

SHEET INDEX	
NO.	TITLE
1	TITLE SHEET
2	ROAD PLAN
3	GRADING, SEDIMENT AND EROSION CONTROL AND MAINTENANCE OF TRAFFIC PLAN
4	SEDIMENT AND EROSION CONTROL NOTES AND DETAILS
5	SWM PROFILES, DETAILS AND NOTES
6	STORM DRAINAGE AREA MAP, PROFILES AND BORINGS
7	LANDSCAPE PLAN
8	FOREST CONSERVATION PLAN

KINGS ARMS SECTION 4

ROADS, STORMWATER MANAGEMENT AND STORM DRAIN CONSTRUCTION PLANS

GENERAL NOTES

- THE PROJECT IS IN CONFORMANCE WITH THE LATEST HOWARD COUNTY STANDARDS UNLESS WAIVERS HAVE BEEN APPROVED.
- THIS PROJECT IS SUBJECT TO THE AMENDED FIFTH EDITION OF THE SUBDIVISION AND LAND DEVELOPMENT REGULATIONS PER COUNCIL BILL NO. 45-2003 AND THE ZONING REGULATIONS AS AMENDED BY COUNCIL BILL NO. 75-2003. DEVELOPMENT OR CONSTRUCTION ON THESE LOTS MUST COMPLY WITH SETBACK AND BUFFER REGULATIONS IN EFFECT AT THE TIME OF SUBMISSION OF THE BUILDING OR GRADING PERMIT APPLICATION.
- THE SUBJECT PROPERTY IS ZONED R-50 PER THE 2-2-04 COMPREHENSIVE ZONING PLAN AND THE 2-2-04 ZONING REGULATIONS. ALL ADJACENT PROPERTIES ARE ZONED R-50 PER THE 2-2-04 COMPREHENSIVE ZONING PLAN.
- TOPOGRAPHY TAKEN FROM A FIELD RUN TOPOGRAPHIC SURVEY PREPARED BY BENCHMARK ENGINEERING, INC. DATED MAY, 2004 AT 2' CONTOUR INTERVALS.
- THE COORDINATES BASED ON NAD 83 MARYLAND COORDINATE SYSTEM AS PROJECTED BY HOWARD COUNTY GEODETIC CONTROL STATIONS 508A AND 508B.
- WATER IS PUBLIC UNDER CONTR. NO.24-1881-D.
- SEWER IS PUBLIC UNDER CONTR. NO.24-1881-D.
- THE EXISTING RESIDENTIAL STRUCTURES LOCATED ON THIS SITE ARE TO BE REMOVED.
- THERE ARE NO BURIAL GROUNDS, CEMETERIES OR HISTORIC STRUCTURES LOCATED ON THE SUBJECT PROPERTY, TO THE BEST OF OUR KNOWLEDGE.
- THE TRAFFIC STUDY FOR THIS PROJECT WAS PREPARED BY LEE CUNNINGHAM IN OCTOBER 2004. AND WAS APPROVED UNDER THE PRELIMINARY PLAN FOR THIS PROJECT (SP-05-10).
- THIS PROJECT IS LOCATED WITHIN THE METROPOLITAN DISTRICT.
- A NOISE STUDY IS NOT REQUIRED FOR THIS PROJECT.
- WETLAND DELINEATION PROVIDED BY ECO-SCIENCE PROFESSIONALS, INC. DATED OCTOBER 22, 2004 AND UPDATE ON JUNE 21, 2007.
- FOREST STAND DELINEATION PROVIDED BY ECO-SCIENCE PROFESSIONALS, INC. DATED OCTOBER 22, 2004.
- THERE ARE NO FLOOD PLANS, STREAMS, STREAM BUFFERS OR STEEP SLOPES (25% OR GREATER) WITHIN THIS SITE.
- THE GEOTECHNICAL REPORT FOR THIS PROJECT WAS PREPARED BY HILLS-CARNES ENGINEERING, ASSOC. DATED SEPTEMBER 27, 2004.
- THE TOTAL FOREST CONSERVATION OBLIGATION AMOUNT FOR THIS PROJECT IS 1.39 AC WHICH SHALL BE MET BY THE ON-SITE RETENTION OF 1.63 AC. WITHIN A FOREST CONSERVATION EASEMENT, WITH A DPW DEVELOPER'S AGREEMENT WITH SURETY IN THE TOTAL AMOUNT OF \$12,110.00.
- ALL LANDSCAPING REQUIREMENTS AS SET FORTH IN THE LANDSCAPE MANUAL SHALL BE COMPLIED WITH. FINANCIAL SURETY FOR THE REQUIRED LANDSCAPING HAS BEEN POSTED AS PART OF THE DPW DEVELOPER'S AGREEMENT IN THE AMOUNT OF \$10,050 (\$7,600 FOR 25 SHADE TREES, \$2,550 FOR 17 EVERGREENS).
- STORM WATER MANAGEMENT SHALL BE PROVIDED BY POCKET POND AND GRASSED SWALE. THE FACILITY IS HAZARD CLASSIFICATION 'A'. THE FACILITIES SHALL BE PRIVATELY OWNED AND JOINTLY MAINTAINED BY THE H.O.A. AND HOWARD COUNTY.
- NO DISTURBANCE SHALL OCCUR IN THE WETLANDS OR 25' WETLAND BUFFER EXCEPT AS PERMITTED BY THE DEPARTMENT OF PLANNING AND ZONING.
- STREET LIGHTS SHALL BE PROVIDED PER DESIGN MANUAL REQUIREMENTS.
- MINIMUM BUILDABLE LOT SIZE SHALL BE 6,000 SQUARE FEET.
- ALL EXISTING WELLS AND SEPTICS IF LOCATED ON THIS PROPERTY SHALL BE ABANDONED AND VERIFICATION OF THE ABANDONMENT SHALL BE SUBMITTED TO THE HEALTH DEPARTMENT PRIOR TO RECORDATION OF THE PLAT OF THE SUBDIVISION.
- ALL WELLS AND SEPTIC SYSTEMS SHALL BE ABANDONED 30 DAYS PRIOR TO FINAL PLAN SIGNATURE. A LICENSED WELL DRILLER SHALL ABANDON THE WELL(S) AND SUBMIT PROPER DOCUMENTATION TO HOWARD COUNTY HEALTH DEPT. THE CONTRACTOR SHALL HAVE THE SEPTIC SYSTEM(S) PUMPED OUT, TANKS AND/OR DRYWELLS CRUSHED AND FILLED WITH SUITABLE MATERIAL.
- FOR FLAG OR PIPE STEM LOTS, REFUSE COLLECTION, SNOW REMOVAL AND ROAD MAINTENANCE ARE PROVIDED TO THE JUNCTION OF THE FLAG OR PIPE STEM AND ROAD RIGHT-OF-WAY LINE AND NOT ONTO THE FLAG OR PIPE STEM LOT DRIVEWAY.
- DRIVEWAYS SHALL BE PROVIDED PRIOR TO ISSUANCE OF A USE AND OCCUPANCY PERMIT FOR ANY NEW DWELLINGS FOR FIRE AND EMERGENCY VEHICLES PER THE FOLLOWING MINIMUM REQUIREMENTS:
 - WIDTH - 12' (16' SERVING MORE THAN ONE RESIDENCE).
 - SURFACE - 6" OF COMPACT CRUSHER RUN BASE WITH TAR AND CHIP COATING.
 - GEOMETRY - MAX. 1.5% GRADE, MAX. 10% GRADE CHANGE & MIN. 45' TURNING RADIUS.
 - STRUCTURES/CULVERTS/BRIDGES - CAPABLE OF SUPPORTING 25 GROSS TONS (425 LOAD).
 - DRAINAGE ELEMENTS - CAPABLE OF SAFELY PASSING 100 YEAR FLOODPLAIN WITH NO MORE THAN 1 FOOT DEPTH OVER DRIVEWAY.
 - STRUCTURE CLEARANCES - MINIMUM 12 FEET.
 - MAINTENANCE - EFFICIENT TO INSURE ALL WEATHER USE.
- A MINIMUM 20 FOOT SPACING IS TO BE PROVIDED BETWEEN STREET LIGHTS AND STREET TREES.
- SPECIAL CONSIDERATION SHALL BE GIVEN TO BASEMENT CONSTRUCTION IN THIS DEVELOPMENT DUE TO POTENTIAL SOIL LIMITATIONS.
- THE DEPARTMENT OF RECREATION AND PARKS HAS AGREED TO ALLOW THE PUBLIC ACCESS ROAD ACROSS COUNTY OWNED OPEN SPACE WITHIN THE CURRY PROPERTY TO ACCESS MANORWOOD ROAD FOR AN AGREED UPON FEE WITH SECURITY DEVELOPMENT, IN ACCORDANCE WITH THEIR LETTER DATED SEPTEMBER 28, 2005.
- THE BOUNDARY IS BASED ON A BOUNDARY SURVEY PERFORMED BY BENCHMARK ENGINEERING INC. ON OR ABOUT SEPTEMBER, 2002.
- FILL AREAS SHALL MEET 95% COMPACTION PER ASTM-T180 WHERE STRUCTURALLY REQUIRED.
- ALL SIGN POSTS USED FOR TRAFFIC CONTROL SIGNS INSTALLED IN THE COUNTY RIGHT-OF-WAY SHALL BE MOUNTED ON A 2" GALVANIZED STEEL PERFORATED, SQUARE TUBE POST (14 GAUGE), INSERTED INTO A 2-1/2" GALVANIZED STEEL, PERFORATED, SQUARE TUBE SLEEVE (12 GAUGE) - 3' LONG A GALVANIZED STEEL POLE CAP SHALL BE MOUNTED ON TOP OF EACH POST.

LEGEND

EXISTING CONTOURS	999
PROPOSED CONTOURS	999
LIMIT OF WETLANDS	999
EXISTING WOODS LINE	999
EXISTING STRUCTURE	999
PROPOSED STRUCTURE	999
FOREST CONSERVATION EASEMENT (RETENTION)	999
NATURAL CONSERVATION AREA	999
PUBLIC SEWER, WATER AND UTILITY EASEMENT	999
PRIVATE USE-IN-COMMON ACCESS EASEMENT LOTS 4-6	999
RIP-RAP	999
PUBLIC STORM WATER MANAGEMENT, DRAINAGE & UTILITY EASEMENT	999
PUBLIC SIDEWALK EASEMENT	999
PUBLIC 10' TREE MAINTENANCE EASEMENT	999
20' PUBLIC STORM DRAIN & UTILITY EASEMENT	999

MINIMUM LOT SIZE CHART

LOT NO.	GROSS AREA	PIPESTEM AREA	MIN. LOT SIZE
2	10,743 S.F.	2,191 S.F.	8,552 S.F.
4	7,934 S.F.	714 S.F.	7,220 S.F.
5	8,689 S.F.	659 S.F.	8,030 S.F.
6	6,653 S.F.	91 S.F.	5,562 S.F.

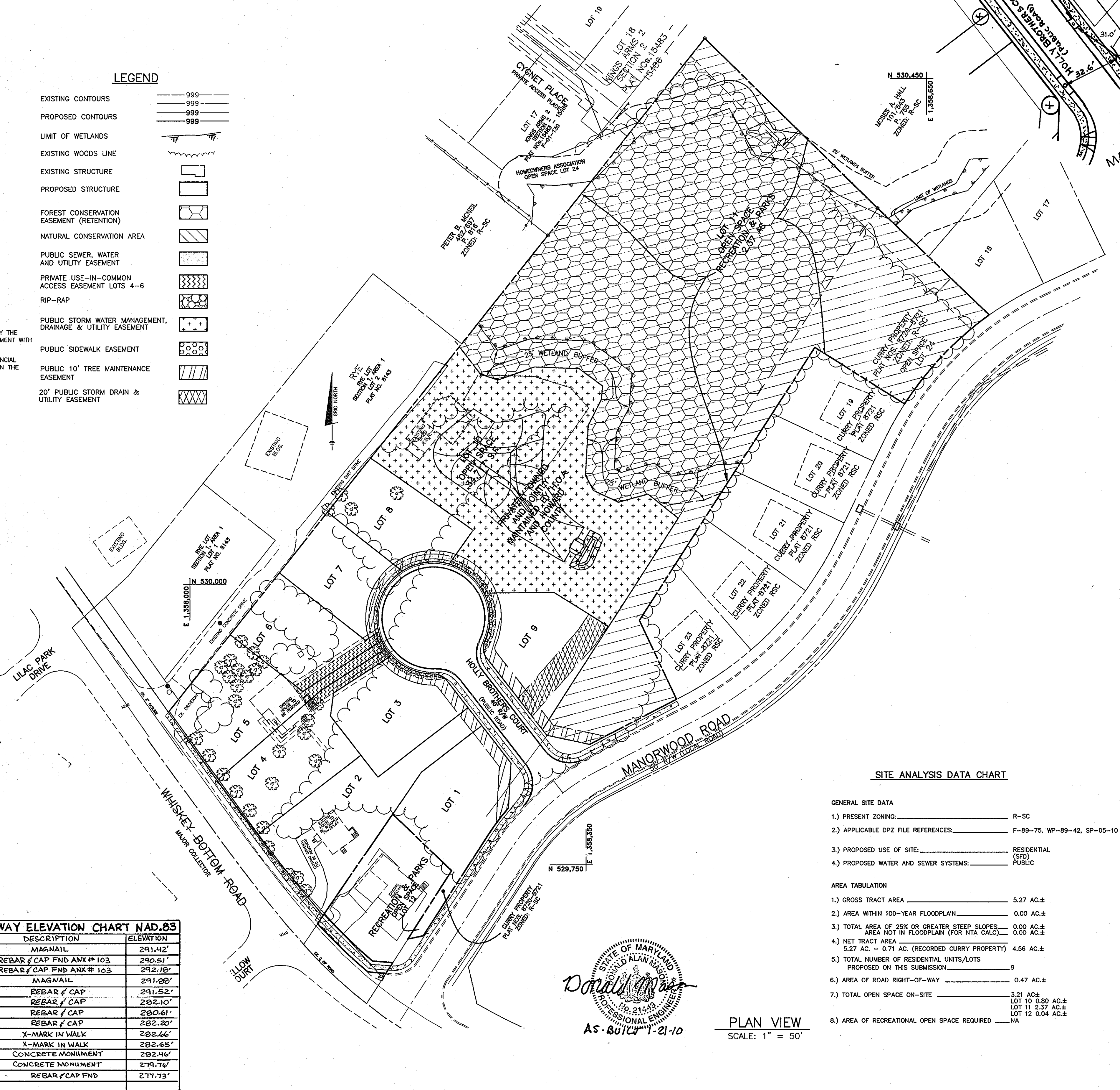
RIGHT OF WAY ELEVATION CHART NAD.83

R/W PT. NO.	DESCRIPTION	ELEVATION
1	MAGNAIL	291.42'
2	REBAR / CAP FND ANX # 103	290.51'
3	REBAR / CAP FND ANX # 103	292.18'
4	MAGNAIL	291.00'
5	REBAR / CAP	291.52'
6	REBAR / CAP	282.10'
7	REBAR / CAP	280.61'
8	REBAR / CAP	282.20'
9	X-MARK IN WALK	282.66'
10	X-MARK IN WALK	282.65'
11	CONCRETE MONUMENT	282.46'
12	CONCRETE MONUMENT	279.76'
13	REBAR / CAP FND	277.73'

APPROVED: DEPARTMENT OF PUBLIC WORKS
Walter R. ... 1-23-09
 CHIEF, BUREAU OF HIGHWAYS

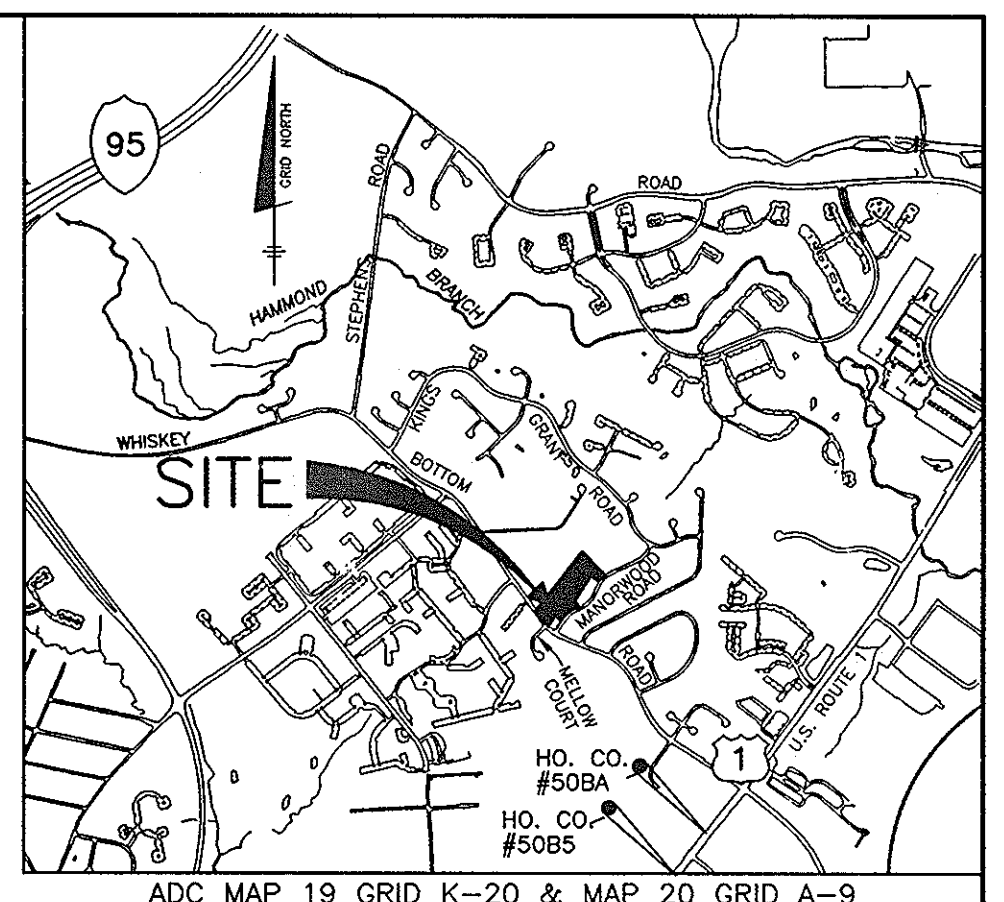
APPROVED: DEPARTMENT OF PLANNING AND ZONING
Cindy ... 1/29/08
 CHIEF, DIVISION OF LAND DEVELOPMENT

... 1/30/08
 CHIEF, DEVELOPMENT ENGINEERING DIVISION



BENCH MARKS-(NAD'83)

HO. CO. #508A	EL. N/A
STANDARD DISC ON CONC. MONUMENT	
N 527561.6702	E 1359772.5936
HO. CO. #5085	EL. 178.242
STANDARD DISC ON CONC. MONUMENT	
N 524999.3640	E 1357925.6751



SUMMARY

A Pocket Pond in drainage area B-2 is proposed for storage of the Cpv and WQv. The control structure will control the release to ensure that the runoff at the study point will be equal to or less than the existing condition run-off. Ground water recharge will be addressed with a diversion structure (M-1) and an underground stone chamber with void ratio of 40%.

Non-Structural Water Quality Provisions Summary

Area	Method	Rev (Provided)	Rev (Required)
B-2	Stone Chamber	0.014 ac-ft	0.013 ac-ft
Total		0.014 ac-ft	0.013 ac-ft
		Remaining Requirement	0.0000 AC

Note: Ground water recharge volume fully addressed with the stone chamber.

SWM Facility Summary

Facility	Type	Storage Volume/Elevations	
		WQv	Cpv
SWM #1	Pocket Pond	Req.	0.1126 ac-ft
		Prov.	0.1126 ac-ft / @ 268.90'
		Remaining	0.0 AC-FT
			0.1065 ac-ft / @ 270.00'

Note: The channel protection and water quality control are address fully with SWM Facility #1.

Drainage Area Summary

STUDY POINTS (DRAINAGE AREAS)	EXISTING DISCHARGE (CFS)	DEVELOPED DISCHARGE (CFS)		
		1 YR	10 YR	100 YR
#1	9.5	38.2	77.44	7.0
				35.1
				68.5

SITE ANALYSIS DATA CHART

- GENERAL SITE DATA
- PRESENT ZONING: R-SC
 - APPLICABLE DPZ FILE REFERENCES: F-89-75, WP-89-42, SP-05-10
 - PROPOSED USE OF SITE: RESIDENTIAL
 - PROPOSED WATER AND SEWER SYSTEMS: PUBLIC
- AREA TABULATION
- GROSS TRACT AREA: 5.27 AC.±
 - AREA WITHIN 100-YEAR FLOODPLAIN: 0.00 AC.±
 - TOTAL AREA OF 25% OR GREATER STEEP SLOPES: 0.00 AC.±
 - NET TRACT AREA: 5.27 AC. - 0.71 AC. (RECORDED CURRY PROPERTY) = 4.56 AC.±
 - TOTAL NUMBER OF RESIDENTIAL UNITS/LOTS PROPOSED ON THIS SUBMISSION: 9
 - AREA OF ROAD RIGHT-OF-WAY: 0.47 AC.±
 - TOTAL OPEN SPACE ON-SITE: 3.21 AC.±
 - AREA OF RECREATIONAL OPEN SPACE REQUIRED: NA

STATE OF MARYLAND
 DONALD M. ...
 PROFESSIONAL ENGINEER
 AS-BUILT 1-21-10

PLAN VIEW
 SCALE: 1" = 50'

BENCHMARK
 ENGINEERS & LAND SURVEYORS & PLANNERS
ENGINEERING, INC.

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 www.bel-civilengineering.com

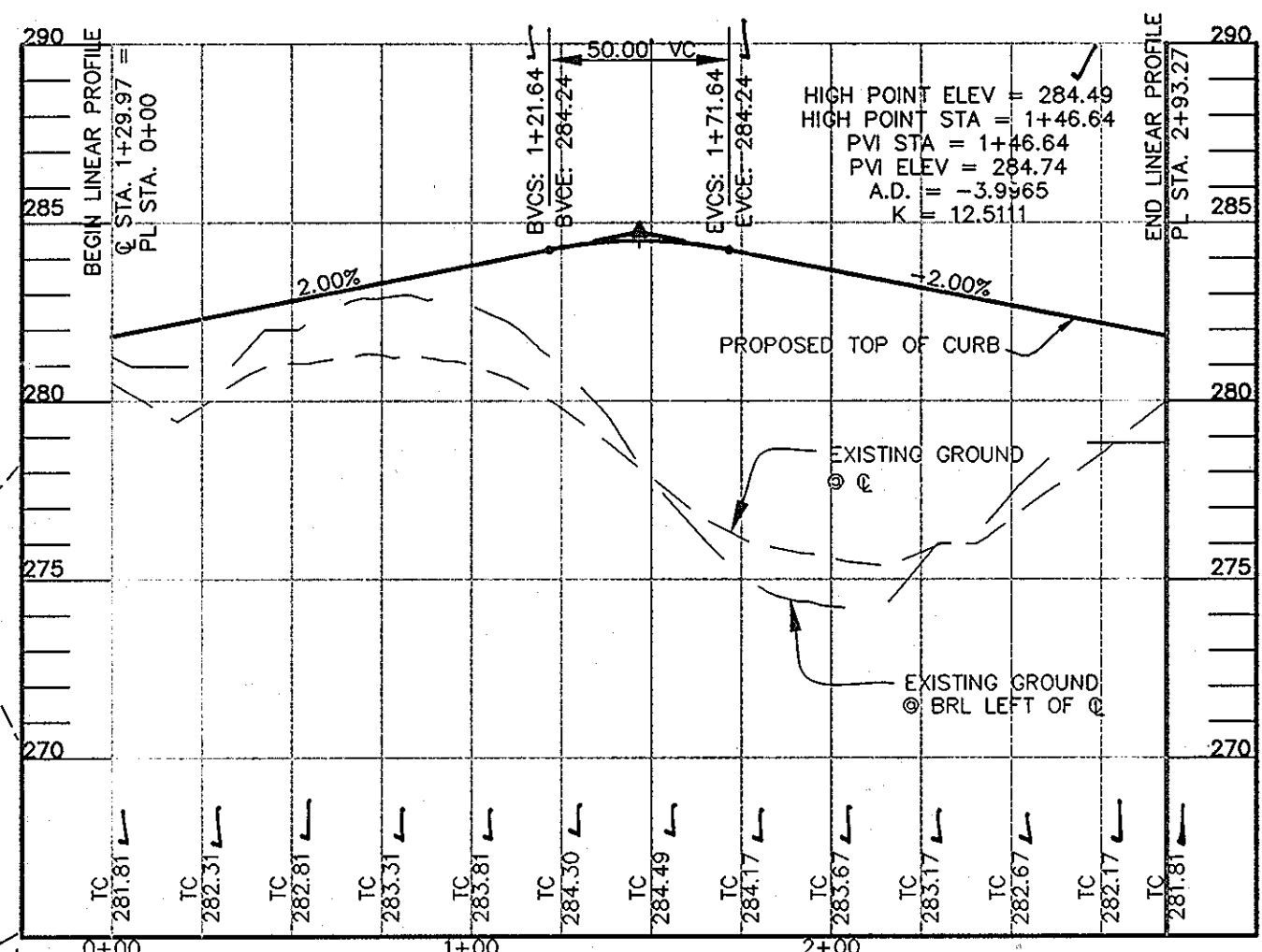
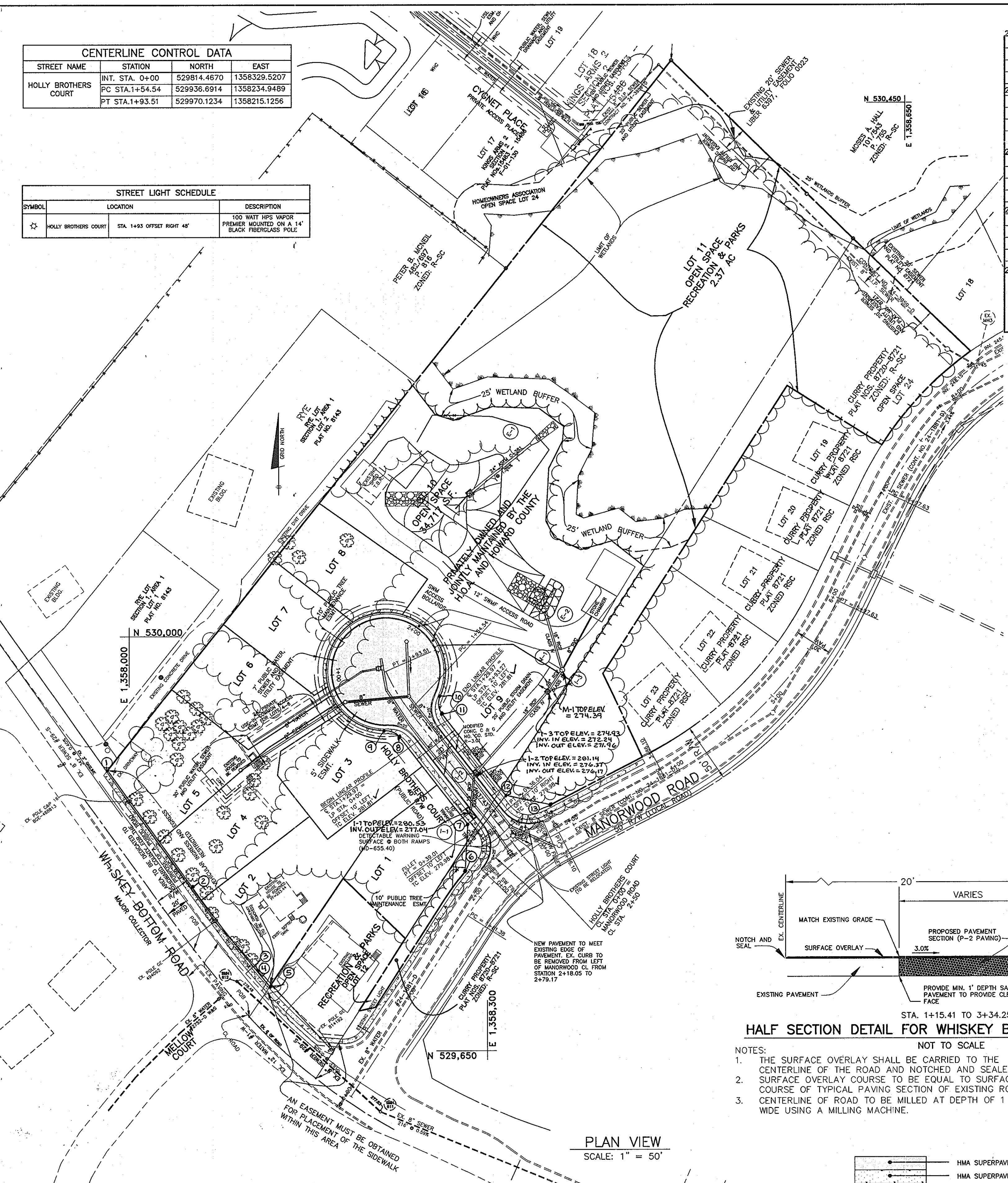
Professional Certification I hereby certify that these documents were prepared or approved by me, and that I am a duly licensed professional engineer under the laws of the State of Maryland, License No. 28559, Expiration Date: 7-22-2009.

NO.	DATE	REVISION

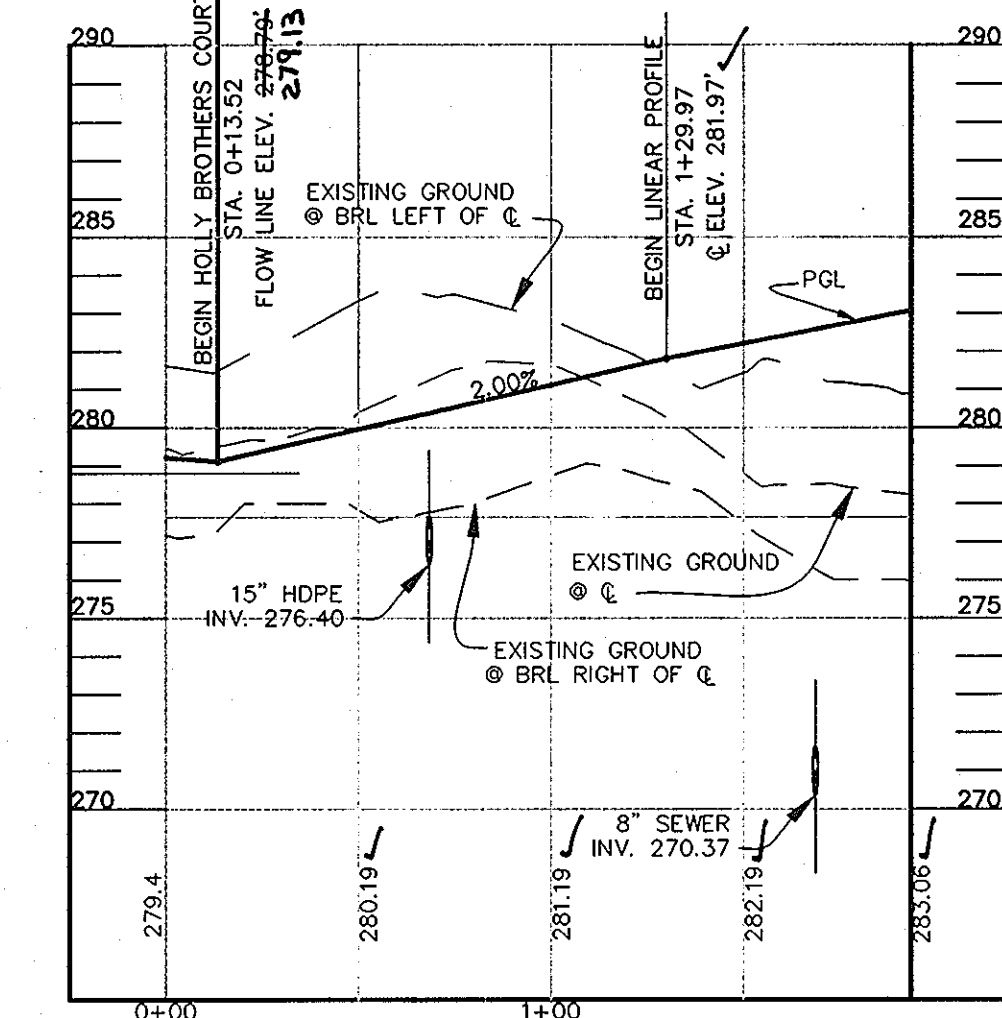
OWNERS: PARCEL: 176 AND 181 SECURITY DEVELOPMENT, LLC. P.O. BOX 417 ELLICOTT CITY, MARYLAND 21041 410-465-4244	PROJECT: KINGS ARMS SECTION 4 LOTS 1-9 AND OPEN SPACE LOTS 10 - 12
DEVELOPER: PARCEL: 176 AND 181 SECURITY DEVELOPMENT, LLC. P.O. BOX 417 ELLICOTT CITY, MARYLAND 21041 410-465-4244	LOCATION: TAX MAP: 47 PARCELS: 176, 178, 181 GRID: 22 ZONED: R-SC ELECTION DISTRICT NO. 6 HOWARD COUNTY, MARYLAND
TITLE: TITLE SHEET	DATE: NOVEMBER, 2008 PROJECT NO. 1275
DESIGN: BC DRAFT: EDD CHECK: DAM	SCALE: 1" = 50' SHEET 1 OF 8

CENTERLINE CONTROL DATA			
STREET NAME	STATION	NORTH	EAST
HOLLY BROTHERS COURT	INT. STA. 0+00	529814.4670	1358329.5207
	PC STA. 1+54.54	529936.6914	1358234.9489
	PT STA. 1+93.51	529970.1234	1358215.1256

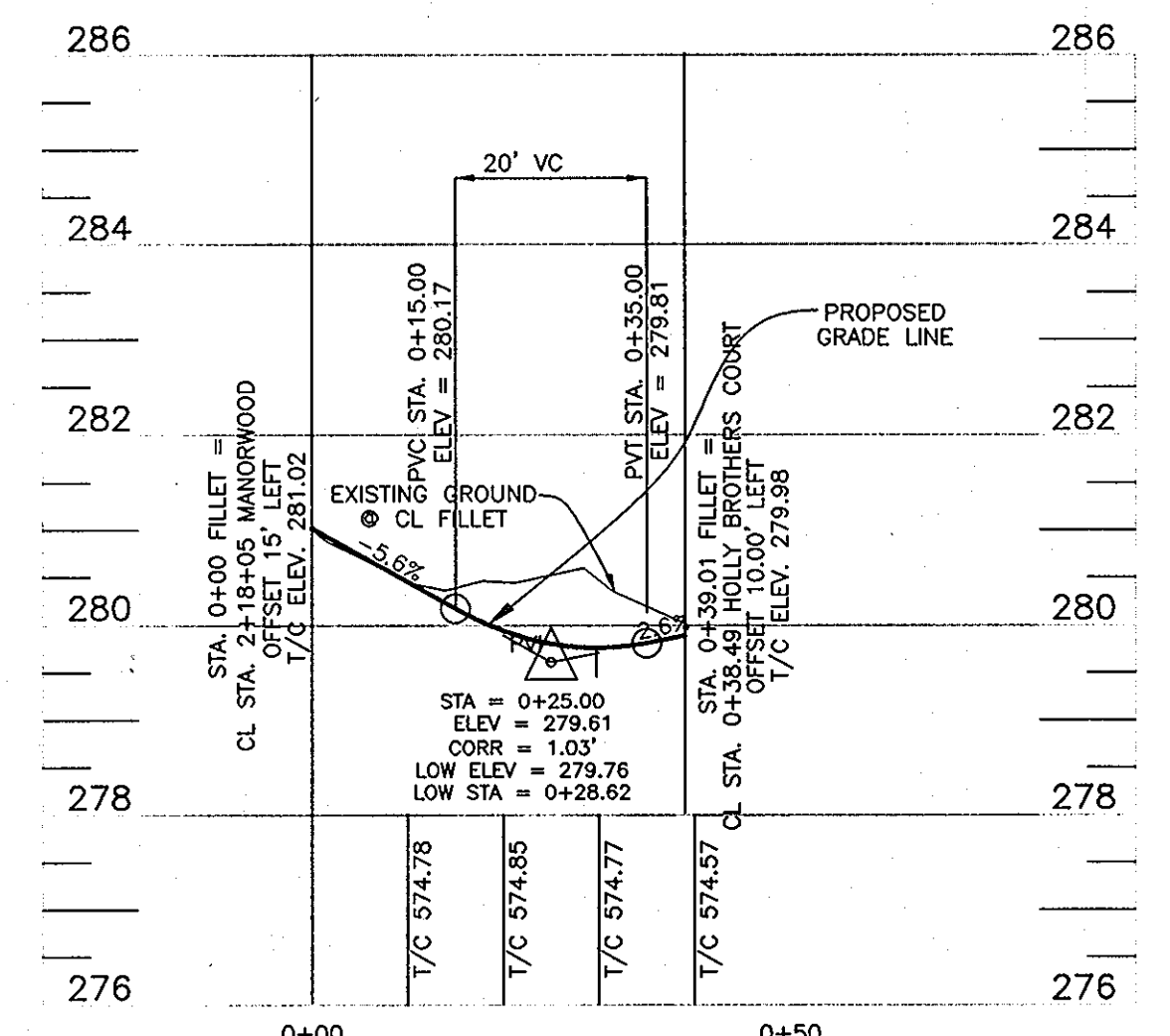
STREET LIGHT SCHEDULE		
SYMBOL	LOCATION	DESCRIPTION
☆	HOLLY BROTHERS COURT	100 WATT HPS VAPOR PRIMER MOUNTED ON A 14" BLACK FREEDRASS POLE



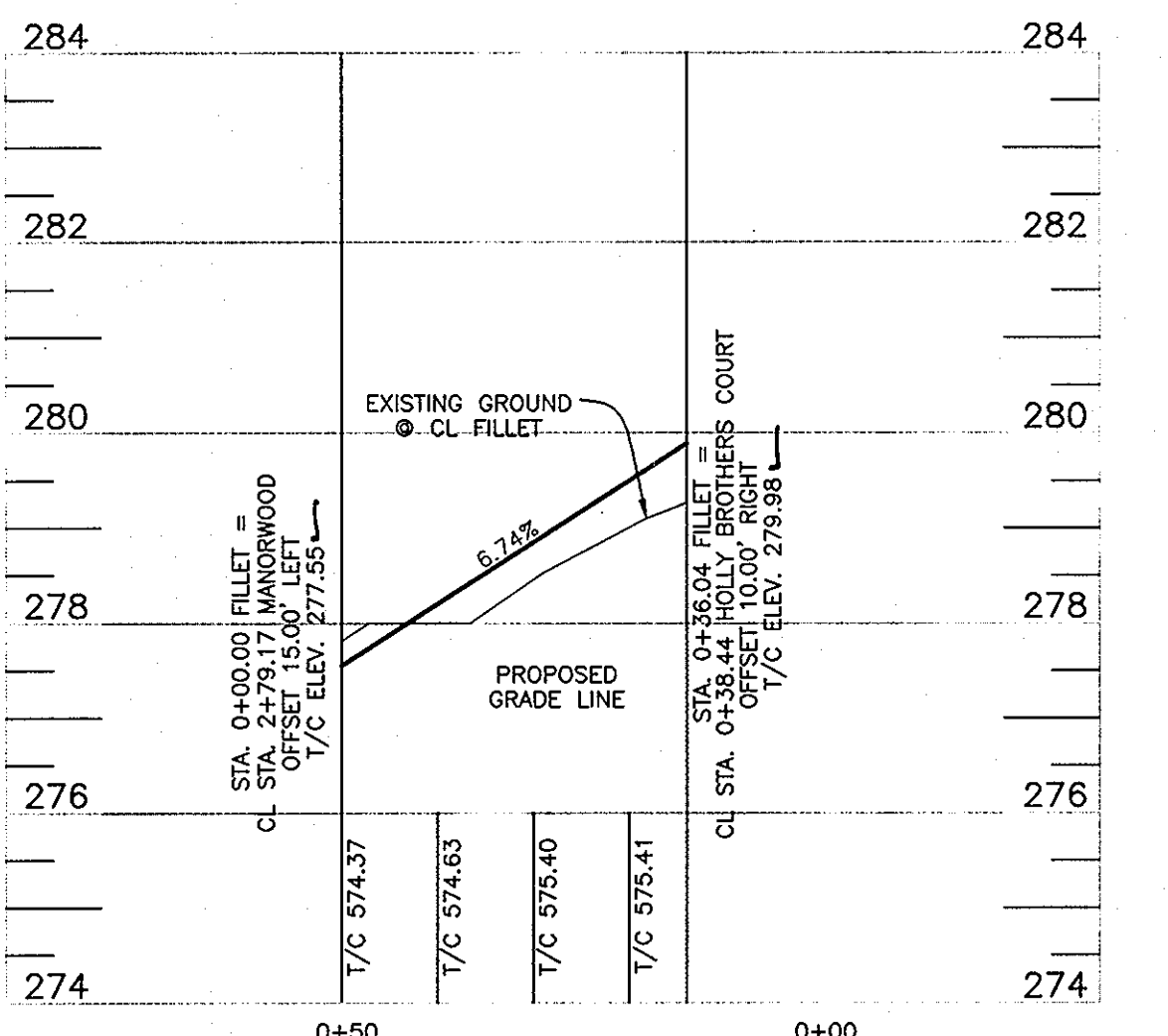
HOLLY BROTHERS COURT-CUL-DE-SAC
HOR.: 1" = 50'
VER.: 1" = 5'



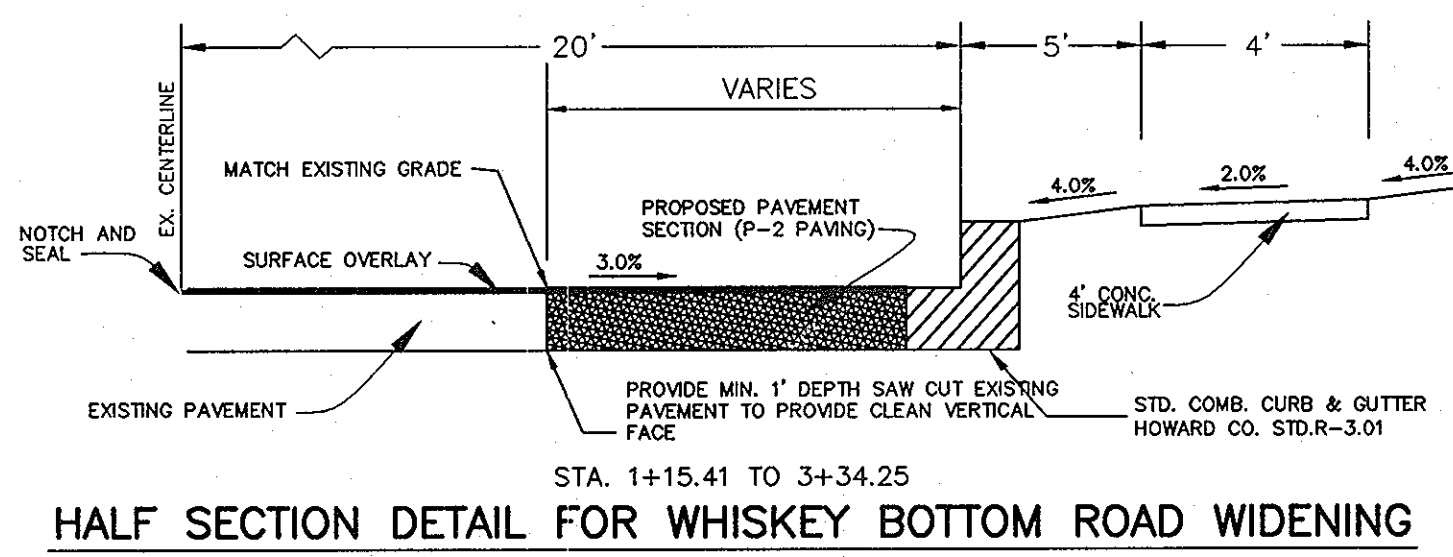
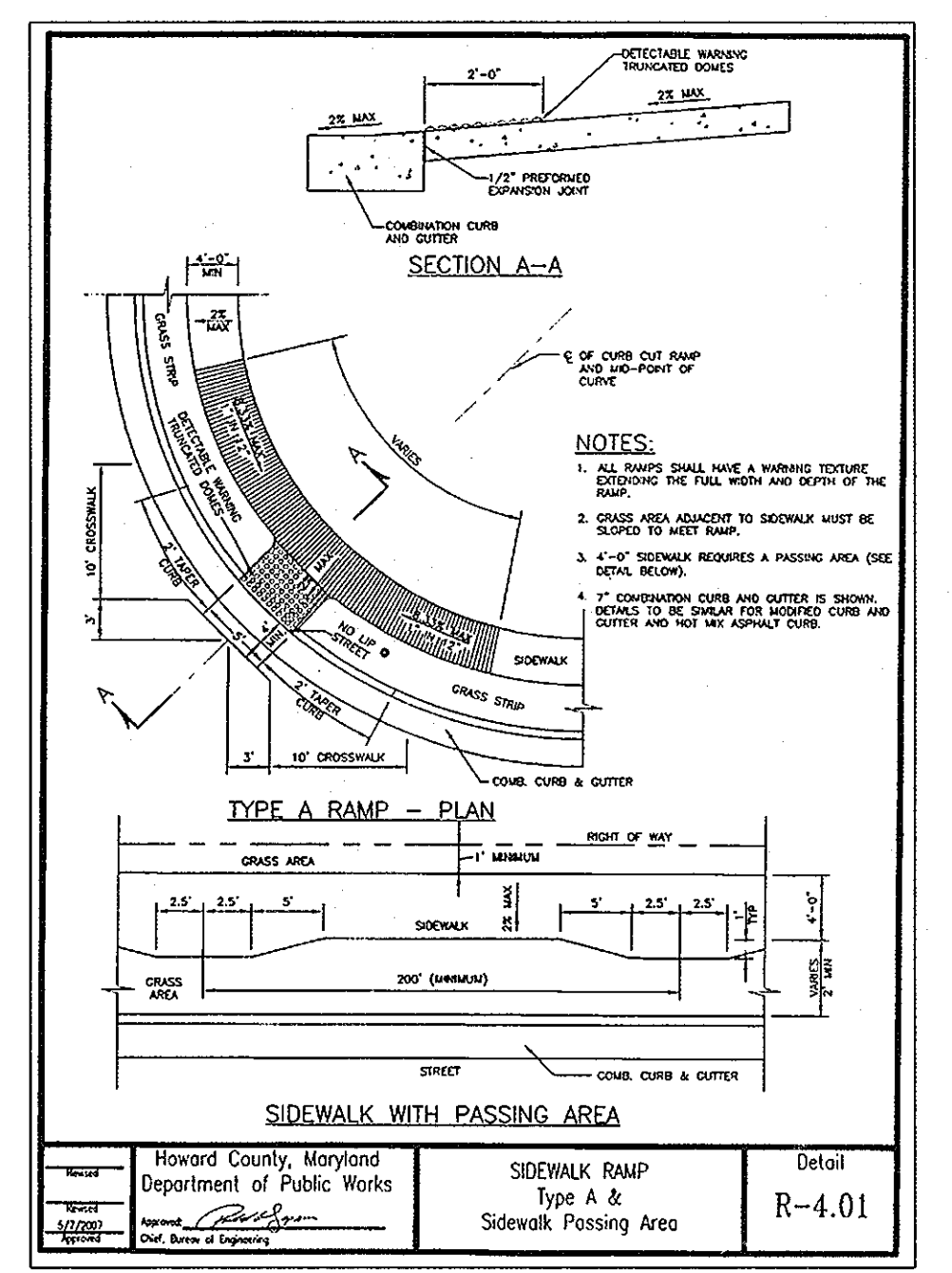
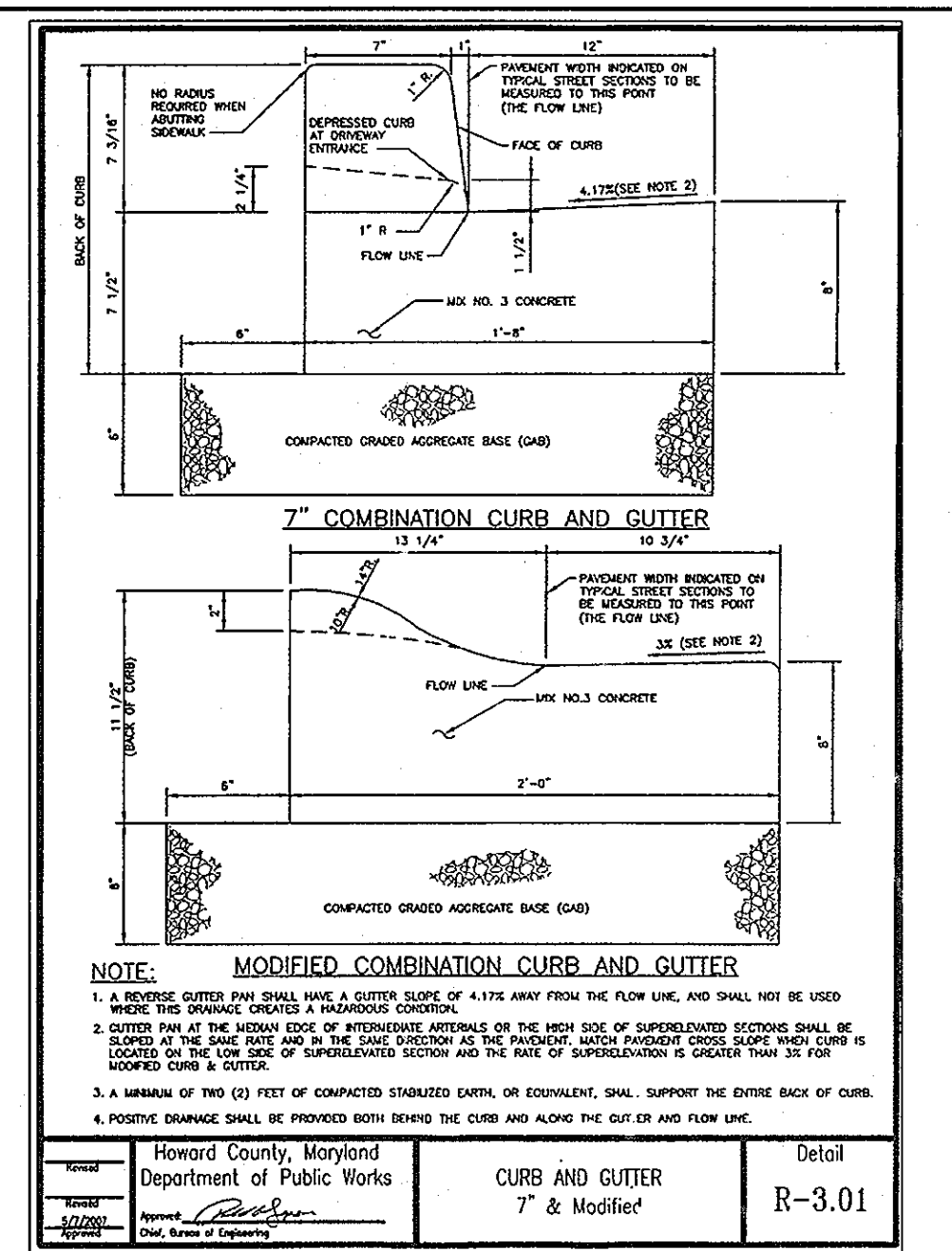
HOLLY BROTHERS COURT
HOR.: 1" = 50'
VER.: 1" = 5'



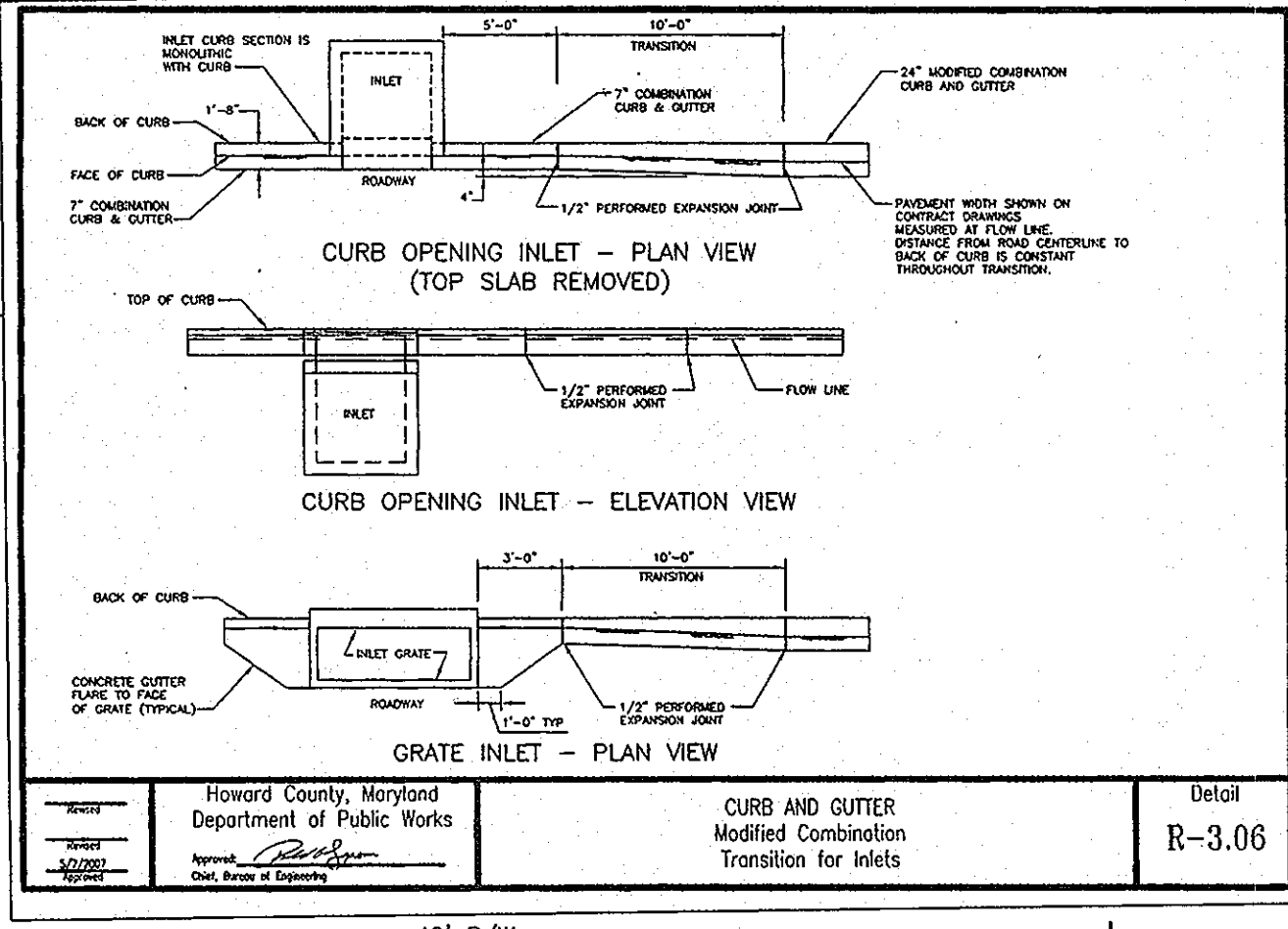
FILLET PROFILE SOUTHWEST CORNER
HOLLY BROTHERS COURT AND
MANORWOOD ROAD
SCALE: 1"=20' HORIZ., 1"=2' VERT.



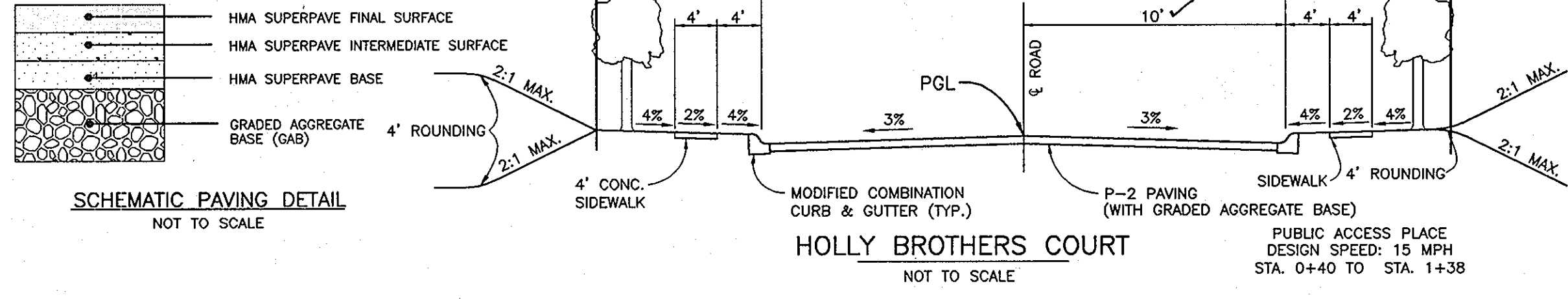
FILLET PROFILE NORTHWEST
CORNER HOLLY BROTHERS COURT
AND MANORWOOD ROAD
SCALE: 1"=20' HORIZ., 1"=2' VERT.



HALF SECTION DETAIL FOR WHISKEY BOTTOM ROAD WIDENING
NOT TO SCALE



CURB AND GUTTER
Modified Combination
Transition for Inlets
Detail R-3.06



CENTER LINE CURVE TABLE					
STREET NAME	STATION	RADIUS	ARC	TANGENT	CHORD
HOLLY BROTHERS COURT	STA. 1+54.54 TO STA. 1+93.51	157.99	38.97	14-07-52	19.58
					S30°39'56"E 38.97

APPROVED: DEPARTMENT OF PUBLIC WORKS
Willa F. Mahall 1-23-08
CHIEF, BUREAU OF HIGHWAYS

APPROVED: DEPARTMENT OF PLANNING AND ZONING
Cindy Adams 1/20/08
CHIEF, DIVISION OF LAND DEVELOPMENT

APPROVED: DEPARTMENT OF PUBLIC WORKS
Chad Williams 1/20/08
CHIEF, DEPARTMENT ENGINEERING DIVISION

SECTION NUMBER	ROAD AND STREET CLASSIFICATION	CALIFORNIA BEARING RATIO (CBR)		MIN. HMA WITH OVB		MIN. HMA WITH CONSTANT GAB	
		3 TO <3.5 TO <7	2.7	3 TO <3.5 TO <7	2.7	3 TO <3.5 TO <7	2.7
P-2	PARKING DRIVE ASIDES: RESIDENTIAL AND NON-RESIDENTIAL WITH NO MORE THAN 10 HEAVY TRUCKS PER DAY LOCAL, HOURLY, DAILY, ACCESS STREET CUL-DE-SACS, RESIDENTIAL	HMA SUPERPAVE FINAL SURFACE		1.5	1.5	1.5	1.5
		HMA SUPERPAVE INTERMEDIATE SURFACE		1.0	1.0	1.0	1.0
		HMA SUPERPAVE BASE		2.0	2.0	2.0	2.0
		GRADED AGGREGATE BASE (GAB)		8.0	4.0	3.0	4.0
P-3	PARKING DRIVE ASIDES: RESIDENTIAL AND NON-RESIDENTIAL WITH NO MORE THAN 10 HEAVY TRUCKS PER DAY LOCAL, HOURLY, DAILY, ACCESS STREET CUL-DE-SACS, RESIDENTIAL	HMA SUPERPAVE FINAL SURFACE		1.5	1.5	1.5	1.5
		HMA SUPERPAVE INTERMEDIATE SURFACE		1.0	1.0	1.0	1.0
		HMA SUPERPAVE BASE		3.0	3.0	3.0	3.0
		GRADED AGGREGATE BASE (GAB)		10.0	6.0	3.0	6.0

PAVING SPECIFICATIONS (HO.CO. STD R-2.01)

NO. DATE REVISION

BENCHMARK ENGINEERING, INC.
ENGINEERS & LAND SURVEYORS & PLANNERS
8480 BALTIMORE NATIONAL PIKE SUITE 418
ELLCOTT CITY, MARYLAND 21043
PHONE: 410-465-6105 FAX: 410-465-6644
WWW.BEL-CIVILENGINEERING.COM

OWNERS: PARCEL 178 AND 181 SECURITY DEVELOPMENT, LLC. P.O. BOX 417 ELLCOTT CITY, MARYLAND 21041

PROJECT: KINGS ARMS SECTION 4 LOTS 1-9 AND OPEN SPACE LOTS 10 - 12

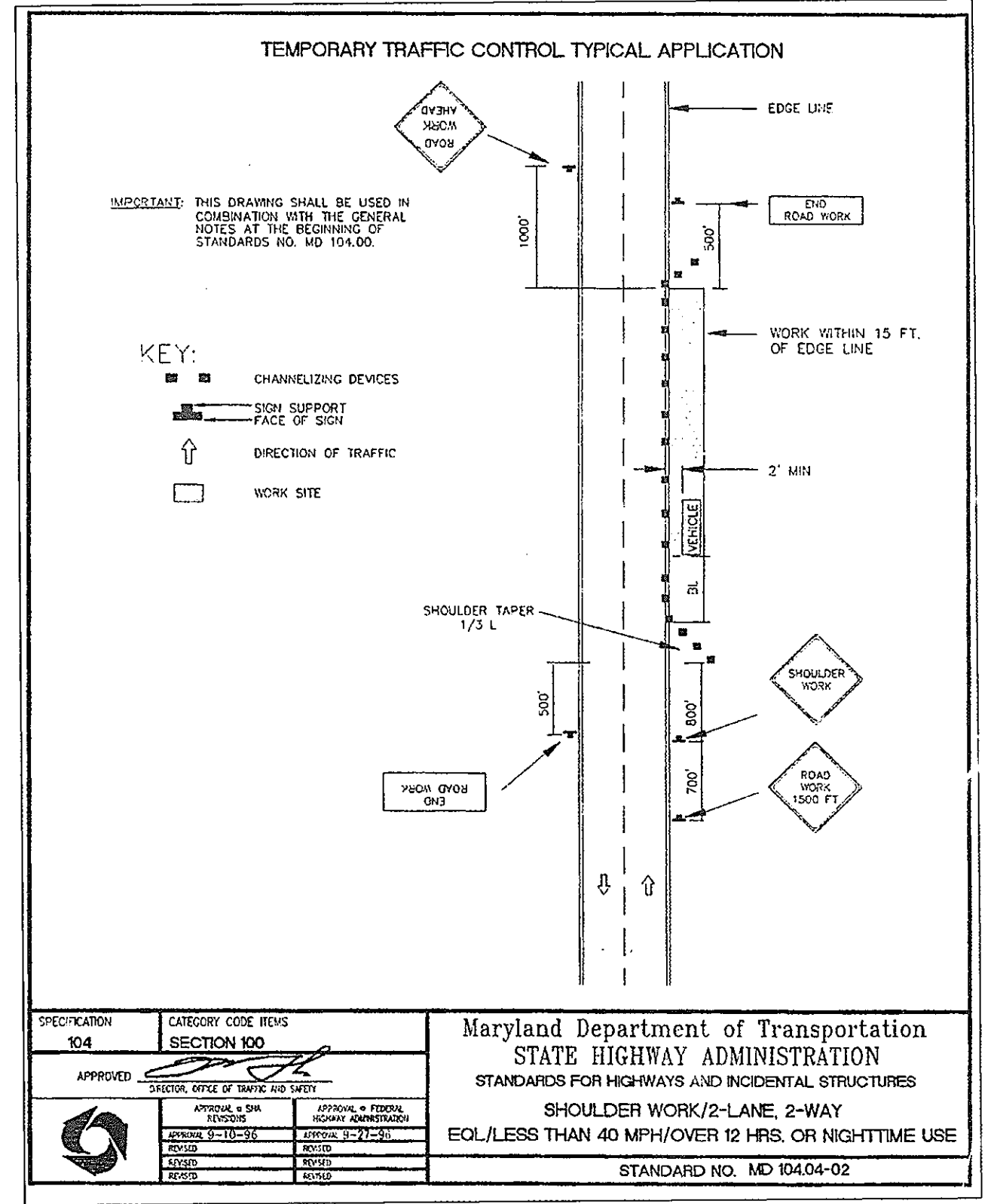
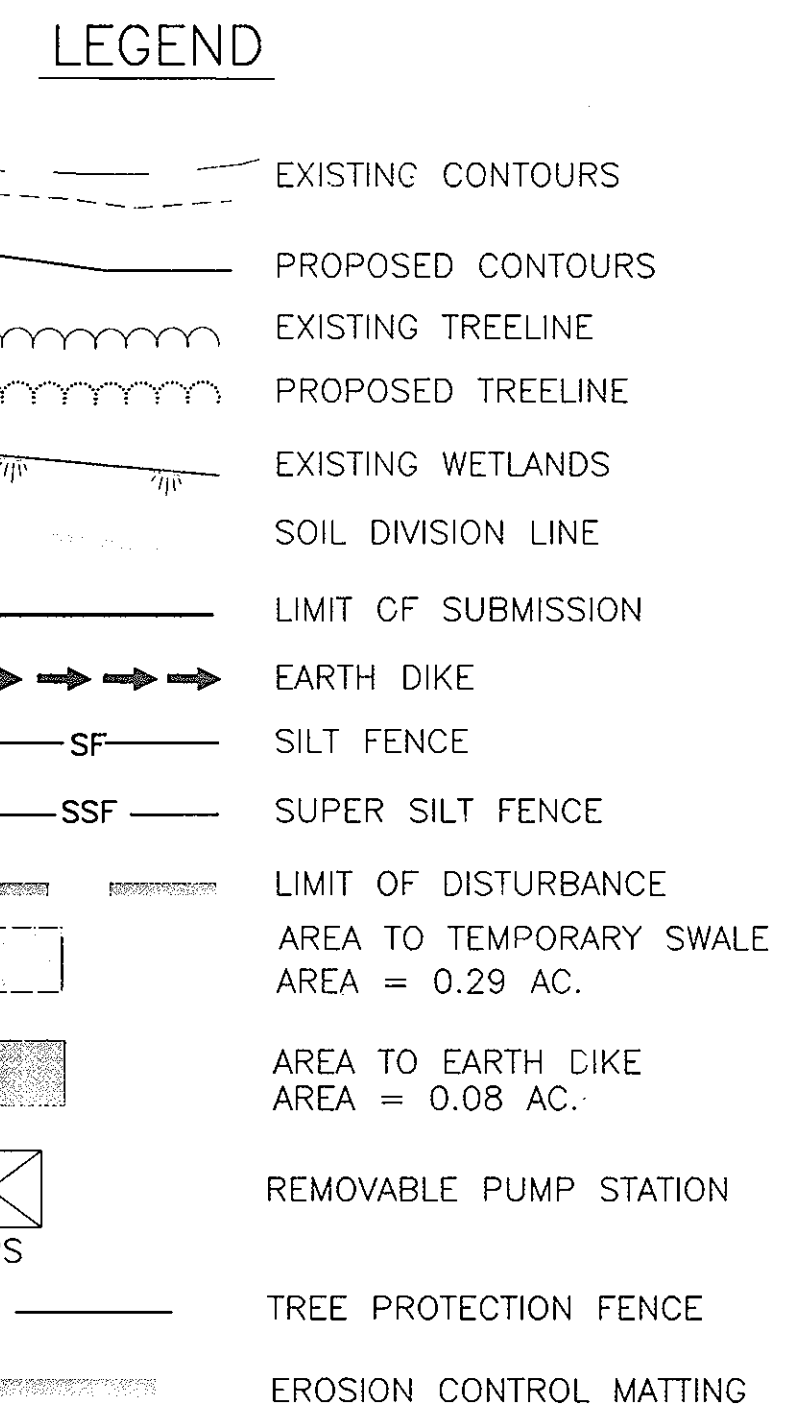
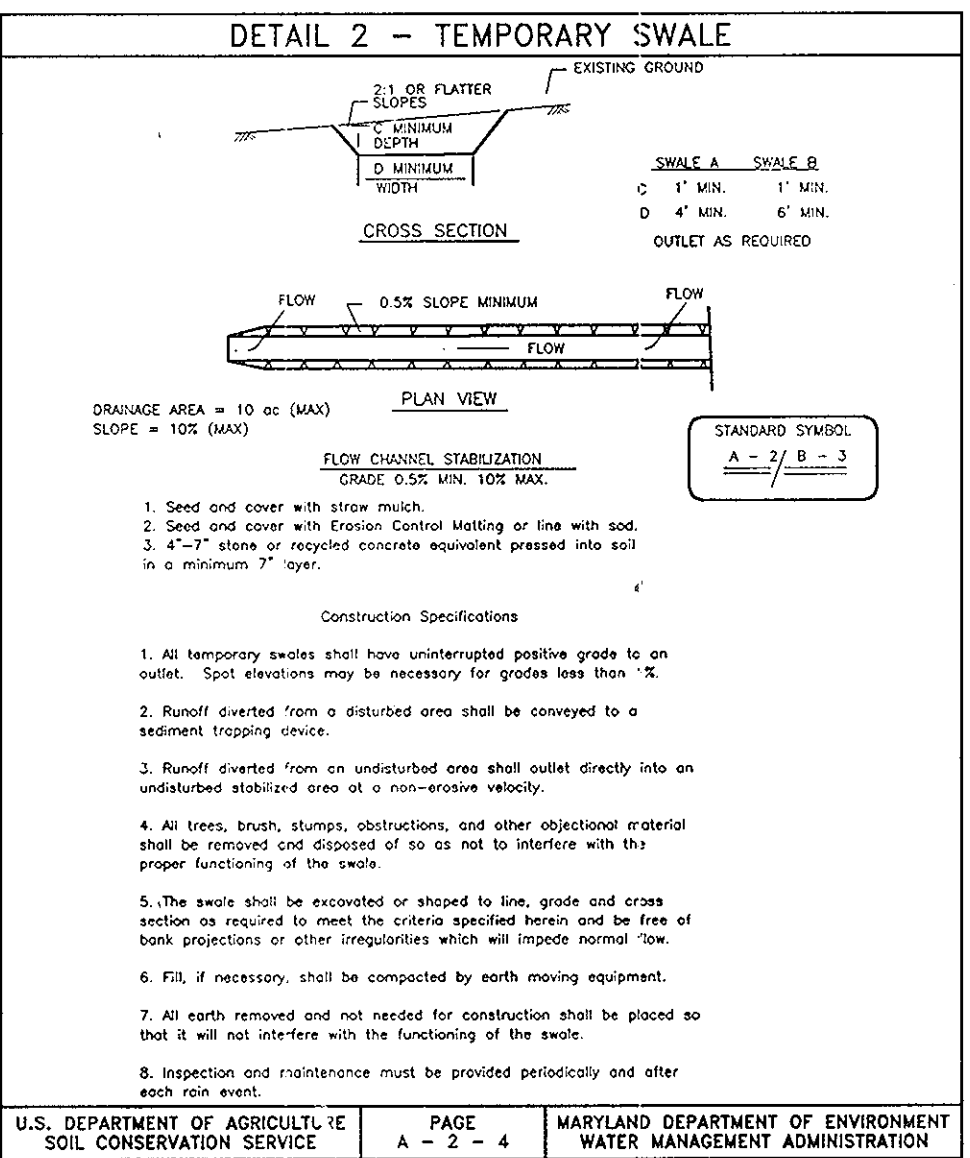
LOCATION: TAX MAP: 47 PARCELS: 176, 178, 181 GRID: 22 ZONED: R-SC ELECTION DISTRICT NO. 6 HOWARD COUNTY, MARYLAND

TITLE: ROAD PLAN

DATE: NOVEMBER, 2006 PROJECT NO. 1275
JANUARY, 2008 SHEET 2 OF 8

DESIGN: BC DRAFT: EDD CHECK: DAM SCALE: 1" = 50'

TEMPORARY BASIN #1
 PRE D.A. = 1.53 AC
 POST D.A. = 2.46 AC
 WET STORAGE ELEVATION = 268.77
 DRY STORAGE ELEVATION = 269.85
 DEPTH = 10' TOP OF EMBANKMENT
 REQ. AND PROVIDED WET VOL. = 4,428± C.F.
 REQ. AND PROVIDED DRY VOL. = 8,856± C.F.
 RISER BARREL SIZE = 24" DIA
 OUTFALL LENGTH = 66'
 EMBANKMENT ELEV. = 274.00
 CLEANOUT ELEV. = 268.08
 EXIST Q1(@ STUDY PT) = 1.48 CFS
 DEVELOPED Q1(@ STUDY PT) = 0.77 CFS



AS-BUILT CERTIFICATION
 I HEREBY CERTIFY THAT THE FACILITY SHOWN ON THESE PLANS WAS CONSTRUCTED AS SHOWN ON THE "AS-BUILT" PLANS AND MEETS THE APPROVED...
 Donald M... 2/14/23
 1-21-10
ENGINEER'S CERTIFICATE
 I HEREBY CERTIFY THAT THIS PLAN FOR POND CONSTRUCTION, SEDIMENT AND EROSION CONTROL REPRESENTS A PRACTICAL AND WORKABLE PLAN BASED ON MY PERSONAL KNOWLEDGE OF THE SITE CONDITIONS AND THAT IT WAS PREPARED IN ACCORDANCE WITH THE REQUIREMENTS OF THE HOWARD SOIL CONSERVATION DISTRICT...
 Brian F. Cleary P.E. # 28359 1/10/2003
DEVELOPER'S CERTIFICATE
 I/WE CERTIFY THAT ALL DEVELOPMENT AND CONSTRUCTION WILL BE DONE ACCORDING TO THIS PLAN OF DEVELOPMENT FOR SEDIMENT AND EROSION CONTROL...
 James R. Misphey, III 1/10/08
 APPROVED: DEPARTMENT OF PUBLIC WORKS
 APPROVED: DEPARTMENT OF PLANNING AND ZONING

SOILS LEGEND

MAP SYMBOL	SOIL GROUP	SOIL TYPE
* BeC3	C	BELTSVILLE SILT LOAM, 5 TO 10 PERCENT SLOPES, SEVERELY ERODED
* BeB2	C	BELTSVILLE SILT LOAM, 1 TO 5 PERCENT SLOPES, MODERATELY ERODED
EvB	A	EVESBORO LOAMY SAND, 1 TO 5 PERCENT SLOPES
Li	D	LEONARDTOWN SILT LOAM

* INDICATES HYDRIC SOILS
 TAKEN FROM SOILS SURVEY, ISSUED JULY 1968, MAP NO. 33

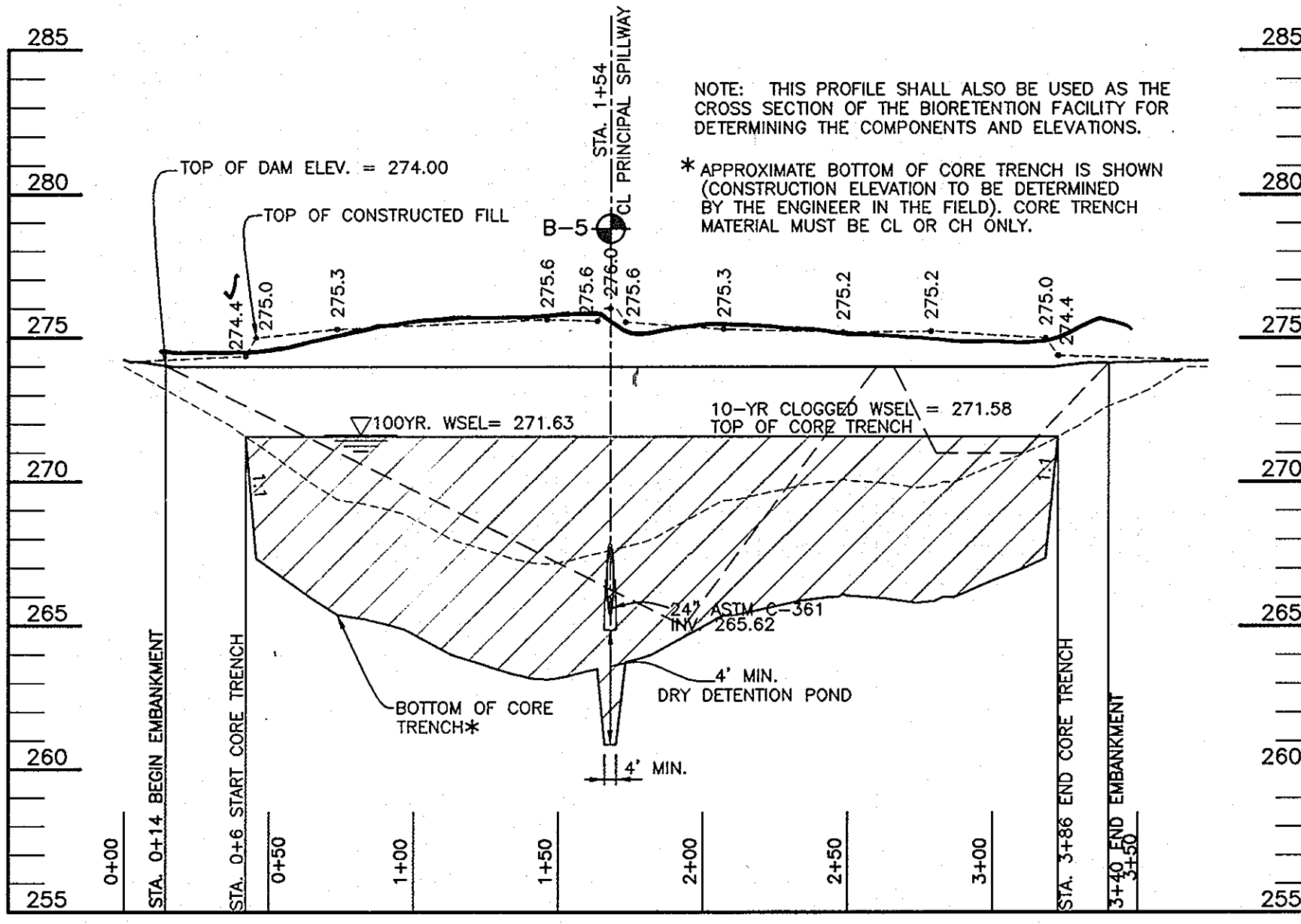
PLAN VIEW
 SCALE: 1" = 50'

NOTES:
 1. CONTRACTOR SHALL CURL ALL ENDS OF SILT FENCE AND SUPER SILT FENCE UPHILL BY 2 FEET IN ELEVATION.
 2. THE DIKE LOCATED IN THE AREA OF THE STABILIZED CONSTRUCTION ENTRANCE SHALL BE A MOUNTABLE BERM.

BENCHMARK ENGINEERING, INC.
 8480 BALTIMORE NATIONAL PIKE SUITE 418
 ELLICOTT CITY, MARYLAND 21043
 phone: 410-465-6105 • fax: 410-465-6844
 www.bei-civilengineering.com

PROFESSIONAL CERTIFICATION: I hereby certify that these documents were prepared or approved by me, and that I am a duly licensed professional engineer under the laws of the State of Maryland, License No. 28559, Expiration Date: 7-22-2009.

OWNERS:	PARCEL: 176 AND 181 SECURITY DEVELOPMENT, LLC. P.O. BOX 417 ELLICOTT CITY, MARYLAND 21041 410-465-4244	PROJECT:	KINGS ARMS SECTION 4 LOTS 1-9 AND OPEN SPACE LOTS 10 - 12
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DESIGN:	BC	DRAFT:	EDD
CHECK:	DAM	DATE:	NOVEMBER, 2006 JANUARY, 2008
SCALE:	1" = 50'	PROJECT NO.:	1275
		SHEET:	3 OF 8



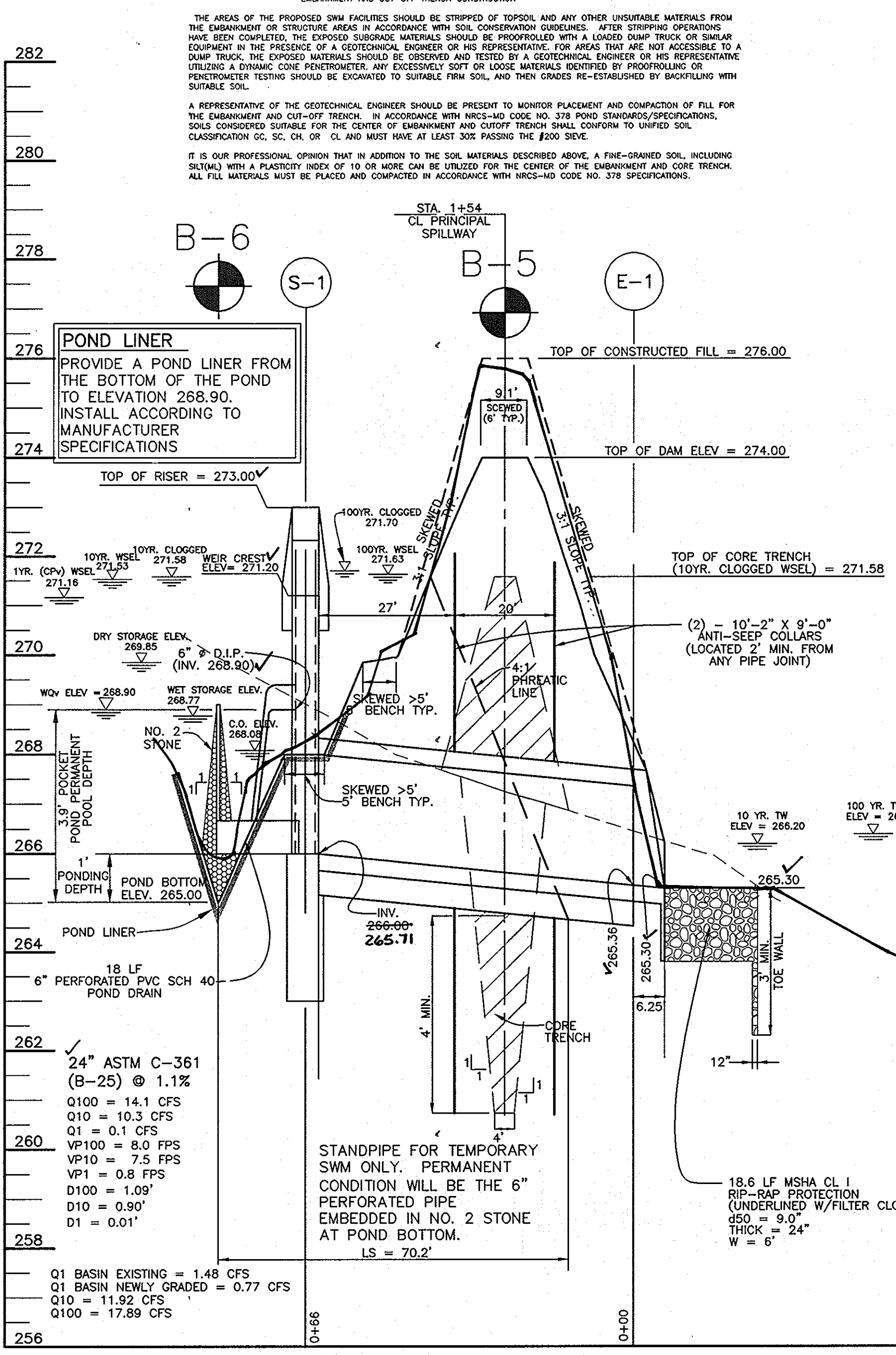
GEOTECHNICAL ENGINEER RECOMMENDATIONS:

EMBANKMENT AND CUT-OFF TRENCH CONSTRUCTION

THE AREAS OF THE PROPOSED SWM FACILITIES SHOULD BE STRIPPED OF TOPSOIL AND ANY OTHER UNSUITABLE MATERIALS FROM THE EMBANKMENT OR STRUCTURE AREAS IN ACCORDANCE WITH SOIL CONSERVATION GUIDELINES. AFTER STRIPPING OPERATIONS HAVE BEEN COMPLETED, THE EXPOSED SUBGRADE MATERIALS SHOULD BE PROTECTED WITH A LOGGED DRAIN TRUCK OR SIMILAR EQUIPMENT IN THE PRESENCE OF A GEOTECHNICAL ENGINEER OR HIS REPRESENTATIVE. FOR AREAS THAT ARE NOT ACCESSIBLE TO A DRAIN TRUCK, THE EXPOSED MATERIALS SHOULD BE COVERED AND TESTED BY A GEOTECHNICAL ENGINEER OR HIS REPRESENTATIVE. UTILIZING A DYNAMIC CONE PENETROMETER, AN EXCESSIVELY SOFT OR LOOSE MATERIALS IDENTIFIED BY PROFILING OR PENETROMETER TESTING SHOULD BE DEGRADED TO SUITABLE FIRM SOIL, AND THEN GRADES RE-ESTABLISHED BY BACKFILLING WITH SUITABLE SOIL.

A REPRESENTATIVE OF THE GEOTECHNICAL ENGINEER SHOULD BE PRESENT TO MONITOR PLACEMENT AND COMPACTION OF FILL FOR THE EMBANKMENT AND CUT-OFF TRENCH. IN ACCORDANCE WITH MDS-10 CODE NO. 378 POND STANDARDS/SPECIFICATIONS, SOILS CONSIDERED SUITABLE FOR THE CENTER OF EMBANKMENT AND CUTOFF TRENCH SHALL CONFORM TO UNIFIED SOIL CLASSIFICATION GC, SC, CK OR CL AND MUST HAVE AT LEAST 30% PASSING THE #200 SIEVE.

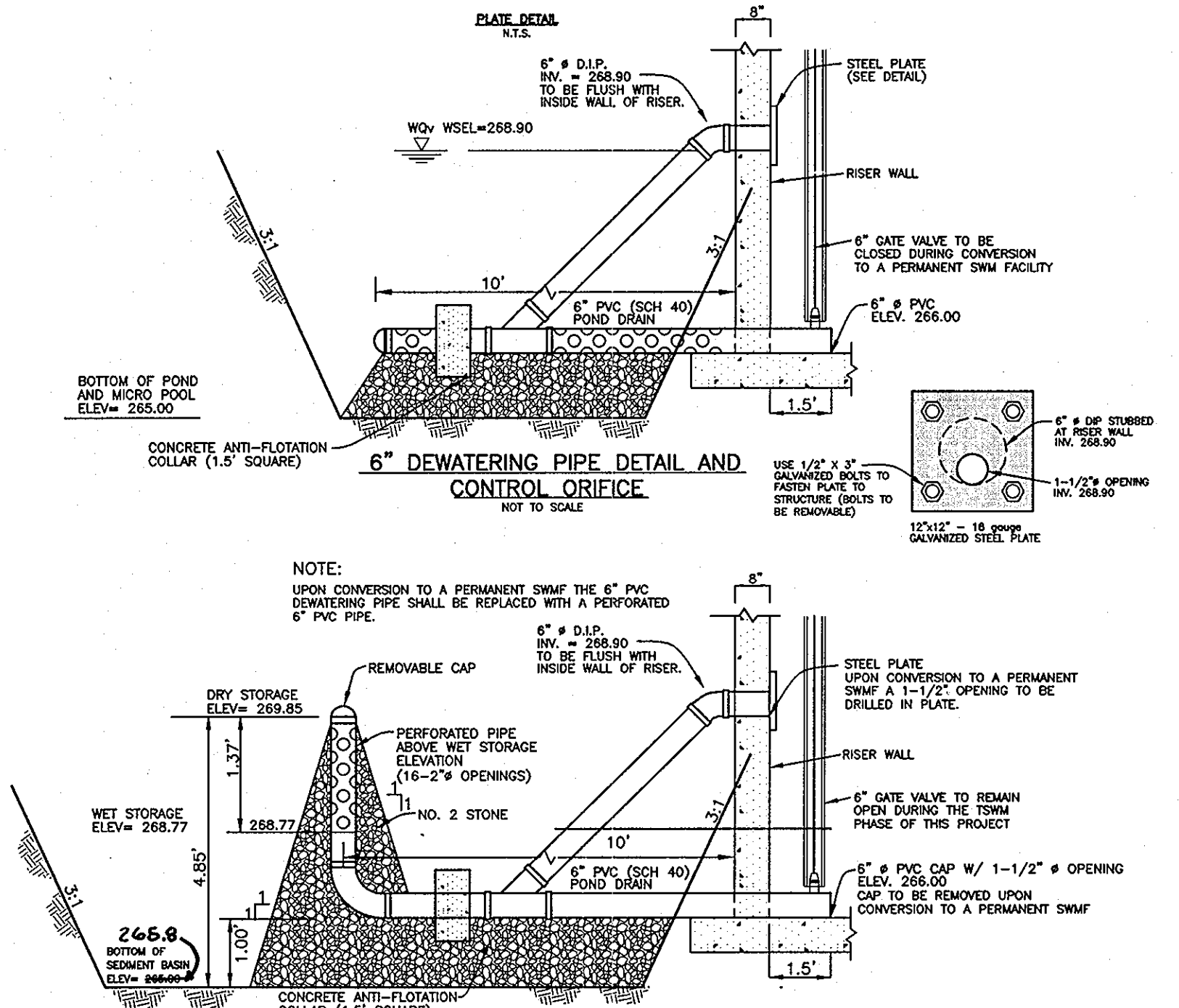
IT IS OUR PROFESSIONAL OPINION THAT IN ADDITION TO THE SOIL MATERIALS DESCRIBED ABOVE, A FINE-GRAINED SOIL, INCLUDING SILT AND A PLASTICITY INDEX OF 10 OR MORE CAN BE UTILIZED FOR THE CENTER OF THE EMBANKMENT AND CORE TRENCH. ALL FILL MATERIALS MUST BE PLACED AND COMPACTED IN ACCORDANCE WITH MDS-10 CODE NO. 378 SPECIFICATIONS.



POND LINER
PROVIDE A POND LINER FROM THE BOTTOM OF THE POND TO ELEVATION 265.00. INSTALL ACCORDING TO MANUFACTURER SPECIFICATIONS.

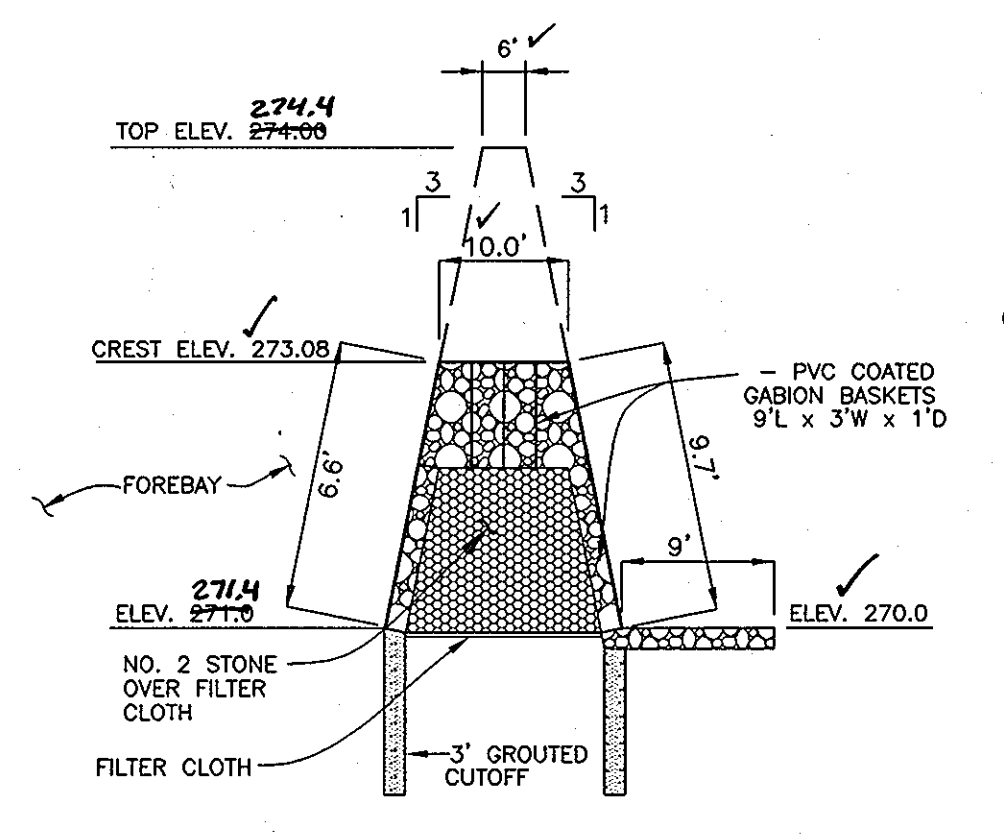
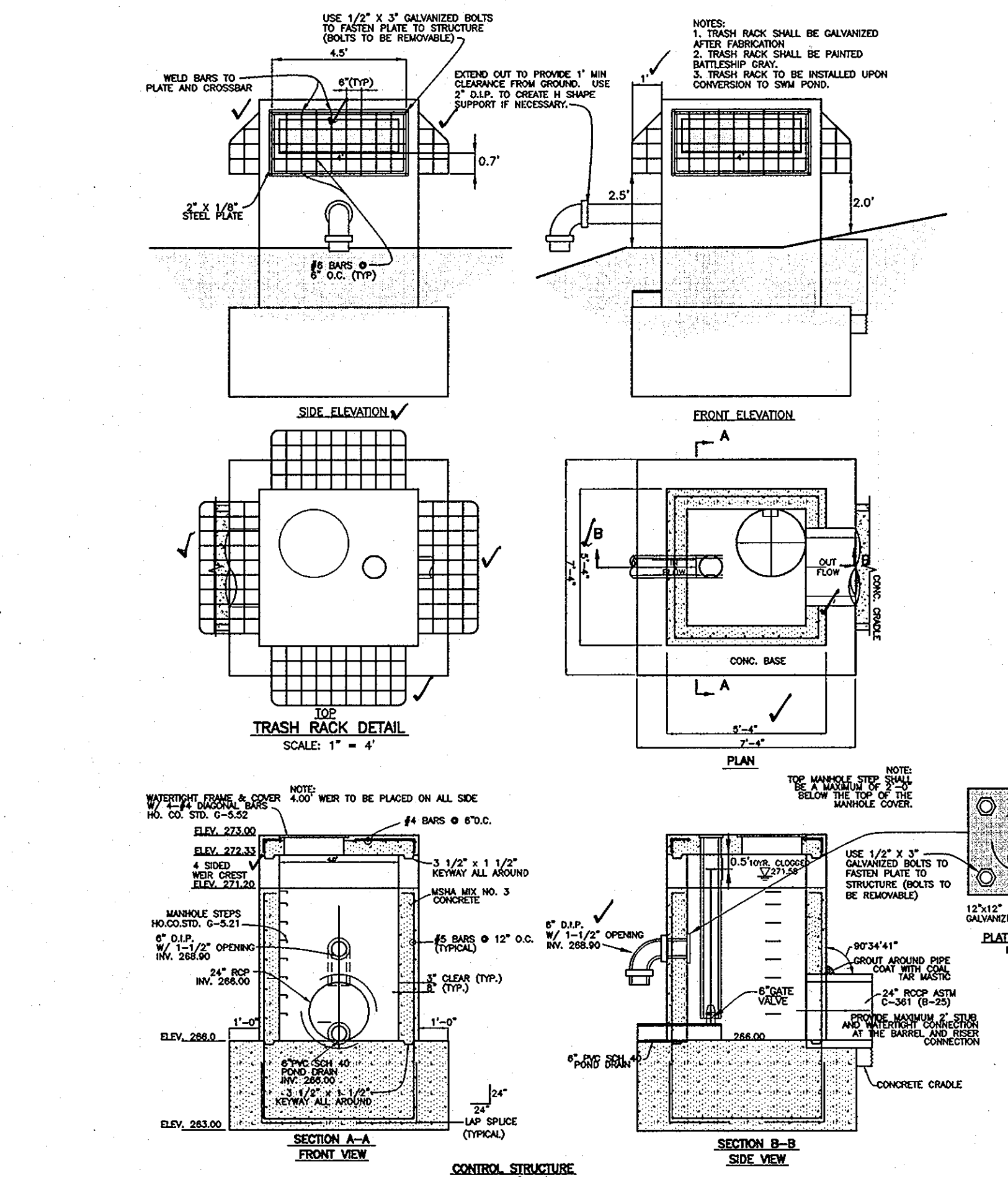
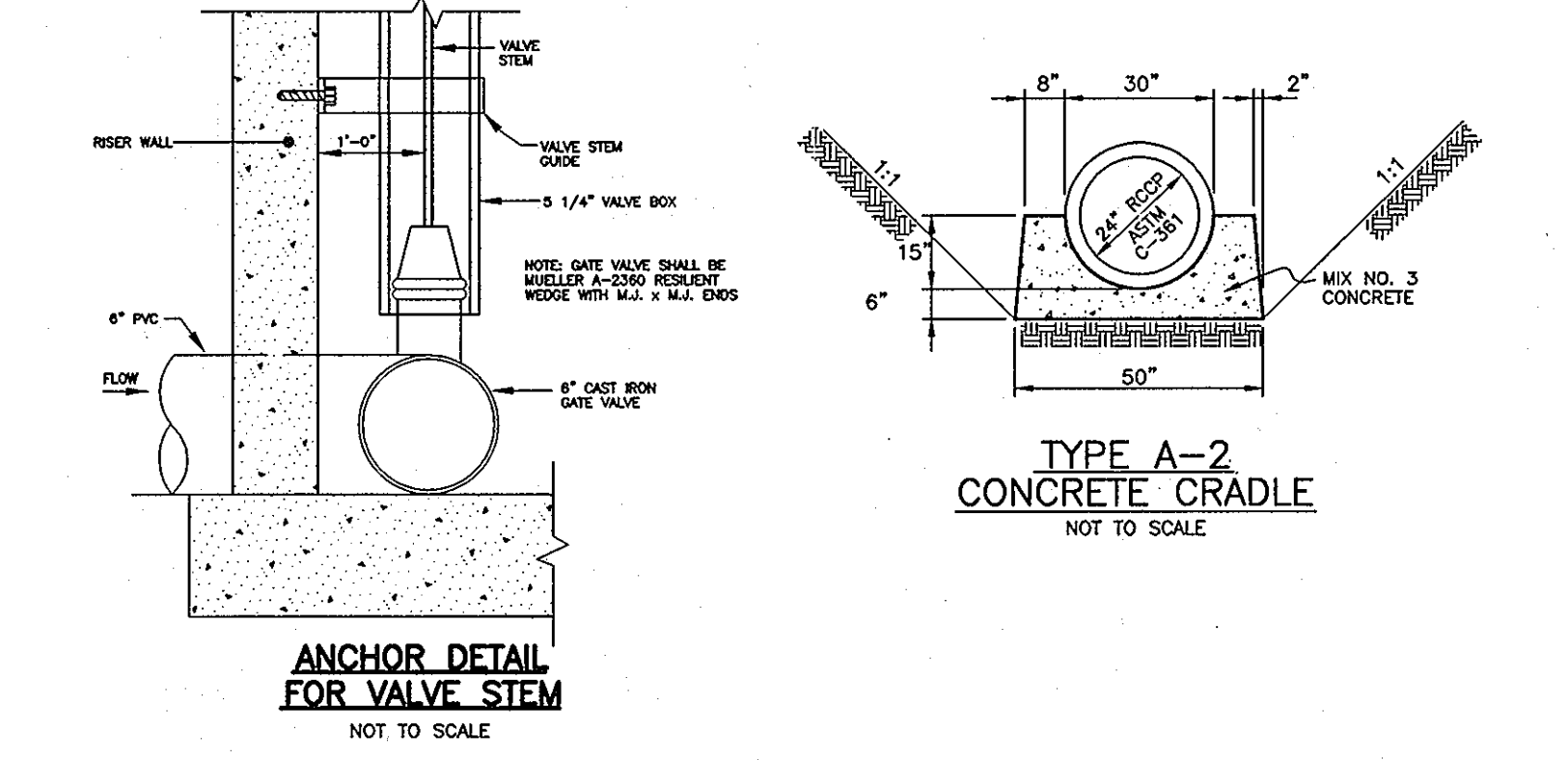
STANDPIPE FOR TEMPORARY SWM ONLY. PERMANENT CONDITION WILL BE THE 6" PERFORATED PIPE EMBEDDED IN NO. 2 STONE AT POND BOTTOM.

Q1 BASIN EXISTING = 1.48 CFS
Q1 BASIN NEWLY GRADED = 0.77 CFS
Q10 = 11.92 CFS
Q100 = 17.89 CFS



BASIN #1 6" TEMPORARY SWM VERTICAL DRAW-DOWN DEVICE
NOT TO SCALE

NOTE: UPON CONVERSION TO A PERMANENT SWM THE 6" PVC DEWATERING PIPE SHALL BE REPLACED WITH A PERFORATED 6" PVC PIPE.



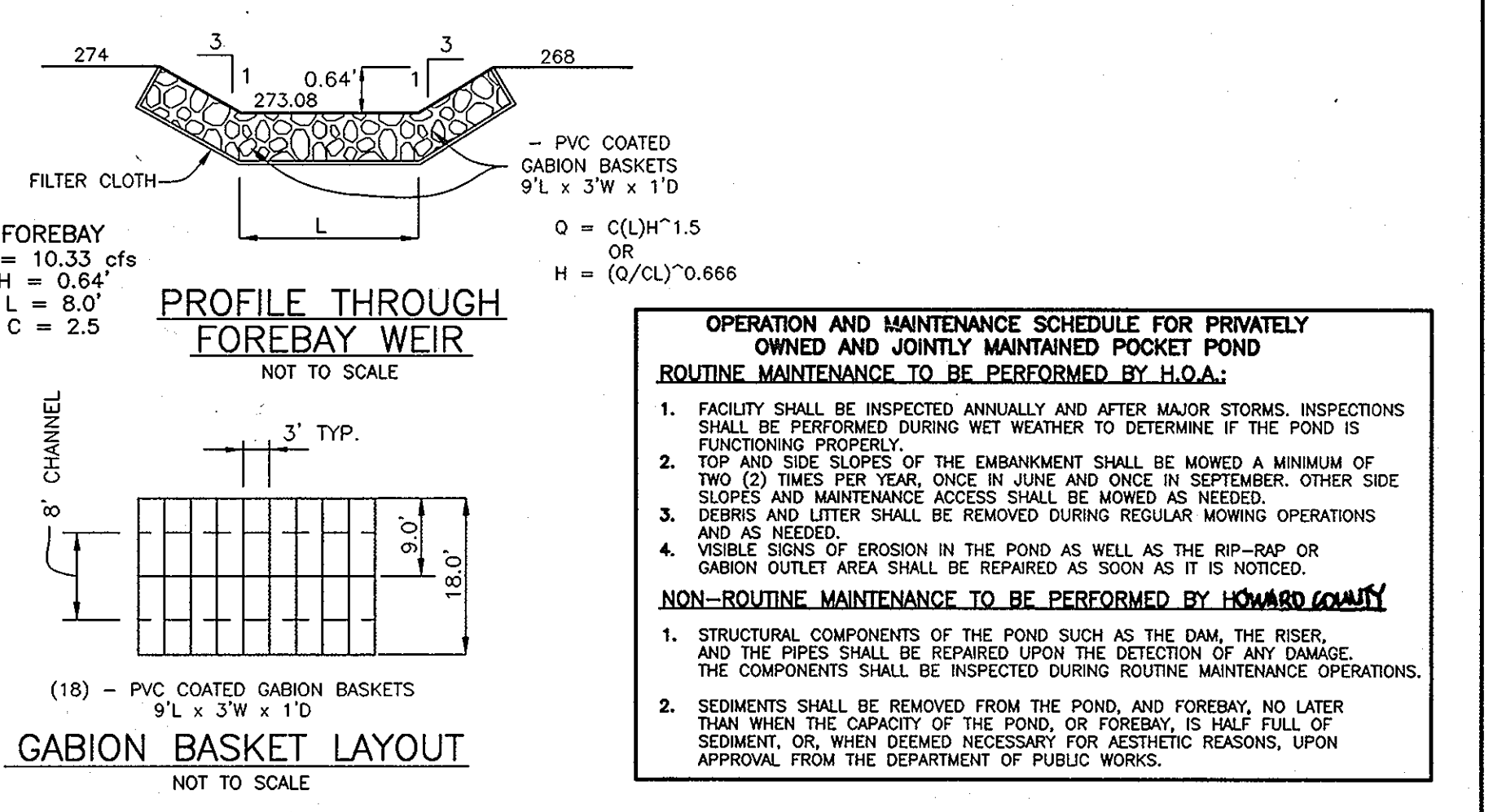
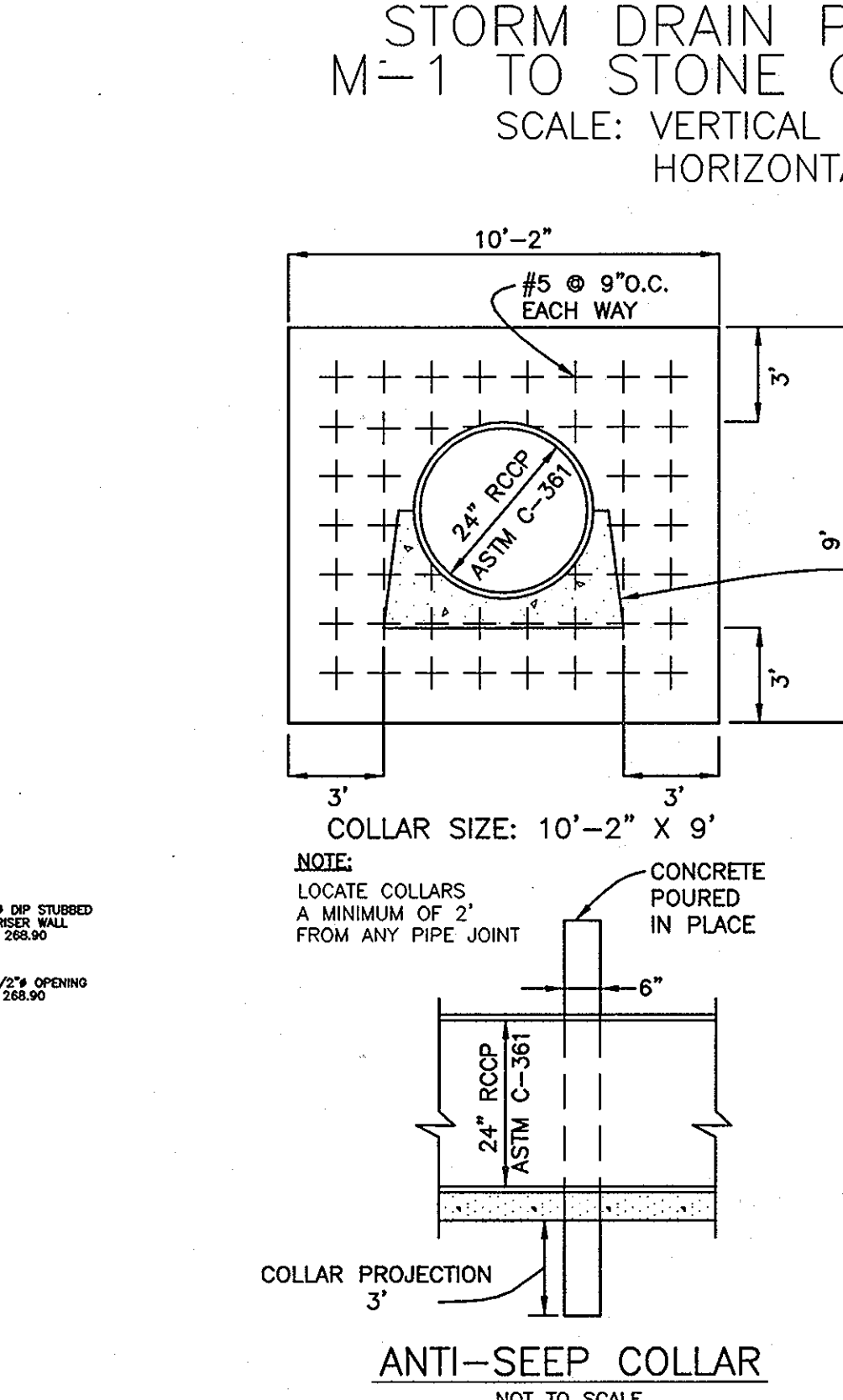
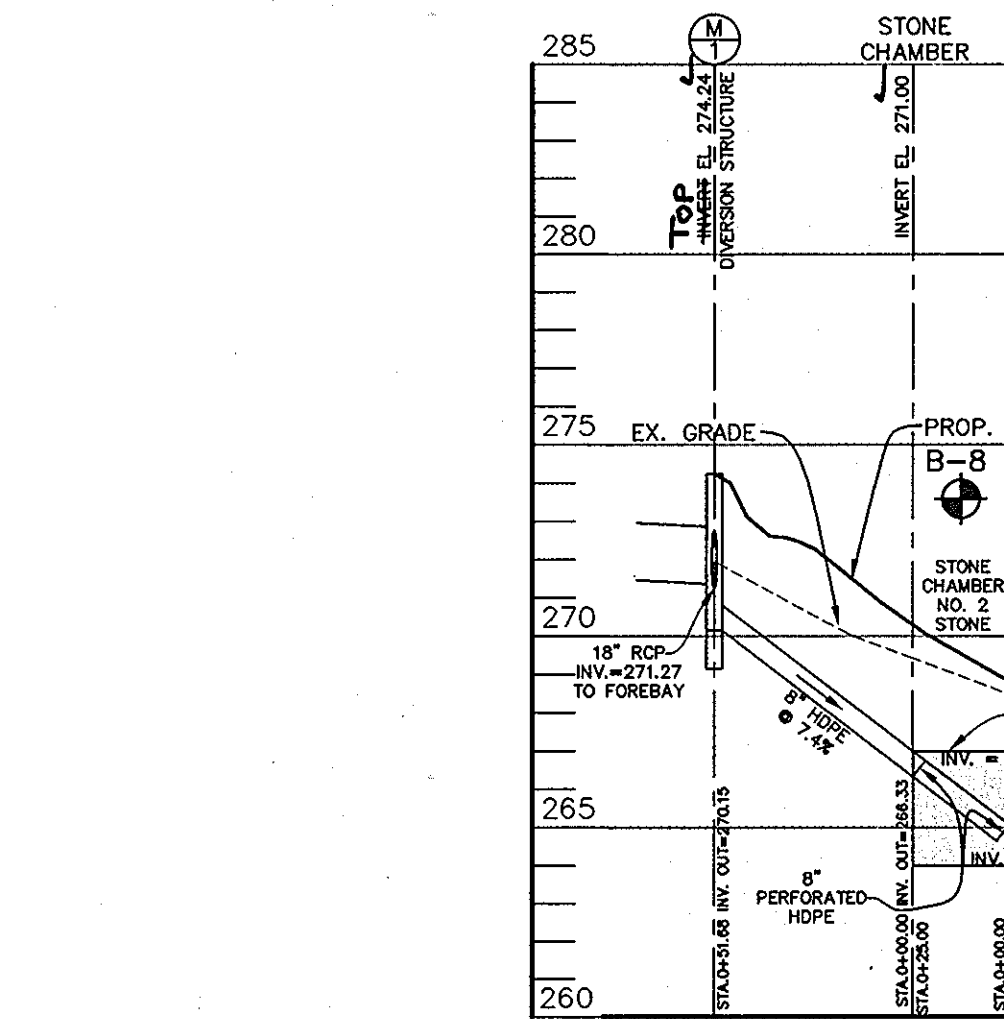
PROFILE THROUGH FOREBAY WEIR
NOT TO SCALE

GABION BASKET LAYOUT
NOT TO SCALE

(18) - PVC COATED GABION BASKETS 9' L X 3' W X 1' D

CORE TRENCH SECTION
NOT TO SCALE

NOTES:
1. IF WATER IS ENCOUNTERED DURING THE CONSTRUCTION OF THE CORE TRENCH, IT IS TO BE REMOVED BY PUMPING.
2. CORE TRENCH SHALL CONSIST OF IMPROVED MATERIAL (GC, SC, CL, CH) AS DIRECTED BY A GEOTECHNICAL ENGINEER ON-SITE AND MAY REQUIRE TO BE MAILED FROM AN OFFSITE LOCATION.



AS-BUILT CERTIFICATION

I HEREBY CERTIFY THAT THE FACILITY SHOWN WAS CONSTRUCTED AS SHOWN ON THE "AS-BUILT" PLANS AND MEETS THE APPLICABLE REQUIREMENTS.

Donald M. Moxley 2/24/23
1-21-10

CERTIFY THAT STATE OR DECLARE A PROFESSIONAL ENGINEER BASED UPON ON-SITE INSPECTIONS AND MATERIAL TESTS WHICH ARE CONDUCTED IN ACCORDANCE WITH THE ON-SITE INSPECTIONS AND MATERIAL TESTS ARE THOSE INSPECTIONS AND TESTS THAT ARE SUFFICIENT AND APPROPRIATE BY COMMONLY ACCEPTED ENGINEERING STANDARDS. CERTIFY DOES NOT MEAN OR IMPLY A GUARANTEE BY THE ENGINEER NOR DOES AN ENGINEER'S CERTIFICATION RELIEVE ANY OTHER PARTY FROM MEETING REQUIREMENTS IMPOSED BY CONTRACT, EMPLOYMENT, OR OTHER MEANS, INCLUDING MEETING COMMONLY ACCEPTED INDUSTRY PRACTICES.

ENGINEER'S CERTIFICATE

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

ENGINEER - *Brian F. Cleary, P.E.* 1/10/2008
DATE

DEVELOPER'S CERTIFICATE

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

DEVELOPER - *James H. Moxley, Jr.* 1/10/08
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.

USDA - 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.

Cholly 1/17/08
DATE

APPROVED: DEPARTMENT OF PUBLIC WORKS

Walter P. Moxley, Jr. 1-23-08
DATE

APPROVED: DEPARTMENT OF PLANNING AND ZONING

Wendy K. Harst 1/30/08
DATE

Alfred 1/30/08
DATE

NO.	DATE	REVISION

BENCHMARK ENGINEERING, INC.
ENGINEERS & LAND SURVEYORS & PLANNERS

8480 BALTIMORE NATIONAL PIKE & SUITE 418
ELICOTT CITY, MARYLAND 21043
phone: 410-485-6105 • fax: 410-485-6644
www.bai-civilengineering.com

OWNERS: PARCEL: 176 AND 181 SECURITY DEVELOPMENT, LLC. P.O. BOX 417 ELICOTT CITY, MARYLAND 21041 410-485-4244

PROJECT: **KINGS ARMS SECTION 4**
LOTS 1-9 AND OPEN SPACE LOTS 10 - 12

HO.O. DEPT. OF PARKS AND RECREATIONS
3430 COURT COURSE DRIVE
ELICOTT CITY, MARYLAND 21043

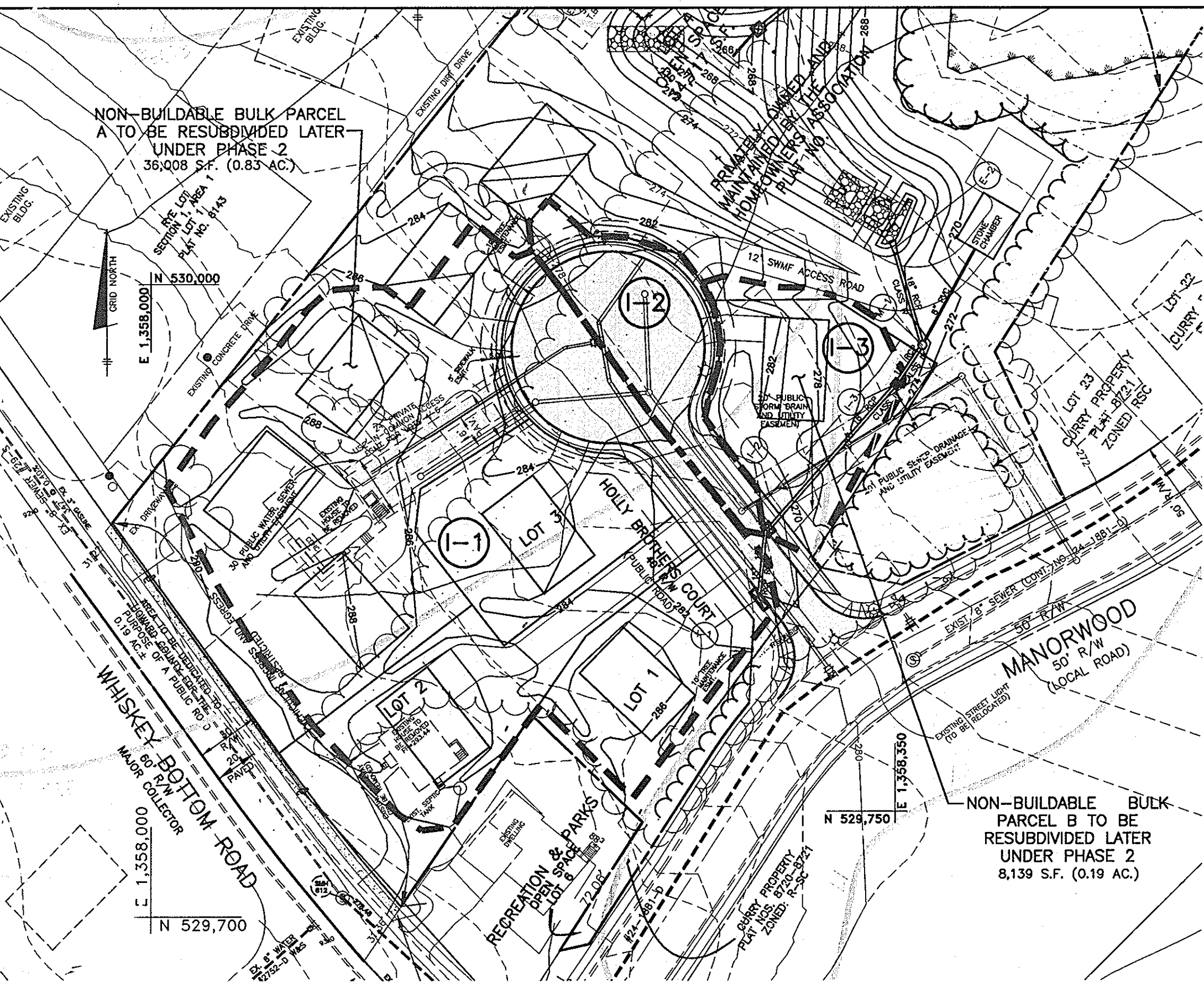
LOCATION: TAX MAP: 47 PARCELS: 176, 178, 181 GRID: 22 ZONED: R-SC ELECTION DISTRICT NO. 6 HOWARD COUNTY, MARYLAND

DEVELOPER: PARCEL: 176 AND 181 SECURITY DEVELOPMENT, LLC. P.O. BOX 417 ELICOTT CITY, MARYLAND 21041 410-485-4244

TITLE: **SWM PROFILES, DETAILS AND NOTES**

DATE: NOVEMBER, 2006 PROJECT NO. 1275
JANUARY, 2008

DESIGN: BFC DRAFT: BFC CHECK: DAM SCALE: AS SHOWN SHEET 5 OF 8



STORM DRAIN AREA MAP
SCALE: 1" = 50'

- ### LEGEND
- EXISTING CONTOURS
 - PROPOSED CONTOURS
 - EXISTING TREELINE
 - PROPOSED TREELINE
 - EXISTING WETLANDS
 - SOIL DIVISION LINE
 - LIMIT OF SUBMISSION
 - DRAINAGE AREA

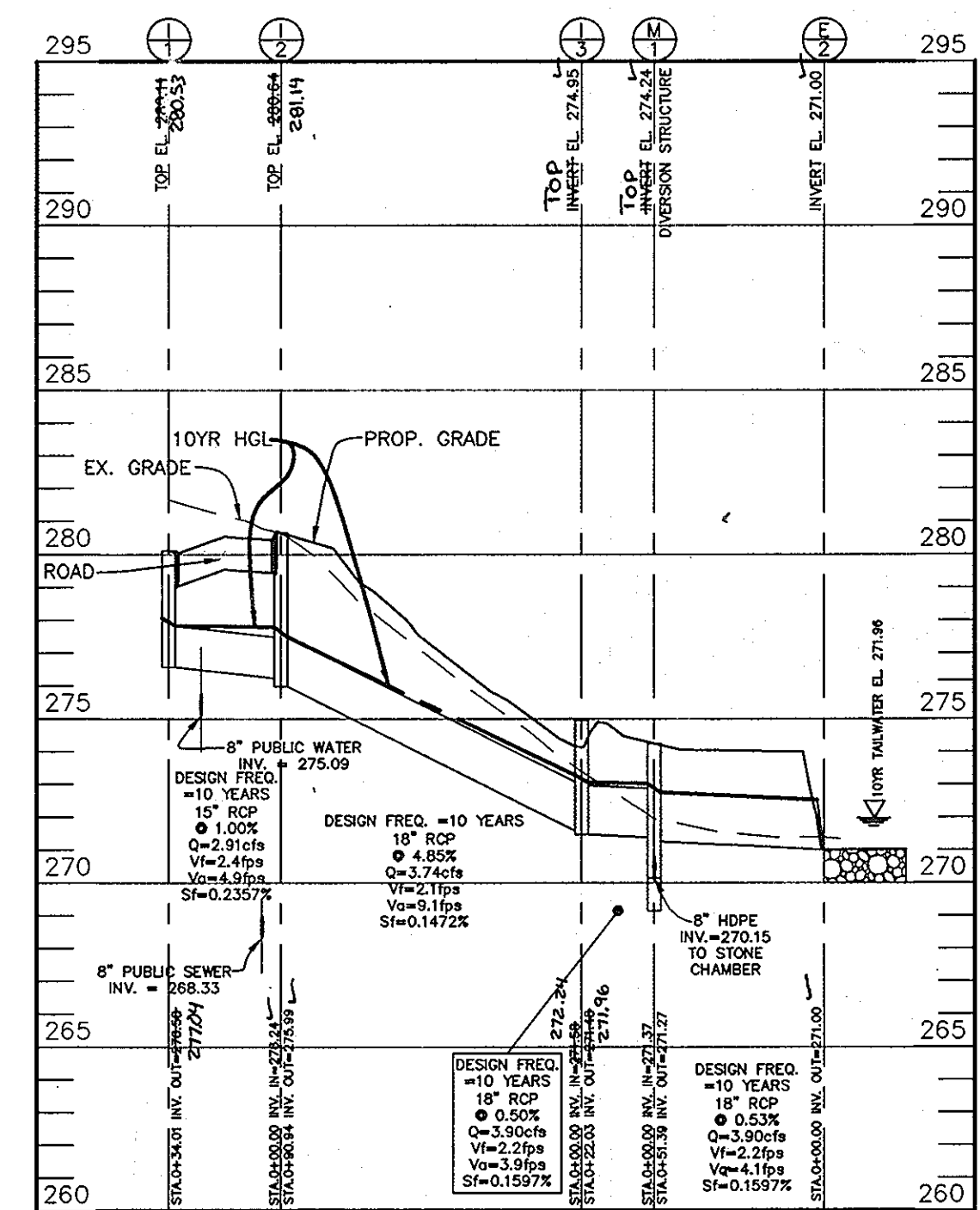
PIPE SCHEDULE (ALL PUBLIC)

TYPE & CLASS	SIZE	LENGTH
RCP CLASS IV	15"	34'
RCP CLASS IV	18"	165'
RCP ASTM C-361	24"	64'

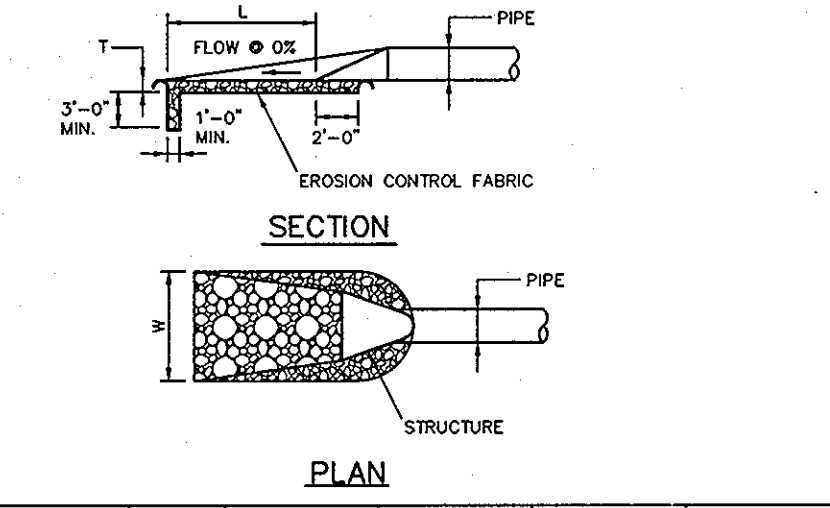
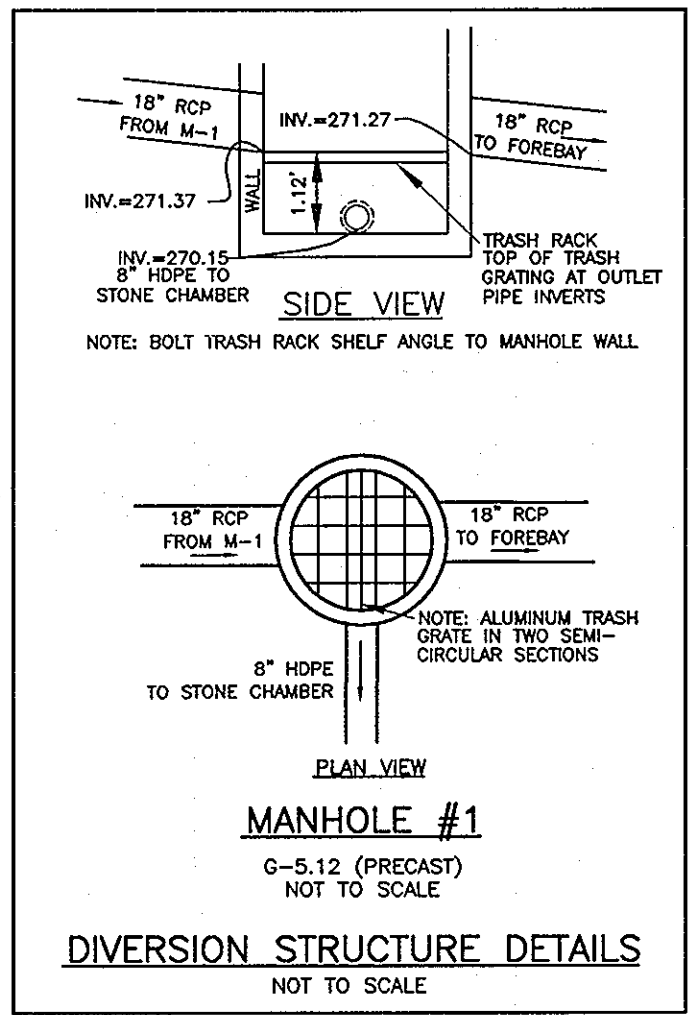
RCP = REINFORCED CONCRETE PIPE

STORM DRAINAGE AREA DATA

(1-1)	AREA = 1.13 AC	(1-1)	ZONE = RC-DEO
	"C" FACTOR = 0.39		IMPERVIOUS = 69%
(1-2)	AREA = 0.15 AC	(1-2)	ZONE = RC-DEO
	"C" FACTOR = 0.86		IMPERVIOUS = 96%
(1-3)	AREA = 0.19 AC	(1-3)	ZONE = RC-DEO
	"C" FACTOR = 0.24		IMPERVIOUS = 66%



STORM DRAIN PROFILE
I-1 TO E-2
SCALE: VERTICAL 1"=5'
HORIZONTAL 1"=50'



STRUCTURE	d50	LENGTH(L)	WIDTH(W)	THICK.(T)	SHA CLASS
E-1	9.5"	15' @ 0.5'	9.5"	19"	I

OUTLET PROTECTION DETAIL

NOT TO SCALE

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

STRUCTURE SCHEDULE

ALL PUBLIC

NO.	TYPE	LOCATION	INV. IN	INV. OUT	TOP ELEV.	HO. CO. STD.
I-1	A-10	N 529,851.73, E 1,358,287.94	-277.04	276.58	280.14	D-4.03
I-2	A-5	N 529,883.02, E 1,358,289.12	276.24	275.99	280.64	D-4.02
I-3	D (2 SIDED)	N 529,952.76 E 1,358,350.50	272.24	274.58	274.95	D-4.10
M-1	4'0" MANHOLE	N 529,971.06, E 1,358,362.76	271.37	271.27, 270.15	274.24	DETAIL THIS SHEET
E-1	RCP END SECTION	N 530,161.69, E 1,358,338.60	-	265.30	-	D-5.42
E-2	RCP END SECTION	N 530,014.50, E 1,358,350.20	-	271.00	-	D-5.42
S-1	STRUCTURE	N 530,120.23, E 1,358,285.52	-	-	-	SEE DETAIL

- STRUCTURE ELEVATION AND LOCATION FOR MANHOLES IS AT THE TOP AND CENTER OF RIM.
- STRUCTURE ELEVATION AND LOCATION FOR CURB INLETS IS AT THE TOP OF CURB AT MIDPOINT OF THE INLET AT THE FACE.
- STRUCTURE ELEVATION AND LOCATION FOR TYPE "D" AND "WR" INLETS IS AT THE TOP OF SLAB/GRATE AT CENTER OF THE INLET.
- PRECAST STRUCTURES MEETING HS-20 LOADING MAY BE USED.
- ALL STORM DRAINS SHALL BE REINFORCED CONCRETE PIPE (CLASS IV) UNLESS OTHERWISE NOTED.
- STRUCTURE ELEVATION AND LOCATION FOR END SECTION IS AT THE INVERT WHERE PIPE JOINS END SECTION

APPROVED: DEPARTMENT OF PUBLIC WORKS
W. J. ... 1-23-08
CHIEF, BUREAU OF HIGHWAYS

APPROVED: DEPARTMENT OF PLANNING AND ZONING
Cindy ... 1/23/08
CHIEF, DIVISION OF LAND DEVELOPMENT

... 1/23/08
CHIEF, DEVELOPMENT ENGINEERING DIVISION

RECORD OF SOIL EXPLORATION

Page 1 of 1

Project Name: Kings Arms Section 4 SWM
Location: Howard County, Maryland

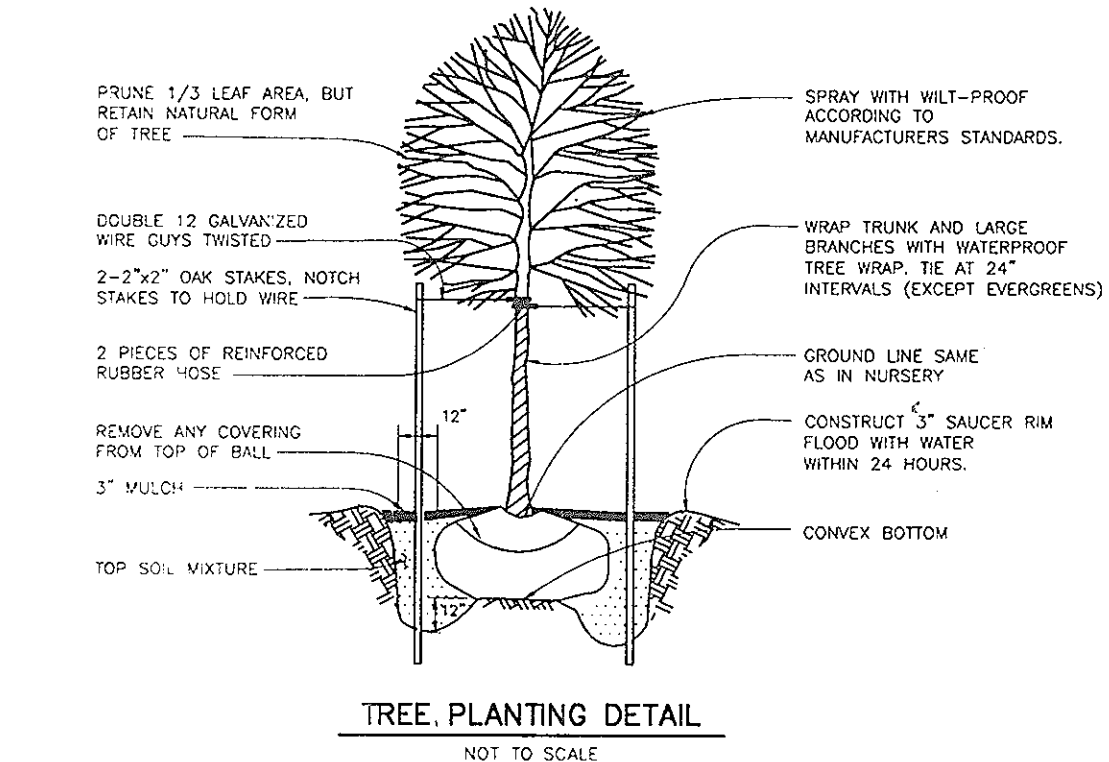
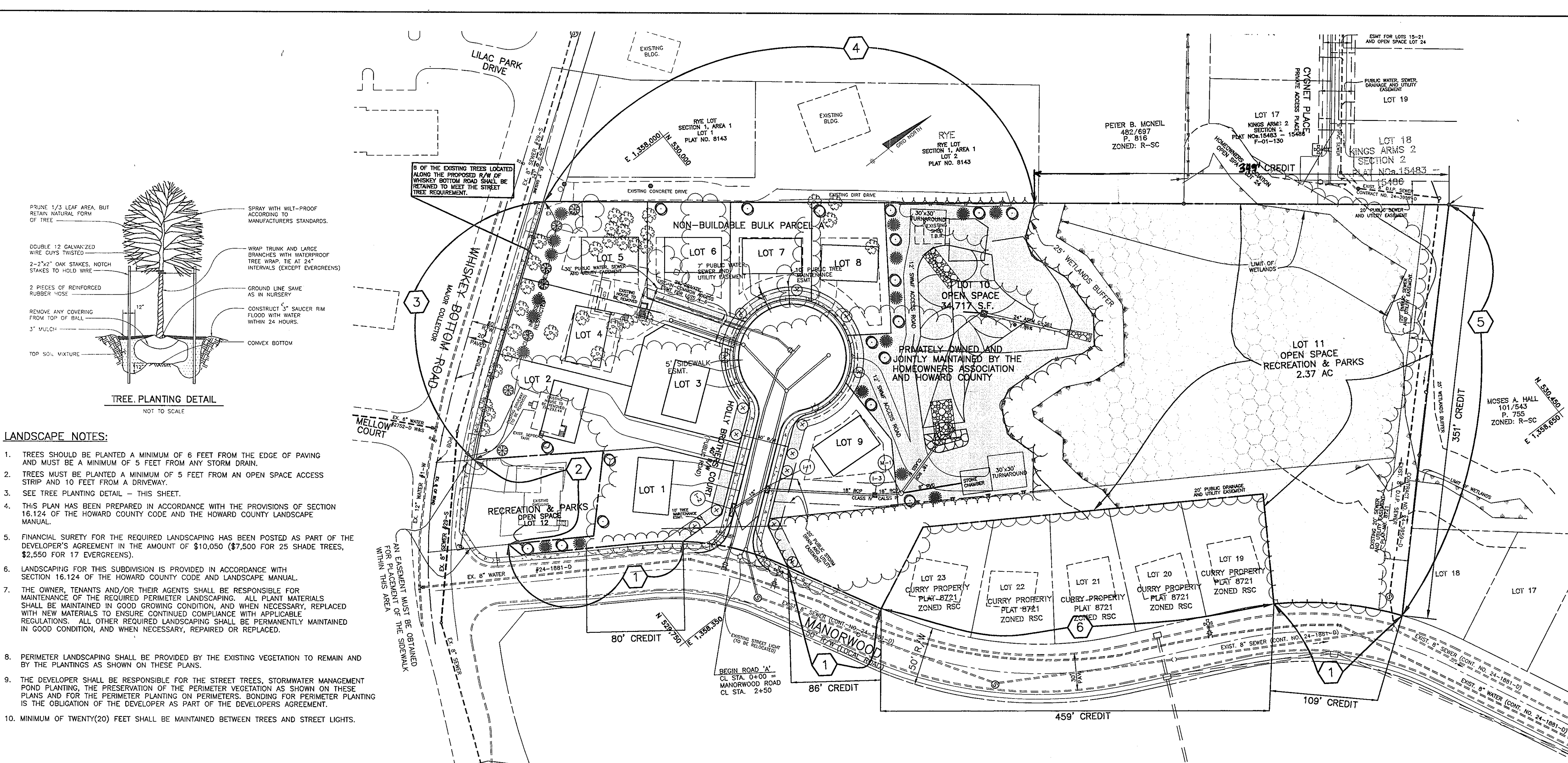
Date	Hammer	Penetration	Soil	Notes
2/27/08	140	1.5	Light gray, moist silty sand (SM)	Topsoil 0"
2/27/08	140	2.5	Reddish, moist silty sand (SM)	Topsoil 0"
2/27/08	140	3.5	Gray and red, moist, silty clay (CL)	Topsoil 0"
2/27/08	140	4.5	Gray and red, moist, silty clay (CL)	Topsoil 0"
2/27/08	140	5.5	Gray and red, moist, silty clay (CL)	Topsoil 0"
2/27/08	140	6.5	Gray and red, moist, silty clay (CL)	Topsoil 0"
2/27/08	140	7.5	Gray and red, moist, silty clay (CL)	Topsoil 0"
2/27/08	140	8.5	Gray and red, moist, silty clay (CL)	Topsoil 0"
2/27/08	140	9.5	Gray and red, moist, silty clay (CL)	Topsoil 0"
2/27/08	140	10.5	Gray and red, moist, silty clay (CL)	Topsoil 0"
2/27/08	140	11.5	Gray and red, moist, silty clay (CL)	Topsoil 0"
2/27/08	140	12.5	Gray and red, moist, silty clay (CL)	Topsoil 0"
2/27/08	140	13.5	Gray and red, moist, silty clay (CL)	Topsoil 0"
2/27/08	140	14.5	Gray and red, moist, silty clay (CL)	Topsoil 0"
2/27/08	140	15.5	Gray and red, moist, silty clay (CL)	Topsoil 0"
2/27/08	140	16.5	Gray and red, moist, silty clay (CL)	Topsoil 0"
2/27/08	140	17.5	Gray and red, moist, silty clay (CL)	Topsoil 0"
2/27/08	140	18.5	Gray and red, moist, silty clay (CL)	Topsoil 0"
2/27/08	140	19.5	Gray and red, moist, silty clay (CL)	Topsoil 0"
2/27/08	140	20.5	Gray and red, moist, silty clay (CL)	Topsoil 0"
2/27/08	140	21.5	Gray and red, moist, silty clay (CL)	Topsoil 0"
2/27/08	140	22.5	Gray and red, moist, silty clay (CL)	Topsoil 0"
2/27/08	140	23.5	Gray and red, moist, silty clay (CL)	Topsoil 0"
2/27/08	140	24.5	Gray and red, moist, silty clay (CL)	Topsoil 0"
2/27/08	140	25.5	Gray and red, moist, silty clay (CL)	Topsoil 0"
2/27/08	140	26.5	Gray and red, moist, silty clay (CL)	Topsoil 0"
2/27/08	140	27.5	Gray and red, moist, silty clay (CL)	Topsoil 0"
2/27/08	140	28.5	Gray and red, moist, silty clay (CL)	Topsoil 0"
2/27/08	140	29.5	Gray and red, moist, silty clay (CL)	Topsoil 0"
2/27/08	140	30.5	Gray and red, moist, silty clay (CL)	Topsoil 0"
2/27/08	140	31.5	Gray and red, moist, silty clay (CL)	Topsoil 0"
2/27/08	140	32.5	Gray and red, moist, silty clay (CL)	Topsoil 0"
2/27/08	140	33.5	Gray and red, moist, silty clay (CL)	Topsoil 0"
2/27/08	140	34.5	Gray and red, moist, silty clay (CL)	Topsoil 0"
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2/27/08	140	37.5	Gray and red, moist, silty clay (CL)	Topsoil 0"
2/27/08	140	38.5	Gray and red, moist, silty clay (CL)	Topsoil 0"
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2/27/08	140	42.5	Gray and red, moist, silty clay (CL)	Topsoil 0"
2/27/08	140	43.5	Gray and red, moist, silty clay (CL)	Topsoil 0"
2/27/08	140	44.5	Gray and red, moist, silty clay (CL)	Topsoil 0"
2/27/08	140	45.5	Gray and red, moist, silty clay (CL)	Topsoil 0"
2/27/08	140	46.5	Gray and red, moist, silty clay (CL)	Topsoil 0"
2/27/08	140	47.5	Gray and red, moist, silty clay (CL)	Topsoil 0"
2/27/08	140	48.5	Gray and red, moist, silty clay (CL)	Topsoil 0"
2/27/08	140	49.5	Gray and red, moist, silty clay (CL)	Topsoil 0"
2/27/08	140	50.5	Gray and red, moist, silty clay (CL)	Topsoil 0"
2/27/08	140	51.5	Gray and red, moist, silty clay (CL)	Topsoil 0"
2/27/08	140	52.5	Gray and red, moist, silty clay (CL)	Topsoil 0"
2/27/08	140	53.5	Gray and red, moist, silty clay (CL)	Topsoil 0"
2/27/08	140	54.5	Gray and red, moist, silty clay (CL)	Topsoil 0"
2/27/08	140	55.5	Gray and red, moist, silty clay (CL)	Topsoil 0"
2/27/08	140	56.5	Gray and red, moist, silty clay (CL)	Topsoil 0"
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2/27/08	140	58.5	Gray and red, moist, silty clay (CL)	Topsoil 0"
2/27/08	140	59.5	Gray and red, moist, silty clay (CL)	Topsoil 0"
2/27/08	140	60.5	Gray and red, moist, silty clay (CL)	Topsoil 0"
2/27/08	140	61.5	Gray and red, moist, silty clay (CL)	Topsoil 0"
2/27/08	140	62.5	Gray and red, moist, silty clay (CL)	Topsoil 0"
2/27/08	140	63.5	Gray and red, moist, silty clay (CL)	Topsoil 0"
2/27/08	140	64.5	Gray and red, moist, silty clay (CL)	Topsoil 0"
2/27/08	140	65.5	Gray and red, moist, silty clay (CL)	Topsoil 0"
2/27/08	140	66.5	Gray and red, moist, silty clay (CL)	Topsoil 0"
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2/27/08	140	75.5	Gray and red, moist, silty clay (CL)	Topsoil 0"
2/27/08	140	76.5	Gray and red, moist, silty clay (CL)	Topsoil 0"
2/27/08	140	77.5	Gray and red, moist, silty clay (CL)	Topsoil 0"
2/27/08	140	78.5	Gray and red, moist, silty clay (CL)	Topsoil 0"
2/27/08	140	79.5	Gray and red, moist, silty clay (CL)	Topsoil 0"
2/27/08	140	80.5	Gray and red, moist, silty clay (CL)	Topsoil 0"
2/27/08	140	81.5	Gray and red, moist, silty clay (CL)	Topsoil 0"
2/27/08	140	82.5	Gray and red, moist, silty clay (CL)	Topsoil 0"
2/27/08	140	83.5	Gray and red, moist, silty clay (CL)	Topsoil 0"
2/27/08	140	84.5	Gray and red, moist, silty clay (CL)	Topsoil 0"
2/27/08	140	85.5	Gray and red, moist, silty clay (CL)	Topsoil 0"
2/27/08	140	86.5	Gray and red, moist, silty clay (CL)	Topsoil 0"
2/27/08	140	87.5	Gray and red, moist, silty clay (CL)	Topsoil 0"
2/27/08	140	88.5	Gray and red, moist, silty clay (CL)	Topsoil 0"
2/27/08	140	89.5	Gray and red, moist, silty clay (CL)	Topsoil 0"
2/27/08	140	90.5	Gray and red, moist, silty clay (CL)	Topsoil 0"
2/27/08	140	91.5	Gray and red, moist, silty clay (CL)	Topsoil 0"
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2/27/08	140	93.5	Gray and red, moist, silty clay (CL)	Topsoil 0"
2/27/08	140	94.5	Gray and red, moist, silty clay (CL)	Topsoil 0"
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2/27/08	140	97.5	Gray and red, moist, silty clay (CL)	Topsoil 0"
2/27/08	140	98.5	Gray and red, moist, silty clay (CL)	Topsoil 0"
2/27/08	140	99.5	Gray and red, moist, silty clay (CL)	Topsoil 0"
2/27/08	140	100.5	Gray and red, moist, silty clay (CL)	Topsoil 0"

RECORD OF SOIL EXPLORATION

Page 1 of 1

Project Name: Kings Arms Section 4 SWM
Location: Howard County, Maryland

Date	Hammer	Penetration	Soil	Notes
2/27/08	140	1.5	Light gray, moist silty sand (SM)	Topsoil 0"
2/27/08	140	2.5	Reddish, moist silty sand (SM)	Topsoil 0"
2/27/08	140	3.5	Gray and red, moist, silty clay (CL)	Topsoil 0"
2/27/08	140	4.5	Gray and red, moist, silty clay (CL)	Topsoil 0"
2/27/08	140	5.5	Gray and red, moist, silty clay (CL)	Topsoil 0"
2/27/08	140	6.5	Gray and red, moist, silty clay (CL)	Topsoil 0"
2/27/08	140	7.5	Gray and red, moist, silty clay (CL)	Topsoil 0"
2/27/08	140	8.5	Gray and red, moist, silty clay (CL)	Topsoil 0"
2/27/08	140	9.5	Gray and red, moist, silty clay (CL)	Topsoil 0"
2/27/08	140	10.5	Gray and red, moist, silty clay (CL)	Topsoil 0"
2/27/08	140	11.5	Gray and red, moist, silty clay (CL)	Topsoil 0"
2/27/08	140	12.5	Gray and red, moist, silty clay (CL)	Topsoil 0"
2/27/08	140	13.5	Gray and red, moist, silty clay (CL)	Topsoil 0"
2/27/08	140	14.5	Gray and red, moist, silty clay (CL)	Topsoil 0"
2/27/08	140	15.5	Gray and red, moist, silty clay (CL)	Topsoil 0"
2/27/08	140	16.5	Gray and red, moist, silty clay (CL)	Topsoil 0"
2/27/08	140	17.5	Gray and red, moist, silty clay (CL)	Topsoil 0"
2/27/08	140	18.5	Gray and red, moist, silty clay (CL)	Topsoil 0"
2/27/08	140	19.5	Gray and red, moist, silty clay (CL)	Topsoil 0"
2/27/08	140	20.5	Gray and red, moist, silty clay (CL)	Topsoil 0"
2/27/08	140	21.5	Gray and red, moist, silty clay (CL)	Topsoil 0"
2/27/08	140	22.5	Gray and red, moist, silty clay (CL)	Topsoil 0"
2/27/08	140	23.5	Gray and red, moist, silty clay (CL)	Topsoil 0"
2/27/08	140	24.5	Gray and red, moist, silty clay (CL)	Topsoil 0"
2/27/08	140	25.5	Gray and red, moist, silty clay (CL)	Topsoil 0"
2/27/08	140	26.5	Gray and red, moist, silty clay (CL)	Topsoil 0"
2/27/08	140	27.5	Gray and red, moist, silty clay (CL)	Topsoil 0"
2/27/08	140	28.5	Gray and red, moist, silty clay (CL)	Topsoil 0"
2/27/08	140	29.5	Gray and red, moist, silty clay (CL)	Topsoil 0"
2/27/08	140	30.5	Gray and red, moist, silty clay (CL)	Topsoil 0"
2/27/08	140	31.5	Gray and red, moist, silty clay (CL)	Topsoil 0"
2/27/08	140	32.5	Gray and red, moist, silty clay (CL)	Topsoil 0"
2/27/08	140	33.5	Gray and red, moist, silty clay (CL)	Topsoil 0"
2/27/08	140	34.5	Gray and red, moist, silty clay (CL)	Topsoil 0"
2/27/08	140	35.5	Gray and red, moist, silty clay (CL)	Topsoil 0"
2/27/08	140			



- LANDSCAPE NOTES:**
- TREES SHOULD BE PLANTED A MINIMUM OF 6 FEET FROM THE EDGE OF PAVING AND MUST BE A MINIMUM OF 5 FEET FROM ANY STORM DRAIN.
 - TREES MUST BE PLANTED A MINIMUM OF 5 FEET FROM AN OPEN SPACE ACCESS STRIP AND 10 FEET FROM A DRIVEWAY.
 - SEE TREE PLANTING DETAIL - THIS SHEET.
 - THIS PLAN HAS BEEN PREPARED IN ACCORDANCE WITH THE PROVISIONS OF SECTION 16.124 OF THE HOWARD COUNTY CODE AND THE HOWARD COUNTY LANDSCAPE MANUAL.
 - FINANCIAL SURETY FOR THE REQUIRED LANDSCAPING HAS BEEN POSTED AS PART OF THE DEVELOPER'S AGREEMENT IN THE AMOUNT OF \$10,050 (\$7,500 FOR 25 SHADE TREES, \$2,550 FOR 17 EVERGREENS).
 - LANDSCAPING FOR THIS SUBDIVISION IS PROVIDED IN ACCORDANCE WITH SECTION 16.124 OF THE HOWARD COUNTY CODE AND LANDSCAPE MANUAL.
 - THE OWNER, TENANTS AND/OR THEIR AGENTS SHALL BE RESPONSIBLE FOR MAINTENANCE OF THE REQUIRED PERIMETER LANDSCAPING. ALL PLANT MATERIALS SHALL BE MAINTAINED IN GOOD GROWING CONDITION, AND WHEN NECESSARY, REPLACED WITH NEW MATERIALS TO ENSURE CONTINUED COMPLIANCE WITH APPLICABLE REGULATIONS. ALL OTHER REQUIRED LANDSCAPING SHALL BE PERMANENTLY MAINTAINED IN GOOD CONDITION, AND WHEN NECESSARY, REPAIRED OR REPLACED.
 - PERIMETER LANDSCAPING SHALL BE PROVIDED BY THE EXISTING VEGETATION TO REMAIN AND BY THE PLANTINGS AS SHOWN ON THESE PLANS.
 - THE DEVELOPER SHALL BE RESPONSIBLE FOR THE STREET TREES, STORMWATER MANAGEMENT POND PLANTING, THE PRESERVATION OF THE PERIMETER VEGETATION AS SHOWN ON THESE PLANS AND FOR THE PERIMETER PLANTING ON PERIMETERS. BONDING FOR PERIMETER PLANTING IS THE OBLIGATION OF THE DEVELOPER AS PART OF THE DEVELOPER'S AGREEMENT.
 - MINIMUM OF TWENTY(20) FEET SHALL BE MAINTAINED BETWEEN TREES AND STREET LIGHTS.

NOTE:
 AT THE TIME OF INSTALLMENT, ALL SHRUBS AND OTHER PLANTINGS HEREWITH LISTED AND APPROVED FOR THIS SITE, SHALL BE OF THE PROPER HEIGHT REQUIREMENTS IN ACCORDANCE WITH THE HOWARD COUNTY LANDSCAPE MANUAL. IN ADDITION, NO SUBSTITUTIONS OR RELOCATION OF REQUIRED PLANTINGS MAY BE MADE WITHOUT PRIOR REVIEW AND APPROVAL FROM THE DEPARTMENT OF PLANNING AND ZONING. ANY DEVIATION FROM THIS APPROVED LANDSCAPE PLAN MAY RESULT IN DENIAL OR DELAY IN RELEASE OF LANDSCAPE SURETY UNTIL SUCH TIME AS ALL REQUIRED MATERIALS ARE PLANTED AND/OR REVISIONS ARE MADE TO APPLICABLE PLANS AND CERTIFICATIONS.

SCHEDULE D SWM AREA LANDSCAPING		FACILITY 1
LINEAR FEET OF PERIMETER	634'	
LINEAR FEET OF EXISTING WOODS LINE	275'	
LINEAR FEET OF REQUIRED PLANTING	359'	
BUFFER TYPE		"B"
NUMBER OF TREES REQUIRED		
SHADE TREES	8	
EVERGREEN TREES	9	
CREDIT FOR EXISTING VEGETATION (NO. YES AND %)	YES 43%	
CREDIT FOR OTHER LANDSCAPING (NO. YES AND %)	NO	
NUMBER OF TREES PROVIDED		
SHADE TREES	8	
EVERGREEN TREES	9	
OTHER TREES (2:1 SUBSTITUTE)		

PERIMETER AND SWM PLANTING LIST			
SYMBOL	QUANTITY	NAME	REMARKS
☉	21	QUERCUS RUBRA (Red Oak)	2 1/2" - 3" MIN. CAL FULL HEAD
☼	17	PINUS STROBUS (Eastern White Pine)	5'-6" ht. UNSHEARED
☾	7	ACER GINNALA (LACINUS MAPLE)	1-1/2" - 2" CAL. B & B FULL HEAD

PLAN VIEW
SCALE: 1" = 50'

SCHEDULE A PERIMETER LANDSCAPE EDGE								TOTALS
CATEGORY	ADJACENT TO ROADWAY	NO	YES	NO	YES	NO	YES	
PERIMETER NO. / LANDSCAPE TYPE	1 B	0 A	0 B	0 A	0 A	0 A	0 A	
LINEAR FEET OF PERIMETER (FRONTAGE/PERIMETER)	346±	180±	227±	762±	351±	459±		
CREDIT FOR EXISTING VEGETATION (NO OR YES W/LINEAR FEET) (DESCRIBE BELOW IF NEEDED)	YES 275'	NO	NO	YES 349'	YES 351'	YES 459'		
CREDIT FOR WALL, FENCE OR BERM (NO OR YES W/LINEAR FEET) (DESCRIBE BELOW IF NEEDED)	NO	NO	NO	NO	NO	NO		
NUMBER OF PLANTS REQUIRED:								
SHADE TREES	71	3	5	413	N/A	N/A	17	
EVERGREEN TREES	2	2	6	7	-	-	8	
OTHER TREES (2:1 SUBSTITUTE)	-	-	-	-	-	-	1	
SHRUBS	-	-	-	-	-	-	-	
NUMBER OF PLANTS PROVIDED:								
SHADE TREES	2	3	5	7	N/A	N/A	17	
EVERGREEN TREES	2	2	6	7	-	-	8	
OTHER TREES (2:1 SUBSTITUTE)	-	-	-	-	-	-	1	
SHRUBS (10:1 SUBSTITUTE)	-	-	-	-	-	-	-	
(DESCRIBE PLANT SUBSTITUTION CREDITS BELOW IF NEEDED)								

STREET TREE PLANTING LIST			
SYMBOL	QUANTITY	NAME	REMARKS
☉	14	ACER RUBRA (RED MAPLE)	2 1/2" MIN. CAL. B & B FULL HEAD

LANDSCAPE LEGEND	
SYMBOL	DESCRIPTION
☉	STREET TREES TO BE PROVIDED BY THE DEVELOPER AND TO BE INCORPORATED ON THE FINAL PLANS.
☼	SHADE TREES ALONG PERIMETER AND STORMWATER MANAGEMENT AREA TO BE PROVIDED BY THE DEVELOPER AND INCORPORATED ON FINAL PLANS.
☾	EVERGREEN TREES ALONG PERIMETER AND STORMWATER MANAGEMENT AREA TO BE PROVIDED BY THE DEVELOPER AND INCORPORATED ON FINAL PLANS.

STREET TREE SCHEDULE		
ROAD NAME	PERIMETER	TREES REQ.
HOLLY BROTHERS COURT	545'	14
WHISKEY BOTTOM ROAD	227'	6

- NOTES:**
- LANDSCAPING FOR THIS SUBDIVISION IS PROVIDED IN ACCORDANCE WITH SECTION 16.124 OF THE HOWARD COUNTY CODE AND LANDSCAPE MANUAL.
 - THE STREET TREE REQUIREMENT FOR WHISKEY BOTTOM ROAD IS BEING PROVIDED BY RETENTION OF 6 OF THE EXISTING TREES.

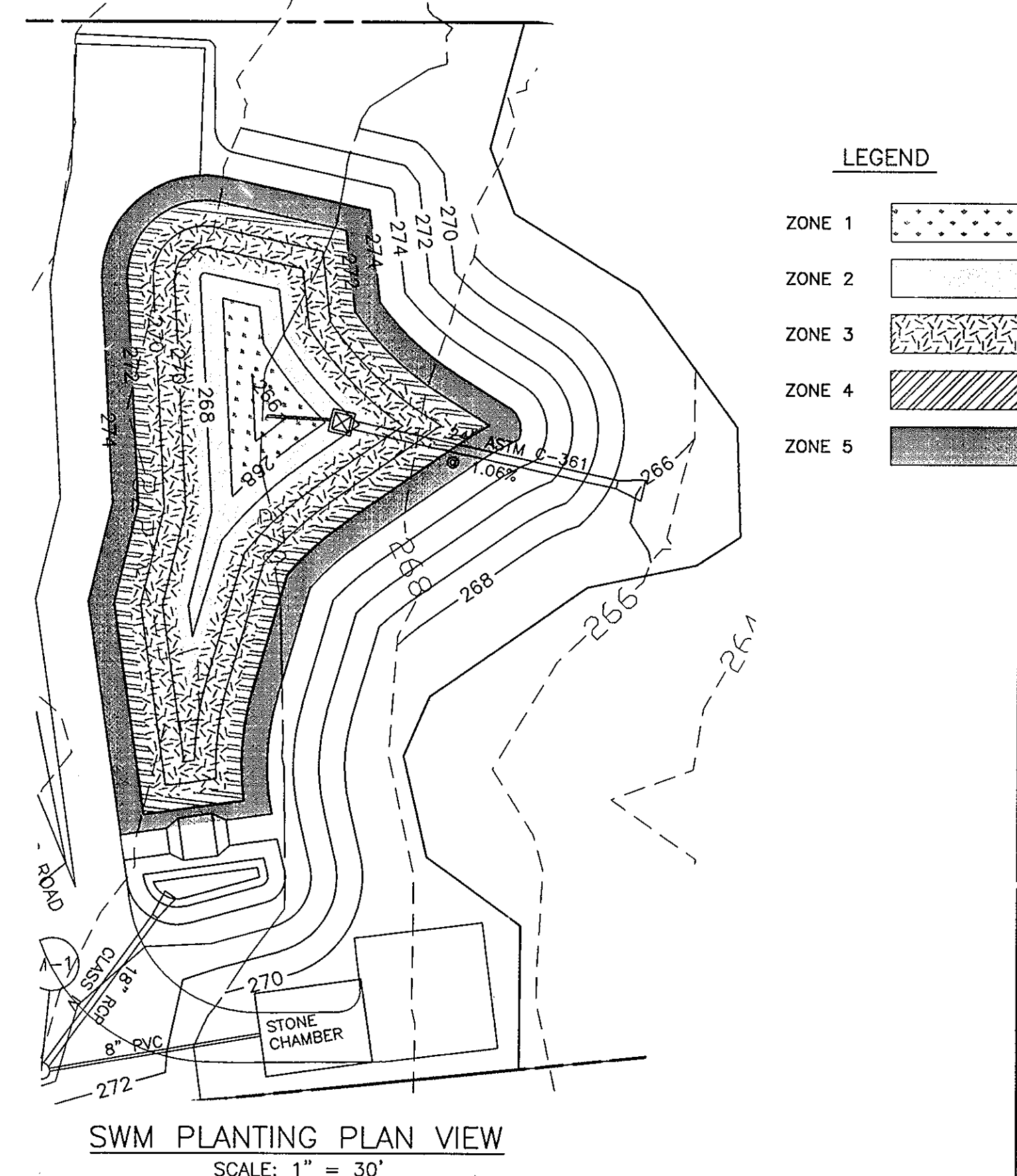
DEVELOPER'S/BUILDER'S CERTIFICATE
 I/WE CERTIFY THAT THE LANDSCAPING SHOWN ON THIS PLAN WILL BE DONE ACCORDING TO THE PLAN, SECTION 16.124 OF THE HOWARD COUNTY CODE AND THE HOWARD COUNTY LANDSCAPE MANUAL. I/WE FURTHER CERTIFY THAT UPON COMPLETION OF A LETTER OF LANDSCAPE INSTALLATION, ACCOMPANIED BY AN EXECUTED ONE-YEAR GUARANTEE OF PLANT MATERIALS, WILL BE SUBMITTED TO THE DEPARTMENT OF PLANNING AND ZONING.

David M. Maly, III 1/10/08
 STATE BREEDEN *David M. Maly, III*
 SECURITY DEVELOPMENT, LLC DATE

APPROVED: HOWARD COUNTY DEPARTMENT OF PUBLIC WORKS
Walter R. ... 1-23-08
 CHIEF, BUREAU OF HIGHWAYS DATE

APPROVED: HOWARD COUNTY DEPARTMENT OF PLANNING & ZONING
Cindy ... 1/20/08
 CHIEF, DIVISION OF LAND DEVELOPMENT DATE

John ... 1/20/08
 CHIEF, DEVELOPMENT ENGINEERING DIVISION DATE



PLANTING SCHEDULE FOR POCKET POND BMP			
ZONE	AREA (SF)	ELEVATION RANGE	PLANT MIX
1	542	265.00-268.00	100% WATER LILLY
2	1,389	268.00-269.00	50% BROAD WATER WEED 25% DUCK POTATO 25% ARROW ARUM
3	3,428	269.00-270.00	50% CUTGRASS, RICE 50% SWITCHGRASS
4	1,115	270.00-271.00	50% LOVEGRASS-HEADROW 25% VIOLETS, COMMON BLUE 25% CONEFLOWER-CUT-LEAF
5	2,512	271.00-274.00	75% WITCHGRASS, NEEDLE-LEAF 25% CONEFLOWER, SWEET
6	0 SF	N/A	N/A

ALL PLANTINGS TO BE SEED MIX WITH THE ABOVE IDENTIFIED PROPORTIONS SPREAD EVENLY THROUGH THE IDENTIFIED AREAS.

BENCHMARK ENGINEERING, INC.
 ENGINEERS • LAND SURVEYORS • PLANNERS
 8480 BALTIMORE NATIONAL PIKE • SUITE 418
 ELLICOTT CITY, MARYLAND 21043
 PHONE: 410-465-6105 FAX: 410-465-6644

OWNERS: PARCEL: 176 AND 181 SECURITY DEVELOPMENT, LLC. P.O. BOX 417 ELLICOTT CITY, MARYLAND 21041 410-465-4244

PROJECT: KINGS ARMS SECTION 4 LOTS 1-9 AND OPEN SPACE LOTS 10 - 12

LOCATION: TAX MAP: 47, GRID: 22 PARCELS: 176, 178, 181 6th ELECTION DISTRICT HOWARD COUNTY, MARYLAND

DEVELOPER: PARCEL: 176 AND 181 SECURITY DEVELOPMENT, LLC. P.O. BOX 417 ELLICOTT CITY, MARYLAND 21041 410-465-4244

TITLE: LANDSCAPE PLAN

DATE: NOVEMBER, 2008 PROJECT NO. 1275
 JANUARY, 2008

DESIGN: BC **DRAFT:** EDD **CHECK:** DAM **SCALE:** AS SHOWN **SHEET:** 7 OF 8

LEGEND

- EXISTING CONTOURS
- EXISTING TREELINE
- PROPOSED TREELINE
- CL. STREAM
- LIMIT OF WETLANDS
- LIMIT OF SUBMISSION
- FOREST CONSERVATION EASEMENT
- FOREST CONSERVATION SIGNAGE
- NATURAL CONSERVATION AREA

FCE ACREAGE CHART	
EASEMENT #	ACREAGE (RETENTION)
FCE#1	1.63 AC.
TOTALS 1.63 AC.	

**FOREST CONSERVATION WORKSHEET
KINGS ARMS SECTION 4**

NET TRACT AREA:

A. Total tract area ...	5.27
B. Land dedication acres (parks, county facility, etc.) ...	0.71
C. Land dedication for roads or utilities (not being constructed by this plan) ...	0.00
D. Area to remain in commercial agricultural production/use ...	0.00
E. Other deductions (specify)	0.00
F. Net Tract Area	4.56

LAND USE CATEGORY: (from Trees Technical Manual)

Input the number "1" under the appropriate land use, limit to only one entry.

ARA	MDR	IDA	HDR	MPD	CIA	
0	0	0	1	0	0	
G. Afforestation Threshold ...						15% x F = 0.68
H. Conservation Threshold ...						20% x F = 0.91

EXISTING FOREST COVER:

I. Existing forest cover	3.30
J. Area of forest above afforestation threshold	2.62
K. Area of forest above conservation threshold	2.39

BREAK EVEN POINT:

L. Forest retention above threshold with no mitigation	1.39
M. Clearing permitted without mitigation	1.91

PROPOSED FOREST CLEARING:

N. Total area of forest to be cleared	1.67
O. Total area of forest to be retained	1.63

PLANTING REQUIREMENTS:

P. Reforestation for clearing above conservation threshold	0.42
Q. Reforestation for clearing below conservation threshold	0.00
R. Credit for retention above conservation threshold	0.72
S. Total reforestation required	0.00
T. Total afforestation required	0.00
U. Credit for landscaping (may not exceed 20% of "S")	0.00
V. Total reforestation and afforestation required	0.00

NOTES:

*Item B - Area is recorded Open Space Lot 24, Curry Property.

APPROVED: DEPARTMENT OF PUBLIC WORKS

Michelle A. ... 1-27-09
CHIEF, BUREAU OF HIGHWAYS

APPROVED: DEPARTMENT OF PLANNING AND ZONING

Cindy ... 1/29/08
CHIEF, DIVISION OF LAND DEVELOPMENT

John ... 1/20/08
CHIEF, DEVELOPMENT ENGINEERING DIVISION

Eco-Science Professionals, Inc.
CONSULTING ECOLOGISTS

MD DNR Qualified Professional
USACOB Wetland Delineator
Certification # W-00000061004403

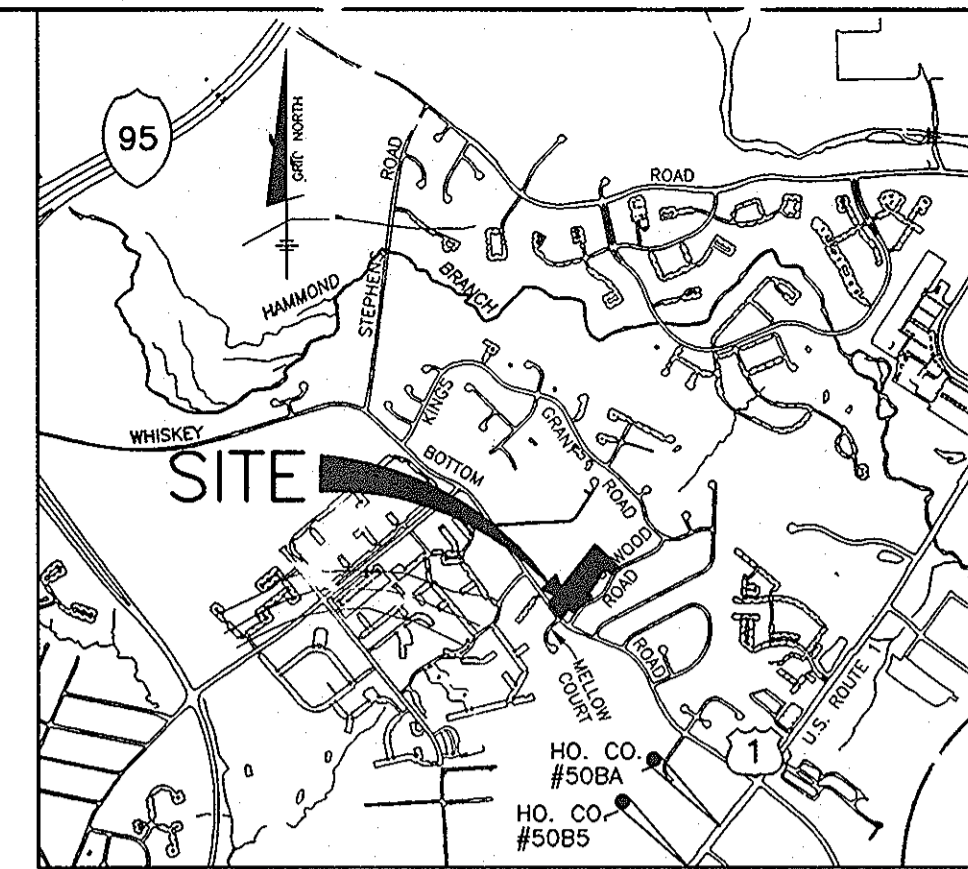
John J. Canales 1/20/08

P.O. Box 5006 Glen Arm, MD 21057 (410) 592-6752

PLAN VIEW
SCALE: 1" = 50'

KINGS ARMS 4 SITE DATA		ACRES
GROSS AREA:		5.27
EX. LOTS/UNFORESTED PRESERVATION		0.71
LAND DEDICATED (PARKS)		0.00
PARCEL/FLOODPLAIN:		4.56
NET TRACT AREA (NTA):		3.30
EXISTING FOREST ON NTA:		0.68
AFFORESTATION THRESHOLD:		0.91
CONSERVATION THRESHOLD:		
FOREST TO BE CLEARED:		1.67
FOREST TO BE RETAINED (NTA):		1.63
REFORESTATION REQUIRED:		0.00
REFORESTATION PROPOSED:		0.00

FOREST CONSERVATION TABULATION		
DESIGNATION	TYPE	ACRAGE
1	RETENTION	1.0



VICINITY MAP
SCALE: 1" = 2000'

FCP NOTES:

- ANY FOREST CONSERVATION EASEMENT (FCE) AREA SHOWN HEREON IS SUBJECT TO PROTECTIVE COVENANTS WHICH MAY BE FOUND IN THE LAND RECORDS OF HOWARD COUNTY WHICH RESTRICT THE DISTURBANCE AND USE OF THESE AREAS.
- THE FOREST CONSERVATION EASEMENTS HAVE BEEN ESTABLISHED TO FULFILL THE REQUIREMENTS OF SECTION 16.1200 OF THE HOWARD COUNTY CODE, FOREST CONSERVATION ACT. NO CLEARING, GRADING, OR CONSTRUCTION IS PERMITTED WITHIN THE FOREST CONSERVATION EASEMENTS; HOWEVER, FOREST MANAGEMENT PRACTICES AS DEFINED IN THE DEED OF FOREST CONSERVATION EASEMENT ARE ALLOWED.
- LIMITS OF DISTURBANCE SHALL BE RESTRICTED TO AREAS OUTSIDE THE LIMIT OF TEMPORARY FENCING OR THE FCE BOUNDARY, WHICHEVER IS GREATER.
- THERE SHALL BE NO CLEARING, GRADING, CONSTRUCTION OR DISTURBANCE OF VEGETATION IN THE FOREST CONSERVATION EASEMENT, EXCEPT AS PERMITTED BY HOWARD COUNTY DPZ.
- NO STOCKPILES, PARKING AREAS, EQUIPMENT CLEANING AREAS, ETC. SHALL OCCUR WITHIN AREAS DESIGNATED AS FOREST CONSERVATION EASEMENTS.
- TEMPORARY FENCING SHALL BE USED TO PROTECT FOREST RESOURCES DURING CONSTRUCTION. THE FENCING SHALL BE PLACED ALONG ALL FCE BOUNDARIES WHICH OCCUR WITHIN 15 FEET OF THE PROPOSED LIMITS OF DISTURBANCE.
- PERMANENT SIGNAGE SHALL BE PLACED 50-100' APART ALONG THE BOUNDARIES OF ALL AREAS INCLUDED IN FOREST CONSERVATION EASEMENTS.
- THE TOTAL FOREST CONSERVATION OBLIGATION AMOUNT FOR THIS PROJECT IS 1.39 ACRES WHICH WILL BE MET BY ON-SITE RETENTION IN THE AMOUNT OF 1.63 ACRES WITHIN A FOREST CONSERVATION EASEMENT, WITH DPW DEVELOPER'S AGREEMENT WITH SURETY IN THE AMOUNT OF \$12,110.00.
- REFER TO PLAT F-06-68 FOR FOREST CONSERVATION AREA BEARINGS AND DISTANCES.

FOREST RETENTION AREA

MACHINERY, DUMPING OR STORAGE OF ANY MATERIALS IS PROHIBITED

VIOLATORS ARE SUBJECT TO FINES AS IMPOSED BY THE HOWARD COUNTY FOREST CONSERVATION ACT OF 1992

SIGNAGE
NOT TO SCALE

<p>BENCHMARK ENGINEERING, INC. ENGINEERS • LAND SURVEYORS • PLANNERS</p> <p>8480 BALTIMORE NATIONAL PIKE SUITE 418 ELLICOTT CITY, MARYLAND 21043 PHONE: 410-465-6105 • FAX: 410-465-6644 WWW.BEI-CIVILENGINEERING.COM</p>		<p>Professional Certification. I hereby certify that these documents were prepared & approved by me, and that I am a duly licensed professional engineer under the laws of the State of Maryland, License No. 28559, Expiration Date: 7-22-2009.</p> <p>1/10/08</p>
<p>OWNERS: PARCEL 176 AND 181 SECURITY DEVELOPMENT, LLC. P.O. BOX 417 ELLICOTT CITY, MARYLAND 21041 410-465-4244</p> <p>PARCEL 178 HO. CO. DEPT. OF PARKS AND RECREATIONS 3430 COURT HOUSE DRIVE ELLICOTT CITY, MARYLAND 21043 410-465-4244</p>	<p>PROJECT: KINGS ARMS SECTION 4 LOTS 1-9 AND OPEN SPACE LOTS 10-12</p> <p>LOCATION: TAX MAP: 47 PARCELS: 176, 178, 17 GRID: 22 ZONED: R-SC ELECTION DISTRICT NO. 6 HOWARD COUNTY, MARYLAND</p> <p>TITLE: FOREST CONSERVATION PLAN</p> <p>DATE: NOVEMBER 2008 PROJECT NO. 1275 JANUARY, 2008</p> <p>DESIGN: BC DRAFT: EDD CHECK: DAM SCALE: 1" = 50' SHEET 8 OF 8</p>	