FINAL PLAN
EMERSON
SECTION 2, PHASE 1-B

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. 23G4 and 23G5 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
Tax Map: 47

Lot/Parcel: P/O: P.837, P.3, P.462
Zoning: MXD
Election District: 6th
Total Tract Area: 97.797 acres
Section 2, Phase 1-B
Preliminary Plan Approval Date : 11-21-00
Total number of HOA & COA lots: 10
File Numbers: 2B-979M, PB-339, S-99-12, P00-15

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

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

14. Development of EMERSON Section 2 Phase 1A & 1B, requires clearing 7.93±AC of Forest and Requires 0.61AC of Reforestation 5.03±AC of Reforestation are being provided per this plan; 4.42±Ac of Reforestation will offset Reforestation Obligations for future phases of Development.

NOTE: ALL FILL AREAS ARE TO BE COMPACTED TO 95% PER AASHTO T-180.

OPERATION AND MAINTENANCE SCHEDULE FOR PRIVATELY OWNED AND MAINTAINED STORMWATER PONDS

ROUTINE MAINTENANCE:

1. FACILITY SHALL BE INSPECTED ANNUALLY AND AFTER MAJOR STORMS, INSPECTIONS SHALL BE PERFORMED DURING WET WEATHER TO DETERMINE IF THE POND IS FUNCTIONING PROPERLY.
2. TOP AND SIDE SLOPES OF THE EMBANKMENT SHALL BE MOWED A MINIMUM OF TWO (2) TIMES PER YEAR, ONCE IN JUNE AND ONCE IN SEPTEMBER. OTHER SIDE SLOPES AND MAINTENANCE ACCESS SHALL BE MOWED AS NEEDED.
3. DEBRIS AND LITTER SHALL BE REMOVED DURING REGULAR MOWING OPERATIONS AND AS NEEDED.
4. VISIBLE SIGNS OF EROSION IN THE POND AS WELL AS THE RIP-RAP OR GABION OUTLET AREA SHALL BE REPAIRED AS SOON AS IT IS NOTICED.

NON-ROUTINE MAINTENANCE:

1. STRUCTURAL COMPONENTS OF THE POND SUCH AS THE DAM, THE RISER AND THE PIPES SHALL BE REPAIRED UPON THE DETECTION OF ANY DAMAGE. THE COMPONENTS SHALL BE INSPECTED DURING ROUTINE MAINTENANCE OPERATIONS.
2. SEDIMENT SHALL BE REMOVED FROM THE POND AND FOREBAY NO LATER THAN WHEN THE CAPACITY OF THE POND OR FOREBAY IS HALF FULL OF SEDIMENT OR WHEN DEEMED NECESSARY FOR AESTHETIC REASONS. UPON APPROVAL FROM THE DEPARTMENT OF PUBLIC WORKS.

VICINITY MAP

SCALE: 1"=500'

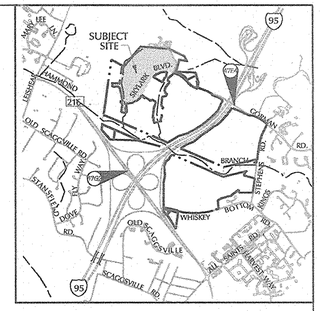
BENCHMARK

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: 4118539279
ELEVATION: 364.210ft.



SHEET INDEX

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5	ROAD CONSTRUCTION PLAN
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13	STORM DRAIN PROFILES
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23	STORMWATER MANAGEMENT DETAILS - SWM III
24	STORMWATER MANAGEMENT PLAN SWM IV
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26	STORMWATER MANAGEMENT DETAILS - SWM V
27	SWM GENERAL DETAILS & SPECIFICATIONS
28	SOIL BORINGS
29	LANDSCAPING PLAN
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37	FOREST CONSERVATION PLAN
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APPROVED: HOWARD COUNTY DEPT. OF PUBLIC WORKS

CHIEF, BUREAU OF HIGHWAYS — DATE 12-19-01

APPROVED: HOWARD COUNTY DEPT. OF PLANNING & ZONING

CHIEF, DEVELOPMENT ENGINEERING DIVISION MK — DATE 12/24/01

CHIEF, DIVISION OF LAND DEVELOPMENT HB — DATE 12/27/01

DIRECTOR — DATE

Date	No.	Revision Description

EMERSON
FORMERLY KEY PROPERTY
SECTION 2, PHASE 1B

OWNER/DEVELOPER:

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

DMW
Dait-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 1B	P/O P. 837, P. 3, P. 462

PLAT# OR L/F	BLOCK, E & R.D.	ZONE	TAX/ZONE MAP	ELECT. DISTRICT	CENSUS TRACT
1,2(SU) 430 1,2(SU) 432	4, 7 & 8 (U) 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		Date	11-7-01		1 of 38
Chk By		Approved			

11/07/01
Date

Professional Engr. No. 10557

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

ROAD & STORM DRAIN AS-BUILT

F-01-137

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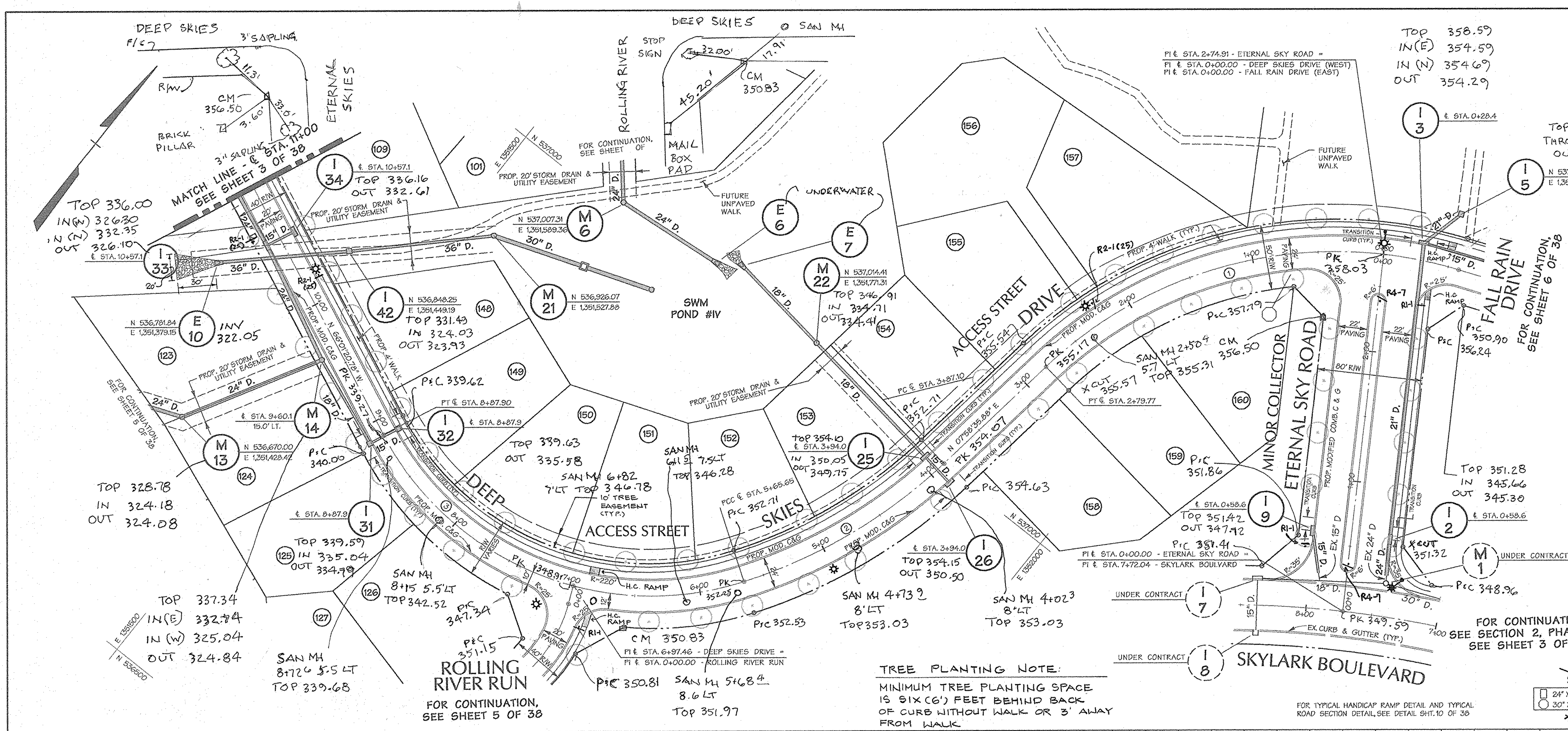

CURVE DATA

NUMBER	DELTA	RADIUS	LENGTH	TANGENT	CHORD	
1	50°05'34"	320.00'	279.77'	149.53'	S 33°01'23" W	270.95'
2	25°43'26"	397.67'	178.54'	90.80'	S 20°50'22" W	177.05'
3	80°16'35"	230.0'	322.25'	193.94'	S 73°50'22" W	296.53'

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

ROAD & STORM DRAIN AS-BUILT

STREET LIGHT LEGEND

- 250 WATT HPS VAPOR
- 150 WATT HPS VAPOR PENDANT
- 100 WATT HPS VAPOR 'PREMIER COLONIAL' POST TOP
- 150 WATT HPS VAPOR "PREMIER COLONIAL" P.T.

STREET LIGHT TABLE

DWG. No.	STREET NAME	STATION	OFF-SET	FIXTURE / POLE TYPE	COMMENTS
	ETERNAL SKY ROAD	0+32	40' RT		
	DEEP SKIES DRIVE	2+35 4+92	15' RT 15' LT		
	DEEP SKIES DRIVE	7+17 10+25	21' LT. 13' RT.		
	DEEP SKIES DRIVE	0+05	15' RT		

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

11/07/01
Date

Professional Engr. No. 10551

APPROVED: HOWARD COUNTY DEPT. OF PUBLIC WORKS
CHIEF, BUREAU OF HIGHWAYS — DATE 12-19-01

APPROVED: HOWARD COUNTY DEPT. OF PLANNING & ZONING
CHIEF, DEVELOPMENT ENGINEERING DIVISION MK — DATE 12/24/01
CHIEF, DIVISION OF LAND DEVELOPMENT — DATE 12/27/01
~~DIRECTOR~~ — ~~DATE~~

Date	No.	Revision Description

EMERSON
FORMERLY KEY PROPERTY
SECTION 2, PHASE 1B

OWNER/DEVELOPER:
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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 I	P10 P. 837, P. 3, P. 462

PLAT# OR L/F	BLOCK #	ZONE	TAXZONE 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
DEEP SKIES DRIVE

Des By	MAT/JDC	Scale	1"=50'	Proj. No.	95054.F
Drn By	WHJ/KMF	Date	11-7-01		2 of 38
Chk By		Approved			

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

F-01-137

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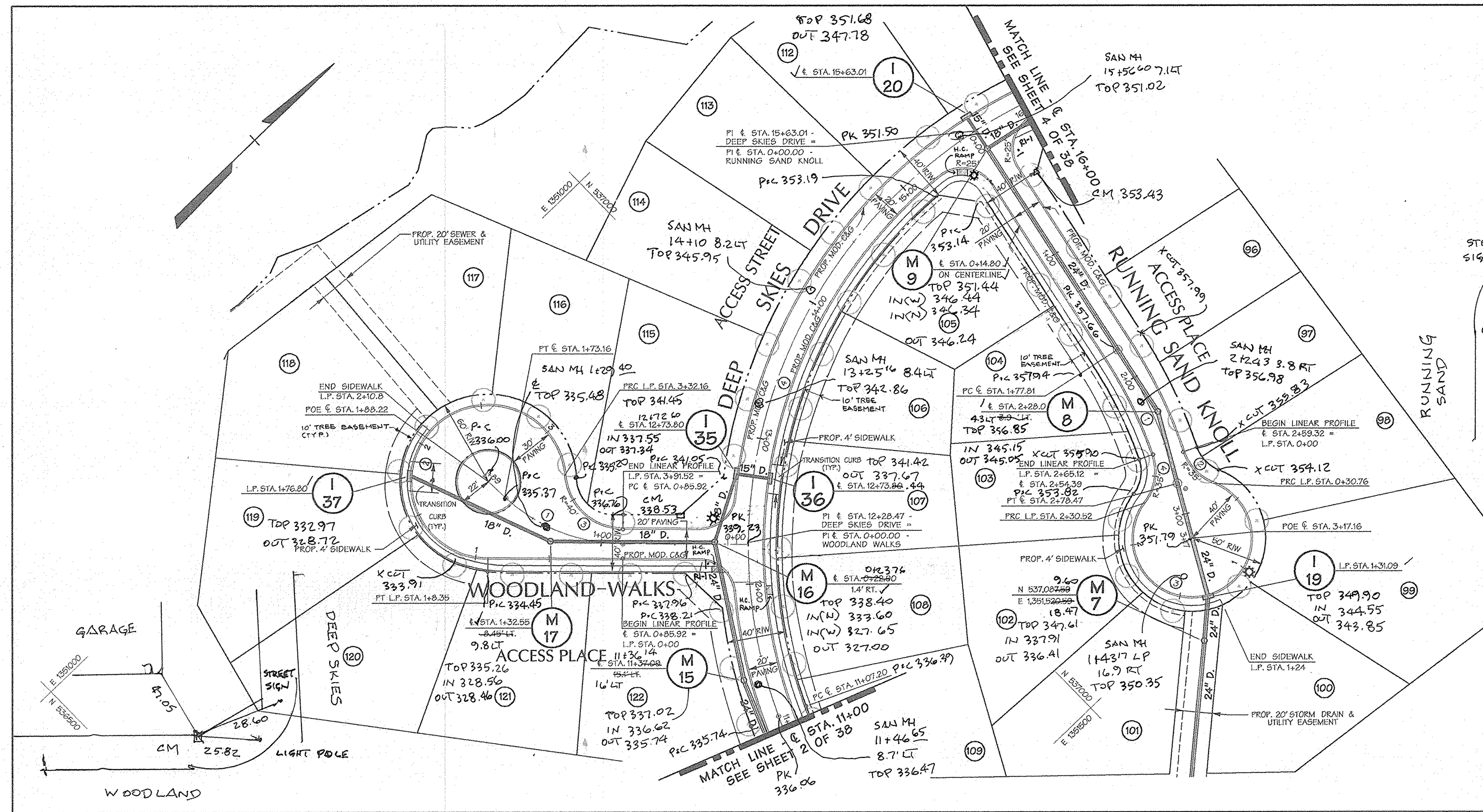
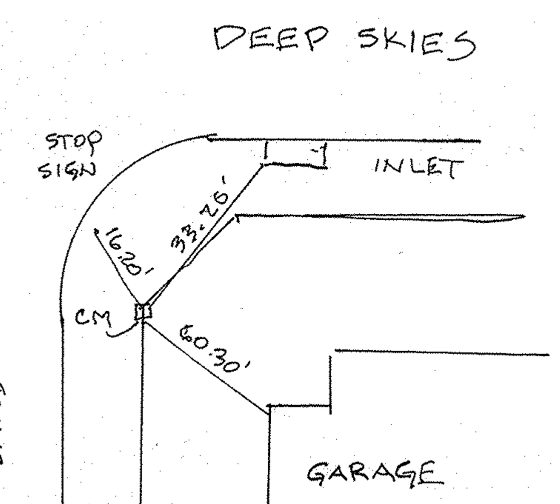


CURVE DATA

ROAD	NUMBER	DELTA	RADIUS	LENGTH	TANGENT	CHORD	
DEEP SKIES DRIVE	4	85°23'20"	338.0'	503.73'	311.84'	N 23°19'41" W	458.39'
WOODLAND WALKS	1	42°30'57"	117.83'	87.44'	45.84'	S 65°34'13" W	85.45'
	2		52.00'	240.52'		N 03°10'54" W	76.67'
	3	85°00'41"	40.00'	59.35'	36.66'	N 86°49'06" E	54.05'
RUNNING SAND KNOLL	1	17°44'48"	325.00'	100.67'	50.74'	S 69°52'55" E	100.26'
	2	50°21'52"	35.00'	30.77'	16.46'	S 89°34'03" E	29.79'
	3		40.00'	199.76'		S 28°19'02" W	48.07'
	4	56°38'20"	35.00'	34.60'	18.86'	N 36°56'07" W	33.21'



STREET LIGHT LEGEND

SEE SHT. 2 OF 38

STREET LIGHT TABLE

DWG. No.	STREET NAME	STATION	OFF-SET	FIXTURE / POLE TYPE	COMMENTS
	RUNNING SAND KNOLL	LP 1+00	3' BACK		
	DEEP SKIES DRIVE	12+44 15+41	24' LT 19' RT		

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

ROAD & STORM DRAIN AS-BUILT

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

FOR TYPICAL HANDICAP RAMP DETAIL AND TYPICAL ROAD SECTION DETAIL, SEE DETAIL SHT. 10 OF 38
FOR TREE PLANTING NOTE, SEE SHT. 2 OF 38

11/07/01
Date

Professional Engr. No. 10557

APPROVED: HOWARD COUNTY DEPT. OF PUBLIC WORKS
CHIEF, BUREAU OF HIGHWAYS — DATE 12-19-01

APPROVED: HOWARD COUNTY DEPT. OF PLANNING & ZONING
CHIEF, DEVELOPMENT ENGINEERING DIVISION MK — DATE 12/21/01
CHIEF, DIVISION OF LAND DEVELOPMENT — DATE 12/27/01
~~DIRECTOR~~ — ~~DATE~~

Date	No.	Revision Description

EMERSON
FORMERLY KEY PROPERTY
SECTION 2, PHASE 1B

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

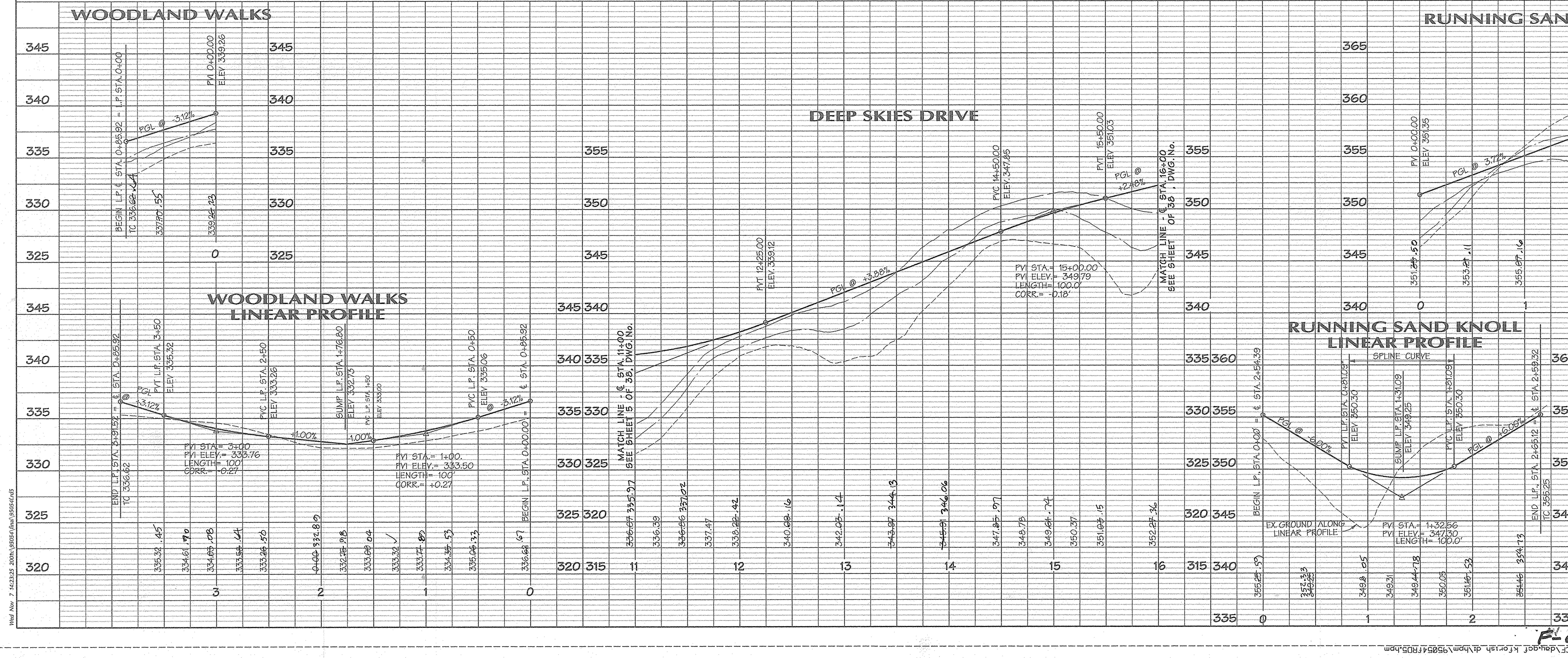
DMW
Daft-McCune-Walker, Inc.
200 East Pennsylvania Avenue
Towson, Maryland 21286
(410) 296-3333
Fax 296-4705

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: 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 PLAN
DEEP SKIES DRIVE, WOODLAND WALKS AND RUNNING SAND KNOLL

Des By	MAT/JDC	Scale	1"=50'	Proj. No.	95054.F
Drn By	WHJ/KMF	Date	11-7-01		3 of 38
Chk By		Approved			



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

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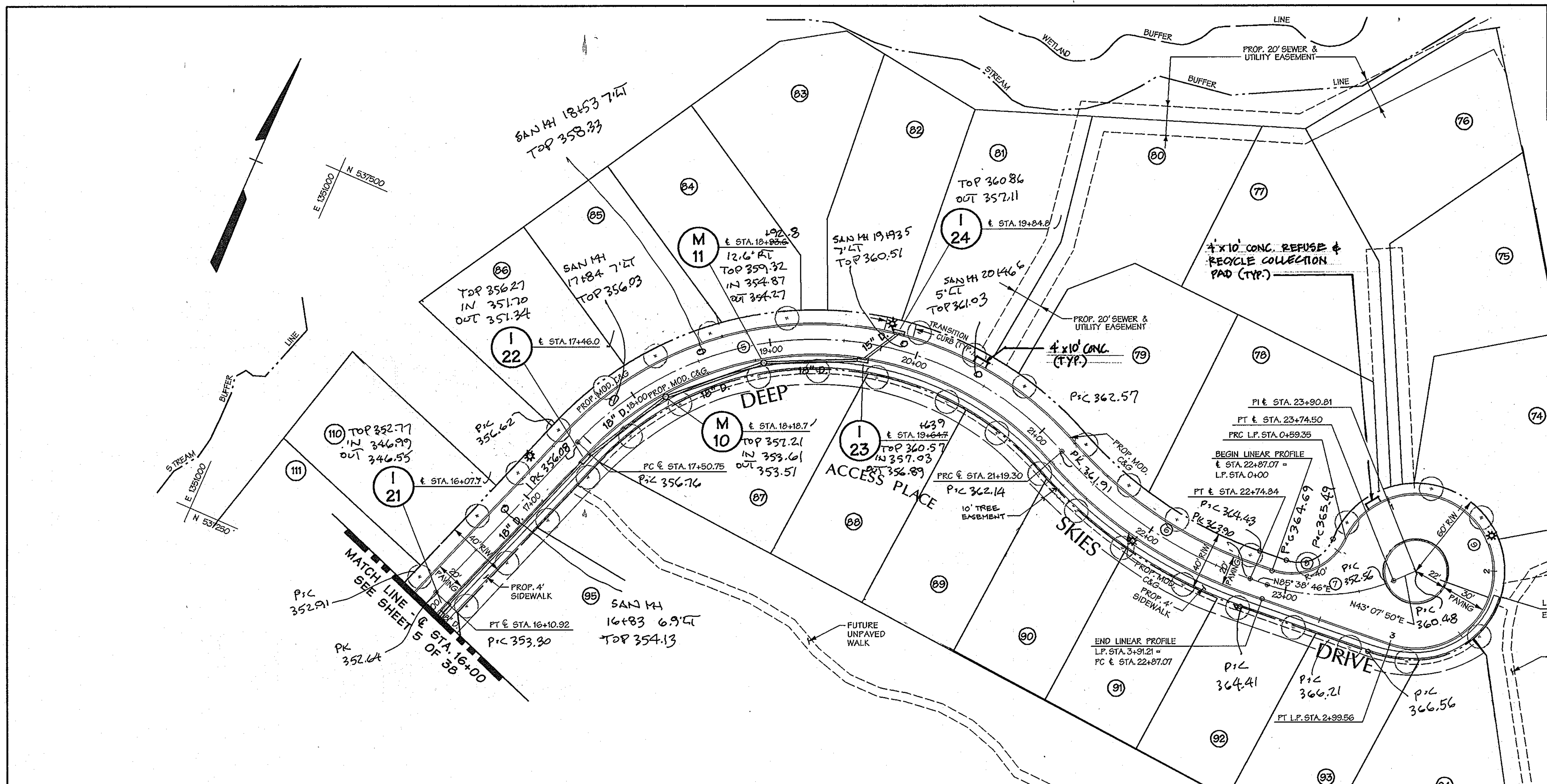

FOR TYPICAL HANDICAP RAMP DETAIL AND TYPICAL ROAD SECTION DETAIL, SEE DETAIL SHT. 10 OF 38
FOR TREE PLANTING NOTE, SEE SHT. 2 OF 38

CURVE DATA						
NUMBER	DELTA	RADIUS	LENGTH	TANGENT	CHORD	
5	95°59'06"	220.0'	368.56'	244.27'	N 67°21'32" E	326.95'
6	29°42'18"	300.0'	155.54'	79.56'	S 79°30'04" E	153.80'
7	42°30'57"	117.83'	87.44'	45.84'	N 64°23'18" E	85.45'
8	85°00'41"	40.00'	59.35'	36.66'	N 43°08'26" E	54.05'
9		52.00'	240.52'		S 46°51'34" E	76.67'

APPROVED: HOWARD COUNTY DEPT. OF PUBLIC WORKS
CHIEF, BUREAU OF HIGHWAYS — DATE 12-19-01

APPROVED: HOWARD COUNTY DEPT. OF PLANNING & ZONING
CHIEF, DEVELOPMENT ENGINEERING DIVISION MK — DATE 12/24/01
CHIEF, DIVISION OF LAND DEVELOPMENT — DATE 12/27/01
DIRECTOR — DATE

Date	No.	Revision Description

STREET LIGHT LEGEND

SEE SHEET 2 OF 38

STREET LIGHT TABLE

DWG. No.	STREET NAME	STATION	OFF-SET	FIXTURE / POLE TYPE	COMMENTS
	DEEP SKIES DRIVE	17+22 19+78	23' LT 13' LT		
	DEEP SKIES DRIVE	21+91 LP 2+13	13' RT 3' BACK		

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

ROAD & STORM DRAIN AS-BUILT

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

11/07/01
Date
Professional Engr. No. 10551

EMERSON
FORMERLY KEY PROPERTY
SECTION 2, PHASE 1B

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
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Fax 296-4705
A Team of Land Planners, Landscape Architects, Engineers, Surveyors & Environmental Professionals

SUBDIVISION NAME	SECTION/AREA	LOT/PARCEL #
EMERSON SECTION 2	PHASE 1	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	-

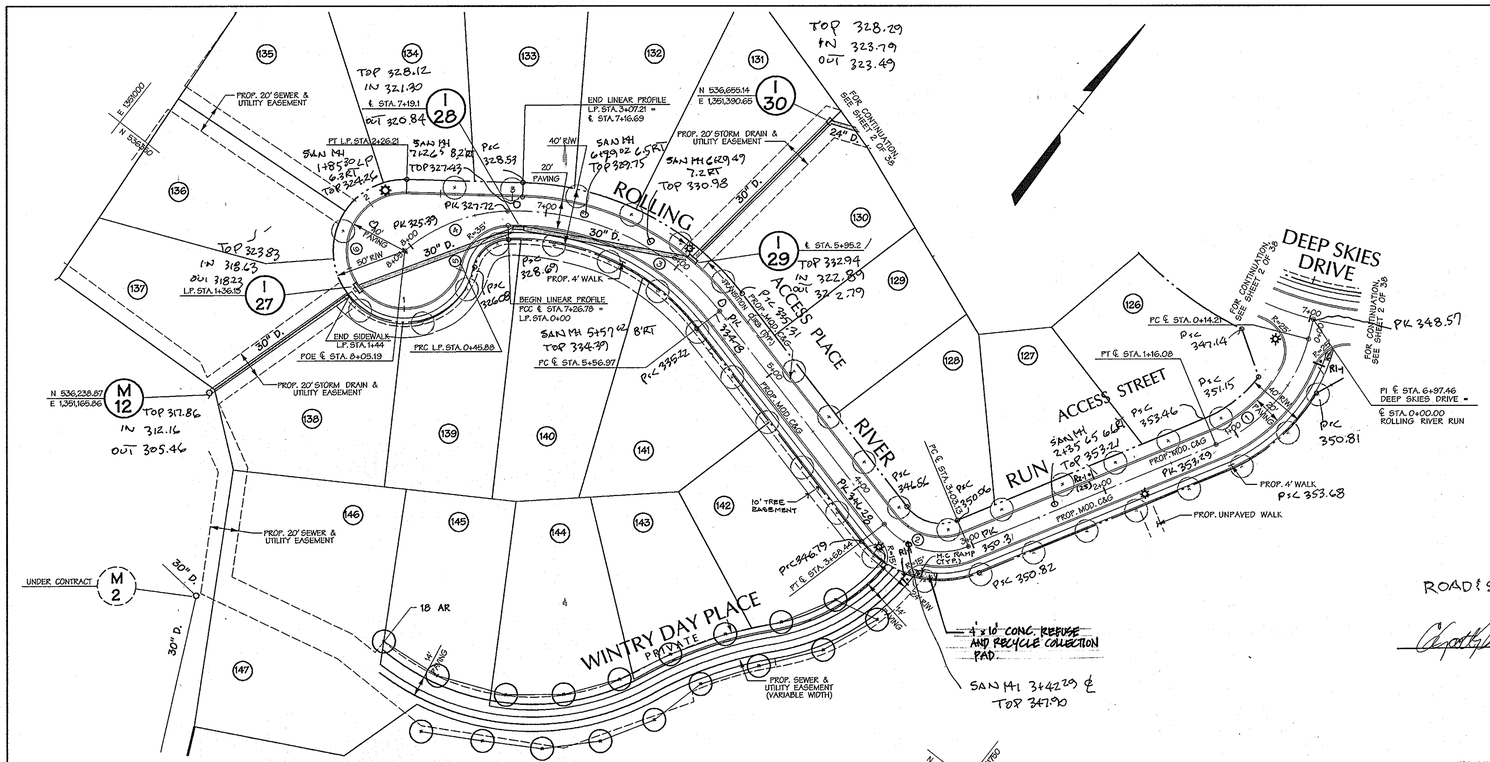
WATER CODE - | SEWER CODE -

TITLE
ROAD CONSTRUCTION PLAN
DEEP SKIES DRIVE

Des By	MAT/JDC	Scale	1"=50'	Proj. No.	95054.F
Drn By	WHJ/KMF	Date	11-7-01	4 of 38	
Chk By		Approved			

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

F-01-137



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

ROAD & STORM DRAIN AS-BUILT

STATE OF MARYLAND — GEORGE SCOTT SHANABERGER — No. 12441 — PROFESSIONAL LAND SURVEYOR — 10/16/01

11/02/01
Date

STATE OF MARYLAND — ANTHONY J. MANOCCHIA, SR. — No. 10551 — PROFESSIONAL ENGINEER

Professional Engr. No. #551

APPROVED: HOWARD COUNTY DEPT. OF PUBLIC WORKS
CHIEF, BUREAU OF HIGHWAYS — DATE 12-19-01

APPROVED: HOWARD COUNTY DEPT. OF PLANNING & ZONING
CHIEF, DEVELOPMENT ENGINEERING DIVISION MK — DATE 12/24/01
CHIEF, DIVISION OF LAND DEVELOPMENT — DATE 12/20/01
DIRECTOR — DATE

Date	No.	Revision Description

EMERSON
FORMERLY KEY PROPERTY
SECTION 2, PHASE 1B

OWNER/DEVELOPER:
THE HOWARD RESEARCH & DEVELOPMENT CORPORATION
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Fax 296-4705
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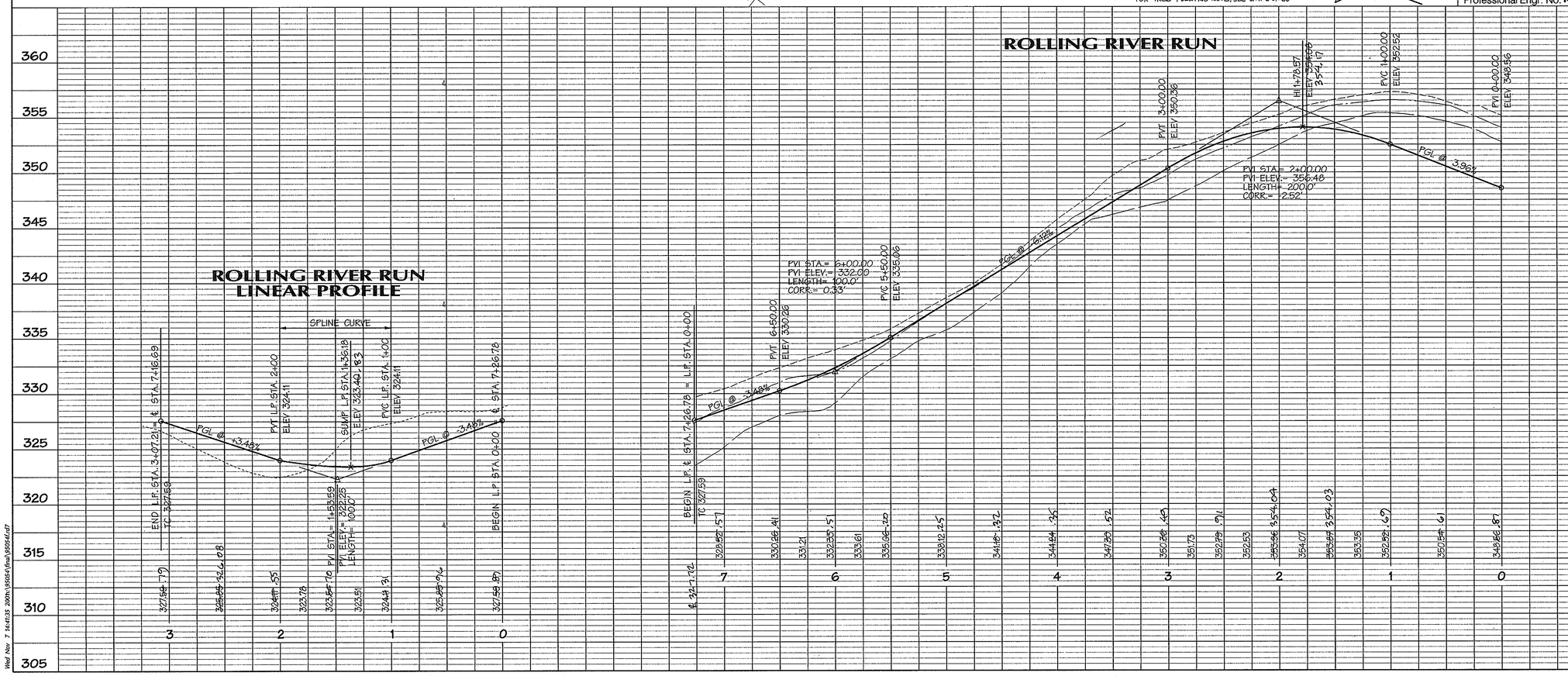
SUBDIVISION NAME	SECTION/AREA	LOT/PARCEL #
EMERSON SECTION 2	PHASE 1	P/O P. 837, P. 3, P. 462
PLAT# OR L/F L.1024, F.160	BLOCK # OR PARCEL # 14, BLKS. A & D	ZONE MXD	TAX/ZONE MAP 47	ELECT. DISTRICT 6 TH	CENSUS TRACT -
WATER CODE -	SEWER CODE -	

TITLE
ROAD CONSTRUCTION PLAN
ROLLING RIVER RUN AND WINTRY DAY PLACE

Des By	MAT/JDC	Scale 1"=50'	Proj. No. 95054.F
Drn By	WHJ/KMF	Date 11-7-01	5 of 38
Chk By		Approved	



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

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CURVE DATA							
ROAD NAME	NUMBER	DELTA	RADIUS	LENGTH	TANGENT	CHORD	
FALL RAIN DRIVE	①	10°26'54"	320.00'	58.36'	29.26'	N 63°17'37" E	58.27'
	②	83°45'01"	230.00'	336.20'	206.19'	N 26°38'33" E	307.06'
MIDSUMMER SNOW LANE	①	28°44'10"	440.00'	220.68'	112.71'	S 74°54'01" W	218.37'

APPROVED: HOWARD COUNTY DEPT. OF PUBLIC WORKS

CHIEF, BUREAU OF HIGHWAYS — DATE 12-10-01

APPROVED: HOWARD COUNTY DEPT. OF PLANNING & ZONING

CHIEF, DEVELOPMENT ENGINEERING DIVISION MK — DATE 12/24/01

CHIEF, DIVISION OF LAND DEVELOPMENT — DATE 12/27/01

DIRECTOR — DATE

Date	No.	Revision Description

EMERSON

FORMERLY KEY PROPERTY
SECTION 2, PHASE 1B

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8716 TOWN & COUNTRY BLVD.
SUITE 201
ELLICOTT CITY, MARYLAND 21043

11/07/01
Date

Professional Engr. No. 10551

SUBDIVISION NAME	SECTION/AREA		LOT/PARCEL #
EMERSON SECTION 2	PHASE 1		P/O P. 837, P. 3, P. 462
PLAT# OR L/F	BLOCK #	ZONE	TAX/ZONE MAP	ELECT. DISTRICT	CENSUS TRACT
L. 1624, F. 328	1A, 15, 16, & 23	MXD	47	6 TH	-
WATER CODE		SEWER CODE			
-		-			

TITLE

ROAD CONSTRUCTION PLAN
FALL RAIN DRIVE AND MIDSUMMER SNOW LANE

Des By	MAT/JDC	Scale	1"=50'	Proj. No.	95054.F
Drn By	WHJ/KMF	Date	11-7-01		6 of 38
Chk By		Approved			

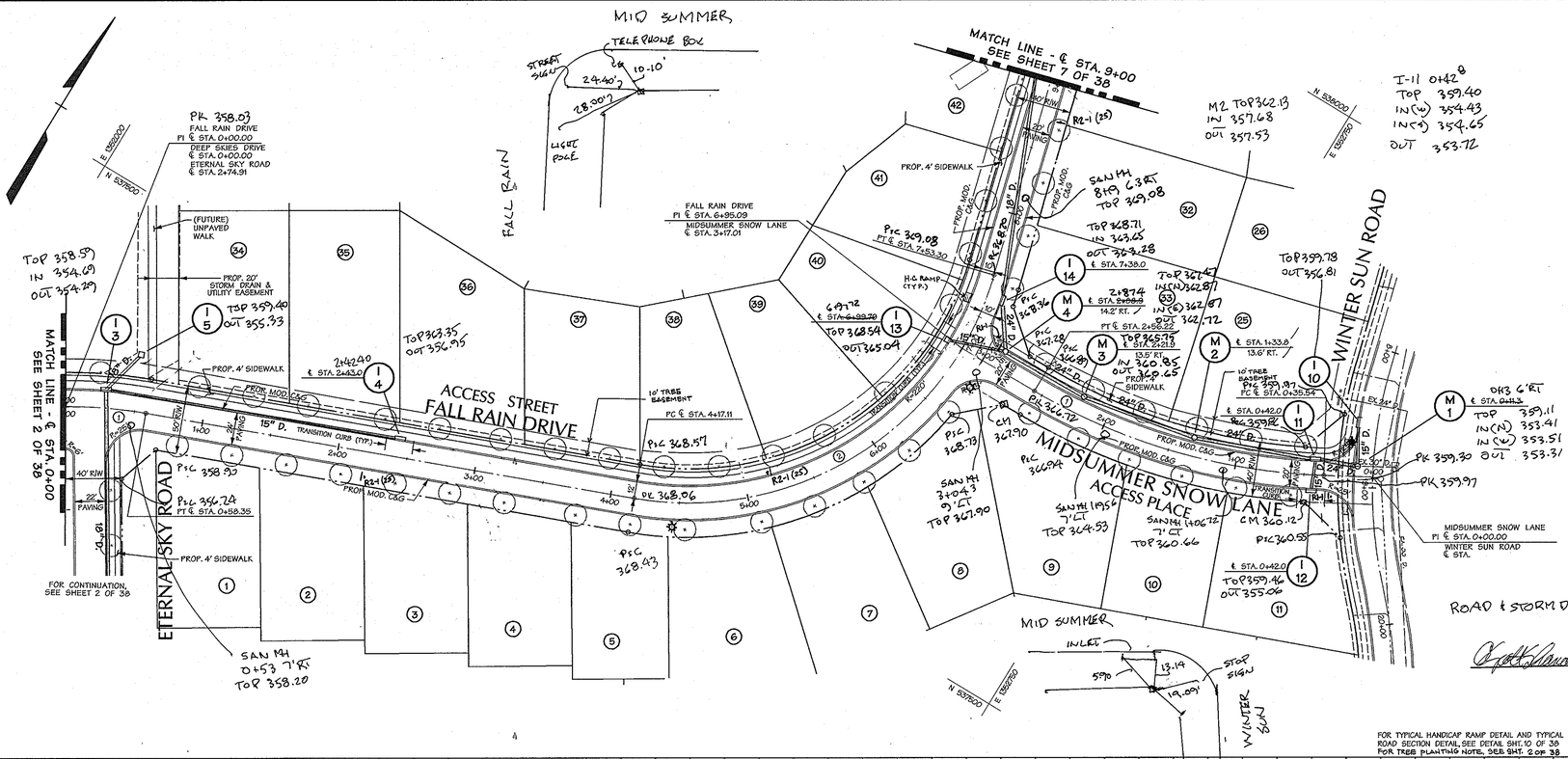
STREET LIGHT LEGEND
SEE SHEET 2 OF 38

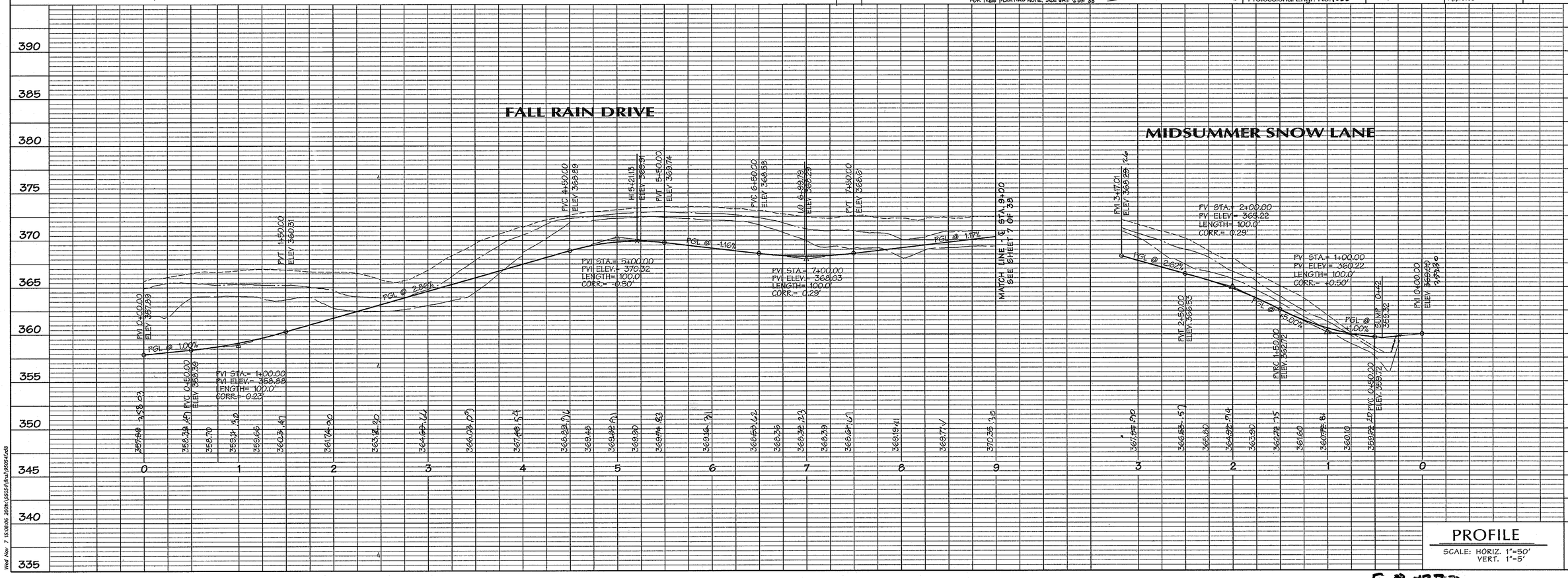
STREET LIGHT TABLE

DWG. No.	STREET NAME	STATION	OFF-SET	FIXTURE / POLE TYPE	COMMENTS
	FALL RAIN DRIVE	4+42.6 6+72.6	15'RT 21'RT		

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

FOR TYPICAL HANDICAP RAMP DETAIL AND TYPICAL ROAD SECTION DETAIL, SEE DETAIL SHT. 10 OF 38
FOR TREE PLANTING NOTE, SEE SHT. 2 OF 38





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

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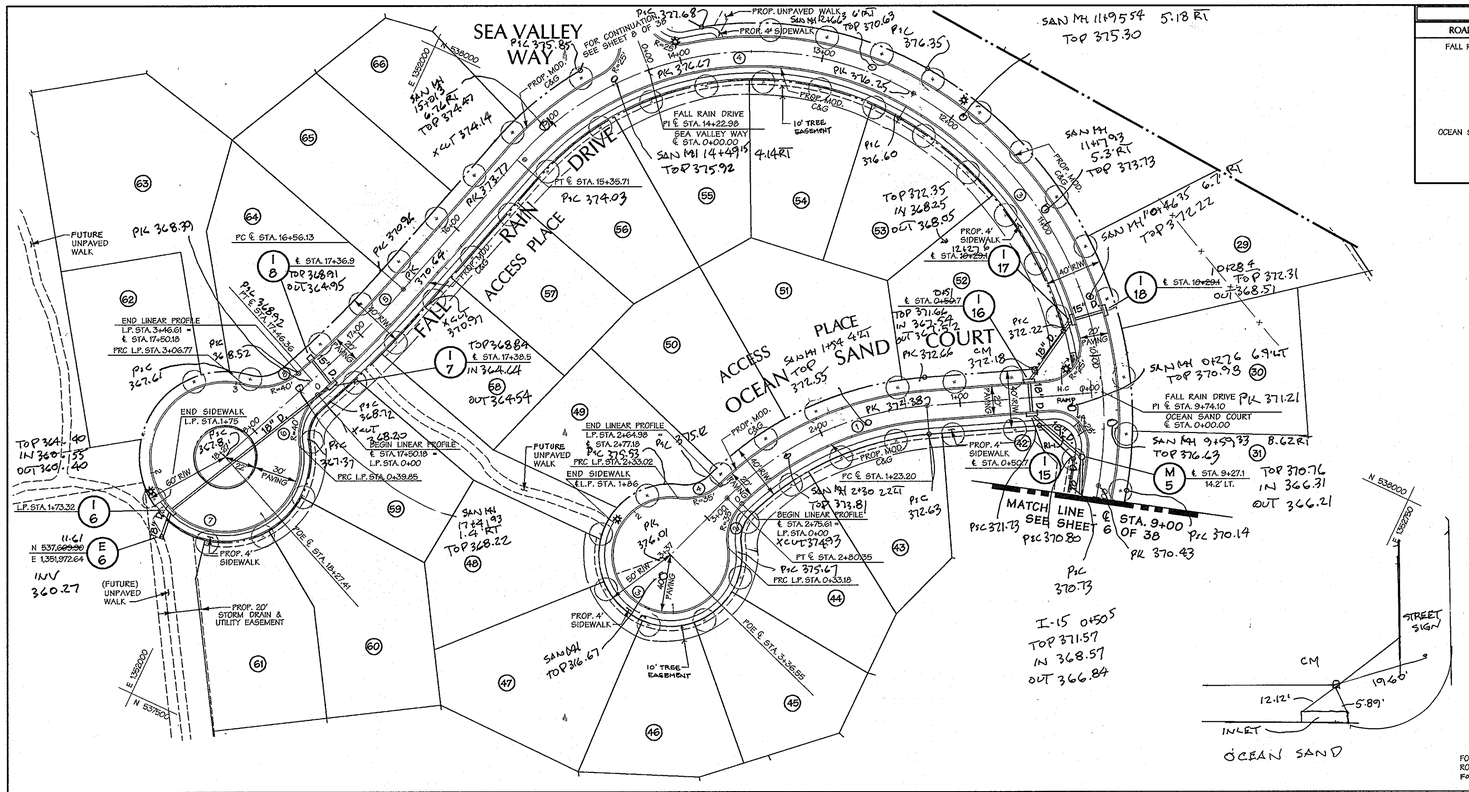
F-01-183



CURVE DATA							
ROAD NAME	NUMBER	DELTA	RADIUS	LENGTH	TANGENT	CHORD	
FALL RAIN DRIVE	3	69°56'58"	265.00'	323.46'	186.32'	N 50°11'57" W	303.74'
	4	78°44'58"	221.18'	304.00'	181.52'	S 55°27'34" W	280.63'
	5	07°23'09"	700.00'	90.24'	45.18'	S 19°46'40" W	90.17'
	6	57°22'41"	40.00'	40.06'	21.88'	S 04°55'37" E	38.40'
	7		52.00'	266.97'		N 66°32'15" W	56.52'
	8	56°44'00"	40.00'	39.61'	21.60'	N 52°10'23" E	38.01'
OCEAN SAND COURT	1	40°56'39"	220.00'	157.15'	82.10'	S 40°04'07" W	153.83'
	2	54°19'31"	35.00'	33.19'	17.96'	S 06°19'25" E	31.96'
	3		40.00'	199.84'		N 70°21'44" W	48.01'
	4	52°19'50"	35.00'	31.97'	17.20'	N 46°35'47" E	30.87'

STREET LIGHT LEGEND
SEE SHEET 20F 30

STREET LIGHT TABLE

DWG. No.	STREET NAME	STATION	OFF-SET	FIXTURE / POLE TYPE	COMMENTS
	FALL RAIN DRIVE	13+06.5 13+26.5	23' LT 13.5' LT	-	
	FALL RAIN DRIVE	10+15.5	0' LT	-	
	OCEAN SAND COURT	10+19.5	3'	-	
	OCEAN SAND COURT	9+81	3'	-	

STREET SIGN LEGEND
R1-1, OCTAGON, STOP SIGN
R2-1, SPEED LIMIT 25

FOR TYPICAL HANDICAP RAMP DETAIL AND TYPICAL ROAD SECTION DETAIL, SEE DETAIL SHT. 10 OF 38
FOR TREE PLANTING NOTE, SEE SHT. 2 OF 38

APPROVED: HOWARD COUNTY DEPT. OF PUBLIC WORKS
CHIEF, BUREAU OF HIGHWAYS — DATE 12-19-01

APPROVED: HOWARD COUNTY DEPT. OF PLANNING & ZONING
CHIEF, DEVELOPMENT ENGINEERING DIVISION MK — DATE 12/24/01
CHIEF, DIVISION OF LAND DEVELOPMENT — DATE 12/27/01
DIRECTOR — DATE

Date	No.	Revision Description

EMERSON
FORMERLY KEY PROPERTY
SECTION 2, PHASE 1B

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

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

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

11/07/01
Date

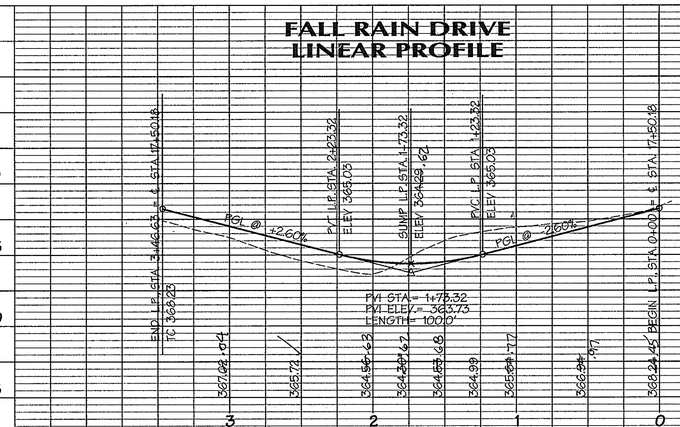
Professional Engr. No. 10551

SUBDIVISION NAME		SECTION/AREA		LOT/PARCEL #
EMERSON SECTION 2		PHASE 1		P/O P. 837, P. 3, P. 462
PLAT # OR L/F	BLOCK #	ZONE	TAX/ZONE MAP	ELECT. DISTRICT	CENSUS TRACT
L.1539 / F.126	P, Q, R & S 1A, B, C & D	MXD	47	6 TH	-
WATER CODE		SEWER CODE		
-		-		

TITLE
ROAD CONSTRUCTION PLAN
FALL RAIN DRIVE AND OCEAN SAND COURT

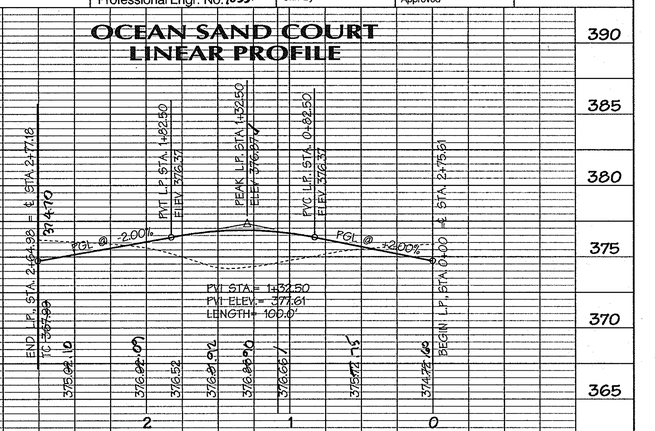
Des By MAT/JDC	Scale 1"=50'	Proj. No. 95054.F	
Drn By WHJ/KMF	Date 11-7-01	7 of 38	
Chk By	Approved		

FALL RAIN DRIVE LINEAR PROFILE



FALL RAIN DRIVE

OCEAN SAND COURT LINEAR PROFILE



OCEAN SAND COURT

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

F-01-137

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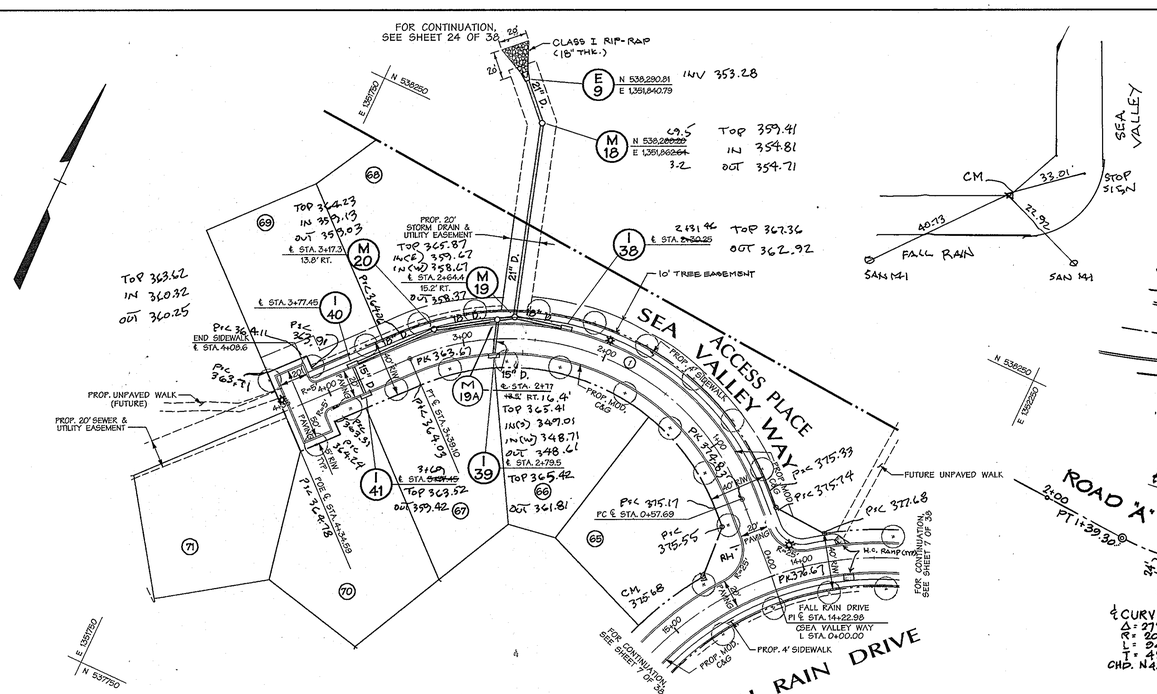
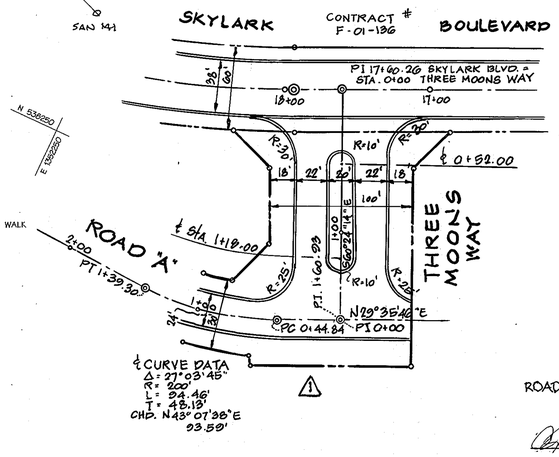




N 536250
E 1352250

STREET LIGHT LEGEND
SEE SHEET 2 OF 38

STREET LIGHT TABLE

DWG. No.	STREET NAME	STATION	OFF-SET	FIXTURE / POLE TYPE	COMMENTS
-	SEA VALLEY WAY	2+00	13' RT		
-	SEA VALLEY WAY	4+32	4' RT		

CURVE DATA

NUMBER	DELTA	RADIUS	LENGTH	TANGENT	CHORD
1	92°07'58"	175.00'	281.40'	181.64'	S 87°58'36" W 252.05'

APPROVED: HOWARD COUNTY DEPT. OF PUBLIC WORKS
CHIEF, BUREAU OF HIGHWAYS — DATE 12-10-01

APPROVED: HOWARD COUNTY DEPT. OF PLANNING & ZONING
CHIEF, DEVELOPMENT ENGINEERING DIVISION MK — DATE 12/21/01
CHIEF, DIVISION OF LAND DEVELOPMENT — DATE 12/27/01
DIRECTOR — DATE

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

EMERSON
FORMERLY KEY PROPERTY
SECTION 2, PHASE 1B

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

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

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 1	P/O P. 837, P. 3, P. 462

PLAT # OR L/F	BLOCK #	ZONE	TAX/ZONE MAP	ELECT. DISTRICT	CENSUS TRACT
L.1559, F.430 L.1559, F.436	3, 7, 8, 9, 13, 14, 15, 20 & 21	MXD	47	6 TH	-

WATER CODE -
SEWER CODE -

TITLE
ROAD CONSTRUCTION PLAN
SEA VALLEY WAY

Des By	MAT/JDC	Scale	1"=50'	Proj. No.	95054.F
Drn By	WHJ/KMF	Date	11-7-01		8 of 38
Chk By		Approved			

11/01/01
Date

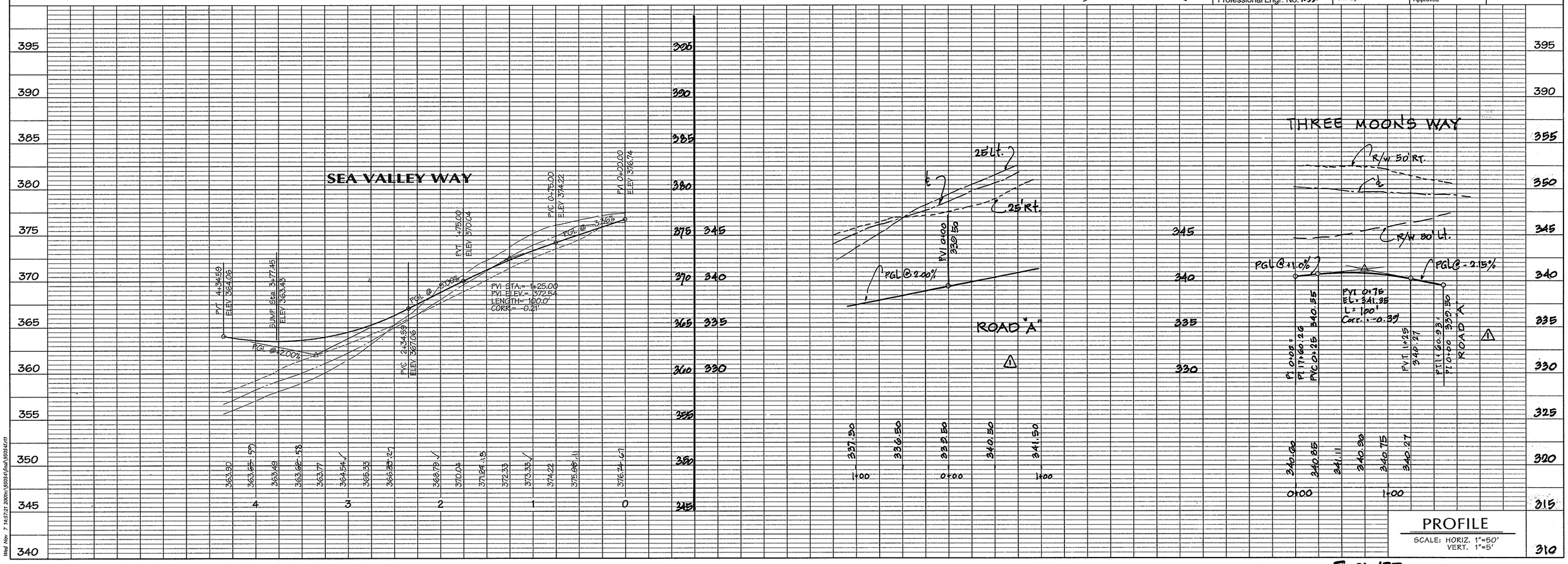
PROFESSIONAL ENGINEER — No. 10551 — JOHN PANOCCHIA, JR. — STATE OF MARYLAND

Professional Engr. No. 10551

ROAD & STORM DRAIN AS-BUILT

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

FOR TYPICAL HANDICAP RAMP DETAIL AND TYPICAL ROAD SECTION DETAIL SEE DETAIL SHT. 10 OF 38
FOR TREE PLANTING NOTE, SEE SHT. 2 OF 38



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

F-01-137

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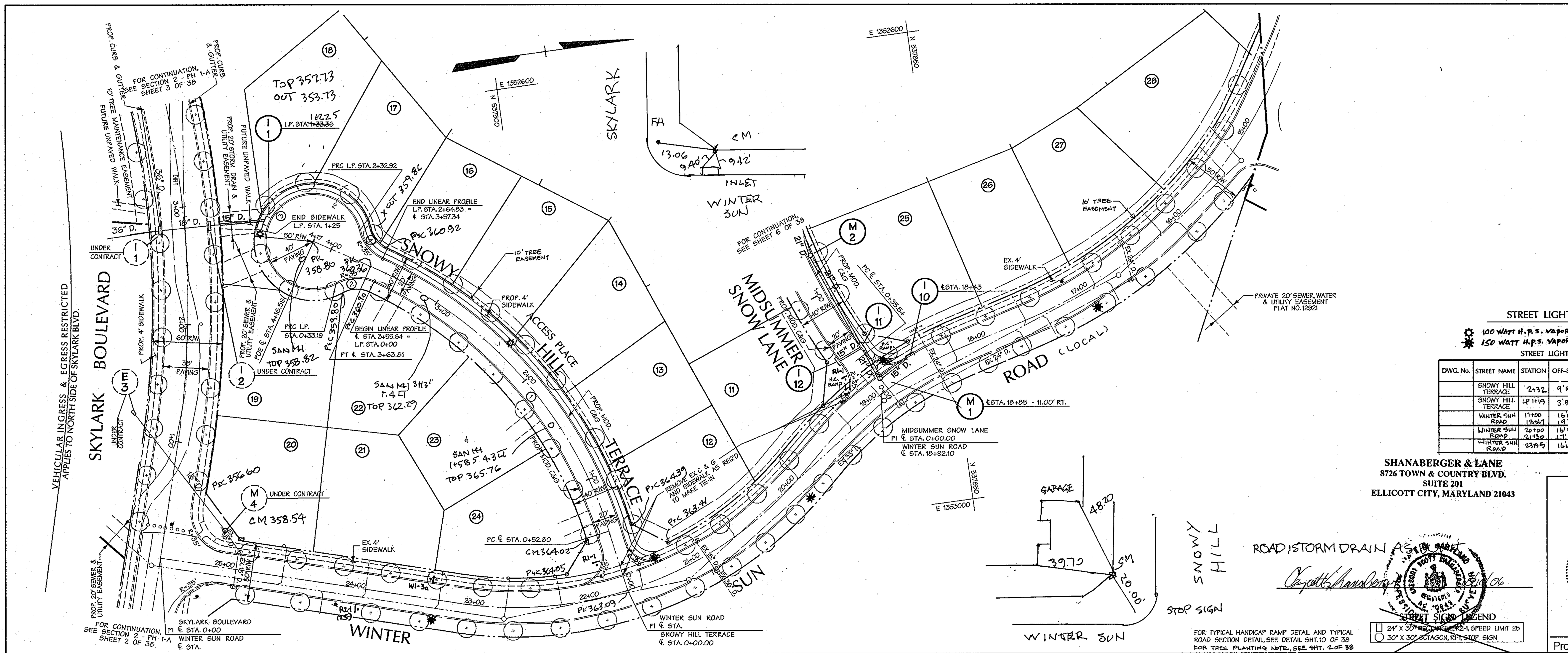

CURVE DATA						
NUMBER	DELTA	RADIUS	LENGTH	TANGENT	CHORD	
①	48°49'14"	365.00'	311.01'	165.65'	S 56°07'09" W	301.69'
②	54°20'10"	35.00'	33.19'	17.96'	S 05°49'25" W	31.96'
③		40.00'	199.84'		N 58°13'19" W	48.01'
④	52°10'31"	35.00'	31.87'	17.14'	N 58°48'46" E	30.78'

APPROVED: HOWARD COUNTY DEPT. OF PUBLIC WORKS

CHIEF, BUREAU OF HIGHWAYS — DATE 12-19-01

APPROVED: HOWARD COUNTY DEPT. OF PLANNING & ZONING

CHIEF, DEVELOPMENT ENGINEERING DIVISION MK — DATE 12/24/01

CHIEF, DIVISION OF LAND DEVELOPMENT — DATE 12/27/01

~~DIRECTOR~~ — ~~DATE~~

Date	No.	Revision Description

EMERSON

FORMERLY KEY PROPERTY
SECTION 2, PHASE 1B

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

STREET LIGHT LEGEND

100 WATT H.P.S. VAPOR "PREMIER COLONIAL" P.T.
150 WATT H.P.S. VAPOR "PREMIER COLONIAL" P.T.

STREET LIGHT TABLE

DWG. No.	STREET NAME	STATION	OFF-SET	FIXTURE / POLE TYPE	COMMENTS
	SNOWY HILL TERRACE	2+32	9' RT	100 watt	
	SNOWY HILL TERRACE	LP 1+15	3' BACK	100 watt	
	WINTER SUN ROAD	17+00 18+67	16' LT 19' RT	150 watt	
	WINTER SUN ROAD	20+00 21+30	16' LT 17' RT	150 watt	
	WINTER SUN ROAD	23+95	16' LT	150 watt	

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

ROAD STORM DRAIN AS-BUILT
10/10/06

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

FOR TYPICAL HANDICAP RAMP DETAIL AND TYPICAL ROAD SECTION DETAIL, SEE DETAIL SHT. 10 OF 38
FOR TREE PLANTING NOTE, SEE SHT. 2 OF 38

11/07/01
Date

Professional Engr. No. 10551

SUBDIVISION NAME	SECTION/AREA	LOT/PARCEL #	
EMERSON SECTION 2	PHASE 1	P10 P.837, P.3, P.462	

PLAT# OR LF	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
SNOWY HILL TERRACE AND WINTER SUN ROAD

Des By	MAT/JDC	Scale	1"=50'	Proj. No.	95054.F
Drn By	WHJ/KMF	Date	11-7-01	9 of 38	
Chk By		Approved			

PROFILE

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

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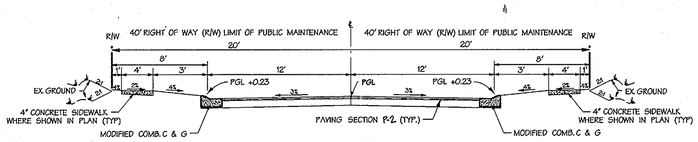
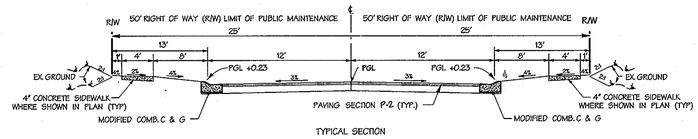


TYPICAL SECTION

24' PAV. ON 40' R/W

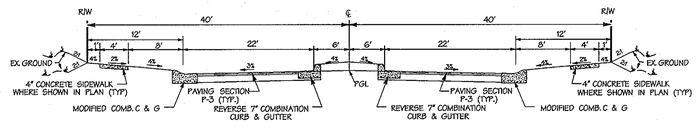
NOT TO SCALE
DESIGN SPEED: 25 MPH



TYPICAL SECTION

24' PAV. ON 50' R/W

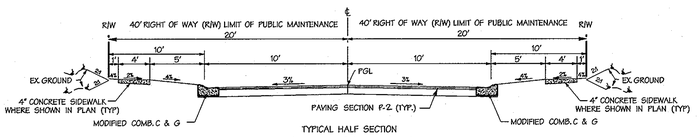
NOT TO SCALE
DESIGN SPEED: 25 MPH



TYPICAL HALF SECTION

ETERNAL SKY ROAD

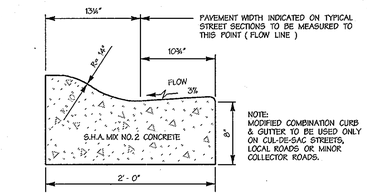
NOT TO SCALE
DESIGN SPEED: 25 MPH



TYPICAL HALF SECTION

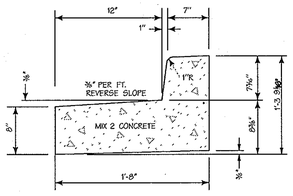
20' PAV. ON 40' R/W

NOT TO SCALE
DESIGN SPEED: 25 MPH



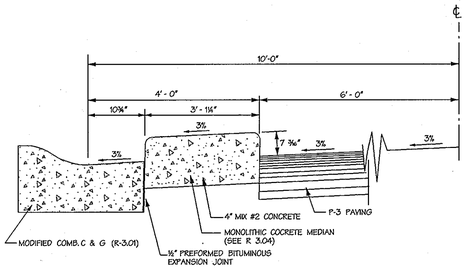
MODIFIED COMBINATION CURB & GUTTER

NO SCALE



REVERSE 7" COMBINATION CURB & GUTTER

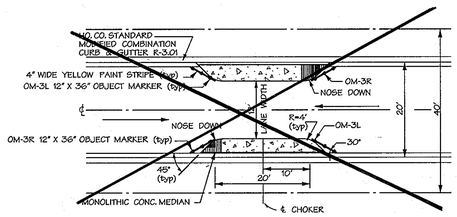
NO SCALE



CROSS SECTION THRU

SLOW POINT CHOKER

NO SCALE

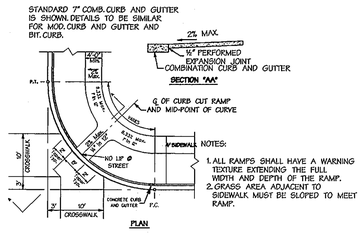


PLAN

SLOW POINT CHOKER

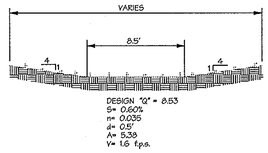
NO SCALE

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



SIDEWALK RAMP

TYPE "A"



DOWNSTREAM FROM E-1

CHANNEL DETAIL

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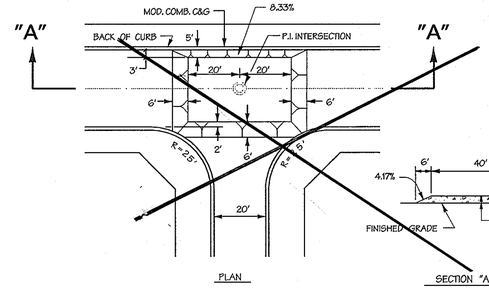

RAISED 'T' INTERSECTION

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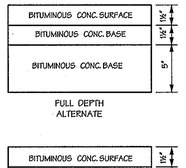
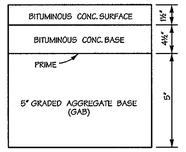


FULL DEPTH ALTERNATE



GRANULAR BASE ALTERNATE

PAVING SECTION P-3

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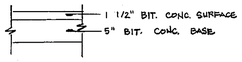

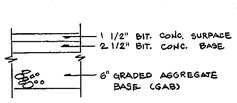

PAVING SECTION P-2

NO SCALE

APPROVED: HOWARD COUNTY DEPT. OF PUBLIC WORKS

CHIEF, BUREAU OF HIGHWAYS — DATE 12-19-01

APPROVED: HOWARD COUNTY DEPT. OF PLANNING & ZONING

CHIEF, DEVELOPMENT ENGINEERING DIVISION MK — DATE 12/24/01

CHIEF, DIVISION OF LAND DEVELOPMENT HB — DATE 12/21/01

DIRECTOR — DATE

Date	No.	Revision Description

EMERSON

FORMERLY KEY PROPERTY
SECTION 2, PHASE 1B

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

11/2/01
Date

PROFESSIONAL ENGINEER NO. 10551 STATE OF MARYLAND JOHN J. PANOCCHIA, JR.

Professional Engr. No. 10551

SUBDIVISION NAME	SECTION/AREA	LOT/PARCEL #
EMERSON SECTION 2	PHASE 1B	P10 F. 837, P. 3, P. 462
PLAT # OR L/F: L.556 F.20	BLOCK #: E, 2 & 9, G, 10, 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
Dm By	Date 11-7-01	10 of 38
Chk By	Approved	

Wed Nov 7 14:16:07 2001h:\95054\final\95054f.dgn

F-01-137

F-01-1357

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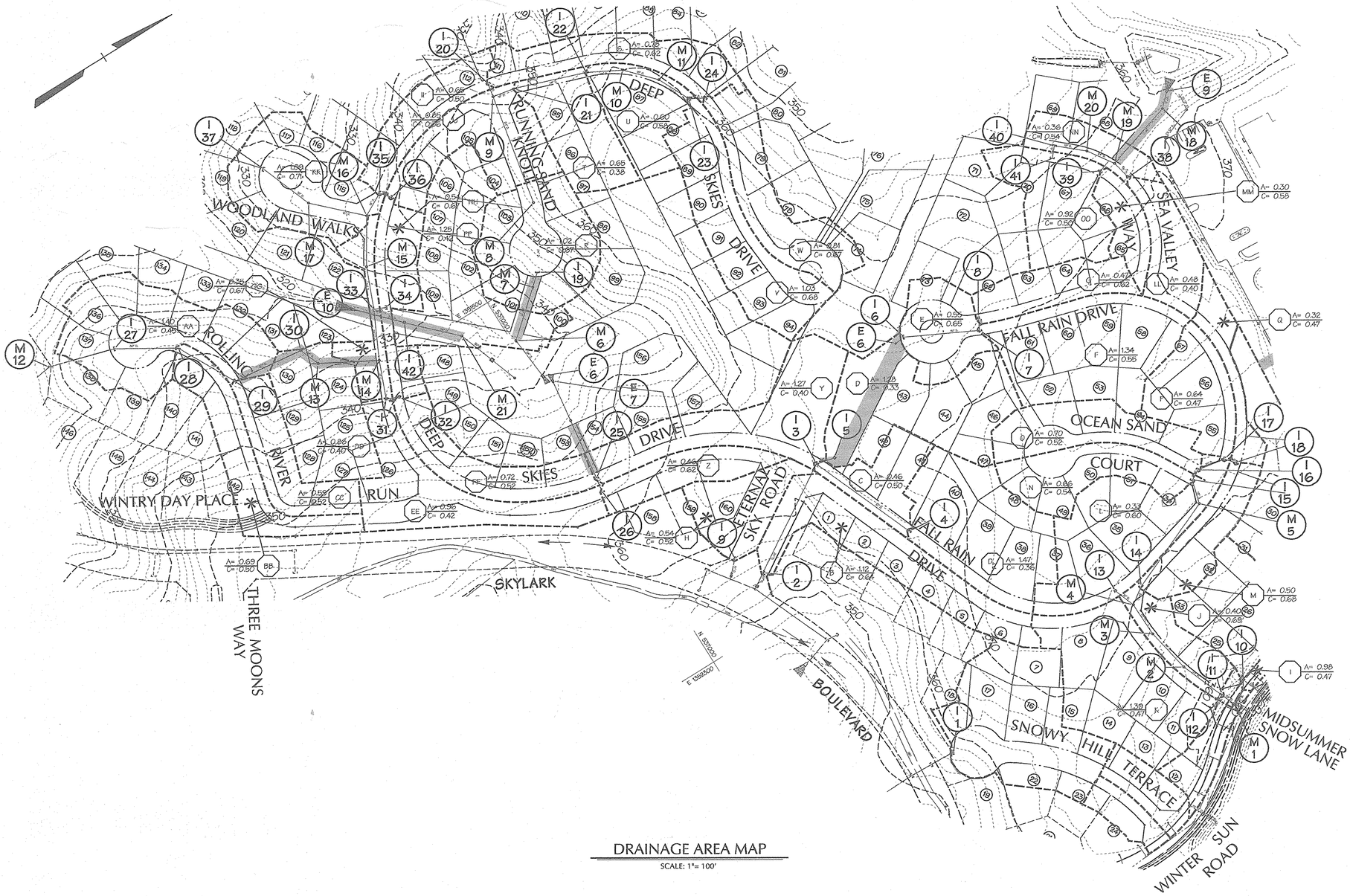

DRAINAGE AREA MAP

SCALE: 1"= 100'

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

APPROVED: HOWARD COUNTY DEPT. OF PUBLIC WORKS

CHIEF, BUREAU OF HIGHWAYS — DATE 12-19-01

APPROVED: HOWARD COUNTY DEPT. OF PLANNING & ZONING

CHIEF, DEVELOPMENT ENGINEERING DIVISION MK — DATE 12/24/01

CHIEF, DIVISION OF LAND DEVELOPMENT HB — DATE 12/27/01

~~DIRECTOR~~ — ~~DATE~~

Date	No.	Revision Description

EMERSON

FORMERLY KEY PROPERTY
SECTION 2, PHASE 1B

OWNER/DEVELOPER:

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Columbia, Maryland 21044

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11/7/01
Date

Professional Engr. No. 10551

SUBDIVISION NAME: EMERSON SECTION 2	SECTION/AREA: PHASE 1B		LOT/PARCEL #: P/O P. 837, P. 3, P. 462
PLAT # OR L.I.B.R./ L. 532 F. 332	BLOCK #: 5, 7, 8, 9, 13, 14, 19, 20 & 21	ZONE: MXD	TAX/ZONE MAP: 47
		ELECT. DISTRICT: 6 TH	CENSUS TRACT: -
WATER CODE: -		SEWER CODE: -	

TITLE

DRAINAGE AREA MAP

Des By RLH/JDC	Scale 1"= 100'	Proj. No. 95054.F	11 of 38
Dm By WHJ	Date 11-7-01		
Chk By	Approved		

F-01-137

F-01-137

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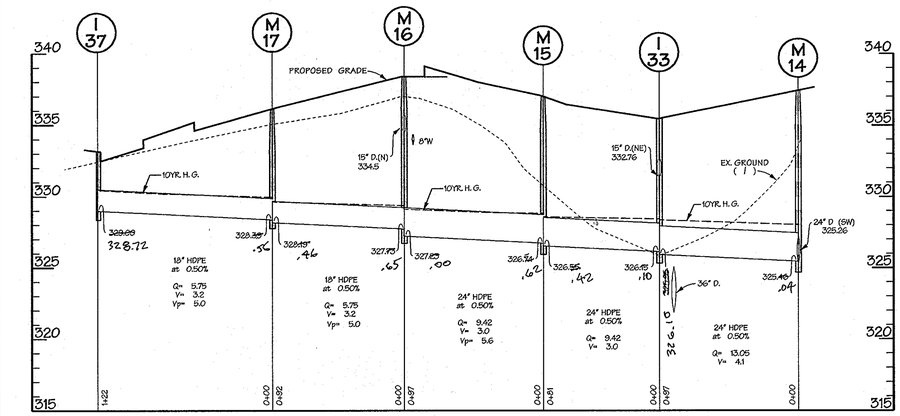
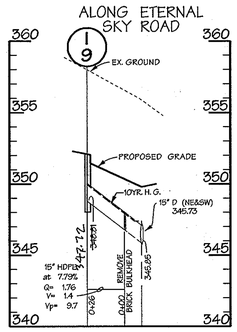
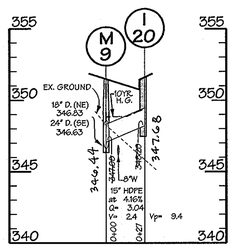
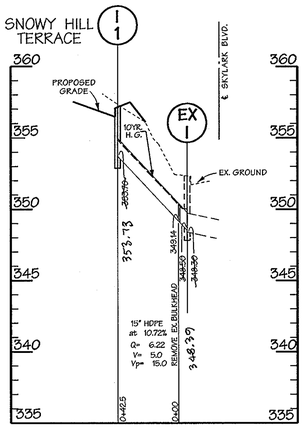
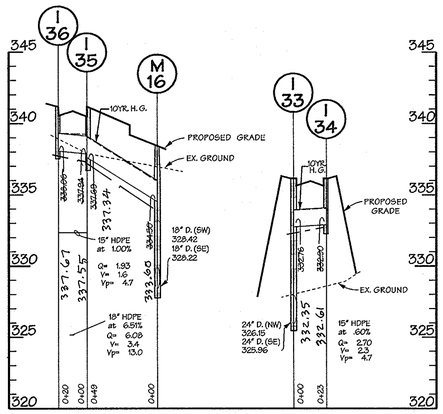
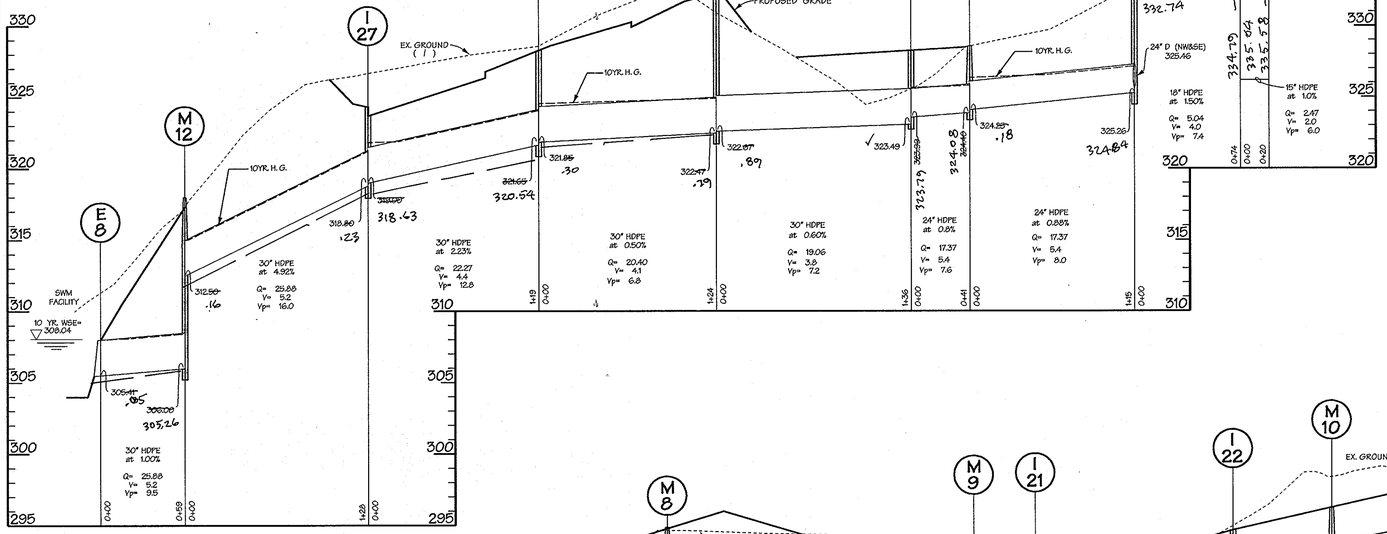


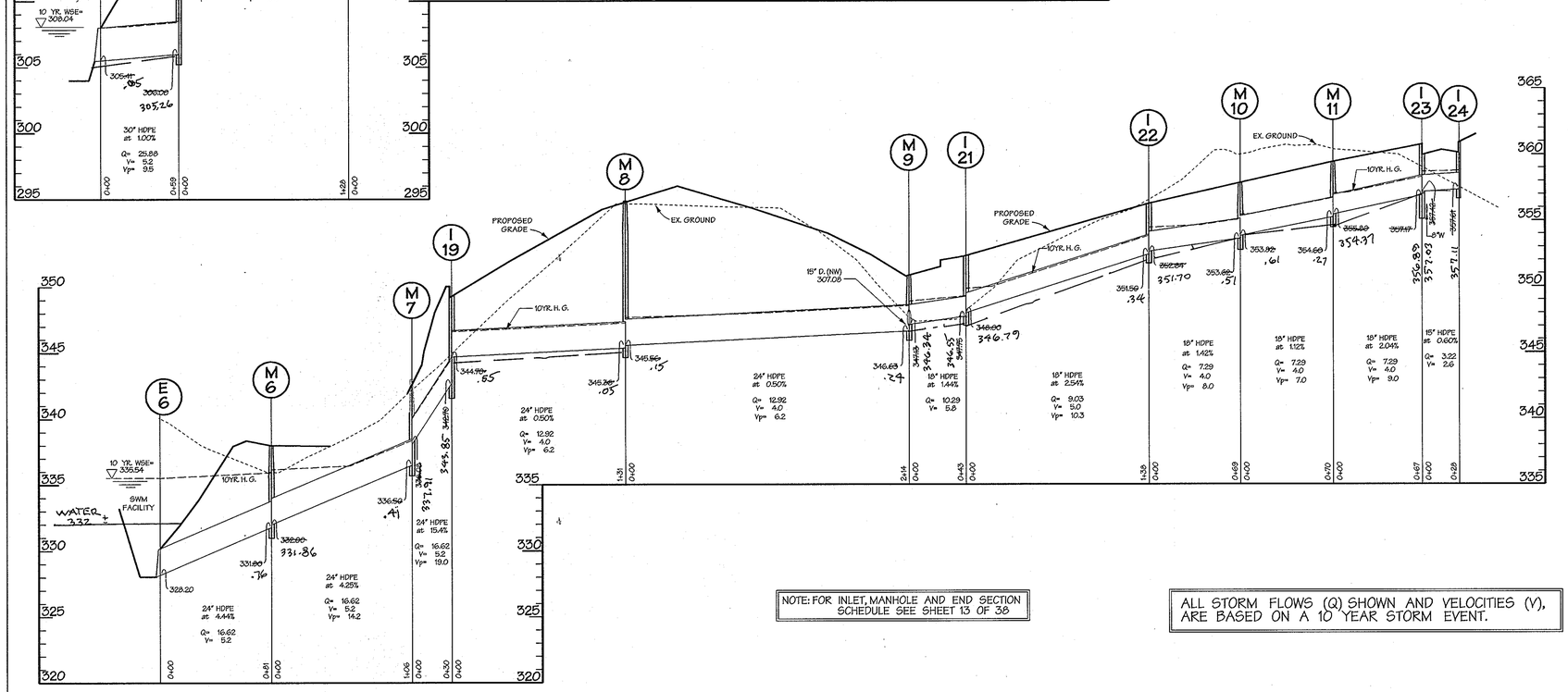












NOTE: FOR INLET, MANHOLE AND END SECTION SCHEDULE SEE SHEET 13 OF 38

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

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

ROAD & STORM DRAIN AS-BUILT

Robert Shanaberger / Holder

PROFESSIONAL ENGINEER — No. 19551 — STATE OF MARYLAND — ROBERT L. RANOCCHIA, SR.

APPROVED: HOWARD COUNTY DEPT. OF PUBLIC WORKS

CHIEF, BUREAU OF HIGHWAYS — DATE 12-19-01

APPROVED: HOWARD COUNTY DEPT. OF PLANNING & ZONING

CHIEF, DEVELOPMENT ENGINEERING DIVISION MK — DATE 12/24/01

CHIEF, DIVISION OF LAND DEVELOPMENT — DATE 12/27/01

DIRECTOR — DATE

Date	No.	Revision Description

EMERSON

FORMERLY KEY PROPERTY
SECTION 2, PHASE 1B

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 1B		LOT/PARCEL #: P10 F. 837, P. 3, P. 462
PLAT # OR L.F.: 1,528 / 1,532	BLOCK #: E, F, G & H; 14, 15, 22 & 24	ZONE: MXD	TAX/ZONE MAP: 47
ELECT. DISTRICT: 6 TH	CENSUS TRACT: -	WATER CODE: -	SEWER CODE: -

TITLE

STORM DRAIN

Des By	RLH/JDC	Scale	HORZ. 1" = 50' VERT. 1" = 5'	Proj. No. 95054.F
Dm By	KDE	Date	11-7-01	12 of 38
Chk By		Approved		

11/7/01
Date

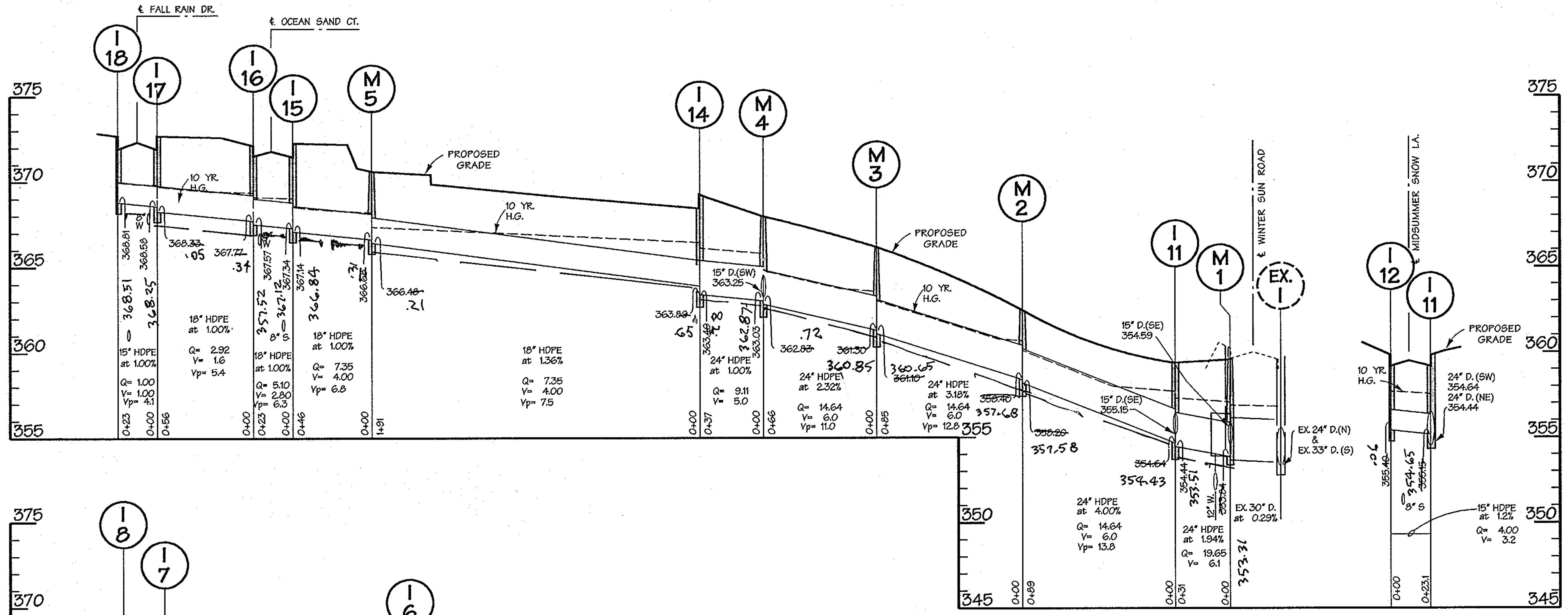
Professional Engr. No. 19551

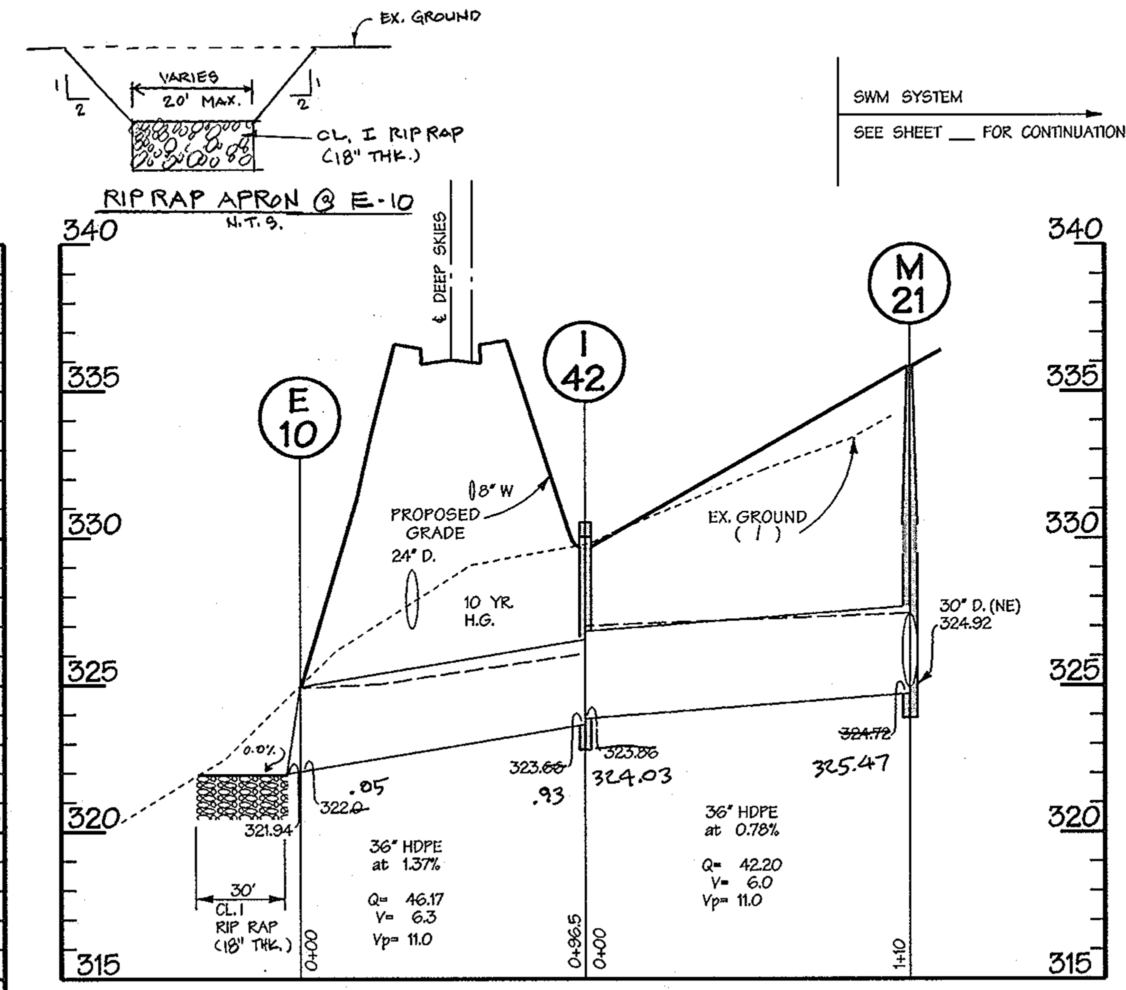
F-01-137

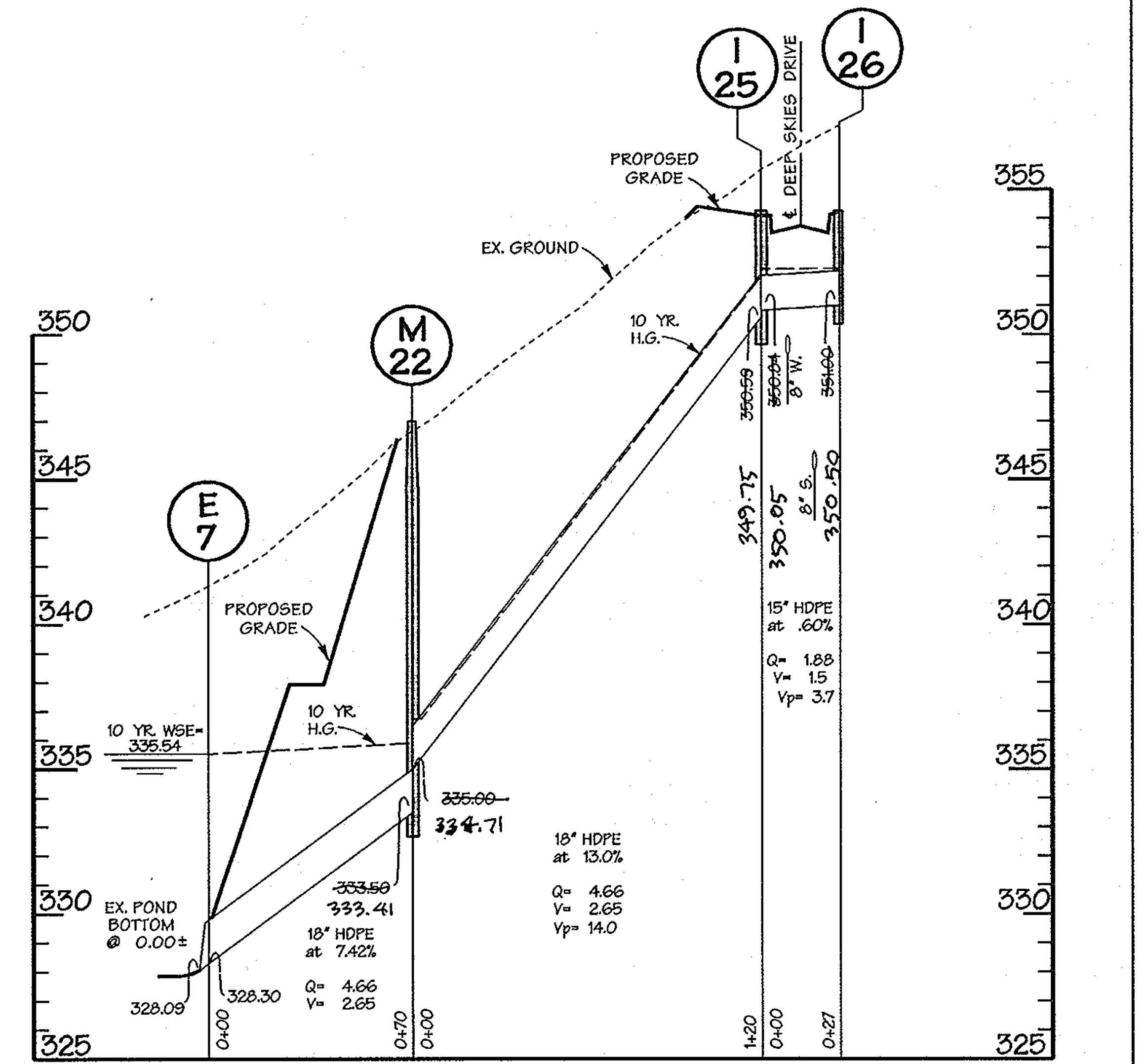
F-01-137

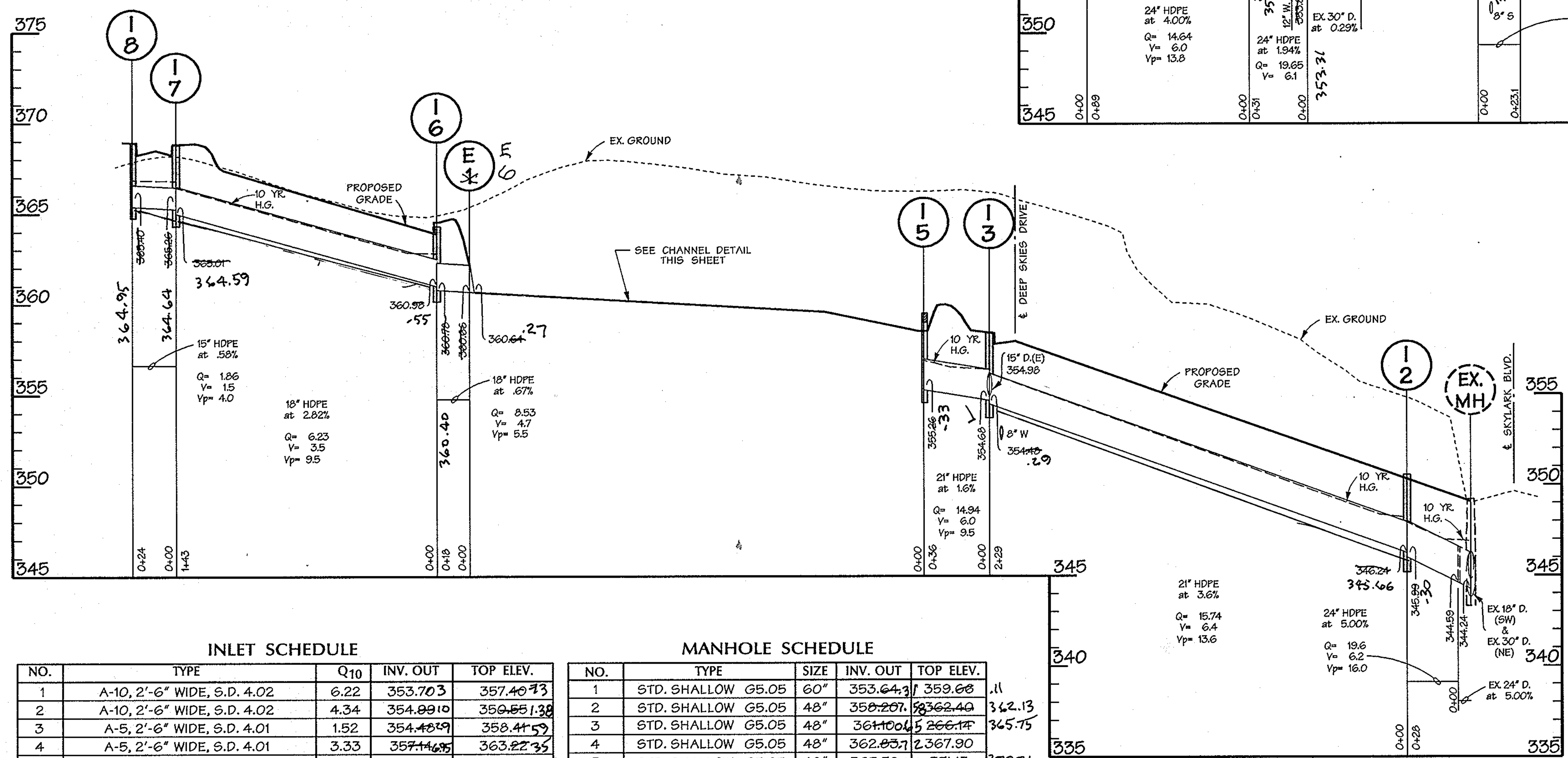
Wed Nov 7 10:46:40 2001\\95054\final\95054F.SD2

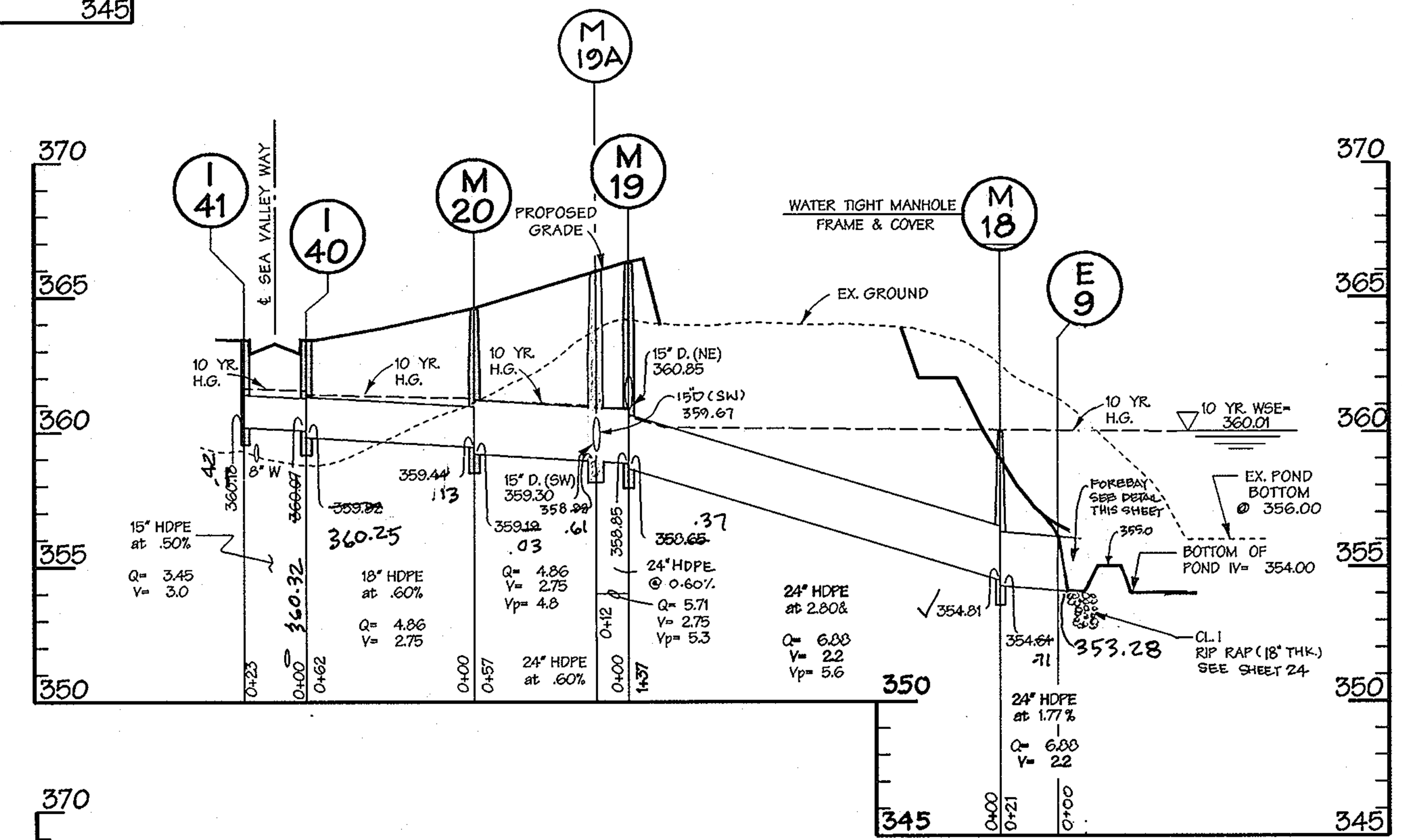
11/7/01 10:46:34 AM \\ATHENS\MSI1\CONNECTION\CAD\SCF_dgn\arch_dj\pm\95054F.hpm

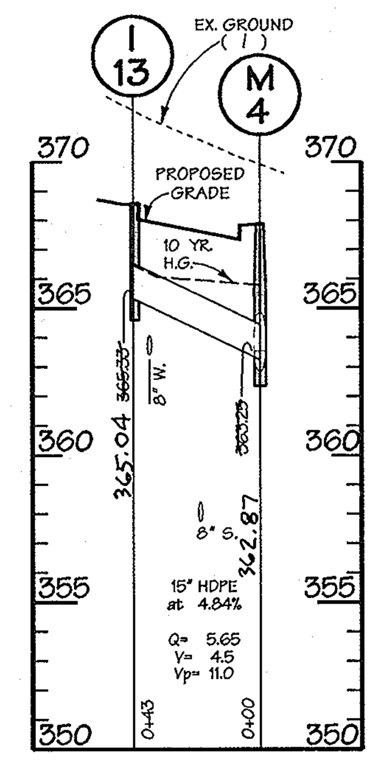


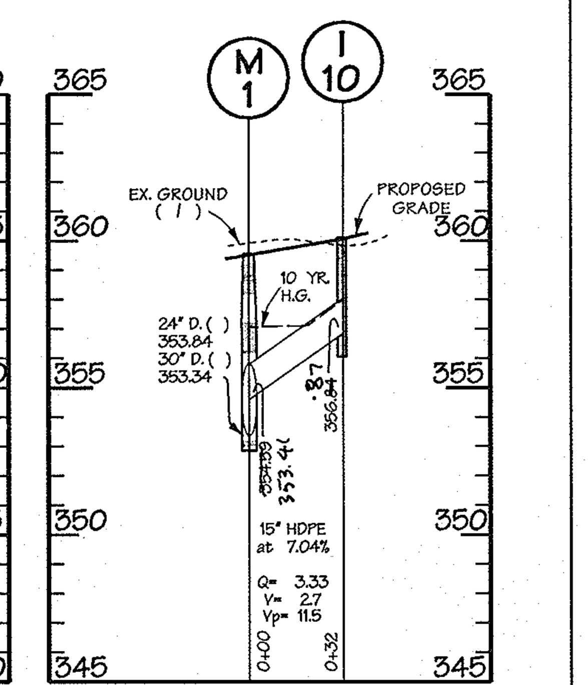


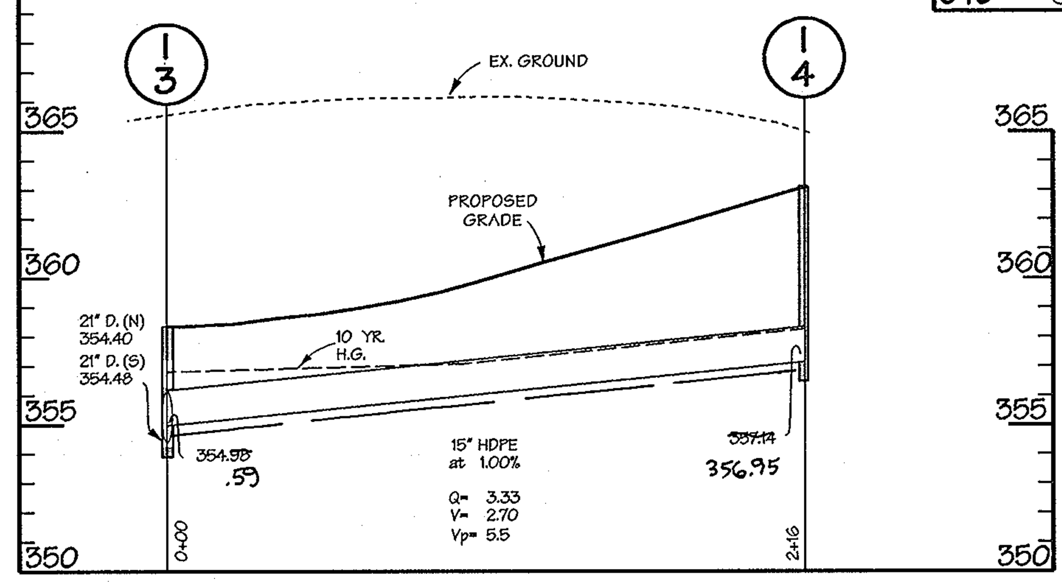


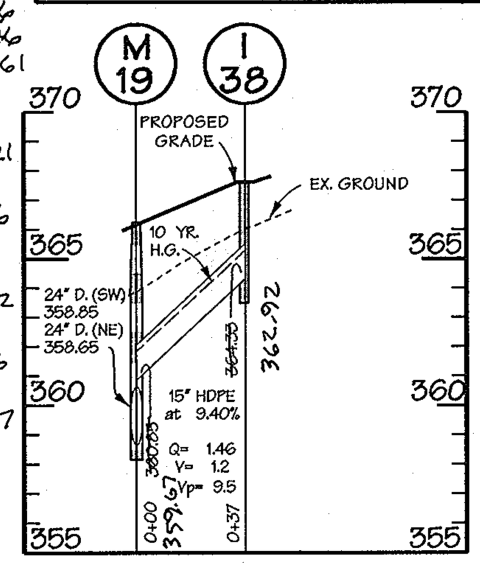


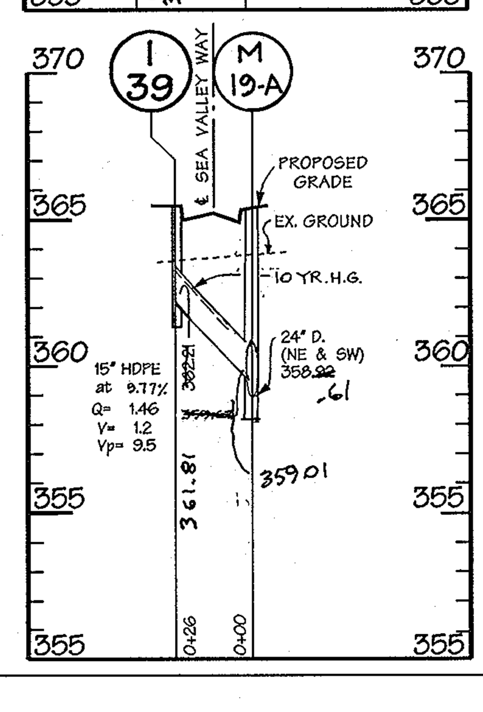


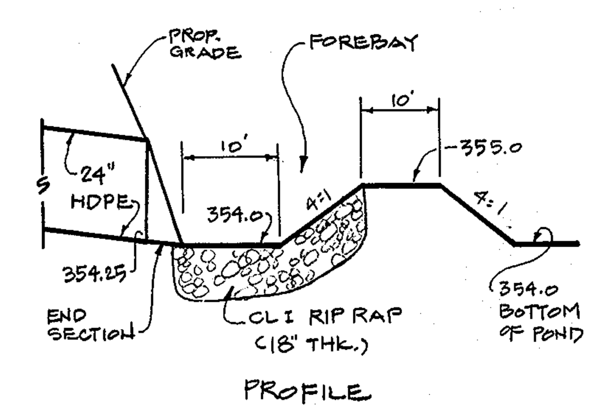












FOREBAY
N.T.S

INLET SCHEDULE

NO.	TYPE	Q_{10}	INV. OUT	TOP ELEV.
1	A-10, 2'-6" WIDE, S.D. 4.02	6.22	353.703	357.40 73
2	A-10, 2'-6" WIDE, S.D. 4.02	4.34	354.89 10	350.55 1.38
3	A-5, 2'-6" WIDE, S.D. 4.01	1.52	354.48 29	358.41 59
4	A-5, 2'-6" WIDE, S.D. 4.01	3.33	357.14 6.95	363.22 35
5	YARD INLET "D" 3'-11" SQ. S.D. 4.11	2.97	355.26 .13	358.50 *43
6	A-10, 2'-6" WIDE, S.D. 4.02	3.17	360.78 40	364.29 .60
7	A-10, 2'-6" WIDE, S.D. 4.02	4.46	365.04 4.54	368.84 ✓
8	A-10, 2'-6" WIDE, S.D. 4.02	1.86	365.40 4.95	368.89 ✓
9	A-10, 2'-6" WIDE, S.D. 4.02	1.76	348.81 7.12	350.55 1.42
10	A-10, 2'-6" WIDE, S.D. 4.02	2.97	256.84 7	360.10± 359.18
11	A-10, 3'-0" WIDE, S.D. 4.02	2.10	354.44 37.2	359.32 40
12	A-10, 2'-6" WIDE, S.D. 4.02	4.00	355.40 6	359.32 41
13	A-10, 2'-6" WIDE, S.D. 4.02	5.65	365.33 04	368.59 54
14	A-10, 3'-0" WIDE, S.D. 4.02	2.58	363.40 28	368.73 71
15	A-10, 3'-0" WIDE, S.D. 4.02	2.35	366.36 84	372.02 1.57
16	A-10, 3'-0" WIDE, S.D. 4.02	2.40	367.57 52	372.02 1.67
17	A-10, 3'-0" WIDE, S.D. 4.02	1.99	368.33 05	372.13 35
18	A-5, 3'-0" WIDE, S.D. 4.01	1.00	368.84 .51	372.13 31
19	A-10, 3'-0" WIDE, S.D. 4.02	5.13	342.70 .85	349.25 90
20	A-10, 3'-0" WIDE, S.D. 4.02	3.04	348.20 7.18	351.46 68
21	A-10, 2'-6" WIDE, S.D. 4.02	1.51	347.75 .55	352.76 ✓
22	A-10, 2'-6" WIDE, S.D. 4.02	2.12	351.50 .34	356.49 2.7
23	A-10, 2'-6" WIDE, S.D. 4.02	4.15	357.17 6.89	360.57 ✓
24	A-10, 2'-6" WIDE, S.D. 4.02	3.22	357.61 .11	360.86 ✓
25	A-10, 2'-6" WIDE, S.D. 4.02	3.07	~~350.59~~ 349.75	354.25 10
26	A-5, 2'-6" WIDE, S.D. 4.01	1.88	~~351.00~~ 350.50	354.25 15
27	A-10, 3'-0" WIDE, S.D. 4.02	4.68	318.80 .13	323.40 83
28	A-10, 3'-0" WIDE, S.D. 4.02	2.24	321.65 0.84	328.16 12
29	A-10, 3'-0" WIDE, S.D. 4.02	2.02	322.47 .19	332.86 94
30	YARD INLET "D" 3'-11" SQ. S.D. 4.11	2.13	323.49 ✓	328.29
31	A-10, 2'-6" WIDE, S.D. 4.02	2.66	335.82 4.79	339.44 59
32	A-10, 2'-6" WIDE, S.D. 4.02	2.47	336.18 5.58	339.44 63
33	A-5, 2'-6" WIDE, S.D. 4.01	1.75	325.95 6.10	336.15 00
34	A-10, 2'-6" WIDE, S.D. 4.02	2.70	332.90 .61	336.15 ✓
35	A-10, 2'-6" WIDE, S.D. 4.02	2.15	337.69 94	341.31 55
36	A-10, 2'-6" WIDE, S.D. 4.02	1.93	338.06 33	341.31 42
37	A-10, 2'-6" WIDE, S.D. 4.02	5.75	329.00 8.72	332.50 97
38	A-10, 2'-6" WIDE, S.D. 4.02	1.46	364.33 2.92	367.58 37
39	A-10, 2'-6" WIDE, S.D. 4.02	1.48	362.21 1.81	365.47 41
40	A-10, 2'-6" WIDE, S.D. 4.02	1.55	~~359.82~~ 360.32	363.43 62
41	A-10, 2'-6" WIDE, S.D. 4.02	3.45	360.18 .42	363.43 52
42	YARD INLET "D" 3'-11" SQ. S.D. 4.11	3.69	323.66 .13	329.94 *

* INDICATES THROAT ELEVATION

MANHOLE SCHEDULE

NO.	TYPE	SIZE	INV. OUT	TOP ELEV.	
1	STD. SHALLOW G5.05	60"	353.64 .31	359.68	.11
2	STD. SHALLOW G5.05	48"	358.20 7.58	362.40	362.13
3	STD. SHALLOW G5.05	48"	361.10 0.65	266.14	365.75
4	STD. SHALLOW G5.05	48"	362.83 .72	367.90	
5	STD. SHALLOW G5.05	48"	365.70 .21	371.13	370.76
6	STD. MANHOLE G5.12	48"	331.86 .76	337.00	339.46
7	STD. MANHOLE G5.12	48"	336.50 .41	343.00	347.61
8	STD. MANHOLE G5.12	48"	345.36 .05	356.75	.85
9	STD. MANHOLE G5.12	48"	346.63 .24	351.90	.44
10	STD. MANHOLE G5.12	48"	353.62 .25	358.09	357.21
11	STD. MANHOLE G5.12	48"	354.60 .27	359.81	.32
12	STD. MANHOLE G5.13	60"	306.00 5.46	318.00	317.86
13	STD. MANHOLE G5.12	48"	324.40 .08	328.78	
14	STD. MANHOLE G5.12	48"	325.26 4.84	337.45	.34
15	STD. MANHOLE G5.12	48"	326.55 .42	336.8	337.02
16	STD. MANHOLE G5.12	48"	327.23 .00	338.5	4
17	STD. MANHOLE G5.12	48"	328.19 .46	334.85	335.76
18	STD. MANHOLE G5.12	48"	354.61 .41	359.50	.40
19	STD. MANHOLE G5.12	48"	358.65 .37	366.24	335.87
20	STD. SHALLOW G5.05	48"	359.19 .03	364.57	.63
21	STD. MANHOLE G5.13	60"	324.72 .47	336.8	12
19A	STD. MANHOLE G5.13	48"	358.92 .61	365.37	.41

END SECTION SCHEDULE

NO.	TYPE	SIZE	INV. OUT	TOP ELEV.
E-1	HDPE END SEC.	36"	~~338.00~~	-
E-2	HDPE END SEC.	30"	304.00	-
E-3	HDPE END SEC.	18"	347.64	310.97-
E-4	HDPE END SEC.	18"	337.87	-
E-5	HDPE END SEC.	18"	336.95	-
E-6	HDPE END SEC.	24"	~~328.20~~	360.27-
E-7	HDPE END SEC.	18"	328.09	N/A -
E-8	HDPE END SEC.	30"	305.44 .05	-
E-9	HDPE END SEC.	24"	~~354.00~~	353.28
E-10	HDPE END SEC.	36"	~~321.94~~	322.05-

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

ROAD & STORM DRAIN AS-BUILT
10/10/0?

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

11/7/01
Date

Professional Engr. No. 10551

APPROVED: HOWARD COUNTY DEPT. OF PUBLIC WORKS
CHIEF, BUREAU OF HIGHWAYS — DATE 12-19-01

APPROVED: HOWARD COUNTY DEPT. OF PLANNING & ZONING
CHIEF, DEVELOPMENT ENGINEERING DIVISION MK — DATE 12/24/01
CHIEF, DIVISION OF LAND DEVELOPMENT — DATE 12/27/01
DIRECTOR — DATE

Date	No.	Revision Description
2/15/02	1	REV. INLETS I-13 & I-37 TO A-10

EMERSON

FORMERLY KEY PROPERTY
SECTION 2, PHASE 1B

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 1B	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 -

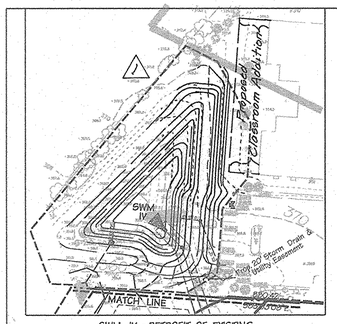
TITLE
STORM DRAIN
ON-SITE PROFILES

Des By	RLH/JDC	Scale	HORZ. 1" = 50' VERT. 1" = 5'	Proj. No.	95054.F
Drn By	KDE	Date	11-7-01	13 of 38	
Chk By		Approved			

F-01-137

F-01-137

Wed Nov 7 15:07:31 2001 h:\95054\final\95054F.SD3



SWM IV - RETROFIT OF EXISTING SOUTH EASTERN MIDDLE SCHOOL POND

MATCH LINE - SEE INSERT THIS SHEET

MD. & VA. MILK PRODUCERS ASSN INC.
LIBER 322 FOLIO 208
± 225.7 AC
PARCEL 2
TAX MAP 47 GRID 1
ZONED PEC

HOWARD COUNTY
LIBER 3573 FOLIO 461
MAP 47 GRID 2
ZONED R-ED

MYER'S HILL
LOT#1
PLAT# 12921
ZONED R-ED

KEY PROPERTY
FUTURE DEVELOPMENT

WAS KEY PROPERTY
PARCEL #A
PLAT #9834
ZONED R-ED

PEGGIN, NORMAN E
9851 GERMAN RD.
LAUREL, MD 20763.
LIBER: 1250 FOLIO: 526
TAX MAP 47 GRID 8 PARCEL 5
ZONED: PEOA

EXISTING BASIN I
PIPE FOR 1.34

EXISTING BASIN II
PIPE FOR 1.36

EXISTING BASIN VI
PIPE FOR 1.35

BASIN III

BASIN V

TRAP I

TRAP II

TRAP III

TRAP IV

EXISTING SKYLARK BLVD.

SKYLARK BLVD.

FALL RAIN DRIVE

OCEAN SAND COURT

MIDSUMMER SNOW LANE

WINTER SUN ROAD

SNOWY HILL TERRACE

ETERNAL SKY ROAD

DEEP SKIES DRIVE

RUNNING SAND KNOLL

WOODLAND WALKS

ROLLING RIVER RUN

WINTRY DAY PLACE

EXISTING INFORMAL OPEN SPACE LOT 164

PROPOSED OPEN SPACE LOT 164

Legend

- PROPERTY LINE
- 20' SWM EASEMENT
- 360 EXISTING CONTOUR
- 362
- 360 PROPOSED CONTOUR
- 362
- CLEAN WATER DIVERSION PIPE
- MOUNTABLE BERM
- L.O.D. LIMIT OF DISTURBANCE
- SF SF SILT FENCE
- FLOOD PLAIN LIMIT
- SSF SSF SUPER SILT FENCE
- EARTH DIKE
- EXISTING DRAINAGE AREA (DA) TO BASIN/TRAPS (ASSUMES BASIN/TRAP HAS BEEN BUILT, SKYLARK BOULEVARD/ SUBDIVISION ROADS HAVE NOT)
- PREVIOUS INTERIM DRAINAGE AREA TO BASINS I, II, VI (ASSUMES OPEN CUT CONDITION FOR SKYLARK BOULEVARD, CONSTRUCTION NOT YET STARTED FOR SUBDIVISION ROADS).
- ULTIMATE DRAINAGE AREA TO BASINS/ TRAPS (ASSUMES COMPLETION OF SKYLARK BOULEVARD, OPEN CUT CONDITION AND ESC IN PLACE FOR SUBDIVISION ROADS).

INTERIM CONDITION HYDROLOGY TABLE			
FACILITY	DRAINAGE AREA (AC)	RCN	TIME OF CONC. (MIN.)
BASIN III	9.00	75	0.33
TRAP I	2.08	88	0.19
TRAP II	2.58	92	0.17
TRAP III	0.92	91	0.10
TRAP IV	0.62	93	0.10

NOTE: IN ULTIMATE CONDITIONS, AREAS WITH ROADS, PONDS, MASS GRADE, OR ESC DEVICES SHOWN ARE CONSIDERED DISTURBED; ALL OTHER AREAS REMAIN UNDISTURBED.

No	Revision	Date
1	Regraded Storm Water Management Pond No. IV to accommodate a proposed classroom addition	1-15-02

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. NATURAL RESOURCE CONSERVATION SERVICE — DATE 11/27/01

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

HOWARD SCD — DATE 11/27/01

ENGINEER'S CERTIFICATION:

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
PRINT NAME BELOW SIGNATURE: JOHN W. RANOCCHIA SR.

DEVELOPERS CERTIFICATION:

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 ALSO AUTHORIZE PERIODIC ON-SITE INSPECTION BY THE HOWARD SOIL CONSERVATION DISTRICT OR THEIR AGENT. I ALSO CERTIFY THAT I WILL PROVIDE A HOWARD SOIL CONSERVATION DISTRICT APPROVED "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: ROMMER A. SERRANO — DATE 11/27/01

ALL SWM FACILITIES HAVE A HAZARD CLASSIFICATION OF "A"

STATE OF MARYLAND — JOHN W. RANOCCHIA JR. — No. 13204 — PROFESSIONAL ENGINEER

11/27/01
Date

PROFESSIONAL ENGINEER — JOHN W. RANOCCHIA JR. — No. 13204 — STATE OF MARYLAND

Professional Engr. No. 13204

APPROVED: HOWARD COUNTY DEPT. OF PUBLIC WORKS

CHIEF, BUREAU OF HIGHWAYS — DATE 12-19-01

APPROVED: HOWARD COUNTY DEPT. OF PLANNING & ZONING

CHIEF, DEVELOPMENT ENGINEERING DIVISION — DATE 12/24/01

CHIEF, DIVISION OF LAND DEVELOPMENT — DATE 12/27/01

DIRECTOR — DATE

Date	No.	Revision Description
11/15/04	1	REVISION 1 TO ADD FISHER, COLLINS AND CARTER, INC.

EMERSON

FORMERLY KEY PROPERTY
SECTION 2, PHASE 1B

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 1B	P/O P. 537, P. 3, P. 462

PLAT # OR L.F.	BLOCK #	ZONE	TAX/ZONE MAP	ELECT. DISTRICT	CENSUS TRACT
1,7675, F. 420 & 11,553, F. 62	23 & 24	MXD	47	6 TH	-

WATER CODE — SEWER CODE

TITLE

EROSION & SEDIMENT CONTROL
DRAINAGE AREA MAP

Des By	MRT	Scale	1" = 100'	Proj. No.	95054.F
Drn By	WHJ	Date	11-7-01	14 of 38	
Chk By		Approved			

F-01-137

F-01-137

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BASIN TABLE

BASIN NUMBER		I	VI
EXISTING DRAINAGE AREA AC.		10.56	4.0
* INTERIM DRAINAGE AREA AC.		9.92	8.3
PROPOSED DRAINAGE AREA AC.		8.96	** 12.6
STORAGE REQUIRED C.F.	WET	17,802	14,868
	DRY	17,802	14,868
	TOTAL	36,604	29,736
STORAGE PROVIDED C.F.	WET	19,129	15,025
	DRY	17,818	15,750
	TOTAL	36,947	30,775
EXISTING GROUND ELEV.		348.0	338.0
TOP EMBANKMENT ELEV.		354.2	346.0
EMERGENCY SPILLWAY CREST ELEV.		N/A	N/A
RISER CREST ELEV.		351.2	342.6
WET STORAGE ELEV.		350.0	338.0
CLEANOUT ELEV.		349.3	337.0
BOTTOM ELEV.		347.0	335.5
Q INTO BASIN (C.F.S.) 10 YR. CLOGGED		36.97	36.96
Q OUT BARREL (C.F.S.) 10 YR. CLOGGED		27.59	1.73
Q OUT EMERGENCY SPILLWAY		N/A	N/A
BASIN DEPTH	WET	3.00'	2.50'
	DRY	1.20'	1.40'
	TOTAL	4.20'	3.90'
DESIGN HIGHWATER 10 YR. CLOGGED		351.9	342.63
FREEBOARD PROVIDED		2.1'	3.37'
BARREL DIAMETER		30"	48"
RISER DIMENSIONS		4'X 4'	7'X 7'
EMERGENCY SPILLWAY WIDTH		N/A	N/A
WET STORAGE ZONE ELEV.		347.0-350.0	335.5-338.0
DRY STORAGE ZONE ELEV.		350.0-351.2	338.0-339.4
BOTTOM DIMENSIONS		140'X 70'	40'X 120'
EXISTING 2 YR. Q		3.62 CFS	2.59 CFS
PROPOSED 2 YR. Q		1.84 CFS	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.

NOTE:
CLEAN WATER ENTERING INLET I-6 WILL BE CONVEYED TO EXISTING BASIN VI.

FOR ULTIMATE CONDITIONS, EXISTING BASIN VI WILL BE CONVERTED TO SWM POND NO.VI, UNDER PHASE 1A AS PER F-01-136

FOR ULTIMATE CONDITIONS, EXISTING BASIN I WILL BE CONVERTED TO SWM POND NO.I, UNDER PHASE 1A AS PER F-01-136

NOTE:
THIS TEMP. SWERT WILL CONVEY CLEAN WATER INTO THE S.D. SYSTEM AT INLET I-12. CLEAN WATER WILL THEN DISCHARGE INTO EXISTING BASIN I.

LEGEND

- PROPERTY LINE
- 20' SWM EASEMENT
- 360 EXISTING CONTOUR
- 362 EXISTING CONTOUR
- 360 PROPOSED CONTOUR
- 362 PROPOSED CONTOUR
- CLEAN WATER DIVERSION PIPE
- MOUNTABLE BERM
- L.O.D. LIMIT OF DISTURBANCE
- SF SILT FENCE
- SSF SUPER SILT FENCE
- EARTH DIKE
- RPS REMOVABLE PUMPING STATION
- CIP CURB INLET PROTECTION
- AGIP AT GRADE INLET PROTECTION
- ECM EROSION CONTROL MATTING

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 OF DEVELOPER — DATE 11/2/01
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 — 11/7/01
PRINT NAME BELOW SIGNATURE
JOHN W. RANOCHIA SR.

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

U.S. NATURAL RESOURCE CONSERVATION SERVICE — DATE 11/27/01

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

HOWARD S.C.D. — DATE 11/27/01

NOTE: SEDIMENT BASINS I AND VI ARE ALREADY BUILT IN PHASE 1-A AND WILL FUNCTION AGAIN AS BASINS UNTIL SITE IS COMPLETED AND STABILIZED. AT THAT TIME THEY WILL BE CONVERTED TO SWM FACILITIES. SEE SEQUENCE OF CONSTRUCTION, SHEET OF .

APPROVED: HOWARD COUNTY DEPT. OF PUBLIC WORKS

CHIEF, BUREAU OF HIGHWAYS — DATE 12-19-01

APPROVED: HOWARD COUNTY DEPT. OF PLANNING & ZONING

CHIEF, DEVELOPMENT ENGINEERING DIVISION MK — DATE 12/24/01

CHIEF, DIVISION OF LAND DEVELOPMENT — DATE 12/27/01

DIRECTOR — DATE

Date	No.	Revision Description

EMERSON

FORMERLY KEY PROPERTY
SECTION 2, PHASE 1B

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 IB	P/O F, 837, F. 3, F. 462

PLAT OR L.F.	BLDG. #	ZONE	TAX/ZONE MAP	ELECT. DISTRICT	CENSUS TRACT
L.1076, F.430	1, 2, 3, 4, 5 & 6	MXD	47	6 TH	-
L.1076, F.431	M1, M2, M3, & M4				

WATER CODE	SEWER CODE
-	-

TITLE

EROSION & SEDIMENT CONTROL PLAN

Des By	MRT	Scale	1" = 50'	Proj. No.	95054.F
Dm By	WHJ	Date	11-7-01		
Chk By		Approved			15 of 38

11/7/01
Date

PROFESSIONAL ENGINEER — No. 10551 — JOHN W. RANOCHIA, SR. — STATE OF MARYLAND

Professional Engr. No. 10551

F-01-137

F-01-137

Wed Nov 7 10:06:37 2001 95054\final\95054sht2.dct

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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 OF DEVELOPER — DATE: 11/2/01
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
PRINT NAME BELOW SIGNATURE
JOHN W. RAHOCHIA JR.

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

U.S. NATURAL RESOURCE CONSERVATION SERVICE — DATE: 11/27/01

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

HOWARD S.C.D. — DATE: 11/27/01

NOTES:

SWM IV WILL NOT FUNCTION AS A BASIN AND THUS WILL BE CONSTRUCTED AS A SWM POND. THERE ARE NO DISTURBED AREAS THAT WILL DRAIN TO IT IN THIS PHASE.

THE BASEMENT ELEVATIONS AT LOTS 72 AND 73 ARE 358.5 AND 357.5 FT., RESPECTIVELY. BASIN/ SWM III HAS AN ULTIMATE 100-YEAR WATER SURFACE ELEV. OF 360.5. THE CLOSEST THE HOUSES CAN BE TO THE EDGE OF THE WATER SURFACE IS 60 FEET, BASED ON THE HOUSES BEING BUILT THE MINIMUM 20 FEET FROM THE BACK LOT LINE, EXTENDED DOWNSTREAM AT A 4:1 DOWNWARD GRADIENT, THE WATER SURFACE WOULD INTERSECT THESE TWO HOUSES AT ELEV. 349.5, CLEARLY BELOW THE BASEMENT ELEVATIONS OF EITHER HOUSE. THEREFORE, THE HOUSES WILL NOT FLOOD AS A RESULT OF THE BASIN/SWM POND.

TRAP TABLE

TRAP NUMBER		III
TRAP TYPE		ST-II
EXISTING DRAINAGE AREA AC.		2.44
INTERIM DRAINAGE AREA AC.		0.92
PROPOSED DRAINAGE AREA AC.		0.92
STORAGE REQUIRED C.F.	WET	1,656
	DRY	1,656
	TOTAL	3,312
* STORAGE PROVIDED C.F.	WET	3,700
	DRY	4,512
	TOTAL	8,212
EXISTING GROUND ELEVATION		362.0
TOP EMBANKMENT ELEVATION		364.0
TOP OF RIPRAP (ABOVE WEIR)		363.0
WEIR CREST ELEVATION (BOTT. RIPRAP)		360.0
WET STORAGE ELEVATION		360.0
CLEANOUT ELEVATION		359.5
BOTTOM ELEVATION		358.0
DEPTH OF CHANNEL (a)		NA
OUTLET WIDTH (b)		10.0'
BOTTOM DIMENSION		20' X 40'
TRAP SIDESLOPES		2:1
TRAP DEPTH	WET	2'
	DRY	3'
	TOTAL	5'
BARREL DIAMETER		N/A
RISER DIAMETER		N/A
WET STORAGE ZONE ELEVATION		358.0-360.0
DRY STOR.|2-YR MGMT ZONE ELEVATION		360.0-363.0
EXISTING 2-YR. Q		1.12 CFS
PROPOSED 2-YR. Q		1.12 CFS

* TRAP SIZED FOR TSWM 2-YEAR STORM EVENT BASED ON TR55 SHORT-CUT METHOD.

TRAP TABLE

TRAP NUMBER		IV
TRAP TYPE		ST-II
EXISTING DRAINAGE AREA AC.		1.66
INTERIM DRAINAGE AREA AC.		0.62
PROPOSED DRAINAGE AREA AC.		0.62
STORAGE REQUIRED C.F.	WET	1,116
	DRY	1,116
	TOTAL	2,232
* STORAGE PROVIDED C.F.	WET	2,800
	DRY	3,537
	TOTAL	6,337
EXISTING GROUND ELEVATION		355.0
TOP EMBANKMENT ELEVATION		358.0
TOP OF RIPRAP (ABOVE WEIR)		357.0
WEIR CREST ELEVATION (BOTT. RIPRAP)		354.0
WET STORAGE ELEVATION		354.0
CLEANOUT ELEVATION		353.2
BOTTOM ELEVATION		352.0
DEPTH OF CHANNEL (a)		NA
OUTLET WIDTH (b)		7.0'
BOTTOM DIMENSION		20' X 40'
TRAP SIDESLOPES		2:1
TRAP DEPTH	WET	2'
	DRY	3'
	TOTAL	5'
BARREL DIAMETER		N/A
RISER DIAMETER		N/A
WET STORAGE ZONE ELEVATION		352.0-354.0
DRY STOR.|2-YR MGMT ZONE ELEVATION		354.0-357.0
EXISTING 2-YR. Q		0.94 CFS
PROPOSED 2-YR. Q		0.94 CFS

* TRAP SIZED FOR TSWM 2-YEAR STORM EVENT BASED ON TR55 SHORT CUT METHOD.

APPROVED: HOWARD COUNTY DEPT. OF PUBLIC WORKS

CHIEF, BUREAU OF HIGHWAYS MS — DATE: 12-10-01

APPROVED: HOWARD COUNTY DEPT. OF PLANNING & ZONING

CHIEF, DEVELOPMENT ENGINEERING DIVISION MK — DATE: 12/4/01

CHIEF, DIVISION OF LAND DEVELOPMENT HB — DATE: 12/3/01

DIRECTOR — DATE

Date	No.	Revision Description

EMERSON

FORMERLY KEY PROPERTY
SECTION 2, PHASE 1B

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 IB	LOT/PARCEL #: P10 F. 837, P. 3, P. 462
PLAT# OR LIBER/FOLIO: L. 9726, F. 420 & L. 9781, F. 248	BLOCK #: E, 2, 3, & 4 & 1A, 2A, 3A, & 3B	ZONE: MXD	TAX/ZONE MAP: 47
		ELECT. DISTRICT: 6 TH	CENSUS TRACT: -
WATER CODE: -		SEWER CODE: -	

TITLE

EROSION & SEDIMENT CONTROL PLAN

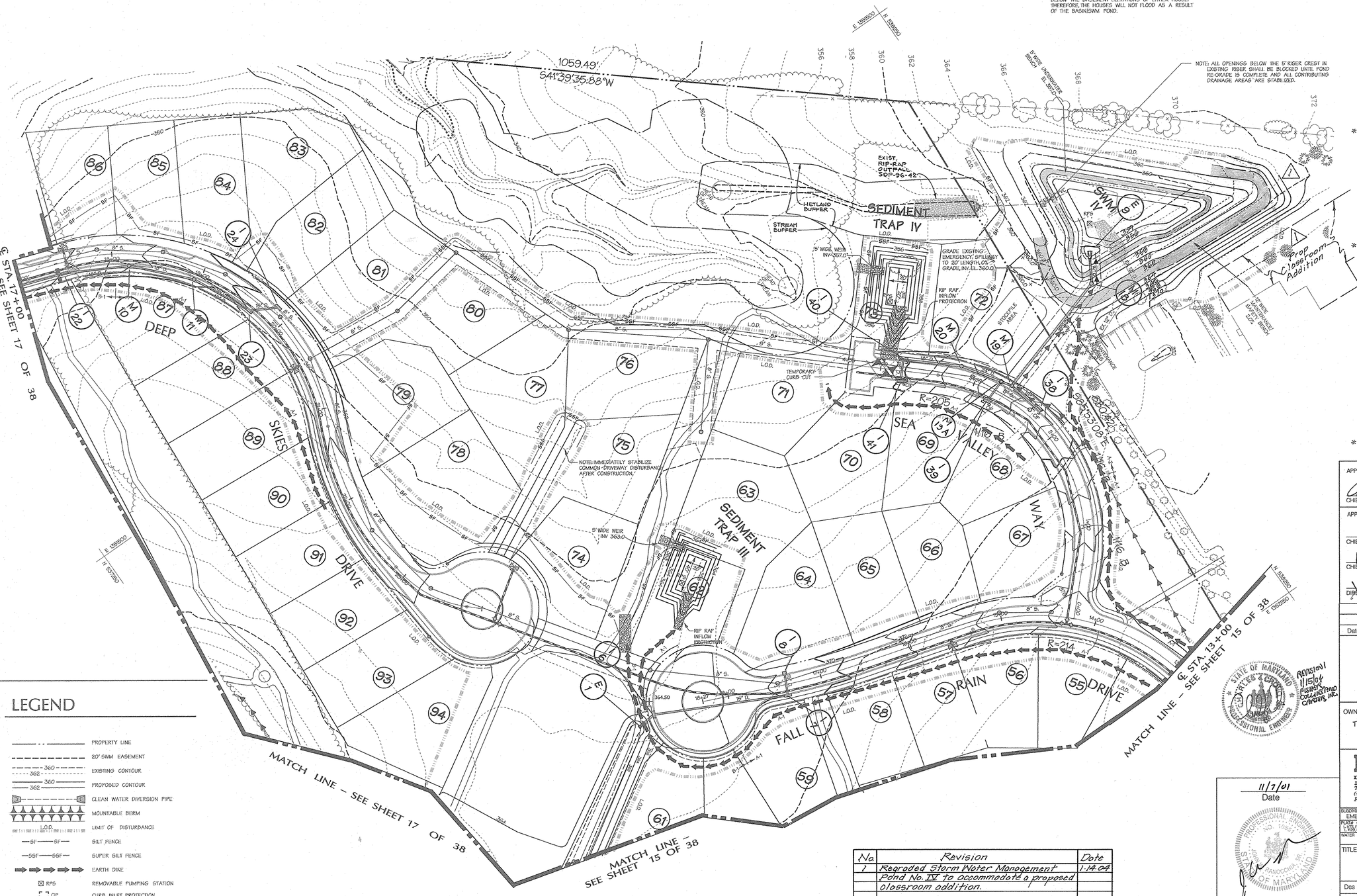
Des By: MRT	Scale: 1" = 50'	Proj. No.: 95054.F	
Drn By: WHJ	Date: 11-7-01	16 of 38	
Chk By:	Approved:		

11/7/01
Date

Professional Engr. No. 10551

No.	Revision	Date
1	Regraded Storm Water Management Pond No. IV to accommodate a proposed classroom addition.	1.14.04

REVISION 1 11/15/04 FISHER COLLINS AND CARTER, INC.



LEGEND

- PROPERTY LINE
- 20' SWM EASEMENT
- 360 EXISTING CONTOUR
- 362 / 360 PROPOSED CONTOUR
- CLEAN WATER DIVERSION PIPE
- MOUNTABLE BERM
- L.O.D. LIMIT OF DISTURBANCE
- SF SILT FENCE
- SSF SUPER SILT FENCE
- EARTH DIKE
- RPS REMOVABLE PUMPING STATION
- CIP CURB INLET PROTECTION
- AGIP AT GRADE INLET PROTECTION

F-01-137

F-01-137

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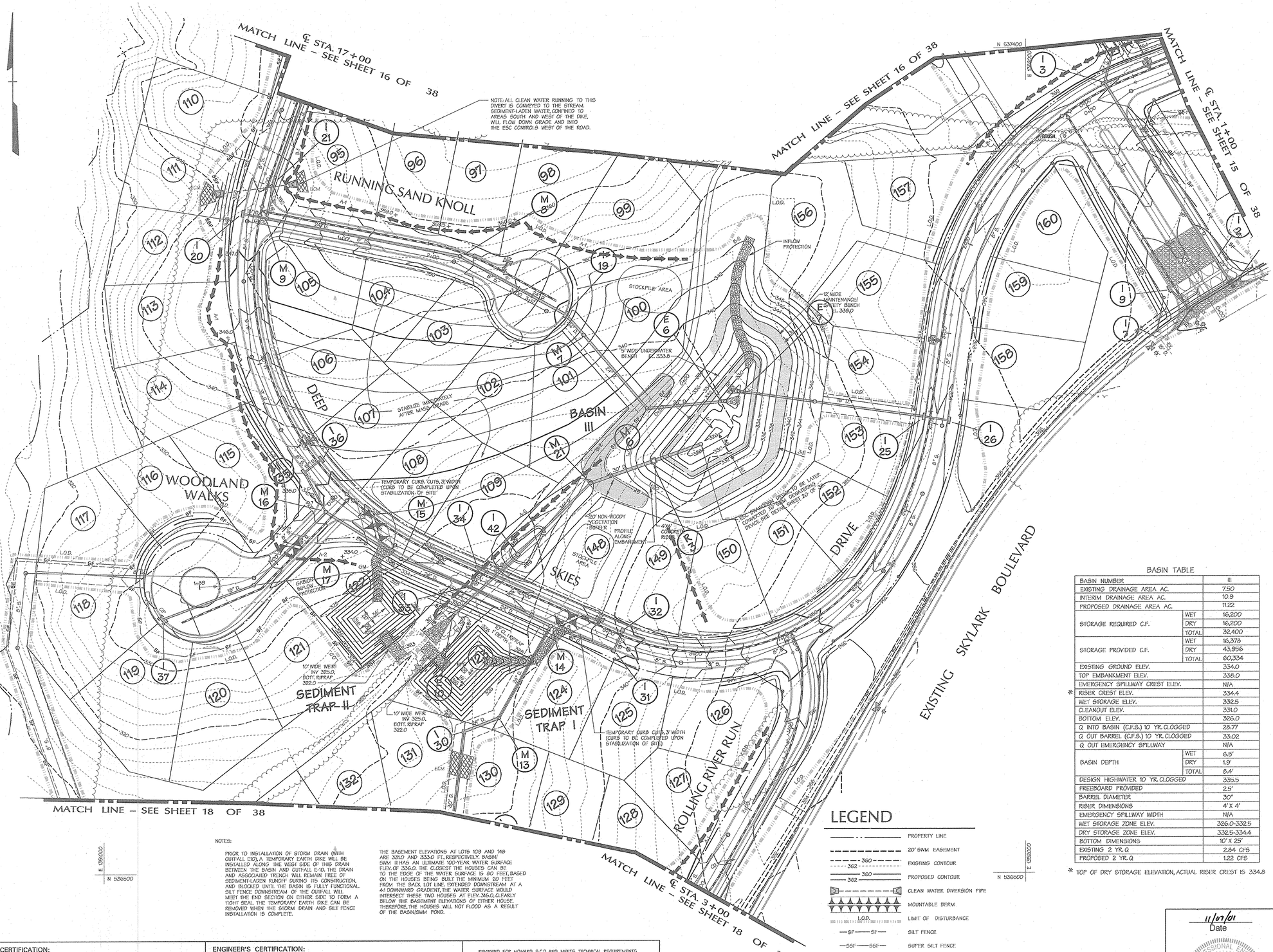

NOTES:

PRIOR TO INSTALLATION OF STORM DRAIN (WITH OUTFALL E10), A TEMPORARY EARTH DIKE WILL BE INSTALLED ALONG THE WEST SIDE OF THIS DRAIN BETWEEN THE BASIN AND OUTFALL E-10. THE DRAIN AND ASSOCIATED TRENCH WILL REMAIN FREE OF SEDIMENT-LADEN RUNOFF DURING ITS CONSTRUCTION, AND BLOCKED UNTIL THE BASIN IS FULLY FUNCTIONAL. SILT FENCE DOWNSTREAM OF THE OUTFALL WILL MEET THE END SECTION ON EITHER SIDE TO FORM A TIGHT SEAL. THE TEMPORARY EARTH DIKE CAN BE REMOVED WHEN THE STORM DRAIN AND SILT FENCE INSTALLATION IS COMPLETE.

THE BASEMENT ELEVATIONS AT LOTS 109 AND 148 ARE 339.0 AND 333.0 FT., RESPECTIVELY. BASIN/ SWM III HAS AN ULTIMATE 100-YEAR WATER SURFACE ELEV. OF 336.0. THE CLOSEST THE HOUSES CAN BE TO THE EDGE OF THE WATER SURFACE IS 80 FEET, BASED ON THE HOUSES BEING BUILT THE MINIMUM 20 FEET FROM THE BACK LOT LINE, EXTENDED DOWNSTREAM AT A 4H DOWNWARD GRADIENT, THE WATER SURFACE WOULD INTERSECT THESE TWO HOUSES AT ELEV. 346.0, CLEARLY BELOW THE BASEMENT ELEVATIONS OF EITHER HOUSE. THEREFORE, THE HOUSES WILL NOT FLOOD AS A RESULT OF THE BASIN/SWM POND.

LEGEND

- PROPERTY LINE
- 20' SWM EASEMENT
- 360 EXISTING CONTOUR
- 362 PROPOSED CONTOUR
- CLEAN WATER DIVERSION PIPE
- MOUNTABLE BERM
- L.O.D. LIMIT OF DISTURBANCE
- SF SILT FENCE
- SSF SUPER SILT FENCE
- EARTH DIKE
- RPS REMOVABLE PUMPING STATION
- CIP CURB INLET PROTECTION
- AGIP AT GRADE INLET PROTECTION
- ECM EROSION CONTROL MATTING
- GM GABION INFLOW PROTECTION WITH 3' GROUTED CUTOFF AT GRADE BREAKS (UPPER AND LOWER)

TRAP TABLE

TRAP NUMBER		II
TRAP TYPE		ST-II
EXISTING DRAINAGE AREA AC.		0.53
INTERIM DRAINAGE AREA AC.		2.58
PROPOSED DRAINAGE AREA AC.		2.58
STORAGE REQUIRED C.F.	WET	4,644
	DRY	4,644
	TOTAL	9,288
* STORAGE PROVIDED C.F.	WET	9,000
	DRY	9,448
	TOTAL	18,448
EXISTING GROUND ELEVATION		323.0
TOP EMBANKMENT ELEVATION		326.0
TOP OF RIPRAP (ABOVE WEIR)		325.0
WEIR CREST (BOTT. RIPRAP) ELEVATION		322.0
WET STORAGE ELEVATION		322.0
CLEANOUT ELEVATION		319.5
BOTTOM ELEVATION		316.0
DEPTH OF CHANNEL (a)		NA
OUTLET WIDTH (b)		11.0'
BOTTOM DIMENSION		20' X 36'
TRAP SIDESLOPES		2:1
TRAP DEPTH	WET	6'
	DRY	3'
	TOTAL	9'
BARREL DIAMETER		N/A
RISER DIAMETER		N/A
WET STORAGE ZONE ELEVATION		316.0-322.0
DRY STORAGE ZONE ELEVATION		322.0-325.0
EXISTING 2-YR. Q		0.17 CFS
PROPOSED 2-YR. Q		0.17 CFS

TRAP TABLE

TRAP NUMBER		I
TRAP TYPE		ST-II
EXISTING DRAINAGE AREA AC.		1.20
INTERIM DRAINAGE AREA AC.		2.08
PROPOSED DRAINAGE AREA AC.		2.08
STORAGE REQUIRED C.F.	WET	5,550
	DRY	5,550
	TOTAL	11,100
* STORAGE PROVIDED C.F.	WET	12,000
	DRY	8,030
	TOTAL	20,030
EXISTING GROUND ELEVATION		323.0
TOP EMBANKMENT ELEVATION		326.0
TOP OF RIPRAP (ABOVE WEIR)		325.0
WEIR CREST (BOTT. RIPRAP) ELEVATION		322.0
WET STORAGE ELEVATION		322.0
CLEANOUT ELEVATION		319.0
BOTTOM ELEVATION		316.0
DEPTH OF CHANNEL (a)		NA
OUTLET WIDTH (b)		9.0'
BOTTOM DIMENSION		16' X 44'
TRAP SIDESLOPES		2:1
TRAP DEPTH	WET	6'
	DRY	3'
	TOTAL	9'
BARREL DIAMETER		N/A
RISER DIAMETER		N/A
WET STORAGE ZONE ELEVATION		316.0-322.0
DRY STORAGE ZONE ELEVATION		322.0-325.0
EXISTING 2-YR. Q		0.32 CFS
PROPOSED 2-YR. Q		0.32 CFS

* TRAP SIZED FOR TSWM 2-YEAR STORM EVENT BASED ON TR55 SHORT CUT METHOD.

BASIN TABLE

BASIN NUMBER		III
EXISTING DRAINAGE AREA AC.		7.50
INTERIM DRAINAGE AREA AC.		10.9
PROPOSED DRAINAGE AREA AC.		11.22
STORAGE REQUIRED C.F.	WET	16,200
	DRY	16,200
	TOTAL	32,400
STORAGE PROVIDED C.F.	WET	16,376
	DRY	43,956
	TOTAL	60,334
EXISTING GROUND ELEV.		334.0
TOP EMBANKMENT ELEV.		338.0
EMERGENCY SPILLWAY CREST ELEV.		N/A
* RISER CREST ELEV.		334.4
WET STORAGE ELEV.		332.5
CLEANOUT ELEV.		331.0
BOTTOM ELEV.		326.0
Q INTO BASIN (C.F.S.) 10 YR. CLOGGED		28.77
Q OUT BARREL (C.F.S.) 10 YR. CLOGGED		33.02
Q OUT EMERGENCY SPILLWAY		N/A
BASIN DEPTH	WET	6.5'
	DRY	1.9'
	TOTAL	8.4'
DESIGN HIGHWATER 10 YR. CLOGGED		335.5
FREEBOARD PROVIDED		2.5'
BARREL DIAMETER		30"
RISER DIMENSIONS		4' X 4'
EMERGENCY SPILLWAY WIDTH		N/A
WET STORAGE ZONE ELEV.		326.0-332.5
DRY STORAGE ZONE ELEV.		332.5-334.4
BOTTOM DIMENSIONS		10' X 25'
EXISTING 2 YR. Q		2.84 CFS
PROPOSED 2 YR. Q		1.22 CFS

* 10" OF DRY STORAGE ELEVATION, ACTUAL RISER CREST IS 334.8

APPROVED: HOWARD COUNTY DEPT. OF PUBLIC WORKS

CHIEF, BUREAU OF HIGHWAYS — DATE 12-10-01

APPROVED: HOWARD COUNTY DEPT. OF PLANNING & ZONING

CHIEF, DEVELOPMENT ENGINEERING DIVISION — DATE 12/24/01

CHIEF, DIVISION OF LAND DEVELOPMENT — DATE 12-27-01

DIRECTOR — DATE

Date	No.	Revision Description

EMERSON

FORMERLY KEY PROPERTY
SECTION 2, PHASE 1B

OWNER/DEVELOPER:

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

SUBDIVISION NAME		SECTION/AREA		LOT#/PARCEL #
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PLAT# OR L/F	BLOCK #	ZONE	TAX/ZONE MAP	ELECT. DISTRICT	CENSUS TRACT
L.1505/F.122	E, F, G & 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 11-7-01		17 of 38
Chk By	Approved		

11/07/01
Date

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

Professional Engr. No. 10551

DEVELOPERS CERTIFICATION:

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SIGNATURE OF DEVELOPER — DATE 11/7/01
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
PRINT NAME BELOW SIGNATURE
JOHN W. RANOCCHIA SR.

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

U.S. NATURAL RESOURCE CONSERVATION SERVICE — DATE 11/21/01

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

HOWARD S.C.D. — DATE 11/27/01

F-01-137

F-01-137

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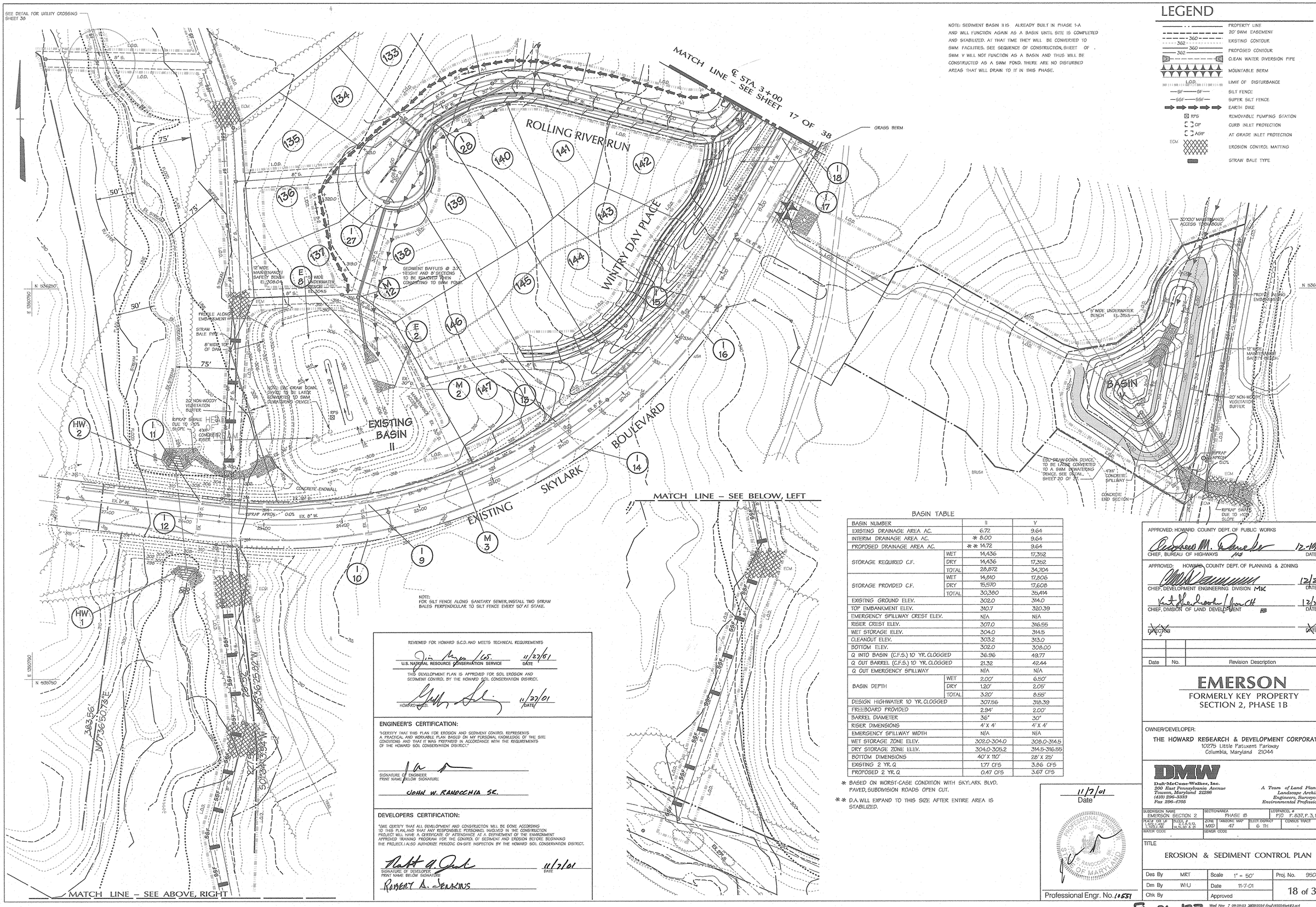

REVIEWED FOR HOWARD S.C.D. AND MEETS TECHNICAL REQUIREMENTS

U.S. NATURAL RESOURCE CONSERVATION SERVICE — DATE 11/27/01

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

HOWARD S.C.D. — DATE 11/27/01

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

PRINT NAME BELOW SIGNATURE: JOHN W. RANOCCHIA SR.

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 OF DEVELOPER — DATE 11/7/01

PRINT NAME BELOW SIGNATURE: ROBERT A. JENKINS

BASIN TABLE

BASIN NUMBER		II	V
EXISTING DRAINAGE AREA AC.		6.72	9.64
INTERIM DRAINAGE AREA AC.		* 8.00	9.64
PROPOSED DRAINAGE AREA AC.		** 14.72	9.64
STORAGE REQUIRED C.F.	WET	14,436	17,352
	DRY	14,436	17,352
	TOTAL	28,872	34,704
STORAGE PROVIDED C.F.	WET	14,810	17,806
	DRY	15,570	17,608
	TOTAL	30,380	35,414
EXISTING GROUND ELEV.		302.0	314.0
TOP EMBANKMENT ELEV.		310.7	320.39
EMERGENCY SPILLWAY CREST ELEV.		N/A	N/A
RISER CREST ELEV.		307.0	316.55
WET STORAGE ELEV.		304.0	314.5
CLEANOUT ELEV.		303.2	313.0
BOTTOM ELEV.		302.0	308.00
Q INTO BASIN (C.F.S.) 10 YR. CLOGGED		36.96	49.77
Q OUT BARREL (C.F.S.) 10 YR. CLOGGED		21.32	42.44
Q OUT EMERGENCY SPILLWAY		N/A	N/A
BASIN DEPTH	WET	2.00'	6.50'
	DRY	1.20'	2.05'
	TOTAL	3.20'	8.55'
DESIGN HIGHWATER 10 YR. CLOGGED		307.56	318.39
FREEBOARD PROVIDED		2.94'	2.00'
BARREL DIAMETER		36"	30"
RISER DIMENSIONS		4' X 4'	4' X 4'
EMERGENCY SPILLWAY WIDTH		N/A	N/A
WET STORAGE ZONE ELEV.		302.0-304.0	308.0-314.5
DRY STORAGE ZONE ELEV.		304.0-305.2	314.5-316.55
BOTTOM DIMENSIONS		40' X 110'	28' X 25'
EXISTING 2 YR. Q		1.77 CFS	3.86 CFS
PROPOSED 2 YR. Q		0.47 CFS	3.67 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.

11/7/01 Date

Professional Engr. No. 10551

APPROVED: HOWARD COUNTY DEPT. OF PUBLIC WORKS

CHIEF, BUREAU OF HIGHWAYS — DATE 12-19-01

APPROVED: HOWARD COUNTY DEPT. OF PLANNING & ZONING

CHIEF, DEVELOPMENT ENGINEERING DIVISION MK — DATE 12/24/01

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

DIRECTOR — DATE

Date	No.	Revision Description

EMERSON

FORMERLY KEY PROPERTY
SECTION 2, PHASE 1B

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 1B	P10 F. 837, P. 3, P. 462

PLAT # OR L/F	TAX/ZONE	TAX/ZONE MAP	ELECT. DISTRICT	CENSUS TRACT
11,009, & 20,425	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	11-7-01		18 of 38
Chk By		Approved			

F-01-137

F-01-137

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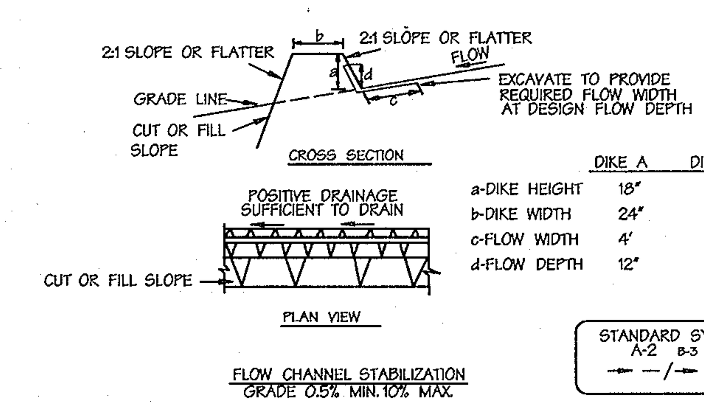


	DIKE A	DIKE B
a-DIKE HEIGHT	18"	30"
b-DIKE WIDTH	24"	36"
c-FLOW WIDTH	4'	6'
d-FLOW DEPTH	12"	24"

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

Earth Dike

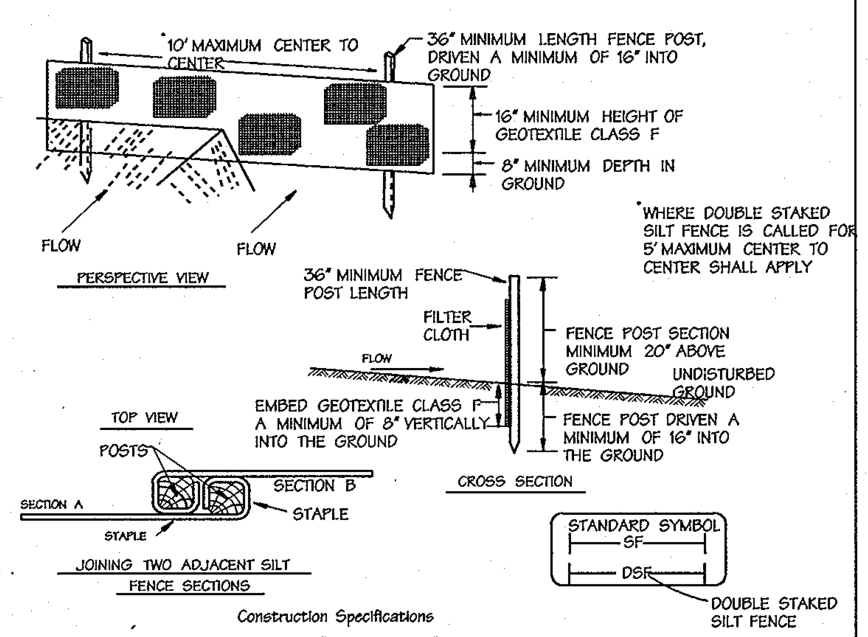
Not to Scale

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/BASING 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 (INCL. BOTH PHASES)	97.797 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.

Howard County Sediment Control General Notes



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:

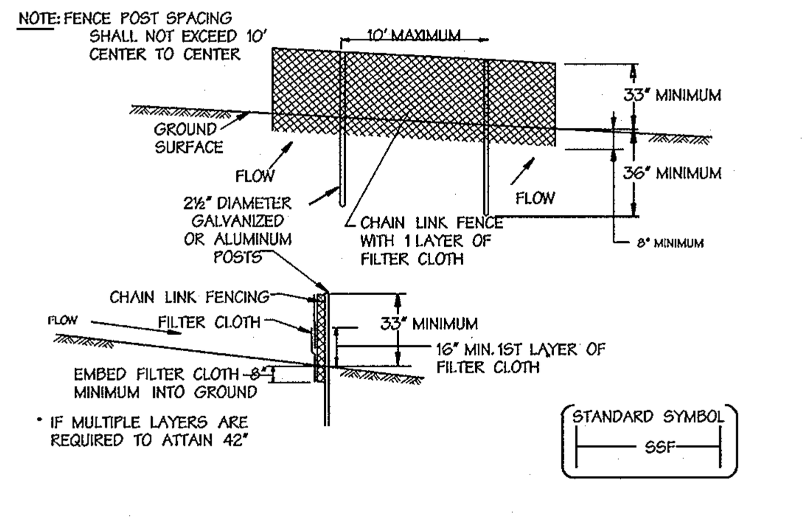
Tensile Strength	50 lbs/in (min.)	Test: MSMT 509
Tensile Modulus	20 lbs/in (min.)	Test: MSMT 509
Flow Rate	0.3 gal ft/minute (max.)	Test: MSTM 322
Filtering Efficiency	75% (min.)	Test: MSMT 322

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

Silt Fence

Not to Scale



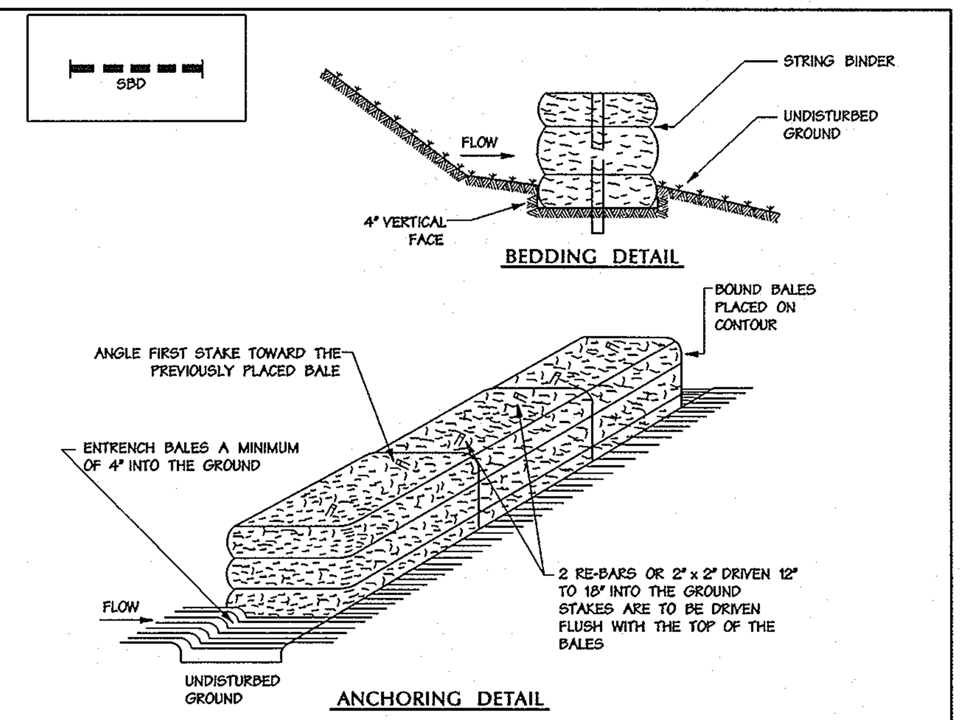
Construction Specifications

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

Super Silt Fence

Not to Scale



CONSTRUCTION SPECIFICATIONS

1. BALES SHALL BE PLACED AT THE TOE OF A SLOPE, ON THE CONTOUR, AND IN A ROW WITH THE ENDS OF EACH BALE TIGHTLY ABUTTING THE ADJACENT BALES.
2. EACH BALE SHALL BE ENTRENCHED IN THE SOIL A MINIMUM OF 4" AND PLACED SO THE BINDINGS ARE HORIZONTAL.
3. BALES SHALL BE SECURELY ANCHORED IN PLACE BY EITHER TWO STAKES OR RE-BARS DRIVEN THROUGH THE BALE 12" TO 18" INTO THE GROUND. THE FIRST STAKE IN EACH BALE SHALL BE DRIVEN TOWARD THE PREVIOUSLY LAID BALE AT AN ANGLE TO FORCE THE BALES TOGETHER. STAKES SHALL BE DRIVEN FLUSH WITH THE TOP OF THE BALE.
4. STRAW BALE DIKES SHALL BE INSPECTED FREQUENTLY AND AFTER EACH RAIN EVENT AND MAINTENANCE PERFORMED AS NECESSARY.
5. ALL BALES SHALL BE REMOVED WHEN THE SITE HAS BEEN STABILIZED. THE TRENCH WHERE THE BALES WERE LOCATED SHALL BE GRADED FLUSH AND STABILIZER.

U.S. DEPARTMENT OF AGRICULTURE SOIL CONSERVATION SERVICE — *H - 25 - 2* — *MARYLAND DEPARTMENT OF ENVIRONMENT WATER MANAGEMENT ADMINISTRATION*

Straw Bale Dike

Not to Scale

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.

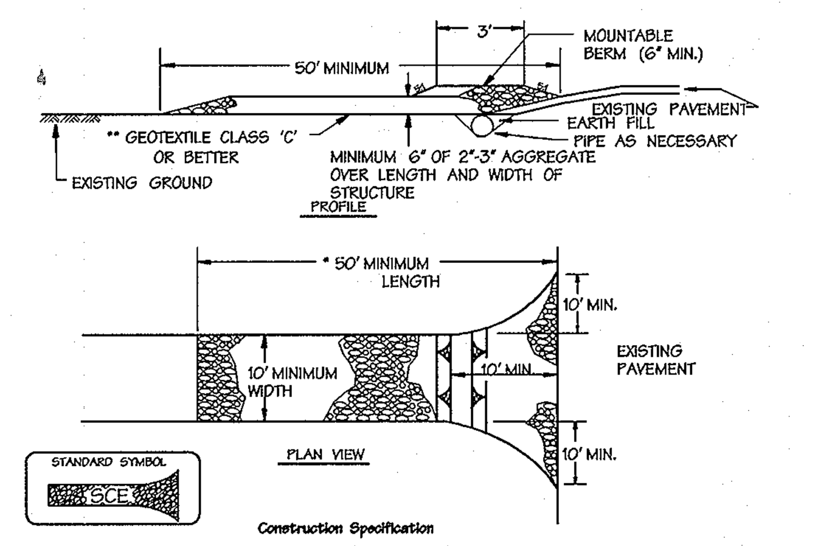
SOIL AMENDMENTS - APPLY 600 LBS. PER ACRE 10-10-10 FERTILIZER (14 LBS/1000 SQ.FT.)

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.

Temporary And Permanent Seeding Notes



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

Stabilized Construction Entrance

Not to Scale

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

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.

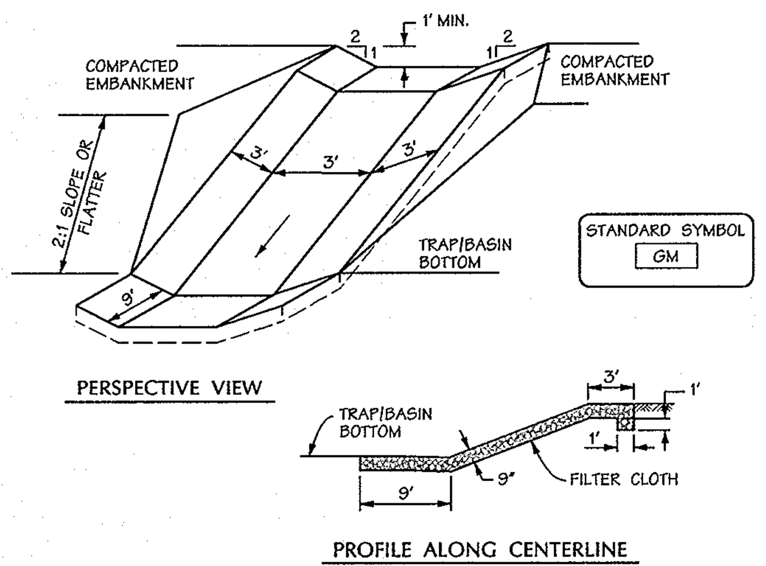
In addition, Classes A through E shall have a 0.01 cm./sec. minimum permeability when tested in accordance with MSMT 507, and an apparent minimum elongation of 20 percent (20%) when tested in accordance with the grab tensile strength requirements listed above.

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.

H - 24 - 1

Geotextile Material Specifications

Not To Scale



CONSTRUCTION SPECIFICATIONS

1. GABION INFLOW PROTECTION SHALL BE CONSTRUCTED OF 9' x 3' x 9" GABION BASKETS FORMING A TRAPEZOIDAL CROSS SECTION 1' DEEP, WITH 2:1 SIDE SLOPES, AND A 3' BOTTOM WIDTH.
2. GEOTEXTILE CLASS C SHALL BE INSTALLED UNDER ALL GABION BASKETS.
3. THE STONE USED TO FILL THE GABION BASKETS SHALL BE 4" - 7".
4. GABIONS SHALL BE INSTALLED IN ACCORDANCE WITH MANUFACTURERS RECOMMENDATIONS.
5. GABION INFLOW PROTECTION SHALL BE USED WHERE CONCENTRATED FLOW IS PRESENT ON SLOPES STEEPER THAN 4:1.

U.S. DEPARTMENT OF AGRICULTURE SOIL CONSERVATION SERVICE — B - 7 - 2 — *MARYLAND DEPARTMENT OF ENVIRONMENT WATER MANAGEMENT ADMINISTRATION*

NOT TO SCALE

Gabion Inflow Protection

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] 11/2/01
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]
SIGNATURE OF ENGINEER
PRINT NAME BELOW SIGNATURE
JOHN W. RANOCCHIA SR.

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

[signature] 11/27/01
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] 11/27/01
HOWARD S.C.D. — DATE

11/7/01
Date

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

Professional Engr. No. 10551

APPROVED: HOWARD COUNTY DEPT. OF PUBLIC WORKS
[signature] 12-19-01
CHIEF, BUREAU OF HIGHWAYS — DATE

APPROVED: HOWARD COUNTY DEPT. OF PLANNING & ZONING
[signature] 12/24/01
CHIEF, DEVELOPMENT ENGINEERING DIVISION MK — DATE
[signature] 12/27/01
CHIEF, DIVISION OF LAND DEVELOPMENT — DATE
DIRECTOR — DATE

Date	No.	Revision Description

EMERSON
FORMERLY KEY PROPERTY
SECTION 2, PHASE 1B

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 IB	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 AS SHOWN	Proj. No.	95054.F
Drn By WHJ	Date 11-7-01	19 of 38	
Chk By	Approved		

F-01-137

F-01-137

Wed Nov 7 11:06:26 2001 95054\final\95054fset#2.sc6

11/7/01 11:06:07 AM \\ATHENS\MSTATION\CADNETIN\QCF\dau.qcf Jbranch d:\hpm\95054fset#2.hpm

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 1-1/2⅜ 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 4⅜ - 8⅜ higher in elevation.

iii. Topsoil shall be uniformly distributed in a 4⅜ - 8⅜ layer and lightly compacted to a minimum thickness of 4⅜. 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.

EMERSON SEQUENCE OF CONSTRUCTION - PHASE 1-B

SEQUENCE	NO. OF DAYS
1. THIS SEQUENCE IS PREDICATED ON THE COMPLETION OF SEDIMENT BASINS CONSTRUCTED UNDER PHASE 1-A, PLAN F-01-136. AND AS DESCRIBED IN #4 AND NOTE 2 BELOW OBTAIN A GRADING PERMIT; NOTIFY MARYLAND DEPARTMENT OF THE ENVIRONMENT'S WATER MANAGEMENT ADMINISTRATION INSPECTIONS AND COMPLIANCE SECTION AT 410-631-3510 AT LEAST FIVE DAYS PRIOR TO START OF WORK IN WETLANDS, BUFFERS, FLOODPLAINS, OR STREAMS; AND NOTIFY ALL OTHER APPROPRIATE AGENCIES 48 HOURS PRIOR TO BEGINNING ANY WORK	14
2. INSTALL STABILIZED CONSTRUCTION ENTRANCES AT SKYLARK BLVD STATION 7+70, WINTER SUN ROAD STATION 19+00, 22+70 (CORRESPONDING TO ETERNAL SKY ROAD, SNOWY HILL TERRACE AND MIDSUMMER SNOW LANE, RESPECTIVELY)	3
3. CLEAR AND GRUB* FOR, INSTALL SILT FENCE, SUPER SILT FENCE, CLEAN WATER DIVERT AND INSTALL TREE PROTECTION FENCING IN ACCORDANCE WITH THE FCP.	10
4. INSTALL EROSION AND SEDIMENT CONTROL (ESC) BASINS AND TRAPS. BUILD OUT ENTIRE BARREL/ STORM DRAIN STRUCTURE BETWEEN PROPOSED SEDIMENT BASIN III AND PROP. OUTFALL WEST OF DEEP SKIES DRIVE. THE UPSTREAM END OF THIS STORM DRAIN SHALL BE BLOCKED UNTIL THE COMPLETION OF THE RISER AND BASIN DRAW-DOWN DEVICE. ESC BASINS I, II, VI WERE CONSTRUCTED UNDER PHASE 1-A (F-01-136); SEE SHEETS 15 AND 18 OF 38. BASIN III AND TRAPS I - IV ARE DESIGNED UNDER PHASE I-B; SEE SHEETS 16 AND 17 OF 38.	45
NOTE: ① THE CONTRACTOR SHALL MAINTAIN ESC MEASURES AT TRAPS I AND II AND AT E10 OUTFALL AT THE END OF EACH WORKING DAY TO ENSURE THAT NO SEDIMENT-LADEN RUNOFF LEAVES THE SITE. NOTE: ② IF BASINS 1, 2, OR 3 HAVE NOT BEEN COMPLETED PRIOR TO THE START OF PHASE 1.B CONSTRUCTION, THEN WORK WILL BE LIMITED TO THE DRAINAGE AREAS OF THE COMPLETED BASINS AS SHOWN ON SHEET 14 OF 38.	
5. AFTER OBTAINING PERMISSION FROM THE SEDIMENT CONTROL INSPECTOR TO PROCEED, GRADE THE SITE. MAINTAIN POSITIVE FLOW OF ALL SEDIMENT LADEN FLOWS TO ESC DEVICES. ESTABLISH AT-GRADE INLET PROTECTION DEVICES AT INLETS TO POND IV. ESTABLISH AND MAINTAIN DUST CONTROL MEASURES.	30
6. INSTALL STORM DRAINS AND OTHER UTILITIES. INSTALL CURB AND GUTTER, PAVE ROADS, REMOVE STOCKPILES, STABILIZE SITE.	50
7. WITH THE APPROVAL OF THE ESC INSPECTOR, REMOVE ESC DEVICES AND CONVERT SEDIMENT BASINS I, II, III, VI TO STORMWATER MANAGEMENT PONDS. STABILIZE ALL DISTURBED AREAS CREATED DURING ESC DEVICE REMOVAL AND POND CONVERSIONS.	10

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

Sequence of Construction

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:

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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 20.0Materials. Vegetative Stabilization - Section I - Vegetative Stabilization Methods and

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.

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

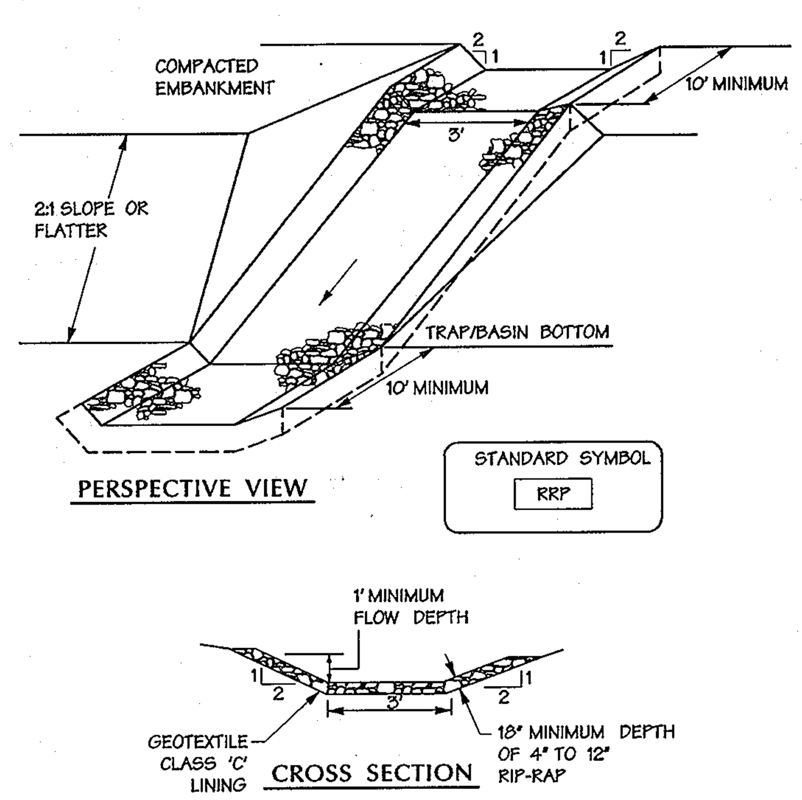
I. When topsoiling, maintain needed erosion and sediment control practices such as diversions, Grade Stabilization Structures, Earth Dikes, Slop Silt Fence and Sediment Traps and Basins.

ii. Grades on the areas to be topsoiled, which have been previously established, shall be maintained, albeit 4⅜ - 8⅜ higher in elevation.

iii. Topsoil shall be uniformly distributed in a 4⅜ - 8⅜ layer and lightly compacted to a minimum thickness of 4⅜. 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.

Top Soil Specifications



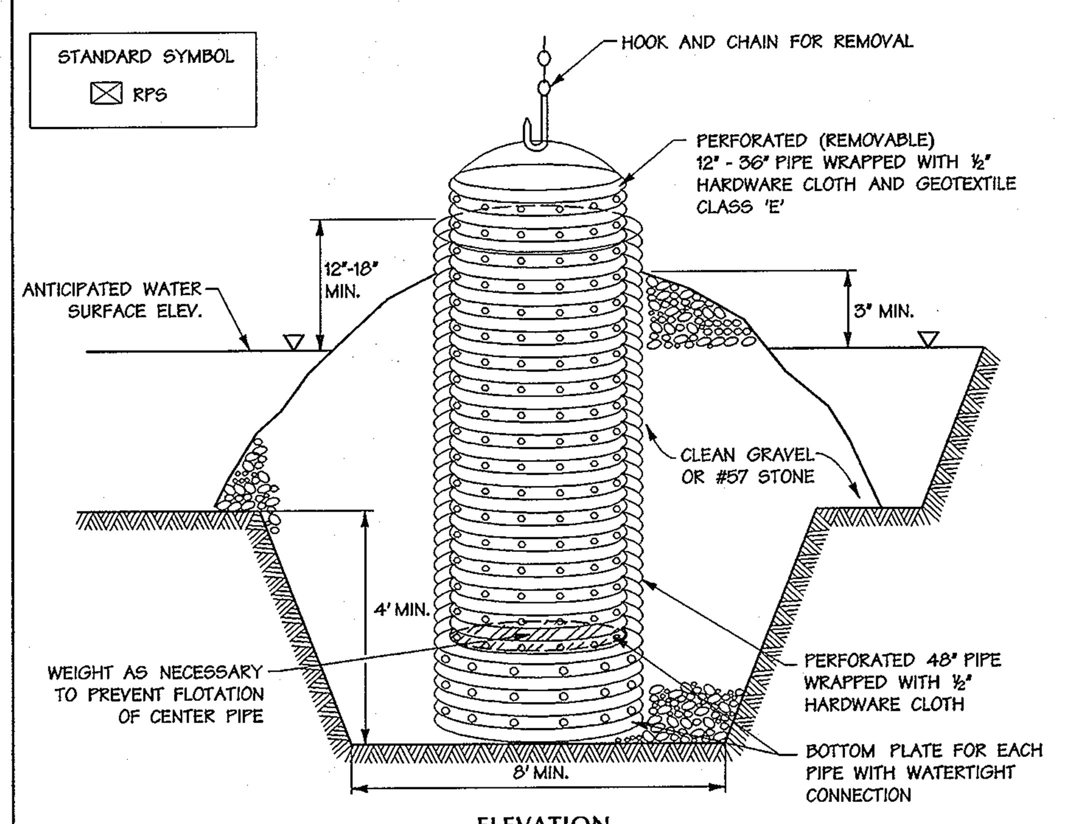
CONSTRUCTION SPECIFICATIONS

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

Not To Scale



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

"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.

Conditions and Management Practices

DUST CONTROL SPECIFICATIONS

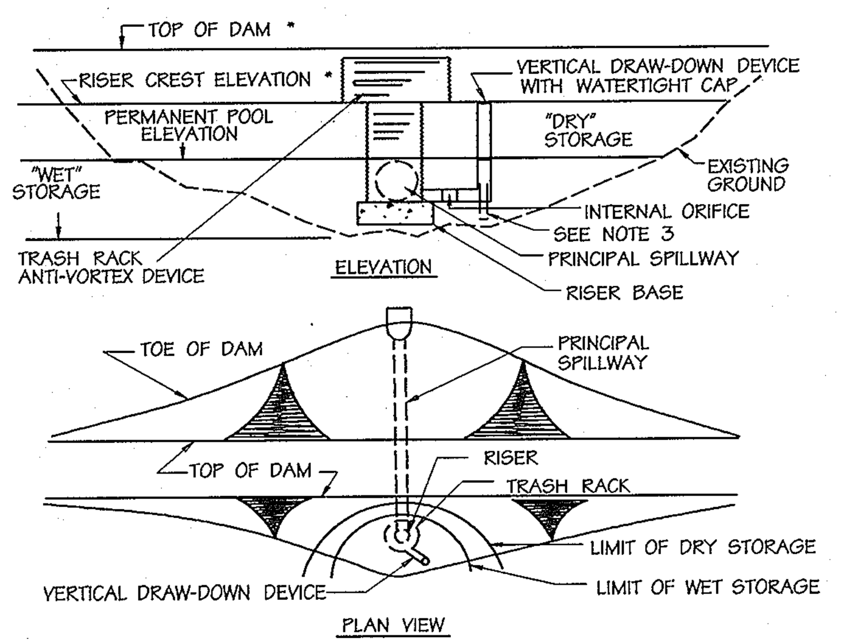
TEMPORARY METHODS:
1. MULCHES - SEE STANDARDS FOR VEGETATIVE STABILIZATION WITH MULCHES ONLY. MULCH SHOULD BE CRIMPED OR TACKED TO PREVENT BLOWING.
2. VEGETATIVE COVER - SEE STANDARDS FOR TEMPORARY VEGETATIVE COVER.
3. TILLAGE - TO ROUGHEN SURFACE AND BRING CLODS TO THE SURFACE. THIS IS AN EMERGENCY 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



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.

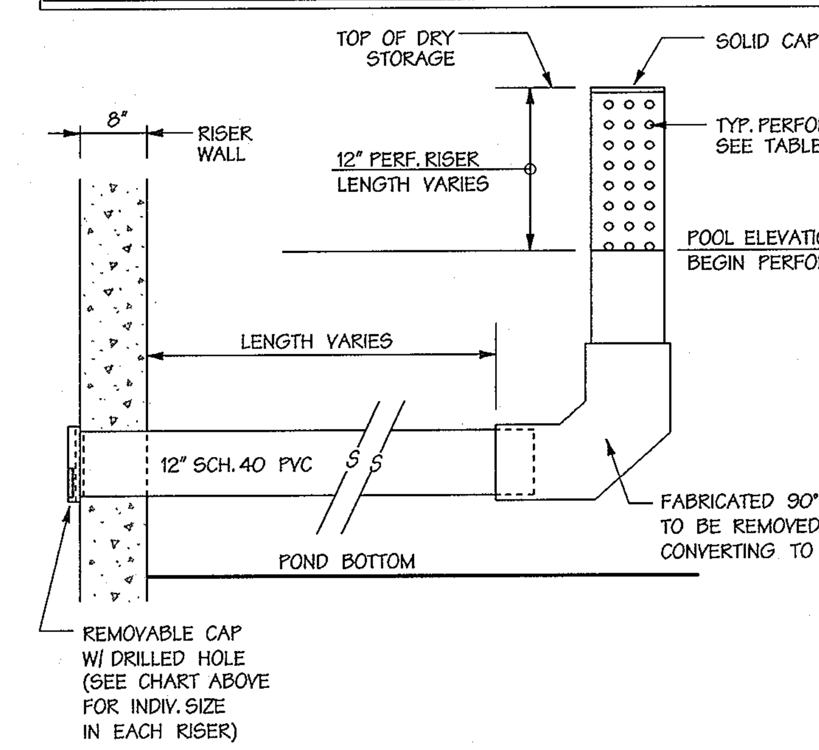
* RISER, EMBANKMENT DESIGNED BASED ON SWM COMPUTATIONS. RISER CREST DOES NOT NECESSARILY COINCIDE WITH TOP OF "DRY" STORAGE.

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

Basin Schematic Vertical Draw-Down Device

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-3	41.0'	332.5	1.9'	4"	2 ½"	40
R-6	19.5'	338.0	1.4'	3"	3"	40
R-5	16.0'	315.3	1.8'	4"	2 ¾"	40



Sediment Control Draw-Down

Not To Scale

DEVELOPERS CERTIFICATION:

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[signature] 11/7/01

SIGNATURE OF DEVELOPER — DATE
PRINT NAME BELOW SIGNATURE

ROBERT A. JENKINS

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"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."

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SIGNATURE OF ENGINEER
PRINT NAME BELOW SIGNATURE

JOHN W. RANOCCHIA SR.

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

[signature] GS — 11/27/01

U.S. NATURAL RESOURCE CONSERVATION SERVICE — DATE

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[signature] — 11/27/01

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Professional Engr. No. 10557

APPROVED: HOWARD COUNTY DEPT. OF PUBLIC WORKS

[signature] MS — 12-19-01

CHIEF, BUREAU OF HIGHWAYS — DATE

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[signature] MK — 12/24/01

CHIEF, DEVELOPMENT ENGINEERING DIVISION — DATE

[signature] for CH HB — 12/27/01

CHIEF, DIVISION OF LAND DEVELOPMENT — DATE

~~DIRECTOR~~ — ~~DATE~~

Date	No.	Revision Description

EMERSON

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SECTION 2, PHASE 1B

OWNER/DEVELOPER:

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10275 Little Patuxent Parkway
Columbia, Maryland 21044

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

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EMERSON SECTION 2	PHASE IB	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

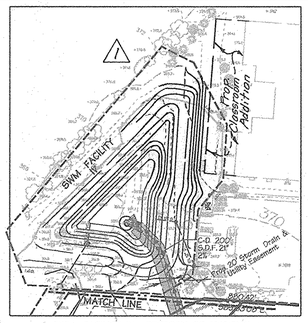
Des By	MRT	Scale	AS SHOWN	Proj. No.	95054.F
Drn By	WHJ	Date	11-7-01	20 of 38	
Chk By		Approved			

F-01-137

F-01-137

Wed Nov 7 09:46:17 2001 95054\final\95054fset#2.sc5

11/7/01 9:45:48 AM \\ATHENS\MSTATION\CADNETIN\OCF\day.gcf jbranch d:\hpm\95054fset#2.hpm



SWM FACILITY IV - RETROFIT OF EXISTING SOUTH EASTERN MIDDLE SCHOOL POND
SCALE: 1" = 100'

MATCH LINE - SEE INSERT THIS SHEET

MD. & VA. MILK PRODUCERS ASSN. INC.
LIBER 302 FOLIO 208
± 253.7 AC
PARCEL 2
TAX MAP 47 GRID 1
ZONED PECK

HOWARD COUNTY
LIBER 3973 FOLIO 491
MAP 47 GRID 2
ZONED R-ED

MYER'S HILL
LOT #1
PLAT# 12921
ZONED R-ED

WAS KEY PROPERTY
PARCEL #4
PLAT #5194
ZONED R-ED

PESSIN, NORMAN E
9951 GERMAN RD.
LAUREL, MD 20763.
LIBER 1250 FOLIO 526
TAX MAP 47 GRID 8 PARCEL 5
ZONED PECK

KEY PROPERTY
FUTURE DEVELOPMENT

SEA VALLEY WAY
FALL RAIN DRIVE
OCEAN SAND COURT
MIDSUMMER SNOW LANE
WINTER SUN ROAD
SNOWY HILL TERRACE
SKYLARK BLVD.
ETERNAL SKY ROAD
SKIES DRIVE
DEER SKIES
RUNNING SAND KNOLL
WOODLAND WALKS
ROLLING RIVER RUN
WINTRY DAY PLACE
THREE MOONS WAY
EXISTING SKYLARK BLVD.

DRAINAGE AREA I TO SWM I
DRAINAGE AREA II TO SWM II
DRAINAGE AREA III TO SWM III
DRAINAGE AREA IV TO SWM IV
DRAINAGE AREA V TO SWM V

SWM FACILITY I
SWM FACILITY II
SWM FACILITY III
SWM FACILITY IV
SWM FACILITY V

4' x 4' SPILLWAY RISER
36" RCCP INV. 346
EX. RIPRAP CHANNEL
CONCRETE HEADWALL
INLET #1
INLET #2
4' x 5' CONC. END WALL
ALL SWM FACILITIES HAVE A HAZARD CLASSIFICATION OF "A"

NOTE:
THE SPILLWAY RISER WILL SERVE AS THE EMERGENCY SPILLWAY FOR SWM FACILITIES III, V.

SWM FACILITY	FACILITY TYPE	WET POND ELEV.
III	WET POND	332.0
IV	WET POND	357.0
V	WET POND	314.2

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

No.	Revision	Date
1	Regraded Storm Water Management Pond IV to accommodate a proposed classroom addition	1-14-04

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. NATURAL RESOURCE CONSERVATION SERVICE — DATE 11/27/01

THESE PLANS FOR SMALL POND CONSTRUCTION, SOIL EROSION AND SEDIMENT CONTROL MEET THE REQUIREMENTS OF HOWARD SOIL CONSERVATION DISTRICT.
HOWARD SCD — DATE 11/27/01

ENGINEER'S CERTIFICATION:
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 — PRINT NAME BELOW SIGNATURE
JOHN W. RANOCCHIA SR.

DEVELOPERS CERTIFICATION:
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/WE 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 — DATE 11/26/01
ROBERT A. JEALOUS

11/7/01
Date

Professional Engr. No. 10551

APPROVED: HOWARD COUNTY DEPT. OF PUBLIC WORKS
CHIEF, BUREAU OF HIGHWAYS — DATE 12-19-01

APPROVED: HOWARD COUNTY DEPT. OF PLANNING & ZONING
CHIEF, DEVELOPMENT ENGINEERING DIVISION — DATE 12/24/01
CHIEF, DIVISION OF LAND DEVELOPMENT — DATE 12/27/01
DIRECTOR — DATE

Date	No.	Revision Description

EMERSON
FORMERLY KEY PROPERTY
SECTION 2, PHASE 1B

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

REVISION 1 1/15/04 FISHER COLLINS AND CARTER, INC.

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 IB		LOT/PARCEL #: P/O P. 837, P. 3, P. 462
PLAT # OR L/F: L.1023, F.420 PLATS 12,921 & 13,195	BLOCK #: 27 & 28	ZONE: MXD	TAX/ZONE MAP: 47
		ELECT. DISTRICT: 6 TH	CENSUS TRACT: -
WATER CODE:		SEWER CODE:	

TITLE
STORMWATER MANAGEMENT DRAINAGE AREA MAP

Des By: MRT	Scale: 1"=100'	Proj. No.	95054.F
Drn By: WHJ	Date: 11-7-01		21 of 38
Chk By:	Approved:		

F-01-137

Wed Nov 7 12:08:16 2001 95054\final\95054sht2.smf
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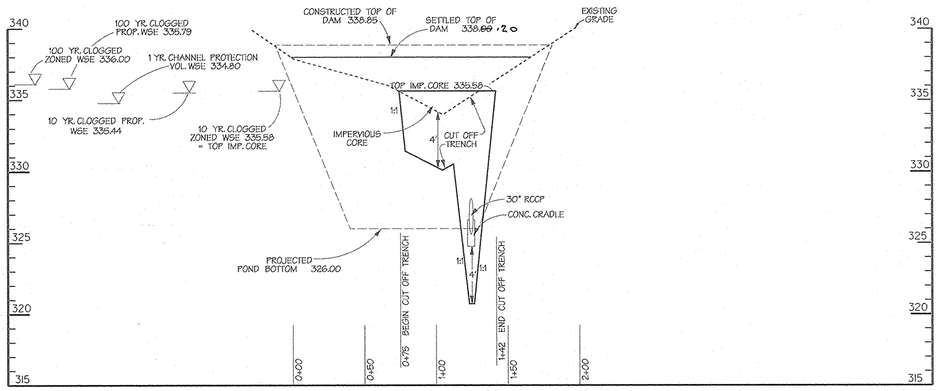
POND III
DESIGN FLOW SUMMARY PROPOSED CONDITIONS *

Water Quality Vol. WQ_v (Ac-ft)	0.324
Recharge Vol. Re_v (Ac-ft)	0.086
Channel Protection Vol. Cp_v (Ac-ft)	0.686
WQ_v Water Surface Elev. = Normal Pool	332.0
Cp_v Discharge, Proposed (cfs)	12.04
Cp_v Discharge Managed (cfs)	0.36
Cp_v Water Surface Elev.	334.8
Riser Crest Elev.	334.8
10 Yr. Clogged Water Surface Elev.	335.58
100 Yr. Clogged Water Surface Elev.	336.00
Pond Volume Below 100 Yr. Clogged WSE	1.38

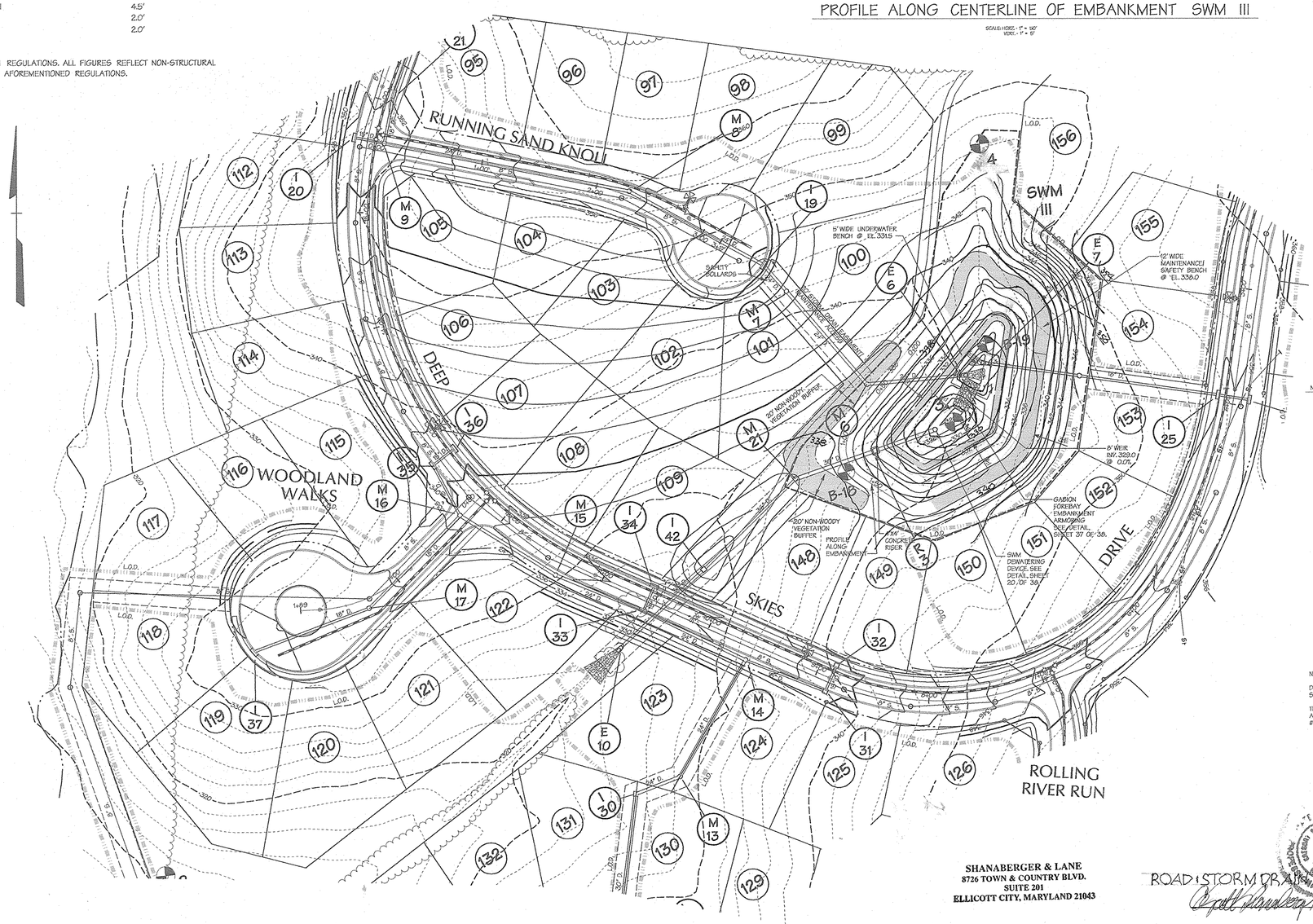
Structure Type	WET EXTENDED DETENTION
Water Quality Type	WET POND
Structure Classification	'A'
Storage Height Product 1 year	334.8
Storage Height Product 10 year	336.41
Storage Height Product 100 year	335.74
Watershed Area to Facility	0.0175 SQ MI.
Level of Management Required	1 YR.
Level of Management Provided	1 YR.
Top Width Provided	12'
Maximum Height of Fill	4.5'
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.



PROFILE ALONG CENTERLINE OF EMBANKMENT SWM III

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



NOTES:

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

THIS SWM FACILITY SHALL BE MAINTAINED AND OPERATED AS INDICATED IN ITEM #16 ON SHEET 27 OF 38.

NOTE: FOR SECTION A-A SEE SHEET 27.

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

ROAD/STORM DRAIN AS-BUILT

11/7/01
Date

Professional Engr. No. 10551

F-01-137

LEGEND

- PROPERTY LINE
- 20' SWM EASEMENT
- 360 EXISTING CONTOUR
- 362
- 360 PROPOSED CONTOUR
- 362
- L.O.D. LIMIT OF DISTURBANCE

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. NATURAL RESOURCE CONSERVATION SERVICE — DATE 11/27/01

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

HOWARD S.C.D. — DATE 11/27/01

DEVELOPERS CERTIFICATION:

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SIGNATURE OF DEVELOPER — DATE 11/26/01
PRINT NAME BELOW SIGNATURE
ROBERT A. JENKINS

ENGINEER'S CERTIFICATION:

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
PRINT NAME BELOW SIGNATURE
JOHN N. RANOCCHIA JR.

APPROVED: HOWARD COUNTY DEPT. OF PUBLIC WORKS

CHIEF, BUREAU OF HIGHWAYS — DATE 12-19-01

APPROVED: HOWARD COUNTY DEPT. OF PLANNING & ZONING

CHIEF, DEVELOPMENT ENGINEERING DIVISION — DATE

CHIEF, DIVISION OF LAND DEVELOPMENT — DATE 12-27-01

DIRECTOR — DATE

Date	No.	Revision Description

EMERSON

FORMERLY KEY PROPERTY
SECTION 2, PHASE 1B

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 1B		LOT/PARCEL #: P/O P. 837, P. 3, P. 462
PLAT OR L.F. L. 1078, F. 430	BLOCK, E, ZONE, ETC. E, F, G & H	ZONE: MXD	TAX/ZONE MAP: 47
ELECT. DISTRICT: 6 TH	CENSUS TRACT: -
WATER CODE: -	SEWER CODE: -		

TITLE

STORMWATER MANAGEMENT PLAN
SWM III

Des By: MRT	Scale: 1" = 50'	Proj. No.	95054.F
Drn By: WHJ	Date: 11-7-01		22 of 38
Chk By:	Approved:		

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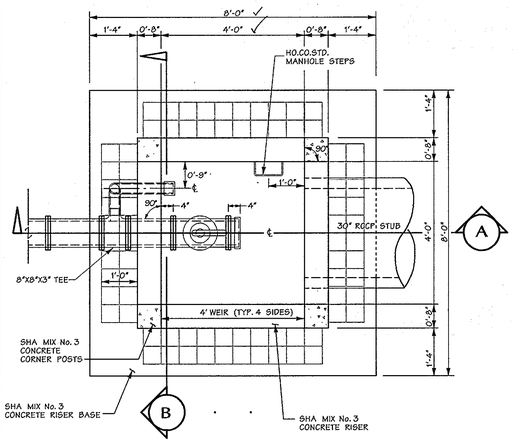
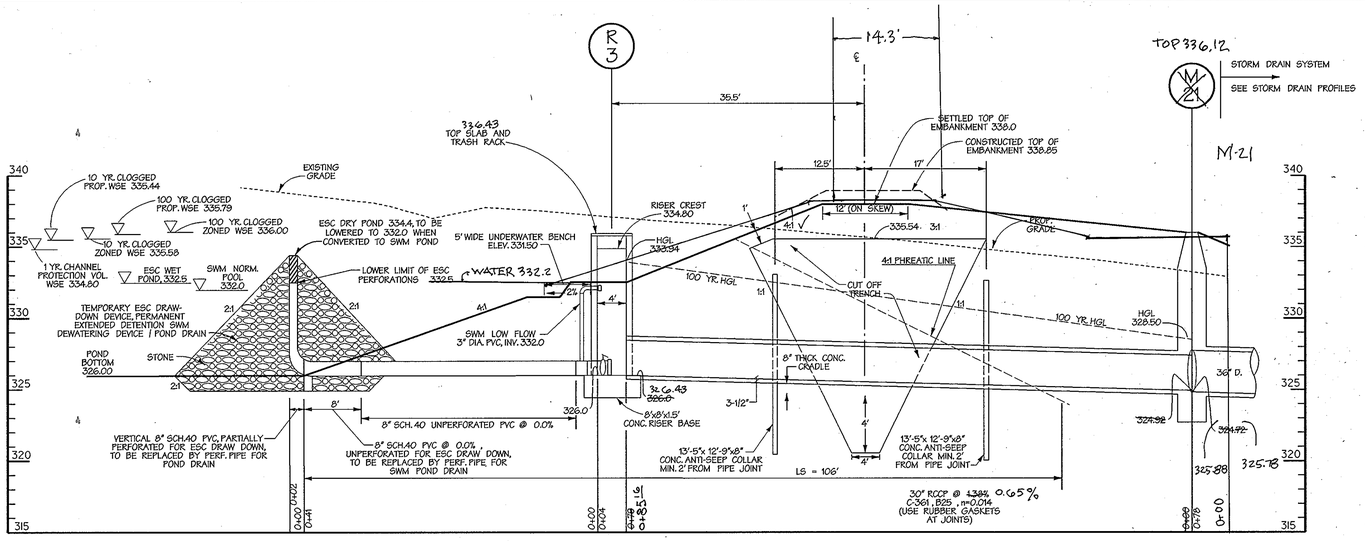


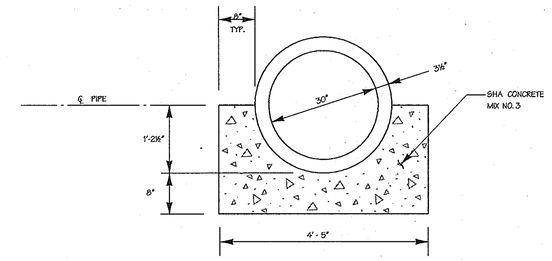
R-1 RISER PLAN (TOP SLAB REMOVED) - SWM III

Scale: ½" = 1'-0"
CAST IN PLACE



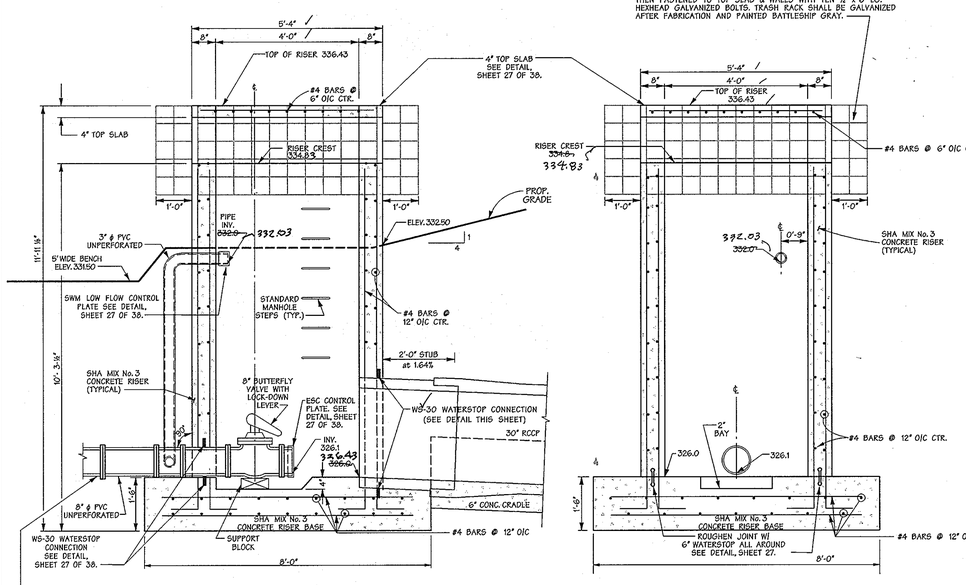
PROFILE ALONG PRINCIPAL SPILLWAY SWM POND III

Scale: Horz. - 1" = 10'
Vert. - 1" = 5'



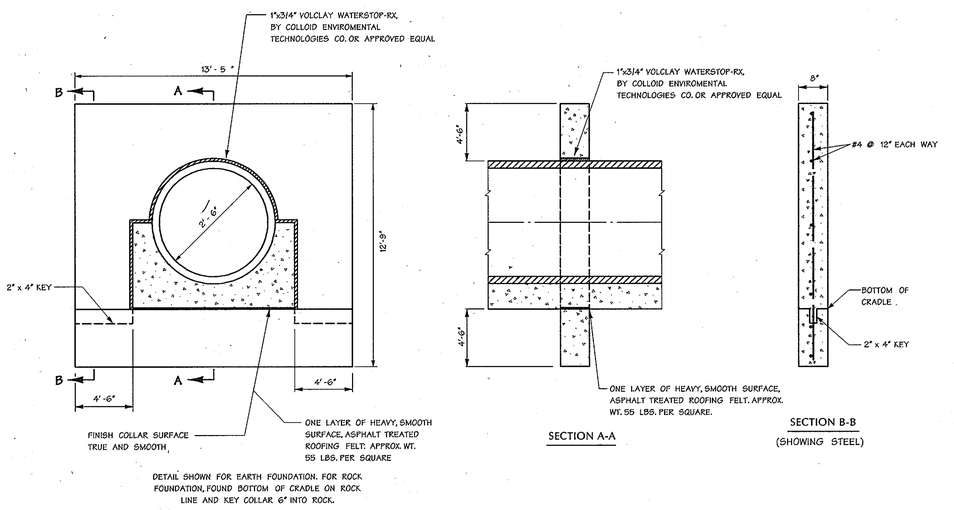
CONCRETE CRADLE DETAIL - SWM III

NTS



R-3 RISER DETAIL FOR POND - SWM III

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



ANTI - SEEP COLLAR DETAIL - SWM III

CAST IN PLACE - NOT TO SCALE

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 11/27/01

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 11/27/01

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 11/7/01
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 11/7/01
PRINT NAME BELOW SIGNATURE
JOHN W. RANOCCHIA, JR.

11/7/01
Date

PROFESSIONAL ENGINEER — NO. 10537 — JOHN W. RANOCCHIA, JR. — STATE OF MARYLAND

Professional Engr. No. 10537

F-01-137

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

STATE OF MARYLAND — SCOTT SHANABERGER — No. 21431 — REGISTERED PROFESSIONAL ENGINEER

ROAD/STORM DRAIN AS BUILT — 10/96

APPROVED: HOWARD COUNTY DEPT. OF PUBLIC WORKS
CHIEF, BUREAU OF HIGHWAYS MS — 12-19-01 DATE

APPROVED: HOWARD COUNTY DEPT. OF PLANNING & ZONING
CHIEF, DEVELOPMENT ENGINEERING DIVISION MK — 12/24/01 DATE
CHIEF, DIVISION OF LAND DEVELOPMENT HB — 12/27/01 DATE
DIRECTOR — DATE

Date	No.	Revision Description

EMERSON
FORMERLY KEY PROPERTY
SECTION 2, PHASE 1B

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 1B		LOT/PARCEL #: P/O F. 837, P. 3, P. 462
PLAT # OR L.F. L.1599, F.22	BLOCK #, E, G, H, I, J, K, L, M, N, O, P & R: M/O	ZONE: MXD	TAX/ZONE MAP: 47
ELECT. DISTRICT: 6TH	CENSUS TRACT: -	WATER CODE: -	SEWER CODE: -

TITLE
STORMWATER MANAGEMENT DETAILS – SWM III

Des By: MRT	Scale: AS SHOWN	Proj. No.	95054.F
Dm By: WHJ	Date: 11-7-01		23 of 38
Chk By	Approved		

F-01-137

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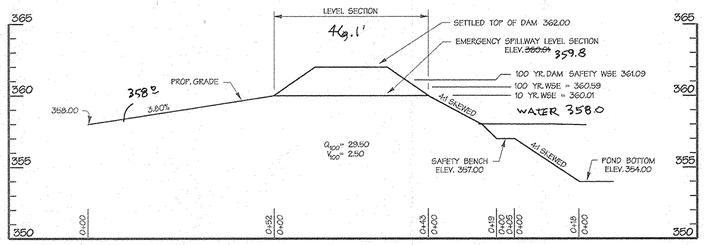


DEVELOPERS CERTIFICATION:

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.

Robt A. Shaw — 11/7/01
SIGNATURE OF DEVELOPER — DATE
PRINT NAME BELOW SIGNATURE
ROBERT A. SENKUS

ENGINEER'S CERTIFICATION:

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/ WE 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. 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.

U.S. NATURAL RESOURCE CONSERVATION SERVICE — DATE

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

HOWARD S.C.D. — DATE 11/27/01

LEGEND

- PROPERTY LINE
- 20' SWM EASEMENT
- 362 EXISTING CONTOUR
- 362 PROPOSED CONTOUR
- L.O.D. LIMIT OF DISTURBANCE

PROFILE ALONG ℄ OF EMERGENCY SPILLWAY

SCALE: HORZ. 1" = 20'
VERT. 1" = 5'

OPERATION AND MAINTENANCE SCHEDULE FOR PRIVATELY OWNED AND MAINTAINED STORMWATER PONDS

ROUTINE MAINTENANCE:

1. FACILITY SHALL BE INSPECTED ANNUALLY AND AFTER MAJOR STORMS. INSPECTIONS SHALL BE PERFORMED DURING WET WEATHER TO DETERMINE IF THIS POND IS FUNCTIONING PROPERLY.
2. TOP AND SIDE SLOPES OF THE EMBANKMENT SHALL BE MOWED A MINIMUM OF TWO (2) TIMES PER YEAR, ONCE IN JUNE AND ONCE IN SEPTEMBER. OTHER SIDE SLOPES AND MAINTENANCE ACCESS SHALL BE MOWED AS NEEDED.
3. DEBRIS AND LITTER SHALL BE REMOVED DURING REGULAR MOWING OPERATIONS AND AS NEEDED.
4. VISIBLE SIGNS OF EROSION IN THE POND AS WELL AS THE RIP-RAP OR GABION OUTLET AREA SHALL BE REPAIRED AS SOON AS IT IS NOTICED.

NON-ROUTINE MAINTENANCE:

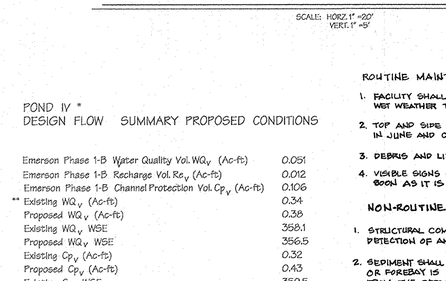
1. STRUCTURAL COMPONENTS OF THE POND SUCH AS THE DAM, THE RISER AND THE PIPES SHALL BE REPAIRED UPON THE DETECTION OF ANY DAMAGE. THE COMPONENTS SHALL BE INSPECTED DURING ROUTINE MAINTENANCE OPERATIONS.
2. SEDIMENT SHALL BE REMOVED FROM THE POND AND FOREBAY NO LATER THAN WHEN THE CAPACITY OF THE POND OR FOREBAY IS HALF FULL OF SEDIMENT OR WHEN DEEMED NECESSARY FOR AESTHETIC REASONS. UPON APPROVAL FROM THE DEPARTMENT OF PUBLIC WORKS.

POND IV *
DESIGN FLOW SUMMARY PROPOSED CONDITIONS

Emerson Phase 1-B Water Quality Vol. WQ_v (Ac-ft)	0.051
Emerson Phase 1-B Recharge Vol. Re_v (Ac-ft)	0.012
Emerson Phase 1-B Channel Protection Vol. Cp_v (Ac-ft)	0.106
** Existing WQ_v (Ac-ft)	0.34
Proposed WQ_v (Ac-ft)	0.38
Existing WQ_v WSE	358.1
Proposed WQ_v WSE	356.5
Existing Cp_v (Ac-ft)	0.32
Proposed Cp_v (Ac-ft)	0.43
Existing Cp_v WSE	359.5
Proposed Cp_v WSE	356.8
Existing / Proposed Riser Crest Elev.	358.70 & 358.95
10 Yr. Water Surface Elev.	360.01
100 Yr. Water Surface Elev.	360.59
Pond Volume Below 100 Yr. Clogged WSE	1.83
Structure Type	WET EXTENDED DETENTION
Water Quality Type	WET POND
Structure Classification	'A'
Proposed Watershed Area to Facility	0.023 mi^2
Level of Management Required	1 YR.
Level of Management Provided	1 YR. ,10 YR.
Top Width Provided	N/A (Existing)
Freeboard Required	1.0'
Freeboard Provided	1.4'

* POND IV CONSISTS OF EXPANSION OF EX. EASTERN MIDDLE SCHOOL SWM POND #2 BY EXCAVATION ALONG EAST SIDE OF POND. RISER / EMBANKMENT NOT AFFECTED.

** EXISTING VALUES ARE GLEANED FROM 12/95 DMW EASTERN MIDDLE SCHOOL SWM DESIGN REPORT. PROPOSED VALUES ARE THE COMBINED EX. (E.M.S.) AND EMERSON PHASE 1-B VALUES WHICH WILL BE DIVERTED INTO SWM IV.

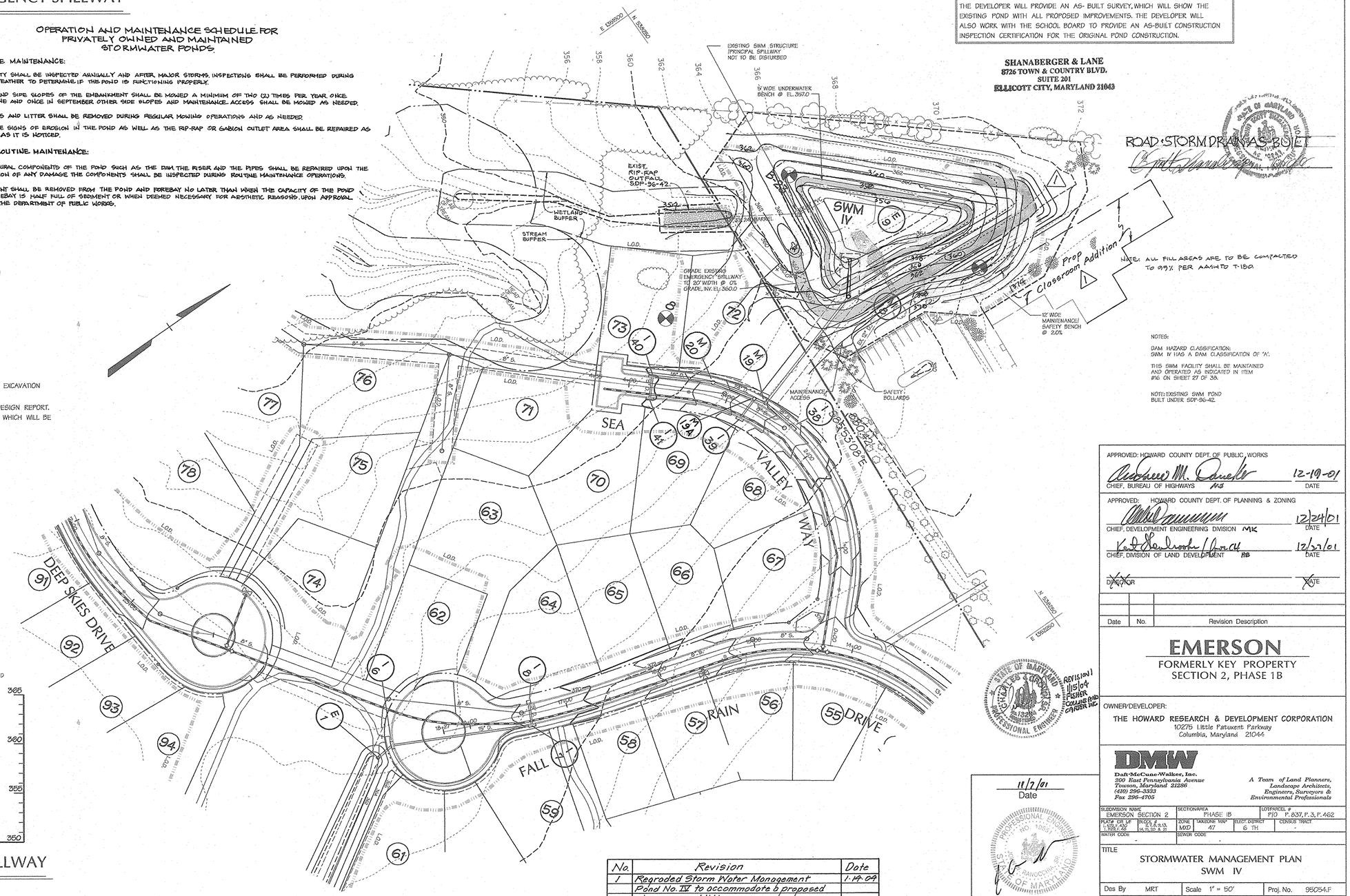


PROFILE ALONG ℄ OF EMERGENCY SPILLWAY

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

SWM POND #IV * AS BUILT NOTE

THE DEVELOPER WILL PROVIDE AN AS- BUILT SURVEY, WHICH WILL SHOW THE EXISTING POND WITH ALL PROPOSED IMPROVEMENTS. THE DEVELOPER WILL ALSO WORK WITH THE SCHOOL BOARD TO PROVIDE AN AS-BUILT CONSTRUCTION INSPECTION CERTIFICATION FOR THE ORIGINAL POND CONSTRUCTION.



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

ROAD, STORM DRAIN AS-BUILT

NOTE: ALL FILL AREAS ARE TO BE COMPACTED TO 99% PER AASHTO T-180.

NOTES:

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

THIS SWM FACILITY SHALL BE MAINTAINED AND OPERATED AS INDICATED IN ITEM #16 ON SHEET 27 OF 38.

NOTE: EXISTING SWM POND BUILT UNDER SDP-96-42.

No.	Revision	Date
1	Regraded Storm Water Management Pond No. IV to accommodate proposed classroom addition.	1-19-02

11/7/01
Date

Professional Engr. No. 10557

APPROVED: HOWARD COUNTY DEPT. OF PUBLIC WORKS
CHIEF, BUREAU OF HIGHWAYS — DATE 12-19-01

APPROVED: HOWARD COUNTY DEPT. OF PLANNING & ZONING
CHIEF, DEVELOPMENT ENGINEERING DIVISION — DATE 12/24/01
CHIEF, DIVISION OF LAND DEVELOPMENT — DATE 12/27/01
DIRECTOR — DATE

Date	No.	Revision Description

EMERSON
FORMERLY KEY PROPERTY
SECTION 2, PHASE 1B

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 1B		LOT/PARCEL #: P/O F, 837, F. 3, F. 462
PLAT OR L/F: L. 9276, F. 420 L. 10291, F. 481	BLOCK, E, Z & G.N.A.: 1A, 1B, 1D & 1E	ZONE: MXD	TAX/ZONE MAP: 47
ELECT. DISTRICT: 6 TH	CENSUS TRACT: -	WATER CODE: -	SEWER CODE: -

TITLE
STORMWATER MANAGEMENT PLAN
SWM IV

Des By MRT	Scale 1" = 50'	Proj. No. 95054.F	
Drn By WHJ	Date 11-7-01	24 of 38	
Chk By	Approved		

F-01-137

Wed Nov 7 11:53:18 2001 95054\final\95054sct#2.sm3
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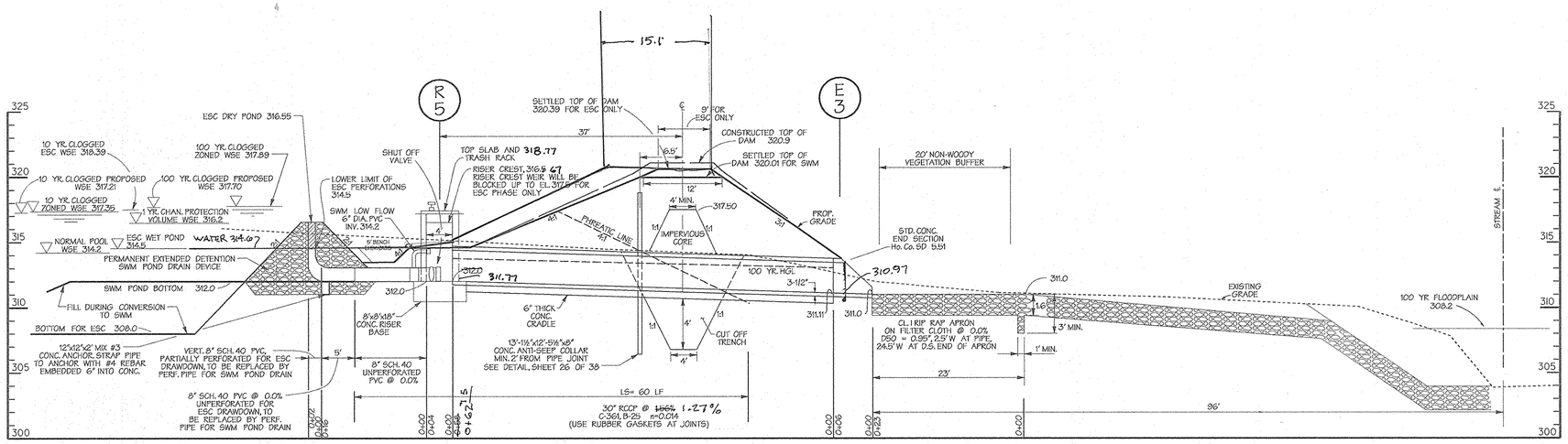


PROFILE ALONG PRINCIPAL SPILLWAY SWM POND V

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

LEGEND

- PROPERTY LINE
- 20' SWM EASEMENT
- 360 EXISTING CONTOUR
- 362
- 360 PROPOSED CONTOUR
- 362
- L.O.D. LIMIT OF DISTURBANCE

DEVELOPERS CERTIFICATION:

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 11/7/01
PRINT NAME BELOW SIGNATURE
ROBERT A. JENKINS

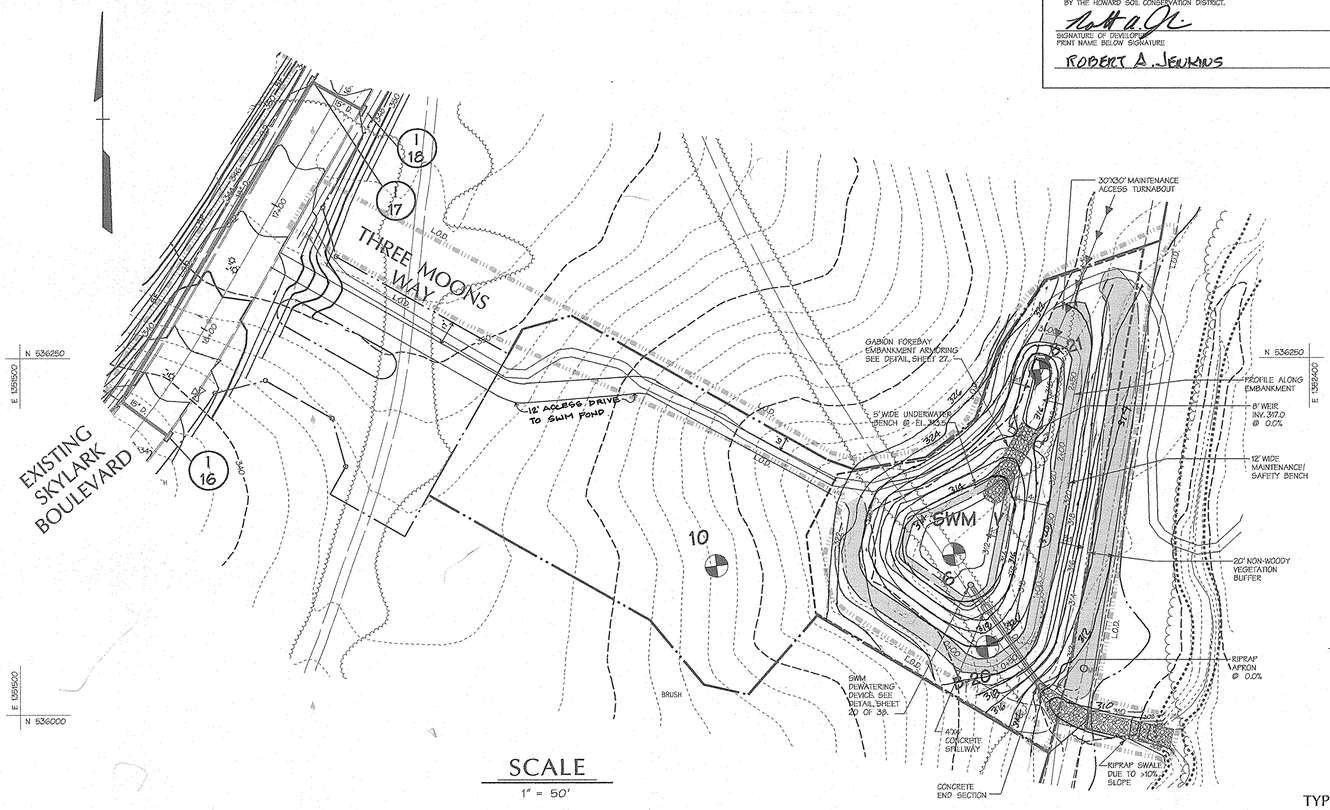
ENGINEER'S CERTIFICATION:

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
PRINT NAME BELOW SIGNATURE
JOHN W. RANOCCHIA SR.

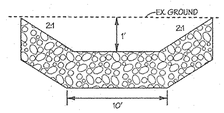
THESE PLANS HAVE BEEN REVIEWED FOR THE HOWARD SOIL CONSERVATION DISTRICT AND MEET THE TECHNICAL REQUIREMENTS FOR SMALL POND CONSTRUCTION, SOIL EROSION AND SEDIMENT CONTROL.
U.S. NATURAL RESOURCE CONSERVATION SERVICE — DATE 11/22/01

THESE PLANS FOR SMALL POND CONSTRUCTION, SOIL EROSION AND SEDIMENT CONTROL MEET THE REQUIREMENTS OF HOWARD SOIL CONSERVATION DISTRICT.
HOWARD S.C.D. — DATE 11/27/01



SCALE
1" = 50'

NOTE: FOR SECTION A-A SEE SHEET 27.



TYPICAL SECTION OF RIP-RAP CHANNEL
NOT TO SCALE

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

ROAD & STORM DRAIN AS-BUILT
11/7/01

NOTES:

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

THIS SWM FACILITY SHALL BE MAINTAINED AND OPERATED AS INDICATED IN ITEM #16 ON SHEET 27.

11/7/01
Date

Professional Engr. No. 10557

APPROVED: HOWARD COUNTY DEPT. OF PUBLIC WORKS
CHIEF, BUREAU OF HIGHWAYS — DATE 12-10-01

APPROVED: HOWARD COUNTY DEPT. OF PLANNING & ZONING
CHIEF, DEVELOPMENT ENGINEERING DIVISION MK — DATE 12/24/01
CHIEF, DIVISION OF LAND DEVELOPMENT — DATE 12/21/01
DIRECTOR — DATE

Date	No.	Revision Description

EMERSON
FORMERLY KEY PROPERTY
SECTION 2, PHASE 1B

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 1B		LOT/PARCEL #: P10 F. 837, P. 3, P. 462
PLAT # OR L.1059, F. 48	BLOCK # OR GRID 27 & 33	ZONE: MXD	TAX/ZONE MAP: 47
ELECT. DISTRICT: 6 TH	CENSUS TRACT:		
WATER CODE:	SEWER CODE:		

TITLE
STORMWATER MANAGEMENT PLAN
SWM V

Des By MRT	Scale AS SHOWN	Proj. No. 95054-F	25 of 38
Drn By WHJ	Date 11-7-01		
Chk By	Approved		

Wed Nov 7 11:03:10 2001 P:\95054\final\95054sht#2.dgn

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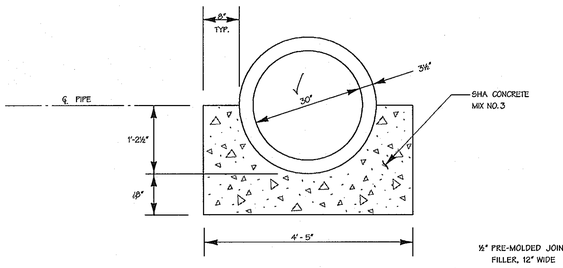
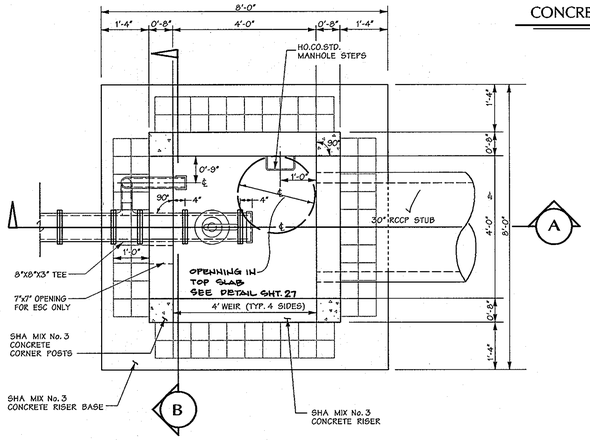


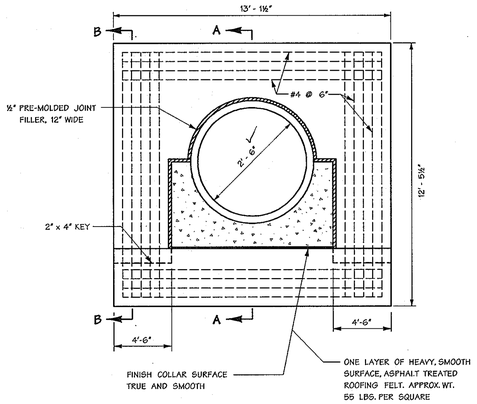
CONCRETE CRADLE DETAIL - SWM V

NTS



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

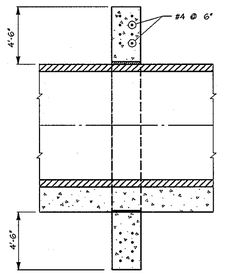
Scale: ½" = 1'-0"
CAST IN PLACE



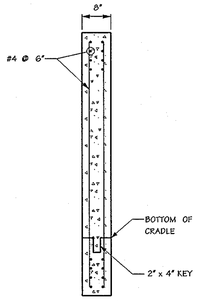
DETAIL SHOWN FOR EARTH FOUNDATION. FOR ROCK FOUNDATION, FOUND BOTTOM OF CRADLE ON ROCK LINE AND KEY COLLAR 6" INTO ROCK.

ANTI - SEEP COLLAR DETAIL - SWM V

CAST IN PLACE - NOT TO SCALE



SECTION A-A



SECTION B-B

(SHOWING STEEL)

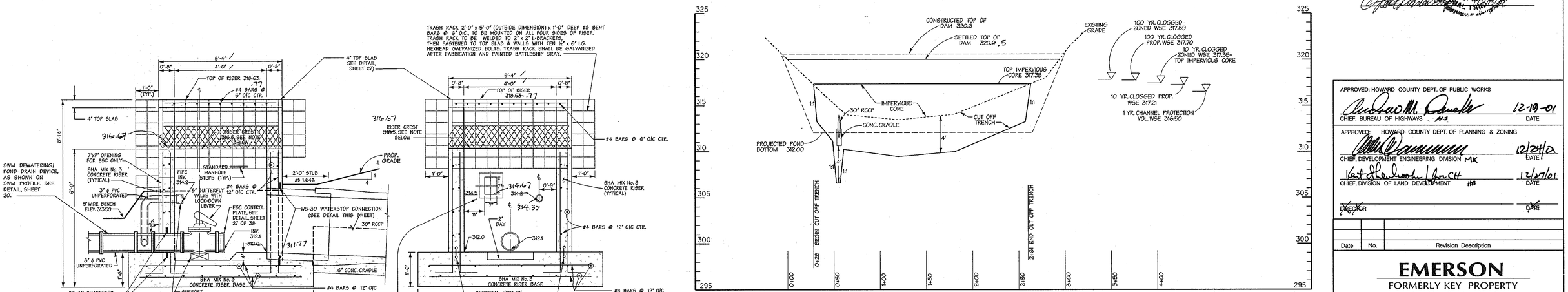
POND V .
DESIGN FLOW SUMMARY PROPOSED CONDITIONS *

Water Quality Vol. WQ_v (Ac-ft)	0.216
Recharge Vol. Re_v (Ac-ft)	0.060
Channel Protection Vol. Cp_v (Ac-ft)	0.364
WQ_v Water Surface Elev. = Normal Pool	314.2
Cp_v Discharge, Proposed (cfs)	7.14
Cp_v Discharge Managed (cfs)	0.19
Cp_v Water Surface Elev.	316.2
Riser Crest Elev.	316.5
10 Yr. Clogged Water Surface Elev.	317.35
100 Yr. Clogged Water Surface Elev.	317.89
Pond Volume Below 100 Yr. Clogged WSE	1.08
Structure Type	WET EXTENDED DETENTION
Water Quality Type	WET POND
Structure Classification	'A'
Storage Height Product 1 year	316.2
Storage Height Product 10 year	317.2
Storage Height Product 100 year	317.7
Watershed Area to Facility	0.015 SQ MI.
Level of Management Required	1YR.
Level of Management Provided	1YR.
Top Width Provided	12'
Maximum Height of Fill	6.0'
Freeboard Required	2.0'
Freeboard Provided	2.1'

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

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

ROAD: STORM DRAIN "AS-BUILT"



R-5 RISER DETAIL FOR POND - SWM V

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

NOTE:
WHEN THE RISER IS FUNCTIONING AS AN ESC DEVICE, THE RISER CREST SHALL BE BLOCKED UP TO ELEVATION 317.5 WITH TWO ROWS OF BRICKS. THESE BRICKS SHALL BE REMOVED WHEN THE FACILITY IS CONVERTED INTO A SWM POND IN PHASE 1-B (F-01-137) AND THE RISER CREST ELEV RESTORED TO 316.5.

PROFILE ALONG CENTERLINE OF EMBANKMENT SWM V

Scale: Horz. - 1" = 50'
Vert. - 1" = 5'

APPROVED: HOWARD COUNTY DEPT. OF PUBLIC WORKS

CHIEF, BUREAU OF HIGHWAYS MS — 12-19-01 DATE

APPROVED: HOWARD COUNTY DEPT. OF PLANNING & ZONING

CHIEF, DEVELOPMENT ENGINEERING DIVISION MK — 12/21/01 DATE

CHIEF, DIVISION OF LAND DEVELOPMENT HB — 12/27/01 DATE

DIRECTOR — DATE

Date	No.	Revision Description

EMERSON

FORMERLY KEY PROPERTY
SECTION 2, PHASE 1B

OWNER/DEVELOPER:

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

DMW
Daft-McCune-Walker, Inc.
200 East Pennsylvania Avenue
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Fax 296-4705

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

SUBDIVISION NAME: EMERSON SECTION 2	SECTION/AREA: PHASE 1B		LOT/PARCEL #: P/O P. 837, P. 3, P. 462
PLAT# OR L/F: L.1259, F.130	BLOCK #: E, F, & G; 14, 15, 20 & 21	ZONE: MXD	TAX/ZONE MAP: 47
ELECT. DISTRICT: 6 TH	CENSUS TRACT: -	WATER CODE: -	SEWER CODE: -

TITLE

STORMWATER MANAGEMENT DETAILS – SWM V

Des By: MRT	Scale: AS SHOWN	Proj. No.	95054.F
Dm By: WHJ	Date: 11-7-01		26 of 38
Chk By	Approved		

DEVELOPERS CERTIFICATION:

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 — 11/21/01 DATE
PRINT NAME BELOW SIGNATURE
ROBERT A. JENKINS

ENGINEER'S CERTIFICATION:

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
PRINT NAME BELOW SIGNATURE
JOHN W. RANOCCHIA SR.

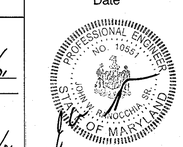
THESE PLANS HAVE BEEN REVIEWED FOR THE HOWARD SOIL CONSERVATION DISTRICT AND MEET THE TECHNICAL REQUIREMENTS FOR SMALL POND CONSTRUCTION, SOIL EROSION AND SEDIMENT CONTROL.

U.S. NATURAL RESOURCE CONSERVATION SERVICE — 11/27/01 DATE

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

HOWARD S.C.D. — 11/27/01 DATE

11/7/01
Date



Professional Engr. No. 10587

F-01-137

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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

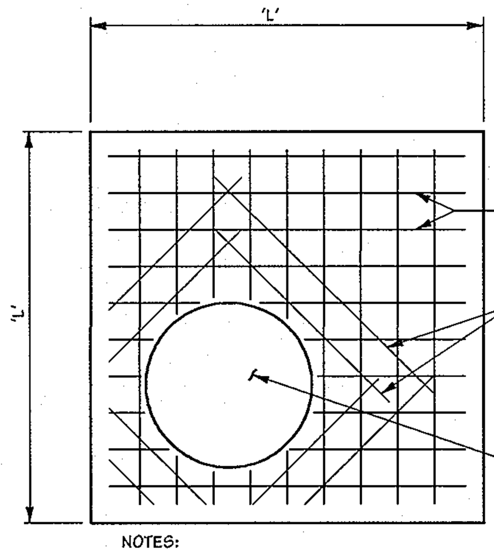
SHOP DRAWINGS FOR PRE-CAST STRUCTURES WITH SUPPORTING STRUCTURAL COMPUTATIONS (SIGNED AND SEALED BY A MARYLAND REGISTERED PROFESSIONAL ENGINEER) MEETING ASTM REQUIREMENTS FOR PRE-CAST STRUCTURES MUST BE SUBMITTED TO THE ENGINEER, AND THE APPROVING AGENCY (BALTIMORE COUNTY DEPARTMENT OF ENVIRONMENT PROTECTION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



NOTES:

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

SWM POND	'L'
III	5'-4"
V	5'-4"

TOP SLAB

Scale: ½" = 1'-0"
CAST IN PLACE

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.

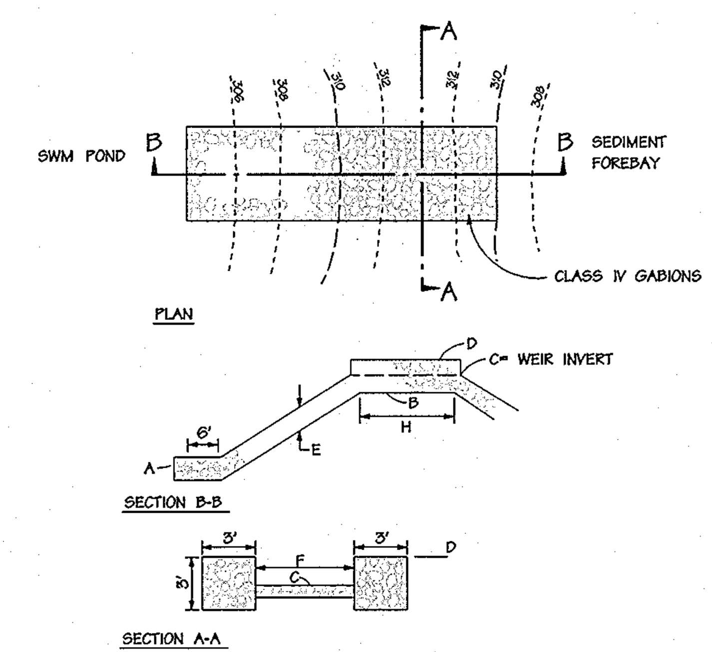
FERTILIZER: 600 LBS./ACRE 10-10-10 FERTILIZER BEFORE SEEDING.
400 LBS./ACRE 30-0-0 UREAFORM FERTILIZER AT TIME OF SEEDING.

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.

DISTANCE / ELEVATION

VARIABLE	SWM III	SWM V
A	326.0	312.0
B	327.5	315.5
C	329.0	317.0
D	330.1	318.0
E	1.5'	1.5'
F	12'	12'
G	15'	15'
H	12'	9'



SWM FOREBAY EMBANKMENT ARMORING DETAIL

NOT TO SCALE

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).

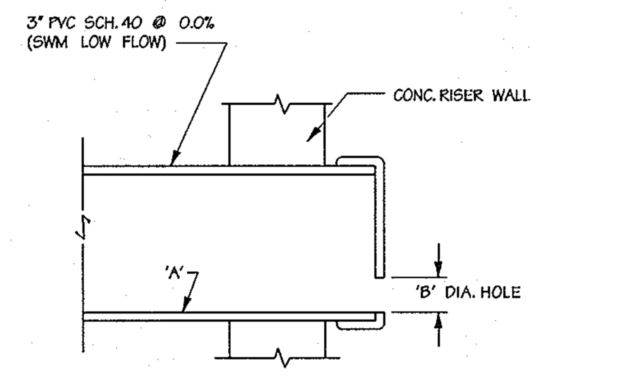
15. CONSTRUCTION INSPECTION BY DESIGNATED ENGINEERS

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. MAINTENANCE SCHEDULE

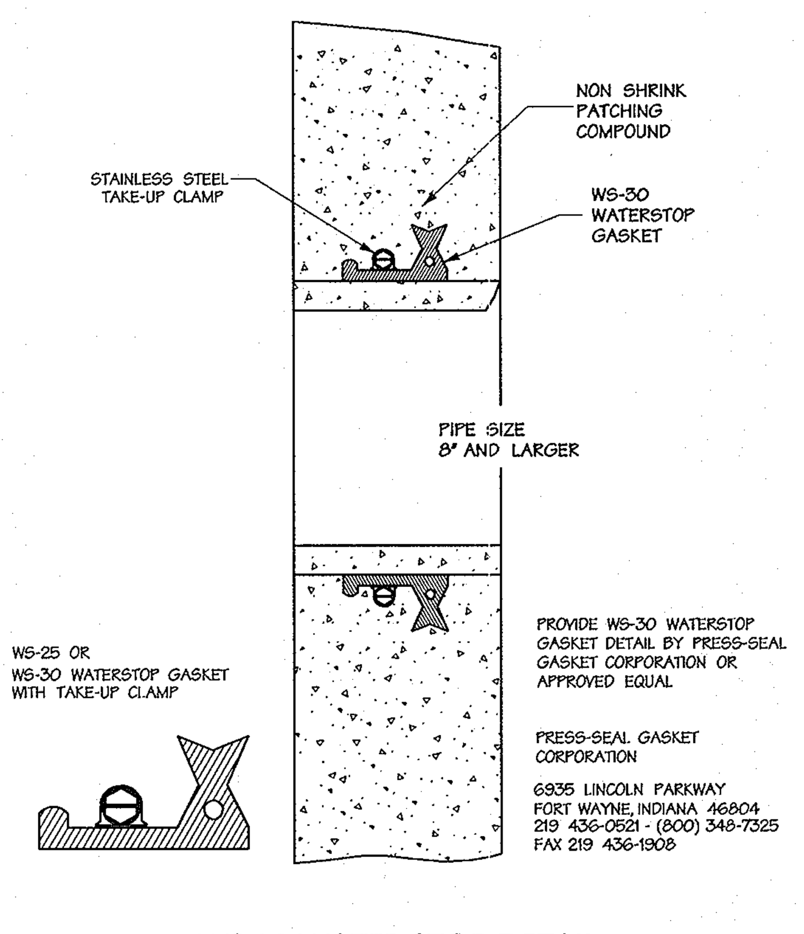
1. THE FACILITY SHALL BE INSPECTED TWICE ANNUALLY, MARCH AND SEPTEMBER, IN ACCORDANCE WITH THE CHECKLIST AND REQUIREMENTS CONTAINED WITHIN USDA, SCS "STANDARDS AND SPECIFICATIONS FOR PONDS" (MD-378). THE POND OWNER(S) AND ANY HEIRS, SUCCESSORS, OR ASSIGNS SHALL BE RESPONSIBLE FOR THE SAFETY OF THE POND AND THE CONTINUED OPERATION, SURVEILLANCE, INSPECTION, AND MAINTENANCE THEREOF. 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. VEGETATED COVER SHALL BE MAINTAINED AT ALL TIMES.
3. RILLS ON THE SLOPES OF THE DAM AND WASHED IN THE EARTH SPILLWAY SHALL BE FILLED WITH SUITABLE MATERIAL AND THOROUGHLY COMPACTED. THESE AREAS SHALL BE RESEEDED OR RESODDED, LIMED, AND FERTILIZED AS NEEDED.
4. ALL APPURTENANCES SHALL BE KEPT FREE OF TRASH.
5. SEDIMENT SHALL BE REMOVED FROM FOREBAYS WHEN THE DEPTH EXCEEDS 1'.
6. TRASH AND DEBRIS SHALL BE REMOVED AS NECESSARY.
7. VEGETATION ON EMBANKMENT AND ACCESS BENCH SHALL NOT EXCEED 18" IN HEIGHT.
8. 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. 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 5' SAFETY BENCH.

SWM POND	'A'	'B'
III	332.0	2"
V	314.2	1-1/2"



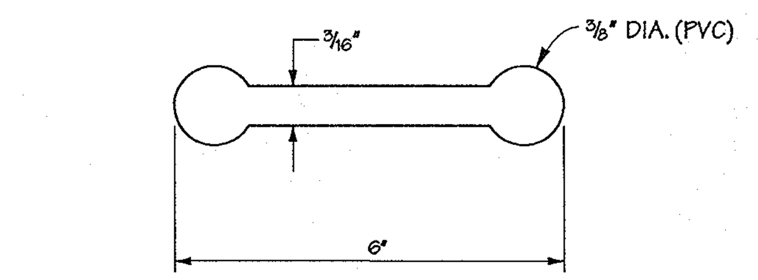
SWM LOW FLOW CONTROL PLATE DETAIL

NTS



WS-30 WATER STOP DETAIL

NOT TO SCALE



#746 BY GREENSTREAK OR APPROVED EQUAL

6" WATERSTOP

NOT TO SCALE

DEVELOPERS CERTIFICATION:

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] 11/7/01
SIGNATURE OF DEVELOPER — DATE
PRINT NAME BELOW SIGNATURE
ROBERT A. JENKINS

ENGINEER'S CERTIFICATION:

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]
SIGNATURE OF ENGINEER
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. 11/27/01
U.S. NATURAL RESOURCE CONSERVATION SERVICE — DATE

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

[signature] 11/27/01
HOWARD S.C.D. — DATE

11/7/01
Date

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

Professional Engr. No. 1055

APPROVED: HOWARD COUNTY DEPT. OF PUBLIC WORKS

[signature] 12-19-01
CHIEF, BUREAU OF HIGHWAYS NS — DATE

APPROVED: HOWARD COUNTY DEPT. OF PLANNING & ZONING

[signature] 12/24/01
CHIEF, DEVELOPMENT ENGINEERING DIVISION MK — DATE

[signature] for CH 12/27/01
CHIEF, DIVISION OF LAND DEVELOPMENT HB — DATE

~~DIRECTOR~~ — ~~DATE~~

Date	No.	Revision Description

EMERSON

FORMERLY KEY PROPERTY
SECTION 2, PHASE 1B

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 1B	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

SWM GENERAL DETAILS AND SPECIFICATIONS

Des By	MRT	Scale AS SHOWN	Proj. No. 95054.F
Drn By	WHJ	Date 11-7-01	27 of 38
Chk By		Approved	

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F-01-137

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11/7/01 10:38:35 AM \\ATHENS\MSTATION\CADNETIN\GCF\day.gcf kforish d:\hpm\95054FSET#2SM7.hpm

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	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		6	50/3"	
		At completion of boring, water at 8.0' and caved at 16.0'			

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'

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	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'			

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'

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	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		7	50/5"	
		At completion of boring, water at 6.0' and caved at 17.0'			

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'

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	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		8	50/5"	
		At completion of boring, water at 11.3' and caved at 21.3'			

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'

BORING LOG

CONTRACT NO. 14002 MD — Sheet 10 of 10

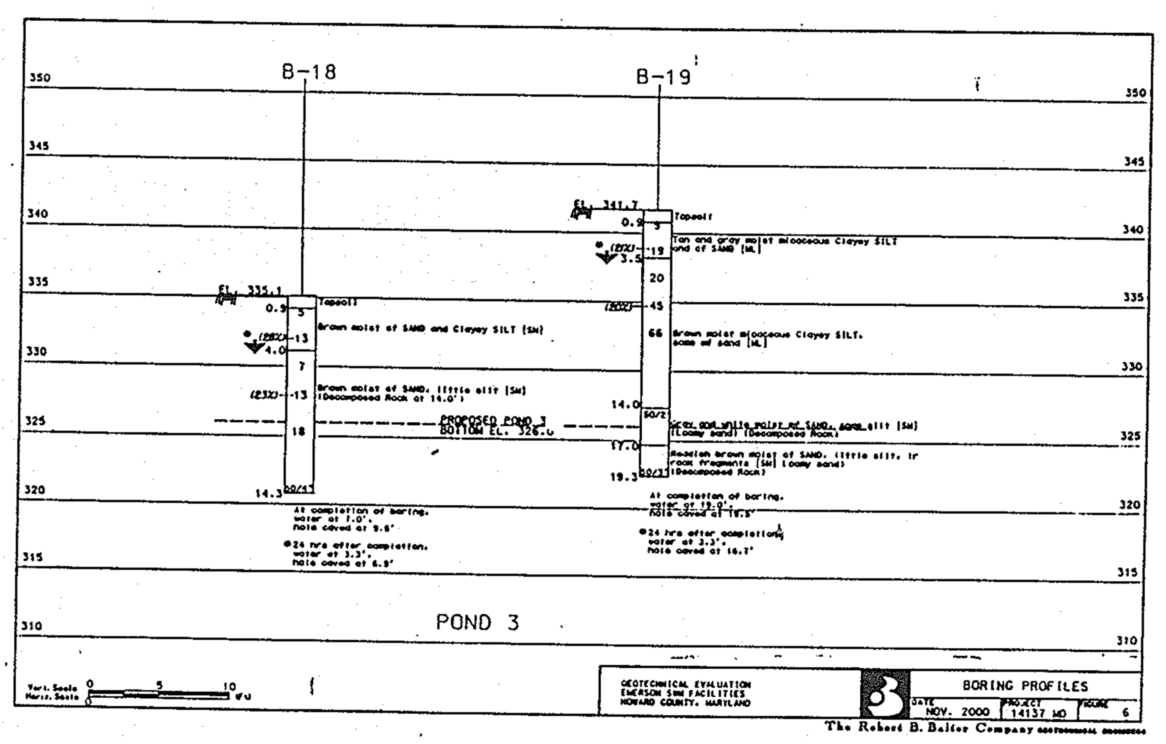
PROJECT & LOCATION: Key Property Phase I/ II SWM Facilities — Begun: 3/24/00 — Completed: 3/24/00

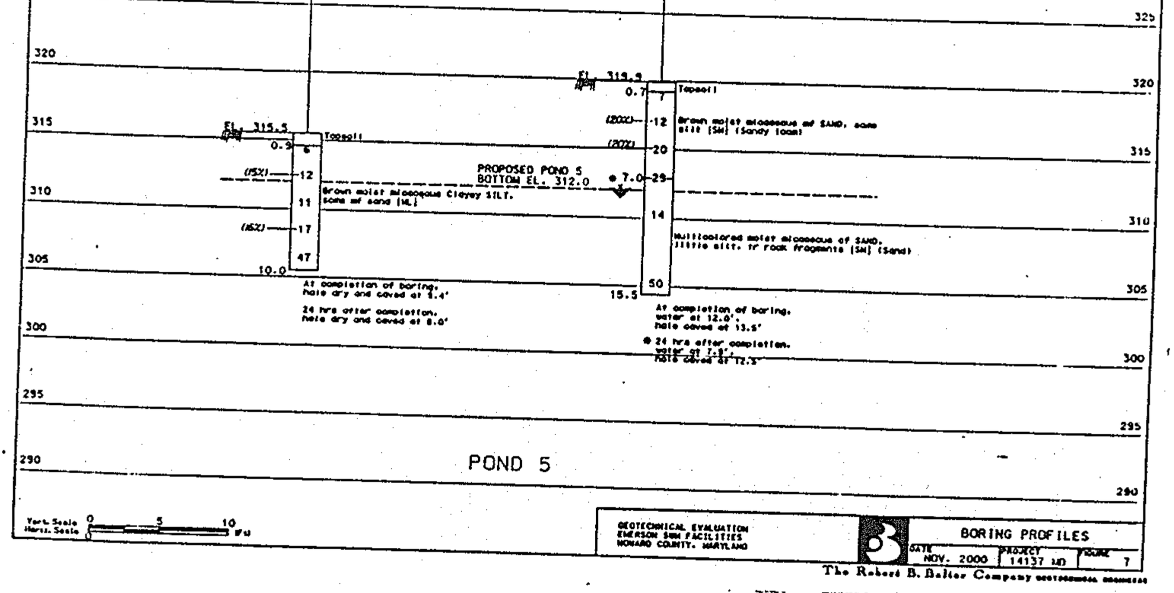
Boring No. B-11 — Surface Elev. 327

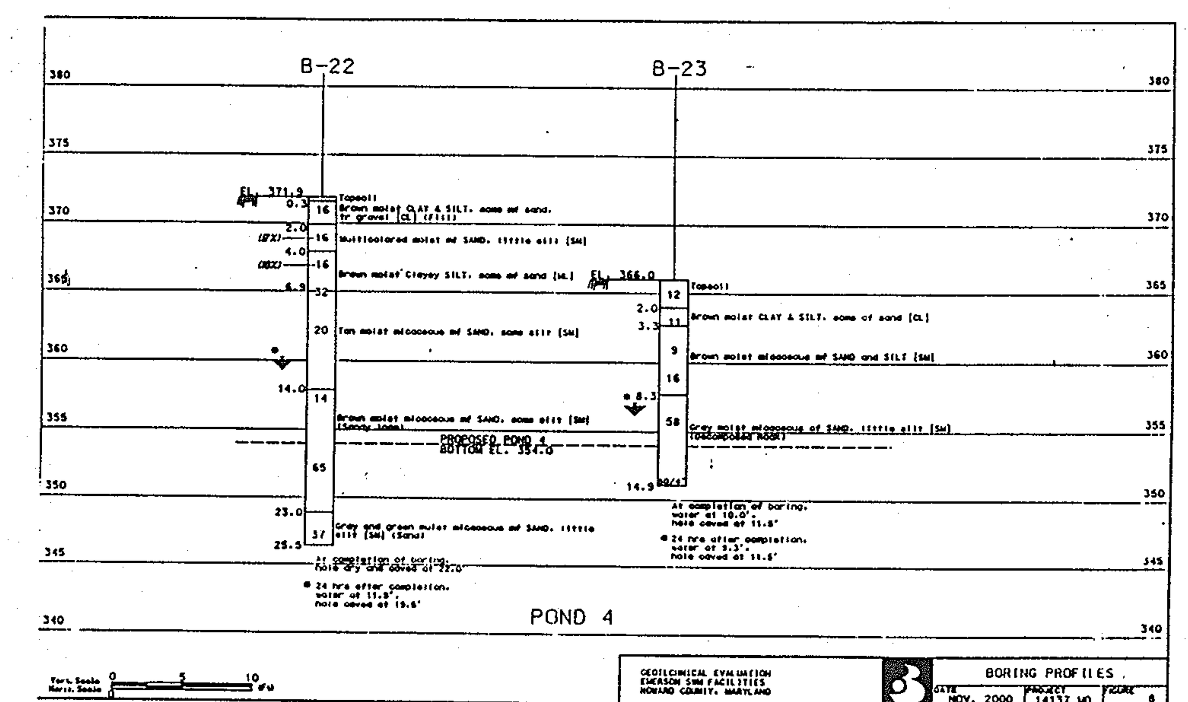
ELEV.	DEPTH	CLASSIFICATION OF MATERIALS	NO.	BLOWS PER FT	REMARKS
326.5	0.5	Topsoil Brown moist Clayey SILT and mf SAND, tr rock fragments (ML) (Sandy loam) (Decomposed Rock)	1	7	Proposed pond bottom 322.0'
324.0	3.0	Brown and gray moist micaceous Clayey SILT and mf SAND (ML) (Sandy loam) (Decomposed 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		6	50/6"	
		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'			

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.

APPROVED: HOWARD COUNTY DEPT. OF PUBLIC WORKS
[signature] 12-19-01
CHIEF BUREAU OF HIGHWAYS — DATE

~~APPROVED: FOR PUBLIC WATER & PUBLIC SEWERAGE SYSTEMS, HOWARD COUNTY HEALTH DEPARTMENT~~
~~COUNTY HEALTH OFFICER — DATE~~

APPROVED: HOWARD COUNTY DEPT. OF PLANNING & ZONING
[signature] 12/24/01
CHIEF, DEVELOPMENT ENGINEERING DIVISION MK — DATE
[signature] for CH 12/27/01
CHIEF, DIVISION OF LAND DEVELOPMENT HB — DATE
~~DIRECTOR — DATE~~

Date	No.	Revision Description

EMERSON
FORMERLY KEY PROPERTY
SECTION 2, PHASE 1B

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 I	LOT/PARCEL #: 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: BORING LOGS

Des By	Scale	Proj. No. 95054.F
Drn By	Date 11-7-01	28 of 38
Chk By	Approved	

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] 11/7/01
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]
SIGNATURE OF ENGINEER
PRINT NAME BELOW SIGNATURE
JOHN W RANOCOKIA SR.

REVIEWED FOR HOWARD S.C.D. AND MEETS TECHNICAL REQUIREMENTS
[signature] 11/27/01
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] 11/27/01
HOWARD S.C.D. — DATE

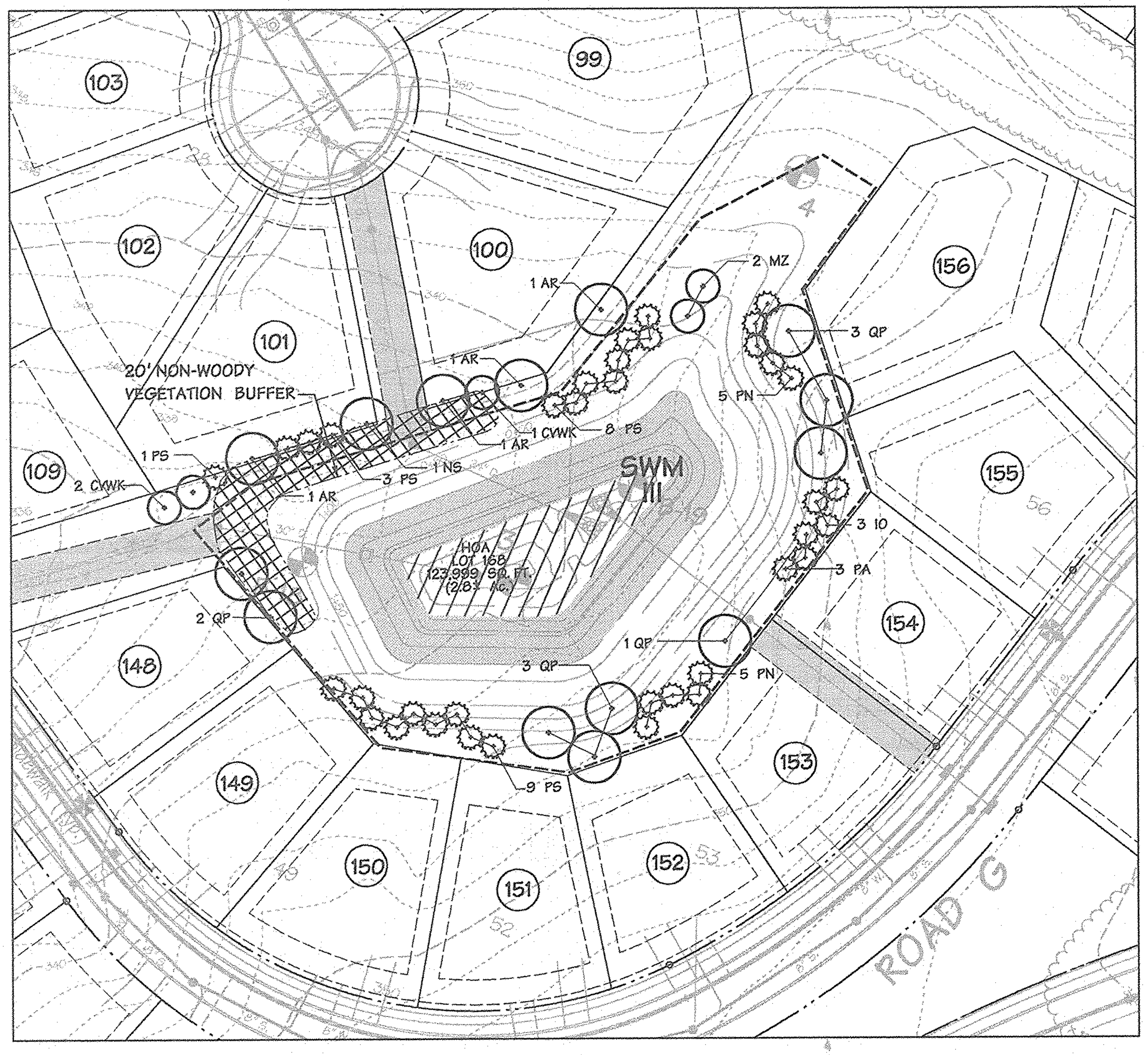
11/7/01
Date

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

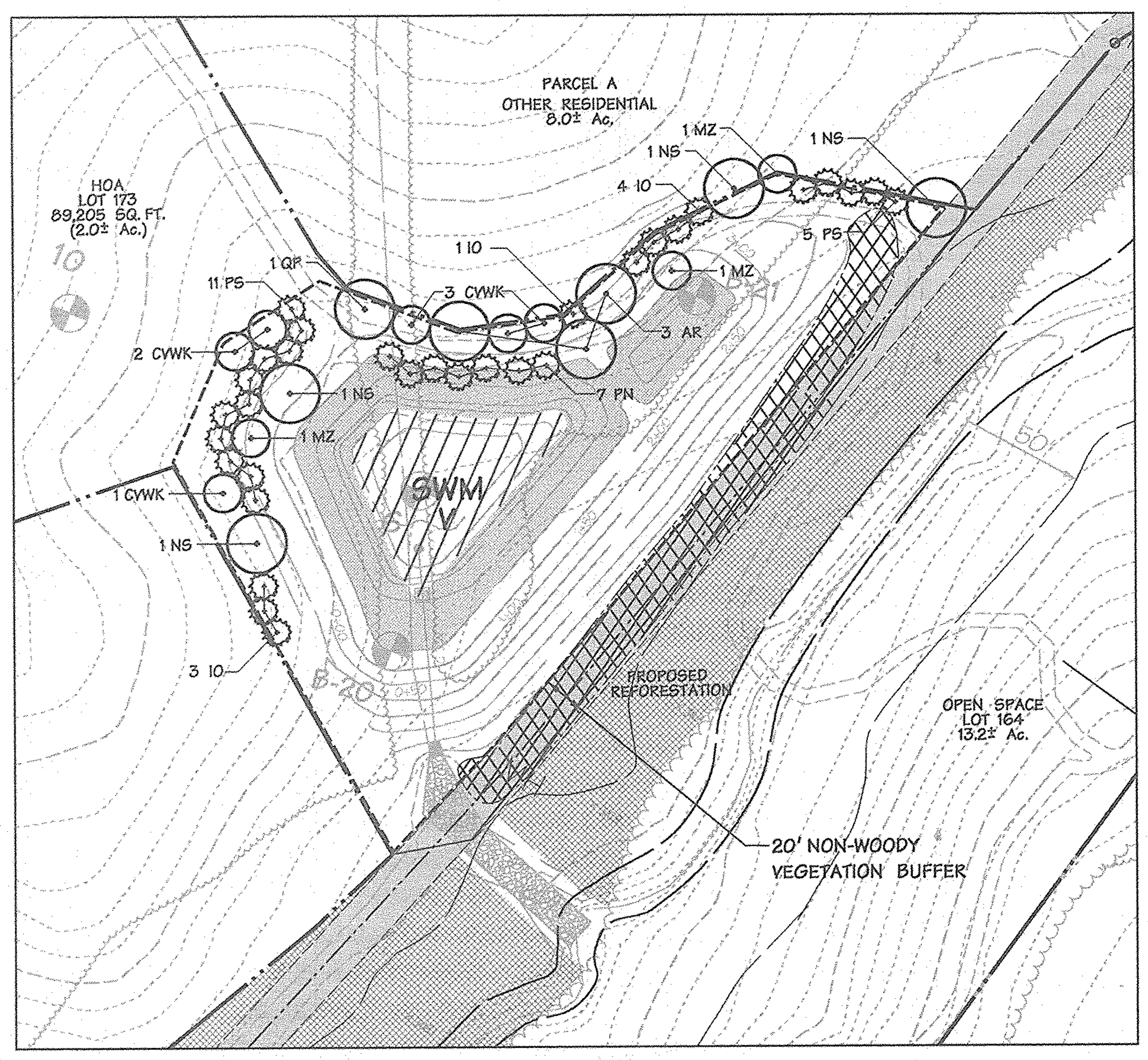
Professional Engr. No. 10551

F-01-137

Thu May 24 09:00:47 2001 95054\final\95054fset#2.smo
Tue May 29 14:16:18 2001 95054\final\95054fset#2.smo



STORMWATER MANAGEMENT POND III
SCALE: 1"=50'



STORMWATER MANAGEMENT POND V
SCALE: 1"=50'

SCHEDULE D
STORMWATER MANAGEMENT AREA LANDSCAPING

STORMWATER MANAGEMENT AREA	III	V
LANDSCAPE TYPE "B" (LINEAR FT OF PERIMETER)	861 LF	940 LF
NUMBER OF TREES REQUIRED SHADE TREES @ 1/50 L.F. EVERGREEN TREES @ 1/40 L.F.	 17 22	 7 8
CREDIT FOR EXISTING VEGETATION	N/A	
CREDIT FOR OTHER LANDSCAPING	N/A	608 LF
PLANTING DEFERRED UNTIL LATER PHASE	N/A	
NUMBER OF TREES PROVIDED SHADE TREES FLOWERING TREES EVERGREEN TREES	 14 9* 28	 8 7 31

* 6 FLOWERING TREES SUBSTITUTED FOR 3 SHADE TREES

Water Quality Planting Plan**
Facility #3

ZONE "A" (8,900 ±-s.f.)

Species	Size	Spacing	Quantity	Remarks
Scirpus tabernaemontanii	quart container*	36"	135	OBL
Iris pseudacoris	quart container*	36"	135	OBL
Lobelia cardinalis	quart container	36"	135	FACW
Iris versicolor	quart container*	36"	135	OBL
Panicum virgatum	quart container	36"	200	FAC
Saururus cernuus	quart container*	36"	135	OBL
TOTALS			875	

ZONE "B" (5,300 ±-s.f.)

Species	Size	Spacing	Quantity	Remarks
Sagittaria latifolia	quart container*	36"	265	OBL
Peltandra virginica	quart container*	36"	265	OBL
TOTALS			530	

*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.

Water Quality Planting Plan**
Facility #5

ZONE "A" (8,800 ±-s.f.)

Species	Size	Spacing	Quantity	Remarks
Scirpus tabernaemontanii	quart container*	36"	240	OBL
Panicum virgatum	quart container	36"	400	FAC
Saururus cernuus	quart container*	36"	240	OBL
TOTALS			880	

ZONE "B" (4,200 ±-s.f.)

Species	Size	Spacing	Quantity	Remarks
Sagittaria latifolia	quart container*	36"	210	OBL
Peltandra virginica	quart container*	36"	210	OBL
TOTALS			420	

*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.

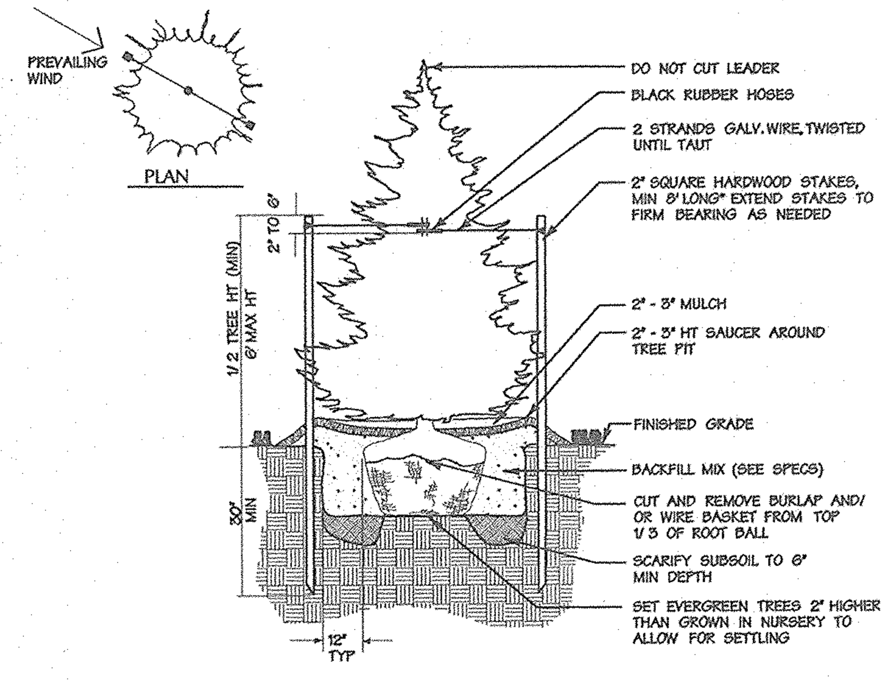
LEGEND

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	
NON-WOODY VEGETATION BUFFER	

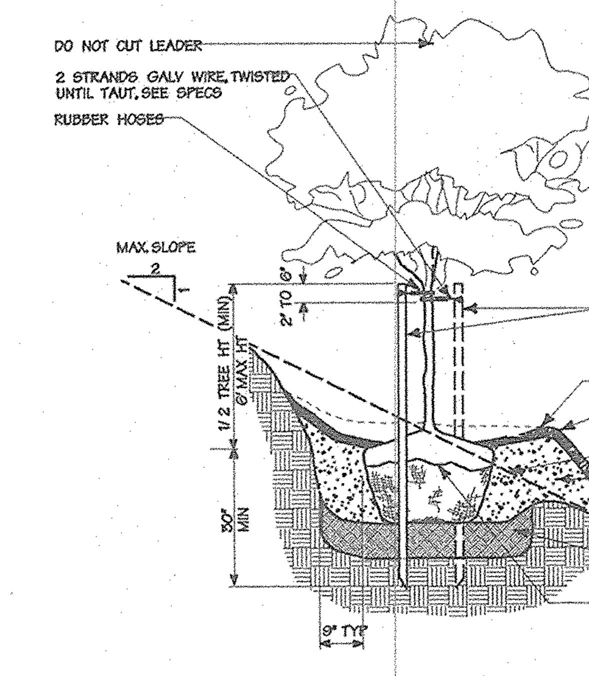
Plant List

QTY	SYM	BOTANICAL NAME/ COMMON NAME	SIZE	REMARKS
SHADE TREES				
28	AR	ACER RUBRUM 'RED SUNSET' RED SUNSET MAPLE	2 1/2" - 3" CAL. 12'-14' HT	B & B FULL HEAD
7	NS	NYSSA SYLVATICA BLACK GUM	2 1/2" - 3" CAL. 12'-14' HT	B & B FULL HEAD
20	QP	QUERCUS PALUSTRIS PIN OAK	2 1/2" - 3" CAL. 12'-14' HT	B & B FULL HEAD
FLOWERING TREES				
9	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				
8	IO	ILEX OPACA AMERICAN HOLLY	6'-8' HT.	B & B
17	PN	PINUS NIGRA AUSTRIAN PINE	6'-8' HT.	B & B
41	PA	PICEA ABIES NORWAY SPRUCE	6'-8' HT.	B & B
37	PS	PINUS STROBUS WHITE PINE	6'-8' HT.	B & B HEAVY / UNSHEARED

*NOTE: STREET TREE LOCATIONS CAN BE FOUND ON THE ROAD PLANS (SHTS 2-9)
PAP LANDSCAPE TREE LOCATIONS CAN BE FOUND ON SHEET 5 OF 38

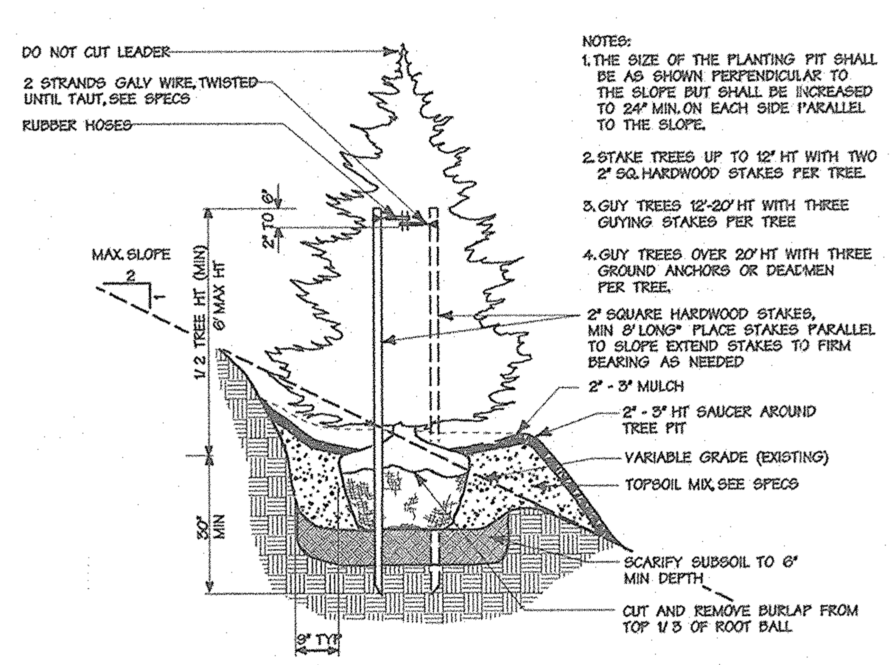


Evergreen Tree Planting
Not To Scale



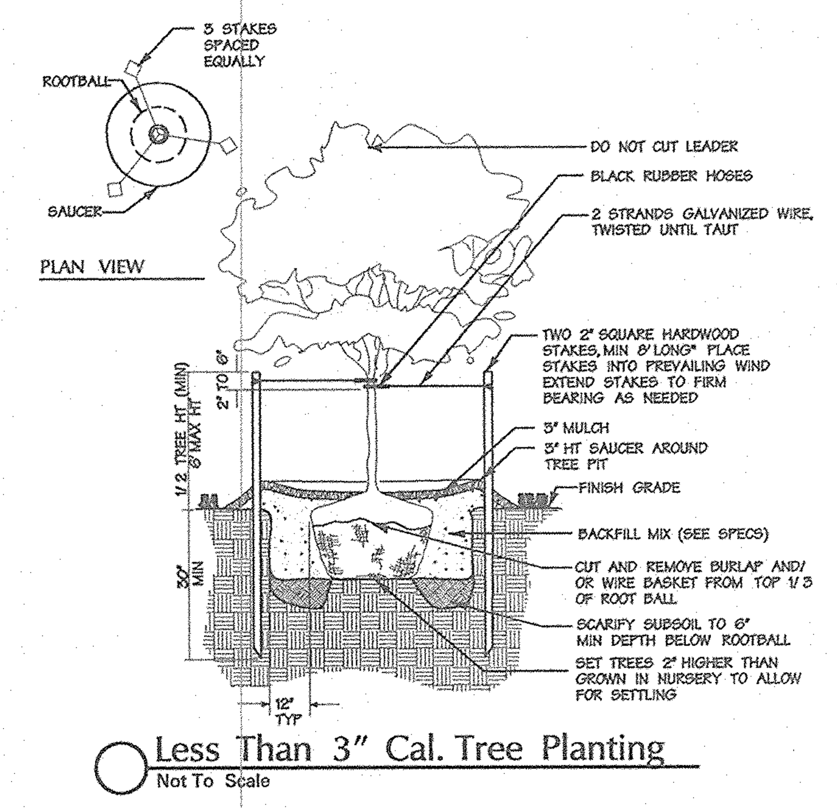
NOTES:
1. THE SIZE OF THE PLANTING PIT SHALL BE AS SHOWN PERPENDICULAR TO THE SLOPE BUT SHALL BE INCREASED TO 24" MIN. ON EACH SIDE PARALLEL TO THE SLOPE.
2. STAKE TREES UP TO 3" CAL WITH TWO 2" SQ. HARDWOOD STAKES PER TREE.
3. GUY TREES 3" TO 6" CAL WITH THREE GUYING STAKES PER TREE
4. GUY TREES OVER 6" CAL WITH THREE GROUND ANCHORS OR DEADMEN PER TREE.
2" SQUARE HARDWOOD STAKES, MIN 8' LONG* PLACE STAKES PARALLEL TO SLOPE EXTEND STAKES TO FIRM BEARING AS NEEDED

Tree Planting on Slope
Not To Scale



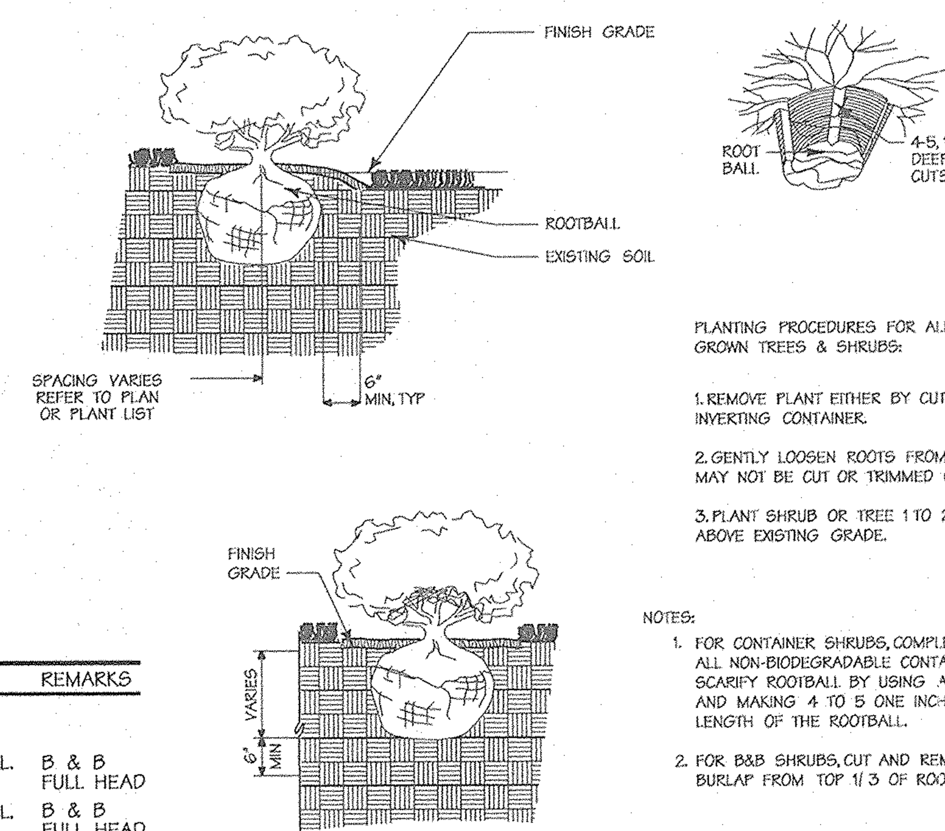
NOTES:
1. THE SIZE OF THE PLANTING PIT SHALL BE AS SHOWN PERPENDICULAR TO THE SLOPE BUT SHALL BE INCREASED TO 24" MIN. ON EACH SIDE PARALLEL TO THE SLOPE.
2. STAKE TREES UP TO 12' HT WITH TWO 2" SQ. HARDWOOD STAKES PER TREE.
3. GUY TREES 12'-20' HT WITH THREE GUYING STAKES PER TREE
4. GUY TREES OVER 20' HT WITH THREE GROUND ANCHORS OR DEADMEN PER TREE.

Evergreen Tree Planting on Slope
Not To Scale



Less Than 3" Cal. Tree Planting
Not To Scale

NOTE: SEE PLANTING DETAILS, NOTES & SPECIFICATIONS SHEET



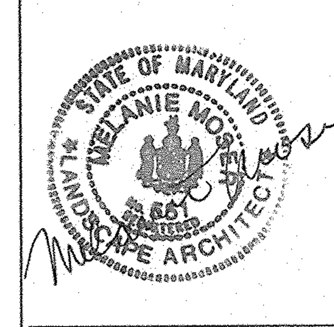
PLANTING PROCEDURES FOR ALL CONTAINER GROWN TREES & SHRUBS:

1. REMOVE PLANT EITHER BY CUTTING OR INVERTING CONTAINER.
2. GENTLY LOOSEN ROOTS FROM SOIL. ROOTS MAY NOT BE CUT OR TRIMMED ON SITE.
3. PLANT SHRUB OR TREE 1 TO 2 INCHES ABOVE EXISTING GRADE.

NOTES:
1. FOR CONTAINER SHRUBS, COMPLETELY REMOVE ALL NON-BIODEGRADABLE CONTAINERS AND SCARIFY ROOTBALL BY USING A SHARP BLADE AND MAKING 4 TO 5 ONE INCH CUTS THE LENGTH OF THE ROOTBALL.
2. FOR B&B SHRUBS, CUT AND REMOVE BURLAP FROM TOP 1/3 OF ROOT BALL

Planting of Container Grown Material
Not To Scale

11-7-01
Date



Landscape Architect 551

APPROVED: HOWARD COUNTY DEPT. OF PUBLIC WORKS
CHIEF, BUREAU OF HIGHWAYS — DATE 12-10-01

APPROVED: HOWARD COUNTY DEPT. OF PLANNING & ZONING
CHIEF, DEVELOPMENT ENGINEERING DIVISION MK — DATE 12/24/01
CHIEF, DIVISION OF LAND DEVELOPMENT HB — DATE 12/27/01
~~DIRECTOR~~ — ~~DATE~~

Date	No.	Revision Description

EMERSON
FORMERLY KEY PROPERTY
SECTION 2, PHASE 1B

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 IB	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 AND DETAILS
STORMWATER MANAGEMENT PONDS III AND V

Des By		Scale		Proj. No. 95054.F
Drn By	BKC	Date	11-7-01	29 of 38
Chk By		Approved		

Wed Nov 7 11:46:30 200N:\95054\final\95054f.lp3

F-01-137

F-01-137

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.

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. 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 (plants shall not be smaller in caliper), growth, size of ball, and density of branch structure. Plant material shall be tagged at the sourse 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. The Residential Internal Landscaping, and Landscaping for Lots with side yards adjacent to a street, will be addressed at the site plan stage.

28. FINANCIAL SURETY FOR THE REQUIRED LANDSCAPING HAS BEEN POSTED AS PART OF THE DPW DEVELOPERS AGREEMENT IN THE AMOUNT OF $27,600 (59 SHADE TREES, 30 EVERGREEN TREES, 18 PAP STREET TREES)

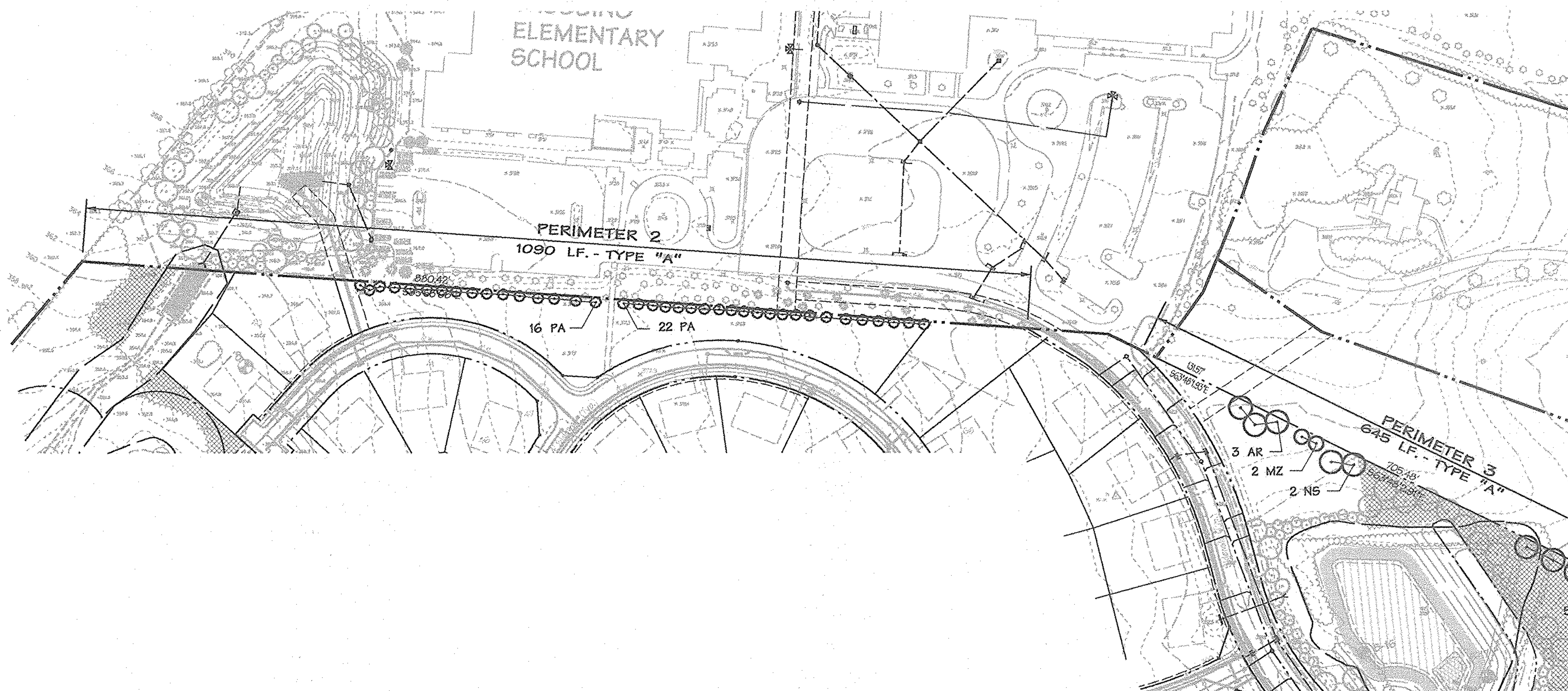
29. THE OWNER, TENANT, AND/OR THEIR AGENTS SHALL BE RESPONSIBLE FOR MAINTENANCE OF THE REQUIRED LANDSCAPING, INCLUDING BOTH PLANT MATERIALS AND BERMS, FENCES AND WALLS. ALL PLANT MATERIALS SHALL BE MAINTAINED IN GOOD GROWING CONDITION, AND WHEN NECESSARY, REPLACED WITH NEW MATERIALS TO ENSURE CONTINUED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

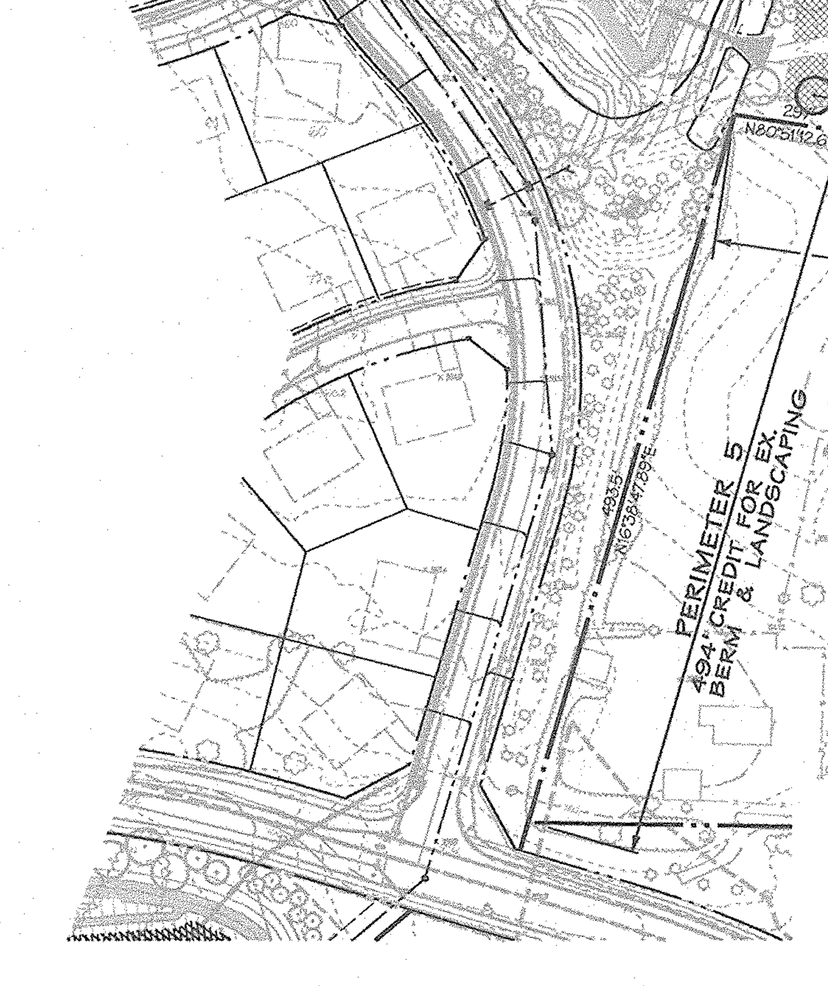
DEVELOPER'S BUILDER'S CERTIFICATE

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.

[signature] NAME — 11/7/01 DATE





SCHEDULE A PERIMETER LANDSCAPE EDGE

CATEGORY	ADJACENT to PERIMETER PROPERTIES			
LANDSCAPE TYPE "A"				
LINEAR FEET OF PERIMETER				
LANDSCAPE TYPE "A"	P 2	P 3	P 4	P 5
LINEAR FEET OF PERIMETER	1190 LF.	645 LF.	297 LF.	494 LF.
CREDIT FOR EXISTING VEGETATION (DESCRIBE BELOW IF NEEDED)	N/A	N/A	N/A	494 LF.
CREDIT FOR BERM (DESCRIBE BELOW IF NEEDED)	N/A	N/A	N/A	N/A
NUMBER OF PLANTS REQUIRED SHADE TREES EVERGREEN TREES SHRUBS	 19 0 0	 11 0 0	 5 0 0	 0 0 0
NUMBER OF PLANTS PROVIDED SHADE TREES EVERGREEN TREES OTHER TREES (2 :1 SUBSTITUTION) SHRUBS (10 :1 SUBSTITUTION) (DESCRIBE PLANT SUBSTITUTION CREDITS BELOW IF NEEDED)	 0 38 0	 10 0 2	 5 0 0	 0 0 0

* NOTE: REMAINING PERIMETERS DID NOT GENERATE LANDSCAPE REQUIREMENTS, SEE PRELIMINARY PLAN FOR CALCULATIONS.

PRIVATE ACCESS PLACE LANDSCAPE REQUIREMENTS:
PAP REQUIRES 1 STREET TREE PER 40' = 18 TREES
LOCATIONS CAN BE FOUND ON SHEET 5 OF 38 OF THE ROAD PLANS
18 TREES HAVE ALSO BEEN INCLUDED IN THE SURETY AMOUNT.

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
- PROPOSED SHADE TREE (PHASE 1-A)
- PROPOSED ORNAMENTAL TREE (PHASE 1-A)
- PROPOSED EVERGREEN TREE (PHASE 1-A)
- ZONE 'A' WATER QUALITY PLANTING (PHASE 1-A)
- ZONE 'B' WATER QUALITY PLANTING (PHASE 1-A)
- ZONE 'C' WATER QUALITY PLANTING (PHASE 1-A)
- REFORESTATION

* SEE SHEET 29 OF 38 FOR PLANT LIST AND DETAILS

APPROVED: HOWARD COUNTY DEPT. OF PUBLIC WORKS

[signature] 12-10-01
CHIEF, BUREAU OF HIGHWAYS — DATE

APPROVED: HOWARD COUNTY DEPT. OF PLANNING & ZONING

[signature] 12/24/01
CHIEF, DEVELOPMENT ENGINEERING DIVISION MK — DATE

[signature] 12/27/01
CHIEF, DIVISION OF LAND DEVELOPMENT HB — DATE

~~DIRECTOR~~ — ~~DATE~~

Date	No.	Revision Description

EMERSON

FORMERLY KEY PROPERTY
SECTION 2, PHASE 1B

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 IB	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: -		

11-7-01
Date

STATE OF MARYLAND — MELANIE MOSER — REGISTERED LANDSCAPE ARCHITECT — 551

Landscape Architect 551

TITLE
LANDSCAPE NOTES AND PERIMETERS

Des By		Scale	1"=100'	Proj. No.	95054.F
Drn By	BKC	Date	11-7-01	30 of 38	
Chk By		Approved			

F-01-137

F-01-137

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Symbol	Soils Legend	Hydrologic Soil Group
BeB2	Beltsville silt loam/ 1 to 5% Slopes	C
BeC2	Beltsville silt loam/ 5 to 10% Slopes	C
ClC3	Chillum gravelly loam/ 5 to 10% Slopes	C
ChB2	Chillum silt loam/ 1 to 5% Slopes	C
GlB2	Glenelg loam/ 3 to 8% Slopes	B
GlC2	Glenelg loam/ 8 to 15% Slopes	B
GlC3	Glenelg loam/ 8 to 15% Slopes	B
GlD2	Glenelg loam/ 15 to 25% Slopes	B
GnB2	Glenville silt loam/ 3 to 8% Slopes	C
MaB2	Manor gravelly loam/ 3 to 8% Slopes	B
MaC2	Manor gravelly loam/ 8 to 15% Slopes	B
MlC2	Manor loam/ 8 to 15% Slopes	B
MlC3	Manor loam/ 8 to 15% Slopes	B
MlD3	Manor loam/ 15 to 25% Slopes	B
ScB	Sandy and clayey land, gently sloping	B

Legend

- M1C2 — SOIL LABEL
- SOIL BOUNDARY
- CONCEPTUAL PEDESTRIAN PATH (NOT PART OF THIS PLAN)
- SLOPES >25%
- SLOPES 15%-25%
- REFORESTATION AREAS
- FOREST CLEARING — LOD PHASE 1-A / LOD PHASE 1-B
- NON-WOODY VEGETATION BUFFER
- FOREST EDGE — SCRUB/SHRUB/HEDGEROW OR TREE GROUP
- FOREST CONSERVATION EASEMENT

WETLAND, WETLAND BUFFER, WETLAND SYMBOL, HEAD OF STREAM, STREAM, STREAM BUFFER, 100 YEAR FLOOD PLAIN

FOREST CONSERVATION EASEMENT "B" (±0.396 ACRES)

± 0.07 ACRES FUTURE CLEARING

± 0.396 ACRES RETENTION

± 0.17 ACRES FUTURE CLEARING
±0.24 ACRES FUTURE REFORESTATION

± 0.79 ACRES FUTURE REFORESTATION

FOREST CONSERVATION EASEMENT "A" (±1.652 ACRES)

± 0.415 ACRES RETENTION

FOREST CONSERVATION EASEMENT "D" (±3.824 ACRES THIS SHEET)

± 3.071 ACRES RETENTION

± 0.10 ACRES FUTURE CLEARING

± 1.70 ACRES CLEARING

± 0.423 ACRES REFORESTATION

± 0.701 ACRES REFORESTATION
(±0.601 ACRES TO BE REPLANTED)
(±0.10 ACRES TO BE AUGMENTED)

20' NON-WOODY VEGETATION BUFFER

± 0.19 ACRES CLEARING
±0.044 ACRES REFORESTATION
(FLOODPLAIN NOT INCLUDED IN CLEARING AMOUNT)

± 0.069 ACRES RETENTION

FOREST CONSERVATION EASEMENT "C" (±0.77 ACRES)

OPEN SPACE LOT 169 512,768 SQ. FT. (11.8± Ac.)

SWM II — HWM 57,482 SQ. FT. (1.32± Ac.)

EMERSON FUTURE DEVELOPMENT

MATCHLINE SEE SHEET 32

MATCHLINE SEE SHEET 33

SKY LARK BOULEVARD

DEEP SHED DRIVE

WOODLAND WALKS

RUNNING RIVER

E 1360600 N 537200

E 1360600 N 536000

NORTH

11-7-01
Date

Landscape Architect 951

APPROVED: HOWARD COUNTY DEPT. OF PUBLIC WORKS
CHIEF, BUREAU OF HIGHWAYS MS — 12-19-01 DATE

APPROVED: HOWARD COUNTY DEPT. OF PLANNING & ZONING
CHIEF, DEVELOPMENT ENGINEERING DIVISION MK — 12/21/01 DATE
CHIEF, DIVISION OF LAND DEVELOPMENT MB — 12/27/01 DATE
DIRECTOR — DATE

Date	No.	Revision Description

EMERSON

FORMERLY KEY PROPERTY
SECTION 2, PHASE 1B

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

STATE OF MARYLAND — MELANIE MOSER — NO. 661 — REGISTERED LANDSCAPE ARCHITECT

SUBDIVISION NAME	SECTION/AREA	LOT/PARCEL #
EMERSON SECTION 2	PHASE 1B	P/O P. 637, P. 3, P. 462

PLAT # OR L.F.	BLOCK #	ZONE	TAX/ZONE MAP	ELECT. DISTRICT	CENSUS TRACT
L.1025, F.430 L.1078, F.480	13, 22 & 24 (A, 55, 60, & 25)	MXD	47	6 TH	-
WATER CODE		SEWER CODE			

TITLE
FOREST CONSERVATION PLAN

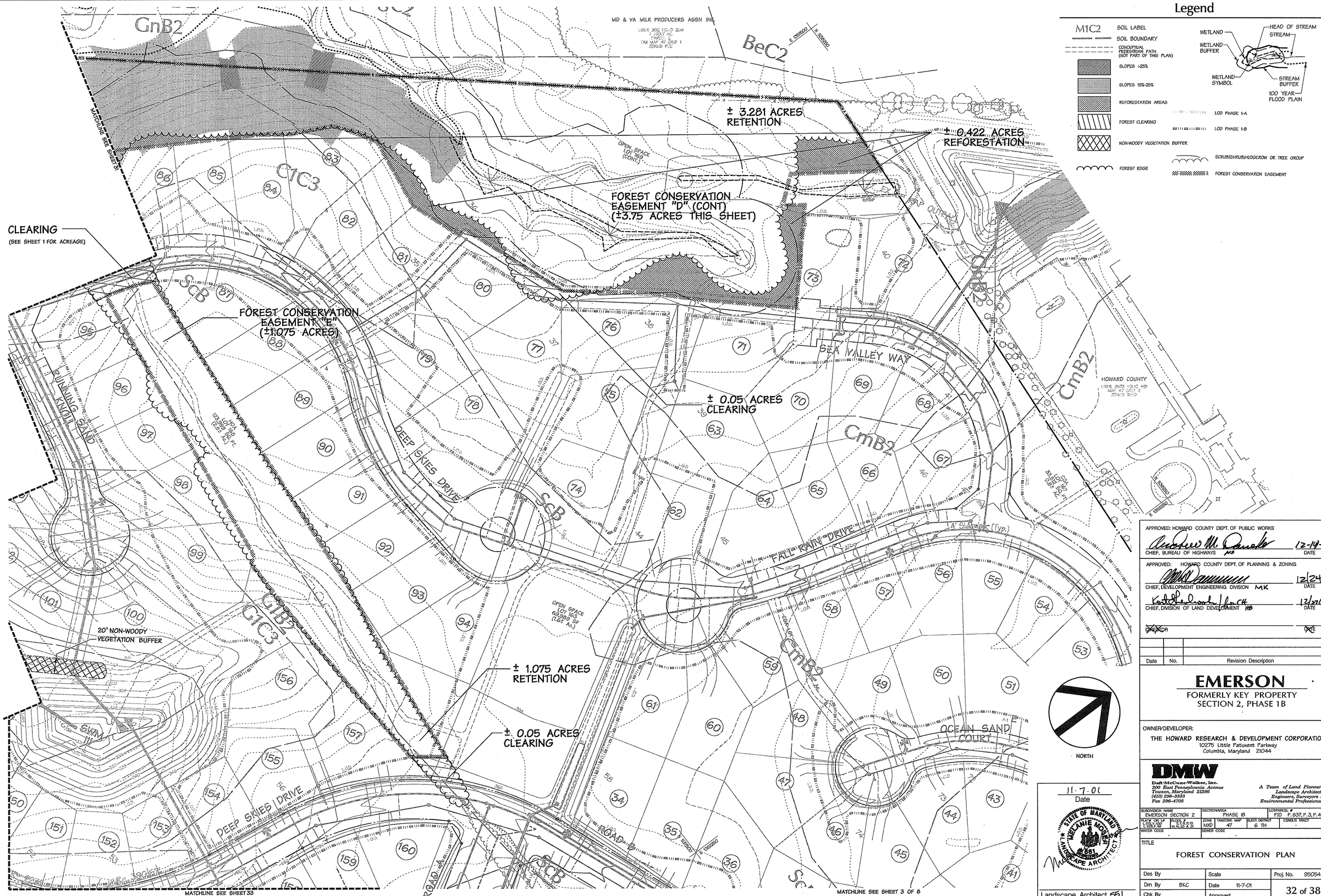
Des By		Scale		Proj. No.	95054.F
Dm By	BKC	Date	11-7-01	31 of 38	
Chk By		Approved			

F-01-137

F-01-137

Wed Nov 7 08:24:56 2001\95054\final\95054f.dgn

11/7/01 8:42:22 AM \\ATHENS\STATION\CADNET\DCE\dave.bell\ins_d\hpm\95054f.hpm



Legend

- M1C2 — SOIL LABEL
- SOIL BOUNDARY
- CONCEPTUAL PEDESTRIAN PATH (NOT PART OF THIS PLAN)
- SLOPES >25%
- SLOPES 15%-25%
- REFORESTATION AREAS
- FOREST CLEARING
- NON-WOODY VEGETATION BUFFER
- FOREST EDGE
- WETLAND
- WETLAND BUFFER
- WETLAND SYMBOL
- HEAD OF STREAM
- STREAM
- STREAM BUFFER
- 100 YEAR FLOOD PLAIN
- LOD PHASE 1-A
- LOD PHASE 1-B
- SCRUB/SHRUB/HEDGEROW OR TREE GROUP
- FOREST CONSERVATION EASEMENT

APPROVED: HOWARD COUNTY DEPT. OF PUBLIC WORKS

CHIEF, BUREAU OF HIGHWAYS MS — 12-19-01 DATE

APPROVED: HOWARD COUNTY DEPT. OF PLANNING & ZONING

CHIEF, DEVELOPMENT ENGINEERING DIVISION MK — 12/24/01 DATE

CHIEF, DIVISION OF LAND DEVELOPMENT HB — 12/21/01 DATE

DIRECTOR — DATE

Date	No.	Revision Description

EMERSON

FORMERLY KEY PROPERTY
SECTION 2, PHASE 1B

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

11-7-01
Date

STATE OF MARYLAND — MELANIE MOSER — 551 — REGISTERED LANDSCAPE ARCHITECT

Landscape Architect 551

SUBDIVISION NAME: EMERSON SECTION 2	SECTION/AREA: PHASE 1B		LOT/PARCEL #: P/O F, 637, P. 3, P. 462
PLAT OR L/F: L.1272, F.105; M.25, P.25	BLOCK #: 6 & 15; M.25, P. 25	ZONE: MXD	TAX/ZONE MAP: 47
		ELECT. DISTRICT: 6 TH	CENSUS TRACT: -
WATER CODE: -		SEWER CODE: -	

TITLE

FOREST CONSERVATION PLAN

Des By		Scale	Proj. No. 95054.F
Dm By	BKC	Date 11-7-01	32 of 38
Chk By		Approved	

F-01-137

F-01-137

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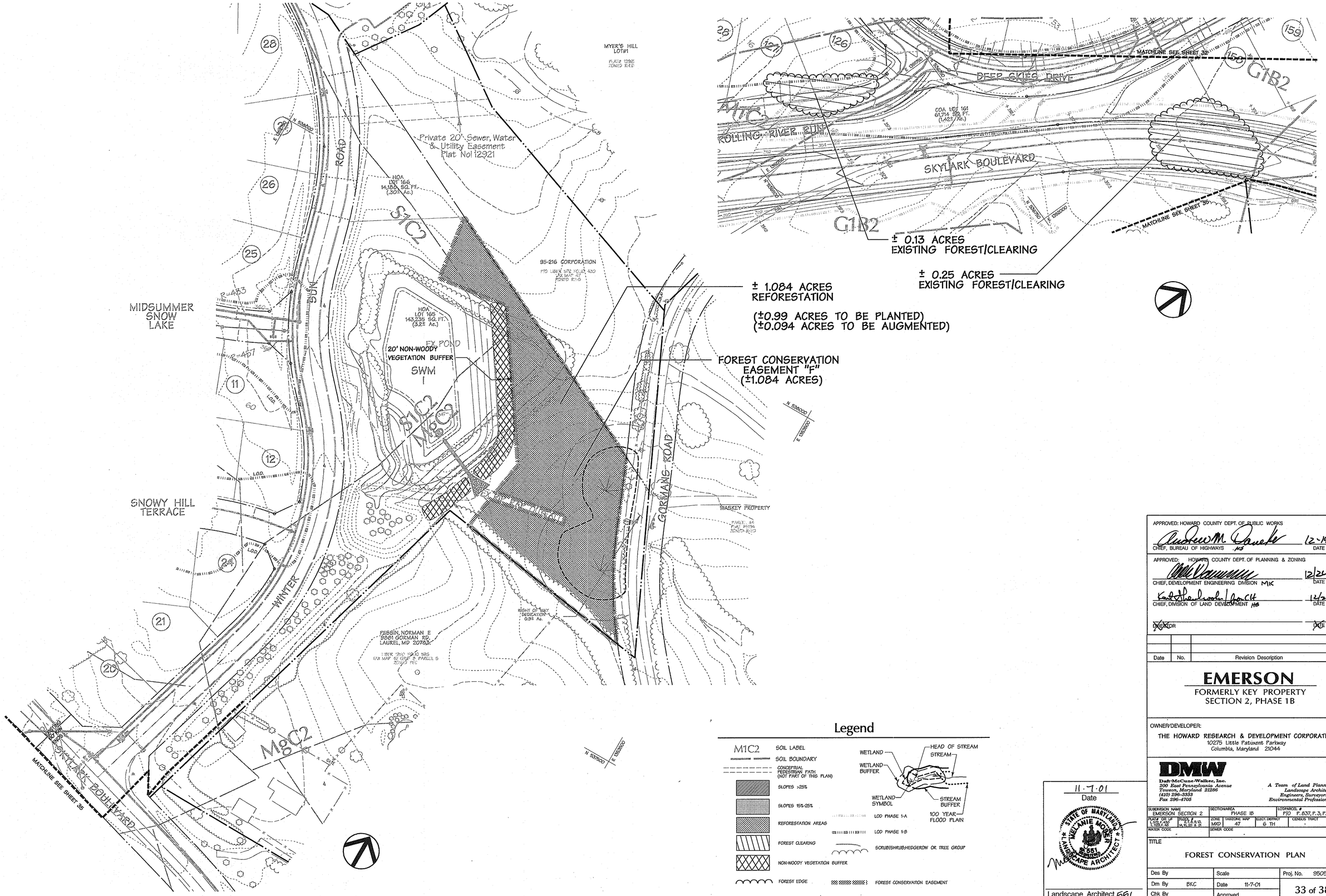

Legend

- M1C2 — SOIL LABEL
- SOIL BOUNDARY
- CONCEPTUAL PEDESTRIAN PATH (NOT PART OF THIS PLAN)
- SLOPES >25%
- SLOPES 15%-25%
- REFORESTATION AREAS
- FOREST CLEARING
- NON-WOODY VEGETATION BUFFER
- FOREST EDGE
- WETLAND
- WETLAND BUFFER
- WETLAND SYMBOL
- HEAD OF STREAM
- STREAM
- STREAM BUFFER
- 100 YEAR FLOOD PLAIN
- LOD PHASE 1-A
- LOD PHASE 1-B
- SCRUB/SHRUB/HEDGEROW OR TREE GROUP
- FOREST CONSERVATION EASEMENT

APPROVED: HOWARD COUNTY DEPT. OF PUBLIC WORKS

Andrew M. Daneker — CHIEF, BUREAU OF HIGHWAYS — 12-19-01 DATE

APPROVED: HOWARD COUNTY DEPT. OF PLANNING & ZONING

CHIEF, DEVELOPMENT ENGINEERING DIVISION MK — 12/21/01 DATE

CHIEF, DIVISION OF LAND DEVELOPMENT HB — 12-27-01 DATE

~~DPZ~~ OR ~~DLE~~

Date	No.	Revision Description

EMERSON

FORMERLY KEY PROPERTY
SECTION 2, PHASE 1B

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 1B	LOT/PARCEL #: P/O F, 637, P. 3, P. 462
PLAT OR L.428/F.462	BLOCK E, P. & N. 14, 15, 20 & 21	ZONE: MXD	TAX/ZONE MAP: 47
ELECT. DISTRICT: 6 TH	CENSUS TRACT: -	WATER CODE: -	SEWER CODE: -

TITLE

FOREST CONSERVATION PLAN

Des By		Scale	Proj. No. 95054.F
Dm By	BKC	Date 11-7-01	33 of 38
Chk By		Approved	

11-7-01
Date

STATE OF MARYLAND — MELANIE MOSER — No. 551 — REGISTERED LANDSCAPE ARCHITECT

Landscape Architect 551

F-01-137

F-01-137

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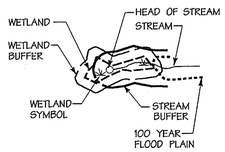

EMERSON FUTURE DEVELOPMENT

PARCEL A
OTHER RESIDENTIAL
8.02± Ac.

± 0.5 ACRES CLEARING

± 0.389 ACRES REFORESTATION

20' NON-WOODY VEGETATION BUFFER

± 0.41 ACRES REFORESTATION

± 0.296 ACRES REFORESTATION

FOREST CONSERVATION EASEMENT "G" (±0.296 ACRES)

HOA LOT 175' (CONT.)

±3.414 ACRES RETENTION

20' NON-WOODY VEGETATION BUFFER

± 0.41 ACRES FUTURE REFORESTATION

FOREST CONSERVATION EASEMENT "H" (±4.825 ACRES)

± 2.13 ACRES FUTURE CLEARING

± 1.03 ACRES FUTURE REFORESTATION

± 1.2 ACRES FUTURE CLEARING

MATCHLINE SEE SHEET 35

APPROVED: HOWARD COUNTY DEPT. OF PUBLIC WORKS

CHIEF, BUREAU OF HIGHWAYS — DATE 12-10-01

APPROVED: HOWARD COUNTY DEPT. OF PLANNING & ZONING

CHIEF, DEVELOPMENT ENGINEERING DIVISION MK — DATE 12/24/01

CHIEF, DIVISION OF LAND DEVELOPMENT HB — DATE 12/27/01

DIRECTOR — DATE

Date	No.	Revision Description

EMERSON

FORMERLY KEY PROPERTY
SECTION 2, PHASE 1B

OWNER/DEVELOPER:

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

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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

11-7-01
Date

STATE OF MARYLAND — MELANIE MOSER — #3561 — LANDSCAPE ARCHITECT

Landscape Architect

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

PLAT OR L.1472 F.420 / L.1626 F.48	BLOCK #	ZONING MAP	ELECT. DISTRICT	CENSUS TRACT
	6, 25, 26 & 27	47	6 TH	-

WATER CODE: - | SEWER CODE: -

TITLE

FOREST CONSERVATION PLAN

Des By		Scale		Proj. No. 95054.F
Drn By	BKC	Date	11-7-01	34 of 38
Chk By		Approved		

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APPROVED: HOWARD COUNTY DEPT. OF PUBLIC WORKS
CHIEF, BUREAU OF HIGHWAYS — DATE 12-19-01

APPROVED: HOWARD COUNTY DEPT. OF PLANNING & ZONING
CHIEF, DEVELOPMENT ENGINEERING DIVISION — DATE 12/24/01
CHIEF, DIVISION OF LAND DEVELOPMENT — DATE 12/20/01
DIRECTOR — DATE

Date	No.	Revision Description

EMERSON

FORMERLY KEY PROPERTY
SECTION 2, PHASE 1B

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11·7·01
Date

STATE OF MARYLAND — MELANIE MOSS — No. 1365 — LANDSCAPE ARCHITECT

Landscape Architect 651

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

PLAT # OR L/F	BLOCK #	ZONE	TAX/ZONE MAP	ELECT. DISTRICT	CENSUS TRACT
1,1259/f. 436	6, 7, 8, 9, 13, 14, 15, 20 & 21	MXD	47	6 TH	-

WATER CODE — SEWER CODE —

TITLE
FOREST CONSERVATION PLAN

Des By		Scale		Proj. No. 95054.F
Dm By	BKC	Date	11-7-01	35 of 38
Chk By		Approved		

F-01-137

F-01-137

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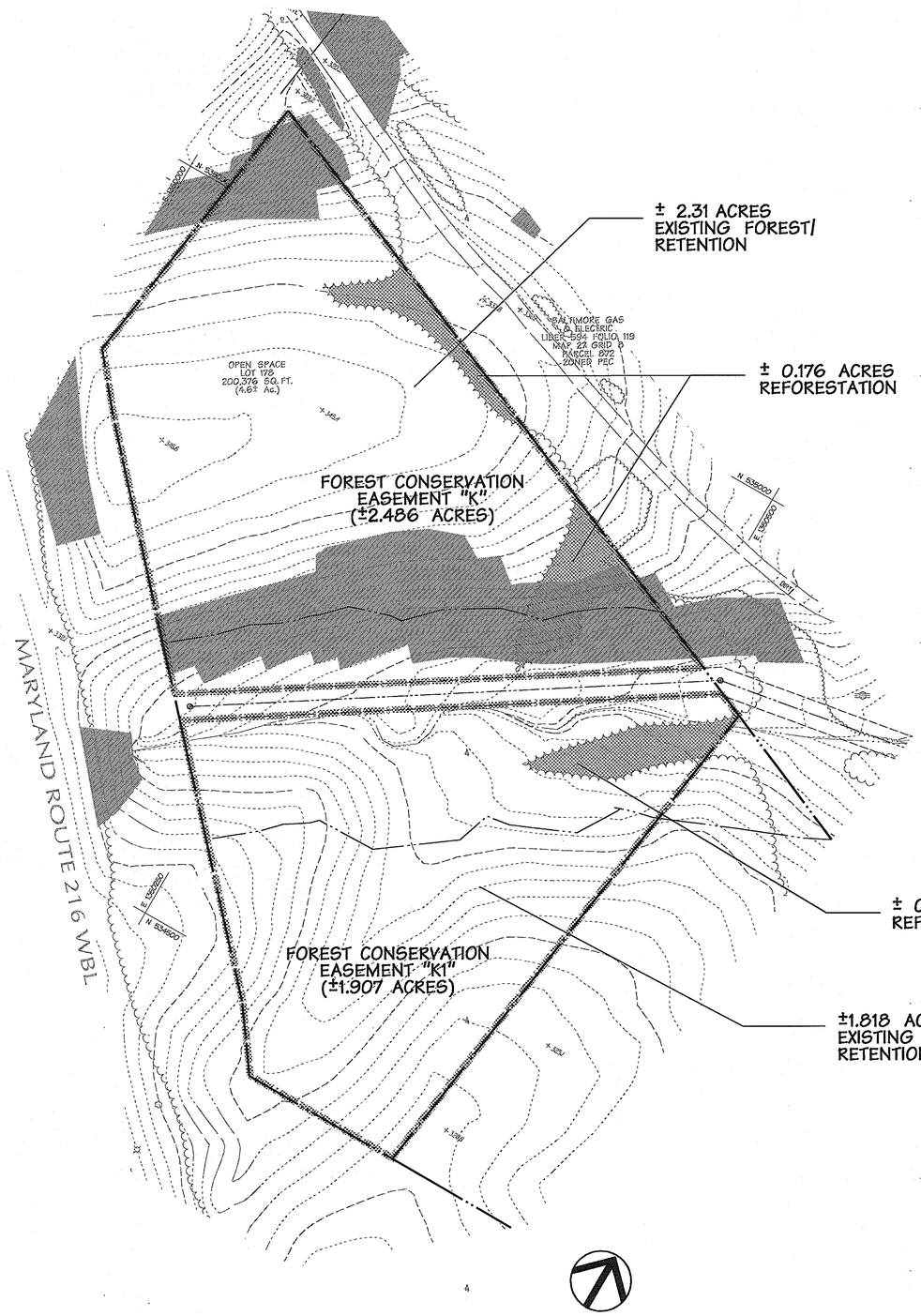

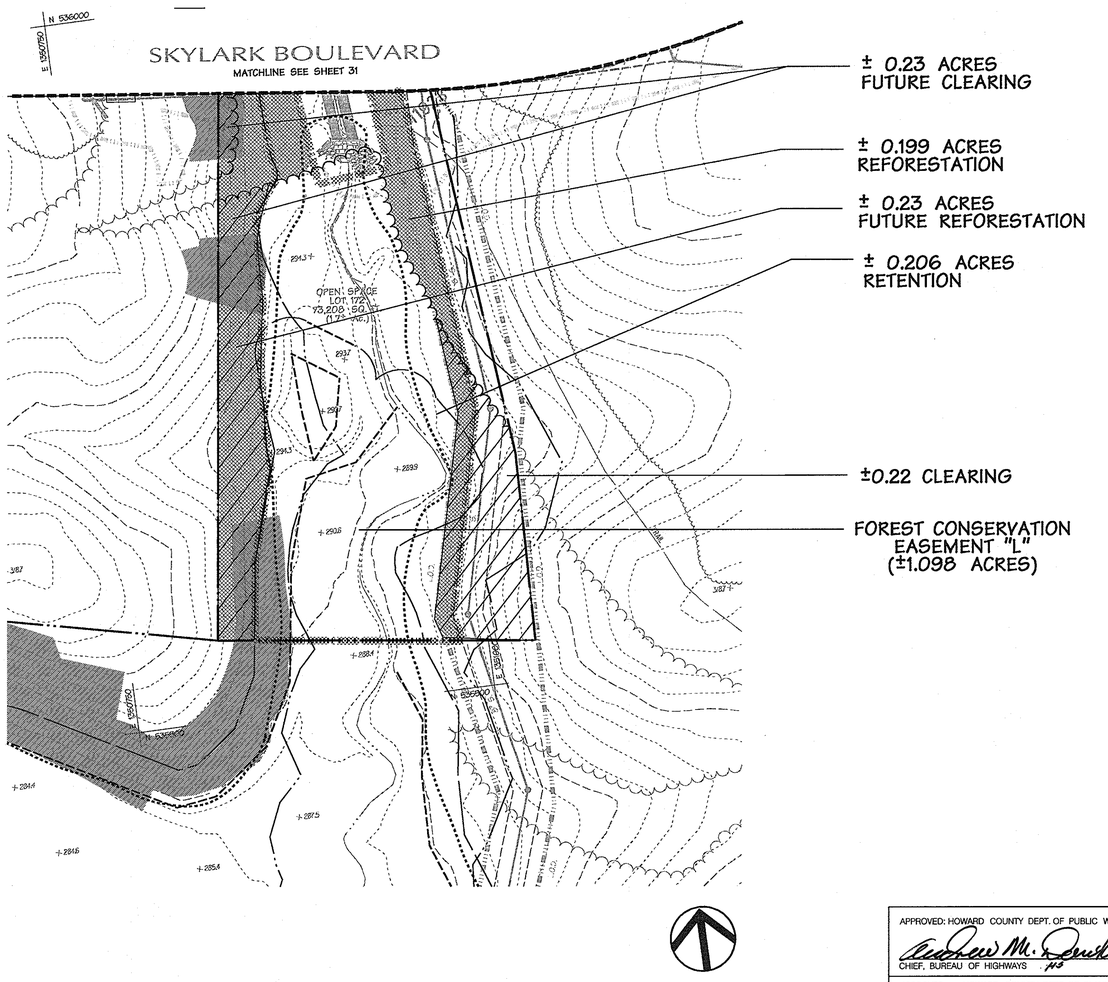

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APPROVED: HOWARD COUNTY DEPT. OF PUBLIC WORKS

CHIEF, BUREAU OF HIGHWAYS — DATE 12-19-01

APPROVED: HOWARD COUNTY DEPT. OF PLANNING & ZONING

CHIEF, DEVELOPMENT ENGINEERING DIVISION MK — DATE 12/24/01

CHIEF, DIVISION OF LAND DEVELOPMENT HB — DATE 12/27/01

DIRECTOR — DATE

Date	No.	Revision Description

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11-7-01
Date

STATE OF MARYLAND — MELANIE MOSES — 661 — REGISTERED LANDSCAPE ARCHITECT

Landscape Architect 551

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

PLAT# OR L/F	BLOCK #	ZONE	TAX/ZONE MAP	ELECT. DISTRICT	CENSUS TRACT
L.1029 F. 62	23, 24, 25, 26, 15, 27 & 28	MXD	47	6 TH	-

WATER CODE	SEWER CODE
-	-

TITLE

FOREST CONSERVATION PLAN

Des By	Scale		Proj. No. 95054.F
Drn By BKC	Date 11-7-01		36 of 38
Chk By	Approved		

F-01-137

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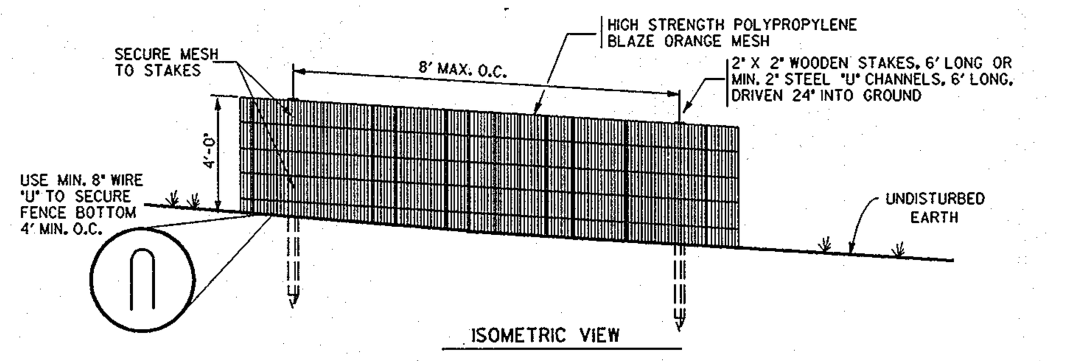
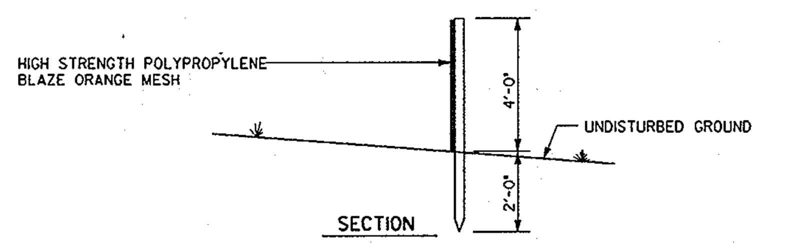




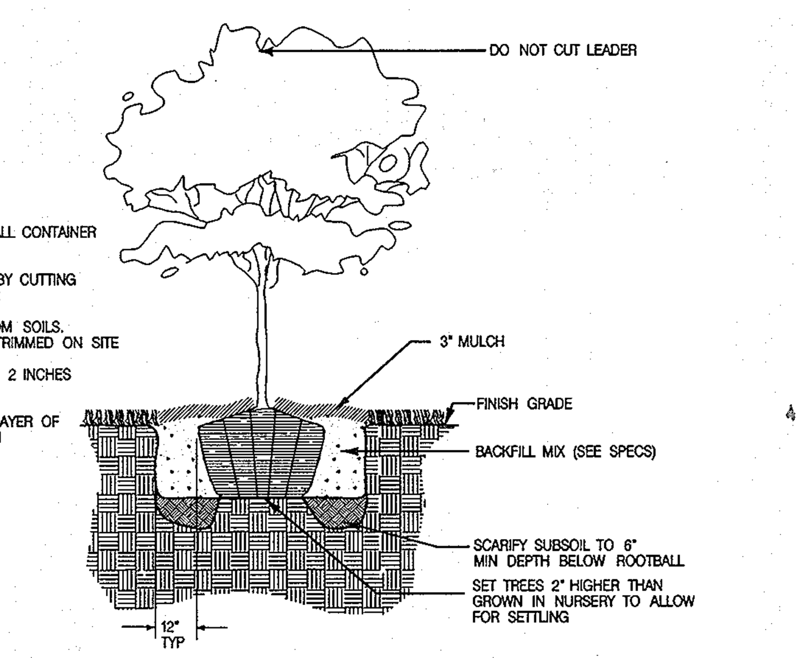
NOTES:

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

Forest Protection Fence*

Not To Scale

* WHERE SUPER SILT FENCE (S.S.F.) IS TO BE INSTALLED ADJACENT TO FOREST RETENTION AREAS, ATTACH HIGH VISIBILITY TAPE OR FLAGGING TO THE TOP EDGE OF S.S.F. AT 5' INTERVALS AND USE S.S.F. IN LIEU OF BLAZE ORANGE FENCE. TEMPORARY FOREST PROTECTION SIGNAGE MAY BE ATTACHED TO S.S.F.



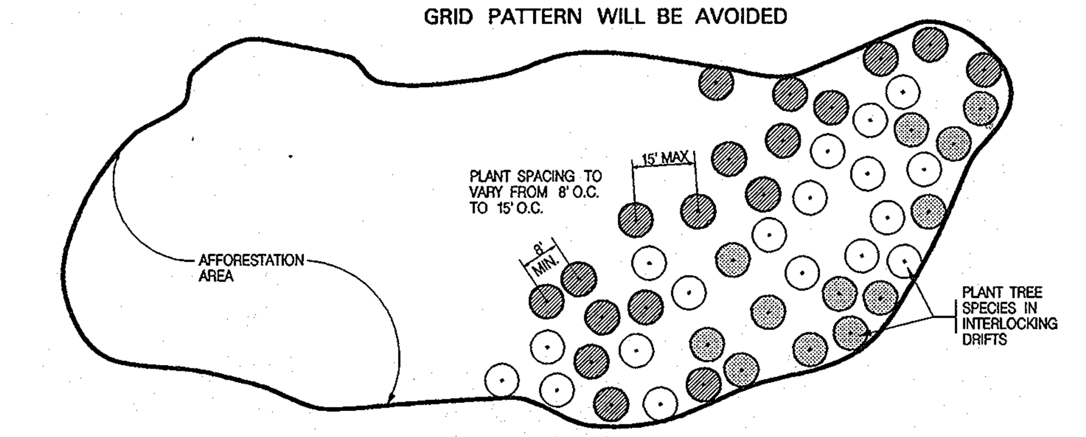
PLANTING PROCEDURES FOR ALL CONTAINER GROWN TREES AND SHRUBS:

1. REMOVE THE PLANT EITHER BY CUTTING OR INVERTING THE CONTAINER
2. GENTLY LOOSEN ROOTS FROM SOILS. ROOTS MAY NOT BE CUT OR TRIMMED ON SITE
3. PLANT SHRUB OR TREE 1 TO 2 INCHES ABOVE THE EXISTING GRADE
4. APPLY 2 TO 3 INCH THICK LAYER OF SHREDDED HARDWOOD MULCH

Typical Tree Planting (For container grown)

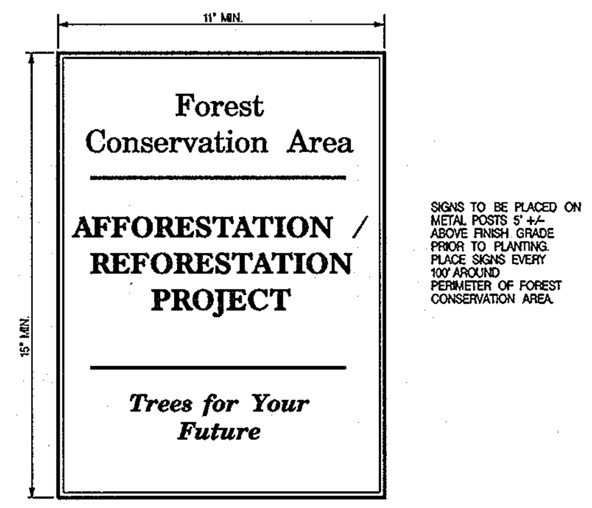
Not To Scale

GRID PATTERN WILL BE AVOIDED



Planting Design Schematic

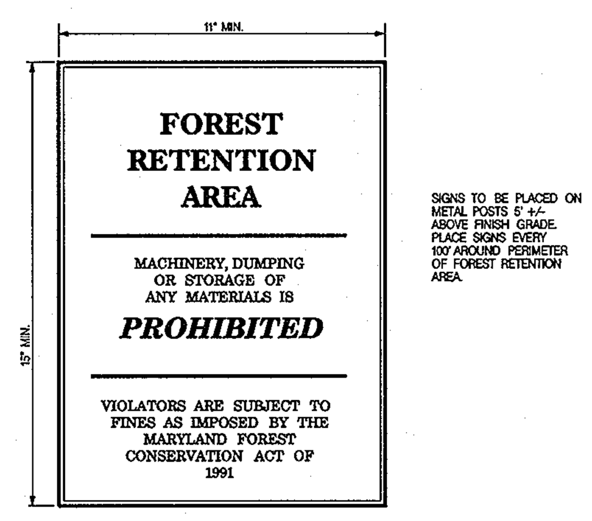
Not To Scale



SIGNS TO BE PLACED ON METAL POSTS 5' +/- ABOVE FINISH GRADE PRIOR TO PLANTING. PLACE SIGNS EVERY 100' AROUND PERIMETER OF FOREST CONSERVATION AREA.

Permanent Signage

Not To Scale



SIGNS TO BE PLACED ON METAL POSTS 5' +/- ABOVE FINISH GRADE. PLACE SIGNS EVERY 100' AROUND PERIMETER OF FOREST RETENTION AREA.

SIGNS MAY NOT BE ATTACHED TO TREES.

Temporary Signage

Not To Scale

FOREST CONSERVATION CALCULATIONS

BASIC SITE DATA	ACRES (1/10)
GROSS SITE AREA	106.2
AREA WITHIN 100 YEAR FLOODPLAIN	3.5
AREA WITHIN AGRICULTURAL USE OR PRESERVATION PARCEL (IF APPLICABLE)	0.0
NET TRACT AREA	102.7
LAND USE CATEGORY	MPD
INFORMATION FOR CALCULATIONS	
A. NET TRACT AREA	102.7
B. REFORESTATION THRESHOLD (15% x A)	15.4
C. AFFORESTATION MINIMUM (15% x A)	15.4
D. EXISTING FOREST ON NET TRACT AREA	24.7
E. FOREST AREAS TO BE CLEARED	7.93
F. FOREST AREAS TO BE RETAINED	16.77
REFORESTATION CALCULATIONS	
A. NET TRACT AREA	102.7
B. REFORESTATION THRESHOLD (15% x A)	15.4
C. EXISTING FOREST ON NET TRACT AREA	24.7
D. FOREST AREAS TO BE CLEARED	7.93
E. FOREST AREAS TO BE RETAINED	16.77
F. FOREST AREAS CLEARED ABOVE REFORESTATION THRESHOLD	7.93
G. FOREST AREAS CLEARED BELOW REFORESTATION THRESHOLD	0.0
H. FOREST AREAS RETAINED ABOVE REFORESTATION THRESHOLD	1.37
CLEARING ABOVE THE THRESHOLD ONLY	
IF FOREST AREAS TO BE RETAINED ARE GREATER THAN THE REFORESTATION THRESHOLD (IF E IS GREATER THAN B), THE FOLLOWING CALCULATIONS APPLY:	
REFORESTATION FOR CLEARING ABOVE THRESHOLD Fx1/4	1.98
REFORESTATION FOR CLEARING BELOW THRESHOLD Gx2	0.0
TOTAL REFORESTATION REQUIRED (Fx1/4) + (Gx2)	1.98
CREDIT FOR RETENTION ABOVE CONSERVATION THRESHOLD	1.37
REFORESTATION REQUIRED	0.61 ACRES
REFORESTATION PROVIDED	5.03 ACRES
POTENTIAL FUTURE REFORESTATION	3.41 ACRES
TOTAL	8.44 ACRES

Section & Phase No.	File No.	Gross Ac.	Floodplain Ac.	Net Tract area	Ex. Forest Ac.	Forest Cleared*	Forest Ret.	Ref/Aff. Req'd	Ref/Aff. Prov.	Excess Ref/Aff.	Future For. Clearing	Future Refor/Affor.	Comments
2 / 1A & 1B	F-01-137	106.2	3.5	102.7	24.7	7.93	16.77	0.61	5.03	4.42	4.48	3.41	

FOREST CONSERVATION TRACKING CHART

Notes: The tabulations shown above for each phase will reflect cumulative totals for this phase and all previous phases.

* Forest Cleared includes the acreage of possible Future Forest Clearing.

The cumulative forest conservation obligatin for Emerson, Sections 2 and 3, has been satisfied by retention of 16.77 acres of forest and creation of 5.03 acres of reforestation/afforestation. This plan for Secion 2, Phase 1B, provides 16.77 acres of retention and 5.03 acres reforestation/afforestation.

GOALS AND OBJECTIVES

Development of Phase I of Emerson Section 2 proposes approximately 7.93 acres of forest clearing. Under the current Forest Conservation Act, 0.61 acres reforestation are required to mitigate for this proposed clearing. The goal of this Forest Conservation Plan is to address reforestation requirements for current and future development Phases by establishing forest in priority reforestation areas which are located on-site. This plan proposes to plant a mix of fast-growing native tree species to establish viable forest cover in these areas as quickly as possible. Reforestation of these areas as proposed will provide resource protection for the adjacent streams and wetlands and will enhance the functional value and quality of the existing habitat. A total of 8.44 acres of priority reforestation areas exist on Phase I portions of the site. This plan proposes to reforest 5.03 acres as part of Phase I development. This reforestation will satisfy the current reforestation obligation; excess reforestation provided will be used for credit for future phases of the project. The 3.41 acres of future reforestation may be planted at a later date and credited towards future phases of development on Emerson Section 2.

FOREST RETENTION

Tree retention/Soil Protection areas will be delineated with temporary signage as appropriate. See Temporary Signage Detail prior to the beginning of any construction activity. Attachment of signs to trees is prohibited.

Forest protection fencing and retention area signage to be installed during later phases of construction where grading has not been indicated.

PRECONSTRUCTION MEETING/CONSTRUCTION PERIOD PRACTICES

Before construction begins, a required preconstruction meeting shall be held. The principle contractors, engineer, Howard County Inspectors and a qualified forest professional familiar with the plan shall be present. All items pertaining to forest retention, tree preservation, and construction period practices shall be discussed.

Any changes to the plan due to on-site conditions must be approved by the Howard County Department of Planning and Zoning.

No grading, excavation, utility placement, sediment and erosion control activities, or vehicular traffic will occur within forest retention areas.

Storage of equipment and materials shall not be permitted in the forest retention areas.

There will be no burial or disposal of discarded material on-site within the retention area.

There will be no open burning within 100 feet of woodlands.

Temporary structures including, but not limited to construction trailers, sanitary facilities, etc. shall not be placed within the forest retention areas.

Employee parking shall not be permitted in the forest retention areas.

POST CONSTRUCTION MANAGEMENT/MAINTENANCE BY CONTRACTOR

All dead trees or tree limbs which pose an immediate safety hazard will be felled. Trees dropped within the forest retention area will not be removed.

All temporary forest protection structures will be removed after construction and permanent signage will be placed where indicated on the plan.

A 2-year Contractor's Maintenance and Monitoring Period shall begin at mobilization. Seventy five percent survivorship must be guaranteed for this period. The site shall be inspected at the end of the two year period to ascertain survivorship and provide for replacement if necessary.

The Contractor's maintenance of new planting shall consist of watering, cultivating, weeding, and mulching as necessary to insure survival.

Contractor shall protect planting areas and plants at all times against damage of all kinds for duration of maintenance period. Maintenance includes temporary protection barriers and signs as required for protection. If any plants become damaged or injured, because sufficient protection was not provided, treat or replace as directed by Landscape Architect at no additional cost to Owner.

ALL FOREST RETENTION & REFORESTATION AREAS SHOWN ON THIS PLAN TO BE PLACED IN FOREST CONSERVATION EASEMENT (POTENTIAL REFORESTATION AREA NOT INCLUDED)

STANDARDS AND SPECIFICATIONS FOR PLANTING

1. PLANT MATERIAL SELECTION

A. Nursery grown plant materials greater than 1" caliper should meet or exceed the requirements of the American Nurserymen Specifications, i.e. should be typical of the species and variety, have a normal habit of growth, be first quality, sound, vigorous, well-branched, have healthy, well furnished root systems, and be free of disease, insect pests and mechanical injuries.

B. Planting stock less than 1" caliper should meet the following standards:

Seedling/whips:

Hardwoods – 1/4" to 1/2" caliper with roots not less than 8" long
Shrubs – 1/8" or larger caliper with 8" root system.

2. PLANTING SITE PREPARATION

Soils shall not be disturbed outside the area necessary for planting individual specimens and the removal of exotic invasive plant material. These areas should be stabilized as shown on the temporary seeding notes on sheet 8.

3. PLANTING PERIOD

All material shall be planted between September 15 and May 31. Material shall not be installed when ground is frozen.

4. PLANT MATERIAL STORAGE

Plants should be planted within 24 hours of delivery if possible. Plant material which are left unplanted for more than 24 hours shall be protected from direct sun and weather and kept moist. Nursery stock should not be left unplanted for more than two weeks.

5. ON-SITE INSPECTION

Prior to planting, planting stock shall be inspected by the landscape architect or other qualified professional familiar with this plan. Plant material not conforming to standard nurseryman specifications for size, form, vigor, roots, trunk wounds, insects and disease should be replaced.

6. TOPSOIL FOR PLANTING SOIL

A. On-site material or imported from same source as topsoil used on site for finish grading.

1. Uniform composition, free of subsoil, clay lumps, stones, stumps, roots or similar objects larger than 1 inch.
2. Topsoil must be free of plants or plant parts of bermudagrass, quackgrass, Johnsongrass, nutsedge, poison ivy, Canada thistle, or others as specified.
3. All topsoil shall be tested by a recognized laboratory for pH and soluble salts. A pH of 4.5 to 7.5 is required. Soluble salts shall not be higher than 500 parts per million.

7. ADDITIVE FOR BACKFILL MIX

A. Wood Residuals:

1. Source shall be well composted, not chemically treated.
2. Physical properties – grading:

U.S. Sieve	Dry Weight Percent Passing
3/8"	100
1/4"	90 – 100
No. 8	70 – 100
No. 35	0 – 30

3. Organic content by ash analysis: 90 – 100 percent dry weight
4. Chemistry:

Range

a. Saturation Extract Conductivity (EC) — Nil – 3.5
b. Reaction (pH) — 3.0 – 5.5

5. Salinity: Maximum saturation extract conductivity 1.0 millimhos per cm at 25 degrees centigrade.

B. Sand

1. Physical Properties – Grading:

U.S. Sieve	Dry Weight Percent Passing
No. 4	100
No. 10	95 – 100
No. 18	90 – 100
No. 35	65 – 100
No. 60	0 – 50
No. 140	0 – 20
No. 270	0 – 7

2. Chemistry:

Saturation Extract Conductivity (EC) — Nil – 3.0
Sodium Absorption Ratio (SAR) — Nil – 6.0
Boron – ppm in saturation extract solution — Nil – 1.0
Reaction (pH) — 6.0 – 7.5
Available calcium – sodium acetate extractable – ppm — Nil – 2000 dry weight

C. Treble Superphosphate: Commercial product containing 19 to 20 percent available phosphoric acid.

8. MULCH

A. Shredded long fiber hardwood.

B. Mulch shall have been shredded within the last six (6) months.

9. 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. Dolomite limestone (eliminate for acid loving plants)

10. LAYOUT AND EXCAVATION OF PLANTING AREAS

A. Plants shall be placed in each zone at random locations shown at spacing as indicated on the plan.

B. The Landscape Architect or qualified professional will check location of plants in the field and shall adjust to exact position before planting begins.

C. Subsoil shall not be worked when moisture content is so great that excessive compaction will occur, nor when it is so dry that clods will not readily break. Water shall be applied, if necessary, to bring soil to an optimum moisture content before tilling and planting.

D. Tree pits shall not be excavated more than 24 hours in advance of planting operation. Tree pits shall be excavated to the following dimensions:

Excavation for	Width	Depth
Canned Trees	Can + 12 in.	Can + 4 in.
B&B Trees	Ball + 12 in.	Ball + 4 in.

E. Excavate shrub pits to the following depths:

Excavation for	Width	Depth
Shrubs	Ball or Can + 8 in.	Can + 4 in., not less than 12 in.

11. PREPARING PLANT MATERIALS FOR PLANTING

A. Container stock shall be removed carefully after cans have been cut on two sides with approved cutter. Do not use spade to cut cans. Do not lift or handle container plants by tops, stems or trunks at any time.

B. Do not bind or handle any plant with wire or rope at any time so as to damage bark or break branches. Lift and handle plants only from bottom of ball.

C. Balled and burlapped (B&B) plants shall have firm balls of earth. Plants moved with a ball will not be accepted if the ball is cracked or broken before or during planting operations. B&B material shall be dug only when dormant. Pre-dug stored B&B material shall be inspected and approved at the storage site.

D. Do not force roots for bare rooted trees into excavated pits – custom dig pits to receive roots without deformation.

12. MIXING

A. Mix soil base, amendments and chemical additives by mechanical means.

B. Soil and sand bases shall be completely pulverized and free of lumps or aggregated material. Moisture content of base materials shall not be such that chemical granular or pelletized additives become dissolved during the mixing process.

C. Mix media in quantities of not less than 20 cubic yards or mix total quantity required if less than 50 cubic yards. The Contractor shall be responsible for continuity between batches.

D. Contaminating backfill mix with unmixed soil in backfill mixing lots shall be avoided.

13. INSTALLATION OF CONTAINERIZED PLANT MATERIAL

A. Scarify the walls and bottom of all plant pits immediately prior to the placement of plant and backfill mix. The Contractor shall remove all glazing of soil caused by an auger or mechanical hole digger.

B. Wells around trees and shrubs: after planting is complete, form a soil well 3 inches high around each plant, extending to the outer limit of the plant pit in accordance with planting details shown on the Drawings.

C. Smooth planted areas to conform to specified grades after full settlement as occurred. Contractor shall bear final responsibility for proper surface drainage of planted areas. Any discrepancy in the drawings or specifications, obstructions on the site, or prior work done by another party, which Contractor feels precludes establishing proper drainage, shall be brought to the attention of the Landscape Architect in writing.

D. Water all plants immediately again after planting.

E. Spread mulch in required areas to the compacted depth of 2 inches.

GUARANTEE:

A MINIMUM SURVIVAL RATE OF 75% IS TO BE GUARANTEED BY THE DEVELOPER AT THE END OF THE TWO YEAR MAINTENANCE PERIOD.

Reforestation Area Planting Plan

#of whips req'd =1,743

Species	Size	Spacing	Quantity	Tolerance	Remarks
Liriodendron tulipifera	Container grown whip	11" o.c./rndm	300	I	FACU
Acer rubrum	Container grown whip	11" o.c./rndm	300	I-VT	FAC
Fraxinus pennsylvanicum	Container grown whip	11" o.c./rndm	300	I-MT	FACW
Quercus alba	Container grown whip	11" o.c./rndm	250	MT	FACU
Platanus occidentalis	Container grown whip	11" o.c./rndm	300	MT	FACW-
Nyssa sylvatica	Container grown whip	11" o.c./rndm	300	T	FAC
TOTALS			1,750		

NOTE:

1. THE PRECISE LOCATION OF PLANT MASSINGS WILL BE LOCATED IN THE FIELD BY LANDSCAPE ARCHITECT.
2. GRID PATTERNS WILL BE AVOIDED
3. PLANT MATERIAL MAY BE GROUPED IN CLUSTERS OF NO MORE THAN 5 TO 7 WHIPS OF THE SAME PLANT. PLANTS WILL BE INSTALLED IN A RANDOM FASHION.

APPROVED: HOWARD COUNTY DEPT. OF PUBLIC WORKS

[signature] 12-19-01
CHIEF, BUREAU OF HIGHWAYS — DATE

APPROVED: HOWARD COUNTY DEPT. OF PLANNING & ZONING

[signature] 12/24/01
CHIEF, DEVELOPMENT ENGINEERING DIVISION MK — DATE

[signature] 12/27/01
CHIEF, DIVISION OF LAND DEVELOPMENT — DATE

DIRECTOR — DATE

Date	No.	Revision Description

EMERSON

FORMERLY KEY PROPERTY
SECTION 2, PHASE 1B

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

11.7.01
Date

STATE OF MARYLAND · MELANIE MOSER · LANDSCAPE ARCHITECT · 551 REGISTERED

Landscape Architect 551

SUBDIVISION NAME	SECTION/AREA	LOT/PARCEL #
EMERSON SECTION 2	PHASE 1B	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

FOREST CONSERVATION PLAN

Des By	Scale	Proj. No. 95054.F
Drn By BKC	Date 11-7-01	37 of 38
Chk By	Approved	

F-01-137

F-01-137

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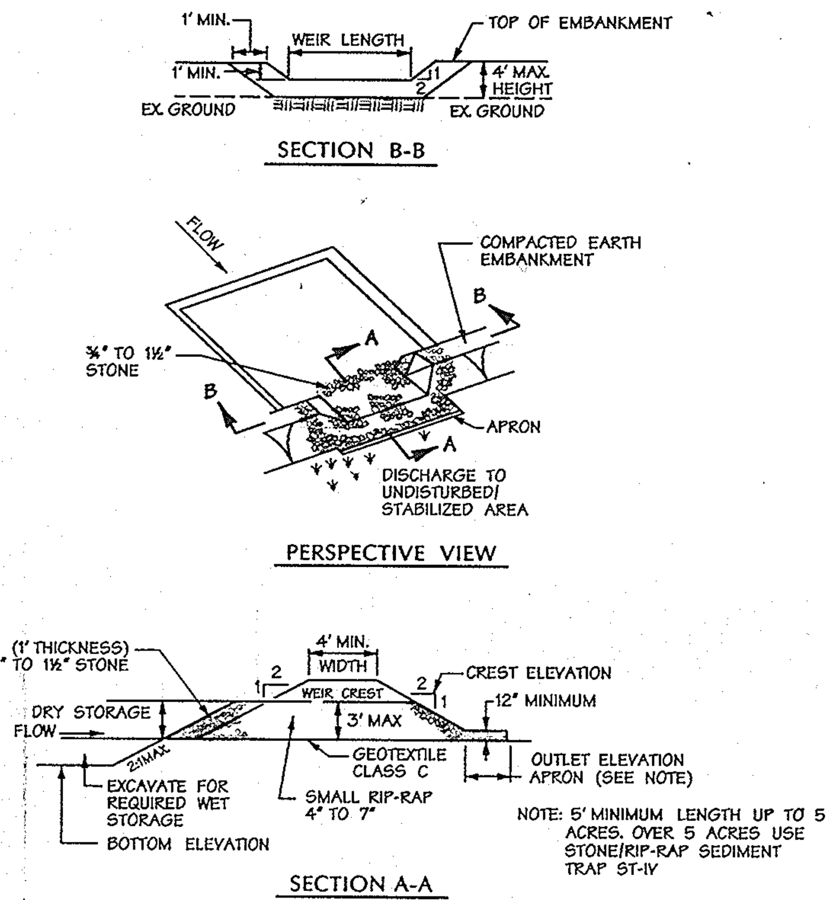


U.S. DEPARTMENT OF AGRICULTURE SOIL CONSERVATION SERVICE — C - 9 - 10 — MARYLAND DEPARTMENT OF ENVIRONMENT WATER MANAGEMENT ADMINISTRATION

STONE OUTLET SEDIMENT TRAP - ST II — NOT TO SCALE

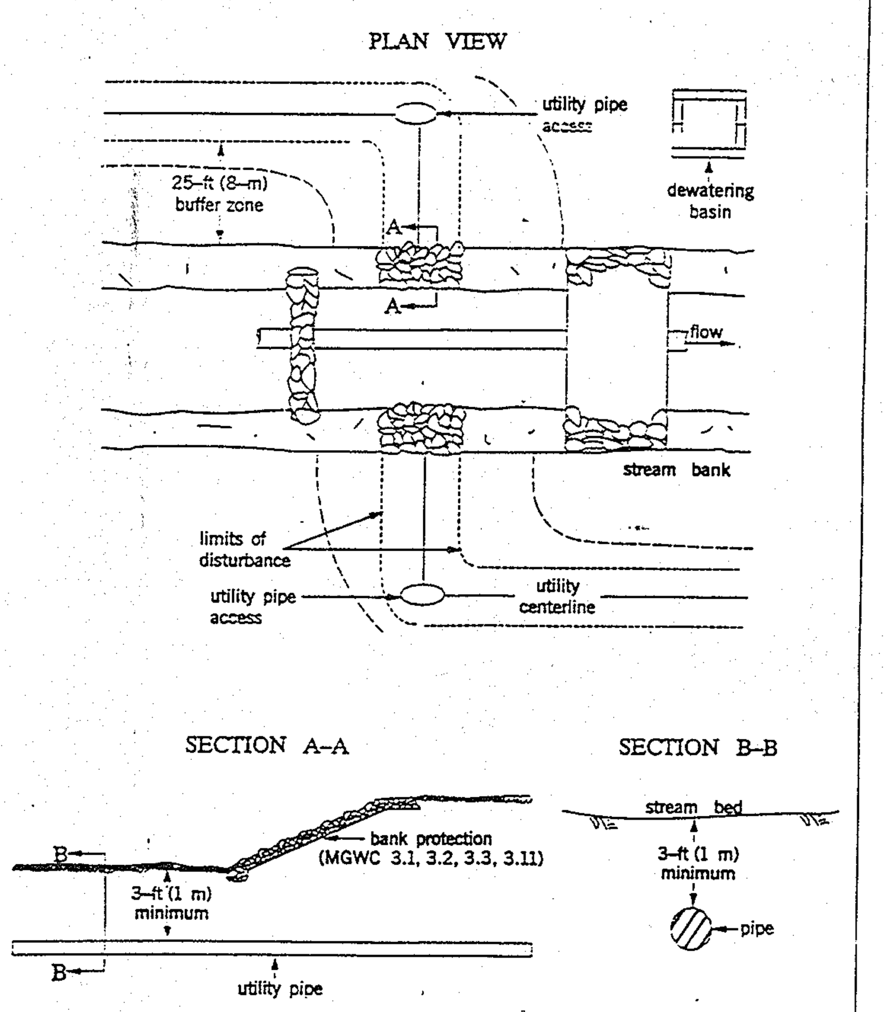
CONSTRUCTION SPECIFICATIONS

1. AREA UNDER EMBANKMENT SHALL BE CLEARED, GRUBBED AND STRIPPED OF ANY VEGETATION AND ROOT MAT. THE POOL AREA SHALL BE CLEARED.
2. THE FILL MATERIAL FOR THE EMBANKMENT SHALL BE FREE OF ROOTS AND OTHER WOODY VEGETATION AS WELL AS OVER-SIZED STONES, ROCKS, ORGANIC MATERIAL OR OTHER OBJECTIONABLE MATERIAL. THE EMBANKMENT SHALL BE COMPACTED BY TRAVERSING WITH EQUIPMENT WHILE IT IS BEING CONSTRUCTED.
3. ALL CUT AND FILL SLOPES SHALL BE 2:1 OR FLATTER.
4. THE STONE USED IN THE OUTLET SHALL BE SMALL RIP-RAP 4" TO 7" IN SIZE WITH A 1' THICK LAYER OF ¾" TO 1½" WASHED AGGREGATE PLACED ON THE UPSTREAM FACE OF THE OUTLET. STONE FACING SHALL BE WASHED AS NECESSARY TO PREVENT CLOGGING. GEOTEXTILE CLASS C MAY BE SUBSTITUTED FOR THE STONE FACING BY PLACING IT ON THE INSIDE FACE OF THE STONE OUTLET.
5. SEDIMENT SHALL BE REMOVED AND TRAP RESTORED TO ITS ORIGINAL DIMENSIONS WHEN THE SEDIMENT HAS ACCUMULATED TO ONE HALF OF THE WET STORAGE DEPTH OF THE TRAP. REMOVED SEDIMENT SHALL BE DEPOSITED IN A SUITABLE AREA AND IN SUCH A MANNER THAT IT WILL NOT ERODE.
6. THE STRUCTURE SHALL BE INSPECTED PERIODICALLY AND AFTER EACH RAIN AND REPAIRS MADE AS NEEDED.
7. CONSTRUCTION OF TRAPS SHALL BE CARRIED OUT IN SUCH A MANNER THAT SEDIMENT POLLUTION IS ABATED. ONCE CONSTRUCTED, THE TOP AND OUTSIDE FACE OF THE EMBANKMENT SHALL BE STABILIZED WITH SEED AND MULCH. POINTS OF CONCENTRATION INFLOW SHALL BE PROTECTED IN ACCORDANCE WITH GRADE STABILIZATION STRUCTURE CRITERIA. THE REMAINDER OF THE INTERIOR SLOPES SHOULD BE STABILIZED (ONE TIME) WITH SEED AND MULCH UPON TRAP COMPLETION AND MONITORED AND MAINTAINED EROSION FREE DURING THE LIFE OF THE TRAP.
8. THE STRUCTURE SHALL BE DEWATERED BY APPROVED METHODS, REMOVED AND THE AREA STABILIZED WHEN THE DRAINAGE AREA HAS BEEN PROPERLY STABILIZED.
9. REFER TO SECTION D FOR SPECIFICATIONS CONCERNING TRAP DEWATERING.
10. MINIMUM TRAP DEPTH SHALL BE MEASURED FROM THE WEIR ELEVATION.
11. THE ELEVATION OF THE TOP OF ANY DIKE DIRECTING WATER INTO THE TRAP MUST EQUAL OR EXCEED THE ELEVATION OF THE TRAP EMBANKMENT.
12. GEOTEXTILE CLASS C SHALL BE PLACED OVER THE BOTTOM AND SIDES OF THE OUTLET CHANNEL PRIOR TO THE PLACEMENT OF STONE. SECTIONS OF FILTER CLOTH MUST OVERLAP AT LEAST 1' WITH THE SECTION NEAREST THE ENTRANCE PLACED ON TOP. THE FILTER CLOTH SHALL BE EMBEDDED AT LEAST 6" INTO EXISTING GROUND AT THE ENTRANCE OF THE OUTLET CHANNEL.
13. OUTLET - AN OUTLET SHALL BE PROVIDED, INCLUDING A MEANS OF CONVEYING THE DISCHARGE IN AN EROSION FREE MANNER TO AN EXISTING STABLE CHANNEL.

U.S. DEPARTMENT OF AGRICULTURE SOIL CONSERVATION SERVICE — C - 9 - 10A — MARYLAND DEPARTMENT OF ENVIRONMENT WATER MANAGEMENT ADMINISTRATION

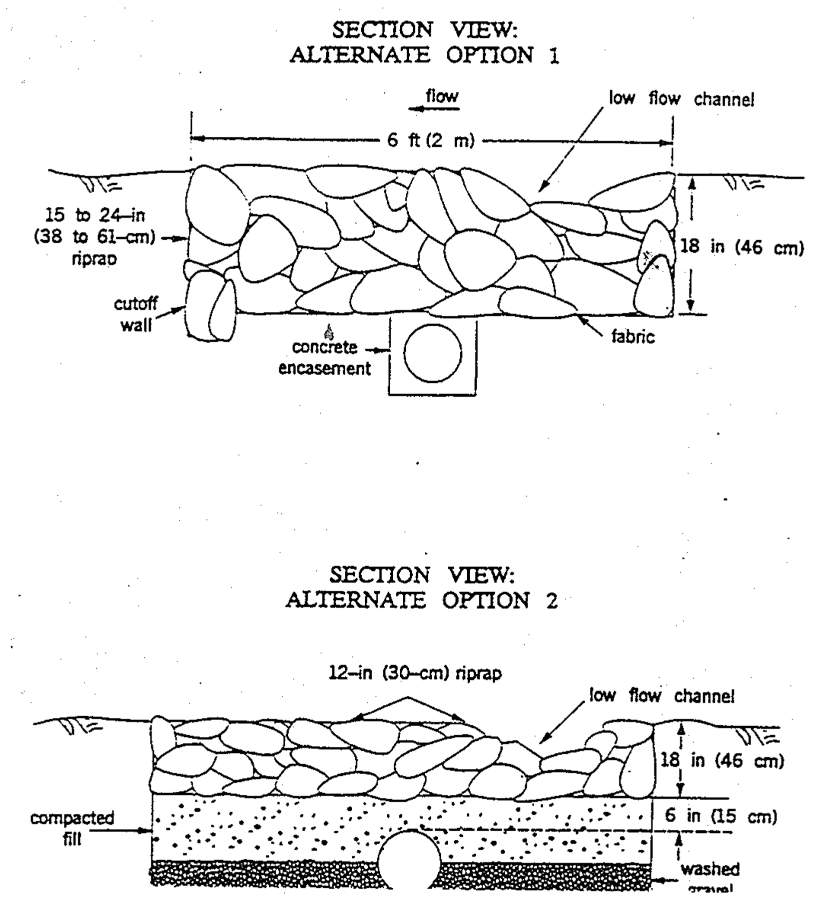
STONE OUTLET SEDIMENT TRAP - ST II — NOT TO SCALE

Maryland's Guidelines To Waterway Construction
DETAIL 4.2(a): UTILITY CROSSING



STREAM CROSSINGS	PAGE 4.2 - 2	MARYLAND DEPARTMENT OF THE ENVIRONMENT WATER MANAGEMENT ADMINISTRATION

Maryland's Guidelines To Waterway Construction
DETAIL 4.2(b): UTILITY CROSSING



STREAM CROSSINGS	REVISED NOVEMBER 2000 PAGE 4.2 - 3	MARYLAND DEPARTMENT OF THE ENVIRONMENT WATER MANAGEMENT ADMINISTRATION

MGWC 4.2: UTILITY CROSSING

Temporary in-stream construction

DESCRIPTION

The work should consist of installing erosion control devices in and adjacent to the construction of utility crossings.

INSTALLATION GUIDELINES

All erosion and sediment control devices, including dewatering basins, should be implemented as the first order of business according to a plan approved by the WMA or local authority. (See *the 1994 Maryland Standards and Specifications for Soil Erosion and Sediment Control.*) The proposed construction sequence is as follows (refer to Detail 4.2):

1. The contractor should insure that a continuous perimeter control barrier is in place to minimize the amount of pollutants entering the flow. A diversion pipe as shown in MGWC 1.4: Diversion Pipe or other measure should be installed and sandbag or stone barriers as shown in MGWC 1.5: Sandbag/Stone Diversion should be constructed according to specifications to divert the streamflow.
2. Excavated topsoil and subsoil should be kept separate, placed on the upland side of the excavation, and replaced in their natural order.
3. All construction should take place during stream low flows. The length of construction time should be limited to a maximum of 5 consecutive days for each crossing.
4. All utility crossings should be placed a minimum of 3 feet (1 meter) beneath the stream bed unless an alternative section is specifically approved by the WMA. For instances where a 3-foot cover is not viable, two alternate stabilization options are given in the Detail 4.2. A low flow channel shall be constructed through all riprap placements across the stream bed.
5. The stream should be diverted by an approved temporary stream diversion, the construction area should be dewatered, and any disturbed banks should be stabilized. The contractor may elect to construct the utility crossing in two stages. In this case, a WMA approved flow barrier may be constructed to keep the construction area dry.
6. Once the crossing is completed, the diversion should be removed from upstream to downstream. Sediment control devices, including perimeter erosion controls, are to remain in place until all disturbed areas are stabilized in accordance with an approved sediment and erosion control plan and the inspection authority approves their removal.

STREAM CROSSINGS — *MARYLAND DEPARTMENT OF THE ENVIRONMENT WATERWAY CONSTRUCTION GUIDELINES REVISED NOVEMBER 2000*

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 OF DEVELOPER — DATE 11/7/01
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
PRINT NAME BELOW SIGNATURE
John W. Ranocchia, Sr.

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

Jim Myers / GS — 11/27/01
U.S. NATURAL RESOURCE CONSERVATION SERVICE — DATE

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

HOWARD S.C.D. — 11/27/01 DATE

11/7/01
Date

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

Professional Engr. No. 10557

APPROVED: HOWARD COUNTY DEPT. OF PUBLIC WORKS
12-19-01
CHIEF BUREAU OF HIGHWAYS — DATE

~~APPROVED:~~ FOR PUBLIC WATER & PUBLIC SEWERAGE SYSTEMS, HOWARD COUNTY HEALTH DEPARTMENT
~~COUNTY HEALTH OFFICER — DATE~~

APPROVED: HOWARD COUNTY DEPT. OF PLANNING & ZONING
CHIEF, DEVELOPMENT ENGINEERING DIVISION MK — 12/24/01 DATE
Kent Sheubrooks / for CH
CHIEF, DIVISION OF LAND DEVELOPMENT HB — 12/27/01 DATE
~~DIRECTOR — DATE~~

Date	No.	Revision Description

EMERSON
FORMERLY KEY PROPERTY
SECTION 2, PHASE 1B

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
EROSION & SEDIMENT CONTROL DETAILS

Des By	MRT	Scale	1"=50'	Proj. No.	95054.F
Dm By	WHJ	Date	11-7-01	38 of 38	
Chk By		Approved			

F-01-137

F-01-137

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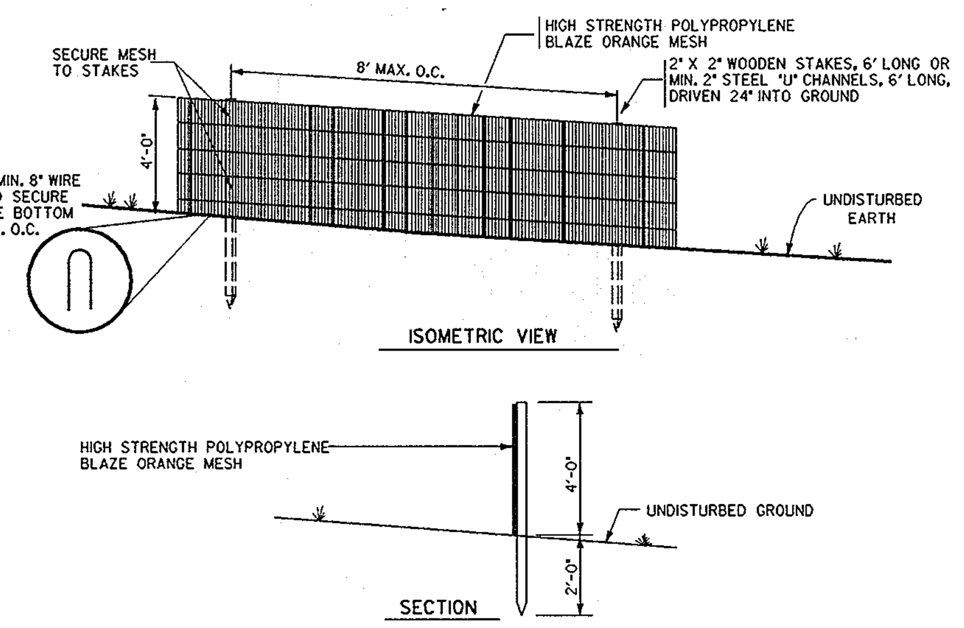


NOTES:

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

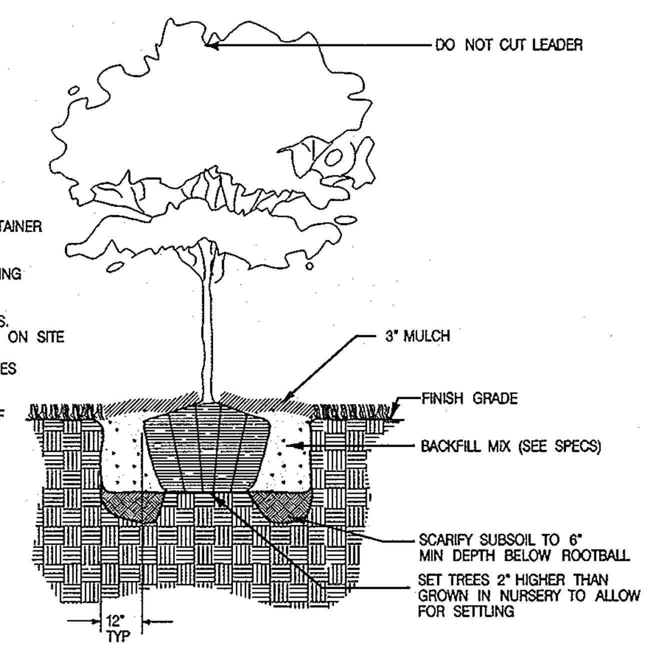
Forest Protection Fence*

Not To Scale

* WHERE SUPER SILT FENCE (S.S.F.) IS TO BE INSTALLED ADJACENT TO FOREST RETENTION AREAS, ATTACH HIGH VISIBILITY TAPE OR FLAGGING TO THE TOP EDGE OF S.S.F. AT 5' INTERVALS AND USE S.S.F. IN LIEU OF BLAZE ORANGE FENCE. TEMPORARY FOREST PROTECTION SIGNAGE MAY BE ATTACHED TO S.S.F.

PLANTING PROCEDURES FOR ALL CONTAINER GROWN TREES AND SHRUBS:

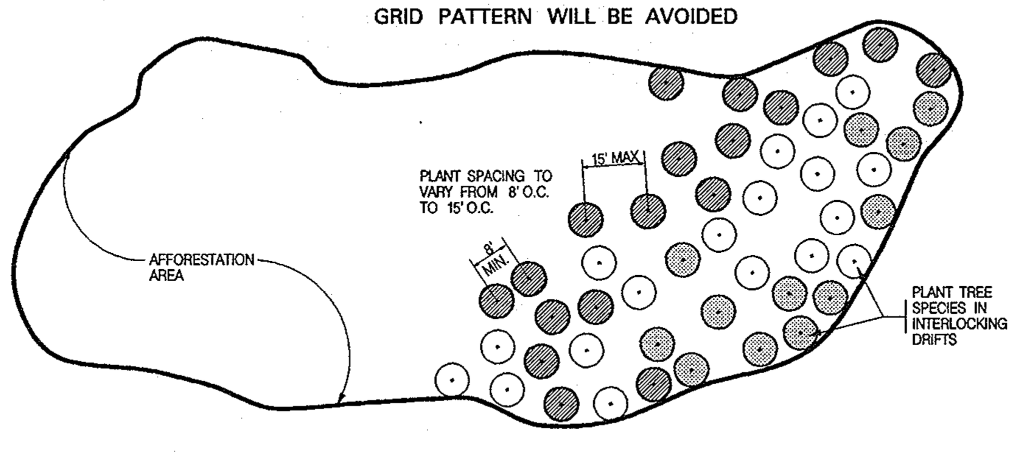
1. REMOVE THE PLANT EITHER BY CUTTING OR INVERTING THE CONTAINER
2. GENTLY LOOSEN ROOTS FROM SOILS. ROOTS MAY NOT BE CUT OR TRIMMED ON SITE
3. PLANT SHRUB OR TREE 1 TO 2 INCHES ABOVE THE EXISTING GRADE
4. APPLY 2 TO 3 INCH THICK LAYER OF SHREDDED HARDWOOD MULCH



Typical Tree Planting (For container grown)

Not To Scale

GRID PATTERN WILL BE AVOIDED



Planting Design Schematic

Not To Scale

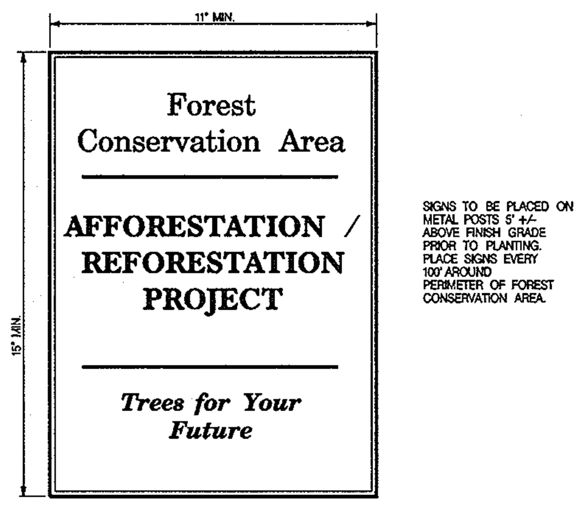
Section & Phase No.	File No.	Gross Ac.	Floodplain Ac.	Net Tract area	Ex. Forest Ac.	Forest Cleared*	Forest Ret.	Ref/Aff. Req'd	Ref/Aff. Prov.	Excess Ref/Aff.	Future For. Clearing	Future Refor/Affor.	Comments
2 / 1A & 1B	F-01-137	106.2	3.5	102.7	24.7	7.93	16.77	0.61	5.00	4.42	4.48	3.41	

FOREST CONSERVATION TRACKING CHART

Notes: The tabulations shown above for each phase will reflect cumulative totals for this phase and all previous phases.

* Forest Cleared includes the acreage of possible Future Forest Clearing.

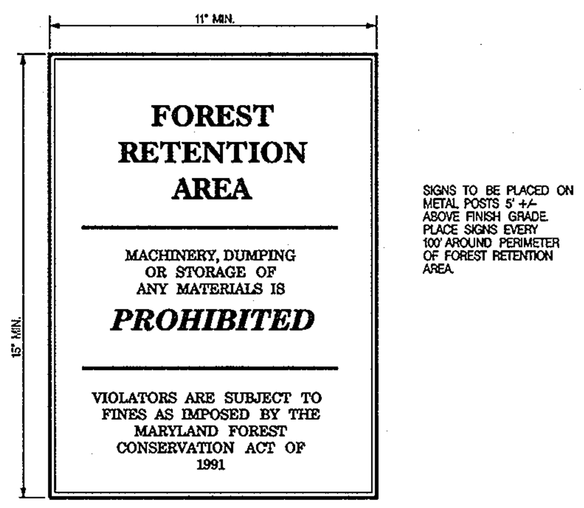
The cumulative forest conseration obligatin for Emerson, Sections 2 and 3, has been satisfied by retention of 16.77 acres of forest and creation of 5.03 acres of reforestation/afforestation. This plan for Secion 2, Phase 1B, provides 16.77 acres of retention and 5.00 acres reforestation/afforestation.



SIGNS TO BE PLACED ON METAL POSTS 5' +/- ABOVE FINISH GRADE PRIOR TO PLANTING. PLACE SIGNS EVERY 100' AROUND PERIMETER OF FOREST CONSERVATION AREA.

Permanent Signage

Not To Scale



SIGNS TO BE PLACED ON METAL POSTS 5' +/- ABOVE FINISH GRADE. PLACE SIGNS EVERY 100' AROUND PERIMETER OF FOREST RETENTION AREA.

SIGNS MAY NOT BE ATTACHED TO TREES.

Temporary Signage

Not To Scale

FOREST CONSERVATION CALCULATIONS

BASIC SITE DATA	ACRES (1/10)
GROSS SITE AREA	106.2
AREA WITHIN 100 YEAR FLOODPLAIN	3.5
AREA WITHIN AGRICULTURAL USE OR PRESERVATION PARCEL (IF APPLICABLE)	0.0
NET TRACT AREA	102.7
LAND USE CATEGORY	MPD
INFORMATION FOR CALCULATIONS	
A. NET TRACT AREA	102.7
B. REFORESTATION THRESHOLD (15% x A)	15.4
C. AFFORESTATION MINIMUM (15% x A)	15.4
D. EXISTING FOREST ON NET TRACT AREA	24.7
E. FOREST AREAS TO BE CLEARED	7.93
F. FOREST AREAS TO BE RETAINED	16.77
REFORESTATION CALCULATIONS	
A. NET TRACT AREA	102.7
B. REFORESTATION THRESHOLD (15% x A)	15.4
C. EXISTING FOREST ON NET TRACT AREA	24.7
D. FOREST AREAS TO BE CLEARED	7.93
E. FOREST AREAS TO BE RETAINED	16.77
F. FOREST AREAS CLEARED ABOVE REFORESTATION THRESHOLD	7.93
G. FOREST AREAS CLEARED BELOW REFORESTATION THRESHOLD	0.0
H. FOREST AREAS RETAINED ABOVE REFORESTATION THRESHOLD	1.37
CLEARING ABOVE THE THRESHOLD ONLY	
IF FOREST AREAS TO BE RETAINED ARE GREATER THAN THE REFORESTATION THRESHOLD (IF E IS GREATER THAN B), THE FOLLOWING CALCULATIONS APPLY:	
REFORESTATION FOR CLEARING ABOVE THRESHOLD Fx1/4	1.98
REFORESTATION FOR CLEARING BELOW THRESHOLD Gx2	0.0
TOTAL REFORESTATION REQUIRED (Fx1/4) + (Gx2)	1.98
CREDIT FOR RETENTION ABOVE CONSERVATION THRESHOLD	1.37
REFORESTATION REQUIRED	0.61 ACRES
REFORESTATION PROVIDED	5.00 ACRES
POTENTIAL FUTURE REFORESTATION	3.41 ACRES
TOTAL	8.44 ACRES

GOALS AND OBJECTIVES

Development of Phase I of Emerson Section 2 proposes approximately 7.93 acres of forest clearing. Under the current Forest Conservation Act, 0.61 acres reforestation are required to mitigate for this proposed clearing. The goal of this Forest Conservation Plan is to address reforestation requirements for current and future development Phases by establishing forest in priority reforestation areas which are located on-site. This plan proposes to plant a mix of fast-growing native tree species to establish viable forest cover in these areas as quickly as possible. Reforestation of these areas as proposed will provide resource protection for the adjacent streams and wetlands and will enhance the functional value and quality of the existing habitat. A total of 8.44 acres of priority reforestation areas exist on Phase I portions of the site. This plan proposes to reforest 5.03 acres as part of Phase 1 development. This reforestation will satisfy the current reforestation obligation; excess reforestation provided will be used for credit for future phases of the project. The 3.41 acres of future reforestation may be planted at a later date and credited towards future phases of development on Emerson Section 2.

FOREST RETENTION

Tree retention/Soil Protection areas will be delineated with temporary signage as appropriate. See Temporary Signage Detail prior to the beginning of any construction activity. Attachment of signs to trees is prohibited.

Forest protection fencing and retention area signage to be installed during later phases of construction where grading has not been indicated.

PRECONSTRUCTION MEETING/CONSTRUCTION PERIOD PRACTICES

Before construction begins, a required preconstruction meeting shall be held. The principle contractors, engineer, Howard County Inspectors and a qualified forest professional familiar with the plan shall be present. All items pertaining to forest retention, tree preservation, and construction period practices shall be discussed.

Any changes to the plan due to on-site conditions must be approved by the Howard County Department of Planning and Zoning.

No grading, excavation, utility placement, sediment and erosion control activities, or vehicular traffic will occur within forest retention areas.

Storage of equipment and materials shall not be permitted in the forest retention areas.

There will be no burial or disposal of discarded material on-site within the retention area.

There will be no open burning within 100 feet of woodlands.

Temporary structures including, but not limited to construction trailers, sanitary facilities, etc. shall not be placed within the forest retention areas.

Employee parking shall not be permitted in the forest retention areas.

POST CONSTRUCTION MANAGEMENT/MAINTENANCE BY CONTRACTOR

All dead trees or tree limbs which pose an immediate safety hazard will be felled. Trees dropped within the forest retention area will not be removed.

All temporary forest protection structures will be removed after construction and permanent signage will be placed where indicated on the plan.

A 2-year Contractor's Maintenance and Monitoring Period shall begin at mobilization. Seventy five percent survivorship must be guaranteed for this period. The site shall be inspected at the end of the two year period to ascertain survivorship and provide for replacement if necessary.

The Contractor's maintenance of new planting shall consist of watering, cultivating, weeding, and mulching as necessary to insure survival.

Contractor shall protect planting areas and plants at all times against damage of all kinds for duration of maintenance period. Maintenance includes temporary protection barriers and signs as required for protection. If any plants become damaged or injured, because sufficient protection was not provided, treat or replace as directed by Landscape Architect at no additional cost to Owner.

ALL FOREST RETENTION & REFORESTATION AREAS SHOWN ON THIS PLAN TO BE PLACED IN FOREST CONSERVATION EASEMENT (POTENTIAL REFORESTATION AREA NOT INCLUDED)

STANDARDS AND SPECIFICATIONS FOR PLANTING

1. PLANT MATERIAL SELECTION

A. Nursery grown plant materials greater than 1" caliper should meet or exceed the requirements of the American Nurserymen Specifications, i.e. should be typical of the species and variety, have a normal habit of growth, be first quality, sound, vigorous, well-branched, have healthy, well furnished root systems, and be free of disease, insect pests and mechanical injuries.

B. Planting stock less than 1" caliper should meet the following standards:

Seedling/whips:

Hardwoods – 1/4" to 1/2" caliper with roots not less than 8" long
Shrubs – 1/8" or larger caliper with 8" root system.

2. PLANTING SITE PREPARATION

Soils shall not be disturbed outside the area necessary for planting individual specimens and the removal of exotic invasive plant material. These areas should be stabilized as shown on the temporary seeding notes on sheet 8.

3. PLANTING PERIOD

All material shall be planted between September 15 and May 31. Material shall not be installed when ground is frozen.

4. PLANT MATERIAL STORAGE

Plants should be planted within 24 hours of delivery if possible. Plant material which are left unplanted for more than 24 hours shall be protected from direct sun and weather and kept moist. Nursery stock should not be left unplanted for more than two weeks.

5. ON-SITE INSPECTION

Prior to planting, planting stock shall be inspected by the landscape architect or other qualified professional familiar with this plan. Plant material not conforming to standard nurseryman specifications for size, form, vigor, roots, trunk wounds, insects and disease should be replaced.

6. TOPSOIL FOR PLANTING SOIL

A. On-site material or imported from same source as topsoil used on site for finish grading.

1. Uniform composition, free of subsoil, clay lumps, stones, stumps, roots or similar objects larger than 1 inch.
2. Topsoil must be free of plants or plant parts of bermudagrass, quackgrass, Johnsongrass, nutsedge, poison ivy, Canada thistle, or others as specified.
3. All topsoil shall be tested by a recognized laboratory for pH and soluble salts. A pH of 4.5 to 7.5 is required. Soluble salts shall not be higher than 500 parts per million.

7. ADDITIVE FOR BACKFILL MIX

A. Wood Residuals:

1. Source shall be well composted, not chemically treated.
2. Physical properties – grading:

U.S. Sieve	Dry Weight Percent Passing
3/8"	100
1/4"	90 – 100
No. 8	70 – 100
No. 35	0 – 30

3. Organic content by ash analysis: 90 – 100 percent dry weight
4. Chemistry:

Range

a. Saturation Extract Conductivity (EC) ——— Nil – 3.5
b. Reaction (pH) ——— 3.0 – 5.5

5. Salinity: Maximum saturation extract conductivity 1.0 millimhos per cm at 25 degrees centigrade.

B. Sand

1. Physical Properties – Grading:

U.S. Sieve	Dry Weight Percent Passing
No. 4	100
No. 10	95 – 100
No. 18	90 – 100
No. 35	65 – 100
No. 60	0 – 50
No. 140	0 – 20
No. 270	0 – 7

2. Chemistry:

Saturation Extract Conductivity (EC) ——— Nil – 3.0
Sodium Absorption Ratio (SAR) ——— Nil – 6.0
Boron – ppm in saturation extract solution ——— Nil – 1.0
Reaction (pH) ——— 6.0 – 7.5
Available calcium – sodium acetate extractable – ppm — Nil – 2000 dry weight

C. Treble Superphosphate: Commercial product containing 19 to 20 percent available phosphoric acid.

8. MULCH

A. Shredded long fiber hardwood.

B. Mulch shall have been shredded within the last six (6) months.

9. 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. Dolomite limestone (eliminate for acid loving plants)

10. LAYOUT AND EXCAVATION OF PLANTING AREAS

A. Plants shall be placed in each zone at random locations shown at spacing as indicated on the plan.

B. The Landscape Architect or qualified professional will check location of plants in the field and shall adjust to exact position before planting begins.

C. Subsoil shall not be worked when moisture content is so great that excessive compaction will occur, nor when it is so dry that clods will not readily break. Water shall be applied, if necessary, to bring soil to an optimum moisture content before tilling and planting.

D. Tree pits shall not be excavated more than 24 hours in advance of planting operation. Tree pits shall be excavated to the following dimensions:

Excavation for	Width	Depth
Canned Trees	Can + 12 in.	Can + 4 in.
B&B Trees	Ball + 12 in.	Ball + 4 in.

E. Excavate shrub pits to the following depths:

Excavation for	Width	Depth
Shrubs	Ball or Can + 8 in.	Can + 4 in., not less than 12 in.

11. PREPARING PLANT MATERIALS FOR PLANTING

A. Container stock shall be removed carefully after cans have been cut on two sides with approved cutter. Do not use spade to cut cans. Do not lift or handle container plants by tops, stems or trunks at any time.

B. Do not bind or handle any plant with wire or rope at any time so as to damage bark or break branches. Lift and handle plants only from bottom of ball.

C. Balled and burlapped (B&B) plants shall have firm balls of earth. Plants moved with a ball will not be accepted if the ball is cracked or broken before or during planting operations. B&B material shall be dug only when dormant. Pre-dug stored B&B material shall be inspected and approved at the storage site.

D. Do not force roots for bare rooted trees into excavated pits – custom dig pits to receive roots without deformation.

12. MIXING

A. Mix soil base, amendments and chemical additives by mechanical means.

B. Soil and sand bases shall be completely pulverized and free of lumps or aggregated material. Moisture content of base materials shall not be such that chemical granular or pelletized additives become dissolved during the mixing process.

C. Mix media in quantities of not less than 20 cubic yards or mix total quantity required if less than 50 cubic yards. The Contractor shall be responsible for continuity between batches.

D. Contaminating backfill mix with unmixed soil in backfill mixing lots shall be avoided.

13. INSTALLATION OF CONTAINERIZED PLANT MATERIAL

A. Scarify the walls and bottom of all plant pits immediately prior to the placement of plant and backfill mix. The Contractor shall remove all glazing of soil caused by an auger or mechanical hole digger.

B. Wells around trees and shrubs: after planting is complete, form a soil well 3 inches high around each plant, extending to the outer limit of the plant pit in accordance with planting details shown on the Drawings.

C. Smooth planted areas to conform to specified grades after full settlement as occurred. Contractor shall bear final responsibility for proper surface drainage of planted areas. Any discrepancy in the drawings or specifications, obstructions on the site, or prior work done by another party, which Contractor feels precludes establishing proper drainage, shall be brought to the attention of the Landscape Architect in writing.

D. Water all plants immediately again after planting.

E. Spread mulch in required areas to the compacted depth of 2 inches.

GUARANTEE:

A MINIMUM SURVIVAL RATE OF 75% IS TO BE GUARANTEED BY THE DEVELOPER AT THE END OF THE TWO YEAR MAINTENANCE PERIOD.

Reforestation Area Planting Plan

#of whips req'd =1,743

Species	Size	Spacing	Quantity	Tolerance	Remarks
Liriodendron tulipifera	Container grown whip	11" o.c./rndm	300	I	FACU
Acer rubrum	Container grown whip	11" o.c./rndm	300	I-VT	FAC
Fraxinus pennsylvanicum	Container grown whip	11" o.c./rndm	300	I-MT	FACW
Quercus alba	Container grown whip	11" o.c./rndm	250	MT	FACU
Platanus occidentalis	Container grown whip	11" o.c./rndm	300	MT	FACW-
Nyssa sylvatica	Container grown whip	11" o.c./rndm	300	T	FAC
TOTALS			1,750		

NOTE:

1. THE PRECISE LOCATION OF PLANT MASSINGS WILL BE LOCATED IN THE FIELD BY LANDSCAPE ARCHITECT.
2. GRID PATTERNS WILL BE AVOIDED
3. PLANT MATERIAL MAY BE GROUPED IN CLUSTERS OF NO MORE THAN 5 TO 7 WHIPS OF THE SAME PLANT. PLANTS WILL BE INSTALLED IN A RANDOM FASHION.

APPROVED: HOWARD COUNTY DEPT. OF PUBLIC WORKS
[signature] 12-19-01
CHIEF, BUREAU OF HIGHWAYS — DATE

APPROVED: HOWARD COUNTY DEPT. OF PLANNING & ZONING
[signature] 12/24/01
CHIEF, DEVELOPMENT ENGINEERING DIVISION MK — DATE
[signature] / for CH 12/27/01
CHIEF, DIVISION OF LAND DEVELOPMENT HB — DATE
~~DIRECTOR~~ — ~~DATE~~

Date	No.	Revision Description
5/21/08	1	Revise Forest Conservation Easement "1"

EMERSON

FORMERLY KEY PROPERTY
SECTION 2, PHASE 1B

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

11·7·01
Date

STATE OF MARYLAND — MELANIE MOSER — LANDSCAPE ARCHITECT — 551 REGISTERED

Landscape Architect 551

SUBDIVISION NAME	SECTION/AREA	LOT/PARCEL #
EMERSON SECTION 2	PHASE 1B	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

FOREST CONSERVATION PLAN

Des By	Scale	Proj. No. 95054.F
Drn By BKC	Date 11-7-01	37 of 38
Chk By	Approved	

F-01-137 F-01-137

Wed Nov 7 12:57:02 2001 :\95054\final\95054f.fcp7

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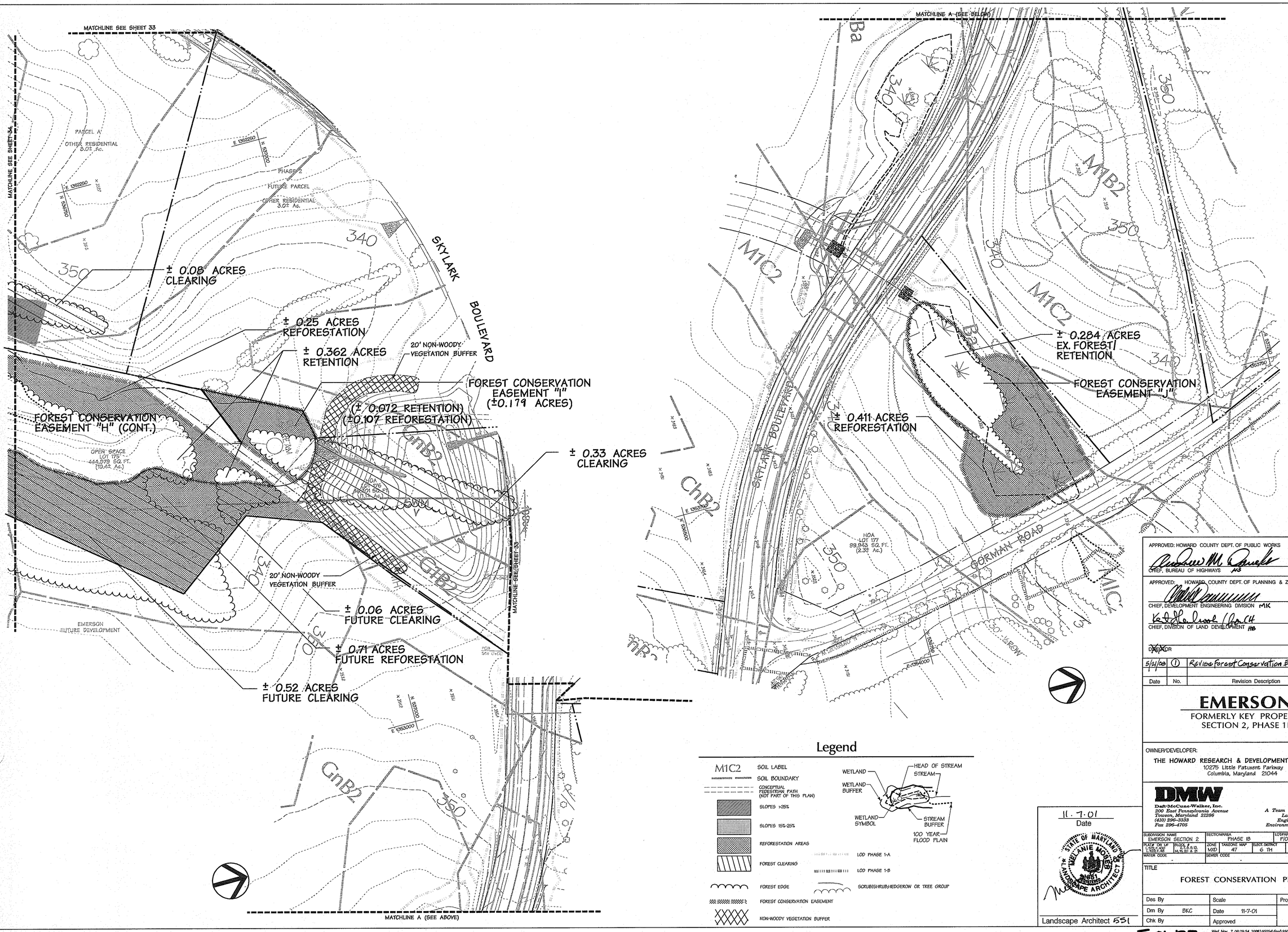
MATCHLINE SEE SHEET 33
MATCHLINE SEE SHEET 34
MATCHLINE A (SEE BELOW)
MATCHLINE A (SEE ABOVE)
MATCHLINE SEE SHEET 33
PARCEL A
OTHER RESIDENTIAL
3.0± Ac.
PHASE 2
FUTURE PARCEL
OTHER RESIDENTIAL
3.0± Ac.
E 1362250
N 530700
E 1362250
N 530750
± 0.08 ACRES
CLEARING
± 0.25 ACRES
REFORESTATION
± 0.362 ACRES
RETENTION
20' NON-WOODY
VEGETATION BUFFER
FOREST CONSERVATION
EASEMENT "I"
(±0.179 ACRES)
(± 0.072 RETENTION)
(±0.107 REFORESTATION)
FOREST CONSERVATION
EASEMENT "H" (CONT.)
OPEN SPACE
LOT 175
444,673 SQ. FT.
(10.45 Ac.)
HOA
LOT 176
89,201 SQ. FT.
(1.15 Ac.)
± 0.33 ACRES
CLEARING
20' NON-WOODY
VEGETATION BUFFER
± 0.06 ACRES
FUTURE CLEARING
± 0.71 ACRES
FUTURE REFORESTATION
± 0.52 ACRES
FUTURE CLEARING
EMERSON
FUTURE DEVELOPMENT
SKYLARK BOULEVARD
GORMAN ROAD
± 0.411 ACRES
REFORESTATION
± 0.284 ACRES
EX. FOREST/
RETENTION
FOREST CONSERVATION
EASEMENT "J"
HOA
LOT 177
99,943 SQ. FT.
(2.3± Ac.)
M1C2
ChB2
GnB2
Ba
340
350
N 530700
N 530750
E 1363000
N 530700
N 530750
E 1363750
N 530750
E 1363000
N 530700
N 530750
E 1363750
N 530750
E 1363000
N 530700
N 530750
E 1363750