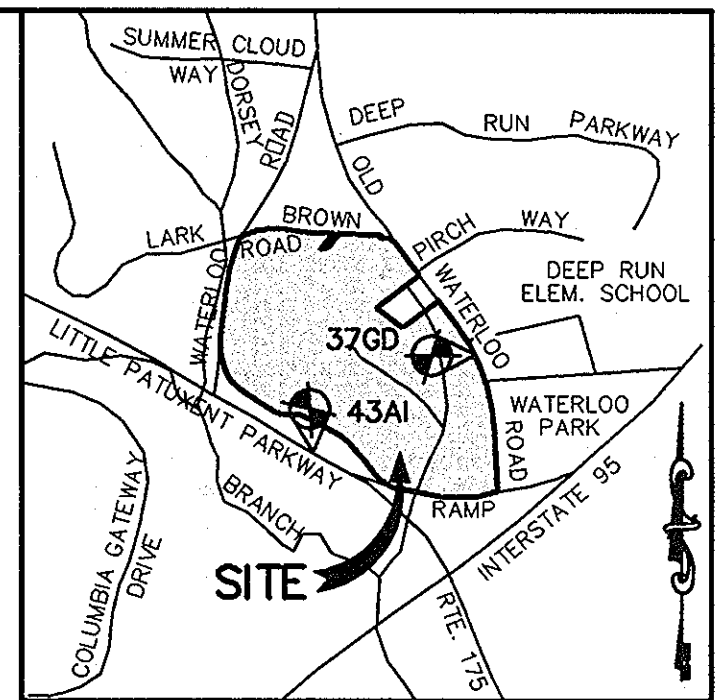


SHEET INDEX	
NO	DESCRIPTION
1	TITLE SHEET
2	GRADING AND SEDIMENT CONTROL PLAN
3	GRADING AND SEDIMENT CONTROL PLAN
4	GRADING AND SEDIMENT CONTROL PLAN
5	GRADING AND SEDIMENT CONTROL PLAN
6	GRADING AND SEDIMENT CONTROL PLAN
7	SEDIMENT CONTROL DETAILS
8	SEDIMENT CONTROL DETAILS
9	NOTES
10	SWM #1 PROFILES AND DETAILS
11	SWM #2 PROFILES AND DETAILS
12	SWM #3 PROFILES AND DETAILS
13	Basin #4 and Basin #5 Profiles and Details
14	DETAILS
15	OVERALL SEDIMENT CONTROL PLAN
16	LANDSCAPE PLAN
17	LANDSCAPE PLAN
18	LANDSCAPE PLAN
19	LANDSCAPE PLAN
20	LANDSCAPE PLAN
21	LANDSCAPE PLAN

BENSON EAST

6th ELECTION DISTRICT

HOWARD COUNTY, MARYLAND



VICINITY MAP
SCALE: 1" = 2000'

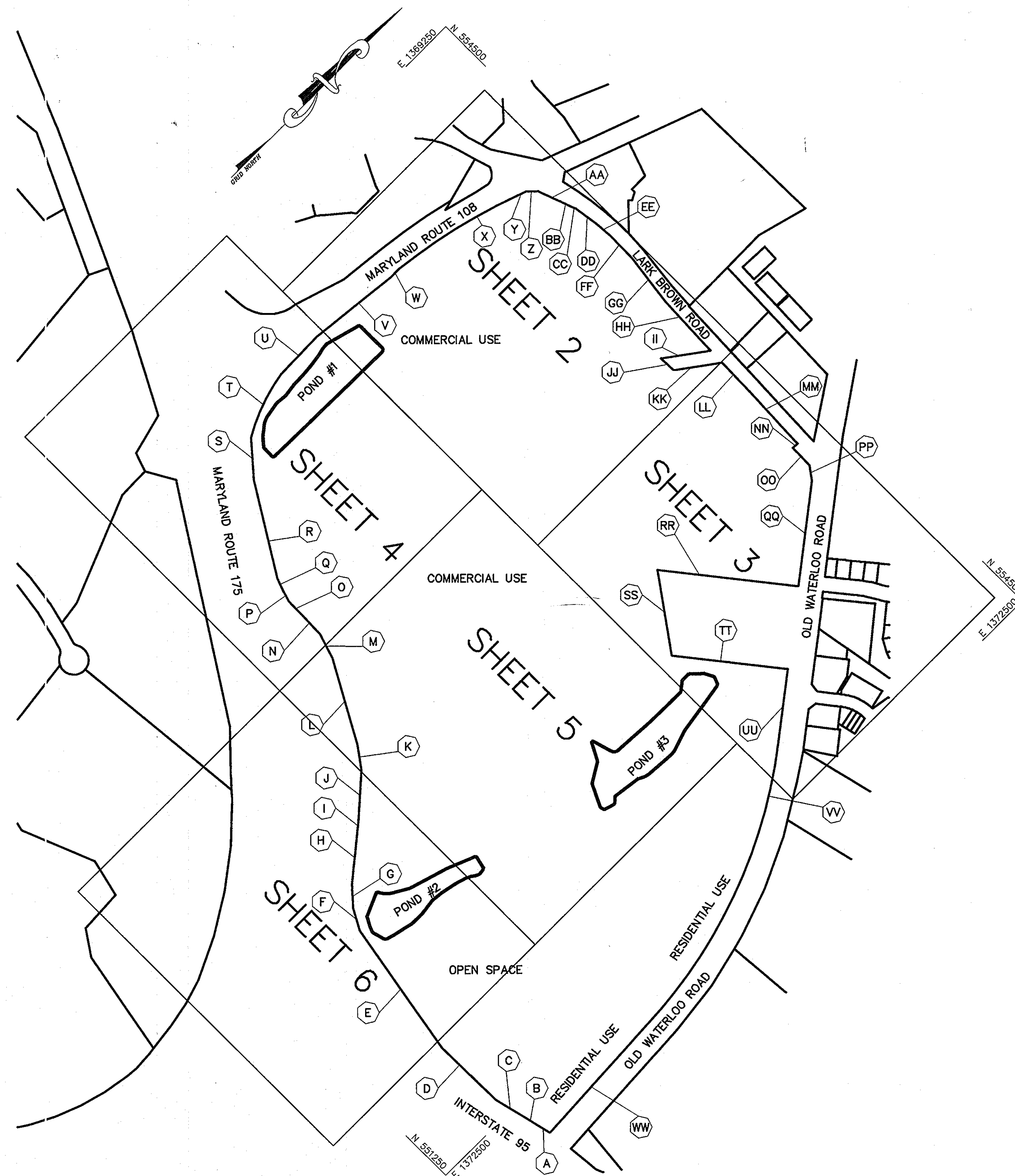
BENCHMARKS

CONTROL STATION 37GD
ELEVATION 290.19
N 553,237.211
E 1,372,353.600

CONTROL STATION 43AI
ELEVATION 307.455
N 552,061.826
E 1,370,625.818

GENERAL NOTES

- THE EXISTING TOPOGRAPHY IS TAKEN FROM AERIAL AND FIELD RUN SURVEY MAPS WITH MAXIMUM TWO FOOT CONTOUR INTERVALS PREPARED BY DAFT MCCUAN & WALKER, INC. DATED MAY 2003.
- STREAMS AND WETLANDS ARE BASED ON FIELD OBSERVATIONS BY DAFT MCCUNE & WALKER, INC. AND CONFIRMED BY ON-SITE MEETING WITH US ARMY CORP. OF ENGINEERS ON DEC. 13, 2002.
- THE BOUNDARY SURVEY FOR THIS PROJECT WAS PREPARED BY DAFT, MCCUNE & WALKER, INC. SEPT. 2002.
- SUBJECT PROPERTY ZONED NEWTOWN PER 2-2-04 COMPREHENSIVE ZONING PLAN.
- SEE DEPARTMENT OF PLANNING AND ZONING FILE NO'S: S-03-05, WP-04-113, PB-360, FDP-240, WP-04-135
- THERE ARE NO KNOWN CEMETERIES OR GRAVE SITES ON THIS PROPERTY.
- SOIL MAP #30.
- STREAM BUFFERS ARE DETERMINED BY LAND USE ADJOINING THE OPEN SPACE. EMPLOYMENT USE = 50' BUFFER FROM ANY STREAM. RESIDENTIAL USES = 50' BUFFER FOR INTERMITTENT STREAMS AND 75' BUFFER FOR PERENNIAL STREAMS.
- 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 ON UNIFORM TRAFFIC CONTROL DEVICES (MUTCD). ALL STREET AND REGULATORY SIGNS SHALL BE IN PLACE PRIOR TO THE PLACEMENT OF ANY ASPHALT.
- THE COORDINATES SHOWN HEREON ARE BASED UPON THE HOWARD COUNTY GEODETIC CONTROL WHICH IS BASED UPON THE MARYLAND STATE PLANE COORDINATE SYSTEM. HOWARD COUNTY MONUMENT NOS. 37GD AND 43AI WERE USED FOR THIS PROJECT.
- APPROXIMATE LOCATION OF EXISTING UTILITIES ARE SHOWN. THE CONTRACTOR SHALL TAKE ALL NECESSARY PRECAUTIONS TO PROTECT THE EXISTING UTILITIES AND MAINTAIN UNINTERRUPTED SERVICE. ANY DAMAGE INCURRED DUE TO CONTRACTOR'S OPERATION SHALL BE REPAIRED IMMEDIATELY AT THE CONTRACTOR'S EXPENSE. EXISTING UTILITIES ARE SHOWN ON THE BEST AVAILABLE INFORMATION.
- FLOODPLAIN STUDY WAS PREPARED BY PATTON HARRIS RUST & ASSOCIATES, PC, DATED 2005.
- ALL ELEVATIONS SHOWN ARE BASED ON THE U.S.C. AND G.S. MEAN SEA LEVEL DATUM, 1929.
- THE CONTRACTOR SHALL TEST PIT EXISTING UTILITIES AT LEAST (5) DAYS BEFORE STARTING WORK SHOWN ON THESE DRAWINGS.
- CONTRACTOR IS SOLELY RESPONSIBLE FOR CONSTRUCTION MEANS, METHODS, TECHNIQUES, SEQUENCES, PROCEDURES, AND SAFETY PRECAUTIONS AND PROGRAMS.
- ALL EXISTING STRUCTURES TO BE REMOVED PRIOR TO GRADING.
- EXISTING STRUCTURES MUST BE DEMOLISHED PRIOR TO DEVELOPMENT OF SITE.
- THE STORMWATER MANAGEMENT FACILITIES PROPOSED FOR THIS SITE ARE ALL PRIVATELY OWNED AND MAINTAINED. WATER QUALITY VOLUME AND CHANNEL PROTECTION WILL BE PROVIDED IN TWO WET POND SAND ONE MICROPOND EXTENDED DETENTION POND. REV MANAGEMENT WILL BE ADDRESSED AT THE TIME OF ULTIMATE SITE DEVELOPMENT OF THE INDIVIDUAL PARCELS. NO STORMWATER MANAGEMENT IS PROVIDED FOR RESIDENTIAL USE PARCELS ALONG OLD WATERLOO ROAD.
- LANDSCAPING IS ONLY BEING PROVIDED FOR THE SWM FACILITIES. LANDSCAPING FOR THE REST OF THE SITE WILL BE ADDRESSED AT THE SITE PLAN STAGE FOR CONSTRUCTION OF BUILDINGS AND OTHER IMPROVEMENTS.
- WP-04-113 DENIED REQUEST TO WAIVE SECTION 16.155.c.(1), WHICH REQUIRES APPROVAL OF SITE DEVELOPMENT PLAN PRIOR TO ISSUANCE OF GRADING OR BUILDING PERMIT, TO ALLOW THE PETITIONER TO MASS GRADE THE SUBJECT PROPERTY. THE REASONS FOR DENIAL ARE AS FOLLOWS:
 - THE APPROVAL OF THIS WAIVER WOULD NULLIFY THE INTENT OF THE REGULATIONS, ONE OF WHICH IS TO GUIDE THE ORDERLY DEVELOPMENT OF PROPERTY IN THE COUNTY, BECAUSE THE SUBJECT PROPERTY IS NOT AT A POINT IN THE DEVELOPMENT REVIEW PROCESS AT WHICH IT WOULD BE REASONABLE TO BEGIN GRADING. THE PROPERTY HAS NOT BEEN RECORDED UNDER A FINAL PLAN, NOR HAVE ANY SITE DEVELOPMENT PLANS BEEN SUBMITTED FOR CONSIDERATION. PRELIMINARY ENGINEERING FOR INFRASTRUCTURE AND STORMWATER MANAGEMENT HAVE NOT BEEN SUBMITTED OR APPROVED; THEREFORE, THE PARAMETERS FOR MASS GRADING HAVE NOT BEEN DETERMINED. IN ESSENCE, THEN, THIS WAIVER IS PREMATURE.
 - SEE THE ATTACHED COMMENTS FROM THE DEVELOPMENT ENGINEERING DIVISION.
 - THE APPLICANT HAS NOT PROVIDED ADEQUATE JUSTIFICATION TO WAIVE THE REQUIREMENTS FOR OBTAINING AN APPROVED SITE DEVELOPMENT PLAN FOR MASS GRADING PLAN FOR THIS PROJECT.
 - A SITE DEVELOPMENT PLAN FOR MASS GRADING WILL BE REQUIRED TO BE SUBMITTED, REVIEWED AND APPROVED BY THIS DIVISION AS THIS SITE INVOLVES MULTIPLE STORMWATER MANAGEMENT FACILITIES, FLOODPLAINS, AND EXTENSIVE PUBLIC ROAD IMPROVEMENTS.
 - A PRELIMINARY FOR THE REQUIRED ROAD IMPROVEMENTS TO MARYLAND ROUTE 108 AND TO LARK BROWN ROAD MUST BE SUBMITTED, REVIEWED AND APPROVED PRIOR TO APPROVAL OF A MASS GRADING PLAN FOR THIS DEVELOPMENT.
- WP-04-135 APPROVED REQUEST TO WAIVE SECTION 16.146.a.(1), WHICH REQUIRES SUBMISSION OF PRELIMINARY PLAN APPLICATION WITHIN A CERTAIN TIME AFTER APPROVAL OF A SKETCH PLAN, AND PRIOR TO SUBMISSION OF A FINAL PLAN. APPROVAL IS SUBJECT TO THE FOLLOWING CONDITIONS:
 - THE FINAL PLAN SHALL BE SUBMITTED WITHIN 4 MONTHS OF APPROVAL FOR THIS WAIVER (ON OR BEFORE 10/23/04) FOR THE AREA ASSOCIATED WITH PHASE 1; WITHIN 6 MONTHS OF APPROVAL OF THIS WAIVER (ON OR BEFORE 12/23/04) FOR THE AREA ASSOCIATED WITH PHASE 2; AND WITHIN 9 MONTHS OF APPROVAL OF THIS WAIVER (ON OR BEFORE 03/23/05) FOR THE NON-RESIDENTIAL AREA OF THE SUBDIVISION. YOU MAY SUBMIT A SINGLE FINAL PLAN APPLICATION TO COVER THE ENTIRE SUBDIVISION SINCE THE MILESTONE DATE TO REMAIN IN COMPLIANCE WITH APFO REQUIREMENTS.
 - YOU MAY NOT CONVERT THE ROADS TO PUBLIC ROADS.
 - YOU WILL HAVE TO COMPLY WITH ALL SHA REQUIREMENTS FOR ROAD IMPROVEMENTS ON ROUTE 108, IN CONJUNCTION WITH THE REVIEW AND APPROVAL OF THE FINAL.
- THIS PROJECT IS EXEMPT FROM THE FOREST CONSERVATION BECAUSE THE PROPERTY IS ZONED NEWTOWN.
- PROPOSED STORMWATER MANAGEMENT DRAINAGE AREA BOUNDARIES WILL REQUIRE VERIFICATION AT THE ULTIMATE DEVELOPMENT SDP SUBMITTED. MODIFICATIONS TO DRAINAGE AREAS CURRENTLY SHOWN FOR THESE POND DESIGNS MAY REQUIRE ADDITIONAL SWM DRAINAGE AREA PERCENT IMPERVIOUSNESS VALUES USED TO DESIGN PROPOSED PONDS MUST BE VERIFIED AT THE TIME ULTIMATE DEVELOPMENT SITE DEVELOPMENT PLAN SUBMITTAL. ANY INCREASE IN DRAINAGE AREA PERCENT IMPERVIOUSNESS VALUES WILL REQUIRE STORMWATER MANAGEMENT AT THE ULTIMATE DEVELOPMENT SITE DEVELOPMENT PLAN SUBMISSION. FOREBAY REQUIREMENTS WILL BE VERIFIED. ADDITIONAL FOREBAY LOCATIONS AND STORAGE VOLUME MAY BE REQUIRED AT THAT TIME.



PLAN
SCALE: 1" = 300'

A	S 76°09'11" W	63.68'
B	S 77°00'17" W	58.78'
C	S 76°01'08" W	131.47'
D	S 89°12'34" W	300.81'
E	N 79°55'10" W	572.20'
F	N 61°07'17" W	92.89'
G	N 48°29'20" W	94.64'
H	N 39°10'01" W	216.41'
I	N 39°18'19" W	39.60'
J	N 41°34'50" W	203.38'
K	N 53°40'53" W	102.97'
L	N 61°09'00" W	361.98'
M	N 72°14'50" W	108.79'
N	N 08°06'44" W	119.96'
O	N 88°59'49" W	60.07'
P	N 73°31'41" W	52.90'
Q	N 68°28'09" W	51.85'
R	N 58°25'53" W	405.22'
S	N 48°42'56" W	169.33'
T	R=768.51' L=281.67'	
U	N 01°32'19" W	203.47'
V	N 06°04'07" E	382.67'
W	N 00°06'58" W	46.41'
X	R=2246.83' L=554.94'	
Y	N 20°13'12" E	37.80'
Z	N 43°35'37" E	49.59'
AA	N 69°24'28" E	97.97'
BB	N 70°30'53" E	49.45'
CC	N 67°48'55" E	18.51'
DD	N 81°21'39" E	99.21'
EE	N 80°02'59" E	72.40'
FF	S 89°21'01" E	127.40'
GG	S 82°01'09" E	218.85'
HH	S 87°36'50" E	267.54'
II	S 36°16'31" W	200.00'
JJ	S 87°59'31" W	69.48'
KK	N 36°16'31" E	195.19'
LL	S 88°45'40" E	132.92'
MM	S 87°32'46" E	308.86'
NN	S 01°17'27" W	25.35'
OO	S 88°42'33" E	95.00'
PP	S 53°56'39" E	64.08'
QQ	S 37°42'33" E	424.74'
RR	S 51°42'01" W	565.37'
SS	S 54°18'58" E	347.48'
TT	N 51°42'02" E	466.06'
UU	S 37°42'30" E	303.97'
VV	W=2033.48' L=1090.21'	
WW	S 03°11'18" E	611.51'

APPROVED
July 22, 2004

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

CHRISTOPHER J. REID #19949
DATE

APPROVED : HOWARD COUNTY DEPARTMENT OF PLANNING AND ZONING.	
<i>Mark D. ...</i>	10/23/04
DIRECTOR	DATE
<i>...</i>	10/23/04
CHIEF, DEVELOPMENT ENGINEERING DIVISION	DATE
<i>Cindy Hanada</i>	10/23/04
CHIEF, DIVISION OF LAND DEVELOPMENT	DATE
A-20-05 REVISOR GENERAL NOTES	
DATE NO.	REVISION
OWNER / DEVELOPER HRD LAND HOLDINGS, INC. HOWARD RESEARCH AND DEVELOPMENT CORPORATION THE ROUSE BUILDING 10275 LITTLE PATUXENT PARKWAY COLUMBIA, MARYLAND 21044 410-992-6000	
PROJECT BENSON EAST	
AREA TAX MAP 37 & 43 ZONED - NEWTOWN PARCELS 482, 587, 382, 421, 547 6th ELECTION DISTRICT HOWARD COUNTY, MARYLAND	
TITLE TITLE SHEET	
Patton Harris Rust & Associates, pc Engineers, Surveyors, Planners, Landscape Architects. 8818 Centre Park Drive Columbia, MD 21045 T 410.997.8900 F 410.997.9282	
10.19.04	DATE
DESIGNED BY : ACR/CJR	
DRAWN BY : DAM	
PROJECT NO : 11621 / PRELIM TRAPSI.DWG	
DATE : OCTOBER 18, 2004	
SCALE : AS SHOWN	
DRAWING NO. 1 OF 21	
SDP-04-163	



LARK BROWN ROAD
 HOWARD COUNTY PUBLIC ROAD
 CLASSIFICATION = LOCAL ROAD

LEGEND

EXISTING 2' CONTOUR	---	300
EXISTING 10' CONTOUR	---	300
PROPOSED 2' CONTOUR	---	300
PROPOSED 10' CONTOUR	---	300
PROPERTY LINE AND RIGHT OF WAY	---	15'0"
STORM DRAIN	---	15'0"
EXISTING TREELINE	---	15'2"
PROPOSED TREELINE	---	15'2"
PROPOSED SPOT ELEVATION	---	15'2"
RRAP INFLOW PROTECTION	---	15'2"
SOIL LINES	---	15'2"
REMOVABLE PUMPING STATION	---	15'2"
LIMIT OF DISTURBANCE	---	15'2"
EARTH DIKE	---	15'2"
SUPER SILT FENCE	---	15'2"
SILT FENCE	---	15'2"
STABILIZED CONSTRUCTION ENTRANCE	---	15'2"
LIMIT OF WETLANDS	---	15'2"
DRAINAGE AREA DIVIDE	---	15'2"

BASIN #5

EX. DRAINAGE AREA	8.0 ACRES
PR. DRAINAGE AREA	7.5 ACRES
STOR. REQ'D (WET STOR.)	14400 CF
STOR. REQ'D (DRY STOR.)	14400 CF
STOR. PROV. (WET STOR.)	19500 CF @ 286.0
STOR. PROV. (DRY STOR.)	51240 CF @ 287.25
RISER CREST ELEVATION	290.0
BASIN CLEANOUT ELEVATION	285.0
TOP OF DAM	293.0
BOTTOM EL.	284.0
EMBANKMENT SIDE SLOPES	3:1
CMP RISER DIAMETER	42"
TRASH RACK DIAMETER	60"
CMP BARREL SIZE	30"
BARREL LENGTH	49'
BARREL INV. IN	286.0
BARREL INV. OUT	285.5
Q ₁ EX	1.8 CFS
Q ₁ ULT	0.6 CFS

BY THE DEVELOPER :
 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 THE ENVIRONMENT APPROVED TRAINING PROGRAM FOR THE CONTROL OF SEDIMENT AND EROSION BEFORE BEGINNING THE PROJECT. I SHALL ENGAGE A REGISTERED PROFESSIONAL ENGINEER TO SUPERVISE POND CONSTRUCTION AND PROVIDE THE HOWARD SOIL CONSERVATION DISTRICT WITH AN "AS-BUILT" PLAN OF THE POND WITHIN 30 DAYS OF COMPLETION. I ALSO AUTHORIZE PERIODIC ON-SITE INSPECTIONS BY THE HOWARD SOIL CONSERVATION DISTRICT.

DEVELOPER
PAUL CAVANAGH 4.21.05
 DATE

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

ENGINEER
Chris J. Reid 5.3.05
 DATE

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

NATURAL RESOURCES/CONSERVATION SERVICE
Jim Myers 5/12/05
 DATE

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

HOWARD SOIL CONSERVATION DISTRICT
John Sals 5/12/05
 DATE

APPROVED : HOWARD COUNTY DEPARTMENT OF PLANNING AND ZONING.

DIRECTOR
Theresa Deyle 5/12/05
 DATE

CHIEF, DEVELOPMENT ENGINEERING DIVISION
Chris Williams 5/12/05
 DATE

CHIEF, DIVISION OF LAND DEVELOPMENT
Cindy Hamata 5/20/05
 DATE

5.3.05 D REVISED SITE DEVELOPMENT PLAN
 MODIFIED RISE GRABES AND SUMP #1

DATE NO. REVISION

OWNER / DEVELOPER
 HRD LAND HOLDINGS, INC.
 HOWARD RESEARCH AND DEVELOPMENT CORPORATION
 THE ROUSE BUILDING
 10275 LITTLE PATENT PARKWAY
 COLUMBIA, MARYLAND 21044
 410-992-6000

PROJECT
BENSON EAST

AREA TAX MAP 37 & 43 ZONED - NEWTOWN
 PARCELS 482, 587, 382, 421, 547
 6th ELECTION DISTRICT
 HOWARD COUNTY, MARYLAND

TITLE
GRADING AND SEDIMENT CONTROL PLAN

Patton Harris Rust & Associates, pc
 Engineers, Surveyors, Planners, Landscape Architects.
 8818 Centre Park Drive
 Columbia, MD 21045
 T 410.997.8900
 F 410.997.9282

DATE
5.3.05

DESIGNED BY : ACR/CJR

DRAWN BY : DAM

PROJECT NO : 11621/PRELIM TRAPS2.DWG

DATE : OCTOBER 18, 2004

SCALE : 1" = 50'

DRAWING NO. 2 OF 21
 CHRISTOPHER J. REID #19949

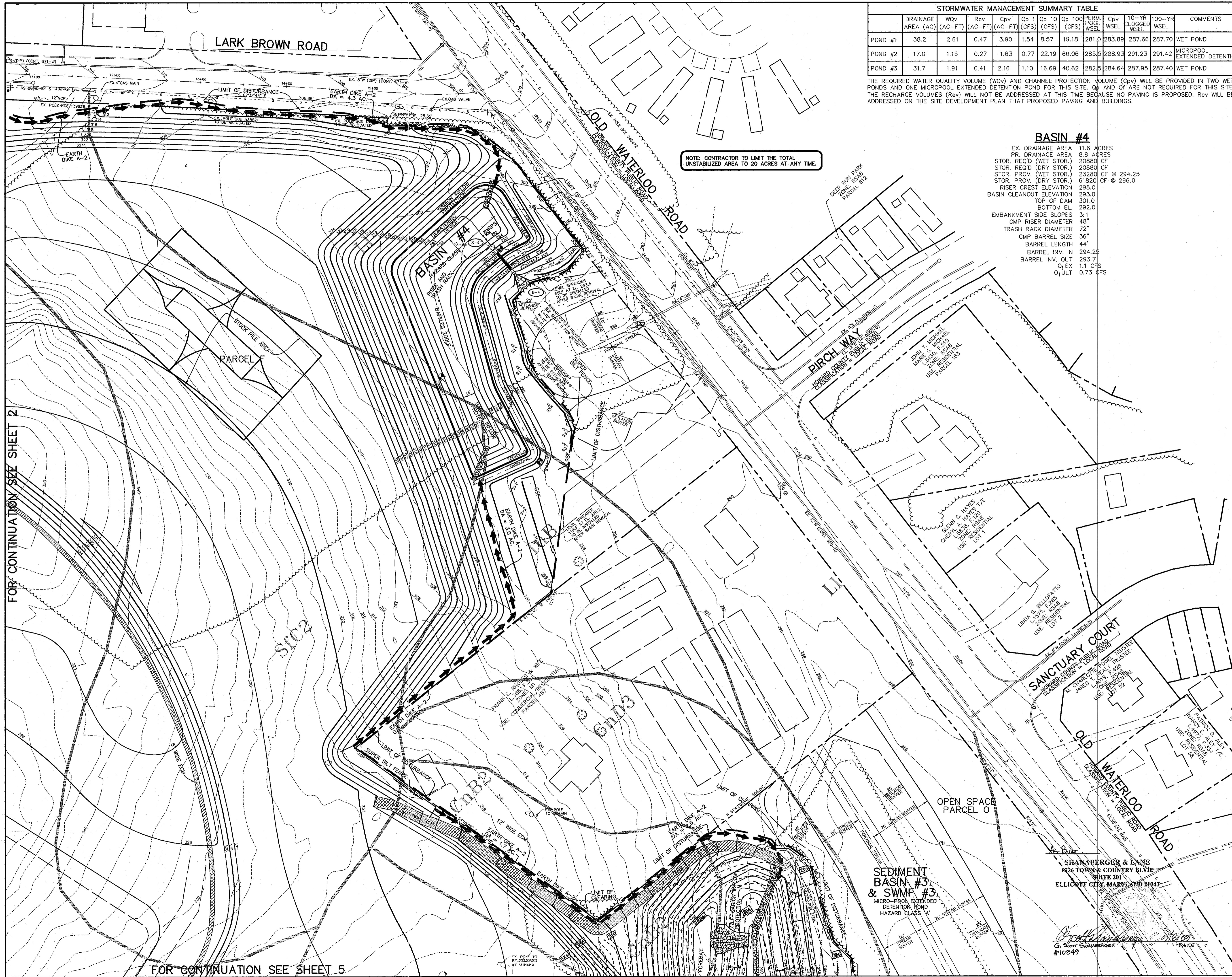
SHANABERGER & LANE
 8766 TOWN & COUNTRY BLVD.
 SUITE 201
 ELLICOTT CITY, MARYLAND 21043



NOTE: CONTRACTOR TO LIMIT THE TOTAL UNSTABILIZED AREA TO 20 ACRES AT ANY TIME.

FOR CONTINUATION SEE SHEET 4

FOR CONTINUATION SEE SHEET 5



	DRAINAGE AREA (AC)	WQv (AC-FT)	Rev (AC-FT)	Cp1 (AC-FT)	Op 1 (CFS)	Op 10 (CFS)	Op 100 (CFS)	PERM. POND WSEL	Cpv WSEL	10-YR LOGGED WSEL	100-YR WSEL	COMMENTS
POND #1	38.2	2.61	0.47	3.90	1.54	8.57	19.18	281.0	283.89	287.66	287.70	WET POND
POND #2	17.0	1.15	0.27	1.63	0.77	22.19	66.06	285.5	288.93	291.23	291.42	MICROPOOL EXTENDED DETENTION
POND #3	31.7	1.91	0.41	2.16	1.10	16.69	40.62	282.5	284.64	287.95	287.40	WET POND

THE REQUIRED WATER QUALITY VOLUME (WQV) AND CHANNEL PROTECTION VOLUME (Cp1) WILL BE PROVIDED IN TWO WET PONDS AND ONE MICROPOOL EXTENDED DETENTION POND FOR THIS SITE. Op AND OF ARE NOT REQUIRED FOR THIS SITE. THE RECHARGE VOLUMES (Rev) WILL NOT BE ADDRESSED AT THIS TIME BECAUSE NO PAVING IS PROPOSED. Rev WILL BE ADDRESSED ON THE SITE DEVELOPMENT PLAN THAT PROPOSED PAVING AND BUILDINGS.

BASIN #4

EX. DRAINAGE AREA 11.6 ACRES
 PR. DRAINAGE AREA 8.8 ACRES
 STOR. REQ'D (WET STOR.) 20880 CF
 STOR. REQ'D (DRY STOR.) 20880 CF
 STOR. PROV. (WET STOR.) 23280 CF @ 294.25
 STOR. PROV. (DRY STOR.) 61820 CF @ 296.0
 RISER CREST ELEVATION 293.0
 BASIN CLEANOUT ELEVATION 293.0
 TOP OF DAM 301.0
 BOTTOM EL. 292.0
 EMBANKMENT SIDE SLOPES 3:1
 CMP RISER DIAMETER 48"
 TRASH RACK DIAMETER 72"
 CMP BARREL SIZE 36"
 BARREL LENGTH 44'
 BARREL INV. IN 294.25
 BARREL INV. OUT 293.7
 Q₁ EX 1.1 CFS
 Q₁ULT 0.73 CFS

EXISTING 2' CONTOUR	---
EXISTING 10' CONTOUR	---
PROPOSED 2' CONTOUR	---
PROPOSED 10' CONTOUR	---
PROPERTY LINE AND RIGHT OF WAY	---
STORM DRAIN	---
EXISTING TREELINE	---
PROPOSED TREELINE	---
PROP. SPOT ELEVATION	---
RIPRAP INFLOW PROTECTION	---
SOIL LINES	---
REMOVABLE PUMPING STATION	---
LIMIT OF DISTURBANCE	---
EARTH DIKE	---
SUPER SILT FENCE	---
SILT FENCE	---
STABILIZED CONSTRUCTION ENTRANCE	---
LIMIT OF WETLANDS	---
DRAINAGE AREA DIVIDE	---

BY THE DEVELOPER:
 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 THE ENVIRONMENT APPROVED TRAINING PROGRAM FOR THE CONTROL OF SEDIMENT AND EROSION BEFORE BEGINNING THE PROJECT. I SHALL ENGAGE A REGISTERED PROFESSIONAL ENGINEER TO SUPERVISE POND CONSTRUCTION AND PROVIDE THE HOWARD SOIL CONSERVATION DISTRICT WITH AN "AS-BUILT" PLAN OF THE POND WITHIN 30 DAYS OF COMPLETION. I ALSO AUTHORIZE PERIODIC ON-SITE INSPECTIONS BY THE HOWARD SOIL CONSERVATION DISTRICT.

DEVELOPER
PAUL CAVANAGH 5/29/05
 DATE

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

ENGINEER
Chris J. Reid 5/3/05
 DATE

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

NATURAL RESOURCES CONSERVATION SERVICE
Jim Manno 5/12/05
 DATE

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

HOWARD SOIL CONSERVATION DISTRICT
Steve Adin 5/12/05
 DATE

APPROVED: HOWARD COUNTY DEPARTMENT OF PLANNING AND ZONING.

DIRECTOR
Frank L. Taylor 5/10/05
 DATE

CHIEF, DEVELOPMENT ENGINEERING DIVISION
Chris J. Reid 5/17/05
 DATE

CHIEF, DIVISION OF LAND DEVELOPMENT
Condy Stewart 5/20/05
 DATE

5.3.05 (A) REVISED SITE DEVELOPMENT PLAN
 MORRIS MASS GRADERS AND SUMPS #3

OWNER / DEVELOPER
 HRD LAND HOLDINGS, INC.
 HOWARD RESEARCH AND DEVELOPMENT CORPORATION
 THE ROUSE BUILDING
 10275 LITTLE PATENT PARKWAY
 COLUMBIA, MARYLAND 21044
 410-992-6000

PROJECT
BENSON EAST

AREA
 TAX MAP 37 & 43 ZONED - NEWTOWN
 PARCELS 482, 587, 382, 421, 547
 6th ELECTION DISTRICT
 HOWARD COUNTY, MARYLAND

TITLE
GRADING AND SEDIMENT CONTROL PLAN

Patton Harris Rust & Associates, pc
 Engineers, Surveyors, Planners, Landscape Architects.
 8818 Centre Park Drive
 Columbia, MD 21045
 T 410.997.8900
 F 410.997.9282

5.3.05
 DATE

DESIGNED BY: ACR/CJR

DRAWN BY: DAM

PROJECT NO: 11621/PRELIM TRAP3.DWG

DATE: OCTOBER 18, 2004

SCALE: 1" = 50'

DRAWING NO. 3 OF 21

FOR CONTINUATION SEE SHEET 2

LEGEND

EXISTING 2' CONTOUR	---	300
EXISTING 10' CONTOUR	---	300
PROPOSED 2' CONTOUR	---	300
PROPOSED 10' CONTOUR	---	300
PROPERTY LINE AND RIGHT OF WAY	---	15'D
STORM DRAIN	---	15'D
EXISTING TREELINE	---	15'D
PROPOSED TREELINE	---	15'D
PROP. SPOT ELEVATION	---	15'D
RIPRAP INFLOW PROTECTION	---	15'D
SOIL LINES	---	15'D
REMOVABLE PUMPING STATION	---	15'D
LIMIT OF DISTURBANCE	---	15'D
EARTH DIKE	---	15'D
SUPER SILT FENCE	---	15'D
SILT FENCE	---	15'D
STABILIZED CONSTRUCTION ENTRANCE	---	15'D
LIMIT OF WETLANDS	---	15'D
DRAINAGE AREA DIVIDE	---	15'D

BY THE DEVELOPER :
 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 THE ENVIRONMENT APPROVED TRAINING PROGRAM FOR THE CONTROL OF SEDIMENT AND EROSION BEFORE BEGINNING THE PROJECT. I SHALL ENGAGE A REGISTERED PROFESSIONAL ENGINEER TO SUPERVISE POND CONSTRUCTION AND PROVIDE THE HOWARD SOIL CONSERVATION DISTRICT WITH AN "AS-BUILT" PLAN OF THE POND WITHIN 30 DAYS OF COMPLETION. I ALSO AUTHORIZE PERIODIC ON-SITE INSPECTIONS BY THE HOWARD SOIL CONSERVATION DISTRICT.

DEVELOPER
PAUL CAVANAUGH 4-29-06
 DATE

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

ENGINEER
Chris J. Reid 5-3-06
 DATE

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

Jim Myrnes 5/12/05
 DATE

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

John A. Hines 5/12/05
 DATE

APPROVED : HOWARD COUNTY DEPARTMENT OF PLANNING AND ZONING.

Paul D. Layer 5/20/05
 DIRECTOR DATE

Bill Cummings 5/17/05
 CHIEF, DEVELOPMENT ENGINEERING DIVISION DATE

Candy Hamilton 5/20/05
 CHIEF, DIVISION OF LAND DEVELOPMENT 88 DATE

5-3-05D REVISED SITE DEVELOPMENT PLAN
 MAINTAINED MASS GRADES AND SWAMP # 1

OWNER / DEVELOPER
 HRD LAND HOLDINGS, INC.
 HOWARD RESEARCH AND DEVELOPMENT CORPORATION
 THE ROUSE BUILDING
 10275 LITTLE PATUXENT PARKWAY
 COLUMBIA, MARYLAND 21044
 410-992-6000

PROJECT
BENSON EAST

AREA TAX MAP 37 & 43 ZONED - NEWTOWN
 PARCELS 482, 587, 382, 421, 547
 6TH ELECTION DISTRICT
 HOWARD COUNTY, MARYLAND

TITLE
GRADING AND SEDIMENT CONTROL PLAN

Patton Harris Rust & Associates, pc
 Engineers, Surveyors, Planners, Landscape Architects.
 8818 Centre Park Drive
 Columbia, MD 21045
 T 410.997.8900
 F 410.997.9282

5-3-05
 DATE

DESIGNED BY : ACR/CJR
 DRAWN BY : DAM
 PROJECT NO : 11621/PRELIM TRAPS4.DWG
 DATE : OCTOBER 18, 2004
 SCALE : 1" = 50'

DRAWING NO. 4 OF 21
 CHRISTOPHER J. REID #19949

SDP-04-163

INLET DRAINAGE DATA

INLET NOS.	AREA IN ACRES	C FACTOR	PERCENT IMPERVIOUS
I-27	2.34	0.42	35
I-28	2.00	0.55	53
I-29	1.0	0.22	5
STUB	8.55	0.76	85

BASIN #1

DRAINAGE AREA 46.0 ACRES
 STOR. REQ'D (WET STOR.) 82,800 CF
 STOR. REQ'D (DRY STOR.) 82,800 CF
 STOR. PROV. (WET STOR.) 114,127 CF @ 280.00
 STOR. PROV. (DRY STOR.) 117,612 CF @ 282.20
 RISER CREST ELEVATION 284.17
 BASIN CLEANOUT ELEVATION 278.5
 TOP OF DAM 280.0
 BOTTOM EL. 277.8
 SIDE SLOPES 3:1
 Q1 EX 3.82 CFS
 Q1 PR 3.04 CFS

As-Built
SHAN BERGER & LANE
 8726 TOWN & COUNTRY BLVD.
 SUITE 201
 BELLICOTT CITY, MARYLAND 21043

COLUMBIA ASSOCIATION INC.
 LOT T-9
 L. 3324, F. 191
 ZONE: M-1
 USE: COMMERCIAL
 PARCEL 671

SOIL CHART

SYMBOL	DESCRIPTION
BrB2	BRANDYWINE LOAM, 3 TO 8 PERCENT SLOPES, MODERATELY ERODED
CnB2	CHILLUM-FAIRFAX LOAMS, 1 TO 5 PERCENT SLOPES, MODERATELY ERODED
CnD3	CHILLUM-FAIRFAX LOAMS, 5 TO 15 PERCENT SLOPES, SEVERELY ERODED
Fa	FALLSINGTON LOAM
IuB	IUKA LOAM, LOCAL ALLUVIUM, 1 TO 5 PERCENT SLOPES
KeB2	KELLY SILT LOAM, 3 TO 8 PERCENT SLOPES, MODERATELY ERODED
LI	LEONARDTOWN SILT LOAM
SfB2	SASSAFRAS GRAVELLY SANDY LOAM, 1 TO 5 PERCENT SLOPES, MODERATELY ERODED
SfC2	SASSAFRAS GRAVELLY SANDY LOAM, 5 TO 10 PERCENT SLOPES, MODERATELY ERODED
SD2	SASSAFRAS GRAVELLY SANDY LOAM, 10 TO 15 PERCENT SLOPES, MODERATELY ERODED
SID2	SASSAFRAS LOAM, 10 TO 15 PERCENT SLOPES, MODERATELY ERODED

STORMWATER MANAGEMENT SUMMARY TABLE

	DRAINAGE AREA (AC)	WQV (AC-FT)	Rev (AC-FT)	Cpv (AC-FT)	Op 1 (CFS)	Op 10 (CFS)	Op 100 (CFS)	PERM. POOL WSEL	Cpv WSEL	10-YR PLOGGED WSEL	100-YR WSEL	COMMENTS
POND #1	38.2	2.61	0.47	3.90	1.54	8.57	19.18	281.0	283.89	287.66	287.70	WET POND
POND #2	17.0	1.15	0.27	1.63	0.77	22.19	66.06	285.5	288.93	291.23	291.42	MICROPOOL EXTENDED DETENTION
POND #3	31.7	1.91	0.41	2.16	1.10	16.69	40.62	282.5	284.64	287.95	287.40	WET POND

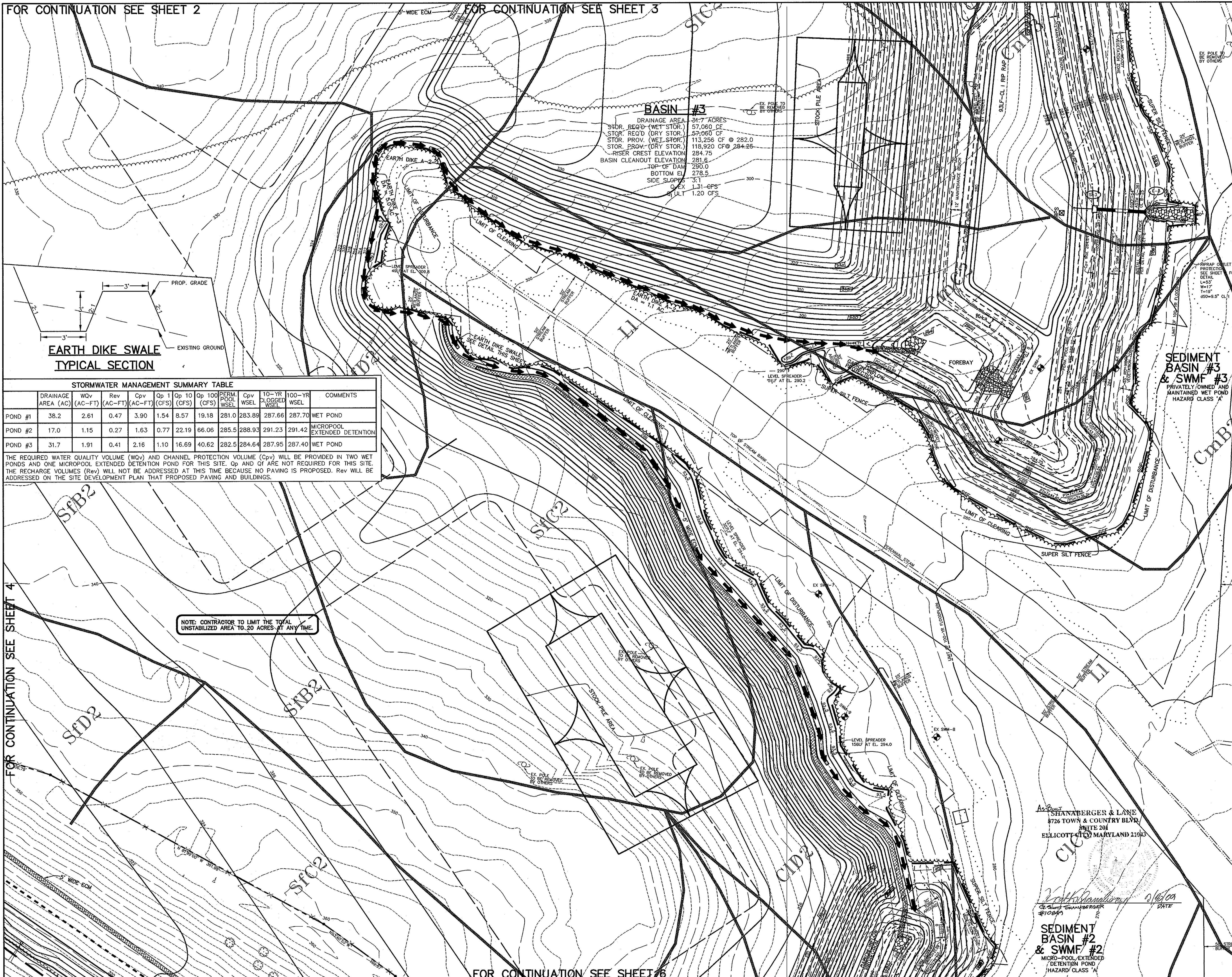
THE REQUIRED WATER QUALITY VOLUME (WQV) AND CHANNEL PROTECTION VOLUME (CPV) WILL BE PROVIDED IN TWO WET PONDS AND ONE MICROPOOL EXTENDED DETENTION POND FOR THIS SITE. CP AND Q1 ARE NOT REQUIRED FOR THIS SITE. THE RECHARGE VOLUMES (REV) WILL NOT BE ADDRESSED AT THIS TIME BECAUSE NO PAVING IS PROPOSED. REV WILL BE ADDRESSED ON THE SITE DEVELOPMENT PLAN THAT PROPOSED PAVING AND BUILDINGS.

NOTE: CONTRACTOR TO LIMIT THE TOTAL UNSTABILIZED AREA TO 20 ACRES AT ANY TIME.

FOR CONTINUATION SEE SHEET 5

FOR CONTINUATION SEE SHEET 2

FOR CONTINUATION SEE SHEET 3



BASIN #3
 DRAINAGE AREA 31.7 ACRES
 STOR. REQ'D (WET STOR.) 57,060 CF
 STOR. REQ'D (DRY STOR.) 57,060 CF
 STOR. PROV. (WET STOR.) 113,256 CF @ 282.0
 STOR. PROV. (DRY STOR.) 118,920 CF @ 284.25
 RISER CREST ELEVATION 284.75
 BASIN CLEANOUT ELEVATION 281.6
 TOP OF DAM 290.0
 BOTTOM EL. 278.5
 SIDE SLOPES 3:1
 SLOTT 1.20 CFS

SEDIMENT BASIN #3 & SWMF #3
 PRIVATELY OWNED AND MAINTAINED WET POND HAZARD CLASS 'A'

EARTH DIKE SWALE TYPICAL SECTION

STORMWATER MANAGEMENT SUMMARY TABLE

DRAINAGE AREA (AC)	WQv (AC-FT)	Rev (AC-FT)	Cpv (AC-FT)	Qp 1 (CFS)	Qp 10 (CFS)	Qp 100 (CFS)	PERM. POOL WSEL	Cpv WSEL	10-YR LOGGED WSEL	100-YR WSEL	COMMENTS	
POND #1	38.2	2.61	0.47	3.90	1.54	8.57	19.18	281.0	283.89	287.66	287.70	WET POND
POND #2	17.0	1.15	0.27	1.63	0.77	22.19	66.06	285.5	288.93	291.23	291.42	MICROPOOL EXTENDED DETENTION
POND #3	31.7	1.91	0.41	2.16	1.10	16.69	40.62	282.5	284.64	287.95	287.40	WET POND

THE REQUIRED WATER QUALITY VOLUME (WQV) AND CHANNEL PROTECTION VOLUME (Cpv) WILL BE PROVIDED IN TWO WET PONDS AND ONE MICROPOOL EXTENDED DETENTION POND FOR THIS SITE. Qp AND Qf ARE NOT REQUIRED FOR THIS SITE. THE RECHARGE VOLUMES (Rev) WILL NOT BE ADDRESSED AT THIS TIME BECAUSE NO PAVING IS PROPOSED. Rev WILL BE ADDRESSED ON THE SITE DEVELOPMENT PLAN THAT PROPOSED PAVING AND BUILDINGS.

NOTE: CONTRACTOR TO LIMIT THE TOTAL UNSTABILIZED AREA TO 20 ACRES AT ANY TIME.

LEGEND

EXISTING 2' CONTOUR	---
EXISTING 10' CONTOUR	---
PROPOSED 2' CONTOUR	---
PROPOSED 10' CONTOUR	---
PROPERTY LINE AND RIGHT OF WAY	---
STORM DRAIN	---
EXISTING TREELINE	---
PROPOSED TREELINE	---
PROP. SPOT ELEVATION	---
RIPRAP INFLOW PROTECTION	---
SOIL LINES	---
REMOVABLE PUMPING STATION	---
LIMIT OF DISTURBANCE	---
EARTH DIKE	---
SUPER SILT FENCE	---
SILT FENCE	---
STABILIZED CONSTRUCTION ENTRANCE	---
LIMIT OF WETLANDS	---
DRAINAGE AREA DIVIDE	---

BY THE DEVELOPER:
 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 THE ENVIRONMENT APPROVED TRAINING PROGRAM FOR THE CONTROL OF SEDIMENT AND EROSION BEFORE BEGINNING THE PROJECT. I SHALL ENGAGE A REGISTERED PROFESSIONAL ENGINEER TO SUPERVISE POND CONSTRUCTION AND PROVIDE THE HOWARD SOIL CONSERVATION DISTRICT WITH AN "AS-BUILT" PLAN OF THE POND WITHIN 30 DAYS OF COMPLETION. I ALSO AUTHORIZE PERIODIC ON-SITE INSPECTIONS BY THE HOWARD SOIL CONSERVATION DISTRICT.

DEVELOPER: *Paul Caraway* DATE: 4-29-05
 BY THE ENGINEER:
 I CERTIFY THAT THIS PLAN FOR POND CONSTRUCTION, EROSION AND SEDIMENT CONTROL REPRESENTS A PRACTICAL AND WORKABLE PLAN BASED ON MY PERSONAL KNOWLEDGE OF THE SITE CONDITIONS. THIS PLAN WAS PREPARED IN ACCORDANCE WITH THE REQUIREMENTS OF THE HOWARD SOIL CONSERVATION DISTRICT. I HAVE NOTIFIED THE DEVELOPER THAT HE/SHE MUST ENGAGE A REGISTERED PROFESSIONAL ENGINEER TO SUPERVISE POND CONSTRUCTION AND PROVIDE THE HOWARD SOIL CONSERVATION DISTRICT WITH AN "AS-BUILT" PLAN OF THE POND WITHIN 30 DAYS OF COMPLETION.
 ENGINEER: *Chris & Paul* DATE: 5/3/05

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.
 NATURAL RESOURCES CONSERVATION SERVICE DATE: 5/12/05

THESE PLANS FOR SMALL POND CONSTRUCTION, SOIL EROSION AND SEDIMENT CONTROL MEET THE REQUIREMENTS OF THE HOWARD SOIL CONSERVATION DISTRICT.
 HOWARD SOIL CONSERVATION DISTRICT DATE: 5/12/05

APPROVED: HOWARD COUNTY DEPARTMENT OF PLANNING AND ZONING.
 DIRECTOR: *Frank H. Lytle* DATE: 5/20/05
 CHIEF, DEVELOPMENT ENGINEERING DIVISION DATE: 5/17/05
 CHIEF, DIVISION OF LAND DEVELOPMENT DATE: 5/20/05

5.3.05 REVISED SITE DEVELOPMENT PLAN
 MINOR MASS GRABS, SWMF #2 & #3
 OWNER / DEVELOPER: HRD LAND HOLDINGS, INC.
 HOWARD RESEARCH AND DEVELOPMENT CORPORATION
 THE ROUSE BUILDING
 10275 LITTLE PATUXENT PARKWAY
 COLUMBIA, MARYLAND 21044
 410-992-6000

PROJECT: **BENSON EAST**
 AREA: TAX MAP 37 & 43 ZONED - NEWTOWN
 PARCELS 482, 587, 382, 421, 547
 6th ELECTION DISTRICT
 HOWARD COUNTY, MARYLAND

TITLE: **GRADING AND SEDIMENT CONTROL PLAN**
 Patton Harris Rust & Associates, p.c.
 Engineers, Surveyors, Planners, Landscape Architects.
 8818 Centre Park Drive
 Columbia, MD 21045
 T 410.997.8900
 F 410.997.9252

DATE: 5.3.05
 DESIGNED BY: ACR/CJR
 DRAWN BY: DAM
 PROJECT NO: 11621/PRELIM TRAP5.DWG
 DATE: OCTOBER 18, 2004
 SCALE: 1" = 50'
 DRAWING NO. 5 OF 21
 CHRISTOPHER J. REID #19949



AS-PLANNED
 SHANABERGER & LANE
 8726 TOWN & COUNTRY BLVD.
 SUITE 204
 ELLICOTT CITY, MARYLAND 21043

SEDIMENT BASIN #2 & SWMF #2
 MICRO-POOL EXTENDED DETENTION POND
 HAZARD CLASS 'A'

FOR CONTINUATION SEE SHEET 4

FOR CONTINUATION SEE SHEET 6

FOR CONTINUATION SEE SHEET 5

BASIN #2

DRAINAGE AREA	20.5 ACRES
STOR. REQ'D (WET STOR.)	36,900 CF
STOR. REQ'D (DRY STOR.)	36,900 CF
STOR. PROV. (WET STOR.)	36,900 CF @ 286.17
STOR. PROV. (DRY STOR.)	106,280 CF @ 288.00
RISER CREST ELEVATION	290.00
BASIN CLEANOUT ELEVATION	284.8
TOP OF DAM	294.0
BOTTOM EL.	282.0
SIDE SLOPES	3:1
Q ₁ EX	0.95 CFS
Q ₁ ULT	0.94 CFS

LEGEND

EXISTING 2' CONTOUR	---
EXISTING 10' CONTOUR	---
PROPOSED 2' CONTOUR	---
PROPOSED 10' CONTOUR	---
PROPERTY LINE AND RIGHT OF WAY	---
STORM GRAB	---
EXISTING TREELINE	---
PROPOSED TREELINE	---
PROP. SPOT ELEVATION	---
RIPRAP INFLOW PROTECTION	---
SOIL LINES	---
REMOVABLE PUMPING STATION	---
LIMIT OF DISTURBANCE	---
EARTH DIKE	---
SUPER SILT FENCE	---
SILT FENCE	---
STABILIZED CONSTRUCTION ENTRANCE	---
LIMIT OF WETLANDS	---
DRAINAGE AREA DIVIDE	---

BY THE DEVELOPER :
 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 THE ENVIRONMENT APPROVED TRAINING PROGRAM FOR THE CONTROL OF SEDIMENT AND EROSION BEFORE BEGINNING THE PROJECT. I SHALL ENGAGE A REGISTERED PROFESSIONAL ENGINEER TO SUPERVISE POND CONSTRUCTION AND PROVIDE THE HOWARD SOIL CONSERVATION DISTRICT WITH AN "AS-BUILT" PLAN OF THE POND WITHIN 30 DAYS OF COMPLETION. I ALSO AUTHORIZE PERIODIC ON-SITE INSPECTIONS BY THE HOWARD SOIL CONSERVATION DISTRICT.

DEVELOPER
 PAUL CAYANBUGH
 DATE 4-29-05

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

ENGINEER
 Chris J. Reid
 DATE 5-3-05

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.

NATURAL RESOURCES CONSERVATION SERVICE
 DATE 5/12/05

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

HOWARD SOIL CONSERVATION DISTRICT
 DATE 5/12/05

APPROVED : HOWARD COUNTY DEPARTMENT OF PLANNING AND ZONING.

DIRECTOR
 DATE 5/24/05

CHIEF, DEVELOPMENT ENGINEERING DIVISION
 DATE 5/17/05

CHIEF, DIVISION OF LAND DEVELOPMENT
 DATE 5/24/05

5.3.05 A REVISED SITE DEVELOPMENT PLAN
 MODIFIED MASS GRABES AND SWMF #2

DATE NO. REVISION

OWNER / DEVELOPER
 HRD LAND HOLDINGS, INC.
 HOWARD RESEARCH AND DEVELOPMENT CORPORATION
 THE ROUSE BUILDING
 10275 LITTLE PATUXENT PARKWAY
 COLUMBIA, MARYLAND 21044
 410-992-6000

PROJECT
 BENSON EAST

AREA TAX MAP 37 & 43 ZONED - NEWTOWN
 PARCELS 482, 587, 382, 421, 547
 6th ELECTION DISTRICT
 HOWARD COUNTY, MARYLAND

TITLE
 GRADING AND SEDIMENT CONTROL PLAN

Patton Harris Rust & Associates, pc
 Engineers, Surveyors, Planners, Landscape Architects.
 8818 Centre Park Drive.
 Columbia, MD 21045
 T 410.997.8900
 F 410.997.9282

DESIGNED BY : ACJ/CJR

DRAWN BY: DAM

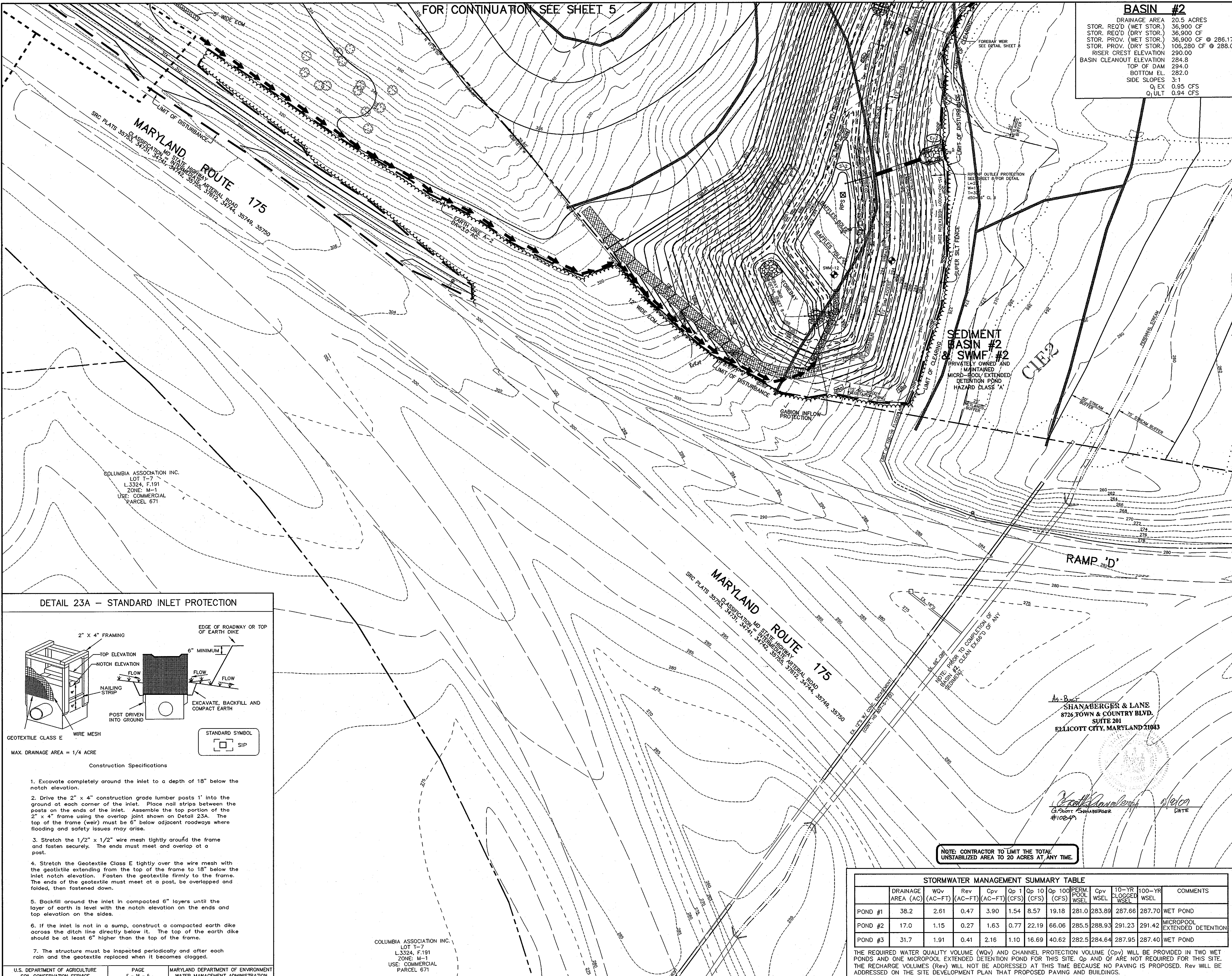
PROJECT NO : 11621/PRELIM TRAPSS6.DWG

DATE : OCTOBER 18, 2004

SCALE : 1" = 50'

DRAWING NO. 6 OF 21

SDP-04-163



DETAIL 23A - STANDARD INLET PROTECTION

2" x 4" FRAMING
 TOP ELEVATION
 NOTCH ELEVATION
 NAILING STRIP
 POST DRIVEN INTO GROUND
 EXCAVATE, BACKFILL AND COMPACT EARTH
 GEOTEXTILE CLASS E
 WIRE MESH
 MAX. DRAINAGE AREA = 1/4 ACRE
 STANDARD SYMBOL
 SIP

Construction Specifications

- Excavate completely around the inlet to a depth of 18" below the notch elevation.
- Drive the 2" x 4" construction grade lumber posts 1" into the ground at each corner of the inlet. Place nail strips between the posts on the ends of the inlet. Assemble the top portion of the 2" x 4" frame using the overlap joint shown on Detail 23A. The top of the frame (wire) must be 6" below adjacent roadways where flooding and safety issues may arise.
- Stretch the 1/2" x 1/2" wire mesh tightly around the frame and fasten securely. The ends must meet and overlap at a post.
- Stretch the Geotextile Class E tightly over the wire mesh with the geotextile extending from the top of the frame to 18" below the inlet notch elevation. Fasten the geotextile firmly to the frame. The ends of the geotextile must meet at a post, be overlapped and folded, then fastened down.
- Backfill around the inlet in compacted 6" layers until the layer of earth is level with the notch elevation on the ends and top elevation on the sides.
- If the inlet is not in a sump, construct a compacted earth dike across the ditch line directly below it. The top of the earth dike should be at least 6" higher than the top of the frame.
- The structure must be inspected periodically and after each rain and the geotextile replaced when it becomes clogged.

U.S. DEPARTMENT OF AGRICULTURE SOIL CONSERVATION SERVICE
 PAGE E-16-5
 MARYLAND DEPARTMENT OF ENVIRONMENT WATER MANAGEMENT ADMINISTRATION

STORMWATER MANAGEMENT SUMMARY TABLE

	DRAINAGE AREA (AC)	WQV (AC-FT)	Rev (AC-FT)	Cpv (AC-FT)	Qp 1 (CFS)	Qp 10 (CFS)	Qp 100 (CFS)	PERM POOL WSEL	Cpv WSEL	10-YR CLOGGED WSEL	100-YR WSEL	COMMENTS
POND #1	38.2	2.61	0.47	3.90	1.54	8.57	19.18	281.0	283.89	287.66	287.70	WET POND
POND #2	17.0	1.15	0.27	1.63	0.77	22.19	66.06	285.5	288.93	291.23	291.42	MICROPOOL EXTENDED DETENTION
POND #3	31.7	1.91	0.41	2.16	1.10	16.69	40.62	282.5	284.64	287.95	287.40	WET POND

THE REQUIRED WATER QUALITY VOLUME (WQV) AND CHANNEL PROTECTION VOLUME (Cpv) WILL BE PROVIDED IN TWO WET PONDS AND ONE MICROPOOL EXTENDED DETENTION POND FOR THIS SITE. Qp AND OF ARE NOT REQUIRED FOR THIS SITE. THE RECHARGE VOLUMES (Rev) WILL NOT BE ADDRESSED AT THIS TIME BECAUSE NO PAVING IS PROPOSED. Rev WILL BE ADDRESSED ON THE SITE DEVELOPMENT PLAN THAT PROPOSED PAVING AND BUILDINGS.

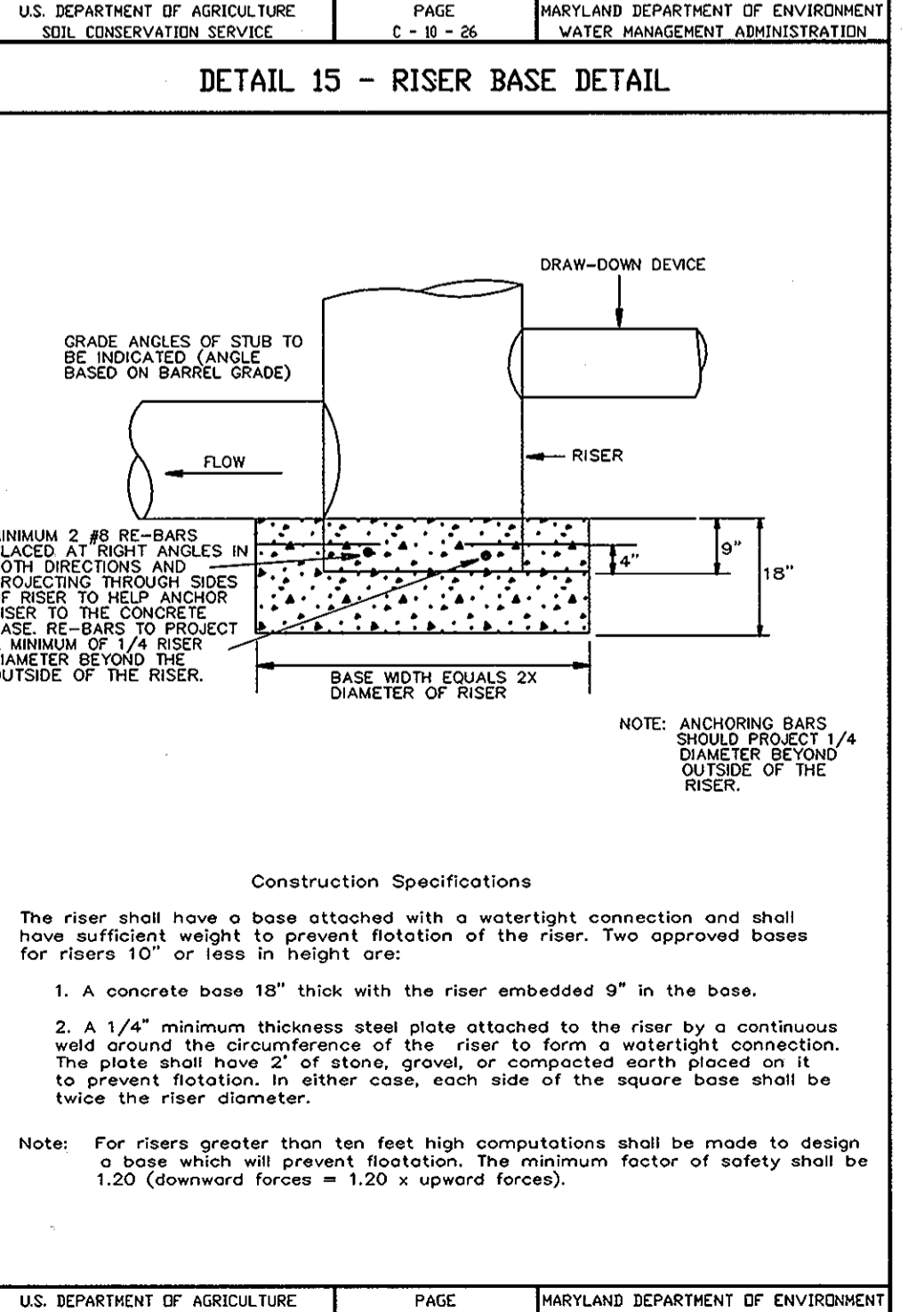
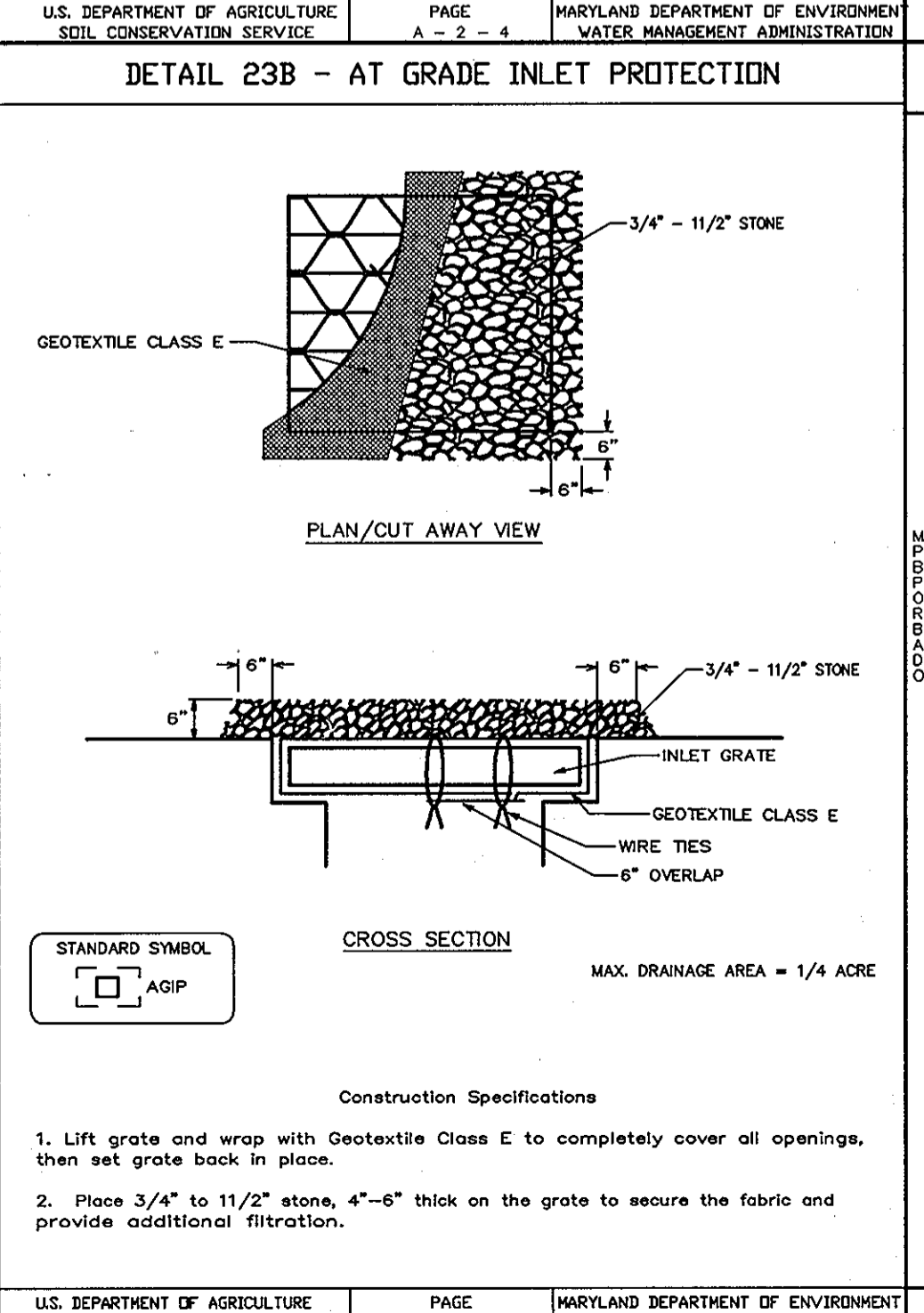
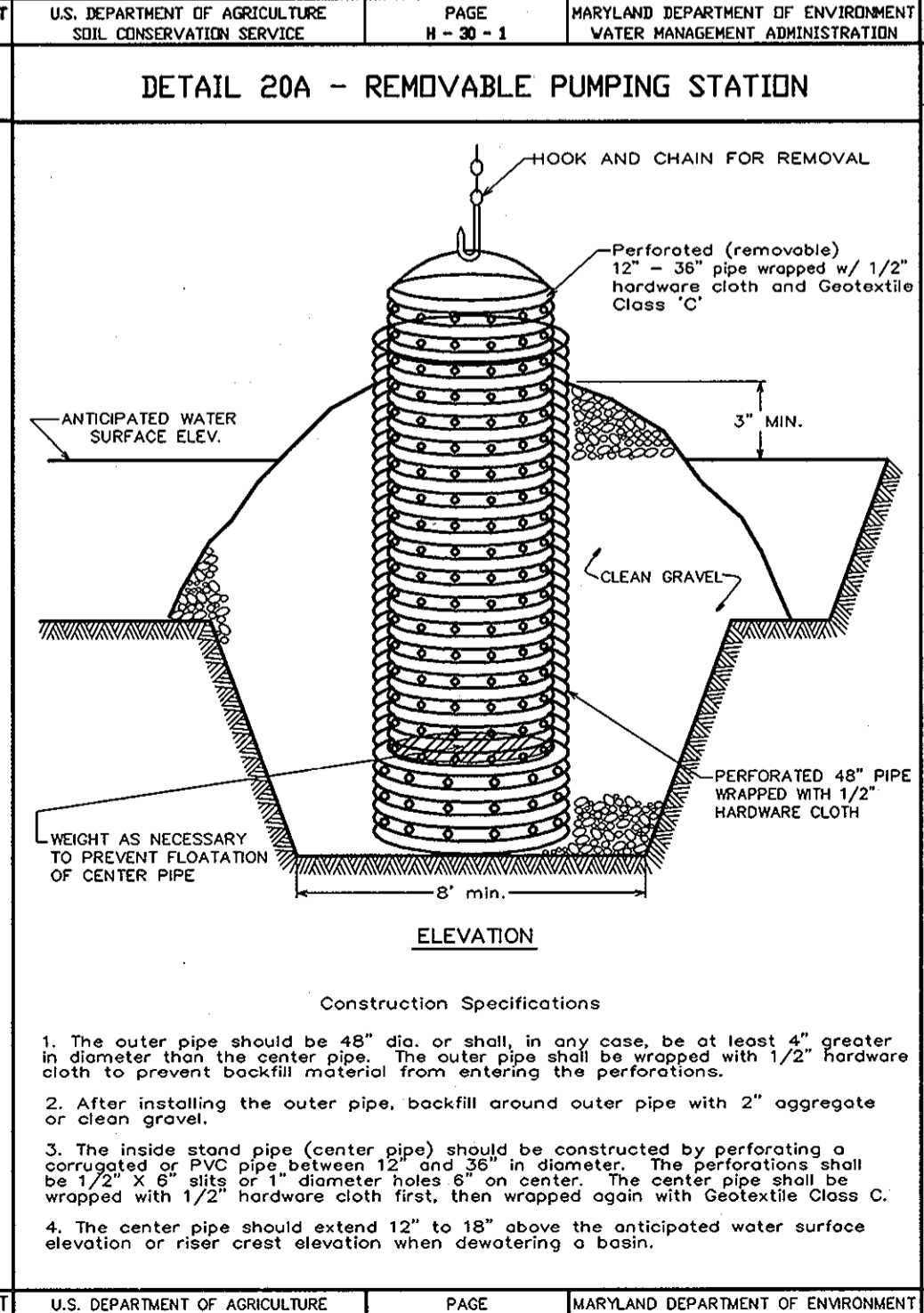
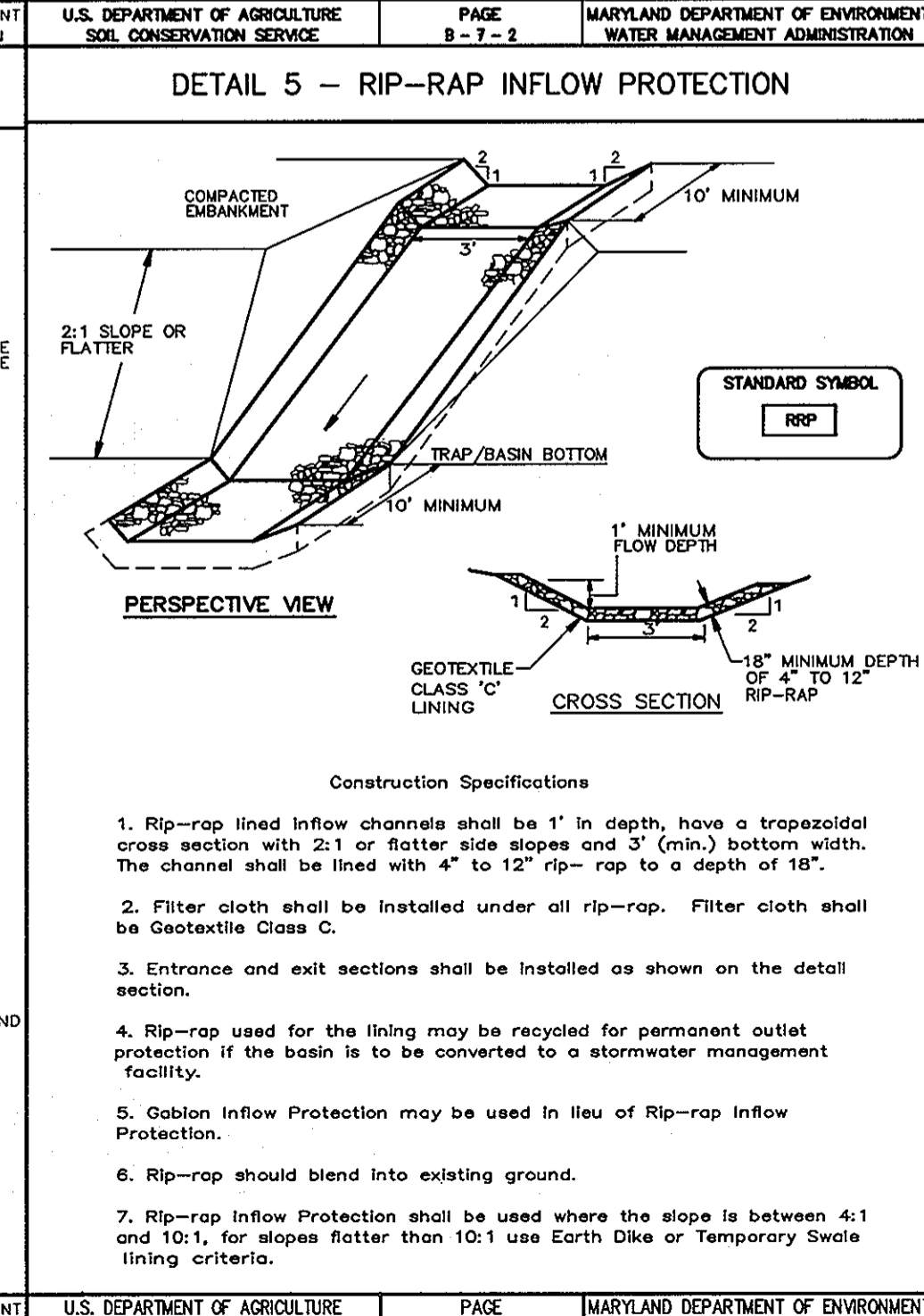
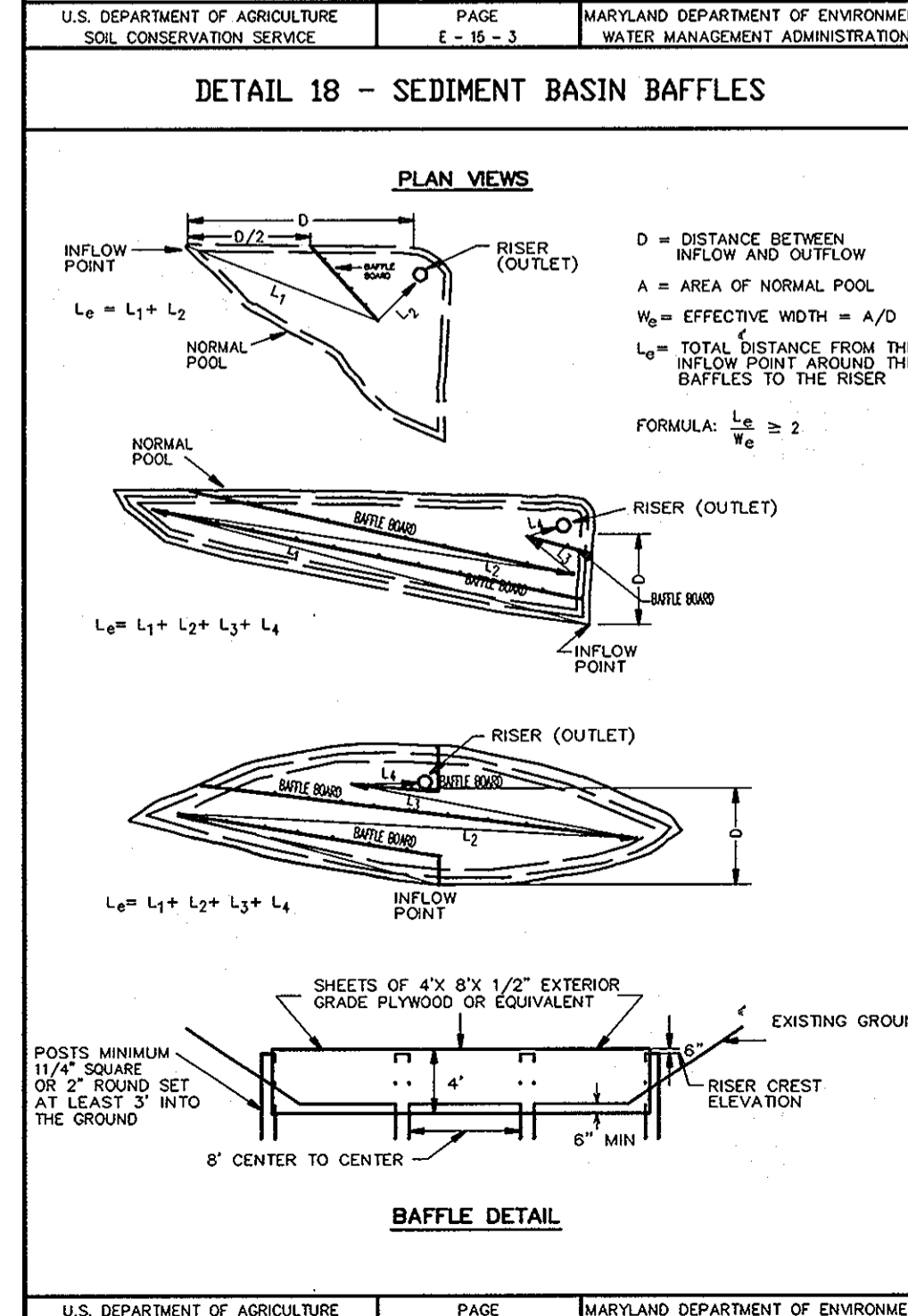
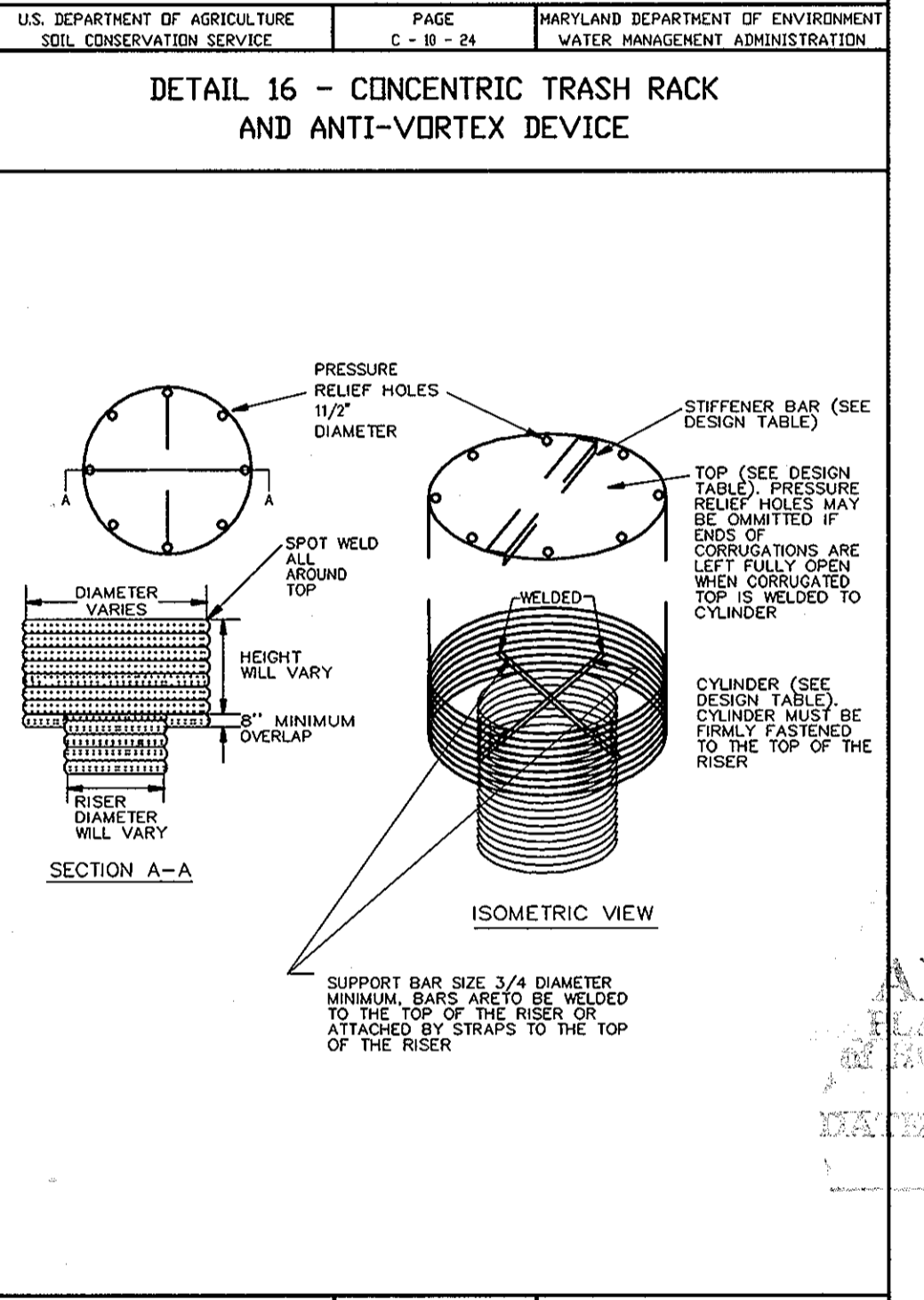
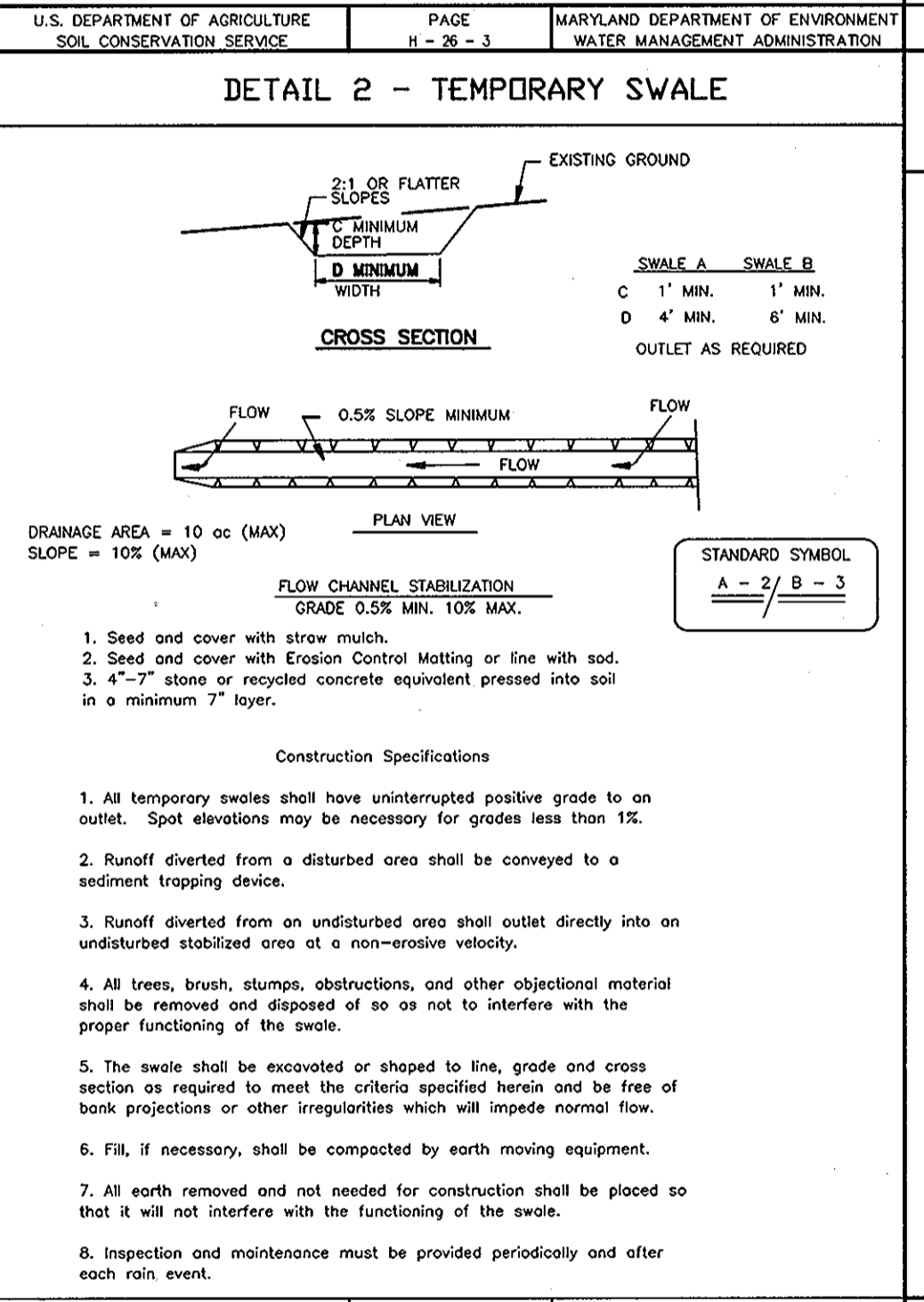
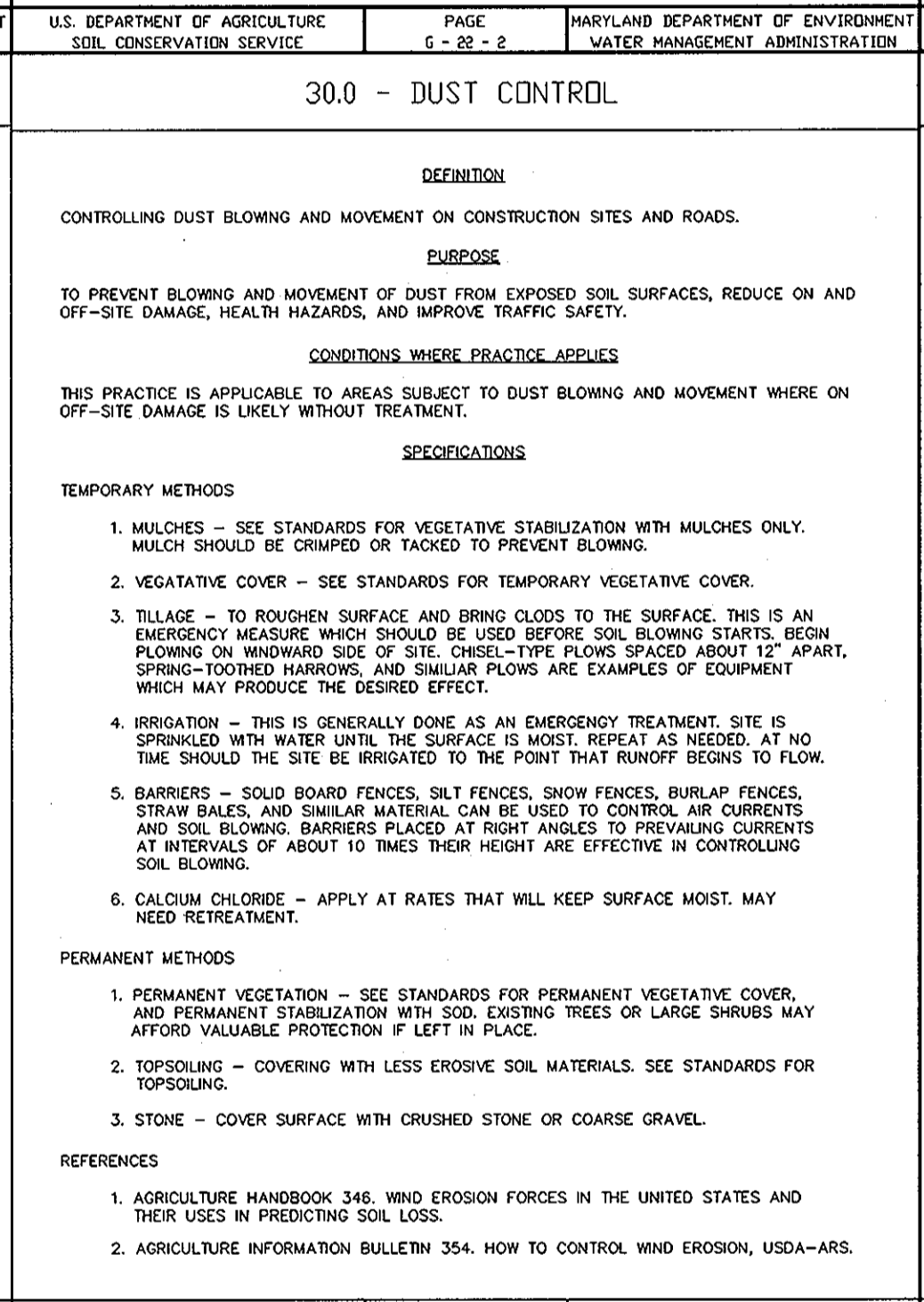
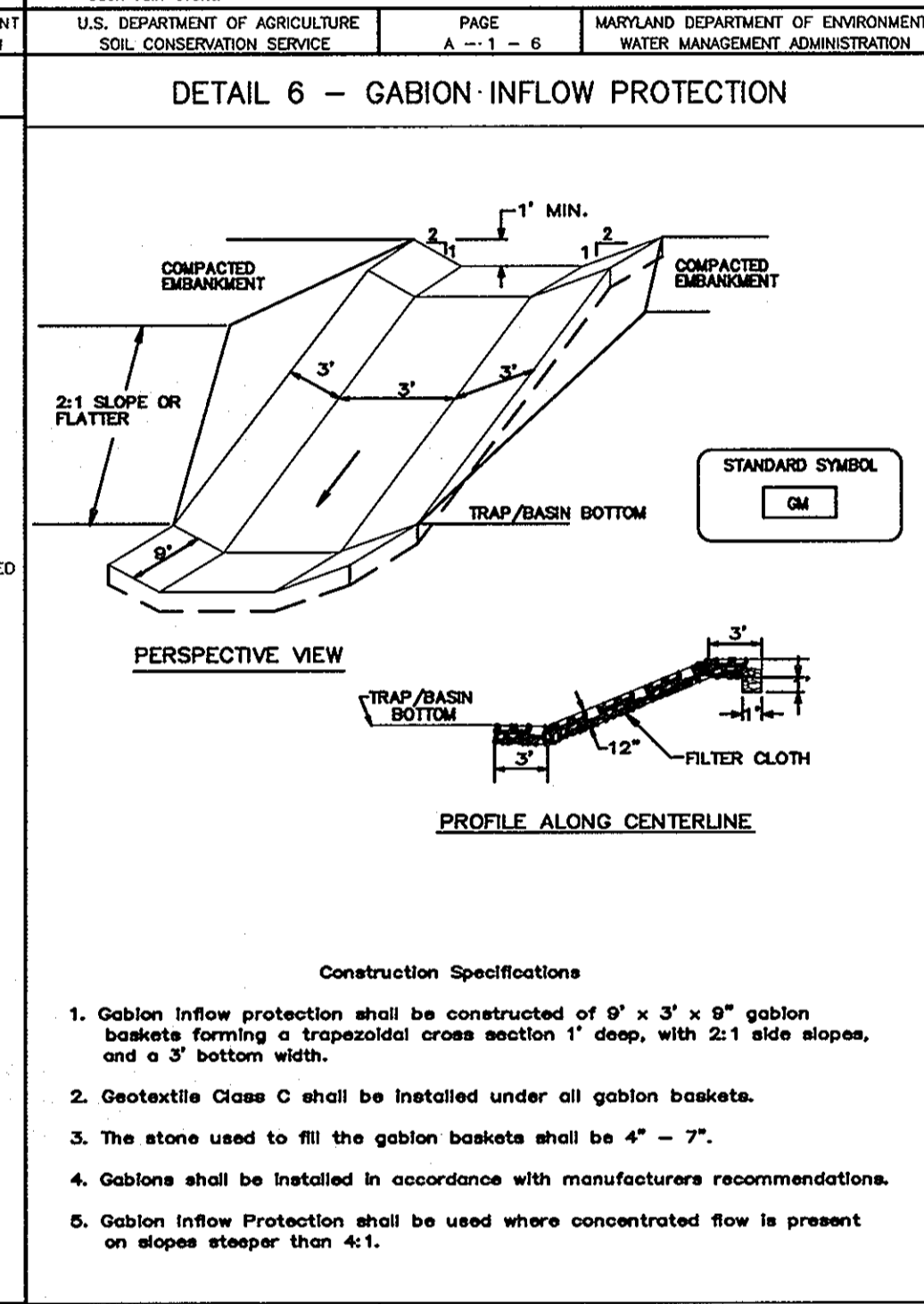
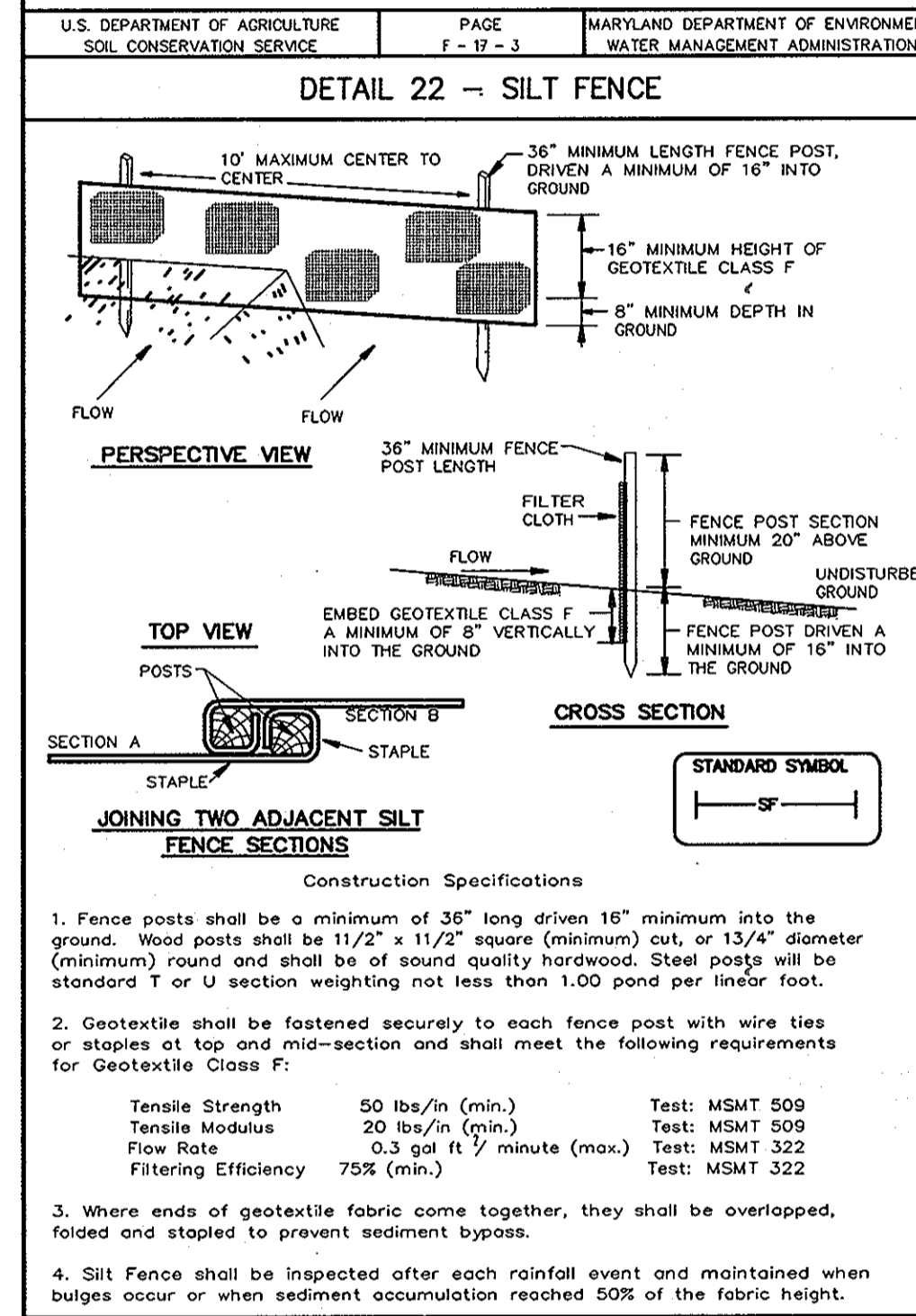
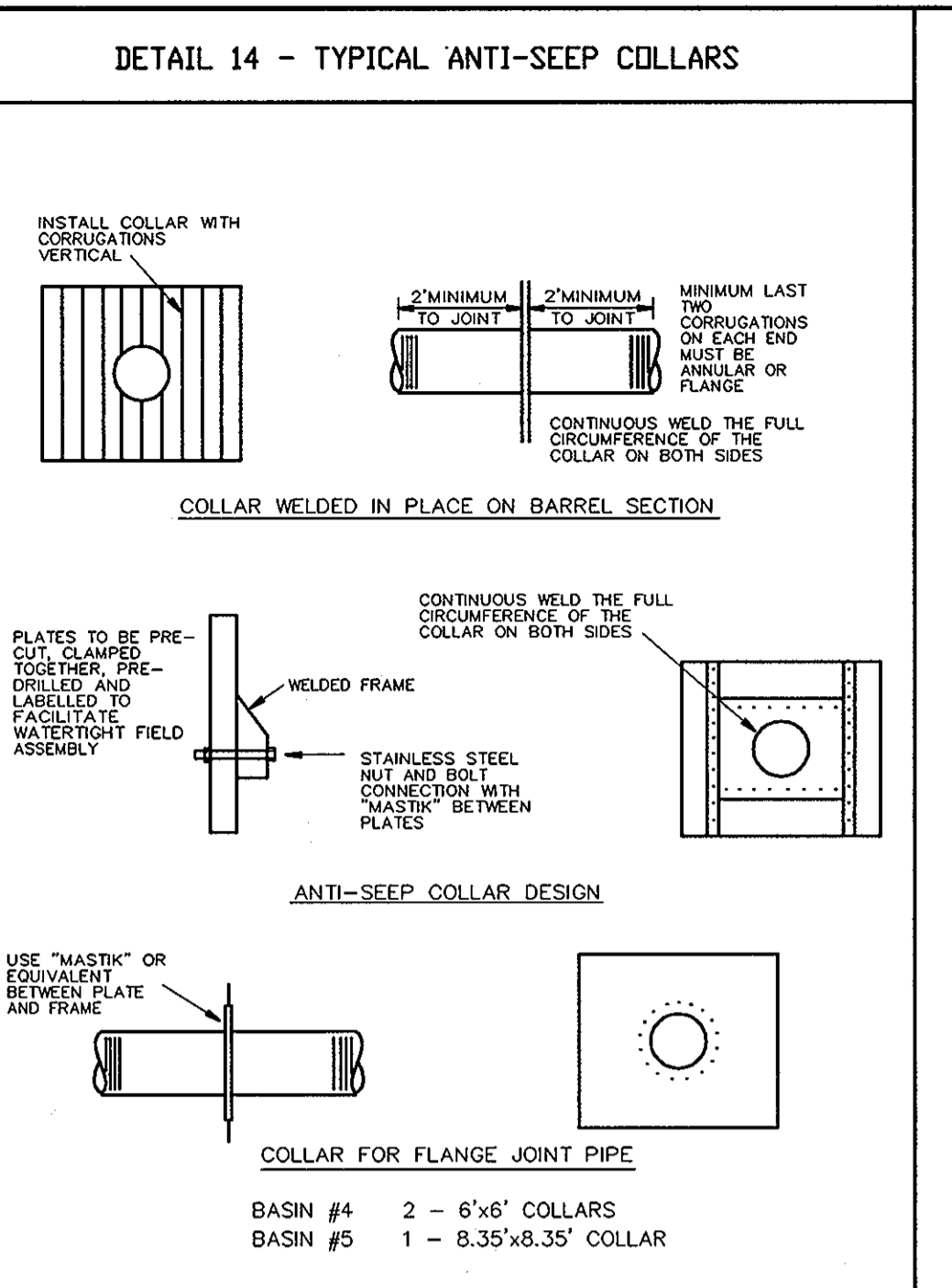
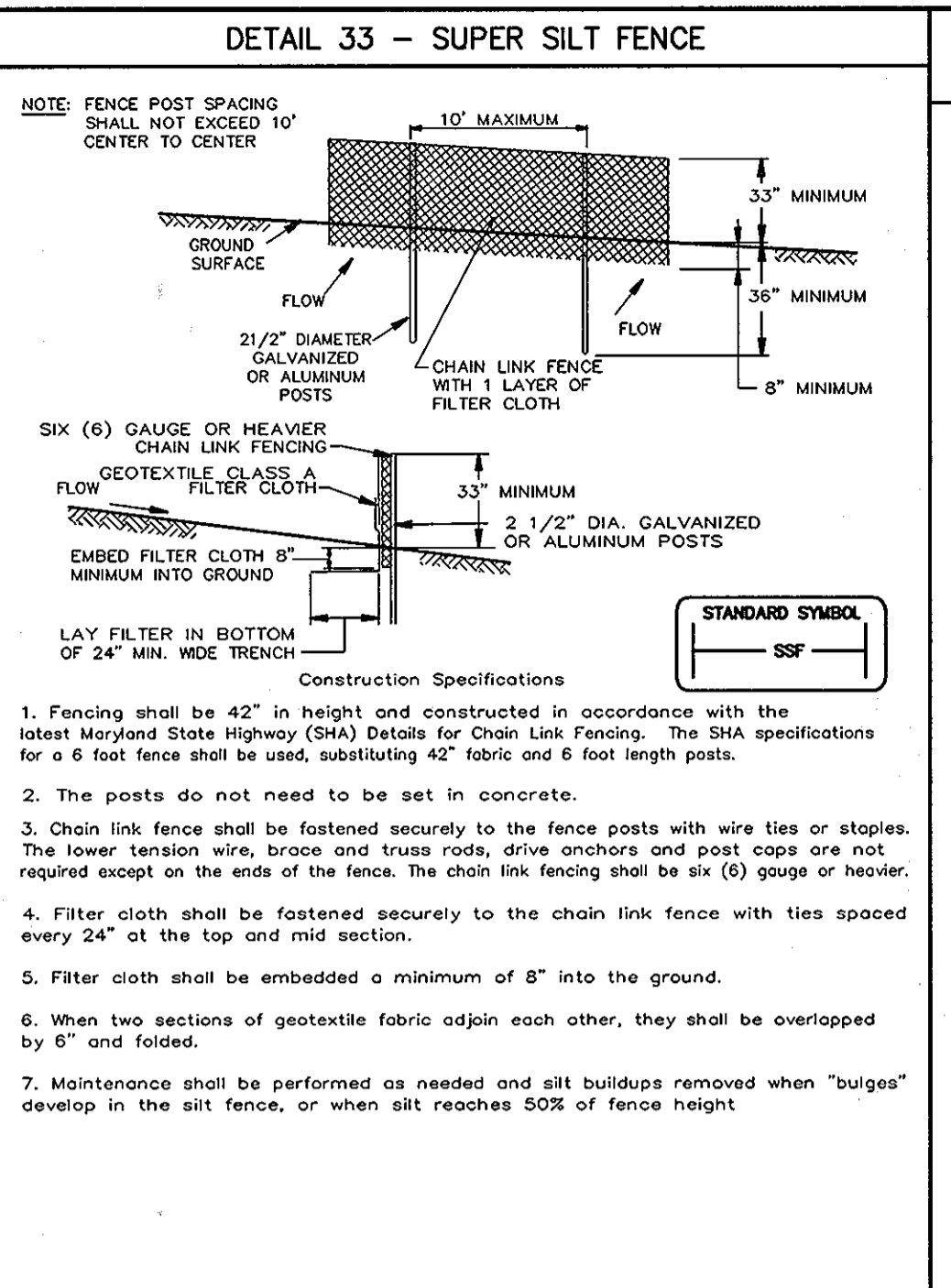
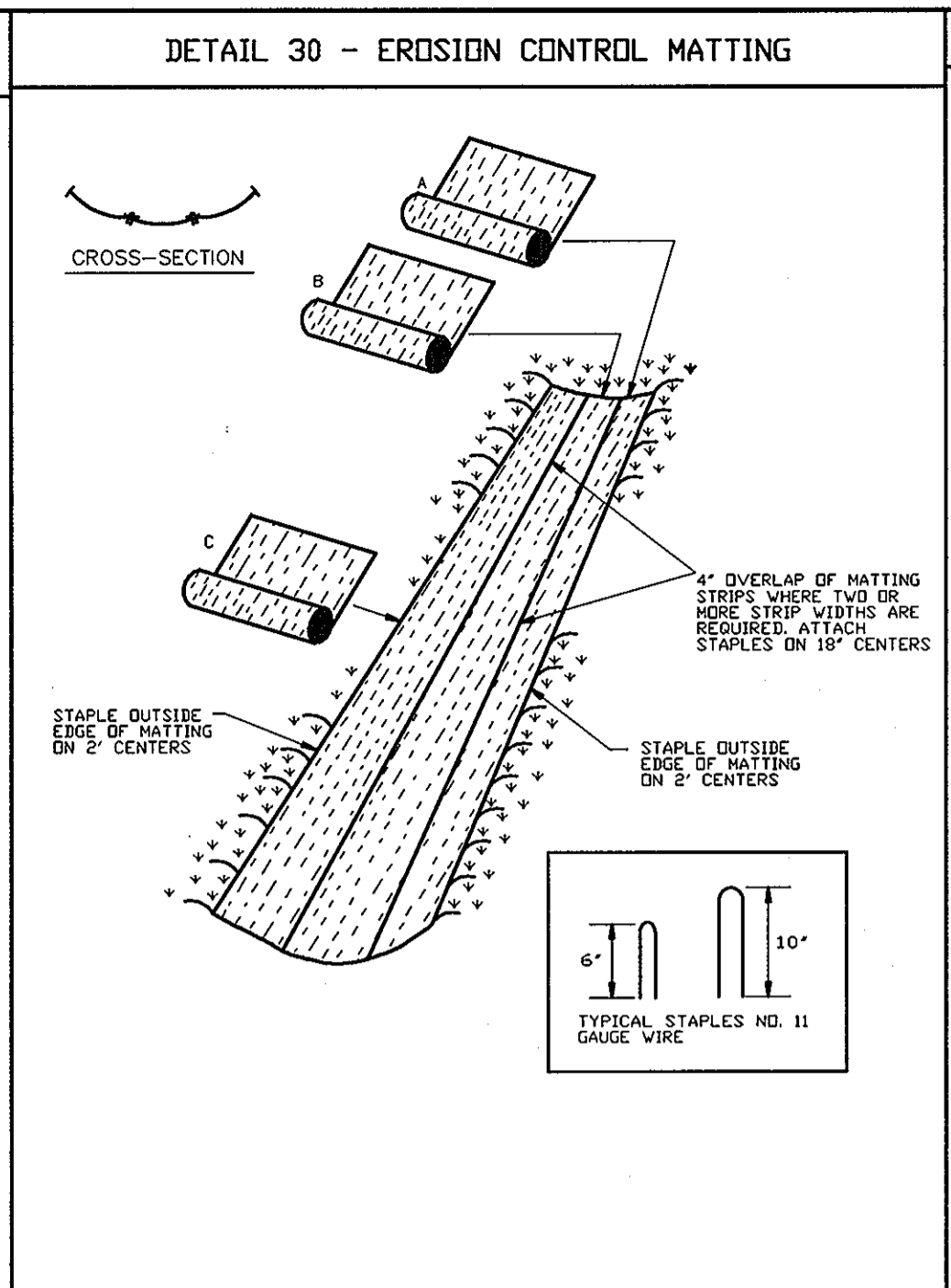
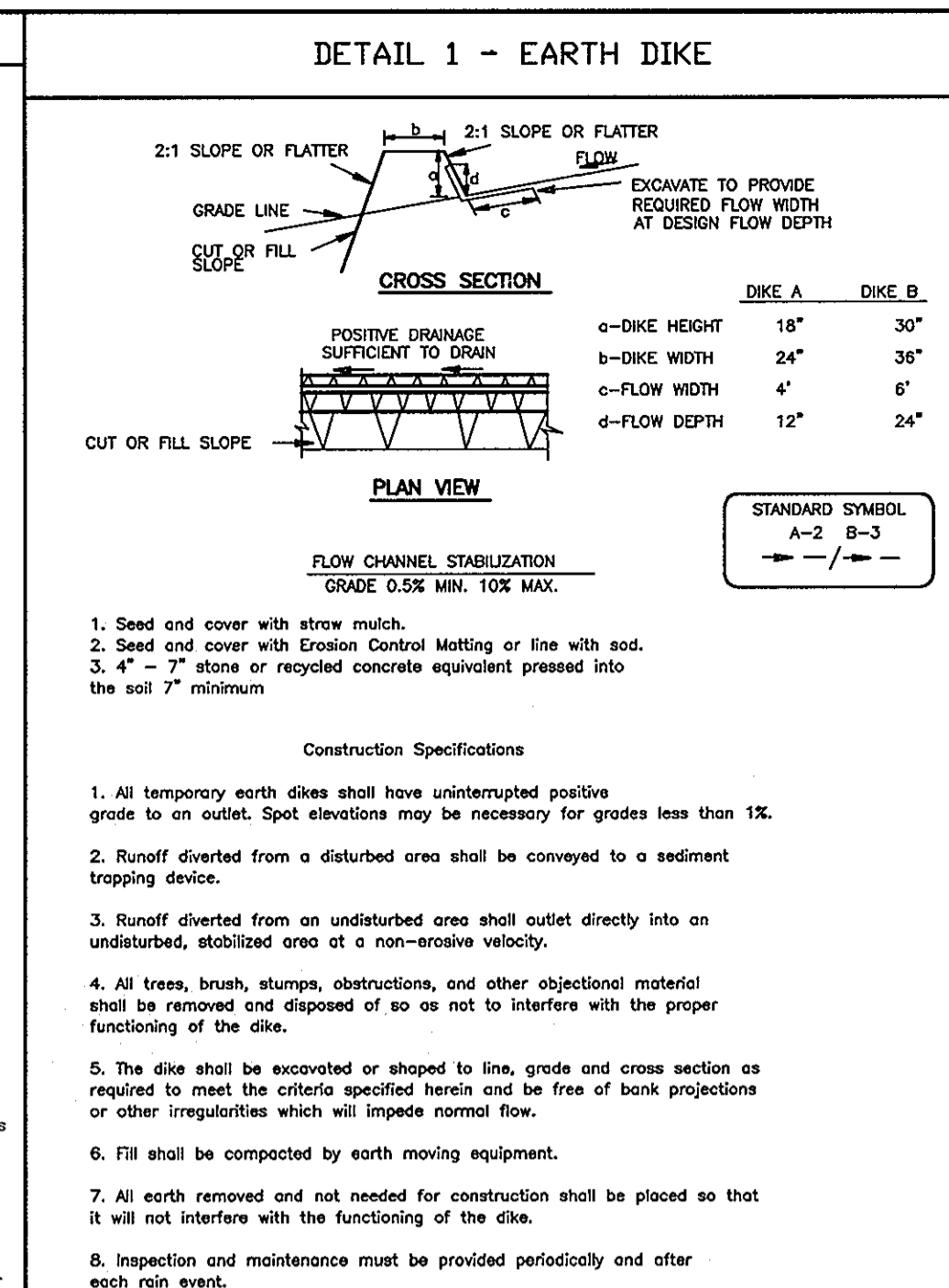
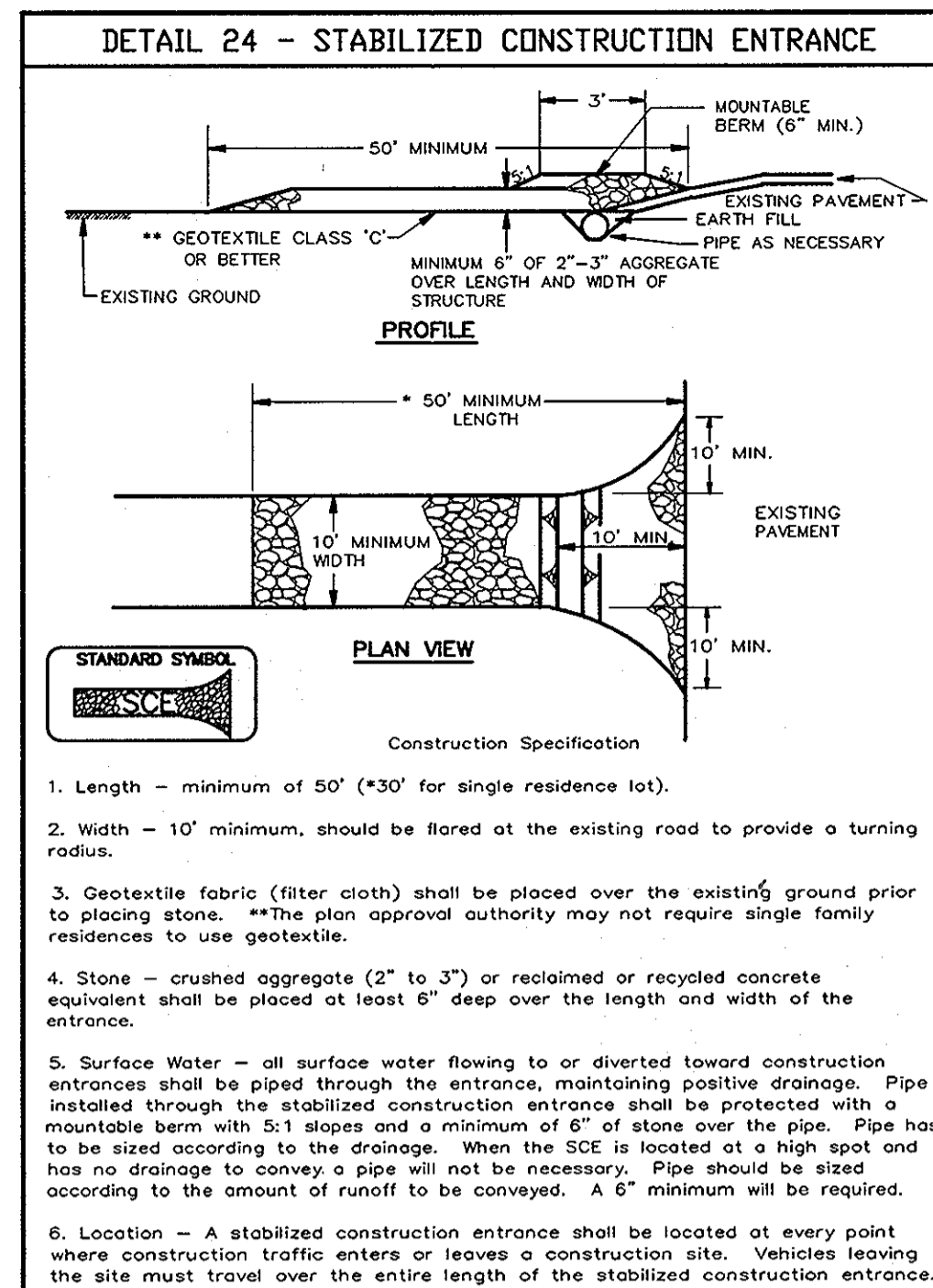
NOTE: CONTRACTOR TO LIMIT THE TOTAL UNSTABILIZED AREA TO 20 ACRES AT ANY TIME.

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

Chris J. Reid
 #10249

COLUMBIA ASSOCIATION INC.
 LOT T-7
 L.3324, F.191
 ZONE: M-1
 USE: COMMERCIAL
 PARCEL 671

COLUMBIA ASSOCIATION INC.
 LOT T-7
 L.3324, F.191
 ZONE: M-1
 USE: COMMERCIAL
 PARCEL 671



BY THE DEVELOPER :

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 THE ENVIRONMENT APPROVED TRAINING PROGRAM FOR THE CONTROL OF SEDIMENT AND EROSION BEFORE BEGINNING THE PROJECT. I SHALL ENGAGE A REGISTERED PROFESSIONAL ENGINEER TO SUPERVISE POND CONSTRUCTION AND PROVIDE THE HOWARD SOIL CONSERVATION DISTRICT WITH AN "AS-BUILT" PLAN OF THE POND WITHIN 30 DAYS OF COMPLETION. I ALSO AUTHORIZE PERIODIC ON-SITE INSPECTIONS BY THE HOWARD SOIL CONSERVATION DISTRICT.

Paul Cavanaugh 10-19-04
DEVELOPER PAUL CAVANAGH DATE

BY THE ENGINEER :

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

Chris Res 10-19-04
ENGINEER DATE

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

Jim M... 10/21/04
NATURAL RESOURCES CONSERVATION SERVICE DATE

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

John... 10/21/04
HOWARD SOIL CONSERVATION DISTRICT DATE

APPROVED : HOWARD COUNTY DEPARTMENT OF PLANNING AND ZONING.

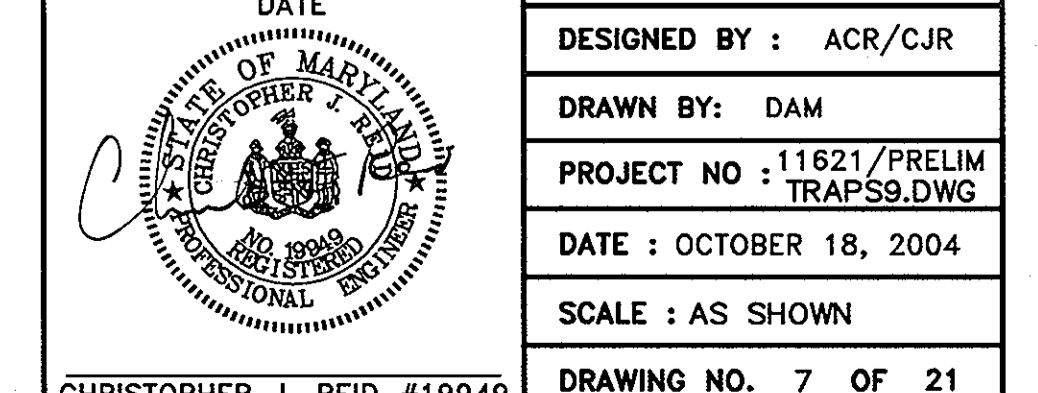
Mark D. Lytle 10/23/04
DIRECTOR DATE

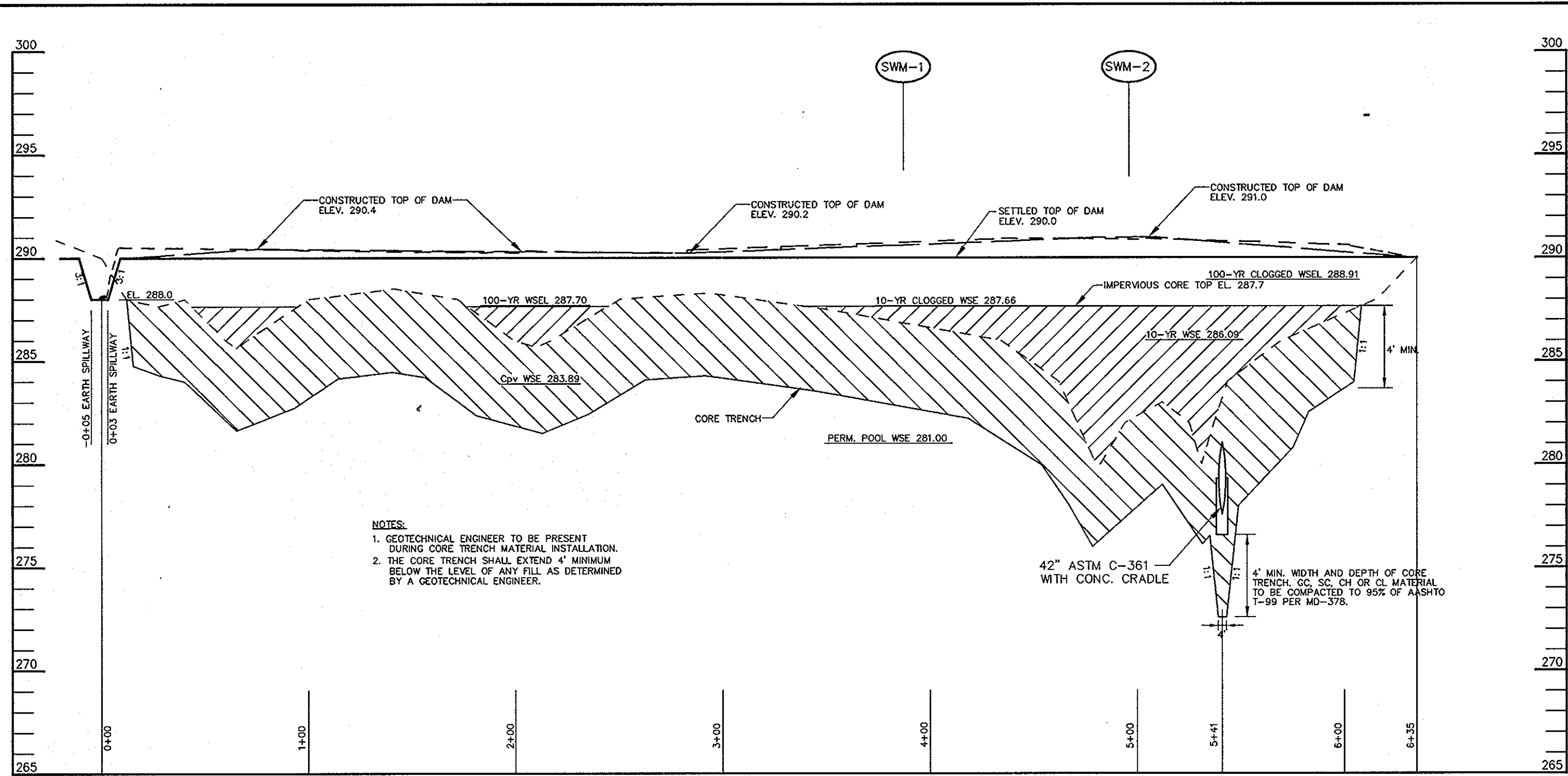
John... 10/25/04
CHIEF, DEVELOPMENT ENGINEERING DIVISION DATE

Jim... 10/25/04
CHIEF, DIVISION OF LAND DEVELOPMENT DATE

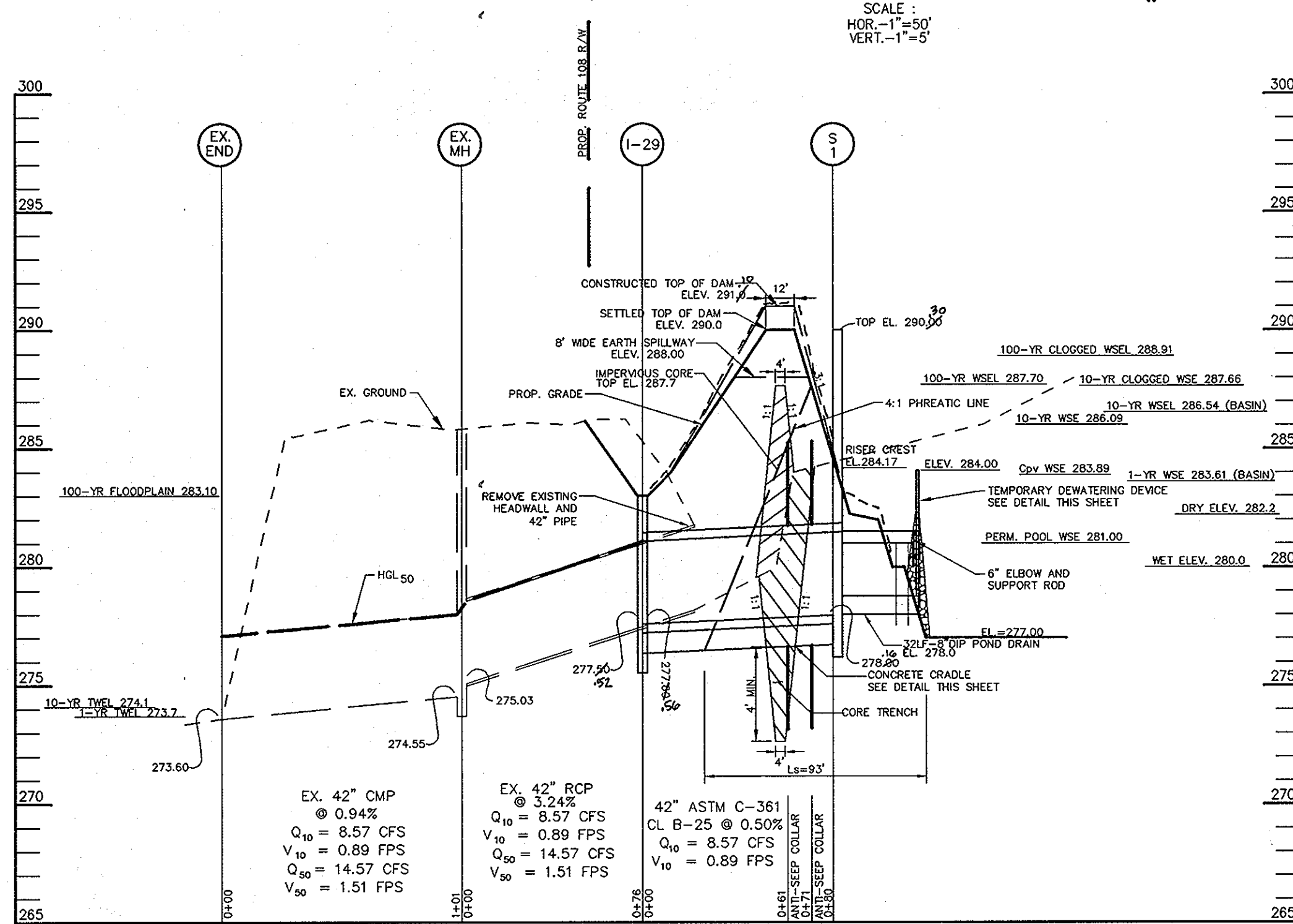
APPROVED
PLANNING BOARD
HOWARD COUNTY
July 22, 2004

DATE NO.	REVISION
OWNER / DEVELOPER	HRD LAND HOLDINGS, INC. HOWARD RESEARCH AND DEVELOPMENT CORPORATION THE ROUSE BUILDING 10275 LITTLE PATUXENT PARKWAY COLUMBIA, MARYLAND 21044 410-992-6000
PROJECT	BENSON EAST
AREA	TAX MAP 37 & 43 ZONED - NEWTOWN PARCELS 482, 587, 382, 421, 547 6th ELECTION DISTRICT HOWARD COUNTY, MARYLAND
TITLE	SEDIMENT CONTROL DETAILS
Patton Harris Rust & Associates, p.c. Engineers, Surveyors, Planners, Landscape Architects. 8818 Centre Park Drive Columbia, MD 21045 T 410.997.8900 F 410.997.9282	
DATE	10-19-04
DESIGNED BY :	ACR/CJR
DRAWN BY :	DAM
PROJECT NO :	11621/PRELIM TRAPS.DWG
DATE :	OCTOBER 18, 2004
SCALE :	AS SHOWN
DRAWING NO.	7 OF 21
SDP-04-163	

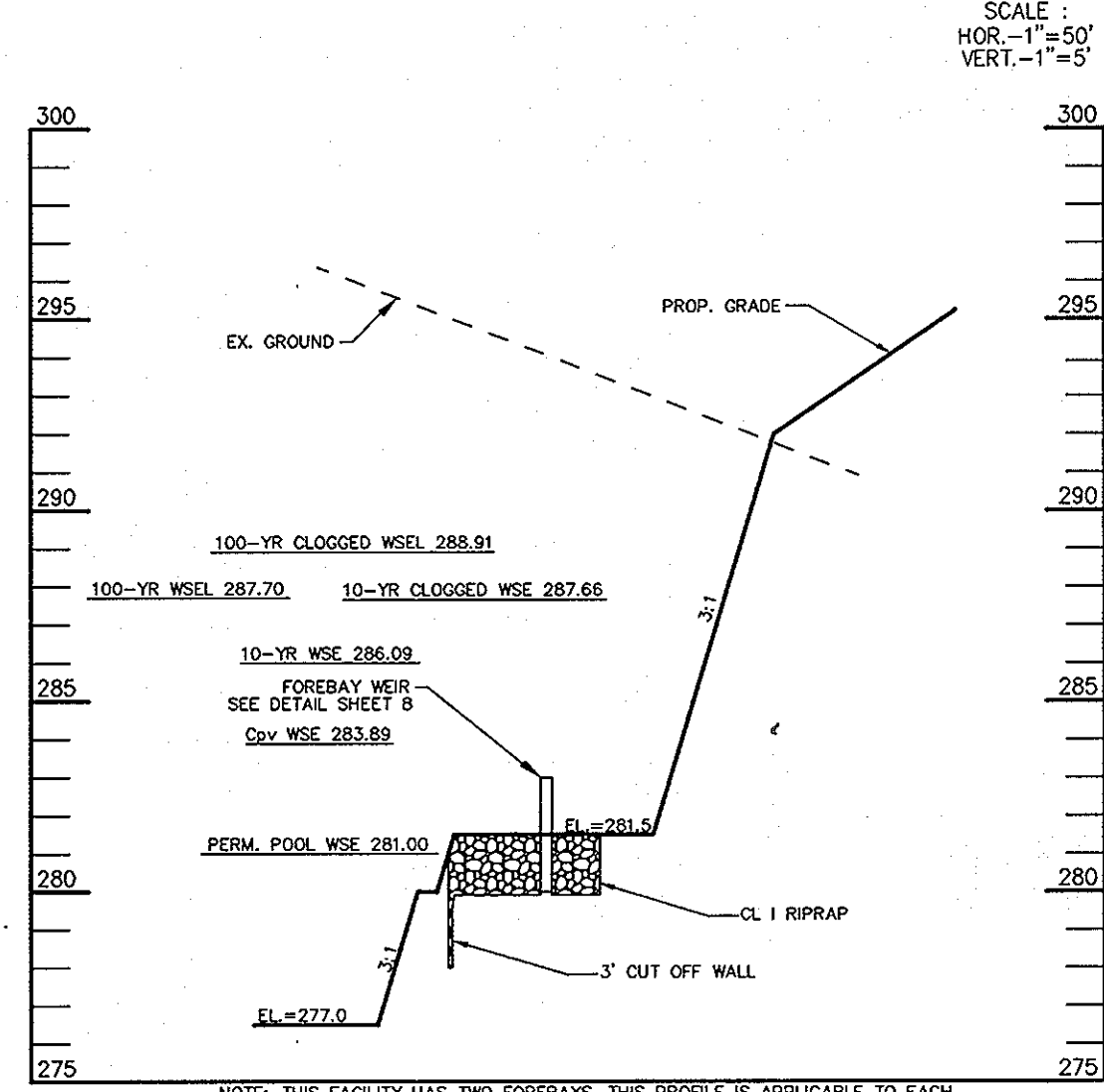




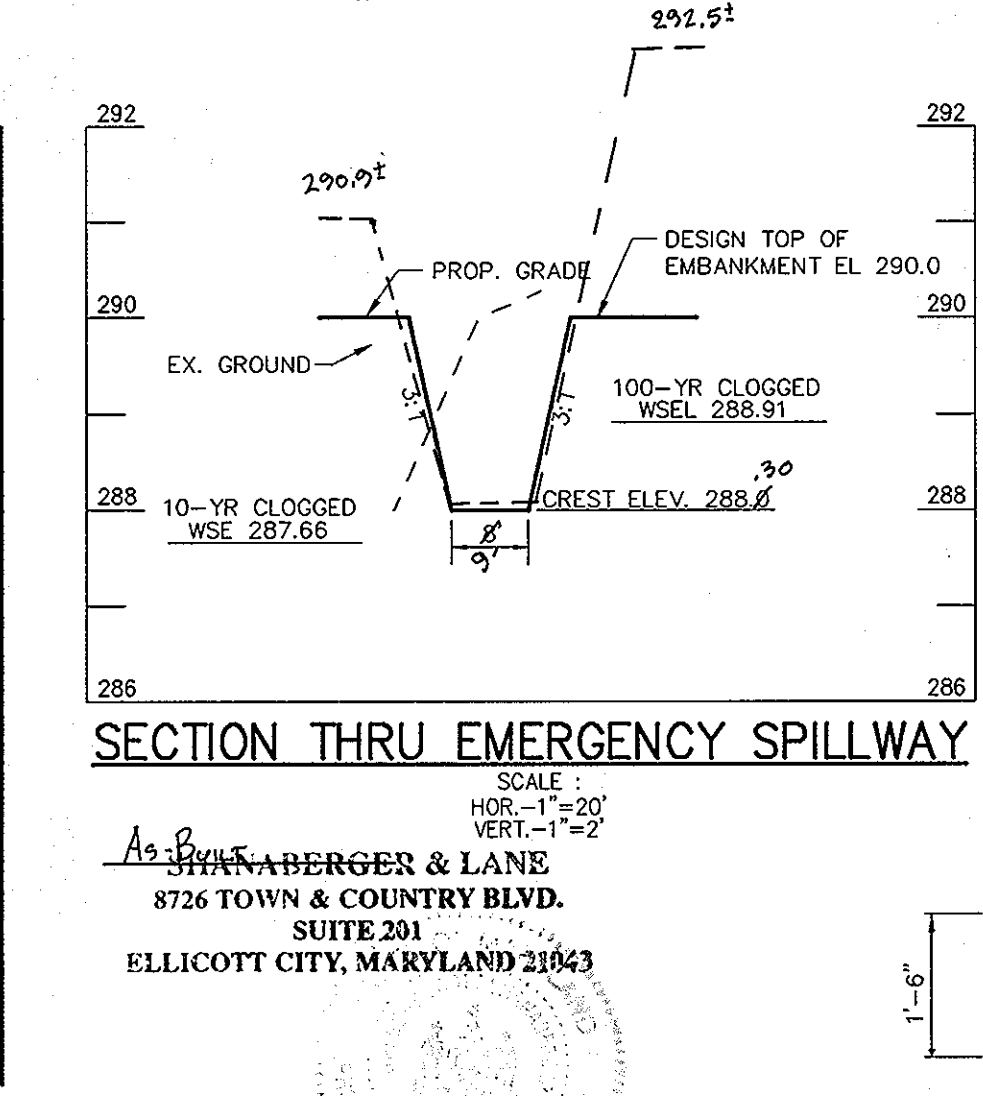
PROFILE ALONG CL OF DAM - SWMF #1



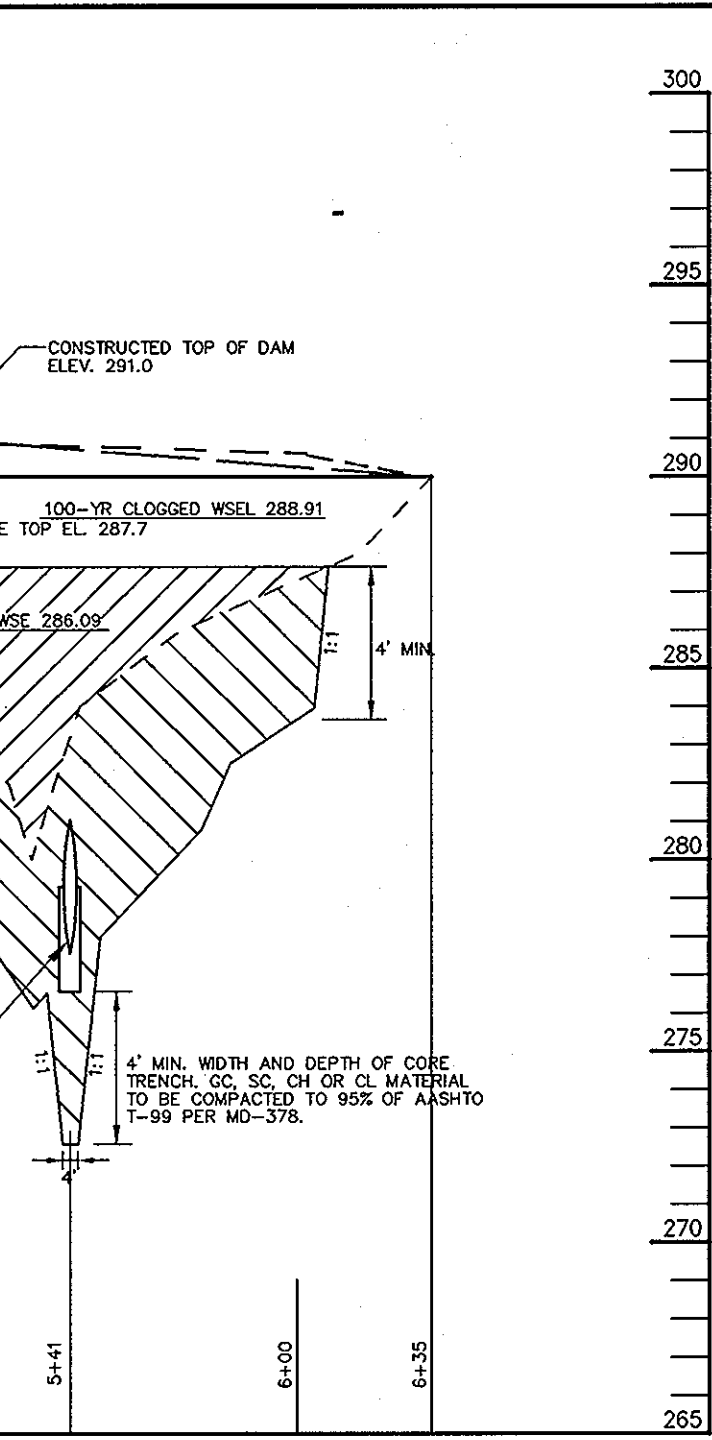
PRINCIPAL SPILLWAY PROFILE - SWMF #1



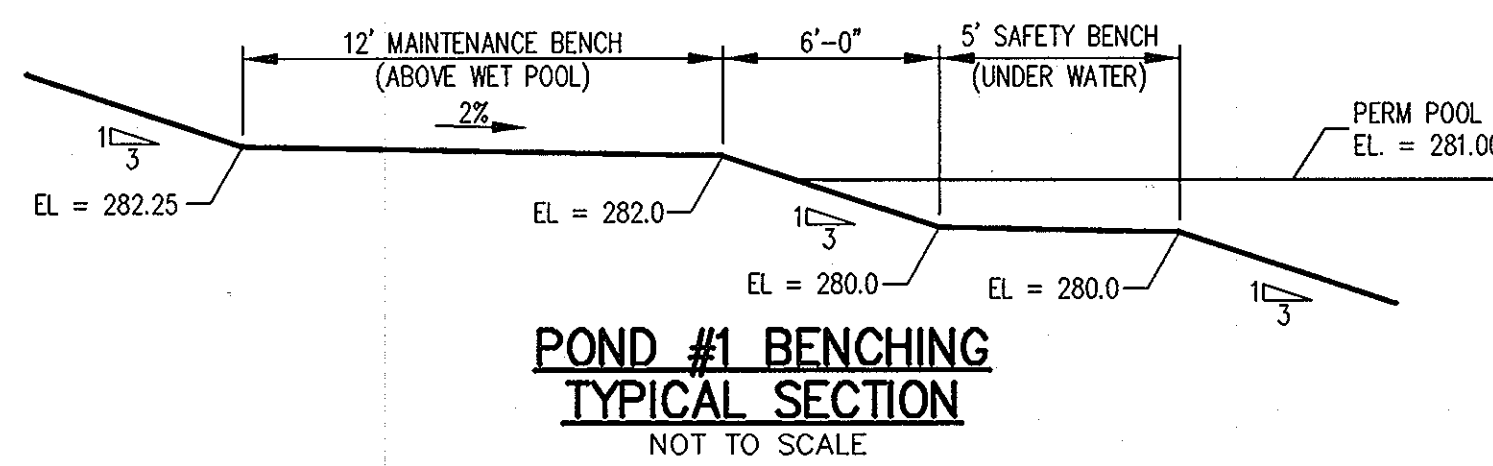
FOREBAY PROFILE - SWMF #1



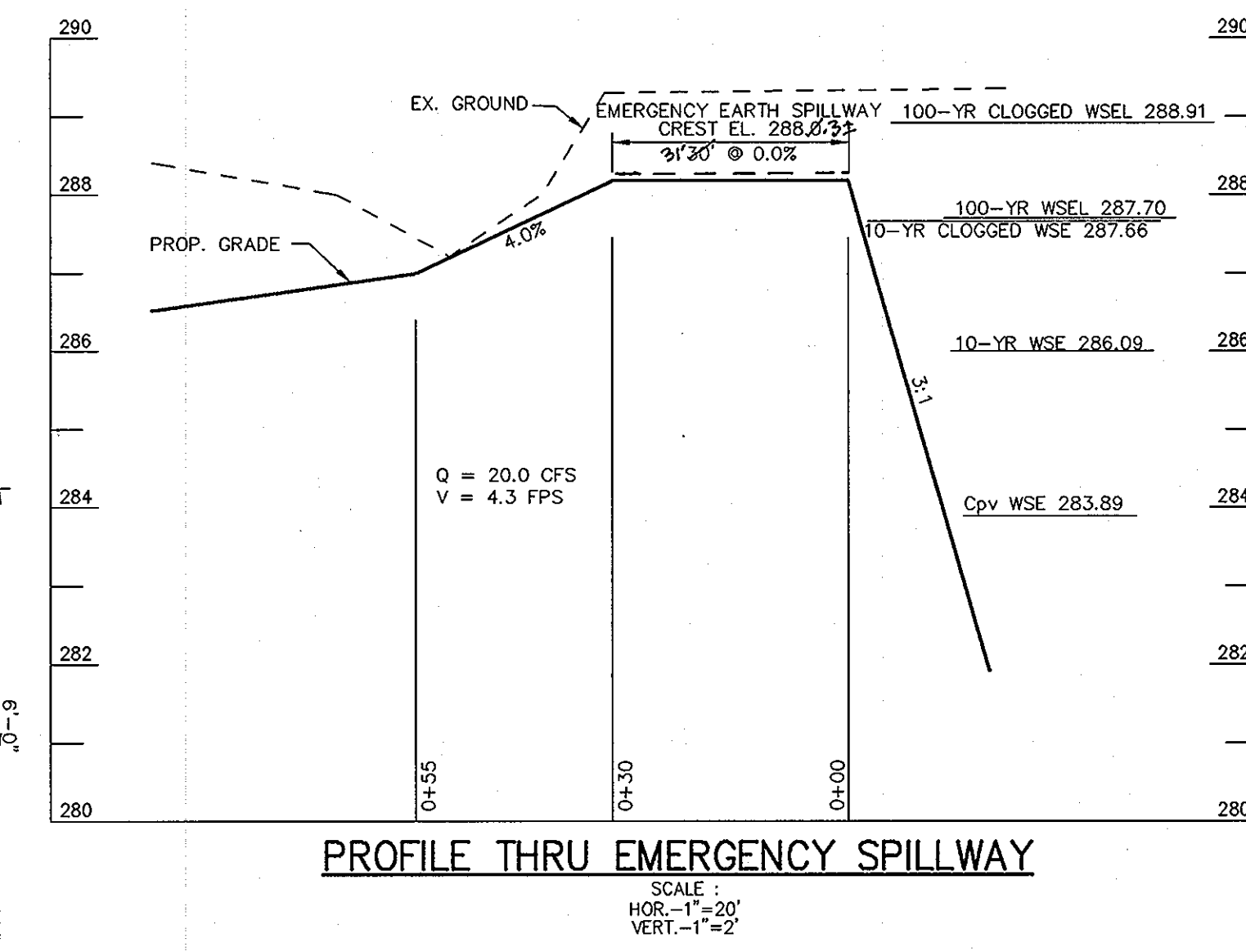
SECTION THRU EMERGENCY SPILLWAY



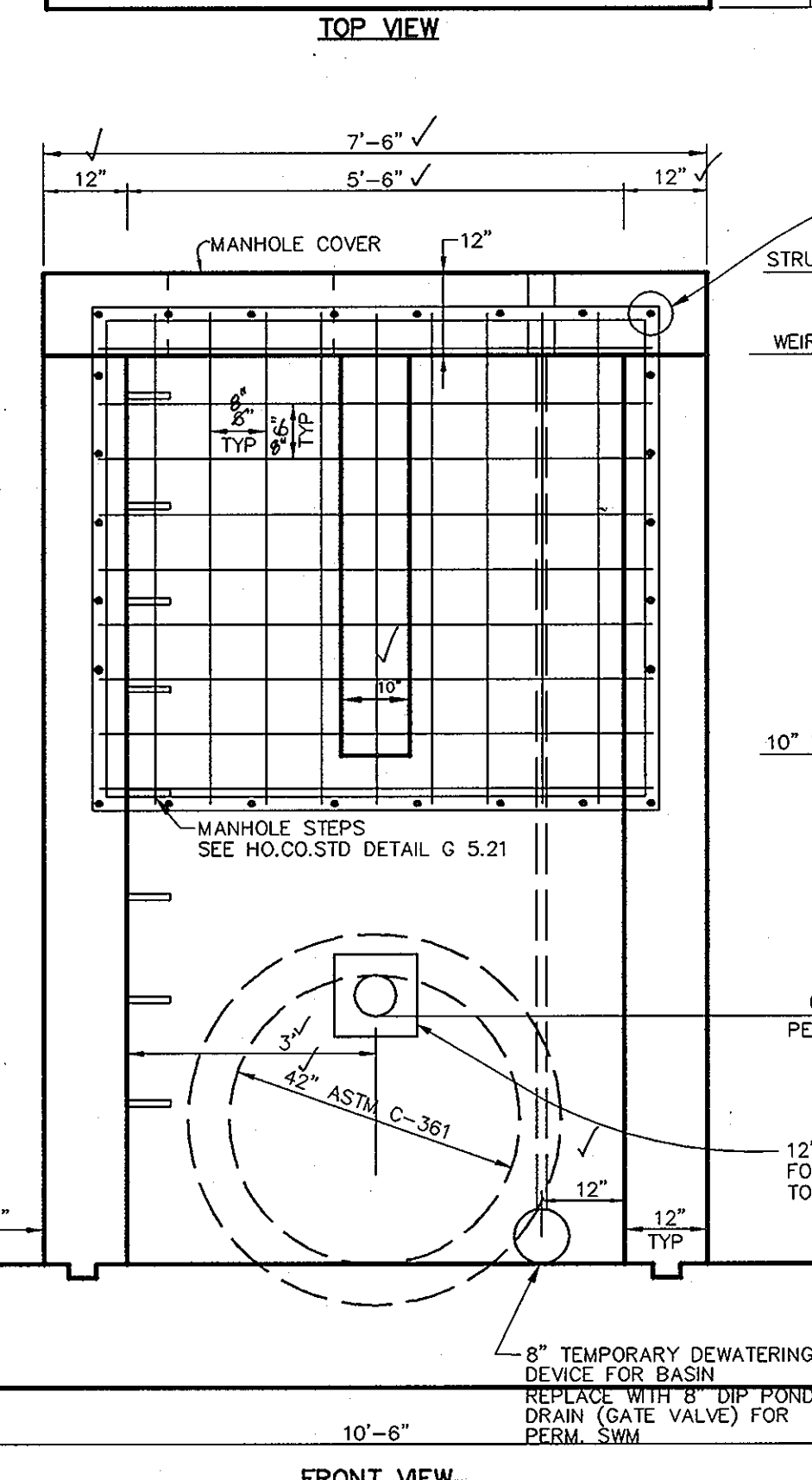
CONCRETE ANTI-SEEP COLLAR SWMF #1



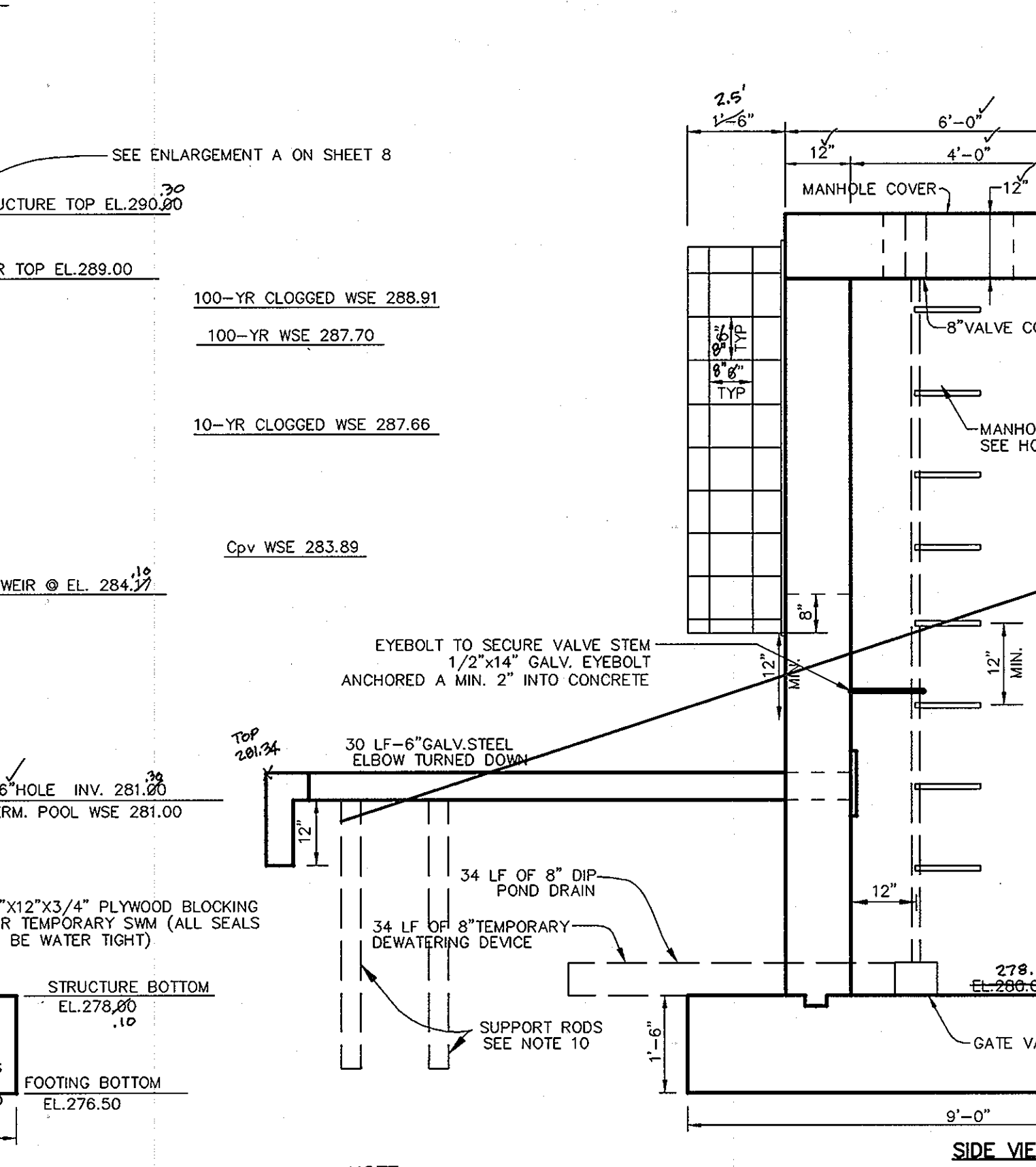
POND #1 BENCHING TYPICAL SECTION



PROFILE THRU EMERGENCY SPILLWAY

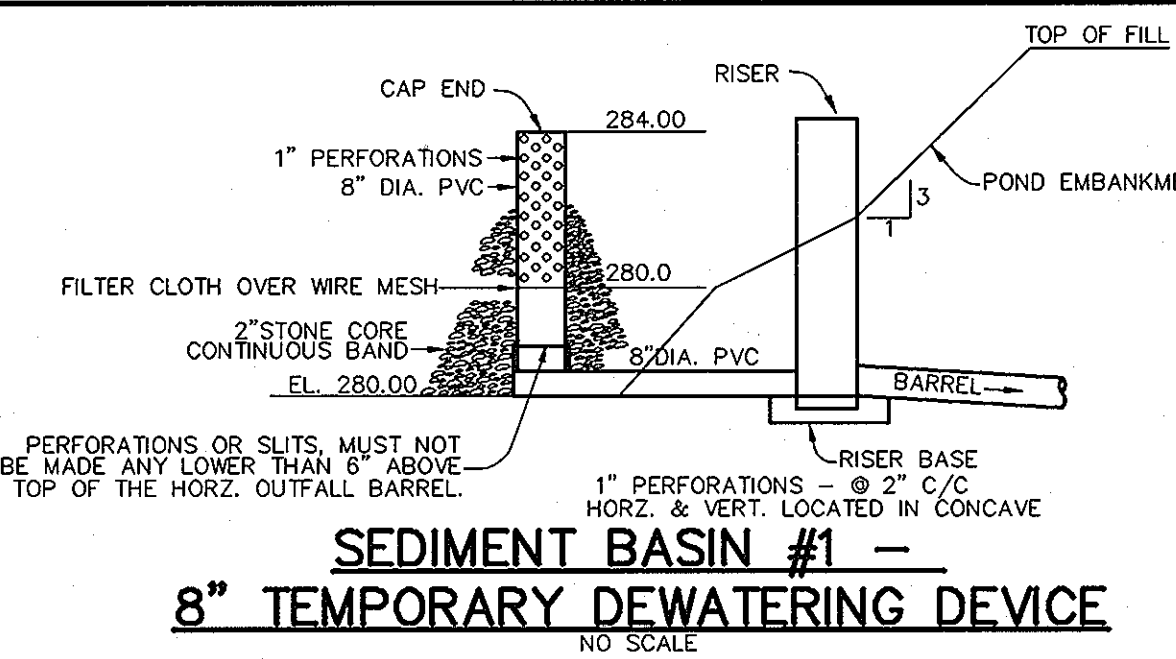


FRONT VIEW



SIDE VIEW

S-1 DETAILS SCALE 1"=2'



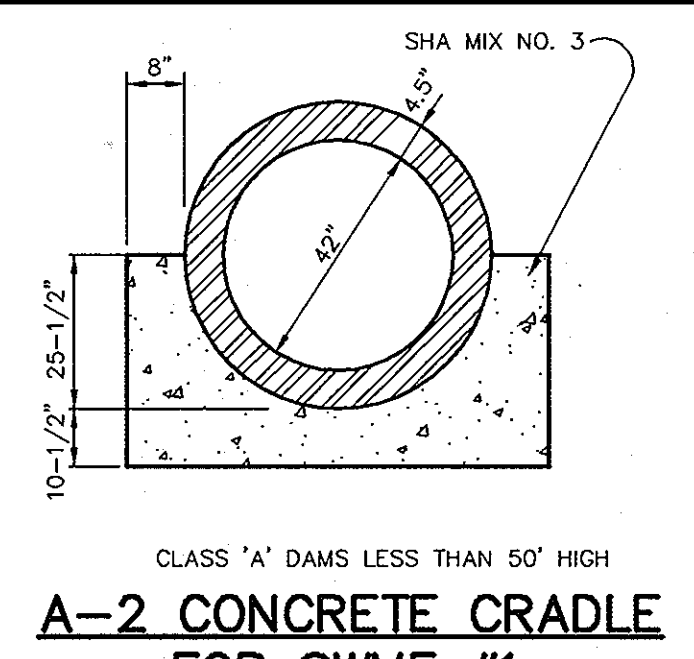
SEDIMENT BASIN #1 - 8" TEMPORARY DEWATERING DEVICE

RISER STRUCTURE NOTES

1. RISERS TO BE CAST-IN-PLACE. SHOP DRAWINGS FOR ALL CONCRETE STRUCTURES SHALL MEET THE MINIMUM ASTM REQUIREMENTS FOR CAST-IN-PLACE STRUCTURES. A SHOP DRAWING SHALL BE SUBMITTED TO THE ENGINEER PRIOR TO FABRICATION AND SHALL BE SIGNED AND SEALED BY A MARSHLAND REGISTERED PROFESSIONAL ENGINEER.
2. CONCRETE SHALL BE MSHA MIX NO. 3 (F_c=3,500 PSI MINIMUM)
3. REFER TO HOWARD COUNTY STD. 6-5.21 FOR MANHOLE STEP DETAILS.
4. RISER JOINTS SHALL BE WATER-TIGHT USING NEOPRENE GASKETS.
5. ALL PIPE CONNECTIONS SHALL PROVIDE RUBBER GASKET FOR WATER-TIGHTNESS.
6. RISER SHALL BE PLACED ON A FIRMLY COMPACTED SUBGRADE AND SHALL BE APPROVED BY A GEOTECHNICAL ENGINEER.
7. ALL 8" BUTTERFLY VALVE SHALL BE CONNECTED TO THE RISER WALL WITH ALL-THREADED ROD AND A FLANGE JOINT.
10. PROVIDE SUPPORT OF GALV. STEEL ELBOWS TO PREVENT SAGGING. AN ACCEPTABLE METHOD IS TO STAKEOUT BOTH SIDES OF STEEL ELBOW WITH 1" STEEL ANGLE OR 1"x2" SQUARE OR 2" ROUND STEEL POSTS SET 3 FEET MIN. INTO GROUND THEN JOINING THEM TO THE ELBOW BY WRAPPING WITH 12 GAUGE MIN. WIRE.

REMOVABLE TRASH RACK NOTES:

1. STEEL TO CONFORM TO ASTM A-36. #5 BARS TO BE SMOOTH. SEE DETAIL FOR SPACING.
2. ALL REBAR TO BE WELDED AT ALL INTERSECTIONS.
3. ALL BENDS TO BE 2" RADIUS. 2"x2" ANGLE IRON AND 1/2" DIAMETER ANCHOR BOLTS TO BE USED FOR TRASH RACK FRAME.
4. GALVANIZE TRASH RACK AFTER FABRICATION AND PAINT 2-COATS BATTLESHIP GRAY.



A-2 CONCRETE CRADLE FOR SWMF #1

BY THE DEVELOPER :

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 THE ENVIRONMENT APPROVED TRAINING PROGRAM FOR THE CONTROL OF SEDIMENT AND EROSION BEFORE BEGINNING THE PROJECT. I SHALL ENGAGE A REGISTERED PROFESSIONAL ENGINEER TO SUPERVISE POND CONSTRUCTION AND PROVIDE THE HOWARD SOIL CONSERVATION DISTRICT WITH AN "AS-BUILT" PLAN OF THE POND WITHIN 30 DAYS OF COMPLETION. I ALSO AUTHORIZE PERIODIC ON-SITE INSPECTIONS BY THE HOWARD SOIL CONSERVATION DISTRICT.

Paul Cavanaugh 4.29.05
 DEVELOPER DATE
PAUL CAVANAUGH

BY THE ENGINEER :

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

Chris J. Reid 5.3.05
 ENGINEER DATE

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

Jim Morrison 5/12/05
 NATURAL RESOURCES CONSERVATION SERVICE DATE

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

Chris J. Reid 5/12/05
 HOWARD SOIL CONSERVATION DISTRICT DATE

APPROVED : HOWARD COUNTY DEPARTMENT OF PLANNING AND ZONING.

Paul Cavanaugh 5/12/05
 DIRECTOR DATE

Chris J. Reid 5/17/05
 CHIEF, DEVELOPMENT ENGINEERING DIVISION DATE

Chris J. Reid 5/12/05
 CHIEF, DIVISION OF LAND DEVELOPMENT DATE

5.3.05 A REVISED SITE DEVELOPMENT PLAN
 MODIFIED SWMF #1 PROFILES AND DETAILS

DATE NO.	REVISION

OWNER / DEVELOPER
 HRD LAND HOLDINGS, INC.
 HOWARD RESEARCH AND DEVELOPMENT CORPORATION
 THE ROUSE BUILDING
 10275 LITTLE PATENT PARKWAY
 COLUMBIA, MARYLAND 21044
 410-992-6000

PROJECT
BENSON EAST

AREA
 TAX MAP 37 & 43 ZONED - NEWTOWN
 PARCELS 482, 587, 382, 421, 547
 6th ELECTION DISTRICT
 HOWARD COUNTY, MARYLAND

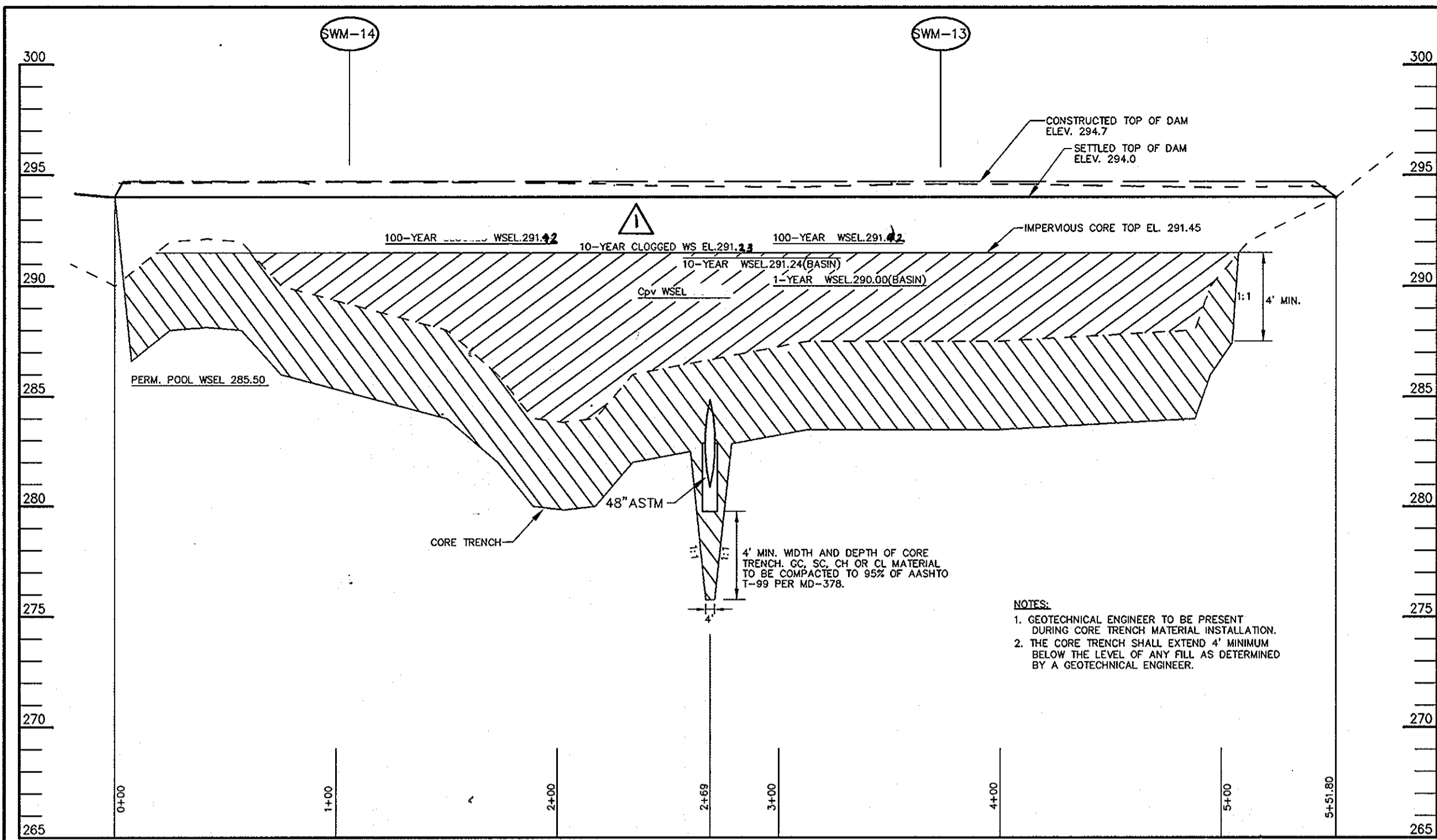
TITLE
SWMF-1 PROFILES AND DETAILS

Patton Harris Rust & Associates, pc
 Engineers, Surveyors, Planners, Landscape Architects.
 8818 Centre Park Drive
 Columbia, MD 21045
 T 410.997.8900
 F 410.997.9282

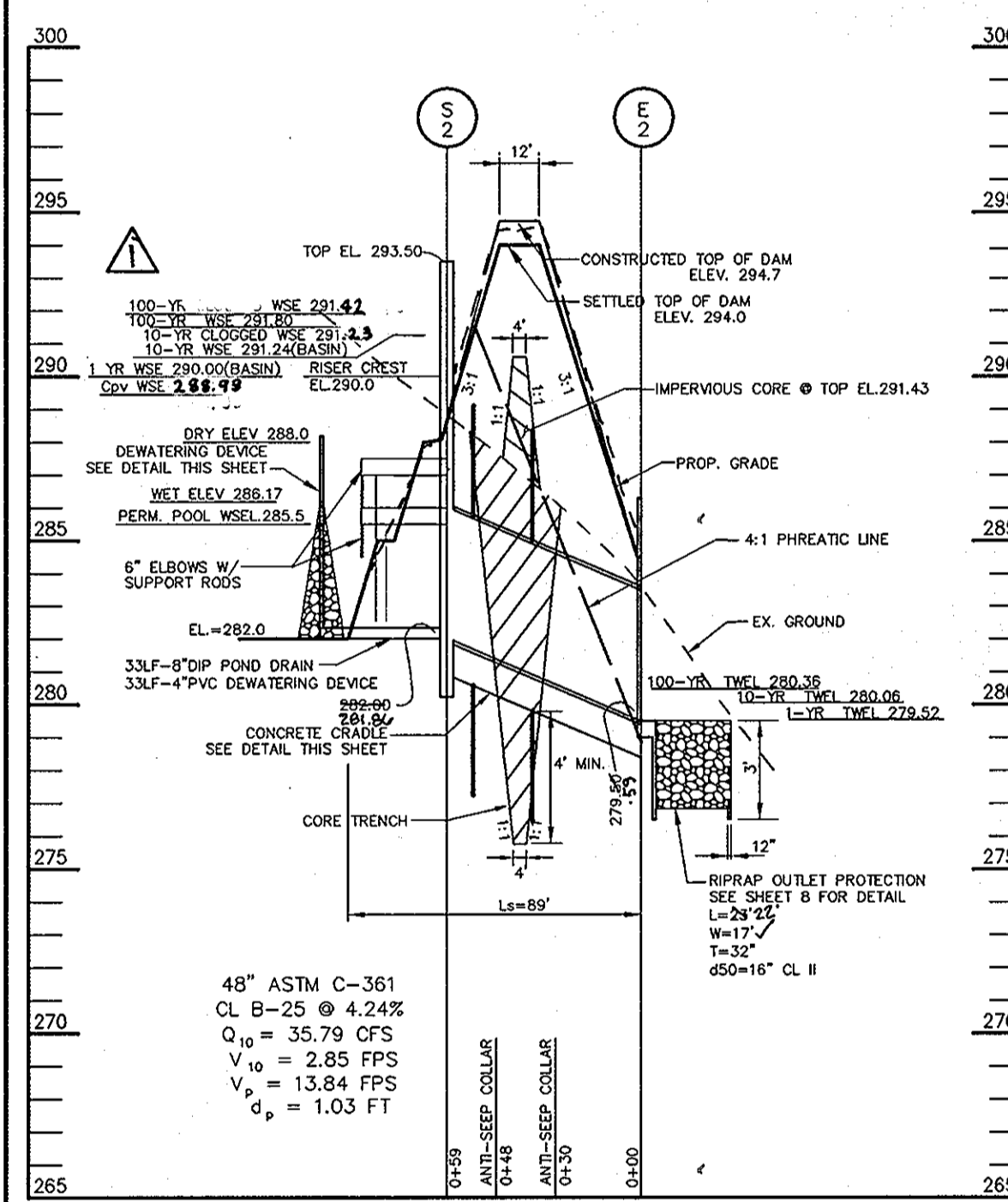
5.3.05
 DATE

DESIGNED BY : ACR/CJR
 DRAWN BY : DAM
 PROJECT NO : 11621/PRELIM TRAPS12-REV
 DATE : OCTOBER 18, 2004
 SCALE : AS SHOWN
 DRAWING NO. 10 OF 21

CHRISTOPHER J. REID #19949
 PROFESSIONAL ENGINEER



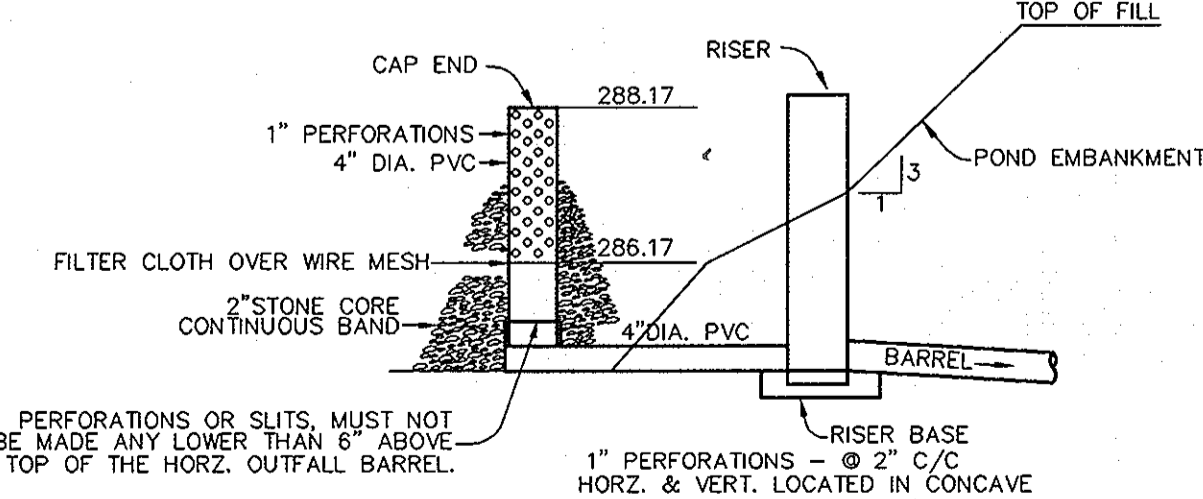
PROFILE ALONG CL OF DAM - SWMF #2



PRINCIPAL SPILLWAY PROFILE - SWMF #2

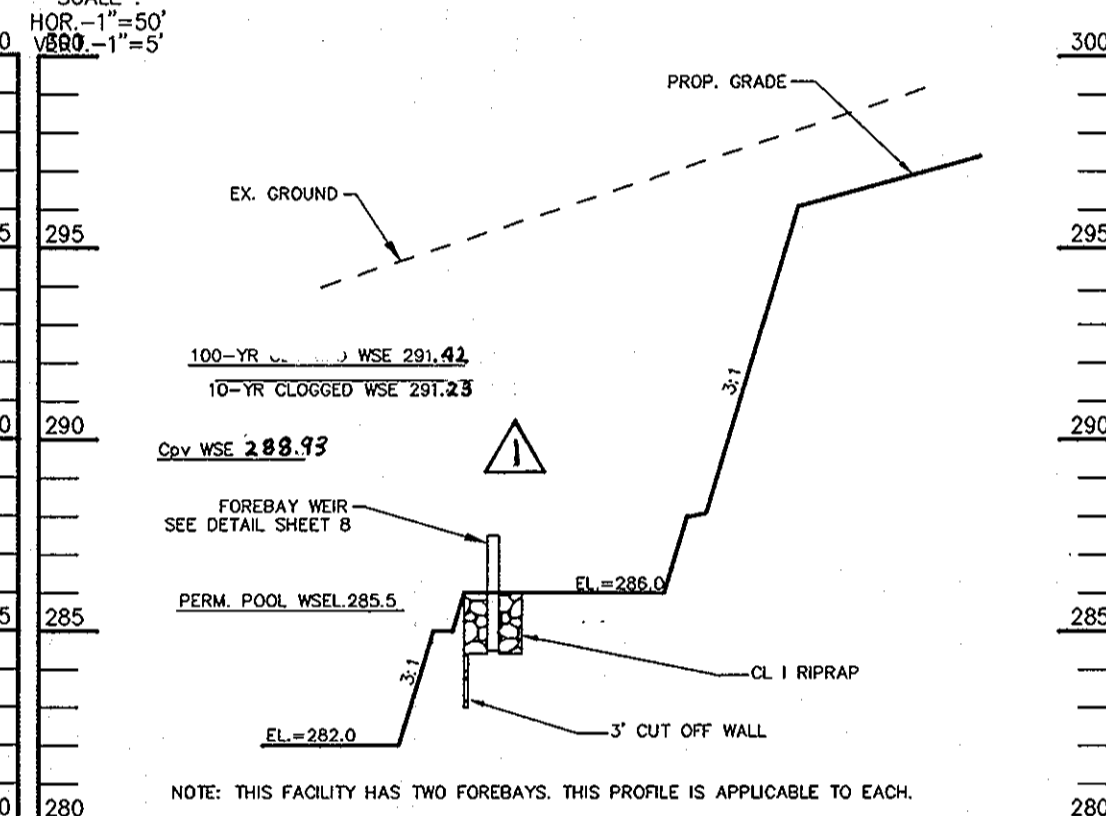
REMOVABLE TRASH RACK NOTES:

1. STEEL TO CONFORM TO ASTM A-36. #5 BARS TO BE SMOOTH. SEE DETAIL FOR SPACING.
2. ALL REBAR TO BE WELDED AT ALL INTERSECTIONS.
3. ALL BENDS TO BE 2" RADIUS. 2"x2" ANGLE IRON AND 1/2" DIAMETER ANCHOR BOLTS TO BE USED FOR TRASH RACK FRAME.
4. GALVANIZE TRASH RACK AFTER FABRICATION AND PAINT 2-COATS BATTLESHIP GRAY.

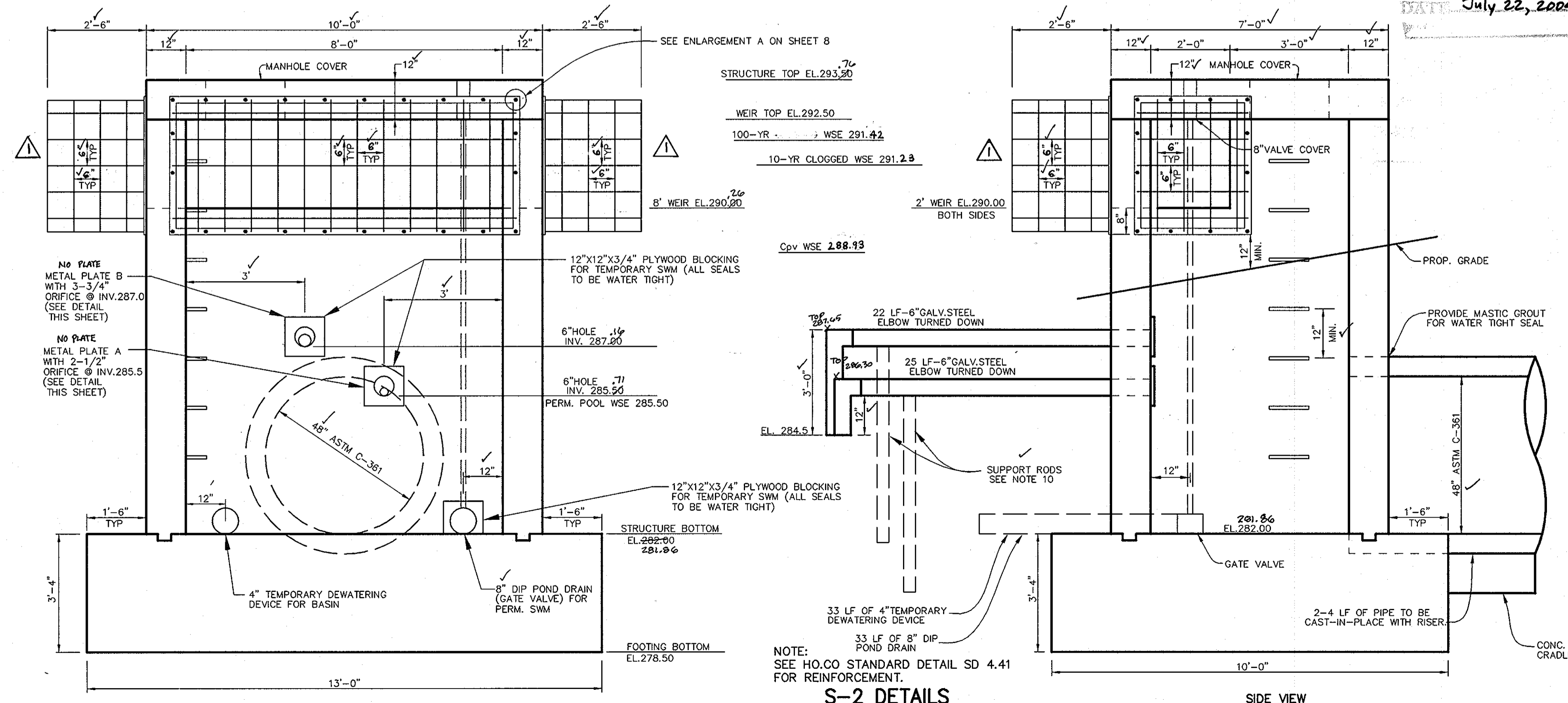


SEDIMENT BASIN 2# - 4" TEMPORARY DEWATERING DEVICE

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

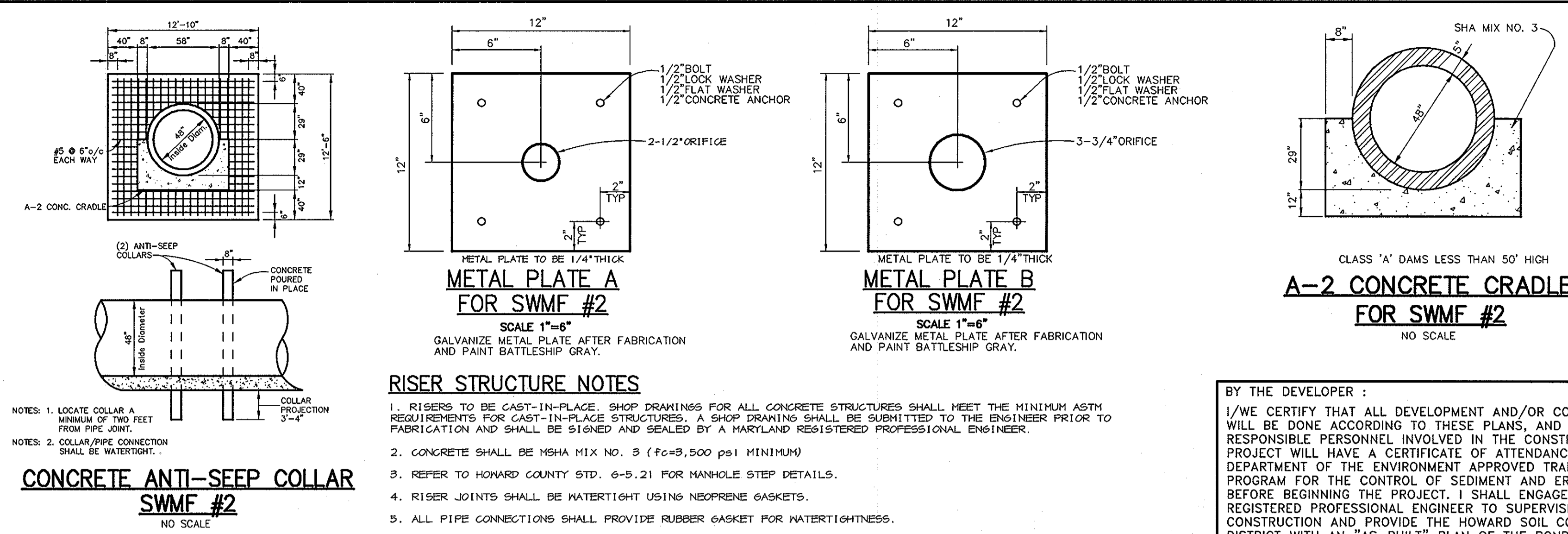


FOREBAY PROFILE - SWMF #2



FRONT VIEW

SIDE VIEW



CONCRETE ANTI-SEEP COLLAR SWMF #2

METAL PLATE A FOR SWMF #2

METAL PLATE B FOR SWMF #2

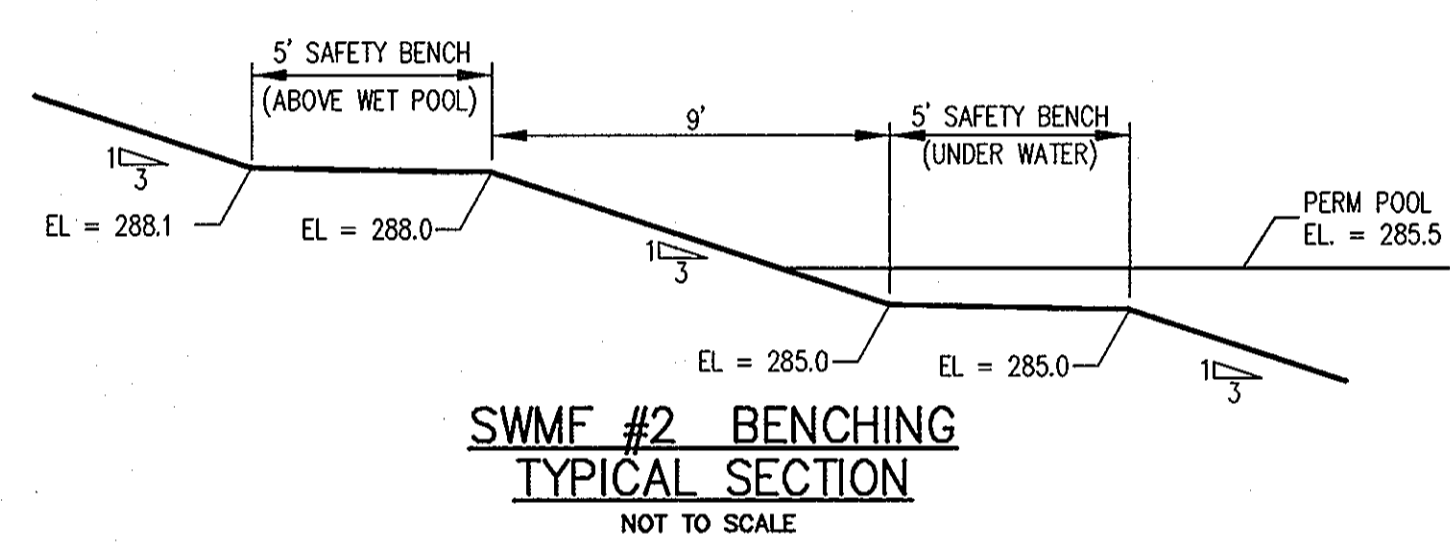
A-2 CONCRETE CRADLE FOR SWMF #2

RISER STRUCTURE NOTES

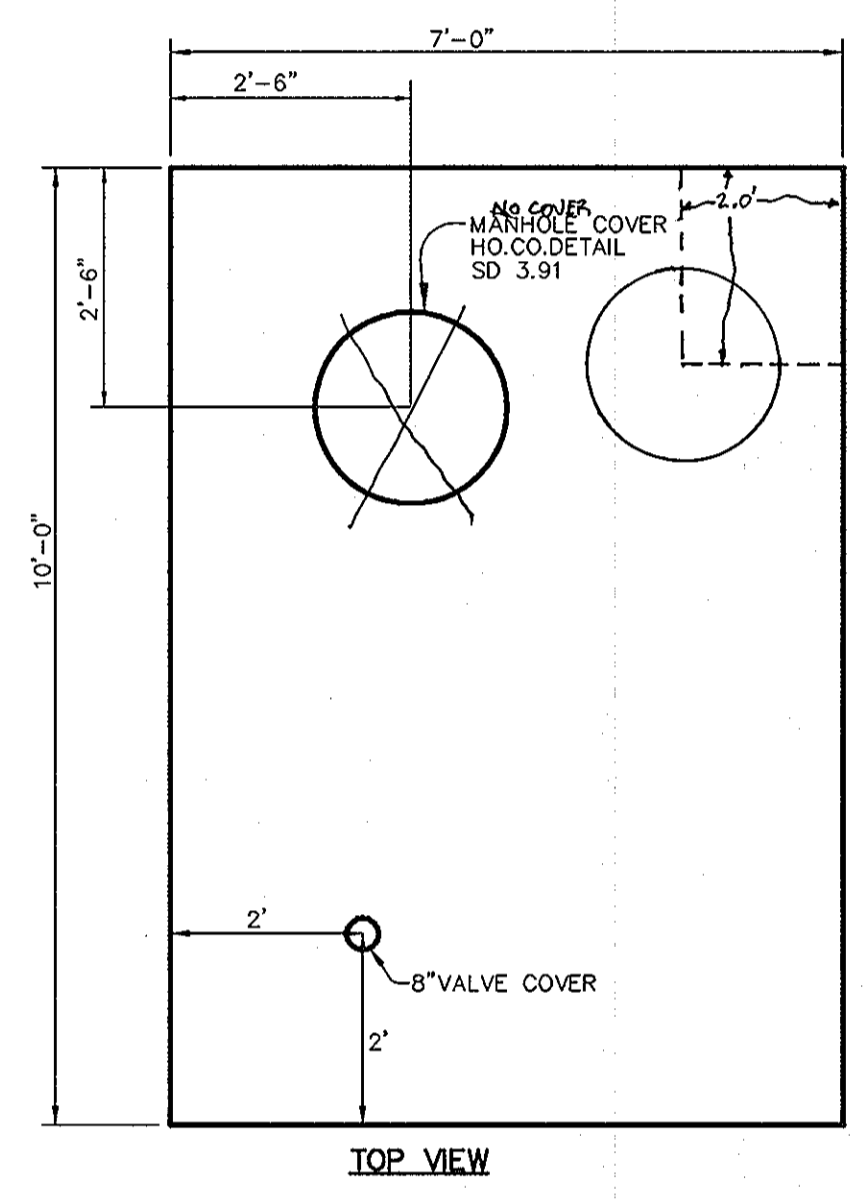
1. RISERS TO BE CAST-IN-PLACE. SHOP DRAWINGS FOR ALL CONCRETE STRUCTURES SHALL MEET THE MINIMUM ASTM REQUIREMENTS FOR CAST-IN-PLACE STRUCTURES. A SHOP DRAWING SHALL BE SUBMITTED TO THE ENGINEER PRIOR TO FABRICATION AND SHALL BE SIGNED AND SEALED BY A MARYLAND REGISTERED PROFESSIONAL ENGINEER.
2. CONCRETE SHALL BE MSHA MIX NO. 3 (FC=3,500 PSI MINIMUM)
3. REFER TO HOWARD COUNTY STD. G-5.21 FOR MANHOLE STEP DETAILS.
4. RISER JOINTS SHALL BE WATERTIGHT USING NEOPRENE GASKETS.
5. ALL PIPE CONNECTIONS SHALL PROVIDE RUBBER GASKET FOR WATERTIGHTNESS.
6. RISER SHALL BE PLACED ON A FIRMLY COMPACTED SUBGRADE AND SHALL BE APPROVED BY A GEOTECHNICAL ENGINEER.
7. ALL 8" BUTTERFLY VALVE SHALL BE CONNECTED TO THE RISER WALL WITH ALL-THREADED ROD AND A FLANGE JOINT.
10. PROVIDE SUPPORT OF GALV. STEEL ELBOWS TO PREVENT SAGGING. AN ACCEPTABLE METHOD IS TO STAKEOUT BOTH SIDES OF STEEL ELBOW WITH 1" STEEL ANGLE OR 1" BY 4" SQUARE OR 2" ROUND STEEL POSTS SET 3 FEET MIN. INTO GROUND THE JOINING THEM TO THE ELBOW BY WRAPPING WITH 12 GAUGE MIN. WIRE.

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

Scott Shanaberg 10/10/04
G. Scott SHANABERGER
#10047



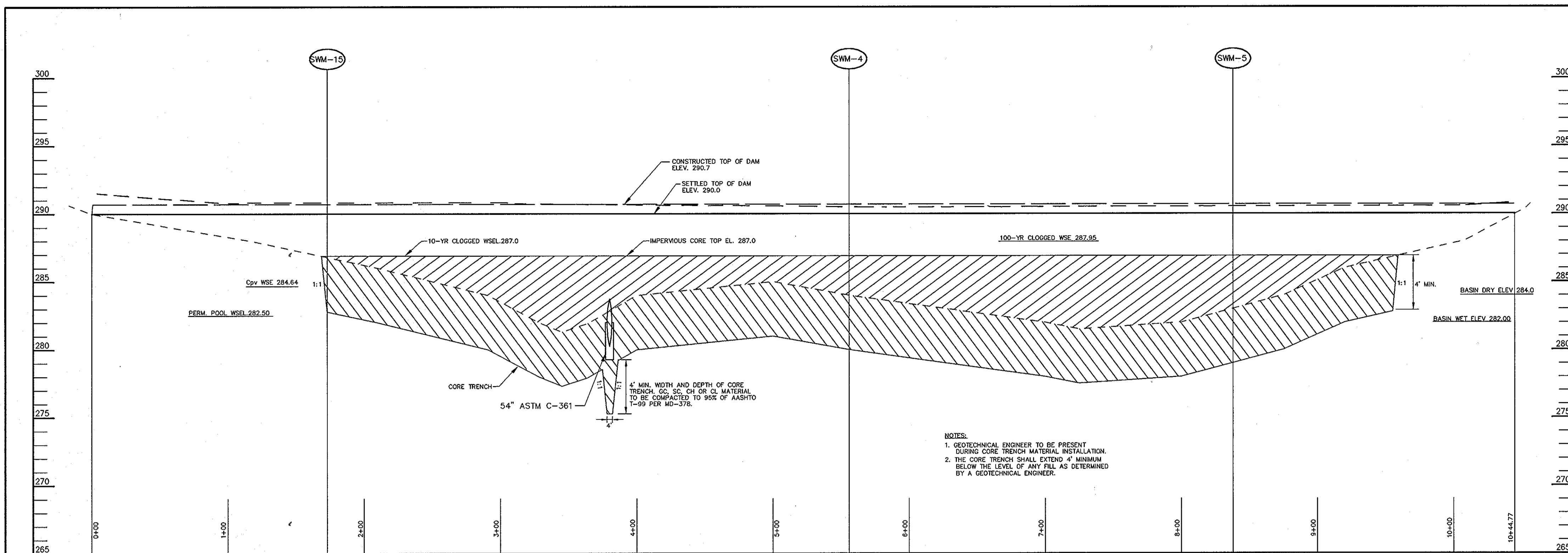
SWMF #2 BENCHING TYPICAL SECTION



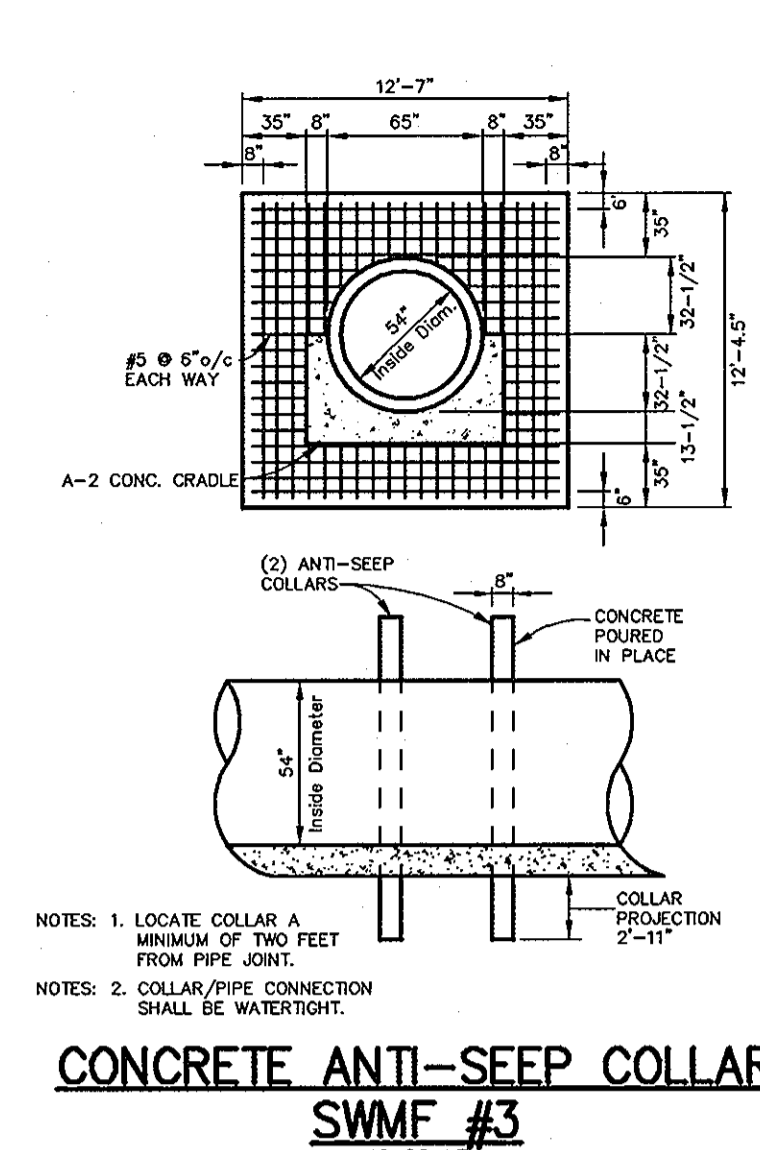
TOP VIEW

APPROVED
PLANNING BOARD
OF HOWARD COUNTY
DATE July 22, 2004

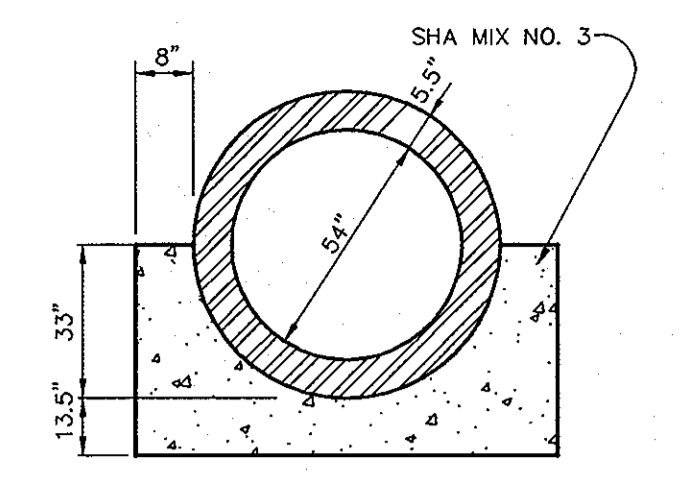
BY THE DEVELOPER :	
I/WE CERTIFY THAT ALL DEVELOPMENT AND/OR CONSTRUCTION WILL BE DONE ACCORDANCE TO THESE PLANS, AND THAT ANY RESPONSIBLE PERSONNEL INVOLVED IN THE CONSTRUCTION PROJECT WILL HAVE A CERTIFICATE OF ATTENDANCE AT A DEPARTMENT OF THE ENVIRONMENT APPROVED TRAINING PROGRAM FOR THE CONTROL OF SEDIMENT AND EROSION BEFORE BEGINNING THE PROJECT. I SHALL ENGAGE A REGISTERED PROFESSIONAL ENGINEER TO SUPERVISE POND CONSTRUCTION AND PROVIDE THE HOWARD SOIL CONSERVATION DISTRICT WITH AN "AS-BUILT" PLAN OF THE POND WITHIN 30 DAYS OF COMPLETION. I ALSO AUTHORIZE PERIODIC ON-SITE INSPECTIONS BY THE HOWARD SOIL CONSERVATION DISTRICT.	
DEVELOPER <i>Paul Cavanaugh</i> PAUL CAVANAUGH	DATE 10-19-04
BY THE ENGINEER :	
I CERTIFY THAT THIS PLAN FOR POND CONSTRUCTION, EROSION AND SEDIMENT CONTROL REPRESENTS A PRACTICAL AND WORKABLE PLAN BASED ON MY PERSONAL KNOWLEDGE OF THE SITE CONDITIONS. THIS PLAN WAS PREPARED IN ACCORDANCE WITH THE REQUIREMENTS OF THE HOWARD SOIL CONSERVATION DISTRICT. I HAVE NOTIFIED THE DEVELOPER THAT HE/SHE MUST ENGAGE A REGISTERED PROFESSIONAL ENGINEER TO SUPERVISE POND CONSTRUCTION AND PROVIDE THE HOWARD SOIL CONSERVATION DISTRICT WITH AN "AS-BUILT" PLAN OF THE POND WITHIN 30 DAYS OF COMPLETION.	
ENGINEER <i>Chris Raw</i> CHRIS RAW	DATE 10-19-04
THESE PLANS HAVE BEEN REVIEWED FOR THE HOWARD SOIL CONSERVATION DISTRICT AND MEET THE TECHNICAL REQUIREMENTS FOR SMALL POND CONSTRUCTION, SOIL EROSION AND SEDIMENT CONTROL.	
NATURAL RESOURCES CONSERVATION SERVICE <i>Jim Aguilera</i> JIM AGUILERA DATE 10/10/04	
THESE PLANS FOR SMALL POND CONSTRUCTION, SOIL EROSION AND SEDIMENT CONTROL MEET THE REQUIREMENTS OF THE HOWARD SOIL CONSERVATION DISTRICT.	
HOWARD SOIL CONSERVATION DISTRICT <i>Shelly Kelly</i> SHELLY KELLY DATE 10/20/04	
APPROVED : HOWARD COUNTY DEPARTMENT OF PLANNING AND ZONING. <i>David D. Wright</i> DAVID D. WRIGHT DATE 10/22/04	
DIRECTOR <i>Mike Wasserman</i> MIKE WASSERMAN DATE 10/25/04	
CHIEF, DEVELOPMENT ENGINEERING DIVISION	
<i>Cindy Harolds</i> CINDY HAROLDS DATE 10/25/04	
CHIEF, DIVISION OF LAND DEVELOPMENT	
05/20/05 REVISED W.S. ELS & TRASH RACK	
DATE NO.	REVISION
OWNER / DEVELOPER HRD LAND HOLDINGS, INC. HOWARD RESEARCH AND DEVELOPMENT CORPORATION THE HOUSE BUILDING 10275 LITTLE PATUXENT PARKWAY COLUMBIA, MARYLAND 21044 410-992-6000	
PROJECT BENSON EAST	
AREA TAX MAP 37 & 43 ZONED - NEWTOWN PARCELS 482, 587, 382, 421, 547 6TH ELECTION DISTRICT HOWARD COUNTY, MARYLAND	
TITLE SWM-2 PROFILES AND DETAILS	
Patton Harris Rust & Associates, pc Engineers, Surveyors, Planners, Landscape Architects. 8818 Centre Park Drive Columbia, MD 21045 T 410.997.8900 F 410.997.9282	
PHRA	
DATE 10-19-04	
DESIGNED BY : ACR/CJR	
DRAWN BY : DAM	
PROJECT NO : 11621/PRELIM TRAP13.DWG	
DATE : OCTOBER 18, 2004	
SCALE : AS SHOWN	
DRAWING NO. 11 OF 21	
CHRISTOPHER J. REID #19949	
SDP-04-163	



PROFILE ALONG CL. OF DAM - SWMF #3
SCALE: HOR.-1"=50' VERT.-1"=5'



CONCRETE ANTI-SEEP COLLAR SWMF #3
NO SCALE



CLASS 'A' DAMS LESS THAN 50' HIGH
A-2 CONCRETE CRADLE FOR SWMF #3
NO SCALE

BY THE DEVELOPER:
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 THE ENVIRONMENT APPROVED TRAINING PROGRAM FOR THE CONTROL OF SEDIMENT AND EROSION BEFORE BEGINNING THE PROJECT. I SHALL ENGAGE A REGISTERED PROFESSIONAL ENGINEER TO SUPERVISE POND CONSTRUCTION AND PROVIDE THE HOWARD SOIL CONSERVATION DISTRICT WITH AN "AS-BUILT" PLAN OF THE POND WITHIN 30 DAYS OF COMPLETION. I ALSO AUTHORIZE PERIODIC ON-SITE INSPECTIONS BY THE HOWARD SOIL CONSERVATION DISTRICT.

DEVELOPER: *Paul Canavan* 4.29.05 DATE
PAUL CANAVAN

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

ENGINEER: *Chris J. Reid* 5.3.05 DATE
CHRISTOPHER J. REID

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.

NATURAL RESOURCES MANAGEMENT SERVICE DATE: *5/2/05*

HOWARD SOIL CONSERVATION DISTRICT DATE: *5/2/05*

APPROVED: HOWARD COUNTY DEPARTMENT OF PLANNING AND ZONING.

DIRECTOR: *David L. Wampler* 5/24/05 DATE
CHIEF, DEVELOPMENT ENGINEERING DIVISION 5/10/05 DATE

CHIEF, DIVISION OF LAND DEVELOPMENT DATE: *5/10/05*

DATE NO. REVISION

DATE NO. REVISION

OWNER / DEVELOPER: HRD LAND HOLDINGS, INC. HOWARD RESEARCH AND DEVELOPMENT CORPORATION THE ROUSE BUILDING 10275 LITTLE PATUXENT PARKWAY COLUMBIA, MARYLAND 21044 410-992-6000

PROJECT: BENSON EAST

AREA: TAX MAP 37 & 43 ZONED - NEWTOWN PARCELS 482, 587, 382, 421, 547 6th ELECTION DISTRICT HOWARD COUNTY, MARYLAND

TITLE: SWM-3 PROFILES AND DETAILS

Patton Harris Rust & Associates, pc
Engineers, Surveyors, Planners, Landscape Architects.
8818 Centre Park Drive
Columbia, MD 21045
T 410.997.8900
F 410.997.9282

DATE: 5.3.05

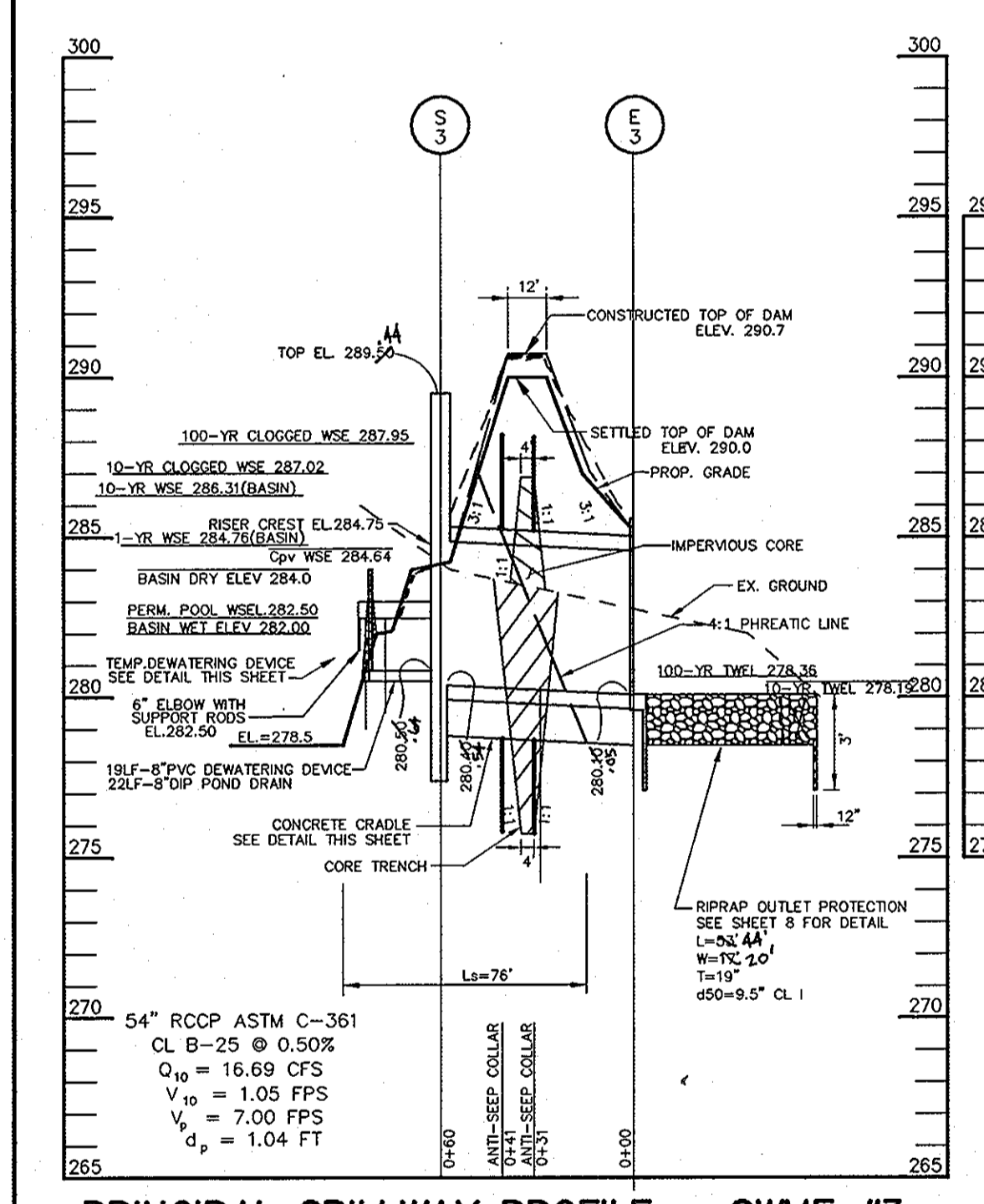
DESIGNED BY: ACR/CJR

DRAWN BY: DAM

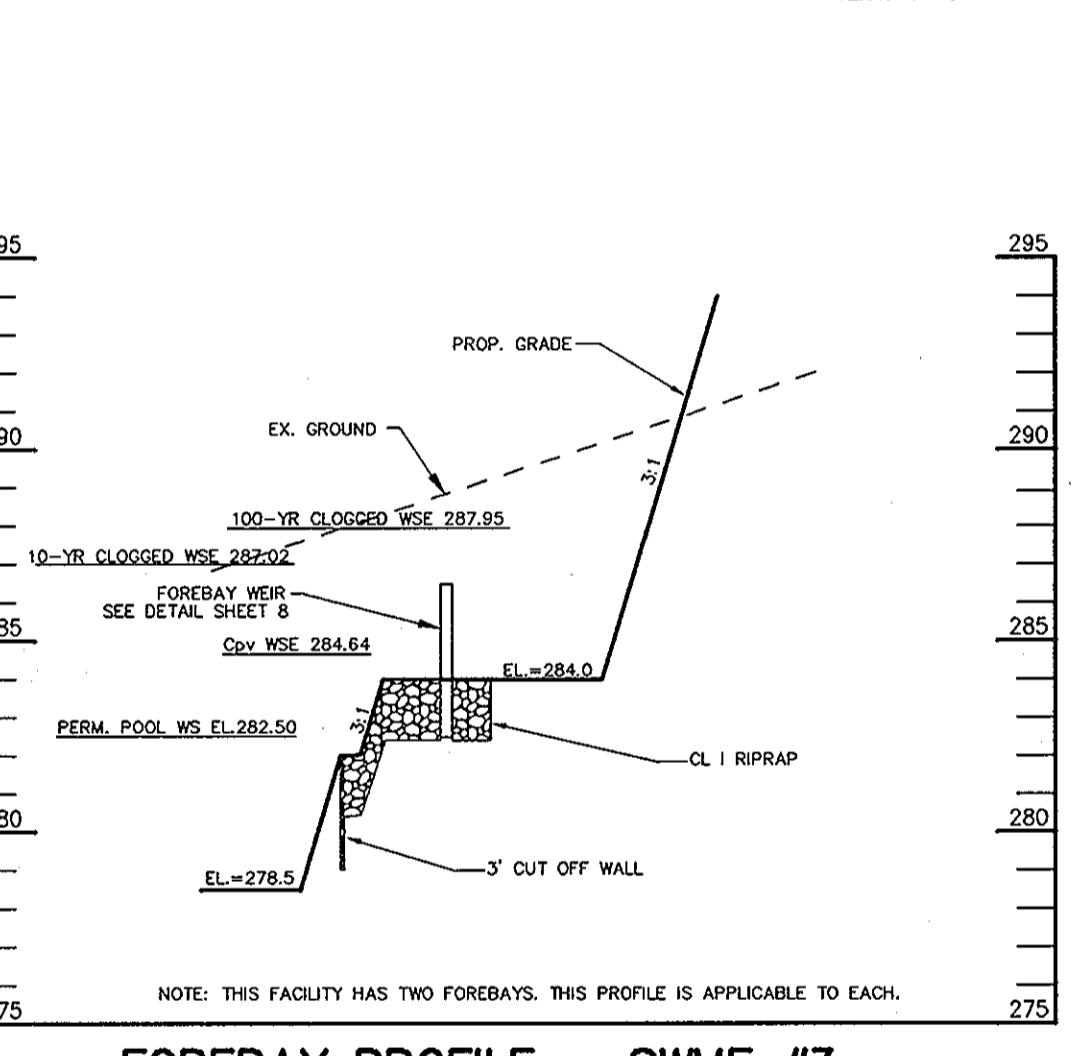
PROJECT NO: 11621/PRELIM TRAPS14-REV

DATE: OCTOBER 18, 2004

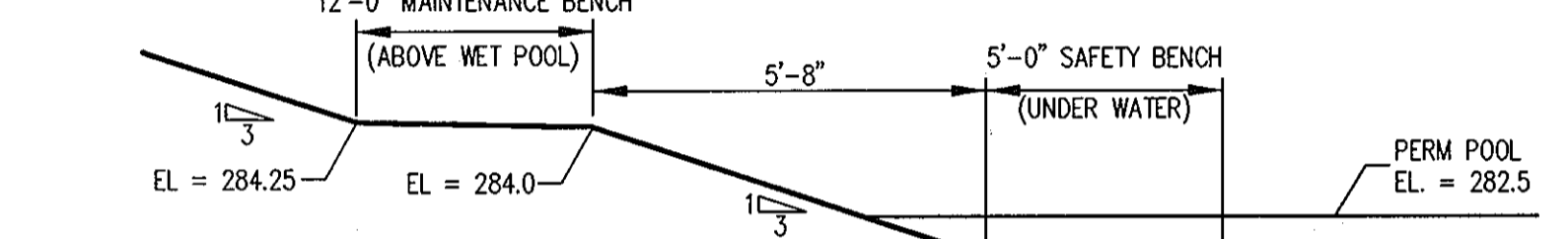
SCALE: AS SHOWN
DRAWING NO. 12 OF 21
SDP-04-163



PRINCIPAL SPILLWAY PROFILE - SWMF #3
SCALE: HOR.-1"=50' VERT.-1"=5'

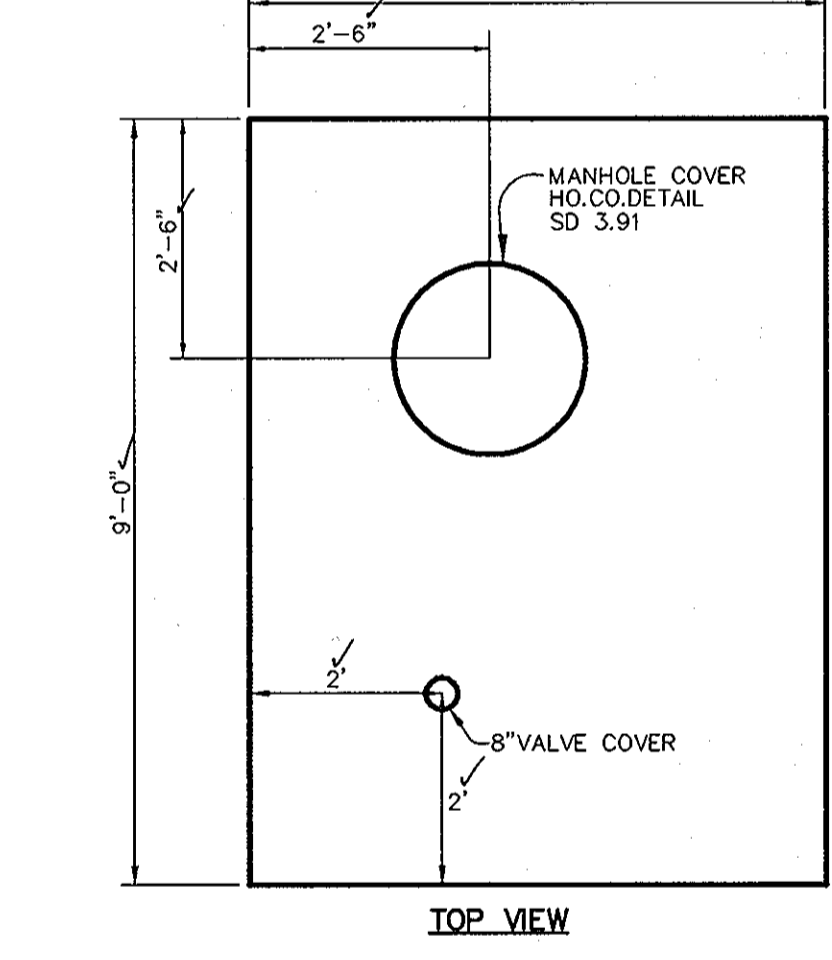
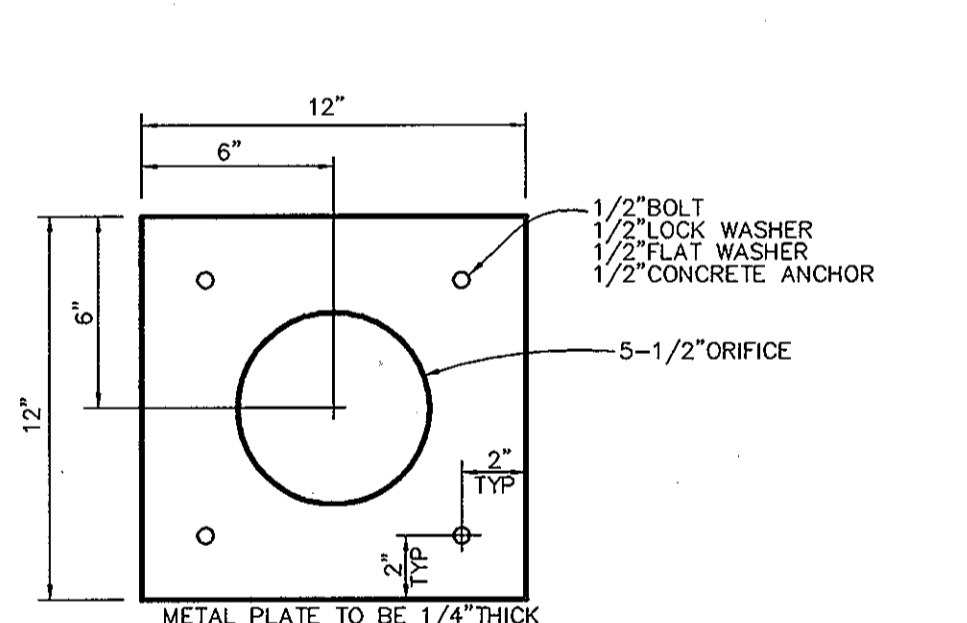


FOREBAY PROFILE - SWMF #3
SCALE: HOR.-1"=50' VERT.-1"=5'



SWMF #3 BENCHING TYPICAL SECTION NOT TO SCALE

METAL PLATE B FOR SWMF #2
SCALE 1"=8"



RISER STRUCTURE NOTES

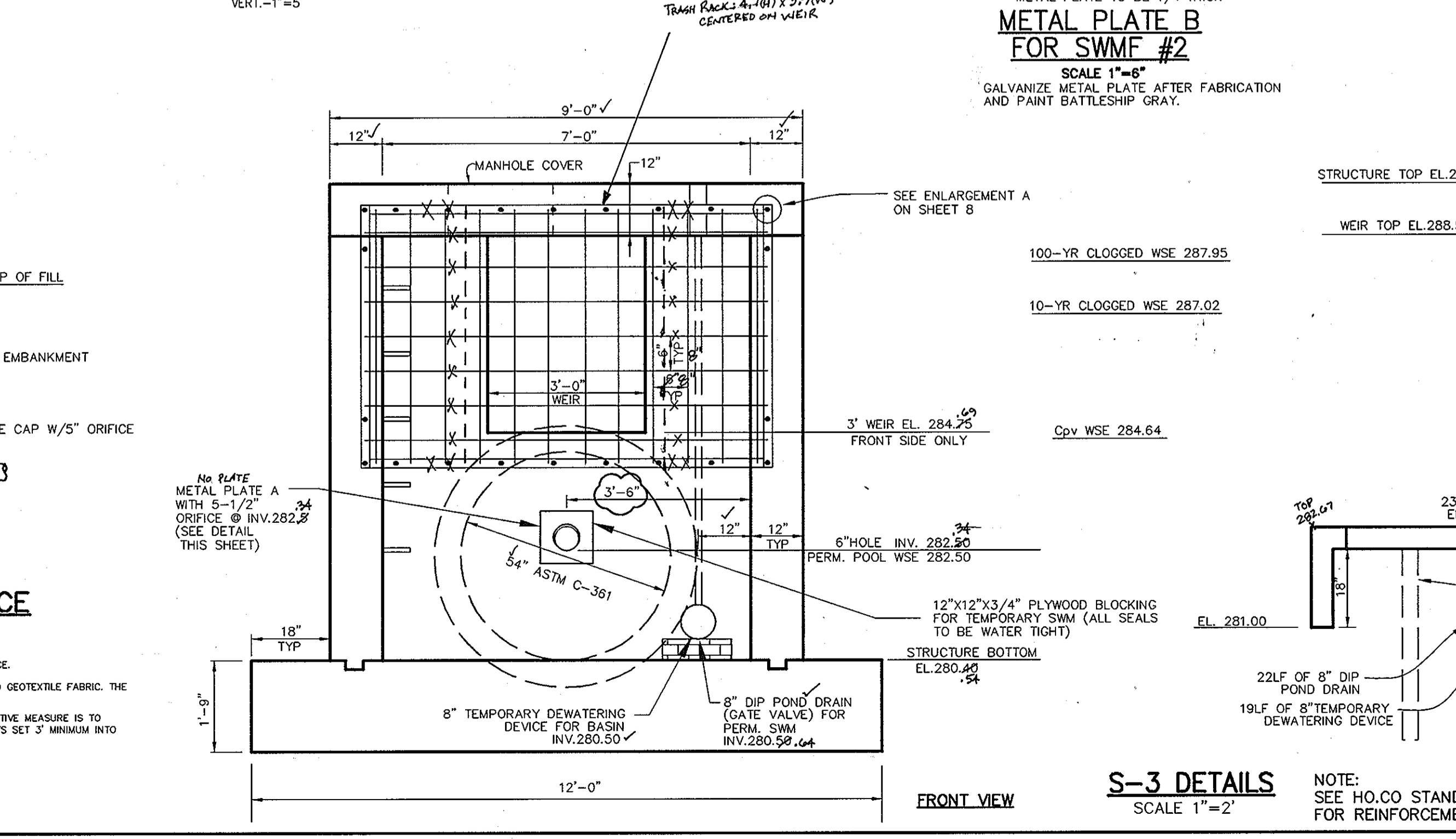
- RISERS TO BE CAST-IN-PLACE. SHOP DRAWINGS FOR ALL CONCRETE STRUCTURES SHALL MEET THE MINIMUM ASTM REQUIREMENTS FOR CAST-IN-PLACE STRUCTURES. A SHOP DRAWING SHALL BE SUBMITTED TO THE ENGINEER PRIOR TO FABRICATION AND SHALL BE SIGNED AND SEALED BY A MARYLAND REGISTERED PROFESSIONAL ENGINEER.
- CONCRETE SHALL BE MSHA MIX NO. 3 (FC=3,500 psi MINIMUM)
- REFER TO HOWARD COUNTY STD. 6-5.21 FOR MANHOLE STEP DETAILS.
- RISER JOINTS SHALL BE WATERTIGHT USING NEOPRENE GASKETS.
- ALL PIPE CONNECTIONS SHALL PROVIDE RUBBER GASKET FOR WATERTIGHTNESS.
- RISER SHALL BE PLACED ON A FIRMLY COMPACTED SUBGRADE AND SHALL BE APPROVED BY A GEOTECHNICAL ENGINEER.
- ALL 8" BUTTERFLY VALVE SHALL BE CONNECTED TO THE RISER HALL WITH ALL-THREADED ROD AND A FLANGE JOINT.
- PROVIDE SUPPORT OF GALV. STEEL ELBOWS TO PREVENT SAGGING. AN ACCEPTABLE METHOD IS TO STAKEOUT BOTH SIDES OF STEEL ELBOW WITH 1" STEEL ANGLE OR 1" BY 4" SQUARE OR 2" ROUND STEEL POSTS SET 3 FEET MIN. INTO GROUND THE JOINING THEM TO THE ELBOW BY WRAPPING WITH 12 GAUGE MIN. WIRE.

REMOVABLE TRASH RACK NOTES:

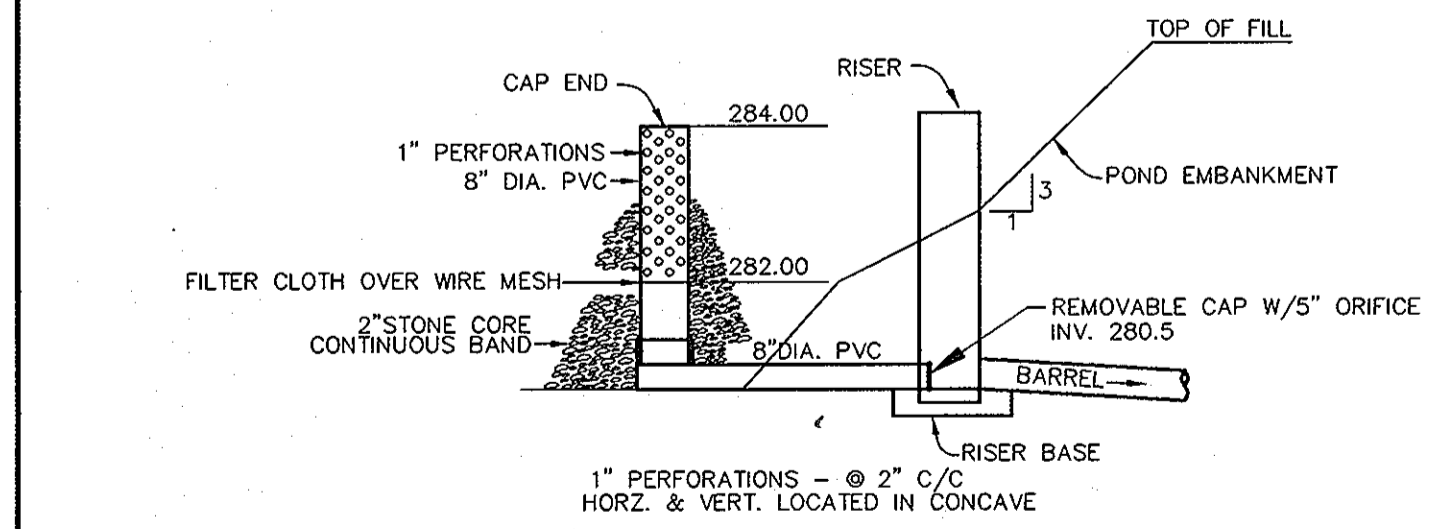
- STEEL TO CONFORM TO ASTM A-36. #5 BARS TO BE SMOOTH. SEE DETAIL FOR SPACING.
- ALL REBAR TO BE WELDED AT ALL INTERSECTIONS.
- ALL BENDS TO BE 2" RADIUS. 2"X2" ANGLE IRON AND 1/2" DIAMETER ANCHOR BOLTS TO BE USED FOR TRASH RACK FRAME.
- GALVANIZE TRASH RACK AFTER FABRICATION AND PAINT 2-COATS BATTLESHIP GRAY.

As-BUILT
SHANABERGER & LANE
8726 TOWN & COUNTRY BLVD.
SUITE 201
ELLCOTT CITY, MARYLAND 21043

Scott Shanabarger 9/10/05 DATE
#10849

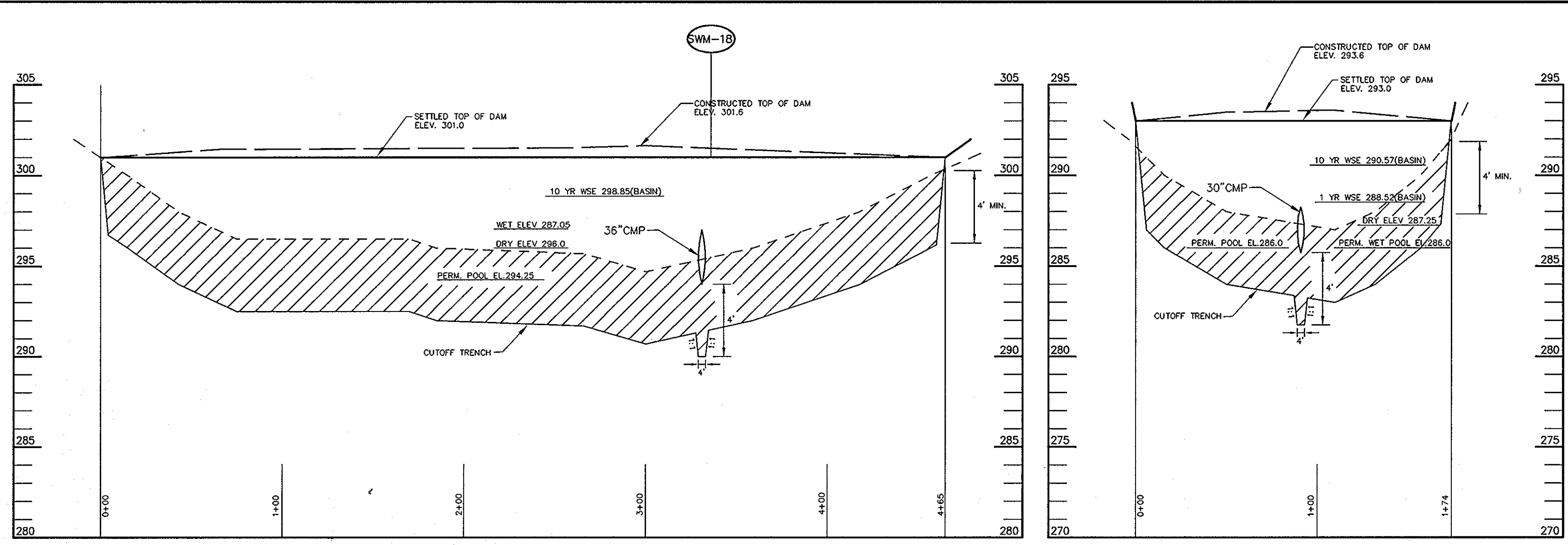


S-3 DETAILS SCALE 1"=2'



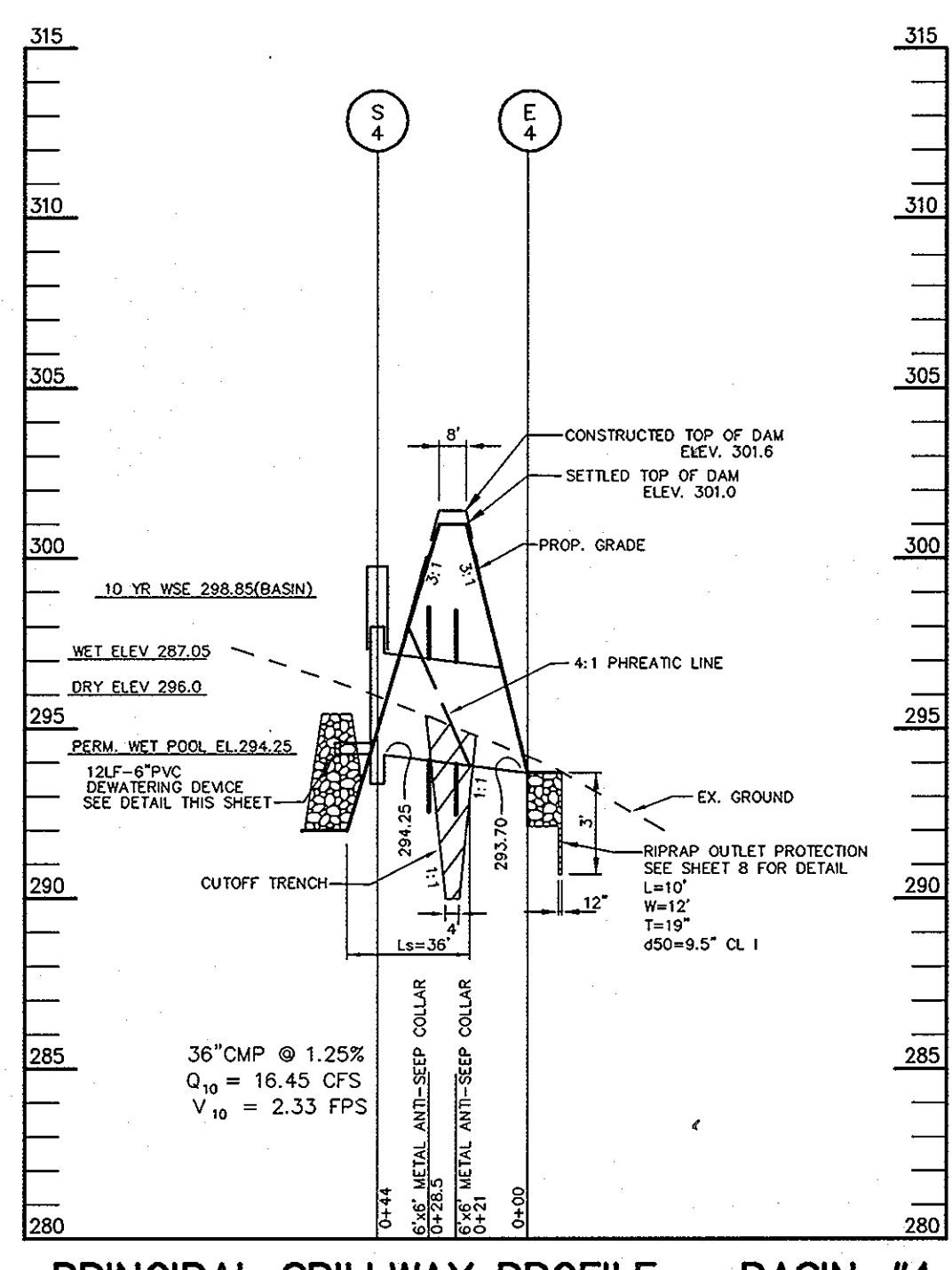
SEDIMENT BASIN #3 - 8" TEMPORARY DEWATERING DEVICE
NO SCALE

- PERFORATIONS ON 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 DEWATERING DEVICE TO PREVENT SAGGING AND FLOATION. AN ACCEPTABLE PREVENTATIVE MEASURE IS TO STAKE BOTH SIDES OF DEWATERING DEVICE WITH 1" STEEL ANGLE OR 1" 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.

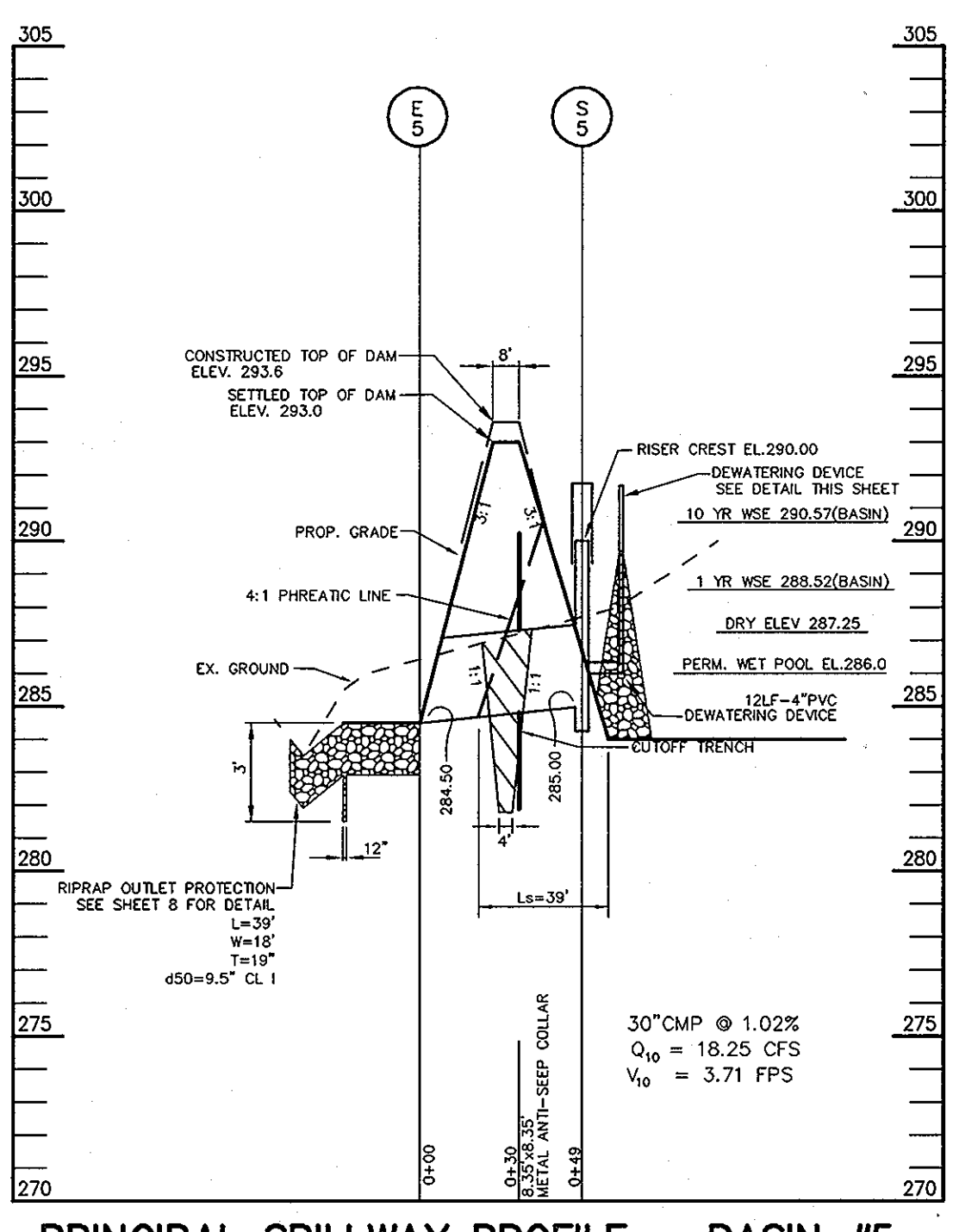


PROFILE ALONG CL OF DAM - BASIN #4

PROFILE ALONG CL OF DAM - BASIN #5

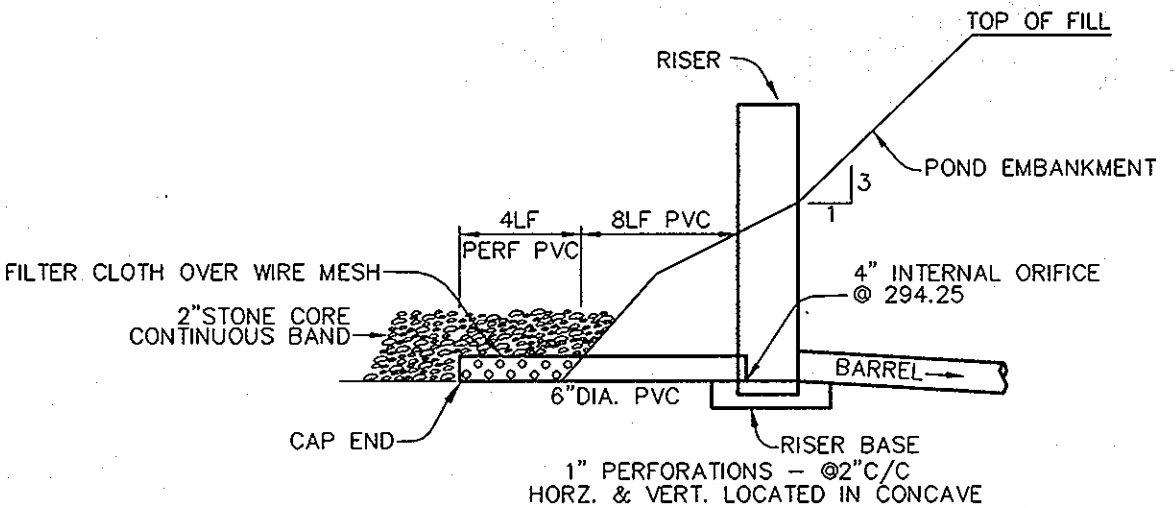


PRINCIPAL SPILLWAY PROFILE - BASIN #4



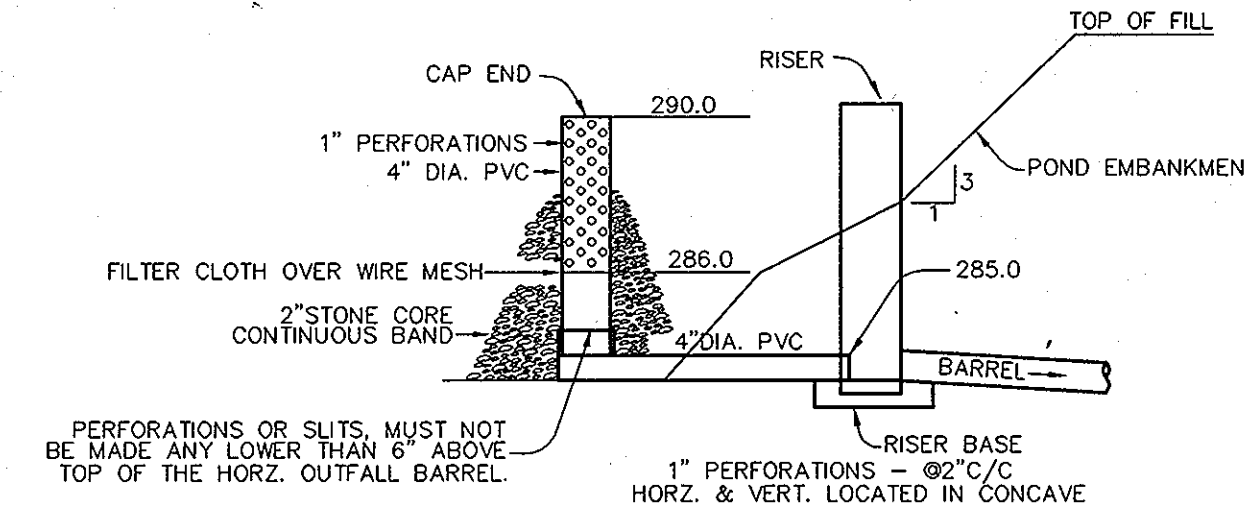
PRINCIPAL SPILLWAY PROFILE - BASIN #5

STRUCTURE SCHEDULE						
STRUCTURE	TYPE	LOCATION	INV. IN	INV. OUT	TOP	REMARKS
I-27	K INLET	N552645 E1369956	285.80 (18")	285.05 (27")	289.60	MSHA STD. DETAIL 378.II
I-28	K INLET	N552525 E1369951	—	288.80 (18")	292.30	MSHA STD. DETAIL 378.II
I-29	OBLQ K INLET	N553145 E1369725	277.60 (42")	277.50 (42")	283.00	MSHA STD. DETAIL 378.II & 378.O7
M-3A	5' MANHOLE	N552741 E1369989	290.45 (36") 289.87 (27")	283.12 (36")	298.00	HOCO STD. DETAIL G-5.13 USE GRANITE BLOCK BOTTOM
E-8	END SECTION	N552773 E1369942	281.50 (36")	—	—	HOCO STD. DETAIL SP-5.G1
STUB	—	N552724 E1370015	290.76 (36")	—	—	—



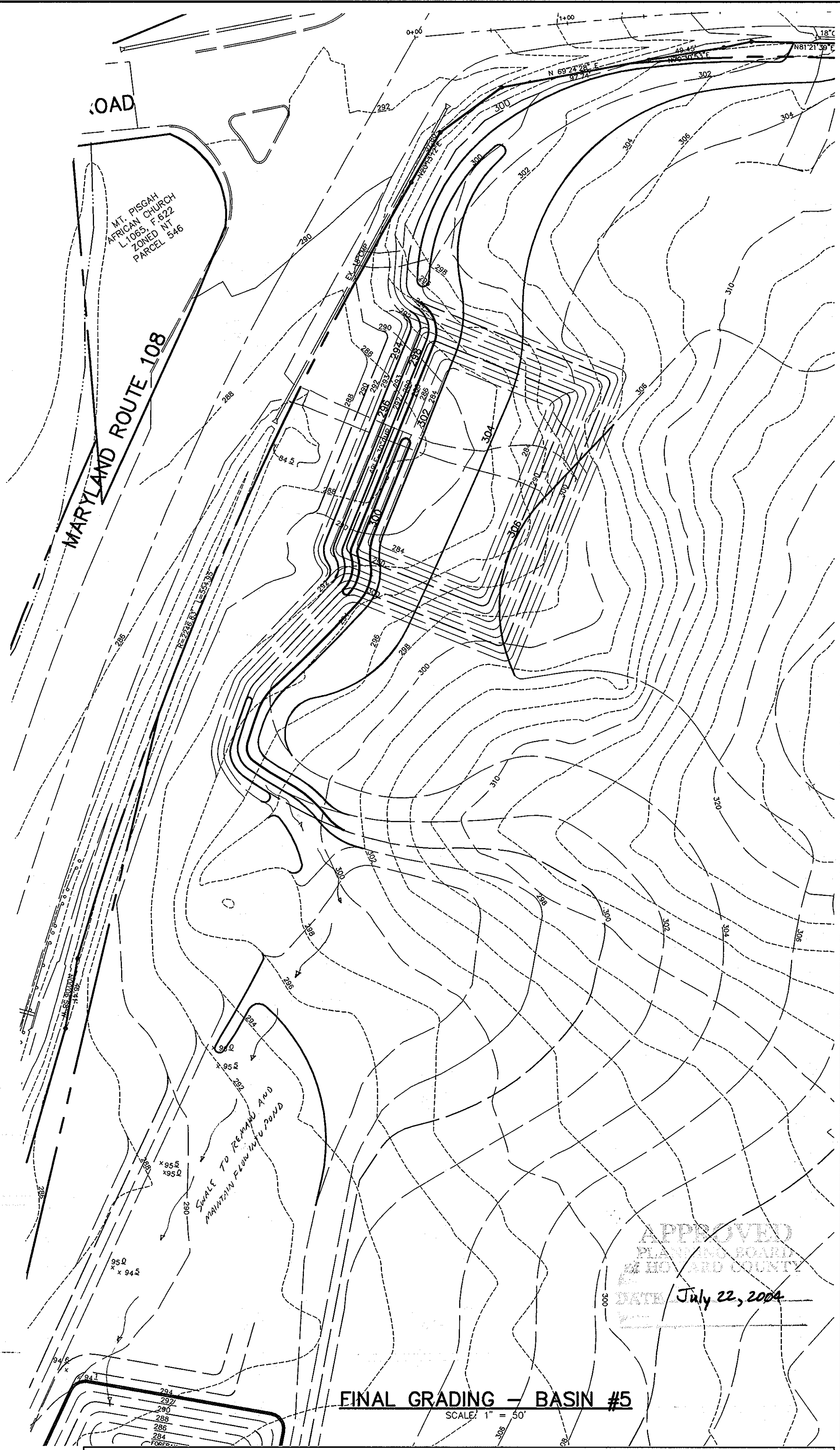
SEDIMENT BASIN #4 - 6\"/>

- PERFORATIONS ON 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\"/>



SEDIMENT BASIN #5 - 4\"/>

- PERFORATIONS ON 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\"/>



FINAL GRADING - BASIN #5

STRUCTURE SCHEDULE						
STRUCTURE	TYPE	LOCATION	INV. IN	INV. OUT	TOP	REMARKS
E-1	TYPE 'A' HEADWALL	N 551971 E 1371727	279.50 (48")	—	—	HOCO STD. DETAIL SD-5.11
E-2	TYPE 'A' HEADWALL	N 553047 E 1371988	280.10 (54")	—	—	HOCO STD. DETAIL SD-5.11
E-3	END SECTION	N 554110 E 1371571	342.00 (15")	—	—	HOCO STD. DETAIL SD-5.61
E-4	END SECTION	N 554034 E 1369899	384.50 (30")	—	—	HOCO STD. DETAIL SD-5.61
S-1	MODIFIED STRUCTURE	N 553151 E 1369809	278.00	278.00 (42")	240.00	SEE SHEET 10
S-2	MODIFIED STRUCTURE	N 551952 E 1371670	282.00	282.00 (48")	293.50	SEE SHEET 11
S-3	MODIFIED STRUCTURE	N 553051 E 1371927	280.50	280.40 (54")	289.50	SEE SHEET 12
S-4	METAL RISER	N 554144 E 1371542	294.25	294.25 (36")	299.00	SEE SHEET 13
S-5	METAL RISER	N 554024 E 1369948	285.00	285.00 (30")	291.00	SEE SHEET 13

BY THE DEVELOPER :
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 THE ENVIRONMENT APPROVED TRAINING PROGRAM FOR THE CONTROL OF SEDIMENT AND EROSION BEFORE BEGINNING THE PROJECT. I SHALL ENGAGE A REGISTERED PROFESSIONAL ENGINEER TO SUPERVISE POND CONSTRUCTION AND PROVIDE THE HOWARD SOIL CONSERVATION DISTRICT WITH AN "AS-BUILT" PLAN OF THE POND WITHIN 30 DAYS OF COMPLETION. I ALSO AUTHORIZE PERIODIC ON-SITE INSPECTIONS BY THE HOWARD SOIL CONSERVATION DISTRICT.

DEVELOPER: PAUL CAVANAUGH DATE: 10-19-04

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

ENGINEER: Christopher J. Reid DATE: 10-19-04

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

NATURAL RESOURCES CONSERVATION SERVICE DATE: 10/21/04

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

HOWARD SOIL CONSERVATION DISTRICT DATE: 10/21/04

APPROVED : HOWARD COUNTY DEPARTMENT OF PLANNING AND ZONING.
DIRECTOR: Mark A. Wright DATE: 10/21/04
CHIEF, DEVELOPMENT ENGINEERING DIVISION: [Signature] DATE: 10/21/04
CHIEF, DIVISION OF LAND DEVELOPMENT: [Signature] DATE: 10/21/04
05/20/05 REVISED STRUCTURE SCHEDULE

OWNER / DEVELOPER
HRD LAND HOLDINGS, INC.
HOWARD RESEARCH AND DEVELOPMENT CORPORATION
THE ROUSE BUILDING
10275 LITTLE PATUXENT PARKWAY
COLUMBIA, MARYLAND 21044
410-992-6000

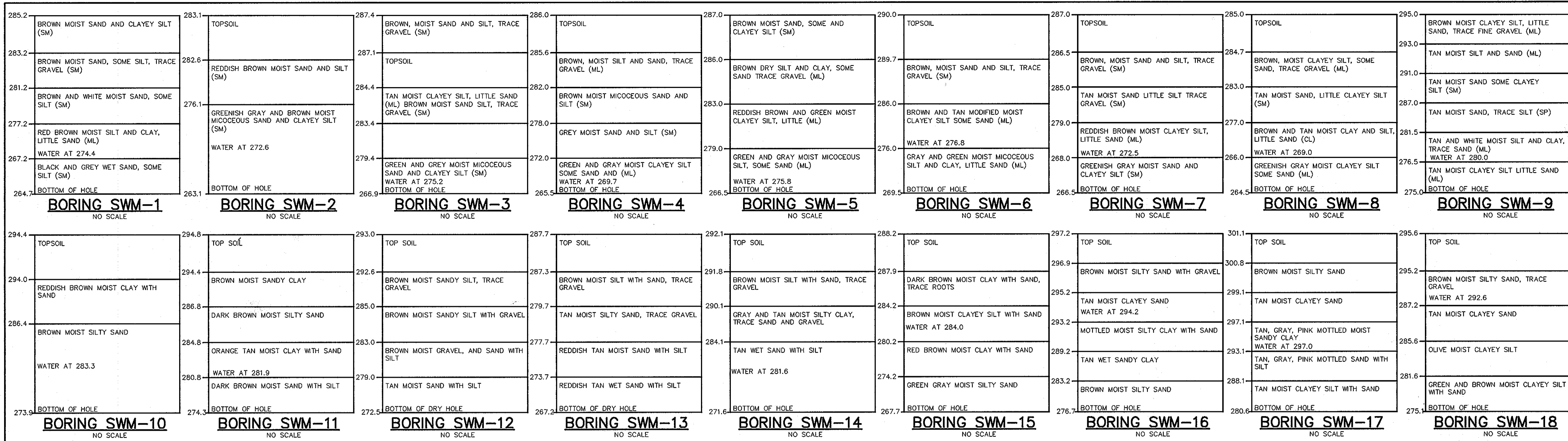
PROJECT
BENSON EAST

AREA TAX MAP 37 & 43 ZONED - NEWTOWN
PARCELS 482, 587, 382, 421, 547
6th ELECTION DISTRICT
HOWARD COUNTY, MARYLAND

TITLE
BASIN #4 AND BASIN #5
PROFILES AND DETAILS

Patton Harris Rust & Associates, pc
Engineers, Surveyors, Planners, Landscape Architects.
PHRA
8818 Centre Park Drive
Columbia, MD 21045
T 410.997.8900
F 410.997.9282

DATE: 10-19-04
DESIGNED BY: ACR/CJR
DRAWN BY: DAM
PROJECT NO: 11621/PRELIM TRAP515.DWG
DATE: OCTOBER 18, 2004
SCALE: AS SHOWN
DRAWING NO. 13 OF 21
CHRISTOPHER J. REID #19949



BY THE DEVELOPER:
 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 THE ENVIRONMENT APPROVED TRAINING PROGRAM FOR THE CONTROL OF SEDIMENT AND EROSION BEFORE BEGINNING THE PROJECT. I SHALL ENGAGE A REGISTERED PROFESSIONAL ENGINEER TO SUPERVISE POND CONSTRUCTION AND PROVIDE THE HOWARD SOIL CONSERVATION DISTRICT WITH AN "AS-BUILT" PLAN OF THE POND WITHIN 30 DAYS OF COMPLETION. I ALSO AUTHORIZE PERIODIC ON-SITE INSPECTIONS BY THE HOWARD SOIL CONSERVATION DISTRICT.

Paul Cavanna 10.19.04
 DEVELOPER DATE

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

Chris Lee 10.19.04
 ENGINEER DATE

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

Jim Mays 10/2/04
 NATURAL RESOURCES CONSERVATION SERVICE DATE

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

John Smith 10/2/04
 HOWARD SOIL CONSERVATION DISTRICT DATE

APPROVED BY HOWARD COUNTY DEPARTMENT OF PLANNING AND ZONING.

Mark Pringle 10/2/04
 DIRECTOR DATE

Michelle Williams 10/2/04
 CHIEF, DEVELOPMENT ENGINEERING DIVISION DATE

Cindy Hamble 10/2/04
 CHIEF, DIVISION OF LAND DEVELOPMENT DATE

5-24-05 ADDED TWO PROFILES

OWNER / DEVELOPER
 HRD LAND HOLDINGS, INC.
 HOWARD RESEARCH AND DEVELOPMENT CORPORATION
 THE ROUSE BUILDING
 10275 LITTLE PATUXENT PARKWAY
 COLUMBIA, MARYLAND 21044
 410-992-6000

PROJECT
BENSON EAST

AREA TAX MAP 37 & 43 ZONED - NEWTOWN
 PARCELS 482, 587, 382, 421, 547
 6TH ELECTION DISTRICT
 HOWARD COUNTY, MARYLAND

TITLE
DETAIL SHEET

APPROVED
 PLANNING BOARD
 OF HOWARD COUNTY
 DATE July 22, 2004

PHRA
 Patton Harris Rust & Associates, pc
 Engineers, Surveyors, Planners, Landscape Architects.
 8818 Centre Park Drive
 Columbia, MD 21045
 T 410.997.8900
 F 410.997.9282

10.19.04
 DATE

DESIGNED BY: ACR/CJR
 DRAWN BY: DAM
 PROJECT NO: 11621/PRELIM TRAPSS.DWG
 DATE: OCTOBER 18, 2004
 SCALE: AS SHOWN
 DRAWING NO. 14 OF 21

CHRISTOPHER J. REID #19949

6. CONSTRUCTION CONSIDERATIONS
 FOR SWMF #1, #2 AND #3

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. Some of the surficial on-site soils as described in Section 4.0 are suitable for use as impermeable core trench materials based on their soil classification (SC, CL, and CH).

The maximum dry density (AASHTO T-99) for the residual soil samples ranged from 86.8 to 119.1 pcf with optimum moisture contents ranging from 12.5% to 34.5%. The natural

moisture content of the fill materials on site was generally above the optimum moisture content. Based on these conditions, significant drying of the soil by discing and aeration or other means of manipulation can be anticipated during the earthwork process. Furthermore, the micaceous component of the on-site soils makes it susceptible to loss of strength upon exposure to free water. Therefore, it would be prudent to schedule clearing and grubbing, stripping, and earthwork operations for the warmer, dryer periods of the year (if possible) so that construction schedules will not be delayed due to inclement weather.

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

- a) Within the described construction areas, strip the vegetation, topsoil, and any organic, contaminated, or otherwise unsuitable materials to expose clean soils. The subject area shall encompass the SWM ponds and extend outward from the edges a minimum of 5 feet plus 1 additional foot horizontally for every foot of new fill to be placed, or cut to be excavated.
- b) Proofroll the stripped soil surface with a fully loaded, tandem-axle dump truck, or other approved equipment, under the observation of a geotechnical engineer or highly qualified senior level soils technician, to verify and establish a uniform, dense and stable condition. Any soft, yielding, organic, contaminated, or otherwise unacceptable spots detected shall be overexcavated and replaced with controlled compacted fill.
- c) Any material used for controlled fill shall be inspected and approved for use by a geotechnical engineer or qualified soils technician prior to use on the site. All fill shall be free from topsoil, boulders, cobbles, roots, organic matter, and debris. Preliminary approval of the borrow material shall not constitute general acceptance of all materials in the deposit or source of supply, and the acceptance shall be subject to field tests taken at the discretion of the geotechnical engineer or qualified soils technician.
- d) Compacted fill should be placed in horizontal, successive, uniform layers having a maximum uncompacted lift thickness of 8 inches. Each lift should be compacted uniformly to a minimum of 95 percent of the Standard Proctor maximum dry density as determined by AASHTO T-99 (ASTM D-698). The moisture content of the materials shall be maintained within ± 3% of the optimum moisture content in order to attain the required degree of compaction. Each lift should be uniformly and evenly blade mixed during spreading to ensure uniformity of the material in each layer. If the work deteriorates prior to placement of the next lift, the layer shall be recompacted and reshaped accordingly.

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

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

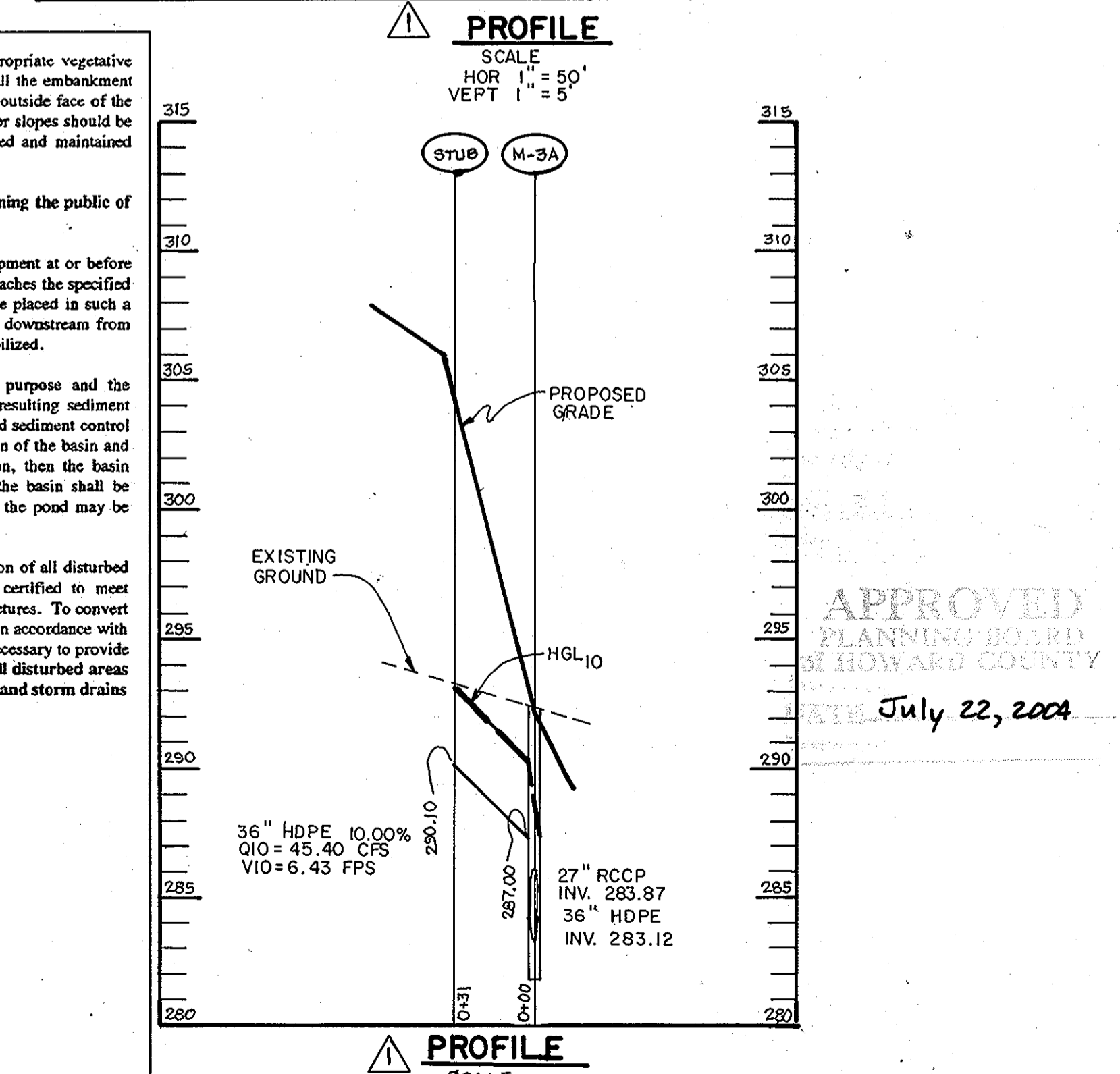
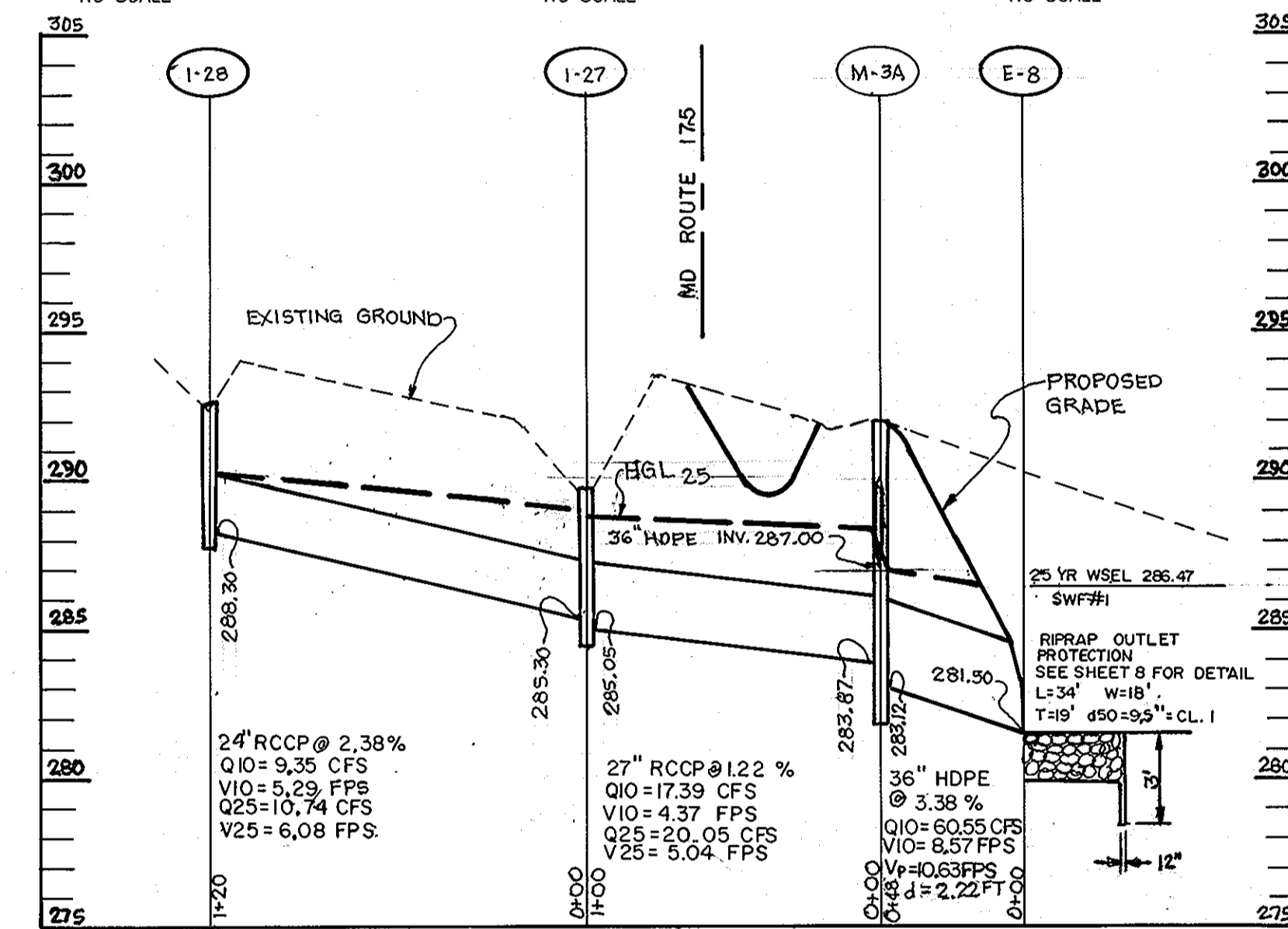
It is noted that this methodology is recommended both as preparation for areas to receive new fill, as well as locations where cut is required to establish the proposed grades such as foundation excavations. In cut areas, the proofrolling and selective undercutting shall be accomplished after excavation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

6.2. Dewatering
 Groundwater measurements suggest that groundwater infiltration 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.

Construction Specifications

1. **Site Preparation:** Perimeter sediment control devices must be installed prior to clearing and grubbing. Areas where the embankment is to be placed shall be cleared, grubbed, and stripped of topsoil to remove trees, vegetation, roots or other objectionable material. The pool area shall not be cleared until completion of the dam embankment unless the pool area is to be used for borrow. In order to facilitate clean-out and restoration, the pool area (measured at the top of the pipe spillway) shall be cleared of all brush, trees, and other objectionable materials.
2. **Cut-off Trench:** A cut-off trench shall be excavated along the centerline of earth fill embankments. The minimum depth shall be four feet. The cut-off trench shall extend up both abutments to the riser crest elevation. The minimum bottom width shall be two feet, but wide enough to permit operation of excavation and compaction equipment. The side slopes shall be no steeper than 1:1. Compaction requirements shall be the same as those for the embankment. The trench shall be dewatered during the backfilling-compaction operations. For dewatering see Section D.
3. **Embankment:** The fill material shall be taken from approved areas shown on the plans. It shall be clean mineral soil free of roots, woody vegetation, oversized stones, rocks, or other objectionable material. Relatively pervious materials such as sand or gravel (Unified Soil Classes GW, GP, SW & SP) or organic materials (Unified Soil Classes OL and OH) shall not be placed in the embankment. Areas on which fill is to be placed shall be scarified prior to placement of fill. The fill material shall contain sufficient moisture so that it can be formed by hand into a ball without crumbling. If water can be squeezed out of the ball, it is too wet for proper compaction. Fill material shall be placed in six-inch to eight-inch thick continuous lifts over the entire length of the fill. Compaction shall be obtained by routing and hauling the construction equipment over the fill so that the entire surface of each layer of the fill is traversed by at least one wheel or tread track of the equipment or by the use of a compactor. The embankment shall be constructed to an elevation 10 percent higher than the design height to allow for settlement.
4. **Principal Spillway:** Steel risers shall be securely attached to the barrel or barrel stub by welding the full circumference making a watertight structural connection. Concrete risers shall be poured with the principal spillway in place or precast with voids around the principal spillway filled with concrete or shrink proof grout for watertight connection. The barrel stub must be attached to the riser at the same percent (angle) of grade as the outlet conduit. The connection between the riser and the riser base shall be watertight. All connections between barrel sections must be achieved by approved watertight band assemblies. The barrel and riser shall be placed on a firm, smooth foundation of impervious soil as the embankment is constructed. Breaching the embankment to install the barrel is unacceptable. Pervious materials such as sand, gravel, or crushed stone shall not be used as backfill around the pipe or anti-seep collars. The fill material around the pipe spillway shall be placed in four inch lifts and hand compacted under and around the pipe to at least the same density as the adjacent embankment. A depth of 1.5 times the pipe diameter (min.) shall be backfilled over the principal spillway and hand compacted before crossing it with construction equipment.
5. **Emergency Spillway:** The emergency spillway shall be installed in undisturbed ground. The achievement of planned elevations, grades, design width, entrance and exit channel slopes are critical to the successful operation of the emergency spillway and must be constructed within a tolerance of ± 0.2 feet.

6. **Vegetative Treatment:** Stabilize the embankment in accordance with the appropriate vegetative Standard and Specifications immediately following construction. In no case shall the embankment remain unstabilized for more than seven (7) days. Once constructed, the top and outside face of the embankment shall be stabilized with seed and mulch. The remainder of the interior slopes should be stabilized (one time) with seed and mulch upon basin completion and monitored and maintained erosion free during the life of the basin.
7. **Safety:** Local requirements concerning fencing and signs shall be met, warning the public of hazards of soft sediment and floodwater.
8. **Maintenance:** Repair all damage caused by soil erosion and construction equipment at or before the end of each working day. Sediment shall be removed from the basin when it reaches the specified distance below the top of the riser as shown on the riser. This sediment shall be placed in such a manner that it will not erode from the site. The sediment shall not be deposited downstream from the embankment, adjacent to a stream or floodplain. Disposal areas must be stabilized.
9. **Final Disposal:** When temporary structures have served their intended purpose and the contributing drainage area has been properly stabilized, the embankment and resulting sediment deposits are to be leveled or otherwise disposed of in accordance with the approved sediment control plan. The proposed use of a sediment basin site will often dictate final disposition of the basin and any sediment contained therein. If the site is scheduled for future construction, then the basin material and trapped sediments must be removed and safely disposed of and the basin shall be backfilled with a structural fill. When the basin area is to remain open space, the pond may be pumped dry (using methods in Section D - Dewatering), graded, and back filled.
10. **Conversion to Stormwater Management Structure:** After permanent stabilization of all disturbed contributory drainage areas, temporary sediment basins, if initially built and certified to meet permanent standards, may be converted to permanent stormwater management structures. To convert the basin from temporary to permanent use, the outlet structure must be modified in accordance with approved stormwater management design plans. Additional grading may also be necessary to provide the required storage volume in the basin. Conversion can only take place after all disturbed areas have been permanently stabilized to the satisfaction of the inspection authority and storm drains have been flushed.





LEGEND

EXISTING 2' CONTOUR	---	300
EXISTING 10' CONTOUR	---	300
PROPOSED 2' CONTOUR	---	300
PROPOSED 10' CONTOUR	---	300
PROPERTY LINE AND RIGHT OF WAY	---	15'0"
STORM DRAIN	---	15'0"
EXISTING TREELINE	---	15'0"
PROPOSED TREELINE	---	15'0"
PROP. SPOT ELEVATION	---	13'2"
RRPAP INFLOW PROTECTION	---	13'2"
SOIL LINES	---	13'2"
REMOVABLE PUMPING STATION	---	13'2"
LIMIT OF DISTURBANCE	---	13'2"
EARTH DIKE	---	13'2"
SUPER SILT FENCE	---	13'2"
SILT FENCE	---	13'2"
STABILIZED CONSTRUCTION ENTRANCE	---	13'2"
LIMIT OF WETLANDS	---	13'2"
DRAINAGE AREA DIVIDE	---	13'2"

BY THE DEVELOPER :

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 THE ENVIRONMENT APPROVED TRAINING PROGRAM FOR THE CONTROL OF SEDIMENT AND EROSION BEFORE BEGINNING THE PROJECT. I SHALL ENGAGE A REGISTERED PROFESSIONAL ENGINEER TO SUPERVISE POND CONSTRUCTION AND PROVIDE THE HOWARD SOIL CONSERVATION DISTRICT WITH AN "AS-BUILT" PLAN OF THE POND WITHIN 30 DAYS OF COMPLETION. I ALSO AUTHORIZE PERIODIC ON-SITE INSPECTIONS BY THE HOWARD SOIL CONSERVATION DISTRICT.

Paul Cavanaugh 5.3.05
 DEVELOPER DATE
PAUL CAVANAUGH

BY THE ENGINEER :

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

Christopher J. Reid 5.3.05
 ENGINEER DATE

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

Jim Myers 5/12/05
 NATURAL RESOURCES CONSERVATION SERVICE DATE

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

Yell 5/12/05
 HOWARD SOIL CONSERVATION DISTRICT DATE

APPROVED : HOWARD COUNTY DEPARTMENT OF PLANNING AND ZONING.

Frank D. Taylor 5/20/05
 DIRECTOR DATE

William 5/17/05
 CHIEF, DEVELOPMENT ENGINEERING DIVISION DATE

Cinda 5/20/05
 CHIEF, DIVISION OF LAND DEVELOPMENT DATE

5.3.05A REVISED SITE DEVELOPMENT PLAN
 MODIFIED BASIN #1 AND #3

DATE NO. REVISION

OWNER / DEVELOPER
 HRD LAND HOLDINGS, INC.
 HOWARD RESEARCH AND DEVELOPMENT CORPORATION
 THE ROUSE BUILDING
 10275 LITTLE PATUXENT PARKWAY
 COLUMBIA, MARYLAND 21044
 410-992-6000

PROJECT
BENSON EAST

AREA TAX MAP 37 & 43 ZONED - NEWTOWN
 PARCELS 482, 587, 382, 421, 547
 6th ELECTION DISTRICT
 HOWARD COUNTY, MARYLAND

TITLE
**OVERALL
 GRADING AND SEDIMENT CONTROL PLAN**

Patton Harris Rust & Associates, pc
 Engineers, Surveyors, Planners, Landscape Architects.
 8818 Centre Park Drive
 Columbia, MD 21045
 T 410.997.8900
 F 410.997.9282

5.3.05
 DATE

Christopher J. Reid
 REGISTERED PROFESSIONAL ENGINEER

DESIGNED BY : ACR/CJR
 DRAWN BY : DAM
 PROJECT NO : 11621/PRELIM TRAPS7.DWG
 DATE : OCTOBER 18, 2004
 SCALE : 1" = 200'
 DRAWING NO. 15 OF 21

NOTE: CONTRACTOR TO LIMIT THE TOTAL UNSTABILIZED AREA TO 20 ACRES AT ANY TIME.



LARK BROWN ROAD
 HOWARD COUNTY PUBLIC ROAD
 CLASSIFICATION - LOCAL ROAD

LARK BROWN ROAD

MARYLAND ROUTE 408
 MINOR ARTERIAL

BASIN #5

FOR CONTINUATION SEE SHEET 17

LEGEND	
EX. TREELINE	
PROP. TREELINE	
PROPERTY LINE	
CONTOUR LINES	
EX. BUILDING	
PROP. SHADE TREE	
PROP. EVERGREEN TREE	
PROP. ORNAMENTAL TREE	
PROP. SHRUBS	
CUT SLOPE ZONE A GROUND COVER/PERENNIALS	
CUT SLOPE ZONE B GROUND COVER/PERENNIALS	
CUT SLOPE ZONE C GROUND COVER/PERENNIALS	
EMBANKMENT ZONE A GROUND COVER/PERENNIALS	
EMBANKMENT ZONE B GROUND COVER/PERENNIALS	
EMBANKMENT ZONE C GROUND COVER/PERENNIALS	
PERIMETER LANDSCAPE REQUIREMENT	
PROPOSED SHM POD PLANTINGS	
CREDIT FOR EXISTING VEGETATION	

APPROVED : HOWARD COUNTY DEPARTMENT OF PLANNING AND ZONING.

James A. Lough 5/22/05
 DIRECTOR DATE

John D. Williams 5/17/05
 CHIEF, DEVELOPMENT ENGINEERING DIVISION DATE

Cinda Starnes 5/23/05
 CHIEF, DIVISION OF LAND DEVELOPMENT DATE

5.3.05 **REVISED SITE DEVELOPMENT PLAN**
 MODIFIED LANDSCAPE AT SUMM # 1

DATE	NO.	REVISION

OWNER / DEVELOPER
 HRD LAND HOLDINGS, INC.
 HOWARD RESEARCH AND DEVELOPMENT CORPORATION
 THE ROUSE BUILDING
 10275 LITTLE PATUXENT PARKWAY
 COLUMBIA, MARYLAND 21044
 410-992-6000

PROJECT
BENSON EAST

AREA
 TAX MAP 37 & 43 ZONED - NEWTOWN
 PARCELS 482, 587, 382, 421, 547
 6th ELECTION DISTRICT
 HOWARD COUNTY, MARYLAND

TITLE
LANDSCAPE PLAN

Patton Harris Rust & Associates, pc
 Engineers, Surveyors, Planners, Landscape Architects.
 8818 Centre Park Drive
 Columbia, MD 21045
 T 410.997.8900
 F 410.997.9282

5.3.05
 DATE

Scott R. Wolford
 SCOTT R. WOLFORD #797

DESIGNED BY : K.L.M.
 DRAWN BY : K.L.M.
 PROJECT NO : 11621/PRELIM L200TRAP02
 DATE : OCTOBER 18, 2004
 SCALE : 1" = 50'
 DRAWING NO. 16 OF 21

FOR CONTINUATION SEE SHEET 18

FOR CONTINUATION SEE SHEET 19



FOR CONTINUATION SEE SHEET 16

FOR CONTINUATION SEE SHEET 19

LEGEND	
EX. TREELINE	[Symbol]
PROP. TREELINE	[Symbol]
PROPERTY LINE	[Symbol]
CONTOUR LINES	[Symbol]
EX. BUILDING	[Symbol]
PROP. SHADE TREE	[Symbol]
PROP. EVERGREEN TREE	[Symbol]
PROP. ORNAMENTAL TREE	[Symbol]
PROP. SHRUBS	[Symbol]
CUT SLOPE ZONE A GROUNDCOVER/PERENNIALS	[Symbol]
CUT SLOPE ZONE B GROUNDCOVER/PERENNIALS	[Symbol]
CUT SLOPE ZONE C GROUNDCOVER/PERENNIALS	[Symbol]
ENHANCEMENT ZONE A GROUNDCOVER/PERENNIALS	[Symbol]
ENHANCEMENT ZONE B GROUNDCOVER/PERENNIALS	[Symbol]
ENHANCEMENT ZONE C GROUNDCOVER/PERENNIALS	[Symbol]
PERIMETER LANDSCAPE REQUIREMENT	[Symbol] AR-3
PROPOSED SWP POND PLANTINGS	[Symbol] LA-18
CREDIT FOR EXISTING VEGETATION	[Symbol]

APPROVED : HOWARD COUNTY DEPARTMENT OF PLANNING AND ZONING.	
DIRECTOR	5/23/05 DATE
CHIEF, DEVELOPMENT ENGINEERING DIVISION	5/18/05 DATE
CHIEF, DIVISION OF LAND DEVELOPMENT	5/20/05 DATE
5.3.05 A REVISED SITE DEVELOPMENT PLAN MODIFIED SURFACE LANDSCAPING	
DATE NO.	REVISION
OWNER / DEVELOPER HRD LAND HOLDINGS, INC. HOWARD RESEARCH AND DEVELOPMENT CORPORATION 10275 LITTLE PATUXENT PARKWAY COLUMBIA, MARYLAND 21044 410-992-6000	
PROJECT BENSON EAST	
AREA TAX MAP 37 & 43 ZONED - NEWTOWN PARCELS 482, 587, 382, 421, 547 6th ELECTION DISTRICT HOWARD COUNTY, MARYLAND	
TITLE LANDSCAPE PLAN	
Patton Harris Rust & Associates, pc Engineers, Surveyors, Planners, Landscape Architects. 8818 Centre Park Drive Columbia, MD 21045 T 410.997.8900 F 410.997.9282	
DATE 5.3.05	DESIGNED BY : K.L.M.
	DRAWN BY: K.L.M.
	PROJECT NO : 11621/PRELIM L200TRAP03
	DATE : OCTOBER 18, 2004
SCALE : 1" = 50'	DRAWING NO. 17 OF 21
SCOTT R. WOLFORD #797	SDP-04-163

FOR CONTINUATION SEE SHEET 16

FOR CONTINUATION SEE SHEET 19

LEGEND	
EX. TREELINE	
PROP. TREELINE	
PROPERTY LINE	
CONTOUR LINES	
EX. BUILDING	
PROP. SHADE TREE	
PROP. EVERGREEN TREE	
PROP. ORNAMENTAL TREE	
PROP. SHRUBS	
CUT SLOPE ZONE A GROUNDCOVER/PERENNIALS	
CUT SLOPE ZONE B GROUNDCOVER/PERENNIALS	
CUT SLOPE ZONE C GROUNDCOVER/PERENNIALS	
EMBANKMENT ZONE A GROUNDCOVER/PERENNIALS	
EMBANKMENT ZONE B GROUNDCOVER/PERENNIALS	
EMBANKMENT ZONE C GROUNDCOVER/PERENNIALS	
PERIMETER LANDSCAPE REQUIREMENT	
PROPOSED SHM POND PLANTINGS	
CREDIT FOR EXISTING VEGETATION	

APPROVED : HOWARD COUNTY DEPARTMENT OF PLANNING AND ZONING.

Paul J. Doyle 5/20/05
 DIRECTOR DATE
John J. Williams 5/17/05
 CHIEF, DEVELOPMENT ENGINEERING DIVISION DATE
Wanda J. Starnes 5/18/05
 CHIEF, DIVISION OF LAND DEVELOPMENT DATE

5.3.05 **REVISED SITE DEVELOPMENT PLAN**
REVISED POND #1 LANDSCAPING

DATE NO. REVISION
 OWNER / DEVELOPER
 HRD LAND HOLDINGS, INC.
 HOWARD RESEARCH AND DEVELOPMENT CORPORATION
 THE ROUSE BUILDING
 10275 LITTLE PATUXENT PARKWAY
 COLUMBIA, MARYLAND 21044
 410-992-6000

PROJECT **BENSON EAST**

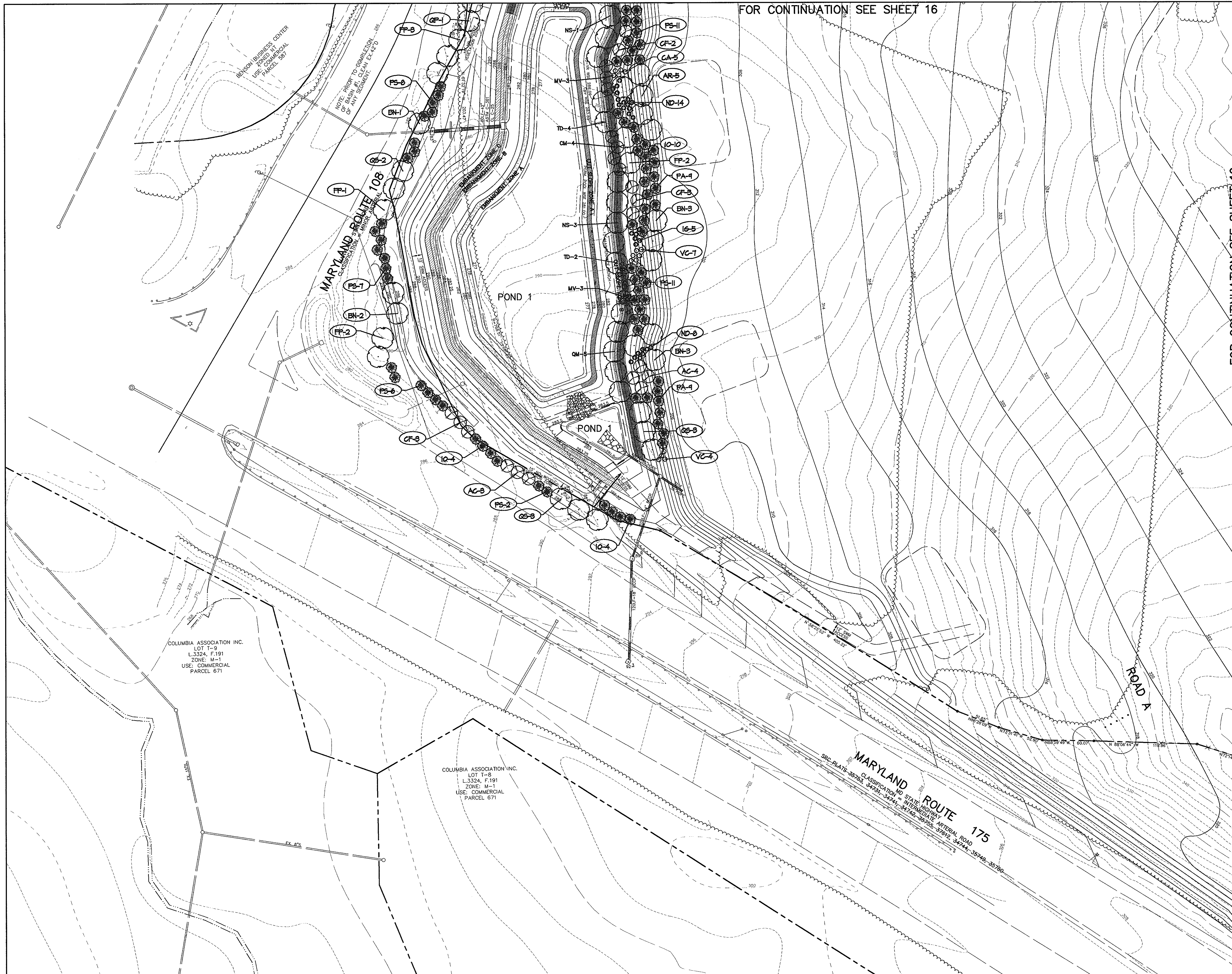
AREA TAX MAP 37 & 43 ZONED - NEWTOWN
 PARCELS 482, 587, 382, 421, 547
 6th ELECTION DISTRICT
 HOWARD COUNTY, MARYLAND

TITLE **LANDSCAPE PLAN**

Patton Harris Rust & Associates, pc
 Engineers, Surveyors, Planners, Landscape Architects.
 8818 Centre Park Drive
 Columbia, MD 21045
 T 410.997.8900
 F 410.997.9282

5.3.05
 DATE
 DESIGNED BY : K.L.M.
 DRAWN BY: K.L.M.
 PROJECT NO : 11621/PRELIM
 L200TRAP04
 DATE : OCTOBER 18, 2004
 SCALE : 1" = 50'
 DRAWING NO. 18 OF 21

SCOTT R. WOLFORD #797
 SDP-04-163



FOR CONTINUATION SEE SHEET 2

FOR CONTINUATION SEE SHEET 17

FOR CONTINUATION SEE SHEET 18

FOR CONTINUATION SEE SHEET 20



LEGEND

EX. TREELINE	[Symbol]
PROP. TREELINE	[Symbol]
PROPERTY LINE	[Symbol]
CONTOUR LINES	[Symbol]
EX. BUILDING	[Symbol]
PROP. SHADE TREE	[Symbol]
PROP. EVERGREEN TREE	[Symbol]
PROP. ORNAMENTAL TREE	[Symbol]
PROP. SHRUBS	[Symbol]
CUT SLOPE ZONE A GROUND COVER/PERENNIALS	[Symbol]
CUT SLOPE ZONE B GROUND COVER/PERENNIALS	[Symbol]
CUT SLOPE ZONE C GROUND COVER/PERENNIALS	[Symbol]
ENHANCEMENT ZONE A GROUND COVER/PERENNIALS	[Symbol]
ENHANCEMENT ZONE B GROUND COVER/PERENNIALS	[Symbol]
ENHANCEMENT ZONE C GROUND COVER/PERENNIALS	[Symbol]
PERIMETER LANDSCAPE REQUIREMENT	AR-3
PROPOSED SHRUB POND PLANTINGS	LA-18
CREDIT FOR EXISTING VEGETATION	[Symbol]

APPROVED : HOWARD COUNTY DEPARTMENT OF PLANNING AND ZONING.

DIRECTOR	<i>David L. Cagle</i>	5/24/05	DATE
CHIEF, DEVELOPMENT ENGINEERING DIVISION	<i>Michael J. Williams</i>	5/17/05	DATE
CHIEF, DIVISION OF LAND DEVELOPMENT	<i>Judy Hammett</i>	5/21/05	DATE
5.3.05 A REVISED SITE DEVELOPMENT PLAN			
DATE NO.	MODIFIED POND #2 & #3 LANDSCAPING		REVISION
OWNER / DEVELOPER			
HRD LAND HOLDINGS, INC. HOWARD RESEARCH AND DEVELOPMENT CORPORATION THE ROUSE BUILDING 10275 LITTLE PATUXENT PARKWAY COLUMBIA, MARYLAND 21044 410-992-6000			
PROJECT			
BENSON EAST			
AREA			
TAX MAP 37 & 43 ZONED - NEWTOWN PARCELS 482, 587, 382, 421, 547 6th ELECTION DISTRICT HOWARD COUNTY, MARYLAND			
TITLE			
LANDSCAPE PLAN			
Patton Harris Rust & Associates, pc Engineers, Surveyors, Planners, Landscape Architects. 8818 Centre Park Drive Columbia, MD 21045 T 410.997.8900 F 410.997.9282			
5.3.05 DATE			
DESIGNED BY : K.L.M.			
DRAWN BY: K.L.M.			
PROJECT NO : 11621/PRELIM L200TRAPOS			
DATE : OCTOBER 18, 2004			
SCALE : 1" = 50'			
DRAWING NO. 19 OF 21			
SCOTT R. WOLFORD #797			





FOR CONTINUATION SEE SHEET 19

MARYLAND ROUTE 175
 CLASSIFICATION NO. STATE HIGHWAY
 SRC PLATS 35735, 34731, 34741, 34742, 35735, 35740, 35750

COLUMBIA ASSOCIATION INC.
 LOT T-7
 L.3324, F.191
 ZONE: M-1
 USE: COMMERCIAL
 PARCEL 671

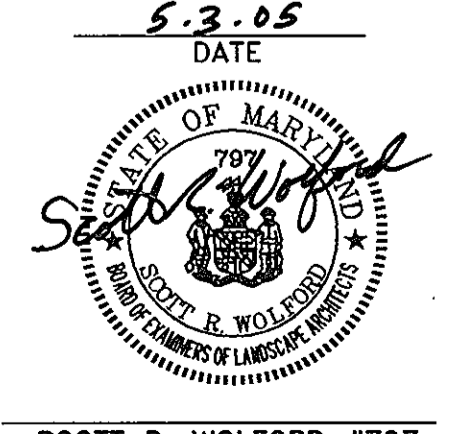
MARYLAND ROUTE 175
 CLASSIFICATION NO. STATE HIGHWAY
 SRC PLATS 35735, 34731, 34741, 34742, 35735, 35740, 35750

NOTE: PRIOR TO COMPLETION OF
 ASH #2 CLEAN DRAINAGE OF ANY
 SEEDING.

LEGEND	
EX. TREELINE	
PROP. TREELINE	
PROPERTY LINE	
CONTOUR LINES	
EX. BUILDING	
PROP. SHADE TREE	
PROP. EVERGREEN TREE	
PROP. ORNAMENTAL TREE	
PROP. SHRUBS	
CUT SLOPE ZONE A GROUNDCOVER/PERENNIALS	
CUT SLOPE ZONE B GROUNDCOVER/PERENNIALS	
CUT SLOPE ZONE C GROUNDCOVER/PERENNIALS	
EMBANKMENT ZONE A GROUNDCOVER/PERENNIALS	
EMBANKMENT ZONE B GROUNDCOVER/PERENNIALS	
EMBANKMENT ZONE C GROUNDCOVER/PERENNIALS	
PERIMETER LANDSCAPE REQUIREMENT	
PROPOSED SHM POND PLANTINGS	
CREDIT FOR EXISTING VEGETATION	

APPROVED : HOWARD COUNTY DEPARTMENT OF PLANNING AND ZONING.	
<i>David L. Layne</i>	5/20/05
DIRECTOR	DATE
<i>Michael J. Pappas</i>	5/17/05
CHIEF, DEVELOPMENT ENGINEERING DIVISION	DATE
<i>Cynthia Hammett</i>	5/20/05
CHIEF, DIVISION OF LAND DEVELOPMENT	DATE
5.3.05 A REVISED SITE DEVELOPMENT PLAN	
MODIFIED POND #2 LANDSCAPING	
DATE NO.	REVISION
OWNER / DEVELOPER	
HRD LAND HOLDINGS, INC. HOWARD RESEARCH AND DEVELOPMENT CORPORATION 10275 LITTLE PATUXENT PARKWAY COLUMBIA, MARYLAND 21044 410-992-6000	
PROJECT	
BENSON EAST	
AREA	
TAX MAP 37 & 43 ZONED - NEWTOWN PARCELS 482, 587, 382, 421, 547 6th ELECTION DISTRICT HOWARD COUNTY, MARYLAND	
TITLE	
LANDSCAPE PLAN	
Patton Harris Rust & Associates, pc Engineers, Surveyors, Planners, Landscape Architects. 8818 Centre Park Drive Columbia, MD 21045 T 410.997.8900 F 410.997.9282	
5.3.05 DATE	
DESIGNED BY : K.L.M.	
DRAWN BY: K.L.M.	
PROJECT NO : 11621/PRELIM L200TRAP06	
DATE : OCTOBER 18, 2004	
SCALE : 1" = 50'	
DRAWING NO. 20 OF 21	
SCOTT R. WOLFORD #797	

COLUMBIA ASSOCIATION INC.
 LOT T-7
 L.3324, F.191
 ZONE: M-1
 USE: COMMERCIAL
 PARCEL 671



SCHEDULE D - STORMWATER MANAGEMENT PERIMETER LANDSCAPING			
S.W.M. POND PERIMETER	1	2	3
LANDSCAPE TYPE	C	B	B
LINEAR FEET OF TOTAL PERIMETER	±1,905'	±1,616'	±1,623'
CREDIT FOR EX. VEGETATION (NO OR YES & #)	NO	YES	YES
CREDIT FOR OTHER PROP. LANDSCAPING (NO OR YES & #)	NO	NO	NO
LINEAR FEET OF REMAINING PERIMETER	1,905'	686'	623'
NUMBER OF TREES REQUIRED:			
SHADE TREES	48	21	13
EVERGREEN TREES	45	26	16
NUMBER OF PLANTS PROVIDED:			
SHADE TREES	40	21	10
EVERGREEN TREES	45	26	16
OTHER TREES (2:1 SUBSTITUTION, 50% MAX.)	16*	0	6*

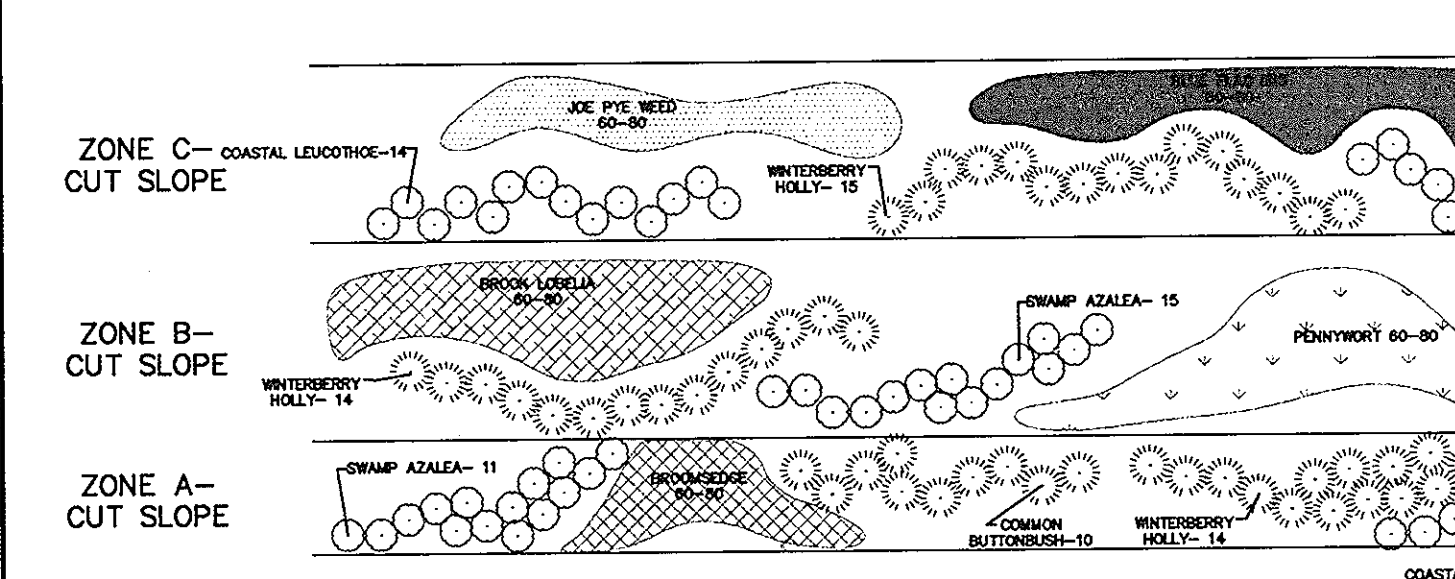
* SUBSTITUTION NOTES:
 Perimeter 1: 6 ornamental trees were substituted for 8 shade trees.
 Perimeter 2: 6 ornamental trees were substituted for 8 shade trees.
 Perimeter 3: 6 ornamental trees were substituted for 8 shade trees.

STORMWATER MANAGEMENT PERIMETER PLANT LIST						
SYMBOL	QTY.	SCIENTIFIC / COMMON NAME	SIZE	ROOT	SPACING	ZONE*
BR 10	10	Acer rubrum 'Red Sunset'	2.5'-3" cal.	B&B	Plant as shown	
BR 17	17	Betula nigra 'Red Maple'	2.5'-3" cal.	B&B	Plant as shown	
FP 21	21	Fraxinus pennsylvanica 'Harriet's'	2.5'-3" cal.	B&B	Plant as shown	
OS 15	15	Quercus prinus 'Pin Oak'	2.5'-3" cal.	B&B	Plant as shown	
OP 11	11	Quercus prinus 'Pin Oak'	2.5'-3" cal.	B&B	Plant as shown	
IO 41	41	Ilex opaca 'Amelco Holly'	5'-6" ht.	B&B	Plant as shown	
PA 34	34	Picea canadensis 'Blue Spruce'	6'-8" ht.	B&B	Plant as shown	
PS 54	54	Pinus strobus 'Bald Pine'	6'-8" ht.	B&B	Plant as shown	
AC 16	16	Amelanchier canadensis 'Waxhaw'	8'-10" ht.	B&B	Plant as shown	
GA 11	11	Gaultheria procumbens 'Wintergreen'	8'-10" ht.	B&B	Plant as shown	
CF 5	5	Calluna vulgaris 'Heather'	2.5' - 3' ht.	CONT.	Plant as shown	
IS 5	5	Irish Yew 'Blue Yew'	18-24" ht.	CONT.	Plant as shown	
ND 31	31	Nandina domestica 'Gulf Stream'	18-24" ht.	CONT.	Plant as shown	
VC 11	11	Viola cornuta 'Candytuft'	2.5' - 3' ht.	CONT.	Plant as shown	

STORMWATER MANAGEMENT POND PLANT LIST - POND 1 CUT SLOPE						
KEY	QTY.	SCIENTIFIC / COMMON NAME	SIZE	ROOT	SPACING	ZONE*
CUT SLOPE ZONE A						
15	15	CERANTHUS OCCIDENTALIS	2.5'-3" HT.	CONT.	4' SPACING	(1,2),3
10	10	ITEA LAEVIATA	2.5'-3" HT.	CONT.	4' SPACING	(1,2),3
10	10	LEUCOTHE AXILLARIS	18-24" SP.	CONT.	4' SPACING	(1,2,3,4),5
10	10	RHOODENDRON VISCOSUM	2.5'-3" HT.	CONT.	4' SPACING	(1,2,3),4
120	120	ANDROPOGON VIRGINICUS	1 GAL.	CONT.	24" SPACING	(1,2,3),4
120	120	SAGITTARIA LATIFOLIA	1 GAL.	CONT.	24" SPACING	(4,5),6
CUT SLOPE ZONE B						
6	6	TAXODIUM DISTICHUM	2.5'-3" GAL.	B&B	PLANT AS SHOWN	(1,2),3
5	5	NYSSA SYLVATICA	2.5'-3" GAL.	B&B	PLANT AS SHOWN	1, (2,3)
3	3	GRATIOPSIS ROLLIIS	5'-6" HT.	B&B	PLANT AS SHOWN	1, (2,3,4,5)
3	3	HANDELIA VIRIDITIANA	5'-6" HT.	B&B	PLANT AS SHOWN	**
45	45	LEUCOTHE AXILLARIS	18-24" SP.	CONT.	4' SPACING	(1,2,3,4),5
45	45	RHOODENDRON VISCOSUM	2.5'-3" HT.	CONT.	4' SPACING	(1,2,3),4
45	45	CERANTHUS OCCIDENTALIS	2.5'-3" HT.	CONT.	4' SPACING	(1,2),3
45	45	ITEA LAEVIATA	2.5'-3" HT.	CONT.	4' SPACING	(1,2),3
360	360	ANDROPOGON VIRGINICUS	1 GAL.	CONT.	24" SPACING	(1,2),3
360	360	SAGITTARIA LATIFOLIA	1 GAL.	CONT.	24" SPACING	(1,2),3
CUT SLOPE ZONE C						
4	4	NYSSA SYLVATICA	2.5'-3" GAL.	B&B	PLANT AS SHOWN	1, (2,3)
4	4	GRATIOPSIS ROLLIIS	5'-6" HT.	B&B	PLANT AS SHOWN	1,2,(3,4,5)
6	6	HANDELIA VIRIDITIANA	5'-6" HT.	B&B	PLANT AS SHOWN	**
45	45	LEUCOTHE AXILLARIS	18-24" SP.	CONT.	4' SPACING	(1,2,3,4),5
45	45	RHOODENDRON VISCOSUM	2.5'-3" HT.	CONT.	4' SPACING	(1,2,3),4
45	45	CERANTHUS OCCIDENTALIS	2.5'-3" HT.	CONT.	4' SPACING	(1,2),3
45	45	ITEA LAEVIATA	2.5'-3" HT.	CONT.	4' SPACING	(1,2),3
360	360	ANDROPOGON VIRGINICUS	1 GAL.	CONT.	24" SPACING	(1,2),3
360	360	SAGITTARIA LATIFOLIA	1 GAL.	CONT.	24" SPACING	(1,2),3

STORMWATER MANAGEMENT POND PLANT LIST - POND 1 EMBANKMENT						
KEY	QTY.	SCIENTIFIC / COMMON NAME	SIZE	ROOT	SPACING	ZONE*
EMBANKMENT ZONE A						
145	145	ANDROPOGON VIRGINICUS	1 GAL.	CONT.	24" SPACING	(1,2,3),4
145	145	ALTHAEA OFFICINALIS	1 GAL.	CONT.	24" SPACING	(1,2),3
145	145	CAREX ELATA 'AUREA'	2" FEAT POT	CONT.	24" SPACING	(1,2),3
145	145	SAGITTARIA LATIFOLIA	1 GAL.	CONT.	24" SPACING	(4,5),6
EMBANKMENT ZONE B						
150	150	LOBELIA KALMI	1 GAL.	CONT.	24" SPACING	(1,2),3
150	150	HYDROCOYLE UMBELLATA	1 GAL.	CONT.	24" SPACING	(1,2),3
150	150	JUNCUS EFFRUSUS	1 GAL.	CONT.	24" SPACING	(2,3),4
150	150	PONTERIA CORDATA	1 GAL.	CONT.	24" SPACING	2,3
EMBANKMENT ZONE C						
245	245	COROPHIS VERTICILLATA	1 GAL.	CONT.	24" SPACING	(2,3),4
245	245	EUPATORIUM PURPUREA	1 GAL.	CONT.	24" SPACING	***
245	245	IRIS VERTECOLOR 'BLUE FLAS'	1 GAL.	CONT.	24" SPACING	(1,2),3
245	245	NORONDA DITIPA	1 GAL.	CONT.	24" SPACING	3,4,5

STORMWATER MANAGEMENT POND PLANT LIST - POND 2 EMBANKMENT						
KEY	QTY.	SCIENTIFIC / COMMON NAME	SIZE	ROOT	SPACING	ZONE*
EMBANKMENT ZONE A						
70	70	ANDROPOGON VIRGINICUS	1 GAL.	CONT.	24" SPACING	(1,2,3),4
70	70	ALTHAEA OFFICINALIS	1 GAL.	CONT.	24" SPACING	(1,2),3
70	70	CAREX ELATA 'AUREA'	2" FEAT POT	CONT.	24" SPACING	(1,2),3
70	70	SAGITTARIA LATIFOLIA	1 GAL.	CONT.	24" SPACING	(4,5),6
EMBANKMENT ZONE B						
364	364	LOBELIA KALMI	1 GAL.	CONT.	24" SPACING	(1,2),3
364	364	HYDROCOYLE UMBELLATA	1 GAL.	CONT.	24" SPACING	(1,2),3
364	364	JUNCUS EFFRUSUS	1 GAL.	CONT.	24" SPACING	(2,3),4
364	364	PONTERIA CORDATA	1 GAL.	CONT.	24" SPACING	2,3
EMBANKMENT ZONE C						
161	161	COROPHIS VERTICILLATA	1 GAL.	CONT.	24" SPACING	(2,3),4
161	161	EUPATORIUM PURPUREA	1 GAL.	CONT.	24" SPACING	***
161	161	IRIS VERTECOLOR 'BLUE FLAS'	1 GAL.	CONT.	24" SPACING	(1,2),3
161	161	NORONDA DITIPA	1 GAL.	CONT.	24" SPACING	3,4,5



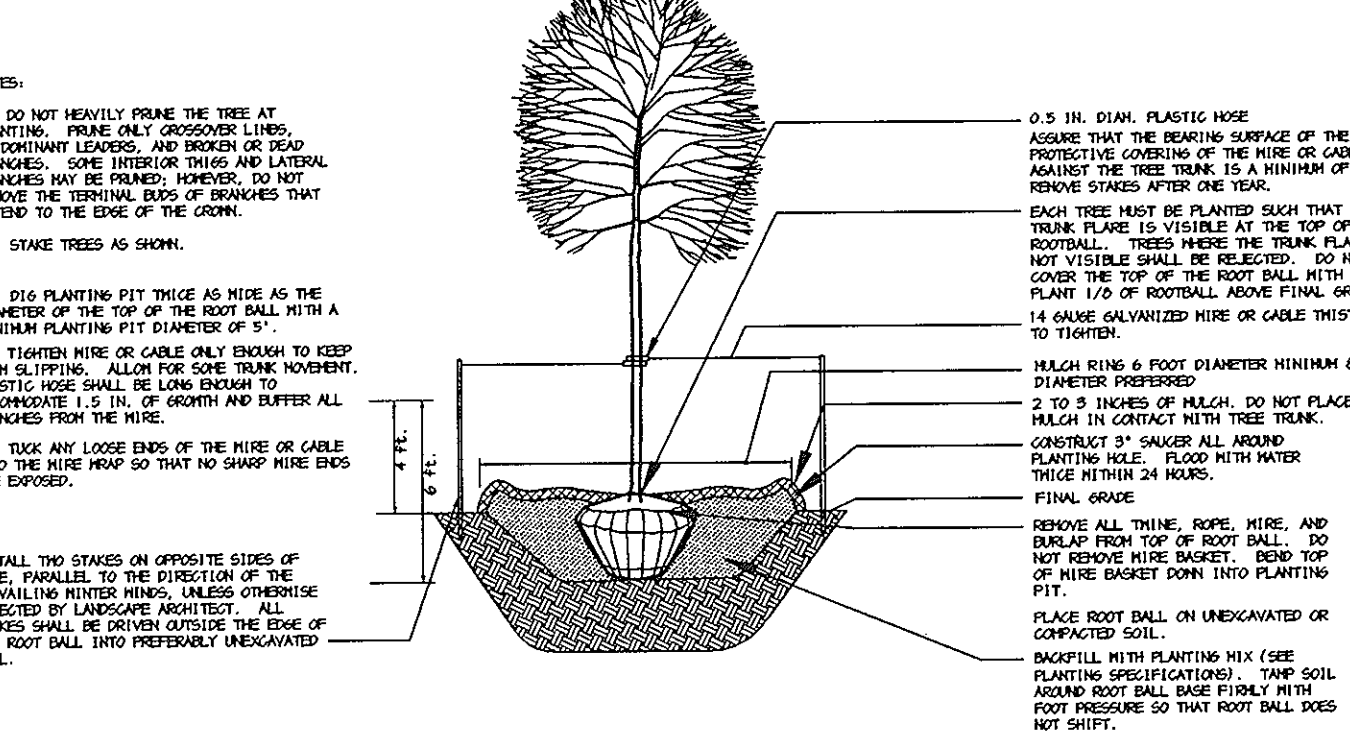
TYPICAL PLANTING DETAIL FOR CUT SLOPE ZONES A, B, AND C

STORMWATER MANAGEMENT POND PLANT LIST - POND 2 CUT SLOPE						
KEY	QTY.	SCIENTIFIC / COMMON NAME	SIZE	ROOT	SPACING	ZONE*
CUT SLOPE ZONE A						
10	10	CERANTHUS OCCIDENTALIS	2.5'-3" HT.	CONT.	4' SPACING	(1,2),3
10	10	ITEA LAEVIATA	2.5'-3" HT.	CONT.	4' SPACING	(1,2),3
10	10	LEUCOTHE AXILLARIS	18-24" SP.	CONT.	4' SPACING	(1,2,3,4),5
10	10	RHOODENDRON VISCOSUM	2.5'-3" HT.	CONT.	4' SPACING	(1,2,3),4
76	76	ANDROPOGON VIRGINICUS	1 GAL.	CONT.	24" SPACING	(1,2,3),4
76	76	SAGITTARIA LATIFOLIA	1 GAL.	CONT.	24" SPACING	(4,5),6
CUT SLOPE ZONE B						
3	3	TAXODIUM DISTICHUM	2.5'-3" GAL.	B&B	PLANT AS SHOWN	(1,2,3)
3	3	NYSSA SYLVATICA	2.5'-3" GAL.	B&B	PLANT AS SHOWN	1, (2,3,4,5)
3	3	GRATIOPSIS ROLLIIS	5'-6" HT.	B&B	PLANT AS SHOWN	1,2, (3, 4, 5)
38	38	CERANTHUS OCCIDENTALIS	2.5'-3" HT.	CONT.	4' SPACING	(1,2),3
38	38	ITEA LAEVIATA	2.5'-3" HT.	CONT.	4' SPACING	(1,2),3
38	38	LEUCOTHE AXILLARIS	18-24" SP.	CONT.	4' SPACING	(1,2,3,4),5
38	38	RHOODENDRON VISCOSUM	2.5'-3" HT.	CONT.	4' SPACING	(1,2,3),4
310	310	LOBELIA KALMI	1 GAL.	CONT.	24" SPACING	(1,2),3
310	310	HYDROCOYLE UMBELLATA	1 GAL.	CONT.	24" SPACING	(1,2),3
CUT SLOPE ZONE C						
7	7	NYSSA SYLVATICA	2.5'-3" GAL.	B&B	PLANT AS SHOWN	1, (2,3)
4	4	GRATIOPSIS ROLLIIS	5'-6" HT.	B&B	PLANT AS SHOWN	1,2,(3,4,5)
4	4	HANDELIA VIRIDITIANA	5'-6" HT.	B&B	PLANT AS SHOWN	**
15	15	LEUCOTHE AXILLARIS	18-24" SP.	CONT.	4' SPACING	(1,2,3,4),5
15	15	RHOODENDRON VISCOSUM	2.5'-3" HT.	CONT.	4' SPACING	(1,2,3),4
15	15	CERANTHUS OCCIDENTALIS	2.5'-3" HT.	CONT.	4' SPACING	(1,2),3
15	15	ITEA LAEVIATA	2.5'-3" HT.	CONT.	4' SPACING	(1,2),3
120	120	ANDROPOGON VIRGINICUS	1 GAL.	CONT.	24" SPACING	***
120	120	IRIS VERTECOLOR 'BLUE FLAS'	1 GAL.	CONT.	24" SPACING	(1,2),3

STORMWATER MANAGEMENT POND PLANT LIST - POND 2 EMBANKMENT						
KEY	QTY.	SCIENTIFIC / COMMON NAME	SIZE	ROOT	SPACING	ZONE*
EMBANKMENT ZONE A						
70	70	ANDROPOGON VIRGINICUS	1 GAL.	CONT.	24" SPACING	(1,2,3),4
70	70	ALTHAEA OFFICINALIS	1 GAL.	CONT.	24" SPACING	(1,2),3
70	70	CAREX ELATA 'AUREA'	2" FEAT POT	CONT.	24" SPACING	(1,2),3
70	70	SAGITTARIA LATIFOLIA	1 GAL.	CONT.	24" SPACING	(4,5),6
EMBANKMENT ZONE B						
364	364	LOBELIA KALMI	1 GAL.	CONT.	24" SPACING	(1,2),3
364	364	HYDROCOYLE UMBELLATA	1 GAL.	CONT.	24" SPACING	(1,2),3
364	364	JUNCUS EFFRUSUS	1 GAL.	CONT.	24" SPACING	(2,3),4
364	364	PONTERIA CORDATA	1 GAL.	CONT.	24" SPACING	2,3
EMBANKMENT ZONE C						
161	161	COROPHIS VERTICILLATA	1 GAL.	CONT.	24" SPACING	(2,3),4
161	161	EUPATORIUM PURPUREA	1 GAL.	CONT.	24" SPACING	***
161	161	IRIS VERTECOLOR 'BLUE FLAS'	1 GAL.	CONT.	24" SPACING	(1,2),3
161	161	NORONDA DITIPA	1 GAL.	CONT.	24" SPACING	3,4,5

• HYDROLOGIC ZONES ACCORDING TO APPENDIX A OF THE MARYLAND MODEL STORMWATER MANAGEMENT PLAN AS WELL AS DRY AREAS ACCORDING TO DIRK, MICHAEL A. MANUAL OF WOODY LANDSCAPE PLANTS.
 *** COMMONLY USED BIOTRENT SPECIES ACCORDING TO TABLE A.4 IN APPENDIX A OF THE MARYLAND MODEL STORMWATER MANAGEMENT ORDINANCE JULY 2000.
 **** ALSO KNOWN AS CAREX STRICTA 'AUREA'

- SHRUB PLANT LIST NOTES:**
- SHRUBS SHALL BE PLANTED IN GROUPS OF 10-15 OF SAME SPECIES.
 - PERENNIALS SHALL BE PLANTED IN GROUPS OF 60-80 OF SAME SPECIES.
 - AREAS WHICH ARE ABOVE THE PERMANENT POOL AND ARE NOT SHOWN TO BE PLANTED WITH SHRUBS OR GROUNDCOVERS SHALL HAVE A PERMANENT GRASS COVER.



DECIDUOUS SHRUB TREE PLANTING DETAIL (TREES 3' GAL. OR SMALLER)

STORMWATER MANAGEMENT POND PLANT LIST - POND 3 CUT SLOPE						
KEY	QTY.	SCIENTIFIC / COMMON NAME	SIZE	ROOT	SPACING	ZONE*
CUT SLOPE ZONE A						
14	14	CERANTHUS OCCIDENTALIS	2.5'-3" HT.	CONT.	4' SPACING	(1,2),3
14	14	ITEA LAEVIATA	2.5'-3" HT.	CONT.	4' SPACING	(1,2),3
14	14	LEUCOTHE AXILLARIS	18-24" SP.	CONT.	4' SPACING	(1,2,3,4),5
14	14	RHOODENDRON VISCOSUM	2.5'-3" HT.	CONT.	4' SPACING	(1,2,3),4
110	110	ANDROPOGON VIRGINICUS	1 GAL.	CONT.	24" SPACING	(1,2,3),4
110	110	SAGITTARIA LATIFOLIA	1 GAL.	CONT.	24" SPACING	(4,5),6
CUT SLOPE ZONE B						
4	4	TAXODIUM DISTICHUM	2.5'-3" GAL.	B&B	PLANT AS SHOWN	(1,2,3)
4	4	NYSSA SYLVATICA	2.5'-3" GAL.	B&B	PLANT AS SHOWN	1, (2,3,4,5)
4	4	GRATIOPSIS ROLLIIS	5'-6" HT.	B&B	PLANT AS SHOWN	1, (2,3,4,5)
60	60	CERANTHUS OCCIDENTALIS	2.5'-3" HT.	CONT.	4' SPACING	(1,2),3
60	60	ITEA LAEVIATA	2.5'-3" HT.	CONT.	4' SPACING	(1,2),3
60	60	LEUCOTHE AXILLARIS	18-24" SP.	CONT.	4' SPACING	(1,2,3,4),5
60	60	RHOODENDRON VISCOSUM	2.5'-3" HT.	CONT.	4' SPACING	(1,2,3),4
470	470	LOBELIA KALMI	1 GAL.	CONT.	24" SPACING	(1,2),3
470	470	HYDROCOYLE UMBELLATA	1 GAL.	CONT.	24" SPACING	(1,2),3
CUT SLOPE ZONE C						
5	5	NYSSA SYLVATICA	2.5'-3" GAL.	B&B	PLANT AS SHOWN	1, (2,3)
4	4	GRATIOPSIS ROLLIIS	5'-6" HT.	B&B	PLANT AS SHOWN	1,2,(3,4,5)
4	4	HANDELIA VIRIDITIANA	5'-6" HT.	B&B	PLANT AS SHOWN	**
14	14	LEUCOTHE AXILLARIS	18-24" SP.	CONT.	4' SPACING	(1,2,3,4),5
14	14	RHOODENDRON VISCOSUM	2.5'-3" HT.	CONT.	4' SPACING	(1,2,3),4
14	14	CERANTHUS OCCIDENTALIS	2.5'-3" HT.	CONT.	4' SPACING	(1,2),3
14	14	ITEA LAEVIATA	2.5'-3" HT.	CONT.	4' SPACING	(1,2),3
115	115	EUPATORIUM PURPUREA	1 GAL.	CONT.	24" SPACING	***
115	115	IRIS VERTECOLOR 'BLUE FLAS'	1 GAL.	CONT.	24" SPACING	(1,2),3