

General Notes

- All construction shall be in accordance with the latest standards and specifications of Howard County plus MSHA standards and specifications if applicable.
- 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.
- The contractor shall notify "Miss Utility" at 1-800-257-7777 at least 48 hours prior to any excavation work being done.
- 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.
- All plan dimensions are to face of curb unless otherwise noted.
- The existing topography is taken from aerial survey with 2' contour intervals prepared by Air Survey Corporation dated 1998.
- The coordinates shown herein are based upon the Howard County Geodetic Control which is based upon the Maryland State Plane Coordinate System. Howard County Monument Nos. 47E4 and 47G2 were used for this project.
- Water is public, contract no. 24-4024-D, drainage area.
- Sewer is public, contract no. 24-4024-D, drainage area.
- Stormwater Management for this project will be addressed with the installation of 2 Stormwater Management Facilities which will control the runoff per the latest approved Design Standards.
- Existing utilities are based on Construction Plans and field verified structures.
- The floodplain study for this project was prepared by Daft-McCune-Walker, Inc., dated June 12, 2001, and was approved in September 2001.
- The wetlands delineation study for this project was prepared by Daft-McCune-Walker, Inc., dated September 1998, and was approved by the U.S. Army Corps of Engineers on December 19, 2001.
- The traffic study for this project was prepared by Wells and Associates, and was approved on February 1, 2002.
- Project background information:
 Subdivision Name: Emerson Section 3, Area 1
 Tax Map: 47
 Lot/Parcel: F10-P-837
 Zoning: PEC - MXD -3
 Election District: 6th
 Total Tract Area: 64.915± acres
 Preliminary Plan Approval Date: November 30, 2001
 Open Space Lots: 2
 File Numbers: P-01-25; S-99-12; PB 339; ZB 979 M, PB-359
- 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 maintained between lights and any tree.
- Sidewalk ramps shall meet current ADA requirements.
- Street trees shall be planted at least 5' from any inlet structure.
- Storm water management facilities to be owned by the Property Owners Association (POA). Maintenance Responsibility, routine and non-routine schedule is shown on sheet 21.
- Development of Emerson Section 3, Area 1 under the current Forest Conservation Act requires the clearing of approximately 26.94 forested acres and the retention of 23.96 acres of forest on the net tract. When evaluated cumulatively with previous phases of the project, no reforestation is required. Cumulative forest clearing totals 39.47 acres, cumulative retention is 45.83 acres, and cumulative reforestation provided is 5.03 acres.
- Stormwater quality and quantity management, per 2101 Howard County SWM Design Manual, is provided for roads and future development of parcels in the regional pond facilities. Recharge is provided for roads via a grass swale. The development parcels will have to provide their own recharge requirements, with the exception of a portion of Parcel C, which will be able to utilize the grass swale.

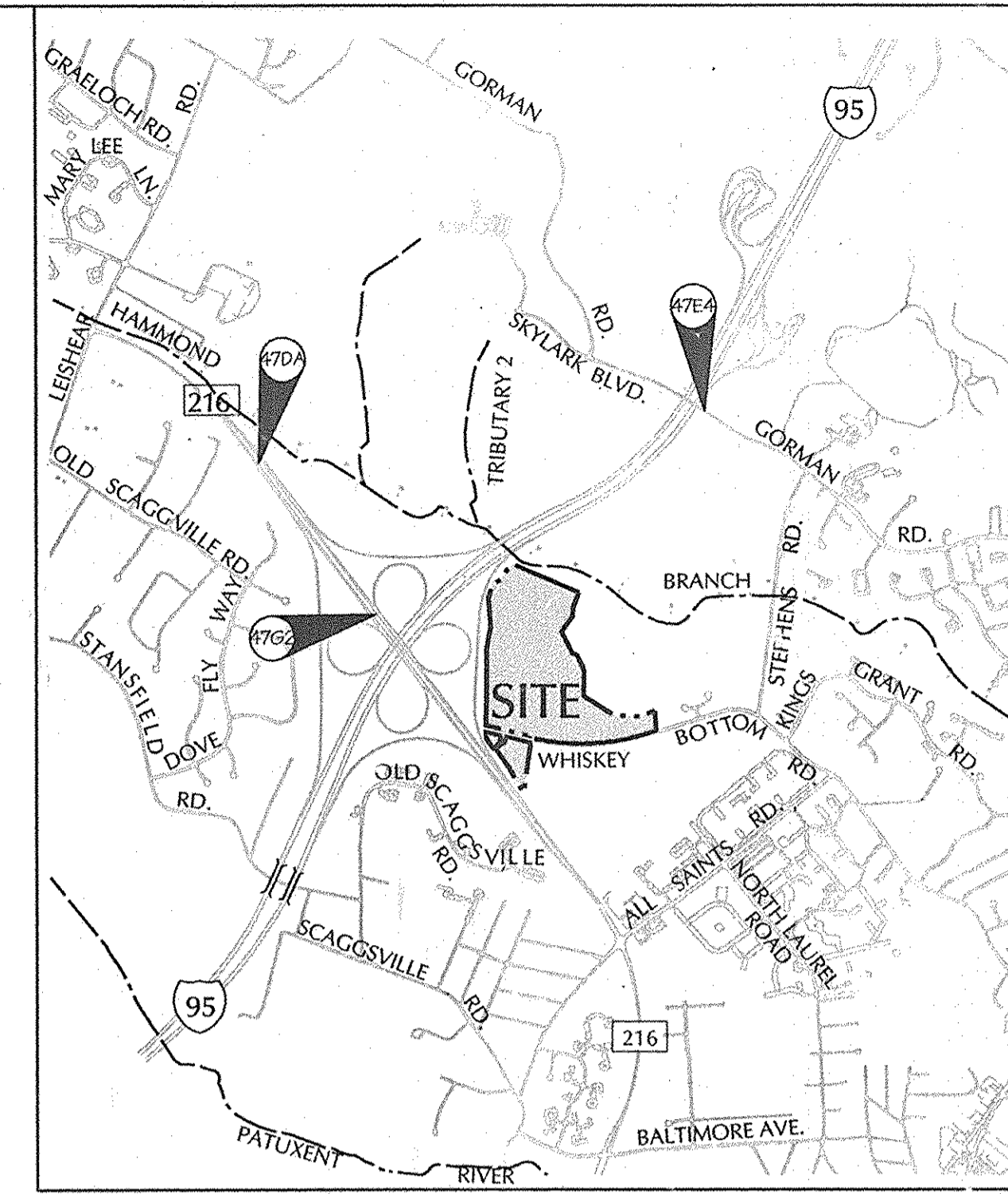
23. A VARIANCE (RESOLUTION NO. 118-2011) PURSUANT TO SECTIONS 16.301 AND 16.300 (C) OF THE HOWARD COUNTY CODE WAS GRANTED ON JULY 28, 2011 FOR GOVERNMENT USES FROM THE STRUCTURE AND USE SETBACK FOR A FENCE.

- OPERATION AND MAINTENANCE SCHEDULE FOR PRIVATELY OWNED AND JOINTLY MAINTAINED STORMWATER MANAGEMENT PONDS ROUTINE MAINTENANCE BY HOA
 - FACILITY SHALL BE INSPECTED ANNUALLY AND AFTER MAJOR STORMS, INSPECTIONS SHALL BE PERFORMED DURING WET WEATHER TO DETERMINE IF THE POND IS FUNCTIONING PROPERLY.
 - TOP AND SIDE SLOPES OF THE EMBANKMENT SHALL BE MOVED A MINIMUM OF TWO (2) TIMES PER YEAR, ONCE IN JUNE AND ONCE IN SEPTEMBER, OTHER SIDE SLOPES AND MAINTENANCE ACCESS SHALL BE MOVED AS NEEDED.
 - DEBRIS AND LITTER SHALL BE REMOVED DURING REGULAR MAINTENANCE OPERATIONS AND AS NEEDED.
 - VISIBLE SIGNS OF EROSION IN THE POND AS WELL AS SPILLWAY OR GABION OUTLET AREA SHALL BE REPAIRED AS SOON AS IT IS NOTICED.
- ROUTINE MAINTENANCE BY HOWARD COUNTY
 - STRUCTURAL COMPONENTS OF THE POND SUCH AS THE DAM, RISER AND THE PIPES SHALL BE REPAIRED UPON THE DETECTION OF ANY DAMAGE. THE COMPONENTS SHALL BE INSPECTED DURING ROUTINE MAINTENANCE OPERATIONS.
 - 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.

Final Plan for Emerson (Formerly the Key Property) Section 3, Area 1 Parcels A - I

Howard County

Maryland



Vicinity Map
SCALE: 1"=2000'

BENCHMARK DESCRIPTION

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

470A NORTHING: 163191.9104	47G2 NORTHING: 162440.1212	47E4 NORTHING: 163326.2295
EASTING: 411265759	EASTING: 4118539279	EASTING: 413136.2550
ELEVATION: 315.905 ft.	ELEVATION: 364.210ft.	ELEVATION: 339.909ft.

FOREST CONSERVATION TRACKING CHART

Section/Phase Number	Gross Area	Floodplain/Ex. Sewer Easement	Net Tract Area	Ex. Forest Area	Forest Cleared	Forest Reforested	Reforest./Infor. Provided	Reforest./Infor. Required	Excess Reforest./Infor.	Future Forest-Clearing	Future Reforest./Infor.	Comments
2.1	106.20	3.50	102.70	24.70	7.96	16.77	0.61	5.03	4.42	4.48	3.41	
2.2	118.90	3.50	115.40	24.80	0.03	16.77	2.95	5.03	2.08	3.28	3.41	SEE NOTE 'A'
2.3	137.35	4.00	133.35	34.40	12.53	21.87	1.27	5.03	3.76	2.18	3.91	SEE NOTE 'B'
3.1	206.85	2.19	195.66	85.30	39.47	45.83	0.00	5.03	5.03	2.18	3.91	

A. 1.20± ACRES OF FUTURE FOREST CLEARING SHOWN ON F-01-137 WAS CLEARED FOR SWM ON OPEN SPACE LOT 17A.
 B. 1.10± ACRES OF FUTURE FOREST CLEARING SHOWN ON F-01-137 WAS CLEARED FOR SWM ON OPEN SPACE LOT 17B.



Overall Property Outline
Scale: 1"=600'

THE PURPOSE OF REVISION #1 IS:
 1. SHOW THE PROPOSED EMERSON CAMPUS SECURITY FENCE.
 2. ADD ADDITIONAL DRAWING SHEETS ASSOCIATED WITH THE PROPOSED EMERSON CAMPUS SECURITY FENCE.

PROFESSIONAL CERTIFICATION REVISION #1
 I HEREBY CERTIFY THAT THESE DOCUMENTS WERE PREPARED OR APPROVED BY ME, AND THAT I AM A DULY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MARYLAND, LICENSE NO. 45292
 EXPIRATION DATE: 05/21/2014

Sheet Index

SHEET	DESCRIPTION
1	COVER SHEET
2	ROAD CONSTRUCTION PLAN - STERLING DRIVE & STA. 19+84.95 - 26+00
3	ROAD CONSTRUCTION PLAN - STERLING DRIVE & STA. 26+00 - 32+00.93
4	ROAD CONSTRUCTION DETAILS
5	DRAINAGE AREA MAP
6	STORM DRAIN PROFILES
7	SEDIMENT & EROSION CONTROL DRAINAGE AREA MAP
8	FINAL PLAN GRADING & SEDIMENT EROSION CONTROL
9	FINAL PLAN GRADING & SEDIMENT EROSION CONTROL
10	FINAL PLAN GRADING & SEDIMENT EROSION CONTROL
11	FINAL PLAN GRADING & SEDIMENT EROSION CONTROL DETAILS
12	FINAL PLAN GRADING & SEDIMENT EROSION CONTROL DETAILS
13	FINAL PLAN GRADING & SEDIMENT EROSION CONTROL DETAILS
14	FINAL PLAN GRADING & SEDIMENT EROSION CONTROL DETAILS
15	STORMWATER MANAGEMENT DRAINAGE AREA MAP
16	STORMWATER MANAGEMENT POND PLAN VIEWS
17	STORMWATER MANAGEMENT PROFILES FOR SWM I
18	STORMWATER MANAGEMENT PROFILES FOR SWM II
19	STORMWATER MANAGEMENT DETAILS SWM I
20	STORMWATER MANAGEMENT DETAILS SWM II
21	STORMWATER MANAGEMENT SPECIFICATIONS & DETAILS
22	STORMWATER MANAGEMENT BORING LOGS
23	FINAL PLAN - FOREST CONSERVATION PLAN
24	FINAL PLAN - FOREST CONSERVATION PLAN
25	FINAL PLAN - FOREST CONSERVATION PLAN
26	FINAL PLAN - FOREST CONSERVATION PLAN
27	FINAL PLAN - FOREST CONSERVATION PLAN
28	FINAL PLAN - FOREST CONSERVATION NOTES AND DETAILS
29	FINAL PLAN - LANDSCAPE PLAN
30	FINAL PLAN - LANDSCAPE AND WATER QUALITY NOTES AND DETAILS
31	STORMWATER POND LANDSCAPING & WATER QUALITY PLANTING
31A	FENCE LAYOUT PLAN
31B	SITE DETAILS
31C	SITE DETAILS
31D	SITE DETAILS

FOR REVISION

Richard F. Lane
10-1-2014
Date

Richard F. Lane
9/25/02
Date

Professional Engr. No. 10551

APPROVED: HOWARD COUNTY DEPT. OF PUBLIC WORKS
Andrew M. Decker 11/25/02
 CHIEF, BUREAU OF HIGHWAYS HB DATE

APPROVED: HOWARD COUNTY DEPT. OF PLANNING AND ZONING
Cindy Hammett 12/6/02
 CHIEF, DIVISION OF LAND DEVELOPMENT HB DATE

Richard F. Lane 12/2/02
 CHIEF, DEVELOPMENT ENGINEERING DIVISION MK DATE

10/1/14
 Date No. **CAMPUS PERIMETER SECURITY FENCE**
 Revision Description

EMERSON
 (Formerly the Key Property)
 Section 3, Area 1
 Parcels A - I

OWNER / DEVELOPER:
 THE HOWARD RESEARCH & DEVELOPMENT CORPORATION
 10275 LITTLE PATUXENT PARKWAY
 COLUMBIA, MARYLAND 21044

DMW
 Daft-McCune-Walker, Inc.
 500 East Pennsylvania Avenue
 Towson, Maryland 21286
 (410) 296-3353
 Fax: 296-4765
 A Team of Land Planners,
 Landscape Architects,
 Engineers, Surveyors &
 Environmental Professionals

TITLE
COVER SHEET

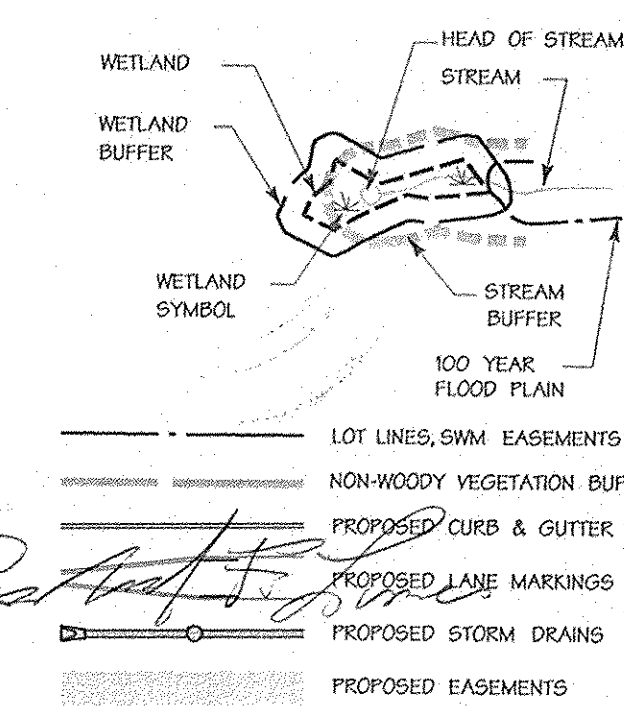
Des By RBW Scale 1"=600' Proj. No. 01011.00
 Dm By WDE Date 9/25/02
 Unk By Approved 1 OF 31

STREET LIGHT LEGEND

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

DWG. No.	STREET NAME	STATION	OFF-SET	FIGURE / POLE TYPE	COMMENTS
	STERLING DRIVE	20+70	24' LT	—*	
	STERLING DRIVE	22+70	24' RT	—*	
	STERLING DRIVE	24+70	24' LT	—*	

Legend



F-02-131

9/25/02
Date



Professional Engr. No. 10551

APPROVED: HOWARD COUNTY DEPT. OF PUBLIC WORKS
Richard M. Casper 11-15-02
 CHIEF, BUREAU OF HIGHWAYS HS DATE

APPROVED: HOWARD COUNTY DEPT. OF PLANNING AND ZONING
Andy Hamada 12/6/02
 CHIEF, DIVISION OF LAND DEVELOPMENT HS DATE

Michael M. ... 12/6/02
 CHIEF, DEVELOPMENT ENGINEERING DIVISION MK DATE

9/2/02
 Date No. ADD 4" TURNAROUND
 Revision Description

EMERSON
 (Formerly the Key Property)
 Section 3, Area 1
 Parcels A - I

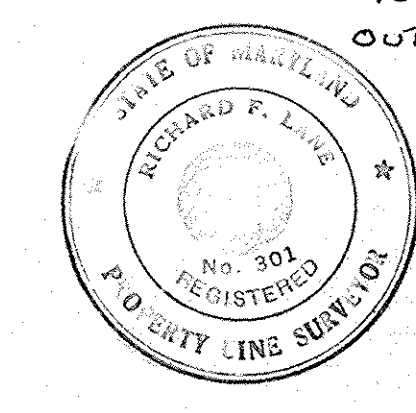
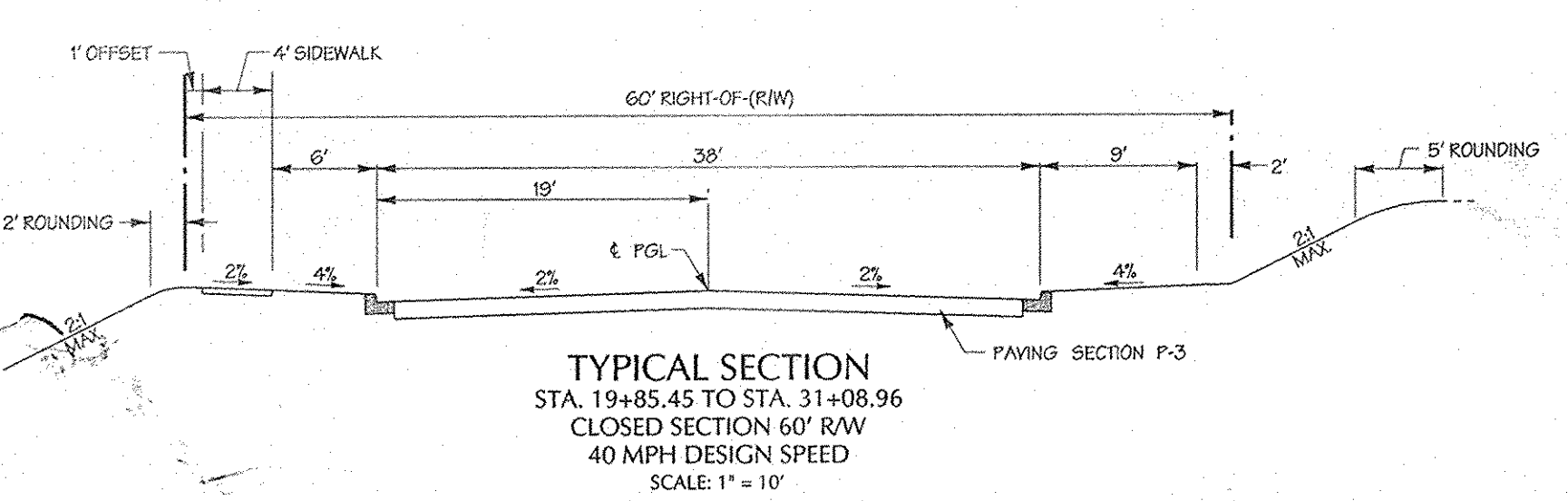
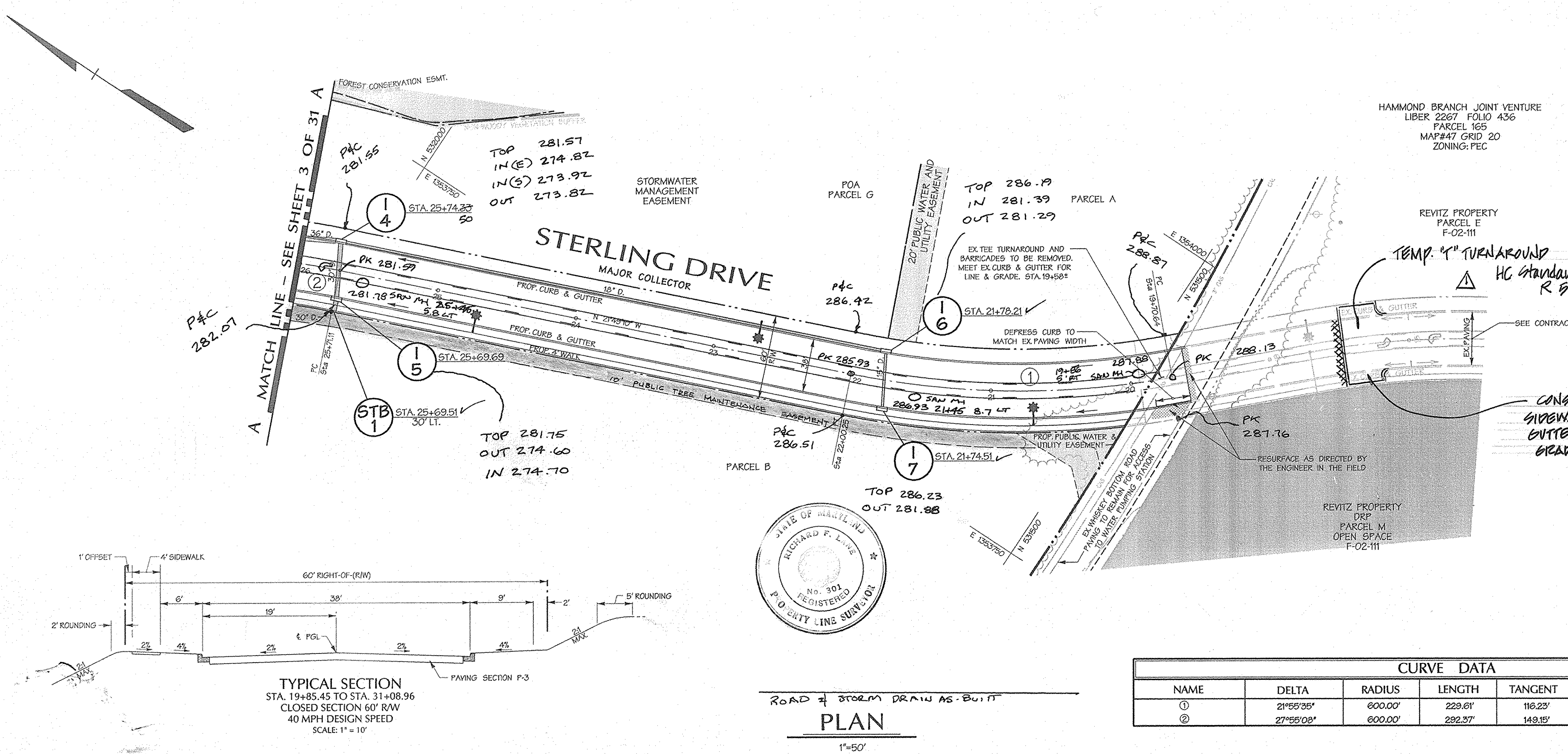
OWNER / DEVELOPER:
 THE HOWARD RESEARCH & DEVELOPMENT CORPORATION
 10275 LITTLE PATUXENT PARKWAY
 COLUMBIA, MARYLAND 21044

DMW
 Daft-McCune-Walker, Inc.
 200 East Pennsylvania Avenue
 Towson, Maryland 21286
 (410) 296-3333
 Fax 296-4706
 A Team of Land Planners, Landscape Architects, Engineers, Surveyors & Environmental Professionals

AREA
 TAX MAP 47 PARCEL 837
 6th ELECTION DISTRICT OF HOWARD COUNTY, MARYLAND

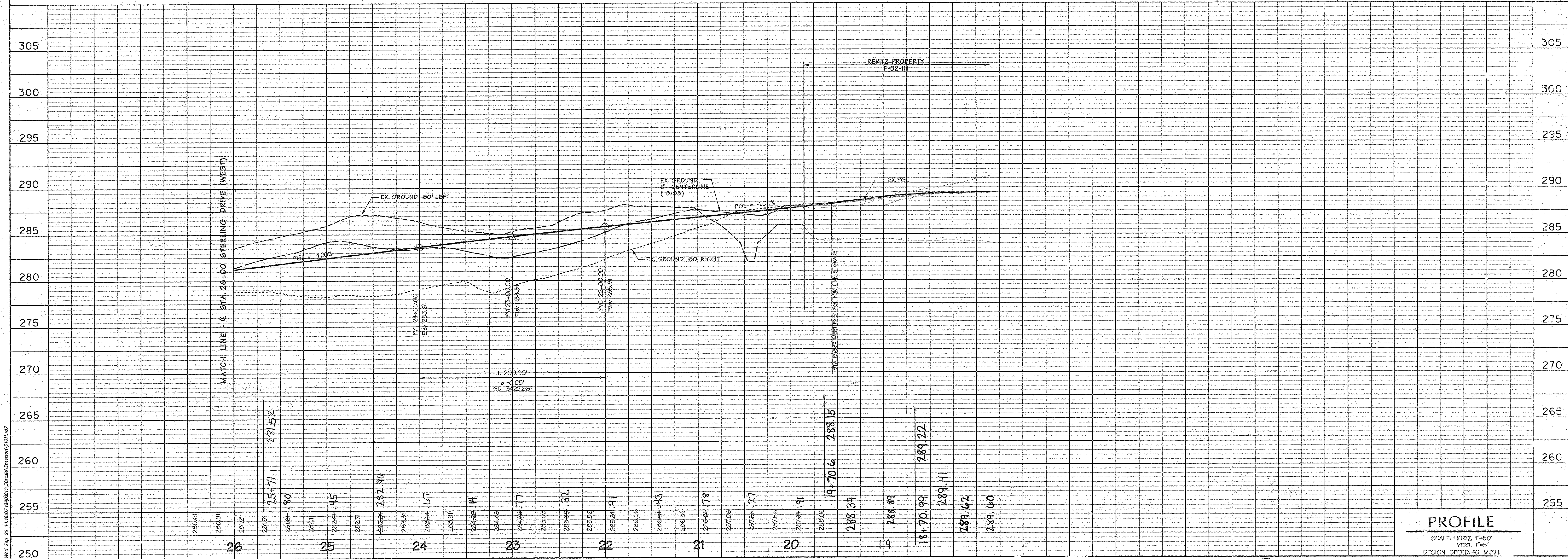
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FINAL PLAN
ROAD CONSTRUCTION PLAN
STERLING DRIVE

Des By DFM Scale 1" = 50' Proj. No. 01011.CC
 Dm By WDE Date 9/25/02
 Chk By Approved 2 OF 31



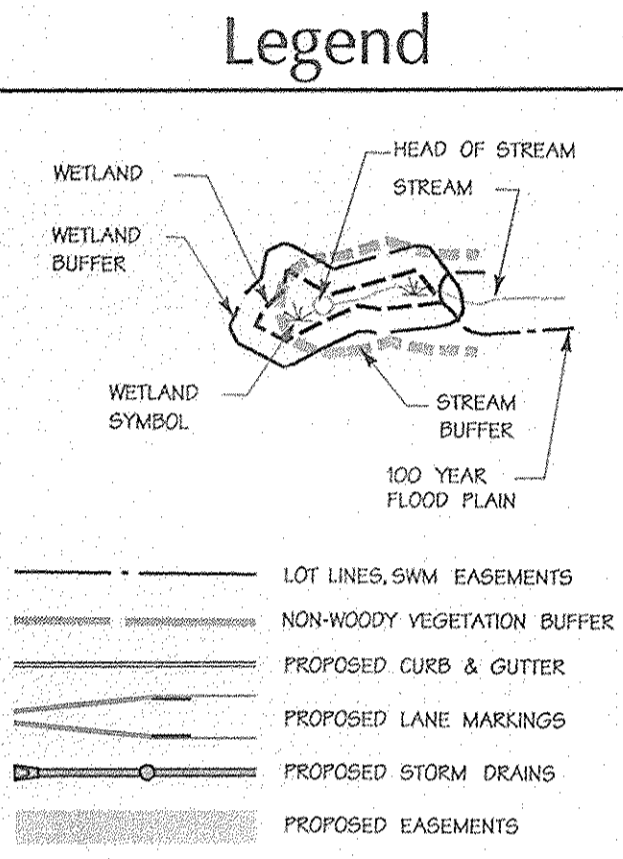
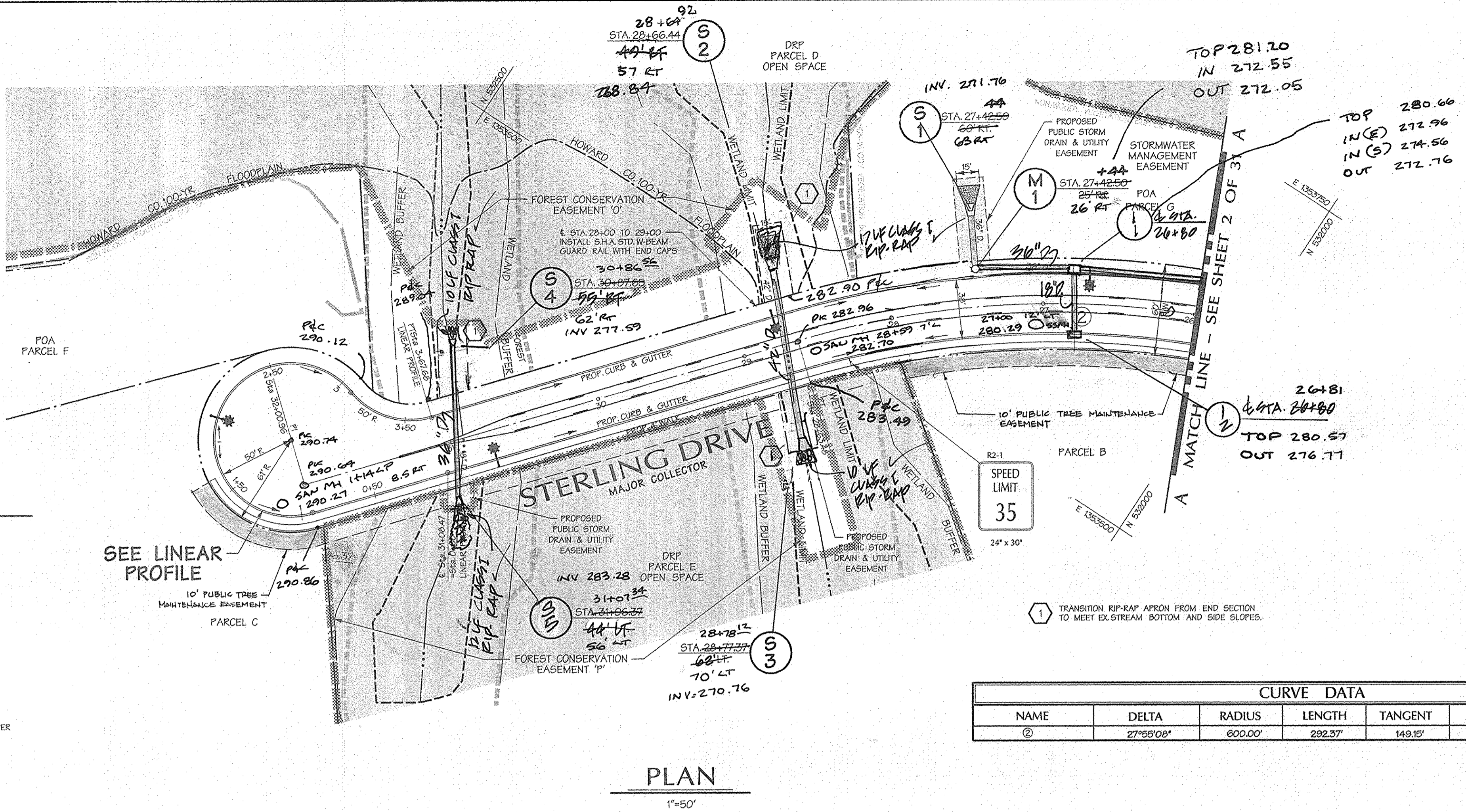
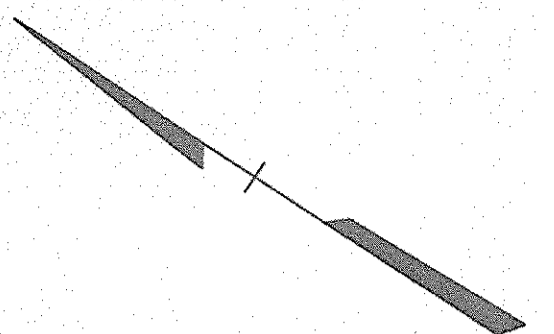
ROAD & STORM DRAIN AS-BUILT
PLAN
 1"=50'

CURVE DATA					
NAME	DELTA	RADIUS	LENGTH	TANGENT	CHORD
①	21°55'35"	600.00'	223.61'	116.23'	N 32°46'57" W 228.21'
②	27°55'08"	600.00'	232.37'	143.15'	N 25°46'43" W 233.48'



PROFILE
 SCALE: HORIZ. 1"=50'
 VERT. 1"=5'
 DESIGN SPEED: 40 M.P.H.

F-02-131



PLAN
1"=50'

STREET LIGHT LEGEND

* 250 WATT HIGH PRESSURE SODIUM (HPS) VAPOR PENDANT (SAP) MOUNTED AT 30' ON A BRONZE FIBERGLASS POLE USING A 5/8" DIA.

STREET LIGHT TABLE

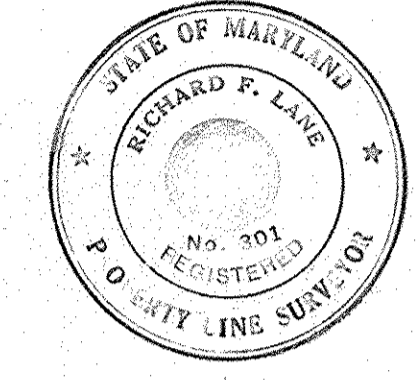
DWG. No.	STREET NAME	STATION	OFF-SET	FIXTURE / POLE TYPE	COMMENTS
	STERLING DRIVE	28+70	24' RT	—*	
	STERLING DRIVE	28+75	24' RT	—*	
	STERLING DRIVE	30+75	24' LT	—*	
	STERLING DRIVE	24+00 LP	5' LT/FC	—*	

APPROVED: HOWARD COUNTY DEPT. OF PUBLIC WORKS
Richard M. Dewberry 11-25-02
 CHIEF, BUREAU OF HIGHWAYS
 DATE

APPROVED: HOWARD COUNTY DEPT. OF PLANNING AND ZONING
Carly Hammett 12/6/02
 CHIEF, DIVISION OF LAND DEVELOPMENT
 DATE

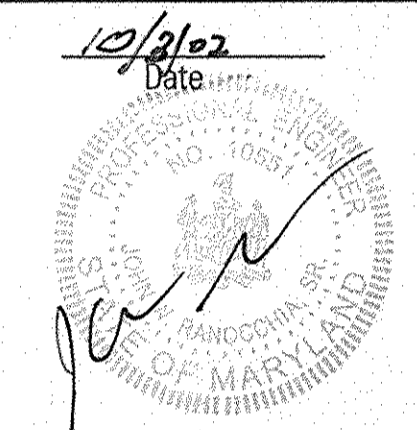
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 CHIEF, DEVELOPMENT ENGINEERING DIVISION
 DATE

REVISIONS:
 5/19/03 Δ CHANGE PROFILE AND OPEN DRAINS
 5-3, 5-4, ADD 5-5, 5-6, ELIMINATE 1-3



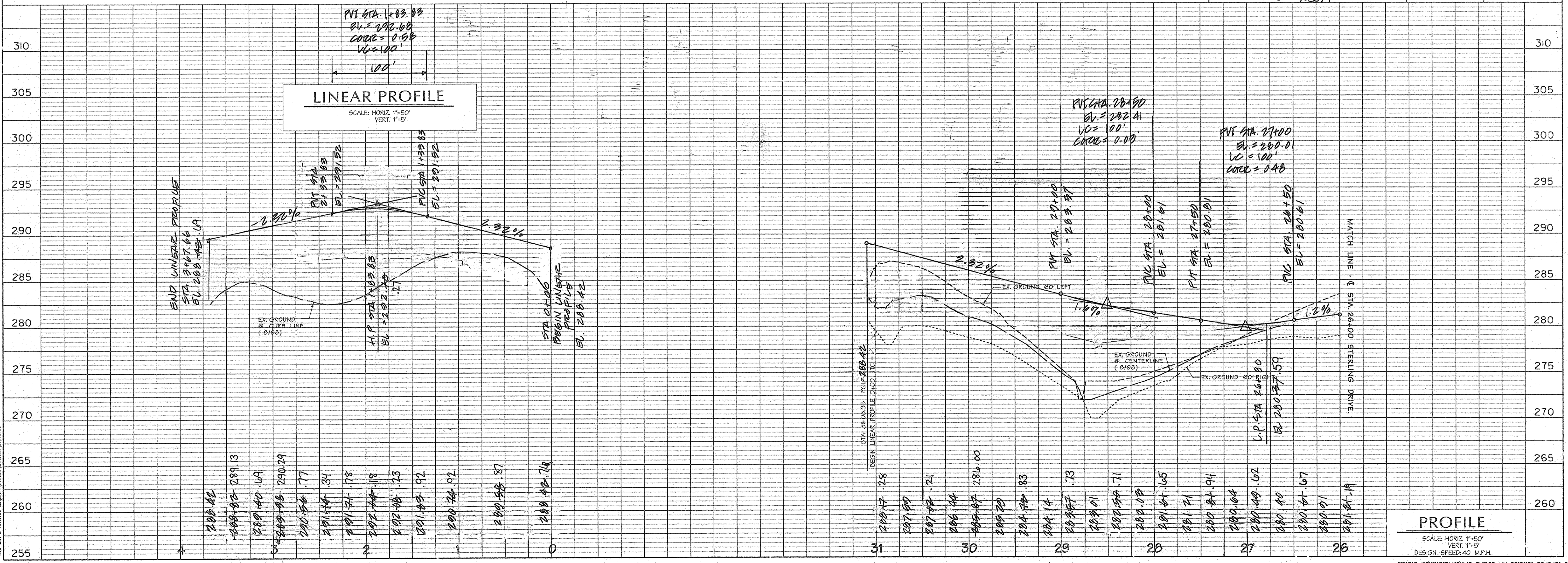
Richard F. Lane
 ROAD & STORM DRAIN AS-BUILT

F-02-131



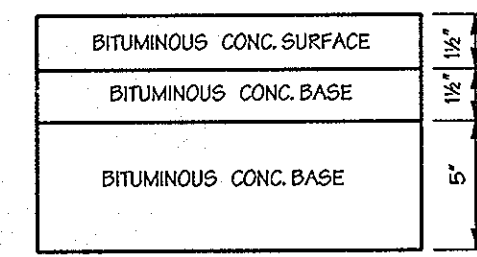
Professional Engr. No. 10551

CURVE DATA					
NAME	DELTA	RADIUS	LENGTH	TANGENT	CHORD
②	27°53'08"	600.00'	292.37'	149.15'	N 35°46'43" W 229.48'

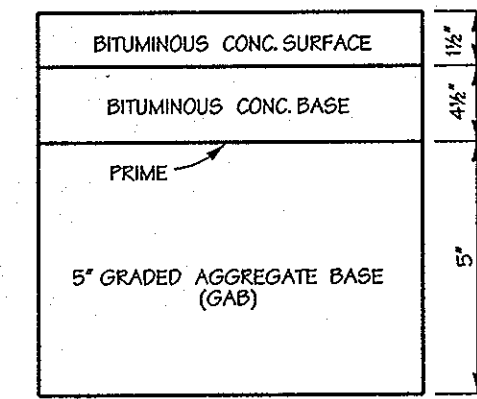


LINEAR PROFILE
 SCALE: HORIZ. 1"=50'
 VERT. 1"=5'

PROFILE
 SCALE: HORIZ. 1"=50'
 VERT. 1"=5'
 DES. GN. SPEED: 40 M.P.H.

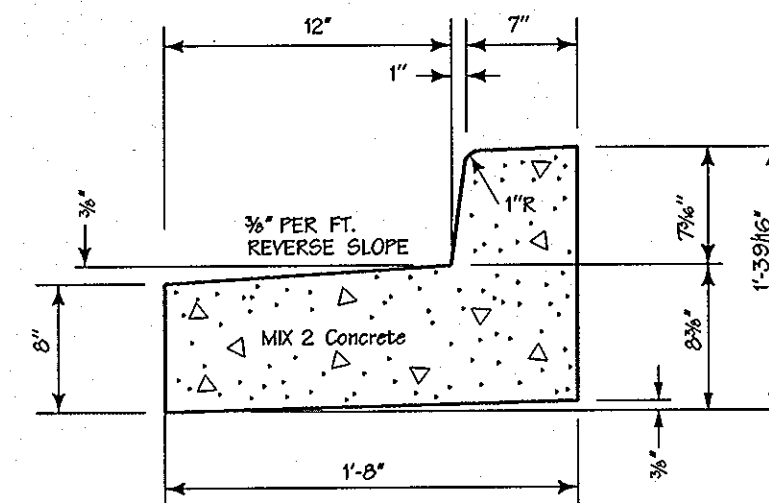


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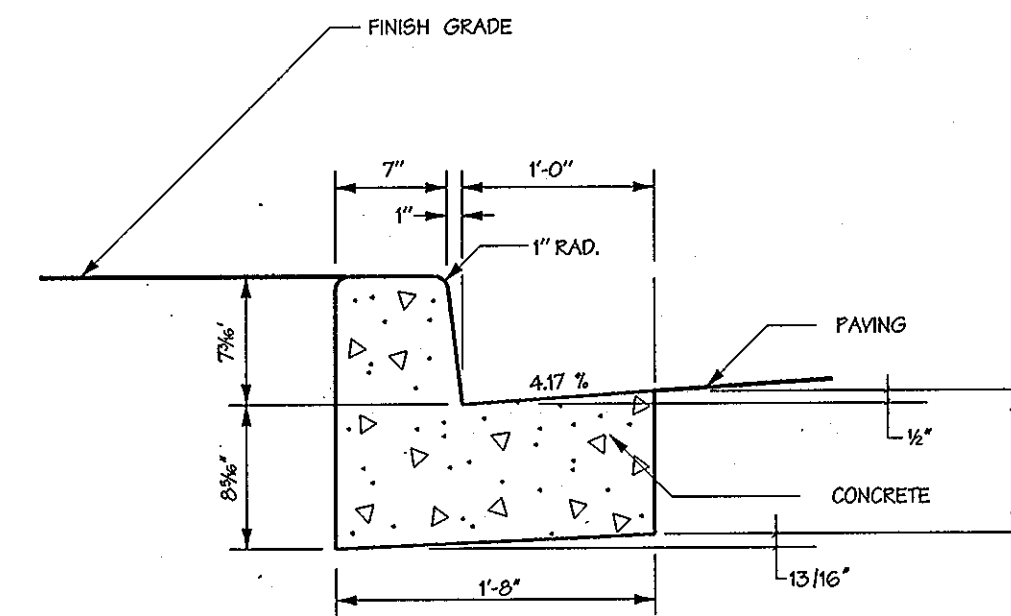


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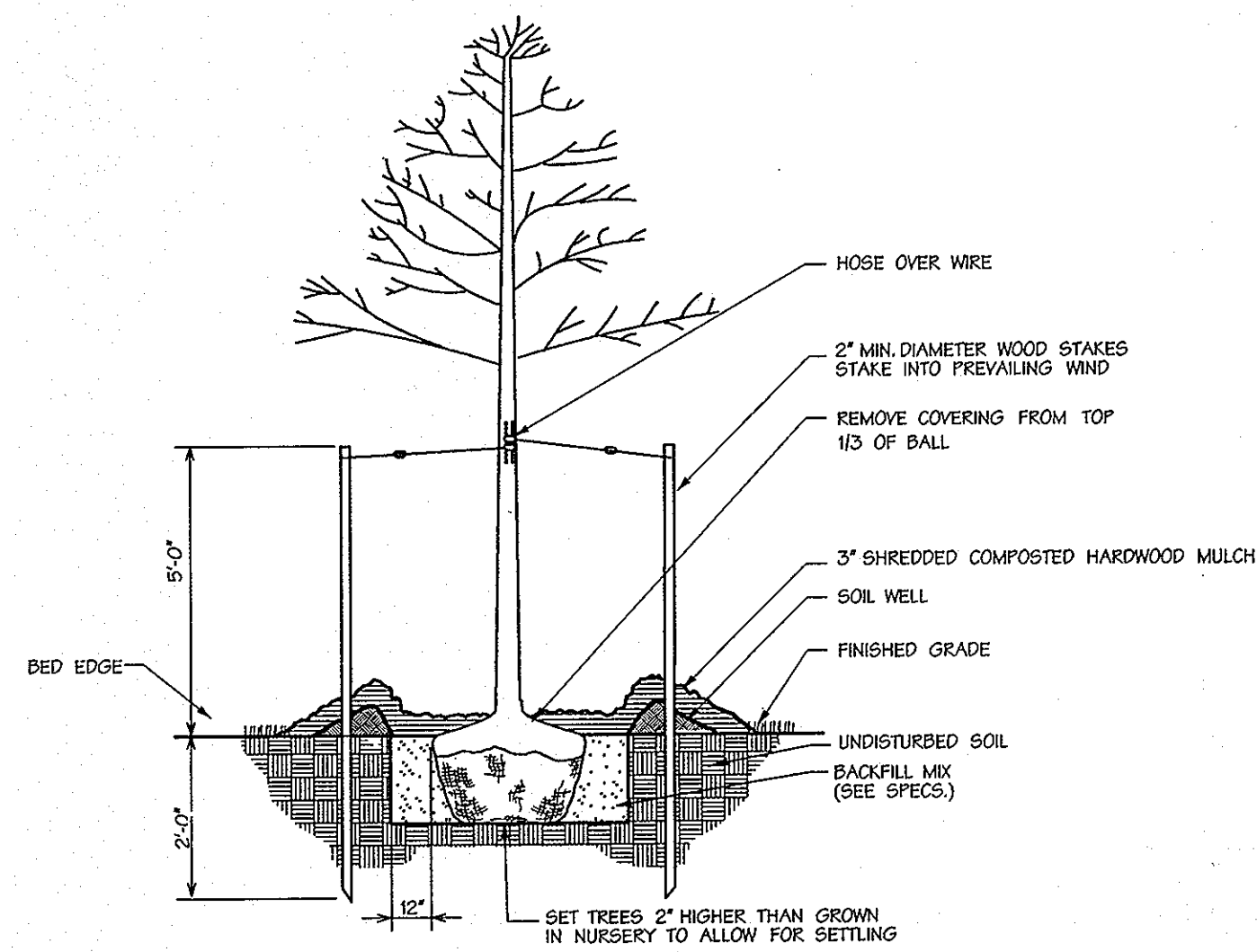
PAVING SECTION P-3
MINOR & MAJOR COLLECTORS
NO SCALE



REVERSE 7" COMBINATION
CURB & GUTTER
NO SCALE



SECTION
TYPE "A" CURB AND GUTTER
NO SCALE



DECIDUOUS TREE DETAIL
(TO 3" CALIPER)

APPROVED: HOWARD COUNTY DEPT. OF PUBLIC WORKS
Richard M. ... 11-25-02
 CHIEF, BUREAU OF HIGHWAYS HS DATE

APPROVED: HOWARD COUNTY DEPT. OF PLANNING AND ZONING
Cindy Hammett 12/6/02
 CHIEF, DIVISION OF LAND DEVELOPMENT HS DATE

... 12/2/02
 CHIEF, DEVELOPMENT ENGINEERING DIVISION MK DATE

Date	No.	Revision Description

EMERSON
 (Formerly the Key Property)
 Section 3, Area 1
 Parcels A - I

OWNER /DEVELOPER:
 THE HOWARD RESEARCH & DEVELOPMENT CORPORATION
 10275 LITTLE PATUXENT PARKWAY
 COLUMBIA, MARYLAND 21044

DMW
 Draft McCune-Walker, Inc.
 200 East Pennsylvania Avenue
 Towson, Maryland 21286
 (410) 296-3633
 Fax 296-4706

A Team of Land Planners,
 Landscape Architects,
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 Environmental Professionals

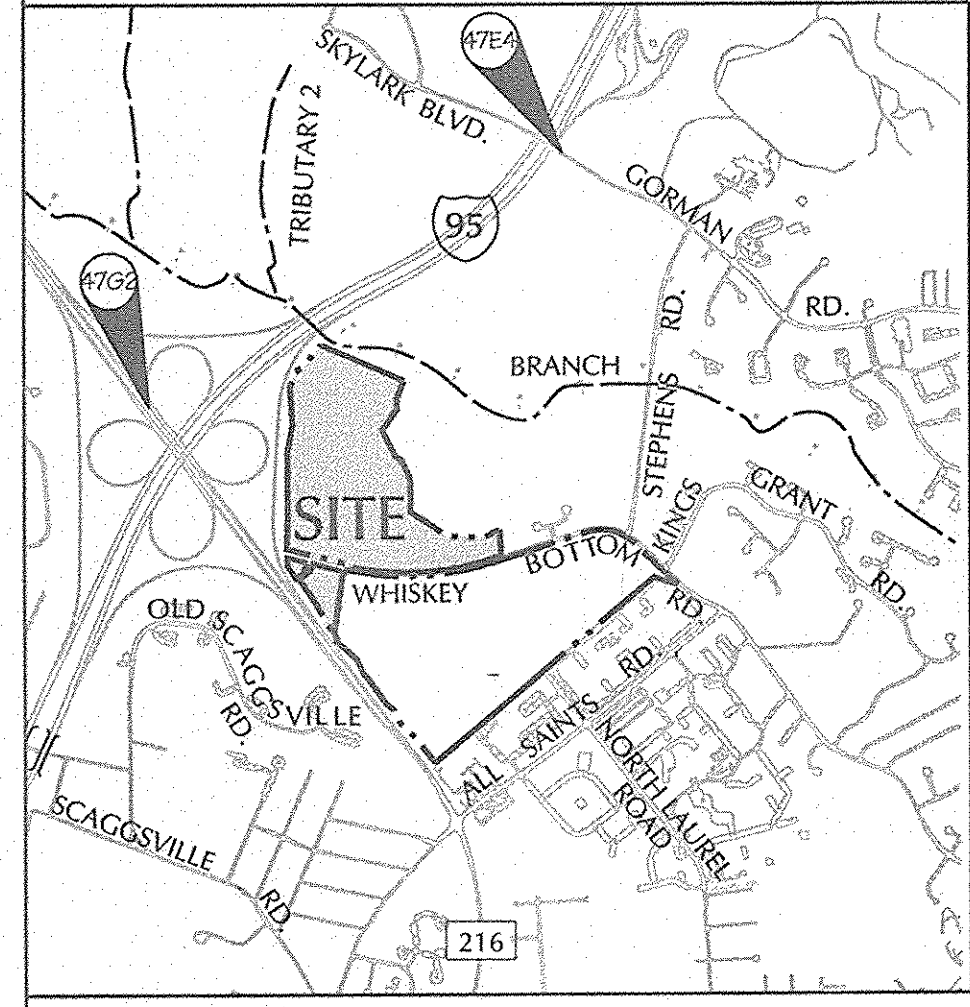
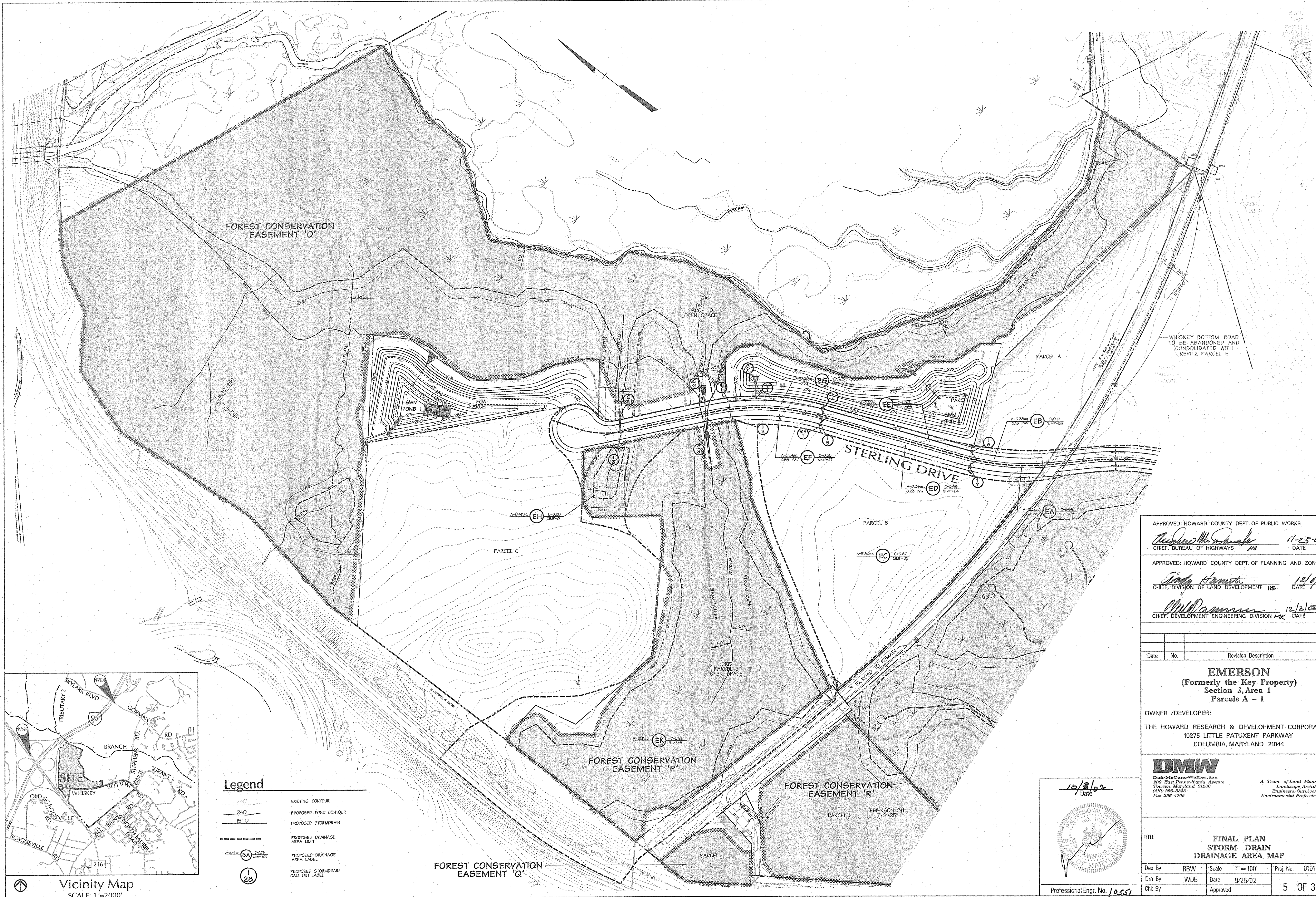
9/25/02
 Date

Professional Engineer
 No. 10550

TITLE

FINAL PLAN
ROAD CONSTRUCTION DETAILS

Des By	R&W	Scale	AS SHOWN	Proj. No.	01011.CC
Drn By	WDE	Date	9/25/02		
Chk By	Approved				4 OF 31



Vicinity Map
SCALE: 1"=2000'

Legend

- EXISTING CONTOUR
- PROPOSED POND CONTOUR
- PROPOSED STORMDRAIN
- PROPOSED DRAINAGE AREA LIMIT
- PROPOSED DRAINAGE AREA LABEL
- PROPOSED STORMDRAIN CALL OUT LABEL

APPROVED: HOWARD COUNTY DEPT. OF PUBLIC WORKS
Richard M. G. ... 11-25-02
 CHIEF, BUREAU OF HIGHWAYS HHS DATE

APPROVED: HOWARD COUNTY DEPT. OF PLANNING AND ZONING
Judy ... 12/6/02
 CHIEF, DIVISION OF LAND DEVELOPMENT HHS DATE

... 12/2/02
 CHIEF, DEVELOPMENT ENGINEERING DIVISION HHS DATE

Date	No.	Revision Description

EMERSON
 (Formerly the Key Property)
 Section 3, Area 1
 Parcels A - I

OWNER / DEVELOPER:
 THE HOWARD RESEARCH & DEVELOPMENT CORPORATION
 10275 LITTLE PATUXENT PARKWAY
 COLUMBIA, MARYLAND 21044

DMW
 Dat McCon-Walker, Inc.
 200 East Pennsylvania Avenue
 Towson, Maryland 21286
 (410) 286-3333
 Fax 286-4705

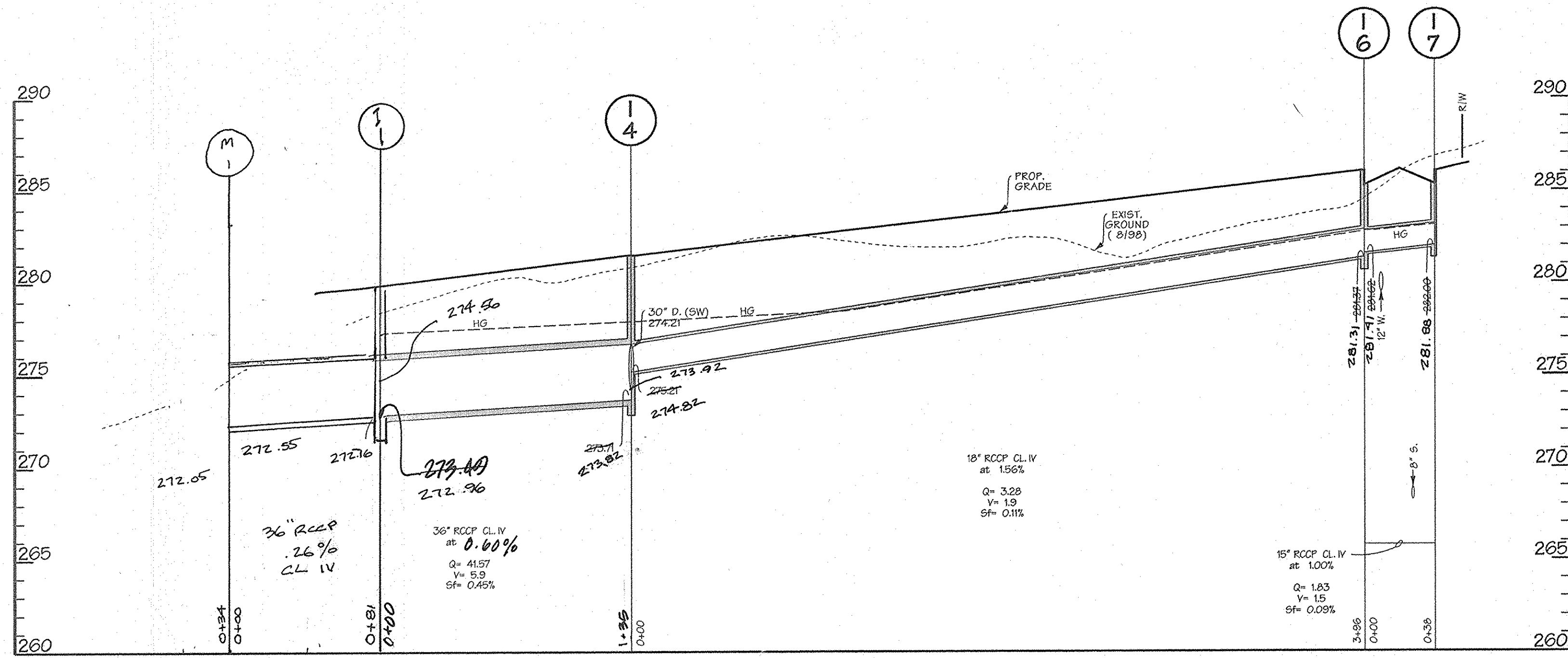
A Team of Land Planners,
 Landscape Architects,
 Engineers, Surveyors &
 Environmental Professionals

10/3/02
 Date

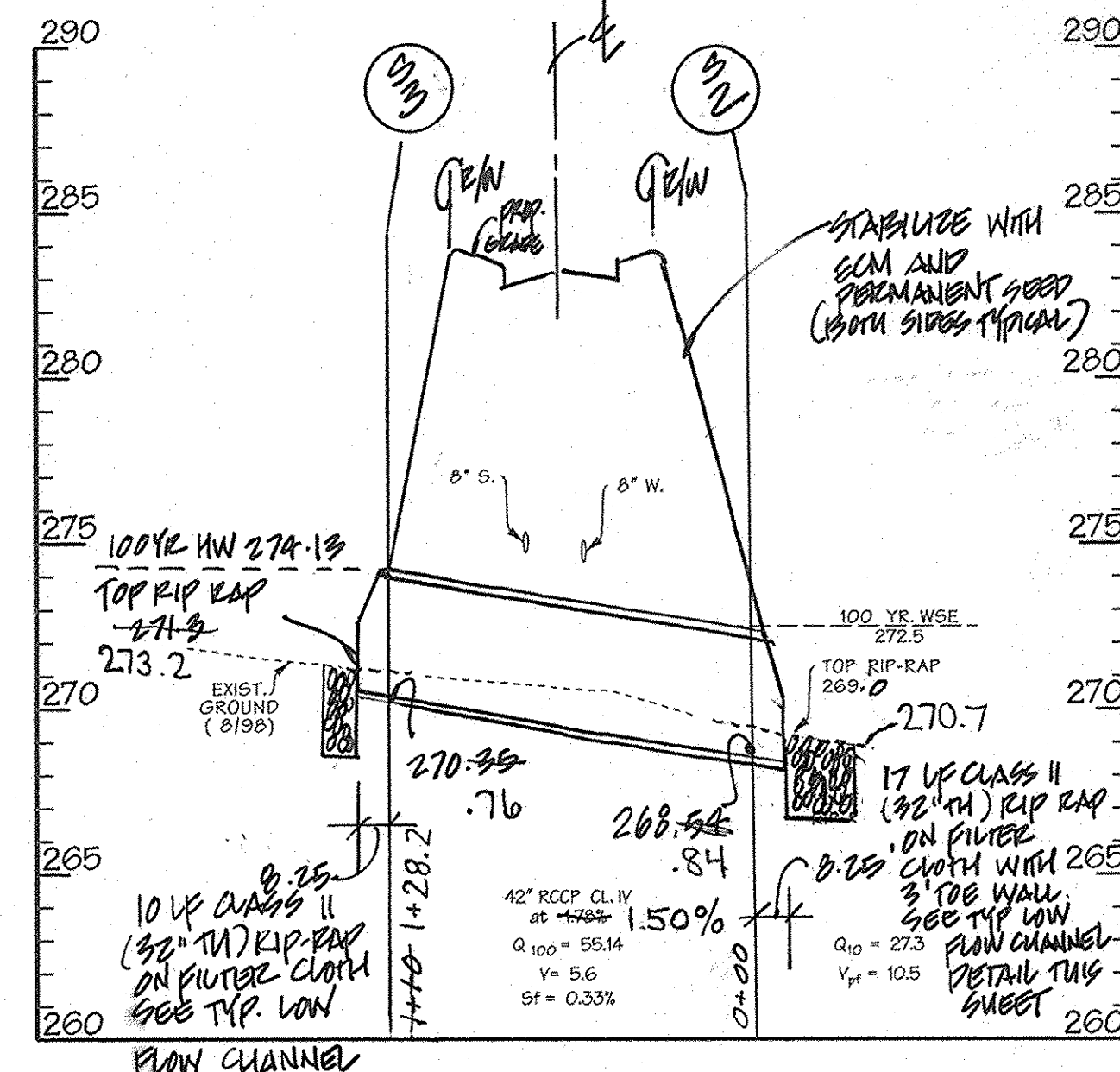
Professional Engr. No. 10551

TITLE: **FINAL PLAN
 STORM DRAIN
 DRAINAGE AREA MAP**

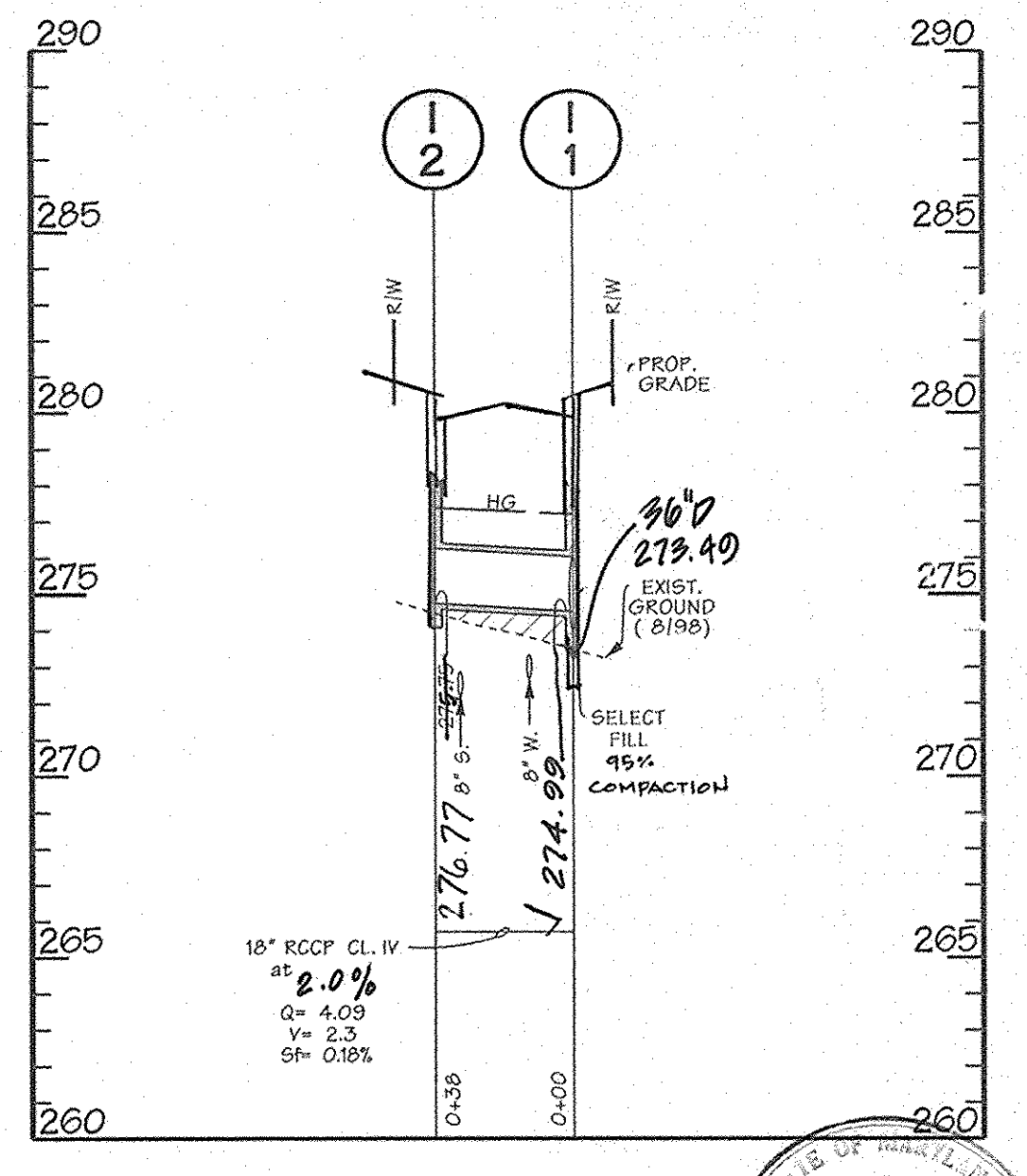
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Drn By	WDE	Date	9/25/02		
Chk By	Approved				5 OF 31



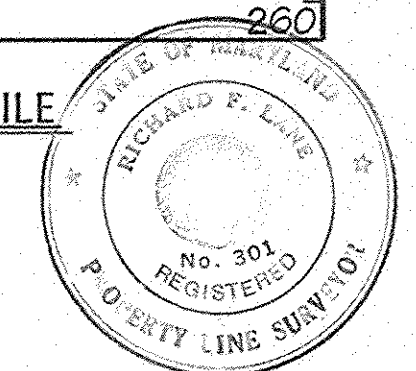
STORM DRAIN PROFILE
SCALE: HOR. 1" = 50'
VER. 1" = 5'



STORM DRAIN PROFILE
SCALE: HOR. 1" = 50'
VER. 1" = 5'



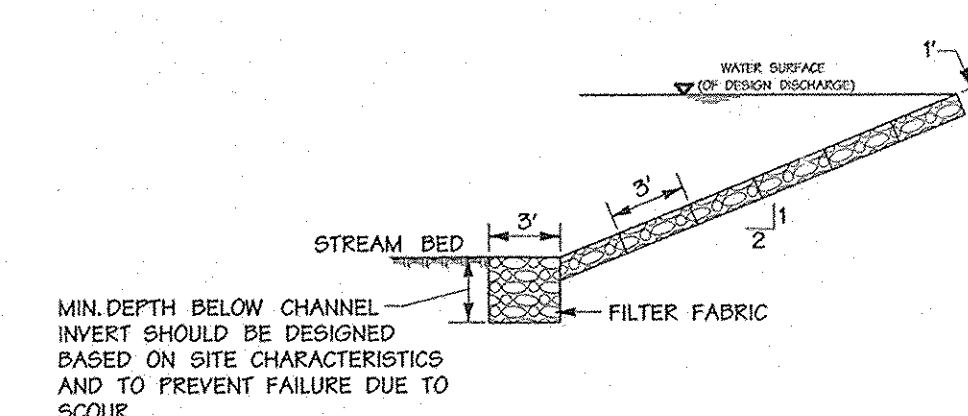
STORM DRAIN PROFILE
SCALE: HOR. 1" = 50'
VER. 1" = 5'



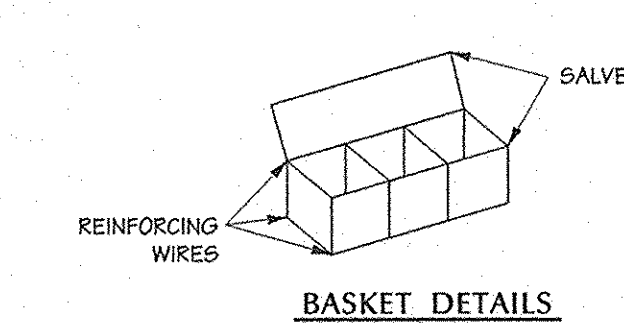
Richard F. Lewis
Road & Storm Drain AS-4 BUS14

PIPE SCHEDULE

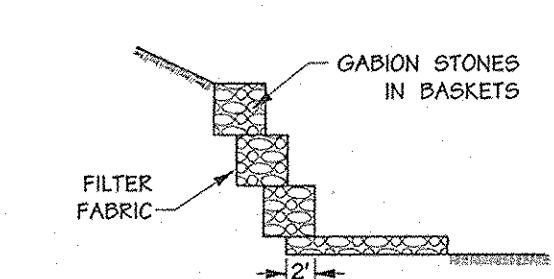
SIZE (IN.)	CATEGORY	L (FT.)
15	RCCP CL. IV	38
18	RCCP CL. IV	460
30	RCCP CL. IV	50
36	RCCP CL. IV	280
42	RCCP CL. IV	110



CROSS SECTION



BASKET DETAILS



ALTERNATE SECTION

DESCRIPTION
THIS WORK SHALL CONSIST OF PROTECTING STREAM SLOPES AND CHANNELS WITH STONE-FILLED WIRE BASKETS IN ORDER TO PROVIDE STABILIZATION FOR STREAM CHANNELS AND BANKS. BASKETS SHALL BE PLACED IN SUCH A MANNER AS TO PREVENT UNDERMINING FROM WATER VELOCITIES AND OVERTURNING FROM LATERAL EARTH PRESSURES.

MATERIAL SPECIFICATIONS
1. FILTER FABRIC
FILTER FABRIC SHALL BE CAREFULLY AND LOOSELY PLACED ON THE PREPARED SUBGRADE AND HELD IN PLACE. ADJACENT STRIPS SHALL BE OVERLAPPED BY A MINIMUM OF 6 INCHES. CARE SHALL BE TAKEN TO ENSURE PROPER STRETCHING AND HOLDING THE EMPTY BASKET UNITS IN GOOD ALIGNMENT IN ORDER TO AVOID DAMAGE TO THE CLOTH IF THE FILTER FABRIC SHOULD BE TORN OR DAMAGED, IT SHALL MEET THE FOLLOWING REQUIREMENTS:
TENSILE STRENGTH 200 LBS.
BURST STRENGTH 300 LBS.
PUNCTURE STRENGTH 70 LBS.
PERMEABILITY 200 GMS/SEC
ELONGATION AT FAILURE 30%
MINIMUM LAP LENGTH 24 IN.

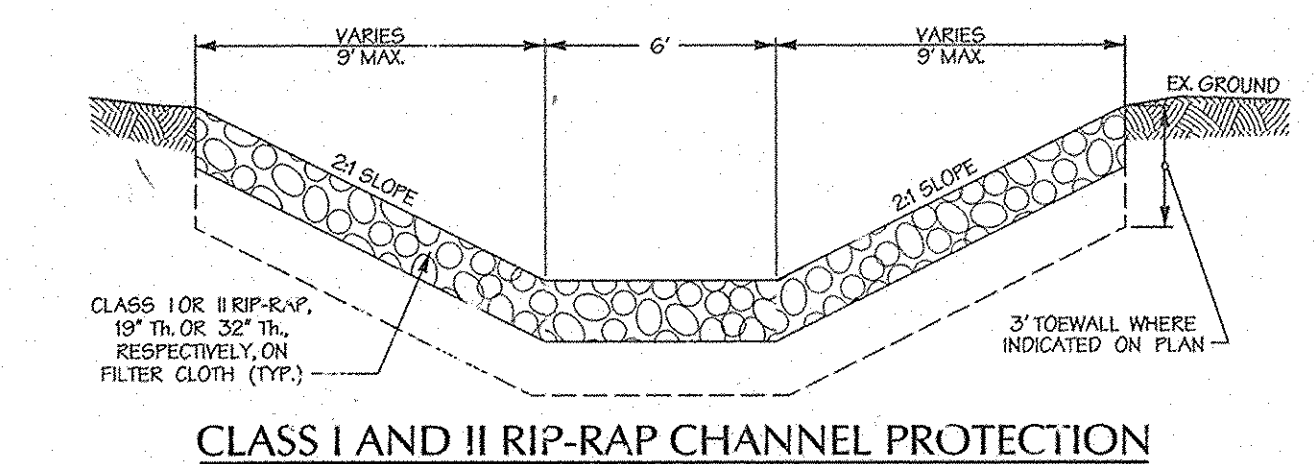
2. WIRE BASKETS
THE PLACEMENT OF THE WIRE BASKET UNITS SHALL BEGIN WITH THE CUTOFF WALLS. THE EMPTY WIRE BASKET UNITS SHALL BE SET ON THE PREPARED SUBGRADE AND THE VERTICAL ENDS BOUND TOGETHER WITH WIRE TIES AT SPACINGS THAT ARE ADEQUATE TO PERMIT OVERTURNING OF THE UNITS TO REMOVE KINKS. THE USE OF STAKES, PINS OR OTHER ACCEPTABLE METHODS SHALL BE USED TO INSURE A GOOD ALIGNMENT OF THE EMPTY WIRE BASKET UNITS. THE BASKETS MAY BE REQUIRED TO INSURE STABILITY OF THE STREAM BANK FROM ROTATIONAL OVERTURNING.

3. STONE
STONE FOR GABIONS, FOR WHICH THE SIZE OF PARTICLES WILL BE DETERMINED VISUALLY, SHALL MEET THE FOLLOWING REQUIREMENTS:
BASKET THICKNESS SIZE OF INDIVIDUAL PARTICLES
IN MM IN
6 150 3-5
12 200 4-7
18 450 4-7
36 900 4-12

4. CONSTRUCTION REQUIREMENTS
1. THE CONTRACTOR SHALL INSTALL ALL SEDIMENT AND EROSION CONTROL DEVICES AS A FIRST ORDER OF BUSINESS.
2. EXCAVATION, INCLUDING CUTOFF WALLS, SHALL BE MADE IN REASONABLY CLOSE CONFORMITY WITH THE EXISTING STREAM SLOPE. THE SUBGRADE SHALL BE SMOOTH, FIRM AND FREE FROM PROTRUDING OBJECTS OR VOIDS THAT WOULD AFFECT THE PROPER PLACEMENT OF THE WIRE BASKETS OR DAMAGE THE FILTER CLOTH.
3. THE EMPTY BASKET UNITS SHALL BE FILLED CAREFULLY WITH STONE PLACED BY HAND OR MACHINE TO ASSURE GOOD ALIGNMENT WITH A MINIMUM OF VOID BETWEEN STONES AND TO AVOID BULGING OF MESH. THE MAXIMUM HEIGHT FROM WHICH THE STONE MAY BE DROPPED INTO THE UNITS SHALL BE 30 INCHES. THE STONE SHALL BE SO PLACED AS TO PROVIDE A MINIMUM OF TWO COURSES. CARE SHALL BE TAKEN IN PLACING THE TOP LAYER OF STONE TO ASSURE A UNIFORM SURFACE TRUE AND WITHOUT ANY BULGING OF THE LID MESH. AFTER A BASKET UNIT HAS BEEN FILLED, ITS LID SHALL BE BENT OVER UNTIL IT MEETS THE END OF THE UNIT. THE LID SHALL THEN BE SECURED TO THE SIDES AND ENDS WITH WIRE TIES. WHEN A COMPLETE BASKET UNIT CANNOT BE INSTALLED ON SLOPES OR CHANNELS BECAUSE OF SPACE LIMITATIONS, THE BASKET UNIT SHALL BE CUT TO FIT IN A MANNER APPROVED BY THE WRA.
4. ANY EXCAVATION VOIDS EXISTING ALONG THE EDGES OF THE COMPLETED GABIONS SHALL BE BACKFILLED AND PERMANENTLY STABILIZED IN ACCORDANCE WITH AN APPROVED SEDIMENT AND EROSION CONTROL PLAN.

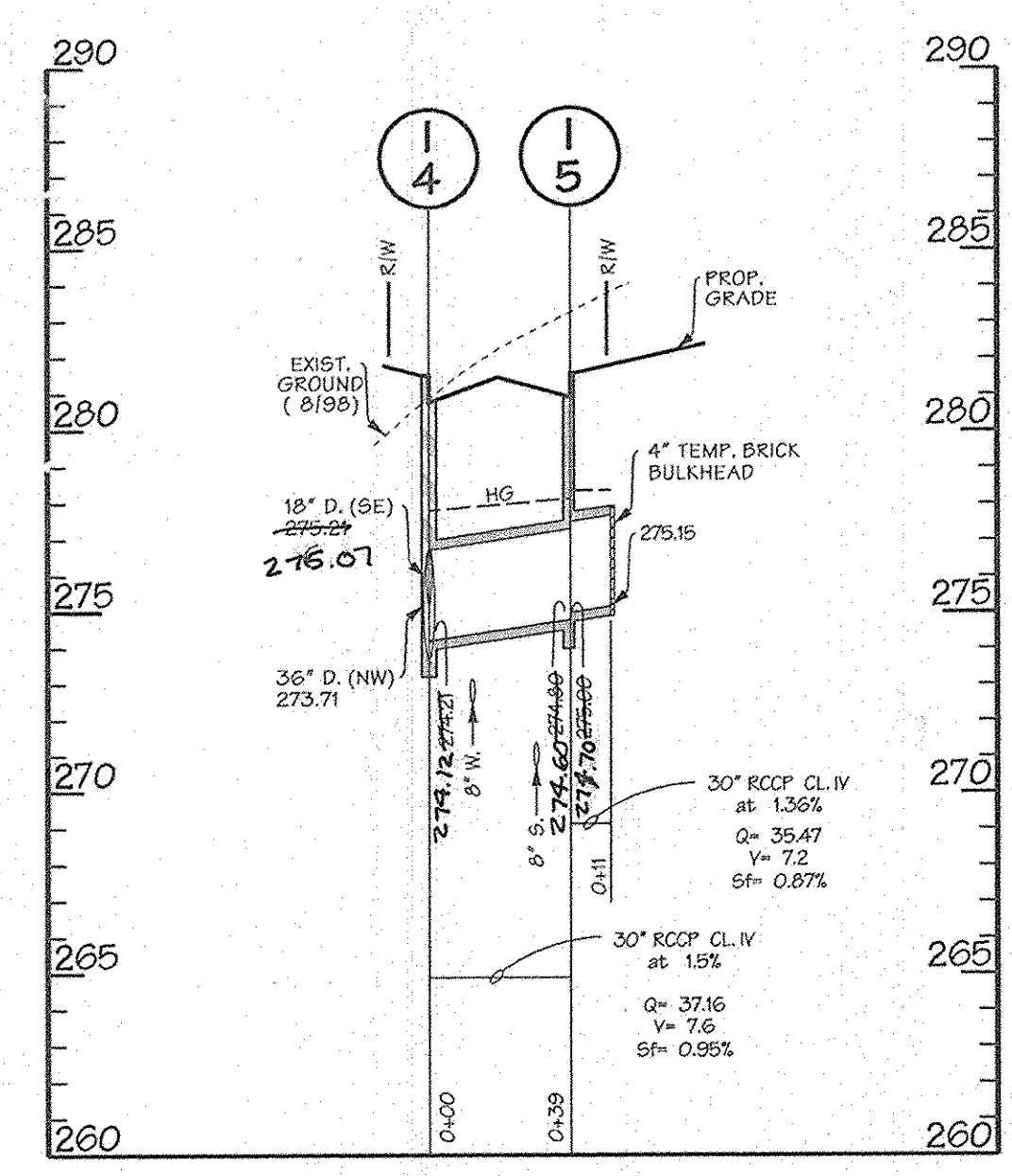
DETAIL 2.3 - GABIONS

REVISED 11/2000 MD DEPARTMENT OF THE ENVIRONMENT
PAGE 2.3-3 WATER MANAGEMENT ADMINISTRATION

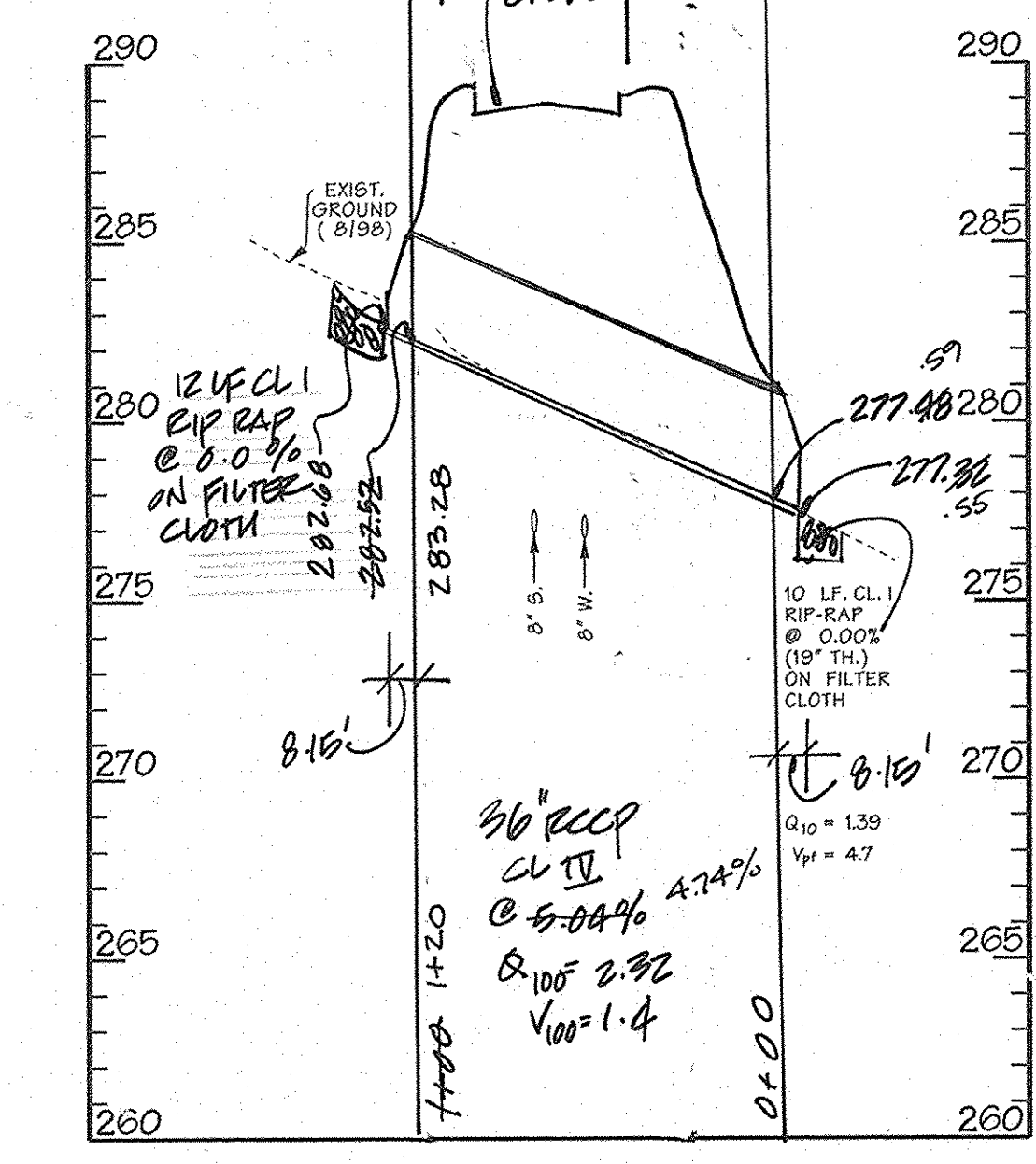


CLASS I AND II RIP-RAP CHANNEL PROTECTION
NTS

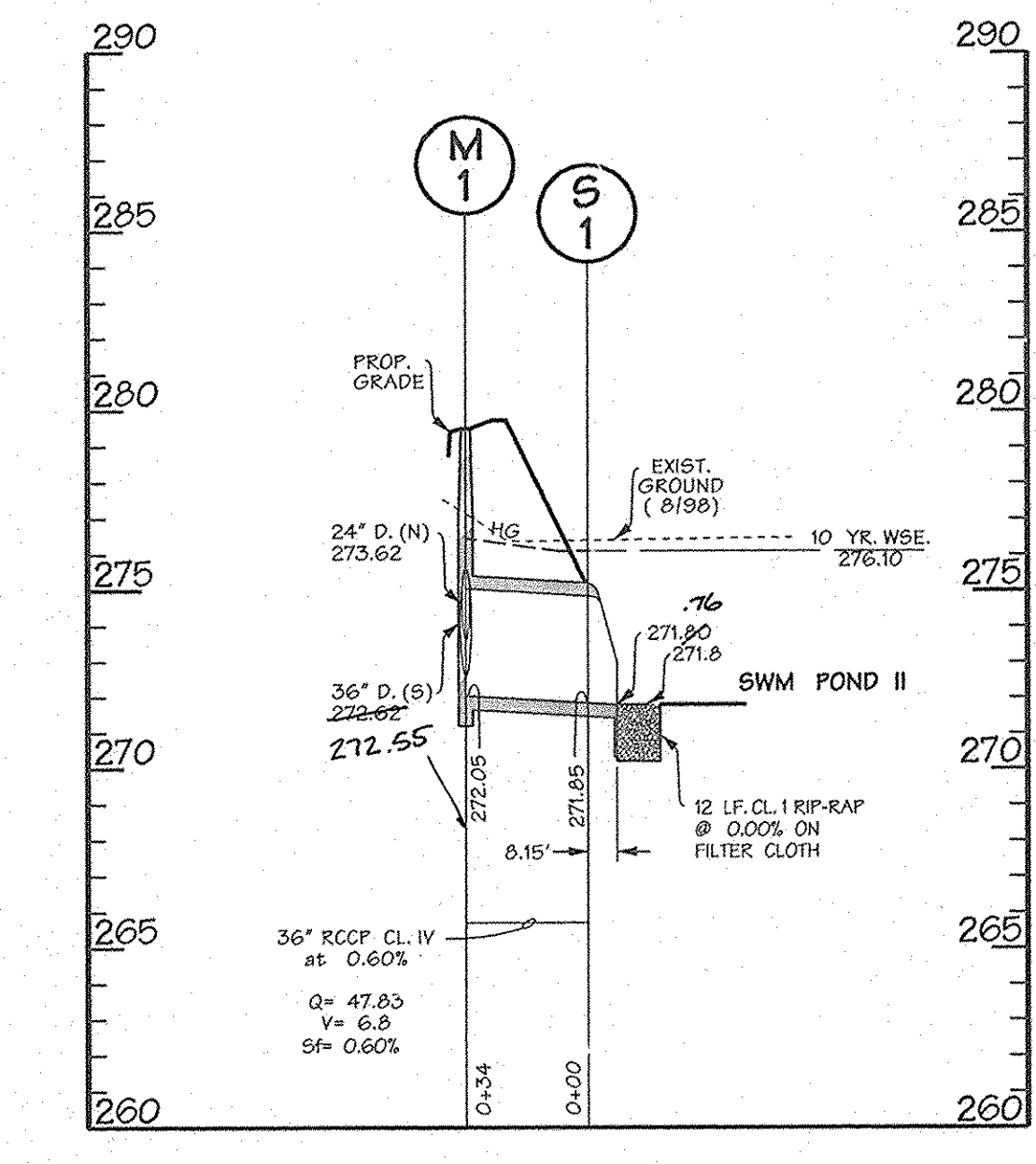
9/25/02
Date
Professional Engr. No. 10551



STORM DRAIN PROFILE
SCALE: HOR. 1" = 50'
VER. 1" = 5'



STORM DRAIN PROFILE
SCALE: HOR. 1" = 50'
VER. 1" = 5'

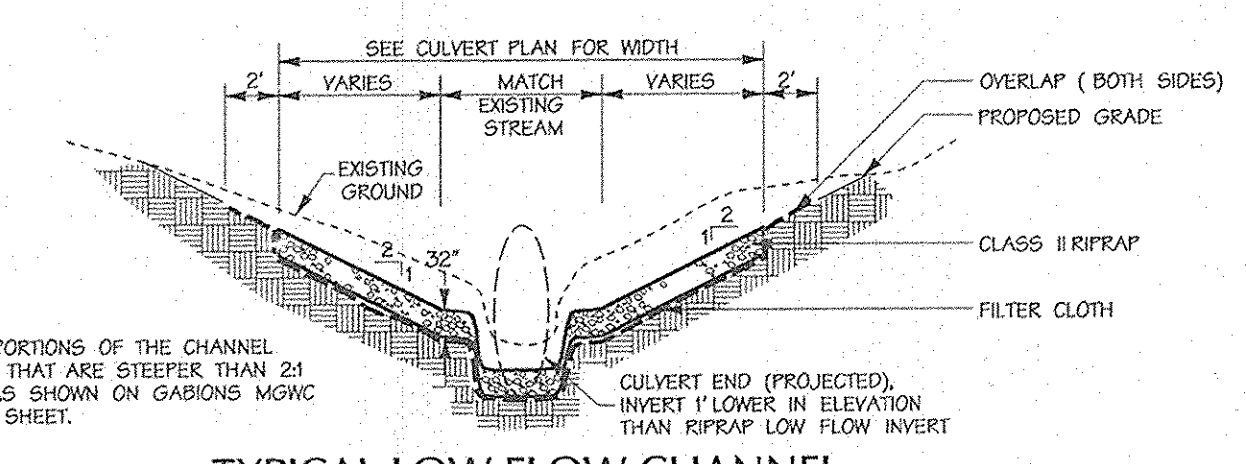


STORM DRAIN PROFILE
SCALE: HOR. 1" = 50'
VER. 1" = 5'

STRUCTURE SCHEDULE

NO.	TYPE	INV. IN	INV. OUT	TOP ELEV.	REMARKS	LOCATION
1-1	A-10 W=4'-0"	274.96	274.06	280.66	HO. CO. STD. SD 4.01	± STA. 28+08.87 26+80
1-2	A-5 W=2'-6"		276.78	280.87	HO. CO. STD. SD 4.01	± STA. 28+08.87 26+80
1-3	D		279.70	282.7	HO. CO. STD. SD 4.11	± STA. 31+00.37 31+1
1-4	A-10 W=4'-0"	274.82	273.82	281.57	HO. CO. STD. SD 4.02	± STA. 25+74.33
1-5	A-10 W=2'-6"	274.80	274.70	281.35	HO. CO. STD. SD 4.02	± STA. 25+65.69
1-6	A-5 W=2'-6"	281.32	281.22	286.13	HO. CO. STD. SD 4.01	± STA. 21+78.21
1-7	A-10 W=2'-6"		282.88	286.23	HO. CO. STD. SD 4.02	± STA. 21+74.51
M-1	SHALLOW PRE-CAST MANHOLE (72")	272.55	272.25	283.20	HO. CO. STD. G 5.12	± STA. 27+42.50 26+ RT.
5-5	CONC. END SECTION (36")	282.28			HO. CO. STD. SD 5.81	± STA. 30+87.69 31+07.38
S-1	CONC. END SECTION (36")		271.85	271.86	HO. CO. STD. SD 5.81	± STA. 27+42.50 +44
S-2	CONC. END SECTION (42")		276.84	268.84	HO. CO. STD. SD 5.81	± STA. 28+66.84 +14.92
S-3	CONC. END SECTION (42")		270.76		HO. CO. STD. SD 5.81	± STA. 28+72.37 +18.12
S-4	CONC. END SECTION (36")		271.89		HO. CO. STD. SD 5.81	± STA. 30+87.69 +86.02

* THROAT ELEVATION



TYPICAL LOW FLOW CHANNEL

NOTE: FOR THE PORTIONS OF THE CHANNEL CROSS SECTION THAT ARE STEEPER THAN 2:1 USE GABIONS AS SHOWN ON GABIONS MOWC DETAIL 2.3, THIS SHEET.

APPROVED: HOWARD COUNTY DEPT. OF PUBLIC WORKS

Richard M. G. Walker
CHIEF, BUREAU OF HIGHWAYS
11-25-02
DATE

APPROVED: HOWARD COUNTY DEPT. OF PLANNING AND ZONING

Judy Hamstra
CHIEF, DIVISION OF LAND DEVELOPMENT
10/6/02
DATE

Michael M. M...
CHIEF, DEVELOPMENT ENGINEERING DIVISION
12/2/02
DATE

Date	No.	REVISIONS	Revision Description
5-5-05	1	REVISE PROFILES	

EMERSON
(Formerly the Key Property)
Section 3, Area 1
Parcels A - I

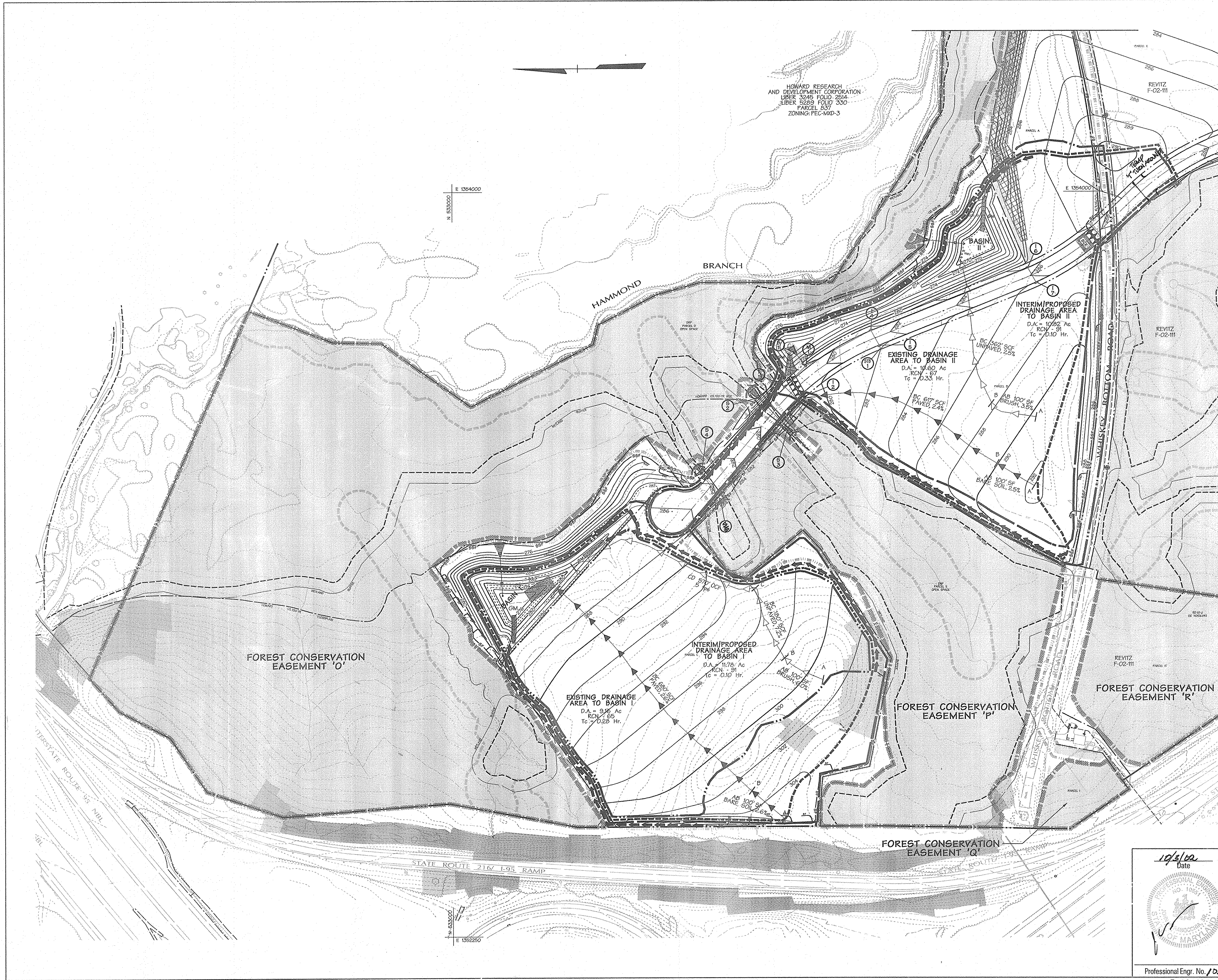
OWNER / DEVELOPER:
THE HOWARD RESEARCH & DEVELOPMENT CORPORATION
10275 LITTLE PATUXENT PARKWAY
COLUMBIA, MARYLAND 21044

DMW
Duff Mc Cune Walker, Inc.
200 East Pennsylvania Avenue
Towson, Maryland 21286
(410) 286-3333
Fax 286-4705

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

TITLE
FINAL PLAN
STORM DRAIN PROFILES

Des By	DFM	Scale	AS SHOWN	Proj. No.	01011.C0
Dwn By	WDE	Date	9/25/02		
Chk By		Approved			6 OF 31



Legend

- WETLAND
- WETLAND BUFFER
- WETLAND SYMBOL
- HEAD OF STREAM
- STREAM
- STREAM BUFFER
- STREAM BUFFER
- 100 YEAR FLOOD FLAIN
- SLOPES >25%
- SLOPES 15%-25%
- PC / PT OF ARC
- CENTERLINE OF ROAD
- RADIUS OF ARC
- SF SILT FENCE
- SBF SUPER SILT FENCE
- EARTH DIKE
- MOUNTABLE BERM
- EXISTING DRAINAGE DIVIDE
- PROP. DRAINAGE DIVIDE
- INTERIM DRAINAGE DIVIDE
- INTERIM TC PATH
- EXISTING TC PATH
- B-10 SOIL BORING
- PROPERTY BOUNDARY

APPROVED: HOWARD COUNTY DEPT. OF PUBLIC WORKS
Richard M. Conley 11-25-02
 CHIEF, BUREAU OF HIGHWAYS HS DATE

APPROVED: HOWARD COUNTY DEPT. OF PLANNING AND ZONING
Cynthia Hamrick 12/6/02
 CHIEF, DIVISION OF LAND DEVELOPMENT HS DATE

Michael J. Williams 12/2/02
 CHIEF, DEVELOPMENT ENGINEERING DIVISION MK DATE

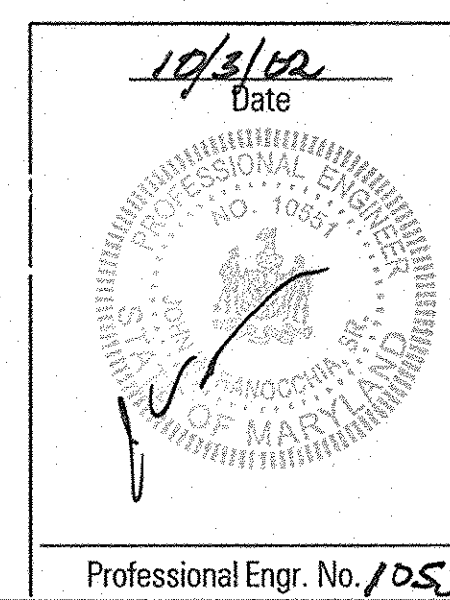
6/9/05	ADD TURN AROUND
Date	Revision Description

EMERSON
 (Formerly the Key Property)
 Section 3, Area 1
 Parcels A - I

OWNER / DEVELOPER:
 THE HOWARD RESEARCH & DEVELOPMENT CORPORATION
 10275 LITTLE PATUXENT PARKWAY
 COLUMBIA, MARYLAND 21044

DMW
 Duff, McConno, Walker, Inc.
 200 East Pennsylvania Avenue
 Tucson, Maryland 21286
 (410) 296-3333
 Fax 296-4706

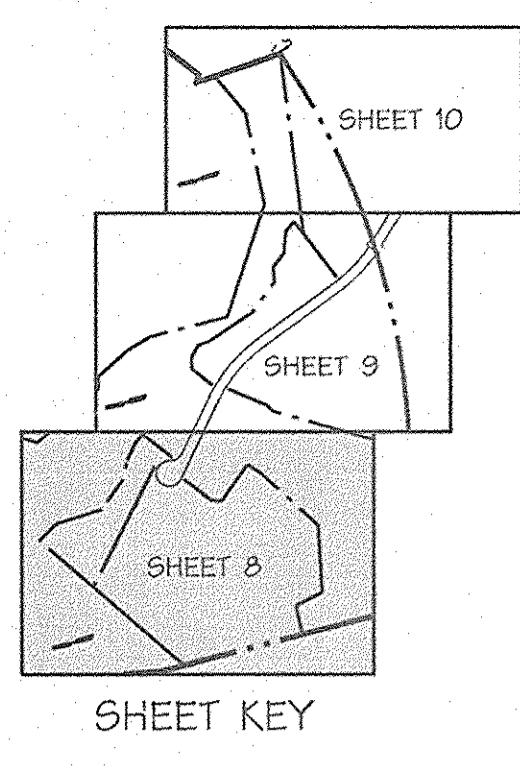
A Team of Land Planners,
 Landscape Architects,
 Engineers, Surveyors &
 Environmental Professionals



TITLE: **FINAL PLAN
 SEDIMENT & EROSION CONTROL
 DRAINAGE AREA MAP**

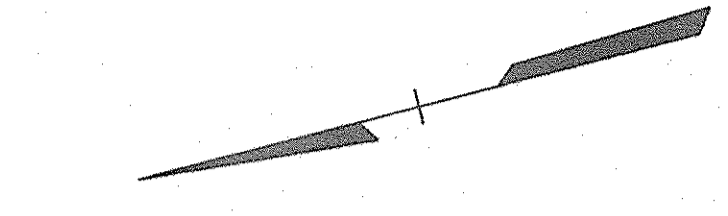
Des By	MRT	Scale	1" = 100'	Proj. No.	01011.C
Drn By	MRT	Date	9/25/02		
Chk By	Approved				7 OF 31

Professional Engr. No. 10557



A MATCH LINE - SEE SHEET 9 OF 31 A

55F TO CROSS OVER TOP OF END SECTION AND CREATE WATER TIGHT SEAL AROUND IT (SAME FOR UPSTREAM END OF PIPE)



BASIN TABLE

BASIN NUMBER	1	
EXISTING DRAINAGE AREA: ACRES	9.16	
INTERIM DRAINAGE AREA: ACRES	11.78	
PROPOSED DRAINAGE AREA: ACRES	11.78	
STORAGE REQUIRED: CUBIC FEET	WET	21,204
	DRY	21,204
	TOTAL	42,410
STORAGE PROVIDED: CUBIC FEET	WET	21,877
	DRY	22,421
	TOTAL	44,298
EXISTING GROUND ELEVATION	276	
TOP EMBANKMENT ELEVATION	287	
EMERGENCY SPILLWAY CREST ELEVATION	N/A	
RISER CREST ELEVATION*	281.8	
WET STORAGE ELEVATION	279.9	
CLEANOUT ELEVATION	278.5	
BOTTOM ELEVATION	276.0	
Q _i INTO BASIN (C.F.S.) POST-DISTURBANCE	32.06	
Q _i (C.F.S.) PRE-DISTURBANCE	2.37	
Q _o OUT BARREL (C.F.S.) POST-DISTURBANCE	80	
Q _o OUT EMERGENCY SPILLWAY	0.00	
BASIN DEPTH	WET	3.9
	DRY	1.9
	TOTAL	5.8
DESIGN HIGHWATER (10 YR. WSE)	285.0	
FREEBOARD PROVIDED	2.0	
BARREL DIAMETER	36"	
RISER DIAMETER*	8"	
EMERGENCY SPILLWAY WIDTH	N/A	
WET STORAGE ZONE ELEVATION	276.0-279.9	
DRY STORAGE ZONE ELEVATION	279.9-281.8	
BOTTOM DIMENSIONS	63' x 175' Triangle	

* 8" PVC RISER FOR SEDIMENT EROSION CONTROL. RISER CREST OF 4"x4" CONCRETE RISER IS EL. 283.5.

- Legend**
- - - - - EXISTING CONTOUR
 - — — — — PROPOSED CONTOUR
 - — — — — PROPOSED STORMDRAIN
 - — — — — 15" D.
 - — — — — EARTH/DIVERSION DIKE
 - SF — — — — — SILT FENCE
 - SSF — — — — — SUPER SILT FENCE
 - LOD — — — — — LIMIT OF DISTURBANCE
 - - - - - WETLAND
 - - - - - WETLAND BUFFER
 - - - - - STREAM BUFFER
 - RPS — — — — — REMOVABLE PUMPING STATION
 - BeP2(C) — — — — — SOILS LINE
 - SiC2 — — — — — 100 YR. FLOODPLAIN
 - - - - - NON-WOODY VEGETATION ZONE

APPROVED: HOWARD COUNTY DEPT. OF PUBLIC WORKS
Andrew M. Puck 11-25-02
 CHIEF, BUREAU OF HIGHWAYS HJS DATE

APPROVED: HOWARD COUNTY DEPT. OF PLANNING AND ZONING
Cathy Hunter 12/6/02
 CHIEF, DIVISION OF LAND DEVELOPMENT HJS DATE

Mike Pappas 12/2/02
 CHIEF, DEVELOPMENT ENGINEERING DIVISION HJK DATE

Date	No.	Revision Description

EMERSON
 (Formerly the Key Property)
 Section 3, Area 1
 Parcels A - I

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

10/3/02
 Date

Professional Engr. No. 10551

MDE PERMIT AND TRACKING No. 01-NT-0222/200164079

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

Joseph Necker Jr. 10.3.02
 SIGNATURE OF DEVELOPER DATE
 PRINT NAME BELOW SIGNATURE

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.

John Kapocchia 10/3/02
 SIGNATURE OF ENGINEER DATE
 PRINT NAME BELOW SIGNATURE

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

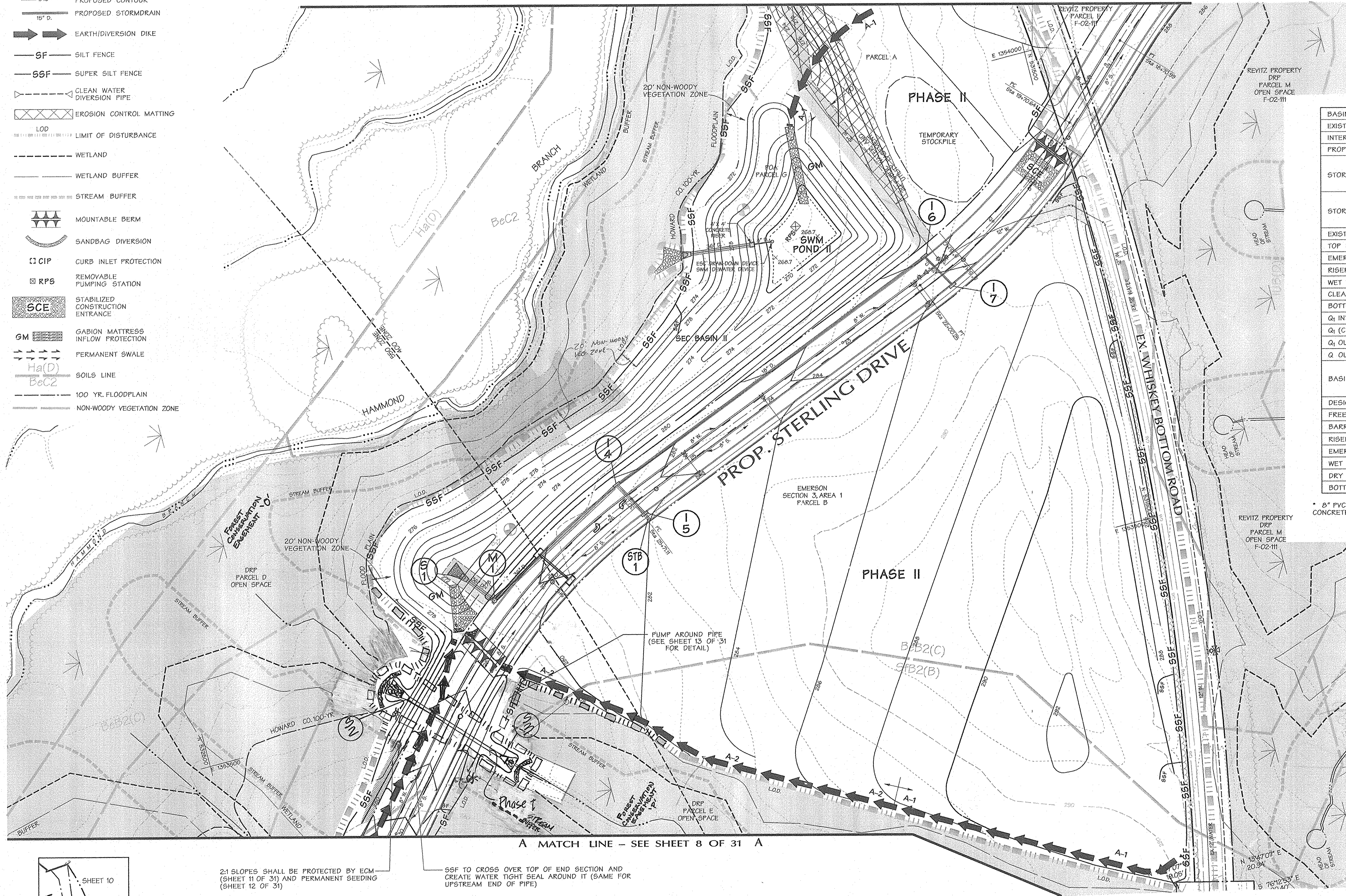
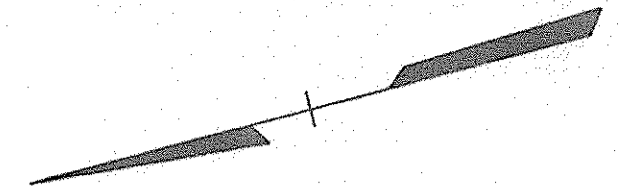
Jill Myers 10/4/02
 U.S. NATURAL RESOURCE CONSERVATION SERVICE DATE

Jeffrey 10/6/02
 HOWARD S.C.D. DATE

Legend

- 340 --- EXISTING CONTOUR
- 340 --- PROPOSED CONTOUR
- 15" D. --- PROPOSED STORMDRAIN
- → → EARTH/DIVERSION DIKE
- SF — SILT FENCE
- SSF — SUPER SILT FENCE
- CLEAN WATER DIVERSION PIPE
- EROSION CONTROL MATTING
- LOD LIMIT OF DISTURBANCE
- WETLAND
- WETLAND BUFFER
- STREAM BUFFER
- MOUNTABLE BERM
- SANDBAG DIVERSION
- CIP CURB INLET PROTECTION
- RPS REMOVABLE PUMPING STATION
- SCE STABILIZED CONSTRUCTION ENTRANCE
- GM GABION MATTRESS INFLOW PROTECTION
- PERMANENT SWALE
- Ha(D) SOILS LINE
- BeC2 100 YR. FLOODPLAIN
- NON-WOODY VEGETATION ZONE

B MATCH LINE - SEE SHEET 10 OF 31 B



BASIN TABLE

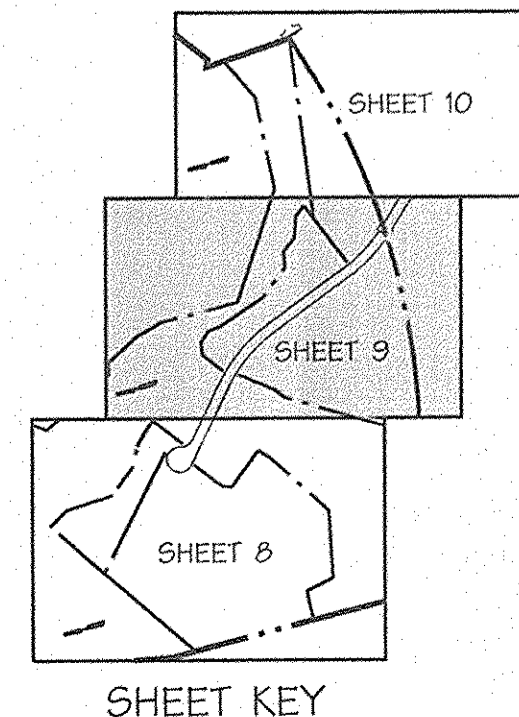
BASIN NUMBER	II	
EXISTING DRAINAGE AREA: ACRES	10.60	
INTERIM DRAINAGE AREA: ACRES	10.82	
PROPOSED DRAINAGE AREA: ACRES	10.82	
STORAGE REQUIRED: CUBIC FEET	WET	19,476
	DRY	19,476
	TOTAL	38,952
STORAGE PROVIDED: CUBIC FEET	WET	19,459
	DRY	19,307
	TOTAL	38,766
EXISTING GROUND ELEVATION	273.0	
TOP EMBANKMENT ELEVATION	278.0	
EMERGENCY SPILLWAY CREST ELEVATION	276.0	
RISER CREST ELEVATION*	274.8	
WET STORAGE ELEVATION	273.5	
CLEANOUT ELEVATION	272.8	
BOTTOM ELEVATION	272.0	
Q _i INTO BASIN (C.F.S.) POST-DISTURBANCE	29.45	
Q _i (C.F.S.) PRE-DISTURBANCE	3.27	
Q _i OUT BARREL (C.F.S.) POST-DISTURBANCE	0.93	
Q _i OUT EMERGENCY SPILLWAY	0.00	
BASIN DEPTH	WET	1.5
	DRY	1.3
	TOTAL	2.8
DESIGN HIGHWATER (10-YEAR)	275.7	
FREEBOARD PROVIDED	2.4	
BARREL DIAMETER	36"	
RISER DIAMETER*	36"	
EMERGENCY SPILLWAY WIDTH	12.0	
WET STORAGE ZONE ELEVATION	272.0-273.5	
DRY STORAGE ZONE ELEVATION	273.5-274.8	
BOTTOM DIMENSIONS	30'x50'	

* 6" PVC RISER FOR SEDIMENT EROSION CONTROL. RISER CREST OF 4"x4" CONCRETE RISER IS ALSO EL. 274.8.

A MATCH LINE - SEE SHEET 8 OF 31 A

2:1 SLOPES SHALL BE PROTECTED BY ECM (SHEET 11 OF 31) AND PERMANENT SEEDING (SHEET 12 OF 31)

SSF TO CROSS OVER TOP OF END SECTION AND CREATE WATER TIGHT SEAL AROUND IT (SAME FOR UPSTREAM END OF PIPE)



MDE PERMIT AND TRACKING No. 01-NT-0222/200164079

DEVELOPER'S CERTIFICATION:

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

Signature: *Joseph Necker Jr.*
 PRINT NAME BELOW SIGNATURE: JOSEPH NECKER JR.
 DATE: 9/25/02

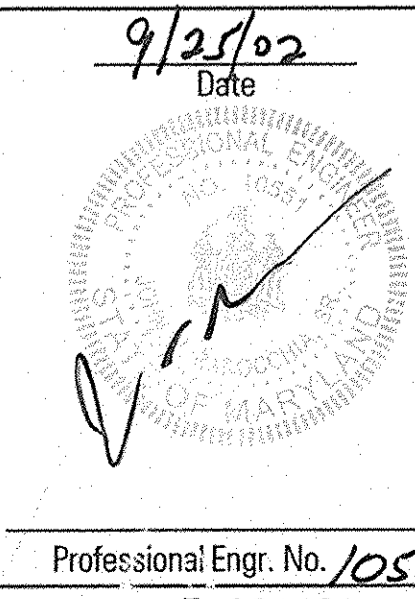
ENGINEER'S CERTIFICATION:

"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: *John R. Reddie*
 PRINT NAME BELOW SIGNATURE: JOHN R. REDDIE
 DATE: 10/8/02

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

Signature: *John R. Reddie*
 U.S. NATIONAL RESOURCE CONSERVATION SERVICE
 DATE: 10/8/02



APPROVED: HOWARD COUNTY DEPT. OF PUBLIC WORKS
 Signature: *Richard M. Daniels*
 CHIEF, BUREAU OF HIGHWAYS
 DATE: 11-25-02

APPROVED: HOWARD COUNTY DEPT. OF PLANNING AND ZONING
 Signature: *Chris Hanna*
 CHIEF, DIVISION OF LAND DEVELOPMENT
 DATE: 12/6/02

Signature: *John R. Reddie*
 CHIEF, DEVELOPMENT ENGINEERING DIVISION
 DATE: 12/2/02

9-3-09 **REVISION 1-1 & 1-2 LOCATION**

EMERSON
 (Formerly the Key Property)
 Section 3, Area 1
 Parcels A - I

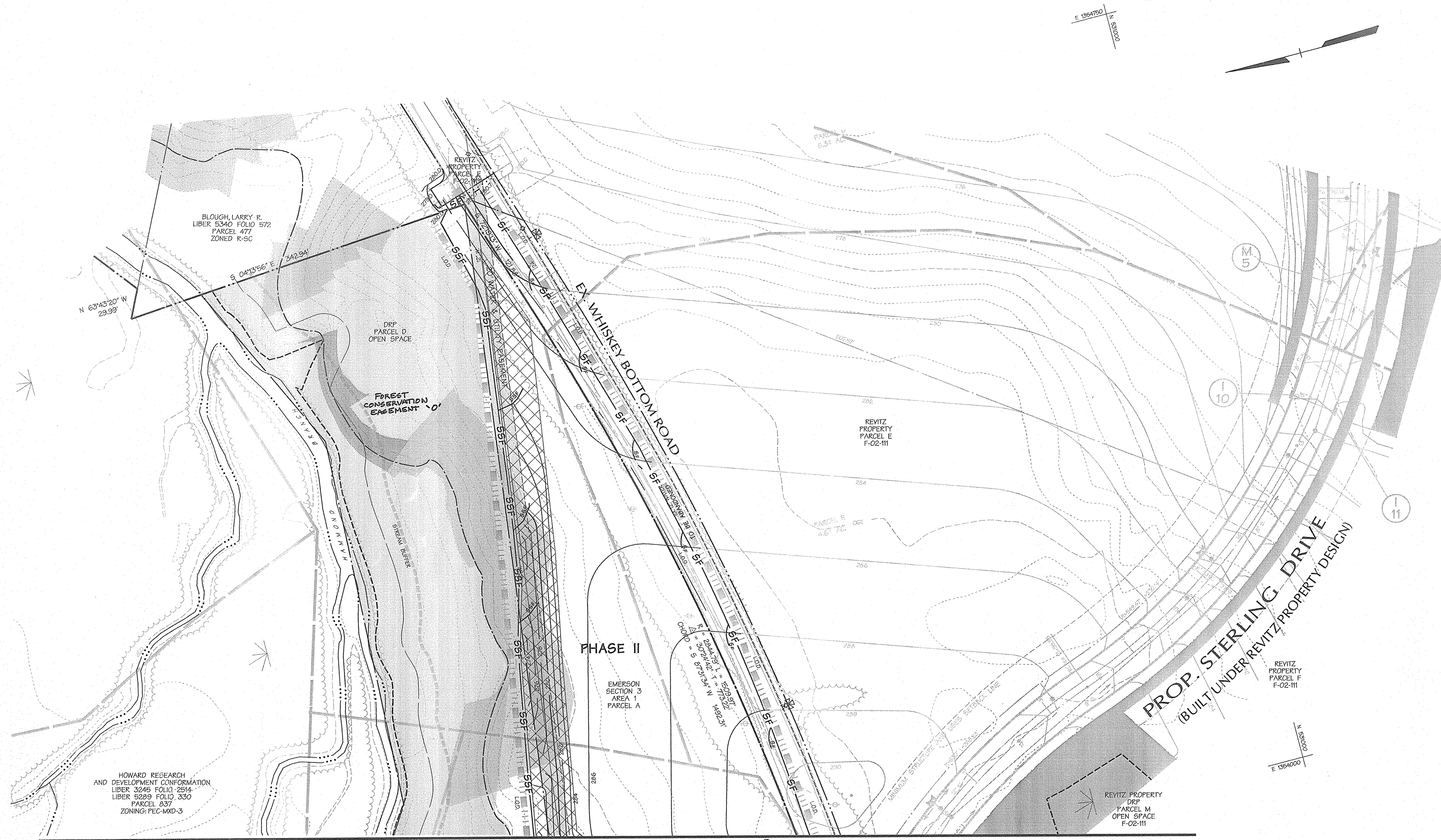
OWNER / DEVELOPER:
 THE HOWARD RESEARCH & DEVELOPMENT CORPGRATION
 10275 LITTLE PATUXENT PARKWAY
 COLUMBIA, MARYLAND 21044

DMW
 Draft-McCune-Walker, Inc.
 200 East Pennsylvania Avenue
 Towson, Maryland 21286
 (410) 286-3333
 Fax: 286-4708

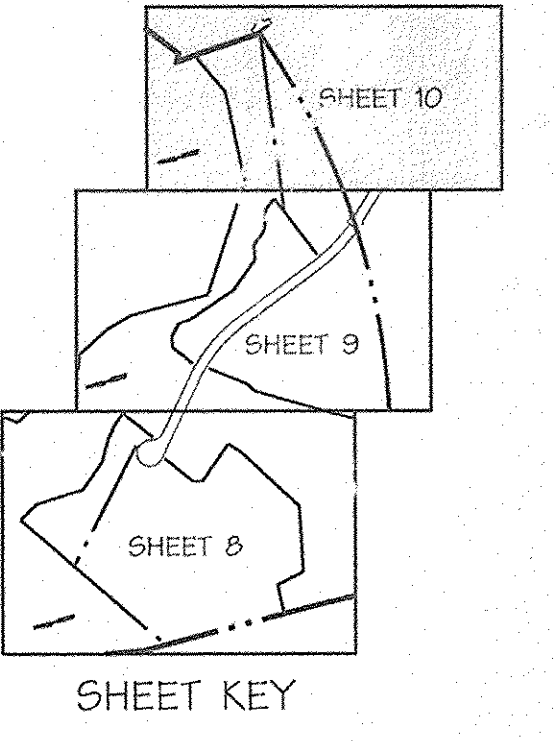
A Team of Land Planners,
 Landscape Architects,
 Engineers, Surveyors &
 Environmental Professionals

FINAL PLAN GRADING, SEDIMENT & EROSION CONTROL PLAN

Des By: MRT Scale: 1" = 50' Proj. No.: 01011.C
 Dwn By: AJL Date: 9/25/02
 Chk By: Approved 9 OF 31



- Legend**
- EXISTING CONTOUR
 - 340 --- PROPOSED CONTOUR
 - 15" D. --- PROPOSED STORMDRAIN
 - ==> EARTH/DIVERSION DIKE
 - SF --- SILT FENCE
 - SSF --- SUPER SILT FENCE
 - XXXXX EROSION CONTROL MATTING
 - LOD LIMIT OF DISTURBANCE
 - WETLAND
 - WETLAND BUFFER
 - STREAM BUFFER
 - SFC2(B)
BcB2(C) SOILS LINE



APPROVED: HOWARD COUNTY DEPT. OF PUBLIC WORKS
Andrew M. Daulton 11-25-02
 CHIEF, BUREAU OF HIGHWAYS JAS DATE

APPROVED: HOWARD COUNTY DEPT. OF PLANNING AND ZONING
Andy Hancock 12/6/02
 CHIEF, DIVISION OF LAND DEVELOPMENT JHB DATE

John P. ... 12/2/02
 CHIEF, DEVELOPMENT ENGINEERING DIVISION MK DATE

Date	No.	Revision Description

EMERSON
 (Formerly the Key Property)
 Section 3, Area 1
 Parcels A - I

OWNER /DEVELOPER:
 THE HOWARD RESEARCH & DEVELOPMENT CORPORATION
 10275 LITTLE PATUXENT PARKWAY
 COLUMBIA, MARYLAND 21044

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

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

TITLE
FINAL PLAN
GRAVING, SEDIMENT & EROSION
CONTROL PLAN

Des By	MRT	Scale	1" = 50'	Proj. No.	01011
Dwn By	ADL	Date	9/25/02	10 OF 31	
Chk By	Approved				

MDE PERMIT AND TRACKING No. 01-NT-0222/200164079

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

Joseph ... 9/25/02
 SIGNATURE OF DEVELOPER
 PRINT NAME BELOW SIGNATURE
 JOSEPH ...

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."

John ... 9/25/02
 SIGNATURE OF ENGINEER
 PRINT NAME BELOW SIGNATURE
 John ...

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

Jim ... 10/8/02
 U.S. NATURAL RESOURCE CONSERVATION SERVICE DATE

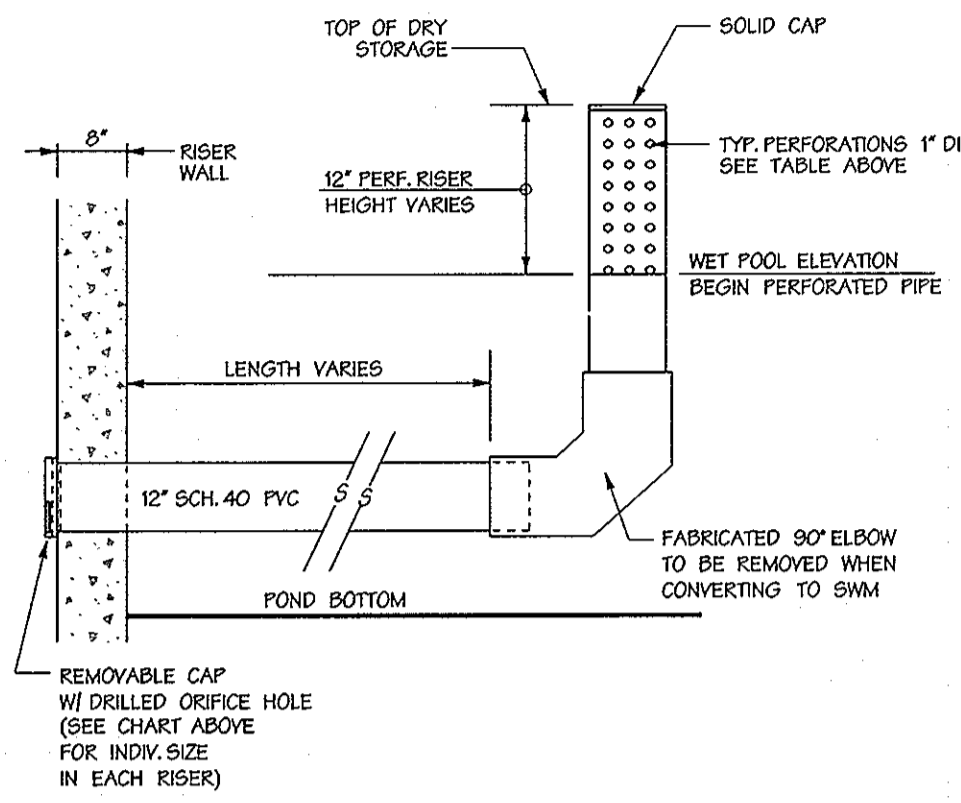
THIS DEVELOPMENT PLAN IS APPROVED FOR SOIL EROSION AND SEDIMENT CONTROL BY THE HOWARD SOIL CONSERVATION DISTRICT.

John ... 10/8/02
 HOWARD S.C.D. DATE

9/25/02
 Date

Professional Engr. No. 10551

RISER #	LENGTH	WET POOL ELEV.	PERF. RISER HEIGHT	DRILLED ORIFICE HOLE SIZE	PERFORATION SPACING	NUMBER OF PERFORATIONS PER VERT. FT.
BASIN I	2'	279.9	1.9'	4"	2 1/4"	42
BASIN II	2'	272.3	1.7'	4"	2 1/4"	42



- FOR SPECIFICATIONS ON MATERIALS, SEE "BASIN DRAWDOWN SCHEMATIC VER. DRAWDOWN DEVICE" THIS SHEET.
- SEE SWM PROFILE ALONG RISER/BAKREL (SHEETS 1710 OF 31) FOR INCORPORATION OF THIS DETAIL INTO THE OVERALL DESIGN.

Table 29. Stone Size

NUMBER	SIZE RANGE	D ₅₀	D ₁₀₀	AASHTO	WEIGHT
NUMBER 57*	3/8" - 1 1/2"	1 1/2"	1 1/2"	M-43	N/A
NUMBER 1	2" - 3"	2 1/4"	3"	M-43	N/A
RIP-RAP**	4" - 7"	5 1/4"	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 over small rip-rap is required. The State Highway Administration designation for this stone is Stone for Gabions (SOS.01.04)

Stone For Gabion Baskets

BASKET THICKNESS	SIZE OF INDIVIDUAL STONES	
INCHES	MM	INCHES
6	150	3 - 5
9	225	4 - 7
12	300	4 - 7
18	450	4 - 7
36	910	4 - 12

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 Fabric

CLASS	APPARENT OPENING SIZE MM. MAX.	GRAB TENSILE STRENGTH LB. MIN.	BURST STRENGTH PSL. 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. Stone CW-02215 ** .50 mm max. for Super Silt Fence

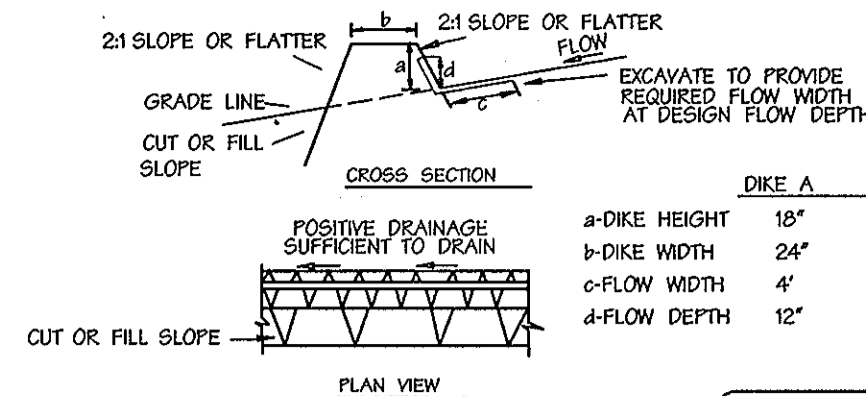
The properties shall be determined in accordance with the following procedures:

- Apparent opening size MSMT 523
- Grab tensile strength ASTM D 1682-4x6" specimen, 1/2" clamps, 12"/min. strain rate in both principal directions of geotextile fabric.
- Burst strength ASTM 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 polyolefins, 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 fabric for silt fence shall have a 50 lb./in. minimum tensile strength and a 20 lb./in. minimum tensile modulus when tested in accordance with MSMT 509. The material shall also have a 0.5 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.



- Seed and cover with straw mulch.
- Seed and cover with Erosion Control Matting or tie with sod.
- 3.4" - 7" stones or recycled concrete aggregate pressed into the soil 7" minimum.

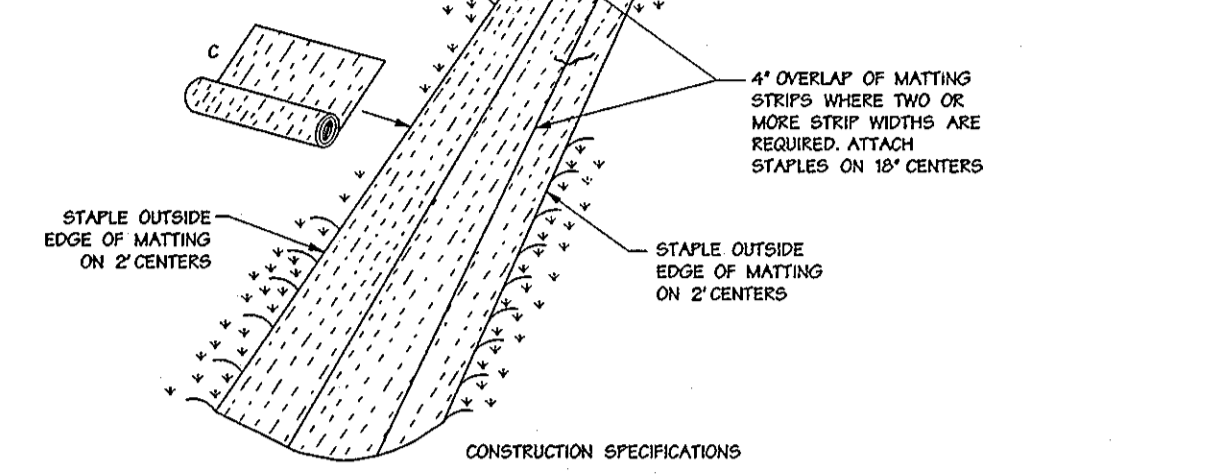
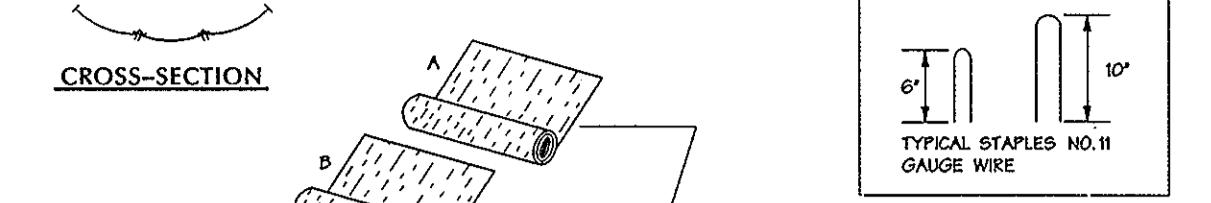
Construction Specifications

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

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MARYLAND DEPARTMENT OF ENVIRONMENT WATER MANAGEMENT ADMINISTRATION

A - 1 - 6



- KEY-IN THE MATTING BY PLACING THE TOP ENDS OF THE MATTING IN A NARROW TRENCH, 6" IN DEPTH. BACKFILL THE TRENCH AND TAMP FIRMLY TO CONFORM TO THE CHANNEL CROSS-SECTION. SCORE WITH A ROW OF STAPLES ABOUT 4' DOWN SLOPE FROM THE TRENCH SPACING BETWEEN STAPLES IN 6'.
- STAPLE THE 4' OVERLAP IN THE CHANNEL CENTER USING AN 18" SPACING BETWEEN STAPLES.
- BEFORE STAPLING THE OUTER EDGES OF THE MATTING, MAKE SURE THE MATTING IS SMOOTH AND IN FIRM CONTACT WITH THE SOIL.
- STAPLES SHALL BE PLACED 2' APART WITH 4 ROWS FOR EACH STRIP, 2 OUTER ROWS, AND 2 ALTERNATING ROWS DOWN THE CENTER.
- WHERE ONE ROLL OF MATTING ENDS AND ANOTHER BEGINS, THE END OF THE TOP STRIP SHALL OVERLAP THE UPPER END OF THE LOWER STRIP BY 4". SHIRLAP FASHION REINFORCE THE OVERLAP WITH A DOUBLE ROW OF STAPLES SPACED 6' APART IN A STAGGERED PATTERN ON EITHER SIDE.
- THE DISCHARGE END OF THE MATTING LITER SHOULD BE SIMILARLY SECURED WITH 2 DOUBLE ROWS OF STAPLES.

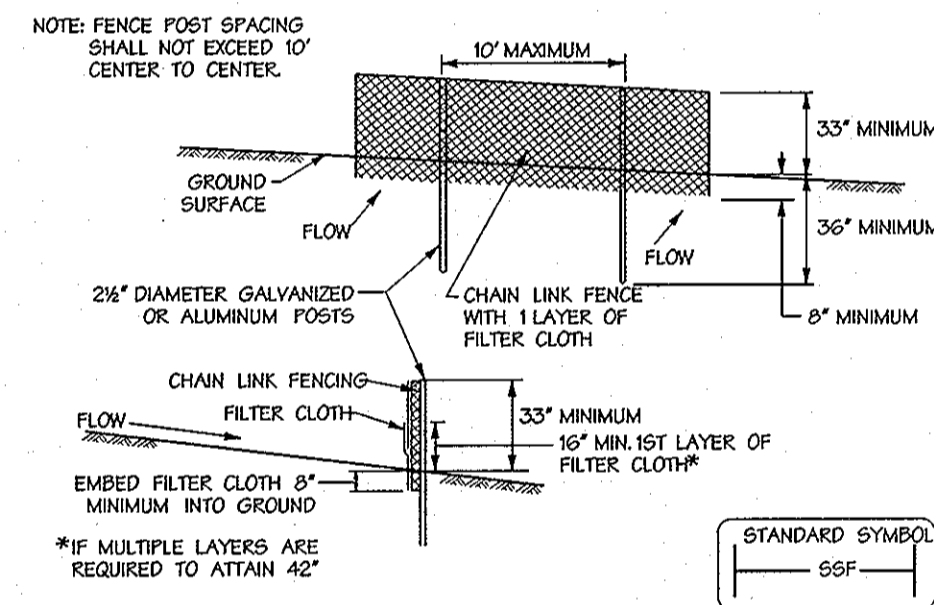
U.S. DEPARTMENT OF AGRICULTURE SOIL CONSERVATION SERVICE

O - 2 - 2

MARYLAND DEPARTMENT OF ENVIRONMENT WATER MANAGEMENT ADMINISTRATION

Sediment Control Draw-Down

Not To Scale



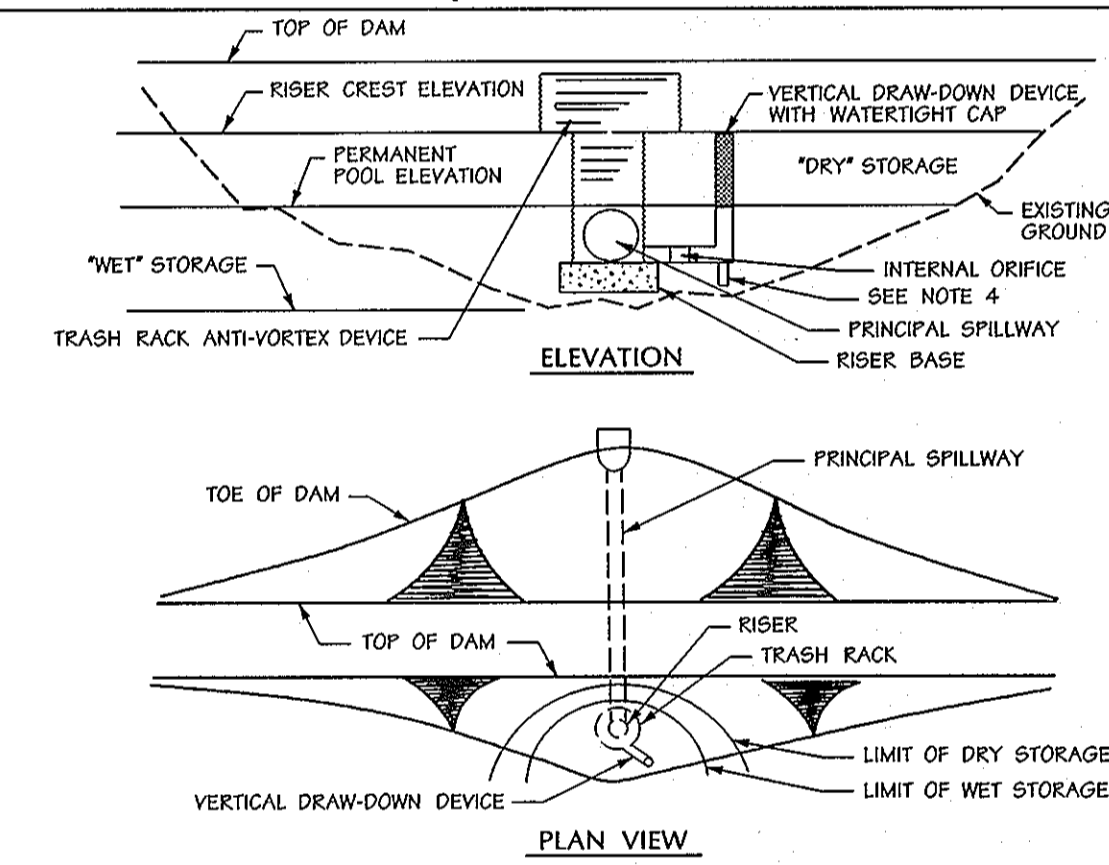
- FENCING SHALL BE 42 INCHES IN HEIGHT AND CONSTRUCTED IN ACCORDANCE WITH THE LATEST MARYLAND STATE HIGHWAY (MSM) DETAILS FOR CHAIN LINK FENCING. THE SPECIFICATION FOR A 6" FENCE SHALL BE USED SUBSTITUTING 42" FABRIC AND 6" LENGTH POSTS.
- THE POSTS DO NOT NEED TO BE SET IN CONCRETE.
- CHAIN LINK FENCE 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 6" (6) GAUGE OR HEAVIER.
- FILTER CLOTH SHALL BE FASTENED SECURELY TO THE CHAIN LINK FENCE WITH TIES SPACED EVERY 24" AT THE TOP AND MID SECTION.
- FILTER CLOTH SHALL BE EMBEDDED A MINIMUM OF 6" INTO THE GROUND.
- WHEN TWO SECTIONS OF FILTER CLOTH ADJOIN EACH OTHER, THEY SHALL BE OVERLAPPED BY 6" AND FOLDED.
- MAINTENANCE SHALL BE PERFORMED AS NEDED 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 - 20 - 5

MARYLAND DEPARTMENT OF ENVIRONMENT WATER MANAGEMENT ADMINISTRATION

Geotextile Material Specifications



- PERFORATIONS IN THE DRAW-DOWN DEVICE MAY NOT EXTEND INTO THE WET STORAGE.
- THE TOTAL AREA OF THE PERFORATIONS MUST BE GREATER THAN 4 TIMES THE AREA OF THE INTERNAL ORIFICE.
- THE PERFORATED PORTION OF THE DRAW-DOWN DEVICE SHALL BE WRAPPED WITH 1/2" HARDWARE CLOTH AND GEOTEXTILE FABRIC. THE GEOTEXTILE FABRIC SHALL MEET THE SPECIFICATIONS FOR GEOTEXTILE CLASS E.
- PROVIDE SUPPORT OF DRAW-DOWN DEVICE TO PREVENT BAGGING AND FLOATATION. AN ACCEPTABLE PREVENTATIVE MEASURE IS TO STAKE BOTH SIDES OF THE DRAW-DOWN DEVICE WITH 1" STEEL ANGLE, OR 2" BY 2" 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.

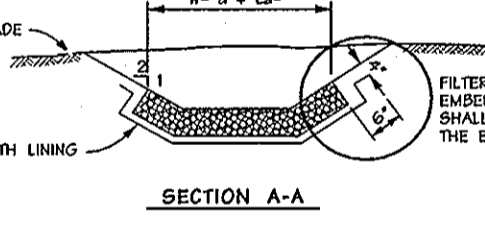
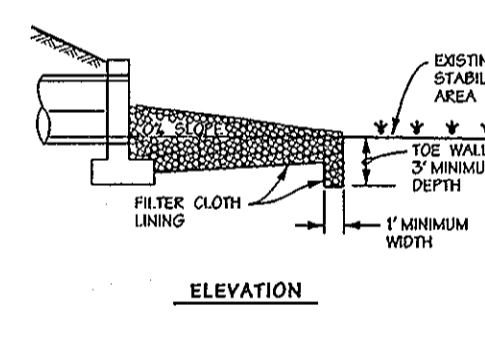
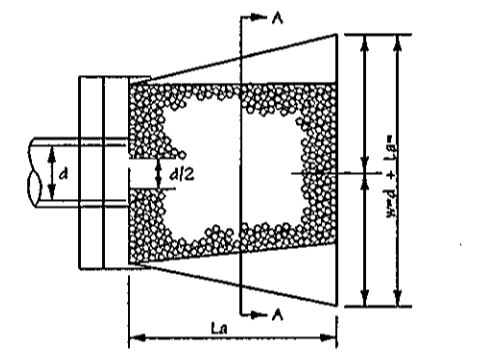
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C - 10 - 30

MARYLAND DEPARTMENT OF ENVIRONMENT WATER MANAGEMENT ADMINISTRATION

Earth Dike

Not To Scale



NOTE: FILTER CLOTH SHALL BE GEOTEXTILE CLASS C.

U.S. DEPARTMENT OF AGRICULTURE SOIL CONSERVATION SERVICE

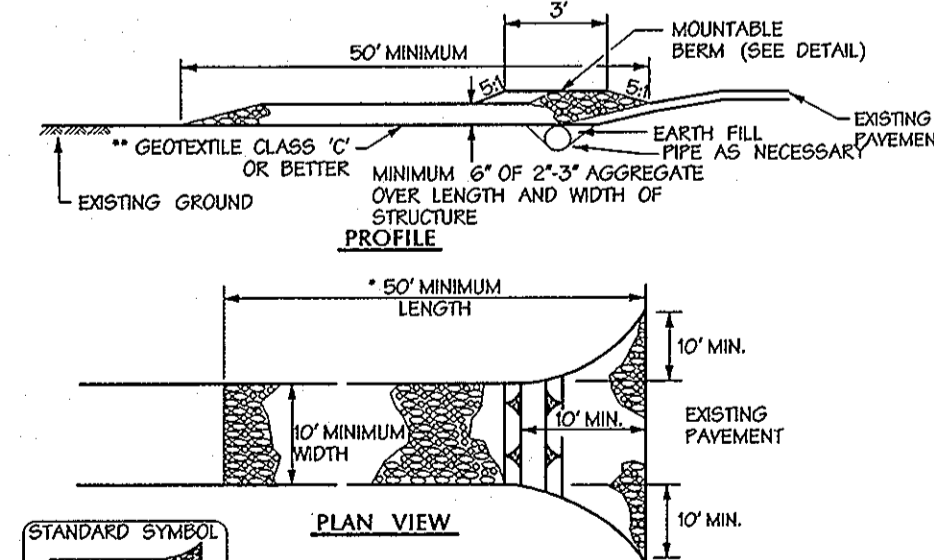
F-10-10 (HEAD)

F-10-BA, 9A, 10A

MARYLAND DEPARTMENT OF ENVIRONMENT WATER MANAGEMENT ADMINISTRATION

Super Silt Fence

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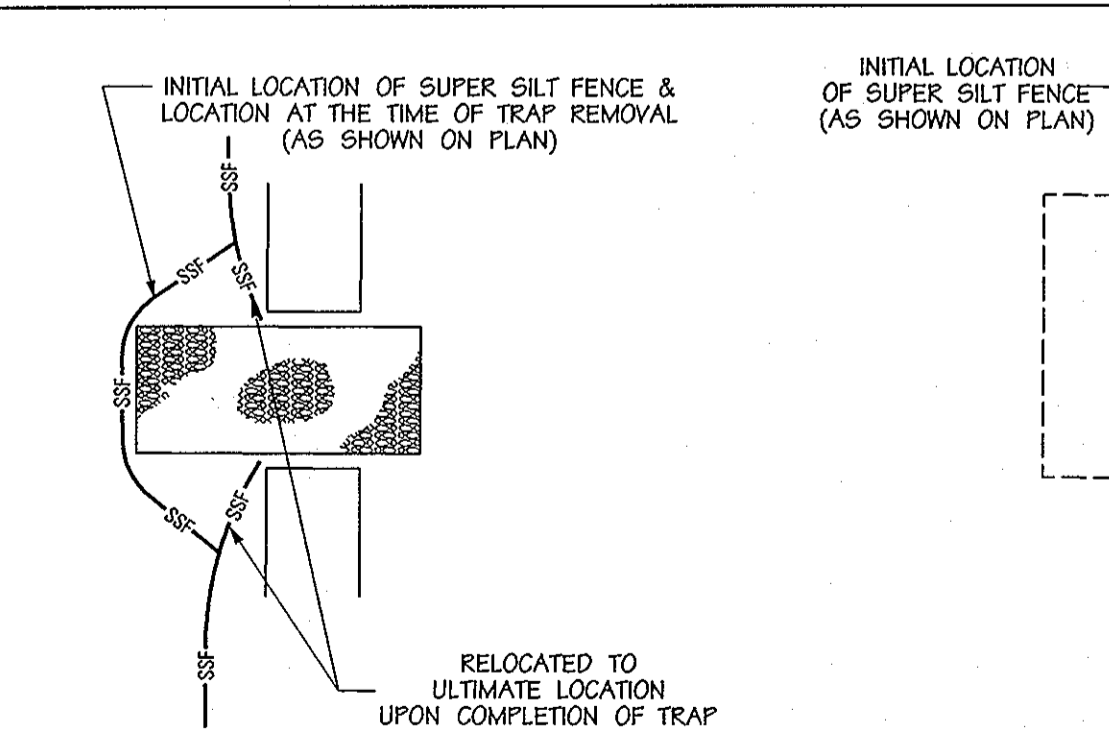
- LENGTH - MINIMUM OF 50' (50' FOR SINGLE RESIDENCE LOT).
- WIDTH - 10' MINIMUM, SHOULD BE FLARED AT THE EXISTING ROAD TO PROVIDE A TURNING RADIUS.
- GEOTEXTILE FABRIC CLASS C (FILTER CLOTH) SHALL BE PLACED OVER THE EXISTING GROUND PRIOR TO PLACING STONE. THE PLAN APPROVAL AUTHORITY MAY NOT REQUIRE SINGLE FAMILY RESIDENCES TO USE GEOTEXTILE.
- 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.
- SURFACE WATER - ALL SURFACE WATER FLOWING TO OR DIVERTED TOWARD CONSTRUCTION ENTRANCE SHALL BE FILTERED THROUGH THE ENTRANCE, MAINTAINING POSITIVE DRAINAGE. PIPE INSTALLED THROUGH THE STABILIZED CONSTRUCTION ENTRANCE SHALL BE PROTECTED WITH A MOUNTABLE BERM WITH 5" SLOPES AND A MINIMUM OF 4" OF STONE OVER THE PIPE. PIPE HAS TO BE SIZED ACCORDING TO THE DRAINAGE WHEN THE SIZE 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.
- 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

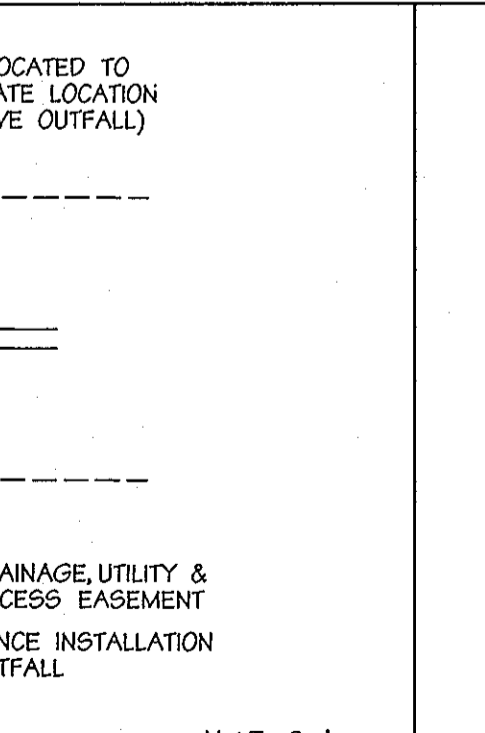
Basin Drawdown Schematic Ver. Drawdown Device



Super Silt Fence Outfall Protection

Rock Outlet Protection III

Not To Scale



Super Silt Fence Outfall Protection

MDE PERMIT AND TRACKING No. 01-NT-0222/200164079

Rock Outlet Protection III Specifications

Not To Scale

CONSTRUCTION SPECIFICATIONS

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

U.S. DEPARTMENT OF AGRICULTURE SOIL CONSERVATION SERVICE

F-10-BA, 9A, 10A

MARYLAND DEPARTMENT OF ENVIRONMENT WATER MANAGEMENT ADMINISTRATION

APPROVED: HOWARD COUNTY DEPT. OF PUBLIC WORKS
Richard M. D'Amico 1/25/02
CHIEF, BUREAU OF HIGHWAYS DATE

APPROVED: HOWARD COUNTY DEPT. OF PLANNING AND ZONING
Andy Hannah 12/4/12
CHIEF, DIVISION OF LAND DEVELOPMENT DATE

Michael J. Ross 12/2/12
CHIEF, DEVELOPMENT ENGINEERING DIVISION DATE

Date	No.	Revision Description

EMERSON
(Formerly the Key Property)
Section 3, Area 1
Parcels A - I

OWNER /DEVELOPER:
THE HOWARD RESEARCH & DEVELOPMENT CORPORATION
10275 LITTLE PATUXENT PARKWAY
COLUMBIA, MARYLAND 21044

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

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

9/25/02
Date

Professional Engr. No. 10551

TITLE
**FINAL PLAN
SEDIMENT & EROSION CONTROL
DETAILS**

Des By
Dm By
Chk By

Scal. 1" = 50'
Date
Approved

Proj. No. 01011.C
11 OF 31

Stabilized Construction Entrance

Not To Scale

DEVELOPER'S CERTIFICATION:

I HEREBY CERTIFY THAT ALL DEVELOPMENT AND CONSTRUCTION WILL BE DONE ACCORDING TO THIS PERMIT AND TRACKING AND THAT ALL 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.

Joseph Neker Jr.
SIGNATURE OF DEVELOPER
PRINT NAME BELOW SIGNATURE
DATE 9/25/02

ENGINEER'S CERTIFICATION:

I CERTIFY THAT THIS PLAN FOR SEDIMENT AND EROSION 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.

John Kanocchia
SIGNATURE OF ENGINEER
PRINT NAME BELOW SIGNATURE
DATE 9/25/02

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

U.S. NATIONAL RESOURCE CONSERVATION SERVICE
DATE 10/8/02

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

Howard Scott
DATE 10/8/02

Professional Engr. No. 10551

STANDARDS AND SPECIFICATIONS FOR VEGETATIVE STABILIZATION

SECTION I - VEGETATIVE STABILIZATION METHODS AND MATERIALS

A. SITE PREPARATION

- I. Install erosion and sediment control structures (either temporary or permanent) such as diversions, grade stabilization structures, berms, waterways, or sediment control basins.
II. Perform all grading operations at right angles to the slope. Final grading and shaping is not usually necessary for temporary seeding.
III. Schedule required soil test to determine soil amendment composition and application rates for sites having disturbed area over 5 acres.

B. SOIL AMENDMENTS (FERTILIZER AND LIME SPECIFICATIONS)

- I. Soil test must be performed to determine the exact ratios and application rates for both lime and fertilizer on sites having disturbed areas over 5 acres. Soil analysis may be performed by the University of Maryland or a recognized commercial laboratory.
II. Fertilizers shall be uniform in composition, free flowing and suitable for accurate application by approved equipment.
III. Lime materials shall be ground limestone (hydrated or burnt lime may be substituted) which contains at least 50% total oxides (calcium oxide plus magnesium oxide).

C. SEEDBED PREPARATION

I. TEMPORARY SEEDING

- A. Seedbed preparation shall consist of loosening soil to a depth of 3 inches to 5 inches by means of suitable agricultural or construction equipment.
B. Apply fertilizer and lime as prescribed on the plans.
C. Incorporate lime and fertilizer into the top 3 - 5 inches of soil by disking or other suitable means.

II. PERMANENT SEEDING

- A. Minimum soil conditions required for permanent vegetative establishment:
1. Soil ph shall be between 6.0 and 7.0.
2. Soluble salts shall be less than 500 parts per million (PPM).
3. The soil shall contain less than 40% clay but enough fine grained material (> 30% silt plus clay) to provide the capacity to hold a moderate amount of moisture.
B. Areas previously graded in conformance with the drawings shall be maintained in a true and even grade, then scarified or otherwise loosened to a depth of 3 - 5 inches to permit bonding of the topsoil to the surface area and to create horizontal erosion check slots to prevent topsoil from sliding down a slope.

D. SEED SPECIFICATIONS

- I. All seed must meet the requirements of the Maryland State Seed Law. All seed shall be subject to re-testing by a recognized seed laboratory.
II. Inoculant - The inoculant for treating legume seed in the seed mixtures shall be a pure culture of nitrogen-fixing bacteria prepared specifically for the species. Inoculants shall not be used later than the date indicated on the container.

E. METHODS OF SEEDING

- I. Hydroseeding: Apply seed uniformly with hydroseeder (slurry includes seed and fertilizer), broadcast or drop seeder, or cultipacker seeder.
A. If fertilizer is being applied at the time of seeding, the application rates amounts will not exceed the following:
Nitrogen: maximum of 100 pounds per acre total of soluble Nitrogen; P2O5 (phosphorus): 200 pounds per acre; K2O (potassium): 200 pounds per acre.
B. Lime: Use only ground agricultural limestone, (up to 3 tons per acre may be applied by hydroseeding).

- III. Drill or cultipacker seeding: Mechanized seeders that apply and cover seed with soil.
A. Cultipacking seeders are required to bury the seed in such a fashion as to provide at least 1/4 inch of soil covering.
B. Where practical, seed should be applied in two directions perpendicular to each other. Apply half the seeding rate in each direction.

F. MULCH SPECIFICATIONS (IN ORDER OF PREFERENCE)

- I. Straw shall consist of thoroughly threshed wheat, rye or oat straw, reasonably bright in color, and shall not be weeds, moly, caked, decayed, or excessively dusty and shall be free of noxious weeds seeds as specified in the Maryland Seed Law.
II. Wood cellulose fiber mulch (WCFFM)
A. WCFFM shall consist of specially prepared wood cellulose processed into a uniform fibrous physical state.
B. WCFFM shall be dyed green or contain a green dye in the package that will provide an appropriate color to facilitate visual inspection of the uniformly spread slurry.

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

G. MULCHING SEEDING AREAS

- I. If grading is completed outside of the seeding season, mulch alone shall be applied as prescribed in this section and maintained until the seeding season returns and seeding can be performed in accordance with these specifications.
II. When straw mulch is used, it shall be spread over all seeded areas at the rate of 2 tons per acre. Mulch shall be applied in a uniform loose depth of between 1 1/2 inches and 2 inches.

H. SECURING STRAW MULCH

- I. A mulch anchoring tool is a tractor drawn implement design to punch and anchor mulch into the soil surface a minimum of two (2) inches. This practice is most effective on large areas, but is limited to flatter slopes where equipment can operate safely.
II. Wood cellulose fiber may be used for anchoring straw. The fiber binder shall be applied at a net dry weight of 750 pounds per acre.
III. Application of liquid binders should be heavier at the edges where wind catches mulch, such as in valleys or on crest of banks.

SECTION II - TEMPORARY SEEDING

VEGETATION - Annual grass or grain used to provide cover on disturbed areas for up to 12 months. For longer duration of vegetative cover, permanent seeding is required.

Table with columns: No., Species, Application Rate (lb./Ac.), Seeding Dates, Seeding Depths, Fertilizer Rate (10-10-10), Lime Rate. Includes rows for Annual Ryegrass and Weeping Lovegrass.

SECTION III - PERMANENT SEEDING

Seeding grass and legumes to establish ground cover for a minimum of one year on disturbed areas generally receiving low maintenance.

Table with columns: %, Species, Application Rate (lb./Ac.), Seeding Dates, Seeding Depths, Fertilizer Rate (10-20-20), Lime Rate. Includes rows for Rebel II Tall Fescue, Pennfine Perennial Ryegrass, and Kenblue Kentucky Bluegrass.

* For 5-16 through 8-14 add two (2) pounds of Weeping Lovegrass per acre or ten (10) pounds of Millet per acre to seed mixture (i.e. Mix #3 shown).

G - 20 - 1A

U.S. DEPARTMENT OF AGRICULTURE SOIL CONSERVATION SERVICE MARYLAND DEPARTMENT OF ENVIRONMENT WATER MANAGEMENT ADMINISTRATION

Vegetative Stabilization

SECTION IV - SOD

To provide quick cover on disturbed areas (2:1 grade or flatter)

A. GENERAL SPECIFICATIONS

- I. Class of turfgrass sod shall be Maryland or Virginia State certified or approved. Sod labels shall be made available to the job foreman and inspector.
II. Sod shall be machine cut at a uniform soil thickness of 3/4", plus or minus 1/8", at the time of cutting.
III. Standard size sections of sod shall be strong enough to support their own weight and retain their size and shape when suspended vertically with a firm grasp on the upper 10 percent of the section.
IV. Sod shall not be harvested or transplanted when moisture content (excessively dry or wet) may adversely affect its survival.
V. Sod shall be harvested, delivered, and installed within a period of 36 hours.

C. SOD MAINTENANCE

- I. In the absence of adequate rainfall, watering shall be performed daily or as often as necessary during the first week and in sufficient quantities to maintain moist soil to a depth of 4 inches.
II. After the first week, sod watering is required as necessary to maintain adequate moisture content.
III. The first mowing of sod should not be attempted until the sod is firmly rooted. No more than 1/3 of the grass leaf shall be removed by the initial cutting or subsequent cuttings.

SECTION V - TURFGRASS ESTABLISHMENT

Areas where turfgrass may be desired may include lawns, parks, playgrounds, and commercial sites which will receive a medium high level of maintenance. Areas to receive seed shall be tilled by disking or other approved methods to a depth of 2 to 4 inches, leveled and raked to prepare a proper seedbed.

Note: Choose certified material. Certified material is the best guarantee of cultivar purity. The certification program of the Maryland Department of Agriculture, Turf and Seed Section, provides a reliable means of consumer protection and assures a pure genetic line.

A. TURFGRASS MIXTURES

- I. Kentucky Bluegrass - Full sun mixture - For use in areas that receive intensive management.
II. Kentucky Bluegrass/Perennial Ryegrass - Full sun mixture - For use in full sun areas where rapid establishment is necessary and when turf will receive medium to intensive management.
III. Tall Fescue/Kentucky Bluegrass - Full sun mixture - For use in drought prone areas and/or for areas receiving low to medium management in full sun to medium shade.
IV. Kentucky Bluegrass/Fine Fescue - Shade mixture - For use in areas with shade in Bluegrass lawns.

B. IDEAL TIMES OF SEEDING

- Western Maryland: March 15 - June 1, August 1 - October 1 (hardness zones - 5B, 6A).
Central Maryland: March 1 - May 15, August 15 - October 15 (hardness zone - 6B).
Southern Maryland, Eastern Shore: March 1 - May 15, August 15 - October 15 (hardness zones - 7A, 7B).

C. IRRIGATION

If soil moisture is different, supply new seedlings with adequate water for plant growth (1/2" - 1" every 3 to 4 days depending on soil texture) until they are firmly established. This is especially true when seedlings are made late in the planting season, in abnormally dry or hot seasons, or on adverse sites.

D. REPAIRS AND MAINTENANCE

- I. Once the vegetation is established, the site shall have 95% groundcover to be considered adequately stabilized.
II. If the stand provides less than 40% ground coverage, re-establish following original lime, fertilizer, seedbed preparation and seeding recommendations.
III. If the stand provides between 40% and 94% ground coverage, overseeding and fertilizing using half of the rates originally applied may be necessary.
IV. Maintenance fertilizer rates for permanent seedings are shown in Table 24, for lawns and other medium high maintenance turfgrass areas, refer to the University of Maryland publication "Lawn Care in Maryland" bulletin number 171.

DEVELOPER'S CERTIFICATION:

I HEREBY 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 AND I ALSO AUTHORIZE PERSONS ON-SITE INSPECTION BY THE HOWARD SOIL CONSERVATION DISTRICT.

Signature of Developer: JOSEPH NECKER, JR. DATE: 9/25/02

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: JOHN BANSEKIN DATE: 9/25/02

REVIEWED FOR HOWARD S.C.D. AND MEETS TECHNICAL REQUIREMENTS. SIGNED: Joe Mueller DATE: 10/8/02

HOWARD S.C.D. SIGNED: [Signature] DATE: 10/8/02

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.
4. Irrigation - this is generally done as an emergency treatment. Site is sprinkled with water until the surface is moist, repeat as needed.
5. Barriers - solid board fences, snow fences, burlap fences, straw bales, and similar material can be used to control air currents and 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

Professional Engineer's seal for Joseph Necker, Jr., No. 10557, State of Maryland, dated 9/25/02.

APPROVED: HOWARD COUNTY DEPT. OF PUBLIC WORKS. SIGNED: [Signature] DATE: 11-25-02

APPROVED: HOWARD COUNTY DEPT. OF PLANNING AND ZONING. SIGNED: [Signature] DATE: 12/6/02

APPROVED: DEVELOPMENT ENGINEERING DIVISION. SIGNED: [Signature] DATE: 12/2/02

EMERSON (Formerly the Key Property) Section 3, Area 1 Parcels A - I. OWNER / DEVELOPER: THE HOWARD RESEARCH & DEVELOPMENT CORPORATION

DMW Dan McCune-Walker, Inc. 300 East Pennsylvania Avenue Potosi, Maryland 21286. A Team of Land Planners, Landscape Architects, Engineers, Surveyors & Environmental Professionals.

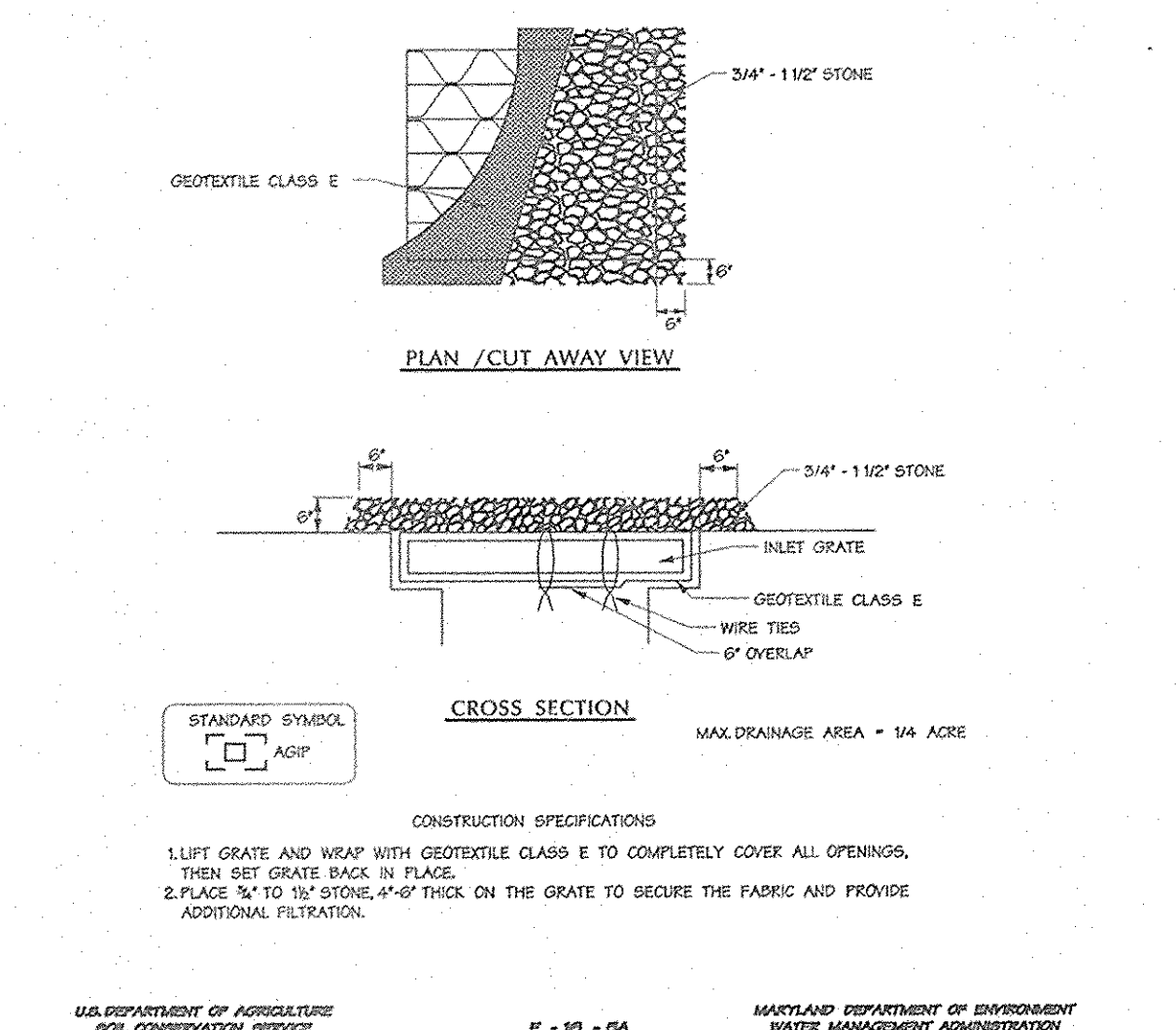
Table with columns: TITLE, Des By, Dwn By, Chk By, Scale, Date, Approved, Proj. No., Sheet No. Includes title 'FINAL PLAN SEDIMENT & EROSION CONTROL DETAILS & SPECIFICATIONS' and sheet number '12 OF 31'.

- A MINIMUM OF 48 HOURS NOTICE MUST BE GIVEN TO THE HOWARD COUNTY DEPARTMENT OF INSPECTIONS AND PERMITS, EROSION CONTROL DIVISION PRIOR TO THE START OF ANY CONSTRUCTION (S3-1059).
- ALL VEGETATION 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 THEREOF.
- FOLLOWING INITIAL SOIL DISTURBANCE OR RE-DISTURBANCE, PERMANENT OR TEMPORARY STABILIZATION SHALL BE CONSIDERED WORK:
 - SEVEN CALENDAR DAYS FOR ALL PERIMETER SEDIMENT CONTROL STRUCTURES, DRAINS, PERIMETER SLOTTES AND ALL SLOTTES DEEPER THAN 36".
 - FOURTEEN DAYS FOR ALL OTHER DISTURBED OR GRADED AREAS ON THE PROJECT SITE.
- ALL SEDIMENT TRAPPING DEVICES MUST BE FENCED AND WARNING SIGNS POSTED AROUND THESE PERIMETERS IN ACCORDANCE WITH VOL. 1, CHAPTER 15 OF THE "HOWARD COUNTY DESIGN MANUAL", STORM DRAINAGE.
- ALL DISTURBED AREAS MUST BE STABILIZED WITHIN THE TIME PERIOD SPECIFIED ABOVE IN ACCORDANCE WITH THE "2004 MARYLAND STANDARDS AND SPECIFICATIONS FOR SOIL EROSION AND SEDIMENT CONTROL" FOR PERMANENT SEEDINGS (S3-51), SODS (S3-52), TEMPORARY SEEDINGS (S3-53) AND MULCHING (S3-54). TEMPORARY STABILIZATION WITH MULCH ALONE CAN ONLY BE DONE WHEN RECOMMENDED SEEDING DATES DO NOT ALLOW FOR PROPER GERMINATION AND ESTABLISHMENT OF GRASSES.
- ALL SEDIMENT CONTROL STRUCTURES ARE TO REMAIN IN PLACE AND ARE TO BE MAINTAINED IN OPERATIVE CONDITION UNTIL PERMISSION FOR THEIR REMOVAL HAS BEEN OBTAINED FROM THE HOWARD COUNTY SEDIMENT CONTROL INSPECTOR.
- SOIL ANALYSIS:

TOTAL AREA ON SITE	+ 64.9 ACRES
AREA DISTURBED	+ 30 ACRES
AREA TO BE ROOFED OR PAVED	+ 3 ACRES
AREA TO BE VEGETATIVELY STABILIZED	+ 27 ACRES
TOTAL CUT	+ 140,000 CUBIC YARDS
TOTAL FILL	+ 30,000 CUBIC YARDS
- ANY SEDIMENT CONTROL PRACTICE WHICH IS DISTURBED BY GRADING ACTIVITY FOR PLACEMENT OF UTILITIES MUST BE REPAIRED ON THE SAME DAY OF DISTURBANCE.
- ADDITIONAL SEDIMENT CONTROL MEASURES MUST BE PROVIDED, IF DEMONSTRATED BY THE HOWARD COUNTY SEDIMENT CONTROL INSPECTOR.
- ON ALL SITES WITH DISTURBED AREAS IN SECTIONS OF 2 ACRES, APPROVAL OF THE INSPECTION AGENCY SHALL BE REGISTERED UPON COMPLETION OF INSTALLATION OF PERIMETER EROSION AND SEDIMENT CONTROL, BUT BEFORE PROCEEDING WITH ANY OTHER EARTH DISTURBANCE OR GRADING. OTHER BUILDING OR GRADING INSPECTION APPROVALS MAY NOT BE ASSIGNED UNTIL THIS INITIAL APPROVAL BY THE INSPECTION AGENCY IS MADE.
- TRENCHES FOR THE CONSTRUCTION OF UTILITIES IS LIMITED TO THREE PIPE LENGTHS OR THAT WHICH SHALL BE EXCAVATED AND STABILIZED WITHIN ONE WORKING DAY, WHICHEVER IS SHORTER.
- THERE WILL BE NO BORROW AREA NECESSARY FOR THE SITE, SHOULD A BORROW BECOME NECESSARY, CONTRACTOR SHALL SELECT A SITE APPROVED BY THE HOWARD SOCS.

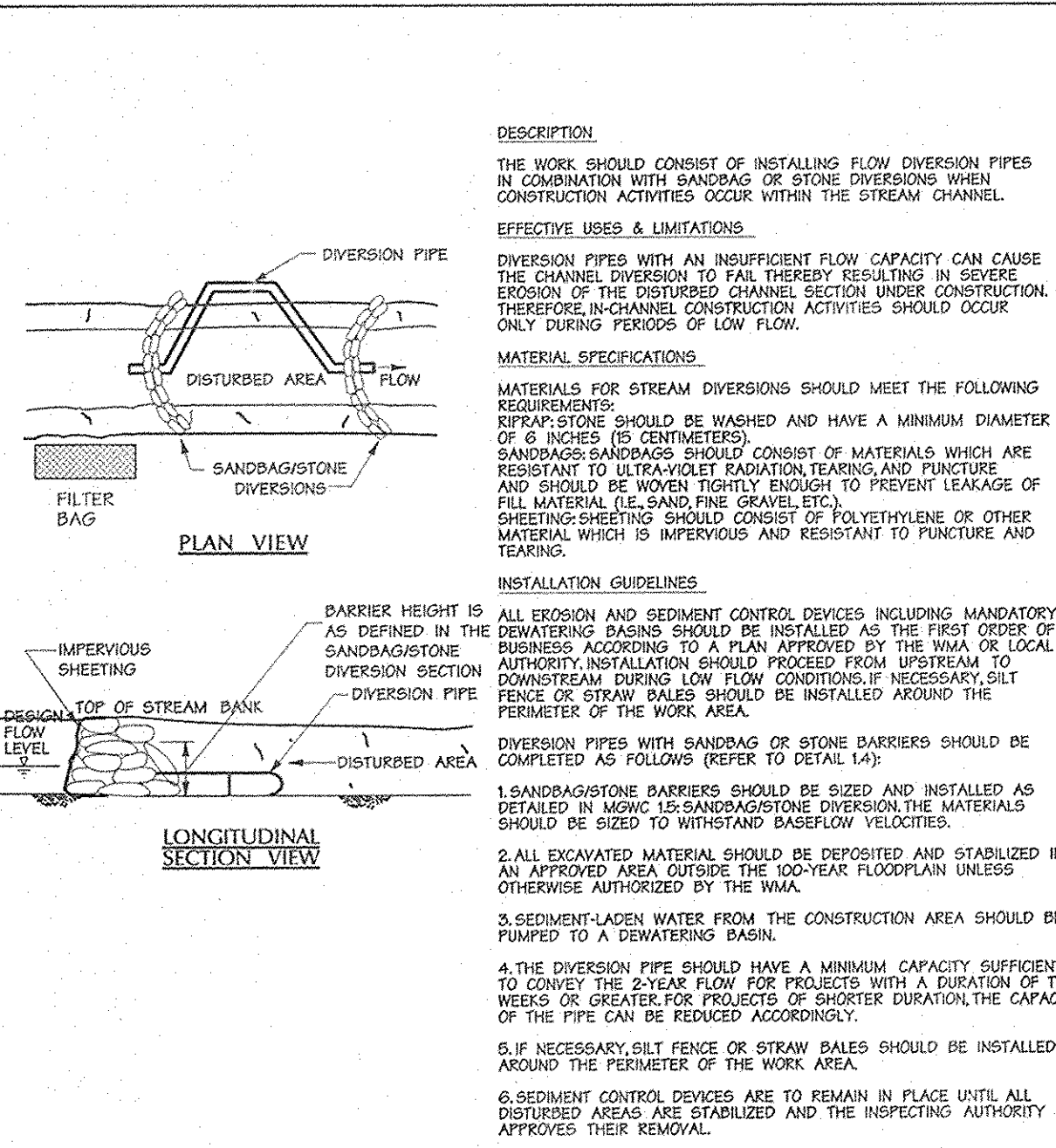
- "Conditions and Management Practices for Working in Nontidal Wetlands and Buffers"
- Remove excavated material, construction material or debris to an upland disposal area outside of any waterway, floodplain, nontidal wetland, or buffer;
 - If backfill is obtained, use clean material free of waste metal products, unsightly debris, toxic material, or any other deleterious substance.
 - Place materials in a location and manner which does not adversely impact surface or subsurface water flow into or out of the nontidal wetland;
 - Maintain the hydrologic regime of nontidal wetlands outside the limits of disturbance.
 - 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;
 - To protect important aquatic species, in-stream work is prohibited as determined by the classification of the stream as follows:
 - Use 1 Waters. In-stream work may not be conducted during the period March 1 - June 15 inclusive, during any year.
 - 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.

Sediment Control General Notes Not To Scale



Sequence of Operations	Days
1. Notify Maryland Department of Environment Nontidal Wetlands and Waterways Inspections and Compliance Section at 410-631-3510 at least five-days in advance of beginning any work in streams, 100-year floodplain, nontidal wetlands and wetlands buffers."	5
2. Notify HCD Department of Inspections 410-313-1855 at least 48 hours prior to beginning work.	2
3. Install culvert crossings. See Sequence of Operations For Culvert Crossings, sheet 14 of 31. Phase I. Fully & permanently stabilize areas around endwalls before proceeding to Phase II.	20
4. Clear and grub for sediment & erosion control measures or devices only with Sediment Control Inspector's permission. Install Sediment Basins. Do not build forebay embankments until basins are converted to GWM ponds.	10
5. Install all sediment & erosion control measures and devices, silt fence, super silt fence, earth dikes, etc.	20
6. Notify HCD Department of Inspection, upon completion of said installation.	1
7. With approval of the Sediment Control Inspector clear and grub remainder of site.	20
8. Mass grade and stabilize remainder of site. Apply dust control measures per "Dust Control Specifications" Sheet 12 of 31. Phase II.	10
9. Install water, sewer, storm drains and curb and gutter for site.	60
10. Pave site.	30
11. Upon stabilization of site with established vegetation and with permission of the Sediment Control Inspector, remove sediment control measures and stabilize those areas disturbed by the process. Convert basins to GWM ponds, including building of forebay embankments.	5

At Grade Inlet Protection Not To Scale



Sequence of Construction

* Refer to Conditions and Management Practices for working in Nontidal Wetlands and Buffers

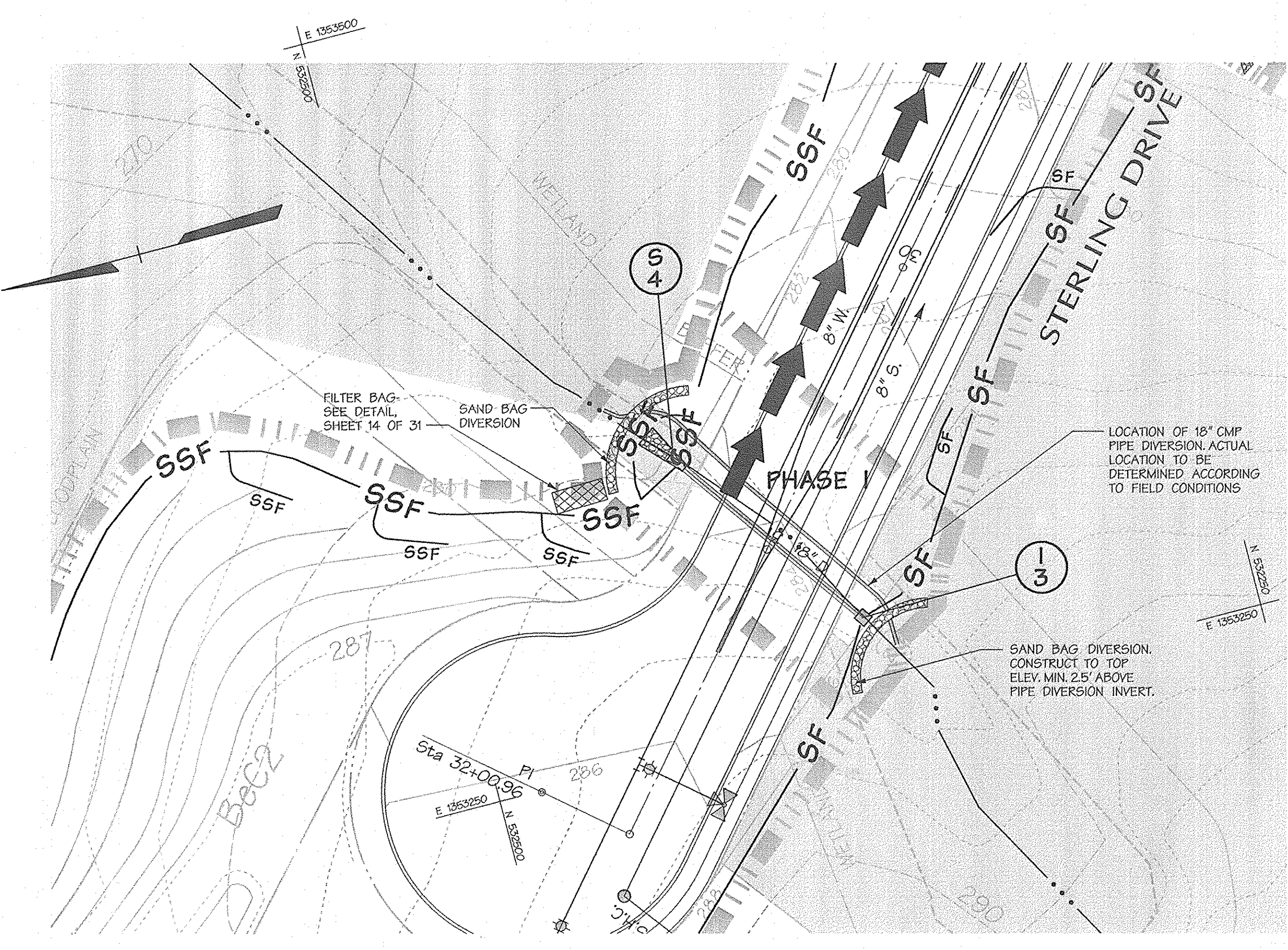
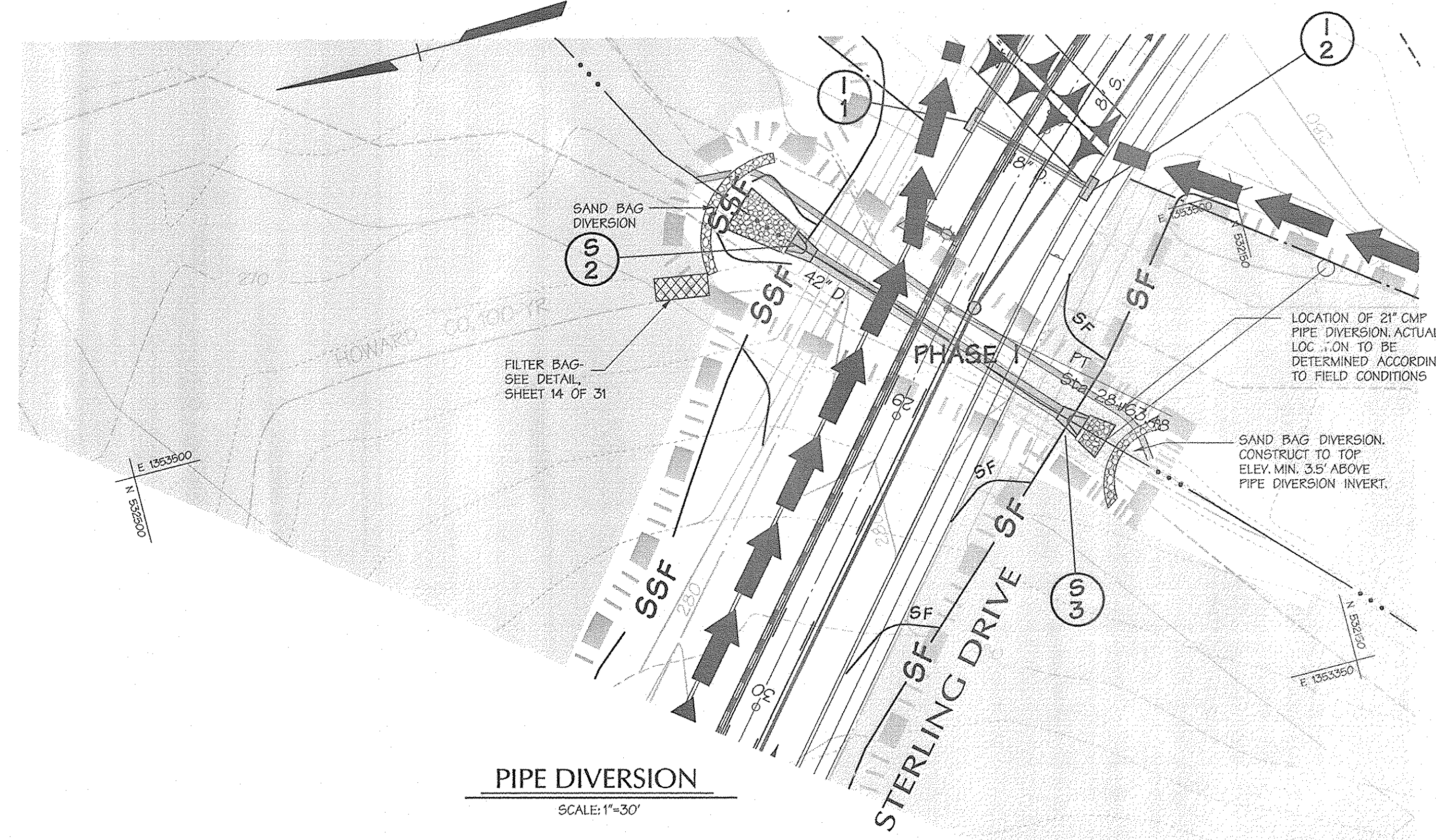
DESCRIPTION:
THE WORK SHOULD CONSIST OF INSTALLING FLOW DIVERSION PIPES IN CONJUNCTION WITH SANDBAG OR STONE DIVERSIONS WHEN CONSTRUCTION ACTIVITIES OCCUR WITHIN THE STREAM CHANNEL.

EFFECTIVE USES & LIMITATIONS:
DIVERSION PIPES WITH AN INSUFFICIENT FLOW CAPACITY CAN CAUSE THE CHANNEL DIVERSION TO FAIL THEREBY RESULTING IN SEVERE EROSION OF THE DISTURBED CHANNEL SECTION UNDER CONSTRUCTION. THEREFORE, IN-CHANNEL CONSTRUCTION ACTIVITIES SHOULD OCCUR ONLY DURING PERIODS OF LOW FLOW.

MATERIAL SPECIFICATIONS:
MATERIALS FOR STREAM DIVERSIONS SHOULD MEET THE FOLLOWING REQUIREMENTS:
KIPRAIP STONE SHOULD BE WASHED AND HAVE A MINIMUM DIAMETER OF 6 INCHES (6 CENTIMETERS).
SANDBAGS/SANDWAGS SHOULD CONSIST OF MATERIALS WHICH ARE RESISTANT TO ULTRA-VIOLET RADIATION, TEARING AND PUNCTURE, AND SHOULD BE WOVEN TIGHTLY ENOUGH TO PREVENT LEAKAGE OF FULL MATERIAL (IE. SAND, FINE GRAVEL, ETC).
SHEETING/SHEETING SHOULD CONSIST OF POLYETHYLENE OR OTHER MATERIAL WHICH IS IMPERVIOUS AND RESISTANT TO PUNCTURE AND TEARING.

INSTALLATION GUIDELINES:
ALL EROSION AND SEDIMENT CONTROL DEVICES INCLUDING MANDATORY DRAINAGE DRAINS SHOULD BE INSTALLED AS THE FIRST ORDER OF BUSINESS ACCORDING TO A PLAN APPROVED BY THE WMA OR LOCAL AUTHORITY. INSTALLATION SHOULD PROCEED FROM UPSTREAM TO DOWNSTREAM DURING LOW FLOW CONDITIONS. IF NECESSARY, SILT FENCE OR STRAW BALES SHOULD BE INSTALLED AROUND THE PERIMETER OF THE WORK AREA.
DIVERSION PIPES WITH SANDBAG OR STONE BARRIERS SHOULD BE COMPLETED AS FOLLOWS (REFER TO DETAIL 1A):
1. SANDBAG/STONE BARRIERS SHOULD BE SIZED AND INSTALLED AS DETAILED IN MOVING SAND/STONE DIVERSION. THE MATERIALS SHOULD BE SIZED TO WITHSTAND BASEFLOW VELOCITIES.
2. ALL EXCAVATED MATERIAL SHOULD BE DEPOSITED AND STABILIZED IN AN APPROVED AREA OUTSIDE THE 100-YEAR FLOODPLAIN UNLESS OTHERWISE AUTHORIZED BY THE WMA.
3. SEDIMENT-LADEN WATER FROM THE CONSTRUCTION AREA SHOULD BE PUMPED TO A DRAINAGE BASIN.
4. THE DIVERSION PIPE SHOULD HAVE A MINIMUM CAPACITY SUFFICIENT TO CONVEY THE 2-YEAR FLOW FOR PROJECTS WITH A DURATION OF TWO WEEKS OR GREATER. FOR PROJECTS OF SHORTER DURATION THE CAPACITY OF THE PIPE CAN BE REDUCED ACCORDINGLY.
5. IF NECESSARY, SILT FENCE OR STRAW BALES SHOULD BE INSTALLED AROUND THE PERIMETER OF THE WORK AREA.
6. SEDIMENT CONTROL DEVICES ARE TO REMAIN IN PLACE UNTIL ALL DISTURBED AREAS ARE STABILIZED AND THE INSPECTING AUTHORITY APPROVES THEIR REMOVAL.

Diversion Pipe WATER MANAGEMENT ADMINISTRATION DETAIL 14 OF 31



APPROVED: HOWARD COUNTY DEPT. OF PUBLIC WORKS
Andrew M. Danahy 4-25-02
CHIEF, BUREAU OF HIGHWAYS JIS DATE

APPROVED: HOWARD COUNTY DEPT. OF PLANNING AND ZONING
Cindy Hamrick 12/6/02
CHIEF, DIVISION OF LAND DEVELOPMENT JHB DATE

Mike Damann 12/2/02
CHIEF, DEVELOPMENT ENGINEERING DIVISION MK DATE

Date No. Revision Description

EMERSON
(Formerly the Key Property)
Section 3, Area 1
Parcels A - I

OWNER / DEVELOPER:
THE HOWARD RESEARCH & DEVELOPMENT CORPORATION
10275 LITTLE PATUXENT PARKWAY
COLUMBIA, MARYLAND 21044

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

A Team of Land Plan. vrs. Landscape Architects, Engineers, Surveyors & Environmental Professionals

DEVELOPER'S CERTIFICATION:
"I 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 DO AUTHORIZE PERIODIC ON-SITE INSPECTION BY THE HOWARD SOIL CONSERVATION DISTRICT.

Joseph Necker Jr. 9/25/02
SIGNATURE OF DEVELOPER
PRINT NAME BELOW SIGNATURE

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."

John Kencochia 9/25/02
SIGNATURE OF ENGINEER
PRINT NAME BELOW SIGNATURE

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

Jim Meyer 10/8/02
U.S. NATURAL RESOURCE CONSERVATION SERVICE DATE

Cliff Schlegel 10/8/02
HOWARD SOCS DATE

9/25/02
Date

Professional Engr. No. 10551

TITLE
**FINAL PLAN
SEDIMENT & EROSION CONTROL
DETAILS**

Des By Scale AS SHOWN Proj. No. 0101.C
Dwn by ADL Date 9/25/02
Chk by Approved 13 OF 31

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

- This practice is limited to areas having 2:1 or flatter slopes where:
 - The texture of the exposed subsoil/parent material is not adequate to produce vegetative growth.
 - 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.
 - The original soil to be vegetated contains material toxic to plant growth.
 - The soil is so acidic that treatment with limestone is not feasible.
- For the purpose of these Standards and Specifications, areas having slopes steeper than 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

1. Topsoil salvages 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 Experiment Station.

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

- Topsoil shall be a loam, sandy loam, clay loam, silt loam, sandy clay loam, loamy sand. Other soils may be used if recommended by an agronomist or soil scientist and approved by the appropriate approval authority. Regardless, topsoil shall not be a mixture of contrasting textured subsoils and shall contain less than 5% by volume of cinders, stones, slag, coarse fragments, gravel, sticks, roots, trash, or other materials larger than 1-1/2" in diameter.
- Topsoil must be free of plants or plant parts such as bermuda grass, quackgrass, Johnsongrass, nutgrass, poison ivy, thistle, or others as specified.

3. Where the subsoil is either highly acidic or composed of heavy clay, 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.

4. For sites having disturbed areas under 5 acres:

- On soil meeting Topsoil specifications, obtain tests results dictating fertilizer and lime amendments required to bring the soil into compliance with the following:
 - 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.
 - Organic content of topsoil shall be not less than 1% percent by weight.
 - Topsoil having soluble salt content greater than 500 parts per million shall not be used.
 - No seed 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 phytotoxic 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.

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

VI. Topsoil Application

- 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.
- Grades on the areas to be topsoiled, which have been previously established, shall be maintained, about 4" - 8" higher in elevation.
- Topsoil shall be uniformly distributed in a 4" - 8" layer and lightly compacted to a minimum thickness of 4". Spreading shall be performed in such a manner that sodding or seeding can proceed with a minimum of additional soil preparation and tillage. Any irregularities in the surface resulting from topsoiling or other operations shall be corrected in order to prevent the formation of depressions or water pockets.
- 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.

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:

- 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:
 - 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.
 - 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.
 - Composted sludge shall be applied at a rate of 1 ton/1,000 square feet.
- Composted sludge shall be amended with a potassium fertilizer applied at a rate of 4 lb/1,000 square feet, and 1/5 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.

CONSTRUCTION OF PIPE DIVERSION

SEQUENCE NO. OF DAYS

- CLEAR FOR AND INSTALL SEDIMENT CONTROL DEVICES AND MEASURES, SAND BAG DIVERSION, AND RIP-RAP OUTFALL PROTECTION AND EROSION CONTROL MATTING AT DOWN STREAM END. MAINTAIN EXISTING STREAM FLOW AT ALL TIMES. 1
 - INSTALL ONLY THAT PORTION OF SAND BAG DIVERSION EAST OF STREAM.
- CLEAR & GRUB FOR AND BEGIN LAYING PIPE. 1
 - INSTALL ONLY THAT PORTION OF PIPE THAT CAN BE CONSTRUCTED, BACKFILLED AND STABILIZED WITHIN ONE WORKING DAY.
 - PLACE SILT FENCE ON LOW SIDE OF WORK AREA DURING PIPE EXCAVATION, IF REQUIRED.
 - WITHIN ONE DAY CONSTRUCTION OF UPPER INVERT AND WITH THE SEDIMENT CONTROL INSPECTOR APPROVAL, CLEAR FOR AND INSTALL SAND BAG DIVERSION WITH RIP-RAP INFLOW PROTECTION AT UPPER END.
 - MAINTAIN EXISTING STREAM FLOW AT ALL TIMES. WITH SEDIMENT CONTROL INSPECTOR APPROVAL, INSTALL LAST SECTION OF PIPE MAKE CONNECTION FOR REROUTING OF STREAM. 2
- CLEAR & GRUB FOR AND INSTALL REMAINING SAND BAG DIVERSION TO DIVERT STREAM AT BOTH ENDS. 1
 - INSTALL UPSTREAM END FIRST, THEN DOWNSTREAM.
- CLEAR & GRUB REMAINING WORK AREA AND INSTALL CULVERT SYSTEM. 1
 - WITH SEDIMENT CONTROL INSPECTOR APPROVAL, CONSTRUCT ENDSECTIONS AND INSTALL STREAM BOTTOM PROTECTION.
 - WITH SEDIMENT CONTROL INSPECTOR APPROVAL, ADJUST SEDIMENT CONTROL DEVICES AND MEASURES AS PER PLAN (SHEET) FOR ROAD CONSTRUCTION (SEE MAIN SEQUENCE - SHEET 29) 1WK.
- UPON COMPLETION OF PIPE INSTALLATION AND WITH SEDIMENT CONTROL INSPECTOR APPROVAL, REMOVE SEDIMENT CONTROL DEVICES AND MEASURES. REMOVE SHALL TAKE PLACE UNDER SEQ. # 8 OF THE MAIN SEQUENCE OF CONSTRUCTION, THIS SHEET. 1

NOTE:

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

SECTION II - TEMPORARY SEEDING

VEGETATION - Annual grass or grain used to provide cover on disturbed areas for up to 12 months. For longer duration of vegetative cover, permanent seeding is required.

Seed Mixture (Hardiness Zone 6B)					Fertilizer Rate (10-10-10)	Lime Rate
No.	Species	Application Rate (Lb./Ac.)	Seeding Dates	Seeding Depths		
1	Annual Ryegrass	50	2/1 - 4/30 8/15 - 1/11	1/4" - 1/2"	600 Lbs./Ac. (15 Lbs./1000 SF)	2 Tons/Ac. (100 Lbs./1000 SF)
2	Weeping Lovegrass	4	5/1 - 8/14	1/4" - 1/2"		

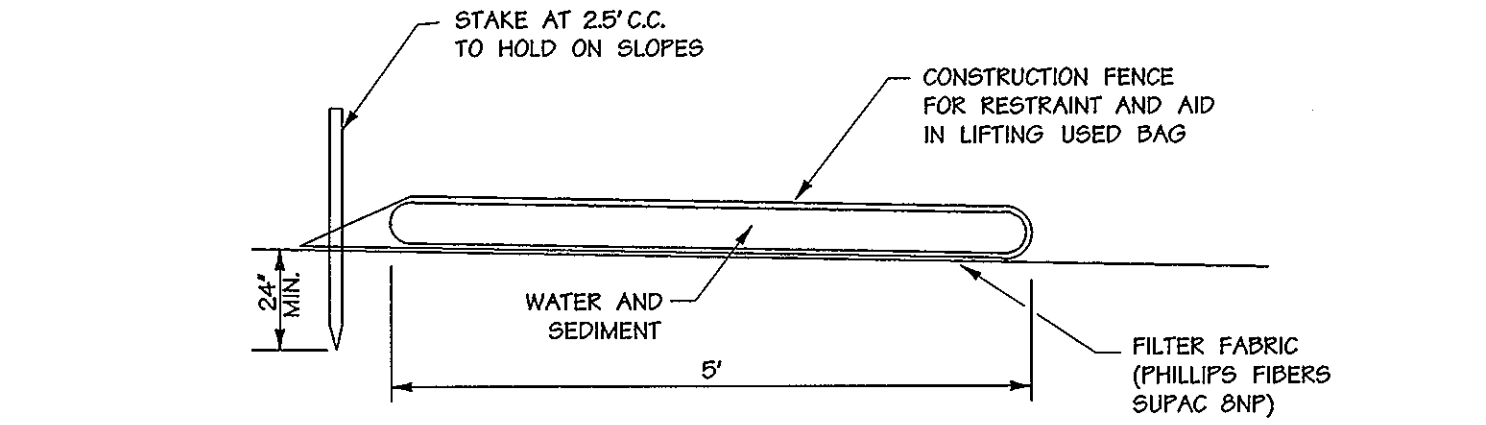
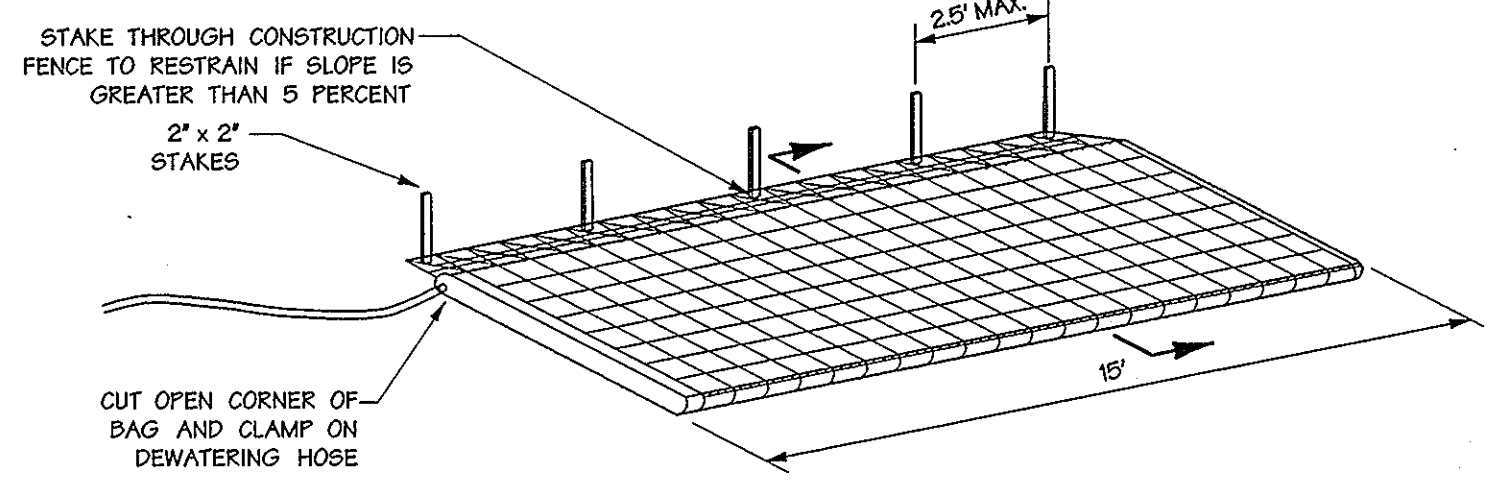
SECTION III - PERMANENT SEEDING

Seeding grass and legumes to establish ground cover for a minimum of one year on disturbed areas generally receiving low maintenance.

Seed Mixture No. 3 (Hardiness Zone 6B)					Fertilizer Rate (10-20-20)			Lime Rate
%	Species	Application Rate (Lb./Ac.)	Seeding Dates	Seeding Depths	N	P2O5	K2O	
85	Rabel II Tall Fescue	125			90 Lb./Ac. (2 Lb./1000 Sq.Ft.)	175 Lb./Ac. (4 Lb./1000 Sq.Ft.)	175 Lb./Ac. (4 Lb./1000 Sq.Ft.)	2 Tons/Ac. (100 Lb./1000 Sq.Ft.)
10	Perennial Ryegrass	15	3/1 - 5/15 8/15 - 11/15	1/4" - 1/2"				
5	Kentucky Bluegrass	10						

* For 5-15 through 8-14 add two (2) pounds of Weeping Lovegrass per acre or ten (10) pounds of Millet per acre to seed mixture (i.e. Mix #3 shown).

Vegetative Stabilization U.S. DEPARTMENT OF AGRICULTURE SOIL CONSERVATION SERVICE MARYLAND DEPARTMENT OF ENVIRONMENT WATER MANAGEMENT ADMINISTRATION



- Filter bag shall be placed on a sloping or level, well graded vegetated site such that water will flow away from device and any work areas.
- Width and length shall be as shown in the table.
- The filter bag must be staked in place and secured to the pump discharge line.
- Filter bag shall not be used for discharge flows greater than 300 gpm.
- Device shall be removed and disposed of after bag is filled with sediment. Sediment from bag shall be spread in an upland area.

Filter Bag

Not To Scale

DESCRIPTION

THE WORK SHOULD CONSIST OF INSTALLING SANDBAG OR STONE FLOW DIVERSIONS FOR THE PURPOSE OF EROSION CONTROL WHEN CONSTRUCTION ACTIVITIES OCCUR WITHIN THE STREAM CHANNEL.

EFFECTIVE USES & LIMITATIONS

DIVERSIONS ARE USED TO ISOLATE WORK AREAS FROM FLOW DURING THE CONSTRUCTION OF IN-STREAM PROJECTS. DIVERSIONS WHICH HAVE AN INSUFFICIENT FLOW CAPACITY CAN FAIL AND SEVERELY ERODE THE DISTURBED CHANNEL SECTION UNDER CONSTRUCTION. THEREFORE, IN-CHANNEL CONSTRUCTION ACTIVITIES SHOULD OCCUR ONLY DURING PERIODS OF LOW RAINFALL. THIS TEMPORARY MEASURE MAY NOT BE PRACTICAL IN LARGE CHANNELS.

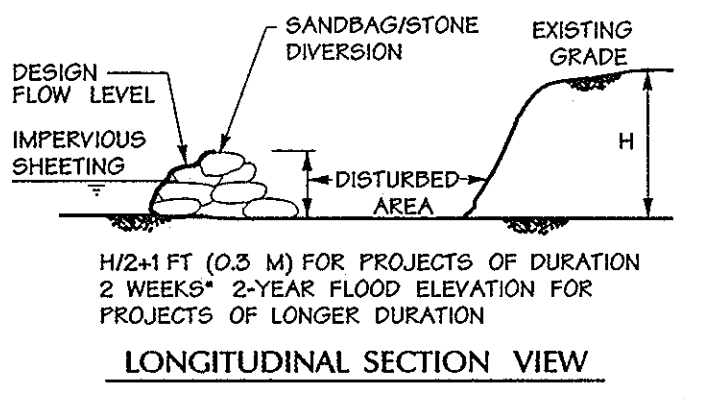
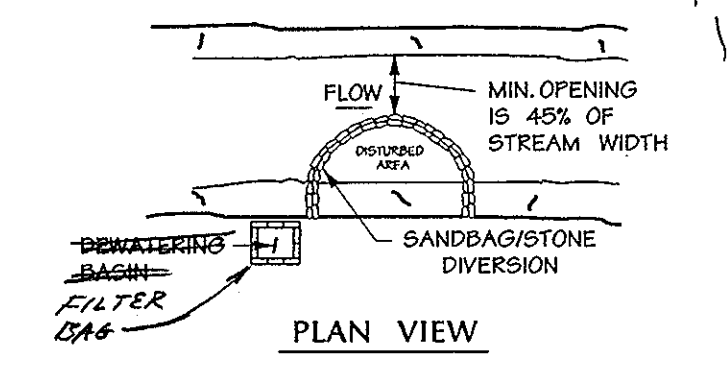
MATERIAL SPECIFICATIONS

MATERIALS FOR SANDBAG AND STONE STREAM DIVERSIONS SHOULD MEET THE FOLLOWING REQUIREMENTS:
RIP-RAP/RIP-RAP SHOULD BE WASHED AND HAVE A MINIMUM DIAMETER OF 6 INCHES (0.15 METERS).
SANDBAGS: SANDBAGS SHOULD CONSIST OF MATERIALS WHICH ARE RESISTANT TO ULTRAVIOLET RADIATION, TEARING AND PUNCTURE AND SHOULD BE WOVEN TIGHTLY ENOUGH TO PREVENT LEAKAGE OF THE FILL MATERIAL (I.E. SAND, FINE GRAVEL, ETC.).
SHEETING: SHEETING SHOULD CONSIST OF POLYETHYLENE OR OTHER MATERIALS WHICH ARE IMPERVIOUS AND RESISTANT TO PUNCTURE AND TEARING.

INSTALLATION GUIDELINES

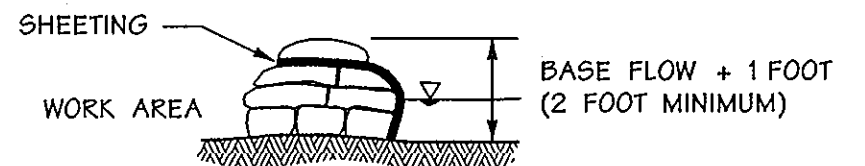
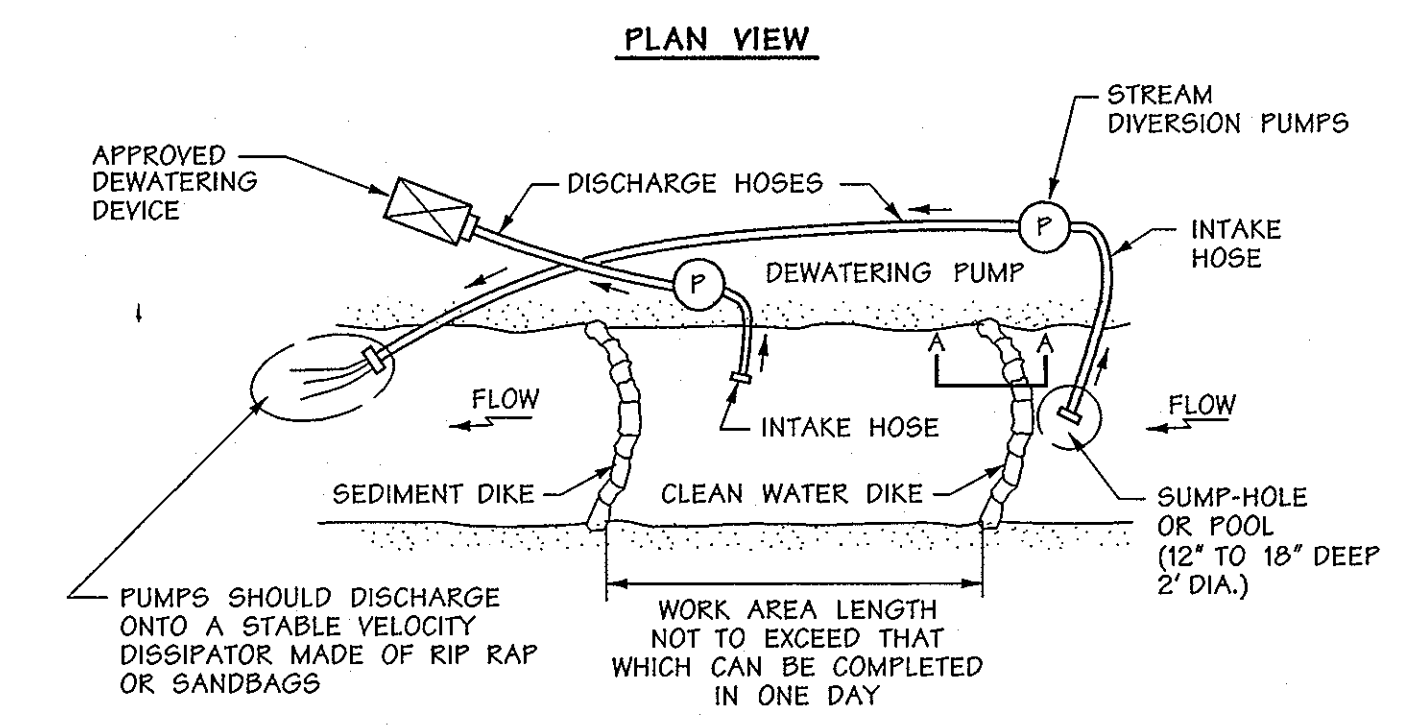
ALL EROSION AND SEDIMENT CONTROL DEVICES, INCLUDING DEWATERING BASINS, SHOULD BE IMPLEMENTED AS THE FIRST ORDER OF BUSINESS ACCORDING TO A PLAN APPROVED BY THE WMA OR LOCAL AUTHORITY. INSTALLATION SHOULD PROCEED FROM UPSTREAM TO DOWNSTREAM DURING PERIODS OF LOW FLOW. IF NECESSARY, SILT FENCE OR STRAW BALES SHOULD BE INSTALLED AROUND THE PERIMETER OF THE WORK AREA. SANDBAG/STONE DIVERSIONS CAN BE USED INDEPENDENTLY OR AS COMPONENTS OF OTHER STREAM DIVERSION TECHNIQUES. INSTALLATION OF THIS MEASURE SHOULD PROCEED AS FOLLOWS (REFER TO DETAIL 15):

- THE DIVERSION STRUCTURE SHOULD BE INSTALLED FROM UPSTREAM TO DOWNSTREAM.
- THE HEIGHT OF THE SANDBAG/STONE DIVERSION SHOULD BE A FUNCTION OF THE DURATION OF THE PROJECT IN THE STREAM REACH. FOR PROJECTS WITH A DURATION LESS THAN 2 WEEKS, THE HEIGHT OF THE DIVERSION SHOULD BE ONE HALF THE STREAM BANK HEIGHT, MEASURED FROM THE CHANNEL BED, PLUS 1 FOOT (0.3 METERS) OR BANK FULL HEIGHT, WHICHEVER IS GREATER. FOR PROJECTS OF LONGER DURATION, THE TOP OF THE SANDBAG OR STONE DIVERSION SHOULD CORRESPOND TO BANK FULL HEIGHT. FOR DIVERSION STRUCTURES UTILIZING SANDBAGS, THE STREAM BED SHOULD BE HAND PREPARED PRIOR TO PLACEMENT OF THE BASE LAYER OF SANDBAGS IN ORDER TO ENSURE A WATER TIGHT FIT. ADDITIONALLY, IT MAY BE NECESSARY TO PREPARE THE BANK IN A SIMILAR FASHION.
- ALL EXCAVATED MATERIAL SHOULD BE DEPOSITED AND STABILIZED IN AN APPROVED AREA OUTSIDE THE 100-YEAR FLOODPLAIN UNLESS OTHERWISE AUTHORIZED BY THE WMA.
- SEDIMENT-LADEN WATER FROM THE CONSTRUCTION AREA SHOULD BE PUMPED TO A FILTER BAG TEMPORARY MEASURE FOR DEWATERING IN-CHANNEL CONSTRUCTION SITES.
- SHEETING ON DIVERSION SHOULD BE POSITIONED SUCH THAT THE UPSTREAM PORTION COVERS THE DOWNSTREAM PORTION WITH AT LEAST A 10-INCH (0.45 METERS) OVERLAP.
- SANDBAG OR STONE DIVERSIONS SHOULD NOT OBSTRUCT MORE THAN 45% OF THE STREAM WIDTH ADDITIONALLY, BANK STABILIZATION DEVICES SHOULD BE PLACED IN THE CONSTRUCTED SECTION IF ACCELERATED EROSION AND BANK SCOUR ARE OBSERVED DURING THE CONSTRUCTION TIME OR IF PROJECT TIME IS EXPECTED TO LAST MORE THAN 2 WEEKS.
- PRIOR TO REMOVAL OF THESE TEMPORARY STRUCTURES, ANY ACCUMULATED SEDIMENT SHOULD BE REMOVED, DEPOSITED AND STABILIZED IN AN APPROVED AREA OUTSIDE THE 100-YEAR FLOODPLAIN UNLESS AUTHORIZED BY THE WMA.
- SEDIMENT CONTROL DEVICES ARE TO REMAIN IN PLACE UNTIL ALL DISTURBED AREAS ARE STABILIZED IN ACCORDANCE WITH AN APPROVED SEDIMENT AND EROSION CONTROL PLAN AND THE INSPECTING AUTHORITY APPROVES THEIR REMOVAL.



MARYLAND DEPARTMENT OF THE ENVIRONMENT WATER MANAGEMENT ADMINISTRATION

Sandbag / Stone Diversion



SECTION A-A

REVISED NOVEMBER 2000 PAGE 12 - 3

Pump-Around Practice

APPROVED: HOWARD COUNTY DEPT. OF PUBLIC WORKS
Richard M. Dangle 11/25/02
 CHIEF, BUREAU OF HIGHWAYS HS DATE

APPROVED: HOWARD COUNTY DEPT. OF PLANNING AND ZONING
Cathy Harvath 12/1/02
 CHIEF, DIVISION OF LAND DEVELOPMENT HS DATE

Michael J. ... 12/2/02
 CHIEF, DEVELOPMENT ENGINEERING DIVISION MK DATE

Date	No.	Revision Description

EMERSON
 (Formerly the Key Property)
 Section 3, Area 1
 Parcels A - I

OWNER / DEVELOPER:
 THE HOWARD RESEARCH & DEVELOPMENT CORPORATION
 10275 LITTLE PATUXENT PARKWAY
 COLUMBIA, MARYLAND 21044

DMW
 Dan 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

MDE PERMIT AND TRACKING No. 01-NT-0222/200164079

DEVELOPER'S CERTIFICATION:
 "I/WE CERTIFY THAT ALL DEVELOPMENT AND CONSTRUCTION WILL BE DONE ACCORDING TO THIS PLAN AND THAT ANY RESPONSIBLE PERSONNEL INVOLVED IN THE CONSTRUCTION PROJECT WILL HAVE A CERTIFICATE OF ATTENDANCE AT A DEPARTMENT OF THE ENVIRONMENT APPROVED TRAINING PROGRAM FOR THE CONTROL OF SEDIMENT AND EROSION BEFORE BEGINNING THE PROJECT. I/WE AUTHORIZE PERIODIC ON-SITE INSPECTION BY THE HOWARD SOIL CONSERVATION DISTRICT."
Joseph J. Necker Jr. 9/25/02
 SIGNATURE OF DEVELOPER PRINT NAME BELOW SIGNATURE DATE

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."
Solu Panocchia 9/25/02
 SIGNATURE OF ENGINEER PRINT NAME BELOW SIGNATURE DATE

REVIEWED FOR HOWARD S.C.D. AND MEETS TECHNICAL REQUIREMENTS
John ... 10/6/02
 U.S. NATURAL RESOURCE CONSERVATION SERVICE DATE

THIS DEVELOPMENT PLAN IS APPROVED FOR SOIL EROSION AND SEDIMENT CONTROL BY THE HOWARD SOIL CONSERVATION DISTRICT.
John ... 10/6/02
 HOWARD S.C.D. DATE

Professional Engr. No. 10551
 9/25/02
 DATE

TITLE: **FINAL PLAN SEDIMENT & EROSION CONTROL DETAILS**

Des By: Scale: 1" = 50' Proj. No.: 01011.C
 Dim By: ADL Date: 9/25/02
 Chk By: Approved: 14 OF 31

THIS POND WILL HAVE A DAM STRUCTURE
HAZARD CLASSIFICATION OF 'A'

HAMMOND BRANCH IS IN THE MIDDLE PATUXENT RIVER
WATERSHED AND HAS A STREAM USAGE CLASSIFICATION
OF 'B-P' (WATER CONTACT RECREATION, AQUATIC LIFE
PROTECTION AND PUBLIC WATER SUPPLY).

NOTE:
1.A. PERMANENT RECHARGE SWALE WILL BE INSTALLED ALONG THE
NORTH PROPERTY LINE OF PARCEL C WHICH DRAINS TO SWM POND 1.
THE SWALE WILL TREAT THE RECHARGE REQUIREMENT FOR THE ROADS
ON EMERSON SECTIONS, THE REMAINING RECHARGE REQUIREMENT
FOR THE ROADS ON THE REVITZ SITE NOT YET TREATED, AND A
PORTION OF THE ULTIMATE DEVELOPMENT ON PARCEL C. THE SWALE
WILL TREAT RUNOFF FROM 2 ACRES OF PARCEL C. RUNOFF WILL BE
CONVEYED TO THE SWALE VIA STORM DRAINS CONSTRUCTED IN THE
ULTIMATE DEVELOPMENT. LANGUAGE WILL BE INCLUDED IN THE PLAN
FOR PARCEL C INDICATING THE AMOUNT OF ULTIMATE DRAINAGE AREA
THAT WILL BE REQUIRED TO DISCHARGE TO THE SWALE.

HOWARD RESEARCH
AND DEVELOPMENT CORPORATION
LIBER 2245 FOLIO 254
LIBER B289 FOLIO 330
PARCEL 837
ZONING: PEC-MAP-3

Legend

- WETLAND
- WETLAND BUFFER
- WETLAND SYMBOL
- HEAD OF STREAM
- STREAM
- STREAM BUFFER
- 100 YEAR FLOOD PLAN
- SLOPES >25%
- SLOPES 15%-25%
- PC / PT OF ARC
- CENTERLINE OF ROAD
- RADIUS OF ARC
- PROP. DRAINAGE DIVIDE (ACTUAL DRAIN AREA TO FACILITY)
- PROP. DRAINAGE DIVIDE (SITE AREA REPRESENTED BY SWM POND)
- PROP. TC PATH
- PROPERTY BOUNDARY
- LOT LINES AND SWM EASEMENTS
- NATURAL AREA CONSERVATION CREDIT
- SOIL TYPE BOUNDARY
- NON-WOODY VEGETATION ZONE

SITE AREA REPRESENTED BY SWM II
(INCLUDES ACTUAL DRAIN AREA)
DRAINAGE AREA = 18.78 AC.
RCN = 80
TC = 0.13 HR.

ACTUAL DRAINAGE AREA TO SWM II
DRAINAGE AREA = 10.85 AC.
RCN = 94
TC = 0.13 HR.

SITE AREA REPRESENTED BY SWM I
(INCLUDES ACTUAL DRAIN AREA)
DRAINAGE AREA = 28.82 AC.
RCN = 75
TC = 0.13 HR.

ACTUAL DRAINAGE AREA TO SWM I
DRAINAGE AREA = 11.59 AC.
RCN = 83
TC = 0.13 HR.

RECHARGE SWALE
SEE NOTE 1 ABOVE.

APPROVED: HOWARD COUNTY DEPT. OF PUBLIC WORKS
Andrew M. Daniels 11/25/02
CHIEF, BUREAU OF HIGHWAYS MS DATE

APPROVED: HOWARD COUNTY DEPT. OF PLANNING AND ZONING
Chris Hamble 12/6/02
CHIEF, DIVISION OF LAND DEVELOPMENT MS DATE

Mr. [Signature] 12/2/02
CHIEF, DEVELOPMENT ENGINEERING DIVISION MK DATE

Date	No.	Revision Description
EMERSON (Formerly the Key Property) Section 3, Area 1 Parcels A - I		
OWNER / DEVELOPER: THE HOWARD RESEARCH & DEVELOPMENT CORPORATION 10275 LITTLE PATUXENT PARKWAY COLUMBIA, MARYLAND 21044		
DMW Darr McCune-Walker, Inc. 200 East Pennsylvania Avenue Towson, Maryland 21286 (410) 296-3333 Fax 296-4700		
A Team of Land Planners, Landscape Architects, Engineers, Surveyors & Environmental Professionals		
TITLE FINAL PLAN STORMWATER MANAGEMENT DRAINAGE AREA MAP		
Des By	MRT	Scale 1" = 100'
Dirn By	KMF	Date 9/25/02
Chk By	Approved	Proj. No. 01011.00
		15 OF 31

10/3/02
Date

[Signature]

Professional Engr. No. / 0551

POND I
DESIGN FLOW SUMMARY PROPOSED CONDITIONS *

Structure Type	RETENTION
Water Quality Type	WET POND
Structure Classification	'A'
Watershed Area to Facility (SWM)	0.0450 SQ. MI.

Level of Management Required	1-YR.
Level of Management Provided	1-YR.
Top Width Provided	12'
Maximum Height of Fill	10.5'
Freeboard Required	2.0'
Freeboard Provided	2.2'

Water Quality Vol. WQ ₁ Required (Ac-ft)	0.487
Water Quality Vol. WQ ₂ Provided (Ac-ft) *	0.525
Recharge Vol. R ₁ Required (Ac-ft)	See Pond II Table

Channel Protection Vol. C ₁ Required (Ac-ft)	1.146
Channel Protection Vol. C ₂ Provided (Ac-ft) *	1.169
WQ ₁ Water Surface Elev. - Normal Pool	280.0
C ₁ Water Surface Elev.	283.5
Riser Crest Elev.	283.5
100 Yr. Closed Water Surface Elev.	284.8
Pond Volume Below 100 Yr. Closed WSE (Ac-ft)	2.400

* WQ₂ IS PROVIDED IN THE WET PORTION OF THE POND AND BY USE OF THE NATURAL AREA CONSERVATION CREDIT. C₂ IS PROVIDED IN THE POND ABOVE THE WQ₁ STORAGE VOLUME.

POND II
DESIGN FLOW SUMMARY PROPOSED CONDITIONS *

Structure Type	RETENTION
Water Quality Type	WET POND
Structure Classification	'A'
Watershed Area to Facility (SWM)	0.0293 SQ. MI.

Level of Management Required	1-YR.
Level of Management Provided	1-YR.
Top Width Provided	12'
Maximum Height of Fill	7.0'
Freeboard Required	1.0'
Freeboard Provided	1.8'

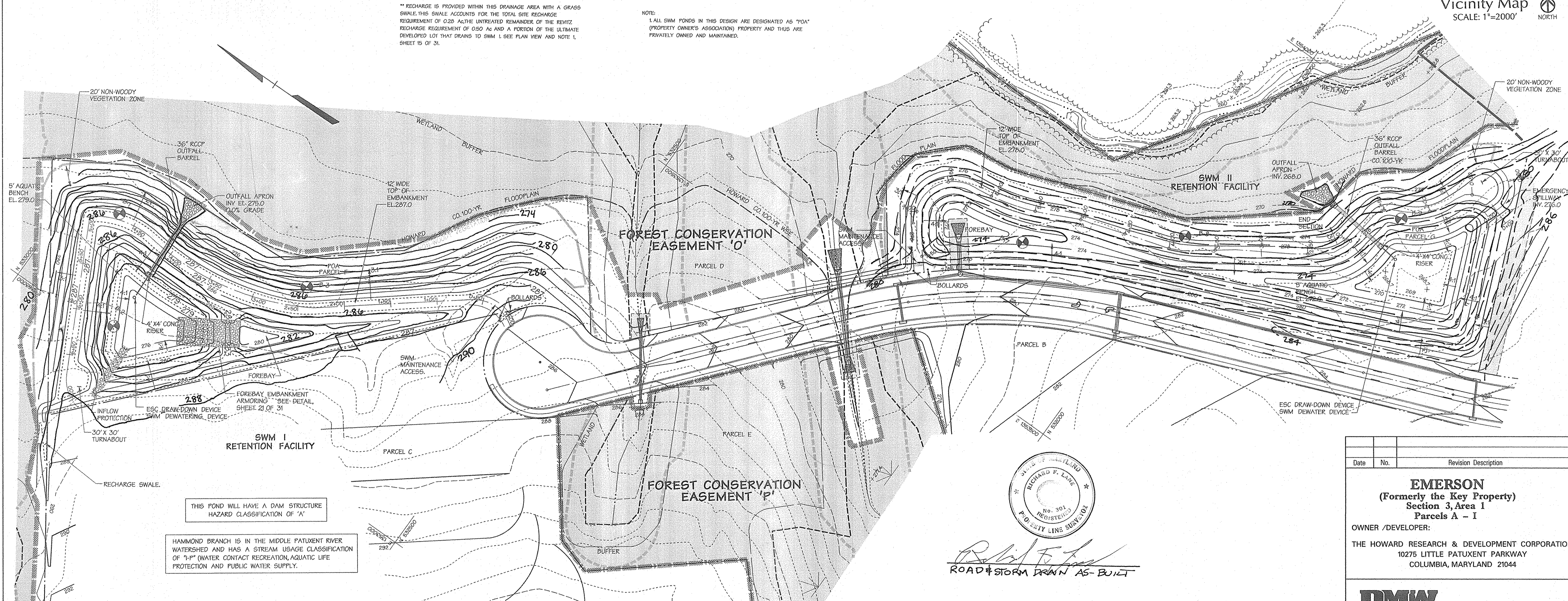
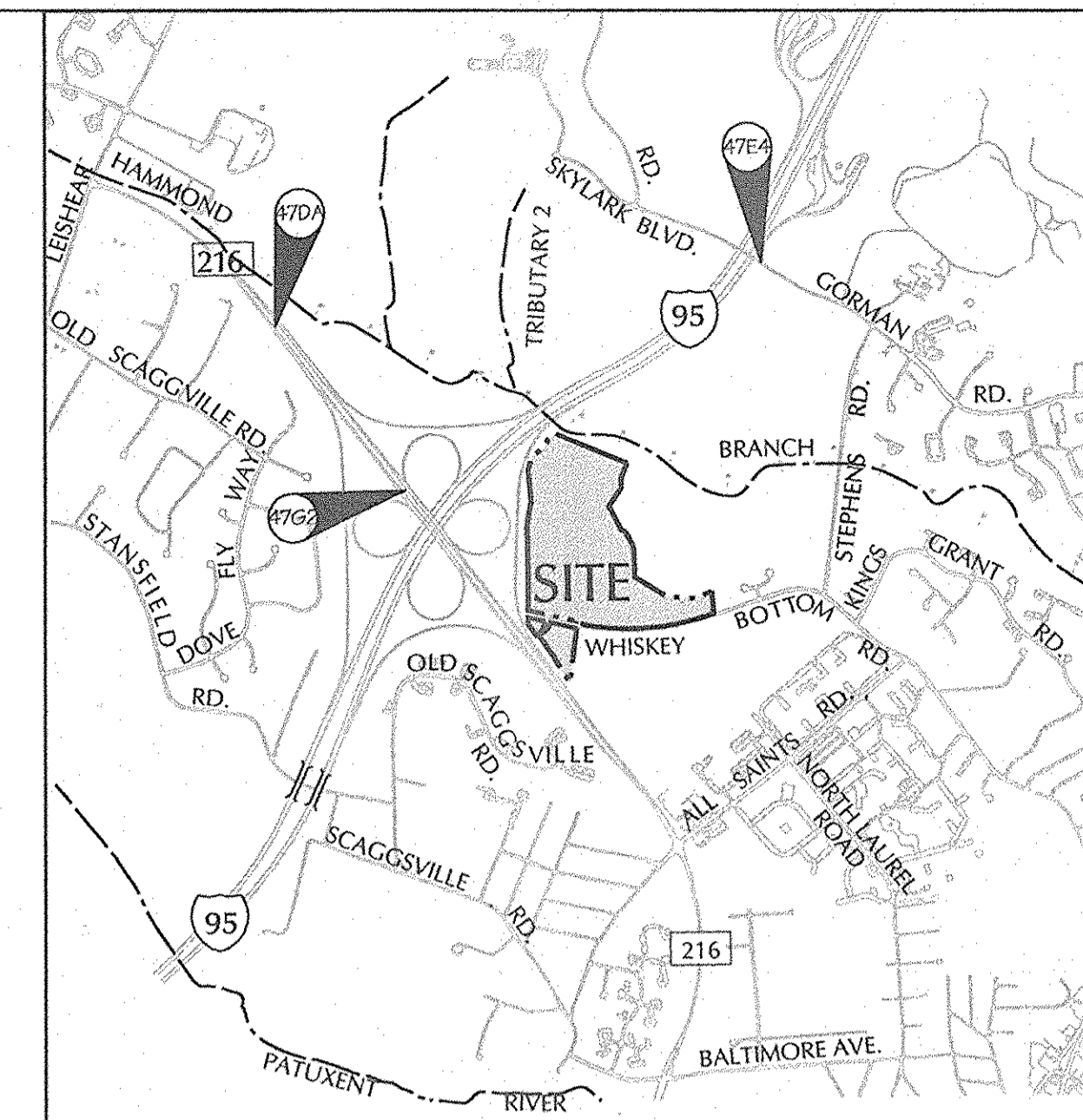
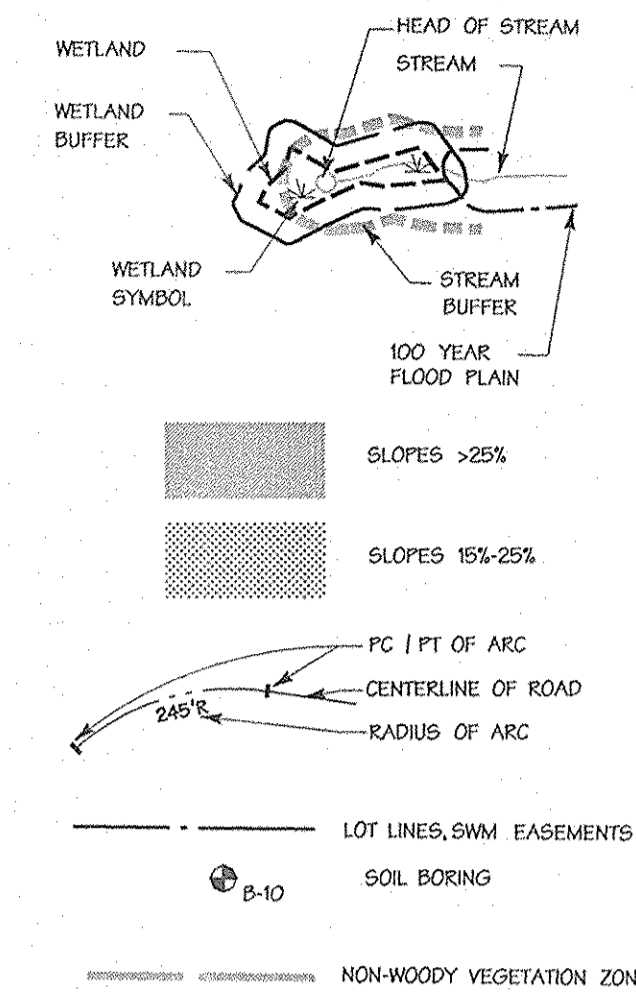
Water Quality Vol. WQ ₁ Required (Ac-ft)	0.491
Water Quality Vol. WQ ₂ Provided (Ac-ft) *	0.567
Recharge Vol. R ₁ Required (Ac-ft) *	0.228
Recharge Vol. R ₂ Provided (Ac-ft) *	0.228
Channel Protection Vol. C ₁ Required (Ac-ft)	0.936
Channel Protection Vol. C ₂ Provided (Ac-ft) *	0.936
WQ ₁ Water Surface Elev. - Normal Pool	272.7
C ₁ Water Surface Elev.	275.0
Riser Crest Elev.	275.0
100 Yr. Closed Water Surface Elev.	276.2
Pond Volume Below 100 Yr. Closed WSE (Ac-ft)	2.356

* WQ₂ IS PROVIDED IN THE WET PORTION OF THE POND AND BY USE OF THE NATURAL AREA CONSERVATION CREDIT. C₂ IS PROVIDED IN THE POND ABOVE THE WQ₁ STORAGE VOLUME.

** RECHARGE IS PROVIDED WITHIN THIS DRAINAGE AREA WITH A GRASS SWALE. THIS SWALE ACCOUNTS FOR THE TOTAL SITE RECHARGE REQUIREMENT OF 0.20 AC. THE UNRECHARGED REMAINDER OF THE RECHARGE REQUIREMENT OF 0.50 AC AND A PORTION OF THE ULTIMATE DEVELOPED LOT THAT DRAINS TO SWM I. SEE PLAN VIEW AND NOTE 1, SHEET 15 OF 31.

NOTE:
1. ALL SWM PONDS IN THIS DESIGN ARE DESIGNATED AS "POA" (PROPERTY OWNER'S ASSOCIATION) PROPERTY AND THIS AREA PRIVATELY OWNED AND MAINTAINED.

Legend



THIS POND WILL HAVE A DAM STRUCTURE HAZARD CLASSIFICATION OF 'A'

HAMMOND BRANCH IS IN THE MIDDLE PATUXENT RIVER WATERSHED AND HAS A STREAM USAGE CLASSIFICATION OF '1' (WATER CONTACT RECREATION, AQUATIC LIFE PROTECTION AND PUBLIC WATER SUPPLY).



ROAD & STORM DRAIN AS-BUILT

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.

John Arca / 10/8/02 DATE

U.S. NATURAL RESOURCES CONSERVATION SERVICE

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

APPROVED: *John Arca* / 10/8/02 DATE

PLAN NUMBER

DEVELOPERS CERTIFICATE:

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

Joseph Newell Jr. / 10.9.02 DATE

SIGNATURE OF DEVELOPER
PRINT NAME: BELOW SIGNATURE

ENGINEERS CERTIFICATE:

I/WE 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/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.

John Karaschic / 10/3/02 DATE

SIGNATURE OF ENGINEER
PRINT NAME: BELOW SIGNATURE

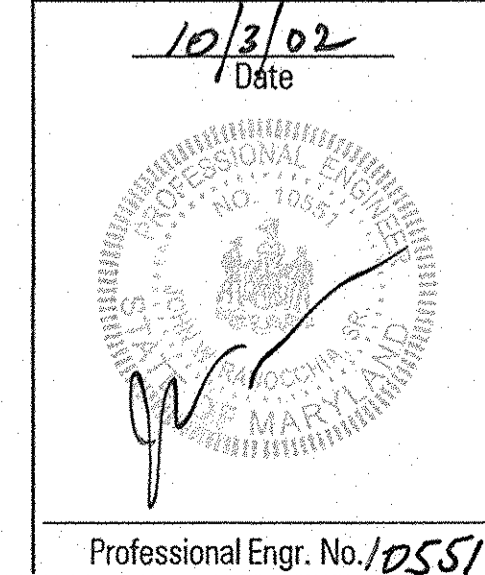
APPROVED: HOWARD COUNTY DEPT. OF PUBLIC WORKS

Judith M. Omely / 11-25-02 DATE
CHIEF BUREAU OF HIGHWAYS

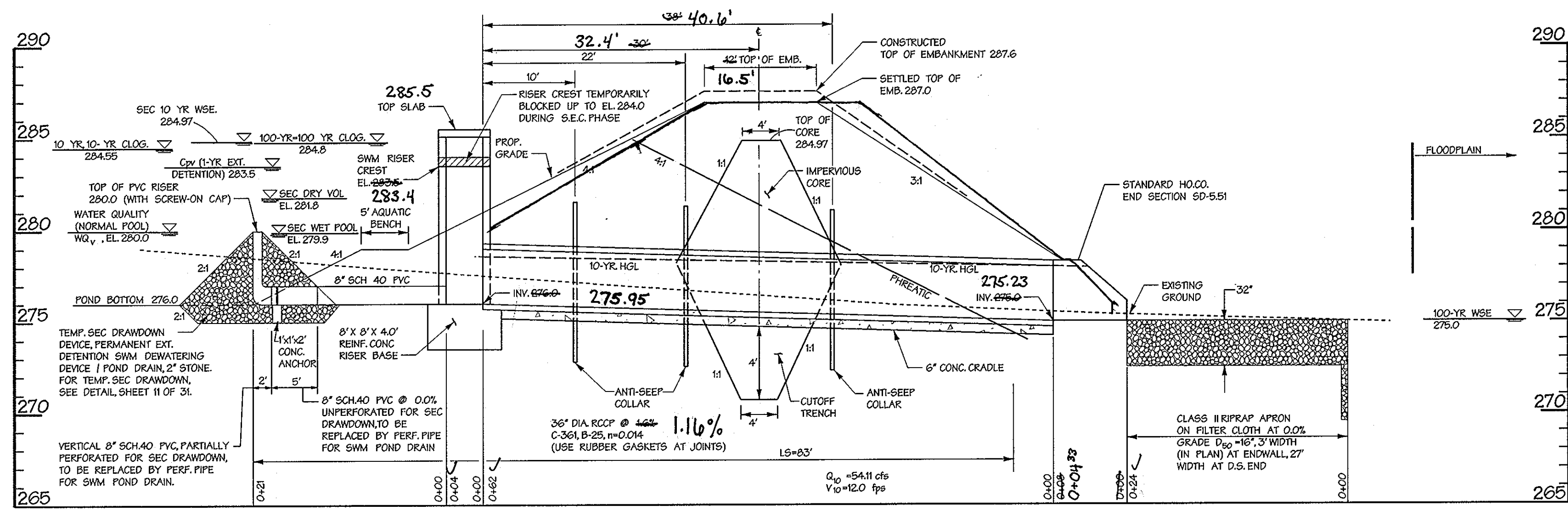
APPROVED: HOWARD COUNTY DEPT. OF PLANNING AND ZONING

Andy Hammett / 10/6/02 DATE
CHIEF DIVISION OF LAND DEVELOPMENT

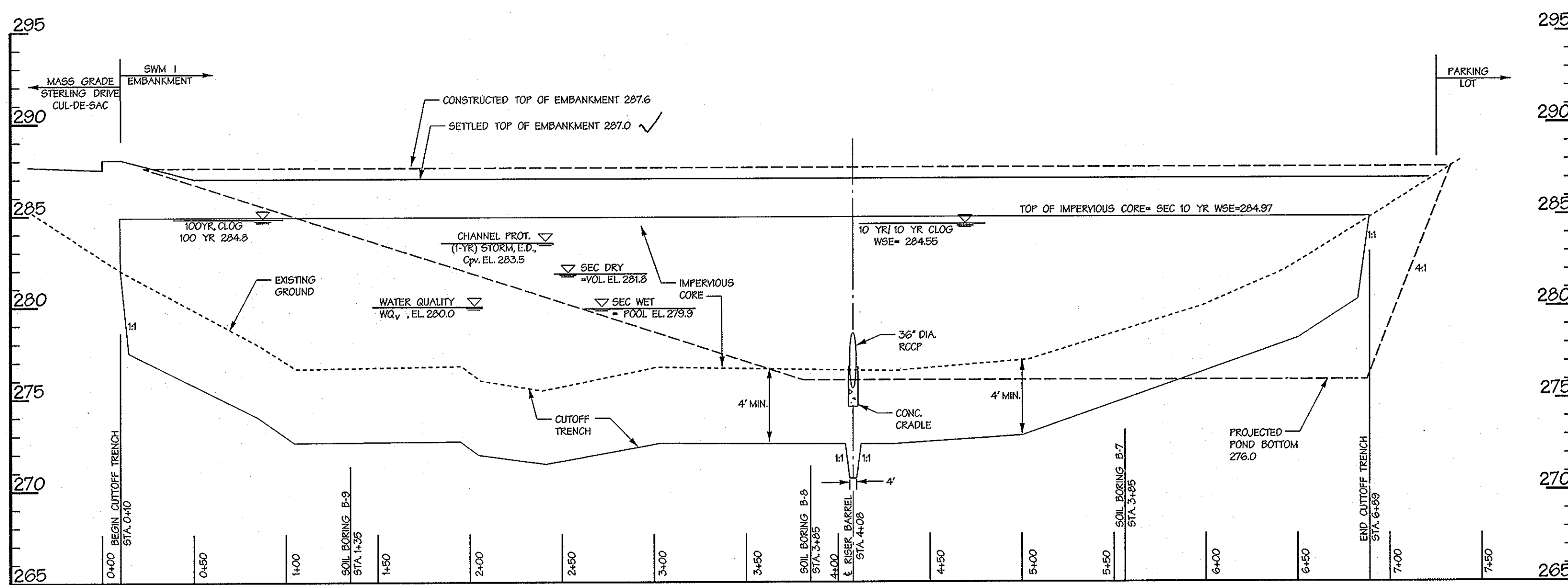
Mr. D. ... / 10/2/02 DATE
CHIEF DEVELOPMENT ENGINEERING DIVISION MK



Date	No.	Revision Description
EMERSON (Formerly the Key Property) Section 3, Area 1 Parcels A - I		
OWNER / DEVELOPER: THE HOWARD RESEARCH & DEVELOPMENT CORPORATION 10275 LITTLE PATUXENT PARKWAY COLUMBIA, MARYLAND 21044		
DMW Datt 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		
TITLE FINAL PLAN STORMWATER MANAGEMENT POND PLAN VIEW		
Des By	MRT	Scale 1" = 50' Proj. No. 01011.C
Dirn By	KMF	Date 9/25/02
Chk By		Approved 16 OF 31



PROFILE ALONG RISER / BARREL FOR SWM I
SCALE: HORIZ. 1"=10'
VERT. 1"=5'



PROFILE ALONG EMBANKMENT FOR SWM I
SCALE: HORIZ. 1"=30'
VERT. 1"=5'

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 Meyer 10/8/02
U.S.D.A. NATURAL RESOURCES CONSERVATION SERVICE DATE

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

John Necker Jr. 10/8/02
APPROVED: HOWARD SOIL CONSERVATION DISTRICT DATE

PLAN NUMBER _____

DEVELOPERS CERTIFICATE:

I/WE CERTIFY THAT ALL DEVELOPMENT AND/OR CONSTRUCTION WILL BE DONE ACCORDING TO THESE PLANS AND THAT ANY RESPONSIBLE PERSONNEL INVOLVED IN THE CONSTRUCTION PROJECT WILL HAVE A CERTIFICATE OF ATTENDANCE AT A DEPARTMENT OF ENVIRONMENT APPROVED TRAINING PROGRAM FOR THE CONTROL OF SEDIMENT AND EROSION BEFORE BEGINNING THE PROJECT. I/WE 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.

Joseph Necker Jr. 9/25/02
SIGNATURE OF DEVELOPER DATE
PRINT NAME BELOW SIGNATURE

ENGINEERS CERTIFICATE:

I/WE 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.

John Benocchia 10/5/02 9/25/02
SIGNATURE OF ENGINEER REG. NO. DATE
PRINT NAME BELOW SIGNATURE

Richard F. Lane
ROAD & STORM DRAIN AS-BUILT

9/25/02
Date
Professional Engr. No. 10551

APPROVED: HOWARD COUNTY DEPT. OF PUBLIC WORKS
Richard W. Daulton 11-25-02
CHIEF, BUREAU OF HIGHWAYS DATE

APPROVED: HOWARD COUNTY DEPT. OF PLANNING AND ZONING
Andra Jantzen 12/6/02
CHIEF, DIVISION OF LAND DEVELOPMENT DATE

Chris Dammus 12/2/02
CHIEF, DEVELOPMENT ENGINEERING DIVISION DATE

Date	No.	Revision Description

EMERSON
(Formerly the Key Property)
Section 3, Area 1
Parcels A - I

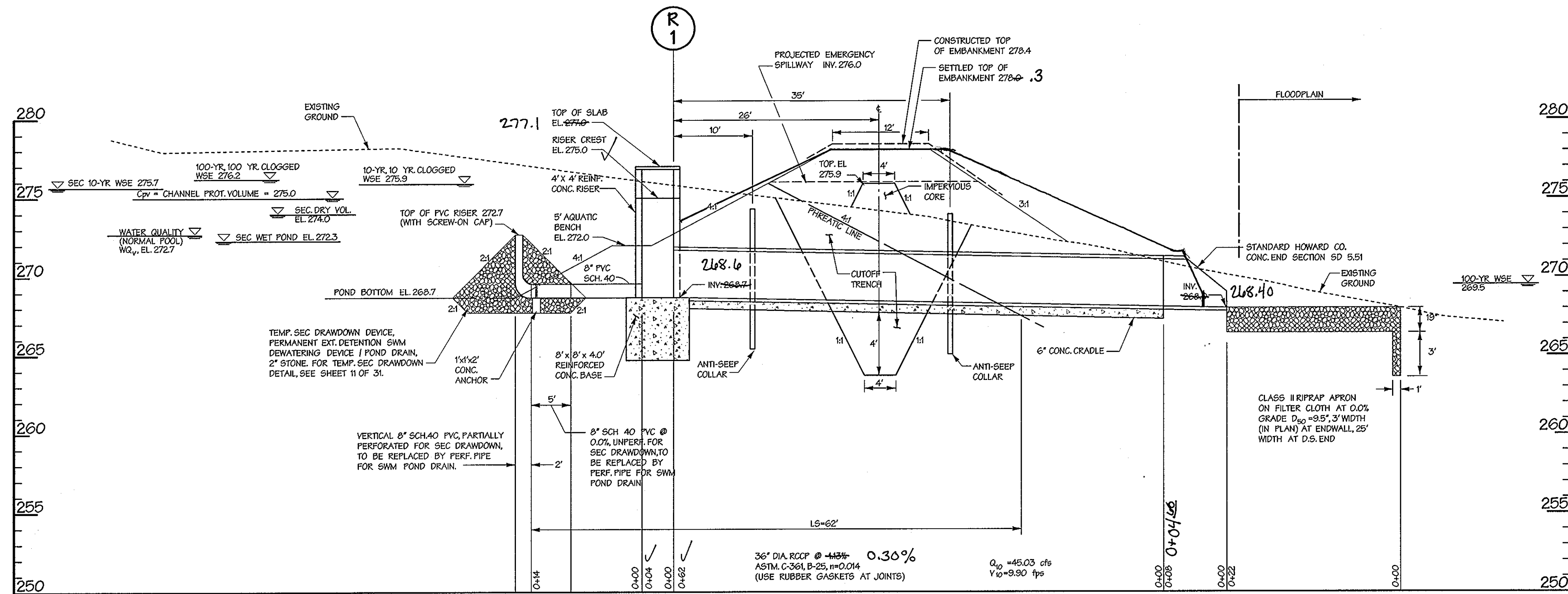
OWNER /DEVELOPER:
THE HOWARD RESEARCH & DEVELOPMENT CORPORATION
10275 LITTLE PATUXENT PARKWAY
COLUMBIA, MARYLAND 21044

DMW
Duff McCune-Walker, Inc.
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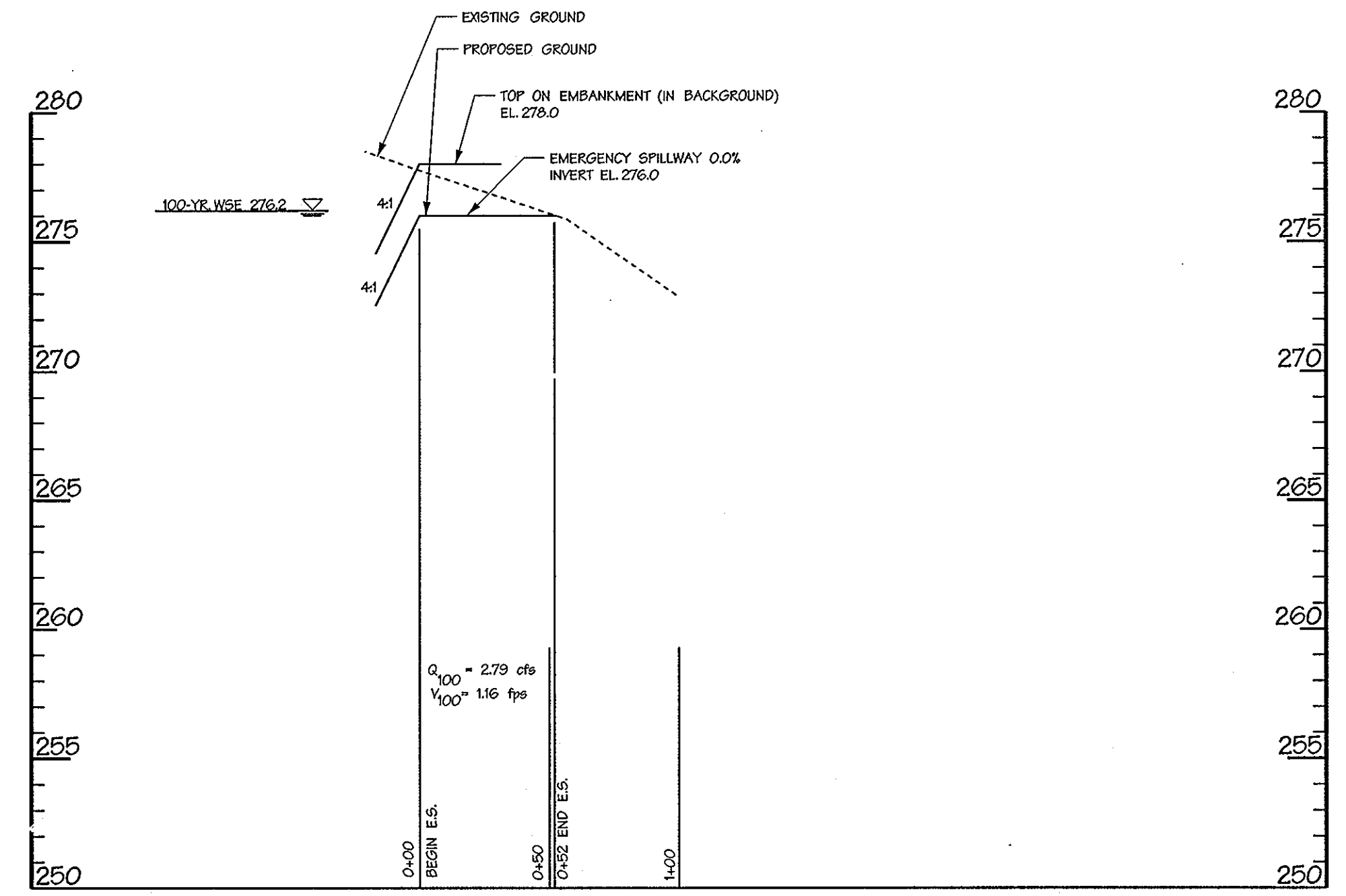
TITLE
FINAL PLAN
STORMWATER MANAGEMENT PROFILES
FOR SWM I

Des By	MRT	Scale	AS SHOWN	Proj. No.	01011.C0
Dwn By	ADL	Date	9/25/02		
Chk By		Approved			17 OF 31



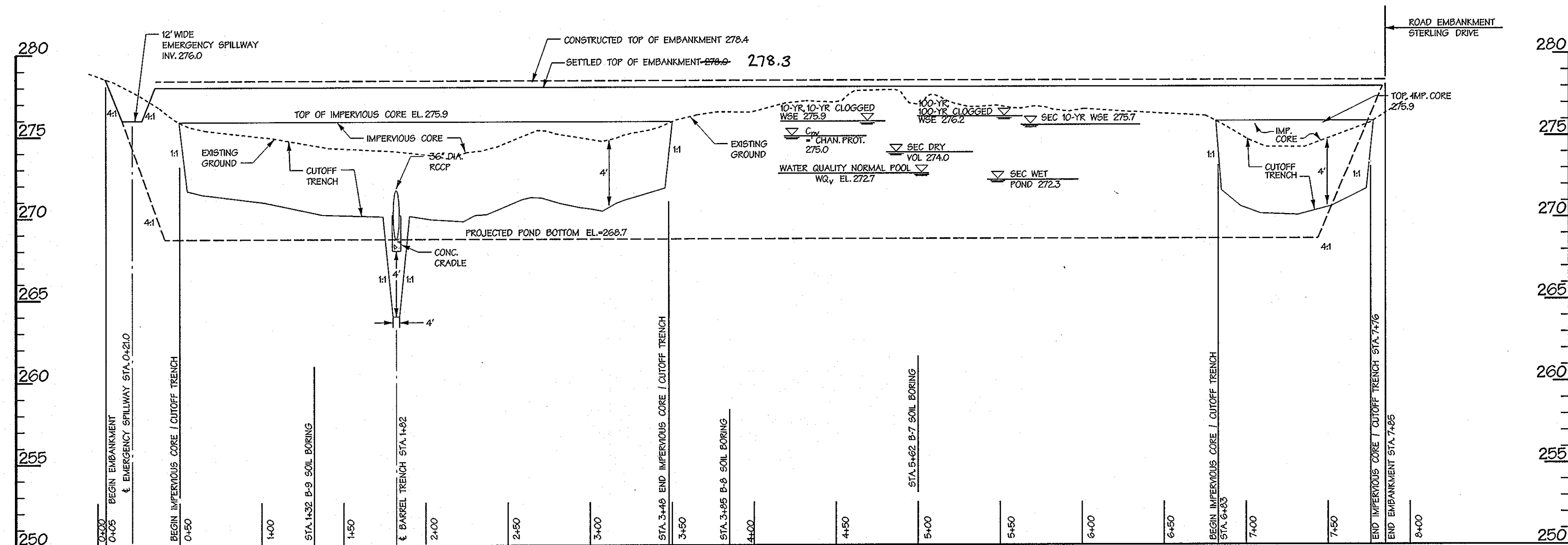
PROFILE ALONG RISER / BARREL FOR SWM II

SCALE: HORIZ. 1"=10'
VERT. 1"=5'



PROFILE ALONG EMERGENCY SPILLWAY FOR SWM II

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



PROFILE ALONG EMBANKMENT FOR SWM II

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

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.

John Mays 10/8/02 DATE
U.S.D.A. NATURAL RESOURCES CONSERVATION SERVICE

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

APPROVED: *Joseph Necker* 9/25/02 DATE
HOWARD SOIL CONSERVATION DISTRICT

PLAN NUMBER

DEVELOPERS CERTIFICATE:

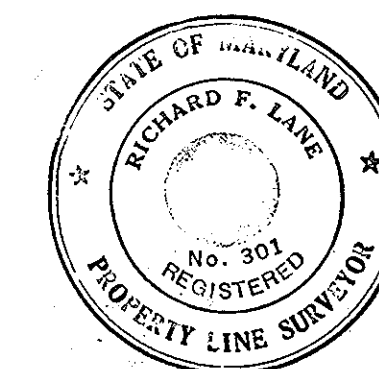
I/WE CERTIFY THAT ALL DEVELOPMENT AND/OR CONSTRUCTION WILL BE DONE ACCORDING TO THESE PLANS AND THAT ANY RESPONSIBLE PERSONNEL INVOLVED IN THE CONSTRUCTION PROJECT WILL HAVE A CERTIFICATE OF ATTENDANCE AT A DEPARTMENT OF ENVIRONMENT APPROVED TRAINING PROGRAM FOR THE CONTROL OF SEDIMENT AND EROSION BEFORE 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.

Joseph Necker 9/25/02 DATE
SIGNATURE OF DEVELOPER
PRINT NAME BELOW SIGNATURE
JOSEPH NECKER JR.

ENGINEERS CERTIFICATE:

I/WE 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/SH/HE 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.

Richard F. Lane 10/5/02 9/25/02 DATE
SIGNATURE OF ENGINEER REG. NO. DATE
PRINT NAME BELOW SIGNATURE
Richard F. Lane



9/25/02 Date
Professional Engr. No. 10551

APPROVED: HOWARD COUNTY DEPT. OF PUBLIC WORKS
Richard M. Daniels 11-25-02 DATE
CHIEF, BUREAU OF HIGHWAYS

APPROVED: HOWARD COUNTY DEPT. OF PLANNING AND ZONING
Chris Hamble 12/6/02 DATE
CHIEF, DIVISION OF LAND DEVELOPMENT

David D. Williams 12/2/02 DATE
CHIEF, DEVELOPMENT ENGINEERING DIVISION

Date	No.	Revision Description

EMERSON
(Formerly the Key Property)
Section 3, Area 1
Parcels A - I

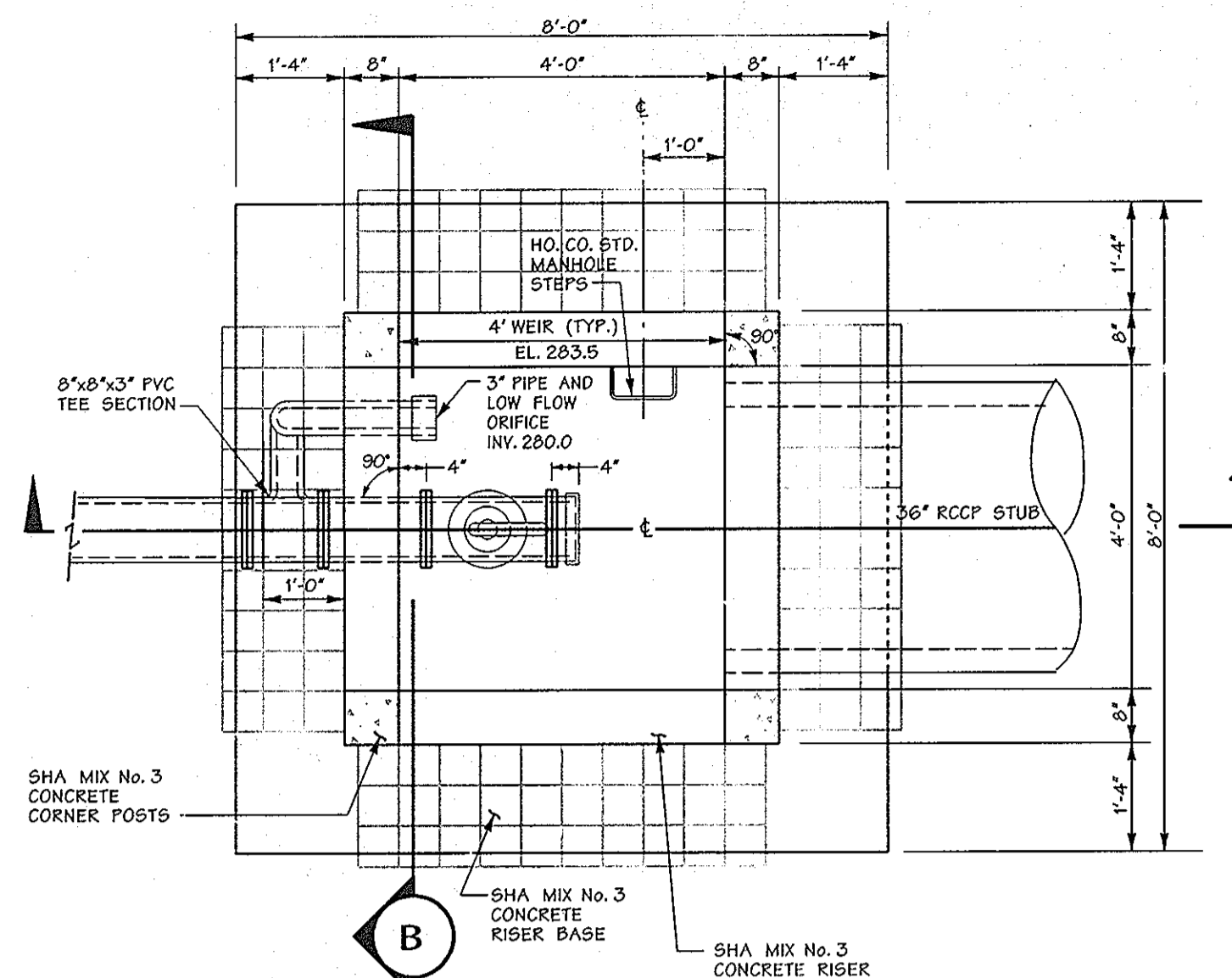
OWNER /DEVELOPER:
THE HOWARD RESEARCH & DEVELOPMENT CORPORATION
10275 LITTLE PATUXENT PARKWAY
COLUMBIA, MARYLAND 21044

DMW
Daft-McCune-Walker, Inc.
200 East Pennsylvania Avenue
Towson, Maryland 21286
(410) 286-3333
Fax 296-4705

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

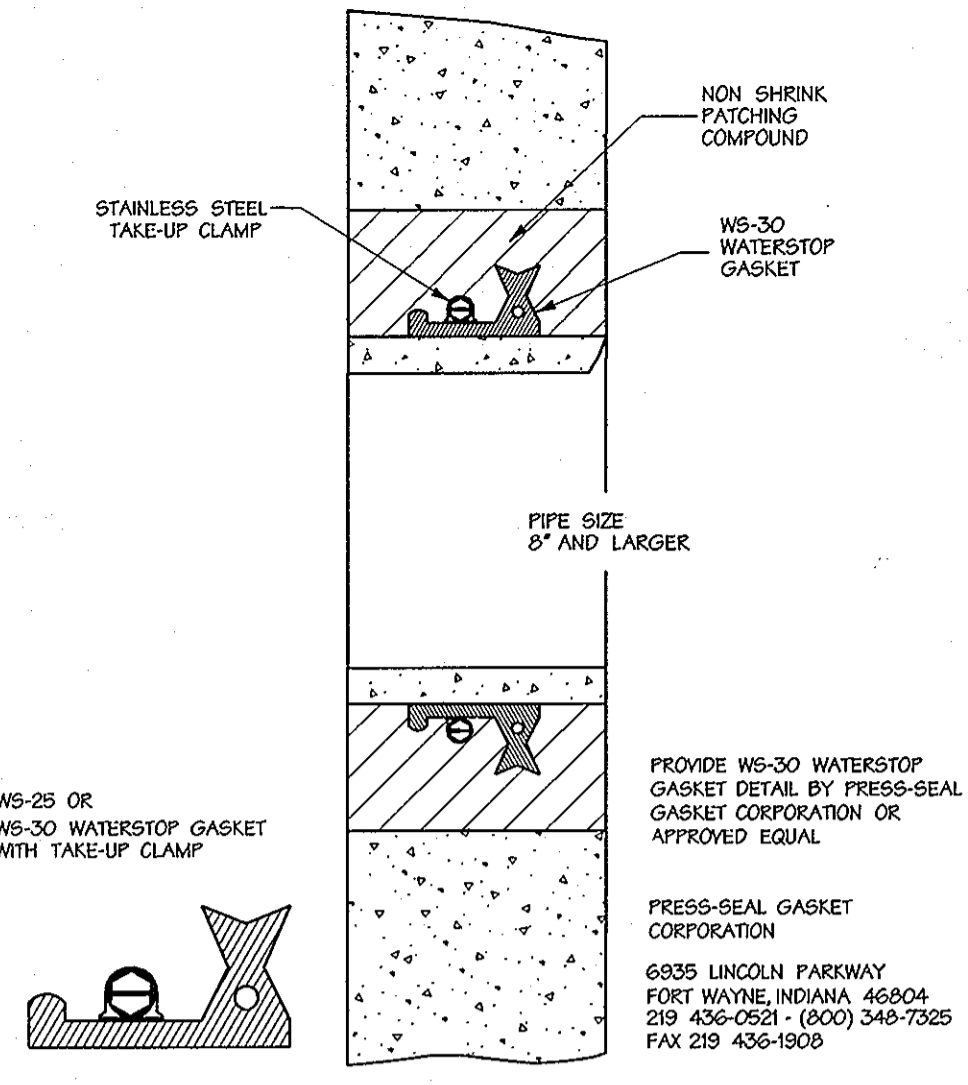
TITLE
FINAL PLAN
STORMWATER MANAGEMENT PROFILES
FOR SWM II

Des By	MRT	Scale	AS SHOWN	Proj. No.	01011CJ
Dwn By	ADL	Date	9/25/02		
Chk By		Approved			18 OF 31

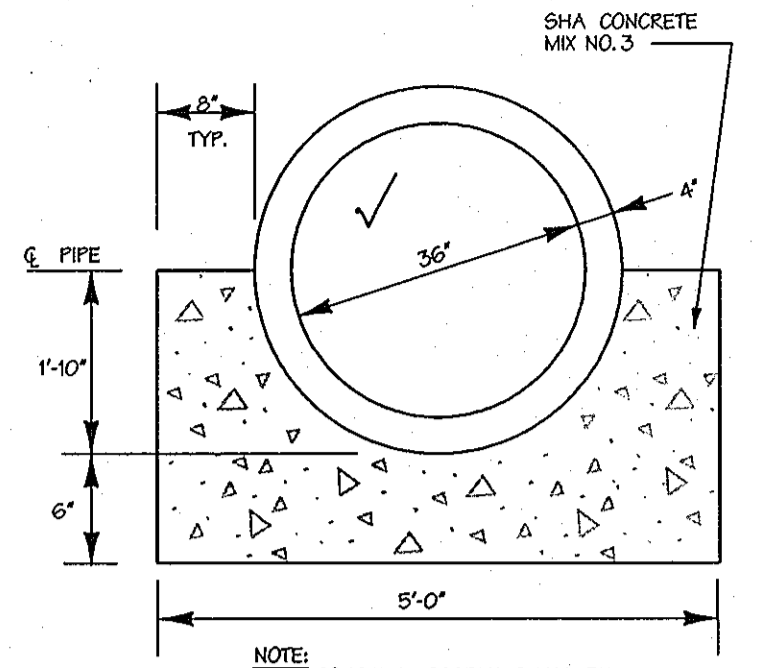


RISER PLAN (TOP SLAB REMOVED) - SWM I

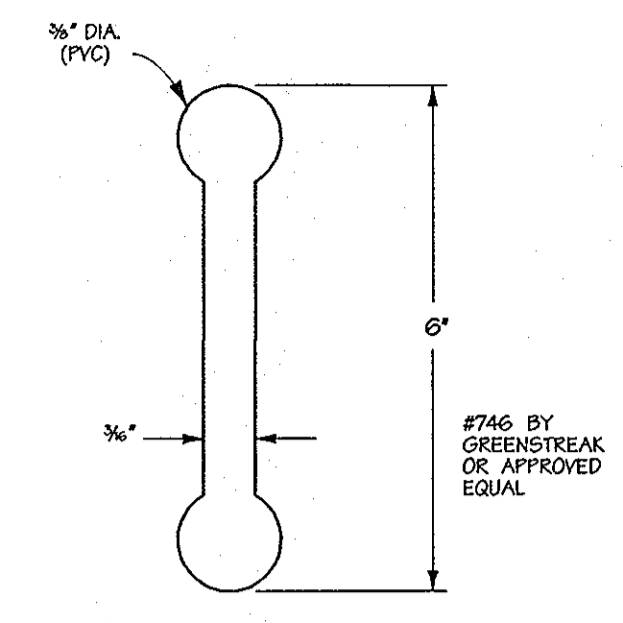
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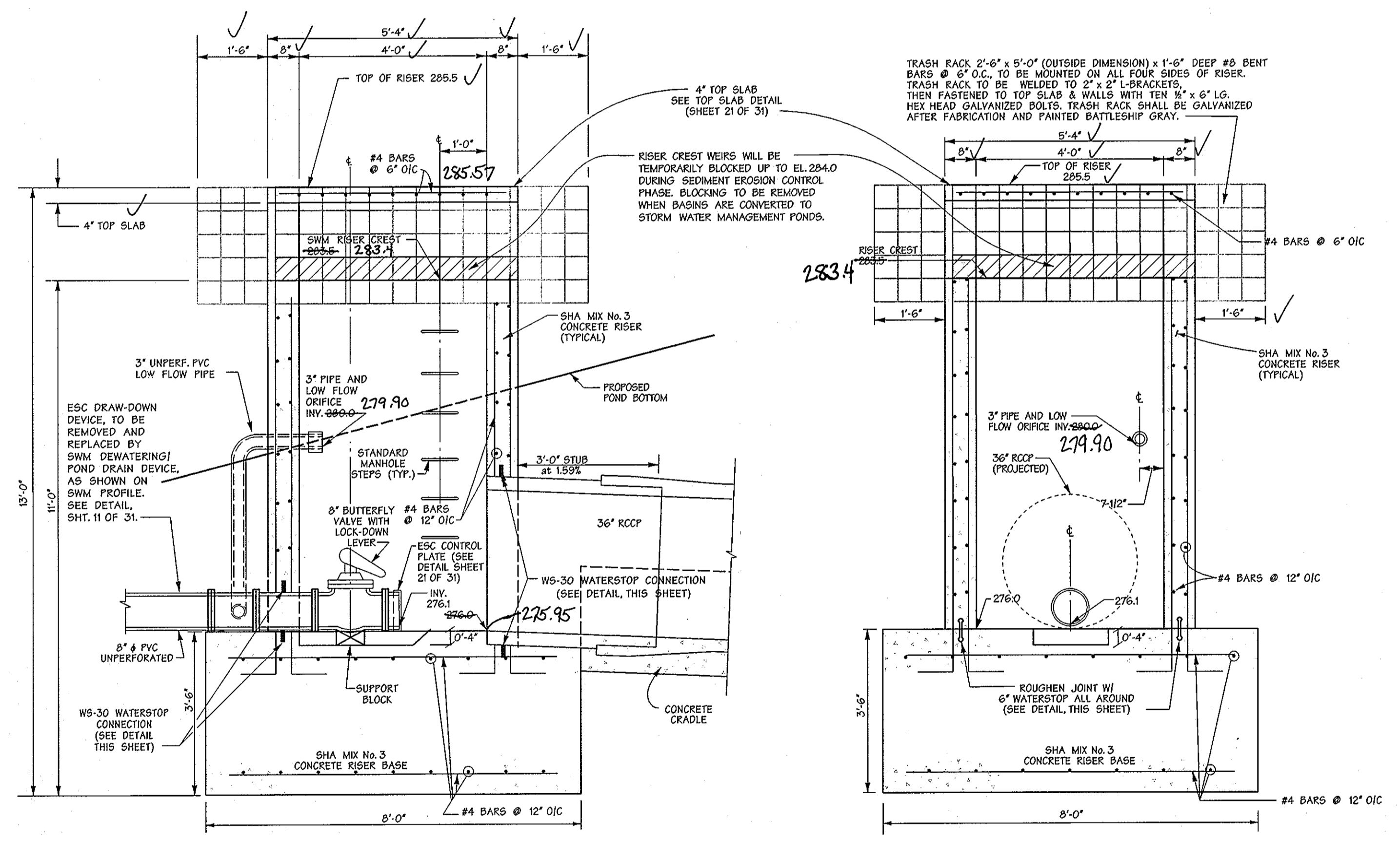
PIPE WATER STOP DETAIL
NOT TO SCALE



NTS

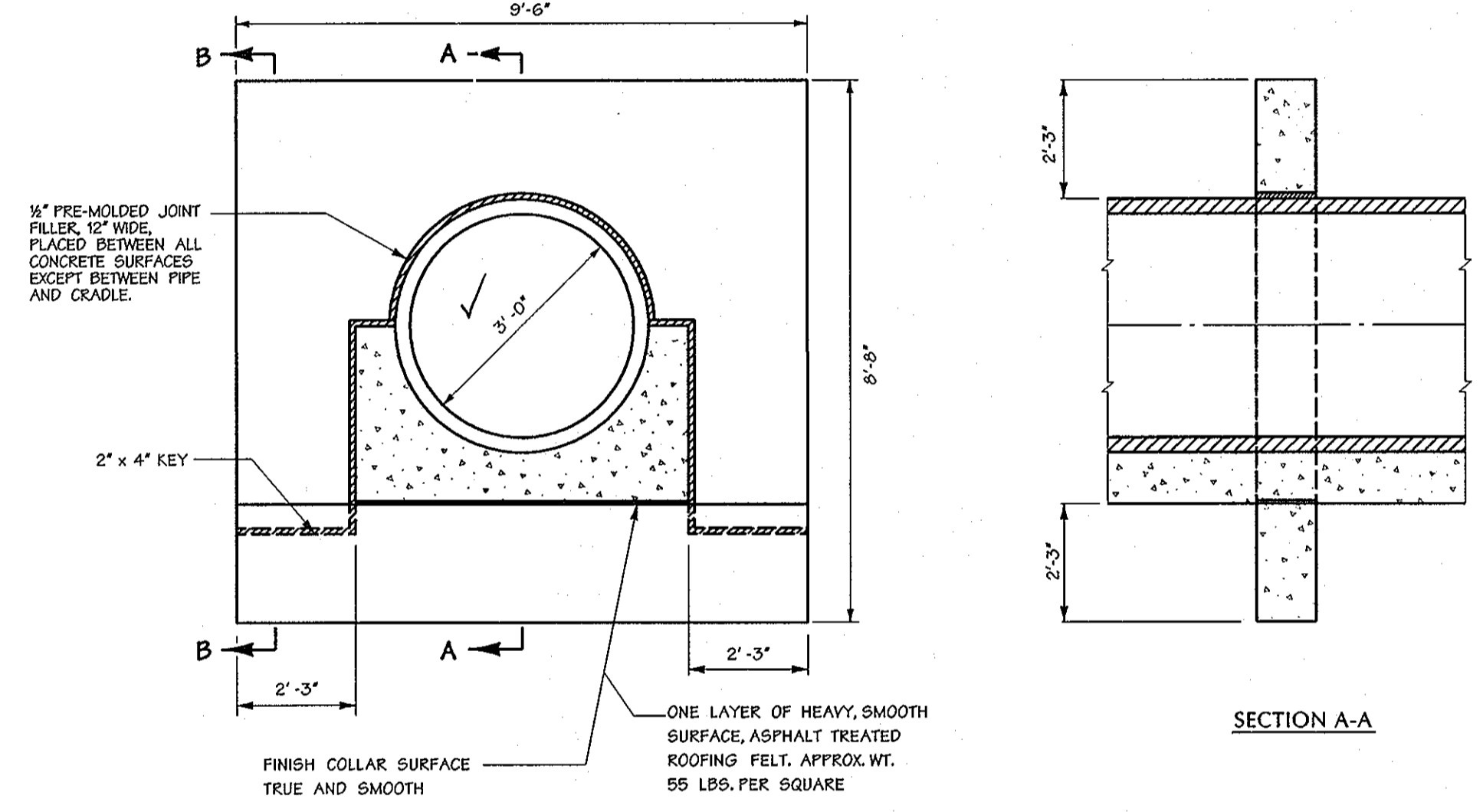


6" WATERSTOP
NOT TO SCALE

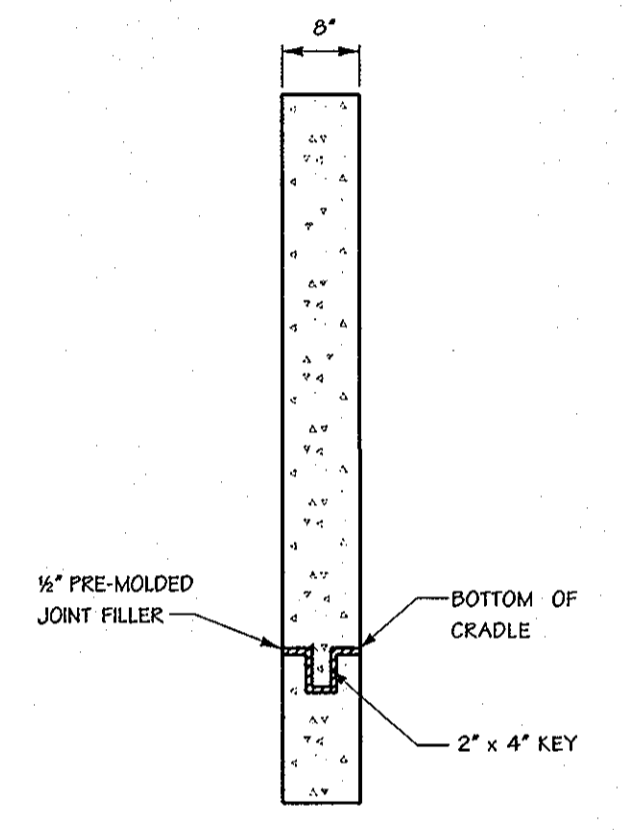


RISER DETAIL FOR POND - SWM I

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



SWM I
ANTI-SEEP COLLAR DETAIL
CAST IN PLACE - NOT TO SCALE



SECTION B-B

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

[Signature] 10/8/02
U.S.D.A. NATURAL RESOURCES CONSERVATION SERVICE DATE

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

APPROVED: *[Signature]* 10/8/02
HOWARD SOIL CONSERVATION DISTRICT DATE

PLAN NUMBER

DEVELOPERS CERTIFICATE:

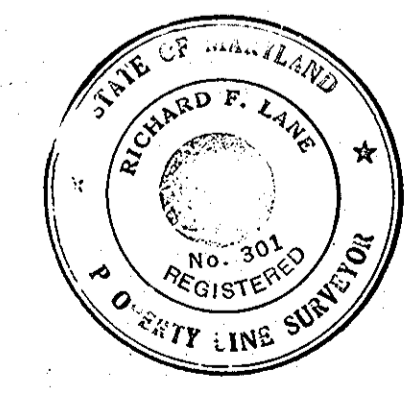
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[Signature] 9/25/02
SIGNATURE OF DEVELOPER DATE
JOSEPH NECKER JR.

ENGINEERS CERTIFICATE:

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[Signature] 10551 9/25/02
SIGNATURE OF ENGINEER REG. NO. DATE
John Banouchie



[Signature]
ROAD + STORM DRAIN AS-BUILT

9/25/02
Date

[Signature]
Professional Engr. No. 10551

APPROVED: HOWARD COUNTY DEPT. OF PUBLIC WORKS

[Signature] 11-25-02
CHIEF, BUREAU OF HIGHWAYS DATE

APPROVED: HOWARD COUNTY DEPT. OF PLANNING AND ZONING

[Signature] 12/6/02
CHIEF, DIVISION OF LAND DEVELOPMENT DATE

[Signature] 12/2/02
CHIEF, DEVELOPMENT ENGINEERING DIVISION DATE

Date	No.	Revision Description

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(Formerly the Key Property)
Section 3, Area 1
Parcels A - I

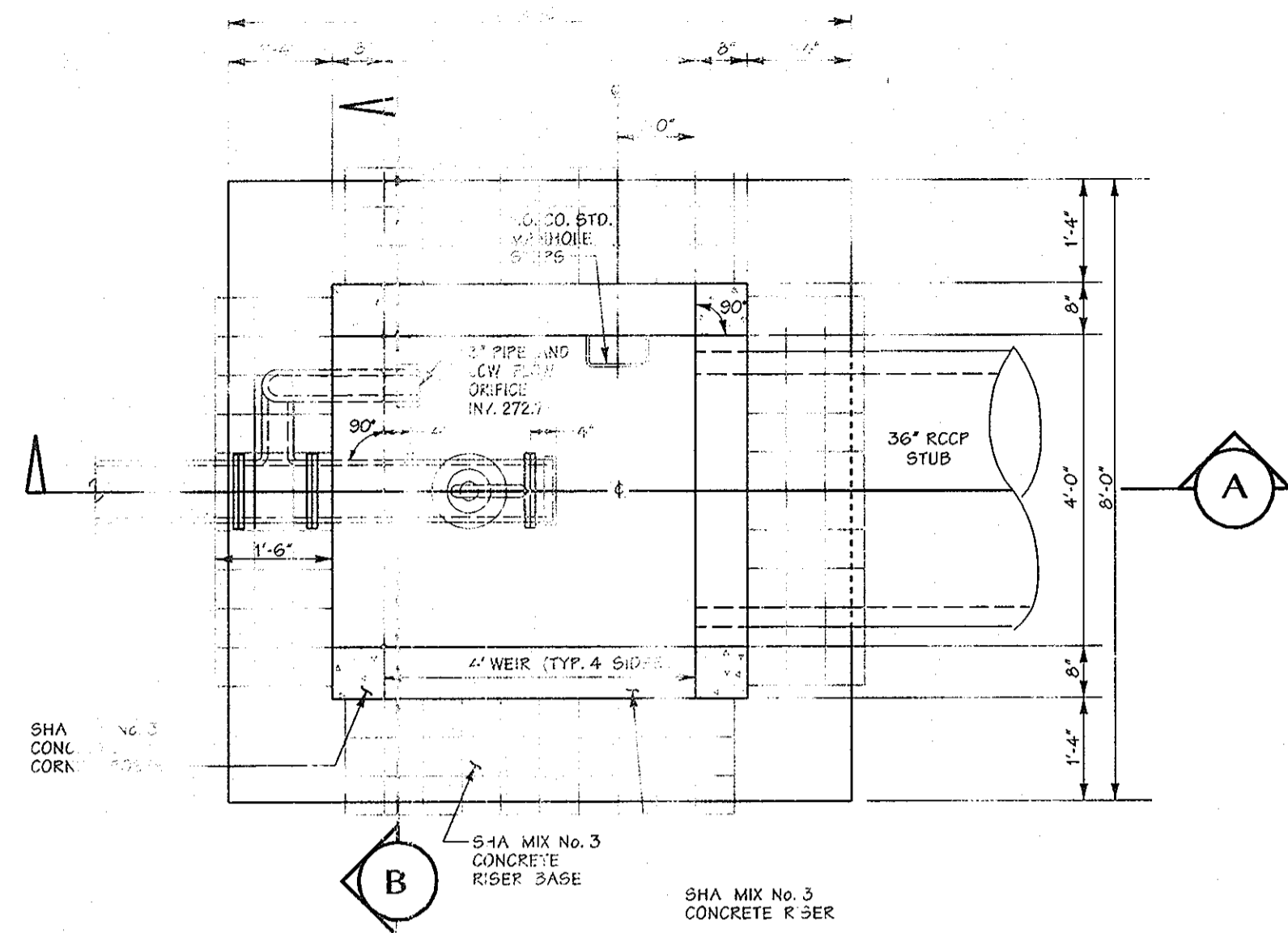
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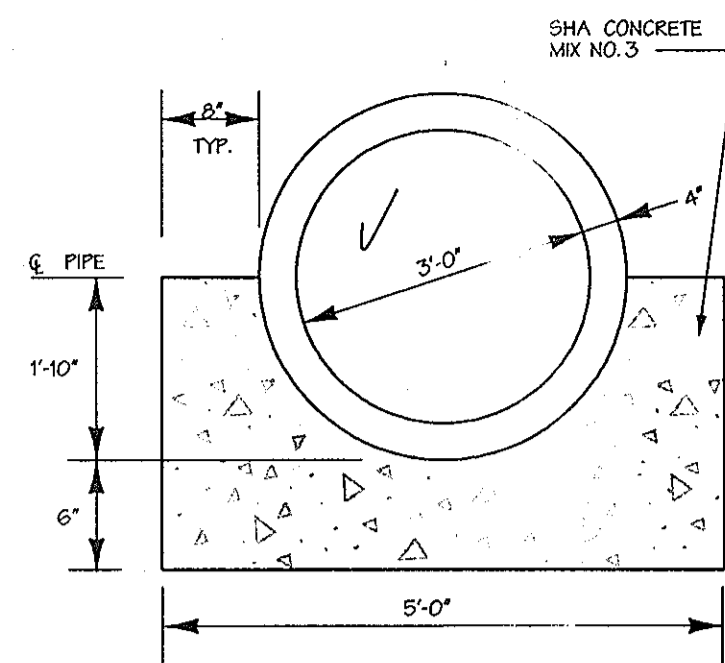
TITLE: FINAL PLAN
STORMWATER MANAGEMENT
DETAILS FOR SWM I

Des By	MRT	Scale	AS SHOWN	Proj. No.	01011.CO
Dwn By	ADL	Date	9/25/02		
Chk By		Approved			19 OF 31



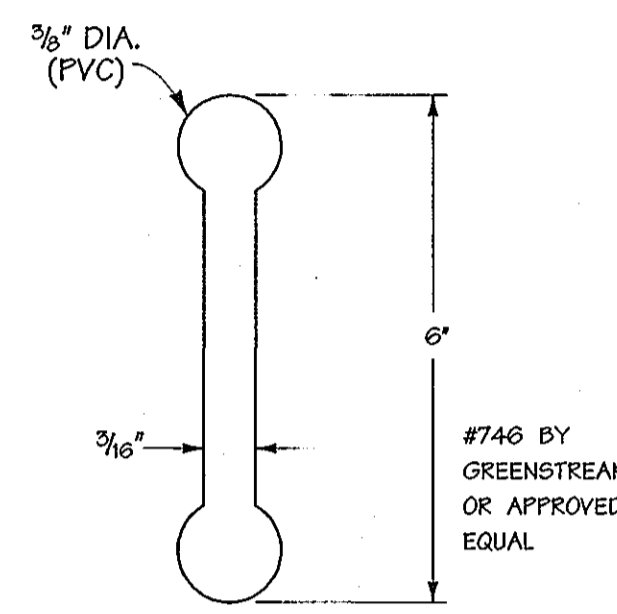
RISER PLAN (TOP SLAB REMOVED) - SWM II

Scale: 1/8" = 1'-0"
CAST IN PLACE



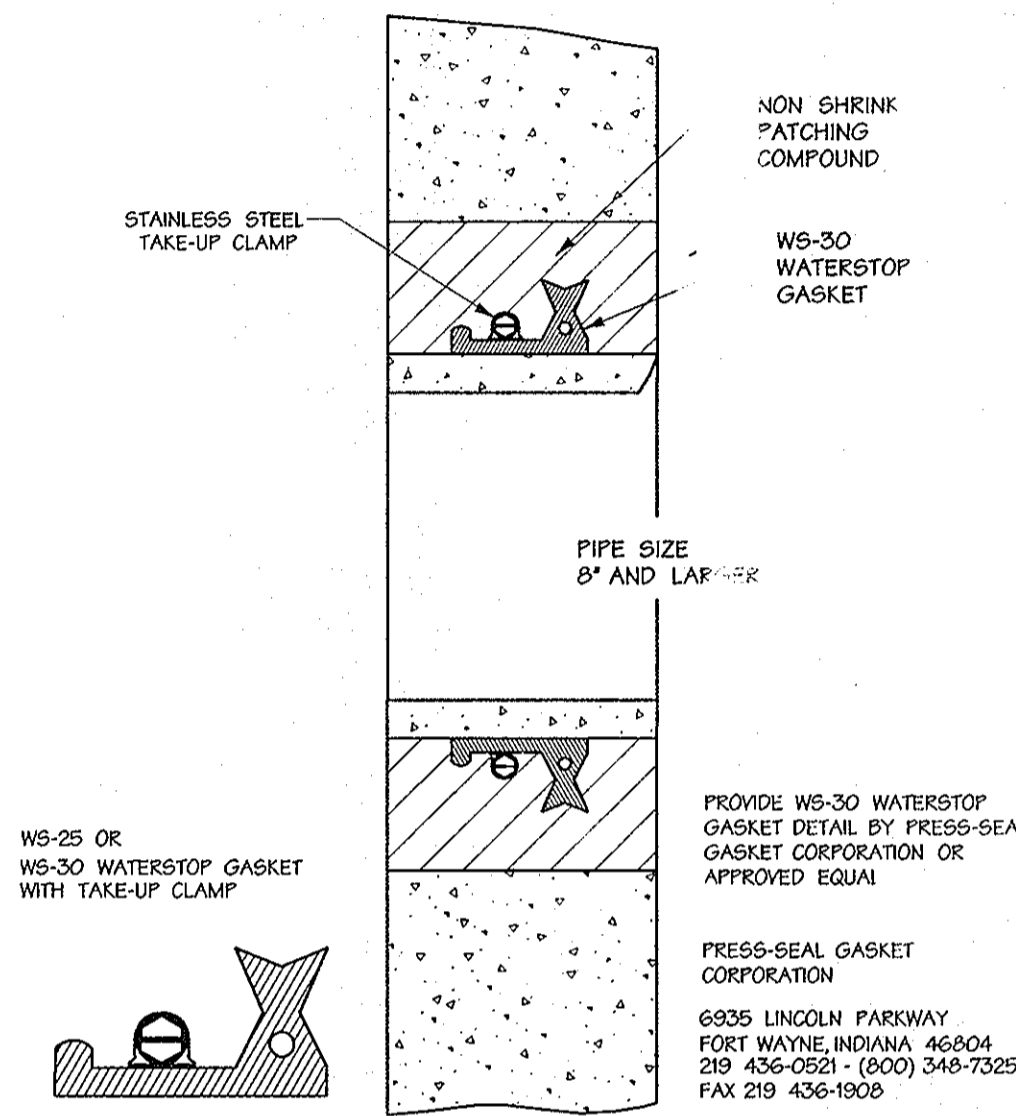
CONCRETE CRADLE DETAIL

NTS



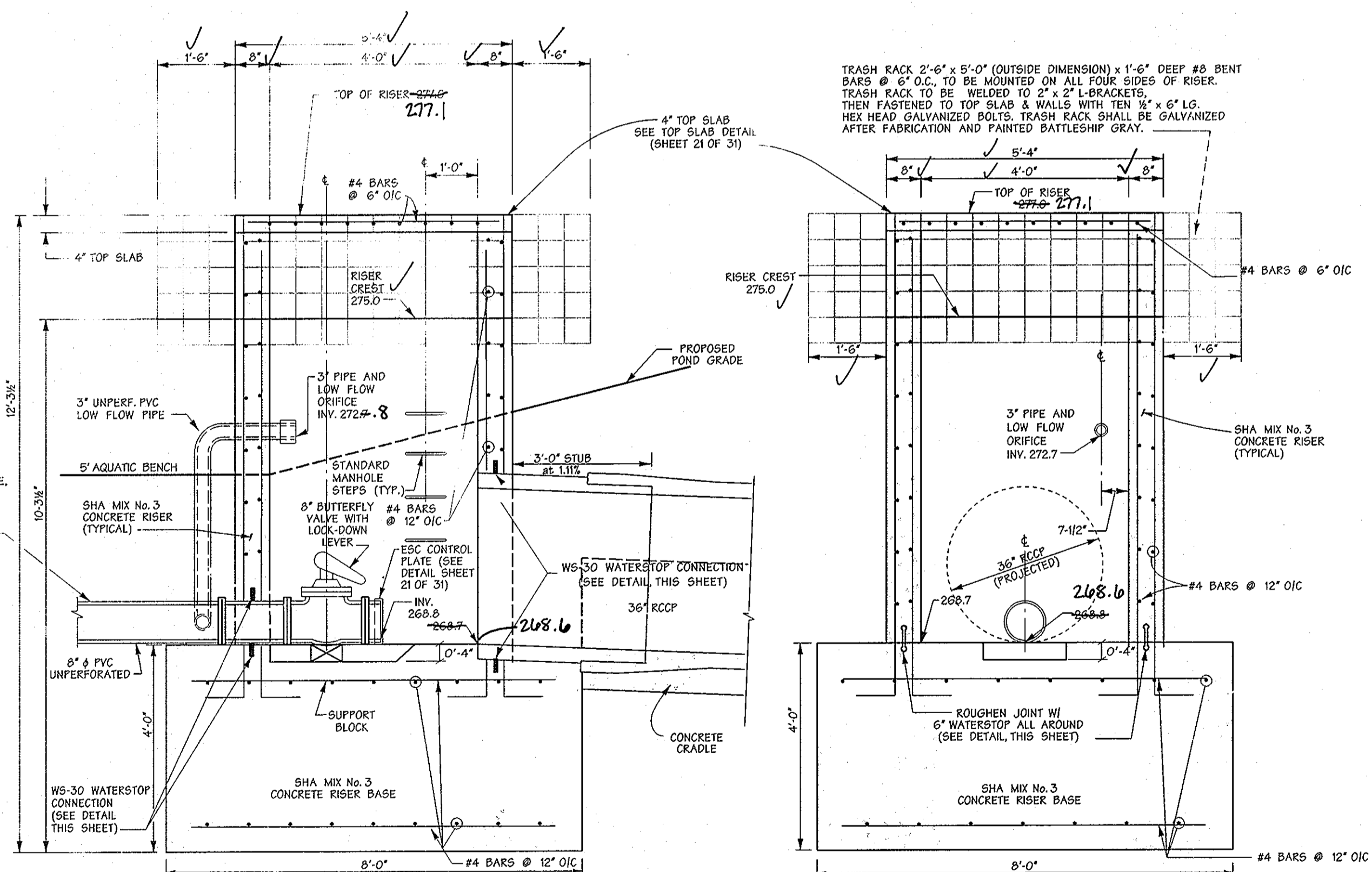
6" WATERSTOP

NOT TO SCALE



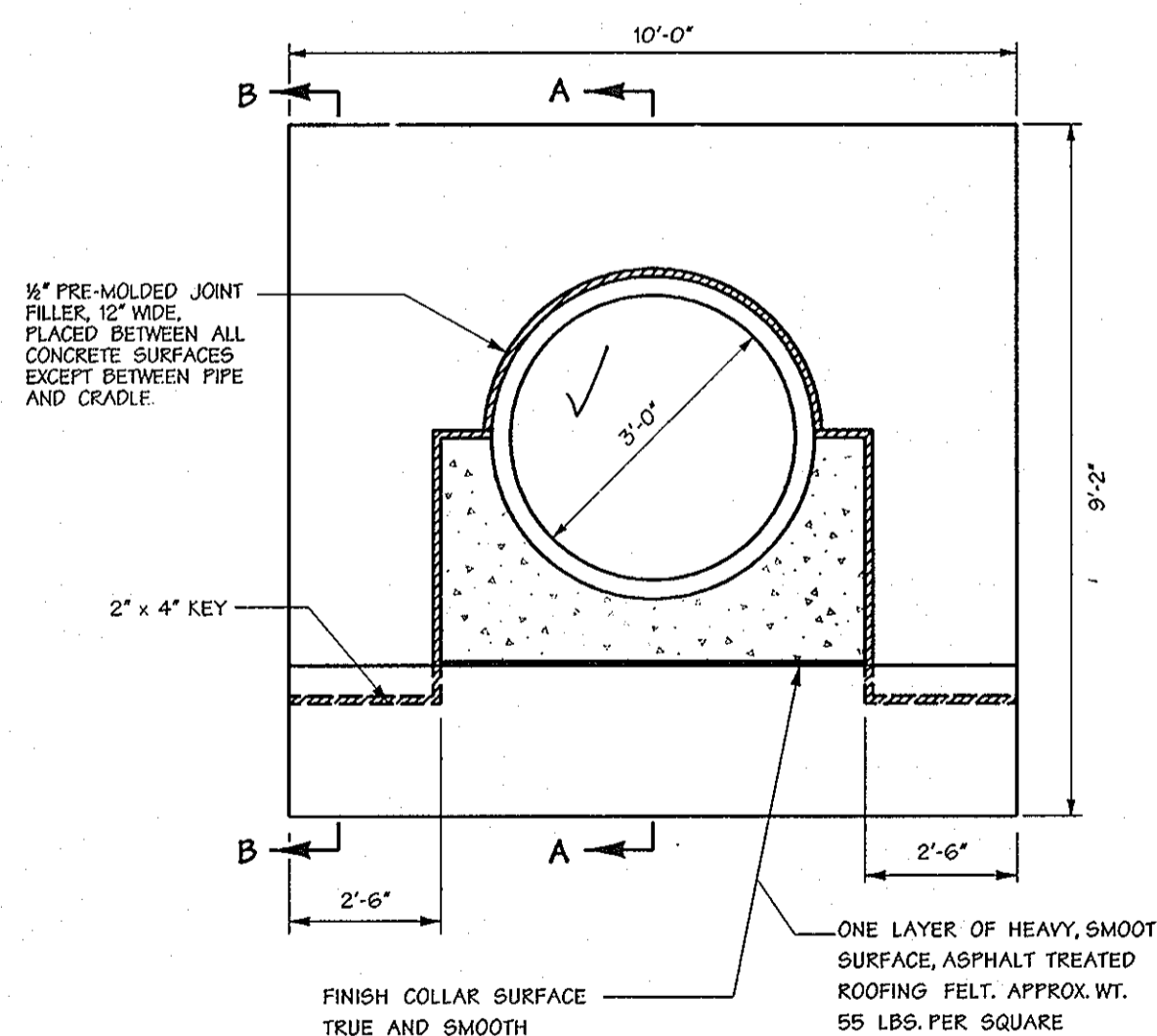
PIPE WATER STOP DETAIL

NOT TO SCALE



RISER DETAIL FOR POND - SWM II

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



ANTI-SEEP COLLAR DETAIL - SWM II

CAST IN PLACE - NOT TO SCALE



Richard F. Lane
Road & Storm Drain AS-BUILT

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.

APPROVED: *John A. Necker Jr.* 10/8/02
HOWARD SOIL CONSERVATION DISTRICT

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SIGNATURE OF DEVELOPER: *John A. Necker Jr.* 9/25/02
PRINT NAME BELOW SIGNATURE: JOSEPH NECKER JR.

ENGINEERS CERTIFICATE:

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SIGNATURE OF ENGINEER: *John A. Necker Jr.* 10/5/02
PRINT NAME BELOW SIGNATURE: JOHN A. NECKER JR.
REG. NO.: 10551
DATE: 9/25/02

APPROVED: HOWARD COUNTY DEPT. OF PUBLIC WORKS
Richard M. Randle 11-25-02
CHIEF, BUREAU OF HIGHWAYS DATE

APPROVED: HOWARD COUNTY DEPT. OF PLANNING AND ZONING
Chris Hamada 12/6/02
CHIEF, DIVISION OF LAND DEVELOPMENT DATE

William D. ... 12/2/02
CHIEF, DEVELOPMENT ENGINEERING DIVISION DATE

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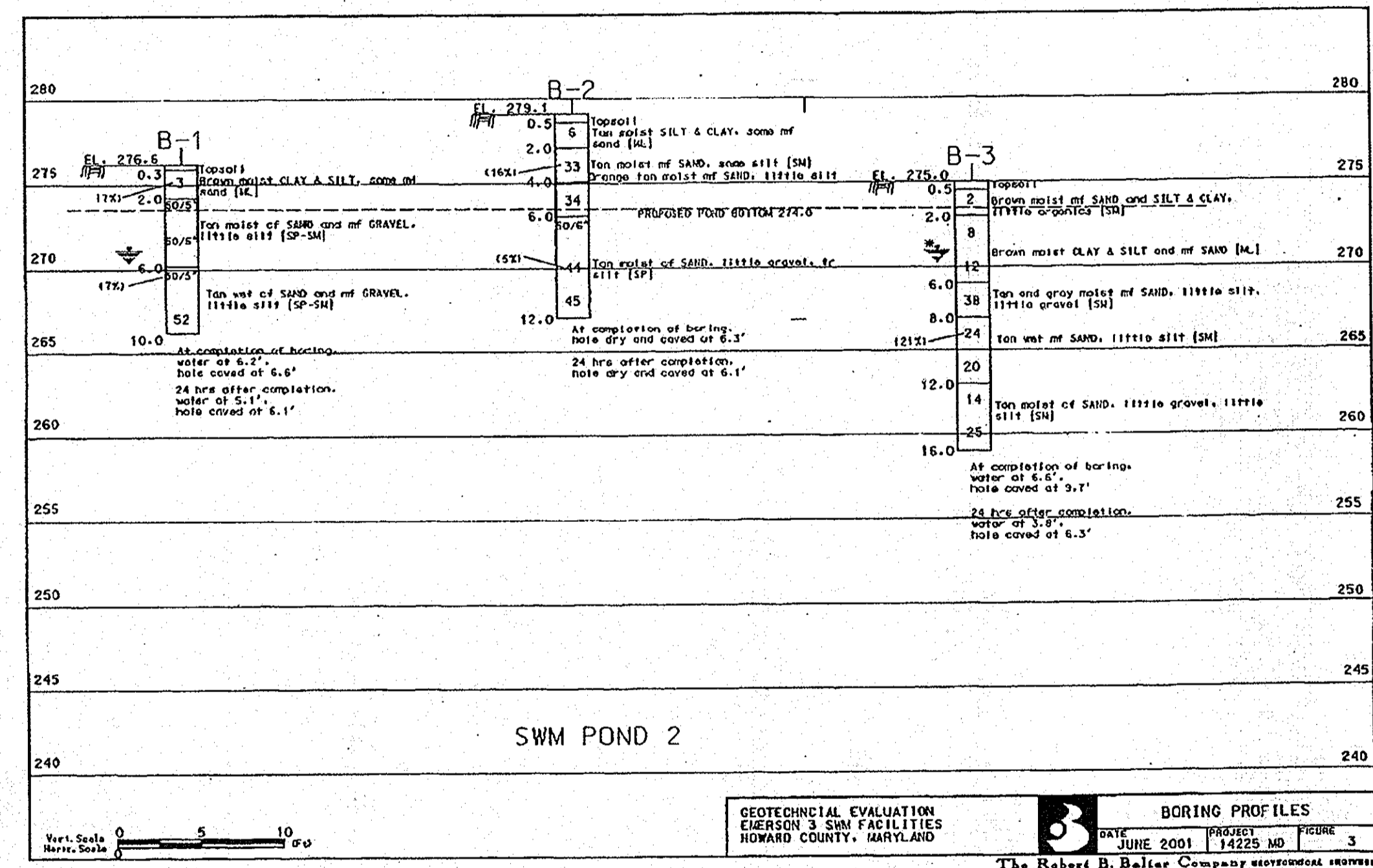
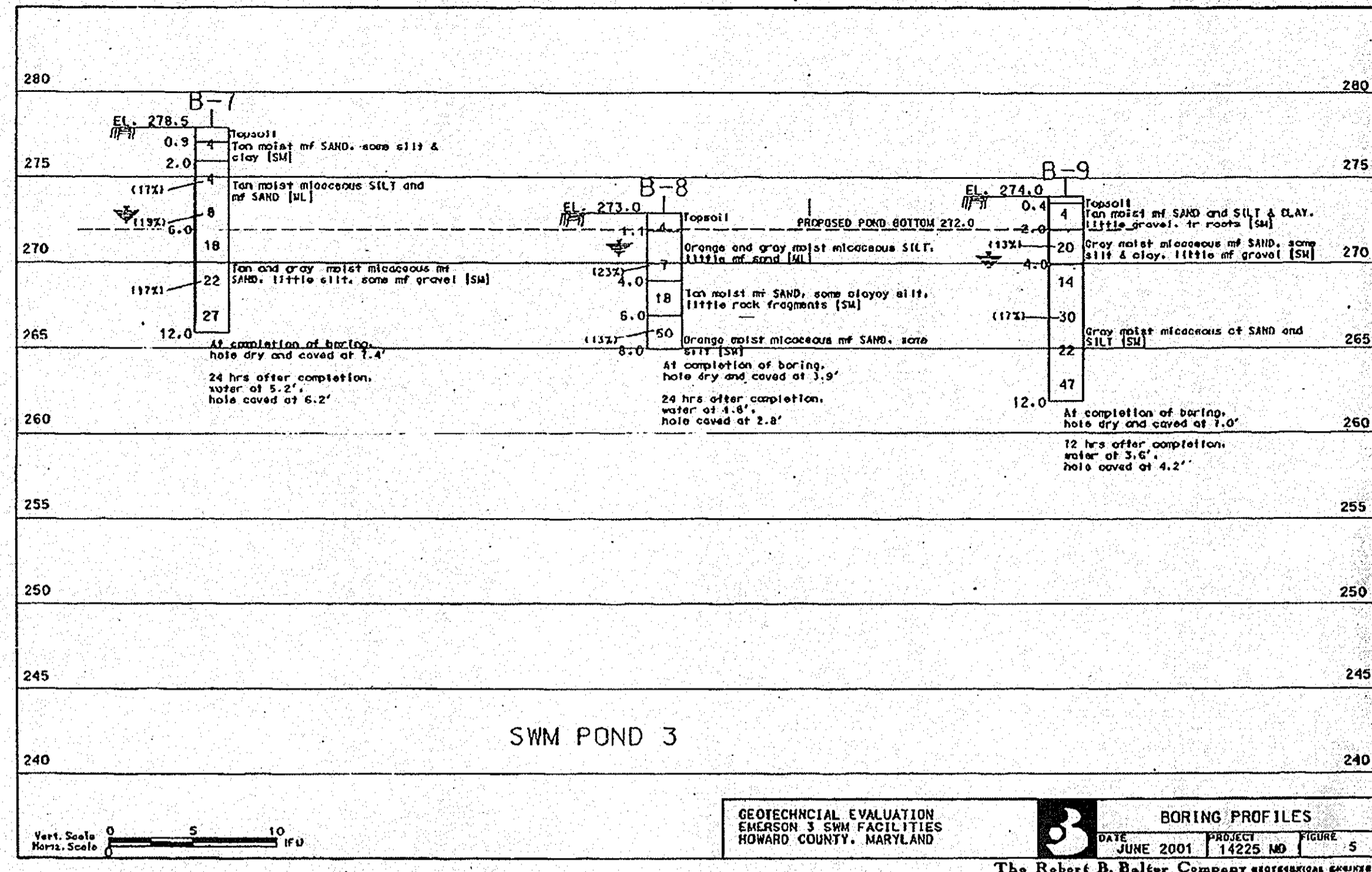
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A Team of Land Planning, Landscape Architecture, Engineering, Surveying, and Environmental Professionals

TITLE: **FINAL PLAN STORMWATER MANAGEMENT DETAILS FOR SWM II**

Des By	ART	Scale	AS SHOWN	Proj. No.	01011.C0
Drn By	ADL	Date	9/25/02		
Chk By		Approved			20 OF 31

Professional Engr. No. 10551



5. EVALUATIONS AND RECOMMENDATIONS

5.1. Stormwater Management Pond

Based upon our review of the available project plans, we understand that the three proposed SWM facilities will be constructed by excavation of the pond and construction of the embankment. The stormwater management facilities may require cuts up to 6 ft.

RBB has assumed that the embankment construction will include a cutoff trench and impermeable core. Since the depth of water impounded against the embankment at the principal spillway will be 3 feet or more, we presume the proposed facilities will be designed and constructed in accordance with the current specifications established by Maryland Soil Conservation Society (SCS) Standards and Specifications 378 for embankment ponds.

According to the "Maryland Stormwater Design Manual, Volume 1 & 2" (2000), established by the Maryland Department of Environment (MDE), it is our understanding that infiltration practices are not recommended to be utilized where the groundwater table or bedrock is within 4.0 feet of the invert level of an infiltration facility, or in materials that exhibit infiltration rates less than 0.52 inches per hour (based on field testing). Additionally, infiltration practices are not allowed on slopes greater than 15%, in fill materials or in materials with a clay content above 20% or silt and clay content above 40%.

During the geotechnical evaluation, a high water table was encountered in all of the proposed SWM facility locations. Also, the sedimentary soils at the pond bottoms exhibited silt and clay contents of 46% to 61%, which is in excess of the maximum allowable (40%). Based on these conditions, the SWM pond bottoms will not meet the infiltration requirements outlined by MDE regulations.

SCS criteria for embankment ponds requires installation of a cutoff trench of relatively impervious material at or upstream of the centerline of the embankment and the cutoff trench should extend into relatively impervious materials and consist of materials conforming to the Unified Soil Classification SC, CH, or CL. The required minimum depth and width of the cutoff trench is 4 feet, with side slopes not steeper than 1H: 1V. Based upon the subsurface data developed from the borings, these materials were not encountered onsite. Because of this, imported material would likely have to be used in the clay core. However, with more detailed and sophisticated stability analyses, it might be possible to demonstrate that reuse of onsite soils for the cutoff trench will result in an adequately impermeable and stable embankment. Section 6.1 General Earthwork Requirements outlines the earthwork requirements for construction of the SWM pond.

All foundations shall be constructed in accordance with the recommendations in Section 5.2 Foundations. All procedures regarding the installation of the discharge structures should be approved by SCS and Howard County.

5.2. Drainage Structure Foundations

Based upon the conditions indicated by the subsurface exploration program and our understanding of the proposed construction, it is our opinion that the natural soils are generally acceptable for support of typical spread footings. Based on our data, and preparation of the soils surfaces as recommended later in this report, the design may be proportioned for an allowable soil bearing pressure of 2,500 psf. It is noted that it is absolutely essential that the new footings bear on acceptable bearing strata. Newly excavated footings must be carefully cleaned of loosened or otherwise unsuitable materials, as verified by monitoring, testing and inspection in the field during construction.

Foundations which will be subject to the effects of freezing weather both during and following construction must bear a minimum of 30 inches below the surrounding grades to mitigate the possibility of detrimental frost action. Also, any minimum footing widths, sizes, and reinforcing required by applicable codes must be maintained. It is noted that proper construction procedures must be employed to prevent the loss of supporting capacity of the

soil bearing surface once footings have been excavated. Such measures include exercising care while setting reinforcing steel, placing concrete as soon as possible after excavation, and providing protection from the weather. During cold weather, the exposed bearing surface must be protected from freezing, and in no case may concrete be placed over materials which are frozen or have been degraded by freezing.

Based on present information, groundwater will likely be encountered and impact foundation excavation and construction. However, it is important to prevent surface water or seepage from collecting in open excavations prior to concrete placement. If water does inadvertently collect in foundation excavations, it will be necessary to bail the water from the hole, remove the saturated soils, and re-test the adequacy of the bearing surface to support the design pressure prior to placing concrete.

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. The on-site 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 117.0 to 135.7 pcf with optimum moisture contents ranging from 7.3% to 12.5%. 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, drier 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 recompact 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 may 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. 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-1	276.6	274	---	274	---
B-2	279.1	274	272	---	---
B-3	275.0	274	---	---	---
B-4	290.0	278	---	279	---
B-5	282.8	278	---	---	---
B-6	281.8	278	---	---	---
B-7	278.5	272	---	---	---
B-8	273.0	272	---	---	---
B-9	274.0	268	---	---	---

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.

Mr. Robert Jenkins
 Howard Research & Development Corporation
 Emerson 3 SWM Facilities
 June 14, 2001

The Robert B. Balter Company
 14225_rep3 emerson 3.doc

APPROVED: HOWARD COUNTY DEPT. OF PUBLIC WORKS
Robert M. Conde
 CHIEF, BUREAU OF HIGHWAYS
 DATE: 11-25-02

APPROVED: HOWARD COUNTY DEPT. OF PLANNING AND ZONING
Cindy Hamble
 CHIEF, DIVISION OF LAND DEVELOPMENT
 DATE: 12/6/02

Mark Damico
 CHIEF, DEVELOPMENT ENGINEERING DIVISION
 DATE: 12/2/02

Date	No.	Revision Description

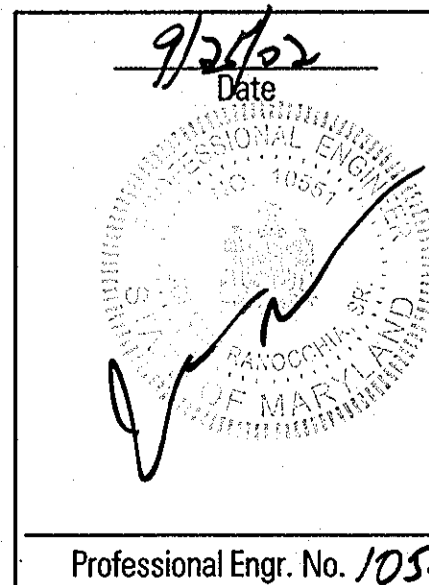
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 A Team of Land Planners,
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TITLE
FINAL PLAN
STORMWATER MANAGEMENT BORING LOGS

Des By	MRT	Scale	AS SHOWN	Proj. No.	01011.C0
Drn By	ADL	Date	9/25/02		
Chk By		Approved			22 OF 31



Professional Engr. No. 10551

THESE PLANS HAVE BEEN REVIEWED FOR THE HOWARD SOIL CONSERVATION DISTRICT AND MEET THE TECHNICAL REQUIREMENTS FOR SMALL POND CONSTRUCTION, SOIL EROSION AND SEDIMENT CONTROL.
Jim Meyer
 U.S.D.A. NATURAL RESOURCES CONSERVATION SERVICE
 DATE: 10/8/02

THESE PLANS FOR SMALL POND CONSTRUCTION, SOIL EROSION AND SEDIMENT CONTROL MEET THE REQUIREMENTS OF HOWARD SOIL CONSERVATION DISTRICT.
Joseph Necker Jr.
 APPROVED: HOWARD SOIL CONSERVATION DISTRICT
 DATE: 10/8/02

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Joseph Necker Jr.
 SIGNATURE OF DEVELOPER
 PRINT NAME BELOW SIGNATURE
 DATE: 9/25/02

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John W. Ramonczyk, Jr.
 SIGNATURE OF ENGINEER
 PRINT NAME BELOW SIGNATURE
 REG. NO. 10551
 DATE: 9/25/02



Legend

- WETLAND
- WETLAND BUFFER
- WETLAND SYMBOL
- HEAD OF STREAM
- STREAM
- STREAM BUFFER
- 100 YEAR FLOOD PLAIN
- MIC2 SOIL LABEL
- SOIL BOUNDARY
- SLOPES >25%
- SLOPES 15%-25%
- REFORESTATION AREAS
- EX. FOREST EDGE
- SCRUB/SHRUB/HEDGEKROW OR TREE GROUP
- FOREST CONSERVATION EASEMENT
- LIMIT OF DISTURBANCE
- PROPOSED WOODS EDGE
- NON-WOODY VEGETATION BUFFER

FOREST CONSERVATION EASEMENT "O" - 28.32± ACRES TOTAL (CONT'D.)
 (0.93± AC. RETENTION THIS SHEET)
 (1.16± AC. FLOODPLAIN THIS SHEET)

FOREST CLEARING 26.89± AC. TOTAL (CONT'D.)
 (1.50± AC. CLEARING THIS SHEET)

MATCH LINE - SEE SHEET 24 OF 31

EASEMENT TABULATION CHART

Forest Conservation Easement	Gross Area	Floodplain/ Existing SE Easement	Net Area	Retention	Unforested Acres Outside Floodplain
O	28.32 AC.	16.91 AC.	11.41 AC.	11.10 AC.	0.31 AC.
P	8.92 AC.	0.00 AC.	8.92 AC.	8.92 AC.	0.00 AC.
Q	0.54 AC.	0.00 AC.	0.54 AC.	0.52 AC.	0.02 AC.
R	3.81 AC.	0.00 AC.	3.81 AC.	3.42 AC.	0.39 AC.
TOTALS	41.59 AC.	16.91 AC.	24.68 AC.	23.96 AC.	0.72 AC.

Symbol	Soils Legend	Hydrologic Soil Group
BeB2	Belleville silt loam/ 1 to 5% Slopes	C
BeC2	Belleville silt loam/ 5 to 10% Slopes	C
ChC2	Chesster silt loam/ 5 to 15% Slopes	B
CmC2	Chillum silt loam/ 5 to 10% Slopes	C
CnB2	Chillum-Fairfax loams/ 1 to 5% Slopes	C
Co	Codorus silt loam	C
EvC	Evesboro loamy sand/ 5 to 15% Slopes	C
Ha	Harboro silt loam	C
SfB2	Sassafras gravelly sand loam/ 1 to 5% Slopes	B
SfC2	Sassafras gravelly sand loam/ 5 to 10% Slopes	B
SlC2	Sassafras loam/ 5 to 10% Slopes	B
SlD2	Sassafras loam/ 10 to 15% Slopes	D

APPROVED: HOWARD COUNTY DEPT. OF PUBLIC WORKS
Richard M. Dwyer 11-25-02
 CHIEF, BUREAU OF HIGHWAYS MS DATE

APPROVED: HOWARD COUNTY DEPT. OF PLANNING AND ZONING
Cathy Hamant 12/6/02
 CHIEF, DIVISION OF LAND DEVELOPMENT HP DATE

William J. Ross 12/2/02
 CHIEF, DEVELOPMENT ENGINEERING DIVISION MK DATE

Revision Description

EMERSON
 (Formerly the Key Property)
 Section 3, Area 1
 Parcels A - I

OWNER / DEVELOPER:
 THE HOWARD RESEARCH & DEVELOPMENT CORPORATION
 10275 LITTLE PATUXENT PARKWAY
 COLUMBIA, MARYLAND 21044

DMW
 Dan 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

9.25.02
 Date

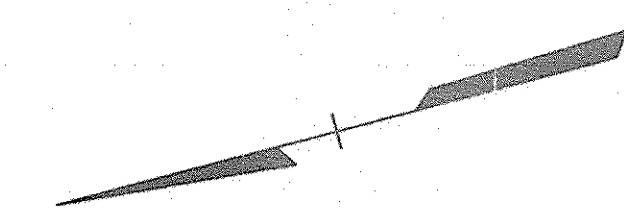
DMW
 LANDSCAPE ARCHITECT

Landscape Architect No.

TITLE
FINAL FOREST CONSERVATION PLAN

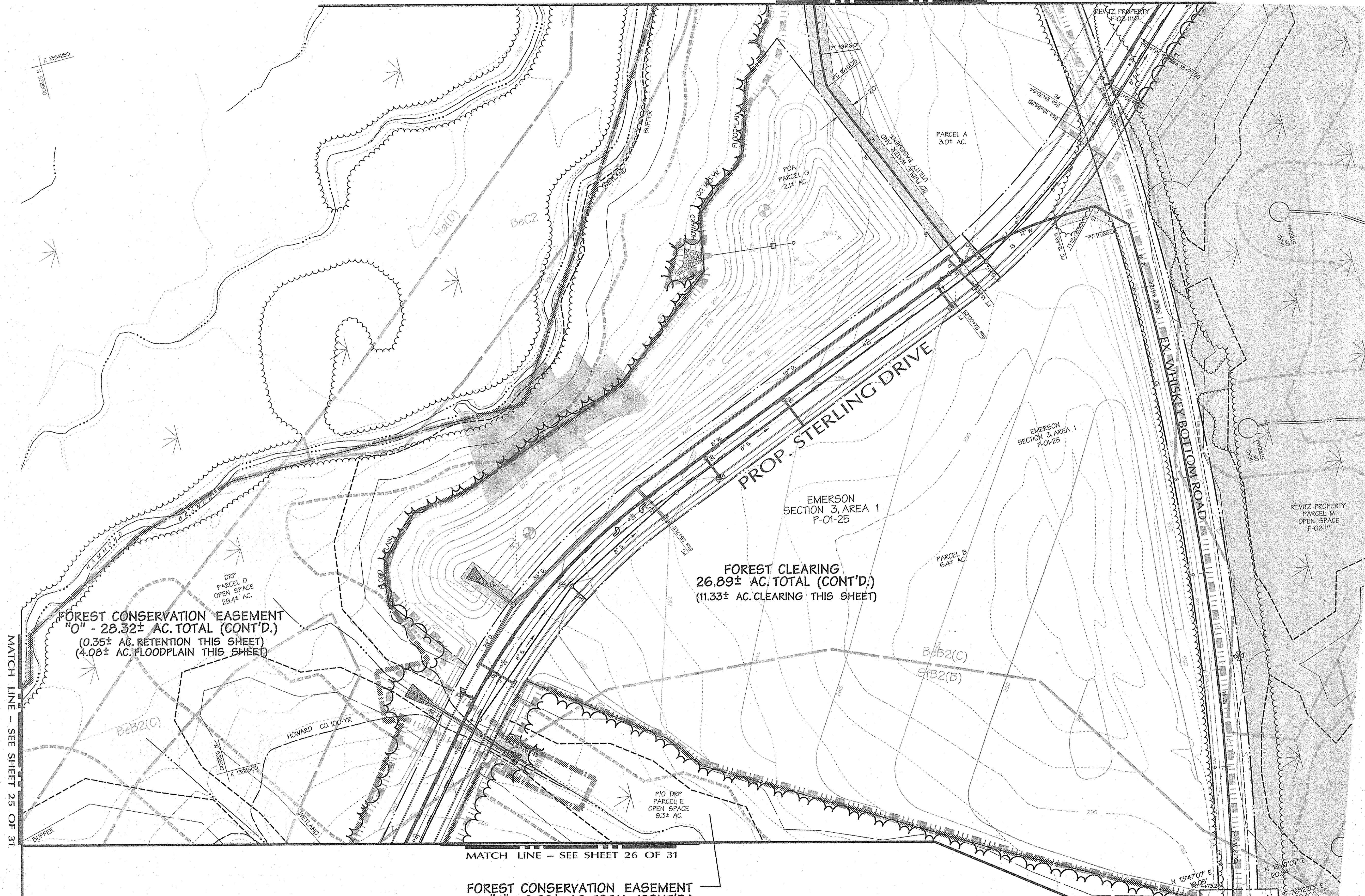
Des By _____ Scale 1" = 50' Proj. No. 01011.C
 Dwn By AJS Date 9/25/02
 Chk By _____ Approved _____ 23 OF 31

MATCH LINE - SEE SHEET 23 OF 31



Legend

- WETLAND
- WETLAND BUFFER
- WETLAND SYMBOL
- HEAD OF STREAM
- STREAM
- STREAM BUFFER
- 100 YEAR FLOOD PLAN
- MIC2 SOIL LABEL
- SOIL BOUNDARY
- SLOPES >25%
- SLOPES 15%-25%
- REFORESTATION AREAS
- EX FOREST EDGE
- SCRUBSHRUBBERGECROW OR TREE GROUP
- FOREST CONSERVATION EASEMENT
- LIMIT OF DISTURBANCE
- PROPOSED WOODS EDGE
- NON-WOODY VEGETATION BUFFER



FOREST CONSERVATION EASEMENT "O" - 28.32± AC. TOTAL (CONT'D.)
(0.35± AC. RETENTION THIS SHEET)
(4.08± AC. FLOODPLAIN THIS SHEET)

FOREST CLEARING 26.89± AC. TOTAL (CONT'D.)
(11.33± AC. CLEARING THIS SHEET)

FOREST CONSERVATION EASEMENT "P" - 8.92± AC. TOTAL (CONT'D.)
(0.98± AC. RETENTION THIS SHEET)

APPROVED: HOWARD COUNTY DEPT. OF PUBLIC WORKS
Stephen M. Daulton 11/25/02
CHIEF, BUREAU OF HIGHWAYS MS DATE

APPROVED: HOWARD COUNTY DEPT. OF PLANNING AND ZONING
Chris Hamada 12/6/02
CHIEF, DIVISION OF LAND DEVELOPMENT HB DATE

Mike Dammann 12/2/02
CHIEF, DEVELOPMENT ENGINEERING DIVISION MK DATE

Date No. Revision Description

EMERSON
(Formerly the Key Property)
Section 3, Area 1
Parcels A - I

OWNER / DEVELOPER:
THE HOWARD RESEARCH & DEVELOPMENT CORPORATION
10275 LITTLE PATUXENT PARKWAY
COLUMBIA, MARYLAND 21044

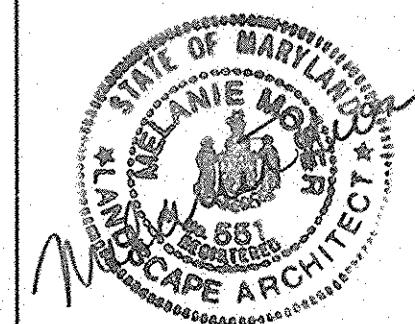
DMW
Dan McCune-Walker, Inc.
300 East Pennsylvania Avenue
Fossom, Maryland 21038
Fax 296-4705

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

TITLE
FINAL FOREST CONSERVATION PLAN

Des By Scale 1" = 50' Proj. No. 01011.C
Dwn By AJS Date 9/25/02
Chk By Approved 24 OF 31

9.25.02
Date



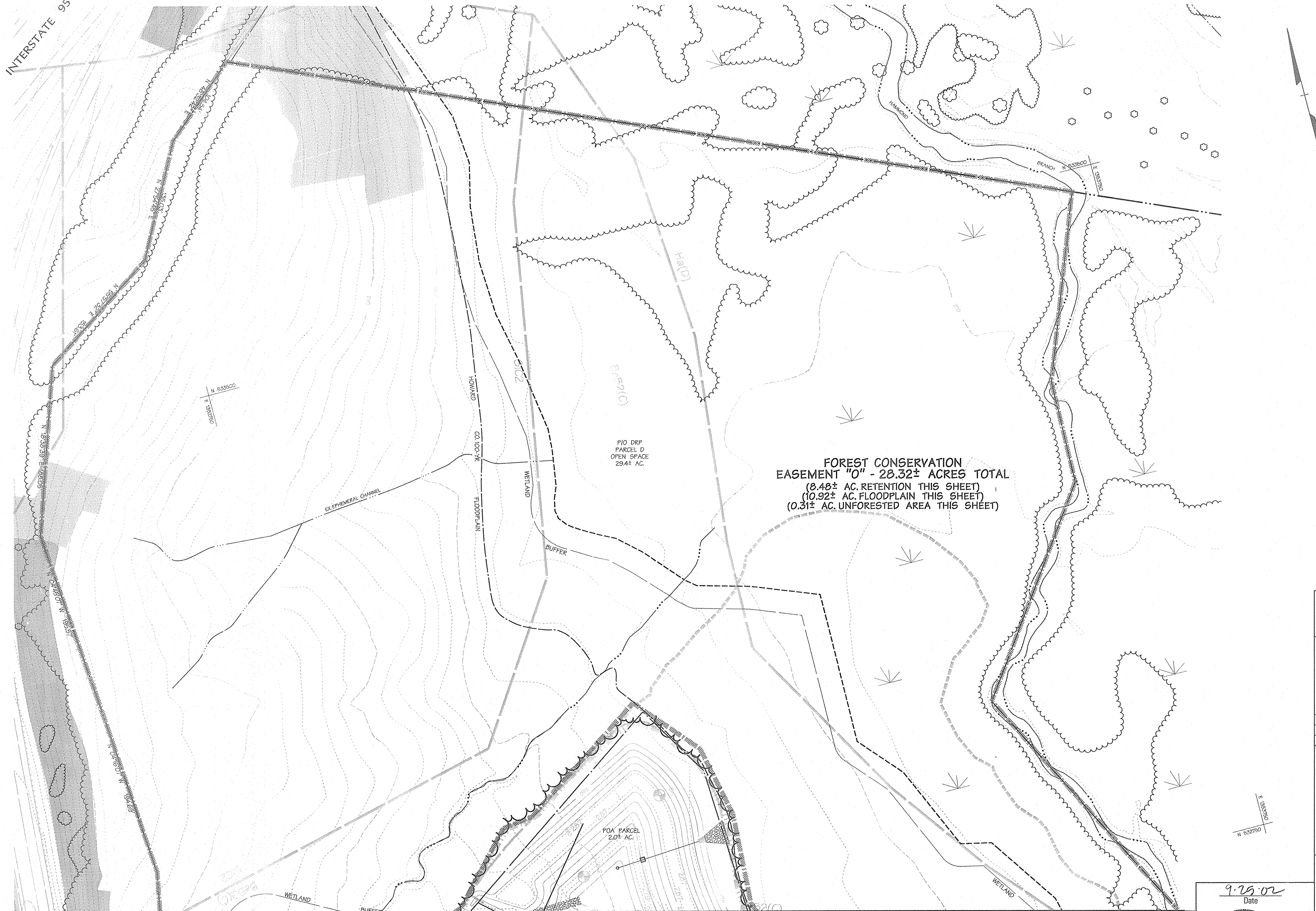
Symbol	Soils Legend	Hydrologic Soil Group
BeB2	Beltville silt loam/ 1 to 5% Slopes	C
BeC2	Beltville silt loam/ 5 to 10% Slopes	C
ChC2	Chester silt loam/ 5 to 15% Slopes	B
ChC2	Chillum silt loam/ 5 to 10% Slopes	C
ChB2	Chillum-Fairfax loam/ 1 to 5% Slopes	C
Co	Codorus silt loam	C
EvC	Essexboro loamy sand/ 5 to 15% Slopes	C
Ha	Harboro silt loam	C
SFB2	Sassafras gravelly sand loam/ 1 to 5% Slopes	B
SFC2	Sassafras gravelly sand loam/ 5 to 10% Slopes	B
SIC2	Sassafras loam/ 5 to 10% Slopes	B
SID2	Sassafras loam/ 10 to 15% Slopes	B

MATCH LINE - SEE SHEET 25 OF 31

MATCH LINE - SEE SHEET 26 OF 31

MATCH LINE - SEE SHEET 27 OF 31

INTERSTATE 95



Legend

- WETLAND
- WETLAND BUFFER
- WETLAND SYMBOL
- HEAD OF STREAM
- STREAM
- STREAM BUFFER
- 100 YEAR FLOOD PLAN
- SOIL LABEL
- SOIL BOUNDARY
- SLOPES >25%
- SLOPES 15%-25%
- REFORESTATION AREA
- EX FOREST EDGE
- SCRUBSHRUBBEDGELOW OR TREE GROUP
- FOREST CONSERVATION EASEMENT
- LIMIT OF DISTURBANCE
- PROPOSED WOODS EDGE
- NON-WOODY VEGETATION BUFFER

Symbol	Soils Legend	Hydrologic Soil Group
BeB2	Beltville silt loam/ 1 to 5% Slopes	C
BcC2	Beltville silt loam/ 5 to 10% Slopes	C
CnC2	Chester silt loam/ 5 to 15% Slopes	B
CmC2	Chillum silt loam/ 5 to 10% Slopes	C
CnB2	Chillum-Fairfax loams/ 1 to 5% Slopes	C
Co	Codorus silt loam	C
EvC	Evesboro loamy sand/ 5 to 15% Slopes	C
Ha	Hatboro silt loam	B
SFB2	Sassafras gravelly sand loam/ 1 to 5% Slopes	B
SFC2	Sassafras gravelly sand loam/ 5 to 10% Slopes	B
SIC2	Sassafras loam/ 5 to 10% Slopes	B
SID2	Sassafras loam/ 10 to 15% Slopes	B

APPROVED: HOWARD COUNTY DEPT. OF PUBLIC WORKS
Andrew M. Duvick 11-25-02
 CHIEF, BUREAU OF HIGHWAYS MS DATE

APPROVED: HOWARD COUNTY DEPT. OF PLANNING AND ZONING
Cynthia Hamata 12/6/02
 CHIEF, DIVISION OF LAND DEVELOPMENT HB DATE

Mark M. ... 12/2/02
 CHIEF, DEVELOPMENT ENGINEERING DIVISION MK DATE

Date	No.	Revision Description
EMERSON (Formerly the Key Property) Section 3, Area 1 Parcels A - I OWNER /DEVELOPER: THE HOWARD RESEARCH & DEVELOPMENT CORPORATION 10275 LITTLE PATUXENT PARKWAY COLUMBIA, MARYLAND 21044		

DMW
 Dart-McCune-Walker, Inc.
 200 East Pennsylvania Avenue
 Poolesville, Maryland 21086
 (410) 296-3353
 Fax 296-4705
 A Team of Land Planners, Landscape Architects, Engineers, Surveyors & Environmental Professionals

9-25-02
 Date

TITLE
FINAL FOREST CONSERVATION PLAN

Des By	Scale 1" = 50'	Proj. No. 01011.C
Dim By	Date 9/25/02	25 OF 31
Chk By	Approved	

MATCH LINE - SEE SHEET 26 OF 31

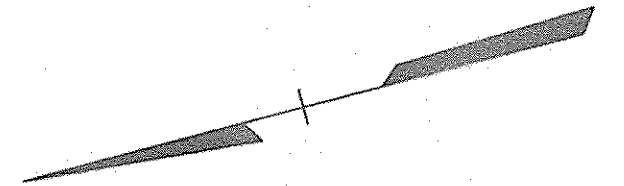
MATCH LINE - SEE SHEET 24 OF 31

FOREST CLEARING
 26.89± AC. TOTAL (CONT'D.)
 (1.05± AC. CLEARING THIS SHEET)

MATCH LINE - SEE SHEET 24 OF 31

MATCH LINE - SEE SHEET 25 OF 31

MATCH LINE - SEE SHEET 27 OF 31



Legend

- WETLAND
- WETLAND BUFFER
- WETLAND SYMBOL
- HEAD OF STREAM
- STREAM
- STREAM BUFFER
- 100 YEAR FLOOD PLAN
- SOIL LABEL
- SOIL BOUNDARY
- SLOPES >25%
- SLOPES 15%-25%
- REFORESTATION AREAS
- EX FOREST EDGE
- SCRUBBUSH/HEDGEROW OR TREE GROUP
- FOREST CONSERVATION EASEMENT
- LIMIT OF DISTURANCE
- PROPOSED WOODS' EDGE
- NON-WOODY VEGETATION BUFFER

APPROVED: HOWARD COUNTY DEPT. OF PUBLIC WORKS
Thomas M. Dancy 11-7-02
 CHIEF, BUREAU OF HIGHWAYS /MS DATE

APPROVED: HOWARD COUNTY DEPT. OF PLANNING AND ZONING
Cindy Harvath 12/6/02
 CHIEF, DIVISION OF LAND DEVELOPMENT /HB DATE

Mark P. ... 12/2/02
 CHIEF, DEVELOPMENT ENGINEERING DIVISION /MK DATE

Date	No.	Revision Description
EMERSON (Formerly the Key Property) Section 3, Area 1 Parcels A - I		
OWNER /DEVELOPER:		
THE HOWARD RESEARCH & DEVELOPME. T CORPORATION 10275 LITTLE PATUXENT PARKWAY COLUMBIA, MARYLAND 21044		

DMW
 Duff-McCune-Walker, Inc.
 200 East Pennsylvania Avenue
 Towson, Maryland 21286
 Fax: 206-4705

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

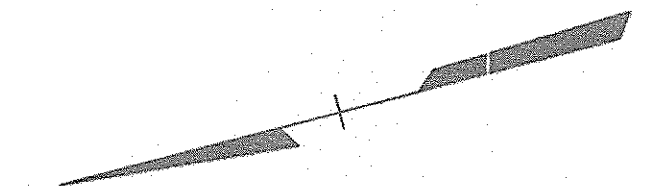
9.25.02
 Date

TITLE

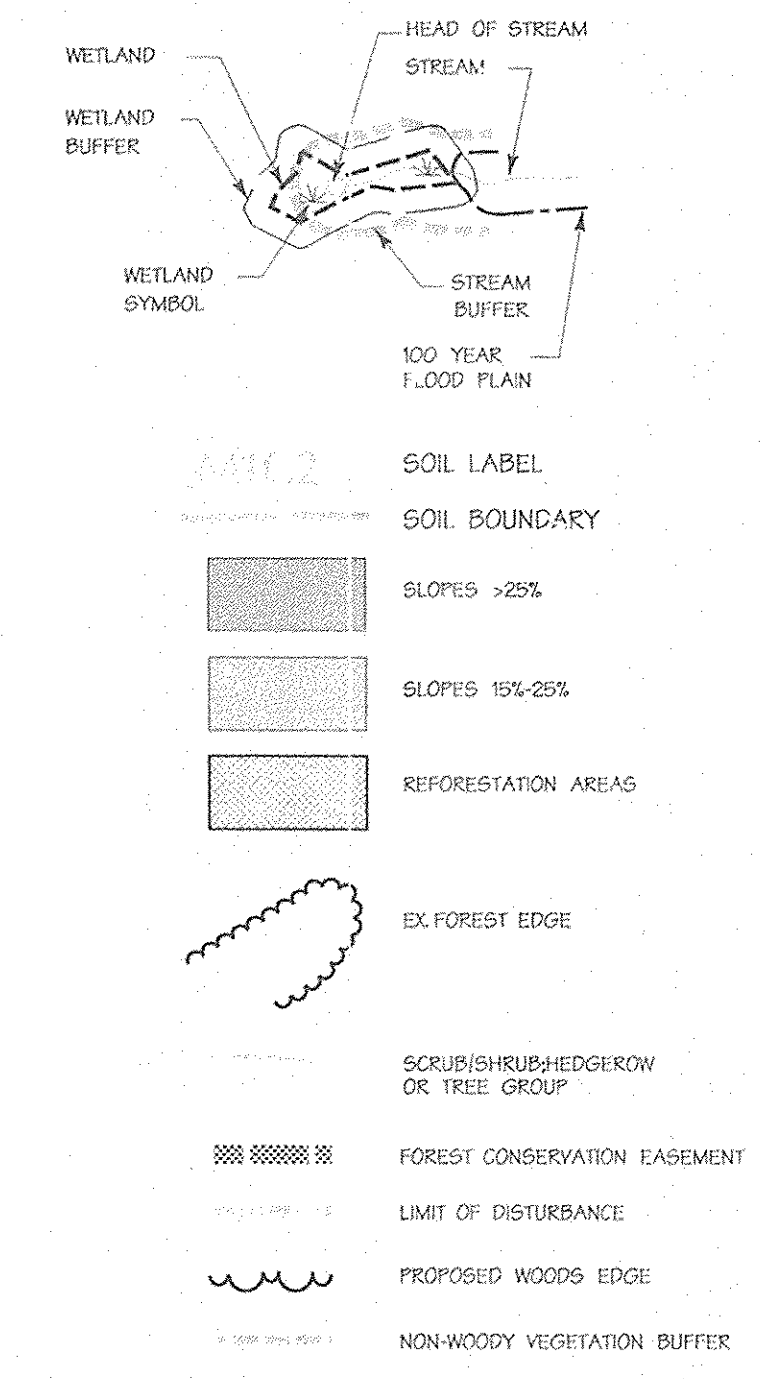
**FINAL
 FOREST CONSERVATION PLAN**

Des By	Scale 1" = 50'	Proj. No. 01011.C
Drn By	Date 9/25/02	
Chk By	Approved	26 OF 31

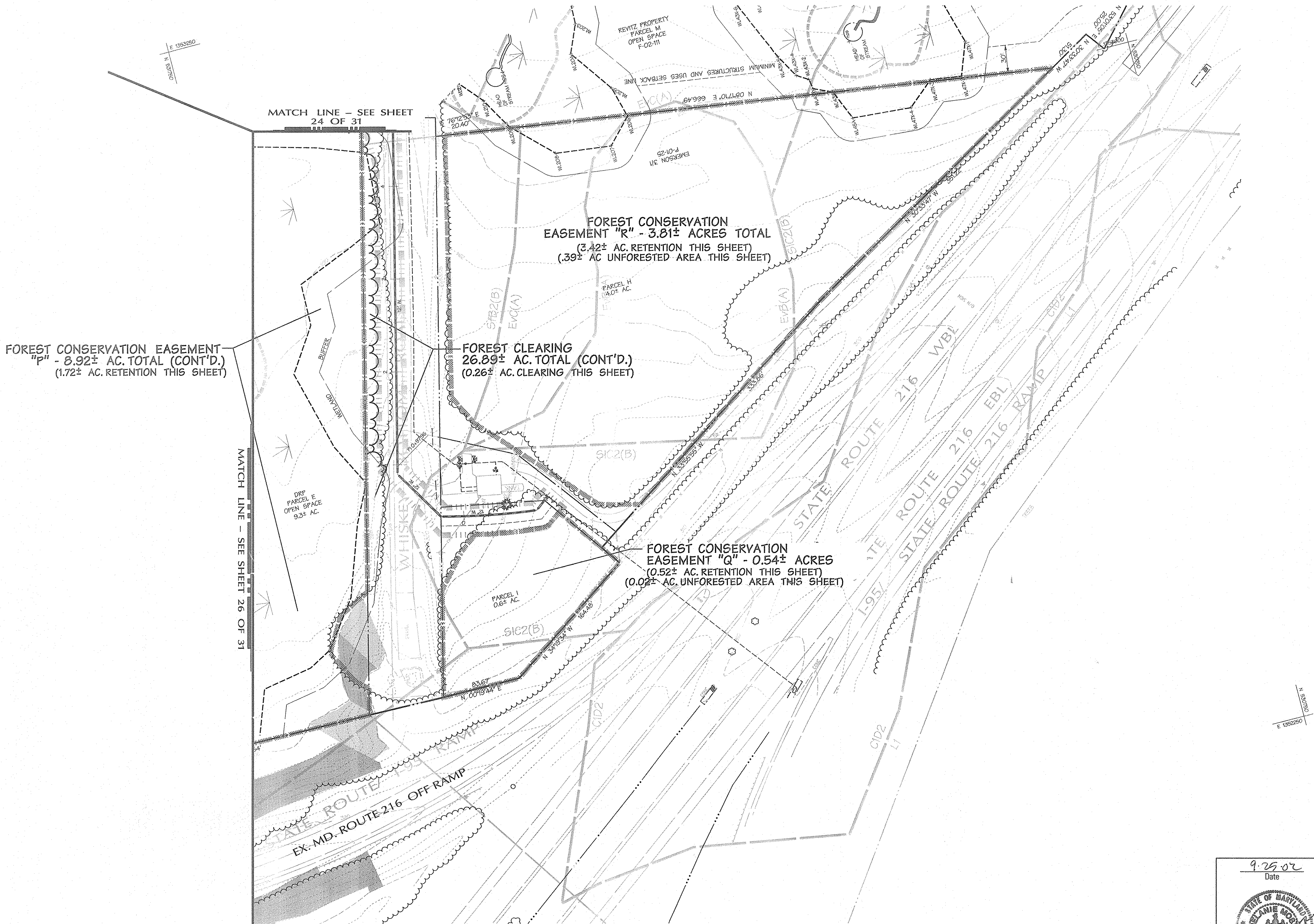
Landscape Architect No.



Legend



Symbol	Soils Legend	Hydrologic Soil Group
BeB2	Beltville silt loam/ 1 to 5% Slopes	C
BeC2	Beltville silt loam/ 5 to 10% Slopes	C
ChC2	Chester silt loam/ 5 to 15% Slopes	B
OmC2	Chillum silt loam/ 5 to 10% Slopes	C
CnB2	Chillum-Fairfax loam/ 1 to 5% Slopes	C
Co	Codorus silt loam	C
EvC	Evesboro loamy sand/ 5 to 15% Slopes	
Ha	Hatboro silt loam	
SFB2	Sassafras gravelly sand loam/ 1 to 5% Slopes	B
SFC2	Sassafras gravelly sand loam/ 5 to 10% Slopes	B
SIC2	Sassafras loam/ 5 to 10% Slopes	B
SID2	Sassafras loam/ 10 to 15% Slopes	B



APPROVED: HOWARD COUNTY DEPT. OF PUBLIC WORKS
Andrew M. Casper 11-25-02
 CHIEF, BUREAU OF HIGHWAYS HCS DATE

APPROVED: HOWARD COUNTY DEPT. OF PLANNING AND ZONING
Cindy Hamant 12/6/02
 CHIEF, DIVISION OF LAND DEVELOPMENT HB DATE

Mark Dammer 12/2/02
 CHIEF, DEVELOPMENT ENGINEERING DIVISION/MK DATE

Date	No.	Revision Description

EMERSON
 (Formerly the Key Property)
 Section 3, Area 1
 Parcels A - I

OWNER /DEVELOPER:
 THE HOWARD RESEARCH & DEVELOPMENT CORPORATION
 10275 LITTLE PATUXENT PARKWAY
 COLUMBIA, MARYLAND 21044

DMW
 Dan McCune-Walter, Inc.
 200 East Pennsylvania Avenue
 Towson, Maryland 21286
 (410) 286-5353
 Fax 286-4705

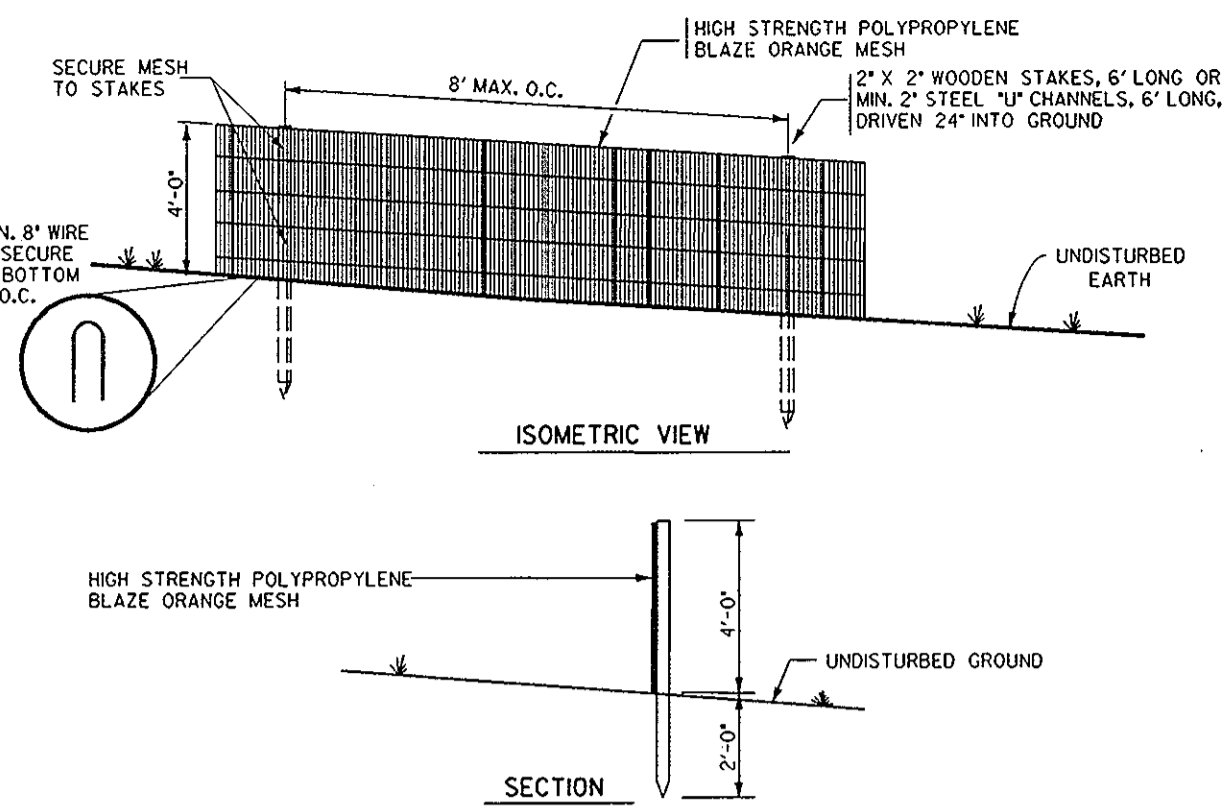
A Team of Land Planners,
 Landscape Architects,
 Engineers, Surveyors &
 Environmental Professionals

9-25-02
 Date

M. McWalter
 ARCHITECT

Landscape Architect No.

TITLE			
FINAL FOREST CONSERVATION PLAN			
Des By	Scale 1" = 50'	Proj. No.	01011.C
Dwn By	AJS	Date	9/25/02
Chk By	Approved		27 OF 31

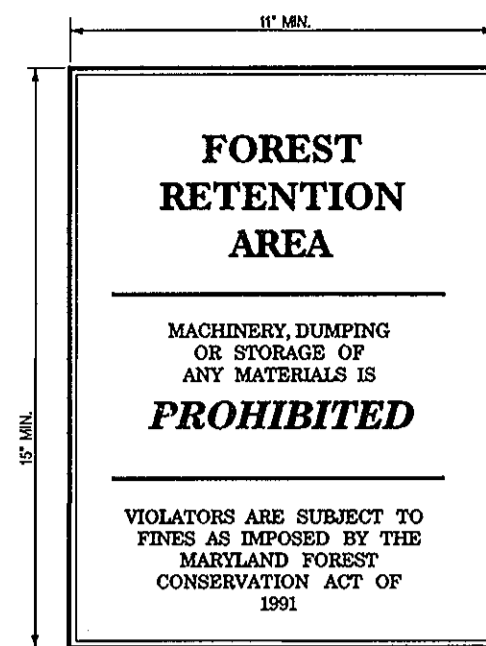


- NOTES:
1. THIS DETAIL IS FOR FOREST PROTECTION DEVICE ONLY.
 2. FOREST RETENTION AREA WILL BE SET AS PART OF THE REVIEW PROCESS.
 3. BOUNDARIES OF FOREST RETENTION AREA SHOULD BE STAKED AND FLAGGED PRIOR TO INSTALLING THE DEVICE.
 4. ROOT DAMAGE SHALL BE AVOIDED.
 5. PROTECTION SIGNAGE MAY ALSO BE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



VIOLATORS ARE SUBJECT TO FINES AS IMPOSED BY THE MARYLAND FOREST CONSERVATION ACT OF 1991.

Temporary and Permanent Signage

Not To Scale

GOALS AND OBJECTIVES

The goals and objectives of this Forest Conservation Plan are to identify forests to be retained and cleared with the development of Emerson Section 3, Area 1 and to provide long-term protection for forests to be retained. Approximately 28.94 acres of forest clearing is proposed, and 23.96 acres of forest will be retained predominantly within and adjacent to stream and wetland resources. As this phase of the Emerson project is being evaluated cumulatively with previous phases, no reforestation is required. Forest Conservation Easements have been defined using wetland buffer limits and parcel lines where appropriate for convenience when preparing plans. These easements include all retention areas, as well as contiguous floodplain and canopy gap areas that will become "filled in" as forest regenerates in the absence of vegetation management within the easement.

FOREST RETENTION

Tree retention/Soil Protection areas will be delineated with temporary forest protection fencing and retention area signage as appropriate. See forest protection fence and temporary signage Detail prior to the beginning of any construction activity. Attachment of signs to trees is prohibited.

PRECONSTRUCTION MEETING/CONSTRUCTION PERIOD PRACTICES

Before construction begins, a required preconstruction meeting shall be held. The principle contractor, 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.

CUMULATIVE FOREST CONSERVATION CALCULATIONS

BASIC SITE DATA	ACRES (UND)
GROSS SITE AREA	206.85
AREA WITHIN 100 YEAR FLOODPLAIN AND EXISTING SEWER EASEMENT	21.19
AREA WITHIN AGRICULTURAL USE OR PRESERVATION PARCEL (IF APPLICABLE)	0.00
NET TRACT AREA	185.66
LAND USE CATEGORY	COMMERCIAL/INDUSTRIAL/OFFICE
INFORMATION FOR CALCULATIONS	
A. NET TRACT AREA	185.66
B. REFORESTATION THRESHOLD (5% x A)	27.85
C. AFFORESTATION MINIMUM (5% x A)	27.85
D. EXISTING FOREST ON NET TRACT AREA	65.30
E. FOREST AREAS TO BE CLEARED	39.47
F. FOREST AREAS TO BE RETAINED	45.83
REFORESTATION CALCULATIONS	
A. NET TRACT AREA	185.66
B. REFORESTATION THRESHOLD (5% x A)	27.85
C. EXISTING FOREST ON NET TRACT AREA	65.30
D. FOREST AREAS TO BE CLEARED	39.47
E. FOREST AREAS TO BE RETAINED	45.83
F. FOREST AREAS CLEARED ABOVE REFORESTATION THRESHOLD	39.47
G. FOREST AREAS CLEARED BELOW REFORESTATION THRESHOLD	0.00
H. FOREST AREAS RETAINED ABOVE REFORESTATION THRESHOLD	17.98
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 (F1) x H	9.87
REFORESTATION FOR CLEARING BELOW THRESHOLD (G) x 2	0.00
TOTAL REFORESTATION REQUIRED (F1) x H + (G) x 2	9.87
CREDIT FOR RETENTION ABOVE CONSERVATION THRESHOLD	17.98
REFORESTATION REQUIRED	0.00 ACRES
REFORESTATION PROVIDED	5.03 ACRES
TOTAL	5.03 ACRES

- 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
Stephen M. Pascale 11-25-02
 CHIEF, BUREAU OF HIGHWAYS MS DATE

APPROVED: HOWARD COUNTY DEPT. OF PLANNING AND ZONING
Andy Hamels 12/6/02
 CHIEF, DIVISION OF LAND DEVELOPMENT HB DATE

Mike Demmus 12/2/02
 CHIEF, DEVELOPMENT ENGINEERING DIVISION MK DATE

Date	No.	Revision Description

EMERSON
 (Formerly the Key Property)
 Section 3, Area 1
 Parcels A - I

OWNER /DEVELOPER:
 THE HOWARD RESEARCH & DEVELOPMENT CORPORATION
 10275 LITTLE PATUXENT PARKWAY
 COLUMBIA, MARYLAND 21044

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

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

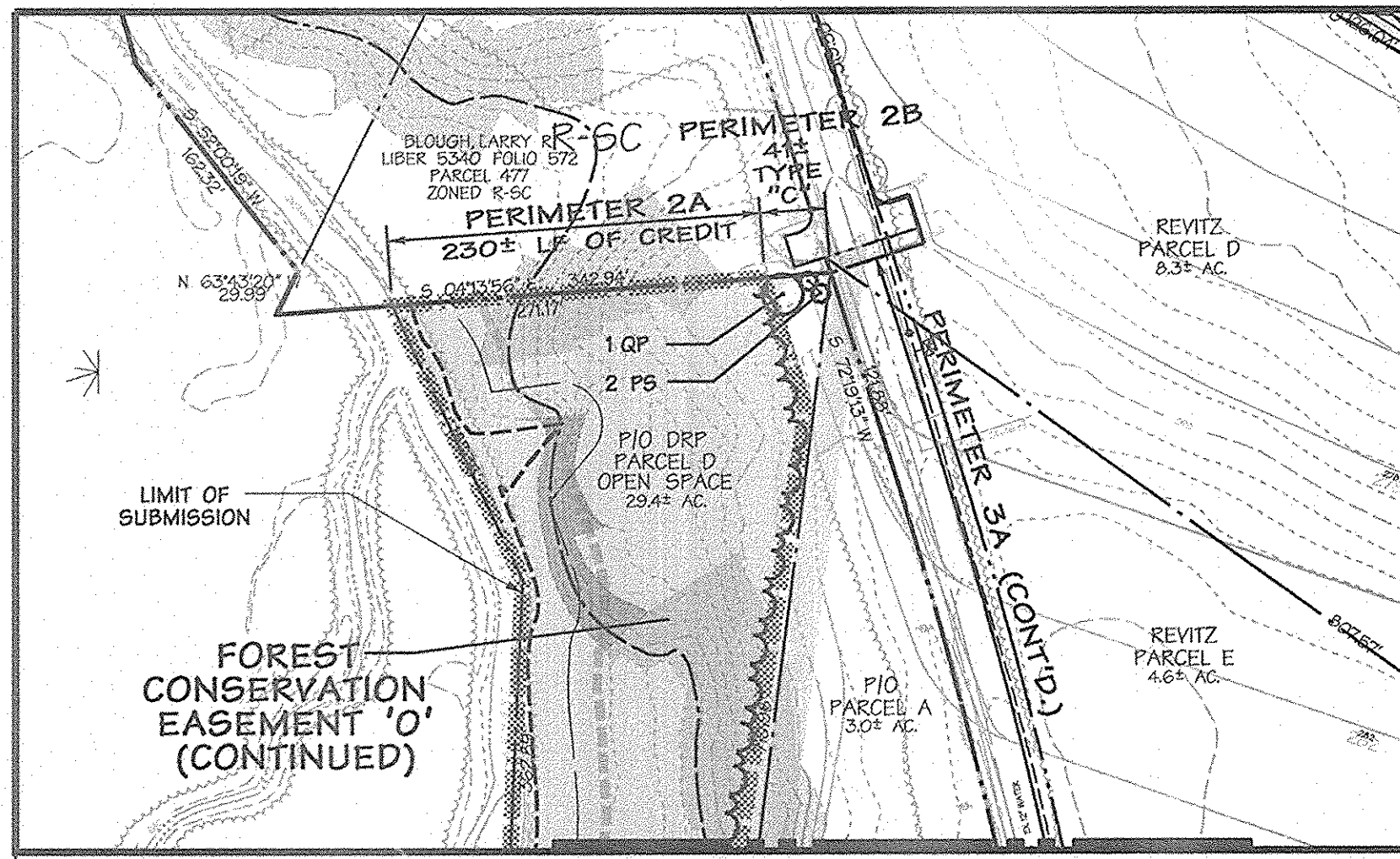
9-25-02
 Date

Melanie Wozniak
 LANDSCAPE ARCHITECT

Landscape Architect No.

TITLE
**FINAL PLAN
 FOREST CONSERVATION NOTES
 AND DETAILS**

Des By	Scale 1" = 50'	Proj. No. 01011.C
Dim By	Date 9/25/02	28 OF 31
Chk By	Approved	



NOTES:
 1. SEE SHEET 30 OF 31 FOR LANDSCAPE NOTES AND DETAILS, PERIMETER CALCS AND WATER QUALITY NOTES.
 2. SEE SHEET 31 OF 31 FOR FULFILLMENT OF SWM PERIMETER REQUIREMENTS AND WATER QUALITY PLANNING.
 3. 64 STREET TREES THIS SHEET.

Plant List (Perimeter Landscaping — This Sheet)

QTY	SYM	BOTANICAL NAME/COMMON NAME	SIZE	REMARKS
10	QP	QUERCUS PALUSTRIS PIN OAK	2 1/2" - 3" CAL. 12'-14" HT.	B & B FULL HEAD
12	PS	PINUS STROBUS WHITE PINE	6'-8" HT.	B & B HEAVY / UNSHEARED
6	PS	CORNUS KOUSA KOUSA DOGWOOD	8'-10" HT.	B & B

Legend

- WETLAND
- WETLAND BUFFER
- WETLAND SYMBOL
- HEAD OF STREAM
- STREAM
- STREAM BUFFER
- 100 YEAR FLOOD PLAN
- SLOPES >25%
- SLOPES 15%-25%
- REFORESTATION AREAS
- PROPOSED FOREST EDGE
- SCRUBSHRUBBERGROW OR TREE GROUP
- FOREST CONSERVATION EASEMENT
- PROPOSED SHADE TREE
- PROPOSED FLOWERING TREE
- PROPOSED EVERGREEN TREE
- PROPOSED STREET TREE
- EXISTING SHADE TREE
- EXISTING EVERGREEN TREE
- EXISTING STREET TREE

APPROVED: HOWARD COUNTY DEPT. OF PUBLIC WORKS
Andrew M. Dando
 CHIEF, BUREAU OF HIGHWAYS *ASB* DATE 11-25-02

APPROVED: HOWARD COUNTY DEPT. OF PLANNING AND ZONING
Andy Hamstra
 CHIEF, DIVISION OF LAND DEVELOPMENT *HSB* DATE 12/6/02

Mike Damann
 CHIEF, DEVELOPMENT ENGINEERING DIVISION *MIC* DATE 12/2/02



Date	No.	Revision Description

EMERSON
 (Formerly the Key Property)
 Section 3, Area 1
 Parcels A - I

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) 286-3333
 Fax 286-4705

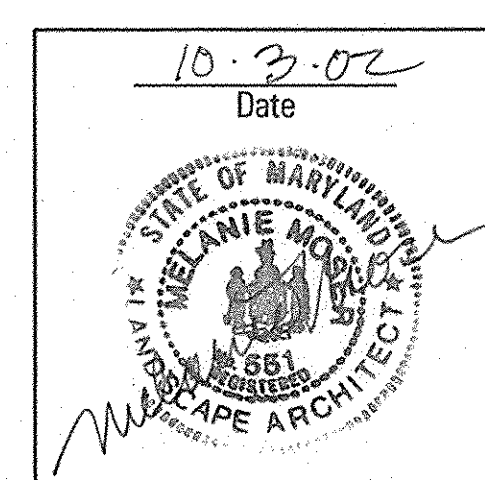
A Team of Land Planners,
 Landscape Architects,
 Engineers, Surveyors &
 Environmental Professionals

10-2-02
 Date

FINAL PLAN
LANDSCAPE PLAN

Des By	Scale	1" = 100'	Proj. No.	01011.C
Dm By	AJS	Date	9/25/02	
Chk By	Approved			29 OF 31

Landscape Architect No.



Landscape Notes

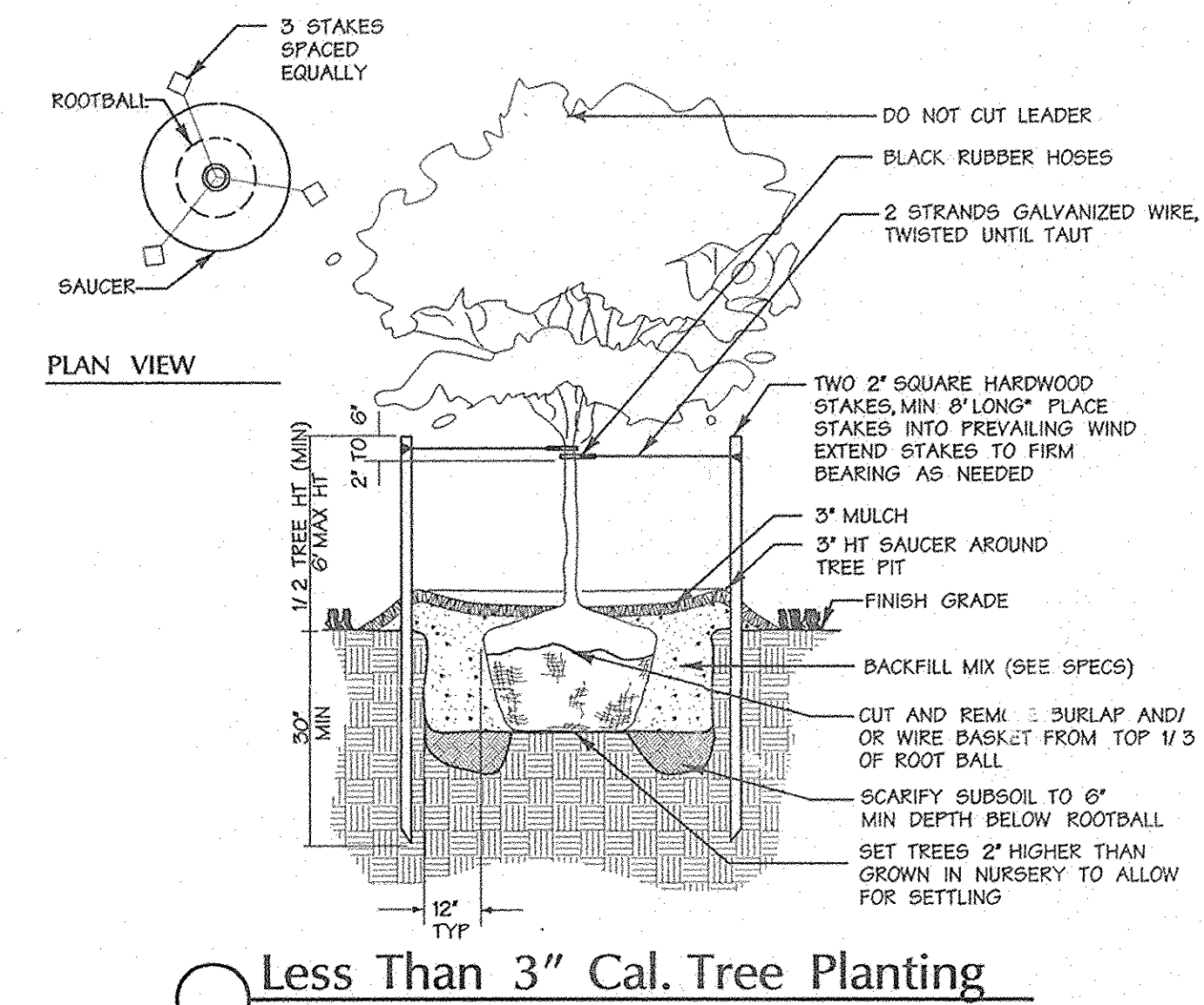
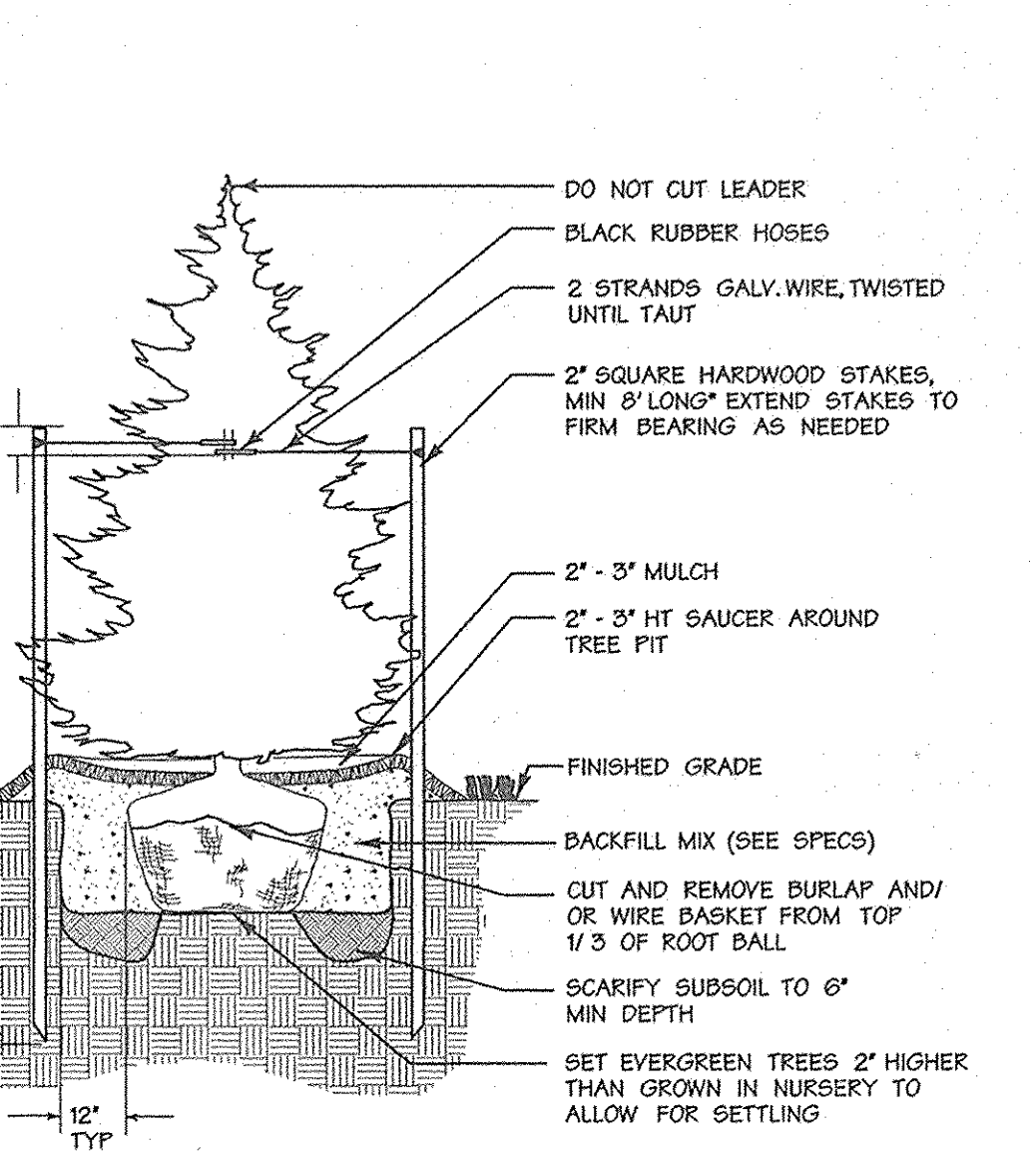
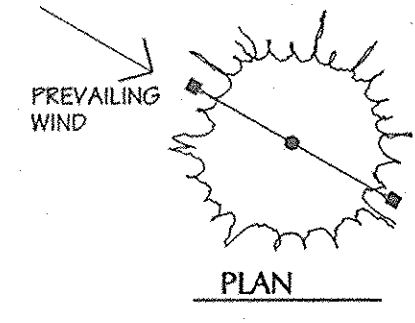
- The contractor shall review architectural/engineering plans to become thoroughly familiar with grading and surface utilities.
- All equipment and tools shall be placed so as not to interfere or hinder the pedestrian and vehicular traffic flow. See Seasonal Plant List for planting times of bulbs and seasonal plants.
- The contractor shall coordinate with lighting and irrigation contractors regarding timing of installation of plant material.
- The contractor shall insure that his work does not interrupt established or projected drainage patterns.
- During planting operations, excess waste materials shall be promptly and frequently removed from the site.
- 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 expense to the owner.
- 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.
- 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.
- 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.
- 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. Good quantity take-offs are the responsibility of the contractor. 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.
- 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.
- Plants shall conform to current "American Standards for Nursery Stock" by American Association of Nurserymen (A.A.N.), particularly with regard to size, growth, size of ball, and density of branch structure. Plant material shall be tagged at the source by the landscape architect unless this requirement is specifically waived.
- 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.
- 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.
- No substitutions shall be made without written consent of the owner or landscape architect.
- 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.
- 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.
- All proposed trees to be installed either entirely in or entirely out of planting beds. Planting bed lines are not to be obstructed. All shrubs and ground cover areas shall be planted in continuous prepared bed and top dressed with 3-inch shredded hardwood mulch. Mulch shall have been shredded within the last six months.
- All planting beds adjacent to lawn, sod, or seeded areas shall be spade edged.
- 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.
- 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.
- All trees shall be guaranteed for 12 months from the date of acceptance. All shrubs and ground covers shall be guaranteed for 12 months from the date of acceptance.
- 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.
- 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
2 cy wood residuals
4.5 lbs treble superphosphate
5 lbs dolomite 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 dolomite limestone (eliminate for acid loving plants)
- 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.
- The contractor shall insure adequate vertical drainage in all plant beds and planters.
- All disturbed areas on the site not planted with shrubs or ground cover shall be fine graded and seeded or sodded as noted on landscape plan.
- All sod shall be obtained from areas having growing conditions familiar to areas to be covered. Areas to be sodded shall be raked of stones and debris. Debris and stones over 1 inch in diameter shall be removed from the site. All damaged sod will be rejected. All sod must be placed with staggered joints, tightly butted, with no inequalities in grade. Place all sod in rows at right angles to slopes (where applicable).
- All planting procedures shall conform to Darr McCune Walker Inc. specifications.
- Some field located plants are not graphically shown on this plan but are within the limit of construction line. All plants (field located plants and graphically shown plants) are noted on the plant list.

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:**
- Furnishing of all plant material.
 - Soil preparation, planting operations.
 - Maintenance and guarantee.
- 1.02 QUALITY ASSURANCE**
- A. American Association of Nurserymen (A.A.N.): "American Standard for Nursery Stock". (A.N.S.I. 2800.) 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 recent 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 wind. 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. Starts of Planting: Installation of plants material into excavated pits or beds.
B. Payment Release Inspection: Conducted monthly by the Owner or designated representative to verify quantity only for partial payments 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 materials 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 unimpacted material considering growth that has occurred since original installation. Methods of installation shall be identical to the original. The contractor shall guarantee 95% survival through 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 not 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.
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.
- Until the removal of the plants from the containers, the soil/root masses shall be the size of the specified 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.
- 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 direct exposure to the sun and wind, and they shall be protected by covering with straw, peat moss, compost, or other suitable material 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 material 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 insects.
- 2.02 FERTILIZER**
- A. Plant Fertilizer: Slow release fertilizer such as Osmocote 19-6-12 analyze (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 pits 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.

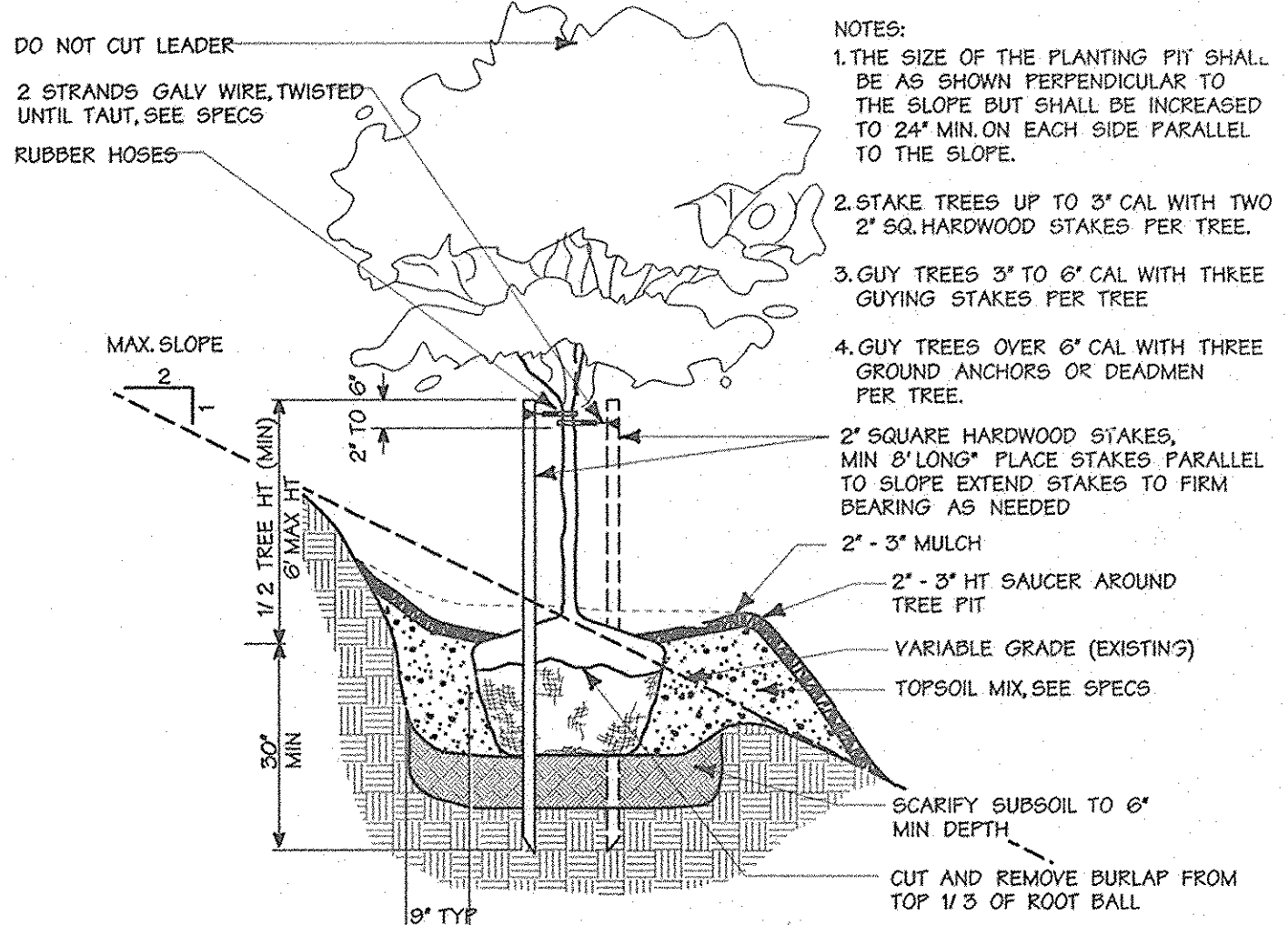
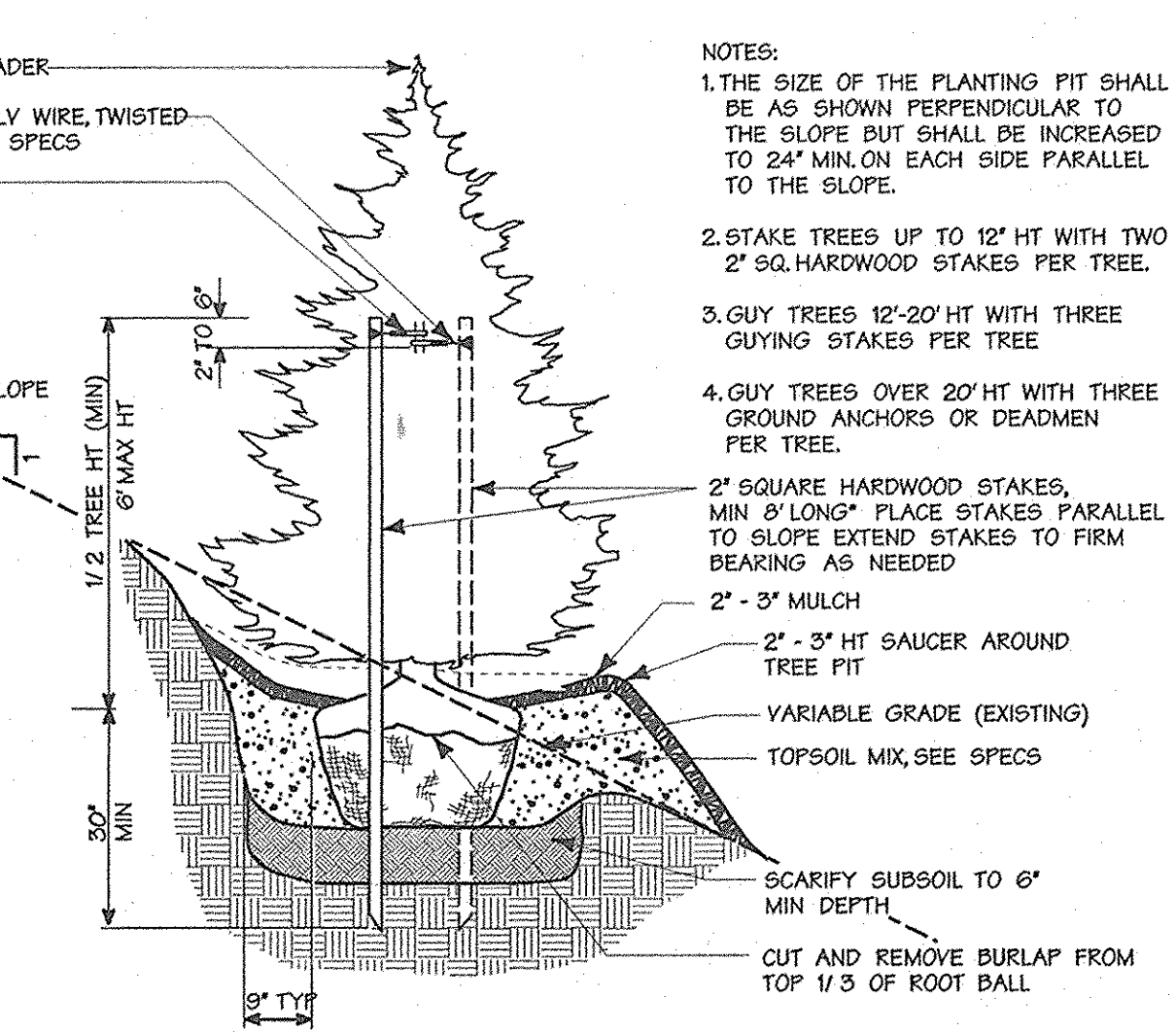
3.01 PREPARATION

- 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.



Less Than 3" Cal. Tree Planting
Not To Scale

Evergreen Tree Planting



Evergreen Tree Planting on Slope
Not To Scale

General Planting Notes

- All plant material to meet A.A.N. Standards.
- Landscape Contractor to follow landscape specification guidelines for Baltimore Washington Metro area, approved by LCMW.
- No substitutions to be made without consent of Landscape Architect or Owner.
- All beds to be topped with three inches of hardwood mulch.
- Landscape Contractor to verify location of utilities with Owner before planting.
- Landscape Architect/Owner shall select, verify and/or approve all plant material. As Owner's discretion, specimen and other plant material will be selected.
- Landscape Contractor shall coordinate plant bed filling operations and plant material installation with General Contractor and Utilities Contractor. At the time of final inspection with acceptance, all electric, water, drainage, and fountain utilities, as well as all plant materials, shall remain undamaged. Likewise, Landscape Contractor and Utilities Contractor shall coordinate efforts to ensure that surface utilities are at the proper elevation relative to final grades.
- Contractor shall notify Miss Utility 72 hours prior to construction.
- 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.
- This plan has been prepared in accordance with the provisions of Section 16.124 of the Ho. Co. code. Financial surety for the required landscaping in the amount of \$15,750.00 must be posted as part of the developer's agreement. (32 shade, 41 evergreens).
- Developer's/Builder's Certificate

I/we certify that the landscaping shown on this plan will be done according to the plan, Section 16.124 of the Howard County code and the Howard County Landscape Manual. I/we further certify that upon completion, a certification of landscape installation, accompanied by an executed one-year guarantee of plant materials, will be submitted to the Department of Planning and Zoning.

NAME: *Jean N. [Signature]* DATE: 9-25-02

SCHEDULE A PERIMETER LANDSCAPE EDGE

CATEGORY	ADJACENT to ROADWAYS				ADJACENT to PERIMETER PROPERTIES			
	P1A	P1B	P1C	P3B	P2A	P2B	P2A	P4
PERIMETER #	B	B	B	A	C	C	A	A
LINEAR FEET OF PERIMETER	1477 LF.	477 LF.	1266 LF.	770 LF.	230 LF.	41 LF.	814 LF.	717 LF.
CREDIT FOR EXISTING VEGETATION (DESCRIBE BELOW IF NEEDED)	1477 LF.	N/A	1266 LF.	N/A	230 LF.	N/A	N/A	717 LF.
CREDIT FOR BERM (DESCRIBE BELOW IF NEEDED)	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
NUMBER OF PLANTS PROVIDED								
SHADE TREES	0	10*	0	15*	0	1	14*	0
EVERGREEN TREES	0	12*	0	19*	0	2	0	0
SHRUBS	0	0	0	0	0	0	0	0
NUMBER OF PLANTS PROVIDED								
SHADE TREES	0	0	0	0	1	0	0	0
EVERGREEN TREES	0	0	0	0	0	2	0	0
OTHER TREES (2:1 SUBSTITUTION)	0	0	0	0	0	0	0	0
SHRUBS (10:1 SUBSTITUTION)	0	0	0	0	0	0	0	0
(DESCRIBE PLANT SUBSTITUTION CREDITS BELOW IF NEEDED)								

PERIMETERS PROVIDED BY THE DEVELOPER: 1A 1C 2A 2B 4

PERIMETERS PROVIDED BY THE BUILDER: 1B 3A 3B

* DEFERRED UNTIL SITE PLAN STAGE

NOTES:

- STREET TREES WILL BE PROVIDED @ 1/40 LF.
- PLANT MATERIAL FOR "PERIMETERS TO BE PROVIDED BY THE BUILDER" TO BE SPECIFIED AND PLACED COINCIDENT WITH THE DEVELOPMENT OF PARCELS TO INSURE RESPONSIVENESS TO THE DESIGN OF EACH PARCEL AND TO PREVENT DAMAGE TO PLANT MATERIAL DURING THE CONSTRUCTION PROCESS.

APPROVED: HOWARD COUNTY DEPT. OF PUBLIC WORKS
[Signature] 11-25-02
CHIEF, BUREAU OF HIGHWAYS

APPROVED: HOWARD COUNTY DEPT. OF PLANNING AND ZONING
[Signature] 12/6/02
CHIEF, DIVISION OF LAND DEVELOPMENT

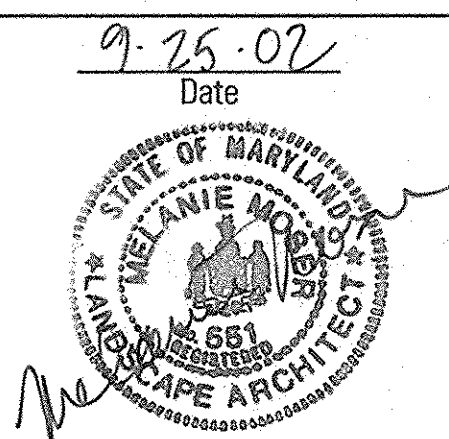
[Signature] 12/21/02
CHIEF, DEVELOPMENT ENGINEERING DIVISION

EMERSON
(Formerly the Key Property)
Section 3, Area 1
Parcels A - I

OWNER /DEVELOPER:
THE HOWARD RESEARCH & DEVELOPMENT CORPORATION
10275 LITTLE PATUXENT PARKWAY
COLUMBIA, MARYLAND 21044

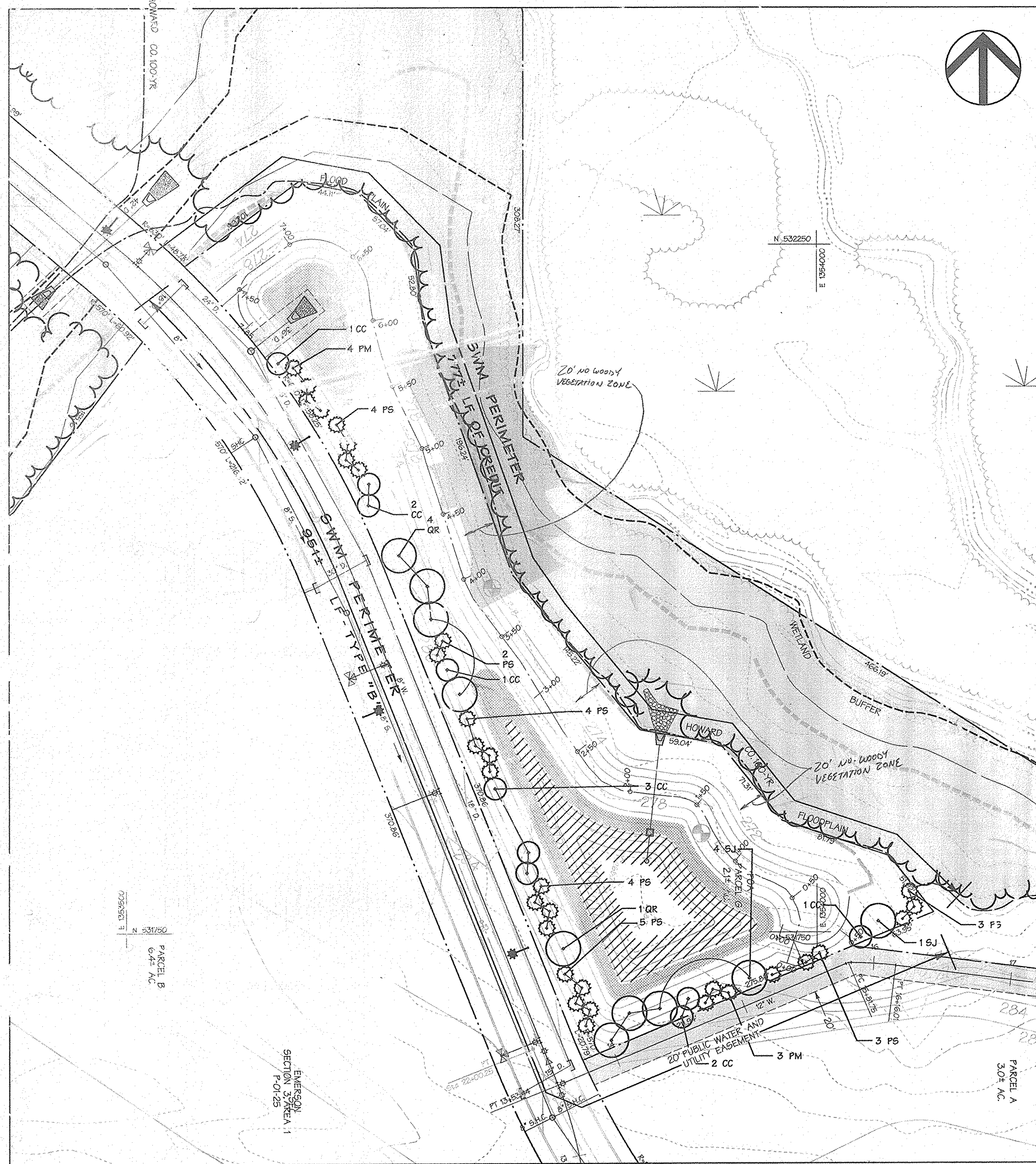
DMW
Darr McCune Walker, Inc.
300 East Pennsylvania Avenue
Potosi, Maryland 21086
(410) 298-3333
Fax 298-4705

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



TITLE
FINAL PLAN LANDSCAPE AND WATER QUALITY NOTES AND DETAILS

Des By: Scale: 1" = 50'
Dwn By: AJS Date: 9/25/02 Proj. No.: 0101.C
Chk By: Approved 30 OF 31



SWM POND II

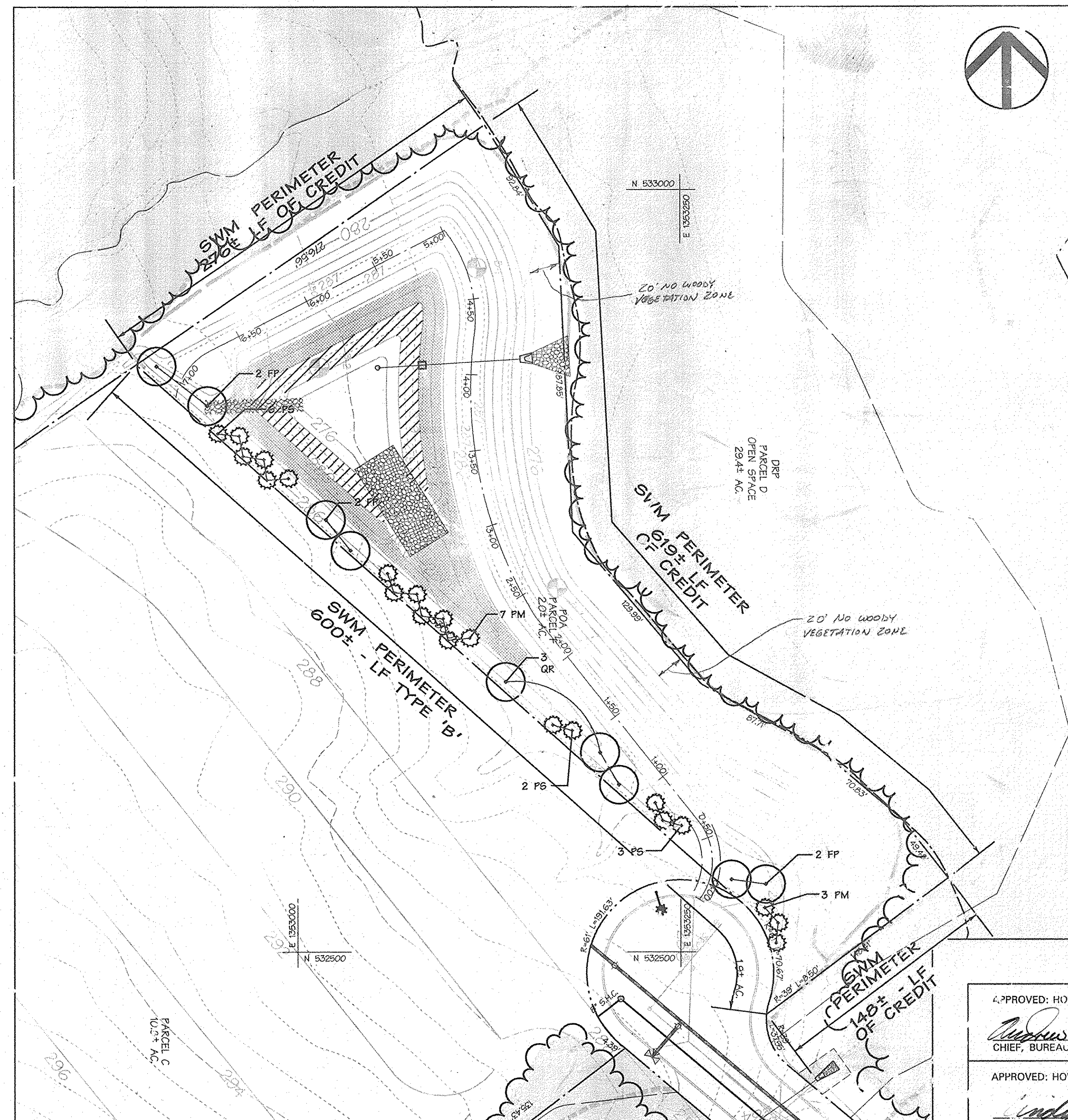
**SCHEDULE D
STORMWATER MANAGEMENT
AREA LANDSCAPING**

POND #	I	II
LINEAR FT. OF PERIMETER (TYPE "B")	1643 LF	1728 LF
NUMBER OF TREES REQUIRED		
SHADE TREES @ 1/50 LF.	12	19
EVERGREEN TREES @ 1/40 LF.	1F	24
CREDIT FOR EXISTING VEGETATION	1043 LF	777 LF
CREDIT FOR OTHER LANDSCAPING	NA	NA
NUMBER OF TREES PROVIDED		
SHADE TREES	9	17
EVERGREEN TREES	21	22
OTHER TREES		10

* THE DEVELOPER WILL PROVIDE ALL SWM LANDSCAPE OBLIGATIONS.
NOTE: PLANT SUBSTITUTIONS ARE AS FOLLOWS:
SWM POND 1: 6 EVERGREEN TREES ARE SUBSTITUTED FOR 5 SHADE TREES
SWM POND 2: 10 FLOWERING TREES ARE SUBSTITUTED FOR 5 SHADE TREES AND 5 EVERGREEN TREES ARE SUBSTITUTED FOR 4 SHADE TREES.

Plant List (This Sheet)

QTY	SYM	BOTANICAL NAME / COMMON NAME	SIZE	REMARKS
SHADE TREES				
6	FP	FRAXINUS PENNSYLVANICA 'MARSHALL'S SEEDLESS' / MARSHALL'S SEEDLESS GREEN ASH	2 1/2" - 3" CAL. 12'-14" HT.	B & B FULL HEAD
8	QR	QUERCUS RUBRA / RED OAK	2 1/2" - 3" CAL. 12'-14" HT.	B & B FULL HEAD
5	SJ	SOPHORA JAPONICA / JAPANESE PAGODA TREE	2 1/2" - 3" CAL. 12'-14" HT.	B & B FULL HEAD
EVERGREEN TREES				
17	PM	PSEUDOTSUGA MENZIESII / DOUGLASS FIR	6"-8" HT.	B & B
26	PS	PINUS STROBUS / WHITE PINE	6"-8" HT.	B & B HEAVY / UNSHEARED
FLOWERING TREES				
10	CC	CARPINUS CAROLINIANA / AMERICAN HORNBEAM	8"-10" HT.	B & B



SWM POND I

Water Quality Planting Plan** Facility #1

Species	Size	Spacing	Quantity	Remarks
Scirpus tabernaemontani	quart. container*	36"	396	O.B.L.
Panicum virgatum	quart. container*	36"	396	F.A.C.
Saururus cernuus	quart. container*	36"	396	O.B.L.
TOTALS			1188	

Water Quality Planting Plan** Facility #2

Species	Size	Spacing	Quantity	Remarks
Sagittaria latifolia	quart. container*	36"	273	O.B.L.
Echinoda virginica	quart. container*	36"	273	O.B.L.
TOTALS			546	

Water Quality Planting Plan** Facility #3

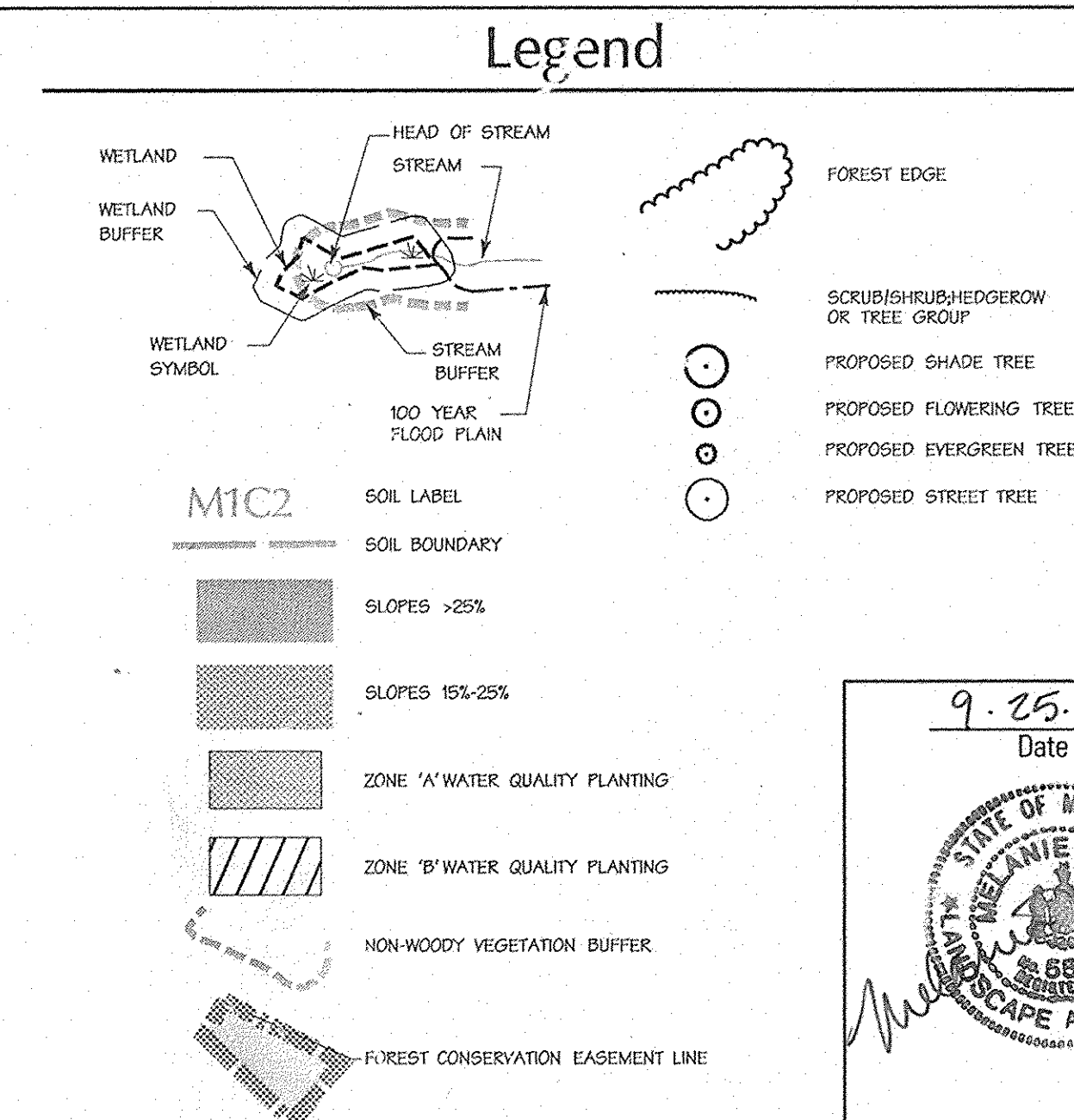
Species	Size	Spacing	Quantity	Remarks
Scirpus tabernaemontani	quart. container*	36"	230	O.B.L.
Iris pseudacorus	quart. container*	36"	230	O.B.L.
Lythrum salicaria	quart. container*	36"	230	F.A.C.W.
Iris versicolor	quart. container*	36"	230	O.B.L.
Panicum virgatum	quart. container*	36"	230	F.A.C.
Saururus cernuus	quart. container*	36"	230	O.B.L.
TOTALS			1380	

Water Quality Planting Plan** Facility #4

Species	Size	Spacing	Quantity	Remarks
Sagittaria latifolia	quart. container*	36"	533	O.B.L.
Potamogeton amplifolius	quart. container*	36"	533	O.B.L.
TOTALS			1066	

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

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



APPROVED: HOWARD COUNTY DEPT. OF PUBLIC WORKS
 Andrew M. Daniels, Chief, Bureau of Highways, 11-25-02
 APPROVED: HOWARD COUNTY DEPT. OF PLANNING AND ZONING
 Cindy Hannah, Chief, Division of Land Development, 12/6/02
 APPROVED: DEVELOPMENT ENGINEERING DIVISION
 M. J. ... Chief, 12/2/02

EMERSON
 (Formerly the Key Property)
 Section 3, Area 1
 Parcels A - I
 OWNER / DEVELOPER:
 THE HOWARD RESEARCH & DEVELOPMENT CORPORATION
 10275 LITT E PATUXENT PARKWAY
 COLUMBIA, MARYLAND 21044

DMW
 Draft to Construction
 200 East Pennsylvania Avenue
 Towson, Maryland 21286
 (410) 296-3355
 Fax 296-4705

9-25-02
 Date
 MIC2
 SOIL LABEL
 SOIL BOUNDARY
 SLOPES >25%
 SLOPES 15%-25%
 ZONE 'A' WATER QUALITY PLANTING
 ZONE 'B' WATER QUALITY PLANTING
 NON-WOODY VEGETATION BUFFER
 FOREST CONSERVATION EASEMENT LINE

TITLE
**FINAL PLAN
 STORMWATER POND LANDSCAPING
 & WATER QUALITY PLANTING**
 Des By: Scale: 1" = 100', No: 0111.C
 Dr: By: AuS, Date: 12/2/02
 Cr: By: [Signature], Date: 12/2/02

1

2

3

4

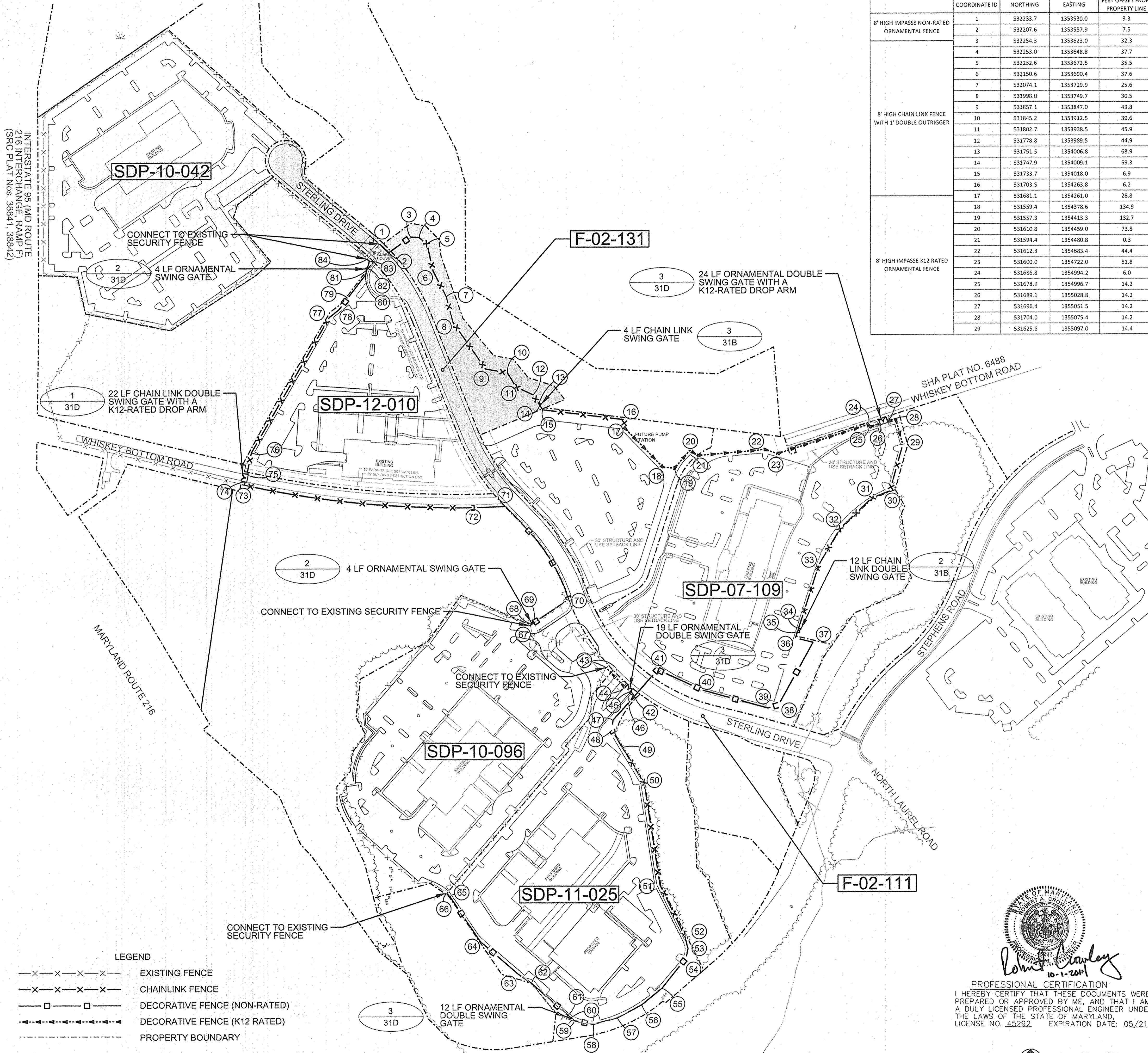
5

D

C

B

A



LEGEND

- x-x-x-x-x- EXISTING FENCE
- x-x-x-x- CHAINLINK FENCE
- o-o-o-o- DECORATIVE FENCE (NON-RATED)
- x-x-x-x-x- DECORATIVE FENCE (K12 RATED)
- PROPERTY BOUNDARY

COORDINATE ID	NORTHING	EASTING	FEET OFFSET FROM PROPERTY LINE
1	532233.7	1353530.0	9.3
2	532207.6	1353557.9	7.5
3	532254.3	1353623.0	32.3
4	532253.0	1353648.8	37.7
5	532232.6	1353672.5	35.5
6	532150.6	1353690.4	37.6
7	532074.1	1353729.9	25.6
8	531998.0	1353749.7	30.5
9	531857.1	1353847.0	43.8
10	531845.2	1353912.5	39.6
11	531802.7	1353938.5	45.9
12	531778.8	1353989.5	44.9
13	531751.5	1354006.8	68.9
14	531747.9	1354009.1	69.3
15	531733.7	1354018.0	6.9
16	531703.5	1354263.8	6.2
17	531681.1	1354261.0	28.8
18	531559.4	1354378.6	134.9
19	531557.3	1354413.3	132.7
20	531610.8	1354459.0	73.8
21	531594.4	1354480.8	0.3
22	531612.3	1354683.4	44.4
23	531600.0	1354722.0	51.8
24	531686.8	1354994.2	6.0
25	531678.9	1354996.7	14.2
26	531689.1	1355028.8	14.2
27	531696.4	1355051.5	14.2
28	531704.0	1355075.4	14.2
29	531625.6	1355097.0	14.4

COORDINATE ID	NORTHING	EASTING	FEET OFFSET FROM PROPERTY LINE
29	531625.6	1355097.0	14.4
30	531487.3	1355058.4	2.5
31	531466.2	1355005.9	2.5
32	531375.2	1354908.7	2.5
33	531266.0	1354845.0	0.0
34	531075.5	1354783.8	0.0
35	531063.8	1354780.1	0.0
36	531045.8	1354774.3	6.0
37	531033.3	1354827.1	6.0
38	530846.1	1354723.0	50.0
39	530837.3	1354691.9	33.0
40	530891.5	1354495.6	34.4
41	530953.0	1354360.7	26.5
42	530874.1	1354291.6	14.5
43	530959.6	1354206.6	13.4
44	530900.0	1354263.2	12.8
45	530886.4	1354277.9	10.0
46	530854.5	1354274.0	7.5
47	530802.1	1354227.0	20.0
48	530771.7	1354223.7	12.3
49	530720.0	1354255.0	2.0
50	530615.3	1354318.4	2.0
51	530308.5	1354367.5	2.0
52	530158.1	1354440.4	4.7
53	530119.6	1354450.4	13.0
54	530090.6	1354444.4	31.4
55	530001.4	1354372.7	40.2
56	529952.2	1354311.7	29.6
57	529912.6	1354238.4	28.6
58	529892.6	1354166.4	31.3
59	529903.4	1354111.0	51.6
60	529912.9	1354100.1	46.3
61	529920.8	1354091.1	36.4
62	530016.4	1353981.6	0.0
63	530042.7	1353942.5	14.2
64	530141.4	1353828.3	2.2
65	530275.8	1353737.0	1.9
66	530286.0	1353726.9	4.4
67	531084.8	1353977.6	3.7
68	531089.6	1353984.8	0.0
69	531092.0	1353988.4	0.0
70	531164.5	1354095.9	0.9
71	531443.9	1353905.8	0.9
72	531440.2	1353802.7	0.0
73	531508.5	1353124.3	0.0
74	531518.5	1353126.4	10.2
75	531540.6	1353131.8	7.0
76	531605.3	1353145.4	6.4
77	532012.6	1353378.9	5.7
78	532035.8	1353407.9	10.0
79	532070.3	1353434.3	4.4
80	532140.6	1353488.1	4.7
81	532155.9	1353492.3	1.1
82	532160.1	1353493.5	2.7
83	532181.5	1353499.4	7.9
84	532187.4	1353492.6	8.5

US Army Corps of Engineers
Ballimore District

REAL PROPERTY SERVICES
FIELD OFFICE
ANNAPOLIS JUNCTION, MARYLAND

JACOBS
1105 N GLEBE RD., ARLINGTON, VA 22201

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NO.	REVISION	DATE	BY	APP.

DATE: SEPTEMBER 18, 2014

REVISION NO: 31A33

DESIGNED BY: M. WERDER

CHECKED BY: R. CROWLEY

PROJECT MANAGER: M. WERDER

PROJ. NO.: 1190

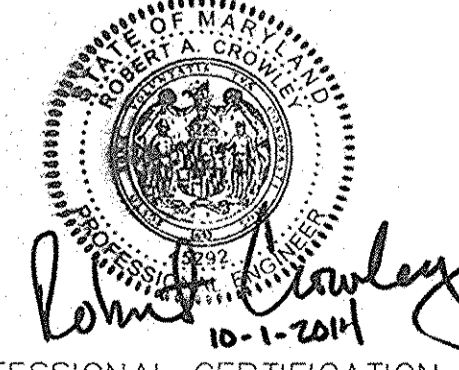
APPROVED: HOWARD COUNTY DEPT. OF PLANNING AND ZONING

CHIEF, DIVISION OF LAND DEVELOPMENT DATE 10/15/14

CHIEF, DEVELOPMENT ENGINEERING DIVISION DATE 10.10.14

DIRECTOR DATE

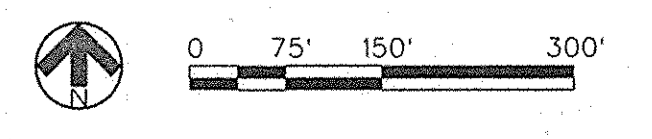
Date	No.	Revision Description



PROFESSIONAL CERTIFICATION

I HEREBY CERTIFY THAT THESE DOCUMENTS WERE PREPARED OR APPROVED BY ME, AND THAT I AM A DULY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MARYLAND.

LICENSE NO. 45292 EXPIRATION DATE: 05/21/2016



EMERSON
Section 3, Area 1
Parcels A Through C and Open Space Parcels D through I

SUBDIVISION NAME	SECTION AREA	LOT/PARCEL #
REVITZ PROPERTY	TAX ZONE MAP/ELECT. DISTRICT	P/O PAR. 837
1508	47 6th	
WATER CODE	SEWER CODE	CENSUS TRACT
20		

TITLE: FENCE LAYOUT PLAN

Des. By	Scale 1"=150'	Proj. No.
Drn. By	Date 09-12-14	31A
Chk. By	Approved	

EMERSON - CAMPUS FENCE

FENCE LAYOUT PLAN

ROOM(S) OR FLOOR: LAUREL MD

Drawing No.

Sheet Reference No.

31A

Sheet of 006

END & CORNER POST TOP OPTIONS

STANDARD	FLAT

GATE POST

GATE LEAF WIDTH	GATE POST (OD)	FABRIC HEIGHT	"A" DIAM	"B" DEPTH	"C" POST EMBED.
3' TO 6'	2.875"	3' TO 5'	12"	38"	36"
		6' TO 9'	14"	42"	40"
		10' TO 12'	16"	46"	44"
7' TO 12'	4.000"	3' TO 5'	14"	38"	36"
		6' TO 9'	16"	42"	40"
		10' TO 12'	18"	46"	44"

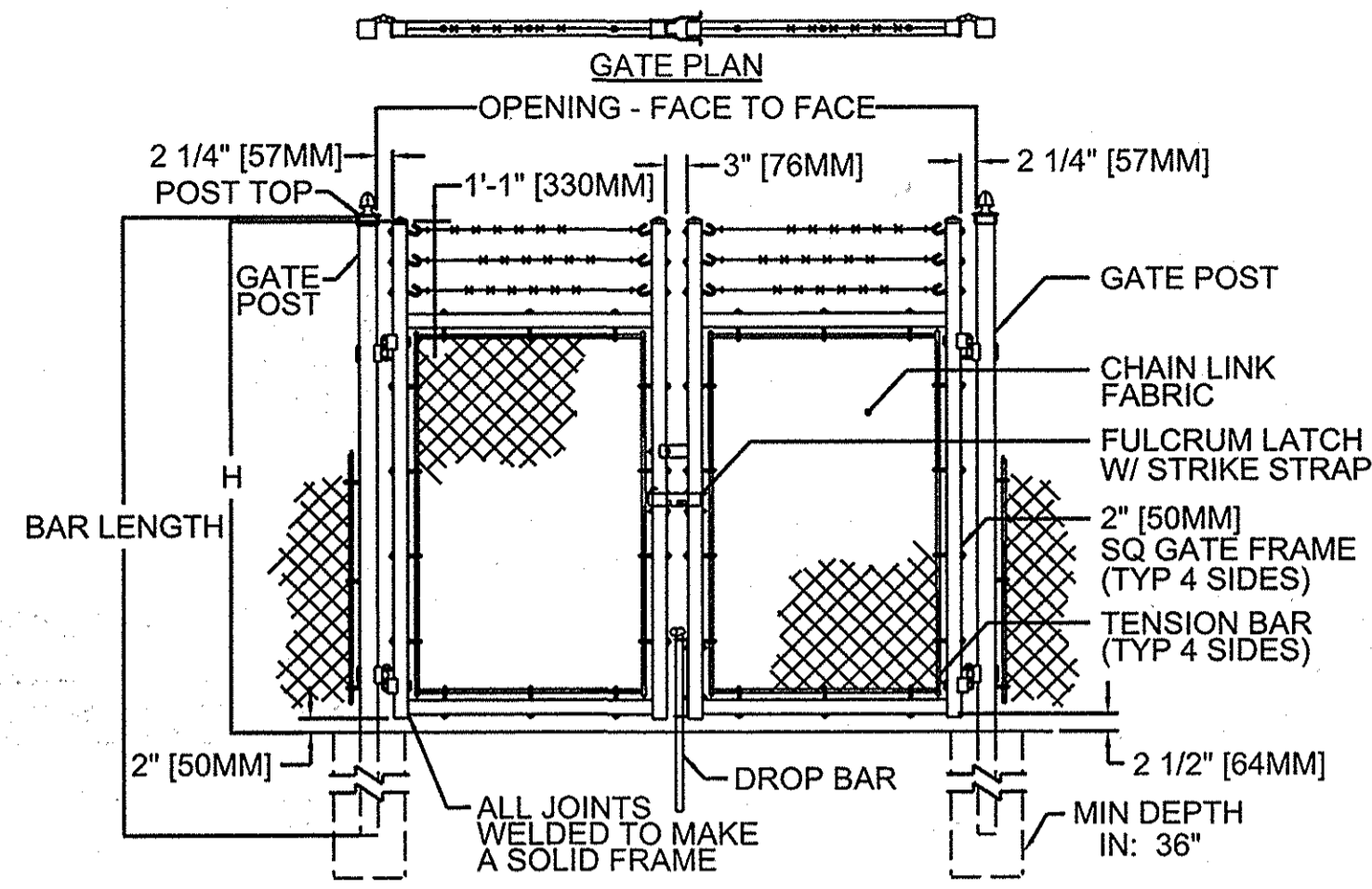
NOM HEIGHT (H)

8'-0" [2438MM]

OPENING (F/F)

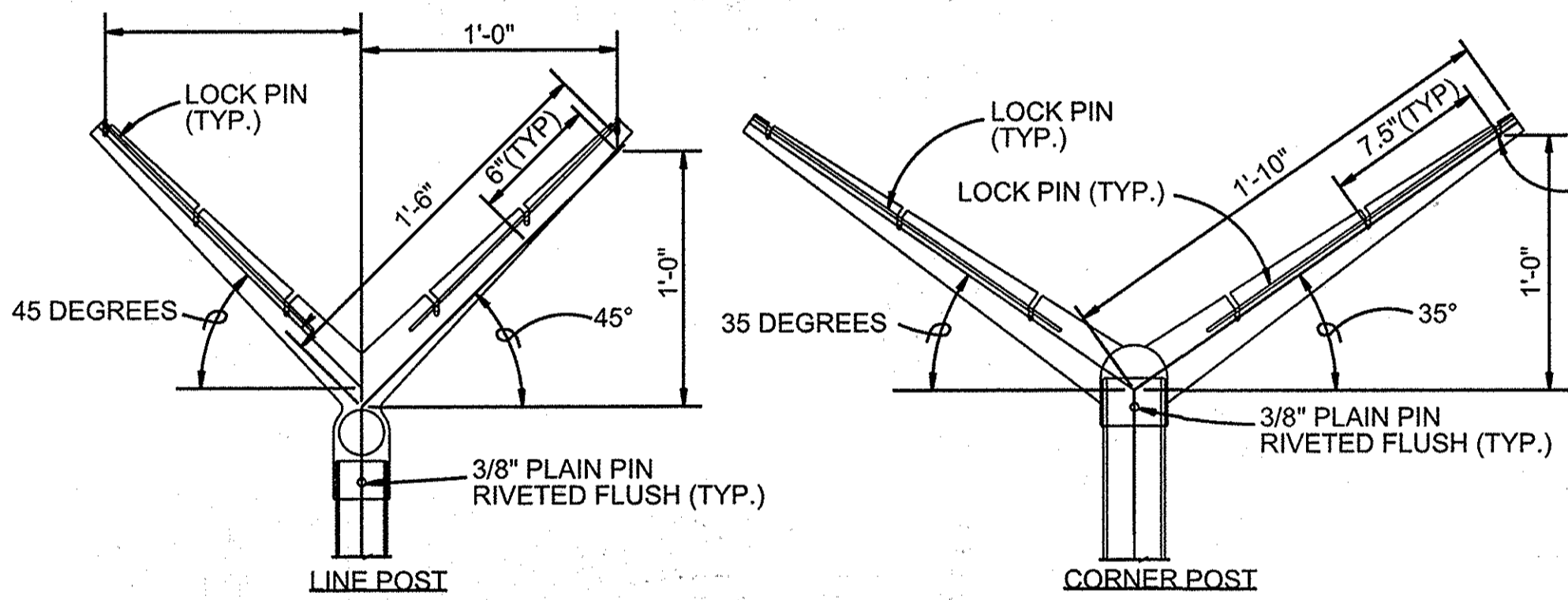
24' [7315MM]

- NOTES:
1. METRIC DIMENSIONS ARE NOMINAL EQUIVALENTS TO U.S. DIMENSIONS.
 2. SPECIFICATIONS SHOWN CAN BE CHANGED BY MASTER HALCO ONLY.
 3. FOOTING WIDTH TO BE (4)X POST WIDTH.
 4. GATES MAY BE MANUALLY OR ELECTRICALLY OPERATED. HARDWARE WILL VARY FOR ELECTRICALLY OPERATED GATES.

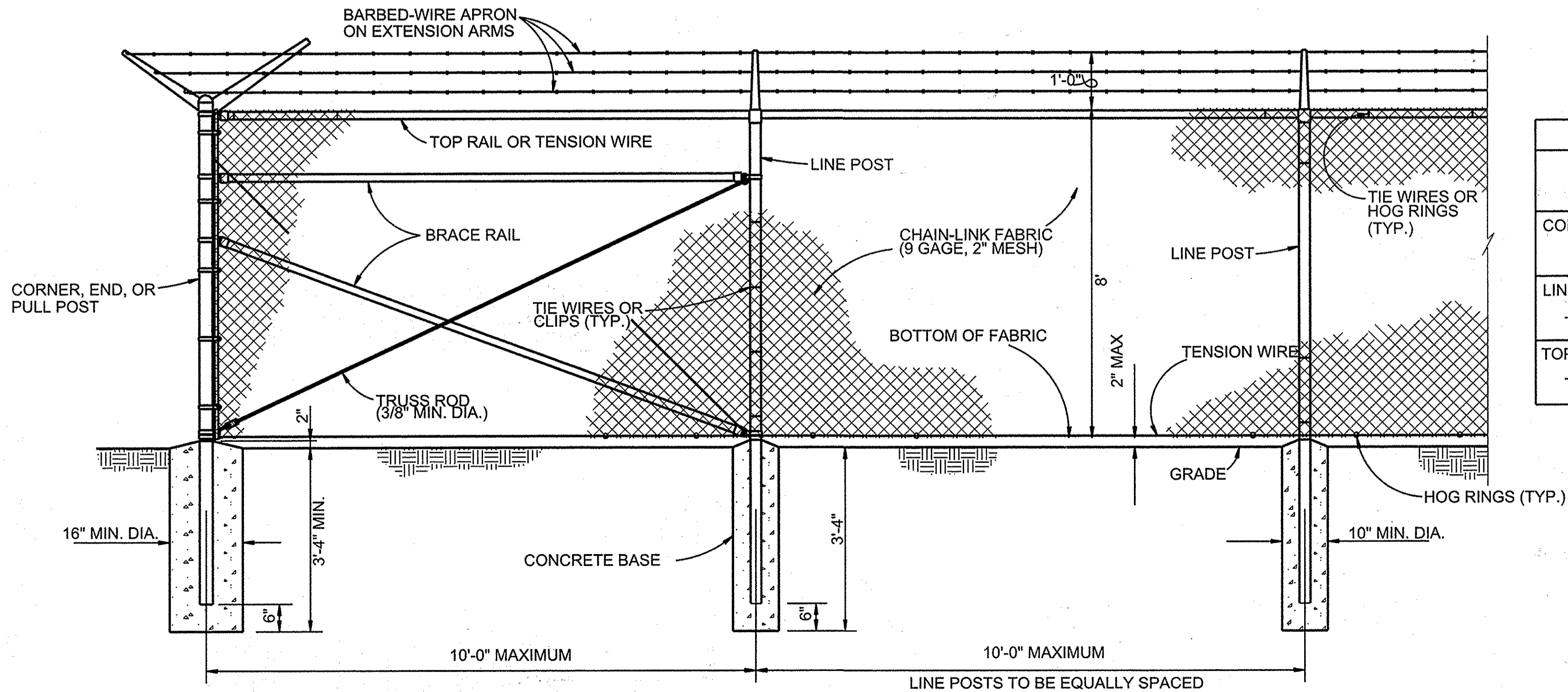


GATE ELEVATION

2 SINGLE-LEAF DOUBLE SWING GATE
SCALE: NONE



EXTENSION ARM DETAILS



1 CHAIN LINK SECURITY FENCE
SCALE: NONE

END & CORNER POST TOP OPTIONS

STANDARD	FLAT

GATE POST

GATE LEAF WIDTH	GATE POST (OD)	FABRIC HEIGHT	"A" DIAM	"B" DEPTH	"C" POST EMBED.
3' TO 6'	2.875"	3' TO 5'	12"	38"	36"
		6' TO 9'	14"	42"	40"
		10' TO 12'	16"	46"	44"

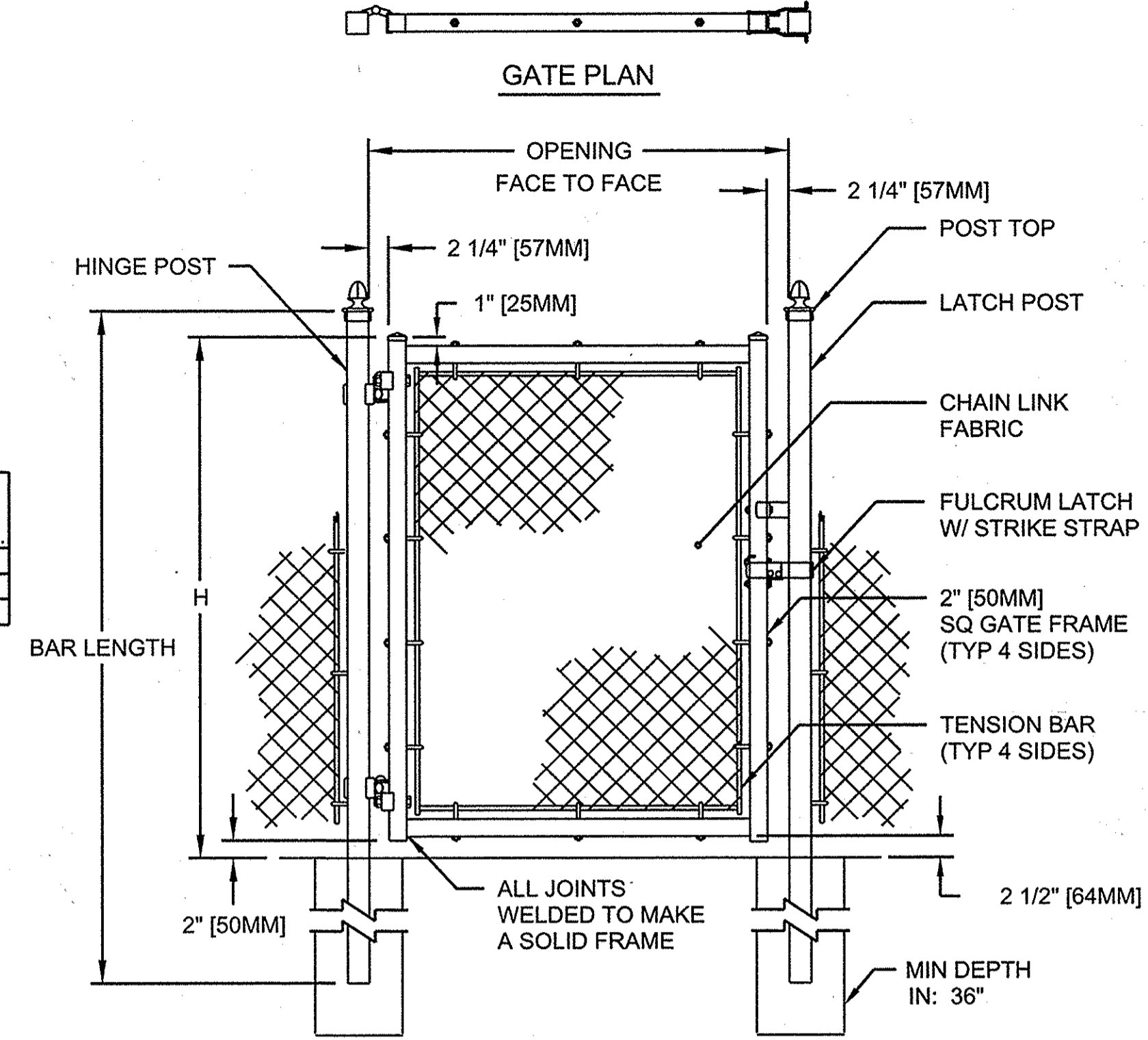
NOM HEIGHT (H)

8'-0" [2438MM]

OPENING (F/F)

4'-0" [1219MM]

- NOTES:
1. METRIC DIMENSIONS ARE NOMINAL EQUIVALENTS TO U.S. DIMENSIONS.
 2. SPECIFICATIONS SHOWN CAN BE CHANGED BY MASTER-HALCO ONLY.
 3. FOOTING WIDTH TO BE (4)X POST WIDTH.
 4. GATES MAY BE MANUALLY OR ELECTRICALLY OPERATED. HARDWARE WILL VARY FOR ELECTRICALLY OPERATED GATES.



GATE ELEVATION

3 SINGLE SWING GATE
SCALE: NONE

STEEL POST SCHEDULE

USE AND SECTION	MINIMUM OUTSIDE DIMENSIONS (NOMINAL)	
	FABRIC WIDTH 84" TO 96"	
CORNER, END & PULL POSTS	TUBULAR - ROUND	
	2.875" O.D.	
LINE POSTS	TUBULAR - ROUND	
	2.375" O.D.	
TOP, BOTTOM & BRACE RAILS	TUBULAR - ROUND	
	1.66" O.D.	

PROFESSIONAL CERTIFICATION
I HEREBY CERTIFY THAT THESE DOCUMENTS WERE PREPARED OR APPROVED BY ME, AND THAT I AM A DULY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MARYLAND, LICENSE NO. 45292, EXPIRATION DATE: 05/21/2016.

APPROVED: HOWARD COUNTY DEPT. OF PLANNING AND ZONING

Chief, Division of Land Development: *Robert Crowley* DATE: 10/15/14

Chief, Development Engineering Division: *Robert Crowley* DATE: 10-10-14

Director: *Robert Crowley* DATE: X

Date	No.	Revision Description

EMERSON
Section 3, Area 1
Parcels A Through C and
Open Space Parcels D through I

SUBDIVISION NAME: REVITZ PROPERTY
SECTION AREA: 47
LOT/PARCEL #: P/O PAR. 837

TITLE: FENCE LAYOUT PLAN

Des. By	Scale 1"=150'	Proj. No.
Drn. By	Date 09-12-14	31B
Chk. By	Approved	

Sheet Reference No. 31B
Sheet of 006

US Army Corps of Engineers
Baltimore District

REAL PROPERTY SERVICES
PROJECT NO. 15010001
ANNAPOLIS JUNCTION, MARYLAND

JACOBS
1100 N. GLEBE RD., ARLINGTON, VA, 22201

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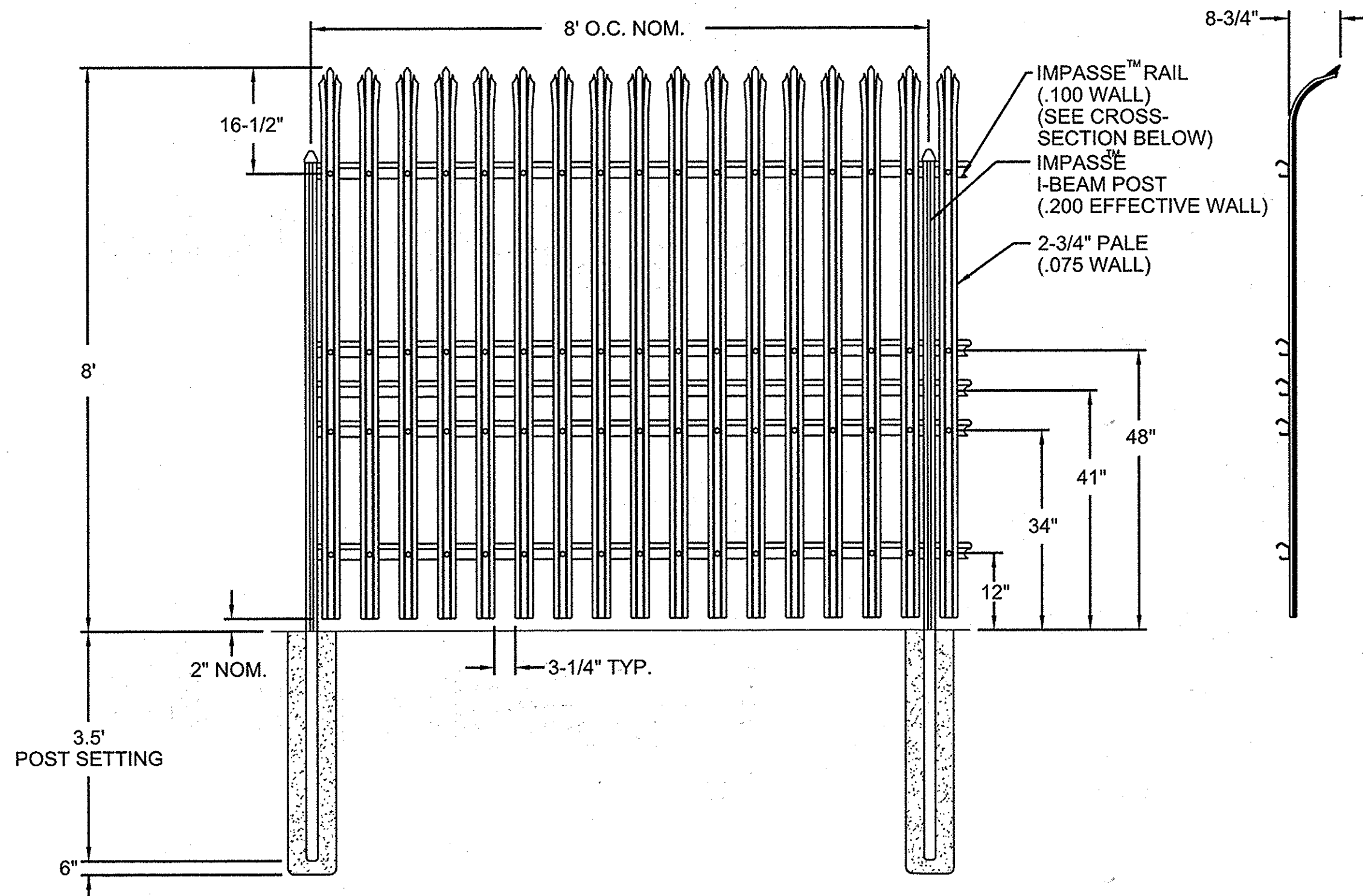
Rev.	Date	Description
1	10/15/2014	NEW SHEET ADDED FOR REDLINE REVISION #1

Designed by: M. WERGER
Dwn by: M. WERGER
Project No: 314135
Project Manager: R. CROWLEY
Submitted by: AMY YALE
Checked by: NATHAN JAMES
Project Manager

EMERSON - CAMPUS FENCE
SITE DETAILS
ROOM(S) OR FLOOR: LAUREL, MD

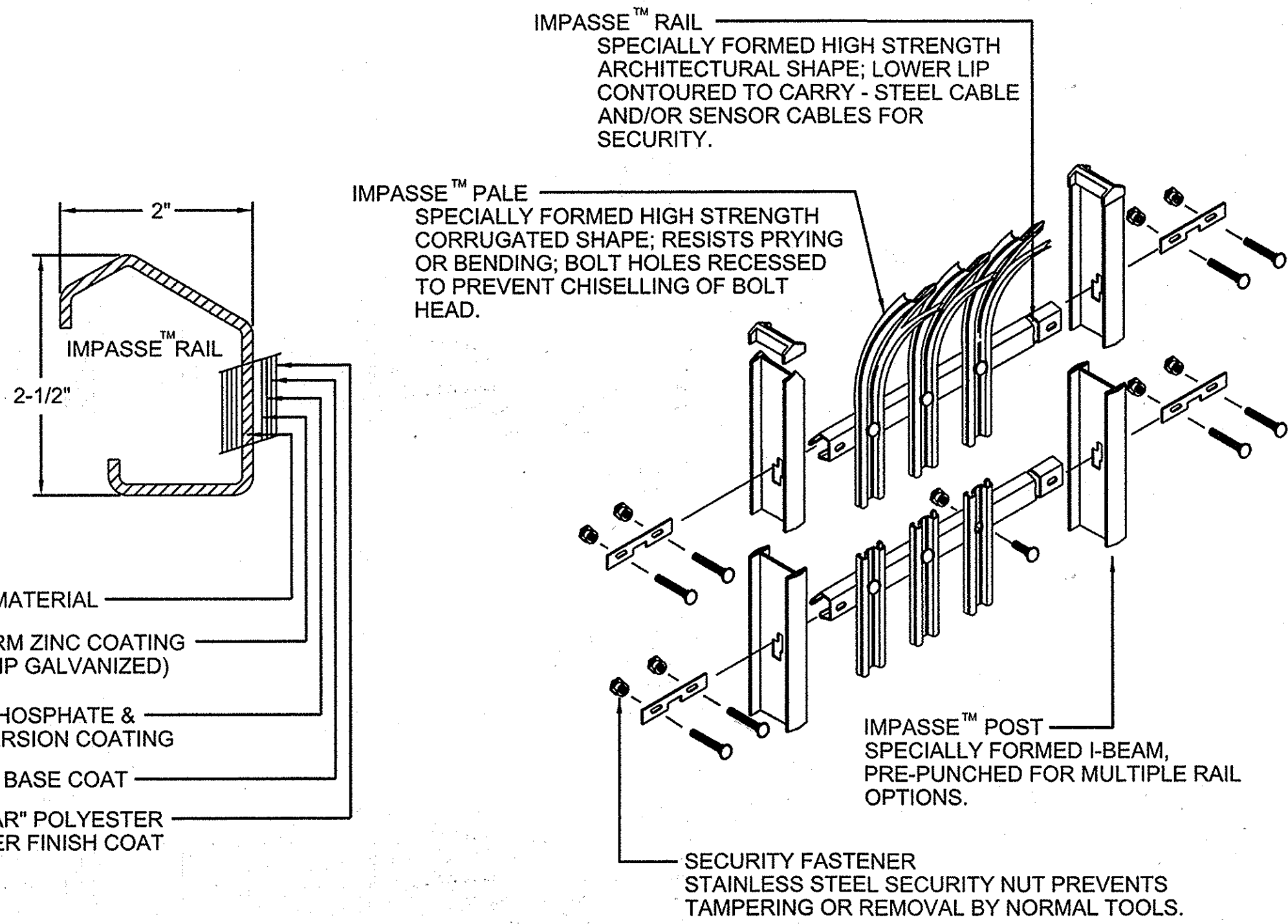
Drawing No. 31B
Sheet of 006

F 02-131



NOTES:

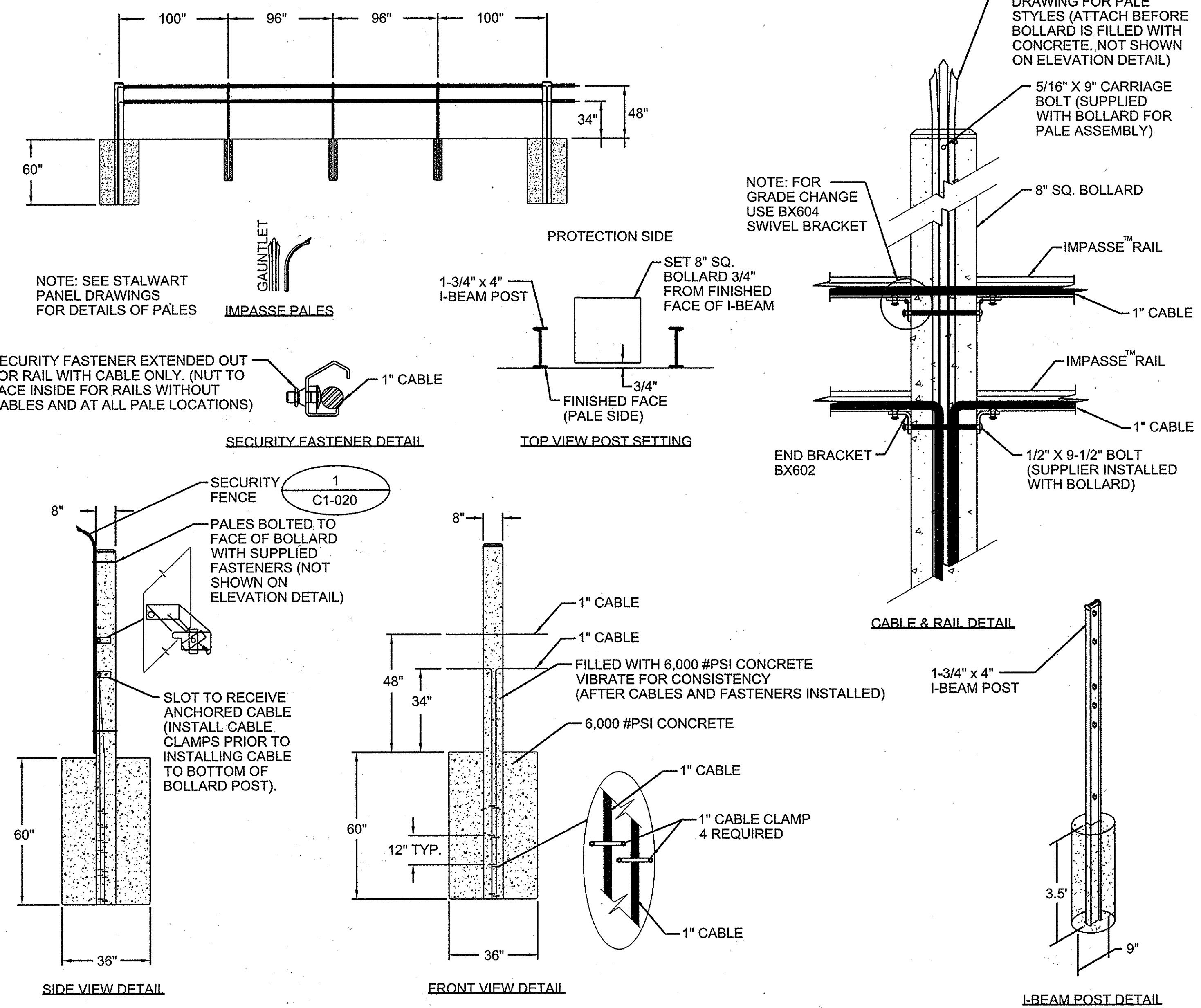
- SEE DETAIL 2 ON THIS SHEET FOR K-12 ANTI-RAM CABLED STEEL BARRIER INSTALLATION FOR PORTIONS OF FENCE TO BE K-12 RATED. SEE SITE LAYOUT PLAN FOR SECTION OF FENCE THAT IS TO BE K-12 RATED.
- IDS SYSTEM IS TO BE ATTACHED TO FENCE PICKETS EVERY 8'. REPLACE CURVED PICKETS WITH STRAIGHT PICKETS AT LOCATIONS FOR IDS CONNECTIONS. FENCE HALF POSTS CAN BE USED FOR IDS CONNECTIONS. STRAIGHT PICKETS ARE TO BE SAME HEIGHT AS CURVED PICKETS.



- BASE MATERIAL
- UNIFORM ZINC COATING (HOT DIP GALVANIZED)
- ZINC PHOSPHATE & CONVERSION COATING
- EPOXY BASE COAT
- "NO-MAR" POLYESTER POWDER FINISH COAT

1 AMERISTAR 8' HIGH IMPASSE GAUNTLET HIGH SECURITY STEEL FENCE

SCALE: NONE
 DETAIL IS BASE DESIGN. CONTRACTOR MAY USE EQUIVALENT PRODUCT THAT MEETS PROJECT REQUIREMENTS AND SPECIFICATIONS AND AS APPROVED BY THE COR.



2 STALLWART M40 (K12) ANTI-RAM CABLED STEEL BARRIER

SCALE: NONE
 DETAIL IS BASE DESIGN. CONTRACTOR MAY USE EQUIVALENT PRODUCT THAT MEETS PROJECT REQUIREMENTS AND SPECIFICATIONS AND AS APPROVED BY THE COR.

APPROVED: HOWARD COUNTY DEPT. OF PLANNING AND ZONING	
DESIGNED BY: <i>Verdelund</i> DIVISION OF LAND DEVELOPMENT DATE: 10/5/14	CHECKED BY: <i>Andy Smith</i> DEVELOPMENT ENGINEERING DIVISION DATE: 10-10-14
DIRECTOR: <i>JJA</i>	DATE: <i>DAE</i>
Date	No.
Revision Description	

EMERSON
 Section 3, Area 1
 Parcels A Through C and
 Open Space Parcels D through I



PROFESSIONAL CERTIFICATION
 I HEREBY CERTIFY THAT THESE DOCUMENTS WERE PREPARED OR APPROVED BY ME, AND THAT I AM A DULY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MARYLAND, LICENSE NO. 45292, EXPIRATION DATE: 05/21/2016.

SUBDIVISION NAME: REVIZ PROPERTY	SECTION AREA: 47	LOT/PARCEL # P/O PAR. 837
PLAT/BLK/ZONE: 1582/20/PEC	TAX ZONE: 47	DISTRICT: 6th
WATER CODE: 1582	SEWER CODE: 47	CENSUS TRACT: 837
TITLE: FENCE LAYOUT PLAN		
Des. By	Scale 1"=150'	Proj. No.
Drn. By	Date 09-12-14	31C
Chk. By	Approved	

US Army Corps of Engineers
 Baltimore District

REAL PROPERTY SERVICES
 ANNAPOLIS JUNCTION, MARYLAND

JACOBS
 1100 N. GLEBE RD., ARLINGTON, VA, 22201

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Rev.	Date	Description
1	10/10/14	NEW SHEET ADDED FOR REDLINE REVISION #1

EMERSON - CAMPUS FENCE
 SITE DETAILS
 ROOM(S) OR FLOOR
 LAUREL, MD

Drawing No.
31C
 Sheet of 006

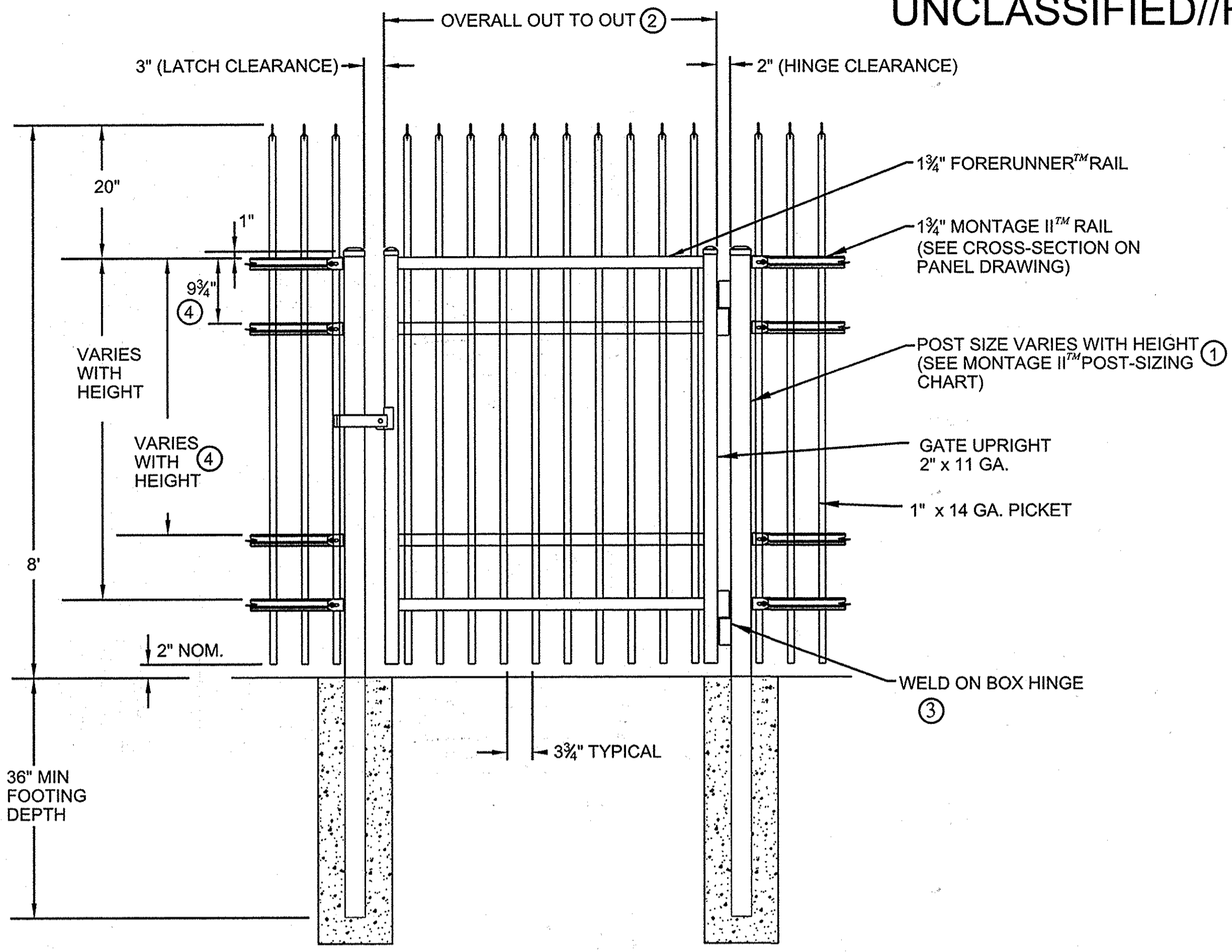
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Rev.	Date	Description
1	10/15/14	NEW SHEET ADDED FOR REDLINE REVISION #1

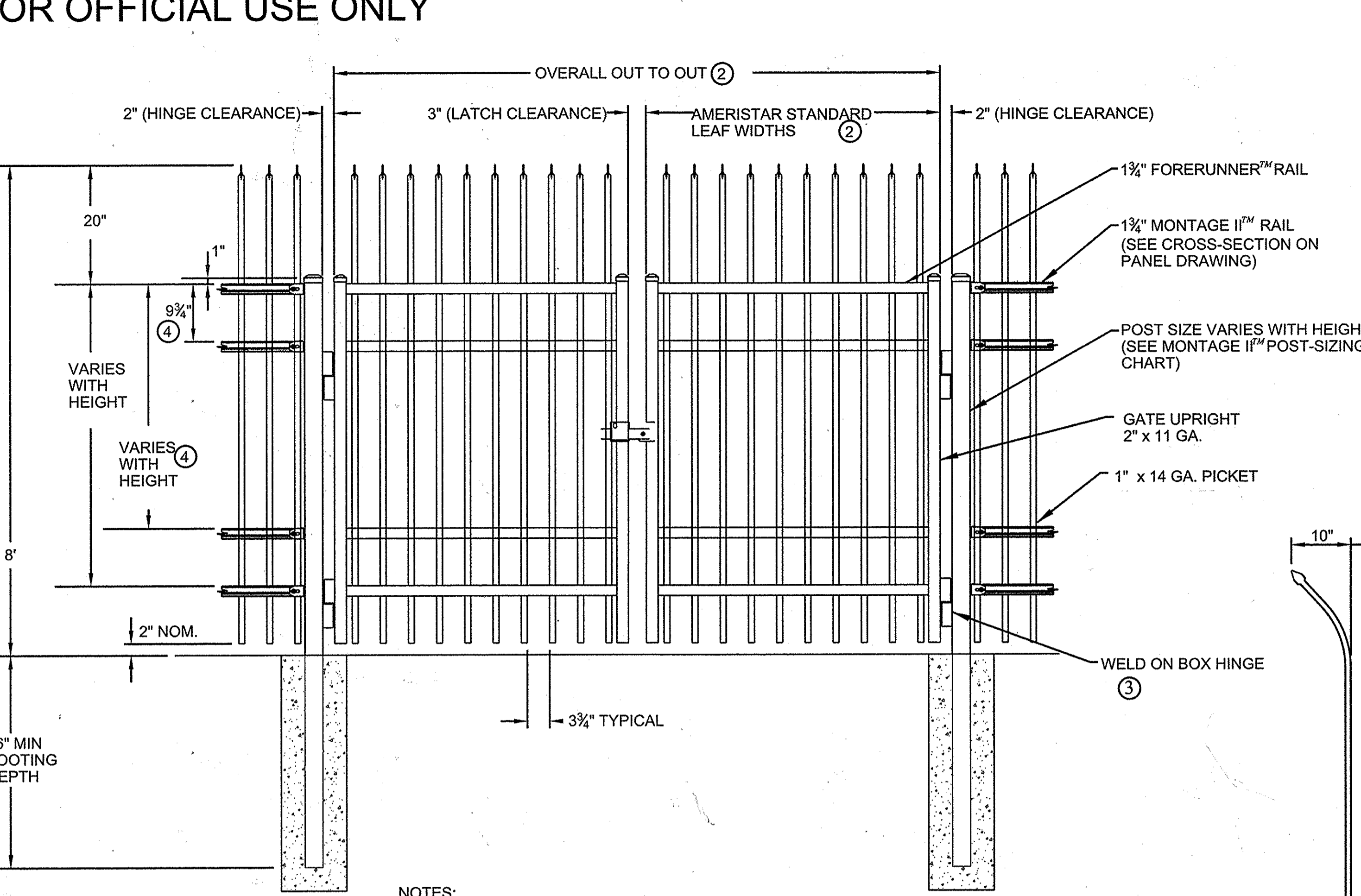
Designed by:	M. WERDER	Project No.:	31435
Drawn by:	M. WERDER	RSFO Project Manager:	AMY VALE
Submitted by:	NATHAN JAMES	Project Manager:	NATHAN JAMES

APPROVED:	HOWARD COUNTY DEPT. OF PLANNING AND ZONING
Chief, Division of Land Development	DATE: 10/15/14
Chief, Development Engineering Division	DATE: 10.10.14

Des. By	Scale 1"=150'	Proj. No.
Drn. By	Date 09-12-14	31D
Chk. By	Approved	



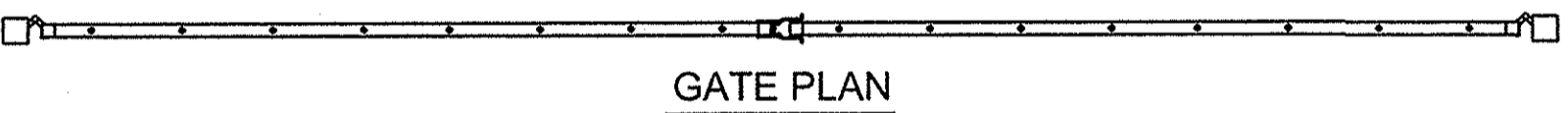
- NOTES:
- 1.) POST SIZE DEPENDS ON FENCE HEIGHT, WEIGHT AND WIND LOADS. SEE MONTAGE II SPECIFICATIONS FOR POST SIZING CHART.
 - 2.) SEE AMERISTAR GATE TABLE FOR STANDARD OUT TO OUTS. CUSTOM GATE OPENINGS AVAILABLE FOR SPECIAL OUT TO OUT/LEAF WIDTHS.
 - 3.) ADDITIONAL STYLES OF GATE HARDWARE ARE AVAILABLE ON REQUEST THIS COULD CHANGE THE LATCH & HINGE CLEARANCE.
 - 4.) THIRD & FORTH RAIL OPTIONAL.



- NOTES:
- 1.) POST SIZE DEPENDS ON FENCE HEIGHT, WEIGHT AND WIND LOADS. SEE MONTAGE II SPECIFICATIONS FOR POST SIZING CHART.
 - 2.) SEE AMERISTAR GATE TABLE FOR STANDARD OUT TO OUTS. CUSTOM GATE OPENINGS AVAILABLE FOR SPECIAL OUT TO OUT/LEAF WIDTHS.
 - 3.) ADDITIONAL STYLES OF GATE HARDWARE ARE AVAILABLE ON REQUEST. THIS COULD CHANGE THE LATCH AND HINGE CLEARANCE.
 - 4.) THIRD AND FOURTH RAIL OPTIONAL.
 - 5.) CONTRACTOR SHALL SAND DOWN END OF SCREWS ON HASPS AS NEEDED TO WELD HASP TO GATE.

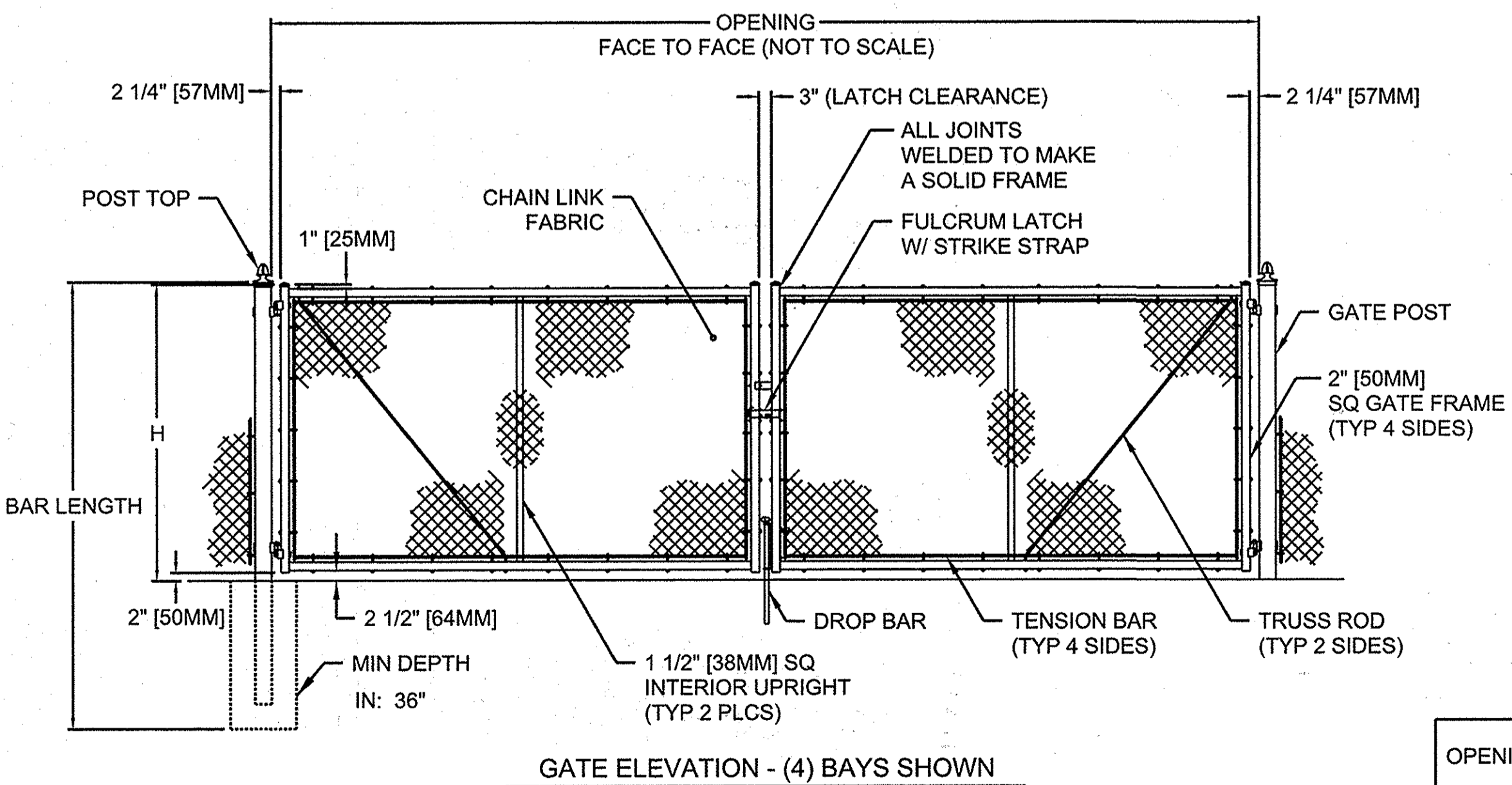
2 AMERISTAR MONTAGE II ORNAMENTAL INVINCIBLE SINGLE SWING GATE

SCALE: NONE
 DETAIL IS BASE DESIGN. CONCRATOR MAY USE EQUIVALENT PRODUCT THAT MEETS PROJECT REQUIREMENTS AND SPECIFICATIONS AND AS APPROVED BY THE COR.



3 AMERISTAR MONTAGE II ORNAMENTAL INVINCIBLE DOUBLE SWING GATE

SCALE: NONE
 DETAIL IS BASE DESIGN. CONCRATOR MAY USE EQUIVALENT PRODUCT THAT MEETS PROJECT REQUIREMENTS AND SPECIFICATIONS AND AS APPROVED BY THE COR.



NOM HEIGHT (H)
8'-0" [2438MM]

BAYS	OPENING (F/F)
4	20'-0" [6096MM]
4	22'-0" [6706MM]
4	24'-0" [7315MM]

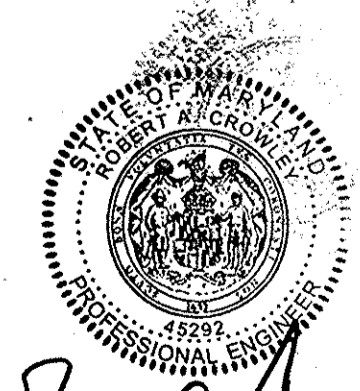
END & CORNER POST TOP OPTIONS	
STANDARD	FLAT

OPENING	GATE POST (OD)	FABRIC HEIGHT	"A" DIAM	"B" DEPTH	"C" POST EMBED.
14' TO 24'	4"	3' TO 5'	12"	38"	36"
		6' TO 9'	14"	42"	40"
		10' TO 12'	16"	46"	44"

- NOTES:
1. METRIC DIMENSIONS ARE NOMINAL EQUIVALENTS TO U.S. DIMENSIONS.
 2. SPECIFICATIONS SHOWN CAN BE CHANGED BY MASTER-HALCO ONLY.
 3. FOOTING WIDTH TO BE (4)X POST WIDTH.
 4. GATES MAY BE MANUALLY OR ELECTRICALLY OPERATED. HARDWARE WILL VARY FOR ELECTRICALLY OPERATED GATES.

1 DOUBLE-LEAF DOUBLE SWING GATE

SCALE: NONE



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APPROVED:	HOWARD COUNTY DEPT. OF PLANNING AND ZONING
Chief, Division of Land Development	DATE: 10/15/14
Chief, Development Engineering Division	DATE: 10.10.14

EMERSON
 Section 3, Area 1
 Parcels A Through C and
 Open Space Parcels D through I

SUBDIVISION NAME	SECTION AREA	LOT/PARCEL #
REVITZ PROPERTY	TAX ZONE MAP/LECT. DISTRICT	P/O PAR. 837
PLAT/BLK/ZONE	47	6th
WATER CODE	SEWER CODE	

TITLE: **FENCE LAYOUT PLAN**

Des. By	Scale 1"=150'	Proj. No.
Drn. By	Date 09-12-14	31D
Chk. By	Approved	

EMERSON - CAMPUS FENCE
 SITE DETAILS
 ROOM(S) OR FLOOR
 LAUREL, MD

Drawing No.	31D
Sheet Reference No.	31D
Sheet	of 006