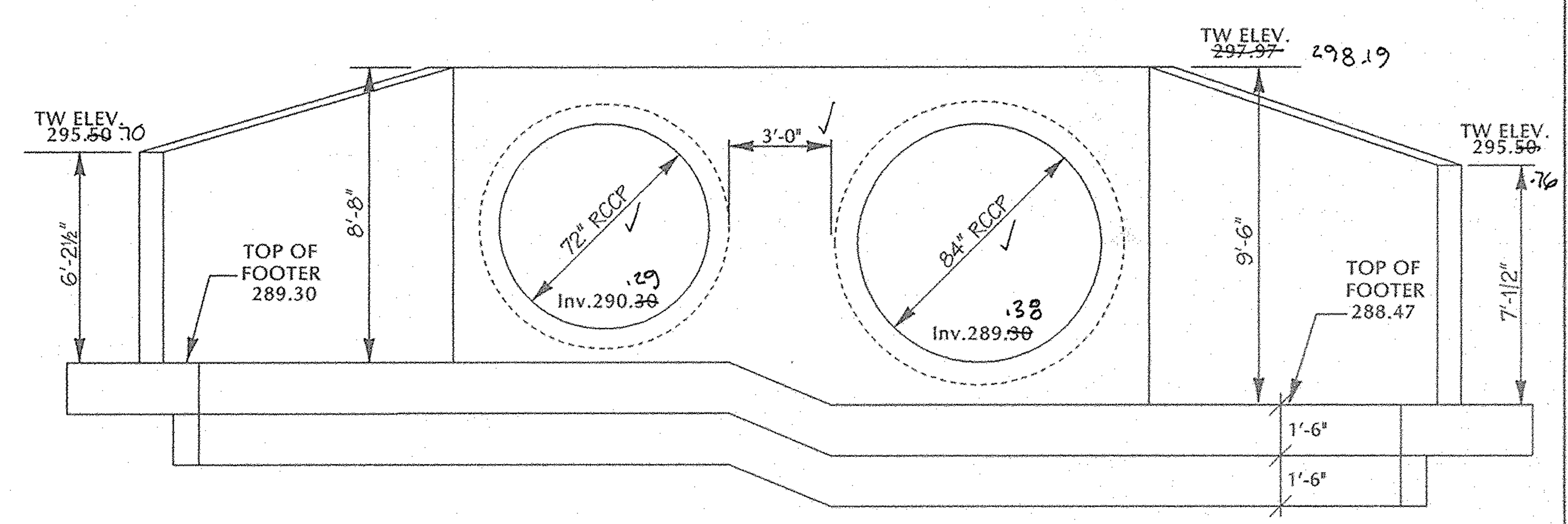


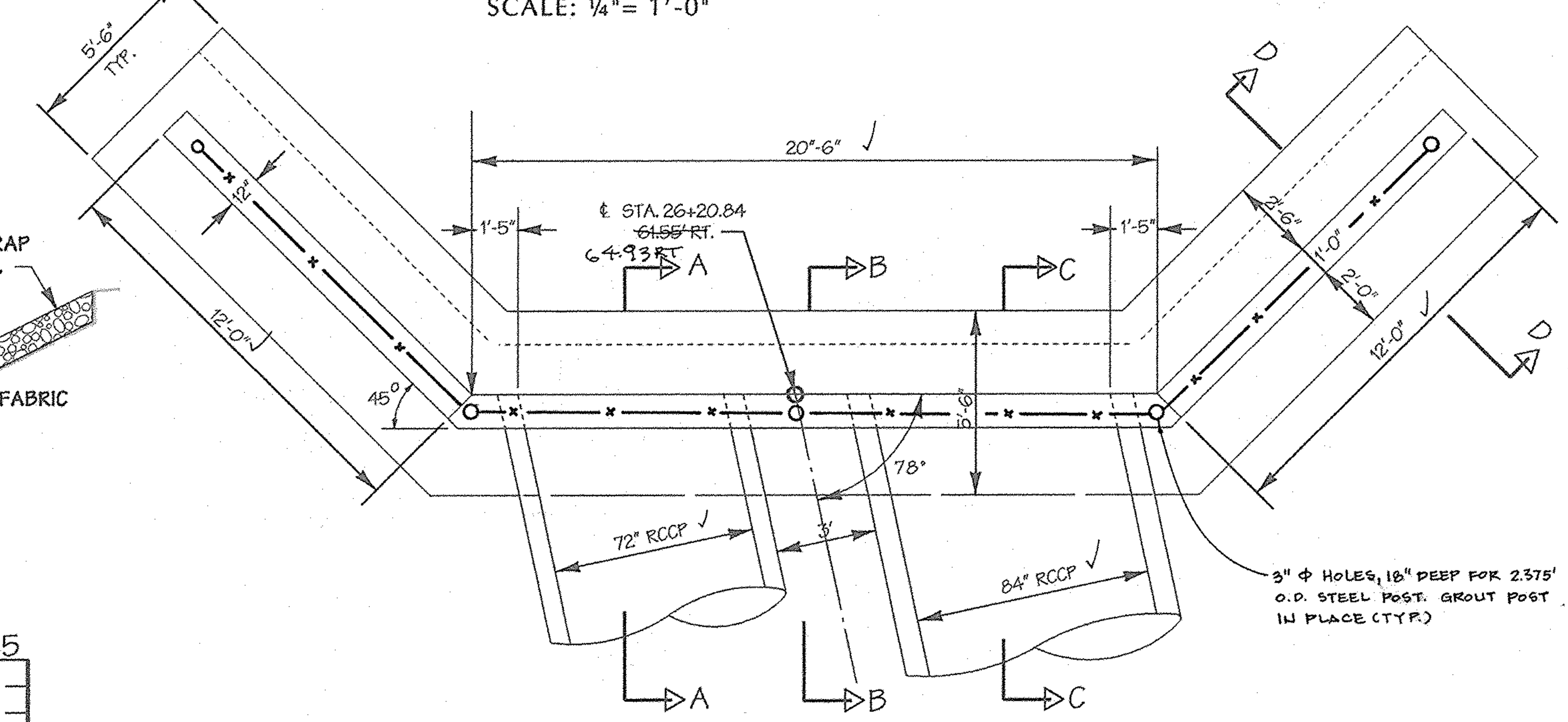
SECTION "D-D"
SCALE: ¼"= 1'-0"



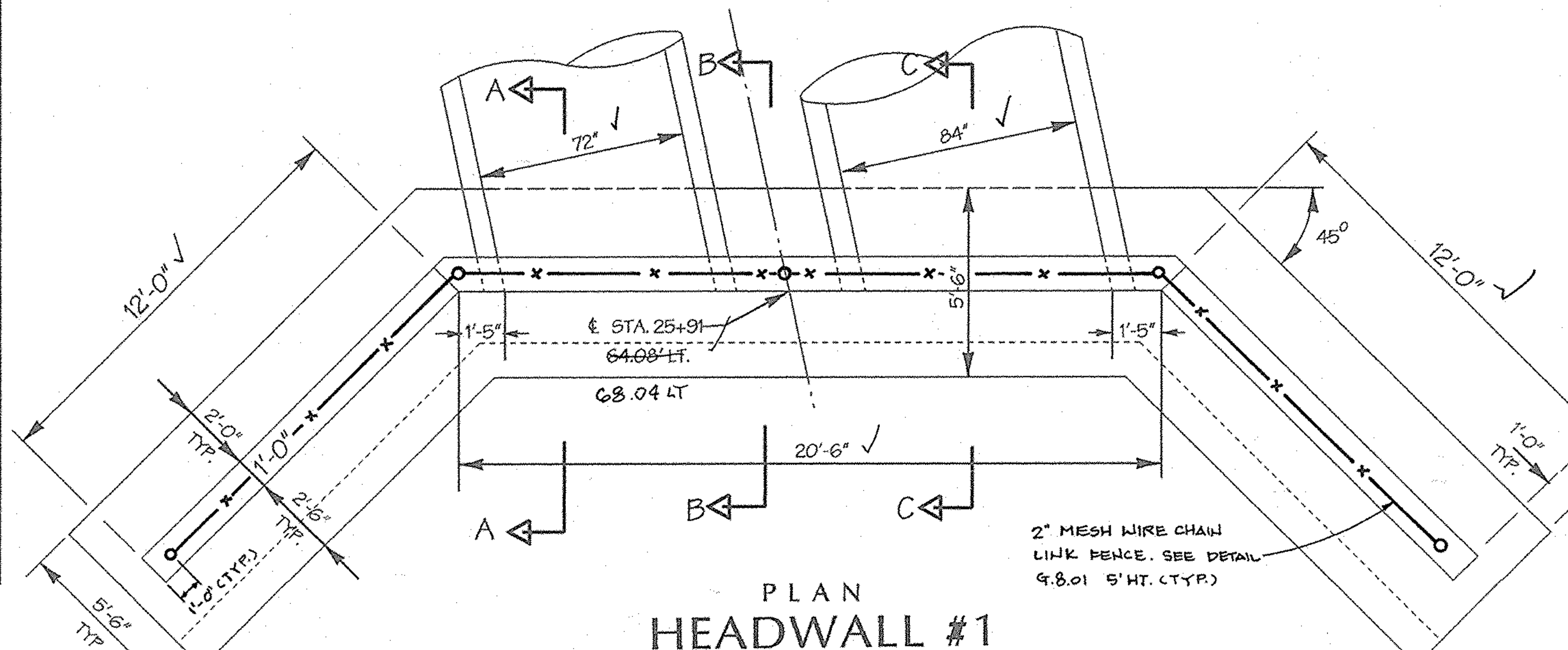
HEADWALL #2
SCALE: ¼"= 1'-0"



HEADWALL #1
SCALE: ¼"= 1'-0"



PLAN
HEADWALL #2
SCALE: ¼"= 1'-0"



PLAN
HEADWALL #1
SCALE: ¼"= 1'-0"

MDE PERMIT & TRACKING NO. 200164079

GENERAL STRUCTURAL NOTES

1. THE FOUNDATION DESIGN FOR THIS STRUCTURE HAS BEEN BASED ON AN ASSUMED 2500 PSF NET SOIL BEARING CAPACITY AT THE BOTTOM OF FOOTINGS ELEVATION. SUB-GRADE PREPARATION AND FOOTING CONSTRUCTION SHALL BE DONE IN A MANNER SO AS TO ASSURE AVAILABILITY OF THIS MINIMUM BEARING CAPACITY.

2. THE CONTRACTOR SHALL ENGAGE AN INDEPENDENT GEOTECHNICAL ENGINEER TO INSPECT ALL FOOTING EXCAVATIONS, AND FIELD VERIFY THE SOIL CAPACITY AT THE BEARING STRATA IMMEDIATELY PRIOR TO PLACING FOOTING CONCRETE. SHOULD THE CAPACITY BE FOUND TO BE LESS THAN THAT INDICATED, THE CONTRACTOR SHALL STOP WORK IN THE REGION IN QUESTION, AND SHALL IMMEDIATELY NOTIFY THE ENGINEER. COPIES OF THE FIELD INSPECTION REPORTS SHALL BE FORWARDED TO THE ENGINEER WITHIN 48 HOURS AFTER TESTING.

3. BOTTOM OF ALL FOOTINGS SHALL BE THE ELEVATION INDICATED, OR 12" BELOW VIRGIN SOIL (REFER TO CIVIL DRAWINGS), OR (FOR EXTERNAL FOOTINGS) 3'-0" BELOW FINISHED GRADE, WHICHEVER IS DEEPER. UNDER NO CIRCUMSTANCES SHALL FOOTINGS BE PLACED ON FILL. PROVIDE FOOTING STEPS AS REQUIRED (REFER TO TYPICAL STEPPED FOOTING DETAIL).

4. ALL CONCRETE INDICATED ON THIS DRAWING SHALL BE 3000 PSI PORTLAND CEMENT NORMAL WEIGHT CONCRETE MEETING THE REQUIREMENTS OF MDOT MIX #2.

5. CONCRETE COVER OVER REINFORCEMENT SHALL BE THE FOLLOWING MINIMUM CLEAR DISTANCE:

FOOTINGS	3"
WALLS & PIERS BELOW GRADE	2"
SLABS ON GRADE (TOP)	2"
SLABS ON GRADE (BOTTOM)	2"
WALLS NOT BACK FILLED	¾"

6. DEFORMED STEEL REINFORCING BARS SHALL CONFORM TO ASTM A-615, GRADE 60. LAP ALL SPLICES 30 BAR DIAMETERS, MIN. (UNO).

7. PROVIDE CHAIRS AND BOLSTERS AS REQUIRED TO SECURELY HOLD REINFORCING BARS AND WIRE MESH IN PLACE UNTIL CONCRETE HAS CURED.

8. MOIST CURE ALL FRESH CONCRETE FOR AT LEAST 7 DAYS AFTER PLACING.

9. UNLESS NOTED OTHERWISE, CHAMFER ALL EXPOSED EDGES ¾".

9/25/01
Date

Professional Engr. No. 10551

ROAD & STORM DRAIN
5/14/02

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

APPROVED: HOWARD COUNTY DEPARTMENT OF PUBLIC WORKS.

CHIEF, BUREAU OF HIGHWAYS. — DATE 10-29-01

APPROVED: HOWARD COUNTY DEPT. OF PLANNING & ZONING

CHIEF, DEVELOPMENT ENGINEERING DIVISION MK — DATE 10/31/01

CHIEF, DIVISION OF LAND DEVELOPMENT — DATE 11/6/01

~~DIRECTOR~~ — ~~DATE~~

Date	No.	Revision Description

EMERSON
FORMERLY KEY PROPERTY
SECTION 2, PHASE 1A

OWNER/DEVELOPER:
THE HOWARD RESEARCH & DEVELOPMENT CORPORATION
10275 Little Patuxent Parkway
Columbia, Maryland 21044

DMW
Daft-McCune-Walker, Inc.
200 East Pennsylvania Avenue
Towson, Maryland 21286
(410) 296-3333
Fax 296-4705

A Team of Land Planners, Landscape Architects, Engineers, Surveyors & Environmental Professionals

SUBDIVISION NAME	SECTION/AREA	LOT/PARCEL #
EMERSON SECTION 2	PHASE IA	P/O P.837, P.3, P.462

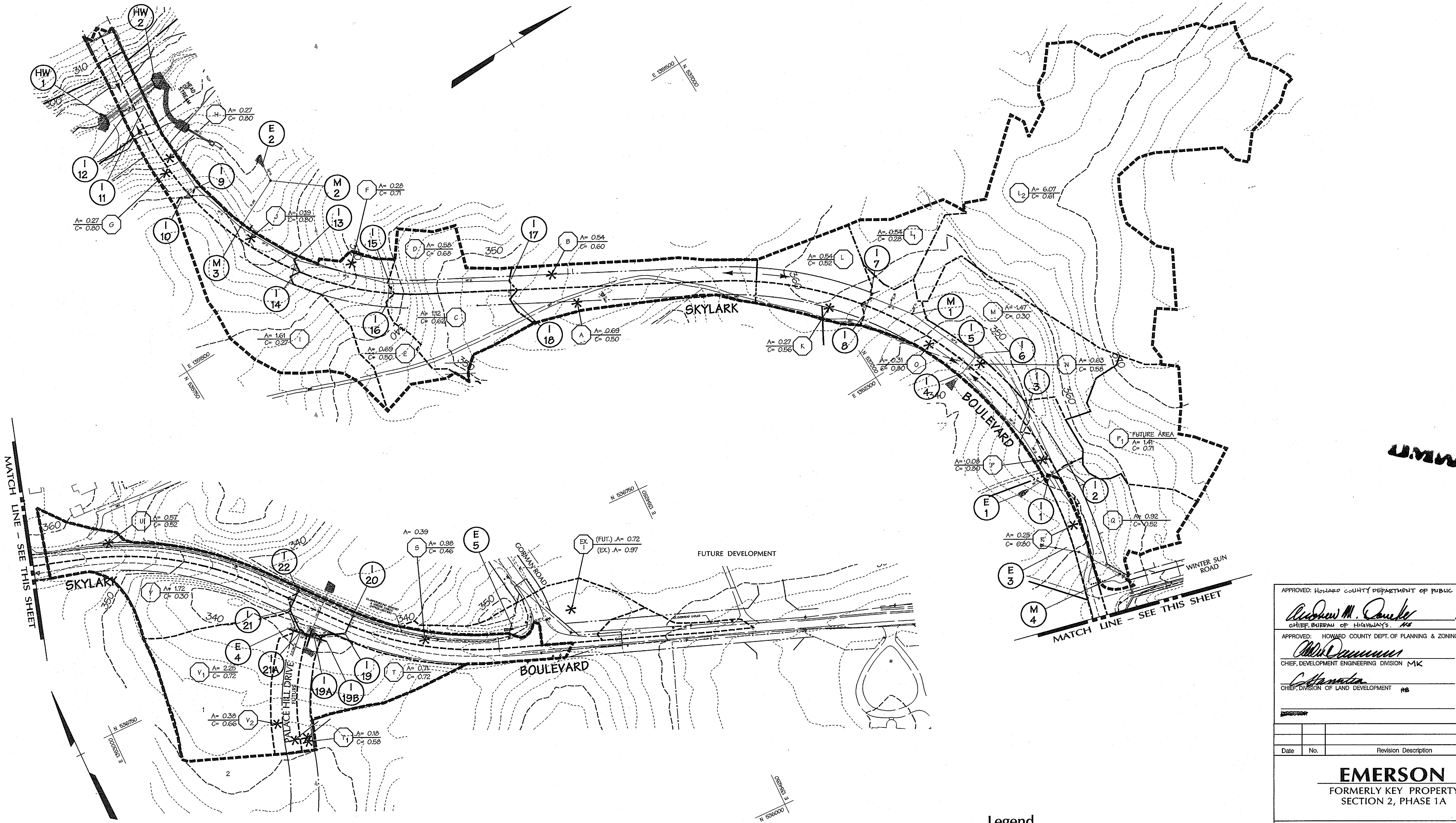
PLAT# OR L/F	BLOCK #	ZONE	TAX/ZONE MAP	ELECT. DISTRICT	CENSUS TRACT
L.572, F.430 L.1129, F.46	2,7,8,9,13, 14,15,20 & 21	MXD	47	6 TH	-

WATER CODE	SEWER CODE
-	-

TITLE
PROPOSED CULVERT PLAN & PROFILE

Des By MAT/JDC	Scale 1"=50'	Proj. No. 95054.F
Drn By KMF/JDC	Date 9-26-01	6 of 27
Chk By	Approved	

F-01-136



Legend

340	EXISTING CONTOUR
340	PROPOSED CONTOUR
15" D	PROPOSED STORMDRAIN
	PROPOSED DRAINAGE AREA LIMIT
M A= 1.47 C= 0.30	PROPOSED DRAINAGE AREA LABEL

DRAINAGE AREA MAP

SCALE: 1"= 100'

9/25/01
Date

PROFESSIONAL ENGINEER NO. 10551 JOHN ... STATE OF MARYLAND

Professional Engr. No. 10551

APPROVED: HOWARD COUNTY DEPARTMENT OF PUBLIC WORKS.

Andrew M. Dauke — 10-29-01
CHIEF, BUREAU OF HIGHWAYS — DATE

APPROVED: HOWARD COUNTY DEPT. OF PLANNING & ZONING

10/31/01
CHIEF, DEVELOPMENT ENGINEERING DIVISION MK — DATE

11/6/01
CHIEF, DIVISION OF LAND DEVELOPMENT — DATE

~~DIRECTOR~~ — ~~DATE~~

Date	No.	Revision Description

EMERSON

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EMERSON SECTION 2	PHASE IA	P/O P.837, P.3, P.462

PLAT# OR L/F	BLOCK #	ZONE	TAX/ZONE MAP	ELECT. DISTRICT	CENSUS TRACT
L.572, F.430 L.1129, F.48	2,7,8,9,13, 14,15,20 & 21	MXD	47	6 TH	-

WATER CODE	SEWER CODE
-	-

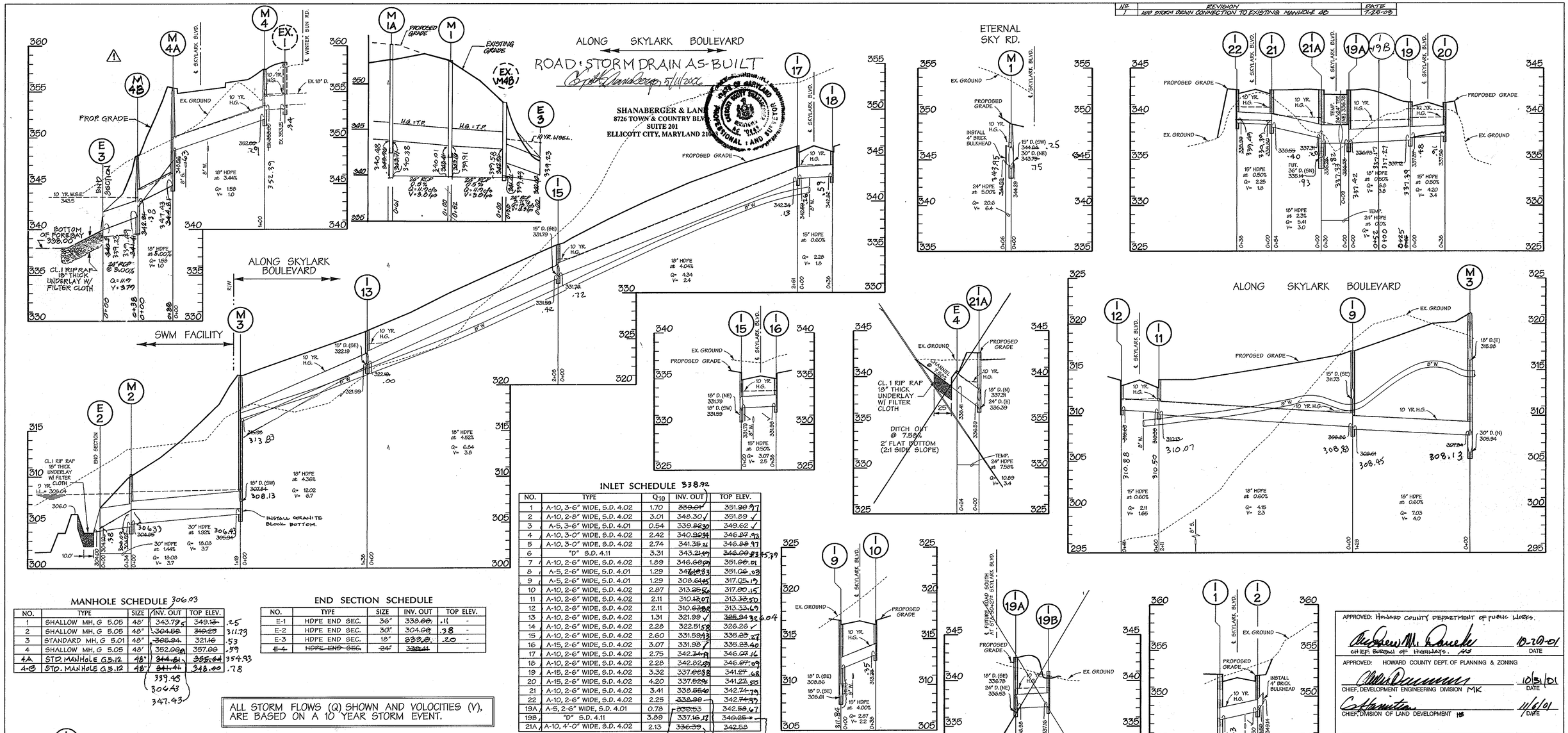
TITLE

DRAINAGE AREA MAP

Des By RLH/JDC	Scale 1"=100'	Proj. No. 95054.F
Drn By WHJ	Date 9-26-01	7 of 27
Chk By	Approved	

F-01-136

Tue Sep 25 12:08:15 2001n:\95054\final\95054f.da3



Nº	REVISION	DATE
1	ADD STORM DRAIN CONNECTION TO EXISTING MANHOLE 4B	7-25-03

ROAD & STORM DRAIN AS-BUILT
5/11/2006

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

INLET SCHEDULE 338.92

NO.	TYPE	Q_{10}	INV. OUT	TOP ELEV.
1	A-10, 3-6" WIDE, S.D. 4.02	1.70	~~339.01~~	351.~~90~~97
2	A-10, 2-8" WIDE, S.D. 4.02	3.01	348.30 ✓	351.89 ✓
3	A-5, 3-6" WIDE, S.D. 4.01	0.54	339.~~82~~30	349.62 ✓
4	A-10, 3-0" WIDE, S.D. 4.02	2.42	340.~~90~~34	346.~~87~~ .93
5	A-10, 3-0" WIDE, S.D. 4.02	2.74	341.~~35~~ 21	346.~~88~~ 97
6	"D" S.D. 4.11	3.31	343.~~21~~49	~~346.00~~ * 345.79
7	A-10, 2-6" WIDE, S.D. 4.02	1.89	346.~~60~~59	351.~~06~~ .01
8	A-5, 2-6" WIDE, S.D. 4.01	1.29	34~~7.10~~6.83	351.~~06~~ .03
9	A-5, 2-6" WIDE, S.D. 4.01	1.29	308.~~61~~45	317.~~05~~ .19
10	A-10, 2-6" WIDE, S.D. 4.02	2.87	313.~~25~~56	317.~~00~~ .15
11	A-10, 2-6" WIDE, S.D. 4.02	2.11	310.~~13~~ .07	313.~~33~~ .50
12	A-10, 2-6" WIDE, S.D. 4.02	2.11	310.~~63~~98	313.~~33~~ .69
13	A-10, 2-6" WIDE, S.D. 4.02	1.31	321.99 ✓	~~325.94~~ 326.04
14	A-10, 2-6" WIDE, S.D. 4.02	2.28	322.~~51~~58	326.26 ✓
15	A-10, 2-6" WIDE, S.D. 4.02	2.60	331.~~59~~43	335.~~23~~ .27
16	A-15, 2-6" WIDE, S.D. 4.02	3.07	331.98 ✓	335.~~23~~ .40
17	A-10, 2-6" WIDE, S.D. 4.02	2.75	342.~~34~~ .19	346.~~07~~ .16
18	A-10, 2-6" WIDE, S.D. 4.02	2.28	342.~~82~~ .59	346.~~07~~ .09
19	A-15, 2-6" WIDE, S.D. 4.02	3.32	337.~~08~~38	341.~~27~~ .68
20	A-15, 2-6" WIDE, S.D. 4.02	4.20	337.~~52~~91	341.~~27~~ .50
21	A-10, 2-6" WIDE, S.D. 4.02	3.41	338.~~55~~40	342.~~74~~ .79
22	A-10, 2-6" WIDE, S.D. 4.02	2.25	~~338.99~~ 339.43	342.~~74~~ .89
19A	A-5, 2-6" WIDE, S.D. 4.01	0.78	~~336.53~~ 337.33	342.~~58~~ .67
19B	"D" S.D. 4.11	3.89	337.~~16~~ .17	~~340.25 *~~ 339.94 *
21A	A-10, 4'-0" WIDE, S.D. 4.02	2.13	~~336.39~~ 335.93	~~342.58~~ 343.07

* INDICATES THROAT ELEVATION

MANHOLE SCHEDULE 306.03

NO.	TYPE	SIZE	INV. OUT	TOP ELEV.
1	SHALLOW MH, G 5.05	48'	343.7~~9~~5	349.~~13~~ .25
2	SHALLOW MH, G 5.05	48"	~~304.59~~ 306.03	~~310.25~~ 311.79
3	STANDARD MH, G 5.01	48"	~~305.94~~ 306.43	321.~~46~~ .53
4	SHALLOW MH, G 5.05	48'	352.~~00~~8	357.~~00~~ .59
4A	STD. MANHOLE G5.12	48"	~~344.81~~ 347.43	~~355.64~~ 354.93
4-B	STD. MANHOLE G5.12	48"	~~341.41~~ 339.48	~~348.00~~ .78

END SECTION SCHEDULE

NO.	TYPE	SIZE	INV. OUT	TOP ELEV.
E-1	HDPE END SEC.	36"	338.~~00~~	.11 -
E-2	HDPE END SEC.	30"	304.~~00~~	.38 -
E-3	HDPE END SEC.	18"	~~339.8~~	.20 -
~~E-4~~	~~HDPE END SEC.~~	~~24"~~	~~338.41~~	-

ALL STORM FLOWS (Q) SHOWN AND VOLOCITIES (V), ARE BASED ON A 10 YEAR STORM EVENT.

APPROVED: HOWARD COUNTY DEPARTMENT OF PUBLIC WORKS.
Andrew M. [illegible] 10-20-01
CHIEF, BUREAU OF HIGHWAYS. HJ — DATE

APPROVED: HOWARD COUNTY DEPT. OF PLANNING & ZONING
10/31/01
CHIEF, DEVELOPMENT ENGINEERING DIVISION MK — DATE
C. Hamilton 11/6/01
CHIEF, DIVISION OF LAND DEVELOPMENT HB — DATE
~~DIRECTOR~~ — ~~DATE~~

Date	No.	Revision Description
1/22/02	⚠	STORM DRAIN PROFILES

EMERSON
FORMERLY KEY PROPERTY
SECTION 2, PHASE 1A

OWNER/DEVELOPER:
THE HOWARD RESEARCH & DEVELOPMENT CORPORATION
10275 Little Patuxent Parkway
Columbia, Maryland 21044

DMW
Daft·McCune·Walker, Inc.
200 East Pennsylvania Avenue
Towson, Maryland 21286
(410) 296-3333
Fax 296-4705

A Team of Land Planners, Landscape Architects, Engineers, Surveyors & Environmental Professionals

SUBDIVISION NAME	SECTION/AREA	LOT/PARCEL #
EMERSON SECTION 2	PHASE IA	P/O P. 837, P. 3, P. 462

PLAT# OR L/F	BLOCK #	ZONE	TAX/ZONE MAP	ELECT. DISTRICT	CENSUS TRACT
L.572, F.430 L.1123, F.48	2,7,8,9,13, 14,15,20 & 21	MXD	47	6 TH	-

WATER CODE	SEWER CODE
-	-

TITLE
STORM DRAIN PROFILES

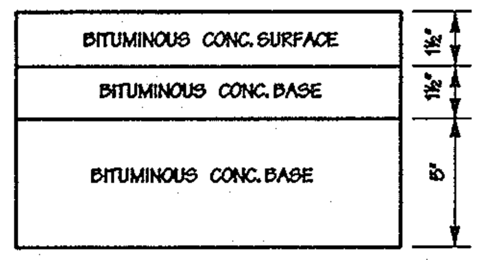
Des By RLH/JDC	Scale HORZ. 1" = 50' VERT. 1" = 5'	Proj. No. 95054.F
Drn By KDE/WHJ	Date 9-26-01	8 of 27
Chk By	Approved	

9/25/01
Date

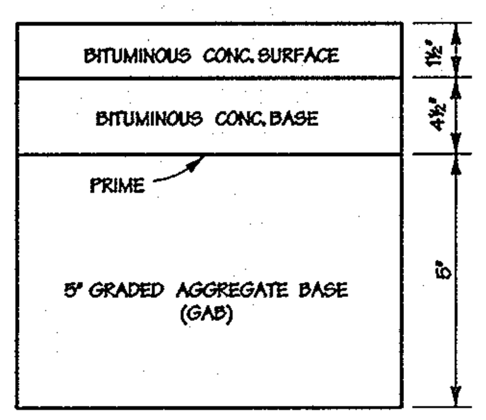
Professional Engr. No. 10551

F-01-136

Tue Sep 25 12:09:41 2001n:\95054\final\95054F.SD1



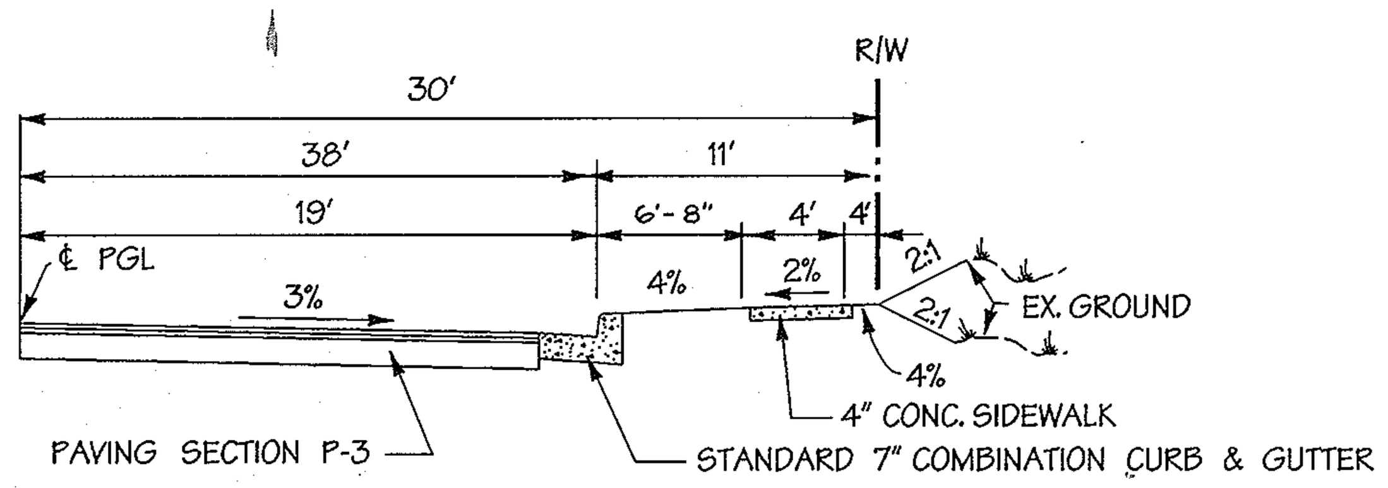
FULL DEPTH
ALTERNATE



GRANULAR BASE
ALTERNATE

PAVING SECTION P-3
MINOR & MAJOR COLLECTORS

NO SCALE

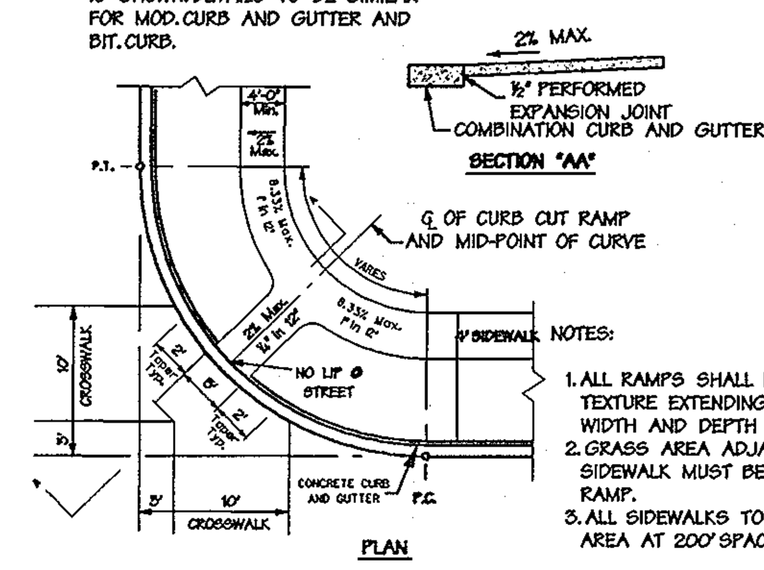


TYPICAL SECTION

SKYLARK BOULEVARD

NOT TO SCALE

STANDARD 7" COMB. CURB AND GUTTER IS SHOWN. DETAILS TO BE SIMILAR FOR MOD. CURB AND GUTTER AND BIT. CURB.

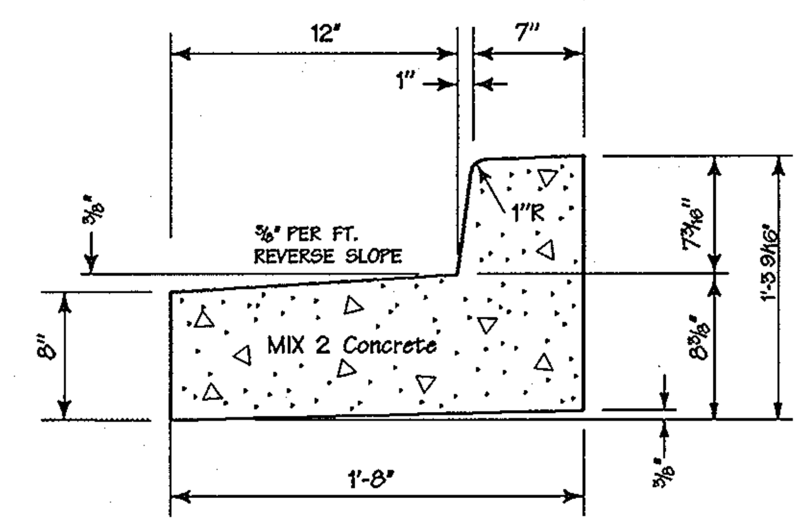


NOTES:

1. ALL RAMPS SHALL HAVE A WARNING TEXTURE EXTENDING THE FULL WIDTH AND DEPTH OF THE RAMP.
2. GRASS AREA ADJACENT TO SIDEWALK MUST BE SLOPED TO MEET RAMP.
3. ALL SIDEWALKS TO HAVE PASSING AREA AT 200' SPACING.

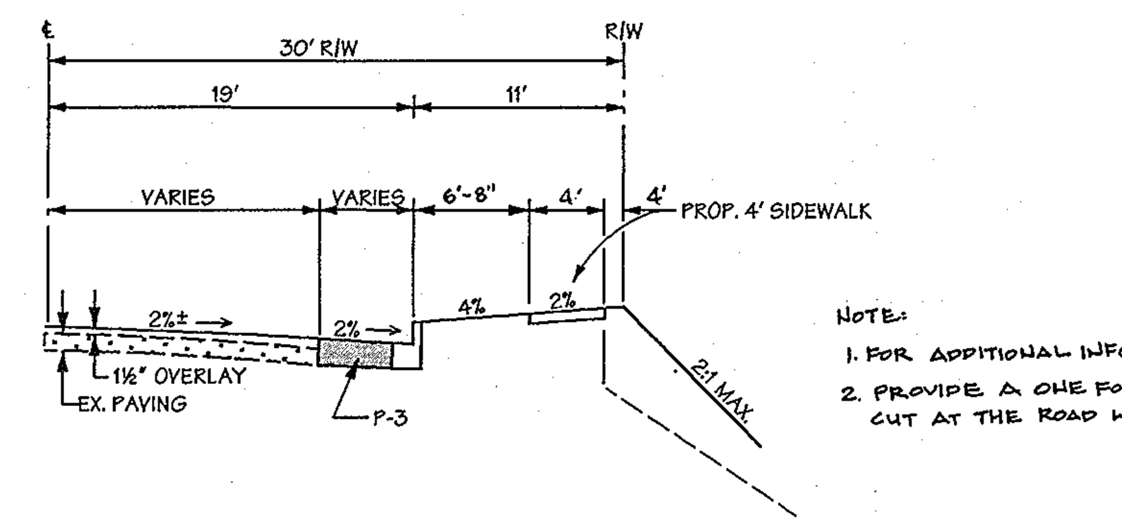
SIDEWALK RAMP

TYPE "A"



REVERSE 7" COMBINATION CURB & GUTTER

NO SCALE



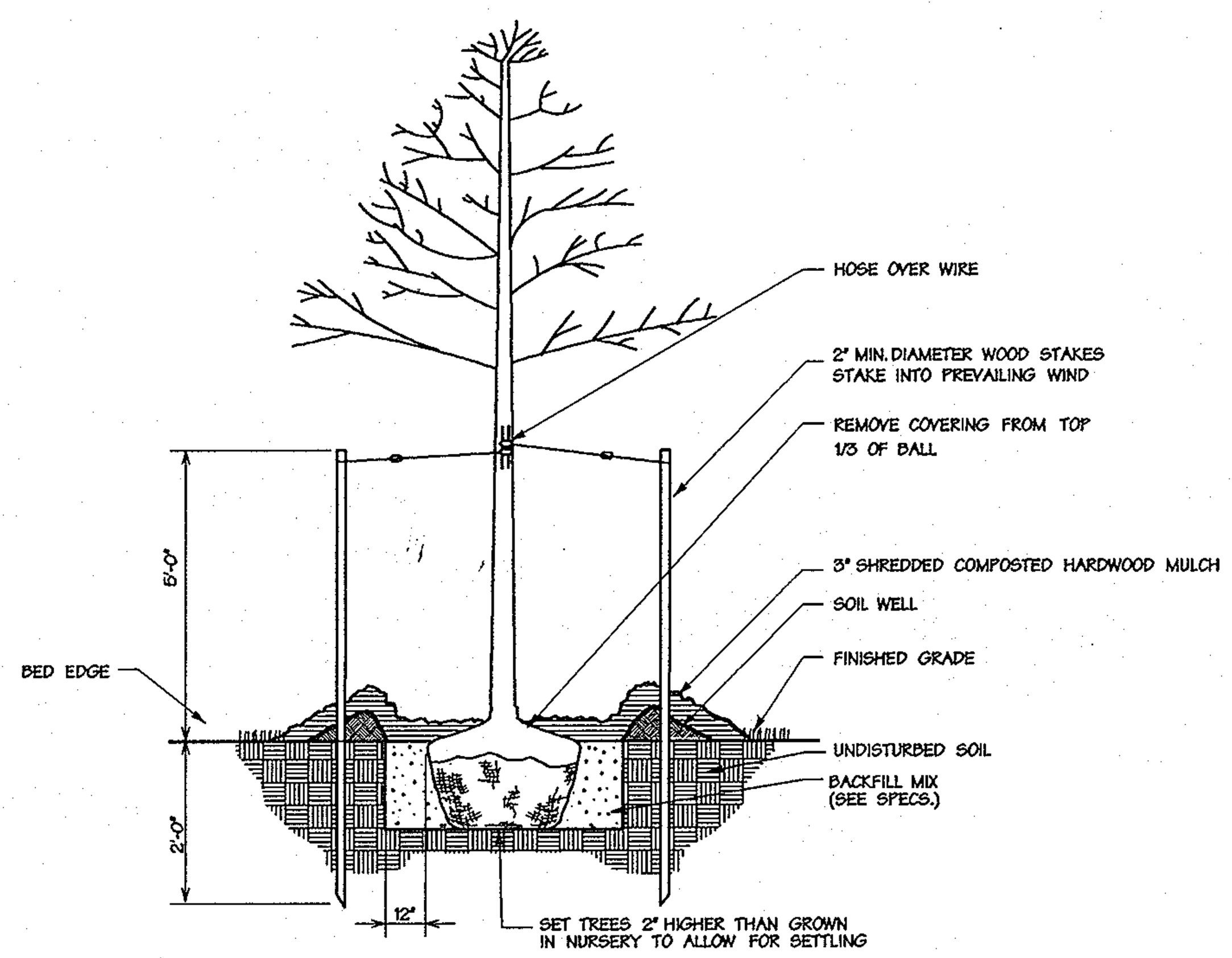
NOTE:

1. FOR ADDITIONAL INFO. SEE DETAIL R10.01
2. PROVIDE A ONE FOOT FULL DEPTH SAW CUT AT THE ROAD WIDENING.

TYPICAL HALF SECTION
SKYLARK BOULEVARD

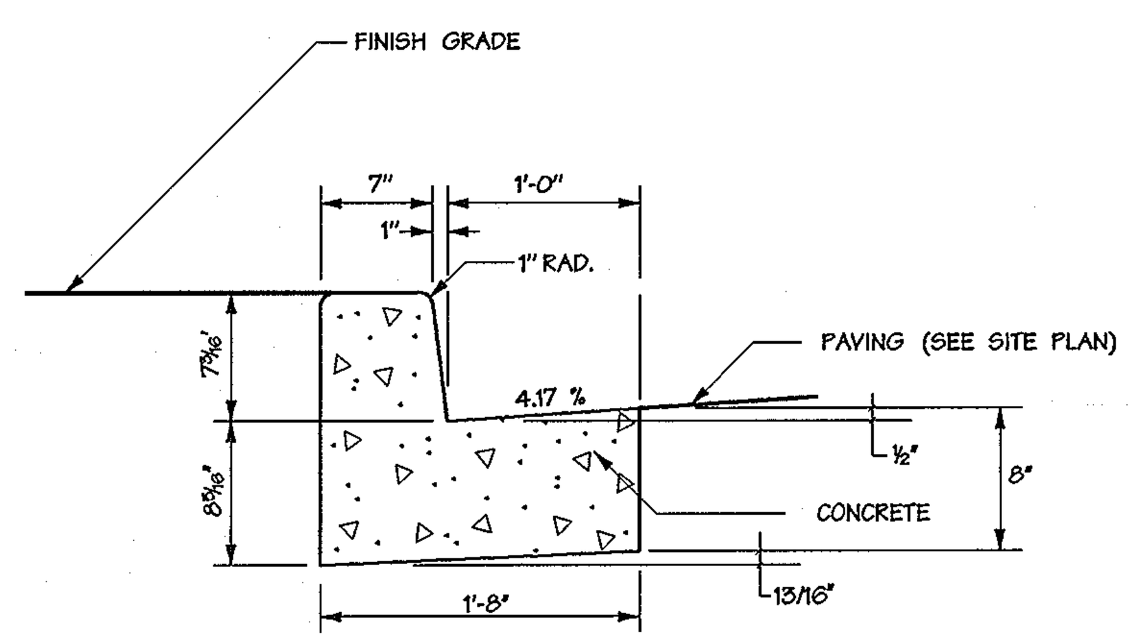
STA. 43+50± TO 44+50±

NTS



DECIDUOUS TREE DETAIL

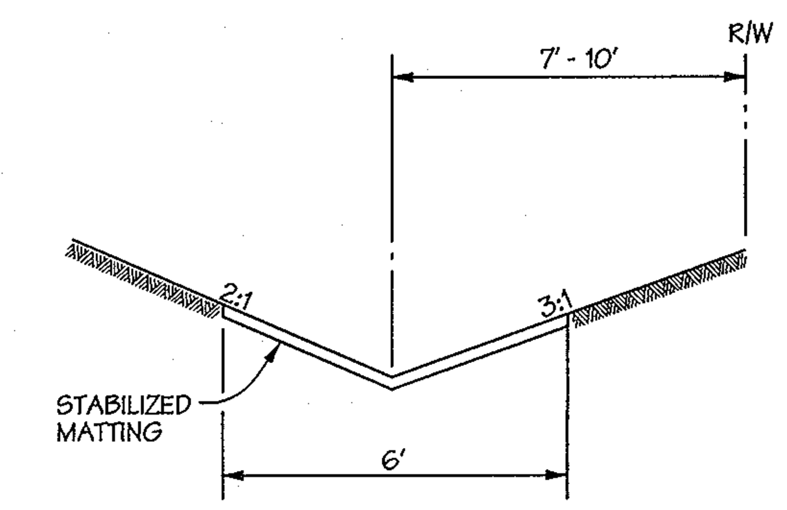
(TO 3" CALIPER)



SECTION

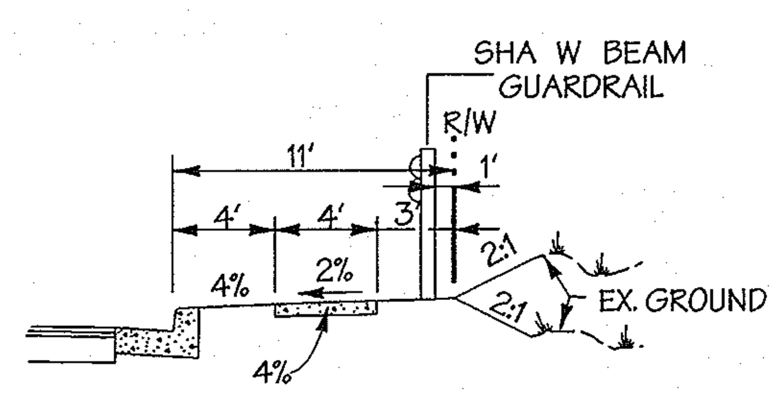
TYPE "A" CURB AND GUTTER

NO SCALE



EX. 12"D OUTFALL
TYPICAL SWALE DETAIL

NO SCALE



LOCATON PLAN
W BEAM GUARDRAIL

APPROVED: HOWARD COUNTY DEPARTMENT OF PUBLIC WORKS.

CHIEF, BUREAU OF HIGHWAYS. 10-29-01 DATE

APPROVED: HOWARD COUNTY DEPT. OF PLANNING & ZONING

CHIEF, DEVELOPMENT ENGINEERING DIVISION MK 10/31/01 DATE

CHIEF, DIVISION OF LAND DEVELOPMENT 11/6/01 DATE

~~DIRECTOR~~ ~~DATE~~

Date	No.	Revision Description

EMERSON

FORMERLY KEY PROPERTY
SECTION 2, PHASE 1A

OWNER/DEVELOPER:

THE HOWARD RESEARCH & DEVELOPMENT CORPORATION
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Columbia, Maryland 21044

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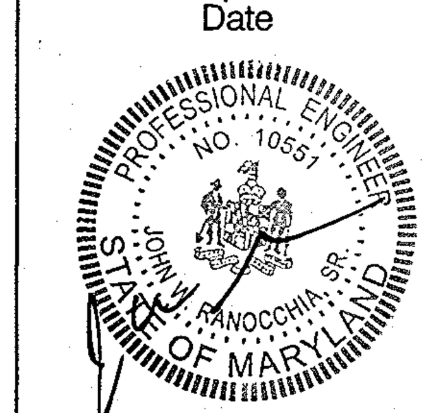
SUBDIVISION NAME		SECTION/AREA		LOT/PARCEL #	
EMERSON SECTION 2		PHASE I		P/O P.837, P.3, P.462	
PLAT# OR L/F: L.572, F.430 L.1129, F.48	BLOCK #: 2, 7, 8, 9, 13, 14, 15, 20 & 21	ZONE: MXD	TAX/ZONE MAP: 47	ELECT. DISTRICT: 6 TH	CENSUS TRACT: -
WATER CODE: -		SEWER CODE: -			

TITLE

ROAD CONSTRUCTION DETAILS

Des By	Scale AS SHOWN	Proj. No. 95054.F
Drn By	Date 9-26-01	9 of 27
Chk By	Approved	

9/25/01
Date



Professional Engr. No. 10551

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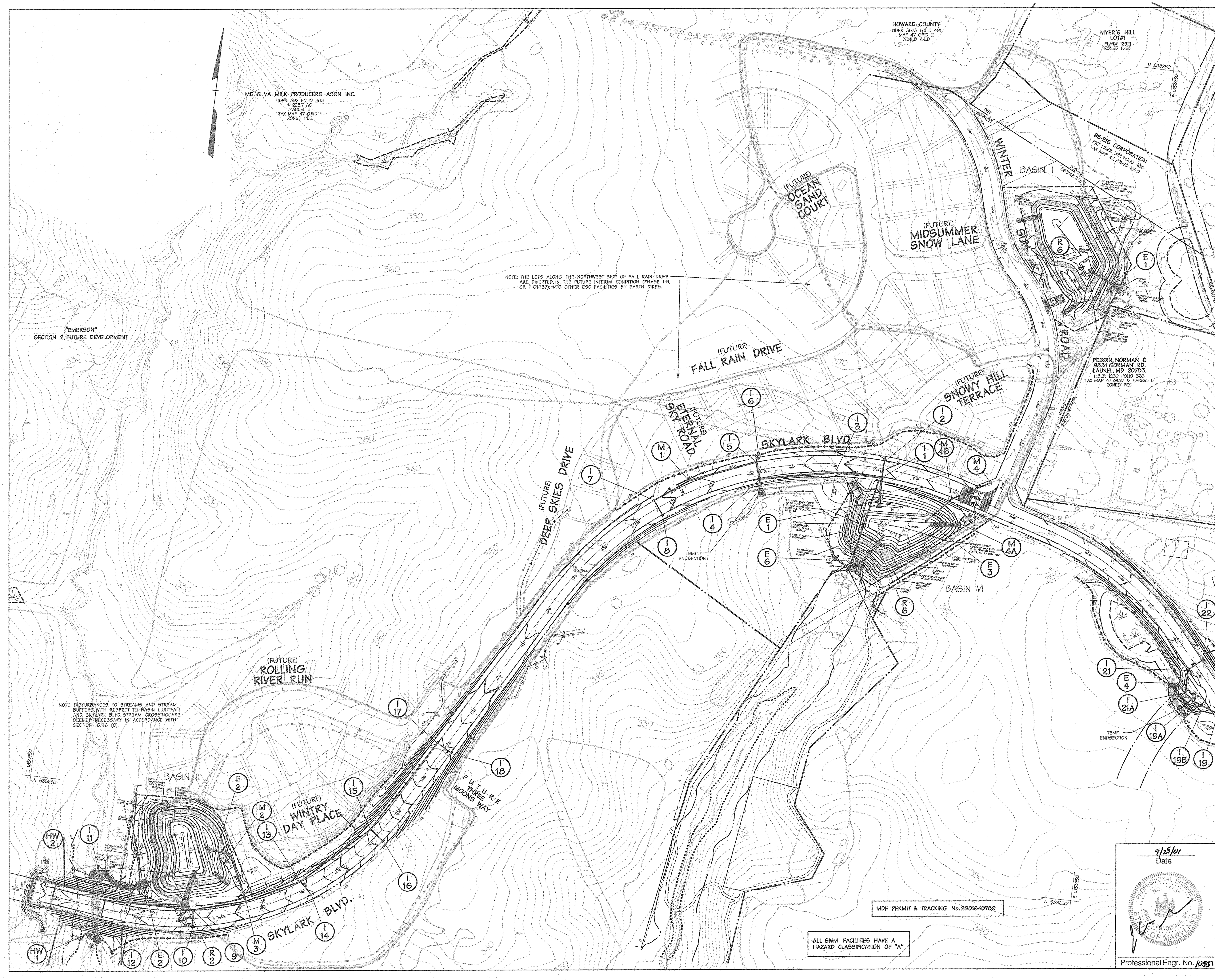

Legend

- PROPERTY LINE
- 20' SWM EASEMENT
- EXISTING CONTOUR (360, 362)
- PROPOSED CONTOUR (360, 362)
- CLEAN WATER DIVERSION PIPE
- MOUNTABLE BERM
- L.O.D. — LIMIT OF DISTURBANCE
- —SF——SF— SILT FENCE
- —SSF——SSF— SUPER SILT FENCE
- EARTH DIKE
- EXISTING DRAINAGE AREA (DA) TO BASIN (ASSUMES BASIN IS BUILT, ROAD CONSTRUCTION HAS NOT BEGUN)
- INTERIM DRAINAGE AREA TO BASIN (ASSUMES OPEN CUT CONDITION, SKYLARK BOULEVARD, ONLY
- FUTURE INTERIM DRAINAGE AREA TO BASIN (ASSUMES COMPLETION OF SKYLARK BOULEVARD, OPEN CUT CONDITION AND ESC IN PLACE FOR FUTURE SUBDIVISION ROADS.

INTERIM CONDITION HYDROLOGY TABLE (USING "FUTURE INTERIM" DRAINAGE AREAS SEE LEGEND THIS SHEET)

BASIN/TRAP	DRAINAGE AREA	RCN	TIME OF CONC. (MIN.)
BASIN I	9.89	77	0.15
BASIN II	10.12	81	0.11
BASIN VI	12.60	81	0.10

APPROVED: HOWARD COUNTY DEPARTMENT OF PUBLIC WORKS
[signature] 10-29-01
CHIEF, BUREAU OF HIGHWAYS HS — DATE

APPROVED: HOWARD COUNTY DEPT. OF PLANNING & ZONING
[signature] 10/31/01
CHIEF, DEVELOPMENT ENGINEERING DIVISION MK — DATE
[signature] 11/6/01
CHIEF, DIVISION OF LAND DEVELOPMENT HB — DATE
~~DIRECTOR~~ — ~~DATE~~

Date	No.	Revision Description

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SUBDIVISION NAME	SECTION/AREA	LOT/PARCEL #
EMERSON SECTION 2	PHASE IA	P/O P. 837, P. 3, P. 462

PLAT# OR L/F	BLOCK #	ZONE	TAX/ZONE MAP	ELECT. DISTRICT	CENSUS TRACT
L. 572, F. 430 L. 1129, F. 48	2, 7, 8, 9, 13, 14, 15, 20 & 21	MXD	47	6 TH	-

WATER CODE: -
SEWER CODE: -

TITLE
EROSION & SEDIMENT CONTROL DRAINAGE AREA MAP

9/25/01
Date
Professional Engr. No. 10551

Des By MRT	Scale 1"=100'	Proj. No. 95054.F
Drn By WHJ	Date 9-26-01	10 of 27
Chk By	Approved	

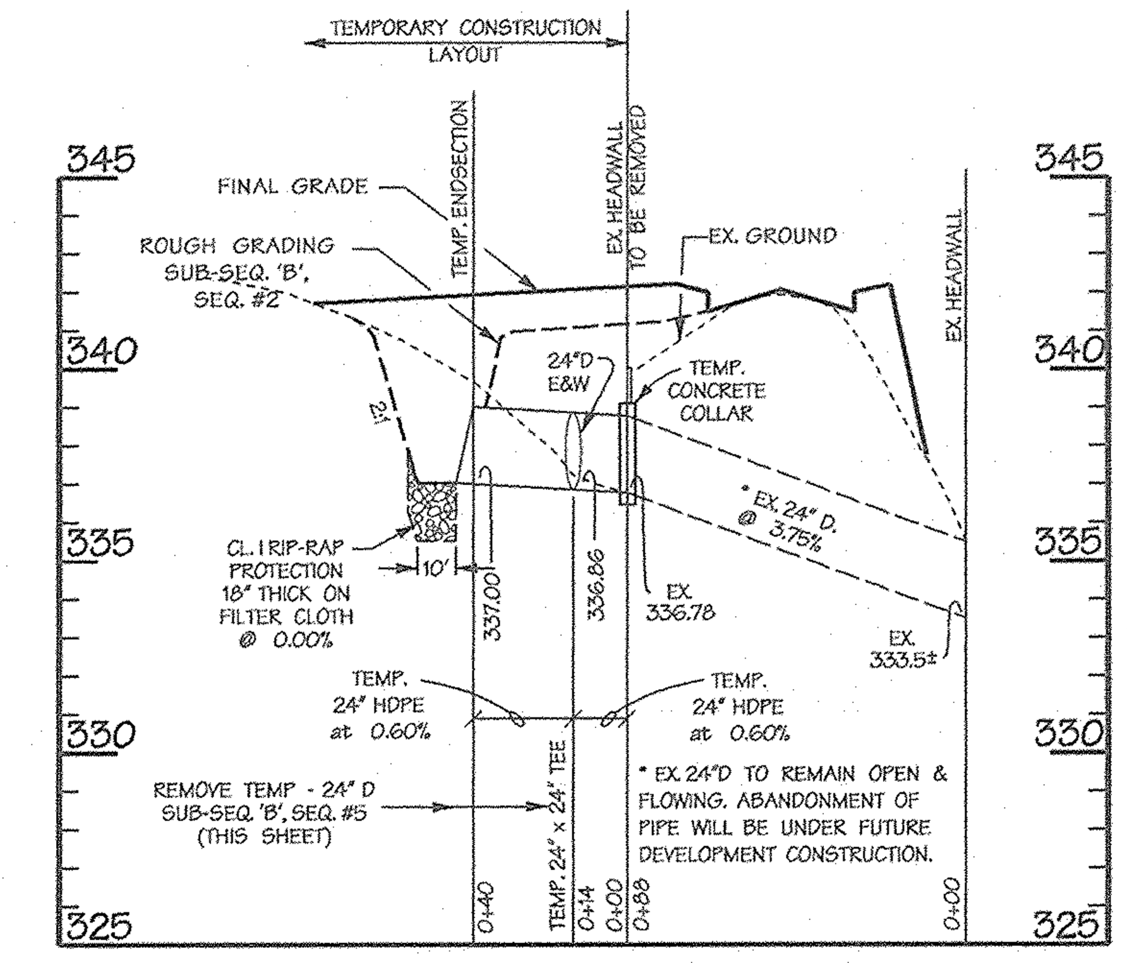
F-01-136

Tue Sep 25 12:16:20 2001\95054\final\95054set#1.sc5

SUB-SEQUENCE "B"
CONSTRUCTION OF EXISTING 24" DRAIN - TEMPORARY EXTENSION
(UNDER MAIN SEQUENCE, SEQ. #3 - SEE SHEET-14)

SEQUENCE	NO. OF DAYS
1. CLEAR FOR AND INSTALL S.S.F. AT INFLOW AREA.	1
2. ROUGH GRADE INFLOW AREA AND STABILIZE WITH EROSION CONTROL MATTING, INSTALL RIP-RAP INFLOW PROTECTION.	1
3. INSTALL TEMPORARY 24"D EXTENSION AND ENDSECTION.	1
4. ROUGH GRADE SITE AREA TO MAINTAIN 4' COVER OVER TEMPORARY PIPE.	2
5. REMOVE TEMPORARY 24"D DURING MAIN SEQUENCE # 6 (SEE SHEET 14), AND WITH THE SEDIMENT CONTROL INSPECTORS APPROVAL COMPLETE STORM DRAIN CONNECTION.	1
6. FINE GRADE DISTURBED AREAS AND STABILIZE.	1

NOTE:
CONTRACTOR SHALL ESTABLISH AND MAINTAIN EROSION/SEDIMENT CONTROL MEASURES AT THE END OF EACH DAY. ALL DISTURBED AREAS OUTSIDE OF THE LOD SHALL BE PROTECTED WITH OTHER MEANS OF ESC MEASURES OR STABILIZED WITH TEMPORARY SEEDING AT THE END PF EACH DAY, AS APPROVED BY SEDIMENT CONTROL INSPECTOR.



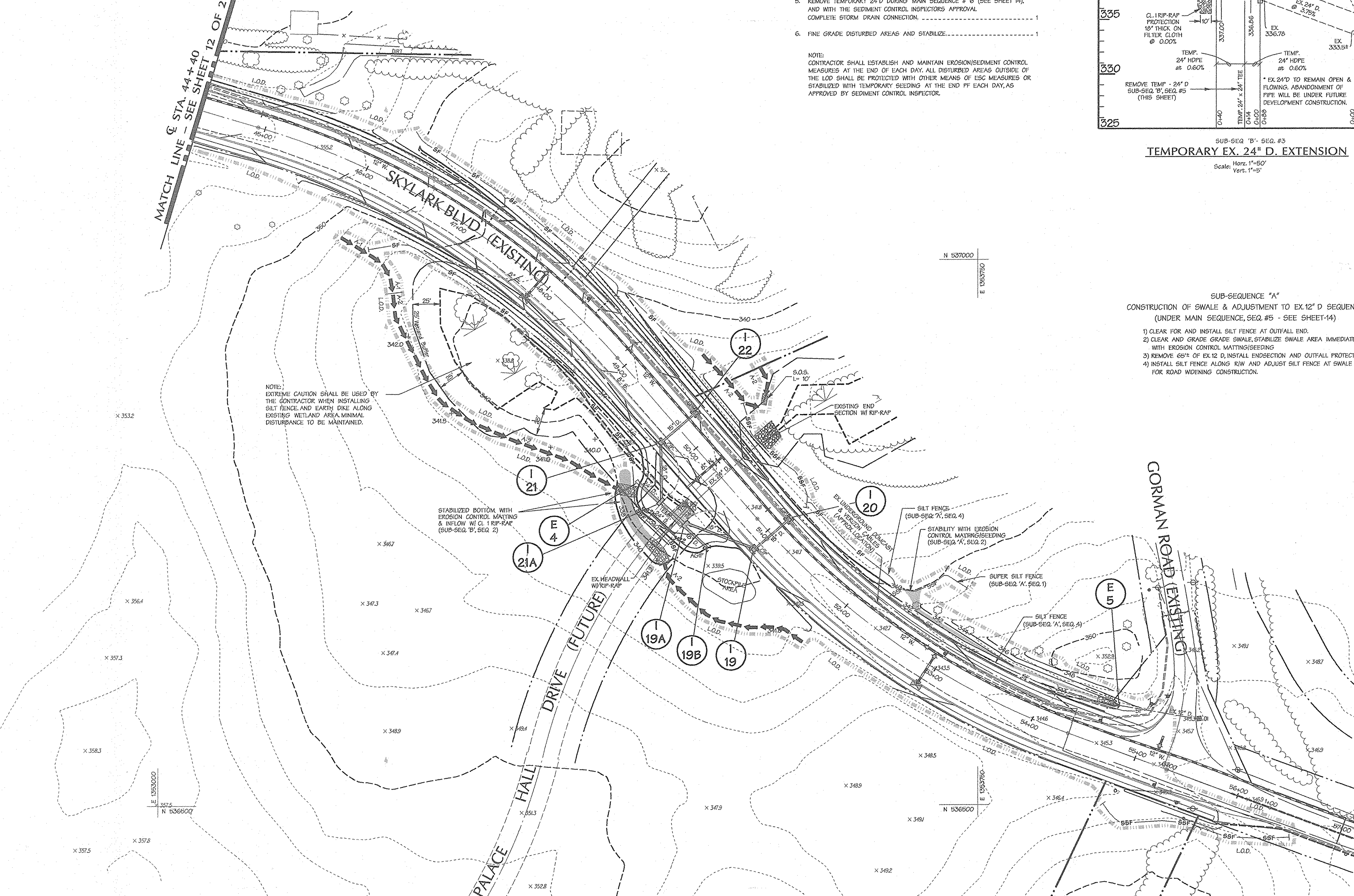
SUB-SEQ 'B' - SEQ. #3
TEMPORARY EX. 24" D. EXTENSION
Scale: Horz. 1"=50' Vert. 1"=5'

LEGEND

PROPERTY LINE	
360 / 362 (dashed)	EXISTING CONTOUR
360 / 362 (solid)	PROPOSED CONTOUR
L.O.D.	LIMIT OF DISTURBANCE
SF	SILT FENCE - SEE DETAIL, SHT. 15 OF 27
SSF	SUPER SILT FENCE - SEE DETAIL, SHT. 15 OF 27
(arrows)	EARTH DIKE - SEE DETAIL, SHT. 15 OF 27
RPS	REMOVABLE PUMPING STATION
CIP	CURB INLET PROTECTION
AGIP	AT GRADE INLET PROTECTION
S.O.S.	STONE OUTLET STRUCTURE
	EROSION CONTROL MATTING/SEEDING

SUB-SEQUENCE "A"
CONSTRUCTION OF SWALE & ADJUSTMENT TO EX. 12" D SEQUENCE
(UNDER MAIN SEQUENCE, SEQ. #5 - SEE SHEET-14)

1) CLEAR FOR AND INSTALL SILT FENCE AT OUTFALL END.
2) CLEAR AND GRADE GRADE SWALE, STABILIZE SWALE AREA IMMEDIATELY, WITH EROSION CONTROL MATTING/SEEDING
3) REMOVE 65'± OF EX. 12 D, INSTALL ENDSECTION AND OUTFALL PROTECTION.
4) INSTALL SILT FENCE ALONG R/W AND ADJUST SILT FENCE AT SWALE OUTFALL FOR ROAD WIDENING CONSTRUCTION.



APPROVED: HOWARD COUNTY DEPARTMENT OF PUBLIC WORKS.	
CHIEF, BUREAU OF HIGHWAYS. HS	10-29-01 DATE
APPROVED: HOWARD COUNTY DEPT. OF PLANNING & ZONING	
CHIEF, DEVELOPMENT ENGINEERING DIVISION MK	10/31/01 DATE
CHIEF, DIVISION OF LAND DEVELOPMENT HB	11/6/01 DATE
~~DIRECTOR~~	~~DATE~~

Date	No.	Revision Description

EMERSON
FORMERLY KEY PROPERTY
SECTION 2, PHASE 1A

OWNER/DEVELOPER:
THE HOWARD RESEARCH & DEVELOPMENT CORPORATION
10275 Little Patuxent Parkway
Columbia, Maryland 21044

DMW
Daft·McCune·Walker, Inc.
200 East Pennsylvania Avenue
Towson, Maryland 21286
(410) 296-3333
Fax 296-4705

A Team of Land Planners, Landscape Architects, Engineers, Surveyors & Environmental Professionals

SUBDIVISION NAME	SECTION/AREA	LOT/PARCEL #
EMERSON SECTION 2	PHASE IA	P/O P. 837, P. 3, P. 462

PLAT# OR L/F	BLOCK #	ZONE	TAX/ZONE MAP	ELECT. DISTRICT	CENSUS TRACT
L.572, F.430 L.1129, F.48	2,7,8,9,13, 14,15,20 & 21	MXD	47	6 TH	-

WATER CODE	SEWER CODE
-	-

TITLE
EROSION & SEDIMENT CONTROL PLAN

Des By MRT	Scale 1"=50'	Proj. No. 95054.F
Drn By WHJ	Date 9-26-01	11 of 27
Chk By	Approved	

9/25/01
Date
Professional Engr. No. 10551

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 — 10/10/01 DATE

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

APPROVED: HOWARD SOIL CONSERVATION DISTRICT — 10/10/01 DATE

PLAN NUMBER

DEVELOPERS CERTIFICATE:
I/WE CERTIFY THAT ALL DEVELOPMENT AND/OR CONSTRUCTION WILL BE DONE ACCORDING TO THESE PLANS AND THAT ANY RESPONSIBLE PERSONNEL INVOLVED IN THE CONSTRUCTION PROJECT WILL HAVE A CERTIFICATE OF ATTENDANCE AT A DEPARTMENT OF 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.

SIGNATURE OF DEVELOPER — 10/27/01 DATE
PRINT NAME BELOW SIGNATURE: Robert A. Jenkins

ENGINEERS CERTIFICATE:
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.

SIGNATURE OF ENGINEER — 9/25/01 DATE
PRINT NAME BELOW SIGNATURE: John W. Ranucchia, Sr.

F-01-136

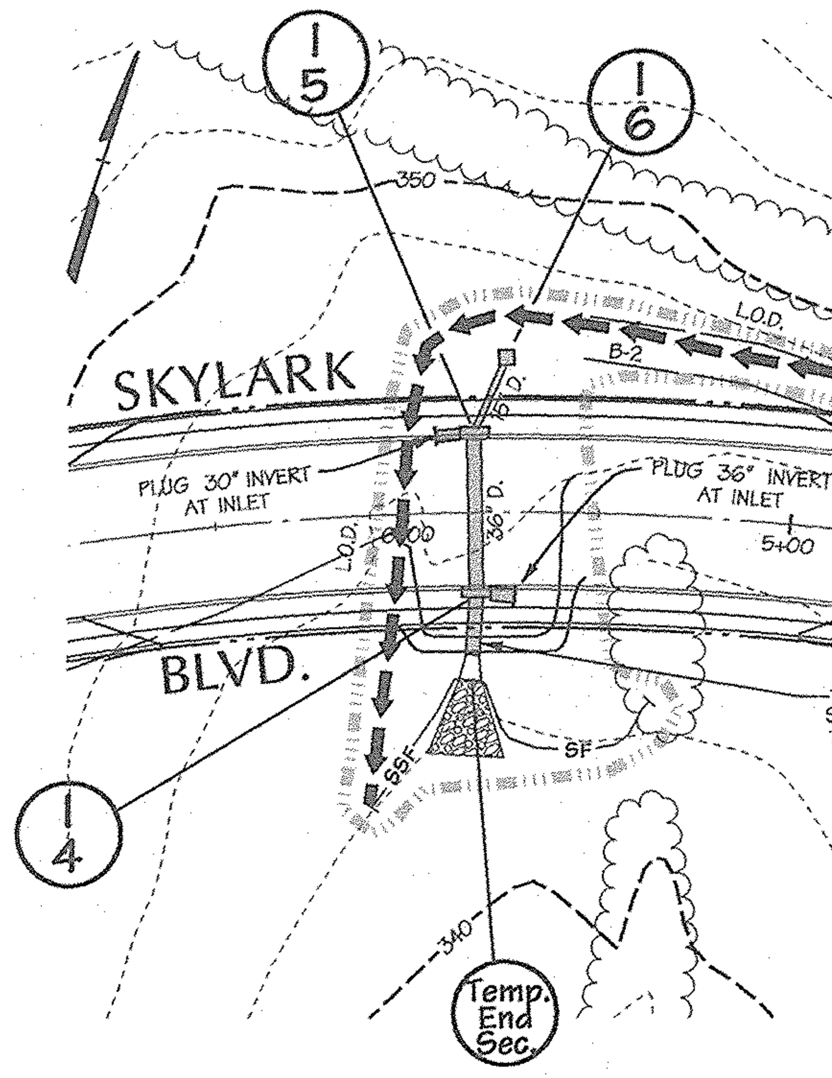
Tue Sep 25 12:33:41 2001\95054\final\95054fset#1.sc6

SUB-SEQUENCE 'C'

CONSTRUCTION OF I-4 TO I-6 AND 36"D TEMPORARY DRAIN
(UNDER MAIN SEQUENCE #3, SEE SHEET.14)

SEQUENCE		NO. OF DAYS
1.	CLEAR FOR AND INSTALL E.D. AND S.S.F.	1
2.	ROUGH GRADE AREA AS REQUIRED FOR UTILITY CONSTRUCTION.	1
3.	INSTALL I-4 TO I-6 AND TEMPORARY 36"D WITH ENDSECTION AND OUTFALL PROTECTION.	3
4.	PLUG DRAINS IN I-4 AND I-6 TO MAINTAIN CLEAR WATER DIVERSION.	1
5.	REMOVE BLOCKED INVERTS AT THE COMPLETION OF SEDIMENT BASIN VI, STORM DRAIN SYSTEM TO BASIN VI AND WITH THE SEDIMENT CONTROL INSPECTORS APPROVAL FOR THE CONNECTION TO THE BASIN.	1

NOTE:
CONTRACTOR SHALL ESTABLISH AND MAINTAIN EROSION/SEDIMENT CONTROL MEASURES AT THE END OF EACH DAY. ALL DISTURBED AREAS OUTSIDE OF THE LOD SHALL BE PROTECTED WITH OTHER MEANS OF ESC MEASURES OR STABILIZED WITH TEMPORARY SEEDING AT THE END OF EACH DAY, AS APPROVED BY SEDIMENT CONTROL INSPECTOR.



INSERT - SUB-SEQUENCE 'C', SEQ.#3

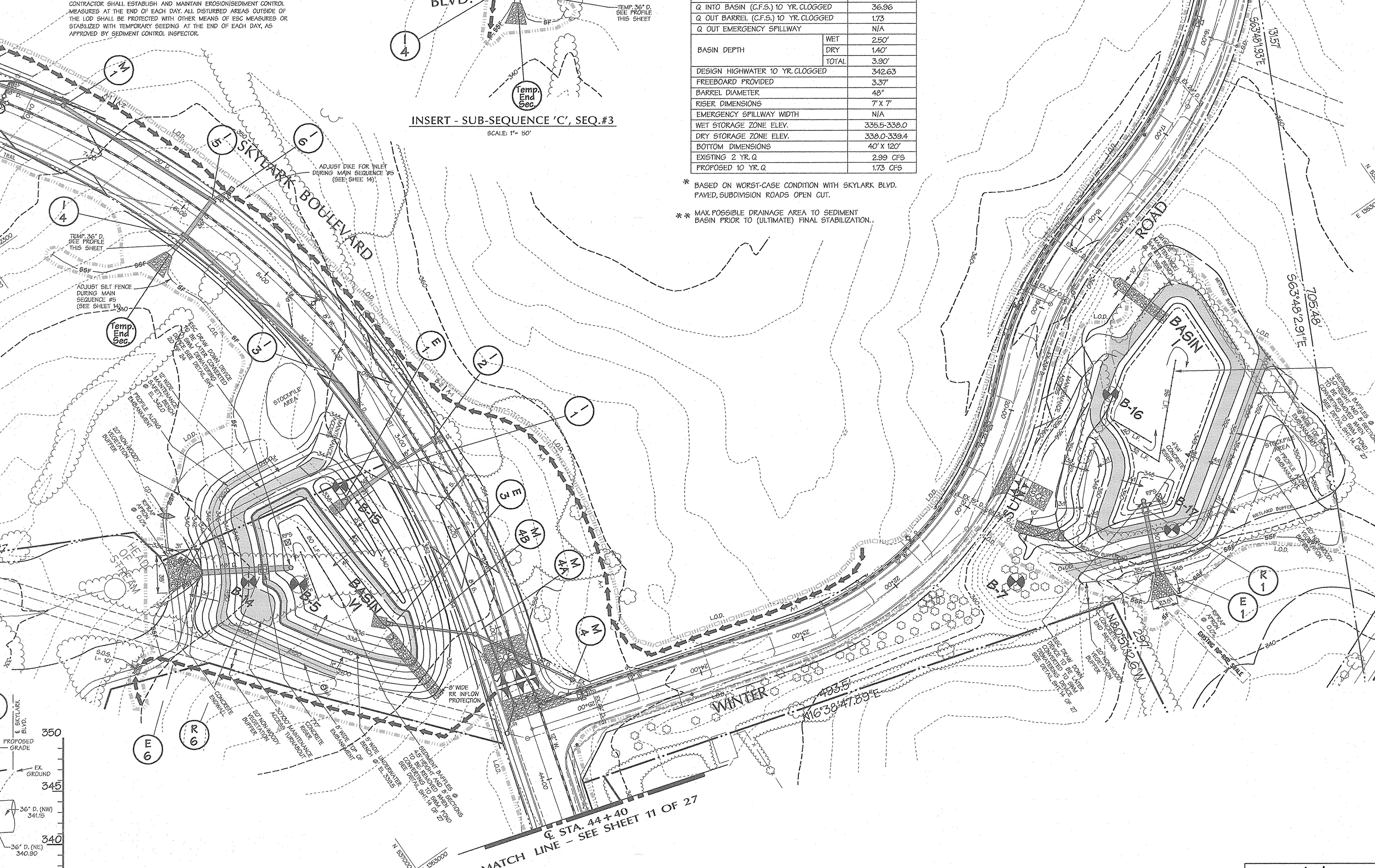
SCALE: 1"= 50'

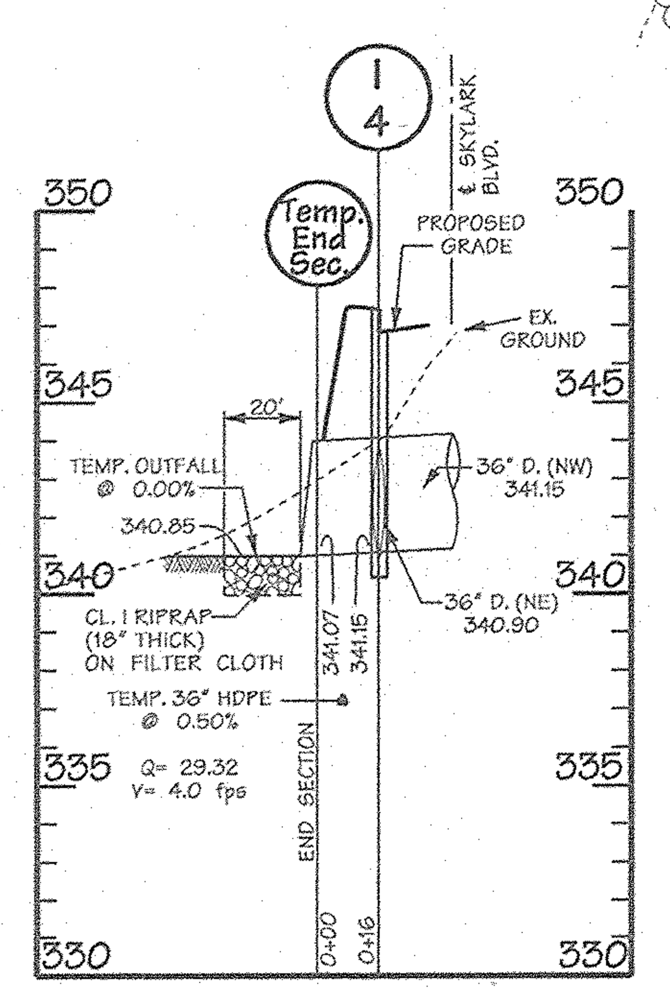
BASIN TABLE

	BASIN NUMBER		VI
	EXISTING DRAINAGE AREA AC.		4.0
*	INTERIM DRAINAGE AREA AC.		8.3
**	PROPOSED DRAINAGE AREA AC.		12.6
	STORAGE REQUIRED C.F.	WET	14,868
		DRY	14,868
		TOTAL	29,736
	STORAGE PROVIDED C.F.	WET	15,025
		DRY	15,750
		TOTAL	30,775
	EXISTING GROUND ELEV.		338.0
	TOP EMBANKMENT ELEV.		346.0
	EMERGENCY SPILLWAY CREST ELEV.		N/A
	RISER CREST ELEV.		342.6
	WET STORAGE ELEV.		338.0
	CLEANOUT ELEV.		337.0
	BOTTOM ELEV.		335.5
	Q INTO BASIN (C.F.S.) 10 YR. CLOGGED		36.96
	Q OUT BARREL (C.F.S.) 10 YR. CLOGGED		1.73
	Q OUT EMERGENCY SPILLWAY		N/A
	BASIN DEPTH	WET	2.50'
		DRY	1.40'
		TOTAL	3.90'
	DESIGN HIGHWATER 10 YR. CLOGGED		342.63
	FREEBOARD PROVIDED		3.37'
	BARREL DIAMETER		48"
	RISER DIMENSIONS		7' X 7'
	EMERGENCY SPILLWAY WIDTH		N/A
	WET STORAGE ZONE ELEV.		335.5-338.0
	DRY STORAGE ZONE ELEV.		338.0-339.4
	BOTTOM DIMENSIONS		40' X 120'
	EXISTING 2 YR. Q		2.99 CFS
	PROPOSED 10 YR. Q		1.73 CFS

* BASED ON WORST-CASE CONDITION WITH SKYLARK BLVD. PAVED, SUBDIVISION ROADS OPEN CUT.

** MAX. POSSIBLE DRAINAGE AREA TO SEDIMENT BASIN PRIOR TO (ULTIMATE) FINAL STABILIZATION.





PROFILE
TEMPORARY OUTFALL
Scale: Horz. 1"=50'
Vert. 1"=5'

LEGEND

(property line symbol)	PROPERTY LINE
360 / 362	EXISTING CONTOUR
360 / 362	PROPOSED CONTOUR
(berm symbol)	MOUNTABLE BERM
L.O.D.	LIMIT OF DISTURBANCE
—SF——SF—	SILT FENCE - SEE DETAIL, SHT. 15 OF 27
—SSF——SSF—	SUPER SILT FENCE - SEE DETAIL, SHT. 15 OF 27
(arrow symbol)	EARTH DIKE - SEE DETAIL, SHT. 15 OF 27
(pipe symbol)	CLEAN WATER DIVERSION PIPE
RPS	REMOVABLE PUMPING STATION
CIP	CURB INLET PROTECTION
AGIP	AT GRADE INLET PROTECTION
CD	STONE CHECK DAM
S.O.S.	STONE OUTLET STRUCTURE

BASIN TABLE

	BASIN NUMBER		I
	EXISTING DRAINAGE AREA AC.		10.56
*	INTERIM DRAINAGE AREA AC.		9.92
	PROPOSED DRAINAGE AREA AC.		8.96
	STORAGE REQUIRED C.F.	WET	17,802
		DRY	17,802
		TOTAL	35,604
	STORAGE PROVIDED C.F.	WET	19,129
		DRY	17,818
		TOTAL	36,947
	EXISTING GROUND ELEV.		348.0
	TOP EMBANKMENT ELEV.		354.2
	EMERGENCY SPILLWAY CREST ELEV.		N/A
	RISER CREST ELEV.		351.2
	WET STORAGE ELEV.		350.0
	CLEANOUT ELEV.		349.3
	BOTTOM ELEV.		347.0
	Q INTO BASIN (C.F.S.) 10 YR. CLOGGED		35.97
	Q OUT BARREL (C.F.S.) 10 YR. CLOGGED		27.59
	Q OUT EMERGENCY SPILLWAY		N/A
	BASIN DEPTH	WET	3.00'
		DRY	1.20'
		TOTAL	4.20'
	DESIGN HIGHWATER 10 YR. CLOGGED		351.9
	FREEBOARD PROVIDED		2.1'
	BARREL DIAMETER		30"
	RISER DIMENSIONS		4' X 4'
	EMERGENCY SPILLWAY WIDTH		N/A
	WET STORAGE ZONE ELEV.		347.0-350.0
	DRY STORAGE ZONE ELEV.		350.0-351.2
	BOTTOM DIMENSIONS		140' X 70'
	EXISTING 2 YR. Q		3.62 CFS
	PROPOSED 2 YR. Q		1.84 CFS

* BASED ON WORST-CASE CONDITION WITH SKYLARK BLVD. PAVED, SUBDIVISION ROADS OPEN CUT.

DAM HAZARD CLASSIFICATION:
SWM I HAS A DAM CLASSIFICATION OF 'A'

APPROVED: HOWARD COUNTY DEPARTMENT OF PUBLIC WORKS.
CHIEF, BUREAU OF HIGHWAYS. HS — DATE 10-29-01

APPROVED: HOWARD COUNTY DEPT. OF PLANNING & ZONING
CHIEF, DEVELOPMENT ENGINEERING DIVISION MK — DATE 10/31/01
CHIEF, DIVISION OF LAND DEVELOPMENT HB — DATE 11/6/01
~~DIRECTOR~~ — ~~DATE~~

Date	No.	Revision Description

EMERSON

FORMERLY KEY PROPERTY
SECTION 2, PHASE 1A

OWNER/DEVELOPER:
THE HOWARD RESEARCH & DEVELOPMENT CORPORATION
10275 Little Patuxent Parkway
Columbia, Maryland 21044

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200 East Pennsylvania Avenue
Towson, Maryland 21286
(410) 296-3333
Fax 296-4705

A Team of Land Planners, Landscape Architects, Engineers, Surveyors & Environmental Professionals

SUBDIVISION NAME		SECTION/AREA		LOT/PARCEL #	
EMERSON SECTION 2		PHASE IA		P/O P.837, P.3, P.462	
PLAT# OR L/F: L.572, F.430; L.1123, F.49	BLOCK #: 2,7,8,9,13, 14,15,20 & 21	ZONE: MXD	TAX/ZONE MAP: 47	ELECT. DISTRICT: 6 TH	CENSUS TRACT: -
WATER CODE: -		SEWER CODE: -			

TITLE
EROSION & SEDIMENT CONTROL PLAN

Des By MRT	Scale 1"=50'	Proj. No. 95054.F
Drn By WHJ	Date 9-26-01	12 of 27
Chk By	Approved	

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 — DATE 10/10/01

THESE PLANS FOR SMALL POND CONSTRUCTION, SOIL EROSION AND SEDIMENT CONTROL MEET THE REQUIREMENTS OF HOWARD SOIL CONSERVATION DISTRICT.
APPROVED: HOWARD SOIL CONSERVATION DISTRICT — DATE 10/10/01
PLAN NUMBER

DEVELOPERS CERTIFICATE:

I/WE CERTIFY THAT ALL DEVELOPMENT AND/OR CONSTRUCTION WILL BE DONE ACCORDING TO THESE PLANS AND THAT ANY RESPONSIBLE PERSONNEL INVOLVED IN THE CONSTRUCTION PROJECT WILL HAVE A CERTIFICATE OF ATTENDANCE AT A DEPARTMENT OF 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.

SIGNATURE OF DEVELOPER — PRINT NAME BELOW SIGNATURE: Robert A. Jenkins — DATE 10/27/01

ENGINEERS CERTIFICATE:

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 REQUIREMENT 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.

SIGNATURE OF ENGINEER — PRINT NAME BELOW SIGNATURE: John W. Ranucchia, Sr. — DATE 9/25/01

9/25/01
Date

Professional Engr. No. 10551

F-01-136

Tue Sep 25 12:36:43 2001\95054\final\95054fset#1.scl

BASIN TABLE

BASIN NUMBER		11
EXISTING DRAINAGE AREA AC.		6.72
* INTERIM DRAINAGE AREA AC.		8.00
** PROPOSED DRAINAGE AREA AC.		14.72
STORAGE REQUIRED C.F.	WET	14,436
	DRY	14,436
	TOTAL	28,872
STORAGE PROVIDED C.F.	WET	14,810
	DRY	15,570
	TOTAL	30,380
EXISTING GROUND ELEV.		302.0
TOP EMBANKMENT ELEV.		310.7
EMERGENCY SPILLWAY CREST ELEV.		N/A
RISER CREST ELEV.		307.0
WET STORAGE ELEV.		304.0
CLEANOUT ELEV.		303.2
BOTTOM ELEV.		302.0
Q INTO BASIN (C.F.S.) 10 YR. CLOGGED		36.96
Q OUT BARREL (C.F.S.) 10 YR. CLOGGED		21.32
Q OUT EMERGENCY SPILLWAY		N/A
BASIN DEPTH	WET	2.00'
	DRY	1.20'
	TOTAL	3.20'
DESIGN HIGHWATER 10 YR. CLOGGED		307.56
FREEBOARD PROVIDED		2.94'
BARREL DIAMETER		36"
RISER DIMENSIONS		4' X 4'
EMERGENCY SPILLWAY WIDTH		N/A
WET STORAGE ZONE ELEV.		302.0-304.0
DRY STORAGE ZONE ELEV.		304.0-305.2
BOTTOM DIMENSIONS		40' X 110'
EXISTING 2 YR. Q		1.77 CFS
PROPOSED 2 YR. Q		0.47 CFS

* BASED ON WORST-CASE CONDITION WITH SKYLARK BLVD. PAVED, SUBDIVISION ROADS OPEN CUT.

** D.A. WILL EXPAND TO THIS SIZE AFTER ENTIRE AREA IS STABILIZED.

DEVELOPERS CERTIFICATE:

I/WE CERTIFY THAT ALL DEVELOPMENT AND/OR CONSTRUCTION WILL BE DONE ACCORDING TO THESE PLANS AND THAT ANY RESPONSIBLE PERSONNEL INVOLVED IN THE CONSTRUCTION PROJECT WILL HAVE A CERTIFICATE OF ATTENDANCE AT A DEPARTMENT OF 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.

SIGNATURE OF DEVELOPER — 10/22/01 DATE
PRINT NAME BELOW SIGNATURE Robert A. Jenkins

ENGINEERS CERTIFICATE:

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 REQUIRMENTS 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.

SIGNATURE OF ENGINEER — 9/25/01 DATE
PRINT NAME BELOW SIGNATURE John W. Ranocchia, Sr.

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.

Jim Myers/GS — U.S.D.A. NATURAL RESOURCES CONSERVATION SERVICE — 10/10/01 DATE

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

APPROVED: HOWARD SOIL CONSERVATION DISTRICT — 10/10/01 DATE

PLAN NUMBER

NOTES:
1) A TEMPORARY STREAM BYPASS WILL BE CONSTRUCTED WHILE THE PROPOSED TWIN CULVERTS ARE INSTALLED. DETAILS OF BYPASS METHOD IS INDICATED ON ESC DETAIL SHEET 16 OF 27.

2) SWM POND FOREBAY EMBANKMENT (BETWEEN STORMDRAIN OUTFALLS INTO BASIN AND SEDIMENT BAFFLES) WILL BE INSTALLED WHEN CONVERTING BASIN TO SWM POND.

3) THE 2:1 SLOPES THAT EXTEND ALONG SKYLARK BLVD. STA. 24+00 TO STA. 27+50 TO EXISTING GRADE AT THE STREAM CHANNEL SHALL BE IMMEDIATELY STABILIZED AFTER THEY ARE CONSTRUCTED. THESE SLOPES SHALL BE STABILIZED WITH ECM AND PERMANENT SEED MIX.

4) NO WORK SHALL BE CONDUCED IN THE EXISTING STREAM DURING MARCH 1 - JUNE 15 INCLUSIVE, DURING ANY YEAR.

LEGEND

- PROPERTY LINE
- EXISTING CONTOUR
- PROPOSED CONTOUR
- MOUNTABLE BERM
- L.O.D. LIMIT OF DISTURBANCE
- SF SILT FENCE - SEE DETAIL, SHT. 15 OF 27
- SSF SUPER SILT FENCE - SEE DETAIL, SHT. 15 OF 27
- EARTH DIKE - SEE DETAIL, SHT. 15 OF 27
- RPS REMOVABLE PUMPING STATION
- CIP CURB INLET PROTECTION
- AGIP AT GRADE INLET PROTECTION
- S.O.S. STONE OUTLET STRUCTURE

NOTE:
1. SWM POND FOREBAY EMBANKMENT (BETWEEN STORMDRAIN OUTFALLS INTO BASINS AND SEDIMENT BAFFLES) MAY BE INSTALLED WHEN CONVERTING BASINS TO SWM PONDS.

2. CONTRACTOR SHALL HAVE REMOVABLE PUMPING STATION (DETAIL, SHEET 20 & 27) AVAILABLE DURING CONSTRUCTION OF BASINS.

MDE PERMIT & TRACKING No. 200164079

APPROVED: HOWARD COUNTY DEPARTMENT OF PUBLIC WORKS.
CHIEF, BUREAU OF HIGHWAYS. — 10-29-01 DATE

APPROVED: HOWARD COUNTY DEPT. OF PLANNING & ZONING
CHIEF, DEVELOPMENT ENGINEERING DIVISION MK — 10/31/01 DATE
CHIEF, DIVISION OF LAND DEVELOPMENT — 11/6/01 DATE
~~DIRECTOR~~ ~~DATE~~

Date	No.	Revision Description

EMERSON
FORMERLY KEY PROPERTY
SECTION 2, PHASE 1A

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A Team of Land Planners, Landscape Architects, Engineers, Surveyors & Environmental Professionals

9/25/01
Date

Professional Engr. No. 10551

SUBDIVISION NAME	SECTION/AREA	LOT/PARCEL #
EMERSON SECTION 2	PHASE 1A	P/O P. 837, P. 3, P. 462

PLAT# OR L/F	BLOCK #	ZONE	TAX/ZONE MAP	ELECT. DISTRICT	CENSUS TRACT
L.572, F.430 L.1129, F.48	2,7,8,9,13, 14,15,20 & 21	MXD	47	6 TH	-

WATER CODE - SEWER CODE -

TITLE
EROSION & SEDIMENT CONTROL PLAN

Des By MRT	Scale 1"=50'	Proj. No. 95054.F
Drn By WHJ	Date 9-26-01	13 of 27
Chk By	Approved	

F-01-136

Tue Sep 25 13:10:43 2001 95054\final\95054fset#1.sc2

EMERSON MAIN SEQUENCE OF CONSTRUCTION-PHASE 1-A

SEQUENCE	NO. OF DAYS
1. OBTAIN A GRADING PERMIT AND NOTIFY ALL APPROPRIATE AGENCIES 48 HOURS PRIOR TO BEGINNING ANY WORK. NOTIFY MARYLAND DEPARTMENT OF THE ENVIRONMENT'S NONTIDAL WETLANDS AND WATERWAYS INSPECTIONS AND COMPLIANCE SECTION AT 410-631-8094, AT LEAST FIVE DAYS PRIOR TO CONDUCTING ANY WORK IN STREAMS, FLOODPLAINS, WETLANDS, OR WETLAND BUFFERS.	14
2. INSTALL STABILIZED CONSTRUCTION ENTRANCE AT SKYLARK BOULEVARD AND WINTER SUN ROAD.	2
3. * CLEAR AND GRUB FOR, AND INSTALL SILT FENCE, SUPER SILT FENCE, CLEAN WATER DIVERT AND DIKES a. SEE SUB-SEQUENCE "A" & "B", SHEET NO.11. b. SEE SUB-SEQUENCE "C", SHEET NO.12.	5
4. AFTER OBTAINING PERMISSION FROM THE SEDIMENT CONTROL INSPECTOR PROCEED WITH THE FOLLOWING: a. INSTALL I-4 TO I-6 WITH TEMPORARY 36"D (SEE SUB-SEQ."C"-SHT 12), AND TEMPORARY 24"D (SEE SUB-SEQ."B"-SHEET 11). AT FUTURE ROAD SOUTH. b. CONSTRUCT BASIN I AND STABILIZE. c. BEGIN IN-STREAM CULVERT CROSSING ON SKYLARK BLVD., SEE THIS SHEET. d. MAINTAIN POSITIVE FLOW OF ALL SEDIMENT LADEN FLOWS TO ESC DEVICES.	45
5. BEGIN CLEARING, GRUBBING AND ROUGH GRADING OF SITE. a. MAINTAIN DUST CONTROL MEASURES. b. INSTALL MOUNTABLE BERM AND TEMPORARY SWALE WHEN REQUIRED FOR DRAINAGE FLOW DIVERSION. c. SEE SUB-SEQUENCE "D"- #4b, THIS SHEET.	20
6. BEGIN CONSTRUCTION OF ROADWAY AND UTILITIES. a. MAINTAIN CLEAR WATER PASSAGE THROUGH TEMPORARY SYSTEM. b. SEE SUB-SEQUENCE "B" - #5, SHEET 11.	25
7. INSTALL CURB AND GUTTER, PAVE SKYLARK BLVD., REMOVE STOCKPILES, AND STABILIZE ALL DISTURBED AREAS.	15
8. WITH THE APPROVAL OF THE ESC INSPECTOR, REMOVE SILT FENCE, SUPER SILT FENCE, CLEAN WATER DIVERT, CIP/AGIP, AND DIKES. STABILIZE ALL DISTURBED AREAS RESULTING FROM REMOVAL OF ESC DEVICES. SEDIMENT BASINS SHALL REMAIN AS SUCH UNTIL THE COMPLETION OF FUTURE PHASE 1-B, HOWARD COUNTY JOB # F-01-137, WHEN THEY WILL BE CONVERTED TO SWM PONDS.	4

* REFER TO 'CONDITIONS AND MANAGEMENT PRACTICES FOR WORKING IN NONTIDAL WETLANDS AND THEIR BUFFERS', THIS SHEET..

NOTE: ALL DISTURBED AREAS OUTSIDE OF L.O.D. SHALL BE PROTECTED BY:

1) ADDITIONAL S.E.C. DEVICES AND MEASURES AND/OR
2) STABILIZE WITH TEMPORARY/PERMANENT SEEDING SPECIFICATION.

AT THE END OF EACH WORKING DAY, AS DIRECTED AND APPROVED BY SEDIMENT CONTROL INSPECTOR.

Main Sequence of Construction

"CONDITIONS AND MANAGEMENT PRACTICES FOR WORKING IN NONTIDAL WETLANDS AND BUFFERS"

A) REMOVE EXCAVATED MATERIAL, CONSTRUCTION MATERIAL OR DEBRIS TO AN UPLAND DISPOSAL AREA OUTSIDE OF ANY WATERWAY, FLOODPLAIN, NONTIDAL WETLAND, OR BUFFER;

B). IF BACKFILL IS OBTAINED, USE CLEAN MATERIAL FREE OF WASTE METAL PRODUCTS, UNSIGHTLY DEBRIS, TOXIC MATERIAL, OR ANY OTHER DELETERIOUS SUBSTANCE.

C) PLACE MATERIALS IN A LOCATION AND MANNER WHICH DOES NOT ADVERSELY IMPACT SURFACE OR SUBSURFACE WATER FLOW INTO OR OUT OF THE NONTIDAL WETLAND;

D) MAINTAIN THE HYDROLOGIC REGIME OF NONTIDAL WETLANDS OUTSIDE THE LIMITS OF DISTURBANCE.

E) RECTIFY ANY NONTIDAL WETLANDS AND BUFFERS TEMPORARILY IMPACTED BY THE PERMITTED ACTIVITY. ALL STABILIZATION IN THE WETLAND AND BUFFER SHALL BE OF THE FOLLOWING RECOMMENDED SPECIES: ANNUAL RYEGRASS (LOLIUM MULTIFLORUM), MILLET (SETARIA ITALICA), OATS (UNIOLA SP.). AND/OR RYE (SECALE CEREALE). OTHER NON-PERSISTENT VEGETATION MAY BE ACCEPTABLE, BUT MUST BE APPROVED BY THE NONTIDAL WETLANDS AND WATERWAYS DIVISION. KENTUCKY 31 FESCUE SHALL NOT BE UTILIZED IN THE WETLAND OR BUFFER. ALL TEMPORARY FILLS SHALL BE REMOVED IN THEIR ENTIRETY ON OR BEFORE THE COMPLETION OF CONSTRUCTION;

F) TO PROTECT IMPORTANT AQUATIC SPECIES, IN-STREAM WORK IS PROHIBITED AS DETERMINED BY THE CLASSIFICATION OF THE STREAM AS FOLLOWS:

USE I WATERS. IN-STREAM WORK MAY NOT BE CONDUCTED DURING THE PERIOD MARCH 1 - JUNE 15 INCLUSIVE, DURING ANY YEAR.

G) NO REMOVAL OF VEGETATION, GRADING, FILLING, DRAINING OR OTHER ALTERATION OF THE NONTIDAL WETLANDS OR BUFFER OUTSIDE THE LIMITS OF DISTURBANCE SHALL OCCUR WITHOUT WRITTEN AUTHORIZATION FROM THE WATER MANAGEMENT ADMINISTRATION.

Working in Nontidal Wetlands & Buffers

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 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 AFFECTIVE IN CONTROLLING SOIL BLOWING.
6. CALCIUM CHLORIDE - APPLY AT A RATE 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.

U.S. DEPARTMENT OF AGRICULTURE SOIL CONSERVATION SERVICE — H - 30 - 1 — MARYLAND DEPARTMENT OF ENVIRONMENT WATER MANAGEMENT ADMINISTRATION

Dust Control Specifications

Not To Scale

21.0 STANDARD AND SPECIFICATIONS FOR TOPSOIL

Definition

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

Purpose

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

Conditions Where Practice Applies

I. This practice is limited to areas having 2:1 or flatter slopes where:

a. The texture of the exposed subsoil/parent material is not adequate to produce vegetative growth.

b. The soil material is so shallow that the rooting zone is not deep enough to support plants or furnish continuing supplies of moisture and plant nutrients.

c. The original soil to be vegetated contains material toxic to plant growth.

d. The soil is so acidic that treatment with limestone is not feasible.

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

Construction and Material Specifications

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

II. Topsoil Specifications - Soil to be used as topsoil must meet the following:

i. Topsoil shall be a loam, sandy loam, clay loam, silt loam, sandy clay loam, loamy sand. Other soils may be used if recommended by an agronomist or soil scientist and approved by the appropriate approval authority. Regardless, topsoil shall not be mixture of contrasting textured subsoils and shall contain less than 5% by volume of cinders, stones, slags, coarse fragments, gravel sticks, roots, trash, and other materials larger 1 1/2 inch in diameter.

ii. Topsoil must be free of plants or plant parts such as Bermuda grass, quackgrass, Johnsongrass, nutsedge, poison ivy, thistle, or others as specified.

iii. Where the subsoil is either highly acidic or composed of heavy clays, ground limestone shall be spread at the rate of 4-8 tons/acre (200-400 pounds per 1,000 square feet) prior to the placement of topsoil. Lime shall be distributed uniformly over designated areas and worked into the soil in conjunction with tillage operations as described in the following procedures.

II. For sites having disturbed areas under 5 acres:

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

III. For sites having disturbed areas over 5 acres:

i. On soil meeting Topsoil specifications, obtain test results dictating fertilizer and lime amendments required to bring the soil into compliance with the following:

a. pH for topsoil shall be between 6.0 and 7.5. If the tested soil demonstrates a pH of less than 6.0, sufficient lime shall be prescribed to raise the pH to 6.5 or higher.

b. Organic contents of topsoil shall be not less than 1.5 percent by weight.

c. Topsoil having soluble salt content greater than 500 parts per million shall not be used.

d. No sod or seed shall be placed on soil which has been treated with soil sterilants or chemicals used for weed control until sufficient time has elapsed (14 days min.) to permit dissipation of phyto-toxic materials.

Note: Topsoil substitutes 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.

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

V. Topsoil Application

i. When topsoiling, maintain needed erosion and sediment control practices such as diversions, Grade Stabilization Structures, Earth Dikes, Slop Silt Fence and Sediment Traps and Basins.

ii. Grades on the areas to be topsoiled, which have been previously established, shall be maintained, albeit 4%2 - 8%2 higher in elevation.

iii. Topsoil shall be uniformly distributed in a 4%2 - 8%2 layer and lightly compacted to a minimum thickness of 4%2. Spreading shall be performed in such a manner that sodding or seeding can proceed with a minimum of additional soil preparation and tillage. Any irregularities in the surface resulting from topsoiling or other operations shall be corrected in order to prevent the formation of depressions or water pockets.

IV. Topsoil shall not be placed while the topsoil 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.

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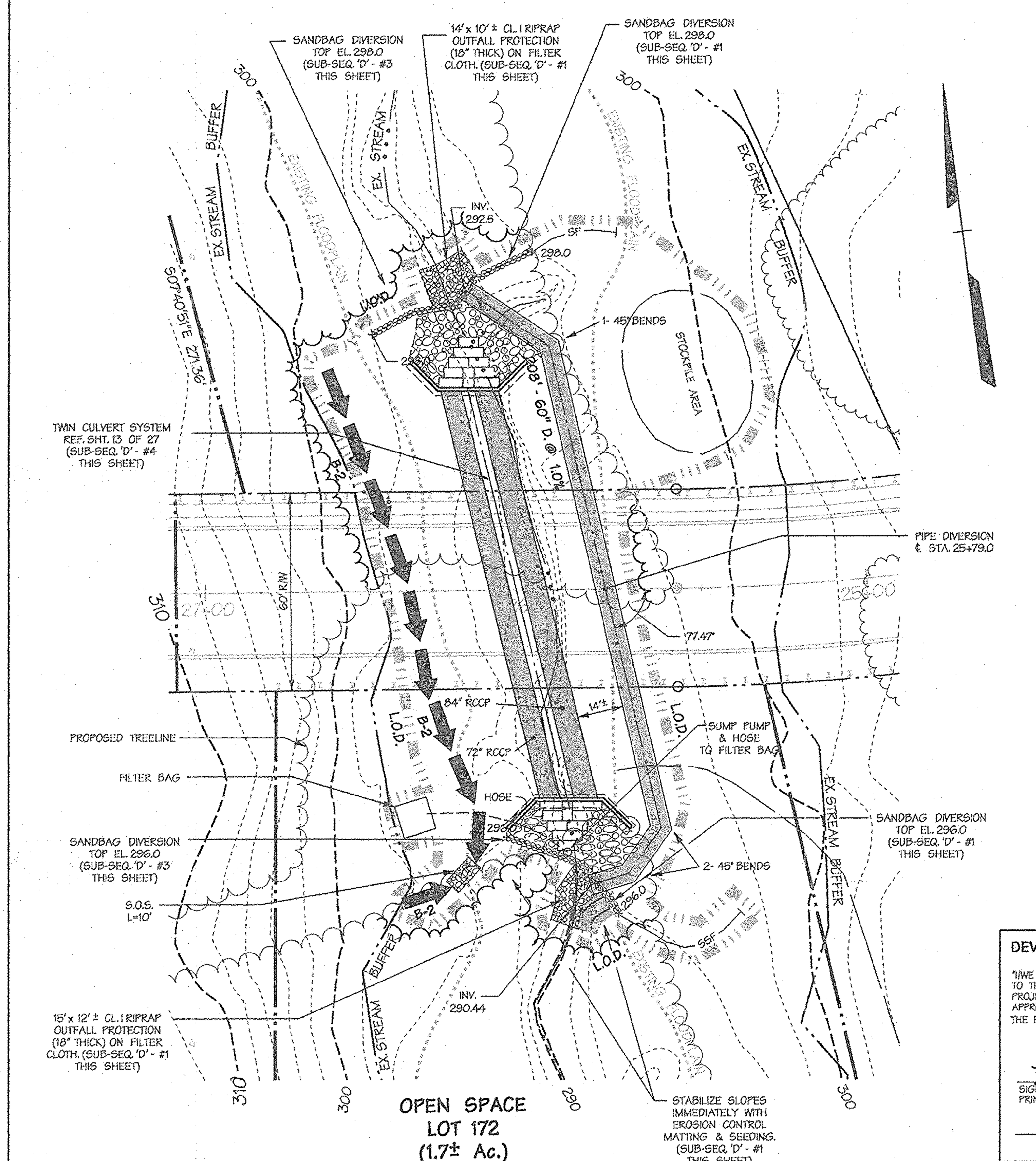
Top Soil Specifications



PIPE DIVERSION FOR CULVERT INSTALLATION

SCALE: 1"=30'

SUB-SEQUENCE 'D'
CONSTRUCTION OF PIPE DIVERSION
(UNDER MAIN SEQUENCE #4C, THIS SHEET)

SEQUENCE	NO. OF DAYS
1. CLEAR FOR AND INSTALL SEDIMENT CONTROL DEVICES AND MEASURES, SAND BAG DIVERSION, AND RIP-RAP OUTFALL PROTECTION AND EROSION CONTROL MATTING AT DOWN STREAM END. MAINTAIN EXISTING STREAM FLOW AT ALL TIMES.	1
a. INSTALL ONLY THAT PORTION OF SAND BAG DIVERSION EAST OF STREAM.	
2. CLEAR & GRUB FOR AND BEGIN LAYING PIPE. a. INSTALL ONLY THAT PORTION OF PIPE THAT CAN BE CONSTRUCTED, BACKFILLED AND STABILIZED WITHIN ONE WORKING DAY. b. PLACE SILT FENCE ON LOW SIDE OF WORK AREA DURING PIPE EXCAVATION, IF REQUIRED. c. WITHIN ONE DAYS CONSTRUCTION OF UPPER INVERT AND WITH THE SEDIMENT CONTROL INSPECTORS APPROVAL, CLEAR FOR AND INSTALL SAND BAG DIVERSION WITH RIP-RAP INFLOW PROTECTION AT UPPER END. c. MAINTAIN EXISTING STREAM FLOW AT ALL TIMES. WITH SEDIMENT CONTROL INSPECTOR APPROVAL, INSTALL LAST SECTION OF PIPE MAKE CONNECTION FOR REROUTING OF STREAM.	2
3. CLEAR & GRUB FOR AND INSTALL REMAINING SAND BAG DIVERSION TO DIVERT STREAM AT BOTH ENDS. a. INSTALL UPSTREAM END FIRST, THEN DOWNSTREAM.	1
4. CLEAR & GRUB REMAINING WORK AREA AND INSTALL TWIN CULVERT SYSTEM. a. WITH SEDIMENT CONTROL INSPECTOR APPROVAL, CONSTRUCT HEADWALLS AND INSTALL STREAM BOTTOM PROTECTION. b. WITH SEDIMENT CONTROL INSPECTOR APPROVAL, ADJUST SEDIMENT CONTROL DEVICES AND MEASURES AS PER PLAN (SHEET. 13 OF 27) FOR ROAD CONSTRUCTION (SEE MAIN SEQUENCE - #5, THIS SHEET)	1 WK.
5. UPON COMPLETION OF PIPE INSTALLATION AND WITH SEDIMENT CONTROL INSPECTOR APPROVAL, REMOVE SEDIMENT CONTROL DEVICES AND MEASURES. REMOVAL SHALL TAKE PLACE UNDER SEQ. # 8 OF THE MAIN SEQUENCE OF CONSTRUCTION, THIS SHEET.	1

NOTE:
CONTRACTOR SHALL USE EXTREME CAUTION TO PREVENT SEDIMENT FROM ENTERING THE STREAM AREA..
ALL EROSION/SEDIMENT CONTROL MEASURES SHALL BE MAINTAIN AND REPAIRED AT THE END OF EACH WORK DAY, AS REQUIRED.
ALL DISTURBED AREAS OUTSIDE OF THE LOD SHALL BE PROTECTED WITH OTHER E.S.C. DEVICES AND MEASURES AND/OR STABILIZED WITH TEMPORARY/PERMANENT SEEDING SPECIFICATIONS AT THE END OF EACH WORKING DAY, AS DIRECTED AND APPROVED BY SEDIMENT CONTROL INSPECTOR.

LEGEND

Symbol	Description
(dash-dot line)	PROPERTY LINE
- - 360 - - / - - 362 - -	EXISTING CONTOUR
— 360 — / — 362 —	PROPOSED CONTOUR
L.O.D.	LIMIT OF DISTURBANCE
—SF—SF—	SILT FENCE - SEE DETAIL, SHT. 15 OF 27
—SSF—SSF—	SUPER SILT FENCE - SEE DETAIL, SHT. 15 OF 27
(double line)	EARTH DIKE - SEE DETAIL, SHT. 15 OF 27
☐ RFB	REMOVABLE FILTER BAG STATION
S.O.S.	STONE OUTLET STRUCTURE
(arrows)	EARTH DIKE
—— ——o	SUMP PUMP & HOSE

DEVELOPERS CERTIFICATION:

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

[signature] DATE 10/28/01
SIGNATURE OF DEVELOPER
PRINT NAME BELOW SIGNATURE
Robert A. Jenkins

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] 9/25/01
SIGNATURE OF ENGINEER
PRINT NAME BELOW SIGNATURE
John W. Ranocchia, Sr.

REVIEWED FOR HOWARD S.C.D. AND MEETS TECHNICAL REQUIREMENTS

[signature] 10/10/01
U.S. NATURAL RESOURCE CONSERVATION SERVICE — DATE

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

[signature] 10/10/01
HOWARD S.C.D. — DATE

9/25/01
Date

PROFESSIONAL ENGINEER NO. 10557 JOHN W. RANOCCHIA, SR. STATE OF MARYLAND

Professional Engr. No. 10557

APPROVED: HOWARD COUNTY DEPARTMENT OF PUBLIC WORKS.

[signature] 10-29-01
CHIEF, BUREAU OF HIGHWAYS. MS — DATE

APPROVED: HOWARD COUNTY DEPT. OF PLANNING & ZONING

[signature] 10/31/01
CHIEF, DEVELOPMENT ENGINEERING DIVISION MK — DATE

[signature] 11/6/01
CHIEF, DIVISION OF LAND DEVELOPMENT HB — DATE

~~DIRECTOR~~ ~~DATE~~

Date	No.	Revision Description

EMERSON
FORMERLY KEY PROPERTY
SECTION 2, PHASE 1A

OWNER/DEVELOPER:
THE HOWARD RESEARCH & DEVELOPMENT CORPORATION
10275 Little Patuxent Parkway
Columbia, Maryland 21044

DMW
Daft·McCune·Walker, Inc.
200 East Pennsylvania Avenue
Towson, Maryland 21286
(410) 296-3333
Fax 296-4705

A Team of Land Planners, Landscape Architects, Engineers, Surveyors & Environmental Professionals

SUBDIVISION NAME	SECTION/AREA	LOT/PARCEL #	
EMERSON SECTION 2	PHASE IA	P/O P. 837, P. 3, P. 462	
PLAT# OR L/F: L.572, F.430 L.1129, F.48	BLOCK #: 2, 7, 8, 9, 13, 14, 15, 20 & 21	ZONE: MXD	TAX/ZONE MAP: 47
ELECT. DISTRICT: 6 TH	CENSUS TRACT: -	WATER CODE: -	SEWER CODE: -

TITLE
EROSION & SEDIMENT CONTROL DETAILS

Des By MRT	Scale AS SHOWN	Proj. No. 95054.F
Drn By WHJ	Date 9-26-01	14 of 27
Chk By	Approved	

F-01-136

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Ho. Co. Sediment Control General Notes

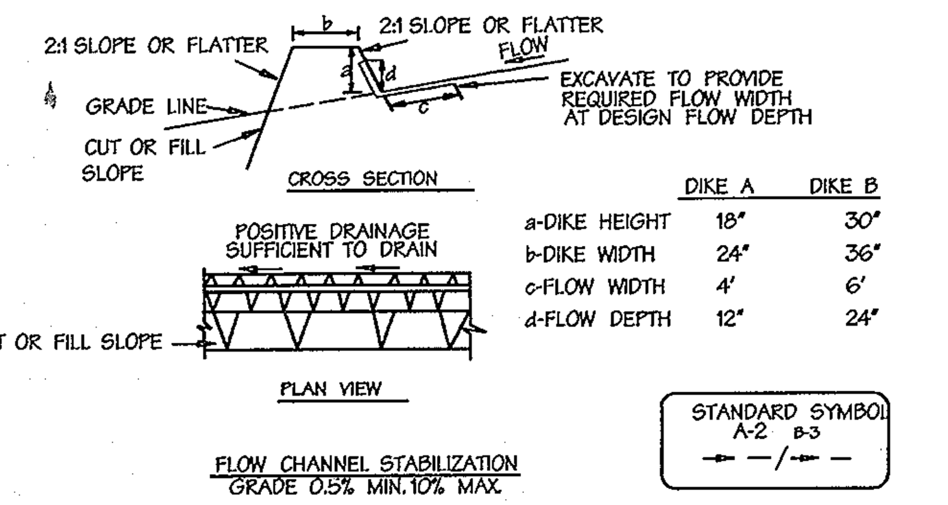
1. A MINIMUM OF 48 HOURS NOTICE MUST BE GIVEN TO THE HOWARD COUNTY DEPARTMENT OF INSPECTIONS, AND PERMITS, SEDIMENT CONTROL DIVISION PRIOR TO THE START OF ANY CONSTRUCTION (313-1855).
2. ALL VEGETATIVE AND STRUCTURAL PRACTICES ARE TO BE INSTALLED ACCORDING TO THE PROVISIONS OF THIS PLAN AND ARE TO BE IN CONFORMANCE WITH THE MOST CURRENT MARYLAND STANDARDS AND SPECIFICATIONS FOR SOIL EROSION AND SEDIMENT CONTROL" AND REVISIONS THERETO.
3. FOLLOWING INITIAL SOIL DISTURBANCE OR RE-DISTURBANCE, PERMANENT OR TEMPORARY STABILIZATION SHALL BE COMPLETED WITHIN:
   A. 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 OF GRADED AREAS ON THE PROJECT SITE.
4. ALL SEDIMENT TRAPS/BASINS SHOWN MUST BE FENCED AND WARNING SIGNS POSTED AROUND THEIR PERIMETER IN ACCORDANCE WITH VOL.1, CHAPTER 12, OF THE "HOWARD COUNTY DESIGN MANUAL", STORM DRAINAGE.
5. ALL DISTURBED AREAS MUST BE STABILIZED WITHIN THE TIME PERIOD SPECIFIED ABOVE IN ACCORDANCE WITH THE "1994 MARYLAND STANDARDS AND SPECIFICATIONS FOR SOIL EROSION AND SEDIMENT CONTROL" FOR PERMANENT SEEDINGS (SEC. 51), SODS (SEC. 54), TEMPORARY SEEDING (SEC. 50), AND MULCHING (SEC. 52). TEMPORARY STABILIZATION WITH MULCH ALONE CAN ONLY BE DONE WHEN RECOMMENDED SEEDING DATES DO NOT ALLOW FOR PROPER GERMINATION AND ESTABLISHMENT OF GRASSES.
6. ALL SEDIMENT CONTROL STRUCTURES ARE TO REMAIN IN PLACE AND ARE TO BE MAINTAINED IN OPERATIVE CONDITION UNTIL PERMISSION FOR THEIR REMOVAL HAS BEEN OBTAINED FROM THE HOWARD COUNTY SEDIMENT CONTROL INSPECTOR.
7. SITE ANALYSIS:

TOTAL AREA OF SITE (BOTH PHASES)	82.8 ACRES
AREA DISTURBED	28.0 ACRES
AREA TO BE ROOFED OR PAVED	16.5 ACRES
AREA TO BE VEGETATIVELY STABILIZED	11.5 ACRES
TOTAL CUT	106,000 CUBIC YARDS
TOTAL FILL	106,000 CUBIC YARDS
OFF-SITE WASTE/BORROW AREA LOCATION WASTE =	

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.

Earth Dike

Not to Scale



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

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

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

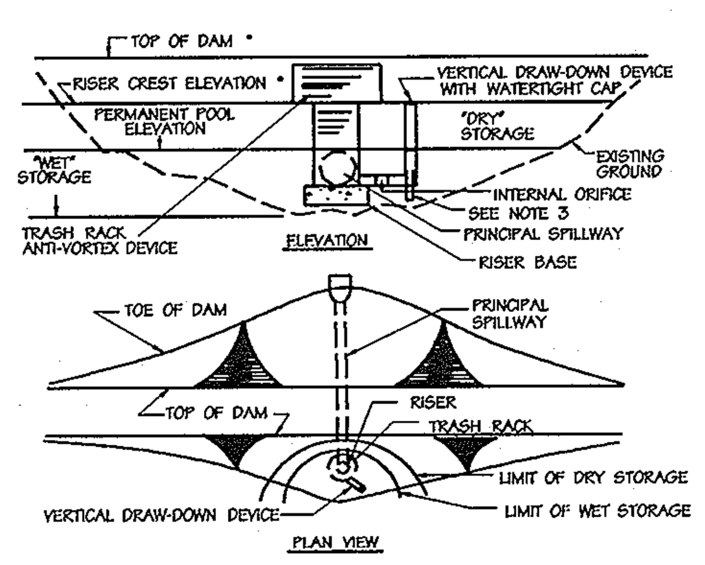
Construction Specifications

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

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

Basin Schematic Vertical Draw-Down Device

Not to Scale



CONSTRUCTION SPECIFICATIONS

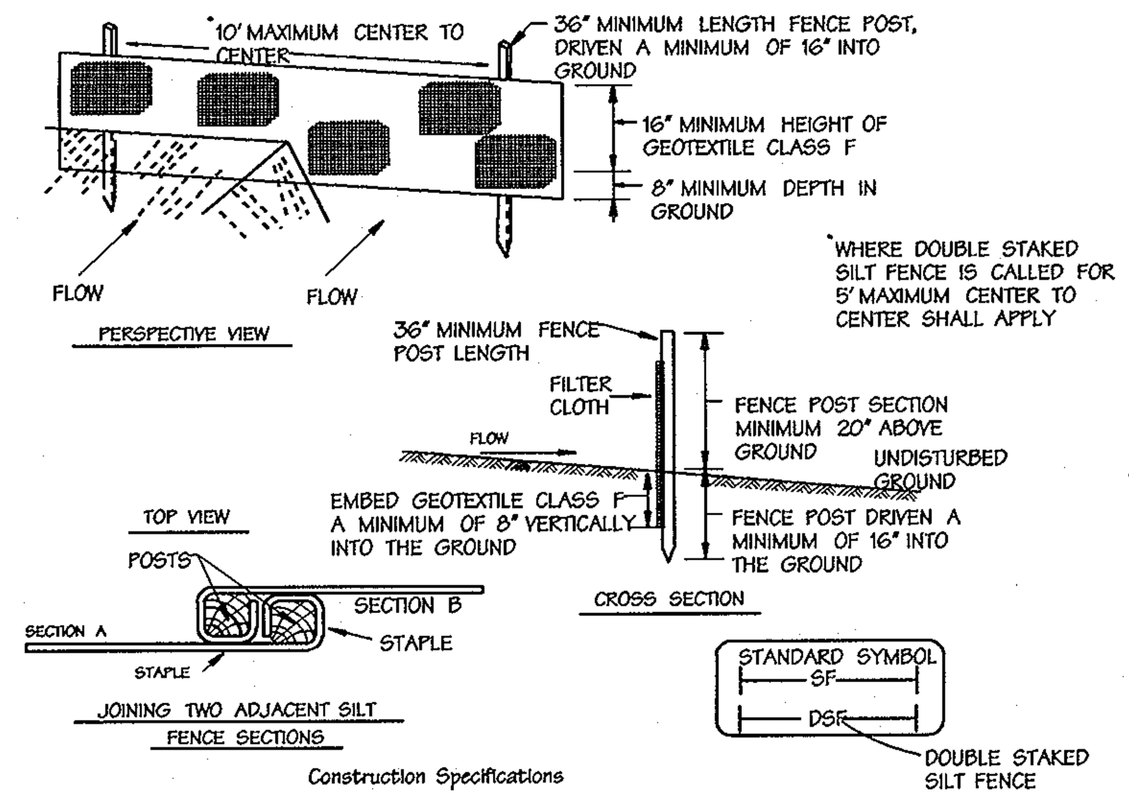
1. PERFORATIONS IN THE DRAW-DOWN DEVICE MAY NOT EXTEND INTO THE WET STORAGE.
2. THE TOTAL AREA OF THE PERFORATIONS MUST BE GREATER THAN 4 TIMES THE AREA OF THE INTERNAL ORIFICE.
3. THE PERFORATED PORTION OF THE DRAW-DOWN DEVICE SHALL BE WRAPPED WITH ½" HARDWARE CLOTH AND GEOTEXTILE FABRIC. THE GEOTEXTILE FABRIC SHALL MEET THE SPECIFICATIONS FOR GEOTEXTILE CLASS E.
4. PROVIDE SUPPORT OF DRAW-DOWN DEVICE TO PREVENT SAGGING AND FLOATATION. AN ACCEPTABLE PREVENTATIVE MEASURE IS TO STAKE BOTH SIDES OF DRAW-DOWN DEVICE WITH 1" STEEL ANGLE, OR 1" BY 4" SQUARE OR 2" ROUND WOODEN POSTS SET 3' MINIMUM INTO THE GROUND THEN JOINING THEM TO THE DEVICE BY WRAPPING WITH 12 GAUGE MINIMUM WIRE.

* RISER, EMBANKMENT DESIGNED BASED ON SWM COMPUTATIONS. RISER CREST DOES NOT NECESSARILY COINCIDE WITH TOP OF "DRY" STORAGE.

U.S. DEPARTMENT OF AGRICULTURE SOIL CONSERVATION SERVICE — C-10-29 — MARYLAND DEPARTMENT OF ENVIRONMENT WATER MANAGEMENT ADMINISTRATION

Silt Fence

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 1½" x 1½" square (minimum) cut, or 1¾" diameter (minimum) round and shall be of sound quality hardwood. Steel posts will be standard T or U section weighting not less than 1.00 pond per linear foot.
2. Geotextile shall be fastened securely to each fence post with wire ties or staples at top and mid-section and shall meet the following requirements for Geotextile Class F:

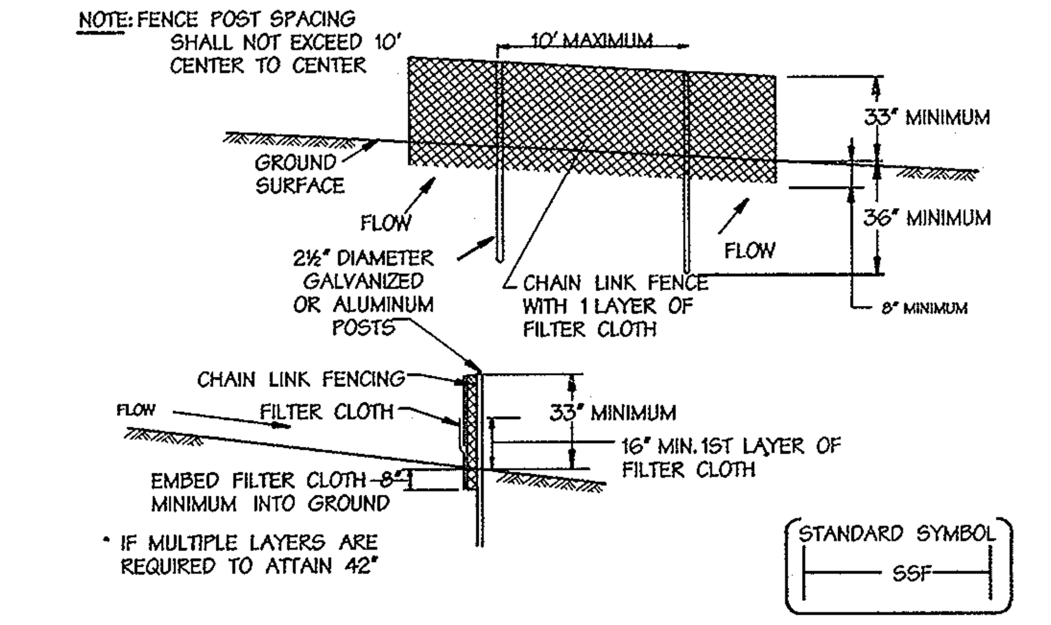
Tensile Strength	50 lbs/in (min.)	Test: MSMT 509
Tensile Modulus	20 lbs/in (min.)	Test: MSMT 509
Flow Rate	0.3 gal ft/minute (max.)	Test: MSTM 322
Filtering Efficiency	75% (min.)	Test: MSMT 322

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

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

Super Silt Fence

Not to Scale



Construction Specifications

1. Fencing shall be 42 inches in height and constructed in accordance with the latest Maryland State Highway (SHA) Details for Chain Link Fencing. The specification 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 filter cloth adjoin each other, they shall be overlapped by 6" and folded.
7. Maintenance shall be performed as needed and silt buildups removed when "bulges" develop in the silt fence, or when silt reaches 50% of fence height

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

Temporary And Permanent Seeding Notes

PERMANENT SEEDING NOTES

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

SEEDBED PREPARATION: LOOSEN UPPER THREE INCHES OF SOIL BY RAKING, DISKING OR OTHER ACCEPTABLE MEANS BEFORE SEEDING, IF NOT PREVIOUSLY LOOSENED.

SOIL AMENDMENTS: IN LIEU OF SOIL TEST RECOMMENDATIONS, USE ONE OF THE FOLLOWING SCHEDULES:
1. PREFERRED - APPLY 2 TONS PER ACRES DOLOMITIC LIMESTONE (92 LBS/1000 SQ.FT.) AND 1000 LBS. PER ACRE 10-10-10 FERTILIZER (14 LBS./1000 SQ.FT.) BEFORE SEEDING. HARROW OR DISK INTO UPPER THREE INCHES OF SOIL. AT TIME OF SEEDING, APPLY 400 LBS. PER ACRE 30-0-0 UREAFORM FERTILIZER (9 LBS./1000 SQ.FT.)
2. ACCEPTABLE - APPLY 2 TOMS PER ACRES DOLOMITIC LIMESTONE (92 LBS/1000 SQ.FT.) AND 1000 LBS. PER ACRE 10-10-10 FERTILIZER (23 LBS./1000 SQ.FT.) BEFORE SEEDING. HARROW OR DISK INTO UPPER THREE INCHES OF SOIL.

SEEDING - FOR THE PERIODS MARCH 1 THRU APRIL 30, AND AUGUST 1 THRU OCTOBER 15, SEED WITH 60 LBS. PER ACRE (1.4 LBS/1000 SQ.FT.) OF KENTUCKY 31 TALL FESCUE. FOR THE PERIOD MAY 1 THRU JULY 31 SEED WITH 60 LBS. KENTUCKY 31 TALL FESCUE PER ACRE AND 2 LBS. PER ACRE (.05 LBS/1000 SQ.FT.) OF WEEPING LOVEGRASS. DURING THE PERIOD OF OCTOBER 16 THRU 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/ACRE KENTUCKY 31 TALL FESCUE AND MULCH WITH 2 TONS/ACRE WELL ANCHORED STRAW.

MULCHING - APPLY 1-1/2 TO 2 TONS PER ACRE (70 TO 90 LBS/1000 SQ.FT.) OF UNROTTED SMALL GRAIN STRAW IMMEDIATELY AFTER SEEDING. ANCHOR MULCH IMMEDIATELY AFTER APPLICATIONS 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.

MAINTENANCE - INSPECT ALL SEEDING AREAS AND MAKE NEEDED REPAIRS, REPLACEMENTS AND RESEEDING.

TEMPORARY SEEDING NOTES

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

SEEDBED PREPARATION - LOOSEN UPPER THREE INCHES OF SOIL BE RAKING, DISKING OR OTHER ACCEPTABLE MEANS BEFORE SEEDING, IF NOT PREVIOUSLY LOOSENED.

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

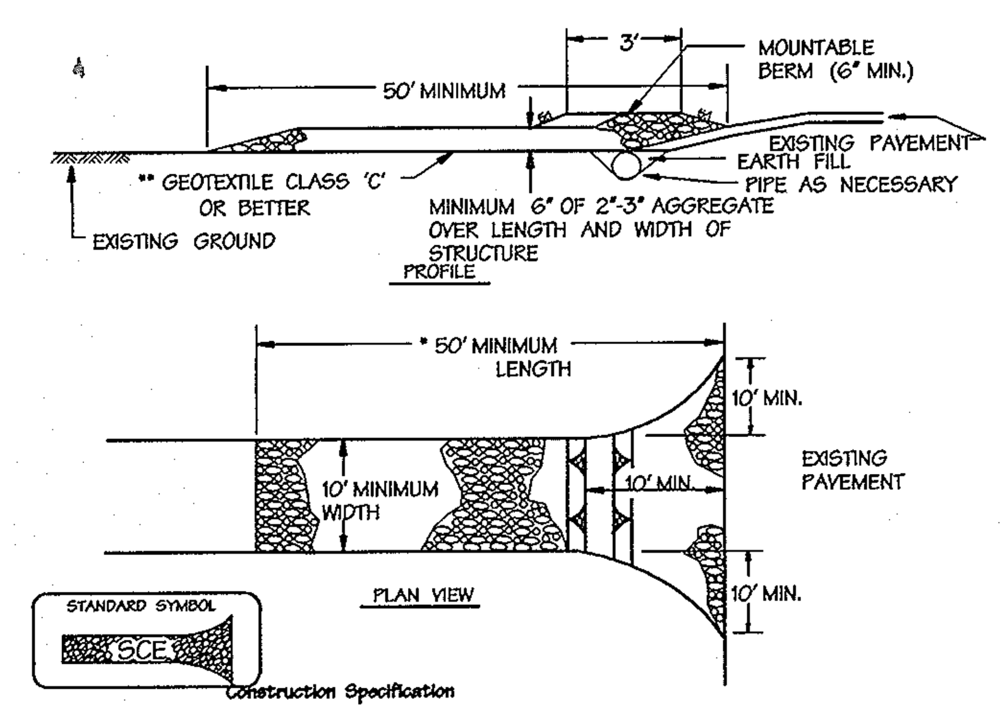
SEEDING - FOR THE PERIODS MARCH 1 THRU APRIL 30, AND AUGUST 15 OCTOBER 15, SEED WITH 2-1/2 BUSHEL PER ACRE OF ANNUAL RYE (3.2 LBS/1000 SQ.FT.). FOR THE PERIOD MAY 1 THRU AUGUST 14, SEED WITH 3 LBS PER ACRE OF WEEPING LOVEGRASS (.07 LBS/1000 SQ.FT.). FOR THE PERIOD NOVEMBER 16 THRU FEBRUARY 28, PROTECT SITE BY APPLYING 2 TONS PER ACRE OF WELL ANCHORED STRAW MULCH AND SEED AS SOON AS POSSIBLE IN THE SPRING, OR USE SOD.

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

REFER TO THE 1994 MARYLAND STANDARDS AND SPECIFICATIONS FOR SOIL EROSION AND SEDIMENT CONTROL FOR ADDITIONAL RATES AND METHODS NOT COVERED.

Stabilized Construction Entrance

Not to Scale



Construction Specification

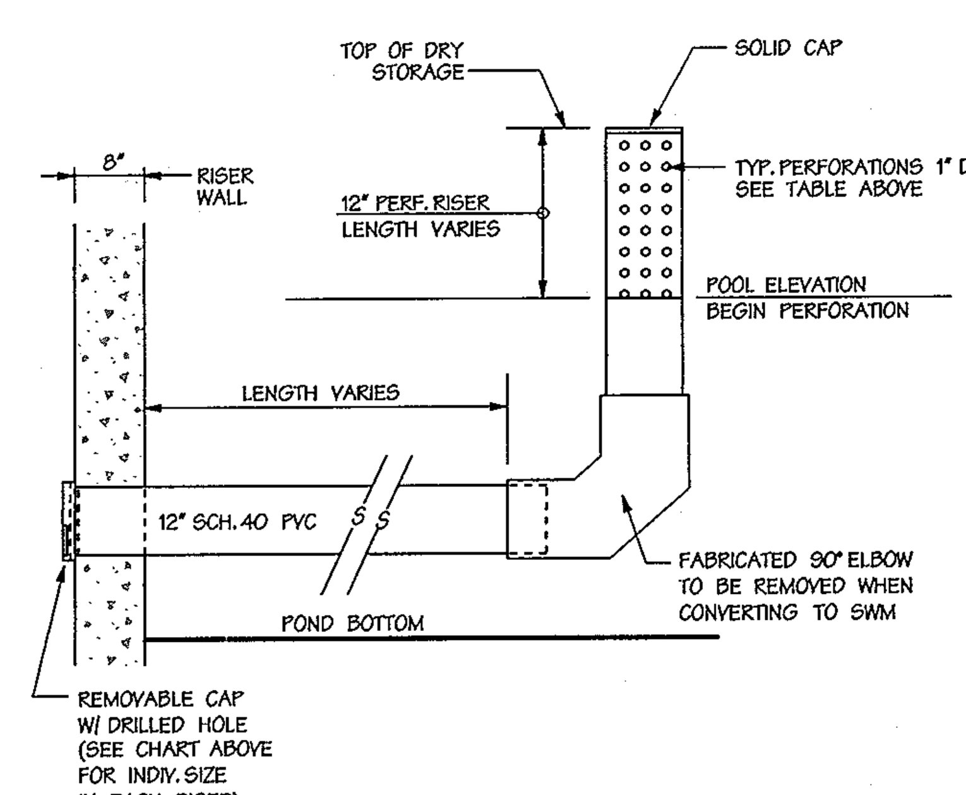
1. Length - minimum of 50' (*30' for single residence lot).
2. Width - 10' minimum, should be flared at the existing road to provide a turning radius.
3. Geotextile fabric Class C (filter cloth) shall be placed over the existing ground prior to placing stone. **The plan approval authority may not require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

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

Sediment Control Draw-Down

Not To Scale

RISER #	LENGTH	WET POOL ELEV.	PERF. RISER HEIGHT	ORIFICE DRILLED HOLE SIZE	PERFORATION SPACING	PERFORATIONS PER VERT. FT.
R-1	7'	350.0	1.2'	4"	2 ½"	75
R-2	18'	304.0	1.2'	1 ½"	3"	40
R-6	19.5'	338.0	1.4'	3"	3"	40



Geotextile Material Specifications

Table 28 Stone Size

	SIZE RANGE	D_{50}	D_{100}	AASHTO	WEIGHT
NUMBER 57*	⅜" - 1½"	½"	1½"	M-43	N/A
NUMBER 1	2" - 3"	2½"	3"	M-43	N/A
RIP-RAP**	4" - 7"	5½"	7"	N/A	N/A
CLASS I	N/A	9.5"	15"	N/A	150lb max.
CLASS II	N/A	16"	24"	N/A	700lb max.
CLASS III	N/A	23"	34"	N/A	2000lb max.

* This classification is to be used on the inside face of stone outlets and check dams.
** This classification is to be used when ever small rip-rap is required. The State Highway Administration designation for this stome is Stone For Gabions (905.01.04)

Stone For Gabion Baskets

BASKET THICKNESS		SIZE OF INDIVIDUAL STONES	
INCHES	MM	INCHES	MM
6	150	3 - 5	75 - 125
9	225	4 - 7	100 - 175
12	300	4 - 7	100 - 175
18	460	4 - 7	100 - 175
36	910	4 - 12	100 - 300

NOTE: Recycled concrete equivalent may be substituted for all stone classifications. Recycled concrete equivalent shall be concrete broken into the sizes meeting the appropriate classification, shall contain no steel reinforcement, and shall have a density of 150 pounds per cubic foot.

Table 27 Geotextile Fabrics

CLASS	APPARENT OPENING SIZE MM. MAX.	GRAB TENSILE STRENGTH LB. MIN.	BURST STRENGTH PSI. MIN.
A	0.30 **	250	500
B	0.60	200	320
C	0.30	200	320
D	0.60	90	145
E	0.30	90	145
F (SILT FENCE)	0.40-0.80*	90	190

* US Std. Sieve CW-02215   ** .50 mm max. for Super Silt Fence

H - 24 - 1

The properties shall be determined in accordance with the following procedures:
- Apparent opening size MSMT 323
- Grab tensile strength ASTMD 1682: 4x8" specimen, 1x2" clamps, 12"/min. strain rate in both principal directions of geotextile fabric.
- Burst strength ASTMD D 3786

The fabric shall be inert to commonly encountered chemicals and hydrocarbons, and will be rot and mildew resistant. It shall be manufactured from fibers consisting of long chain synthetic polymers, and composed of a minimum of 85% by weight of polyolephins, polyesters, or polyamides. The geotextile fabric shall resist deterioration from ultraviolet exposure.

In addition, Classes A through E shall have a 0.01 cm./sec. minimum permeability when tested in accordance with MSMT 507, and an apparent minimum elongation of 20 percent (20%) when tested in accordance with the grab tensile strength requirements listed above.

Silt Fence
Class F geotextile fabrics for silt fence shall have a 50 lb./in. minimum tensile strength and a 20 lb./in. minimum tensile modules when tested in accordance with MSMT 509. The material shall also have a 0.3 gal./ft. /min. flow rate and seventy-five percent (75%) minimum filtering efficiency when tested in accordance with MSMT 322. Geotextile fabrics used in the construction of silt fence shall resist deterioration from ultraviolet exposure. The fabric shall contain sufficient amounts of ultraviolet ray inhibitors and stabilizers to provide a minimum of 12 months of expected usable construction life at a temperature range of 0 to 120 degrees F.

APPROVED: HOWARD COUNTY DEPARTMENT OF PUBLIC WORKS.
CHIEF, BUREAU OF HIGHWAYS. HS — 10-29-01 DATE

APPROVED: HOWARD COUNTY DEPT. OF PLANNING & ZONING
CHIEF, DEVELOPMENT ENGINEERING DIVISION MK — 10/31/01 DATE
CHIEF, DIVISION OF LAND DEVELOPMENT HB — 11/6/01 DATE
~~DIRECTOR~~ ~~DATE~~

Date	No.	Revision Description

EMERSON
FORMERLY KEY PROPERTY
SECTION 2, PHASE 1A

OWNER/DEVELOPER:
THE HOWARD RESEARCH & DEVELOPMENT CORPORATION
10275 Little Patuxent Parkway
Columbia, Maryland 21044

DMW
Daft·McCune·Walker, Inc.
200 East Pennsylvania Avenue
Towson, Maryland 21286
(410) 296-3333
Fax 296-4705
A Team of Land Planners, Landscape Architects, Engineers, Surveyors & Environmental Professionals

SUBDIVISION NAME: EMERSON SECTION 2	SECTION/AREA: PHASE IA	LOT/PARCEL #: P/O P. 837, P. 3, P. 462	
PLAT # OR L/F: L. 572, F. 430; L. 1123, F. 48	BLOCK #: 2, 7, 8, 9, 13, 14, 15, 20 & 21	ZONE: MXD	TAX/ZONE MAP: 47
ELECT. DISTRICT: 6 TH	CENSUS TRACT: -	WATER CODE: -	SEWER CODE: -

TITLE
EROSION & SEDIMENT CONTROL DETAILS

Des By MRT	Scale AS SHOWN	Proj. No. 95054.F
Drn By WHJ	Date 9-26-01	15 of 27
Chk By	Approved	

DEVELOPER'S CERTIFICATION:
"I/WE CERTIFY THAT ALL DEVELOPMENT AND CONSTRUCTION WILL BE DONE ACCORDING TO THIS PLAN, AND THAT ANY RESPONSIBLE PERSONNEL INVOLVED IN THE CONSTRUCTION PROJECT WILL HAVE A CERTIFICATE OF ATTENDANCE AT A DEPARTMENT OF THE ENVIRONMENT APPROVED TRAINING PROGRAM FOR THE CONTROL OF SEDIMENT AND EROSION BEFORE BEGINNING THE PROJECT. I ALSO AUTHORIZE PERIODIC ON-SITE INSPECTION BY THE HOWARD SOIL CONSERVATION DISTRICT.
SIGNATURE OF DEVELOPER — 10/22/01 DATE
PRINT NAME BELOW SIGNATURE: Robert A. Jenkins

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 OF ENGINEER — 9/25/01
PRINT NAME BELOW SIGNATURE: John W. Ranocchia, Sr.

REVIEWED FOR HOWARD S.C.D. AND MEETS TECHNICAL REQUIREMENTS
U.S. NATURAL RESOURCE CONSERVATION SERVICE — 10/10/01 DATE
THIS DEVELOPMENT PLAN IS APPROVED FOR SOIL EROSION AND SEDIMENT CONTROL BY THE HOWARD SOIL CONSERVATION DISTRICT.
HOWARD S.C.D. — 10/10/01 DATE

9/25/01
Date
PROFESSIONAL ENGINEER — NO. 10551 — JOHN W. RANOCCHIA, SR. — STATE OF MARYLAND
Professional Engr. No. 10551

F-01-136

Tue Sep 25 13:54:48 2001\95054\final\95054fset#1.sc4

21.0 Standard And Specifications For Topsoil

DEFINITION

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

PURPOSE

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

CONDITIONS WHERE PRACTICE APPLIES

I. This practice is limited to areas having 2:1 or flatter slopes where:

a. The texture of the exposed subsoil/parent material is not adequate to produce vegetative growth.

b. The soil material is so shallow that the rooting zone is not deep enough to support plants or furnish continuing supplies of moisture and plant nutrients.

c. The original soil to be vegetated contains material toxic to plant growth.

d. The soil is so acidic that treatment with limestone is not feasible.

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

CONSTRUCTION AND MATERIAL SPECIFICATIONS

I. Topsoil salvages from the existing site may be used provided that is 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:

i. Topsoil shall be a loam, sandy loam, clay loam, silt loam, sandy clay loam, loamy sand. Other soils may be used if recommended by an agronomist or soil scientist and approved by the appropriate 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 1-1/2¾₆ in diameter.

ii. Topsoil must be free of plants or plant parts such as bermuda grass, quackgrass, Johnsongrass, nutsedge, poison ivy, thistle, or others as specified.

iii. Where the subsoil is either highly acidic or composed of heavy clays, ground limestone shall be spread at the rate of 4-8 tons/acre (200-400 pounds per 1,000 square feet) prior to the placement of topsoil. Lime shall be distributed uniformly over designated areas and worked into the soil in conjunction with tillage operations as described in the following procedures.

II. For sites having disturbed areas under 5 acres:

i. On soil meeting Topsoil specifications, obtain test results dictating fertilizer and lime amendments required to bring the soil into compliance with the following:

a. pH for topsoil shall be between 6.0 and 7.5. If the tested soil demonstrates a pH of less than 6.0, sufficient lime shall be prescribed to raise the pH to 6.5 or higher.

b. Organic content of topsoil shall be not less than 1.5 percent by weight.

c. Topsoil having soluble salt content greater than 500 parts per million shall not be used.

d. No sod or seed shall be placed on soil which has been treated with soil sterilants or chemicals used for weed control until sufficient time has elapsed (14 days min.) to permit dissipation of phyto-toxic materials.

Note: Topsoil substitutes 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.

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

V. Topsoil Application

i. When topsoiling, maintain needed erosion and sediment control practices such as diversions, Grade Stabilization Structures, Earth Dikes, Slope Silt Fence and Sediment Traps and Basins.

ii. Grades on the areas to be topsoiled, which have been previously established, shall be maintained, albeit 4¾₆ - 8¾₆ higher in elevation.

iii. Topsoil shall be uniformly distributed in a 4¾₆ - 8¾₆ layer and lightly compacted to a minimum thickness of 4¾₆. Spreading shall be performed in such a manner that sodding or seeding can proceed with a minimum of additional soil preparation and tillage. Any irregularities in the surface resulting from topsoiling or other operations shall be corrected in order to prevent the formation of depressions or water pockets.

iv. Topsoil shall not be placed while the topsoil or subsoil is in a frozen or muddy condition, when the subsoil is excessively wet or in a condition that may otherwise be detrimental to proper grading and seedbed preparation.

VI. Alternative for Permanent Seeding - Instead of applying the full amounts of lime and commercial fertilizer, composted sludge and amendments may be applied as specified below:

i. Composted Sludge Material for use as a soil conditioner for sites having disturbed areas over 5 acres shall be tested to prescribe amendments and for sites having disturbed areas under 5 acres shall conform to the following requirements:

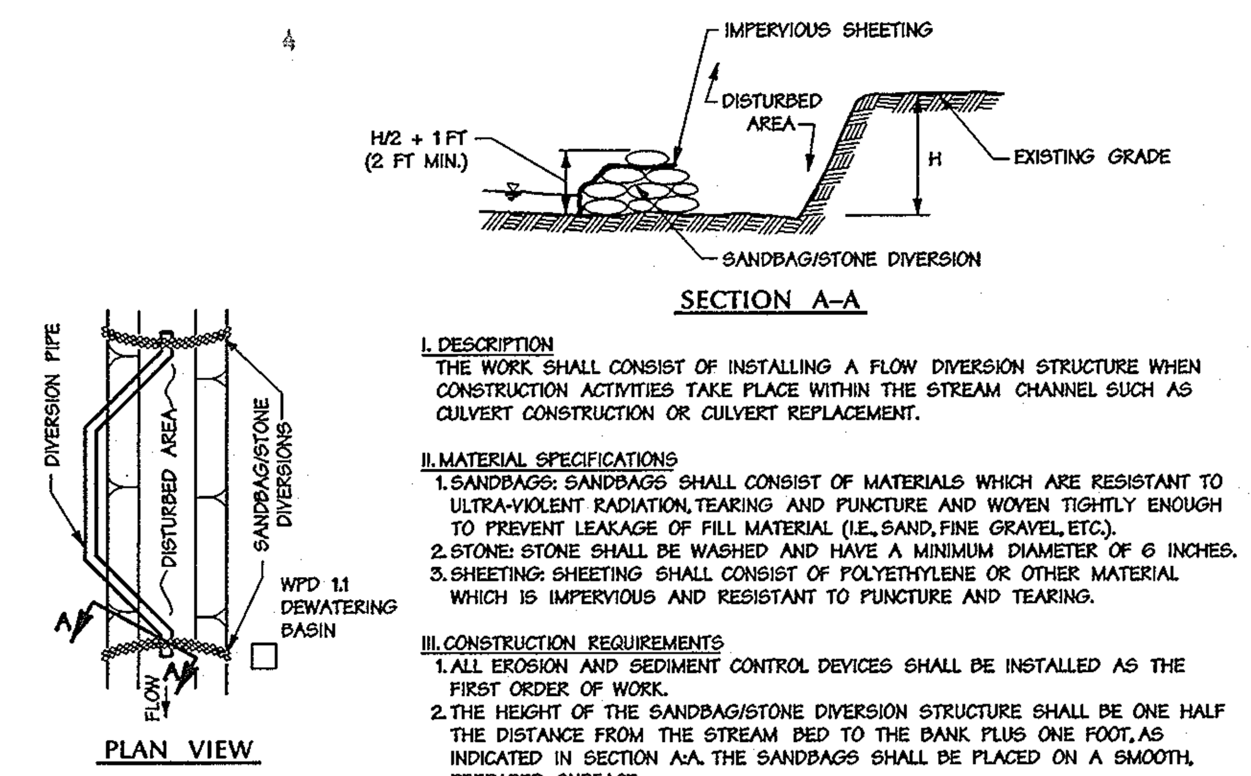
a. Composted sludge shall be supplied by, or originate from, a person or persons that are permitted (at the time of acquisition of the compost) by the Maryland Department of the Environment under COMAR 26.04.06.

b. Composted sludge shall contain at least 1 percent nitrogen, 1.5 percent phosphorus, and 0.2 percent potassium and have a Ph of 7.0 to 8.0. If compost does not meet these requirements, the appropriate constituents must be added to meet the requirements prior to use.

c. Composted sludge shall be applied at a rate of 1 ton/1,000 square feet.

iv. Composted sludge shall be amended with a potassium fertilizer applied at a rate of 4 lb/1,000 square feet, and 1/3 the normal lime application rate.

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



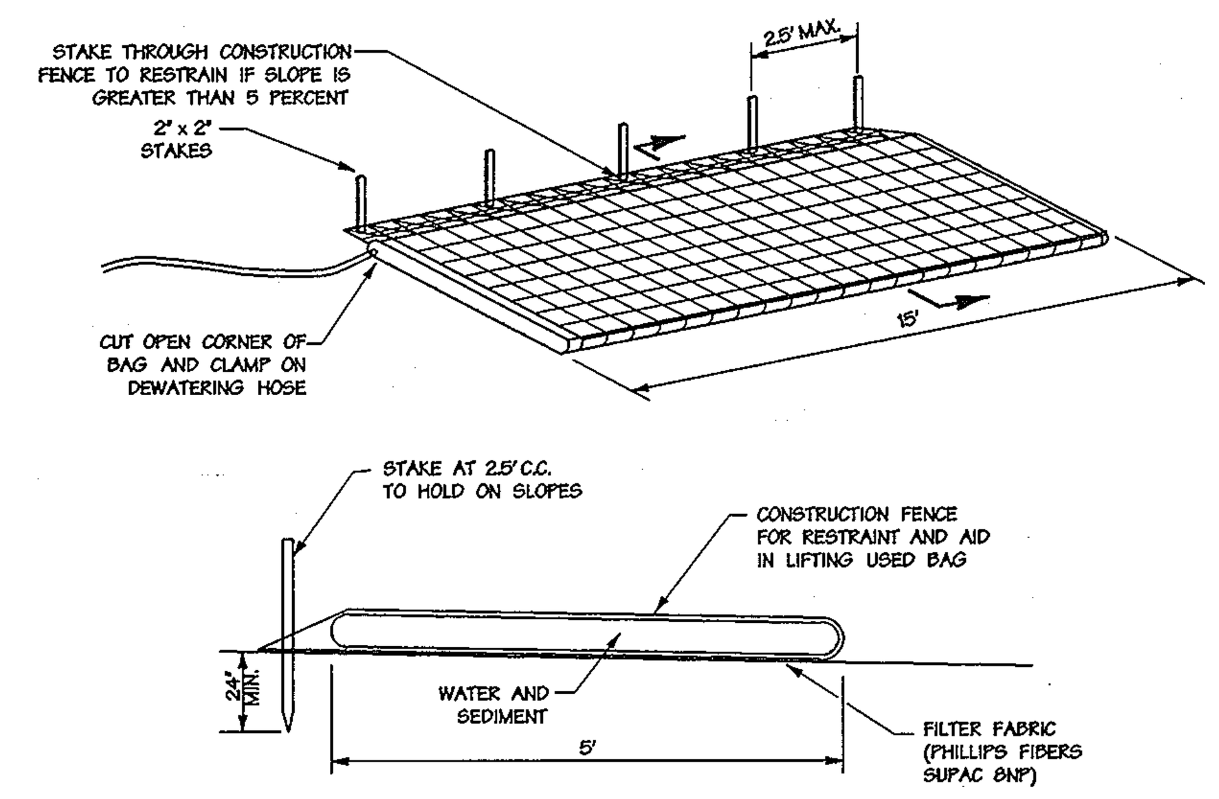
I. DESCRIPTION
THE WORK SHALL CONSIST OF INSTALLING A FLOW DIVERSION STRUCTURE WHEN CONSTRUCTION ACTIVITIES TAKE PLACE WITHIN THE STREAM CHANNEL SUCH AS CULVERT CONSTRUCTION OR CULVERT REPLACEMENT.

II. MATERIAL SPECIFICATIONS
1. SANDBAGS: SANDBAGS SHALL CONSIST OF MATERIALS WHICH ARE RESISTANT TO ULTRA-VIOLENT 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 HEIGHT OF THE SANDBAG/STONE DIVERSION STRUCTURE SHALL BE ONE HALF THE DISTANCE FROM THE STREAM BED TO THE BANK PLUS ONE FOOT, AS INDICATED IN SECTION A-A. THE SANDBAGS SHALL BE PLACED ON A SMOOTH, PREPARED SURFACE.
3. 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.
4. ALL DEWATERING OF THE CONSTRUCTION AREA SHALL BE PUMPED TO A DEWATERING BASIN (WPD1.1) OR OTHERWISE APPROVED ON THE PLANS BY THE WRA.
5. SHEETING SHALL BE OVERLAPPED A MINIMUM OF 18 INCHES.
6. THE DIVERSION PIPE SHALL HAVE A MINIMUM DIAMETER OF SUFFICIENT SIZE TO CONVEY THE NORMAL STREAM FLOW.
7. IF NECESSARY, SILT FENCE OF STRAWBALES SHALL BE INSTALLED AROUND THE PERIMETER OF THE WORK AREA.
8. SEDIMENT CONTROL DEVICES ARE TO REMAIN IN PLACE UNTIL ALL DISTURBED AREAS ARE STABILIZED AND THE INSPECTING AUTHORITY APPROVES THEIR REMOVAL.

WATER RESOURCES ADMINISTRATION
DETAIL WPD 2.2

Diversion Pipe



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

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Filter Bag

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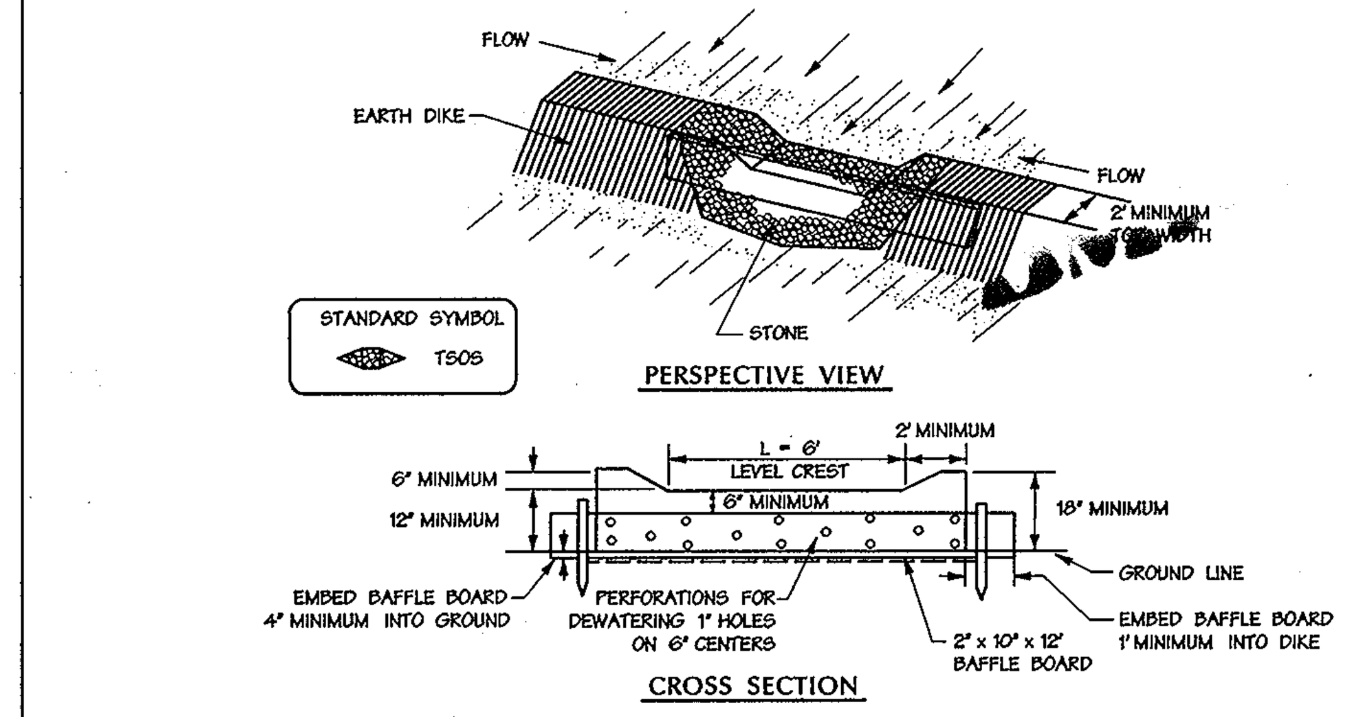


CONSTRUCTION SPECIFICATIONS

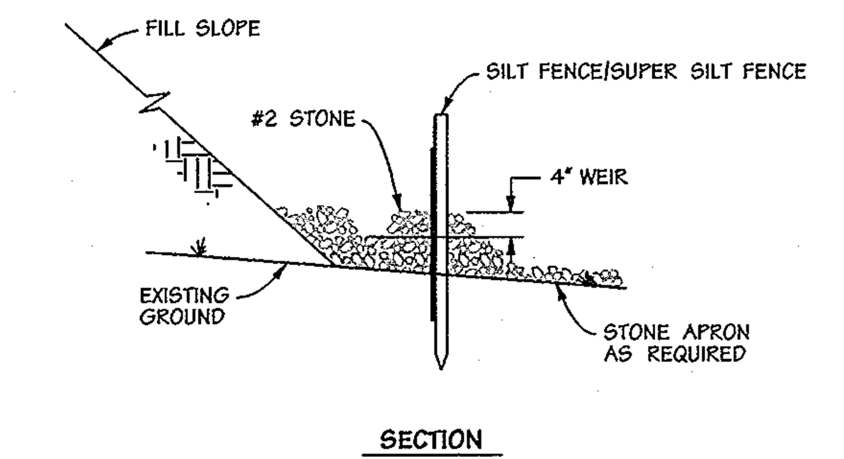
1. CRUSHED STONE SHALL BE USED. GRAVEL MAY BE USED IF CRUSHED STONE IS NOT AVAILABLE. THE STONE SHALL BE 2" - 3" IN SIZE.
2. THE CREST OF THE STONE DIKE SHALL BE AT LEAST 6" LOWER THAN THE LOWEST ELEVATION OF THE TOP OF THE EARTH DIKE AND SHALL BE LEVEL.
3. THE STONE OUTLET STRUCTURE SHALL BE EMBEDDED INTO THE SOIL A MINIMUM OF 4".
4. THE MINIMUM LENGTH OF THE CREST OF THE STONE OUTLET STRUCTURE SHALL BE 6'.
5. THE STONE OUTLET STRUCTURE SHALL BE INSPECTED AFTER EACH RAIN. STONE SHALL BE REPLACED WHEN THE STRUCTURE CEASES TO FUNCTION AND PONDING RESULTS.
6. THE BAFFLE BOARD SHALL BE EXTENDED ONE FOOT INTO THE DIKE, STAKED AND EMBEDDED 4" INTO THE EXISTING GROUND.
7. THE DRAINAGE AREA TO THIS STRUCTURE SHALL BE LESS THAN ½ ACRE.

U.S. DEPARTMENT OF AGRICULTURE SOIL CONSERVATION SERVICE — *C - 11 - 2a* — *MARYLAND DEPARTMENT OF ENVIRONMENT WATER MANAGEMENT ADMINISTRATION*

Stone Outlet Structure

STD. SILT FENCE	SUPER SILT FENCE
#2 STONE	#2 STONE
12" HIGH	24" HIGH
24" WIDE	36" WIDE
50'-100' O.C.	50'-100' O.C.

OR 4' MAX. VERTICAL CHANGE IN ELEV.



LIMITED USE WHERE SILT FENCE DOESN'T FOLLOW CONTOURS

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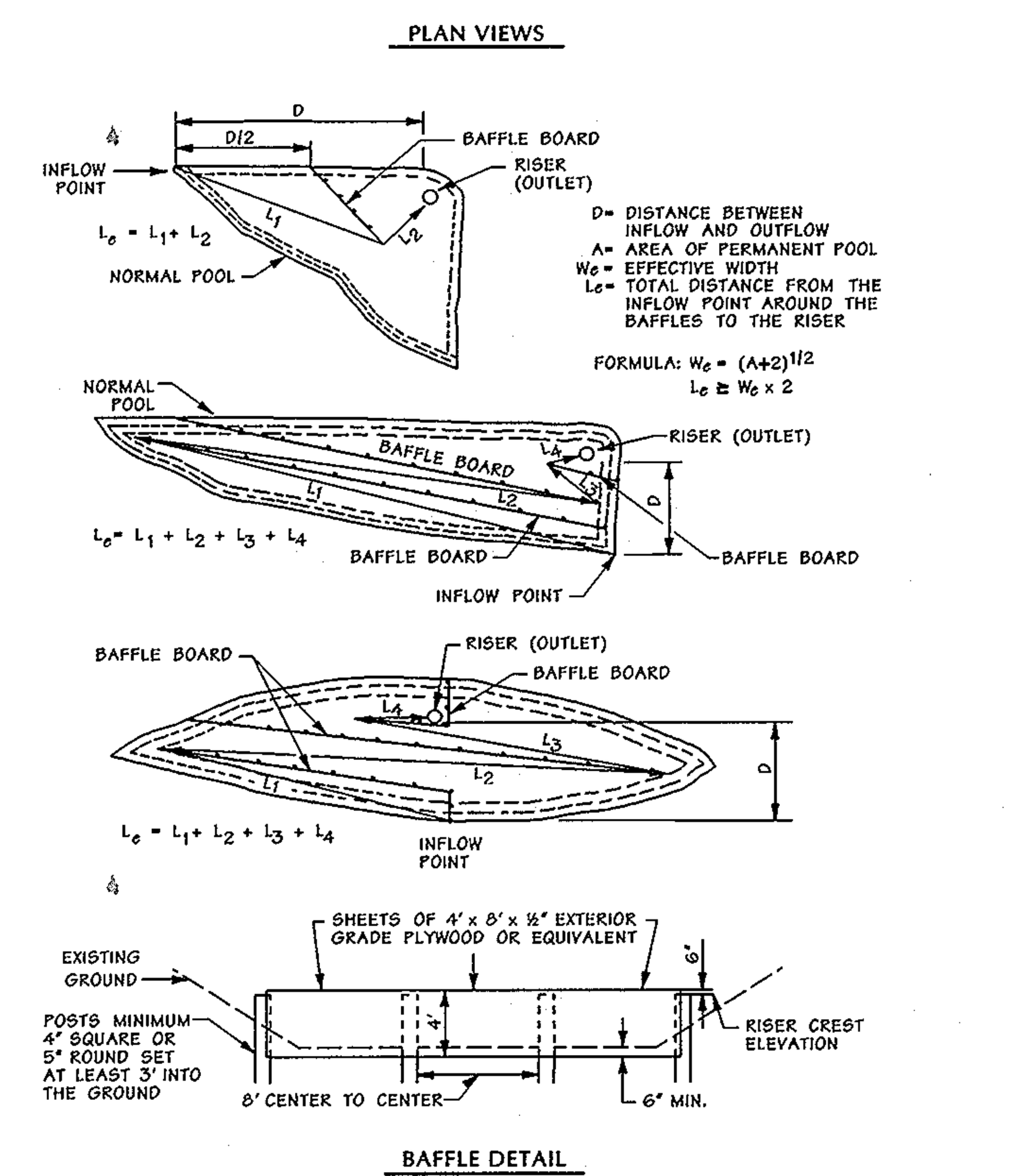
#2 Stone Check Dam



U.S. DEPARTMENT OF AGRICULTURE SOIL CONSERVATION SERVICE — *C - 10 - 28* — *MARYLAND DEPARTMENT OF ENVIRONMENT WATER MANAGEMENT ADMINISTRATION*

Sediment Basin Baffles

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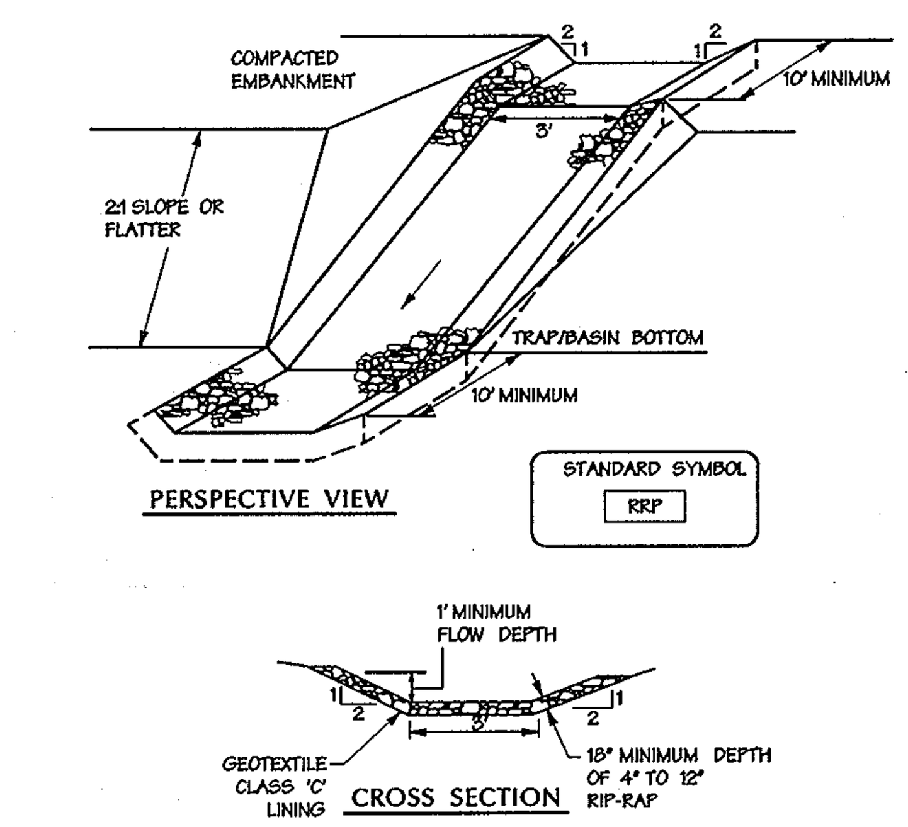

CONSTRUCTION SPECIFICATIONS

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.

U.S. DEPARTMENT OF AGRICULTURE SOIL CONSERVATION SERVICE — *B - 6 - 2* — *MARYLAND DEPARTMENT OF ENVIRONMENT WATER MANAGEMENT ADMINISTRATION*

Rip-Rap Inflow Protection

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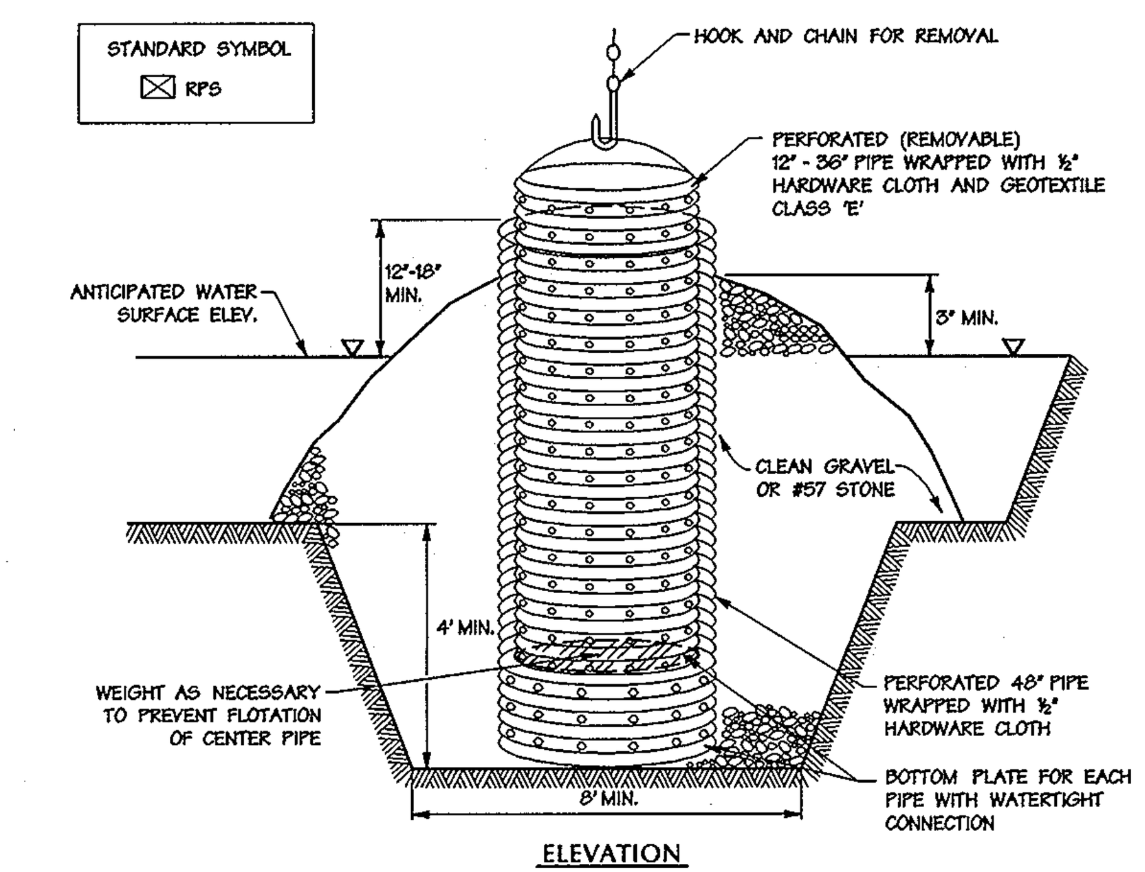


CONSTRUCTION SPECIFICATIONS

1. THE OUTER PIPE SHOULD BE 48" DIAMETER OR SHALL, IN ANY CASE, BE AT LEAST 4" GREATER IN DIAMETER THAN THE CENTER PIPE. THE OUTER PIPE SHALL BE WRAPPED WITH ½" 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 ½" x 6" SLITS OR 1" DIAMETER HOLES 6" ON CENTER. THE CENTER PIPE SHALL BE WRAPPED WITH ½" 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.

U.S. DEPARTMENT OF AGRICULTURE SOIL CONSERVATION SERVICE — *D - 12 - 5* — *MARYLAND DEPARTMENT OF ENVIRONMENT WATER MANAGEMENT ADMINISTRATION*

Removable Pumping Station

Not To Scale

APPROVED: HOWARD COUNTY DEPARTMENT OF PUBLIC WORKS.

[signature] 10-29-01
CHIEF, BUREAU OF HIGHWAYS. HJ — DATE

APPROVED: HOWARD COUNTY DEPT. OF PLANNING & ZONING

[signature] 10/31/01
CHIEF, DEVELOPMENT ENGINEERING DIVISION MK — DATE

Cindy Hamilton 11/6/01
CHIEF, DIVISION OF LAND DEVELOPMENT HB — DATE

Date	No.	Revision Description

MDE PERMIT AND TRACKING No. 200164079

DEVELOPER'S CERTIFICATION:

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

[signature] 10/23/01
SIGNATURE OF DEVELOPER — DATE
PRINT NAME BELOW SIGNATURE
Robert A. Jenkins

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] 9/25/01
SIGNATURE OF ENGINEER
PRINT NAME BELOW SIGNATURE
John W. Ranocchia, Sr.

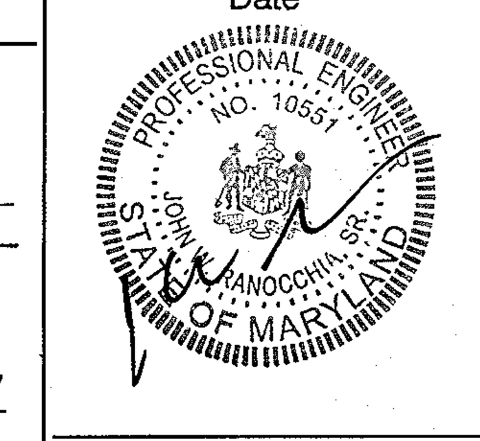
REVIEWED FOR HOWARD S.C.D. AND MEETS TECHNICAL REQUIREMENTS

Jim Myers /CS 10/10/01
U.S. NATURAL RESOURCE CONSERVATION SERVICE — DATE

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

[signature] 10/10/01
HOWARD S.C.D. — DATE

9/25/01
Date



Professional Engr. No. 10551

EMERSON

FORMERLY KEY PROPERTY
SECTION 2, PHASE 1A

OWNER/DEVELOPER:

THE HOWARD RESEARCH & DEVELOPMENT CORPORATION
10275 Little Patuxent Parkway
Columbia, Maryland 21044

Daft·McCune·Walker, Inc.
200 East Pennsylvania Avenue
Towson, Maryland 21286
(410) 296-3333
Fax 296-4705

A Team of Land Planners, Landscape Architects, Engineers, Surveyors & Environmental Professionals

SUBDIVISION NAME	SECTION/AREA	LOT/PARCEL #
EMERSON SECTION 2	PHASE IA	P/O P.837, P.3, P.462

PLAT# OR L/F	BLOCK #	ZONE	TAX/ZONE MAP	ELECT. DISTRICT	CENSUS TRACT
L.572, F.430 L.1129, F.48	2,7,8,9,13, 14,15,20 & 21	MXD	47	6 TH	-

WATER CODE	SEWER CODE
-	-

TITLE

EROSION & SEDIMENT CONTROL DETAILS

Des By MRT	Scale 1"=50'	Proj. No. 95054.F
Drn By WHJ	Date 9-26-01	16 of 27
Chk By	Approved	

F-01-136.


Legend
TIME OF CONCENTRATION PATH
PROPERTY LINE
DRAINAGE AREA BOUNDARY 1 (ULTIMATE, USED FOR SWM POND SIZING, BASED ON 2000 MDE SWM REGULATIONS).
DRAINAGE AREA BOUNDARY 2 (ULTIMATE, REPRESENTS STORM DRAIN, WATERSHED, USED FOR PASSING 10-, 100-YR. STORMS).
20' SWM EASEMENT
SWM CREDIT-DISCONNECTED ROOF TOPS
SWM CREDIT-GRASS SWALES
SWM CREDIT-SHEET FLOW TO BUFFER
SWM CREDIT-NATURAL AREA CONSERVATION
NOTE: THE SPILLWAY RISER WILL SERVE AS THE EMERGENCY SPILLWAY FOR SWM FACILITIES.
SWM FACILITY | FACILITY TYPE | WET POND ELEV.
I | WET POND | 350.0
II | WET POND | 305.0
VI | WET POND | 340.0
WASKEY PROPERTY
PARCEL #4
PLAT #5194
ZONED R-ED
MD & VA MILK PRODUCERS ASSN INC.
KEY PROPERTY FUTURE DEVELOPMENT
HOWARD COUNTY
MYER'S HILL LOT#1
WINTER SUN ROAD
GORMAN ROAD
SKYLARK BLVD.
DRAINAGE AREA I TO SWM I
DRAINAGE AREA VI TO SWM VI
DRAINAGE AREA B-2 TO SWM VI
DRAINAGE AREA B-3 TO SWM VI
DRAINAGE AREA II TO SWM II
SWM FACILITY I
SWM FACILITY VI
PESSIN, NORMAN E
9881 GORMAN RD.
LAUREL, MD 20763.
ALL SWM FACILITIES HAVE A HAZARD CLASSIFICATION OF "A"

APPROVED: HOWARD COUNTY DEPARTMENT OF PUBLIC WORKS.

CHIEF, BUREAU OF HIGHWAYS. — DATE 10-29-01

APPROVED: HOWARD COUNTY DEPT. OF PLANNING & ZONING

CHIEF, DEVELOPMENT ENGINEERING DIVISION MK — DATE 10/31/01

CHIEF, DIVISION OF LAND DEVELOPMENT — DATE 11/6/01

~~DIRECTOR~~ — ~~DATE~~

Date	No.	Revision Description

EMERSON

FORMERLY KEY PROPERTY
SECTION 2, PHASE 1A

OWNER/DEVELOPER:

THE HOWARD RESEARCH & DEVELOPMENT CORPORATION
10275 Little Patuxent Parkway
Columbia, Maryland 21044

DMW
Daft·McCune·Walker, Inc.
200 East Pennsylvania Avenue
Towson, Maryland 21286
(410) 296-3333
Fax 296-4705

A Team of Land Planners, Landscape Architects, Engineers, Surveyors & Environmental Professionals

SUBDIVISION NAME	SECTION/AREA	LOT/PARCEL #
EMERSON SECTION 2	PHASE 1A	P/O P. 837, P. 3, P. 462

PLAT# OR L/F	BLOCK #	ZONE	TAX/ZONE MAP	ELECT. DISTRICT	CENSUS TRACT
L. 572, F. 430 L. 1129, F. 48	2, 7, 8, 9, 13, 14, 15, 20 & 21	MXD	47	6 TH	-

WATER CODE	SEWER CODE
-	-

TITLE

STORMWATER MANAGEMENT DRAINAGE AREA MAP

Des By	MRT	Scale	1"=100'	Proj. No.	95054.F
Drn By	WHJ	Date	9-26-01	17 of 27	
Chk By		Approved			

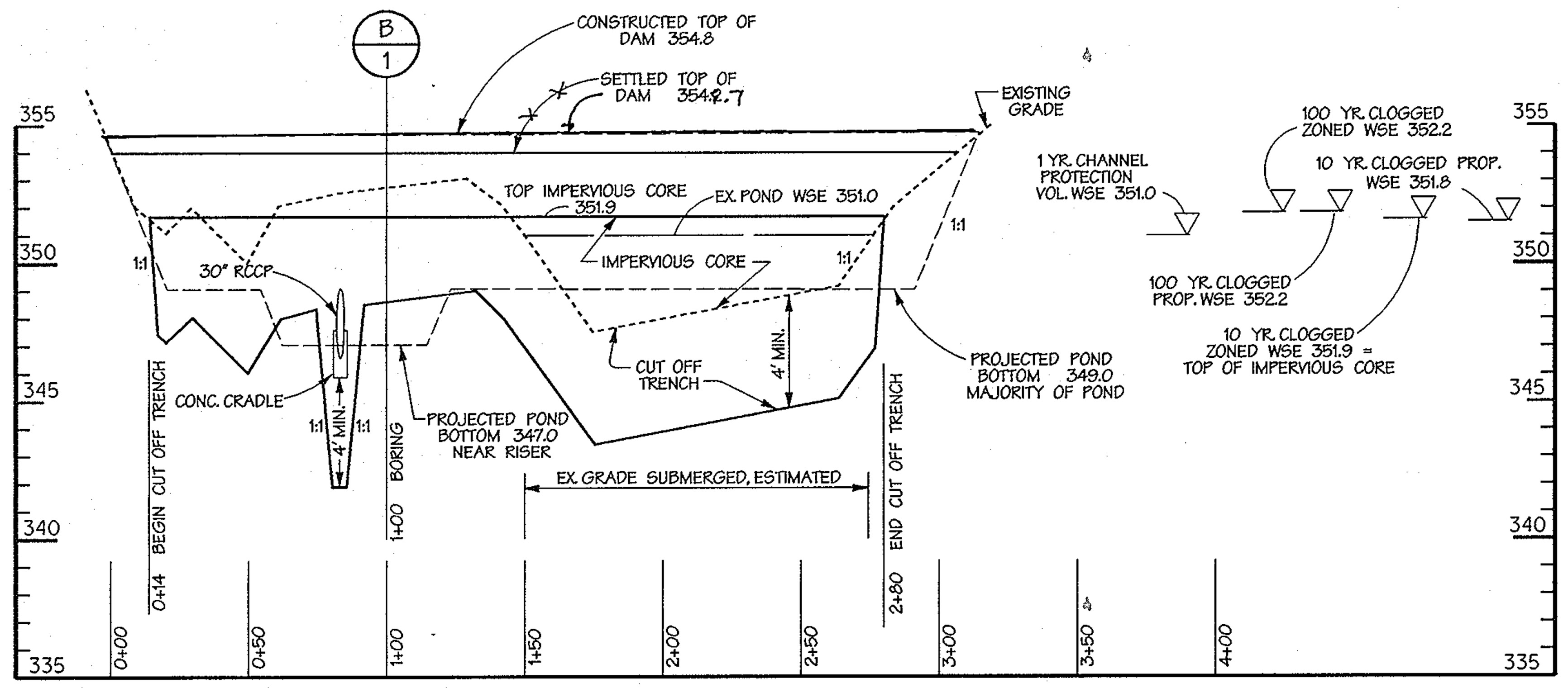
9/26/01
Date

PROFESSIONAL ENGINEER NO. 10551 JOHN RANOCCHIA, SR. STATE OF MARYLAND

Professional Engr. No. 10551

F-01-136

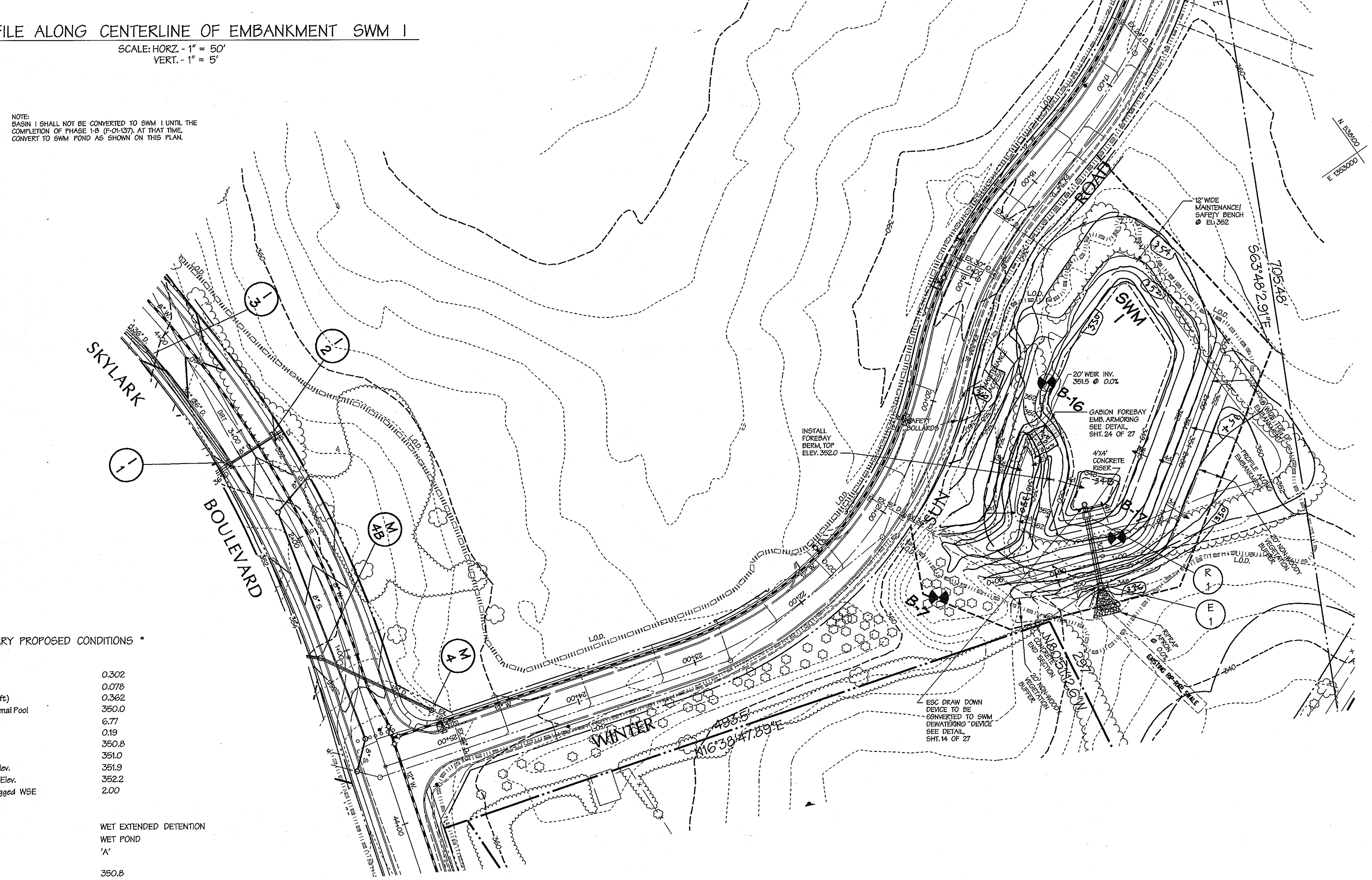
Tue Sep 25 16:17:14 2001\95054\final\95054fset#1.sm9



PROFILE ALONG CENTERLINE OF EMBANKMENT SWM 1

SCALE: HORZ. - 1" = 50'
VERT. - 1" = 5'

NOTE:
BASIN 1 SHALL NOT BE CONVERTED TO SWM 1 UNTIL THE COMPLETION OF PHASE 1-B (F-01-137). AT THAT TIME, CONVERT TO SWM POND AS SHOWN ON THIS PLAN.



LEGEND

- PROPERTY LINE
- 20' SWM EASEMENT
- EXISTING CONTOUR
- PROPOSED CONTOUR
- LIMIT OF DISTURBANCE

ROAD & STORM DRAIN AS-BUILT

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

NOTES:
DAM HAZARD CLASSIFICATION: SWM 1 HAS A DAM CLASSIFICATION OF 'A'.
THIS SWM FACILITY SHALL BE MAINTAINED AND OPERATED AS INDICATED IN ITEM #17 ON SHEET 24 OF 27.

POND 1
DESIGN FLOW SUMMARY PROPOSED CONDITIONS *

Water Quality Vol. WQ_v (Ac-ft)	0.302
Recharge Vol. Re_v (Ac-ft)	0.078
Channel Protection Vol. Cp_v (Ac-ft)	0.362
WQ_v Water Surface Elev. = Normal Pool	350.0
Cp_v Discharge, Proposed (cfs)	6.77
Cp_v Discharge Managed (cfs)	0.19
Cp_v Water Surface Elev.	350.8
Riser Crest Elev.	351.0
10 Yr. Clogged Water Surface Elev.	351.9
100 Yr. Clogged Water Surface Elev.	352.2
Pond Volume Below 100 Yr. Clogged WSE	2.00
Structure Type	WET EXTENDED DETENTION
Water Quality Type	WET POND
Structure Classification	'A'
Storage Height Product 1 year	350.8
Storage Height Product 10 year	351.8
Storage Height Product 100 year	352.2
Watershed Area to Facility	0.017 SQ MI.
Level of Management Required	1 YR.
Level of Management Provided	1 YR.
Top Width Provided	8'
Maximum Height of Fill	7.0'
Freeboard Required	2.0'
Freeboard Provided	2.0'

* BASED ON 2000 MDE SWM REGULATIONS. ALL FIGURES REFLECT NON-STRUCTURAL CREDITS TAKEN PER THE AFOREMENTIONED REGULATIONS.

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 — DATE 10/10/01

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

APPROVED: HOWARD SOIL CONSERVATION DISTRICT — DATE 10/10/01

PLAN NUMBER

DEVELOPERS CERTIFICATE:

I/WE CERTIFY THAT ALL DEVELOPMENT AND/OR CONSTRUCTION WILL BE DONE ACCORDING TO THESE PLANS AND THAT ANY RESPONSIBLE PERSONNEL INVOLVED IN THE CONSTRUCTION PROJECT WILL HAVE A CERTIFICATE OF ATTENDANCE AT A DEPARTMENT OF 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.

SIGNATURE OF DEVELOPER — DATE 10/29/01
PRINT NAME BELOW SIGNATURE Robert A. Jenkins

ENGINEERS CERTIFICATE:

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 REQUIRMENTS 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.

SIGNATURE OF ENGINEER — DATE 9/25/01
PRINT NAME BELOW SIGNATURE John W. Ranocchia, Jr.

9/25/01
Date

Professional Engr. No. 10551

APPROVED: HOWARD COUNTY DEPARTMENT OF PUBLIC WORKS.
CHIEF, BUREAU OF HIGHWAYS — DATE 10-29-01

APPROVED: HOWARD COUNTY DEPT. OF PLANNING & ZONING
CHIEF, DEVELOPMENT ENGINEERING DIVISION MK — DATE 10/31/01
CHIEF, DIVISION OF LAND DEVELOPMENT HB — DATE 11/6/01
~~DIRECTOR~~ — ~~DATE~~

Date	No.	Revision Description

EMERSON
FORMERLY KEY PROPERTY
SECTION 2, PHASE 1A

OWNER/DEVELOPER:
THE HOWARD RESEARCH & DEVELOPMENT CORPORATION
10275 Little Patuxent Parkway
Columbia, Maryland 21044

DMW
Daft·McCune·Walker, Inc.
200 East Pennsylvania Avenue
Towson, Maryland 21286
(410) 296-3333
Fax 296-4705

A Team of Land Planners, Landscape Architects, Engineers, Surveyors & Environmental Professionals

SUBDIVISION NAME	SECTION/AREA	LOT/PARCEL #
EMERSON SECTION 2	PHASE 1A	P/O P. 837, P. 3, P. 462

PLAT# OR L/F	BLOCK #	ZONE	TAX/ZONE MAP	ELECT. DISTRICT	CENSUS TRACT
L.572, F.430 L.1129, F.48	2, 7, 8, 9, 13, 14, 15, 20 & 21	MXD	47	6 TH	-

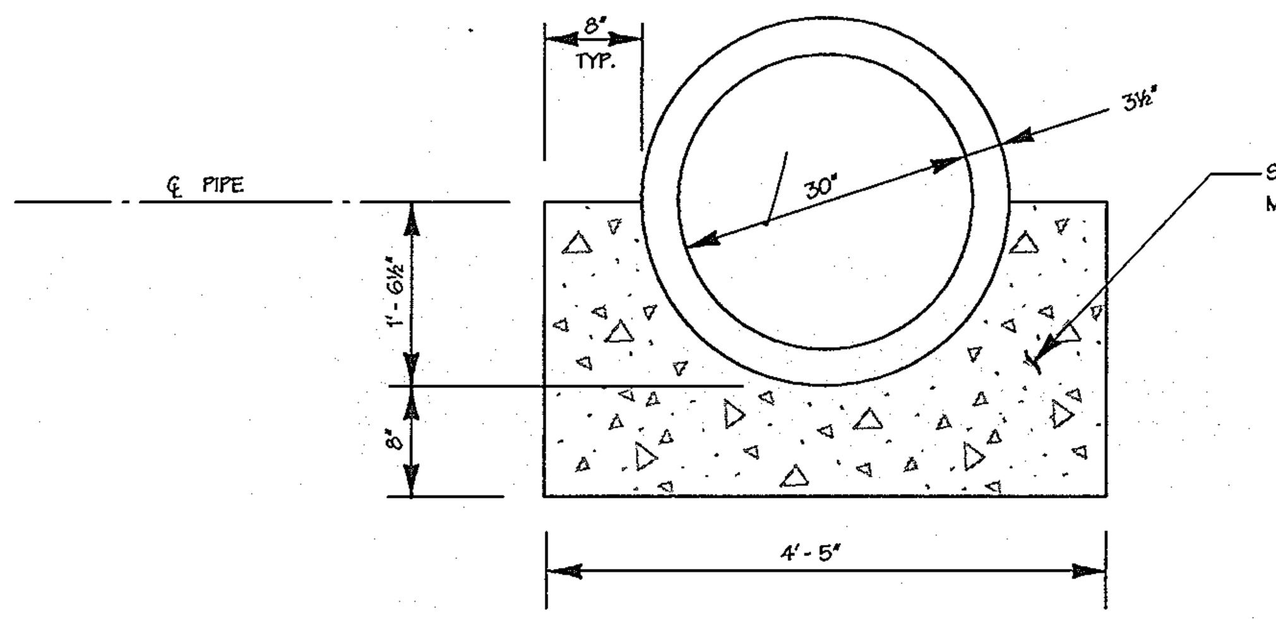
WATER CODE	SEWER CODE
-	-

TITLE
STORMWATER MANAGEMENT PLAN
SWM 1

Des By MRT	Scale 1"=50'	Proj. No. 95054.F
Drn By WHJ	Date 9-26-01	18 of 27
Chk By	Approved	

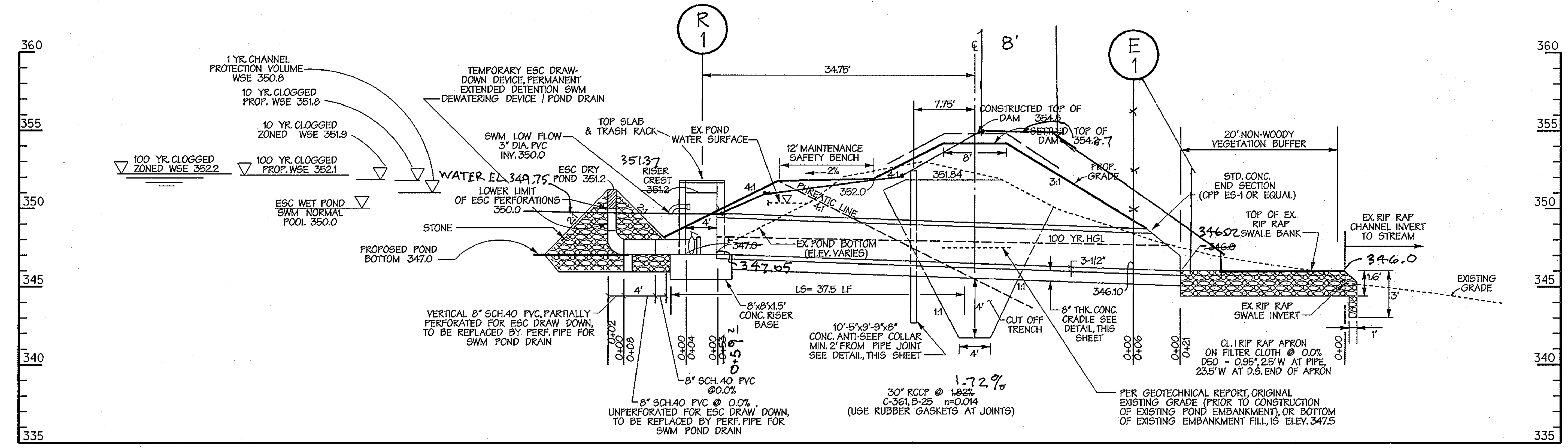
F-01-136

Tue Sep 25 13:59:37 2001\95054\final\95054fset#1.sm2



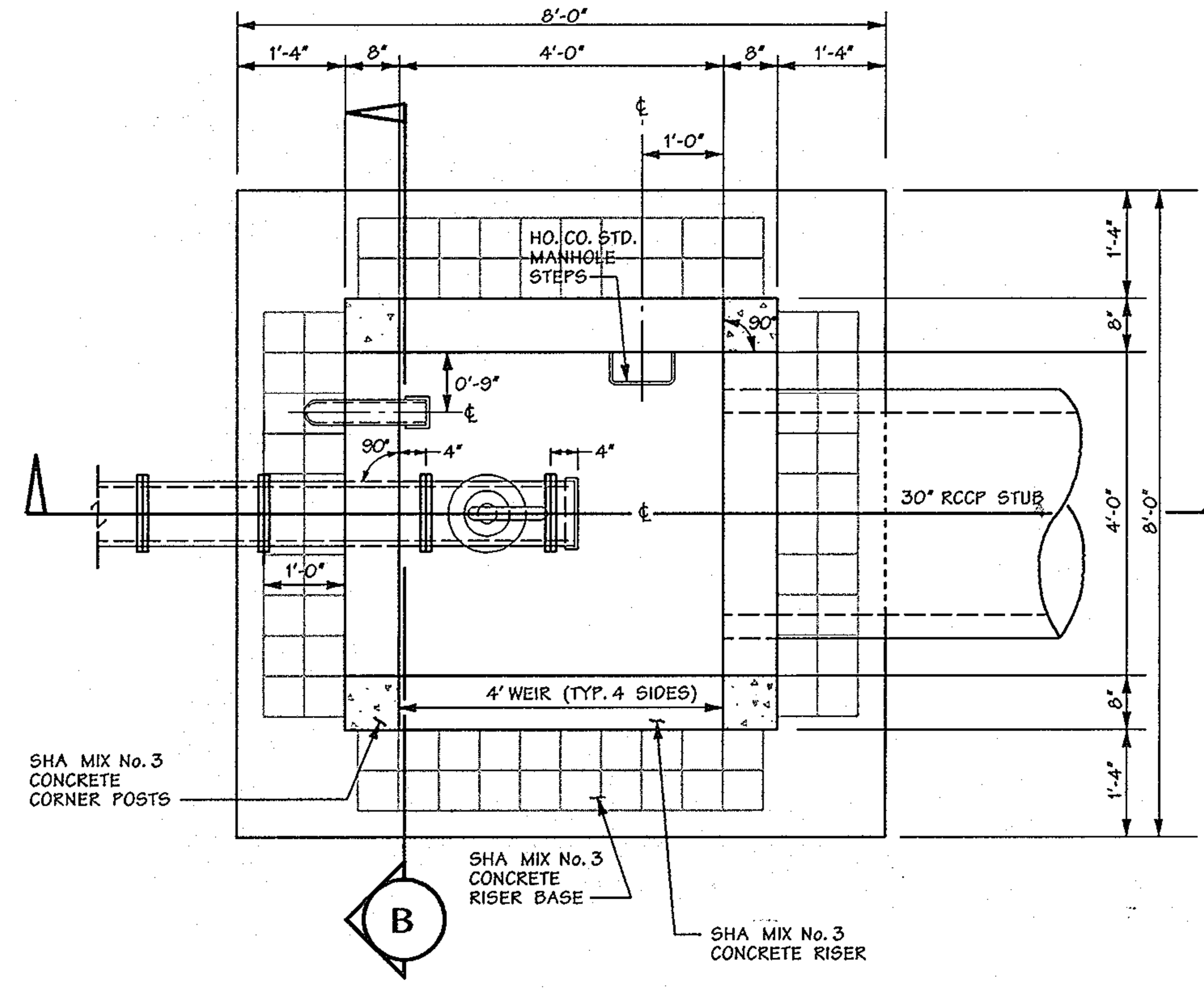
CONCRETE CRADLE DETAIL - SWM I

NTS



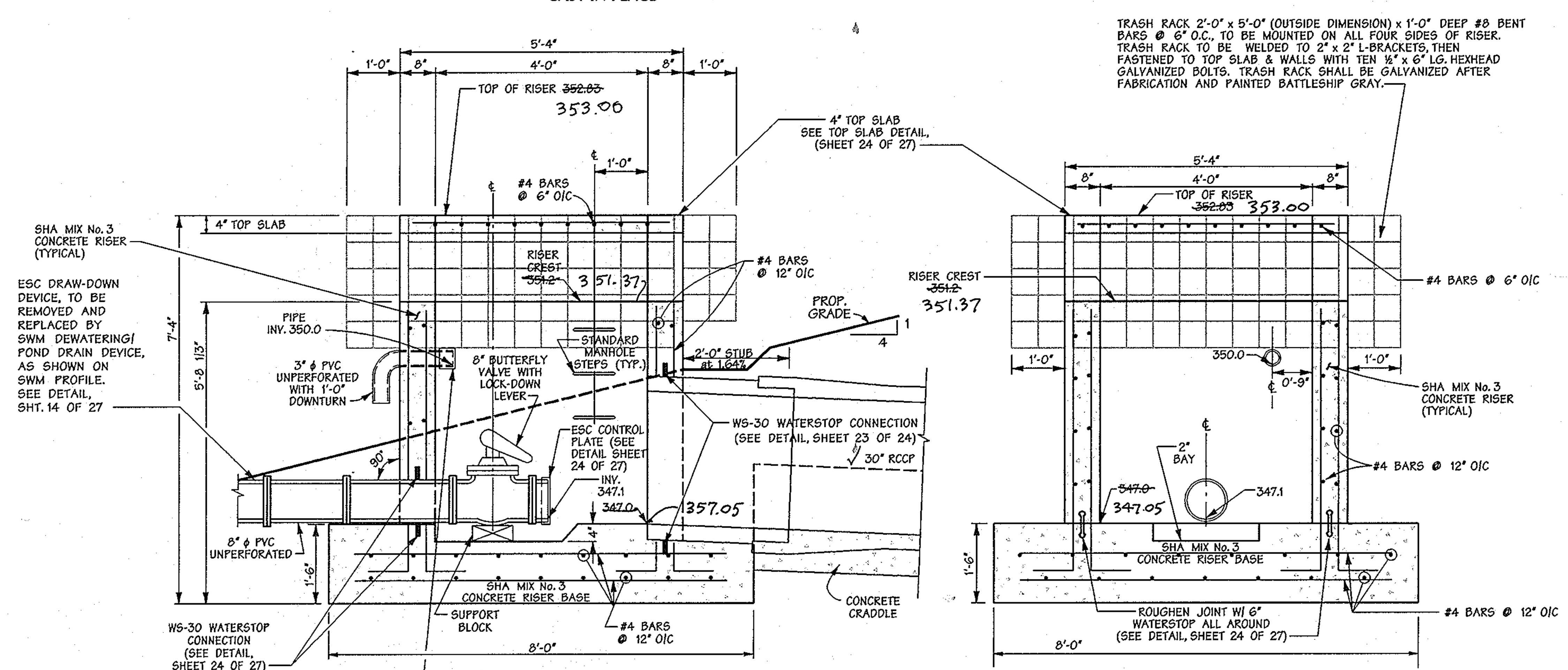
PROFILE ALONG PRINCIPAL SPILLWAY SWM POND I

SCALE: HORZ. - 1" = 10'
VERT. - 1" = 5'



R-1 RISER PLAN (TOP SLAB REMOVED) - SWM I

Scale: ½" = 1'-0"
CAST IN PLACE



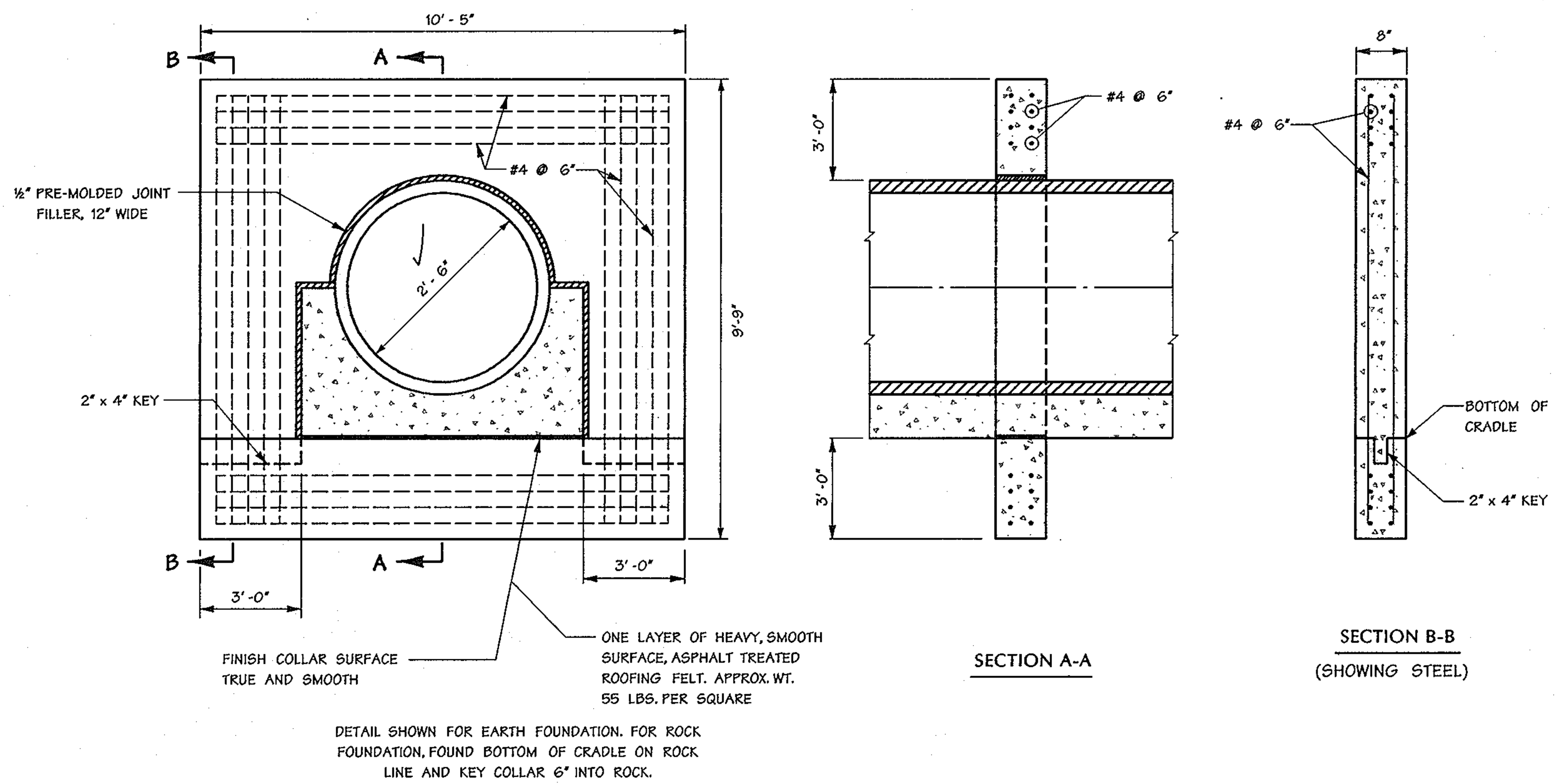
SECTION A

SECTION B

NOTE: MAINTENANCE STAFF WILL CARRY A PORTABLE VALVE STEM INTO THE FIELD FOR OPERATION OF 12" GATE VALVE FROM TOP SLAB.

R-1 RISER DETAIL FOR POND - SWM I

Scale: 1/2" = 1'-0"
CAST IN PLACE



ANTI - SEEP COLLAR DETAIL - SWM I

CAST IN PLACE - NOT TO SCALE

ROAD & STORM DRAIN AS-BUILT

[signature] 5/4/2006

SHANABERGER & L...
8726 TOWN & COUNTRY ...
SUITE 201
ELLICOTT CITY, MARYLAND

APPROVED: HOWARD COUNTY DEPARTMENT OF PUBLIC WORKS.

[signature] 10-29-01
CHIEF, BUREAU OF HIGHWAYS — DATE

APPROVED: HOWARD COUNTY DEPT. OF PLANNING & ZONING

[signature] 10/31/01
CHIEF, DEVELOPMENT ENGINEERING DIVISION MK — DATE

[signature] 11/6/01
CHIEF, DIVISION OF LAND DEVELOPMENT — DATE

Date	No.	Revision Description

EMERSON

FORMERLY KEY PROPERTY
SECTION 2, PHASE 1A

OWNER/DEVELOPER:
THE HOWARD RESEARCH & DEVELOPMENT CORPORATION
10275 Little Patuxent Parkway
Columbia, Maryland 21044

DMW
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200 East Pennsylvania Avenue
Towson, Maryland 21286
(410) 296-3333
Fax 296-4705

A Team of Land Planners, Landscape Architects, Engineers, Surveyors & Environmental Professionals

SUBDIVISION NAME	SECTION/AREA	LOT/PARCEL #
EMERSON SECTION 2	PHASE 1A	P/O P. 837, P. 3, P. 462
ZONE: MXD	TAX/ZONE MAP: 47	ELECT. DISTRICT: 6 TH

TITLE: STORMWATER MANAGEMENT DETAILS - SWM I

Des By	MRT	Scale	AS SHOWN	Proj. No.	95054.F
Drn By	WHJ	Date	9-26-01		19 of 27
Chk By		Approved			

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.

[signature] 12/10/01
U.S.D.A. NATURAL RESOURCES CONSERVATION SERVICE — DATE

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

APPROVED: [signature] 12/10/01
HOWARD SOIL CONSERVATION DISTRICT — DATE

PLAN NUMBER

DEVELOPERS CERTIFICATE:

I/WE CERTIFY THAT ALL DEVELOPMENT AND/OR CONSTRUCTION WILL BE DONE ACCORDING TO THESE PLANS AND THAT ANY RESPONSIBLE PERSONNEL INVOLVED IN THE CONSTRUCTION PROJECT WILL HAVE A CERTIFICATE OF ATTENDANCE AT A DEPARTMENT OF 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.

[signature] 10/29/01
SIGNATURE OF DEVELOPER — DATE
PRINT NAME BELOW SIGNATURE: Robert A. Jenkins

ENGINEERS CERTIFICATE:

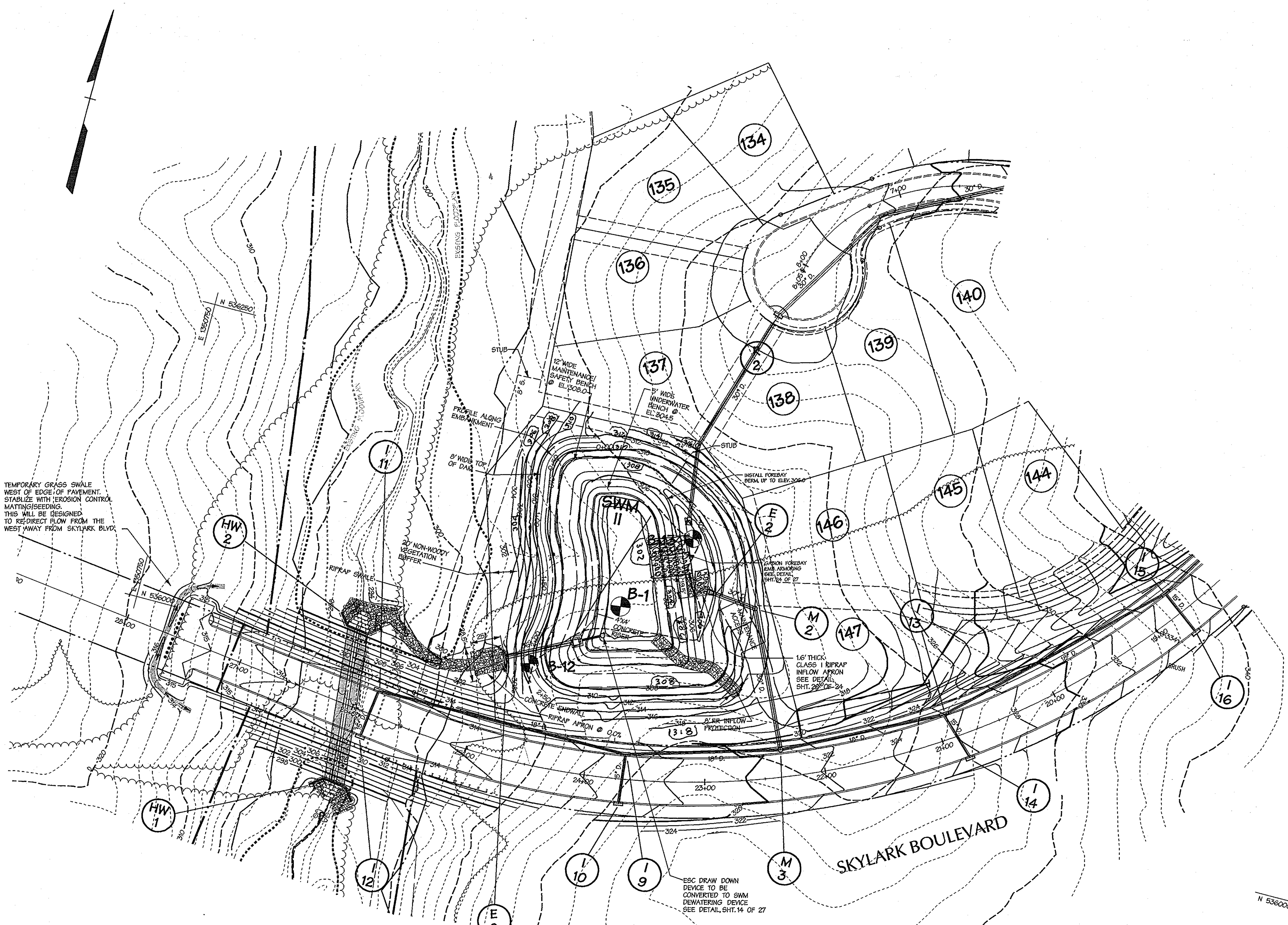
I CERTIFY THAT THIS PLAN FOR POND CONSTRUCTION, EROSION AND SEDIMENT CONTROL REPRESENTS A PRACTICAL AND WORKABLE PLAN BASED ON MY PERSONAL KNOWLEDGE OF THE SITE CONDITIONS. THIS PLAN WAS PREPARED IN ACCORDANCE WITH THE REQUIREMENTS OF THE HOWARD SOIL CONSERVATION DISTRICT. I HAVE NOTIFIED THE DEVELOPER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

[signature] 9/25/01
SIGNATURE OF ENGINEER — DATE
PRINT NAME BELOW SIGNATURE: John W. Ranucchia, Sr.

9/25/01
Date

Professional Engr. No. 10551

F-01-136



POND II
DESIGN FLOW SUMMARY PROPOSED CONDITIONS *

Water Quality Vol. WQ_v (Ac-ft)	0.537
Recharge Vol. Re_v (Ac-ft)	0.150
Channel Protection Vol. Cp_v (Ac-ft)	0.820
WQ_v Water Surface Elev. = Normal Pool	305.0
Cp_v Discharge, Proposed (cfs)	11.23
Cp_v Discharge Managed (cfs)	0.38
Cp_v Water Surface Elev.	306.9
Riser Crest Elev.	307.0
10 Yr. Clogged Water Surface Elev.	308.1
100 Yr. Clogged Water Surface Elev.	308.7
Pond Volume Below 100 Yr. Clogged WSE	2.00
Structure Type	WET EXT. DETENTION
Water Quality Type	WET POND
Structure Classification	'A'
Storage Height Product 1 year	306.9
Storage Height Product 10 year	308.0
Storage Height Product 100 year	308.6
Watershed Area to Facility	0.0305 SQ MI.
Level of Management Required	1 YR.
Level of Management Provided	1 YR.
Minimum Top Width Provided	8'
Maximum Height of Fill	8.5'
Freeboard Required	2.0'
Freeboard Provided	2.0'

* BASED ON 2000 MDE SWM REGULATIONS. ALL FIGURES REFLECT NON-STRUCTURAL CREDITS TAKEN PER THE AFOREMENTIONED REGULATIONS.

ROAD & STORM DRAIN AS-BUILT
5/11/2006

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

NOTES:
DAM HAZARD CLASSIFICATION:
SWM II HAS A DAM CLASSIFICATION OF 'A'.

THIS SWM FACILITY SHALL BE MAINTAINED AND OPERATED AS INDICATED IN ITEM #17 ON SHEET 24 OF 27.

LEGEND

- PROPERTY LINE
- 20' SWM EASEMENT
- EXISTING CONTOUR
- PROPOSED CONTOUR
- LIMIT OF DISTURBANCE
- EROSION CONTROL MATTING/SEEDING

NOTE:
BASIN II SHALL NOT BE CONVERTED TO SWM II UNTIL THE COMPLETION OF PHASE 1-B (F-01-137). AT THAT TIME, CONVERT TO SWM POND AS SHOWN ON THIS PLAN.

APPROVED: HOWARD COUNTY DEPARTMENT OF PUBLIC WORKS
CHIEF, BUREAU OF HIGHWAYS — DATE 10-29-01

APPROVED: HOWARD COUNTY DEPT. OF PLANNING & ZONING
CHIEF, DEVELOPMENT ENGINEERING DIVISION — 10/31/01
CHIEF, DIVISION OF LAND DEVELOPMENT — 11/6/01
~~DIRECTOR~~ ~~DATE~~

Date	No.	Revision Description

EMERSON
FORMERLY KEY PROPERTY
SECTION 2, PHASE 1A

OWNER/DEVELOPER:
THE HOWARD RESEARCH & DEVELOPMENT CORPORATION
10275 Little Patuxent Parkway
Columbia, Maryland 21044

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 — DATE 10/10/01

THESE PLANS FOR SMALL POND CONSTRUCTION, SOIL EROSION AND SEDIMENT CONTROL MEET THE REQUIREMENTS OF HOWARD SOIL CONSERVATION DISTRICT.
APPROVED: HOWARD SOIL CONSERVATION DISTRICT — DATE 10/10/01
PLAN NUMBER

DEVELOPERS CERTIFICATE:

I/WE CERTIFY THAT ALL DEVELOPMENT AND/OR CONSTRUCTION WILL BE DONE ACCORDING TO THESE PLANS AND THAT ANY RESPONSIBLE PERSONNEL INVOLVED IN THE CONSTRUCTION PROJECT WILL HAVE A CERTIFICATE OF ATTENDANCE AT A DEPARTMENT OF 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.

SIGNATURE OF DEVELOPER — DATE 10/27/01
PRINT NAME BELOW SIGNATURE Robert A. Jenkins

ENGINEERS CERTIFICATE:

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.

SIGNATURE OF ENGINEER — DATE 7/25/01
PRINT NAME BELOW SIGNATURE John W. Ranocchia, Sr.

PROFESSIONAL ENGINEER NO. 10551 JOHN W. RANOCCHIA, SR. STATE OF MARYLAND

Professional Engr. No. 10551

DMW
Daft·McCune·Walker, Inc.
200 East Pennsylvania Avenue
Towson, Maryland 21286
(410) 296-3333
Fax 296-4705

A Team of Land Planners, Landscape Architects, Engineers, Surveyors & Environmental Professionals

SUBDIVISION NAME	SECTION/AREA	LOT/PARCEL #
EMERSON SECTION 2	PHASE IA	P/O P.837, P.3, P.462

PLAT# OR L/F	BLOCK #	ZONE	TAX/ZONE MAP	ELECT. DISTRICT	CENSUS TRACT
L.572, F.430 L.1129, F.48	2, 7, 8, 9, 13, 14, 15, 20 & 21	MXD	47	6 TH	-

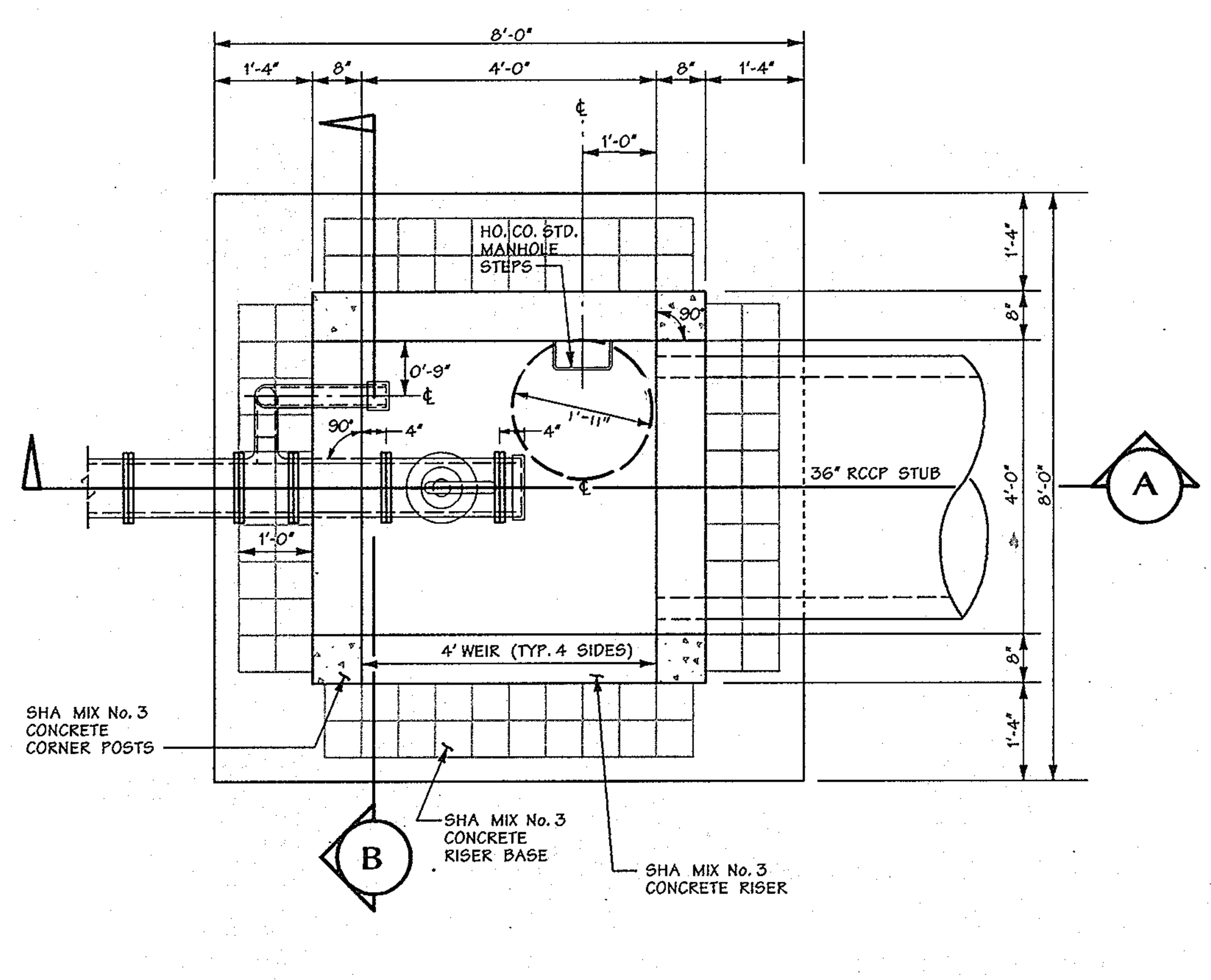
WATER CODE	SEWER CODE
-	-

TITLE STORM WATER MANAGEMENT PLAN AND SPECIFICATIONS

Des By MRT	Scale AS SHOWN	Proj. No. 95054.F
Drn By WHJ	Date 9-26-01	20 of 27
Chk By	Approved	

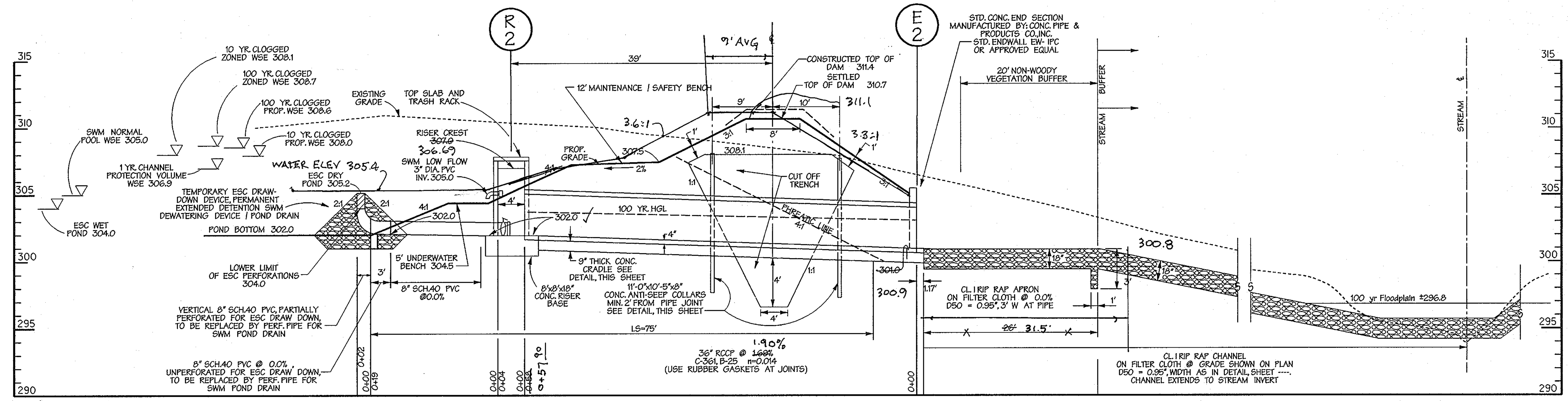
F-01-136

Tue Sep 25 14:10:34 2001 95054\final\95054fset#1.sm4



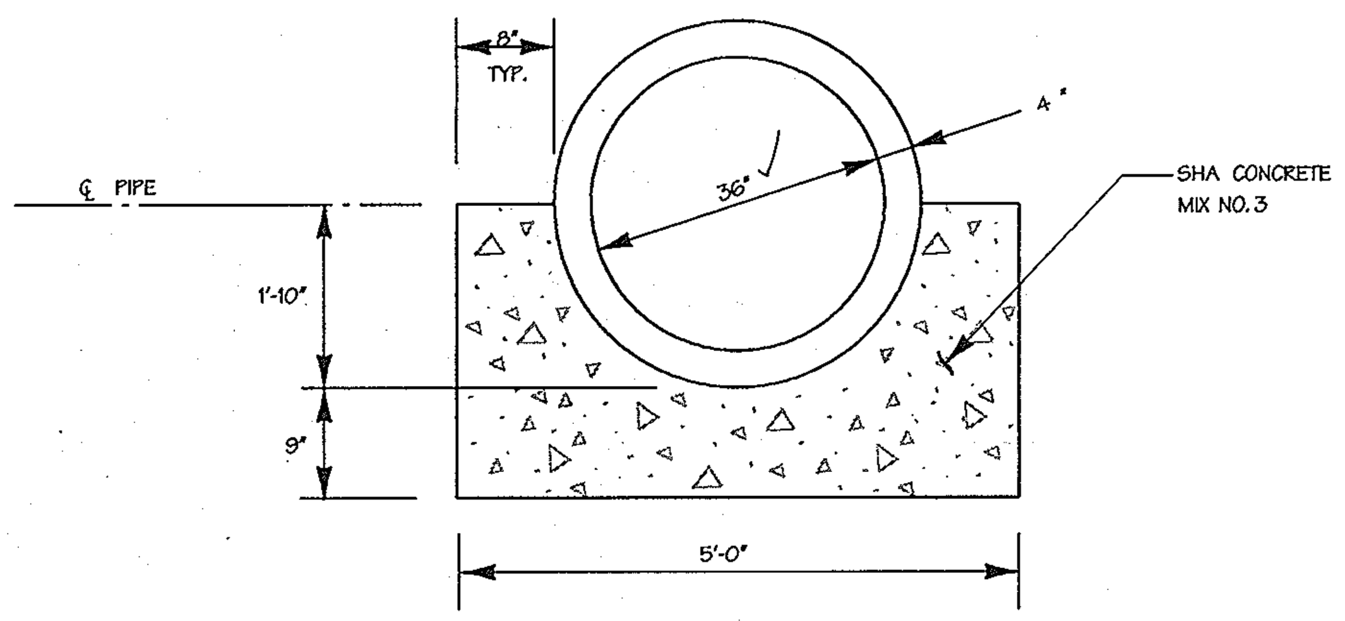
R-1 RISER PLAN (TOP SLAB REMOVED) - SWM II

Scale: ⅛" = 1'-0"
CAST IN PLACE



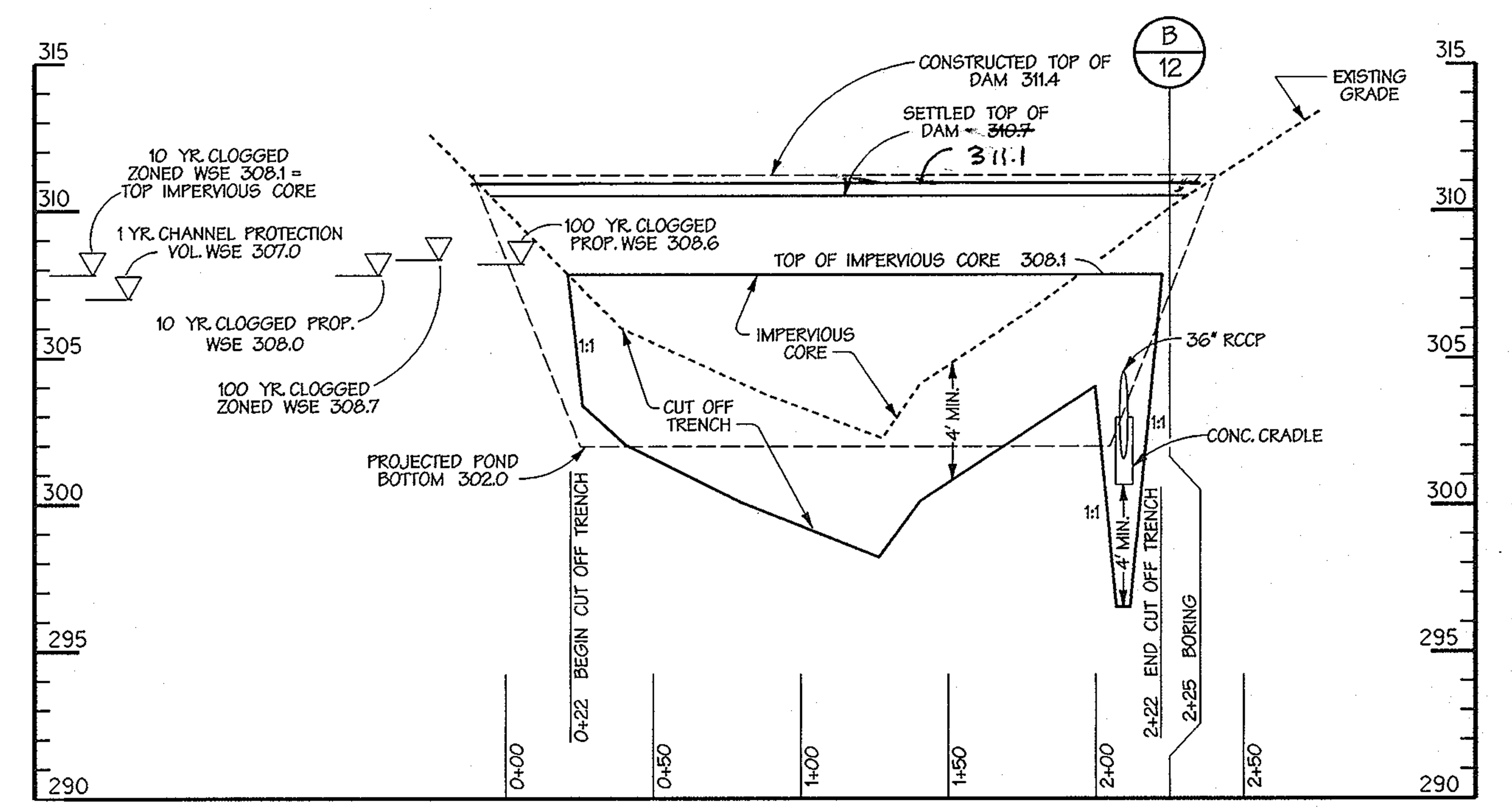
PROFILE ALONG PRINCIPAL SPILLWAY SWM POND II

SCALE: HORZ. - 1" = 10'
VERT. - 1" = 5'



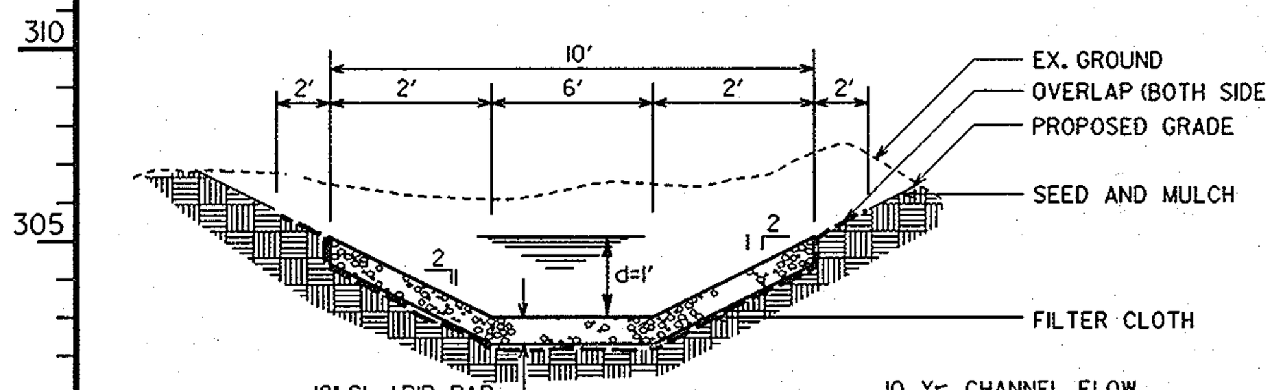
CONCRETE CRADLE DETAIL - SWM II

NTS



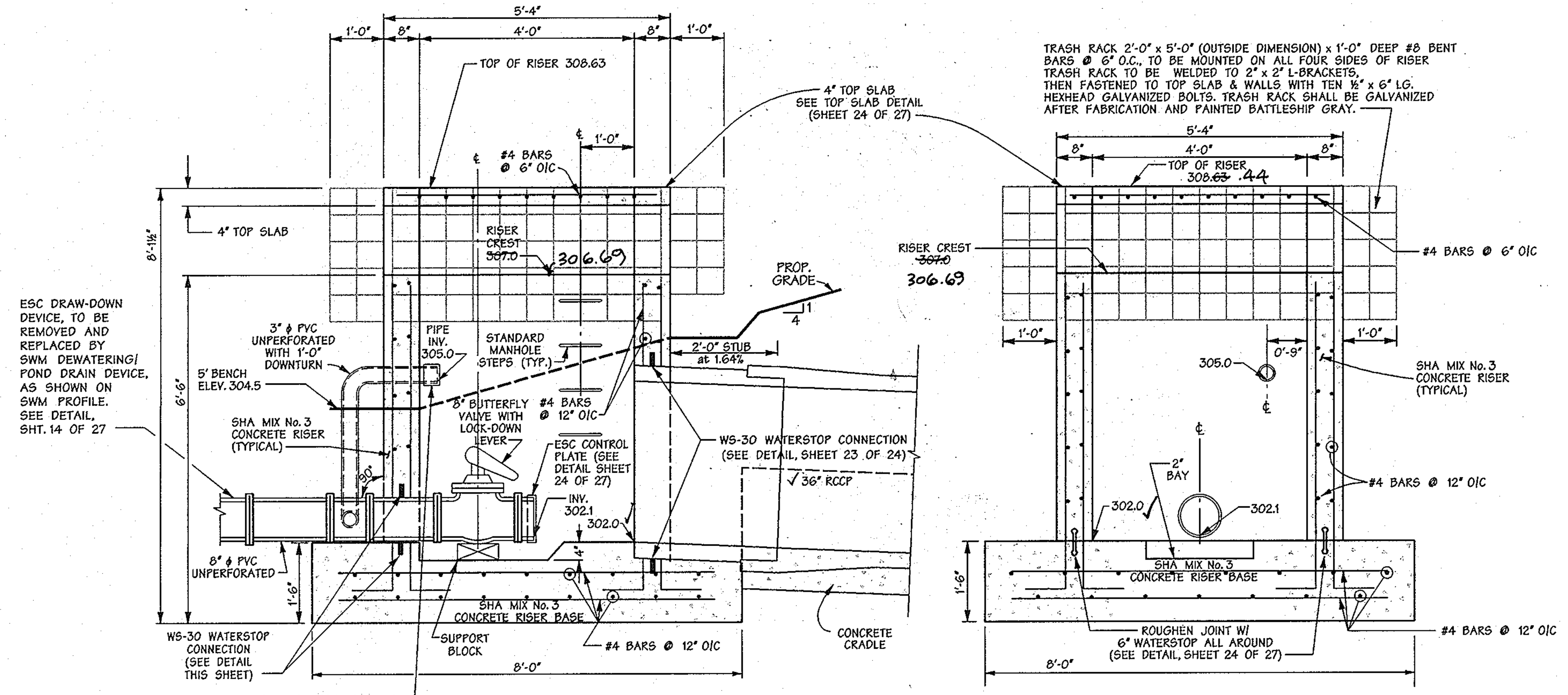
PROFILE ALONG CENTERLINE OF EMBANKMENT SWM II

SCALE: HORZ. - 1" = 50'
VERT. - 1" = 5'



CL I RIPRAP CHANNEL AT E-2

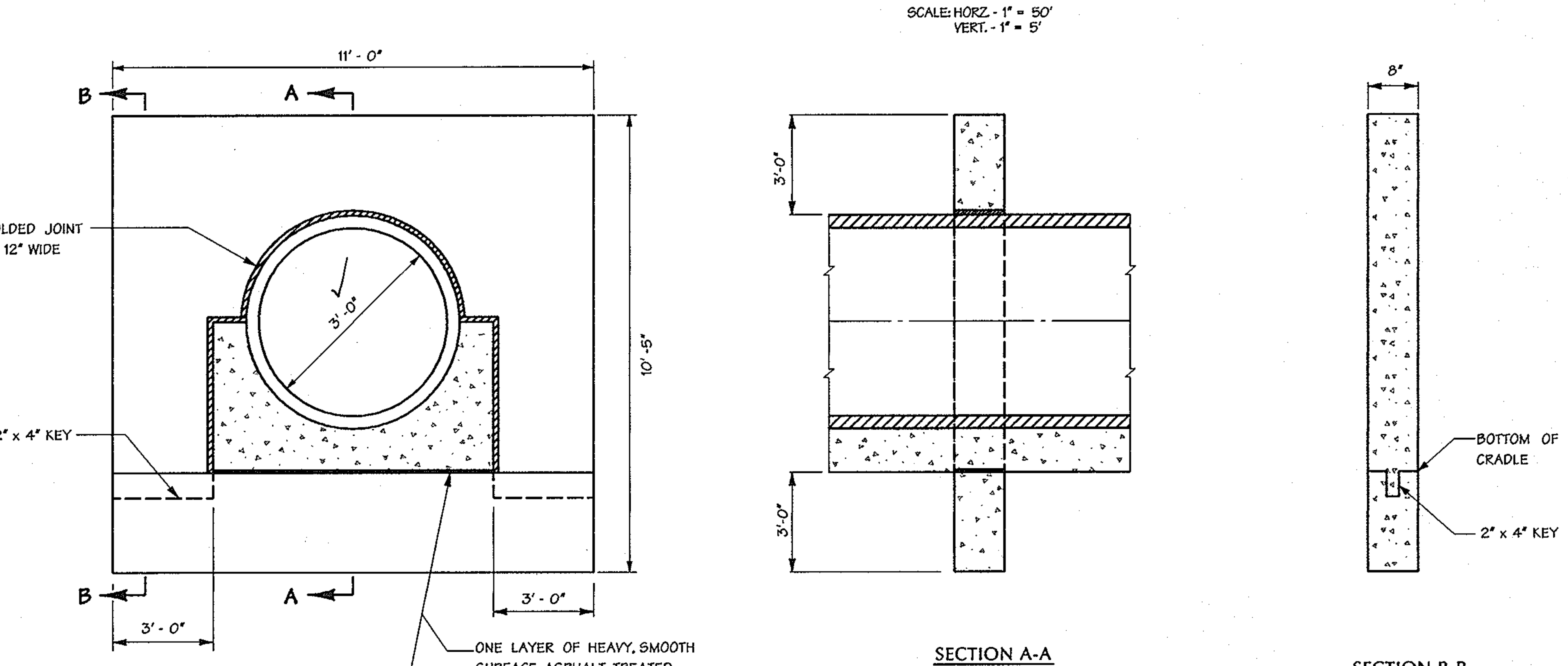
NOT TO SCALE



NOTE: MAINTENANCE STAFF WILL CARRY A PORTABLE VALVE STEM INTO THE FIELD FOR OPERATION OF 12" GATE VALVE FROM TOP SLAB.

R-2 RISER DETAIL FOR POND - SWM II

Scale: 1/2" = 1'-0"
CAST IN PLACE



DETAIL SHOWN FOR EARTH FOUNDATION. FOR ROCK FOUNDATION, FOUND BOTTOM OF CRADLE ON ROCK LINE AND KEY COLLAR 6" INTO ROCK.

ANTI - SEEP COLLAR DETAIL - SWM II

CAST IN PLACE - NOT TO SCALE

ROAD & STORM DRAIN AS-BUILT

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

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 — 10/10/01 DATE

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

APPROVED: HOWARD SOIL CONSERVATION DISTRICT — 10/10/01 DATE

PLAN NUMBER

DEVELOPERS CERTIFICATE:

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SIGNATURE OF DEVELOPER — 10/27/01 DATE
PRINT NAME BELOW SIGNATURE Robert A. Jenkins

ENGINEERS CERTIFICATE:

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SIGNATURE OF ENGINEER — 9/25/01 DATE
PRINT NAME BELOW SIGNATURE John W. Ranocchia, Sr.

9/25/01 Date

Professional Engr. No. 1055'

APPROVED: HOWARD COUNTY DEPARTMENT OF PUBLIC WORKS

CHIEF, BUREAU OF HIGHWAYS — 10-29-01 DATE

APPROVED: HOWARD COUNTY DEPT. OF PLANNING & ZONING

CHIEF, DEVELOPMENT ENGINEERING DIVISION MK — 10/31/01 DATE

CHIEF, DIVISION OF LAND DEVELOPMENT — 11/6/01 DATE

~~DIRECTOR~~ ~~DATE~~

Date	No.	Revision Description

EMERSON

FORMERLY KEY PROPERTY
SECTION 2, PHASE 1A

OWNER/DEVELOPER:

THE HOWARD RESEARCH & DEVELOPMENT CORPORATION
10275 Little Patuxent Parkway
Columbia, Maryland 21044

Daft·McCune·Walker, Inc.
200 East Pennsylvania Avenue
Towson, Maryland 21286
(410) 296-3333
Fax 296-4705

A Team of Land Planners, Landscape Architects, Engineers, Surveyors & Environmental Professionals

SUBDIVISION NAME	SECTION/AREA	LOT/PARCEL #
EMERSON SECTION 2	PHASE 1A	P/O P.837, P.3, P.462

PLAT# OR L/F	BLOCK #	ZONE	TAX/ZONE MAP	ELECT. DISTRICT	CENSUS TRACT
L.572, F.430 L.1129, F.48	2, 7, 8, 9, 13, 14, 15, 20 & 21	MXD	47	6 TH	-

WATER CODE	SEWER CODE
-	-

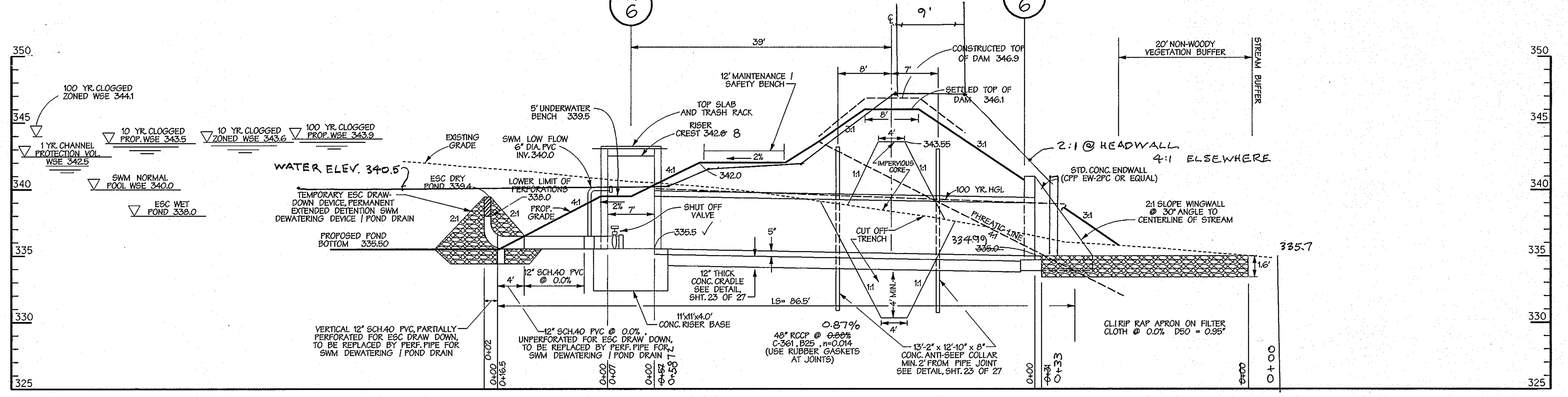
TITLE

STORMWATER MANAGEMENT
DETAILS - SWM II

Des By MRT	Scale 1"=50'	Proj. No. 95054.F
Dm By WHJ	Date 9-26-01	21 of 27
Chk By	Approved	

F-01-136

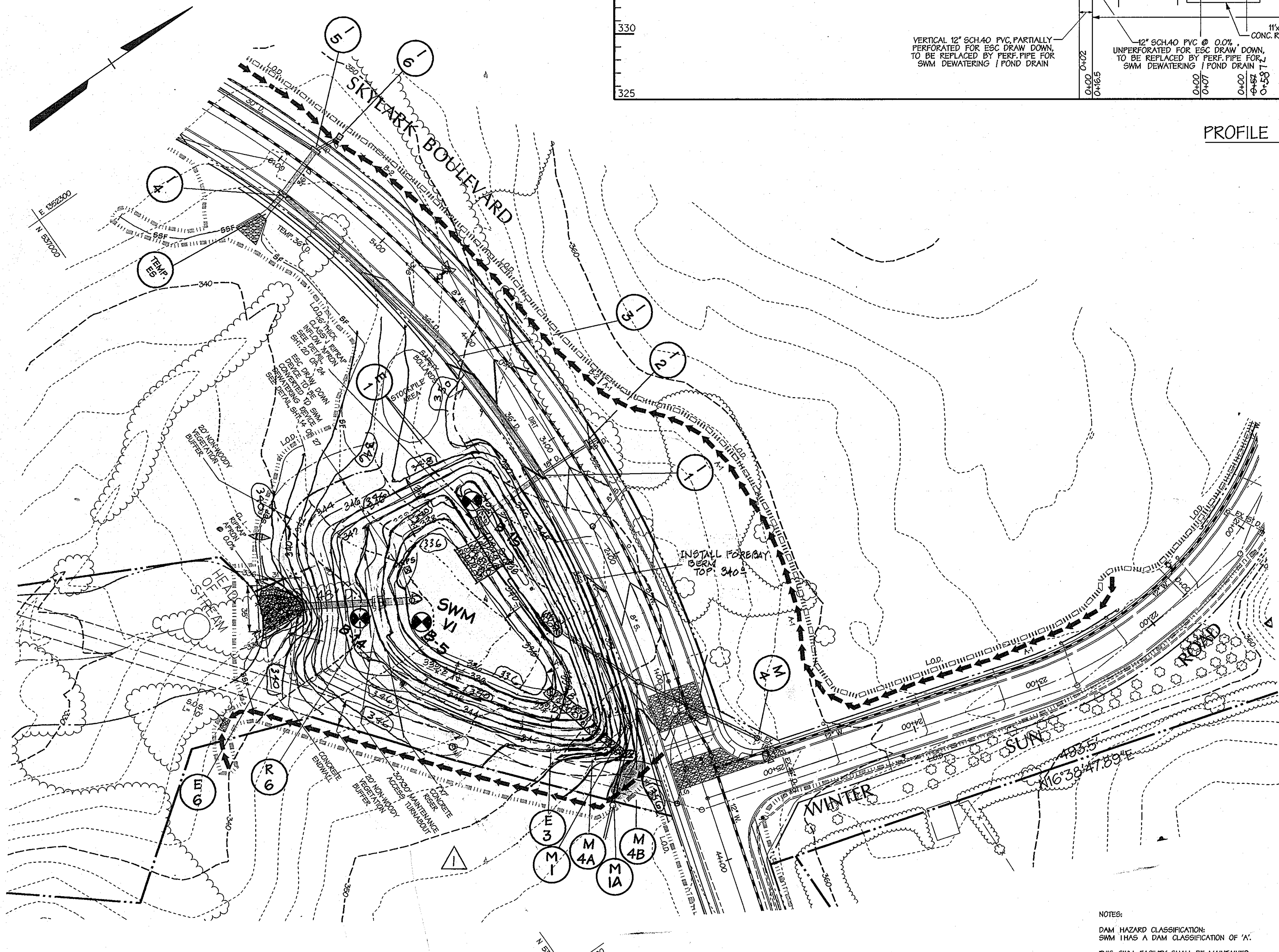
Tue Sep 25 14:14:18 2001\95054\final\95054fset#1.sm6



PROFILE ALONG PRINCIPAL SPILLWAY SWM POND VI

SCALE: HORZ. - 1" = 10'
VERT. - 1" = 5'

NOTE:
BASIN VI SHALL NOT BE CONVERTED TO SWM VI UNTIL THE COMPLETION OF PHASE 1-B (F-01-137). AT THAT TIME, CONVERT TO SWM POND AS SHOWN ON THIS PLAN.



LEGEND

PROPERTY LINE
20' SWM EASEMENT
EXISTING CONTOUR
PROPOSED CONTOUR
LIMIT OF DISTURBANCE
6' CHAIN LINK FENCE - SEE DETAIL, SHT. 23 OF 27

ROAD & STORMDRAIN AS-BUILT

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

POND VI
DESIGN FLOW SUMMARY PROPOSED CONDITIONS *

Water Quality Vol. WQ_v (Ac-ft)	0.803
Recharge Vol. Re_v (Ac-ft)	0.216
Channel Protection Vol. Cp_v (Ac-ft)	1.361
WQ_v Water Surface Elev. = Normal Pool	340.0
Cp_v Discharge, Proposed (cfs)	25.24
Cp_v Discharge Managed (cfs)	0.33
Cp_v Water Surface Elev.	342.6
Riser Crest Elev.	342.6
10 Yr. Clogged Water Surface Elev.	343.6
100 Yr. Clogged Water Surface Elev.	344.1
Pond Volume Below 100 Yr. Clogged WSE	3.68
Structure Type	WET EXTENDED DETENTION
Water Quality Type	WET POND
Structure Classification	'A'
Storage Height Product 1 year	342.5
Storage Height Product 10 year	343.5
Storage Height Product 100 year	343.9
Watershed Area to Facility	0.044 SQ MI.
Level of Management Required	1 YR.
Level of Management Provided	1 YR.
Top Width Provided	8'
Maximum Height of Fill	8.1'
Freeboard Required	2.0'
Freeboard Provided	2.0'

* BASED ON 2000 MDE SWM REGULATIONS. ALL FIGURES REFLECT NON-STRUCTURAL CREDITS TAKEN PER THE AFOREMENTIONED REGULATIONS.

NOTES:

DAM HAZARD CLASSIFICATION:
SWM I HAS A DAM CLASSIFICATION OF 'A'.

THIS SWM FACILITY SHALL BE MAINTAINED AND OPERATED AS INDICATED IN ITEM #17 ON SHEET 24 OF 27.

APPROVED: HOWARD COUNTY DEPARTMENT OF PUBLIC WORKS

CHIEF, BUREAU OF HIGHWAYS — 10-29-01 — DATE

APPROVED: HOWARD COUNTY DEPT. OF PLANNING & ZONING

CHIEF, DEVELOPMENT ENGINEERING DIVISION MK — 10/31/01

CHIEF, DIVISION OF LAND DEVELOPMENT — 11/6/01 — DATE

Date	No.	Revision Description
1/22/02	1	POND GRADING

EMERSON

FORMERLY KEY PROPERTY
SECTION 2, PHASE 1A

OWNER/DEVELOPER:
THE HOWARD RESEARCH & DEVELOPMENT CORPORATION
10275 Little Patuxent Parkway
Columbia, Maryland 21044

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U.S.D.A. NATURAL RESOURCES CONSERVATION SERVICE — 10/10/01 — DATE

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APPROVED: HOWARD SOIL CONSERVATION DISTRICT — 10/10/01 — DATE

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SIGNATURE OF ENGINEER — 9/25/01 — DATE
PRINT NAME BELOW SIGNATURE John W. Ranocchia, Sr.

9/25/01
Date

Professional Engr. No. 10551

No	Revision	Date
1	ADD STORM DRAIN CONNECTION TO EXISTING MANHOLE 4A	7-25-03

DMW
Daft·McCune·Walker, Inc.
200 East Pennsylvania Avenue
Towson, Maryland 21286
(410) 296-3333
Fax 296-4705

A Team of Land Planners, Landscape Architects, Engineers, Surveyors & Environmental Professionals

SUBDIVISION NAME	SECTION/AREA	LOT/PARCEL #
EMERSON SECTION 2	PHASE IA	P/O P.837, P.3, P.462

PLAT # OR L/F	BLOCK #	ZONE	TAX/ZONE MAP	ELECT. DISTRICT	CENSUS TRACT
L.572, F.430 L.1129, F.48	2,7,8,9,13, 14,15,20 & 21	MXD	47	6 TH	-

WATER CODE	SEWER CODE
-	-

TITLE
STORMWATER MANAGEMENT PLAN
SWM VI

Des By MRT	Scale 1"=50'	Proj. No. 95054.F
Drn By WHJ	Date 9-26-01	22 of 27
Chk By	Approved	

F-01-136

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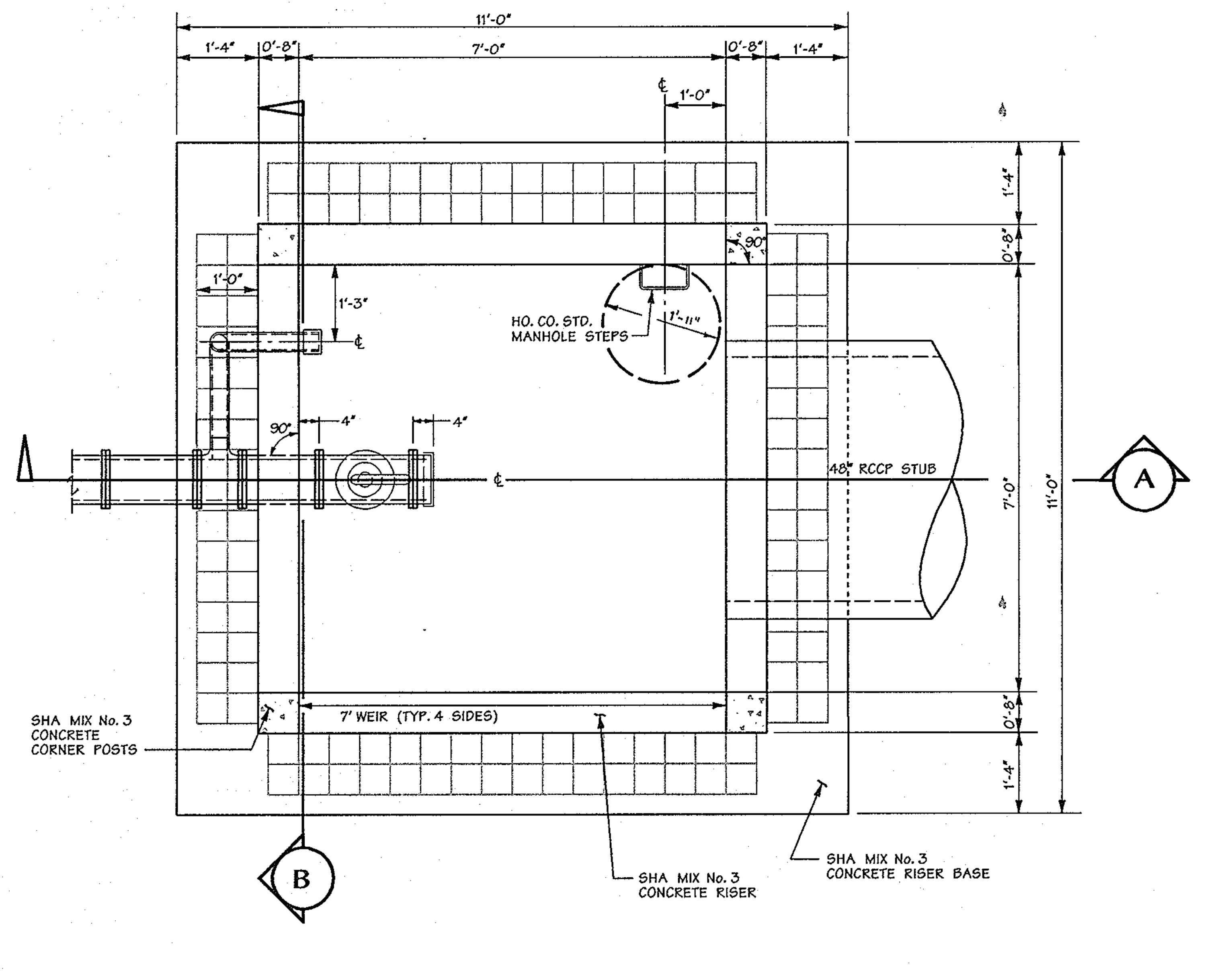
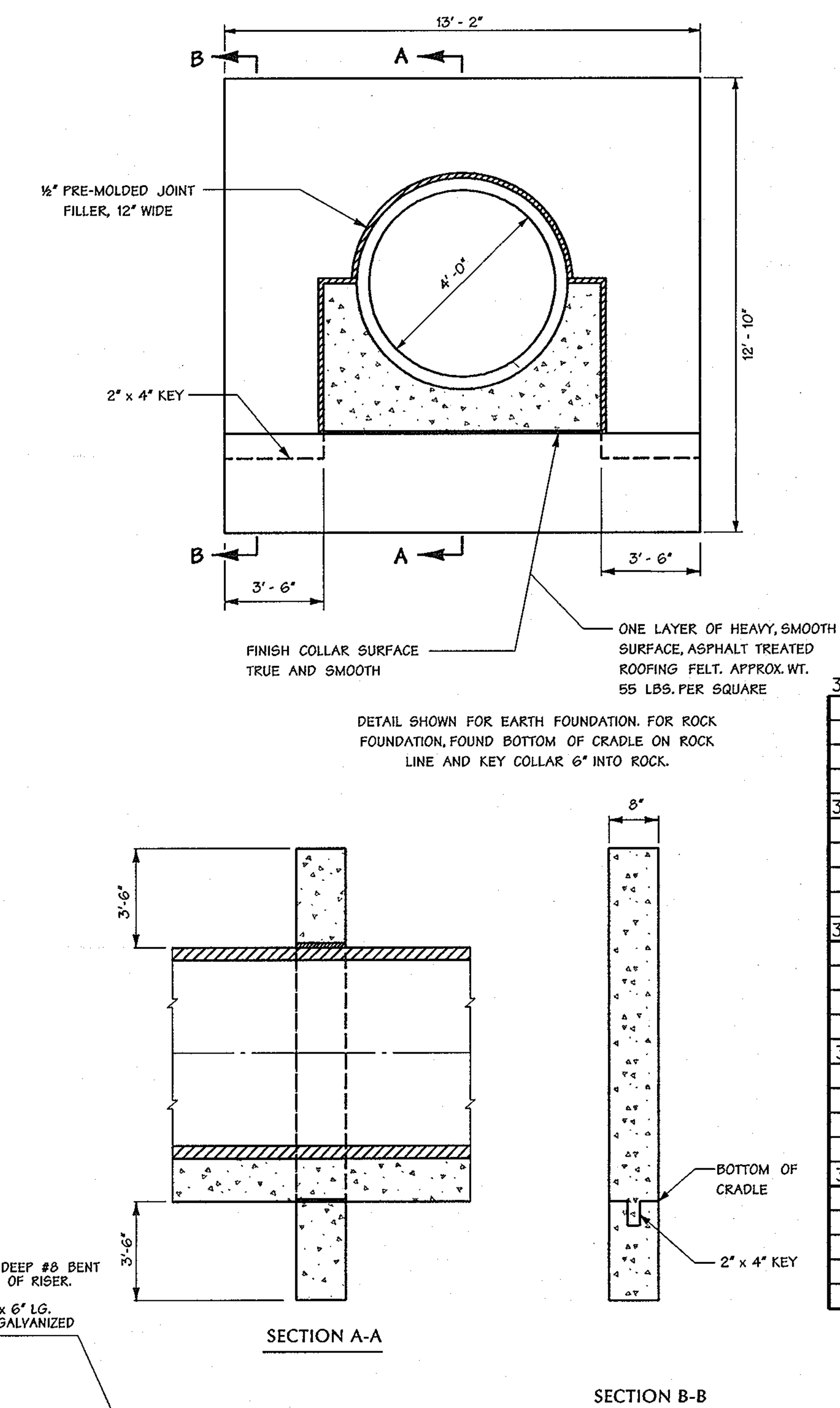


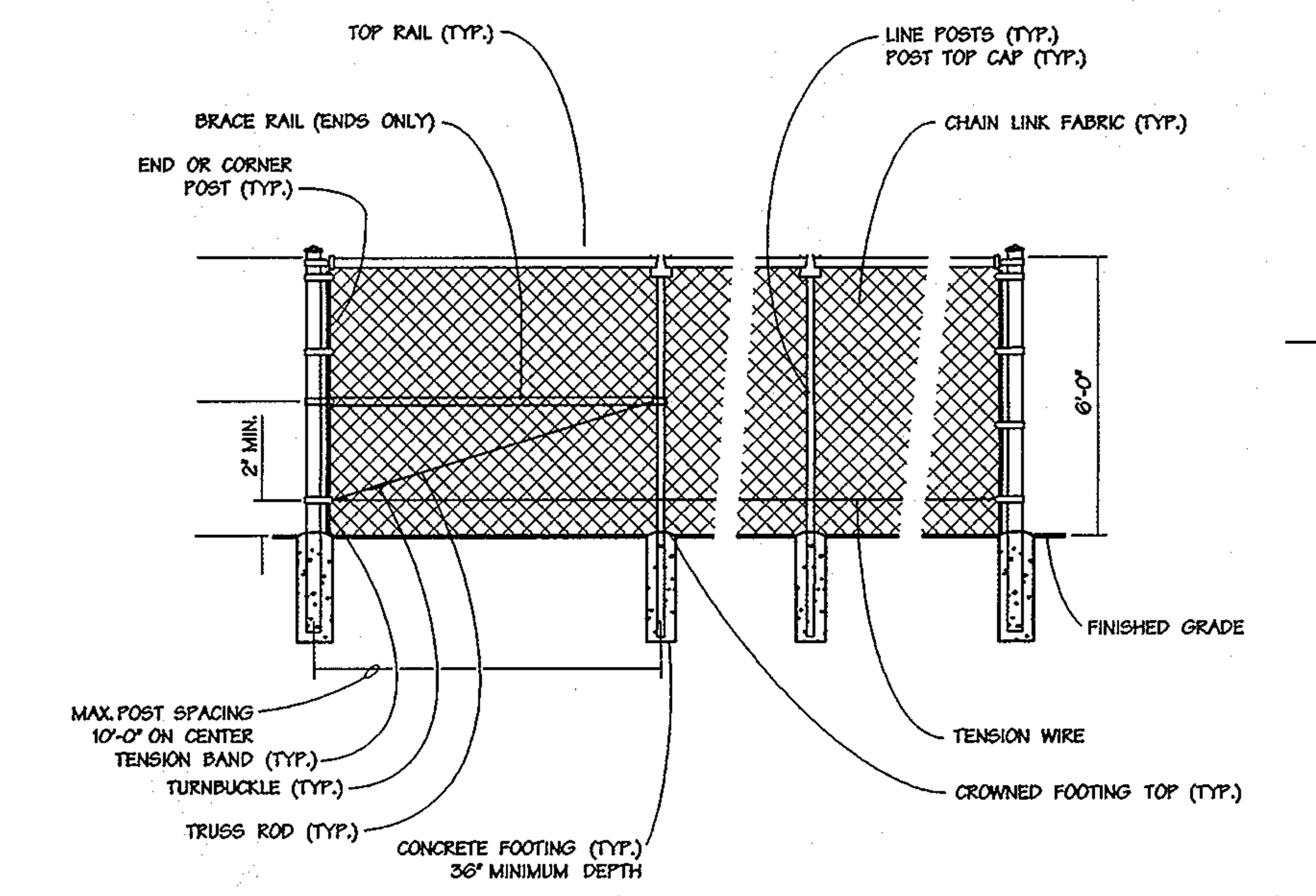
R-1 RISER PLAN (TOP SLAB AND TRASH RACK REMOVED) - SWM VI

Scale: ½" = 1'-0"
CAST IN PLACE



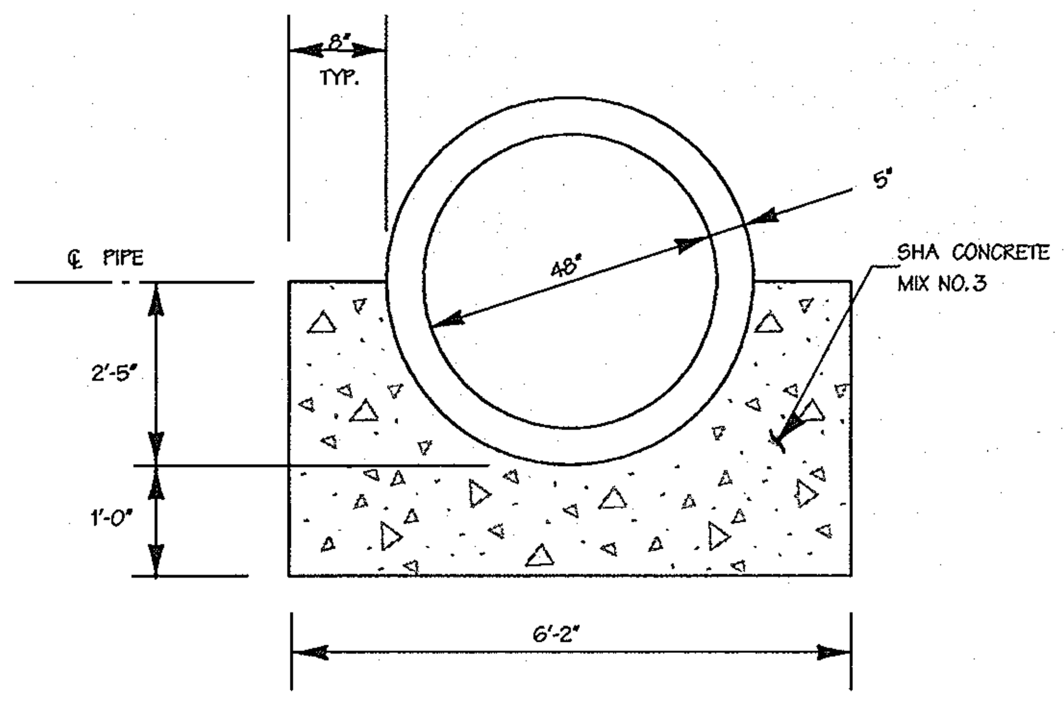
ANTI - SEEP COLLAR DETAIL - SWM VI

CAST IN PLACE - NOT TO SCALE

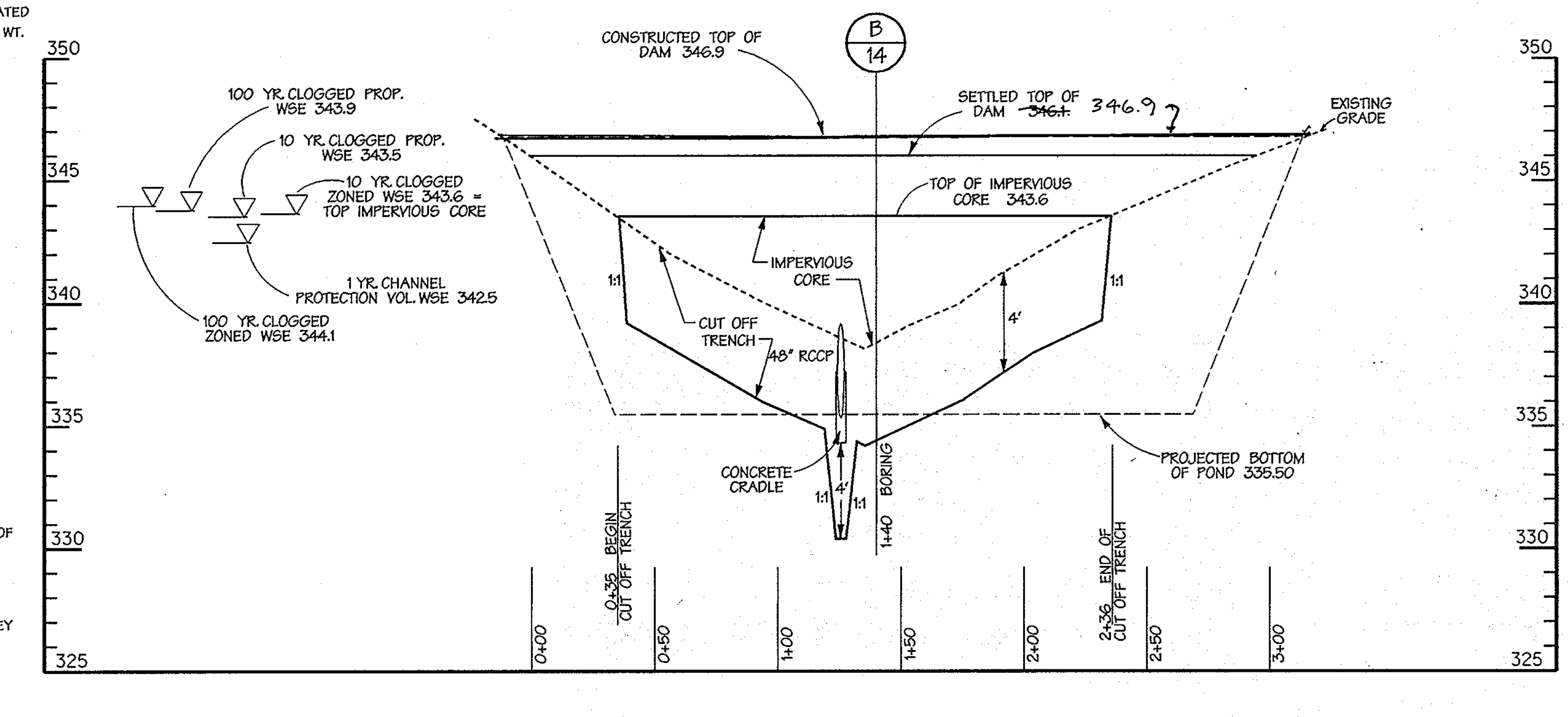


6' CHAIN LINK FENCE DETAIL

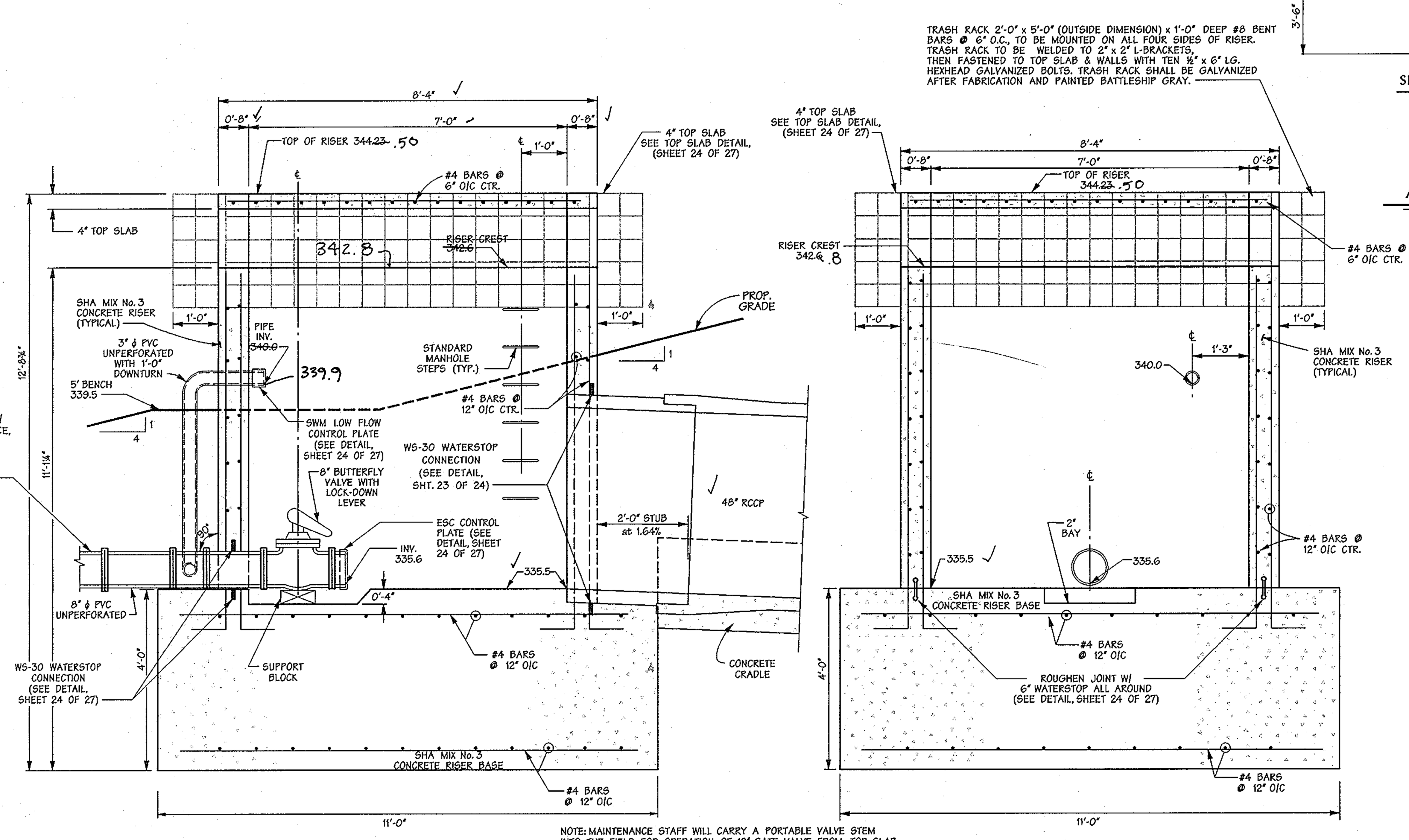
NTS



CONCRETE CRADLE DETAIL - SWM VI



PROFILE ALONG CENTERLINE OF EMBANKMENT SWM VI



NOTE: MAINTENANCE STAFF WILL CARRY A PORTABLE VALVE STEM INTO THE FIELD FOR OPERATION OF 12" GATE VALVE FROM TOP SLAB.

R-6 RISER DETAIL FOR POND - SWM VI

Scale:1/2" = 1'-0"
CAST IN PLACE

ROAD & STORM DRAIN AS-BUILT
5/11/2006

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

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SIGNATURE OF ENGINEER — DATE 9/26/01
PRINT NAME BELOW SIGNATURE John W. Ranocchia, Sr.

9/26/01
Date

Professional Engr. No. 10551

APPROVED: HOWARD COUNTY DEPARTMENT OF PUBLIC WORKS
CHIEF, BUREAU OF HIGHWAYS — DATE 10-29-01

APPROVED: HOWARD COUNTY DEPT. OF PLANNING & ZONING
CHIEF, DEVELOPMENT ENGINEERING DIVISION MK — DATE 10/31/01
CHIEF, DIVISION OF LAND DEVELOPMENT HB — DATE 11/6/01
~~DIRECTOR~~ — ~~DATE~~

Date	No.	Revision Description

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WATER CODE	SEWER CODE
-	-

TITLE
STORMWATER MANAGEMENT
DETAILS – SWM VI

Des By MRT	Scale AS SHOWN	Proj. No. 95054.F
Drn By WHJ	Date 9-26-01	23 of 27
Chk By	Approved	

F-01-136

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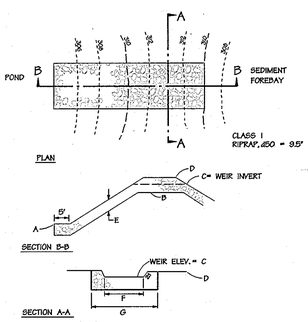
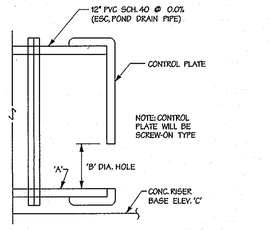
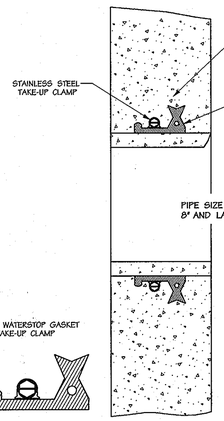
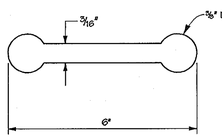
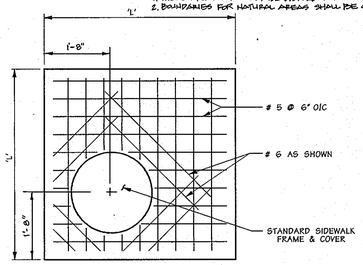
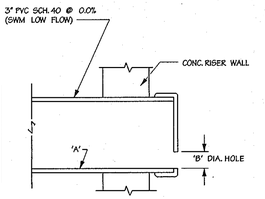












STORMWATER MANAGEMENT POND GENERAL CONSTRUCTION SPECIFICATIONS

1. GENERAL

ALL STORMWATER MANAGEMENT FACILITIES SHALL BE CONSTRUCTED IN ACCORDANCE WITH BALTIMORE COUNTY'S "STANDARD SPECIFICATIONS AND DETAILS FOR CONSTRUCTION (1985)" AND THE N.R.C.S. MARYLAND "STANDARDS AND SPECIFICATIONS FOR PONDS" (MD-378, 2000).

THESE SPECIFICATIONS ARE APPROPRIATE TO ALL PONDS WITHIN THE SCOPE OF THE STANDARD PRACTICE MD-378. ALL REFERENCES TO ASTM AND AASHTO SPECIFICATIONS APPLY TO THE MOST RECENT VERSION.

2. SITE PREPARATION

AREAS DESIGNATED FOR BORROW AREAS, EMBANKMENT, AND STRUCTURAL WORKS SHALL BE CLEARED, GRUBBED AND STRIPPED OF TOPSOIL. ALL TREES, VEGETATION, ROOTS AND OTHER OBJECTIONABLE MATERIAL SHALL BE REMOVED. CHANNEL BANKS AND SHARP BREAKS SHALL BE SLOPED TO NO STEEPER THAN 1:1. ALL TREES SHALL BE CLEARED AND GRUBBED WITHIN 15 FEET OF THE TOE OF THE EMBANKMENT.

AREAS TO BE COVERED BY THE RESERVOIR WILL BE CLEARED OF ALL TREES, BRUSH, LOGS, FENCES, RUBBISH AND OTHER OBJECTIONABLE MATERIAL UNLESS OTHERWISE DESIGNATED ON THE PLANS. TREES, BRUSH AND STUMPS SHALL BE CUT APPROXIMATELY LEVEL WITH THE GROUND SURFACE. FOR DRY STORMWATER MANAGEMENT PONDS, A MINIMUM OF A 25-FOOT RADIUS AROUND THE INLET STRUCTURE SHALL BE CLEARED.

ALL CLEARED AND GRUBBED MATERIAL SHALL BE DISPOSED OF OUTSIDE AND BELOW THE LIMITS OF THE DAM AND RESERVOIR AS DIRECTED BY THE OWNER OR HIS REPRESENTATIVE. WHEN SPECIFIED, A SUFFICIENT QUANTITY OF TOPSOIL WILL BE STOCKPILED IN A SUITABLE LOCATION FOR USE ON THE EMBANKMENT AND OTHER DESIGNATED AREAS.

3. EARTH FILL

MATERIAL - THE FILL MATERIAL SHALL BE TAKEN FROM APPROVED DESIGNATED BORROW AREAS. IT SHALL BE FREE OF ROOTS, STUMPS, WOOD, RUBBISH, STONES GREATER THAN 6", FROZEN OR OTHER OBJECTIONABLE MATERIALS. FILL MATERIAL FOR THE CENTER OF THE EMBANKMENT AND CUT OFF TRENCH SHALL CONFORM TO UNIFIED SOIL CLASSIFICATION GC, SC, CH, OR CL AND MUST HAVE AT LEAST 30% PASSING THE #200 SIEVE. CONSIDERATION MAY BE GIVEN TO THE USE OF OTHER MATERIALS IN THE EMBANKMENT IF DESIGNED BY A GEOTECHNICAL ENGINEER. SUCH SPECIAL DESIGNS MUST HAVE CONSTRUCTION SUPERVISED BY A GEOTECHNICAL ENGINEER.

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.

PLACEMENT - AREAS ON WHICH FILL IS TO BE PLACED SHALL BE SCARIFIED PRIOR TO PLACEMENT OF FILL. FILL MATERIALS SHALL BE PLACED IN MAXIMUM 8 INCH THICK (BEFORE COMPACTION) LAYERS WHICH ARE TO BE CONTINUOUS OVER THE ENTIRE LENGTH OF THE FILL. THE MOST PERMEABLE BORROW MATERIAL SHALL BE PLACED IN THE DOWNSTREAM PORTIONS OF THE EMBANKMENT. THE PRINCIPAL SPILLWAY MUST BE INSTALLED CONCURRENTLY WITH FILL PLACEMENT AND NOT EXCAVATED INTO THE EMBANKMENT.

COMPACTION - THE MOVEMENT OF THE HAULING AND SPREADING EQUIPMENT OVER THE FILL SHALL BE CONTROLLED SO THAT THE ENTIRE SURFACE OF EACH LIFT SHALL BE TRAVERSED BY NOT LESS THAN ONE TREAD TRACK OF THE EQUIPMENT OR COMPACTION SHALL BE ACHIEVED BY A MINIMUM OF FOUR COMPLETE PASSES OF A SHEEPSFOOT, RUBBER TIRED OR VIBRATORY ROLLER. FILL MATERIAL SHALL CONTAIN SUFFICIENT MOISTURE SUCH THAT THE REQUIRED DEGREE OF COMPACTION WILL BE OBTAINED WITH THE EQUIPMENT USED. THE FILL MATERIAL SHALL CONTAIN SUFFICIENT MOISTURE SO THAT IF FORMED INTO A BALL IT WILL NOT CRUMBLE, YET NOT BE SO WET THAT WATER CAN BE SQUEEZED OUT.

WHEN REQUIRED BY THE REVIEWING AGENCY THE MINIMUM REQUIRED DENSITY SHALL NOT BE LESS THAN 95% OF THE MAXIMUM DRY DENSITY WITH A MOISTER 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).

CUT OFF TRENCH - THE CUTOFF TRENCH SHALL BE EXCAVATED INTO IMPERVIOUS MATERIAL ALONG OR PARALLEL TO THE CENTERLINE OF THE EMBANKMENT AS SHOWN ON THE PLANS. THE EQUIPMENT USED FOR EXCAVATION, WITH THE MINIMUM WIDTH BEING FOUR FEET SHALL GOVERN THE BOTTOM WIDTH OF THE TRENCH. THE DEPTH SHALL BE AT LEAST 4 FEET BELOW EXISTING GRADE OR AS SHOWN ON THE PLANS. THE SIDE SLOPES OF THE TRENCH SHALL BE 1 TO 1 OR FLATTER. THE BACKFILL SHALL BE COMPACTED WITH CONSTRUCTION EQUIPMENT, ROLLERS, OR HAND TAMPERS TO ASSURE MAXIMUM DENSITY AND MINIMUM PERMEABILITY.

EMBANKMENT CORE - THE CORE SHALL BE PARALLEL TO THE CENTERLINE OF THE EMBANKMENT AS SHOWN ON THE PLANS. THE TOP WIDTH OF THE CORE SHALL BE A MINIMUM OF FOUR FEET. THE HEIGHT SHALL EXTEND UP TO AT LEAST THE 10 YEAR WATER ELEVATION OR AS SHOWN ON THE PLANS. THE SIDE SLOPES SHALL BE 1 TO 1 OR FLATTER. THE CORE SHALL BE COMPACTED WITH CONSTRUCTION EQUIPMENT, ROLLERS, OR HAND TAMPERS TO ASSURE MAXIMUM DENSITY AND MINIMUM PERMEABILITY. IN ADDITION, THE CORE SHALL BE PLACED CONCURRENTLY WITH THE OUTER SHELL OF THE EMBANKMENT.

4. 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 4 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 4 FEET, MEASURED HORIZONTALLY, TO ANY PART OF A STRUCTURE. UNDER NO CIRCUMSTANCES SHALL EQUIPMENT BE DRIVEN OVER ANY PART OF A CONCRETE STRUCTURE OR PIPE, UNLESS THERE IS A COMPACTED FILL OF 24" OR GREATER OVER THE STRUCTURE OR PIPE.

STRUCTURE BACKFILL MAY BE FLOWABLE FILL MEETING THE REQUIREMENTS OF MARYLAND DEPARTMENT OF TRANSPORTATION, STATE HIGHWAY ADMINISTRATION STANDARD SPECIFICATIONS FOR CONSTRUCTION AND MATERIALS, SECTION313 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 FUR 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 4 FEET, MEASURED HORIZONTALLY, TO ANY PART OF A STRUCTURE. UNDER NO CIRCUMSTANCES SHALL EQUIPMENT BE DRIVEN OVER ANY PART OF A STRUCTURE OR PIPE, UNLESS THERE IS A COMPACTED FILL OF 24" OR GREATER OVER THE STRUCTURE OR PIPE. BACKFILL MATERIAL OUTSIDE THE STRUCTURAL BACKFILL (FLOWABLE FILL) ZONE SHALL BE OF THE TYPE AND QUALITY CONFORMING TO THAT SPECIFIED FOR THE CORE OF THE EMBANKMENT OR OTHER EMBANKMENT MATERIALS.

5. REMOVAL AND REPLACEMENT OF DEFECTIVE FILL

FILL PLACED AT DENSITIES LOWER THAN SPECIFIED MINIMUM DENSITY OR AT MOISTURE CONTENTS OUTSIDE THE SPECIFIED ACCEPTABLE RANGE OF MOISTURE CONTENT OR OTHERWISE NOT CONFORMING TO THE REQUIREMENTS OF THE SPECIFICATIONS SHALL BE REWORKED TO MEET THE REQUIREMENTS OR REMOVED AND REPLACED BY ACCEPTABLE FILL. THE BOTTOMS OF SUCH EXCAVATIONS SHALL BE FINISHED FLAT OR GENTLY CURVING AND AT THE SIDES OF SUCH EXCAVATIONS THE ADJACENT SOUND FILL SHALL BE TRIMMED TO A SLOPE NOT STEEPER THAN 3 FEET HORIZONTALLY TO 1 FOOT VERTICALLY EXTENDING FROM THE BOTTOM OF THE EXCAVATION TO THE FILL SURFACE.

6. PIPE CONDUITS

ALL PIPES SHALL BE CIRCULAR IN CROSS SECTION. ALL PERFORATED PIPES SHALL HAVE A MINIMUM OF 3.31 SQUARE INCHES OF OPENING PER SQUARE FOOT OF PIPE SURFACE (EX. 30 3/8-INCH HOLES PER SQUARE FOOT). PERFORATIONS ARE TO BE UNIFORMLY SPACED AROUND THE FULL PERIPHERY OF THE PIPE. ANY HOLES BLOCKED OR PARTIALLY BLOCKED BY BITUMINOUS COATING SHALL BE OPENED PRIOR TO INSTALLATION.

REINFORCED CONCRETE PIPE - ALL OF THE FOLLOWING CRITERIA SHALL APPLY FOR REINFORCED CONCRETE PIPE:

1. MATERIALS - REINFORCED CONCRETE PIPE SHALL HAVE BELL AND SPIGOT JOINTS WITH RUBBER GASKETS AND SHALL EQUAL OR EXCEED ASTM C-361.
2. BEDDING - REINFORCED CONCRETE PIPE CONDUITS SHALL BE LAID IN A CONCRETE BEDDING 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 PERCENT OF ITS OUTSIDE DIAMETER WITH A MINIMUM THICKNESS OF 6 INCHES. WHERE 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 4 FEET FROM THE RISER.
4. BACKFILLING SHALL CONFORM TO "STRUCTURE BACKFILL".
5. CONNECTIONS - ALL CONNECTIONS (TO ANTI-SEEP COLLARS, RISER, ETC.) SHALL BE WATERTIGHT.
6. OTHER DETAILS (ANTI-SEEP COLLARS, VALVES, ETC.) SHALL BE AS SHOWN ON THE DRAWINGS.

PLASTIC PIPE - ALL OF THE FOLLOWING CRITERIA SHALL APPLY FOR PLASTIC PIPE:

1. MATERIALS - PVC PIPE SHALL BE PVC-1120 OR PVC-1220 CONFORMING TO ASTM D-1785 OR ASTM D-2241. CORRUGATED HIGH DENSITY POLYETHYLENE (HDPE), COUPLINGS AND FITTINGS SHALL CONFORM TO THE FOLLOWING; 4" - 10" INCH PIPE SHALL MEET THE REQUIREMENTS OF AASHTO M252 TYPE S, AND 12" THROUGH 24" SHALL MEET THE REQUIREMENTS OF AASHTO M294 TYPE S.
2. JOINTS AND CONNECTIONS TO ANTI-SEEP COLLARS SHALL BE COMPLETELY WATERTIGHT.
3. BEDDING - THE PIPE SHALL BE FIRMLY AND UNIFORMLY BEDDED THROUGHOUT ITS ENTIRE LENGTH. WHERE ROCK OR SOFT, SPONGY OR OTHER UNSTABLE SOIL IS ENCOUNTERED, ALL SUCH MATERIAL SHALL BE REMOVED AND REPLACED WITH SUITABLE EARTH COMPACTED TO PROVIDE ADEQUATE SUPPORT.
4. BACKFILLING SHALL CONFORM TO "STRUCTURE BACKFILL".
5. OTHER DETAILS (ANTI-SEEP COLLARS, VALVES, ETC.) SHALL BE AS SHOWN ON THE DRAWINGS.

7. CONCRETE

CONCRETE SHALL MEET THE REQUIREMENTS OF THE MARYLAND DEPARTMENT OF TRANSPORTATION, STATE HIGHWAY ADMINISTRATION STANDARD SPECIFICATIONS FOR CONSTRUCTION AND MATERIALS, SECTION 414, MIX NO. 3

CAST-IN-PLACE CONCRETE STRUCTURES

1. SPECIFICATIONS: MARYLAND DEPARTMENT OF TRANSPORTATION, STATE HIGHWAY ADMINISTRATION STANDARD SPECIFICATIONS FOR CONSTRUCTION AND MATERIALS, LATEST EDITION.

   AASHTO STANDARD SPECIFICATIONS FOR HIGHWAY BRIDGES, LATEST EDITION, FOR DESIGN. CONCRETE DESIGN BY THE "SERVICE LOAD DESIGN METHOD".
2. CONCRETE: SHALL MEET THE REQUIREMENTS OF THE MARYLAND DEPARTMENT OF TRANSPORTATION, STATE HIGHWAY ADMINISTRATION STANDARD SPECIFICATIONS FOR CONSTRUCTION AND MATERIALS, SECTION 414 AND 902, MIX NO. 3.
3. CONTRACTOR MAY ADD COLOR MIX AT PLANT IN ACCORDANCE WITH MANUFACTURES RECOMMENDATION "C-12 MESA BEIGE" AS MANUFACTURED BY L. M. SCOFIELD COMPANY (213) 723-5285.

   CONTRACTOR SHALL SUPPLY MIX DESIGN FOR APPROVAL PRIOR TO APPLICATION. LOAD AND MIX TICKETS SHALL BE SUPPLIED FOR EACH TRUCK DELIVERY. NO PARTIAL FIELD MIXES SHALL BE ALLOWED.

   ALL CONCRETE SHALL ATTAIN A MINIMUM COMPRESSIVE STRENGTH OF 3,500 PSI AT 28 DAYS. DESIGN FC = 1,200 PSI.

   ALL EXPOSED EDGES SHALL BE CHAMFERED 3/4" X 3/4". ALL CONSTRUCTION KEYS ARE SHOWN NOMINAL SIZE.
4. REINFORCING STEEL: REINFORCING STEEL SHALL CONFORM TO ASTM A-615, GRADE 60. WHERE NOT INDICATED, BAR LAP SPLICES SHALL BE IN ACCORDANCE WITH AASHTO SPECIFICATIONS. THE MINIMUM CONCRETE COVER SHALL BE 2 INCHES UNLESS OTHERWISE NOTED. DESIGN FS = 24,000 PSI.
5. FOUNDATION: PRESUMED SOIL BEARING CAPACITY = 2,500 PSF. THE ENGINEER MUST APPROVE ALL FOUNDATIONS PRIOR TO CONCRETE PLACEMENT. IF UNSUITABLE MATERIAL IS ENCOUNTERED, THE MATERIAL SHALL BE UNDERCUT AND BACKFILLED WITH STRUCTURAL BACKFILL.
6. STRUCTURAL BACKFILL: CAST-IN-PLACE CONCRETE STRUCTURES AND PIPE SHALL BE BACKFILLED WITH SELECT GRANULAR BACKFILL MEETING THE REQUIREMENTS OF SHA GRADED AGGREGATE-SUBBASE. STRUCTURAL FILL SHALL BE PLACED IN LOOSE LIFTS OF APPROXIMATELY 6 INCHES, AND COMPACTED TO 95 PERCENT OF THE STANDARD PROCTOR MAXIMUM DRY DENSITY IN ACCORDANCE WITH AASHTO T-180. THE STATIC WEIGHT OF EQUIPMENT USED ADJACENT TO WALLS SHALL NOT EXCEED 3,000 POUNDS. NO BACKFILL SHALL BE PLACED AGAINST THE CAST-IN-PLACE WALLS UNTIL THE CONCRETE HAS ATTAINED THE SPECIFIED 28 DAY STRENGTH.

PRE-CAST CONCRETE STRUCTURES

SHOP DRAWINGS FOR PRE-CAST STRUCTURES WITH SUPPORTING STRUCTURAL COMPUTATIONS (SIGNED AND SEALED BY A MARYLAND REGISTERED PROFESSIONAL ENGINEER) MEETING ASTM REQUIREMENTS FOR PRE-CAST STRUCTURES MUST BE SUBMITTED TO THE ENGINEER, AND THE APPROVING AGENCY (BALTIMORE COUNTY DEPARTMENT OF ENVIRONMENT PROTECTION AND RESOURCE MANAGEMENT) FOR APPROVAL PRIOR TO FABRICATION.

8. ROCK RIP-RAP

ROCK RIP-RAP SHALL MEET THE REQUIREMENTS OF THE MARYLAND DEPARTMENT OF TRANSPORTATION, STATE HIGHWAY ADMINISTRATION STANDARD SPECIFICATIONS FOR CONSTRUCTION AND MATERIALS, SECTION 311.

GEOTEXTILE SHALL BE PLACED UNDER ALL RIP-RAP AND SHALL MEET THE REQUIREMENTS OF THE MARYLAND DEPARTMENT OF TRANSPORTATION, STATE HIGHWAY ADMINISTRATION STANDARD SPECIFICATIONS FOR CONSTRUCTION AND MATERIALS, SECTION 921.09, CLASS C.

THE RIP-RAP SHALL BE PLACED TO THE REQUIRED THICKNESS IN ONE OPERATION. THE ROCK SHALL BE DELIVERED AND PLACED IN A MANNER THAT WILL INSURE THE RIP-RAP IN PLACE SHALL BE REASONABLY HOMOGENEOUS WITH THE LARGER ROCKS UNIFORMLY DISTRIBUTED AND FIRMLY IN CONTACT ONE TO ANOTHER WITH THE SMALLER ROCKS FILLING THE VOIDS BETWEEN THE LARGER ROCKS.

9. CARE OF WATER DURING CONSTRUCTION

ALL WORK ON PERMANENT STRUCTURES SHALL BE CARRIED OUT IN AREAS FREE FROM WATER. THE CONTRACTOR SHALL CONSTRUCT AND MAINTAIN ALL TEMPORARY DIKES, LEVEES, COFFERDAMS, DRAINAGE CHANNELS, AND STREAM DIVERSIONS NECESSARY TO PROTECT THE AREAS TO BE OCCUPIED BY THE PERMANENT WORKS. THE CONTRACTOR SHALL ALSO FURNISH, INSTALL, OPERATE, AND MAINTAIN ALL NECESSARY PUMPING AND OTHER EQUIPMENT REQUIRED FOR REMOVAL OF WATER FROM THE VARIOUS PARTS OF THE WORK AND FOR MAINTAINING THE EXCAVATIONS, FOUNDATION, AND OTHER PARTS OF THE WORK FREE FROM WATER AS REQUIRED OR DIRECTED BY THE ENGINEER FOR CONSTRUCTING EACH PART OF THE WORK. AFTER HAVING SERVED THEIR PURPOSE, ALL TEMPORARY PROTECTIVE WORKS SHALL BE REMOVED OR LEVELED AND GRADED TO THE EXTENT REQUIRED TO PREVENT OBSTRUCTION IN ANY DEGREE WHATSOEVER OF THE FLOW OF WATER TO THE SPILLWAY OR OUTLET WORKS AND SO AS NOT TO INTERFERE IN ANY WAY WITH THE OPERATION OR MAINTENANCE OF THE STRUCTURE. STREAM DIVERSIONS SHALL BE MAINTAINED UNTIL THE FULL FLOW CAN BE PASSED THROUGH THE PERMANENT WORKS. THE REMOVAL OF WATER FROM THE REQUIRED EXCAVATION AND THE FOUNDATION SHALL BE ACCOMPLISHED IN A MANNER AND TO THE EXTENT THAT WILL MAINTAIN STABILITY OF THE EXCAVATED SLOPES AND BOTTOM OF REQUIRED EXCAVATIONS AND WILL ALLOW SATISFACTORY PERFORMANCE OF ALL CONSTRUCTION OPERATIONS. DURING THE PLACING AND COMPACTING OF MATERIAL IN REQUIRED EXCAVATIONS, THE WATER LEVEL AT THE LOCATIONS BEING REFILLED SHALL BE MAINTAINED BELOW THE BOTTOM OF THE EXCAVATION AT SUCH LOCATIONS WHICH MAY REQUIRE DRAINING THE WATER TO SUMPS FROM WHICH THE WATER SHALL BE PUMPED.

10. STABILIZATION

ALL BORROW AREAS SHALL BE GRADED TO PROVIDE PROPER DRAINAGE AND LEFT IN A SIGHTLY CONDITION. ALL EXPOSED SURFACES OF THE EMBANKMENT, SPILLWAY, SPOIL AND BORROW AREAS, AND BERMS SHALL BE STABILIZED BY SEEDING, LIMING, FERTILIZING AND MULCHING IN ACCORDANCE WITH THE NATURAL RESOURCES CONSERVATION SERVICE STANDARDS AND SPECIFICATIONS FOR CRITICAL AREA PLANTING (MD-342) OR AS SHOWN ON THE ACCOMPANYING DRAWINGS.

11. 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 TO BE EMPLOYED DURING THE CONSTRUCTION PROCESS.

ALL DISTURBED AREAS SHALL BE CONTROLLED BY AN EROSION AND SEDIMENT CONTROL PLAN WHICH HAS BEEN APPROVED BY THE BALTIMORE COUNTY SOIL CONSERVATION DISTRICT (B. C. S. C. D.).

12. SEEDING

SEEDING, FERTILIZING AND MULCHING SHALL BE AS FOLLOWS:

SEED MIX: 50% KENBLUE KENTUCKY BLUEGRASS
40% PENNLAWN CREEPING RED FESCUE
10% STREAKER REDTOP
APPLIED AT A RATE OF 150 LBS. PER ACRE.
(OR)
REBEL II TALL FESCUE (125 LBS. PER ACRE)
PENNFINE PERENNIAL RYEGRASS (15 LBS. PER ACRE)
KENBLUE KENTUCKY BLUEGRASS (10 LBS. PER ACRE)
(OR)
PENNLAWN CREEPING RED FESCUE (70 LBS. PER ACRE)
AURORA HARD FESCUE (50 LBS. PER ACRE)
COMMON WHITE CLOVER (6 LBS. PER ACRE)
WINTER RYE (45 LBS. PER ACRE)
(OR)
70% FORAGER TALL FESCUE
30% CHEMUNG CROWNVETCH, INOCULATED
APPLIED AT A RATE OF 55 LBS. PER ACRE
OPTIMUM SEEDING DATES: MARCH 1 TO APRIL 30.

LIME: 2 TONS/ACRE DOLOMITIC LIMESTONE.

FERTILIZER: 600 LBS./ACRE 10-10-10 FERTILIZER BEFORE SEEDING,
400 LBS./ACRE 30-0-0 UREAFORM FERTILIZER AT TIME OF SEEDING.

MULCH: STRAW AT 4,000 LBS. PER ACRE.

ANCHORING: MULCHING TOOL OR WOO CELLULOSE FIBER BINDER AT A NET DRY BINDER RATE OF 750 POUNDS PER ACRE. THE WOOD CELLULOSE FIBER SHALL BE MIXED WITH WATER AND THE MIXTURE SHALL CONTAIN A MAXIMUM OF 50 POUNDS OF WOOD CELLULOSE FIBER PER 100 GALLONS OF WATER OR AT RATES RECOMMENDED BY THE MANUFACTURER.

13. FILTER CLOTH

ALL FILTER CLOTH SHALL CONFORM TO THE 1994 MARYLAND STANDARDS AND SPECIFICATIONS FOR SOIL EROSION AND SEDIMENT CONTROL, OR THE LATEST EDITION.

14. GABIONS

ALL GABIONS SHALL BE PVC COATED WOVEN WIRE BASKETS. STONE SIZE SHALL BE 4 INCHES TO 7 INCHES. (CLASS IV GABIONS).

15. CONSTRUCTION INSPECTION BY DESIGNATED ENGINEERS

THE CONSTRUCTION OF THE POND AND EMBANKMENT, AND CERTIFICATION THAT THE POND AND EMBANKMENT HAVE BEEN BUILT IN ACCORDANCE WITH THE PLANS SHALL BE UNDER THE SUPERVISION OF A REGISTERED PROFESSIONAL ENGINEER. THE ENGINEER SHALL BE NOTIFIED SUFFICIENTLY IN ADVANCE OF CONSTRUCTION IN ORDER THAT ARRANGEMENTS CAN BE MADE FOR (1) INSPECTION OF PIPE TRENCH AND BEDDING, (2) INSPECTION OF RISER AND ANTI-SEEP COLLARS AND (3) SUPERVISION OF EMBANKMENT CONSTRUCTION AND COMPACTION TESTING. THE ENGINEER SHALL DIRECT THE HANDLING OF WATER DURING CONSTRUCTION, MINOR CHANGES NOT AFFECTING THE INTEGRITY OF THE DAM IN ORDER TO COMPENSATE FOR UNUSUAL SOIL CONDITIONS, AND THE REMOVAL AND REPLACEMENT OF DEFECTIVE FILL.

16. INSPECTION SCHEDULE

1. PRIOR NOTIFICATION SHALL BE GIVEN TO THE ENGINEER SO THAT INSPECTIONS MAY BE MADE AT THE FOLLOWING STAGES:
   - (1) UPON COMPLETION OF EXCAVATION TO SUBFOUNDATION AND WHERE REQUIRED, INSTALLATION OF STRUCTURAL SUPPORTS OR REINFORCEMENT FOR STRUCTURES, INCLUDING BUT NOT LIMITED TO:
     - (I) CORE TRENCHES FOR STRUCTURAL EMBANKMENTS.
     - (II) INLET-OUTLET STRUCTURES AND ANTI-SEEP STRUCTURES, WATERTIGHT CONNECTORS ON PIPES AND
     - (III) TRENCHES FOR ENCLOSED STORM DRAINAGE FACILITIES.
   - (2) DURING PLACEMENT OF STRUCTURAL FILL, REINFORCING AND CONCRETE, AND INSTALLATION OF PIPING AND CATCH BASINS
   - (3) DURING BACKFILL OF FOUNDATIONS AND TRENCHES
   - (4) DURING EMBANKMENT CONSTRUCTION AND
   - (5) UPON COMPLETION OF FINAL GRADING AND ESTABLISHMENT OF PERMANENT STABILIZATION.

   NO WORK SHALL PROCEED UNTIL THE ENGINEER INSPECTS AND APPROVES THE WORK PREVIOUSLY COMPLETED.
2. GEOTECHNICAL COMPACTION TESTING OF THE FACILITY EMBANKMENT IS REQUIRED. CERTIFICATION MUST BE PROVIDED TO THE DESIGNATED ENGINEER IN CHARGE OF THE AS-BUILT.
3. A COPY OF ALL MATERIAL SUPPLY TICKETS MUST BE GIVEN TO THE DESIGNATED ENGINEER IN CHARGE OF THE AS-BUILT.

17. MAINTENANCE SCHEDULE

A. ROUTINE MAINTENANCE
1. THE FACILITY SHALL BE INSPECTED TWICE ANNUALLY, MARCH AND SEPTEMBER, IN ACCORDANCE WITH THE CHECKLIST AND REQUIREMENTS CONTAINED WITHIN USDA, SCS "STANDARDS AND SPECIFICATIONS FOR PONDS" (MD-378), THE POND OWNER(S) AND ANY HEIRS, SUCCESSORS, OR ASSIGNS SHALL BE RESPONSIBLE FOR THE SAFETY OF THE POND AND THE CONTINUED OPERATION, SURVEILLANCE, INSPECTION, AND MAINTENANCE THEREOF.
2. VEGETATION COVER SHALL BE MAINTAINED AT ALL TIMES.
3. TOP AND OUTSIDE SIDE SLOPE OF THE EMBANKMENT SHALL BE MOWED A MINIMUM OF TWO (2) TIMES A YEAR, ONCE IN JUNE AND ONCE IN SEPTEMBER.

B. NON- ROUTINE MAINTENANCE
1. THE POND OWNER(S) SHALL PROMPTLY NOTIFY THE SOIL CONSERVATION DISTRICT OF ANY UNUSUAL OBSERVATIONS THAT MAY BE INDICATIONS OF DISTRESS SUCH AS EXCESSIVE SEEPAGE, TURBID SEEPAGE, SLIDING OR SLUMPING.
2. RILLS ON THE SLOPE 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.
3. ALL APPURTENANCES SHALL BE KEPT FREE OF TRASH.
4. SEDIMENT SHALL BE REMOVED FROM FOREBAYS WHEN THE DEPTH EXCEEDS ONE FOOT.
5. TRASH AND DEBRIS SHALL BE REMOVED AS NECESSARY.
6. VEGETATION ON EMBANKMENT AND ACCESS BENCH SHALL NOT EXCEED 18- INCHES IN HEIGHT.
7. INSIDE SIDE SLOPE AND MAINTENANCE ACCESS SHOULD BE MOWED AS NEEDED. CARE SHALL BE TAKEN NOT TO MOW ANY OF THE WETLAND PLANTINGS IN THE VICINITY OF THE FIVE-FOOT SAFETY BENCH.

C. MAINTENANCE OF "NATURAL AREA CONSERVATION CREDIT" AREAS.
1. THESE AREAS SHALL NOT BE DISTURBED DURING OR AFTER CONSTRUCTION, WITH THE EXCEPTION OF ANY MITIGATION OR AFFORESTATION PROTECTS.
2. BOUNDARIES FOR NATURAL AREAS SHALL BE CLEARLY MARKED AND MAINTAINED.

DISTANCE / ELEVATION

VARIABLE	SWM I	SWM II	SWM VI
A	349.0	302.0	336.0
B	350.5	304.5	338.5
C	351.5	305.5	339.5
D	352.0	306.0	340.0
E	1.6'	1.6'	1.6'
F	20'	25'	25'
G	26'	31'	31'

SWM FOREBAY EMBANKMENT ARMORING DETAIL

NOT TO SCALE

SWM POND	'A'	'B'	'C'
I	347.1	4.0"	347.0
II	302.1	3.0"	302.0
VI	335.6	3.0"	335.5

ESC CONTROL PLATE DETAIL

NTS

PROVIDE WS-30 WATERSTOP GASKET DETAIL BY PRESS-SEAL GASKET CORPORATION OR APPROVED EQUAL

PRESS-SEAL GASKET CORPORATION

6935 LINCOLN PARKWAY
FORT WAYNE, INDIANA 46804
219 436-0521 - (800) 348-7325
FAX 219 436-1908

WS-30 WATER STOP DETAIL

NOT TO SCALE

#746 BY GREENSTREAK OR APPROVED EQUAL

6" WATERSTOP

NOT TO SCALE

SWM POND	'L'
I	5'-4"
II	5'-4"
VI	9'-0"

NOTES:

1. BOLT TOP SLAB TO RISER WITH (4) ½" x 6" LG. HEX. HEAD GALVANIZED BOLTS.
2. THE SIDE AND THE SLAB CLOSET TO THE FRAME AND LOVER WILL LINE UP WITH THE SIDE OF THE RISER WITH STANDARD MANHOLE STEPS.

TOP SLAB

Scale: ½" = 1'-0"
CAST IN PLACE

SWM POND	'A'	'B'
I	350.0	1½"
II	305.0	2½"
VI	340.0	2"

SWM LOW FLOW CONTROL PLATE DETAIL

NTS

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.

10/10/01
U.S.D.A. NATURAL RESOURCES CONSERVATION SERVICE DATE

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

APPROVED: 10/10/01
HOWARD SOIL CONSERVATION DISTRICT DATE

PLAN NUMBER

DEVELOPERS CERTIFICATE:

I/WE CERTIFY THAT ALL DEVELOPMENT AND/OR CONSTRUCTION WILL BE DONE ACCORDING TO THESE PLANS AND THAT ANY RESPONSIBLE PERSONNEL INVOLVED IN THE CONSTRUCTION PROJECT WILL HAVE A CERTIFICATE OF ATTENDANCE AT A DEPARTMENT OF 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.

10/27/01
SIGNATURE OF DEVELOPER DATE
PRINT NAME BELOW SIGNATURE Robert A. Jenkins

ENGINEERS CERTIFICATE:

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 REQUIRMENTS 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.

9/25/01
SIGNATURE OF ENGINEER DATE
PRINT NAME BELOW SIGNATURE John W. Ranocchia, Sr

9/26/01
Date

JOHN W. RANOCCHIA, SR. NO. 10551

Professional Engr. No. 10551

APPROVED: HOWARD COUNTY DEPARTMENT OF PUBLIC WORKS.
10-29-01
CHIEF, BUREAU OF HIGHWAYS. HS DATE

APPROVED: HOWARD COUNTY DEPT. OF PLANNING & ZONING
10/31/01
CHIEF, DEVELOPMENT ENGINEERING DIVISION MK DATE
Cindy Hamilton 11/6/01
CHIEF, DIVISION OF LAND DEVELOPMENT HB DATE

~~DIRECTOR~~ ~~DATE~~

Date	No.	Revision Description

EMERSON

FORMERLY KEY PROPERTY
SECTION 2, PHASE 1A

OWNER/DEVELOPER:

THE HOWARD RESEARCH & DEVELOPMENT CORPORATION
10275 Little Patuxent Parkway
Columbia, Maryland 21044

DMW

Daft·McCune·Walker, Inc.
200 East Pennsylvania Avenue
Towson, Maryland 21286
(410) 296-3333
Fax 296-4705

A Team of Land Planners, Landscape Architects, Engineers, Surveyors & Environmental Professionals

SUBDIVISION NAME	SECTION/AREA	LOT/PARCEL #
EMERSON SECTION 2	PHASE IA	P/O P. 837, P. 3, P. 462

PLAT# OR L/F	BLOCK #	ZONE	TAX/ZONE MAP	ELECT. DISTRICT	CENSUS TRACT
L. 572, F. 430 L. 1129, F. 48	2, 7, 8, 9, 13, 14, 15, 20 & 21	MXD	47	6 TH	-

WATER CODE	SEWER CODE
-	-

TITLE

SWM GENERAL DETAILS AND SPECIFICATIONS

Des By MRT	Scale AS SHOWN	Proj. No.	95054.F
Drn By WHJ	Date 9-26-01	24 of 27	
Chk By	Approved		

F-01-136

Tue Sep 25 15:06:16 2001 95054\final\95054FSET#1.SM8

BORING LOG

CONTRACT NO. 14002 MD — Sheet 1 of 10

PROJECT & LOCATION: Key Property Phase I/ II SWM Facilities — Begun: 3/23/00 — Completed: 3/23/00

Boring No. B-1 — Surface Elev. 307

Elev.	Depth	Classification of Materials	Sample No.	Blows per ft	Remarks
306.75	0.25	Topsoil	1	6	Proposed pond bottom 301.0'
		Brown moist micaceous mf SAND, little silt (SM) (Sandy loam) (Decomposed Rock)	2	21	
			3	50/3"	
			4	50/2"	
298.0	9.0	Brown wet micaceous cf SAND, little silt, tr mf rock fragments (SM) (Sandy loam) (Decomposed Rock)	5	50/1"	
291.0	16.0	At completion of boring, water at 8.0' and caved at 16.0'	6	50/3"	

BORING LOG

CONTRACT NO. 14002 MD — Sheet 2 of 10

PROJECT & LOCATION: Key Property Phase I/ II SWM Facilities — Begun: 3/23/00 — Completed: 3/23/00

Boring No. B-2 — Surface Elev. 313

Elev.	Depth	Classification of Materials	Sample No.	Blows per ft	Remarks
312.5	0.5	Topsoil Brown moist CLAY & SILT and mf SAND (CL) (Silty clay loam)	1	5	Proposed pond bottom 310.0'
311.0	2.0	Brown moist micaceous cf SAND, some silt (SM) (Sandy loam) (Decomposed Rock)	2	17	
308.0	5.0	Brown moist micaceous mf SAND, some silt (SM) (Sandy loam) (Decomposed Rock)	3	21	
			4	51	
			5	50/6"	
302.0	11.0	Brown moist micaceous SILT and mf sand (ML) (Silty loam)(Decomposed Rock)	6	50/4"	
300.1	12.9	At completion of boring, water at 7.5' and caved at 9.6' At 24 hours after completion, water at 4.0' and caved at 9.0'			

BORING LOG

CONTRACT NO. 14002 MD — Sheet 5 of 10

PROJECT & LOCATION: Key Property Phase I/ II SWM Facilities — Begun: 3/23/00 — Completed: 3/23/00

Boring No. B-5 — Surface Elev. 342

Elev.	Depth	Classification of Materials	Sample No.	Blows per ft	Remarks
341.75	0.25	Topsoil Brown very moist CLAY & SILT, some cf SAND, tr roots (CL) (Sandy clay loam)	1	3	Proposed pond bottom 333.0'
342.0	2.0	Brown and gray moist cf SAND, and SILT & CLAY (SM) (Sandy loam)	2	26	
			3	20	
			4	24	
333.5	8.5	Multicolored moist micaceous SILT, some mf sand (ML) (Silty loam) (Decomposed Rock)	5	34	
			6	50	
323.0	19.0	At completion of boring, water at 6.0' and caved at 17.0'	7	50/5"	

Under REMARKS mention kind of bit, loss of sample, loss of drilling water, caving, cavities, core recovery, unusual ground water conditions, etc., and depths at which these were encountered

BORING LOG

CONTRACT NO. 14002 MD — Sheet 7 of 10

PROJECT & LOCATION: Key Property Phase I/ II SWM Facilities — Begun: 3/24/00 — Completed: 3/24/00

Boring No. B-7 — Surface Elev. 366

Elev.	Depth	Classification of Materials	Sample No.	Blows per ft	Remarks
364.0	2.0	Topsoil	1	2	Proposed pond bottom 352.0'
362.0	4.0	Brown very moist Silty CLAY, some cf SAND, little organics (CL) (Silty clay loam)	2	10	
		Reddish brown moist micaceous cf SAND, some silt, tr rock fragments (SM) (Sandy loam) (Decomposed Rock)	3	21	
			4	56	
			5	26	
			6	52	
347.0	19.0	Gray moist micaceous mf SAND, little silt, tr rock fragments (SM) (Sandy loam) (Decomposed Rock)	7	50/6"	
341.8	24.2	At completion of boring, water at 11.3' and caved at 21.3'	8	50/5"	

Under REMARKS mention kind of bit, loss of sample, loss of drilling water, caving, cavities, core recovery, unusual ground water conditions, etc., and depths at which these were encountered.

BORING LOG

CONTRACT NO. 14002 MD — Sheet 10 of 10

PROJECT & LOCATION: Key Property Phase I/ II SWM Facilities — Begun: 3/24/00 — Completed: 3/24/00

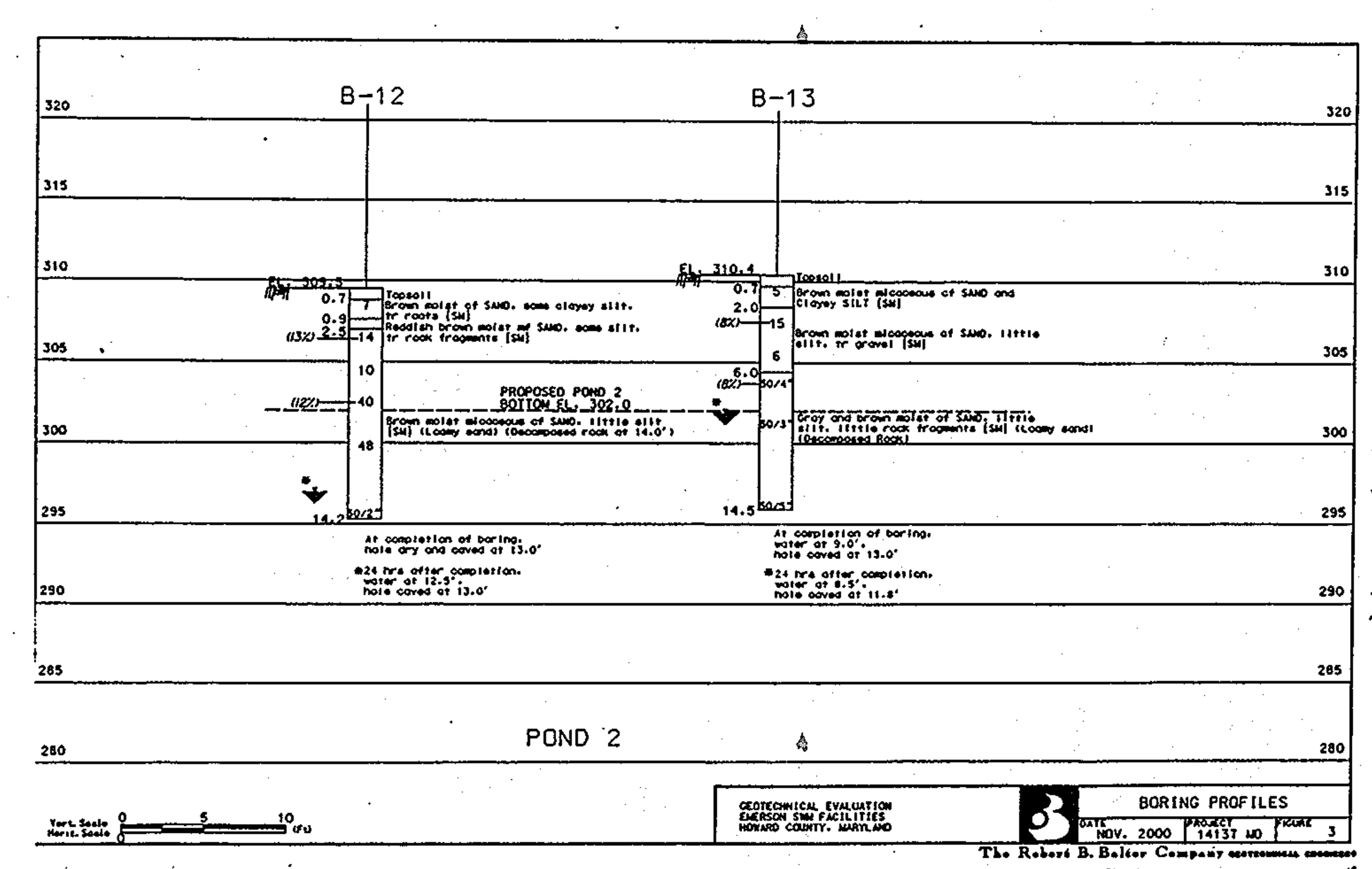
Boring No. B-11 — Surface Elev. 327

Elev.	Depth	Classification of Materials	Sample No.	Blows per ft	Remarks
326.5	0.5	Topsoil Brown moist Clayey SILT and mf SAND, tr rock fragments (ML) (Sandy loam) (Decomposed Rock)	1	7	Proposed pond bottom 322.0'
324.0	3.0	Brown and gray moist micaceous Clayey SILT and mf SAND (ML) (Sandy loam) (Decomposed Rock)	2	22	
323.0	4.0	Brown moist micaceous mf SAND, little silt, tr rock fragments (SM) (Decomposed Rock)	3	34	
			4	40	
			5	48	
312.0	15.0	At completion of boring, water at 9.0' and caved at 13.2' At 24 hours after completion of boring, water at 0.0' and caved at 6.3'	6	50/6"	

Under REMARKS mention kind of bit, loss of sample, loss of drilling water, caving, cavities, core recovery, unusual ground water conditions, etc., and depths at which these were encountered.

THE ROBERT B. BALTER CO
GEOTECHNICAL/ENVIRONMENTAL ENGINEERS

SCALE 1" = 5'



6. CONSTRUCTION CONSIDERATIONS

6.1. General Earthwork Requirements

Controlled compacted fill will be required for the embankments around the SWM ponds. The fill for these areas was assumed to be obtained from the SWM pond areas as well as other nearby regions. Most of the residual soils as described in Section 4.0 are not suitable for use as impermeable core trench materials based on their soil classification, unless proven otherwise with a more sophisticated analysis.

The maximum dry density (AASHTO T-99) for the residual soil samples ranged from 108.4 to 117.2 pcf with optimum moisture contents ranging from 13.1% to 17.3%. The natural moisture content of the fill materials on site was generally 3% to 12% above the optimum moisture content. Based on these conditions, significant drying of the soil by discing and aeration or other means of manipulation can be anticipated during the earthwork process. Furthermore, the micaceous component of the on-site soils makes it susceptible to loss of strength upon exposure to free water. Therefore, it would be prudent to schedule clearing and grubbing, stripping, and earthwork operations for the warmer, dryer periods of the year (if possible) so that construction schedules will not be delayed due to inclement weather.

All fill placed for the embankment, utility backfill, or any other location requiring stable support or minimal settlement shall be constructed as controlled compacted fill. Controlled compacted fill and foundations excavations shall meet the following requirements:

a) Within the described construction areas, strip the vegetation, topsoil, and any organic, contaminated, or otherwise unsuitable materials to expose clean soils. The subject area shall encompass the SWM ponds and extend outward from the edges a minimum of 5 feet plus 1 additional foot horizontally for every foot of new fill to be placed, or cut to be excavated.

b) Proofroll the stripped soil surface with a fully loaded, tandem-axle dump truck, or other approved equipment, under the observation of a geotechnical engineer or highly qualified senior level soils technician, to verify and establish a uniform, dense and stable condition. Any soft, yielding, organic, contaminated, or otherwise unacceptable spots detected shall be overexcavated and replaced with controlled compacted fill.

c) Any material used for controlled fill shall be inspected and approved for use by a geotechnical engineer or qualified soils technician prior to use on the site. All fill shall be free from topsoil, boulders, cobbles, roots, organic matter, and debris. Preliminary approval of the borrow material shall not constitute general acceptance of all materials in the deposit or source of supply, and the acceptance shall be subject to field tests taken at the discretion of the geotechnical engineer or qualified soils technician.

d) Compacted fill should be placed in horizontal, successive, uniform layers having a maximum uncompacted lift thickness of 8 inches. Each lift should be compacted uniformly to a minimum of 95 percent of the Standard Proctor maximum dry density as determined by AASHTO T-99 (ASTM D-698). The moisture content of the materials shall be maintained within ± 3% of the optimum moisture content in order to attain the required degree of compaction. Each lift should be uniformly and evenly blade mixed during spreading to ensure uniformity of the material in each layer. If the work deteriorates prior to placement of the next lift, the layer shall be recompacted and reshaped accordingly.

e) Successive lifts of compacted fill shall not be placed until the layer under construction has been compacted to the required density as measured by a geotechnical engineer or qualified soils technician. Successive runs of equipment shall be staggered over the width of each layer.

f) Where fills are to be placed on slopes, the original ground should be deeply scarified or where slopes are steeper than 5 horizontal to 1 vertical the slope should be stepped or benched, when considered necessary by the Engineer, in order that the placement of fill may be accomplished in horizontal lifts.

It is noted that this methodology is recommended both as preparation for areas to receive new fill, as well as locations where cut is required to establish the proposed grades such as foundation excavations. In cut areas, the proofrolling and selective undercutting shall be accomplished after excavation down to the proposed grades has been completed.

6.2. Dewatering

Groundwater measurements suggest that groundwater infiltration will be encountered in SWM facilities during construction. All excavations should be properly graded to avoid the accumulation of groundwater and surface water near foundation locations. Dewatering measures will most likely be required at these locations. Furthermore, contractors should provide suitable dewatering equipment to remove any water that has accumulated in excavations.

6.3. Excavation Issues

Conventional excavation methods should likely prove feasible for most of the excavations. However, it must be anticipated that dense to very dense decomposed rock or 'floating' boulders may be encountered during earthwork, possibly requiring the use of specialized excavation equipment and methods. It is our experience that the degree of difficulty in excavation can, in a general sense, be correlated to the SPT values, the physical characteristics of the materials and the material's resistance to our drilling equipment. Typically, mass excavation of strata exhibiting SPT results of less than 50 blows per 6 inches could generally be accomplished using conventional earthwork techniques. However, limited ripping or jack hammering of harder materials may be required in narrow excavations or trenches. Materials

with SPT results of 50 blows per 3 inches to 6 inches, or which required very hard augering to penetrate with our drilling equipment, usually require ripping, jack hammering, or hoe ramming for removal, especially in trenches. Any excavations below the depths of auger refusal, or in materials with SPT results of 50 blows per 3 inches or less, will most likely require hard ripping, extensive jack hammering or blasting. The Table 2 presents depths of potential excavation problems at respective boring locations.

Table 2-Potential Excavation Problems

Boring	Existing Elevation	Proposed Bottom Elevation	Elevation to SPT resistances of: 50 blows/6 inches (1)	50 blows/3 to 6 inches (2)	50 blows/3 inches or less (3)
B-12	309.51	302	—	—	295.5
B-13	310.41	302	—	304.4	—
B-14	339.23	336	—	—	—
B-15	347.73	336	—	—	—
B-16	352.09	347	—	—	—
B-17	353.53	347	—	—	—
B-18	335.09	326	—	321.1	—
B-19	341.68	326	—	—	327.7
B-20	315.45	312	—	—	—
B-21	319.85	312	—	—	—
B-22	371.85	354	—	—	—
B-23	366.0	354	—	351.5	—

NOTES:

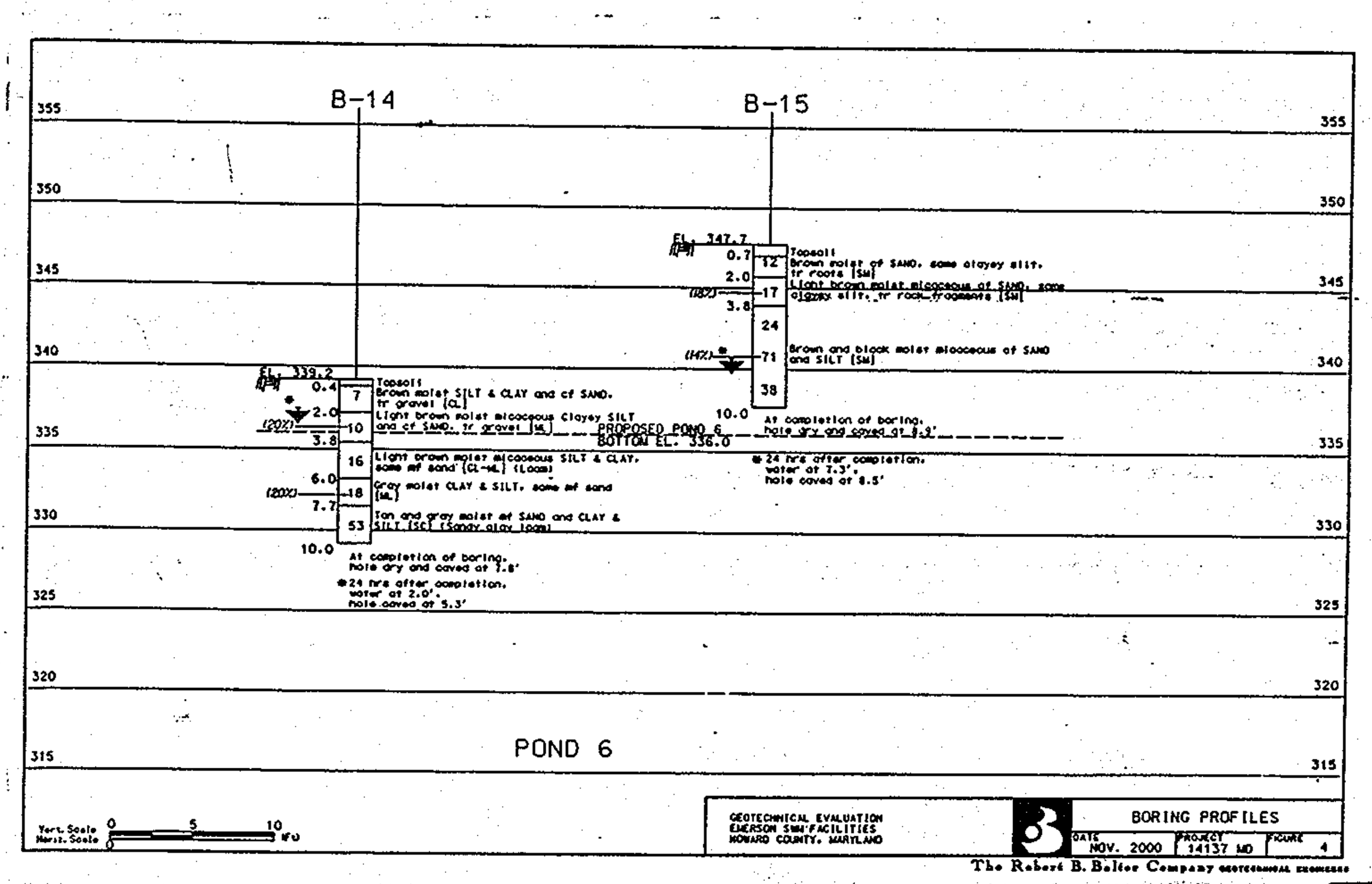
(1) Excavation of materials exhibiting this range of blow counts are typically accomplished through normal mass excavation techniques, i.e. excavation by loader, pan, backhoe, etc. Some limited ripping or jack hammering of materials may be required, especially in trenches.

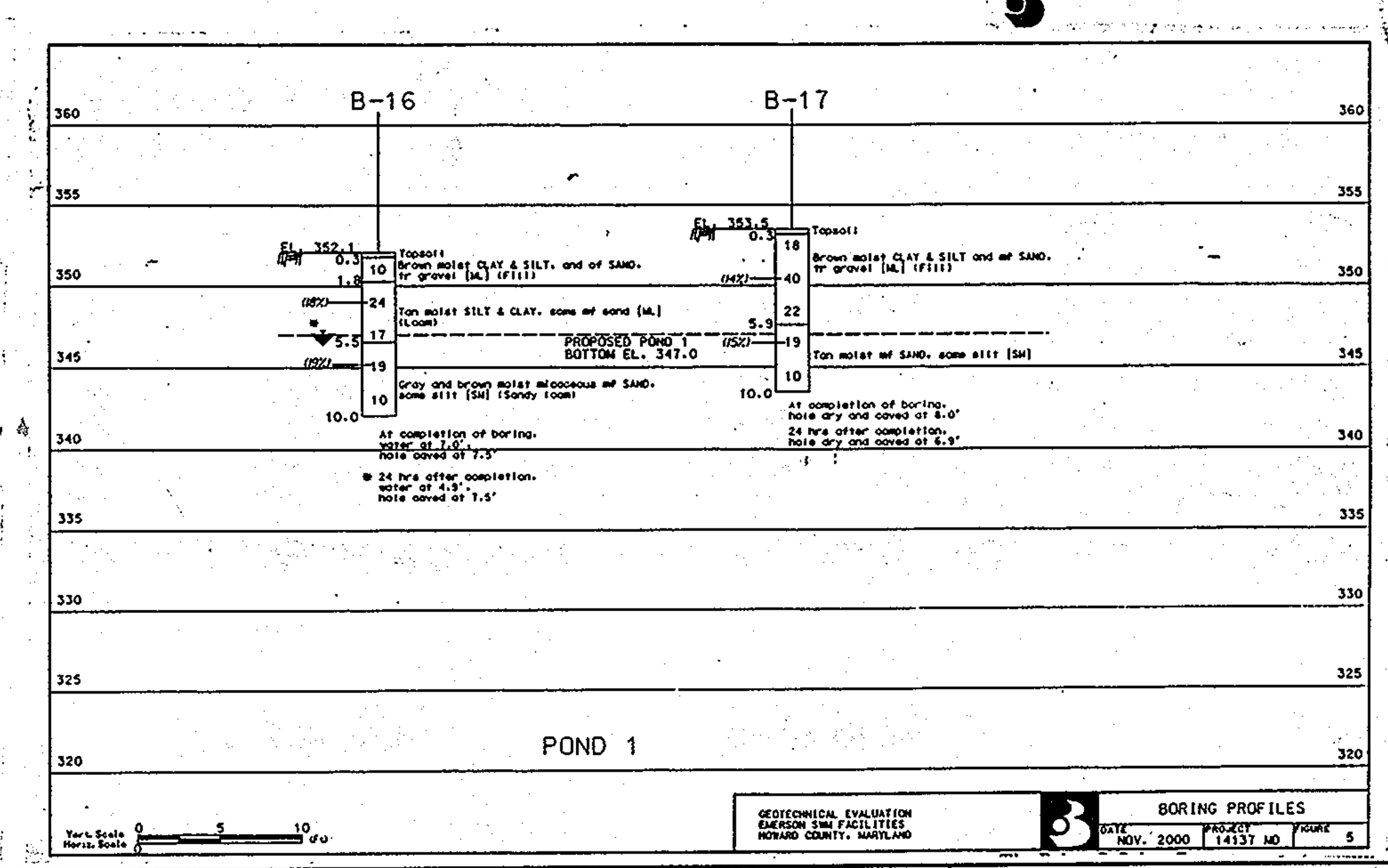
(2) Excavation of materials exhibiting this range of blow counts will typically require ripping, jack hammering or hoe ramming for excavation, especially in trenches or other confined areas.

(3) Excavation of materials exhibiting this range of blow counts will typically require hard ripping or extensive jack hammering. Blasting or other hard excavation techniques may be required, especially in trenches or other confined areas.

It must be noted that the physical characteristics of the rock materials (e.g., jointing, fracturing, and foliation), along with the type of equipment used, will greatly affect difficulty of excavation. It should also be noted that the data presented on the profiles represent the general subsurface conditions at the respective boring locations. Deviations in the excavation characteristics due to differing degrees of weathering, as well as the physical characteristics of

the subject materials, must be anticipated. Also, the excavation conditions, and the SPT values used to differentiate them, tend to vary and overlap. Accordingly, strata with similar SPT results may differ in excavation difficulty, and materials with similar excavation characteristics may have different SPT results.





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.

Jim Myers / CE — 10/10/01
U.S.D.A. NATURAL RESOURCES CONSERVATION SERVICE — DATE

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

APPROVED: [signature] — 10/10/01
HOWARD SOIL CONSERVATION DISTRICT — DATE

PLAN NUMBER

DEVELOPERS CERTIFICATE:

I/WE CERTIFY THAT ALL DEVELOPMENT AND/OR CONSTRUCTION WILL BE DONE ACCORDING TO THESE PLANS AND THAT ANY RESPONSIBLE PERSONNEL INVOLVED IN THE CONSTRUCTION PROJECT WILL HAVE A CERTIFICATE OF ATTENDANCE AT A DEPARTMENT OF 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.

[signature] — 10/23/01
SIGNATURE OF DEVELOPER — DATE
PRINT NAME BELOW SIGNATURE Robert A. Jenkins

ENGINEERS CERTIFICATE:

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 REQUIRMENTS 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.

[signature] — 9/25/01
SIGNATURE OF ENGINEER — DATE
PRINT NAME BELOW SIGNATURE John M. Ranocchia, S

9/26/01
Date

Professional Engr. No. 14551

APPROVED: HOWARD COUNTY DEPARTMENT OF PUBLIC WORKS
[signature] — 10-29-01
CHIEF, BUREAU OF HIGHWAYS MS — DATE

APPROVED: HOWARD COUNTY DEPT. OF PLANNING & ZONING
[signature] — 10/31/01
CHIEF, DEVELOPMENT ENGINEERING DIVISION MK — DATE
[signature] — 11/6/01
CHIEF, DIVISION OF LAND DEVELOPMENT HB — DATE
~~DIRECTOR~~ — ~~DATE~~

Date	No.	Revision Description

EMERSON

FORMERLY KEY PROPERTY
SECTION 2, PHASE 1A

OWNER/DEVELOPER:
THE HOWARD RESEARCH & DEVELOPMENT CORPORATION
10275 Little Patuxent Parkway
Columbia, Maryland 21044

DMW
Daft·McCune·Walker, Inc.
200 East Pennsylvania Avenue
Towson, Maryland 21286
(410) 296-3333
Fax 296-4705

A Team of Land Planners, Landscape Architects, Engineers, Surveyors & Environmental Professionals

SUBDIVISION NAME	SECTION/AREA	LOT/PARCEL #
EMERSON SECTION 2	PHASE 1A	P/O P.837, P. [illegible], P.462

PLAT# OR L/F	BLOCK #	ZONE	TAX/ZONE MAP	ELECT. DISTRICT	CENSUS TRACT
L.572, F.430 L.1129, F.48	2,7,8,9,13, 14,15,20 & 21	MXD	47	6 TH	-

WATER CODE: - SEWER CODE: -

TITLE: BORING LOGS

Des By	Scale AS SHOWN	Proj. No. 95054.F
Dm By	Date 9-26-01	25 of 27
Chk By	Approved	

F-01-136

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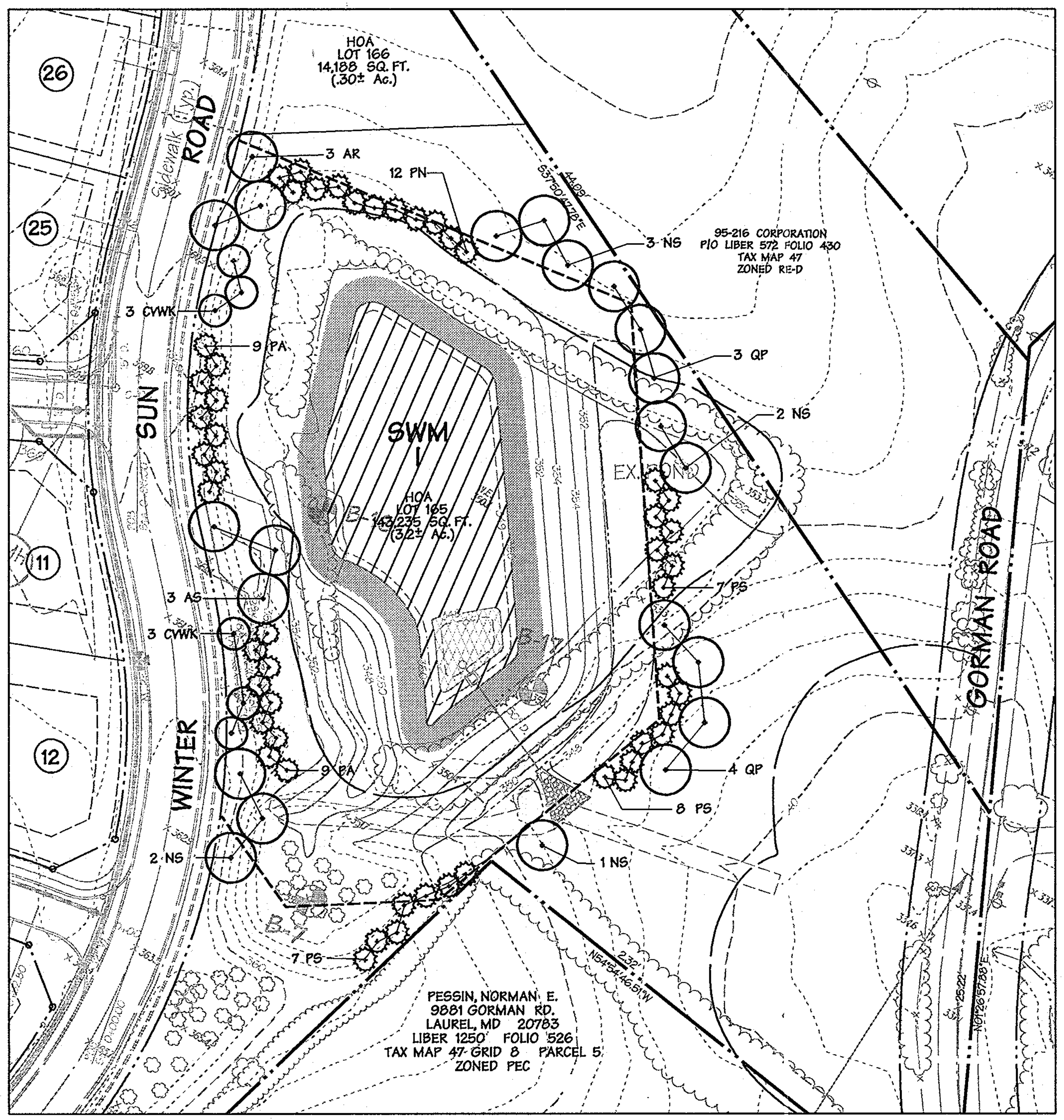


STORMWATER MANAGEMENT POND I

Water Quality Planting Plan**
Facility #1

ZONE "A" (7,800+\- s.f.)

Species	Size	Spacing	Quantity	Remarks
Scirpus tabernaemontanii	quart container*	36"	200	OBL
Panicum virgatum	quart container	36"	380	FAC
Saururus cernuus	quart container*	36"	200	OBL
TOTALS			780	

ZONE "B" (12,350+\- s.f.)

Species	Size	Spacing	Quantity	Remarks
Sagittaria latifolia	quart container*	36"	600	OBL
Peltandra virginica	quart container*	36"	600	OBL
TOTALS			1,200	

ZONE "C" (1,050+\- s.f.)

Species	Size	Spacing	Quantity	Remarks
Nuphar lutea	quart container	72"	25	OBL
TOTALS			25	

* Dormant rhizomes of *Scirpus* and *Saururus*, dormant tubers of *Sagittaria*, and 1st year bulbs of *Peltandra* may be substituted if plantings are to be installed during dormant season.

** Alternate species and install in random pattern, distributing each species across the hydrologic gradient of each planting zone. Single species massings to be avoided.

Water Quality Planting Plan**
Facility #2

ZONE "A" (16,200+\- s.f.)

Species	Size	Spacing	Quantity	Remarks
Scirpus tabernaemontanii	quart container*	36"	500	OBL
Panicum virgatum	quart container	36"	600	FAC
Saururus cernuus	quart container*	36"	500	OBL
TOTALS			1,600	

ZONE "B" (1,100+\- s.f.)

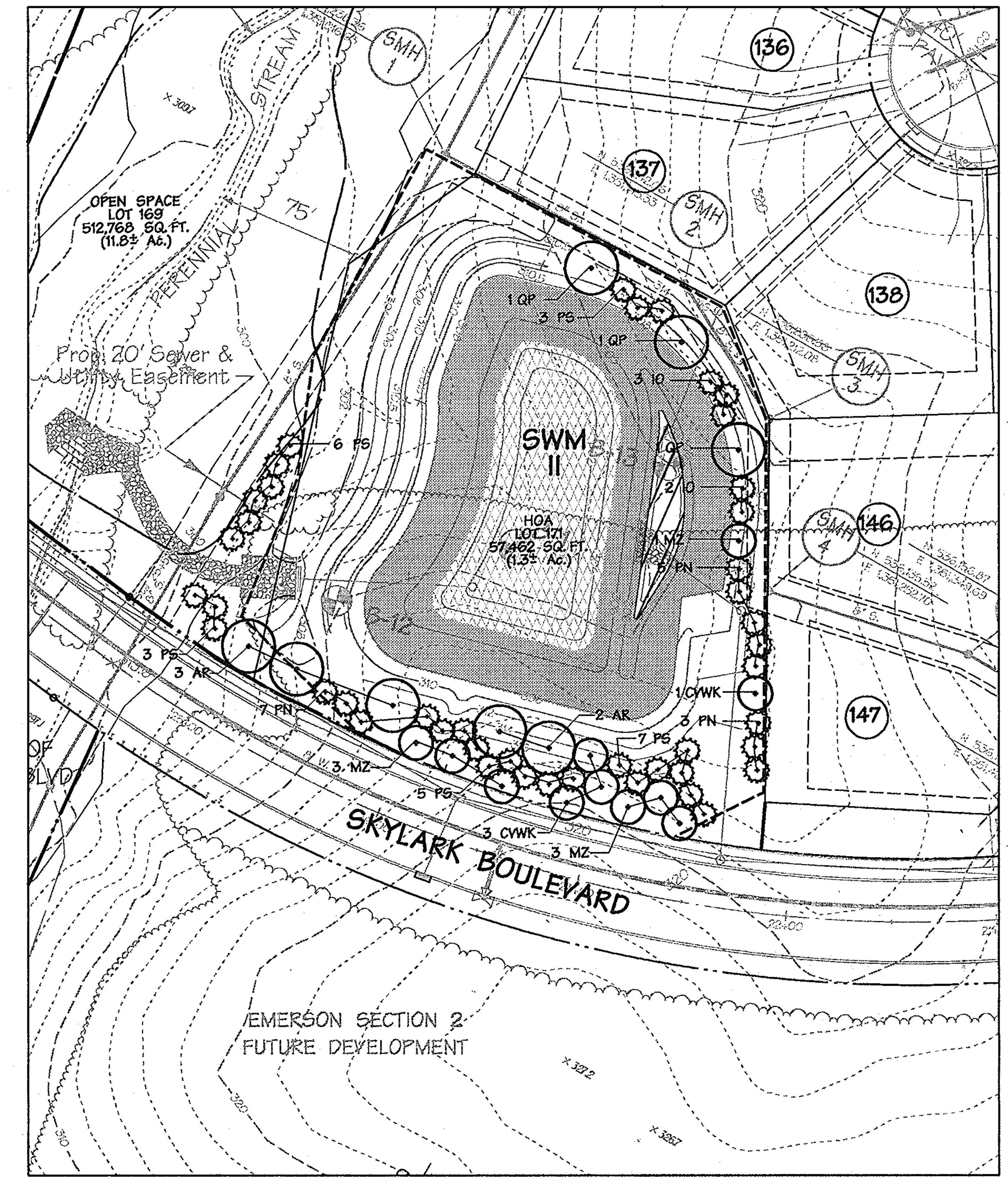
Species	Size	Spacing	Quantity	Remarks
Sagittaria latifolia	quart container*	36"	55	OBL
Peltandra virginica	quart container*	36"	55	OBL
TOTALS			110	

ZONE "C" (8,500+\- s.f.)

Species	Size	Spacing	Quantity	Remarks
Nuphar lutea	quart container	72"	200	OBL
TOTALS			200	

* Dormant rhizomes of *Scirpus* and *Saururus*, dormant tubers of *Sagittaria*, and 1st year bulbs of *Peltandra* may be substituted if plantings are to be installed during dormant season.

* Alternate species and install in random pattern, distributing each species across the hydrologic radient of each planting zone. Single species massings to be avoided.



STORMWATER MANAGEMENT POND II

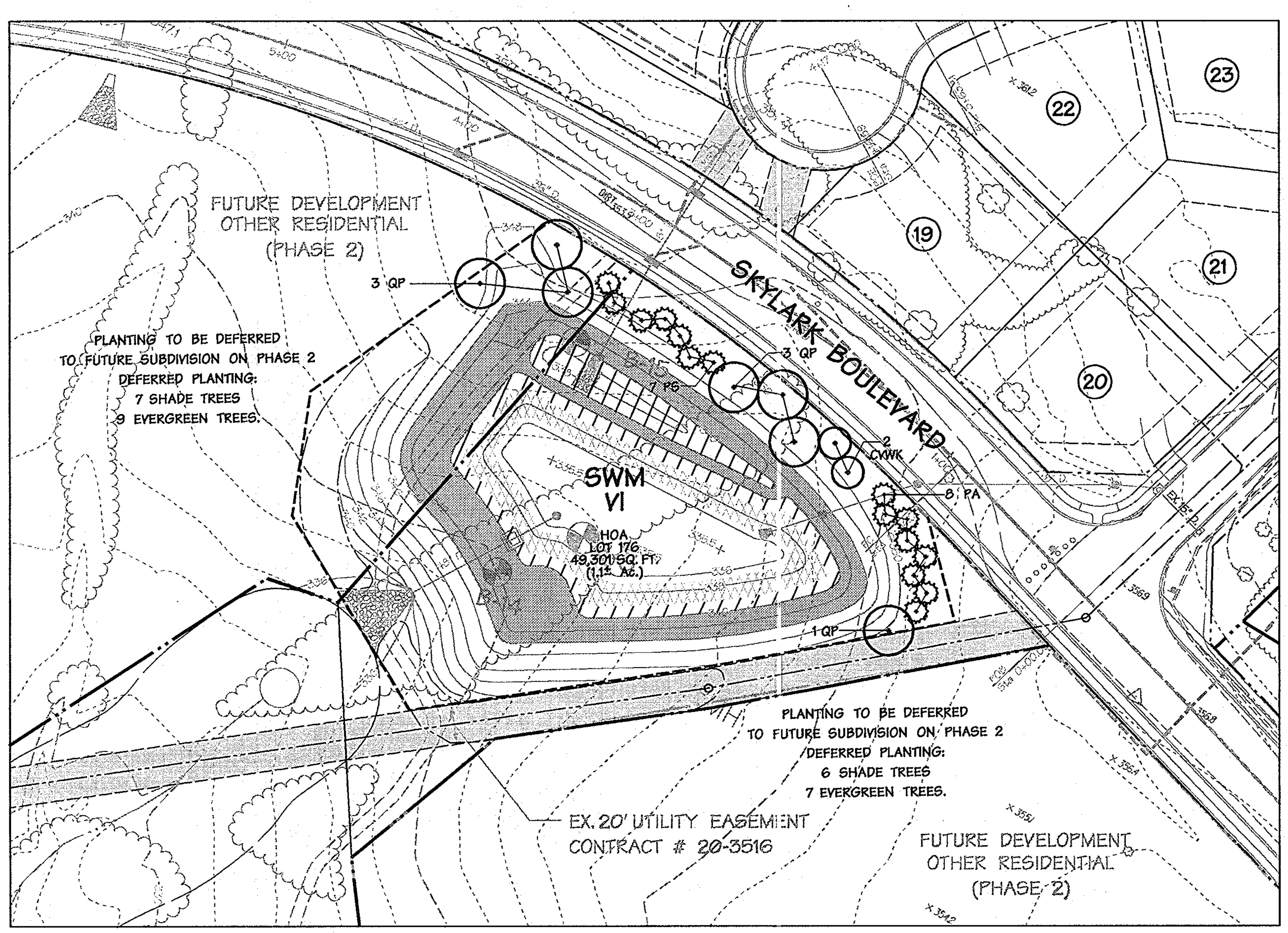
LEGEND

EX. CURB & GUTTER	
EX. MAJOR CONTOURS	400
EX. MINOR CONTOURS	402
PROP. STORM DRAIN	15" RCCP CL. IV
PROP. SEWER	6" S.
PROP. WATER	4" W.
EX. STORM DRAIN	EX. 21" RCP
EX. SEWER	EX. 8" S.
EX. WATER	EX. 8" W.
UTILITY EASEMENTS	
PROPOSED SHADE TREE	
PROPOSED ORNAMENTAL TREE	
PROPOSED EVERGREEN TREE	
ZONE 'A' WATER QUALITY PLANTING	
ZONE 'B' WATER QUALITY PLANTING	
ZONE 'C' WATER QUALITY PLANTING	

SCHEDULE D
STORMWATER MANAGEMENT AREA LANDSCAPING

STORMWATER MANAGEMENT AREA	I	II	VI
LANDSCAPE TYPE "B" (LINEAR FT OF PERIMETER)	N/A	636' LF	558' LF
NUMBER OF TREES REQUIRED SHADE TREES @ 1/50 L.F. EVERGREEN TREES @ 1/40 L.F.		 13 16	 11* 14*
LANDSCAPE TYPE "C" (LINEAR FT OF PERIMETER)	1043' LF	283' LF	298' LF
NUMBER OF TREES REQUIRED SHADE TREES @ 1/40 L.F. EVERGREEN TREES @ 1/20 L.F.	 26 52	 7 14	 8 15
TOTAL NUMBER OF TREES REQUIRED SHADE TREES EVERGREEN TREES	 26 52	 20 30	 19 29
CREDIT FOR EXISTING VEGETATION	N/A		
CREDIT FOR OTHER LANDSCAPING	N/A		
PLANTING DEFERRED UNTIL LATER PHASE	N/A		
NUMBER OF TREES PROVIDED SHADE TREES FLOWERING TREES EVERGREEN TREES	 22 6 54	 8 10 44	 7 2 15

* 11 SHADE TREES AND 14 EVERGREEN TREES WERE DEFERRED TO FUTURE SUBDIVISION ON PHASE 2



STORMWATER MANAGEMENT POND VI

Plant List

QTY	SYM	BOTANICAL NAME/ COMMON NAME	SIZE	REMARKS
SHADE TREES				
8	AR	ACER RUBRUM 'RED SUNSET' RED SUNSET MAPLE	2 1/2" - 3" CAL. 12'-14' HT	B & B FULL HEAD
3	AS	ACER SACCHARUM 'LEGACY' LEGACY SUGAR MAPLE	2 1/2" - 3" CAL. 12'-14' HT	B & B FULL HEAD
8	NS	NYSSA SYLVATICA BLACK GUM	2 1/2" - 3" CAL. 12'-14' HT	B & B FULL HEAD
17	QP	QUERCUS PALUSTRIS PIN OAK	2 1/2" - 3" CAL. 12'-14' HT	B & B FULL HEAD
FLOWERING TREES				
11	CVWK	CRAETEGUS VIRIDIS 'WINTERKING' WINTERKING HAWTHORN	8'-10' HT.	B & B FULL HEAD
7	MZ	MALUS x ZUMI ZUMI CRABAPPLE	8'-10' HT.	B & B FULL HEAD
EVERGREEN TREES				
5	IO	ILEX OPACA AMERICAN HOLLY	6'-8' HT.	B & B
26	PA	PICEA ABIES NORWAY SPRUCE	6'-8' HT.	B & B
27	PN	PINUS NIGRA AUSTRIAN PINE	6'-8' HT.	B & B
53	PS	PINUS STROBUS WHITE PINE	6'-8' HT.	B & B HEAVY / UNSHEARED

NOTE: SEE SHEET 27 FOR PLANTING DETAILS, NOTES AND SPECIFICATIONS

Water Quality Planting Plan**
Facility #6

ZONE "A" (11,300+\- s.f.)

Species	Size	Spacing	Quantity	Remarks
Scirpus tabernaemontanii	quart container*	36"	230	OBL
Lobelia cardinalis	quart container	36"	200	FACW
Asclepias incarnata	quart container	36"	200	OBL
Panicum virgatum	quart container	36"	300	FAC
Saururus cernuus	quart container*	36"	200	OBL
TOTALS			1,130	

ZONE "B" (4,800+\- s.f.)

Species	Size	Spacing	Quantity	Remarks
Sagittaria latifolia	quart container*	36"	130	OBL
Iris versicolor	quart container*	36"	200	OBL
Peltandra virginica	quart container*	36"	150	OBL
TOTALS			480	

ZONE "C" (4,850+\- s.f.)

Species	Size	Spacing	Quantity	Remarks
Nuphar lutea	quart container	72	125	OBL
TOTALS			125	

* Dormant rhizomes of *Scirpus*, *Iris* and *Saururus*, dormant tubers of *Sagittaria*, and 1st year bulbs of *Peltandra* may be substituted if plantings are to be installed during dormant season.

** Alternate species and install in random pattern, distributing each species across the hydrologic gradient of each planting zone. Single species massings to be avoided.

9/25/01
Date

Landscape Architect

APPROVED: HOWARD COUNTY DEPARTMENT OF PUBLIC WORKS.
10-29-01
CHIEF, BUREAU OF HIGHWAYS. MS — DATE

APPROVED: HOWARD COUNTY DEPT. OF PLANNING & ZONING
10/31/01
CHIEF, DEVELOPMENT ENGINEERING DIVISION MK — DATE
11/6/01
CHIEF, DIVISION OF LAND DEVELOPMENT HB — DATE

~~DIRECTOR~~ — ~~DATE~~

Date	No.	Revision Description

EMERSON
FORMERLY KEY PROPERTY
SECTION 2, PHASE 1A

OWNER/DEVELOPER:
THE HOWARD RESEARCH & DEVELOPMENT CORPORATION
10275 Little Patuxent Parkway
Columbia, Maryland 21044

DMW
Daft·McCune·Walker, Inc.
200 East Pennsylvania Avenue
Towson, Maryland 21286
(410) 296-3333
Fax 296-4705

A Team of Land Planners, Landscape Architects, Engineers, Surveyors & Environmental Professionals

SUBDIVISION NAME	SECTION/AREA	LOT/PARCEL #
EMERSON SECTION 2	PHASE IA	P/O P. 837, P. 3, P. 462

PLAT# OR L/F	BLOCK #	ZONE	TAX/ZONE MAP	ELECT. DISTRICT	CENSUS TRACT
L.572, F.430 L.1129, F.48	2, 7, 8, 9, 13, 14, 15, 20 & 21	MXD	47	6 TH	-

WATER CODE	SEWER CODE
-	-

TITLE
LANDSCAPE PLAN
STORMWATER MANAGEMENT PONDS I, II AND VI

Des By	Scale 1"=50'	Proj. No. 95054.F
Drn By BKC	Date 9-26-01	26 of 27
Chk By	Approved	

F-01-136

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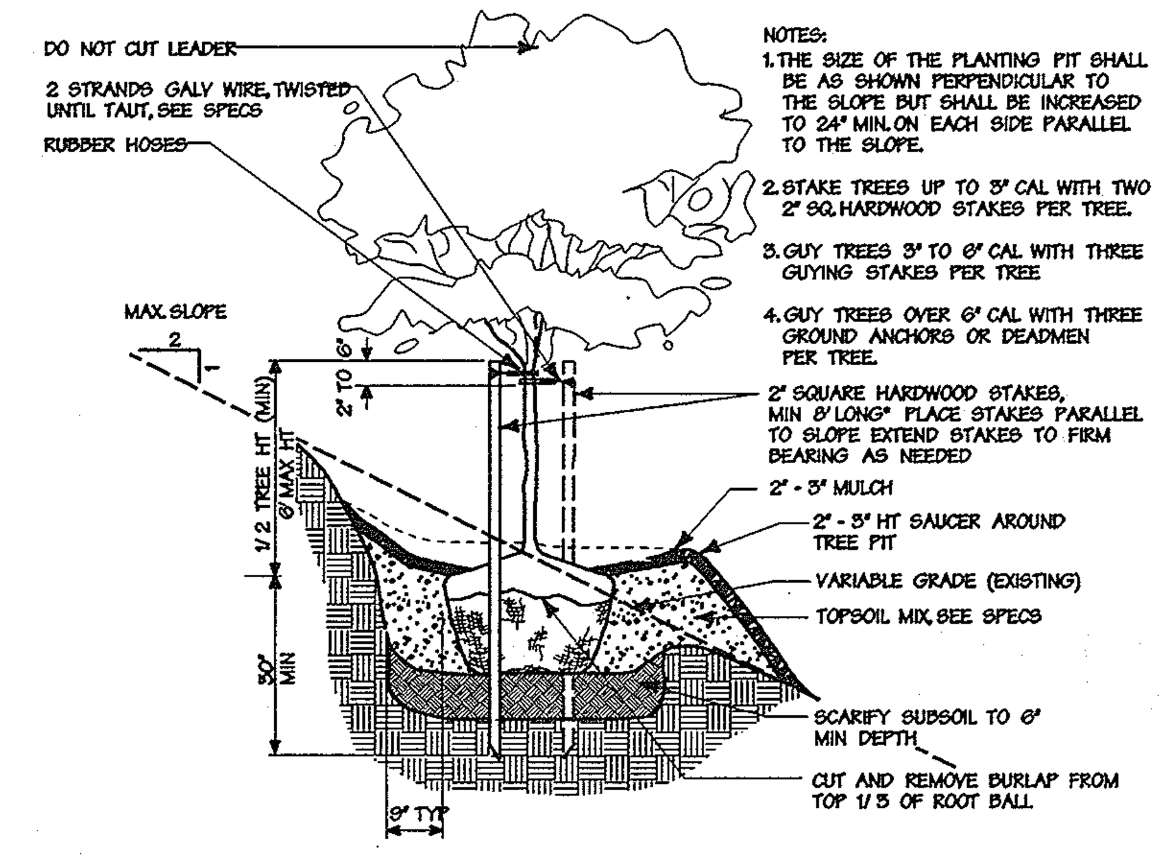
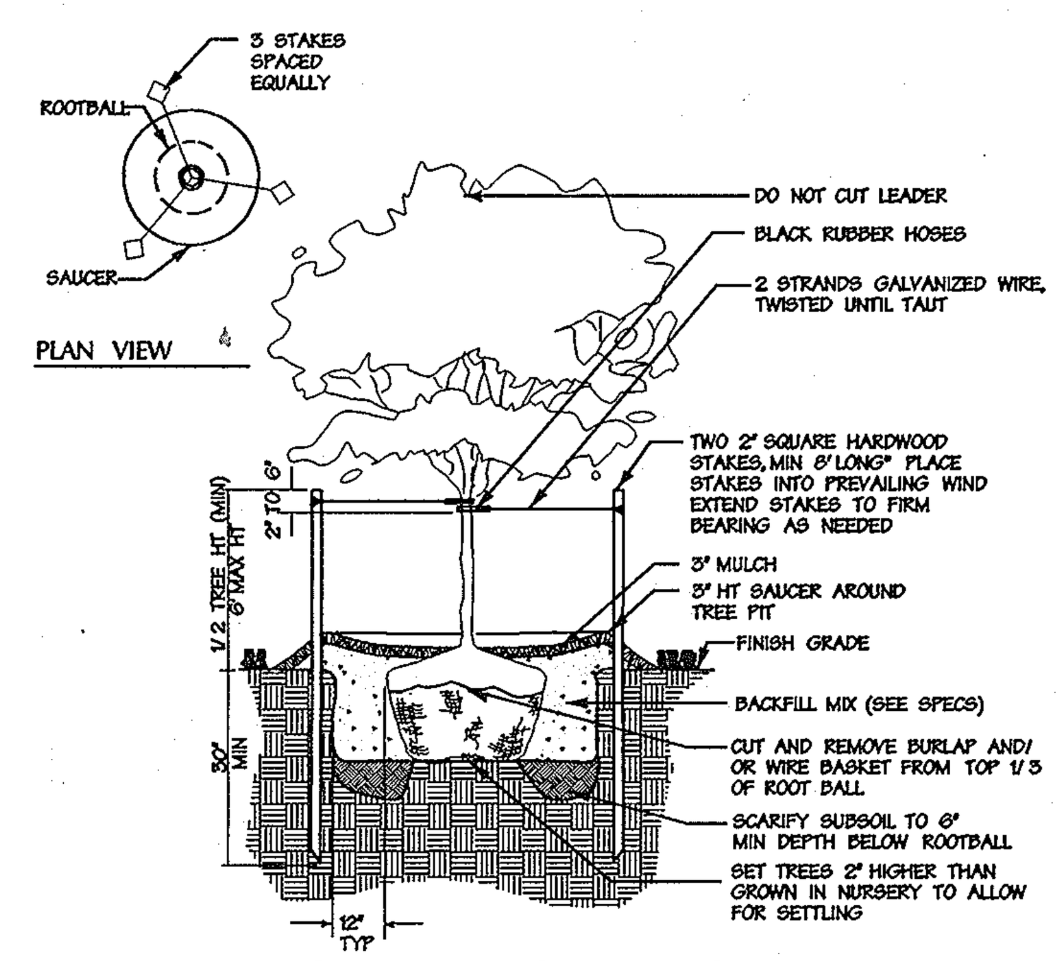


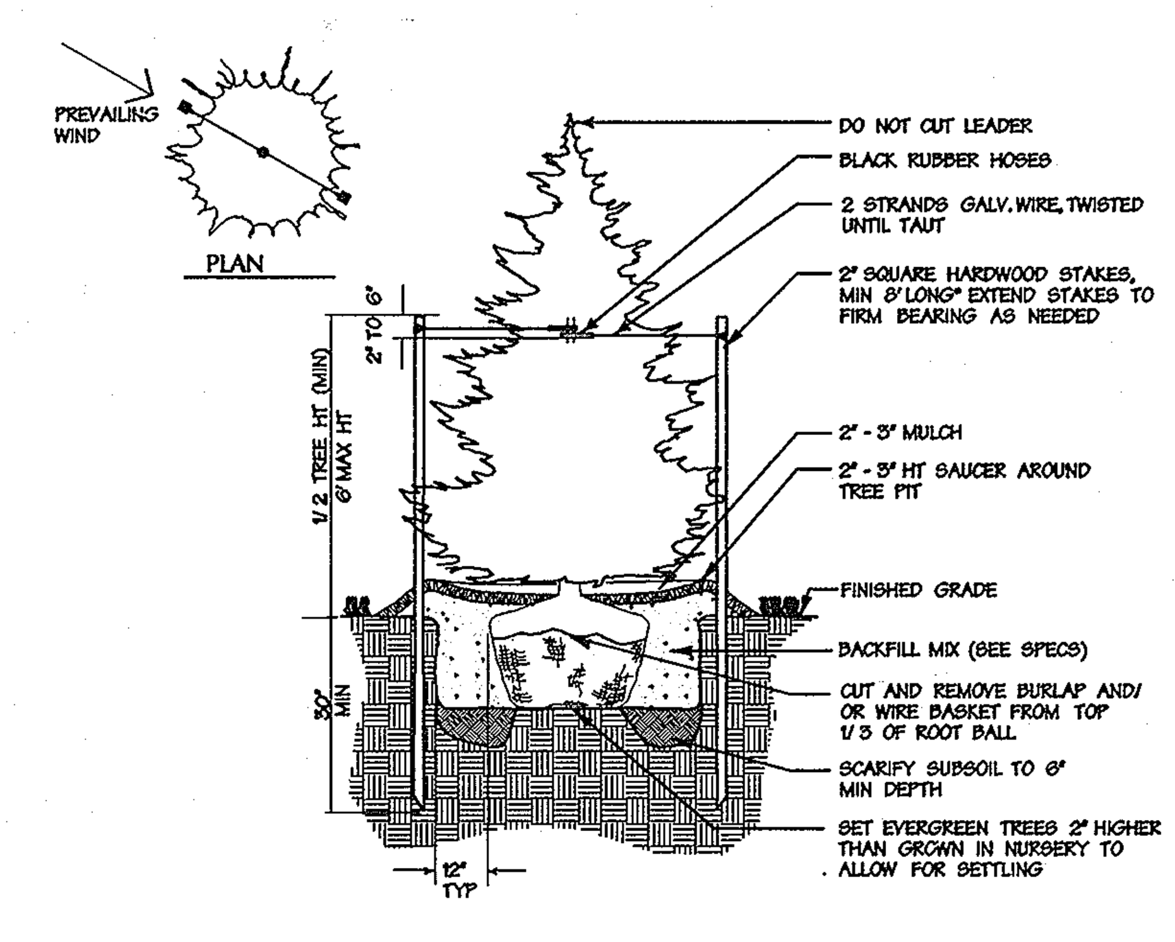
Tree Planting on Slope

Not To Scale



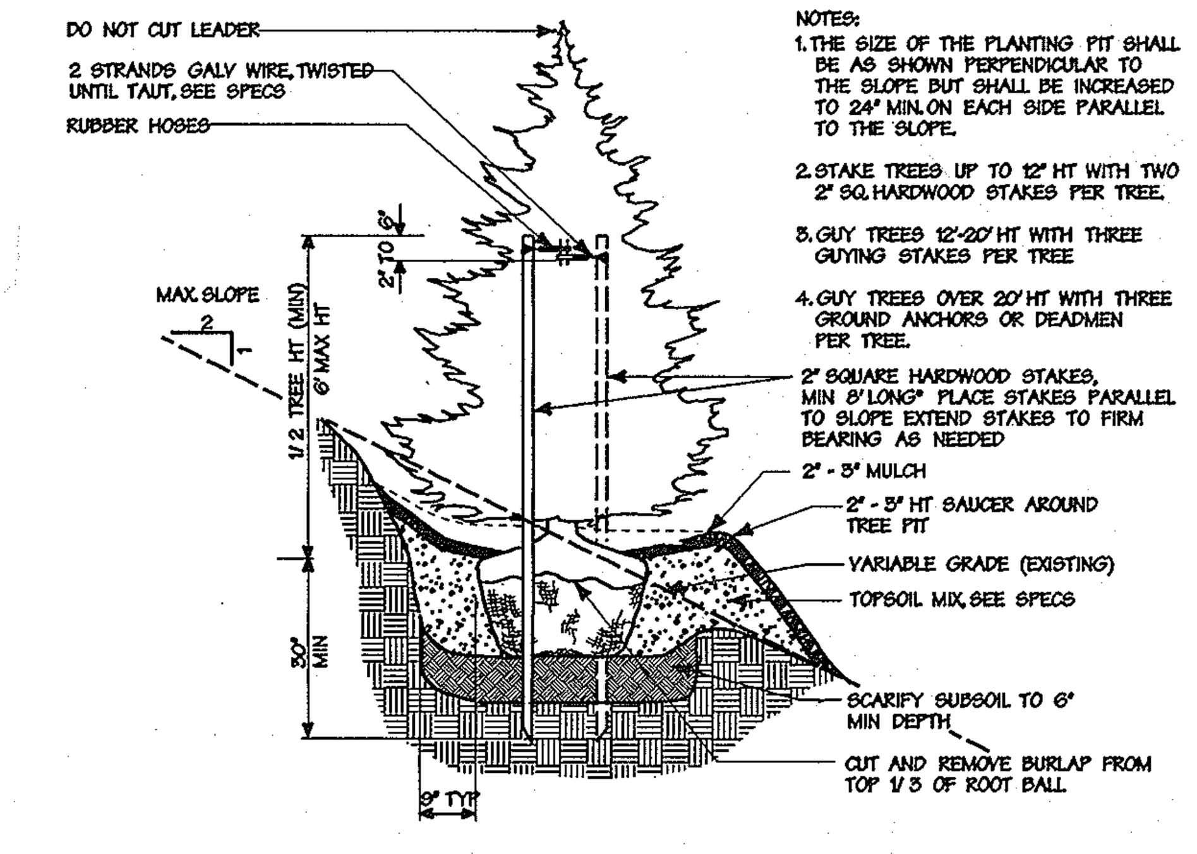
Less Than 3" Cal. Tree Planting

Not To Scale



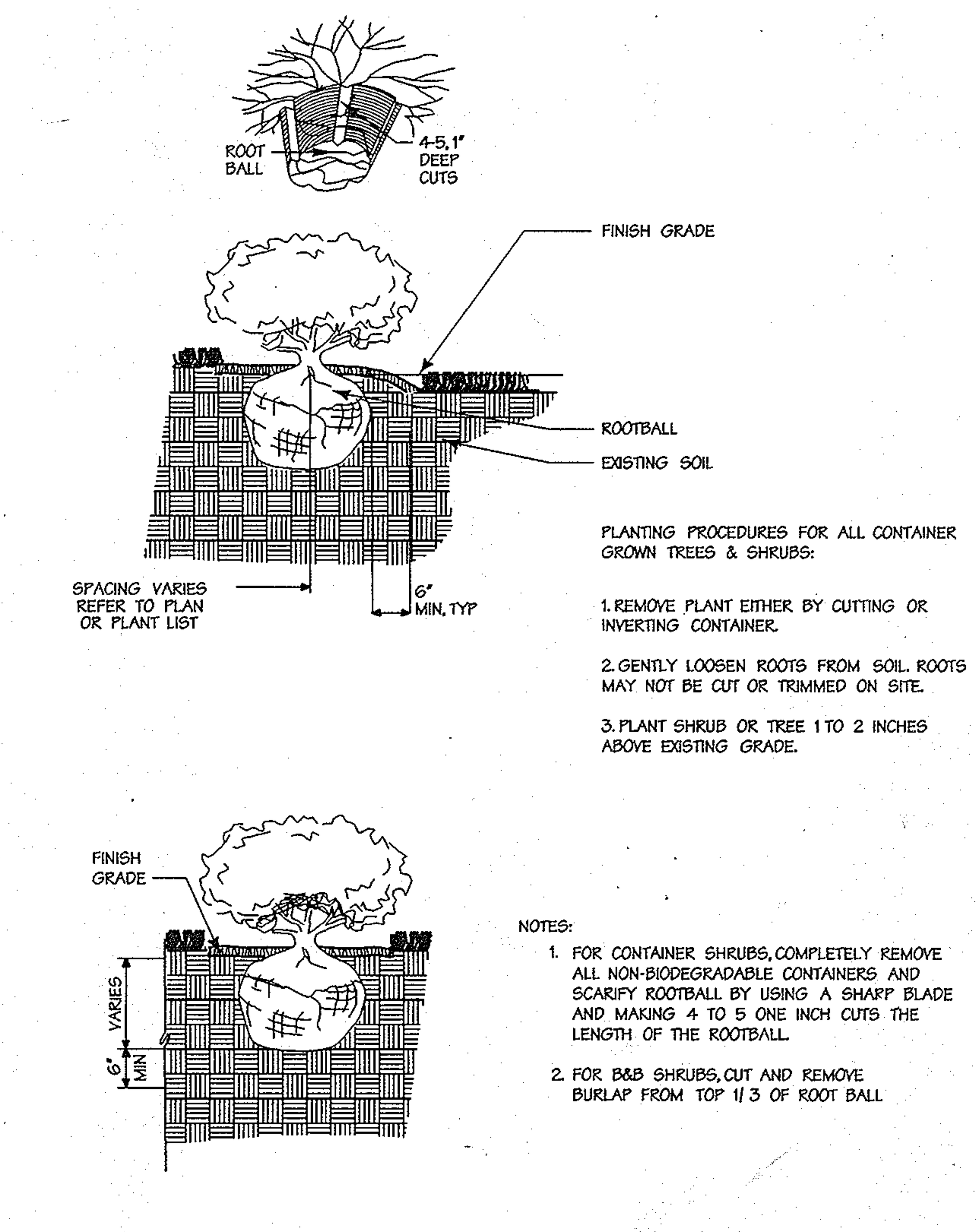
Evergreen Tree Planting

Not To Scale



Evergreen Tree Planting on Slope

Not To Scale



Planting of Container Grown Material

Not To Scale

Landscape Notes

1. The contractor shall review architectural/engineering plans to become thoroughly familiar with grading and surface utilities.

2. All equipment and tools shall be placed so as not to interfere or hinder the pedestrian and vehicular traffic flow. See Seasonal Plant List for planting times of bulbs and seasonal plants.

3. The contractor shall coordinate with lighting and irrigation contractors regarding timing of installation of plant material.

4. The contractor shall insure that his work does not interrupt established or projected drainage patterns.

5. During planting operations, excess waste materials shall be promptly and frequently removed from the site.

6. The contractor is advised of the existence of underground utilities on the site. Their exact location shall be verified in the field with the owner or general contractor prior to the commencement of any digging operations. In the event they are uncovered, the contractor shall be held responsible for all damage to utilities and such damage shall not result in any additional expenses to the owner.

7. If utility lines are encountered in excavation of tree pits, other locations for trees shall be made by the contractor without additional compensation. No changes of location shall be made without approval of the landscape architect.

8. Maintain positive drainage out of planting beds at a minimum 2% slope. All grades, dimensions, and existing conditions shall be verified by the contractor on site before construction begins. Any discrepancies shall be brought to the attention of the landscape architect or owner.

9. Every possible safeguard shall be taken to protect building surfaces, equipment, and furnishing. The contractor shall be responsible for any damage or injury to person or property which may occur as a result of his negligence in the execution of the work.

10. In the event of variation between quantities shown on the plant list and the plans, the plans shall control. In any event, the number of plants shown in the planting schedule is the minimal number of plants to be installed. The contractor is responsible for verifying all plant quantities prior to the commencement of work. All discrepancies shall be reported to the landscape architect for clarification prior to bidding. The contractor shall furnish plant material in sizes as specified in plant list.

11. The contractor shall stake all material located on the site for review and/or adjustment by the landscape architect prior to planting. All locations are to be approved by the landscape architect before excavation.

12. Plants shall conform to current "American Standards for Nursery Stock" by American Association of Nurserymen (AAN) or the Howard County Landscape manual which ever is greater, particularly with regard to size, growth, size of ball, and density of branch structure. Plant material shall be tagged at the source by the landscape architect unless this requirement is specifically waived.

13. All plants (B&B or container) shall be properly identified by weather-proof labels securely attached thereto before delivery to project site. Labels shall identify plants by name, species, and size. Labels shall not be removed until the final inspection by the landscape architect or agent in charge.

14. Any material and/or work may be rejected by the landscape architect if it does not meet the requirements of the specifications. All rejected materials shall be removed from the site by the contractor.

15. No substitutions shall be made without written consent of the owner or landscape architect.

16. The landscape architect or owner shall have the right, at any stage of the operations, to reject any and all work and material which, in his opinion, does not meet the requirements of these plans and specifications.

17. The contractor shall be wholly responsible for stability and conditions of all trees and shrubs and shall be legally liable for any damage caused by instability of any plant materials.

18. All proposed trees to be installed either entirely in or entirely out of planting beds. Planting bed lines are not to be obstructed. Mulch shall have been shredded within the last six months.

19. All planting beds adjacent to lawn, sod, or seeded areas shall be spade edged.

20. Maintenance shall begin after each plant has been installed and shall continue until 90 days after final acceptance by the architect or owner representative. Maintenance includes mowing of turf, watering, pruning, weeding, fertilizing, mulching, replacement of sick or dead plants, and any other care necessary for the proper growth of the plant material. The contractor must be able to provide continued maintenance if requested by the owner.

21. Upon completion of all landscaping, an acceptance of the work shall be held. The contractor shall notify the landscape architect or owner for scheduling the inspection at least seven (7) days prior to the anticipated inspection date.

22. All trees shall be guaranteed for 12 months from the date of acceptance.

23. The contractor is responsible for testing project soils. The contractor is to provide a certified soils report to the owner. The contractor shall verify that the soils on site are acceptable for the proper growth of the proposed plant material. Should the contractor find poor soil conditions, the contractor shall be required to provide soil amendments as necessary. These amendments shall include, but not be limited to, fertilizers, lime, and topsoil. Proper planting soils must be verified prior to planting of materials.

24. PLANTING MIX:

a. Planting mix shall be prepared at approved on-site staging area using approved on-site existing soil. Mix minimum quantities of 20 cubic yards or sufficient mix for entire job if less than 20 cubic yards is required.

b. Thoroughly mixed in the following proportions for tree and shrub planting mix:
.5 cy existing soil
.2 cy sharp sand
.3 cy wood residuals
4.5 lbs treble superphosphate
5 lbs dolmonite limestone (eliminate for acid loving plants)

c. For bed planting, shrubs and groundcover spaces 24 inches or closer, incorporate the following ingredients per 20 sf and incorporate into top 8 inches of existing soils by rototilling or similar method of incorporation.
.2 cy sharp sand
.3 cy organic material
4.5 lbs treble superphosphate
5 lbs dolmonite limestone (eliminate for acid loving plants)

25. The contractor shall dispose of stumps and major roots of all plants to be removed. Any depressions caused by removal operations shall be refilled with fertile, friable soil placed and compacted so as to reestablish proper grade for new planting and/or lawn areas.

26. The contractor shall insure adequate vertical drainage in all plant beds and planters.

27. FINANCIAL SURETY FOR THE REQUIRED LANDSCAPING HAS BEEN POSTED AS PART OF THE DPW DEVELOPERS AGREEMENT IN THE AMOUNT OF $36,150

28. THE OWNER, TENANT, AND/OR THEIR AGENTS SHALL BE RESPONSIBLE FOR MAINTENANCE OF THE REQUIRED LANDSCAPING, INCLUDING BOTH PLANT MATERIALS AND BERMS, FENCES AND WALLS. ALL PLANT MATERIALS SHALL BE MAINTAINED IN GOOD GROWING CONDITION, AND WHEN NECESSARY, REPLACED WITH NEW MATERIALS TO ENSURE CONTINUED COMPLIANCE WITH APPLICABLE REGULATIONS. ALL OTHER REQUIRED LANDSCAPING SHALL BE PERMANENTLY MAINTAINED IN GOOD CONDITION, AND WHEN NECESSARY, REPAIRED OR REPLACED.

DEVELOPER'S BUILDER'S CERTIFICATE

I/WE CERTIFY THAT THE LANDSCAPING SHOWN ON THIS PLAN WILL BE DONE ACCORDING TO THE APPROVED DEVELOPMENT CRITERIA 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 DATE

Water Quality Planting Specifications

PART 1 GENERAL

1.01 DESCRIPTION: Work consists of all labor, materials, equipment and services necessary for and incidental to the execution and completion of WETLAND PLANTS as indicated on the Drawings and specified herein.

A. Include:

1. Furnishing of all plant material.

2. Soil preparation, planting operations.

3. Maintenance and guarantee.

1.02 QUALITY ASSURANCE

A. American Association of Nurserymen (A.A.N.): "American Standard for Nursery Stock", (A.N.S.I. Z60.1) as expanded herein.

B. Nomenclature: In accordance with HORTUS III by L. H. Bailey.

C. United States Department of Agriculture: Textural Classification Diagram for Soils.

1.03 STANDARD OF COMPARISON

A. When the Drawings indicate a total quantity of five (5) or more of an individual plant (other than bulbs or perennials) the Contractor shall obtain approval of a standard of comparison prior to delivery on site. Assemble samples of all plants to be evaluated as "standards" at the principal business location of the Contractor. Notify Owner to schedule an inspection for approval of "standards" and to obtain record photographs. Photographs of each "standard" shall be used for comparison of all material subsequently installed on the site.

1.04 SUBMITTALS

A. Source: Notify the Owner, in writing, of source of all material before delivery.

1.05 DELIVERY, STORAGE AND HANDLING

A. Root stock of the plant material shall be kept moist during transport from the source to the job site and until planted.

B. Transport and handle plants so that foliage, roots, or balls are protected from breakage, sun and winds. Tops or roots of plants allowed to dry out or which have been damaged or disturbed root balls will be cause for rejection.

1.06 DRAWINGS

A. The Contractor shall use quantities of wetland plants noted on the plant list.

1.07 PROJECT CONDITIONS

A. Planting shall commence following approval of the as-built certification of the subject water quality facility.

B. All emergent wetland plantings shall be installed between April 15 and June 30 or as directed by the Landscape Architect. Do not plant when ground is frozen. Do not use frozen planting soil at any time.

1.08 DEFINITIONS

A. Start of Planting: Installation of plant material into excavated pits or beds.

B. Payment Release Inspection: Conducted monthly by the Owner or designated representative to verify quantity only for partial payment to the Contractor. Payment release inspection does not waive any requirements of the standard of comparison or initial acceptance clause.

C. Initial Inspection: Conducted at the request of the Contractor and the Owner when 90% or more of all planting and related tasks are complete.

D. Initial Acceptance: Occurs when all plant material is in place in accordance with the specifications and approved by the Owner.

E. Maintenance Period: From start of planting to final acceptance.

F. Guarantee Period: From initial acceptance and continuing for 90 days thereafter, excluding the period from November 1 to April 15.

G. Final Acceptance: Occurs after Contractor has completed all outstanding items, as determined by the Owner, at the end of the maintenance and guarantee period.

1.09 GUARANTEE AND REPLACEMENT

A. All plants in an impaired, dead or dying condition prior to initial acceptance and prior to final acceptance shall be removed and replaced. Replacement materials shall be the same size as other unreplaced material considering growth that has occurred since original installation. Methods of installation shall be identical to the original. The contractor shall guarantee 85% survivorship at the end of the guarantee period.

B. Replacements shall be made between April 15 and June 30, the season following the initial planting, and shall conform to the planting specifications listed above.

C. The contractor shall notify the Landscape Architect to arrange a site meeting to determine the replacement requirements, at the end of the guarantee period.

PART 2 PRODUCTS

2.01 PLANTS

A. Sound, healthy, vigorous, free from plant diseases, insect pests or their eggs.

B. Plants cut back from larger sizes or pruned prior to delivery will not be accepted.

C. It is anticipated that these plants will need to be obtained from a nursery source. These plant species are normally unavailable from standard landscape nursery sources.

D. Shape and Form: Plant materials shall be symmetrical and typical for the variety and species.

E. Container: The soil/root masses shall be thoroughly moist upon delivery to the job site. Any dry and light weight plants shall be rejected. If not planted immediately after being delivered to the job site, the plants shall be stored out of direct exposure to the sun and wind and their root masses maintained moist, through periodic watering, until the time of planting.

Until the removal of the plants from the containers, the soil/root masses shall be the size of the specified container size. If the soil/root masses are substantially smaller than the specified container size and loose soil exists on the bottom of the containers, the plants will be rejected since they have not been grown sufficiently long in the containers to root into the soils contained therein.

The plants shall appear healthy with no leaf spots, leaf damage, leaf discolorations, leaf wilting, or evidence of insects on the leaves.

The container size shall be at least as large as indicated in the specifications or shown in the plant tables/lists. Plants shall not be rejected if supplied in containers larger than specified.

F. Fiber or Peat Pot: If not planted immediately after being delivered to the job site, the plants shall be stored out of direct exposure to the sun and wind and their pots and associated root masses maintained moist, through periodic watering, until the time of planting.

The plants shall be well-rooted through the sides and bottoms of the pots and firmly contained therein.

Should the plants be removed from the pots by holding them from their tops and gently pulling on the pots, the plants shall be rejected.

If growing, the plants shall appear healthy with no foliar spots, discolorations, wilting, or other evidence of the presence of disease or insects.

The pot size shall be at least as large as indicated in the specifications or shown in the plant tables/lists. Plants shall not be rejected if supplied in pots larger than specified.

The number of plants, stems, or culms per pot as specified or shown in the plant tables/lists at least shall be present, on the average, or the plants shall be rejected.

G. Dormant Propagule (Herbaceous): If not planted immediately after being delivered to the job site, the dormant propagules shall be stored out of the direct exposure to the sun and wind, and they shall be protected by covering with straw, peat moss, compost, or other suitable materials and shall be maintained moist, through periodic watering, until the time of planting.

The bodies and shoots associated with the propagules shall have turgor or be rigid to the touch. If the bodies and/or shoots associated with the propagules are soft or mushy or appear rotten or decomposed, the plant materials shall be rejected.

Rhizome (stolon) sections shall provide a minimum of two shoots per section or Rhizome (stolon) sections containing at least a terminal shoot shall be a minimum of four inches in length (in order to ensure sufficient stored energy to support the new growth). Rhizome sections containing shoots that are soft or mushy or otherwise appear rotten shall not be accepted.

Suckers shall contain a terminal shoot and be a minimum of four inches in length (in order to ensure sufficient stored energy to support the new growth).

Growing Bare Root Plant (Herbaceous): The plants shall contain new roots that are clean and white in coloration.

If not planted immediately after delivery to the job site, the plants shall be stored out of direct exposure to the sun and wind and the new roots shall be protected by the use of straw, peat moss, compost, or other suitable materials and shall be maintained moist, through periodic watering, until the time of planting.

The plants shall appear healthy with no foliar spots, discolorations, wilting, or other evidence of the presence of disease or of insects.

2.02 FERTILIZER

A. Plant Fertilizer: Slow release fertilizer such as Osmocote 19-6-12 analysis (3-4 month release) or equal approved by the Landscape Architect.

B. Slow release fertilizer shall be applied at the time of planting and at the following rate:

All emergent plant material - planting pit application of 1 oz. per container or bare root plant.

C. Pesticides, herbicides and fungicides will not be used unless judged necessary by the wetland landscaper. If applied, quantities recommended by the Department of Agriculture shall not be exceeded.

D. Fertilizer shall be delivered to the site in the original unopened containers with formulas attached.

PART 3 EXECUTION

3.01 PREPARATION

A. Plant Locations: As shown on the Drawings, to dimensions if shown, to scale if not dimensioned. Locations subject to review by the Landscape Architect before starting excavation.

B. No plant material shall be installed until the Landscape Architect has approved the finish grade of the planted areas.

3.02 PLANTING PROCEDURES

A. Set plants straight and plumb.

B. Plant material shall be planted in existing soil with each planting pit excavated to size sufficient to contain the entire root stock or root mass without cramping.

C. Where water is not available on-site, the Contractor shall furnish sufficient quantities to complete the Work at no additional cost to the Owner.

3.04 CLEAN-UP

A. During planting operations, excess and waste materials shall be removed from the site on a daily basis.

B. Repair turf areas and other existing conditions damaged during planting operations, including regrading, seed, mulch and fertilization to the satisfaction of the Owner.

3.05 MAINTENANCE

A. Watering of plant material shall take place at the end of each for fourteen (14) consecutive days after planting has been completed. The watering shall completely saturate the soil and partially immerse the plant material.

B. During maintenance period, on approximately the 1st and 15th of each month, the Contractor shall provide sufficient supervision, equipment, materials and manpower to:

1. Keep all plants in a healthy growing condition by watering, when necessary, removing dead or dying branches, controlling insect infestations, removing sprouts, weeding.

2. Remove and replace dead or damaged plant material. Where replacement is not possible due to season, remove dead material, etc. and level pit until planting is possible.

B. Notify Owner for review of activities prior to initiating maintenance operations each month.

APPROVED: HOWARD COUNTY DEPARTMENT OF PUBLIC WORKS.

[signature] 10-29-01
CHIEF BUREAU OF HIGHWAYS. MS — DATE

APPROVED: HOWARD COUNTY DEPT. OF PLANNING & ZONING

[signature] 10/31/01
CHIEF, DEVELOPMENT ENGINEERING DIVISION MK — DATE

[signature] 11/6/01
CHIEF, DIVISION OF LAND DEVELOPMENT HB — DATE

~~DIRECTOR~~ ~~DATE~~

Date	No.	Revision Description

EMERSON

FORMERLY KEY PROPERTY
SECTION 2, PHASE 1A

OWNER/DEVELOPER:

THE HOWARD RESEARCH & DEVELOPMENT CORPORATION
10275 Little Patuxent Parkway
Columbia, Maryland 21044

DMW
Daft·McCune·Walker, Inc.
200 East Pennsylvania Avenue
Towson, Maryland 21286
(410) 296-3333
Fax 296-4705

A Team of Land Planners, Landscape Architects, Engineers, Surveyors & Environmental Professionals

SUBDIVISION NAME		SECTION/AREA		LOT/PARCEL #
EMERSON SECTION 2		PHASE IA		P/O P.837, P.3, P.462
PLAT # OR L/F: L.572, F.430 L.1129, F.48	BLOCK #: 2,7,8,9,13, 14,15,20 & 21	ZONE: MXD	TAX/ZONE MAP: 47	ELECT. DISTRICT: 6 TH / CENSUS TRACT: -
WATER CODE: -		SEWER CODE: -		

TITLE

LANDSCAPE DETAILS
STORMWATER MANAGEMENT PONDS I, II AND VI

Des By	Scale 1"=50'	Proj. No. 95054.F
Dm By BKC	Date 9-26-01	27 of 27
Chk By	Approved	

9/26/01
Date

[signature]
Landscape Architect

F-01-136

Tue Sep 25 16:03:19 2001n:\95054\final\95054f.lp2