

STORMWATER MANAGEMENT RETROFIT AT ST. JOHNS WOODS

GENERAL NOTES

- THE CONTRACTOR SHALL NOTIFY THE HOWARD COUNTY DEPARTMENT OF PUBLIC WORKS/BUREAU OF ENGINEERING CONSTRUCTION INSPECTION DIVISION AT 410-313-1880 AND MISS UTILITY AT 1-800-257-7777 AT LEAST FIVE (5) WORKING DAYS BEFORE STARTING WORK.
- ALL ELEVATIONS SHOWN ARE BASED ON THE U.S.C. AND G.S. MEAN SEA LEVEL DATUM, 1929.
- ALL CONSTRUCTION SHALL BE IN ACCORDANCE WITH THE LATEST STANDARDS AND SPECIFICATIONS OF HOWARD COUNTY.
- ALL WORK SHALL COMPLY WITH ALL APPLICABLE PROVISIONS OF THE '1994 MARYLAND STANDARDS AND SPECIFICATIONS FOR SOIL EROSION AND SEDIMENT CONTROL' ISSUED BY THE MARYLAND DEPARTMENT OF THE ENVIRONMENT AND THE NATURAL RESOURCES CONSERVATION SERVICE.
- THE EXISTING TOPOGRAPHY IS TAKEN FROM FIELD RUN SURVEY WITH ONE FOOT CONTOUR INTERVALS PREPARED BY URS CORPORATION DATE NOV. 2000.
- THE PROPERTY LINES AND EASEMENT LINES ARE APPROXIMATELY INDICATED AS SHOWN ON PLAT NO. 7394
- SHOULD THE CONTRACTOR DISCOVER DISCREPANCIES BETWEEN THE PLANS AND THE FIELD CONDITIONS, THE ENGINEER IS TO BE NOTIFIED IMMEDIATELY TO RESOLVE THE SITUATION. SHOULD THE CONTRACTOR MAKE FIELD CORRECTIONS OR ADJUSTMENTS WITHOUT NOTIFYING THE ENGINEER, THEN THE CONTRACTOR ASSUMES ALL RESPONSIBILITY FOR THOSE CHANGES.
- CONTRACTOR IS SOLELY RESPONSIBLE FOR CONSTRUCTION MEANS, METHOD, TECHNIQUES, SEQUENCES, PROCEDURES, AND SAFETY PRECAUTIONS AND PROGRAMS.
- APPROXIMATE UTILITIES ARE SHOWN FROM AVAILABLE RECORDS. 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.
- ALL PIPE ELEVATIONS SHOWN ARE INVERT ELEVATIONS.
- POND STRUCTURE HAZARD CLASSIFICATION = A
- THIS PROJECT IS SUBJECT TO THE FIFTH EDITION OF THE SUBDIVISION AND LAND DEVELOPMENT REGULATIONS.
- THE COORDINATES SHOWN HEREON ARE BASED UPON THE HOWARD COUNTY GEODETIC CONTROL WHICH IS BASED UPON THE MARYLAND STATE PLAN COORDINATE SYSTEM, HOWARD COUNTY MONUMENT NOS. 17E6 AND 17E7A WERE USED FOR THIS PROJECT.
- THERE IS NO FLOODPLAIN ON THIS SITE.
- NO EXCESS FILL, CONSTRUCTION MATERIAL, OR DEBRIS SHALL BE STOCKPILED OR STORED IN THE WETLANDS OR BUFFER.
- NO TRAFFIC STUDY IS REQUIRED FOR THIS PROJECT.
- THIS PROJECT IS EXEMPT FROM THE FOREST CONSERVATION REQUIREMENTS IN ACCORDANCE WITH APPENDIX 'O' - HOWARD COUNTY CAPITAL IMPROVEMENT PROJECTS OF THE FOREST CONSERVATION MANUAL AS A SINGLE LOT CLEARING LESS THAN 40,000 SQUARE FEET OF FOREST.
- OWNERSHIP AND ALL MAINTENANCE OF THE STORM WATER MANAGEMENT FACILITY (P-1), REQUIREMENTS WILL THE RESPONSIBILITY OF HOWARD COUNTY.
- THE PROPOSED RETROFIT IMPROVEMENTS TO THE EXISTING SWM FACILITY HAVE BEEN DETERMINED A NECESSARY DISTURBANCE OF THE WETLANDS AND BUFFER IN ACCORDANCE WITH SECTION 16.16(C) OF THE SUBDIVISION AND LAND DEVELOPMENT REGULATIONS.

INDEX OF DRAWINGS

- TITLE SHEET
- GRADING AND EROSION AND SEDIMENT CONTROL PLAN
- STORMWATER MANAGEMENT POND AND DETAILS
- STORMWATER MANAGEMENT NOTES AND DETAILS
- EROSION AND SEDIMENT CONTROL NOTES AND DETAILS
- POND SPECIFICATIONS

2ND ELECTION DISTRICT HOWARD COUNTY, MARYLAND CAPITAL PROJECT NO. D-1106

BMP DATA SUMMARY	
ADDRESS	JEANNINE COURT, ST. JOHNS WOODS TOWNSHIP, HOWARD COUNTY, MD
MD COORDINATES (NAD 83)	NORTH 593,450 EAST 1,360,200
ADC MAP/GRID	12/A4
STRUCTURE TYPE	EXTENDED DETENTION WITH WETLAND
MOP LAND USE	OPEN SPACE
STRUCTURE DRAINAGE AREA	15.34 ACRES
TOTAL SITE DRAINAGE AREA	15.34 ACRES
RCN - POST DEVELOPMENT	T2
ON/OFF SITE SWM	ON SITE STORMWATER MANAGEMENT
OWNER	HOWARD COUNTY, MD

SITE ANALYSIS DATA CHART	
TOTAL PROJECT AREA	= 0.68 ACRES
AREA OF PLAN SUBMISSION	= 0.68 ACRES
LIMIT OF DISTURBED AREA	= 0.68 ACRES
PRESENT ZONING DESIGNATION	= 'R-20'
DPZ FILE REFERENCES	= S-85-25, P-85-36, F-86-144

AS-BUILT CERTIFICATION
I HEREBY CERTIFY THAT THE FACILITY SHOWN ON THIS PLAN WAS CONSTRUCTED AS SHOWN ON THE "AS-BUILT" PLANS AND MEETS THE APPROVED PLANS AND SPECIFICATIONS.

PE NO. _____
DATE _____

CERTIFY MEANS TO STATE OR DECLARE A PROFESSIONAL OPINION BASED UPON ON-SITE INSPECTIONS AND MATERIAL TESTS WHICH ARE CONDUCTED DURING CONSTRUCTION. THE ON-SITE INSPECTIONS AND MATERIAL TESTS ARE THOSE INSPECTIONS AND TESTS DEEMED SUFFICIENT AND APPROPRIATE BY COMMONLY ACCEPTED ENGINEERING STANDARDS. 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.

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 ON THE POND WITHIN 30 DAY OF COMPLETION. I ALSO AUTHORIZE PERIODIC ON-SITE INSPECTIONS BY THE HOWARD SOIL CONSERVATION DISTRICT."

Howard E. Saltzman 12/16/03
DEVELOPER DATE

APPROVED: DEPARTMENT OF PLANNING AND ZONING

[Signature] 2/2/04
Chief, Development Engineering Division # Date

[Signature] 3/2/04
Chief, Division of Land Development # Date

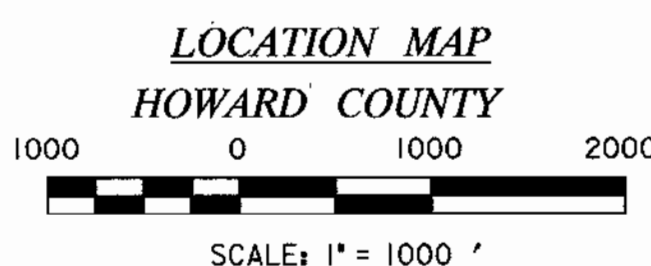
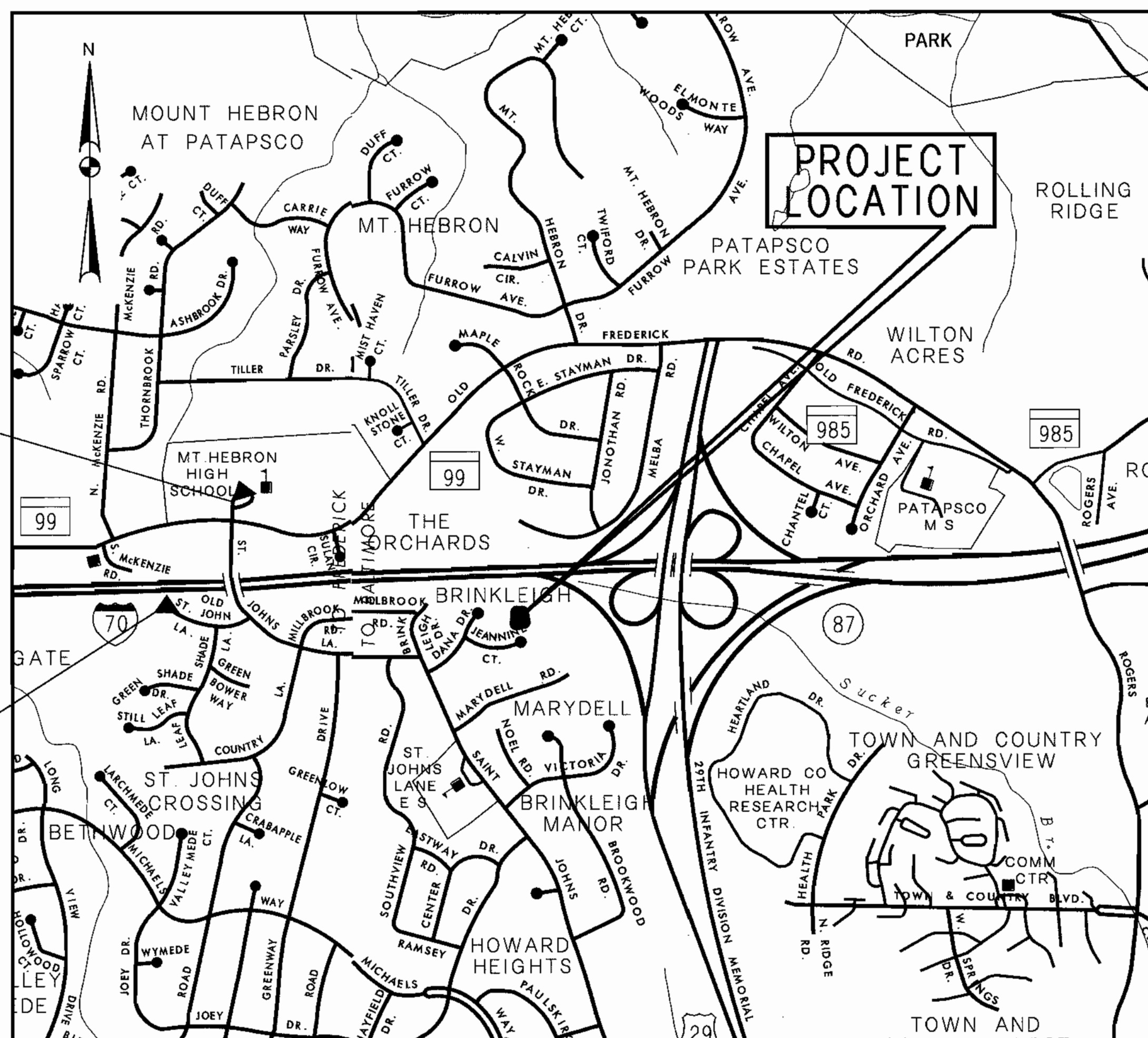
[Signature] 3/2/04
Director (RETIREE) # Date

17EA
EL. 479.49
N 594357.6
E 1357519.37

17EB
EL. 454.20
N 593813.87
E 1355731.86

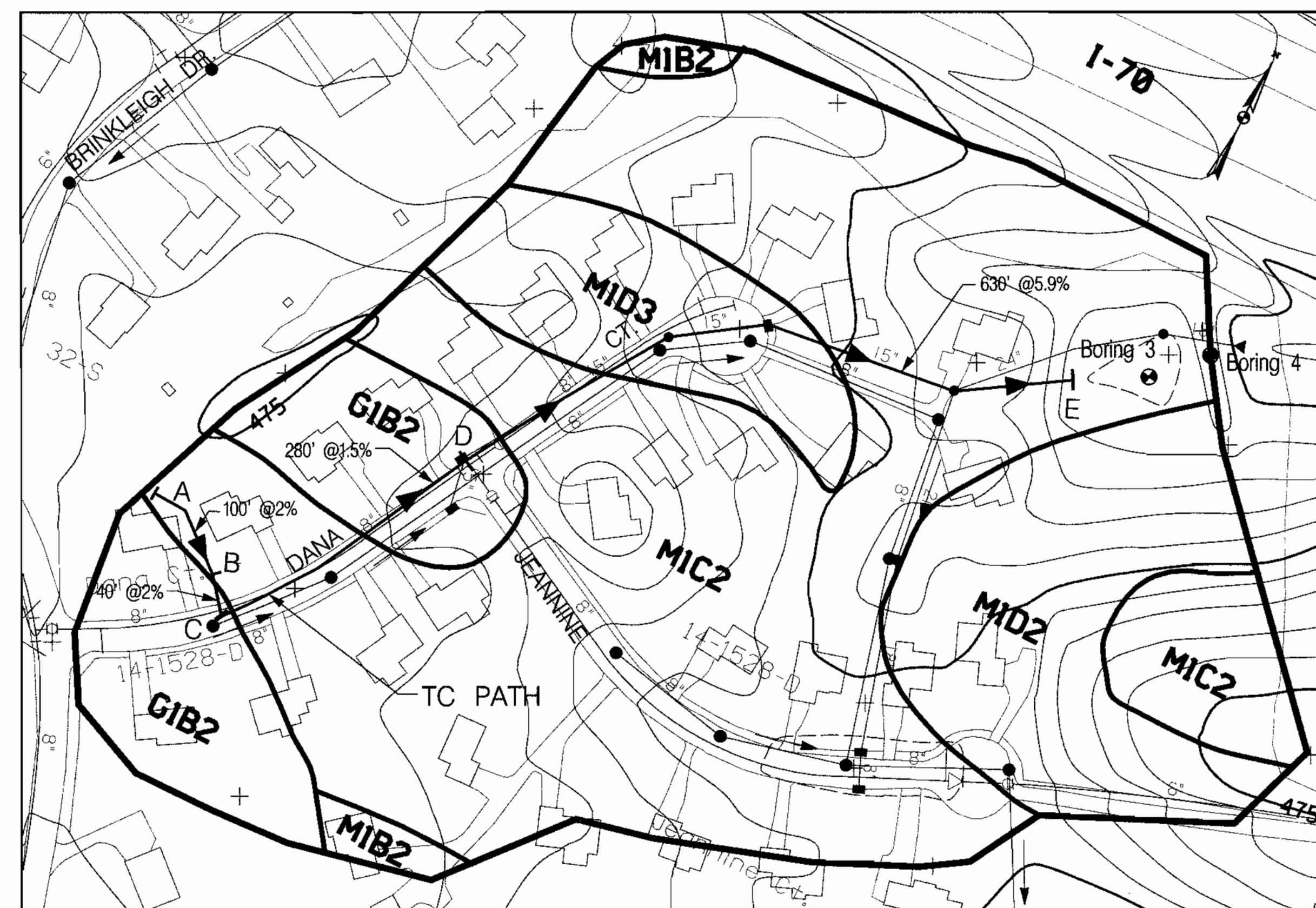
Owners:
Baltimore Gas and Electric
P.O. BOX 1475
Baltimore, MD 21203-1475
Phone No. 410-597-6953

Howard County
Department of Public Works
6751 Columbia Gateway Drive, Fifth Floor
Columbia, MD 21046
Phone No. 410-313-2330



PERMIT INFORMATION BLOCK					
SUBDIVISION NAME	ST. JOHNS WOODS	SECTION/AREA	N/A	LOT / PARCEL #	340
PLAT* OR L/F	BLOCK*	ZONE	TAX/ZONE MAP	ELEC. DIST	CENSUS TRACT
7392 - 7395	16	R-20	17	2	6022

ADDRESS CHART	
LOT NUMBER	STREET ADDRESS
PARCEL 340	2827 JEANNINE COURT, ELLICOTT CITY MD 21042



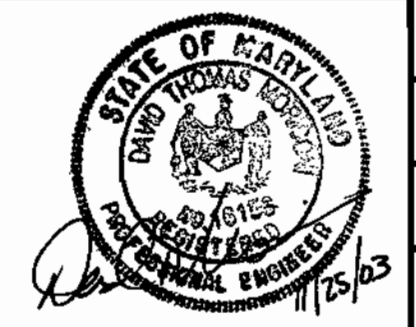
ENTIRE DRAINAGE AREA HYDROLOGIC SOIL TYPE 'B'
DRAINAGE AREA = 15.34 AC.
Tc = 0.23 hr
PERCENT IMPERVIOUS = 31%

STORMWATER MANAGEMENT SUMMARY CHART						
STORM	POND INFLOW PEAK DISCHARGES	EXISTING POND PEAK DISCHARGES	EXISTING POND ELEVATIONS	PROPOSED POND PEAK DISCHARGES	PROPOSED POND ELEVATIONS	PROPOSED STORAGE VOLUMES
	CFS	CFS	FT.	CFS	FT.	AC.-FT.
1 YR.	10.75	2.8	425.7	0.34	427.0	0.118
2 YR.	17.49	8.6	426.4	1.99	427.1	0.545
10 YR.	43.06	36.4	427.5	28.9	427.9	0.879
100 YR.	74.74	64.26	428.1	56.1	429.0	1.255

HOWARD COUNTY, MARYLAND
1/2/04
DIRECTOR OF PUBLIC WORKS DATE
Howard E. Saltzman 12/16/03
CHIEF, STORMWATER MANAGEMENT DIVISION DATE

12/16/03
CHIEF, BUREAU OF ENVIRONMENTAL SERVICES DATE
William J. [Signature] 1-7-04
CHIEF, BUREAU OF HIGHWAYS DATE

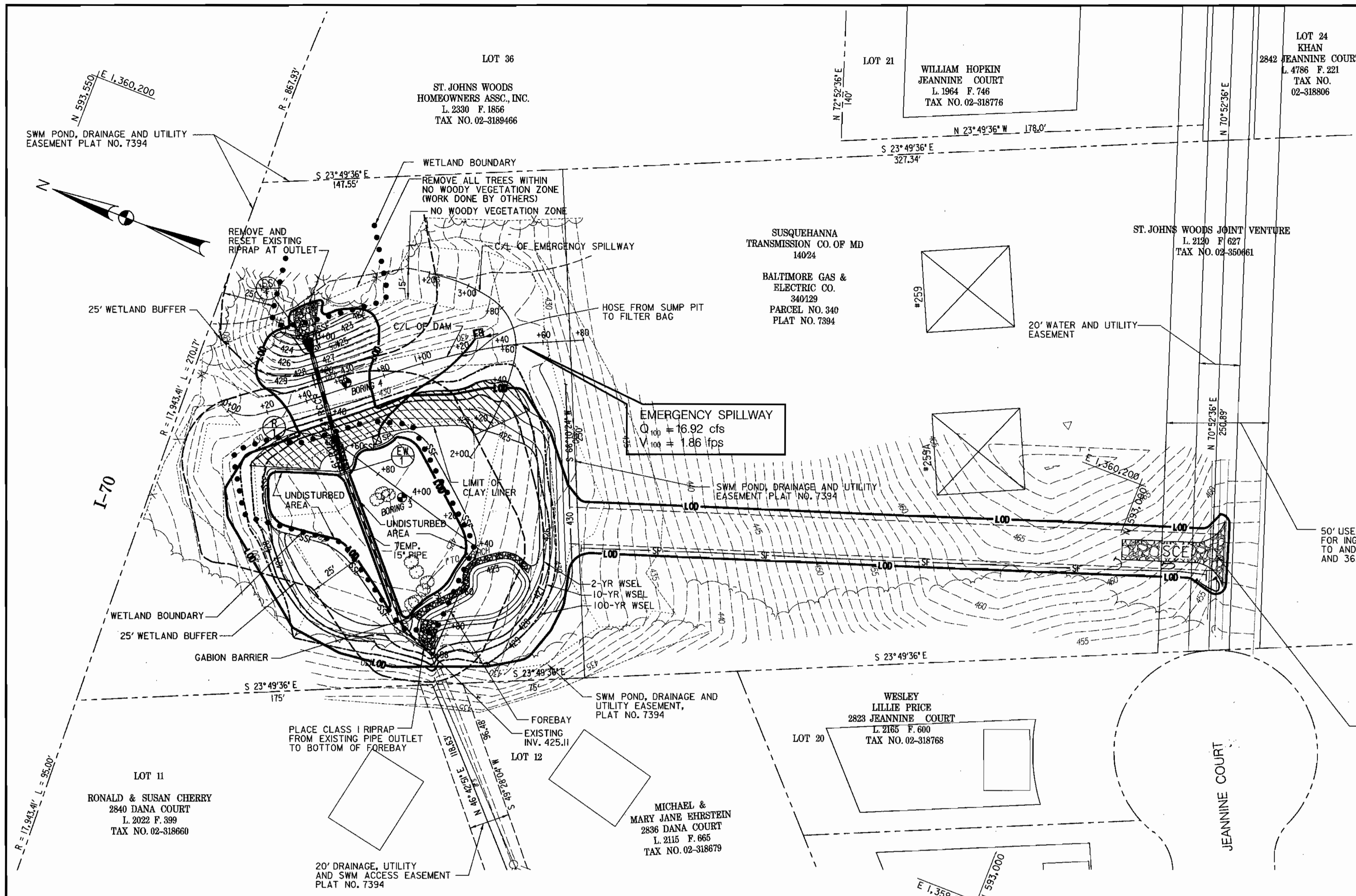
PREPARED BY
URS
4 NORTH PARK DRIVE
HUNT VALLEY, MARYLAND
TEL: (410) 785-7220



DES: WLM			
DRN: SYC/EG8			
CHK: DTM			
DATE: 7-10-03	BY NO.	REVISION	DATE

TITLE SHEET
SCALE MAP NO. N/A BLOCK NO.

STORMWATER MANAGEMENT RETROFIT AT ST. JOHNS WOODS (PARCEL NO. 340) CAPITAL PROJECT NO. D-1106
2ND ELECTION DISTRICT - HOWARD COUNTY, MARYLAND
TAX MAP NO. 17, GRID NO. 16, PARCEL NO. 340
SCALE AS SHOWN
SHEET 1 OF 6



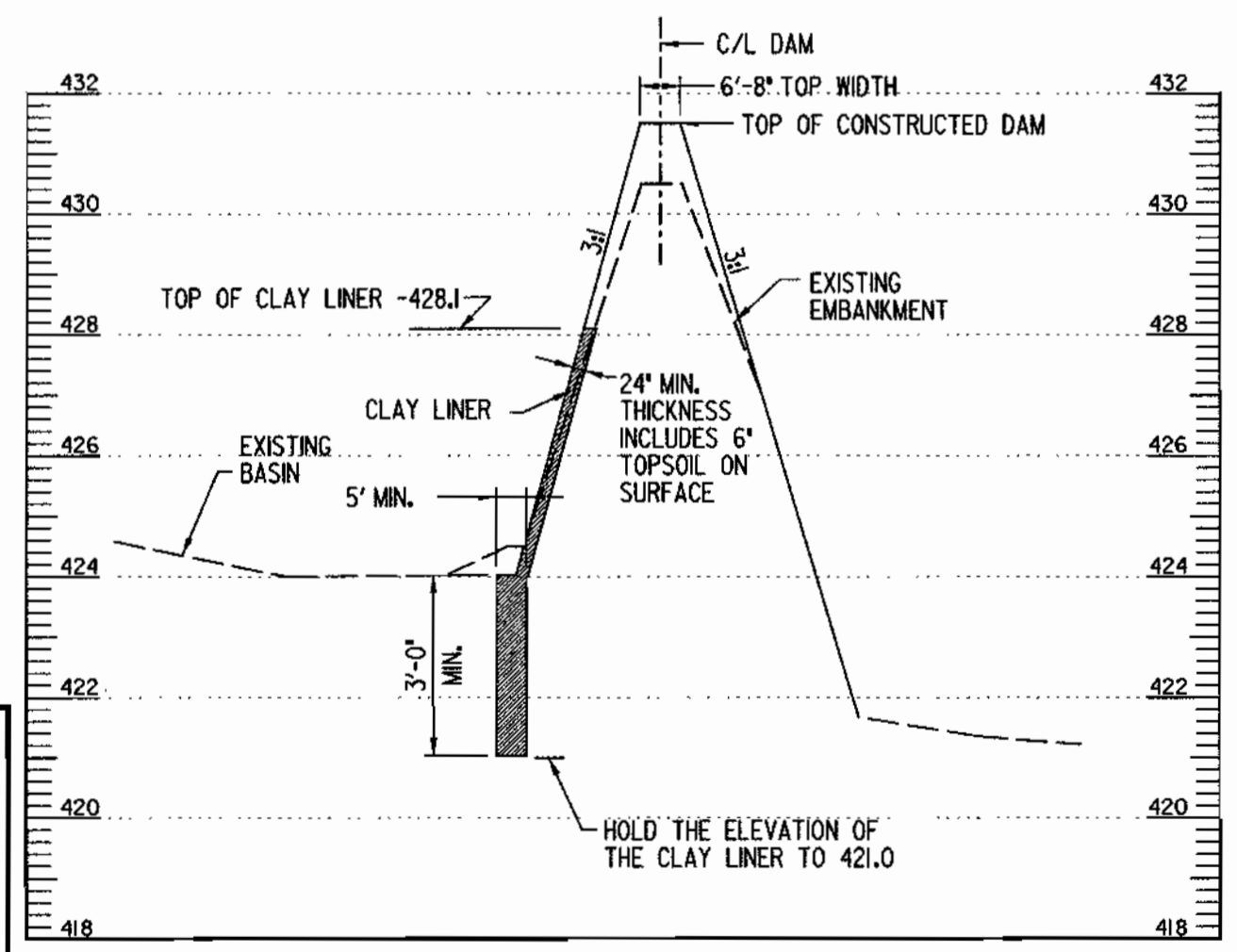
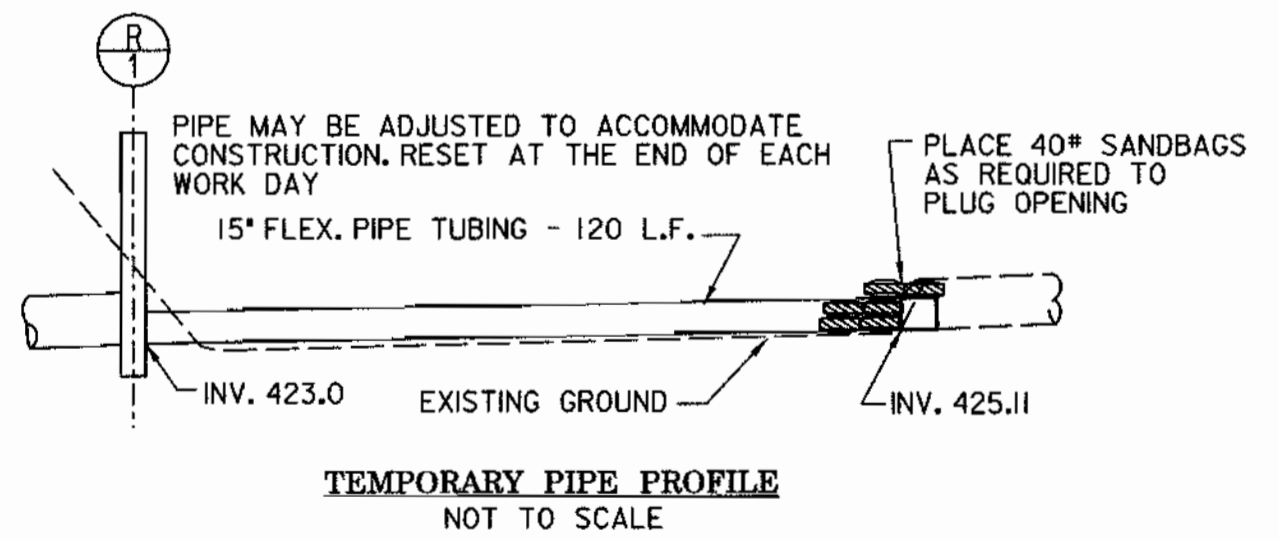
RECORD OF SUBSURFACE EXPLORATION						RECORD OF SUBSURFACE EXPLORATION					
Project: St. Johns Woods Location: Howard County, MD Job Number: 28020039 Inspector: JMS Boring Method: Hollow Stem Auger Hole Diameter: 8 inches Water Level at Completion: NA			Boring Number: B-3 Drilling Company: EBA Engineering, Inc. Driller: D. Edelman Data drilled: 12/16/03 Surface Elevation: 424.1 feet Hammer Weight/Drop: 140lbs./30 in Water Level After 24 hrs.: 3.0' saved @ 8.7'			Project: St. Johns Woods Location: Howard County, MD Job Number: 28020039 Inspector: JMS Boring Method: Hollow Stem Auger Hole Diameter: 8 inches Water Level at Completion: NA			Boring Number: B-4 Drilling Company: EBA Engineering, Inc. Driller: D. Edelman Data drilled: 12/16/03 Surface Elevation: 430.6 feet Hammer Weight/Drop: 140lbs./30 in Water Level After 24 hrs.: Dry, saved @ 12.7'		
Elevation (ft)	Description	Depth (ft)	Sample Number	Blows / 6 in	Remarks	Elevation (ft)	Description	Depth (ft)	Sample Number	Blows / 6 in	Remarks
424.1	3 inches top soil	0				430.6		0			
423	Brown, Moist Medium dense, Micaceous silty fine to medium SAND(Fil)	1	S-1 SS	5-8-6	7"	429	Brown, Moist Medium dense, Micaceous silty fine to medium SAND	1	S-1 SS	9-9-10	12"
422		2				428		2			
420	Brown, Moist loose, Micaceous silty SAND, trace clay and wood (Fil)	3	S-2 SS	9-6-3	8"	427		3	S-2 SS	4-8-8	10"
418		4				426		4			
417	Dark brown, moist, loose, micaceous silty SAND, trace fine rock fragments	5	S-3 SS	6-5-5	12"	425		5	S-3 SS	2-1-1	12"
416		6				424		6			
415		7				423		7			
414		8				422	Brown, wet, very loose, micaceous silty SAND trace fine rock fragments	8	S-4 SS	2-1-2	14"
413	Brown - dark brown, moist medium dense, micaceous silty SAND, trace fine rock fragments	9	S-4 SS	9-10-9	15"	421		9			
412		10				420		10			
411		11				419		11			
410		12				418	Dark brown, wet, loose, micaceous silty SAND, trace fine rock fragments	12	S-5 SS	5-4-1	16"
409	Bottom of boring @ 15.0 feet	15	S-6 SS	12-10-13	12"	417		13			
408		16				416		14			
407		17				415		15			
406		18				414		16			
405		19				413		17			
404		20				412		18			
						411		19			
						410		20			

EBA Engineering, Inc. 4813 Seton Drive Baltimore, Maryland 21215
 SS = Split Spoon
 PT = Pushed Shelby Tube
 RC = Rock Core
 Sheet: 1 of 1

50' USE-IN-COMMON EASEMENT FOR INGRESS AND EGRESS TO AND FROM LOTS 21, 22, 23, 24, AND 36. OPEN SPACE, PLAT NO. 7349

NO STOCKPILES ARE PERMITTED ON SITE

PLAN SCALE: 1" = 30'



CLAY LINER SPECIFICATION

- CLAY LINER MATERIAL (GC, SC, CH OR CL) TO BE COMPACTED TO 95% OF AASHTO T-99 PER MD 378.108 THICKNESS MIN.
- GEOTECHNICAL ENGINEER TO BE PRESENT DURING THE CLAY LINER CONSTRUCTION AND TRENCH COMPACTION.
- SEE PLAN VIEW FOR LIMITS OF CLAY LINER.

OPERATION, MAINTENANCE AND INSPECTION

Inspection of the pond(s) shown hereon shall be performed at least annually, in accordance with the checklist and requirements contained within USDA, NRCS Standards and Specifications For Ponds (MD-378). The pond owner(s) and any heirs, successors, or assigns shall be responsible for the safety of the pond and the continued operation, surveillance, inspection, and maintenance thereof. The pond owner(s) shall promptly notify the Soil Conservation District of any unusual observations that may be indications of distress such as excessive seepage, turbid seepage, sliding or slumping.

MDE TRACKING NO. 03-NT-0092/200362525

AS-BUILT CERTIFICATION

I hereby certify that the facility shown on this plan was constructed as shown on the "as-built" plan and meets the approved plans and specifications.

Signature: _____ PE NO.: _____
 DATE: _____

DEVELOPER'S CERTIFICATE

"I / We Certify that all development and construction will be done according to this plan for sediment and erosion control, and that all responsible personnel involved in that 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 day of completion. I also authorize periodic on-site inspection by the Howard Soil Conservation District"

Signature: *Howard E. Saltzman* DATE: 12/16/03
 DEVELOPER DATE

ENGINEER'S CERTIFICATE

"I certify that this plan for sediment and erosion control represents a practical and workable plan based on my personal knowledge of the site conditions and that it is prepared in accordance with the requirements of the HOWARD Soil Conservation District. I have notified the developer that he/she must engage a registered professional engineer to supervise pond construction and provide the Howard Soil Conservation District with an "as-built" plan of the pond within 30 days of completion."

Signature: *DAVID T. MORLONI* DATE: Nov 25, 2003
 Signature of Engineer (Print name below signature) 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.

Signature: *Jim Mays* DATE: 2/25/04
 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.

Signature: *Howard Soil Conservation District* DATE: 2/25/04
 Signature of Engineer (Print name below signature) DATE

APPROVED: DEPARTMENT OF PLANNING AND ZONING

Chief, Development Engineering Division: *Wendy Hammett* Date: 2/21/04
 Chief, Division of Land Development: *Wendy Hammett* Date: 3/2/04
 Director: *Stephen G. Kelly* Date: 3/2/04

HOWARD COUNTY, MARYLAND

Director of Public Works: *John J. O'Hara* DATE: 12/16/03
 Chief, Bureau of Environmental Services: *William J. Madala* DATE: 1-7-04
 Chief, Stormwater Management Division: *Howard E. Saltzman* DATE: 12/16/03
 Chief, Bureau of Highways: *William J. Madala* DATE: 1-7-04

PREPARED BY
URS
 4 NORTH PARK DRIVE
 HUNT VALLEY, MARYLAND
 TEL: (410) 785-7220

DES: WLM			
DRN: SYC/EBG			
CHK: DTM			
DATE: 7-10-03			
BY NO.		REVISION	

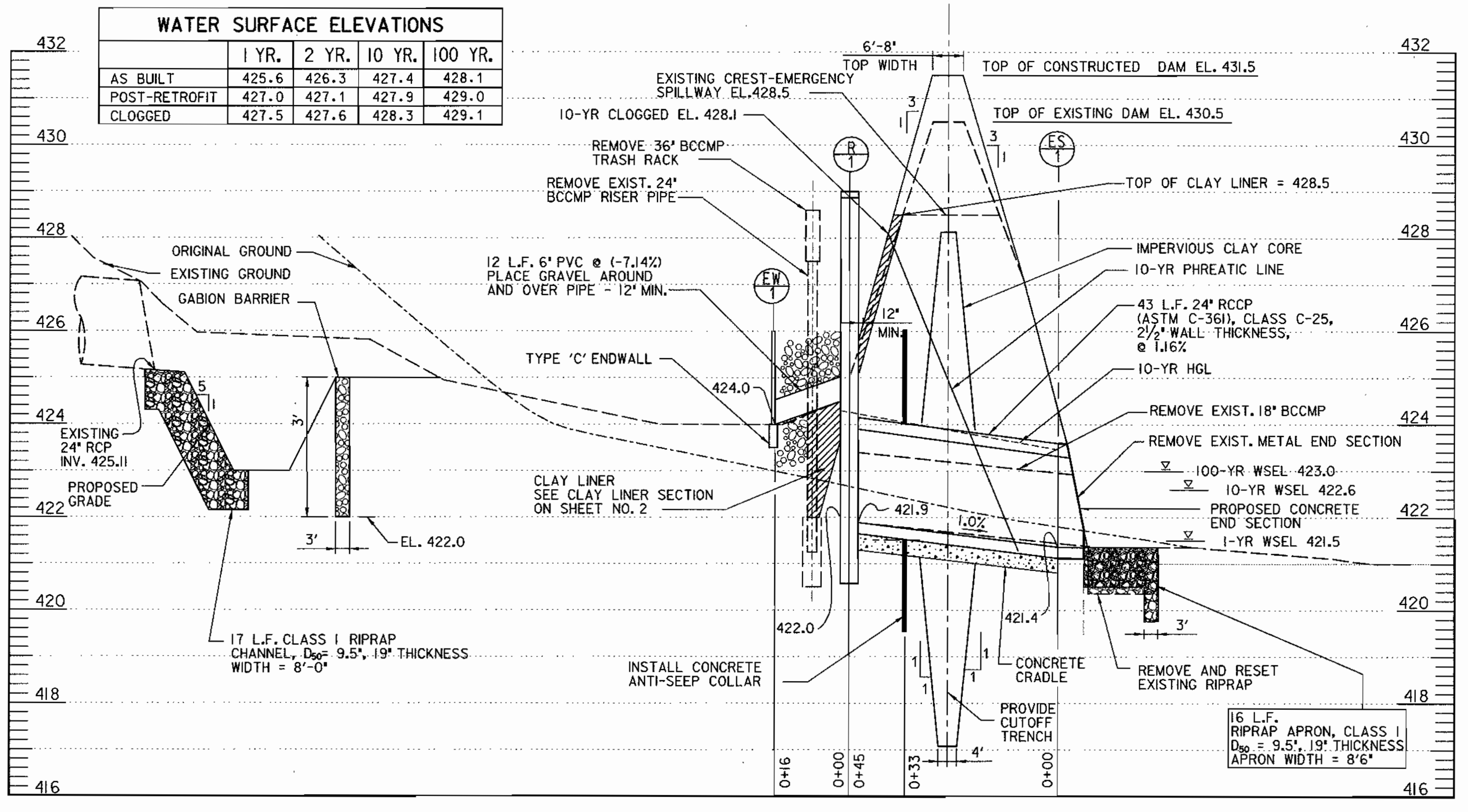
GRADING AND EROSION AND SEDIMENT CONTROL PLAN

SCALE MAP NO. N/A BLOCK NO.

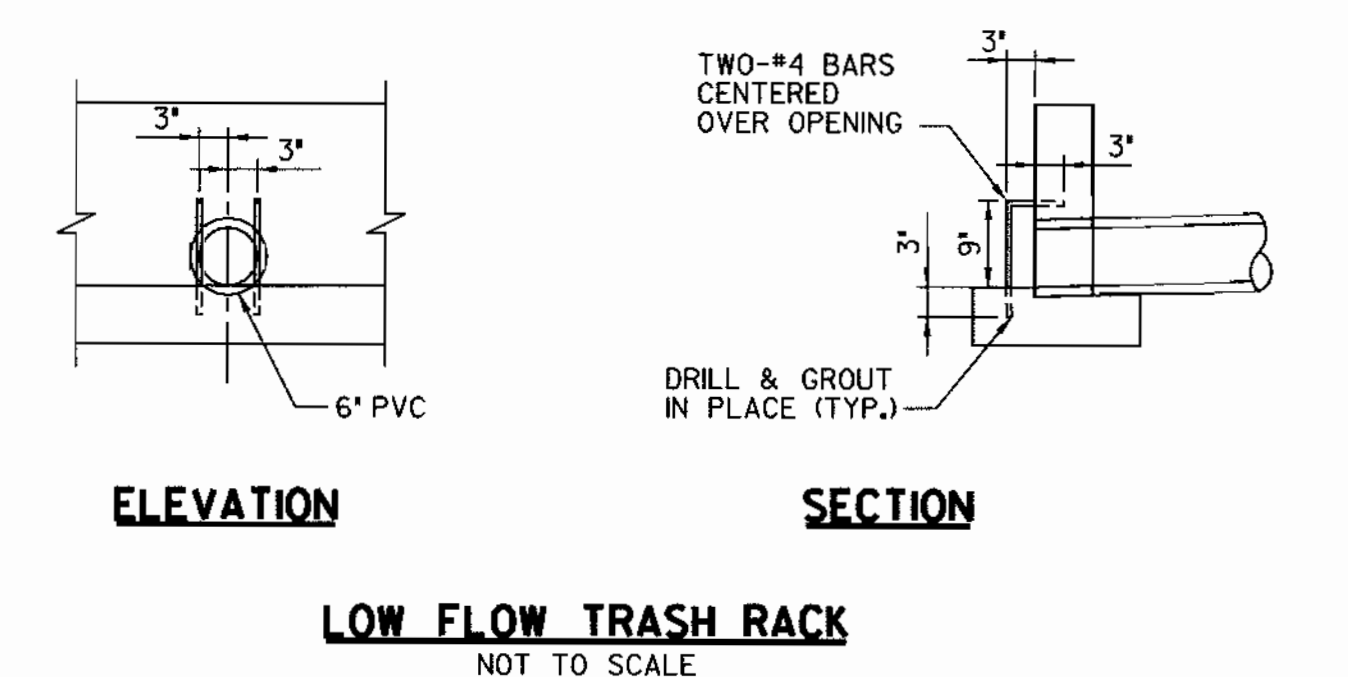
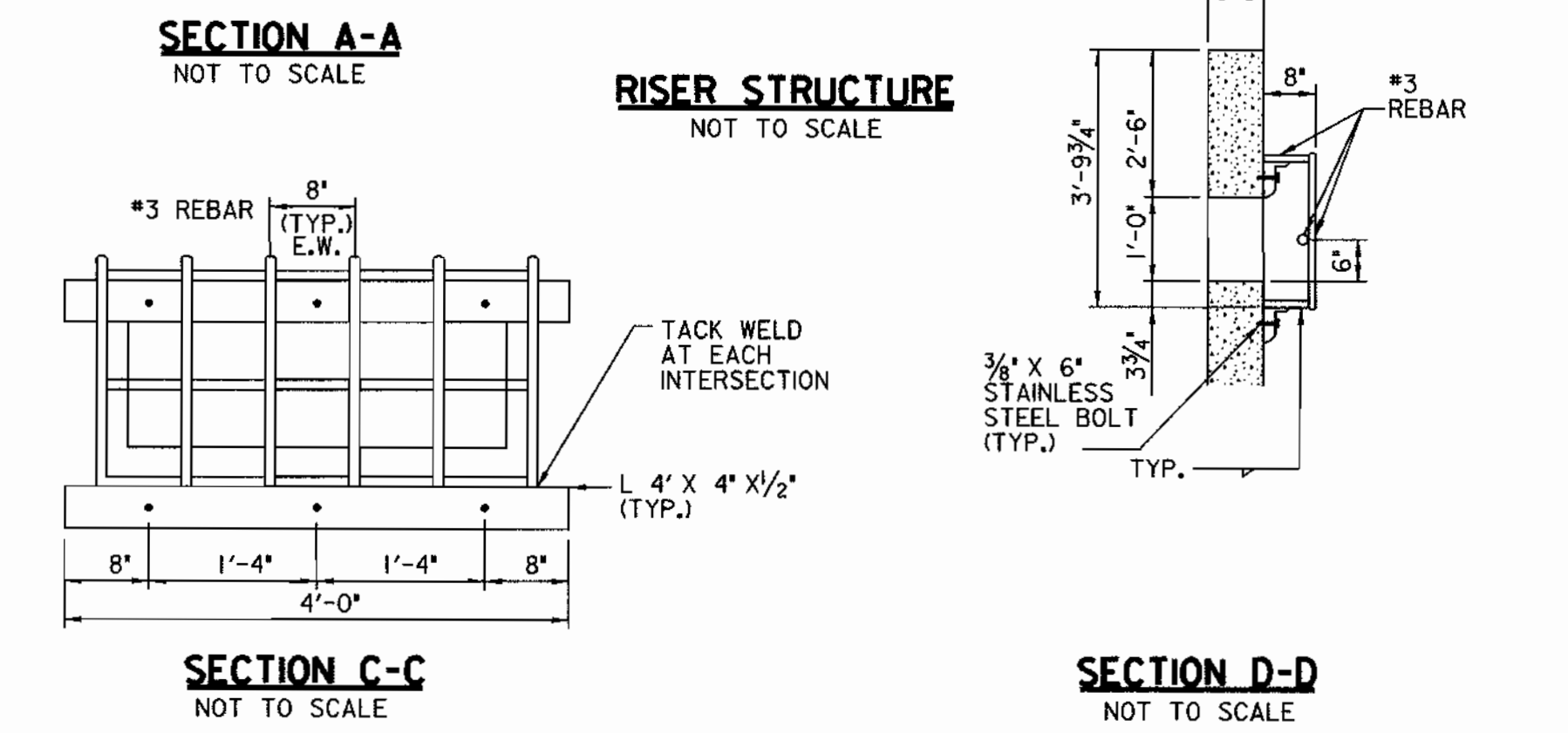
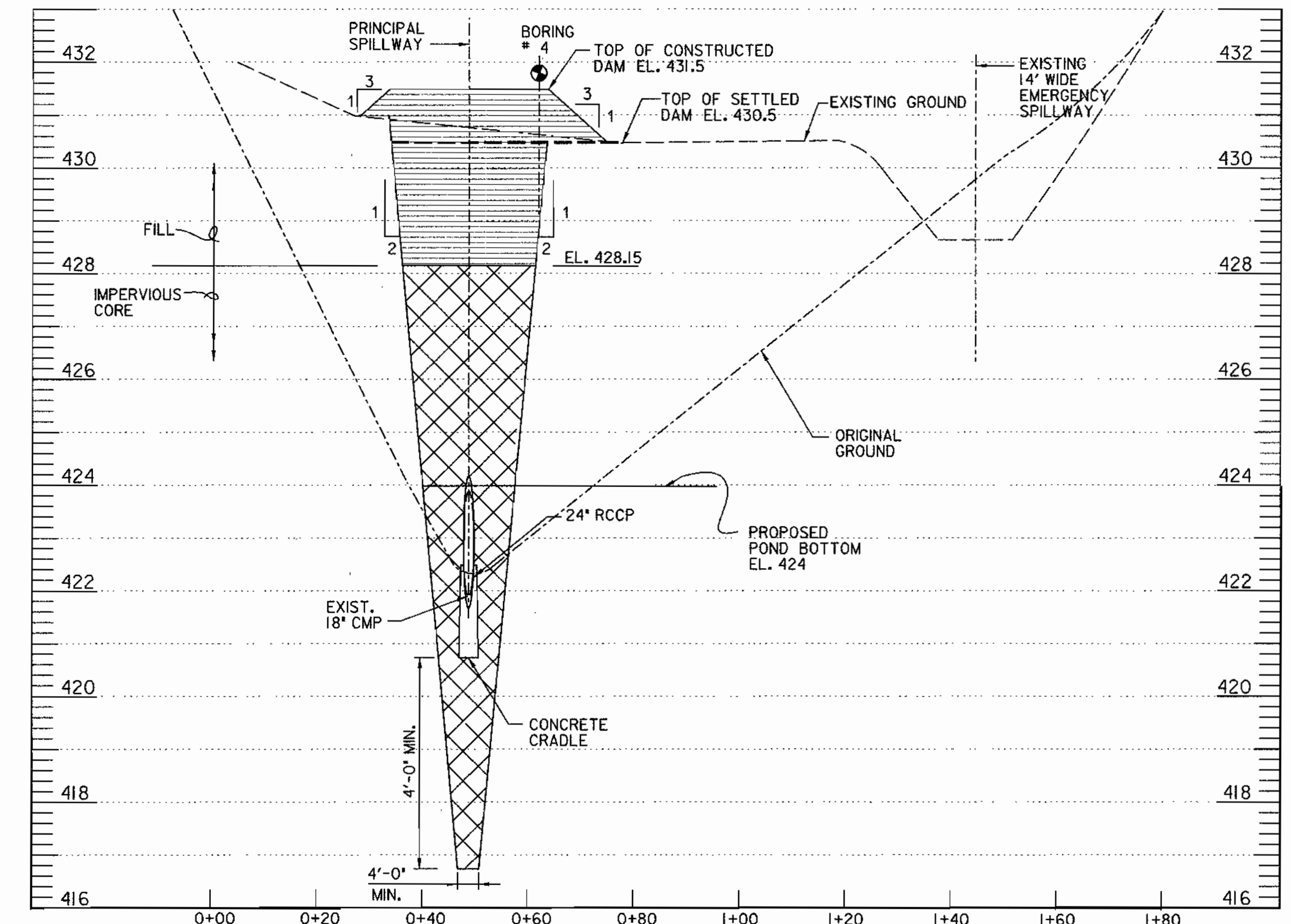
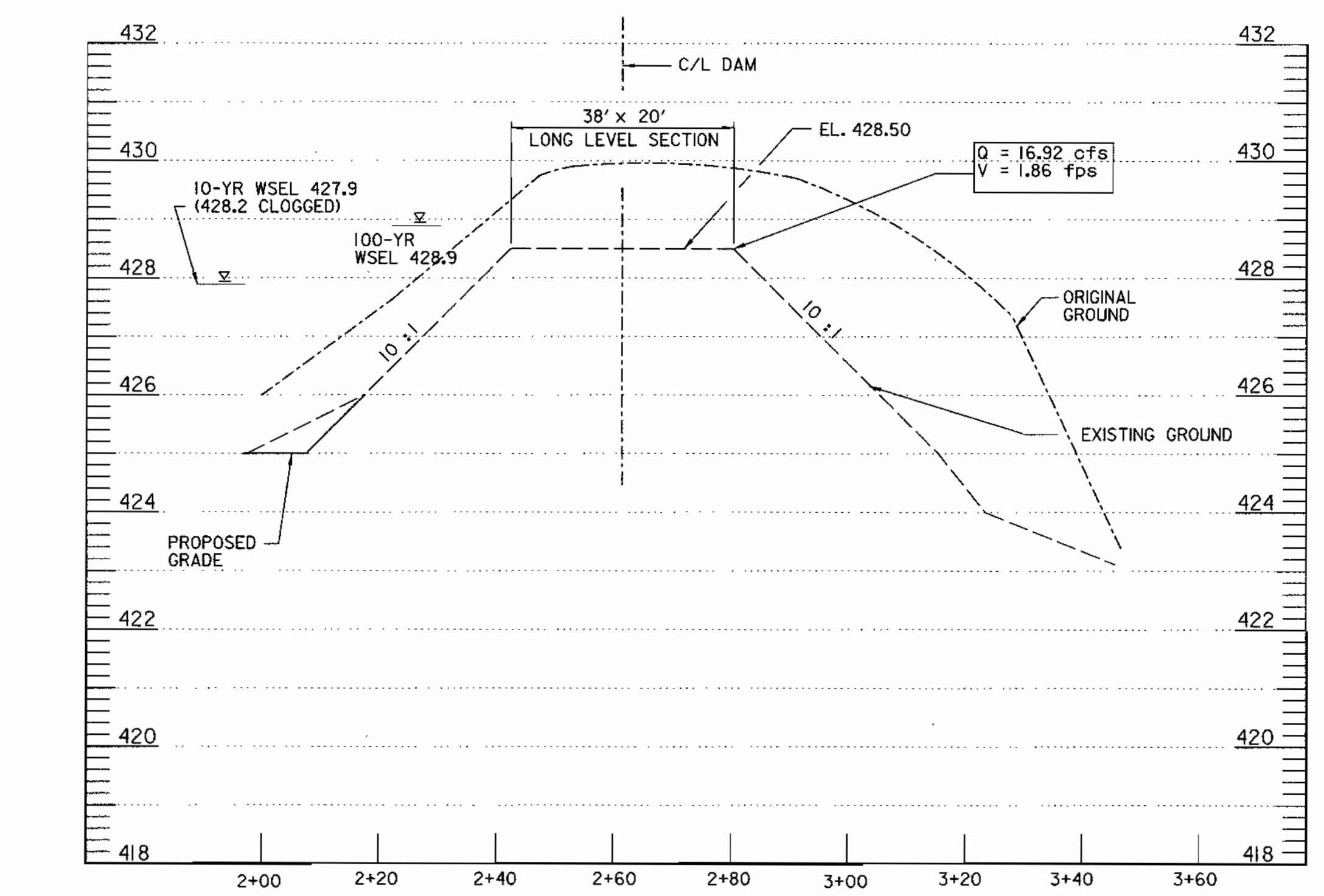
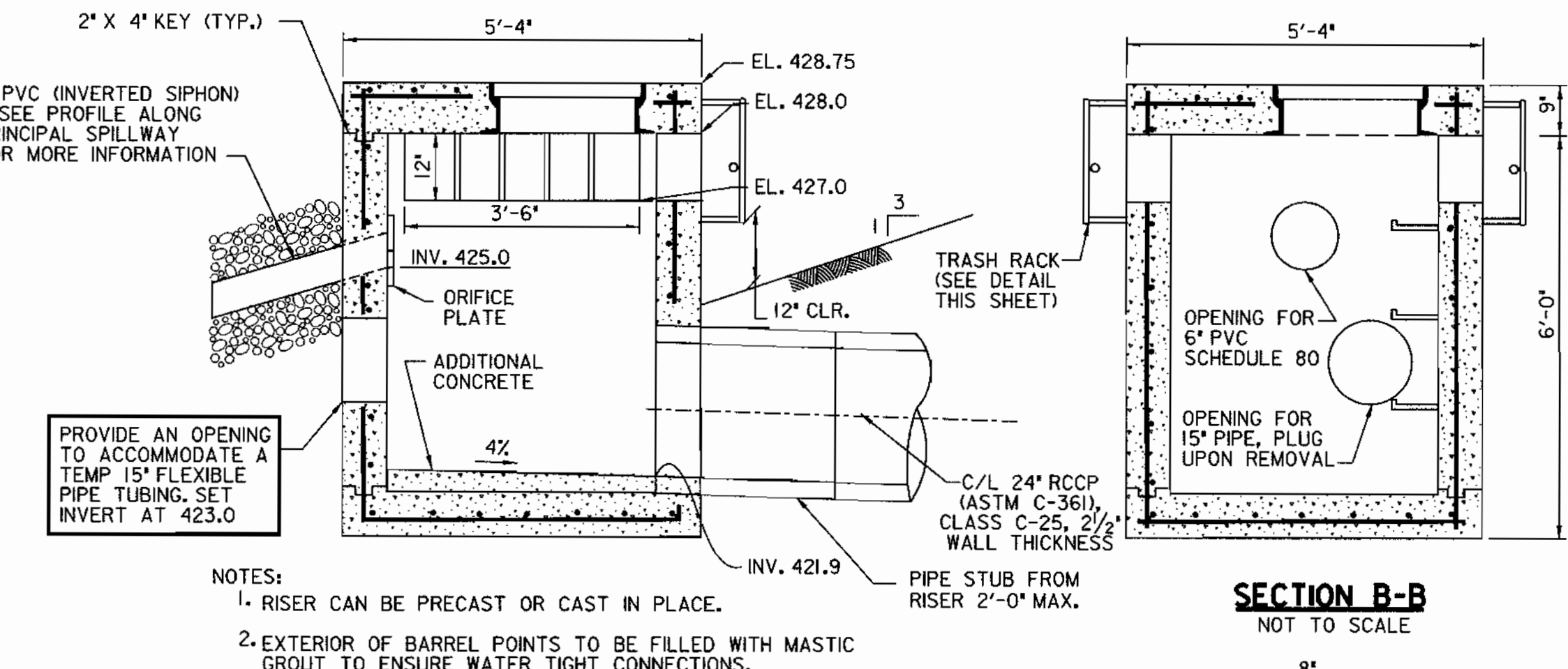
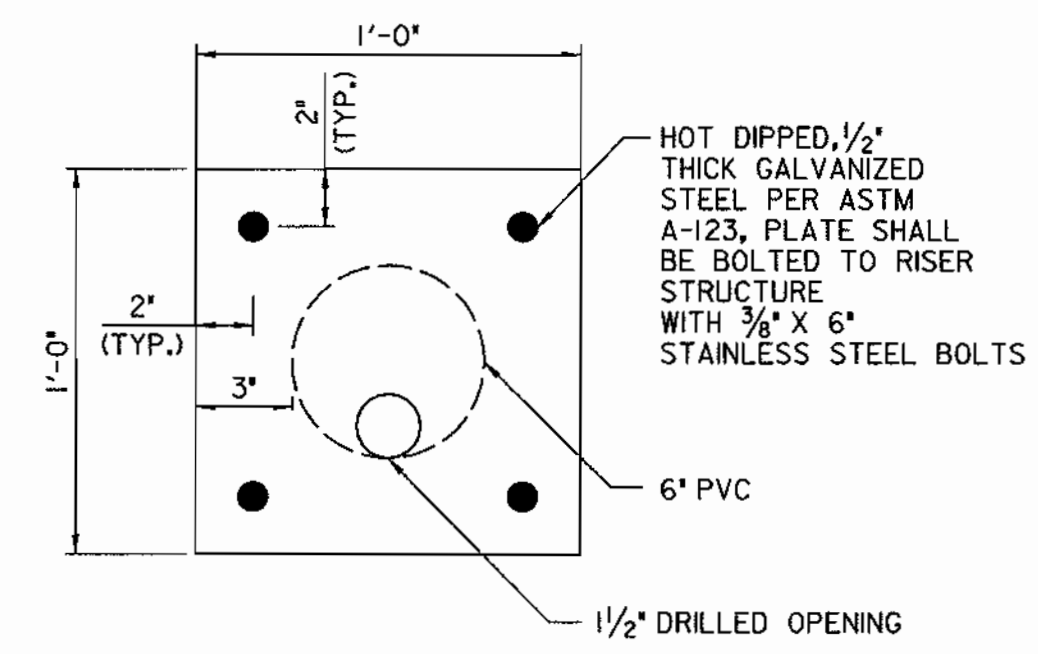
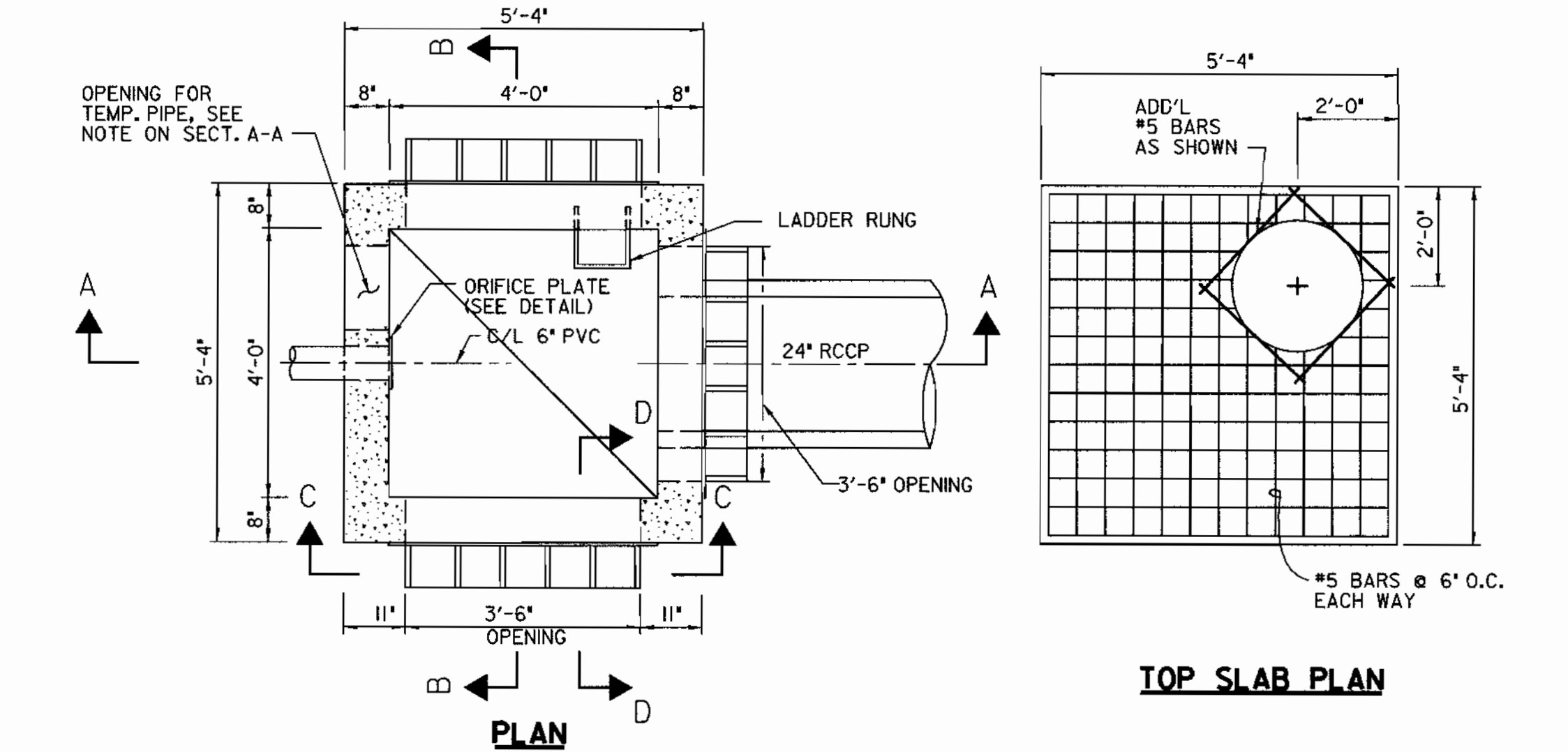
STORMWATER MANAGEMENT RETROFIT AT ST. JOHNS WOODS (PARCEL NO. 340) CAPITAL PROJECT NO. D-1106

2ND ELECTION DISTRICT - HOWARD COUNTY, MARYLAND
 TAX MAP NO. 17, GRID NO. 16, PARCEL NO. 340

SCALE AS SHOWN
 SHEET 2 OF 6



- GENERAL NOTES:**
- REFER TO HOWARD COUNTY STANDARD SD 3.9I FOR SIDEWALK FRAME & COVER.
 - ALL REBAR TO HAVE 2" CONCRETE COVER MINIMUM.
 - CONCRETE SHALL BE MIX NO. 2 (3000 PSI) FOR CAST-IN-PLACE UNIT OR MIX NO. 6 (4500 PSI) FOR PRECAST UNIT.
 - REINFORCEMENT SHALL CONFORM TO ASTM A-615, GRADE 60, AND ALL EXPOSED REBAR SHALL BE GALVANIZED PER ASTM A 153 (AASHTO M 232).
 - ALL REINFORCING BARS ARE #5 AS SHOWN UNLESS NOTED OTHERWISE.
 - LADDER RUNGS SHALL BE INSTALLED IN VERTICAL ALIGNMENT AT 1'-4" MAX. VERTICAL SPACING. RUNG TYPES SHALL BE IN ACCORDANCE WITH STANDARD G5.21 AND SHALL BE INCIDENTAL TO THE COST OF THE RISER STRUCTURE.
 - NO. 57 STONE UNDER THE OUTLET STRUCTURE WILL BE INCIDENTAL.



APPROVED: DEPARTMENT OF PLANNING AND ZONING

Chief, Development Engineering Division: *[Signature]* Date: 2/22/04

Chief, Division of Land Development: *[Signature]* Date: 2/2/04

Director (RETIRING): *[Signature]* Date: 3/2/04

NOTE:
ORIGINAL GROUND FROM 1986 DESIGN DRAWINGS
EXISTING GROUND FROM NOV. 2000 SURVEY BY URS CORPORATION

HOWARD COUNTY, MARYLAND

DIRECTOR OF PUBLIC WORKS: *[Signature]* DATE: 12/16/03

CHIEF, STORMWATER MANAGEMENT DIVISION: *[Signature]* DATE: 12/16/03

PREPARED BY

URS

4 NORTH PARK DRIVE
HUNT VALLEY, MARYLAND
TEL: (410) 785-7220

CHIEF, BUREAU OF ENVIRONMENTAL SERVICES: *[Signature]* DATE: 12/16/03

CHIEF, BUREAU OF HIGHWAYS: *[Signature]* DATE: 1-7-04

DES: WLM	BY NO.	REVISION	DATE
DRN: SYC/EGB			
CHK: DTM			
DATE: 7-10-03			

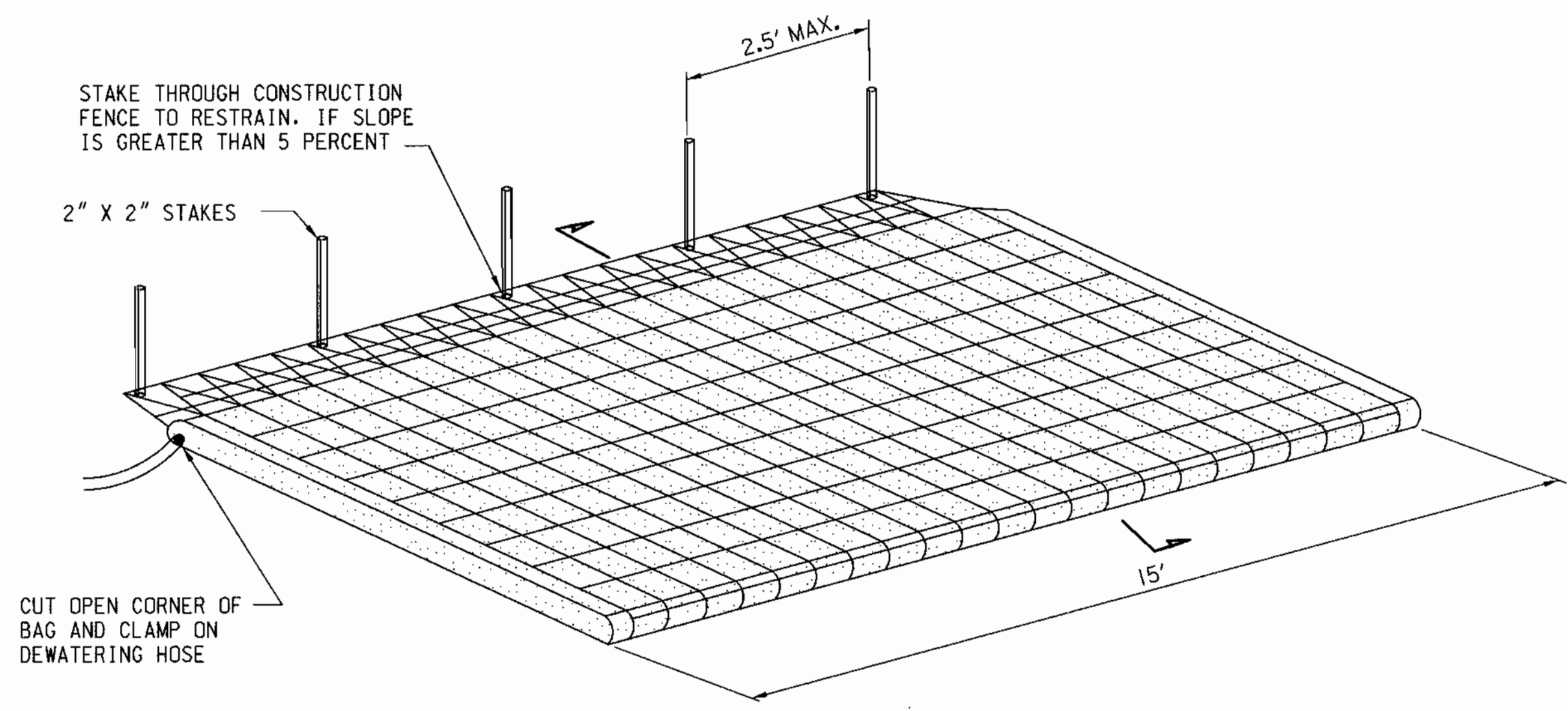
STORMWATER MANAGEMENT
POND AND DETAILS

SCALE MAP NO. N/A BLOCK NO.

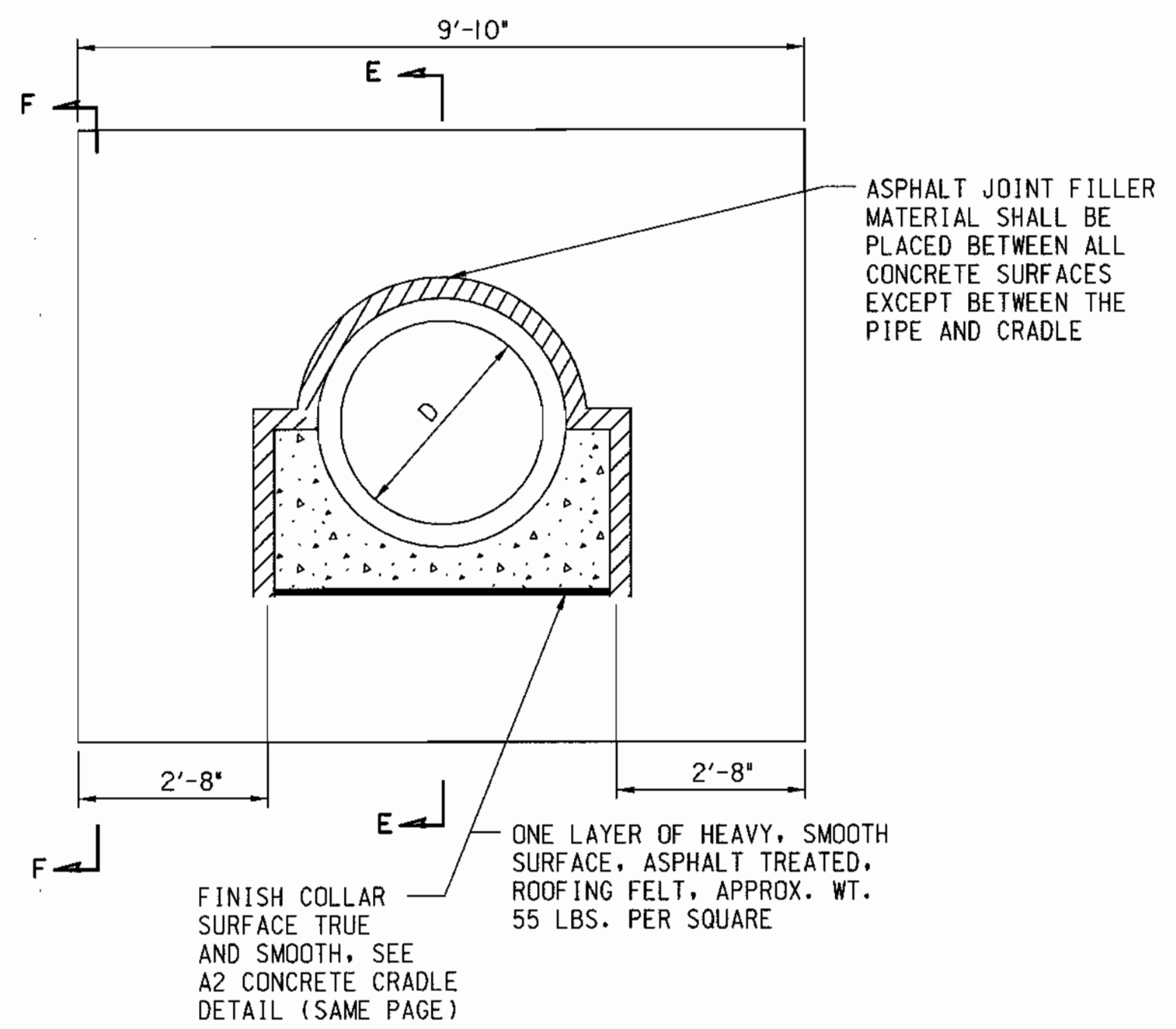
STORMWATER MANAGEMENT RETROFIT AT
ST. JOHNS WOODS (PARCEL NO. 340)
CAPITAL PROJECT NO. D-1106

2ND ELECTION DISTRICT - HOWARD COUNTY, MARYLAND
TAX MAP NO. 17, GRID NO. 16, PARCEL NO. 340

SCALE AS SHOWN
SHEET 3 OF 6

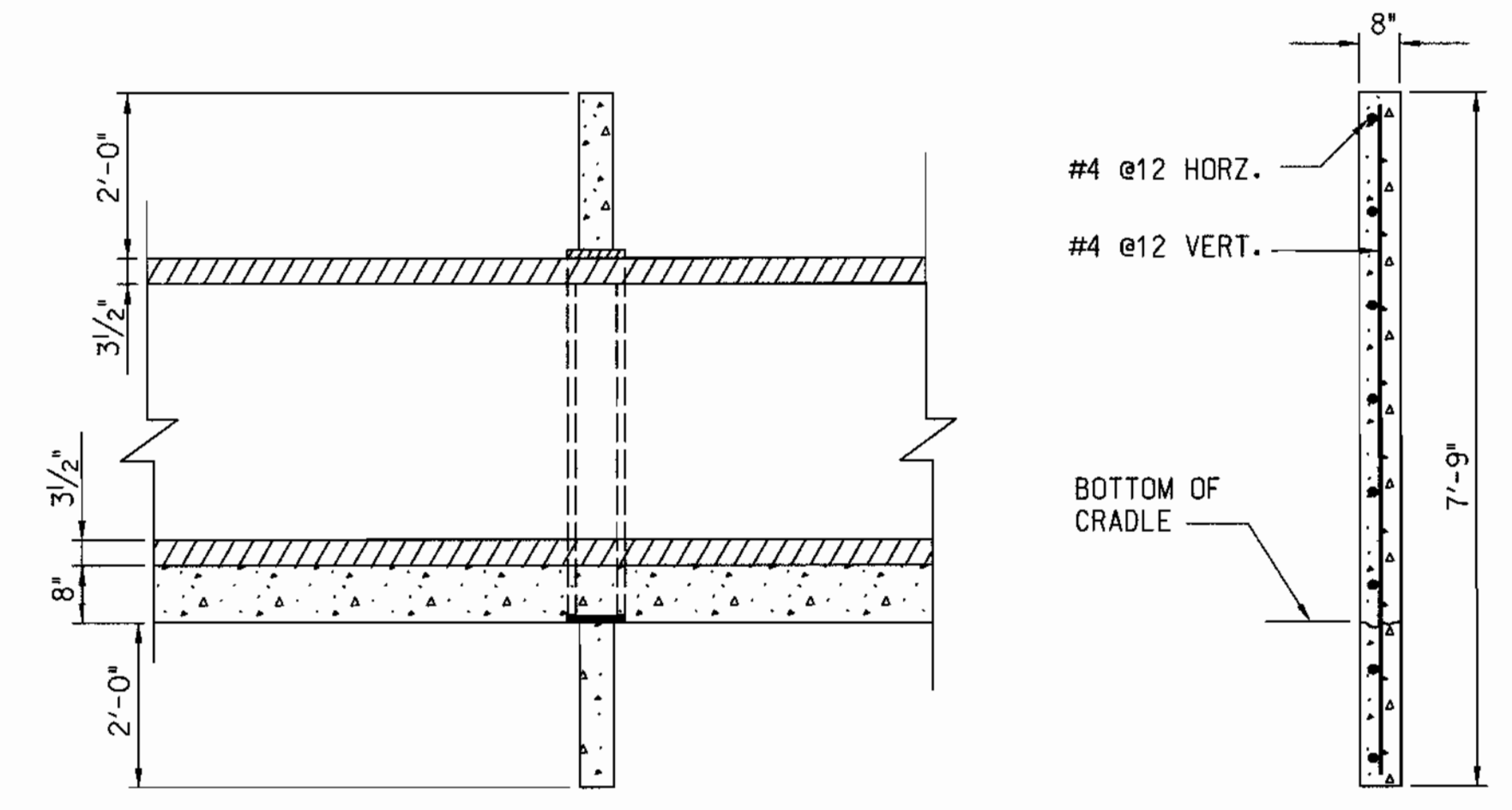


ISOMETRIC VIEW



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

SECTION VIEW

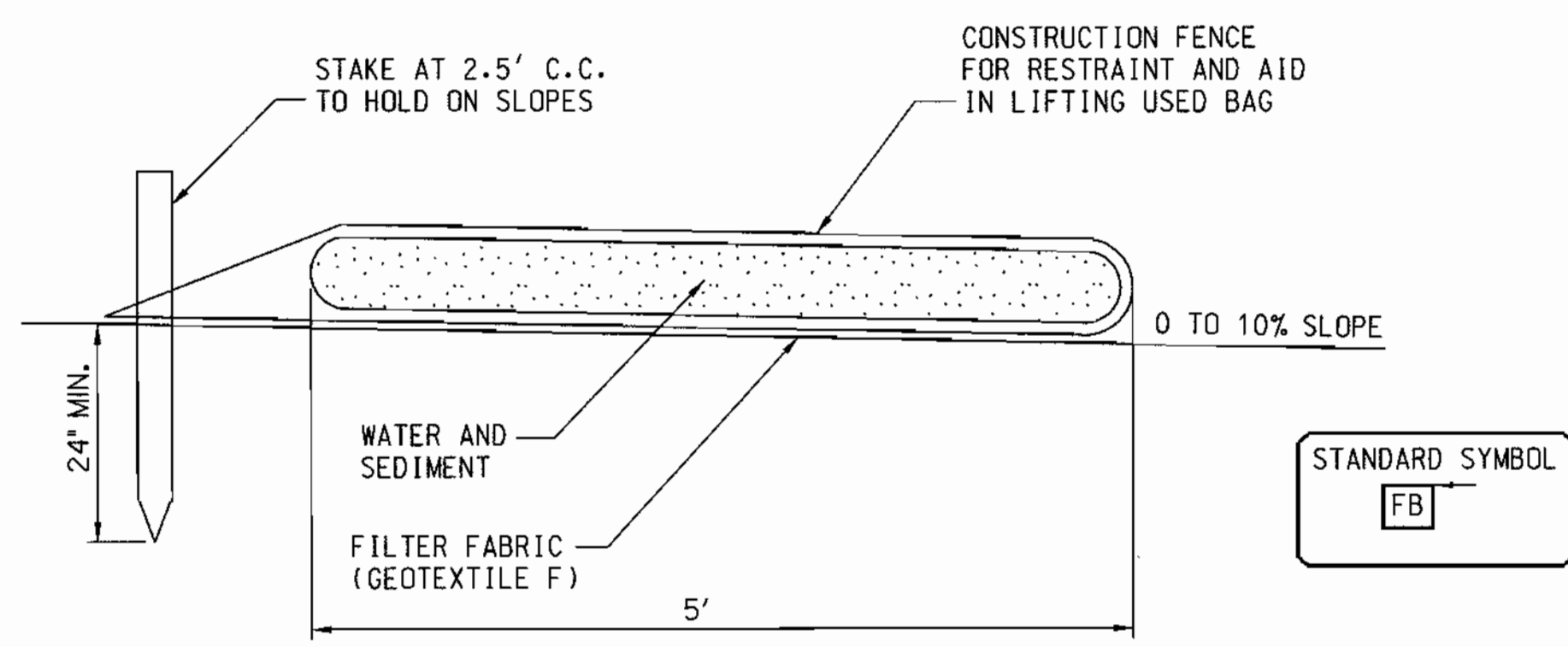


SECTION F-F (SHOWING STEEL)

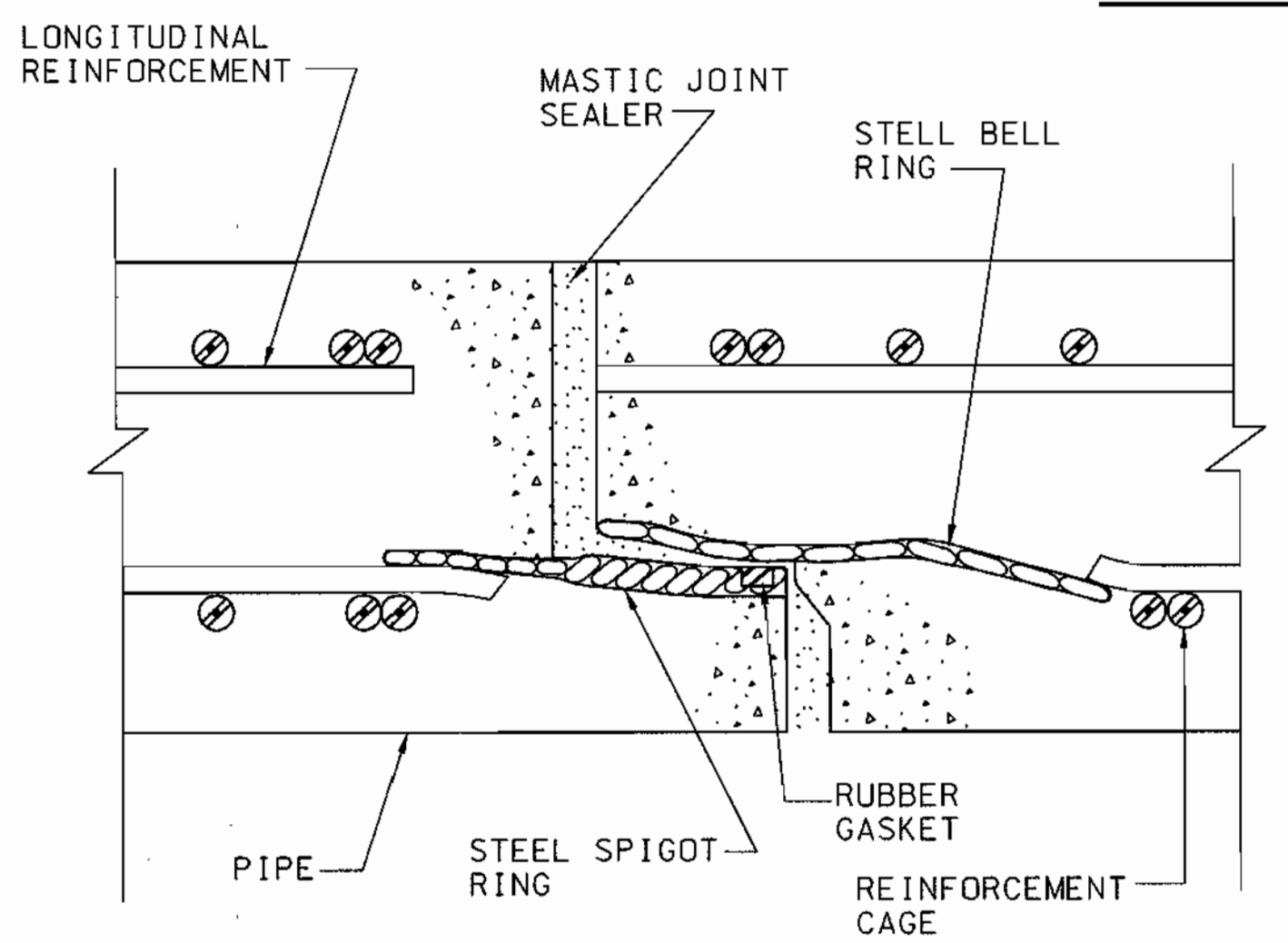
SECTION E-E

DETAIL OF ANTI-SEEP COLLAR ALTERNATE FOR CLASS(a) DAMS LESS THAN 50 F.T. HIGH

NOT TO SCALE



SECTION



ASTM DESIGNATION C361

(Diameters 12 thru 168 inch pressures to 125 feet of head) NOT TO SCALE

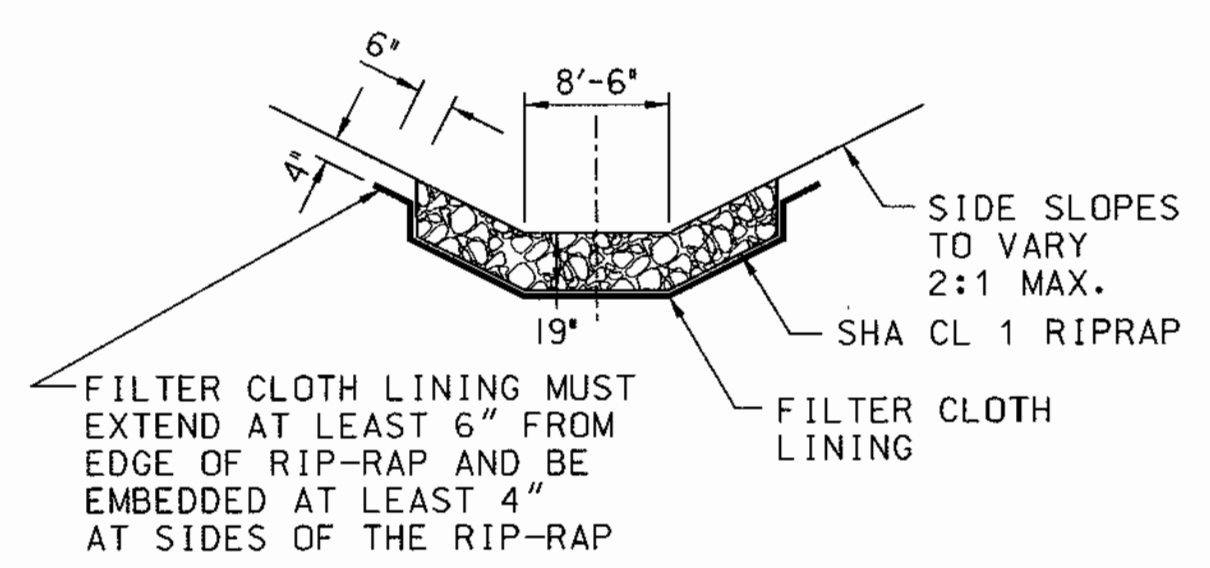
NOTES:

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

Tensile Strength	50 lb / in (min)	Test: MSMT 509
Tensile Modulus	20 lb / in (min)	Test: MSMT 509
Flow Rate	0.3 gal ft ² / minute (max.)	Test: MSMT 322
Filtering Efficiency	75% (min)	Test: MSMT 322

FILTER BAG

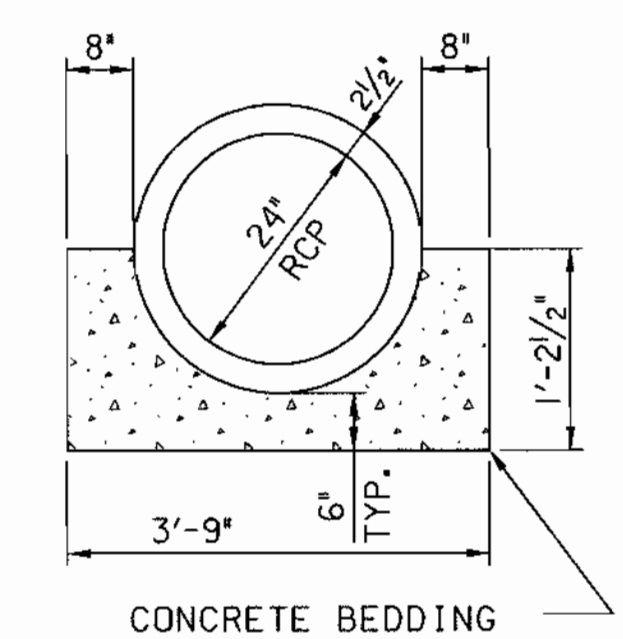
(TEMPORARY EROSION CONTROL MEASURE) NOT TO SCALE



NOTE: FILTER CLOTH SHALL BE GEOTEXTILE CLASS C

RIPRAP DETAIL

NOT TO SCALE



SCS TR-46

A2 CONCRETE CRADLE DETAIL

NOT TO SCALE

AS-BUILT CERTIFICATION
I hereby certify that the facility shown on this plan was constructed as shown on the "as-built" plan and meets the approved plans and specifications.

Signature: _____ PE NO. _____
DATE: _____

DEVELOPER'S CERTIFICATE
"I / We Certify that all development and construction will be done according to this plan for sediment and erosion control, and that all responsible personnel involved in that construction project will have a Certificate of Attendance of 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"

Howard E. Salthman 12/16/03
DEVELOPER DATE

ENGINEER'S CERTIFICATE
"I certify that this plan for sediment and erosion control represents a practical and workable plan based on my personal knowledge of the site conditions and that it as 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 "as-built" plan of the pond within 30 days of completion."

David T. Moriconi Nov. 25, 2003
Signature of Engineer (Print name below signature) 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.

Jin Myung Lee 2/25/04
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.

Yuh-Jyh Lee 2/25/04
Howard Soil Conservation District Date

APPROVED: DEPARTMENT OF PLANNING AND ZONING

John J. ... 2/27/04
Chief, Development Engineering Division Date

Chris Hamilton 2/2/04
Chief, Division of Land Development Date

Stephen Salthman 3/2/04
Director (ACTING) Date

HOWARD COUNTY, MARYLAND

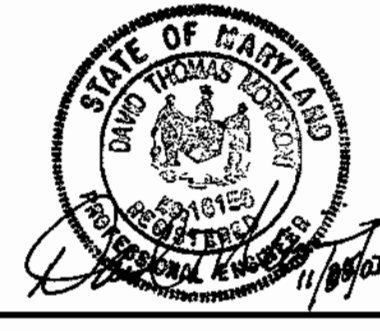
Howard E. Salthman 12/16/03
DIRECTOR OF PUBLIC WORKS DATE

John J. ... 12/16/03
CHIEF, BUREAU OF ENVIRONMENTAL SERVICES DATE

William Z. ... 1-7-04
CHIEF, BUREAU OF HIGHWAYS DATE

PREPARED BY

URS
4 NORTH PARK DRIVE
HUNT VALLEY, MARYLAND
TEL: (410) 785-7220



DES: WLM			
DRN: SYC/EGB			
CHK: DTM			
DATE: 7-10-03	BY NO.	REVISION	DATE

STORMWATER MANAGEMENT NOTES AND DETAILS

SCALE MAP NO. N/A BLOCK NO. _____

STORMWATER MANAGEMENT RETROFIT AT ST. JOHNS WOODS (PARCEL NO. 340) CAPITAL PROJECT NO. D-1106

2ND ELECTION DISTRICT - HOWARD COUNTY, MARYLAND
TAX MAP NO. 17, GRID NO. 16, PARCEL NO. 340

SCALE AS SHOWN

SHEET 4 OF 6

PERMANENT SEEDING NOTES

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

SEEDBED PREPARATION: LOOSEN UPPER 3 INCHES OF SOIL BY RAKING, DISCING, OR OTHER ACCEPTABLE MEANS BEFORE SEEDING, IF NOT PREVIOUSLY LOOSENED.

SOIL AMENDMENTS: IN LIEU OF SOIL TEST RECOMMENDATIONS, USE ONE OF THE FOLLOWING SCHEDULES:

1) PREFERRED - APPLY 2 TONS PER ACRE DOLOMITIC LIMESTONE (92 LBS. PER 1,000 SQUARE FEET) AND 600 LBS. PER ACRE 10-10-10 FERTILIZER (14 LBS. PER 1,000 SQUARE FEET) BEFORE SEEDING, HARROW OR DISC INTO UPPER 3 INCHES OF SOIL, AT TIME OF SEEDING, APPLY 400 LBS. PER ACRE 30-0-0 UREAFORM FERTILIZER (9 LBS. PER 1,000 SQUARE FEET).

2) ACCEPTABLE - APPLY 2 TONS PER ACRE DOLOMITIC LIMESTONE (92 LBS. PER 1,000 SQUARE FEET) AND 1,000 LBS. PER ACRE 10-10-10 FERTILIZER (23 LBS. PER 1,000 SQUARE FEET) BEFORE SEEDING, HARROW OR DISC INTO UPPER 3 INCHES OF SOIL.

SEEDING: FOR THE PERIOD MARCH 1 THROUGH APRIL 30 AND FROM AUGUST 1 THROUGH OCTOBER 15, SEED WITH 60 LBS. PER ACRE (1.4 LBS. PER 1,000 SQUARE FEET) OF KENTUCKY 31 TALL FESCUE. FOR THE PERIOD MAY 1 THROUGH JULY 31, SEED WITH 60 LBS. PER ACRE (1.4 LBS. PER 1,000 SQUARE FEET) OF KENTUCKY 31 TALL FESCUE. FOR THE PERIOD AUGUST 1 THROUGH OCTOBER 15, SEED WITH 60 LBS. PER ACRE (1.4 LBS. PER 1,000 SQUARE FEET) OF KENTUCKY 31 TALL FESCUE. FOR THE PERIOD NOVEMBER 1 THROUGH FEBRUARY 28, SEED WITH 60 LBS. PER ACRE (1.4 LBS. PER 1,000 SQUARE FEET) OF KENTUCKY 31 TALL FESCUE. FOR THE PERIOD MARCH 1 THROUGH APRIL 30 AND FROM AUGUST 1 THROUGH OCTOBER 15, SEED WITH 60 LBS. PER ACRE (1.4 LBS. PER 1,000 SQUARE FEET) OF KENTUCKY 31 TALL FESCUE. FOR THE PERIOD MAY 1 THROUGH JULY 31, SEED WITH 60 LBS. PER ACRE (1.4 LBS. PER 1,000 SQUARE FEET) OF KENTUCKY 31 TALL FESCUE. FOR THE PERIOD AUGUST 1 THROUGH OCTOBER 15, SEED WITH 60 LBS. PER ACRE (1.4 LBS. PER 1,000 SQUARE FEET) OF KENTUCKY 31 TALL FESCUE. FOR THE PERIOD NOVEMBER 1 THROUGH FEBRUARY 28, SEED WITH 60 LBS. PER ACRE (1.4 LBS. PER 1,000 SQUARE FEET) OF KENTUCKY 31 TALL FESCUE.

1) 2 TONS PER ACRE OF WELL-ANCHORED MULCH STRAW AND SEED AS SOON AS POSSIBLE IN THE SPRING.

2) USE SOIL.

3) SEED WITH 60 LBS. PER ACRE KENTUCKY 31 TALL FESCUE AND MULCH WITH 2 TONS PER ACRE WELL ANCHORED STRAW.

MULCHING: APPLY 1/2 TO 2 TONS PER ACRE (70 TO 90 LBS. PER 1,000 SQUARE FEET) OF UNROTATED SMALL GRASS STRAW IMMEDIATELY AFTER SEEDING. ANCHOR MULCH IMMEDIATELY AFTER APPLICATION USING MULCH ANCHORING TOOL OR 218 GALLONS PER ACRE (5 GALLONS PER 1,000 SQUARE FEET) OF EMULSIFIED ASPHALT ON FLAT AREAS, ON SLOPES, 8 FEET OR HIGHER, USE 347 GALLONS PER ACRE (8 GALLONS PER 1,000 SQUARE FEET) FOR ANCHORING.

MAINTENANCE: INSPECT ALL SEEDING AREAS AND MAKE NEEDED REPAIRS, REPLACEMENTS, AND RESEEDINGS.

TEMPORARY SEEDING NOTES

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

SEEDBED PREPARATION: LOOSEN UPPER 3 INCHES OF SOIL BY RAKING, DISCING, OR OTHER ACCEPTABLE MEANS BEFORE SEEDING.

SOIL AMENDMENTS: APPLY 600 LBS. PER ACRE 10-10-10 FERTILIZER (14 LBS. PER 1,000 SQUARE FEET).

SEEDING: FOR PERIODS MARCH 1 THROUGH APRIL 30 AND FROM AUGUST 15 THROUGH NOVEMBER 15, SEED WITH 2 1/2 BUSHELS PER ACRE OF ANNUAL RYE (3.2 LBS. PER 1,000 SQUARE FEET). FOR THE PERIOD MAY 1 THROUGH AUGUST 14, SEED WITH 3 LBS. PER ACRE OF WEEPING LOVEGRASS (0.07 LBS. PER 1,000 SQUARE FEET). FOR THE PERIOD NOVEMBER 16 THROUGH FEBRUARY 28, PROTECT SITE BY APPLYING 2 TONS PER ACRE OF WELL ANCHORED STRAW MULCH AND SEED AS SOON AS POSSIBLE IN THE SPRING OR USE SOIL.

MULCHING: APPLY 1/2 TO 2 TONS PER ACRE (70 TO 90 LBS. PER 1,000 SQUARE FEET) OF UNROTATED SMALL GRASS STRAW IMMEDIATELY AFTER SEEDING. ANCHOR MULCH IMMEDIATELY AFTER APPLICATION USING MULCH ANCHORING TOOL OR 218 GALLONS PER ACRE (5 GALLONS PER 1,000 SQUARE FEET) OF EMULSIFIED ASPHALT ON FLAT AREAS, ON SLOPES, 8 FEET OR HIGHER, USE 347 GALLONS PER ACRE (8 GALLONS PER 1,000 SQUARE FEET) FOR ANCHORING. REFER TO THE 1994 MARYLAND STANDARDS AND SPECIFICATIONS FOR SOIL EROSION AND SEDIMENT CONTROL FOR RATE AND METHODS NOT COVERED.

SEQUENCE OF CONSTRUCTION

- OBTAIN THE NECESSARY PERMITS PRIOR TO CONSTRUCTION. NO WORK SHALL BEGIN UNTIL THE ACCESS LICENSE WITH BGE IS EXECUTED. (1 DAY)
- INSTALL THE PERIMETER SEDIMENT CONTROL MEASURES INCLUDING STABILIZED CONSTRUCTION ENTRANCE AS SHOWN ON GRADING PLAN. (3 DAYS)
- PLACE SUPER SILT FENCE ADJACENT TO WETLAND LIMIT AND BEGIN GRADING OPERATIONS UPSLOPE FROM SUPER SILT FENCE.
- INSTALL TEMPORARY PIPE FROM EX. 24-INCH OUTFALL AND CONNECT TO THE EXISTING OUTFALL RISER. PIPE MAY BE ADJUSTED TO ACCOMMODATE CONSTRUCTION. (2 DAYS)
- UPON THE HOWARD CO. INSPECTOR'S APPROVAL, CLEAR AND GRUB THE SITE AS NEEDED. (2 DAYS)
- UPON VERIFICATION OF A 5-DAY CLEAR (NO PRECIPITATION) WEATHER FORECAST FROM THE NATIONAL WEATHER SERVICE, BEGIN REMOVAL OF THE EXISTING OUTFALL STRUCTURE AND PLACE OF NEW PIPE AND STRUCTURE. INSTALL SUMP PIT AS THE DOWNSLOPE DEVICE. (10 DAYS)
- INSTALL NEW OUTFALL STRUCTURE AND LOW FLOW DEVICE. CONNECT THE TEMPORARY PIPE TO THE NEW RISER STRUCTURE. PLACE GRAVEL AS REQUIRED PER PLAN OR AS DIRECTED BY THE ENGINEER. (1 WEEK)
- STABILIZE THE DISTURBED AREAS WITH TOPSOIL, PERMANENT SEEDING AND MULCHING AS NEEDED. (1 WEEK)
- UPON THE HOWARD CO. INSPECTOR'S APPROVAL, REMOVE ALL SEDIMENT EROSION CONTROL DEVICES AND STABILIZE THE REMAINING AREAS WITH PERMANENT SEEDING. (1 WEEK)

NOTE: THE TIME LINE EXCLUDES WEATHER RELATED DELAYS.

STANDARD SEDIMENT CONTROL NOTES

1. A MINIMUM OF 48 HOURS NOTICE MUST BE GIVEN TO THE HOWARD COUNTY DEPARTMENT OF INSPECTIONS, LICENSES AND PERMITS, SEDIMENT CONTROL DIVISION PRIOR TO THE START OF ANY CONSTRUCTION (410-313-1855).

2. ALL VEGETATIVE AND STRUCTURAL PRACTICES ARE TO BE INSTALLED ACCORDING TO THE PROVISIONS OF THIS PLAN AND ARE TO BE IN CONFORMANCE WITH THE 1994 MARYLAND STANDARDS AND SPECIFICATIONS FOR SOIL EROSION AND SEDIMENT CONTROL AND REVISIONS THERETO.

3. FOLLOWING INITIAL SOIL DISTURBANCE OR REDISTURBANCE, PERMANENT OR TEMPORARY STABILIZATION SHALL BE COMPLETED WITHIN:

- 7 CALENDAR DAYS FOR ALL PERIMETER SEDIMENT CONTROL STRUCTURES, DIKES, PERIMETER SLOPES, AND ALL SLOPES STEEPER THAN 3:1.
- 14 DAYS AS TO ALL OTHER DISTURBED OR GRADED AREAS ON THE PROJECT SITE.

4. ALL SEDIMENT TRAPS/BASINS SHOWN MUST BE FENCED AND WARNING SIGNS POSTED AROUND THE PERIMETER IN ACCORDANCE WITH VOLUME 1, CHAPTER 7, OF THE HOWARD COUNTY DESIGN MANUAL, STORM DRAINAGE.

5. ALL DISTURBED AREAS MUST BE STABILIZED WITHIN THE TIME PERIOD SPECIFIED ABOVE IN ACCORDANCE WITH THE 1994 MARYLAND STANDARDS AND SPECIFICATIONS FOR SOIL EROSION AND SEDIMENT CONTROL FOR PERMANENT SEEDING, SOIL, TEMPORARY SEEDING, AND MULCHING SECTION G). TEMPORARY STABILIZATION WITH MULCH ALONG SHALL ONLY BE DONE WHEN RECOMMENDED SEEDING DATES DO NOT ALLOW FOR PROPER GERMINATION AND ESTABLISHMENT OF GRASSES.

6. ALL SEDIMENT CONTROL STRUCTURES ARE TO REMAIN IN PLACE AND ARE TO BE MAINTAINED IN OPERATIVE CONDITION UNTIL PERMISSON FOR THEIR REMOVAL HAS BEEN OBTAINED FROM THE HOWARD COUNTY SEDIMENT CONTROL INSPECTOR.

7. SITE ANALYSIS: TOTAL AREA OF SITE - 0.68 ACRES AREA DISTURBED - 0.68 ACRES AREAS TO BE ROOFED OR PAVED - 0 ACRES AREA TO BE VEGETATIVELY STABILIZED - 0.45 ACRES TOTAL CUT - 1,049 C.Y. TOTAL FILL - N/A OFF-SITE WASTE SITE - HOWARD COUNTY LANDFILL OFF-SITE BORROW SITE - APPROVED SITE WITH ACTIVE GRADING PERMIT

8. ANY SEDIMENT CONTROL PRACTICE WHICH IS DISTURBED BY GRADING ACTIVITY FOR PLACEMENT OF UTILITIES MUST BE REPAIRED ON THE SAME DAY OF DISTURBANCE.

9. ADDITIONAL SEDIMENT CONTROLS MUST BE PROVIDED, IF DEEMED NECESSARY BY THE HOWARD COUNTY SEDIMENT CONTROL INSPECTOR.

10. ON ALL SITES WITH DISTURBED AREAS IN EXCESS OF 2 ACRES, APPROVAL OF THE INSPECTION AGENCY SHALL BE REQUESTED UPON COMPLETION OF INSTALLATION OF PERIMETER EROSION AND SEDIMENT CONTROLS, BUT BEFORE PROCEEDING WITH ANY OTHER EARTH DISTURBANCE OR GRADING, OTHER BUILDING OR GRADING INSPECTION APPROVALS MAY NOT BE AUTHORIZED UNTIL THIS INITIAL APPROVAL BY THE INSPECTION AGENCY IS MADE.

11. TRENCHES FOR THE CONSTRUCTION OF UTILITIES IS LIMITED TO THREE PIPE LENGTHS OR THAT WHICH SHALL BE BACKFILLED AND STABILIZED WITHIN ONE WORKING DAY, WHICHEVER IS SHORTER.

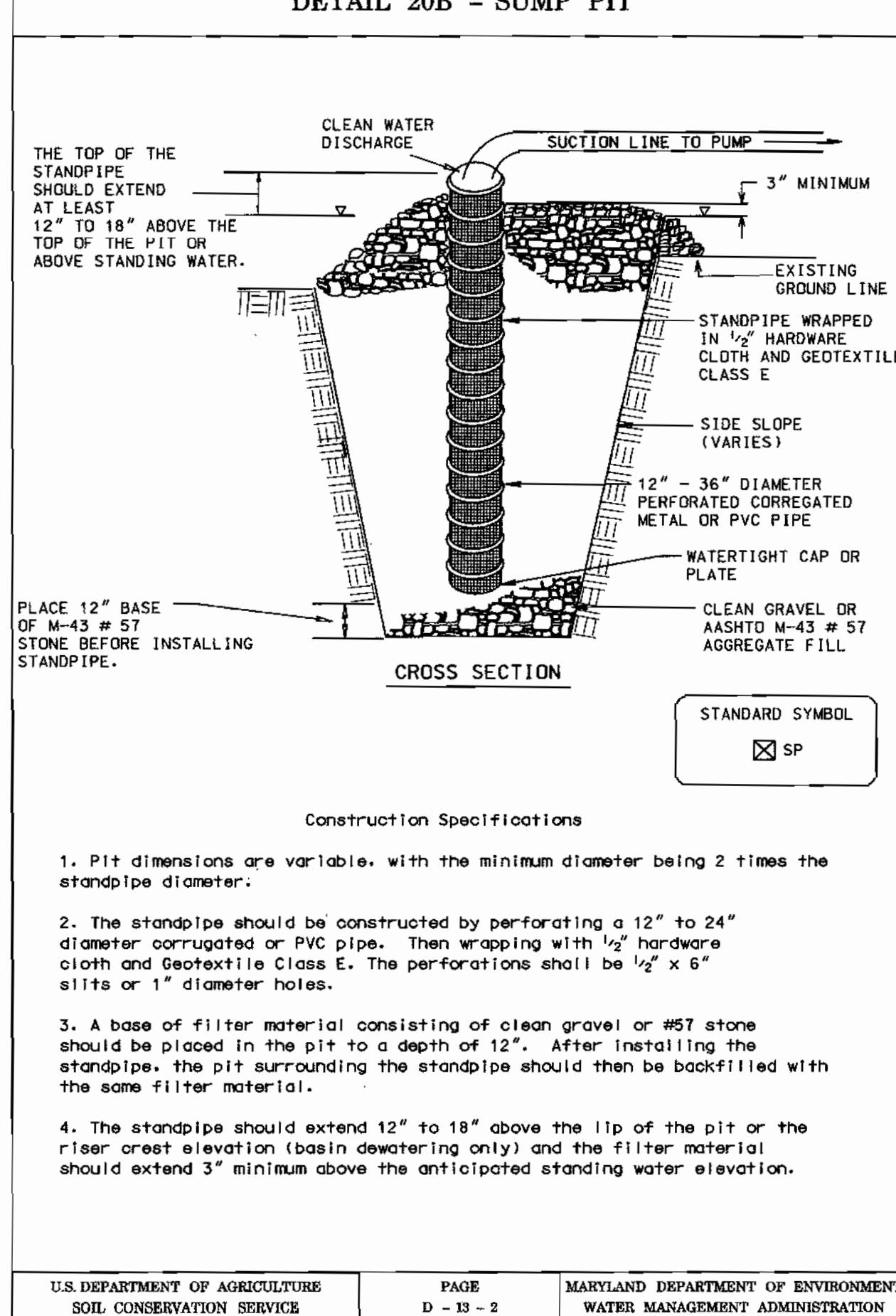
12. SITE GRADING WILL BEGIN ONLY AFTER ALL PERIMETER SEDIMENT CONTROL MEASURES HAVE BEEN INSTALLED AND ARE IN A FUNCTIONING CONDITION.

13. SEDIMENT WILL BE REMOVED FROM TRAPS WHEN ITS DEPTH REACHES CLEAN OUT ELEVATION SHOWN ON THE PLANS.

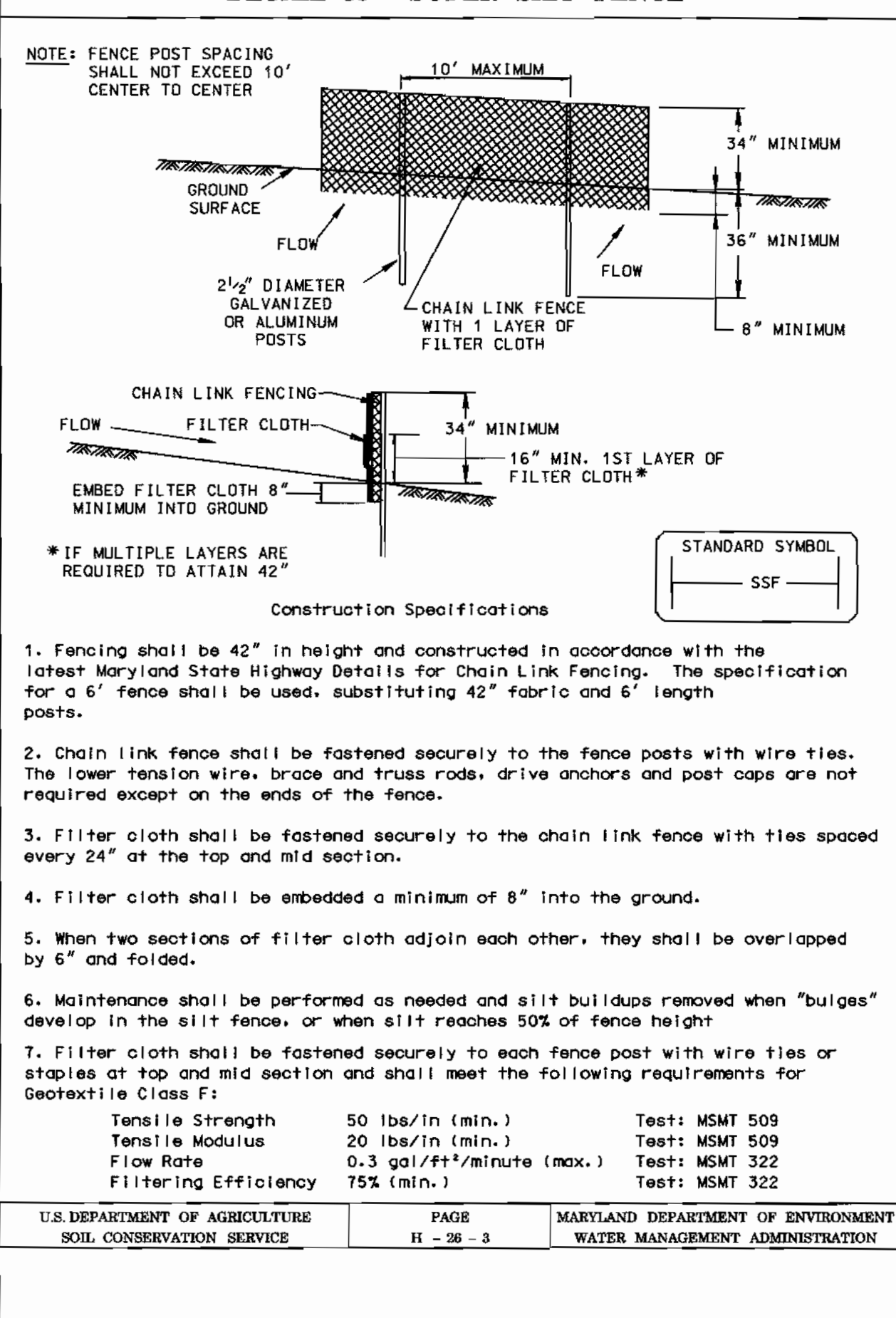
14. CUT AND FILL QUANTITIES PROVIDED UNDER SITE ANALYSIS DO NOT REPRESENT BID QUANTITIES. THESE QUANTITIES DO NOT DISTINGUISH BETWEEN TOPSOIL, STRUCTURAL FILL OR EMBANKMENT MATERIAL, NOR DO THEY REFLECT CONSIDERATION OF UNDERCUTTING OR REMOVAL OF UNSUITABLE MATERIAL. THE CONTRACTOR SHALL FAMILIARIZE HIMSELF WITH SITE CONDITIONS WHICH MAY AFFECT THE WORK.

15. CONSTRUCTION WITHIN, ALONG OR ACROSS STREAM CHANNELS SHALL, AS A MINIMUM, CONFORM TO CRITERIA DESCRIBED UNDER "MARYLAND'S GUIDELINES TO WATERWAY CONSTRUCTION".

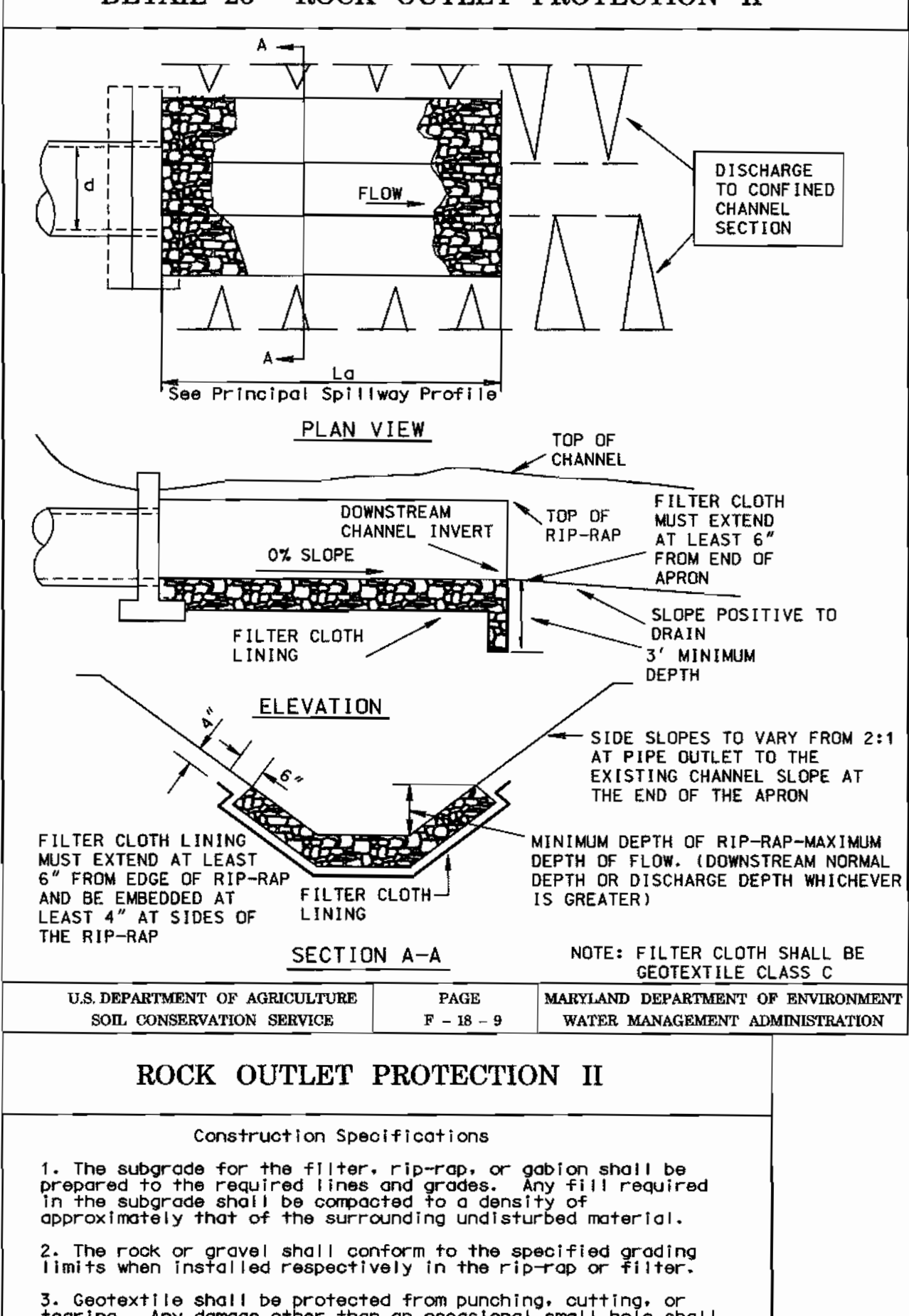
DETAIL 20B - SUMP PIT



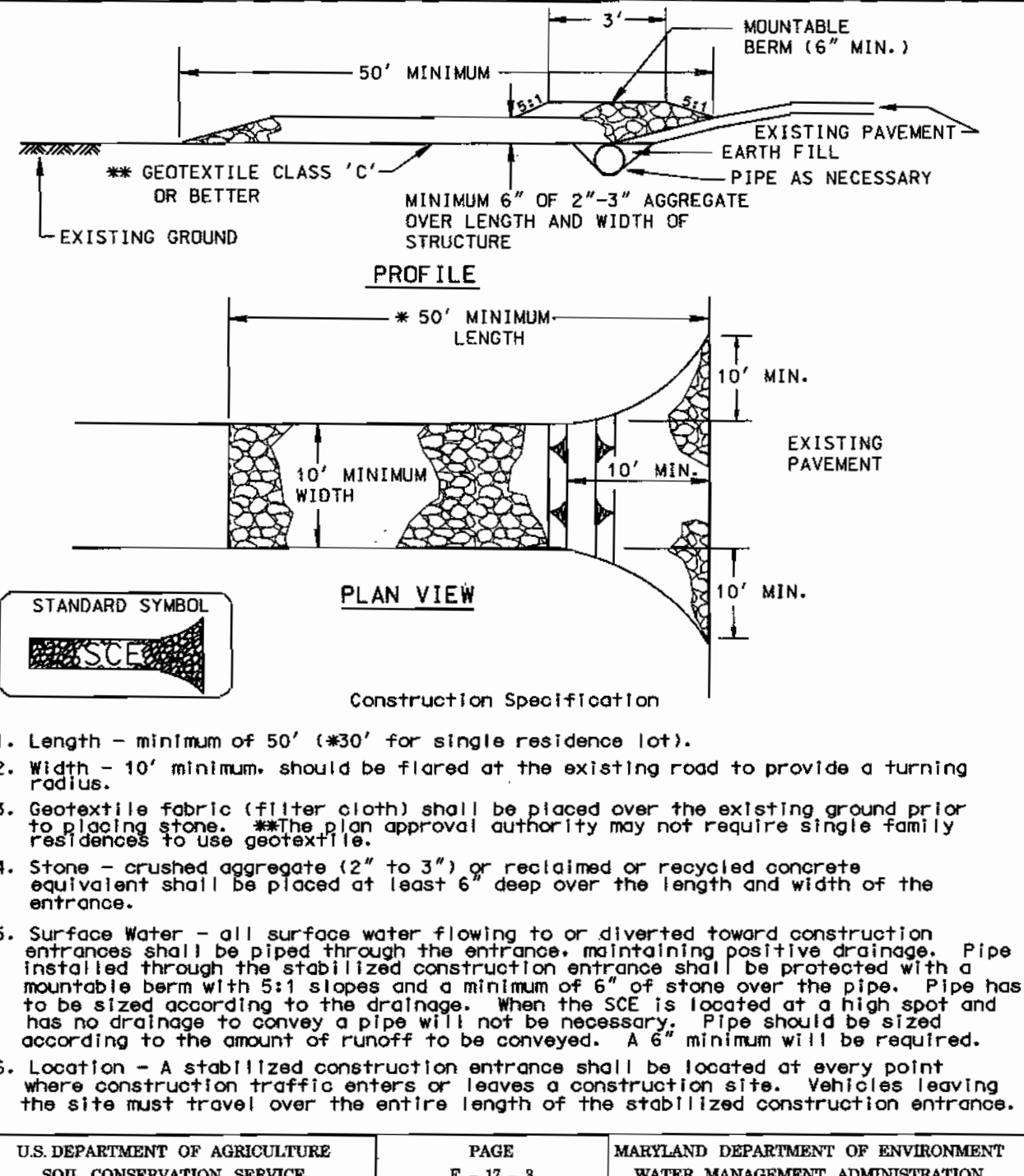
DETAIL 33 - SUPER SILT FENCE



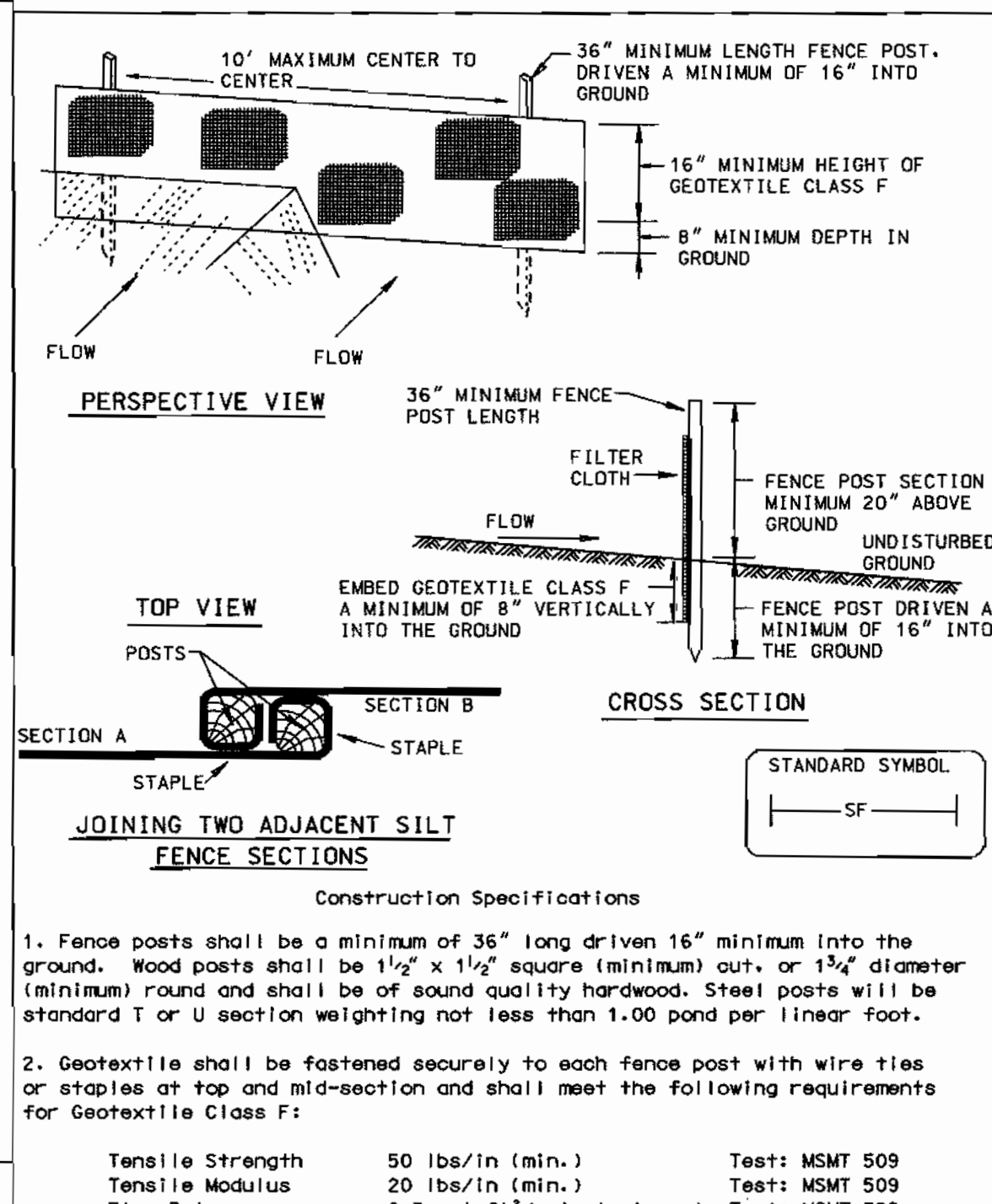
DETAIL 26 - ROCK OUTLET PROTECTION II



DETAIL 24 - STABILIZED CONSTRUCTION ENTRANCE



DETAIL 22 - SILT FENCE



APPROVED: DEPARTMENT OF PLANNING AND ZONING

Chief, Development Engineering Division: *[Signature]* Date: 2/2/04

Chief, Division of Land Development: *[Signature]* Date: 3/2/04

Director: *[Signature]* Date: 3/2/04

AS-BUILT CERTIFICATION

I hereby certify that the facility shown on this plan was constructed as shown on the "as-built" plan and meets the approved plans and specifications.

Signature: _____ PE NO. _____ DATE: _____

DEVELOPER'S CERTIFICATE

"I/ We Certify that all development and construction will be done according to this plan for sediment and erosion control, and that all responsible personnel on that 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"

[Signature] Date: 12/16/03

ENGINEER'S CERTIFICATE

"I certify that this plan for sediment and erosion control represents a practical and workable plan based on my personal knowledge of the site conditions and that it is prepared in accordance with the requirements of the HOWARD Soil Conservation District. I have notified the developer that he/she must engage a registered professional engineer to supervise pond construction and provide the Howard Soil Conservation District with an "as-built" plan of the pond within 30 days of completion."

[Signature] Date: Nov. 25, 2003

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: *[Signature]* Date: 2/25/04

These plans for small pond construction, soil erosion and sediment control meet the requirements of the Howard Soil Conservation District.

Howard Soil Conservation District: *[Signature]* Date: 2/25/04

HOWARD COUNTY, MARYLAND

Director of Public Works: *[Signature]* Date: 1/17/04

Chief, Stormwater Management Division: *[Signature]* Date: 12/16/03

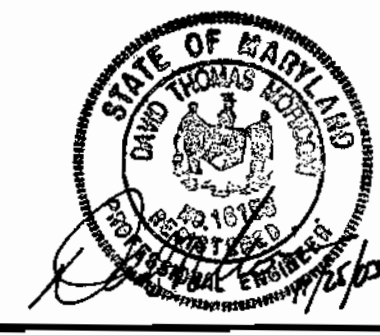
Chief, Bureau of Environmental Services: *[Signature]* Date: 12/16/03

Chief, Bureau of Highways: *[Signature]* Date: 1-4-04

PREPARED BY

URS

4 NORTH PARK DRIVE
HUNT VALLEY, MARYLAND
TEL: (410) 785-7220



DES: WLM	BY NO.	REVISION	DATE
DRN: SYC/EGB			
CHK: DTM			
DATE: 7-10-03			

EROSION AND SEDIMENT CONTROL NOTES AND DETAILS

SCALE MAP NO. N/A BLOCK NO.

STORMWATER MANAGEMENT RETROFIT AT ST. JOHNS WOODS (PARCEL NO. 340) CAPITAL PROJECT NO. D-1106

2ND ELECTION DISTRICT - HOWARD COUNTY, MARYLAND
TAX MAP NO. 17, GRID NO. 16, PARCEL NO. 340

SCALE: N.T.S.
SHEET 5 OF 6

POND MD-378-14 SPECIFICATIONS

CONSTRUCTION SPECIFICATIONS

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

SITE PREPARATION

AREAS DESIGNATED FOR BORROW AREAS, EMBANKMENT, AND STRUCTURAL WORKS SHALL BE CLEARED, GRUBBED AND STRIPPED OF TOPSOIL. ALL TREES, VEGETATION, ROOTS AND OTHER OBJECTIONABLE MATERIAL SHALL BE REMOVED. CHANNEL BANKS AND SHARP BREAKS SHALL BE SLOPED TO STEEPER THAN 1:1. ALL TREES SHALL BE CLEARED AND GRUBBED WITHIN 15 FEET OF THE TOE OF THE EMBANKMENT.

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

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

EARTH FILL

MATERIAL - THE FILL MATERIAL SHALL BE TAKEN FROM APPROVED DESIGNATED BORROW AREAS. IT SHALL BE FREE OF ROOTS, STUMPS, WOOD, RUBBISH, STONES GREATER THAN 6 INCHES, FROZEN OR OTHER OBJECTIONABLE MATERIALS. FILL MATERIAL FOR THE CENTER OF THE EMBANKMENT, AND CUT OFF TRENCH SHALL CONFORM TO UNIFIED SOIL CLASSIFICATION GC, SC, CH, OR CL AND MUST HAVE AT LEAST 30% PASSING THE #20 SIEVE. CONSIDERATION MAY BE GIVEN TO THE USE OF OTHER MATERIALS IN THE EMBANKMENT IF DESIGNED BY A GEOTECHNICAL ENGINEER. SUCH SPECIAL DESIGNS MUST HAVE CONSTRUCTION SUPERVISED BY A GEOTECHNICAL ENGINEER.

MATERIALS USED IN THE OUTER SHELL OF THE EMBANKMENT MUST HAVE THE CAPABILITY TO SUPPORT VEGETATION OF THE QUALITY REQUIRED TO PREVENT EROSION OF THE EMBANKMENT.

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

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

WHEN REQUIRED BY THE REVIEWING AGENCY THE MINIMUM REQUIRED DENSITY SHALL NOT BE LESS THAN 95% OF MAXIMUM DRY DENSITY WITH A MOISTURE CONTENT WITHIN ± 2% OF THE OPTIMUM. EACH LAYER OF FILL SHALL BE COMPACTED AS NECESSARY TO OBTAIN THAT DENSITY, AND IS TO BE CERTIFIED BY THE ENGINEER AT THE TIME OF CONSTRUCTION. ALL COMPACTION IS TO BE DETERMINED BY AASHTO METHOD T-99 (STANDARD PROCTOR).

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

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

STRUCTURE BACKFILL

BACKFILL ADJACENT TO PIPES OR STRUCTURES SHALL BE OF THE TYPE AND QUALITY CONFORMING TO THAT SPECIFIED FOR THE ADJOINING FILL MATERIAL. THE FILL SHALL BE PLACED IN HORIZONTAL LAYERS NOT TO EXCEED FOUR INCHES IN THICKNESS AND COMPACTED BY HAND TAMPERS OR OTHER MANUALLY DIRECTED COMPACTION EQUIPMENT. THE MATERIAL NEEDS TO FILL COMPLETELY ALL SPACES UNDER AND ADJACENT TO THE PIPE. AT NO TIME DURING THE BACKFILLING OPERATION SHALL DRIVEN EQUIPMENT BE ALLOWED TO OPERATE CLOSER THAN FOUR FEET TO THE STRUCTURE. UNDER NO CIRCUMSTANCES SHALL EQUIPMENT BE DRIVEN OVER ANY PART OF A CONCRETE STRUCTURE OR PIPE, UNLESS THERE IS A COMPACTED FILL OF 24" OR GREATER OVER THE STRUCTURE OR PIPE.

STRUCTURE BACKFILL MAY BE FLOWABLE FILL MEETING THE REQUIREMENTS OF MARYLAND DEPARTMENT OF TRANSPORTATION, STATE HIGHWAY ADMINISTRATION STANDARD SPECIFICATIONS FOR CONSTRUCTION AND MATERIALS, SECTION 313 AS MODIFIED. THE MIXTURE SHALL HAVE A 100-200 PSI; 28 DAY UN-CONFINED COMPRESSIVE STRENGTH. THE FLOWABLE FILL SHALL HAVE A MINIMUM PH OF 4.0 AND A MINIMUM RESISTIVITY OF 2,000 OHM-CM. MATERIAL SHALL BE PLACED SUCH THAT A MINIMUM OF 6" (MEASURED PERPENDICULAR TO THE OUTSIDE OF THE PIPE) OF FLOWABLE FILL SHALL BE UNDER (BEDDING), OVER AND ON THE SIDES OF THE PIPE. IT ONLY NEEDS TO EXTEND UP TO THE SPRING LINE FOR RIGID CONDUITS. AVERAGE SLUMP OF THE FILL SHALL BE 7" TO ASSURE FLOWABILITY OF THE MATERIAL. ADEQUATE MEASURES SHALL BE TAKEN (SAND BAGS, ETC.) TO PREVENT FLOATING THE PIPE. WHEN USING FLOWABLE FILL, ALL METAL PIPE SHALL BE BITUMINOUS COATED. ANY ADJOINING SOIL FILL SHALL BE PLACED IN HORIZONTAL LAYERS NOT TO EXCEED FOUR INCHES IN THICKNESS AND COMPACTED BY HAND TAMPERS OR OTHER MANUALLY DIRECTED COMPACTION EQUIPMENT. THE MATERIAL SHALL COMPLETELY FILL ALL VOIDS ADJACENT TO THE FLOWABLE FILL ZONE. AT NO TIME DURING THE BACKFILLING OPERATION SHALL DRIVEN EQUIPMENT BE ALLOWED TO OPERATE CLOSER THAN FOUR FEET, MEASURED HORIZONTALLY, TO ANY PART OF A STRUCTURE. UNDER NO CIRCUMSTANCES SHALL EQUIPMENT BE DRIVEN OVER ANY PART OF A STRUCTURE OR PIPE UNLESS THERE IS A COMPACTED FILL OF 24" OR GREATER OVER THE STRUCTURE OR PIPE. BACKFILL MATERIAL OUTSIDE THE STRUCTURE BACKFILL (FLOWABLE FILL) ZONE SHALL BE OF THE TYPE AND QUALITY CONFORMING TO THAT SPECIFIED FOR THE CORE OF THE EMBANKMENT OR OTHER EMBANKMENT MATERIALS.

PIPE CONDUITS

ALL PIPES SHALL BE CIRCULAR IN CROSS SECTION.

CORRUGATED METAL PIPE -

ALL OF THE FOLLOWING CRITERIA SHALL APPLY FOR CORRUGATED METAL PIPE:

1. MATERIALS - (POLYMER COATED STEEL PIPE) - STEEL PIPES WITH POLYMERIC COATINGS SHALL HAVE A MINIMUM COATING THICKNESS OF 0.01 INCH (10 MIL) ON BOTH SIDES OF THE PIPE. THIS PIPE AND ITS APPURTENANCES SHALL CONFORM TO THE REQUIREMENTS OF AASHTO SPECIFICATIONS M-245 & M-246 WITH WATERTIGHT COUPLING BANDS OR FLANGES.

MATERIALS - (ALUMINUM COATED STEEL PIPE) - THIS PIPE AND ITS APPURTENANCES SHALL CONFORM TO THE REQUIREMENTS OF AASHTO SPECIFICATION M-274 WITH WATERTIGHT COUPLING BANDS OR FLANGES. ALUMINUM COATED STEEL PIPE, WHEN USED WITH FLOWABLE FILL OR WHEN SOIL AND/OR WATER CONDITIONS WARRANT THE NEED FOR INCREASED DURABILITY, SHALL BE FULLY BITUMINOUS COATED PER REQUIREMENTS OF AASHTO SPECIFICATION M-190 TYPE A. ANY ALUMINUM COATING DAMAGED OR OTHERWISE REMOVED SHALL BE REPLACED WITH COLD APPLIED BITUMINOUS COATING COMPOUND. ALUMINUM SURFACES THAT ARE TO BE IN CONTACT WITH CONCRETE SHALL BE PAINTED WITH ONE COAT OF ZINC CHROMATE PRIMER OR TWO COATS OF ASPHALT.

MATERIALS - (ALUMINUM PIPE) - THIS PIPE AND ITS APPURTENANCES SHALL CONFORM TO THE REQUIREMENTS OF AASHTO SPECIFICATION M-196 OR M-211 WITH WATERTIGHT COUPLING BANDS OR FLANGES. ALUMINUM PIPE, WHEN USED WITH FLOWABLE FILL OR WHEN SOIL AND/OR WATER CONDITIONS WARRANT THE NEED FOR INCREASED DURABILITY, SHALL BE FULLY BITUMINOUS COATED PER REQUIREMENTS OF AASHTO SPECIFICATION M-190 TYPE A. ALUMINUM SURFACES THAT ARE TO BE IN CONTACT WITH CONCRETE SHALL BE PAINTED WITH ONE COAT OF ZINC CHROMATE PRIMER OR TWO COATS OF ASPHALT. HOT DIP GALVANIZED BOLTS MAY BE USED FOR CONNECTIONS. THE PH OF THE SURROUNDING SOILS SHALL BE BETWEEN 4 AND 9.

2. COUPLING BANDS, ANTI-SEEP COLLARS, END SECTIONS, ETC., MUST BE COMPOSED OF THE SAME MATERIAL AND COATINGS AS THE PIPE. METALS MUST BE INSULATED FROM DISSIMILAR MATERIALS WITH USE OF RUBBER OR PLASTIC INSULATING MATERIALS AT LEAST 24 MILS IN THICKNESS.

3. CONNECTIONS - ALL CONNECTIONS WITH PIPES MUST BE COMPLETELY WATERTIGHT. THE DRAIN PIPE OR BARREL CONNECTION TO THE RISER SHALL BE WELDED ALL AROUND WHEN THE PIPE AND RISER ARE METAL. ANTI-SEEP COLLARS SHALL BE CONNECTED TO THE PIPE IN SUCH A MANNER AS TO BE COMPLETELY WATERTIGHT. DIMPLE BANDS ARE NOT CONSIDERED TO BE WATERTIGHT.

ALL CONNECTIONS SHALL USE A RUBBER OR NEOPRENE GASKET WHEN JOINING PIPE SECTIONS. THE END OF EACH PIPE SHALL BE RE-ROLLED AN ADEQUATE NUMBER OF CORRUGATIONS TO ACCOMMODATE THE BANDWIDTH. THE FOLLOWING TYPE CONNECTIONS ARE ACCEPTABLE FOR PIPES LESS THAN 24 INCHES IN DIAMETER: FLANGES ON BOTH ENDS OF THE PIPE WITH A CIRCULAR 3/8 INCH CLOSED CELL NEOPRENE GASKET, PRE-PUNCHED TO THE FLANGE BOLT CIRCLE, SANDWICHED BETWEEN ADJACENT FLANGES; A 12 INCH WIDE STANDARD LAP TYPE BAND WITH 12 INCH WIDE BY 3/8 INCH THICK CLOSED CELL CIRCULAR NEOPRENE GASKET; AND A 12 INCH WIDE HUGGER TYPE BAND WITH O-RING GASKETS HAVING A MINIMUM DIAMETER OF 1/2 INCH GREATER THAN THE CORRUGATION DEPTH. PIPES 24 INCHES IN DIAMETER AND LARGER SHALL BE CONNECTED BY A 24 INCH LONG ANNUAL CORRUGATED BAND USING A MINIMUM OF 4 (FOUR) RODS AND LUGS. 2 ON EACH CONNECTING PIPE END. A 24 INCH WIDE BY 3/8 INCH THICK CLOSED CELL CIRCULAR NEOPRENE GASKET WILL BE INSTALLED WITH 12 INCHES ON THE END OF EACH PIPE. FLANGED JOINTS WITH 3/8 INCH CLOSED CELL GASKETS THE FULL WIDTH OF THE FLANGE IS ALSO ACCEPTABLE.

HELICALLY CORRUGATED PIPE SHALL HAVE EITHER CONTINUOUSLY WELDED SEAMS OR HAVE LOCK SEAMS WITH INTERNAL CAULKING OR A NEOPRENE BEAD.

4. BEDDING - THE PIPE SHALL BE FIRMLY AND UNIFORMLY BEDDED THROUGHOUT ITS ENTIRE LENGTH. WHERE ROCK OR SOFT, SPONGY OR OTHER UNSTABLE SOIL IS ENCOUNTERED ALL SUCH MATERIAL SHALL BE REMOVED AND REPLACED WITH SUITABLE EARTH COMPACTED TO PROVIDE ADEQUATE SUPPORT.

5. BACKFILLING SHALL CONFORM TO "STRUCTURE BACKFILL".

6. OTHER DETAILS (ANTI-SEEP COLLARS, VALVES, ETC.) SHALL BE AS SHOWN ON THE DRAWINGS.

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

1. MATERIALS - REINFORCED CONCRETE PIPE SHALL HAVE BELL AND SPIGOT JOINTS WITH RUBBER GASKETS AND SHALL EQUAL OR EXCEED ASTM C-361.

2. BEDDING - REINFORCED CONCRETE PIPE CONDUITS SHALL BE LAID IN A CONCRETE BEDDING / CRADLE FOR THEIR ENTIRE LENGTH. THIS BEDDING / CRADLE SHALL CONSIST OF HIGH SLUMP CONCRETE PLACED UNDER THE PIPE AND UP THE SIDES OF THE PIPE AT LEAST 50% OF ITS OUTSIDE DIAMETER WITH A MINIMUM THICKNESS OF 6 INCHES. WHERE A CONCRETE CRADLE IS NOT NEEDED FOR STRUCTURAL REASONS, FLOWABLE FILL MAY BE USED AS DESCRIBED IN THE "STRUCTURE BACKFILL" SECTION OF THIS STANDARD. GRAVEL BEDDING IS NOT PERMITTED.

3. LAYING PIPE - BELL AND SPIGOT PIPE SHALL BE PLACED WITH THE BELL END UPSTREAM. JOINTS SHALL BE MADE IN ACCORDANCE WITH RECOMMENDATIONS OF THE MANUFACTURER OF THE MATERIAL. AFTER THE JOINTS ARE SEALED FOR THE ENTIRE LINE, THE BEDDING SHALL BE PLACED SO THAT ALL SPACES UNDER THE PIPE ARE FILLED. CARE SHALL BE TAKEN TO PREVENT ANY DEVIATION FROM THE ORIGINAL LINE AND GRADE OF THE PIPE. THE FIRST JOINT MUST BE LOCATED WITHIN 4 FEET FROM THE RISER.

4. BACKFILLING SHALL CONFORM TO "STRUCTURE BACKFILL".

5. OTHER DETAILS (ANTI-SEEP COLLARS, VALVES, ETC.) SHALL BE AS SHOWN ON THE DRAWINGS.

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

1. MATERIALS - PVC PIPE SHALL BE PVC-1120 OR PVC-1220 CONFORMING TO ASTM D-1785 OR ASTM D-2241. CORRUGATED HIGH DENSITY POLYETHYLENE (HDPE) PIPE, COUPLINGS AND FITTINGS SHALL CONFORM TO THE FOLLOWING: 4" - 10" INCH PIPE SHALL MEET THE REQUIREMENTS OF AASHTO M252 TYPE S, AND 12" THROUGH 24" INCH SHALL MEET THE REQUIREMENTS OF AASHTO M294 TYPE S.

2. JOINTS AND CONNECTIONS TO ANTI-SEEP COLLARS SHALL BE COMPLETELY WATERTIGHT.

3. BEDDING - THE PIPE SHALL BE FIRMLY AND UNIFORMLY BEDDED THROUGHOUT ITS ENTIRE LENGTH. WHERE ROCK OR SOFT, SPONGY OR OTHER UNSTABLE SOIL IS ENCOUNTERED, ALL SUCH MATERIAL SHALL BE REMOVED AND REPLACED WITH SUITABLE EARTH COMPACTED TO PROVIDE ADEQUATE SUPPORT.

4. BACKFILLING SHALL CONFORM TO "STRUCTURE BACKFILL".

5. OTHER DETAILS (ANTI-SEEP COLLARS, VALVES, ETC.) SHALL BE AS SHOWN ON THE DRAWINGS.

DRAINAGE DIAPHRAGMS - WHEN A DRAINAGE DIAPHRAGM IS USED, A REGISTERED PROFESSIONAL ENGINEER WILL SUPERVISE THE DESIGN AND CONSTRUCTION INSPECTION.

CONCRETE

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

ROCK RIPRAP

ROCK RIPRAP SHALL MEET THE REQUIREMENTS OF MARYLAND DEPARTMENT OF TRANSPORTATION, STATE HIGHWAY ADMINISTRATION STANDARD SPECIFICATIONS FOR CONSTRUCTION AND MATERIALS, SECTION 311. GEOTEXTILE SHALL BE PLACED UNDER ALL RIPRAP AND SHALL MEET THE REQUIREMENTS OF MARYLAND DEPARTMENT OF TRANSPORTATION, STATE HIGHWAY ADMINISTRATION STANDARD SPECIFICATIONS FOR CONSTRUCTION AND MATERIALS, SECTION 921.09, CLASS C.

CARE OF WATER DURING CONSTRUCTION

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

STABILIZATION

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

EROSION AND SEDIMENT CONTROL

CONSTRUCTION OPERATIONS WILL BE CARRIED OUT IN SUCH A MANNER THAT EROSION WILL BE CONTROLLED AND WATER AND AIR POLLUTION MINIMIZED. STATE AND LOCAL LAWS CONCERNING POLLUTION ABATEMENT WILL BE FOLLOWED. CONSTRUCTION PLANS SHALL DETAIL EROSION AND SEDIMENT CONTROL MEASURES.

OPERATION AND MAINTENANCE SCHEDULE FOR STORMWATER PONDS (P-1 THROUGH P-5)

ROUTINE MAINTENANCE:

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

NON-ROUTINE MAINTENANCE:

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

TOPSOIL SPECIFICATIONS

SOIL TO BE USED AS TOPSOIL MUST MEET THE FOLLOWING:

1. TOPSOIL SHALL BE LOAM, SANDY LOAM, CLAY LOAM, SILT LOAM, SANDY CLAY LOAM, LOAMY SAND. OTHER SOILS MAY BE USED IF RECOMMENDED BY AN AGRONOMIST OR SOIL SCIENTIST AND APPROVED BY THE APPROPRIATE APPROVAL AUTHORITY. REGARDLESS, TOPSOIL SHALL NOT BE A MIXTURE OF CONTRASTING TEXTURED SUBSOILS AND SHALL CONTAIN LESS THAN 5 PERCENT BY VOLUME OF CINDERS, STONES, SLAG, COARSE FRAGMENTS, GRAVEL, STICKS, ROOTS, TRASH, OR OTHER MATERIALS LARGER THAN 1-1/2 INCHES IN DIAMETER.
2. TOPSOIL MUST BE FREE OF PLANTS OR PLANT PARTS AS BERMUDA GRASS, QUACKGRASS, JOHNSONGRASS, NUTSEDGE, POISON IVY, THISTLE, OR OTHERS AS SPECIFIED.
3. WHERE THE SUBSOIL IS EITHER HIGHLY ACIDIC OR COMPOSED OF HEAVY CLAYS, GROUND LIMESTONE SHALL BE SPREAD AT THE RATE OF 4-8 TONS/ACRE (200-400 POUNDS PER 1,000 SQUARE FEET) PRIOR TO THE PLACEMENT OF TOPSOIL. LIME SHALL BE DISTRIBUTED UNIFORMLY OVER DESIGNATED AREAS AND WORKED INTO THE SOIL IN CONJUNCTION WITH TILLAGE OPERATIONS AS DESCRIBED IN THE FOLLOWING PROCEDURES.
4. FOR SITES HAVE DISTURBED AREAS UNDER 5 ACRES, PLACE TOPSOIL (IF REQUIRED) AND APPLY SOIL AMENDMENTS AS SPECIFIED IN 20.0 VEGETATIVE STABILIZATION - SECTION 3 - VEGETATIVE STABILIZATION METHODS AND MATERIALS OF THE 1994 STANDARDS AND SPECIFICATIONS FOR SOIL EROSION AND SEDIMENT CONTROL.

TOPSOIL APPLICATION:

- A. WHEN TOPSOILING, MAINTAIN NEEDED EROSION AND SEDIMENT CONTROL PRACTICES SUCH AS DIVERSIONS, GRADE STABILIZATION STRUCTURES, EARTH DIKES, SLOPE SILT FENCE, AND SEDIMENT TRAPS AND BASINS.
- B. GRADES ON THE AREAS TO BE TOPSOILED, WHICH HAVE BEEN PREVIOUSLY ESTABLISHED, SHALL BE MAINTAINED, ALBEIT 4" - 8" HIGHER IN ELEVATION.
- C. TOPSOIL SHALL BE UNIFORMLY DISTRIBUTED IN A 4" - 8" AND LIGHTLY COMPACTED TO A MINIMUM THICKNESS OF 4". SPREADING SHALL BE PERFORMED IN SUCH A MANNER THAT SODDING OR SEEDING CAN PROCEED WITH A MINIMUM OF ADDITIONAL SOIL PREPARATION AND TILLAGE. ANY IRREGULARITIES IN THE SURFACE RESULTING FROM TOPSOILING OR OTHER OPERATIONS SHALL BE CORRECTED IN ORDER TO PREVENT THE FORMATION OF DEPRESSIONS OR WATER POCKETS.
- D. TOPSOIL SHALL NOT BE PLACED WHILE THE TOPSOIL OR SUBSOIL IS IN A FROZEN OR MUDDY CONDITION, WHEN THE SUBSOIL IS EXCESSIVELY WET OR IN A CONDITION THAT MAY OTHERWISE BE DETRIMENTAL TO PROPER GRADING AND SEEDBED PREPARATION.

APPROVED: DEPARTMENT OF PLANNING AND ZONING

Chief, Development Engineering Division Date 2/27/04
 Chief, Division of Land Development Date 2/2/04
 Director (R/T/IN) Date 3/2/04

HOWARD COUNTY, MARYLAND
 Director of Public Works Date 1/7/04
 Chief, Stormwater Management Division Date 12/16/03
 Chief, Bureau of Environmental Services Date 12/16/03
 Chief, Bureau of Highways Date 1-7-04

PREPARED BY URS 4 NORTH PARK DRIVE HUNT VALLEY, MARYLAND TEL: (410) 785-7220	DES: WLM	DRN: SYC/EGB	CHK: DTM	DATE: 7-10-03	BY	NO.	REVISION	DATE	SCALE MAP NO. - N/A	BLOCK NO.
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STORMWATER MANAGEMENT RETROFIT AT ST. JOHNS WOODS (PARCEL NO. 340) CAPITAL PROJECT NO. D-1106
 2ND ELECTION DISTRICT - HOWARD COUNTY, MARYLAND
 TAX MAP NO. 17, GRID NO. 16, PARCEL NO. 340

SCALE N.T.S.
 SHEET 6 OF 6