

SITE DATA

LOCATION: CORONEOS PROPERTY
 2nd ELECTION DISTRICT
 EXISTING ZONING: R-SC
 GROSS AREA OF PROJECT: 4.01 AC.
 AREA OF 100-YEAR FLOODPLAIN & UTILITY EASEMENT: 0.30 AC.
 AREA OF STEEP SLOPES: 0.27 AC.
 NET AREA OF PROJECT: 3.44 AC.
 AREA OF CREDITED OPEN SPACE REQUIRED: 25% x 4.01 AC. = 1.00 AC.
 AREA OF CREDITED OPEN SPACE PROVIDED: 1.78 AC. (40%)
 AREA OF NON-CREDITED OPEN SPACE PROVIDED: 0.24 AC. (PIPESTEM AREA OF O.S. LOTS 10 AND 11)
 NUMBER OF PROPOSED OPEN SPACE LOTS: 2
 AREA OF PROPOSED RIGHT-OF-WAY: 0.13 AC.
 AREA OF PROPOSED BUILDABLE LOTS: 1.59 AC.
 NUMBER OF LOTS/PARCELS ALLOWED (4 PER NET ACRE): 13 BUILDABLE LOTS
 NUMBER OF LOTS/PARCELS PROPOSED: 9 BUILDABLE LOTS
 TOTAL APPROXIMATE LIMIT OF DISTURBANCE: 1.53 AC.

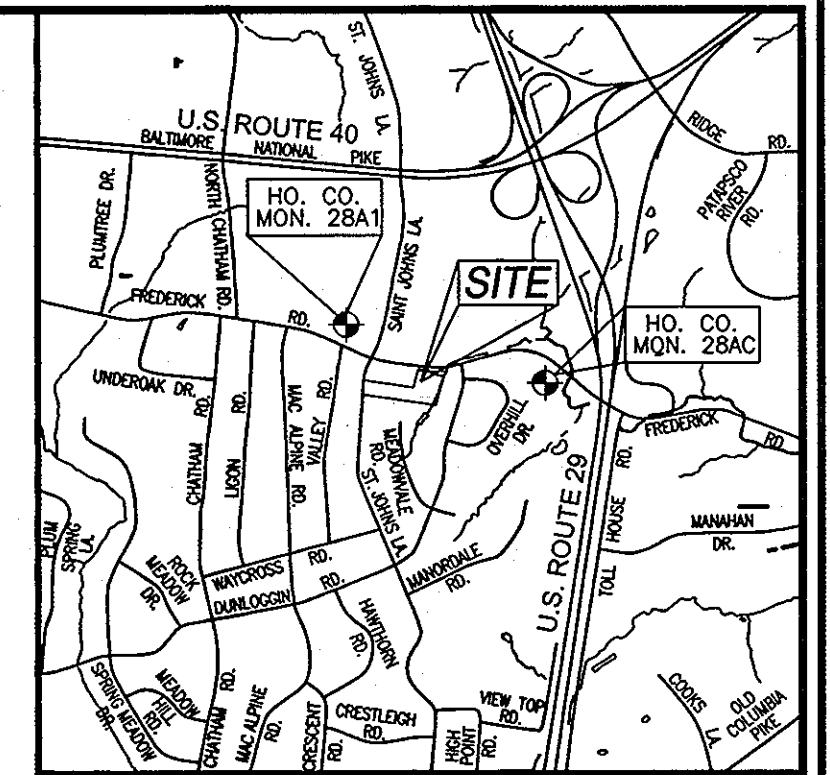
GENERAL NOTES

- ALL ASPECTS OF THE PROJECT ARE IN CONFORMANCE WITH THE LATEST HOWARD COUNTY STANDARDS UNLESS WAIVERS HAVE BEEN APPROVED.
- DEED REFERENCE: [REDACTED]
- DENSITY TABULATION:
 GROSS AREA OF PROJECT: 4.01 AC.
 AREA OF 100-YR FLOODPLAIN DRAINAGE & UTILITY EASEMENT: 0.27 AC.
 AREA OF STEEP SLOPES OUTSIDE OF 100-YR FLOODPLAIN: 0.27 AC.
 NET AREA OF PROJECT: 3.47 AC.
 DWELLING UNITS PER NET ACRE ALLOWED: 4 UNITS PER NET ACRE (4 X 3.47 AC. = 13 BUILDABLE LOTS)
 DWELLING UNITS PROPOSED: 9 UNITS
- THE PROJECT BOUNDARY IS BASED ON A BOUNDARY SURVEY PREPARED BY FREDERICK WARD AND ASSOCIATES, DATED JANUARY 2004.
- THE TOPOGRAPHY SHOWN HEREON IS BASED ON FIELD RUN TOPOGRAPHY PREPARED BY ROBERT H. VOGEL ENGINEERING, INC., DATED OCTOBER 2004.
- THIS SUBDIVISION IS SUBJECT TO SECTION 18.122B OF THE HOWARD COUNTY, PUBLIC WATER AND/OR SEWER SERVICE HAS BEEN GRANTED UNDER THE TERMS AND PROVISIONS, THEREOF, EFFECTIVE WHICH DATE DEVELOPER AGREEMENT # [REDACTED]
- THE CONTRACTOR SHALL NOTIFY THE DEPARTMENT OF PUBLIC WORKS/BUREAU OF ENGINEERING/CONSTRUCTION INSPECTION DIVISION AT (410) 313-1880 AT LEAST FIVE (5) WORKING DAYS PRIOR TO START OF WORK.
- ANY DAMAGE TO PUBLIC RIGHTS-OF-WAY, PAVING, OR EXISTING UTILITIES WILL BE CORRECTED AT THE CONTRACTOR'S EXPENSE.
- THIS SITE WILL UTILIZE GRASS CHANNEL, RAINGARDENS AND NATURAL AREA CONSERVATION CREDITS TO PROVIDE THE REQUIRED WQV AND REV FOR STORMWATER MANAGEMENT. THE CPV IS NOT REQUIRED FOR THIS SITE SINCE THE 1-YR STORM EVENT IS LESS THAN 2 CFS. STORMWATER MANAGEMENT IS REQUIRED AND PROVIDED FOR THE 1 YEAR, 10 YEAR AND 100 YEAR STORM EVENT. THE FACILITY IS A DETENTION FACILITY AND IS TO BE PRIVATELY OWNED AND MAINTAINED.
- STREAMS SHOWN ON-SITE ARE BASED ON A FIELD INVESTIGATION PREPARED BY ROBERT H. VOGEL ENGINEERING, INC., DATED OCTOBER 2004.
- THE 100-YR FLOODPLAIN DRAINAGE AND UTILITY EASEMENT SHOWN ON-SITE IS BASED ON THE TIBER/HUDSON FLOODPLAIN STUDY, HOWARD COUNTY CAPITAL PROJECT NO. C-4-0119.
- FOREST STAND DELINEATION PLAN APPROVED UNDER 5-00-09.
- FOREST CONSERVATION PLAN PREPARED BY ROBERT H. VOGEL ENGINEERING, INC., DATED NOVEMBER 2004.
- FOREST CONSERVATION OBLIGATION TO BE FULFILLED BY RETENTION OF 0.93 AC, AND A FEE-IN-LIEU PAYMENT OF \$10,454.40 TO THE HOWARD COUNTY FOREST CONSERVATION FUND FOR THE REMAINING 0.48 AC. OF REQUIRED REFORESTATION. FOREST CONSERVATION SURETY IN THE AMOUNT OF \$8,102.16 FOR 0.93 AC SHALL BE POSTED AS A PART OF THE DEVELOPER'S AGREEMENT.
- THE TRAFFIC STUDY FOR THIS PROJECT WAS PREPARED BY THE TRAFFIC GROUP, DATED FEBRUARY 24, 2000, AND WAS APPROVED ON JULY 6, 2000.
- ALL LANDSCAPING REQUIREMENTS AS SET FORTH IN SECTION 16.124 OF THE HOWARD COUNTY SUBDIVISION REGULATIONS AND THE LANDSCAPE MANUAL SHALL BE COMPLIED WITH.
- STREET LIGHT PLACEMENT AND THE TYPE OF FIXTURE AND POLE SHALL BE IN ACCORDANCE WITH THE HOWARD COUNTY DESIGN MANUAL, VOLUME III (1993) AND AS MODIFIED BY "GUIDELINES FOR STREET LIGHTS IN RESIDENTIAL DEVELOPMENTS (JUNE 1993). A MINIMUM SPACING OF 20' SHALL BE MAINTAINED BETWEEN ANY STREETLIGHT AND ANY TREE.
- SEDIMENT AND EROSION CONTROL IS PROVIDED FOR THIS SITE.
- THIS PROPERTY IS WITHIN THE METROPOLITAN DISTRICT.
- TO THE BEST OF THE OWNERS KNOWLEDGE, THERE ARE NO BURIAL/CEMETARY LOCATIONS ON-SITE.
- STREET TREES ARE PROVIDED FOR THIS SUBDIVISION IN ACCORDANCE WITH SECTION 16.124(c)(1) OF THE SUBDIVISION REGULATIONS AND THE LANDSCAPE MANUAL.
- WP-00-110: A WAIVER PETITION HAS BEEN SUBMITTED AND APPROVED, DATED JULY 6, 2000, TO WAIVE SECTION 16.124(e)(1) TO PERMIT THIS REQUIRED 40 FEET OF OPEN SPACE LOT FRONTAGE ON A PUBLIC ROAD WHICH IS SUITABLE FOR ACCESS BY PEDESTRIANS AND MAINTENANCE VEHICLES TO BE REDUCED TO ZERO FEET. APPROVAL IS SUBJECT TO THE FOLLOWING CONDITIONS:
 1. PEDESTRIAN AND MAINTENANCE VEHICLE ACCESS TO OPEN SPACE LOTS 10 & 11 SHALL BE PROVIDED BY A 24' ACCESS EASEMENT WITH A 14' DRIVEWAY AND THE 20' SWMF AND OPEN SPACE ACCESS EASEMENT ON LOTS 1-9.
 2. COMPLIANCE WITH THE ENCLOSED RFRS COMMENTS OF 6/19/00.
- NO CLEARING, GRADING, OR CONSTRUCTION IS PERMITTED WITHIN THE 100-YR FLOODPLAIN, STREAMS, OR BUFFERS AND THE FOREST CONSERVATION EASEMENTS.
- REFUSE COLLECTION, SNOW REMOVAL, AND MAINTENANCE FOR LOTS 1-9 SHALL BE PROVIDED AT THE JUNCTION OF THE PROPOSED PRIVATE ACCESS PLACE AND SAINT JOHN'S LANE.
- TREE PROTECTION FENCING WILL BE PROVIDED AT THE LIMITS OF DISTURBANCE WHERE GRADING AND/OR CLEARING IS ADJACENT TO ENVIRONMENTAL AREAS AND THE FOREST CONSERVATION EASEMENT RETENTION AREA.
- THERE ARE NO EXISTING STRUCTURES ON-SITE.
- THIS SUBDIVISION IS SUBJECT TO THE 4TH EDITION OF THE SUBDIVISION AND LAND DEVELOPMENT REGULATIONS.
- OPEN SPACE LOT 10 TO BE OWNED AND MAINTAINED BY THE HOMEOWNERS ASSOCIATIONS AND INCLUDES A SWMF. OPEN SPACE LOT 11 TO BE OWNED AND MAINTAINED BY HOWARD COUNTY DEPARTMENT OF RECREATION AND PARKS.
- IN ACCORDANCE WITH THE HSCD COMMENTS OF 7/27/05 AND 9/19/05, HOWARD SCD WILL REVIEW OUTFALL E-1 UPON SUBMISSION OF THE FINAL PLANS TO VERIFY THAT ITS CURRENT INFRINGEMENT INTO THE ENVIRONMENTAL AREA IS NECESSARY. IF NOT, THE PROPERTY SHOWN WILL REQUIRE ITS REVISION OUT OF THE ENVIRONMENTAL AREA.
- FINANCIAL LANDSCAPE SURETY IN THE AMOUNT OF \$18,544.64 SHALL BE POSTED AS A PART OF THE DEVELOPER'S AGREEMENT FOR THE FOREST CONSERVATION OBLIGATION.
- THE CONTRACTOR SHALL NOTIFY THE DEPARTMENT OF THE PUBLIC WORKS/BUREAU OF ENGINEERING/CONSTRUCTION INSPECTION DIVISION AT (410) 313-1880 AT LEAST (5) WORKING DAYS PRIOR TO THE START OF WORK.
- THE CONTRACTOR SHALL NOTIFY "MISS UTILITY" AT 1-800-257-7777 AT LEAST 48 HOURS PRIOR TO ANY EXCAVATION WORK BEING DONE.
- TRAFFIC CONTROL DEVICES, MARKINGS AND SIGNING SHALL BE IN ACCORDANCE WITH THE LATEST EDITION OF THE MANUAL OF UNIFORM TRAFFIC CONTROL DEVICES (MUTCD). ALL STREET AND REGULATORY SIGNS SHALL BE IN PLACE PRIOR TO THE PLACEMENT OF ANY ASPHALT.
- 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.
- THE COORDINATES SHOWN HEREON ARE BASED UPON THE HOWARD COUNTY GEODETIC CONTROL, WHICH IS BASED UPON THE MARYLAND STATE PLANE COORDINATE SYSTEM. HOWARD COUNTY MONUMENT NO.S 28A1 AND 28AC WERE USED FOR THIS PROJECT.
- EXISTING UTILITIES ARE BASED ON HOWARD COUNTY AS-BUILT CONSTRUCTION DRAWINGS.
- STREET TREES ARE REQUIRED FOR THIS PROJECT IN ACCORDANCE WITH SECTION 16.124(e)(1) OF THE SUBDIVISION REGULATIONS AND THE LANDSCAPE MANUAL. A FINANCIAL SURETY FOR FOUR PUBLIC ROAD STREET TREES IN THE AMOUNT OF \$1,200.00 WILL BE PAID AS A PART OF THE PUBLIC ROAD CONSTRUCTION DEVELOPER'S AGREEMENT AND FINANCIAL SURETY FOR 28 STREET TREES ALONG THE PRIVATE ACCESS PLACE, IN THE AMOUNT OF \$8,400.00 WILL BE PAID AS A PART OF THE LANDSCAPE SURETY, PART OF THE DEVELOPER'S AGREEMENT.
- EXISTING PUBLIC 20' RIGHT OF WAY FOR A SEWER PREVIOUSLY RECORDED AS L. 487 F.152 ABANDONED BY HOWARD COUNTY COUNCIL RESOLUTION CR3-2007, APPROVED 02/05/2007.

FINAL ROAD CONSTRUCTION PLAN

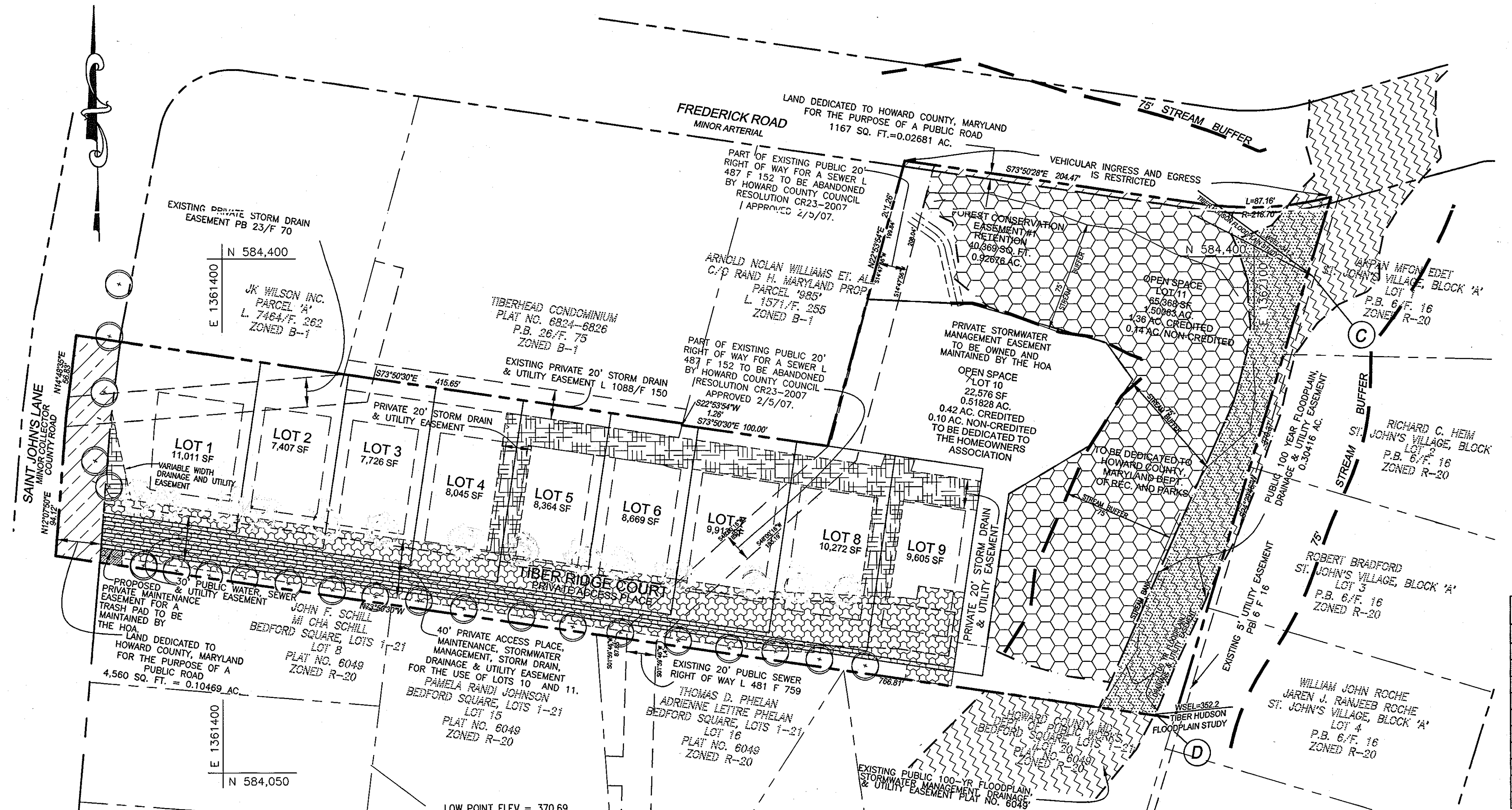
TIBER RIDGE

LOTS 1 - 9 AND OPEN SPACE LOTS 10 AND 11



VICINITY MAP
SCALE: 1"=2000'

BENCHMARKS		
NO.	NORTHING	EASTING
28A1	576723.51	1314261.60
28AC	578041.90	1314261.60



MINIMUM LOT SIZE CHART				
LOT NO.	GROSS AREA	PIPESTEM AREA	MINIMUM LOT SIZE	
2	7,407 SF	242 SF	7,165 SF	
3	7,726 SF	401 SF	7,325 SF	
4	8,045 SF	560 SF	7,485 SF	
5	8,364 SF	720 SF	7,644 SF	
6	8,669 SF	879 SF	7,790 SF	
7	9,913 SF	1,038 SF	8,875 SF	
8	10,272 SF	1,217 SF	9,055 SF	
9	9,605 SF	1,397 SF	8,208 SF	
10	22,576 SF	1,539 SF	21,037 SF	
11	65,367 SF	6,038 SF	59,329 SF	

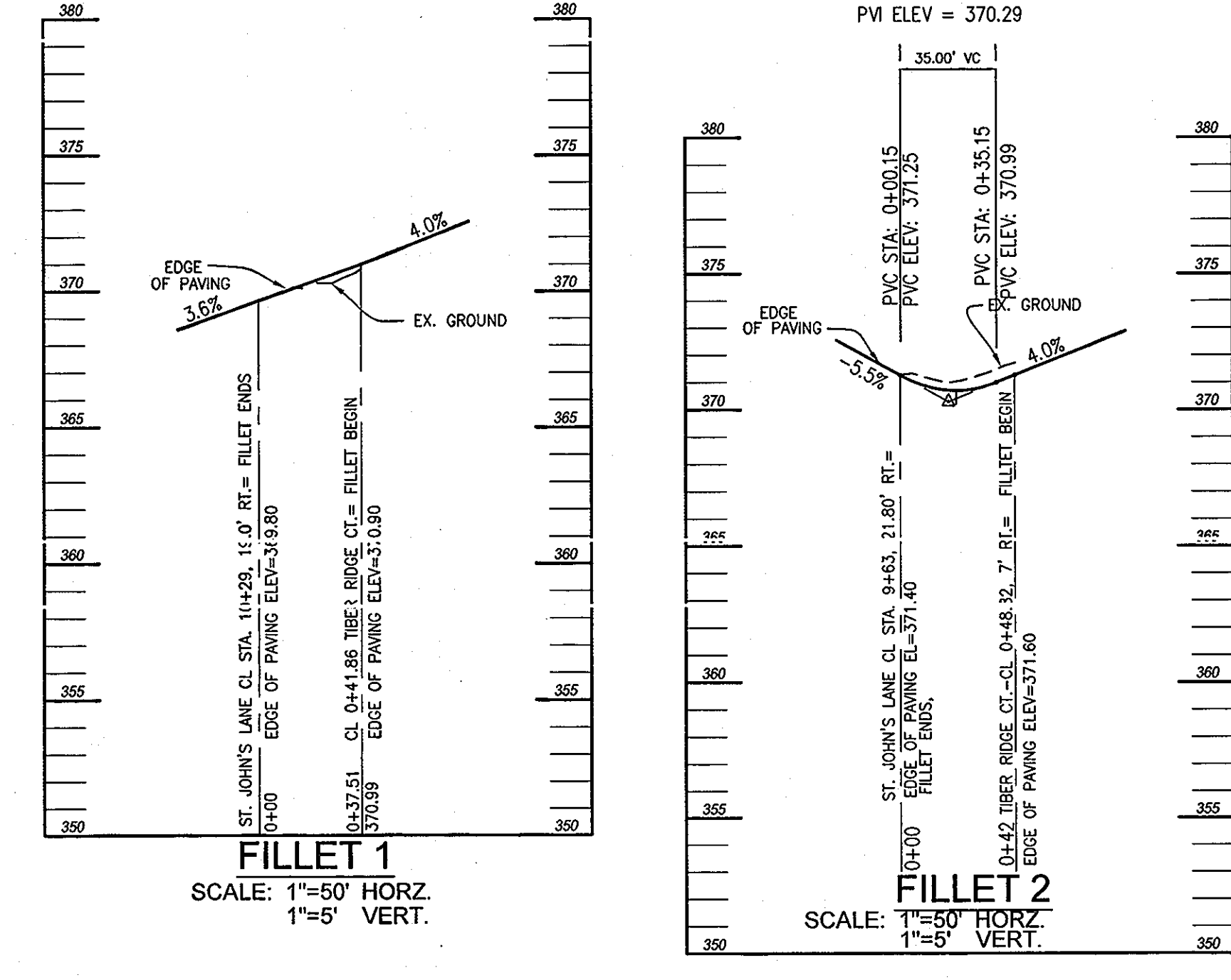
SHEET INDEX		
DESCRIPTION	SHEET NO.	
COVER SHEET	1	
SITE LAYOUT PLAN AND ROAD PROFILE	2	
GRADING, SEDIMENT AND EROSION CONTROL PLAN	3	
LANDSCAPING AND FOREST CONSERVATION PLAN	4	
STORMDRAIN DRAINAGE AREA MAP	5	
STORMDRAIN PROFILES	6	
STORMWATER MANAGEMENT DETAILS	7	
STORMWATER MANAGEMENT NOTES	8	
STORMWATER MANAGEMENT NOTES	9	
SEDIMENT AND EROSION CONTROL DETAILS	10	

LOCATION PLAN
SCALE: 1"=50'

LEGEND	
[Symbol]	PROP. PUBLIC WATER, SEWER, AND UTILITY EASEMENT
[Symbol]	FOREST CONSERVATION EASEMENT (RETENTION)
[Symbol]	AREA DEDICATED TO PUBLIC R/W
[Symbol]	100 YEAR FLOOD PLAIN DRAINAGE & UTILITY EASEMENT

STORMWATER MANAGEMENT REQUIREMENTS - AREA 'A'					
AREA	REQUIREMENT	VOLUME REQUIREMENT WITHOUT CREDITS	CREDITS	VOLUME REQUIREMENT WITH CREDITS	NOTES
1	WATER QUALITY VOLUME (WQV)	3,062 CF	3,062 CF	583 CF	RAINGARDENS, GRASS CHANNEL AND NATURAL AREA CONSERVATION CREDIT
2	RECHARGE VOLUME (REV)	823 CF 0.22 AC	0.22 AC	0.00 AC	RAINGARDENS, GRASS CHANNEL AND NATURAL AREA CONSERVATION CREDIT
3	CHANNEL PROTECTION VOLUME (CPV)	NA	NA	NA	1 YR FLOW < 2.0 CFS 1 YR DETENTION PROVIDED BY POND
4	OVERHEAD FLOOD PROTECTION (OFD)	---	---	---	PROVIDED BY DETENTION POND
5	EXTREME FLOOD VOLUME (EFV)	---	---	---	PROVIDED BY DETENTION POND

- SWMF PROVIDED BY:
1. DETENTION FACILITY (1, 10 AND 100 YEAR QUANTITY CONTROL)
 2. GRASS CHANNEL CREDIT
 3. RAINGARDENS
 4. NATURAL AREA CONSERVATION CREDIT



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

FILLET 2
SCALE: 1"=50' HORZ.
1"=5' VERT.

APPROVED: HOWARD COUNTY DEPARTMENT OF PUBLIC WORKS
 [Signature] 5-14-07
 CHIEF, BUREAU OF HIGHWAYS DATE

APPROVED: HOWARD COUNTY DEPARTMENT OF PLANNING AND ZONING
 [Signature] 6/10/07
 CHIEF, DEVELOPMENT ENGINEERING DIVISION DATE

APPROVED: [Signature] 6/10/07
 CHIEF, DIVISION OF LAND DEVELOPMENT DATE

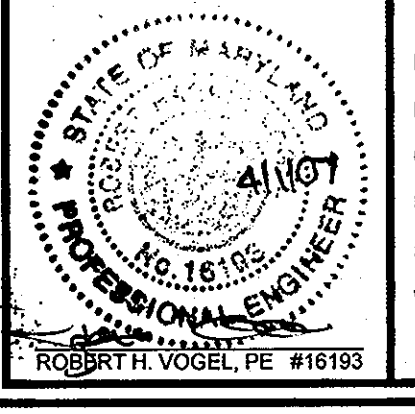
NO.	REVISION	DATE
1	ELIMINATE STREET TREES ALONG N. SIDE OF TIBER RIDGE CT. 12-21-08	

COVER SHEET
TIBER RIDGE
 LOTS 1 - 9 AND OPEN SPACE LOTS 10 AND 11

TAX MAP 24 BLOCK 11 PARCEL 821
 2ND ELECTION DISTRICT HOWARD COUNTY, MARYLAND

ROBERT H. VOGEL, INC.
 ENGINEERS • SURVEYORS • PLANNERS

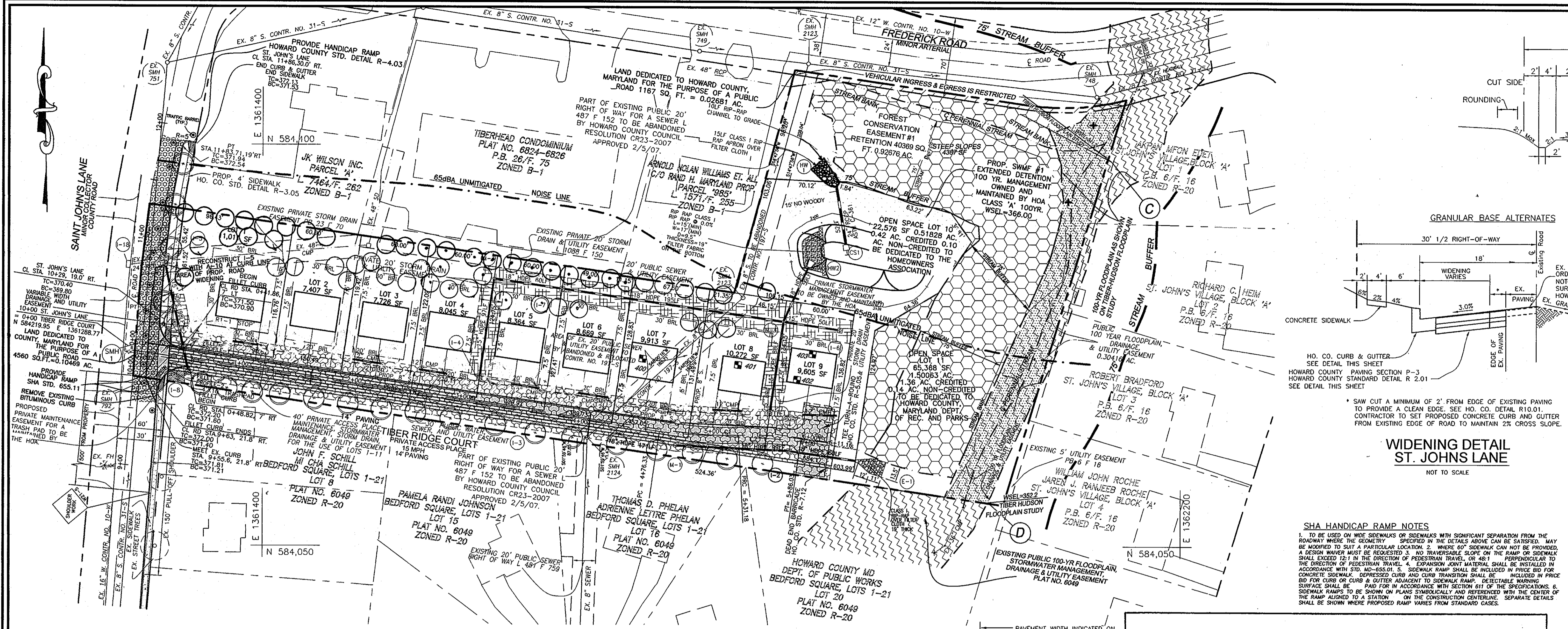
8407 MAIN STREET TEL: 410.461.7666
 ELLICOTT CITY, MD 21043 FAX: 410.461.8961



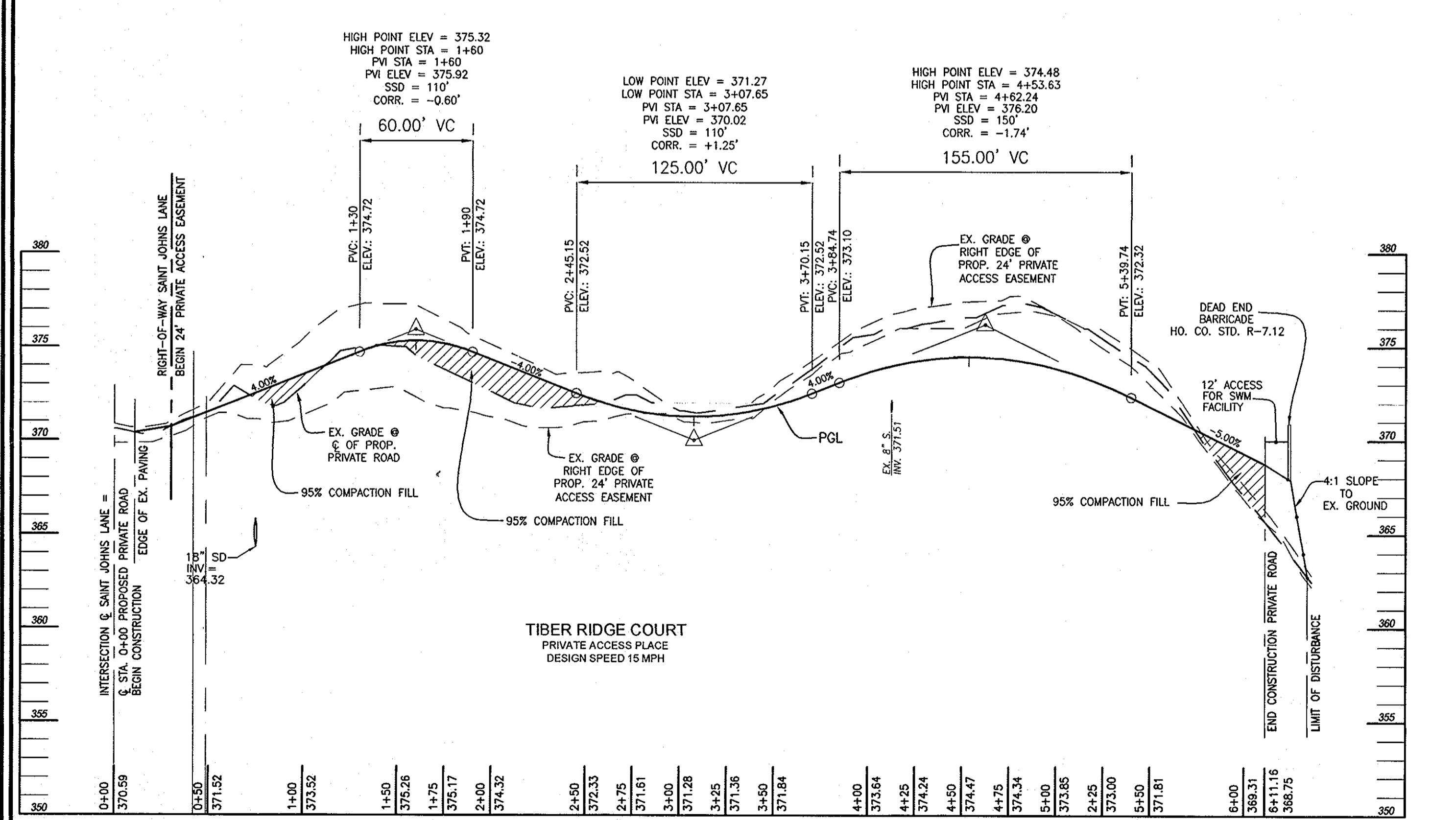
DESIGN BY: RHW/RJ
 DRAWN BY: RJ
 CHECKED BY: RHW
 DATE: 03-01-2007
 SCALE: AS NOTED
 W.O. NO.: 04-84.00
 2019134.00

DPZ REF: S-00-09, WP-00-110, P-05-10

1 SHEET OF 10



PLAN SCALE: 1"=50'



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

APPROVED: HOWARD COUNTY DEPARTMENT OF PUBLIC WORKS
Walter T. Cabell 5-14-07
 CHIEF, BUREAU OF HIGHWAYS

APPROVED: HOWARD COUNTY DEPARTMENT OF PLANNING AND ZONING
Chris Harms 5/14/07
 CHIEF, DIVISION OF LAND DEVELOPMENT

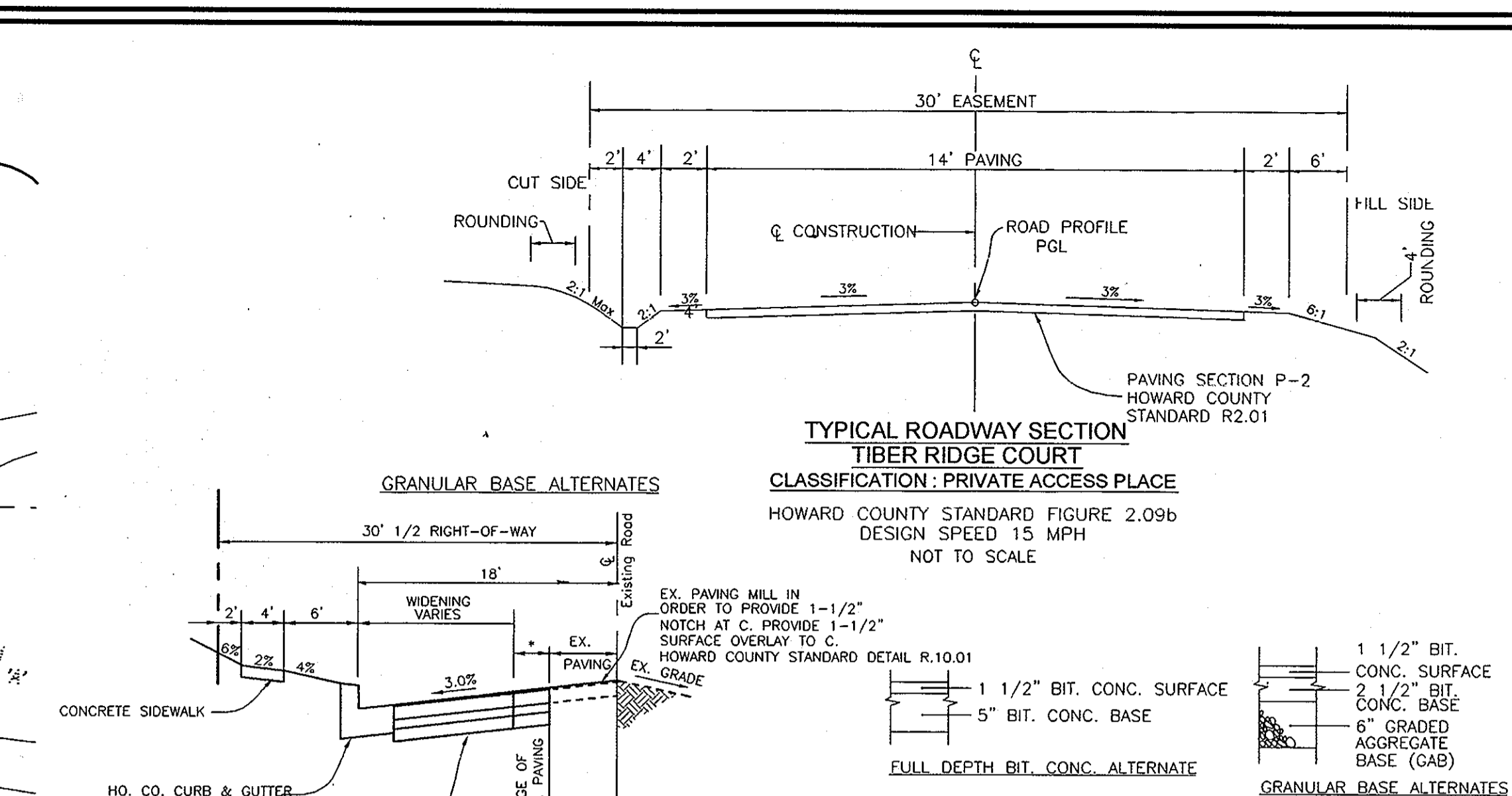
CURVE TABLE

CURVE	LENGTH	RADIUS	DELTA ANGLE	TANGENT	CHORD DIRECTION	CHORD LENGTH
C1	54.85'	300.00'	10°28'31"	27.50'	S 86°49'24" E	54.77'
C2	54.85'	300.00'	10°28'31"	27.50'	N 86°49'24" W	54.77'

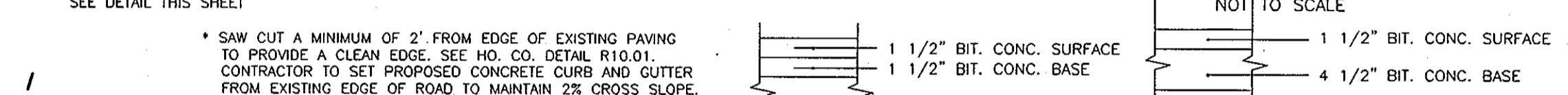
SIGN AND STREET LIGHT LOCATION CHART

DWG. NO.	STREET NAME	STATION	OFFSET	FIXTURE/POLE TYPE
2 OF 4	SANT JOHN'S LANE	10+25	23' RT	150 WATT HPS VAPOR PREMIER POST-TOP FIXTURE MOUNTED ON A 14' BLACK FIBERGLASS POLE
2 OF 4	TIBER RIDGE CT	0+38	10' L	R1-1 "STOP"

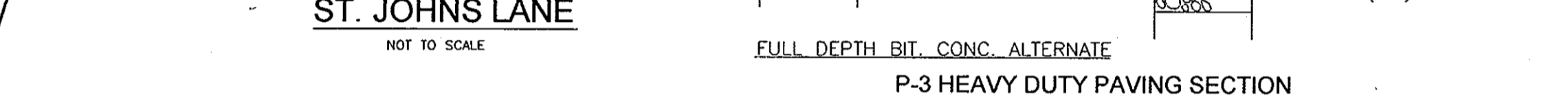
NOTE: A MINIMUM OF 20' IS REQUIRED BETWEEN ANY STREET LIGHT AND ANY TREE



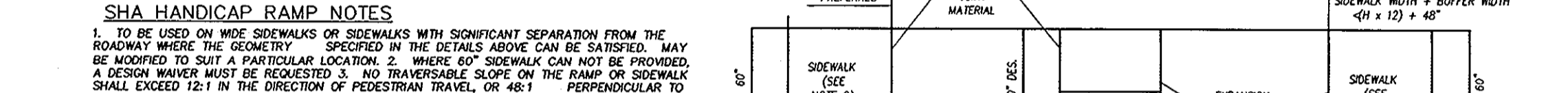
TYPICAL ROADWAY SECTION TIBER RIDGE COURT CLASSIFICATION: PRIVATE ACCESS PLACE



WIDENING DETAIL SAINT JOHN'S LANE



P-2 LIGHT DUTY PAVING SECTION

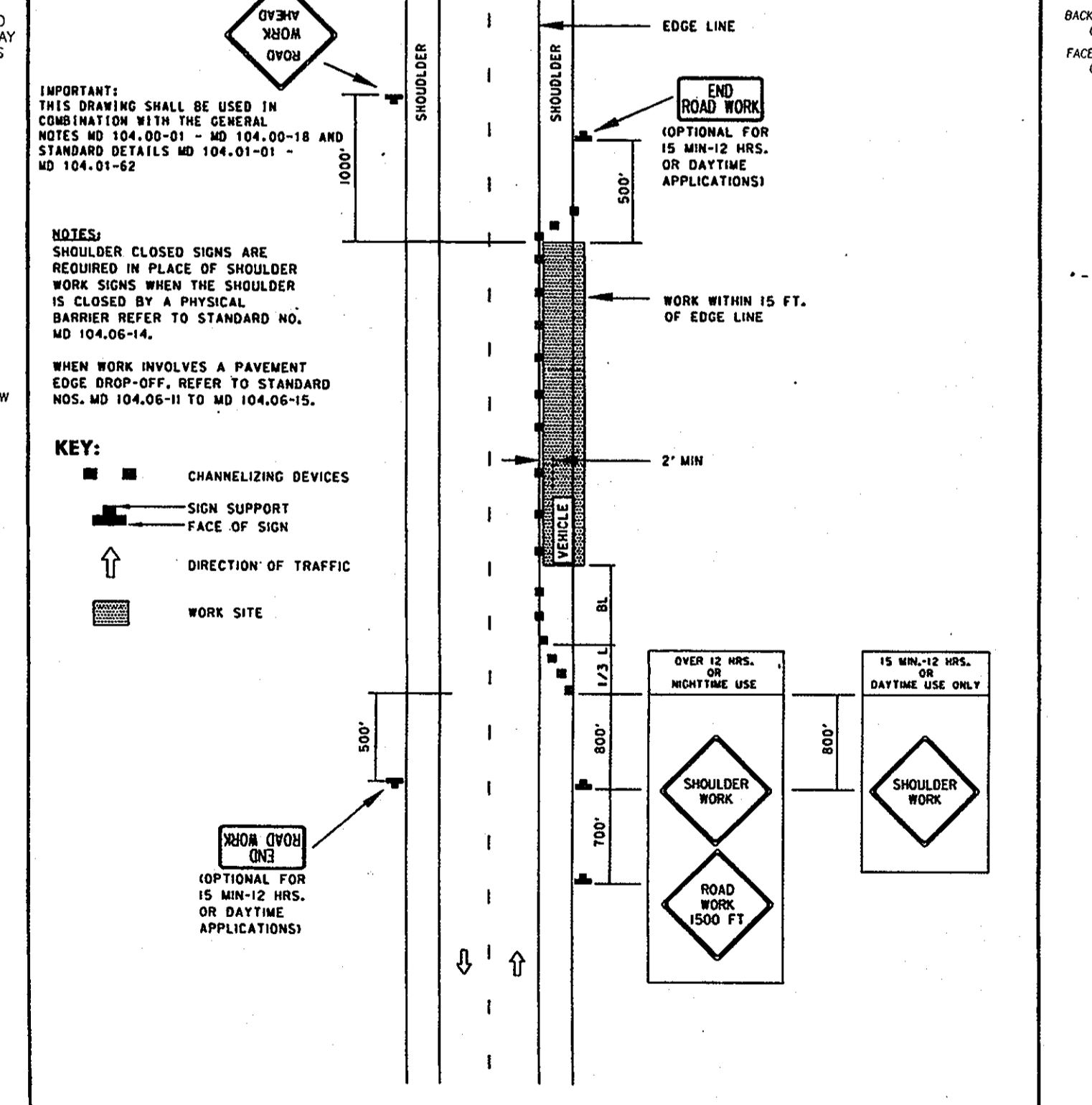


P-3 HEAVY DUTY PAVING SECTION

SHA HANDICAP RAMP NOTES

- TO BE USED ON WIDE SIDEWALKS WITH SIGNIFICANT SEPARATION FROM THE ROADWAY WHERE THE GEOMETRY SPECIFIED IN THE DETAILS ABOVE CAN BE SATISFIED. MAY BE MODIFIED TO SUIT A PARTICULAR LOCATION.
- WHERE 60" SIDEWALK CAN NOT BE PROVIDED A DESIGN WALKER MUST BE REQUESTED. NO TRAVELABLE SLOPE ON THE RAMP OR SIDEWALK SHALL EXCEED 1:21 IN THE DIRECTION OF PEDESTRIAN TRAVEL.
- SIDEWALK RAMP SHALL BE INCLUDED IN PRICE BID FOR CONCRETE SIDEWALK. DEPRESSURED CURB AND CURB TRANSITION SHALL BE INCLUDED IN PRICE BID FOR CURB & GUTTER ADJACENT TO SIDEWALK RAMP. DETECTABLE WARNING SURFACE SHALL BE PAID FOR IN ACCORDANCE WITH SECTION 811 OF THE SPECIFICATIONS. SIDEWALK RAMP SHALL BE SHOWN ON PLANS SYMBOLOGICALLY AND REFERENCED WITH THE CENTER OF THE RAMP ALIGNED TO A STATION ON THE CONSTRUCTION CENTERLINE. SEPARATE DETAILS SHALL BE SHOWN WHERE PROPOSED RAMP VARIES FROM STANDARD CASES.

TEMPORARY TRAFFIC CONTROL TYPICAL APPLICATION



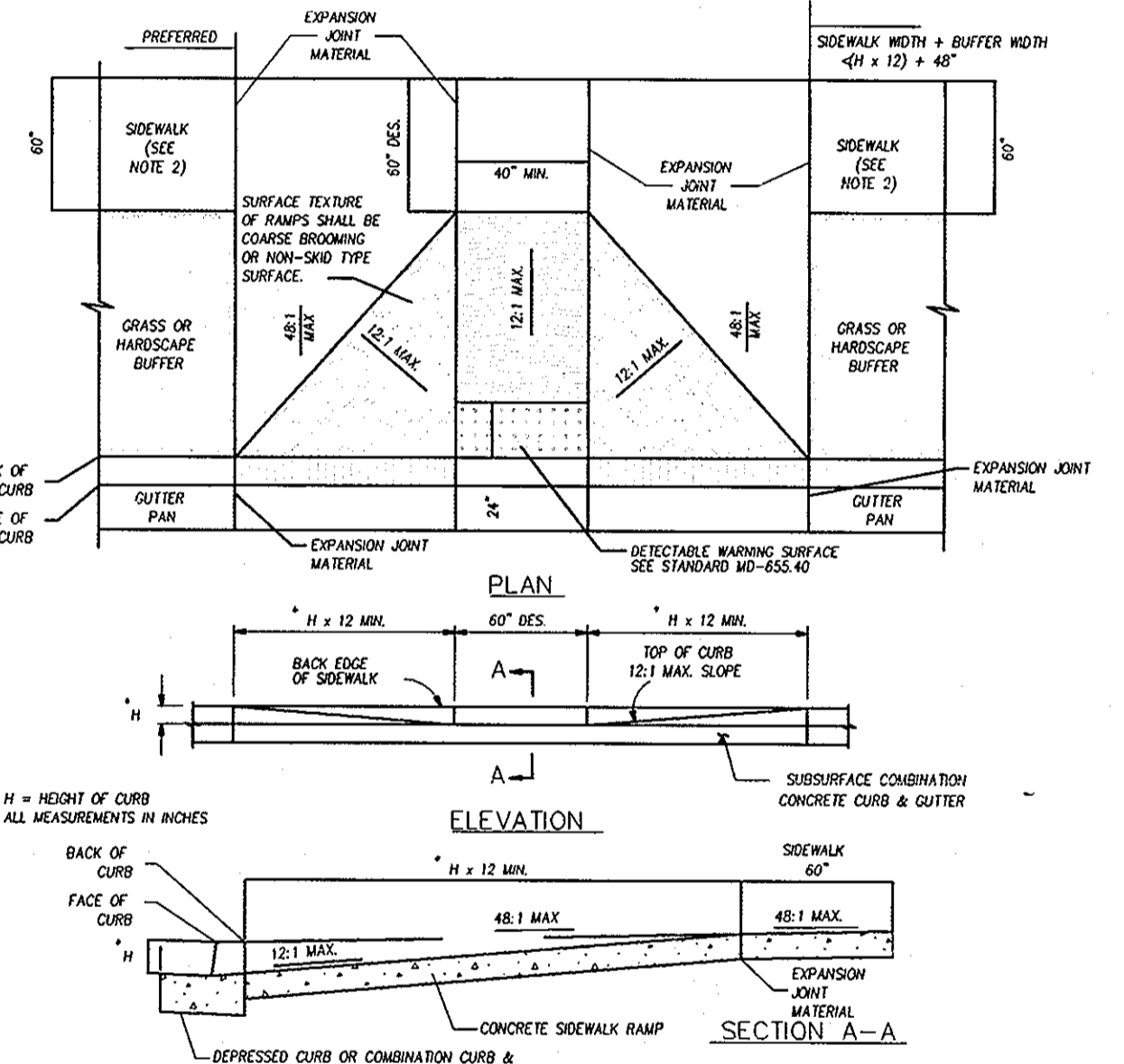
KEY:

- CHANNELIZING DEVICES
- SIGN SUPPORT
- FACE OF SIGN
- DIRECTION OF TRAFFIC
- WORK SITE

Maryland Department of Transportation STATE HIGHWAY ADMINISTRATION
 STANDARDS FOR HIGHWAYS AND INCIDENTAL STRUCTURES

SHOULDER WORK/2-LANE, 2-WAY
 EQ/LESS THAN 40 MPH

STANDARD NO. MD 104.02-02



HC RAMP SAINT JOHN'S LANE AT TIBER RIDGE COURT MD -655.11

NO.	REVISION	DATE
1	ELIMINATE STREET TREES ALONG NORTH SIDE OF TIBER RIDGE COURTS, ADD 59 LEYLAND CYPRUS	12/17/00

SITE LAYOUT PLAN AND PROFILE
TIBER RIDGE
 LOTS 1 - 9 AND OPEN SPACE LOTS 10 AND 11

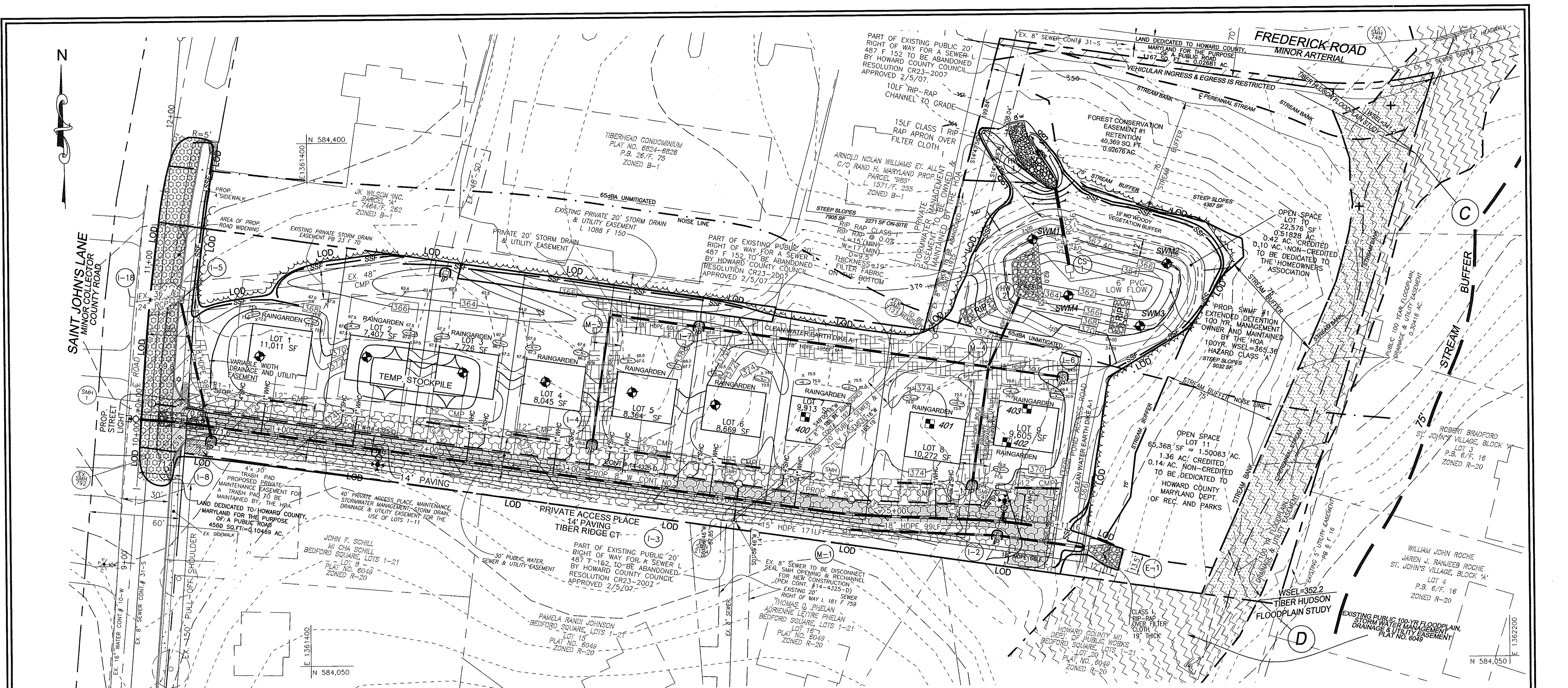
TAX MAP 24 BLOCK 11 PARCEL 821
 2ND ELECTION DISTRICT HOWARD COUNTY, MARYLAND

ROBERT H. VOGEL ENGINEERS, INC.
 ENGINEERS • SURVEYORS • PLANNERS
 8407 MAIN STREET ELLICOTT CITY, MD 21043 TEL: 410.461.7666 FAX: 410.461.8961

DESIGN BY: RHW/RJ
 DRAWN BY: RJ
 CHECKED BY: RHW
 DATE: 5/14/07
 SCALE: AS NOTED
 W.O. NO.: 04-84.00 2019134.00

DPZ REF: S-00-09, WP-00-110, P-05-10

2 SHEET OF 10



PLAN SCALE: 1"=30'

LEGEND

---202---	EXISTING 2 FT CONTOUR	
---200---	EXISTING 10 FT CONTOUR	
---200---	PROPOSED 2 FT CONTOUR	
---200---	PROPOSED 10 FT CONTOUR	
LOD	LIMIT OF DISTURBANCE	
---	EXISTING TREELINE	
---	PROPOSED TREELINE	
---	UNMITIGATED NOISE CONTOUR	
☆	PROPOSED STREET LIGHT	
○	PROPOSED STREET TREE	
---	FOREST CONSERVATION EASEMENT (RETENTION)	
---	SURFACE OVERLAY TO C	
---	AREA OF 15 TO 24.9 PERCENT SLOPES	
---	AREA OF 24 PERCENT OR GREATER SLOPES	
⊕	SOIL BORING	
⊕	TEST PITS	

BASIN NO.1

TRAP TYPE:	SEDIMENT BASIN
EX. DRAINAGE AREA:	2.20 AC.
PROP. DRAINAGE AREA:	2.20 AC.
TOTAL STORAGE REQUIRED:	7,920 CF
TOTAL STORAGE PROVIDED:	7,920 CF
BOTTOM ELEV:	362.00
CREST ELEVATION:	364.80
WET STORAGE ELEVATION:	362.00-363.60
DRY STORAGE ELEVATION:	363.60-364.80
TOTAL STORAGE DEPTH:	2.8'
TOP OF EMBANKMENT:	367.40
CLEANOUT ELEVATION:	362.80
SIDE SLOPES:	3:1
EMERGENCY SPILLWAY:	N/A

SOILS LEGEND

SYMBOL	NAME / DESCRIPTION	GROUP
GIC2	GLENELG LOAM, 8 TO 15 PERCENT SLOPES, MODERATELY ERODED	B
GnB2	GLENVILLE SILT LOAM, 3 TO 8 PERCENT SLOPES, MODERATELY ERODED	C
MB2	MANOR LOAM, 3 TO 8 PERCENT SLOPES, MODERATELY ERODED	B
MC2	MANOR LOAM, 8 TO 15 PERCENT SLOPES, MODERATELY ERODED	B
MD2	MANOR LOAM, 15 TO 25 PERCENT SLOPES, MODERATELY ERODED	B

PAGE 16 OF THE HOWARD COUNTY SOIL SURVEY

DETENTION POND

POCKET POND
HAZARD CLASS A
PRIVATELY OWNED & MAINTAINED

1 YR WSE = 363.39
10 YR WSE = 364.70
100 YR WSE = 365.36

WQV = GRASS CHANNEL & NATURAL AREA CONSERVATION CREDIT & RAINGARDENS

CPV = NA
Rev = GRASS CHANNEL & NATURAL AREA CONSERVATION CREDIT

Q₁ EX = 0.58 CFS
Q₁ W/SWM = 0.30 CFS

STORMWATER MANAGEMENT REQUIREMENTS - AREA 'A'

AREA	REQUIREMENT	VOLUME REQUIREMENT WITHOUT CREDITS	CREDITS	VOLUME REQUIREMENT WITH CREDITS	NOTES
1	WATER QUALITY VOLUME (WQV)	3,062 CF	3,062 CF	583 CF	RAINGARDENS, GRASS CHANNEL AND NATURAL AREA CONSERVATION CREDIT
2	RECHARGE VOLUME (REV)	823 CF	0.22 AC	0.00 AC	RAINGARDENS, GRASS CHANNEL AND NATURAL AREA CONSERVATION CREDIT
3	CHANNEL PROTECTION VOLUME (CPV)	NA	NA	NA	1 YR FLOW < 2.0 CFS 1 YR DETENTION PROVIDED BY POND
4	OVERHEAD FLOOD PROTECTION (O ₁ P)	---	---	---	PROVIDED BY DETENTION POND
5	EXTREME FLOOD VOLUME (E ₁ CF)	---	---	---	PROVIDED BY DETENTION POND

SWM PROVIDED BY:

1. DETENTION FACILITY (1, 10 AND 100 YEAR QUANTITY CONTROL)
2. GRASS CHANNEL CREDIT
3. RAINGARDENS
4. NATURAL AREA CONSERVATION CREDIT

NOTE: RAINGARDENS ARE CONCEPTUAL THE RAIN GARDEN GRADING, UNDERDRAIN PLACEMENT, OUTFALL LOCATION, DESIGN COMPUTATIONS, DETAILS AND SECTIONS WILL BE PROVIDED AT SITE DEVELOPMENT PLAN. LANDSCAPE SURETY IN THE AMOUNT OF \$18,000.00 SHALL BE POSTED AS A PART OF THE DEVELOPER'S AGREEMENT.

APPROVED: HOWARD COUNTY DEPARTMENT OF PUBLIC WORKS
William F. Mabel 5/14/07
 CHIEF, BUREAU OF HIGHWAYS

APPROVED: HOWARD COUNTY DEPARTMENT OF PLANNING AND ZONING
William F. Mabel 6/1/07
 CHIEF, DEVELOPMENT ENGINEERING DIVISION

Cindy Handley 6/11/07
 CHIEF, DIVISION OF LAND DEVELOPMENT

REVIEWED FOR HOWARD SCD AND MEETS TECHNICAL REQUIREMENTS
Jim Myers 5/23/07
 USDA-NATURAL RESOURCES CONSERVATION SERVICE

THIS DEVELOPMENT PLAN IS APPROVED FOR SOIL EROSION AND SEDIMENT CONTROL BY THE HOWARD SOIL CONSERVATION DISTRICT
William F. Mabel 5/23/07
 HOWARD SCD

ENGINEER'S CERTIFICATE

"I HEREBY CERTIFY THAT THIS PLAN FOR POND CONSTRUCTION, EROSION AND SEDIMENT CONTROL REPRESENTS A PRACTICAL AND WORKABLE PLAN BASED ON MY PERSONAL KNOWLEDGE OF THE SITE CONDITIONS. THIS PLAN WAS PREPARED IN ACCORDANCE WITH THE REQUIREMENTS OF THE HOWARD SOIL CONSERVATION DISTRICT. I HAVE NOTICED 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."

Robert H. Vogel 5/11/07
 ROBERT H. VOGEL, P.E. #16193

DEVELOPER'S CERTIFICATE

"I/WE CERTIFY THAT ALL DEVELOPMENT AND/OR CONSTRUCTION WILL BE DONE IN ACCORDANCE TO THESE PLANS, AND THAT ANY RESPONSIBLE PERSONNEL INVOLVED IN THE CONSTRUCTION PROJECT WILL HAVE A CERTIFICATE OF ATTENDANCE AT A DEPARTMENT OF THE ENVIRONMENT APPROVED TRAINING PROGRAM FOR THE CONTROL OF SEDIMENT AND EROSION BEFORE BEGINNING THE PROJECT. I SHALL ENGAGE A REGISTERED PROFESSIONAL ENGINEER TO SUPERVISE POND CONSTRUCTION AND PROVIDE THE HOWARD SOIL CONSERVATION DISTRICT WITH AN "AS-BUILT" PLAN OF THE POND WITHIN 30 DAYS OF COMPLETION."

Robert H. Vogel 5/14/07

"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."

ROBERT H. VOGEL, P.E. #16193 DATE
 WILLIAMSBURG GROUP
 5485 HARPERS FARM ROAD, SUITE 200
 COLUMBIA, MARYLAND 21044
 (410) 997-8800

OWNER / DEVELOPER

WILLIAMSBURG GROUP
 5485 HARPERS FARM ROAD, SUITE 200
 COLUMBIA, MARYLAND 21044
 (410) 997-8800

DESIGN BY: RHV/RJ
 DRAWN BY: RJ
 CHECKED BY: RHV
 DATE: 05/09/07
 SCALE: 1"=30'
 W.O. NO.: 04-84.00
 2019134.00

DPZ REF: S-00-09, WP-00-110, P-05-10

3 SHEET OF 10

GRADING, SEDIMENT AND EROSION CONTROL PLAN
TIBER RIDGE
 LOTS 1 - 9 AND OPEN SPACE LOTS 10 AND 11

TAX MAP 24 BLOCK 11 PARCEL 821
 2ND ELECTION DISTRICT HOWARD COUNTY, MARYLAND

ROBERT H. VOGEL ENGINEERING, INC.
 ENGINEERS • SURVEYORS • PLANNERS
 8407 MAIN STREET ELLICOTT CITY, MD 21043 TEL: 410.461.7666
 FAX: 410.461.8961

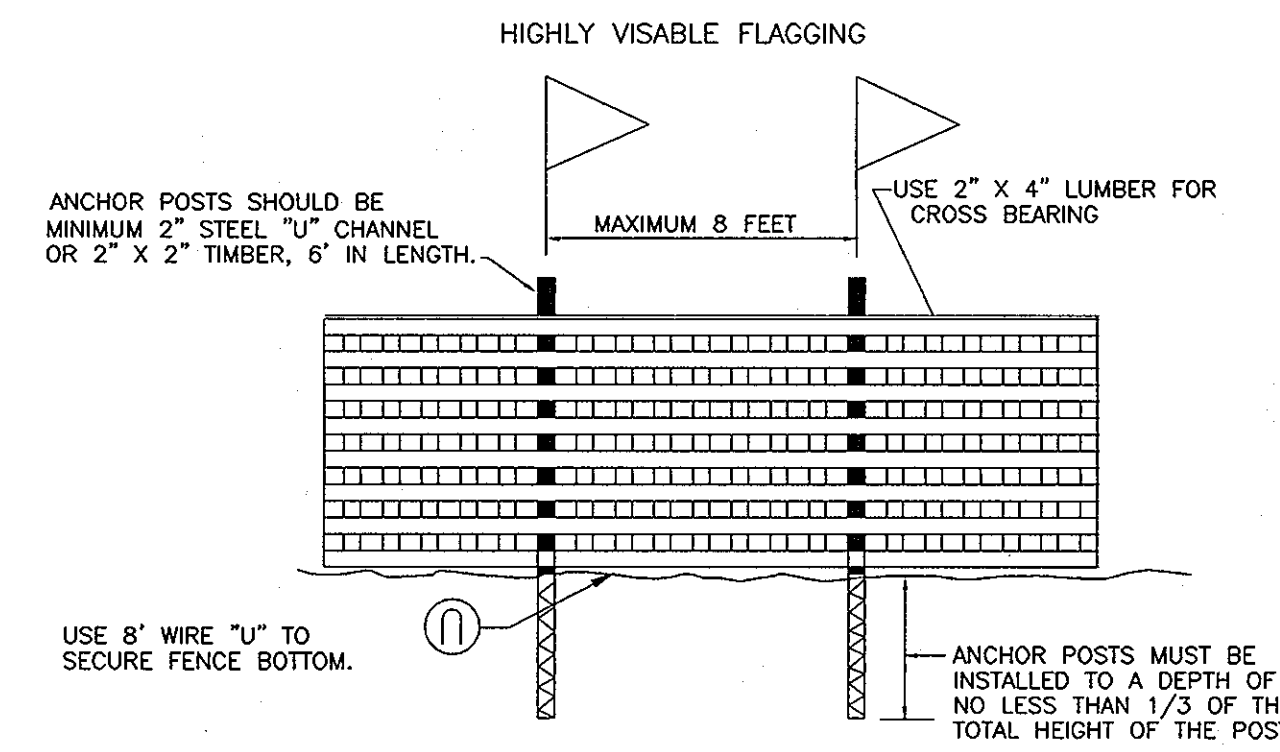
STATE OF MARYLAND PROFESSIONAL ENGINEER NO. 16193

KEY	QUAN.	BOTANICAL NAME	SIZE	REM.
4		ARBORVITAE-TECHNY THUJA OCCIDENTALIS, TECHNY GROWTH HEIGHT=15'-20'	5' - 6' HL.	B & B
7		LIQUIDAMBAR STRYACIFLUA AMERICAN SWEETGUM	2 1/2"-3" Cal.	B & B
9		CORNUS KOUSA KOUSA DOGWOOD (GROWTH HEIGHT=25')	2 1/2"-3" Cal.	B & B
6		TILIA CORDATA 'GREENSPIRE' LITTLELEAF LINDEN	2 1/2"-3" Cal.	B & B
6		ACER RUBRUM 'OCTOBER GLORY' OCTOBER GLORY RED MAPLE	2 1/2"-3" Cal.	B & B
7		CYPRESS OCYPARIS LEYLANDI LEYLAND CYPRESS	5' - 6' HL.	B & B
7		ILEX CRENATA 'ROTUNDFOLIA' ROUNDLEAF JAPANESE HOLLY	3' - 4' HL.	B & B

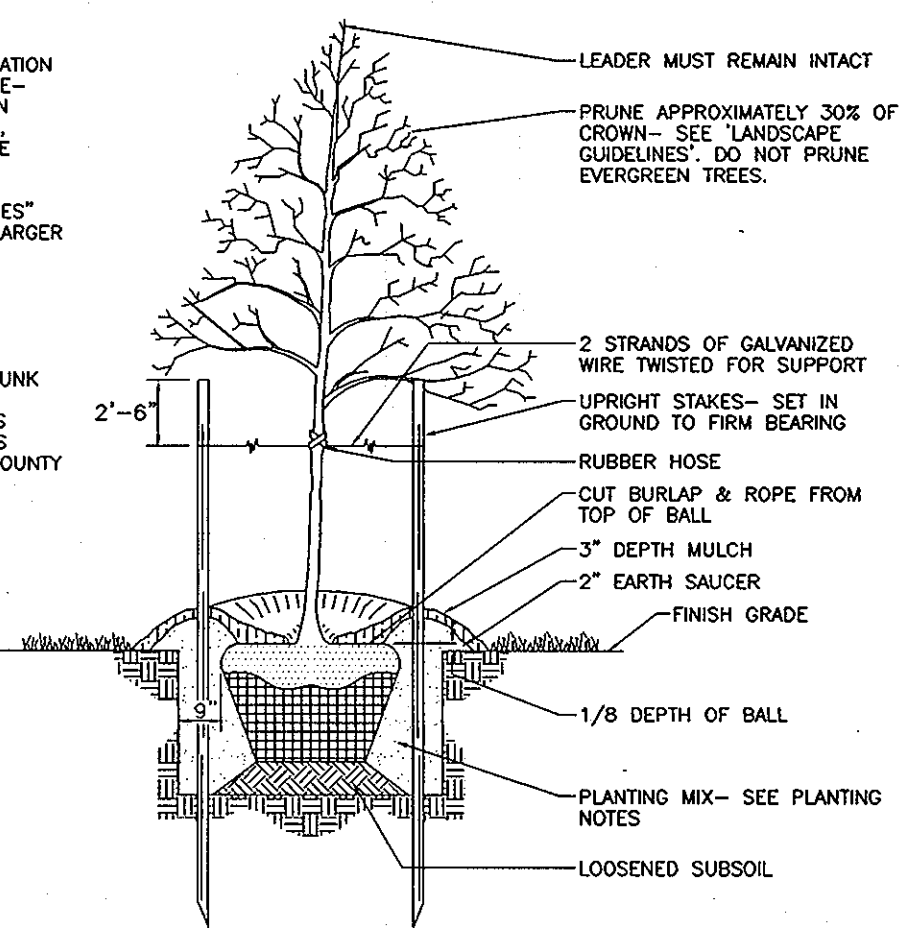
SCHEDULE D: STORMWATER MANAGEMENT AREA LANDSCAPING			
LINEAR FEET OF PERIMETER	503 LF		
CREDIT FOR EXISTING VEGETATION (NO, YES AND LINEAR FEET)	353 LF		
CREDIT FOR OTHER LANDSCAPING (NO, YES AND #)	NO		
NUMBER OF TREES REQUIRED	(150)		
SHADE TREES	3 SHADE TREES		
EVERGREEN TREES	4 EVERGREEN TREES		
NUMBER OF TREES PROVIDED			
SHADE TREES	3 SHADE TREES		
EVERGREEN TREES	4 EVERGREEN TREES		

1. ALL PLANT MATERIALS SHALL BE FULL AND HEAVY, BE WELL FORMED AND SYMMETRICAL, CONFORM TO THE MOST CURRENT AN SPECIFICATIONS AND BE INSTALLED IN ACCORDANCE WITH LAWM PLANTING SPECIFICATIONS.
2. CONTRACTOR SHALL VERIFY LOCATION OF ALL UNDERGROUND UTILITIES PRIOR TO DIGGING.
3. FINAL LOCATION OF PLANT MATERIAL MAY NEED TO VARY TO MEET FINAL FIELD CONDITIONS. TREES SHALL NOT BE PLANTED IN THE BOTTOM OF DRAINAGE SWALES.
4. CONTRACTOR SHALL VERIFY PLANT QUANTITIES PRIOR TO BIDDING. IF PLAN DIFFERS FROM LANDSCAPE SCHEDULE, THE PLAN SHALL GOVERN.

33	CYPRESS OCYPARIS LEYLANDI LEYLAND CYPRESS	9'-10'	B&B
20	CYPRESS OCYPARIS LEYLANDI LEYLAND CYPRESS	14'-16'	B&B



- NOTES:**
1. FOREST PROTECTION DEVICE ONLY.
 2. RETENTION AREA WILL BE SET AS PART OF THE REVIEW PROCESS.
 3. BOUNDARIES OF RETENTION AREA SHOULD BE STAKED AND FLAGGED PRIOR TO INSTALLING DEVICE.
 4. ROOF DAMAGE SHOULD BE AVOIDED.
 5. PROTECTION SIGNAGE SHOULD BE USED.
 6. DEVICE SHOULD BE MAINTAINED THROUGHOUT CONSTRUCTION.



- NOTES:**
1. SEE "LANDSCAPE SPECIFICATION GUIDELINES FOR BALTIMORE WASHINGTON METROPOLITAN AREAS" FOR ALL MATERIAL PRODUCT, AND PROCEDURE SPECIFICATIONS.
 2. SEE "LANDSCAPE GUIDELINES" FOR SUPPORTING TREES LARGER THAN 2-1/2" CALIPER.
 3. PLACE UPRIGHT STAKES PARALLEL TO WALKS & BUILDINGS.
 4. KEEP MULCH 1" FROM TRUNK
 5. SEE ARCHITECTURAL PLANS FOR ADDITIONAL PLANTINGS WHICH EXCEED HOWARD COUNTY MINIMUM REQUIREMENTS.
 6. TREES ARE NOT TO BE PLANTED OVER PRIVATE SEWAGE EASEMENT.

CATEGORY	ADJACENT TO PERIMETER PROPERTIES				ADJACENT TO PERIMETER R/W	
	1	2	3	4	5	6
PERIMETER/FRONTAGE DESIGNATION	1	2	3	4	5	6
LANDSCAPE TYPE	A	A	A	A	A	B
LINEAR FEET OF ROADWAY PERIMETER/FRONTAGE	767'	370'	201'	516'	280'	120'
CREDIT FOR EXISTING VEGETATION (YES, NO, LINEAR FEET DESCRIBE BELOW IF NEEDED)	YES* 30'	YES* 370'	-	YES* 91'	YES*	-
CREDIT FOR WALL, FENCE OR BERM (YES, NO, LINEAR FEET DESCRIBE BELOW IF NEEDED)	-	-	-	-	-	-
NUMBER OF PLANTS REQUIRED (LF REMAINING)	737'	-	-	425'	-	-
SHADE TREES	1:60 12	1:60 0	1:60 3	1:60 7	1:60 0	1:50 3
EVERGREEN TREES	-	-	-	-	-	1:40 3
NUMBER OF PLANTS PROVIDED						
SHADE TREES	12	0	3	7	0	3
EVERGREEN TREES	-	-	-	-	-	3
OTHER TREES (2:1 SUBSTITUTION) SHRUBS (10:1 SUBSTITUTION) (DESCRIBE PLANT SUBSTITUTION CREDITS BELOW IF NEEDED)	-	-	-	-	-	-

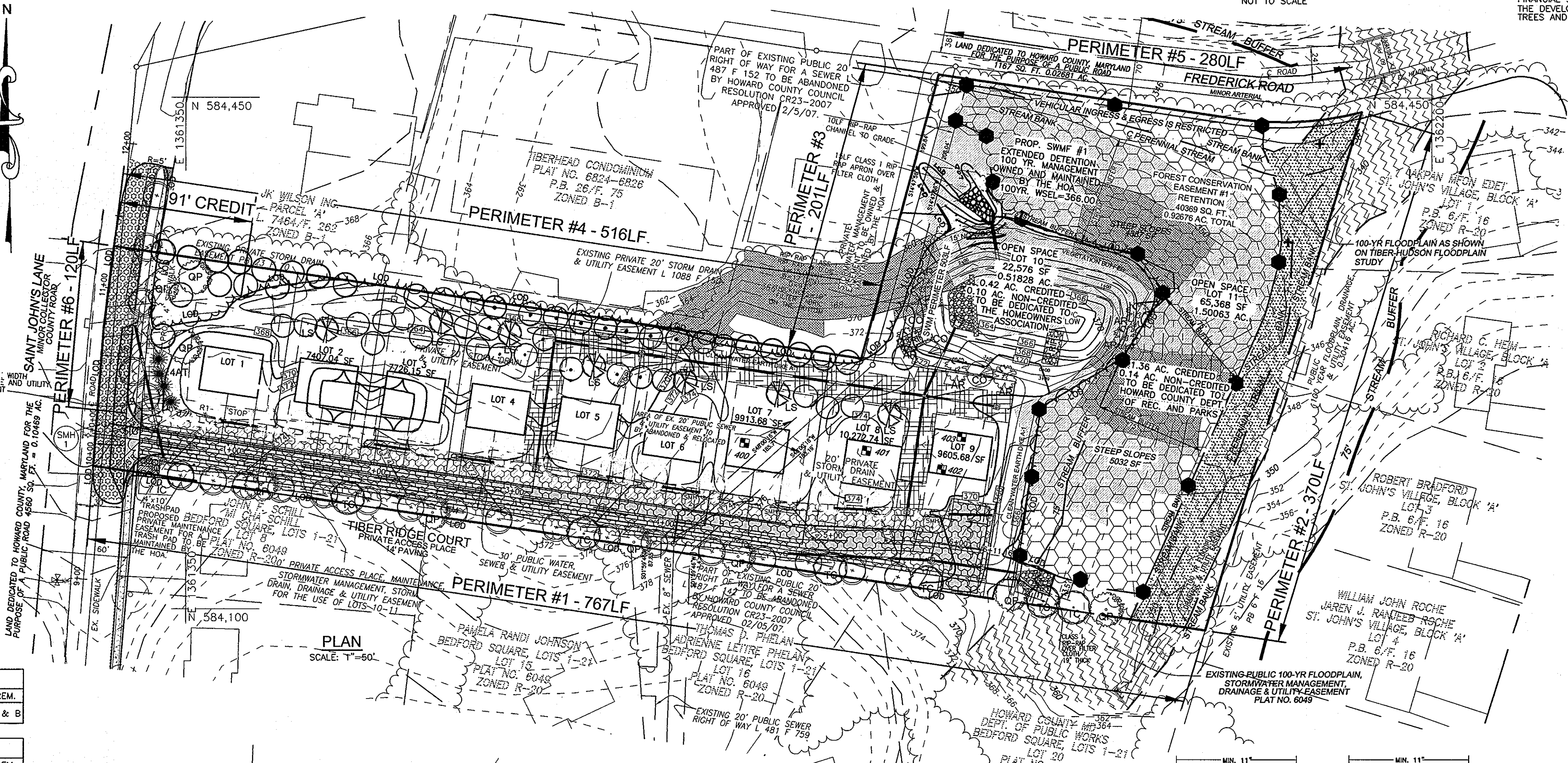
- GENERAL NOTES**
1. ALL PLANT MATERIALS SHALL BE FULL AND HEAVY, BE WELL FORMED AND SYMMETRICAL, CONFORM TO THE MOST CURRENT AN SPECIFICATIONS AND BE INSTALLED IN ACCORDANCE WITH LAWM PLANTING SPECIFICATIONS.
 2. CONTRACTOR SHALL VERIFY LOCATION OF ALL UNDERGROUND UTILITIES PRIOR TO DIGGING.
 3. FINAL LOCATION OF PLANT MATERIAL MAY NEED TO VARY TO MEET FINAL FIELD CONDITIONS. TREES SHALL NOT BE PLANTED IN THE BOTTOM OF DRAINAGE SWALES.
 4. CONTRACTOR SHALL VERIFY PLANT QUANTITIES PRIOR TO BIDDING. IF PLAN DIFFERS FROM LANDSCAPE SCHEDULE, THE PLAN SHALL GOVERN.

DEVELOPER'S AGREEMENT

FINANCIAL SURETY FOR THE REQUIRED LANDSCAPING PROVIDED PER THE LANDSCAPE MANUAL TO BE POSTED WITH THE DEVELOPER'S AGREEMENT IN THE AMOUNT OF \$9,750.00 FOR THE REQUIRED 28 SHADE TREES, 6 EVERGREEN TREES AND 5 SHRUBS.

LEGEND

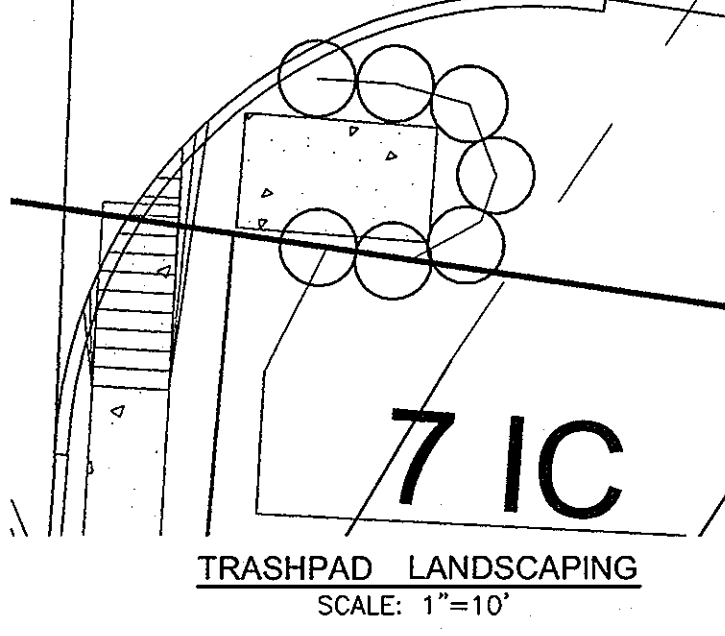
- 202--- EXISTING 2 FT CONTOUR
- 200--- EXISTING 10 FT CONTOUR
- 2002--- PROPOSED 2 FT CONTOUR
- 2000--- PROPOSED 10 FT CONTOUR
- LOD LIMIT OF DISTURBANCE
- EXISTING TREELINE
- PROPOSED TREELINE
- UNMITIGATED NOISE CONTOUR
- PROPOSED STREET LIGHT
- PROPOSED STREET TREE
- FOREST CONSERVATION EASEMENT (RETENTION)
- AREA OF 15 TO 24.9 PERCENT SLOPES
- AREA OF 24 PERCENT OR GREATER SLOPES
- SIB2 SOILS
- SSE 1-1/2" OVERLAY
- 100 YEAR FLOOD PLAN DRAINAGE & UTILITY EASEMENT
- PROP. ROAD PAVING
- PRIVATE STORMDRAIN EASEMENT
- PROP. MAINTENANCE & DRAINAGE EASEMENT
- PUBLIC WATER & SEWER EASEMENT



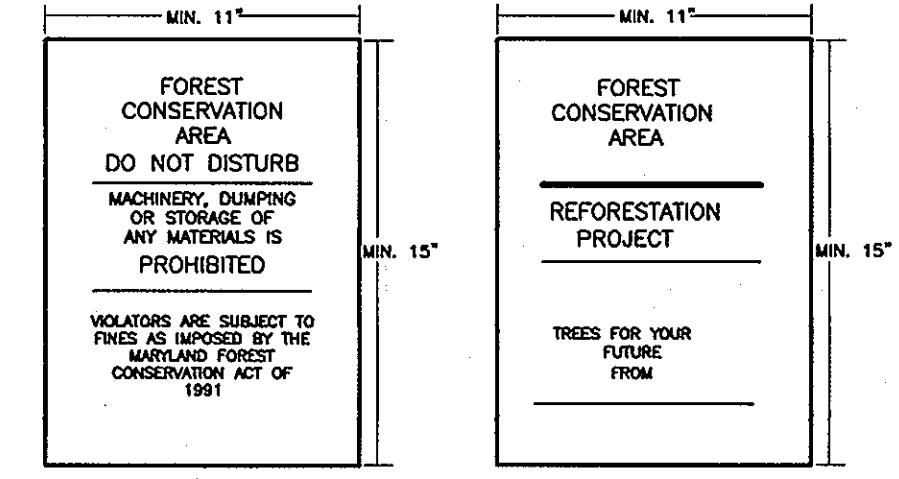
STREET TREE SCHEDULE- TIBER RIDGE COURT				
KEY	QUAN.	BOTANICAL NAME	SIZE	REM.
4		AMUR MAPLE ACRE GINNALA HEIGHT=20'	2 1/2"-3" CAL.	B & B

STREET TREE SCHEDULE- SAINT JOHN'S LANE				
KEY	QUAN.	BOTANICAL NAME	SIZE	REM.
4		CORNELIAN CHERRY CORNUS MAS HEIGHT=25'	2 1/2"-3" CAL.	B & B

SOILS LEGEND		
SYMBOL	NAME / DESCRIPTION	GROUP
GIC2	GLENELG LOAM, 8 TO 15 PERCENT SLOPES, MODERATELY ERODED	B
GnB2	GLENVILLE SILT LOAM, 3 TO 8 PERCENT SLOPES, MODERATELY ERODED	C
MB2	MANOR LOAM, 3 TO 8 PERCENT SLOPES, MODERATELY ERODED	B
MC2	MANOR LOAM, 8 TO 15 PERCENT SLOPES, MODERATELY ERODED	B
MD2	MANOR LOAM, 15 TO 25 PERCENT SLOPES, MODERATELY ERODED	B



- FOREST PROTECTION NOTES**
- PRE-CONSTRUCTION ACTIVITIES**
1. INSTALL BLAZE ORANGE FENCE AND RETENTION SIGNS BEFORE CONSTRUCTION BEGINS.
 2. FENCING SHALL BE MAINTAINED IN GOOD CONDITION AND PROMPTLY REPAIRED OR RESTORED AS THE SITUATION WARRANTS.
- CONSTRUCTION PHASE**
1. NO DISTURBANCE OR DUMPING IS ALLOWED INSIDE THE TREE RETENTION AREA.
 2. NO EQUIPMENT SHALL BE OPERATED INSIDE THE TREE RETENTION AREA INCLUDING TREE CANOPIES.
 3. IN THE EVENT OF DROUGHT, THE PROTECTED TREES SHALL BE MONITORED FOR SIGNS OF STRESS AND WATERED AS NEEDED.
- POST-CONSTRUCTION ACTIVITIES**
1. AT THE DIRECTION OF A QUALIFIED TREE CARE EXPERT, DAMAGES TO RETAINED TREES SHALL BE REPAIRED BY THE CONTRACTOR.
 2. FENCE REMOVAL AND STABILIZATION SHALL BE AS PER THE SEDIMENT AND EROSION CONTROL PLAN, EXCEPT FOR THE SELECTION OF GRASSES FOR STABILIZATION.
 3. DO NOT REMOVE SIGNS.



DEVELOPER'S LANDSCAPE CERTIFICATE

I/WE CERTIFY THAT LANDSCAPING SHOWN ON THIS PLAN WILL BE DONE ACCORDING TO THE PLAN, SECTION 16.124 OF THE HOWARD COUNTY CODE AND THE LANDSCAPE MANUAL. I/WE FURTHER CERTIFY THAT UPON COMPLETION OF THE PROJECT, 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.

DATE: 5/14/07

DEVELOPER'S NAME: WILLIAMSBURG GROUP
5485 HARRIS FARM ROAD, SUITE 200
COLUMBIA, MARYLAND 21044
(410) 997-8800

HOWARD COUNTY FOREST CONSERVATION WORKSHEET

ZONED R-3C

NET TRACT AREA: 4.01 AC

A. TOTAL TRACT AREA: 4.01 AC

B. AREA WITHIN 100 YEAR FLOODPLAIN: 0.30 AC

C. AREA TO REMAIN IN AGRICULTURAL PRODUCTION: 0.00 AC

D. NET TRACT AREA: 3.71 AC

LAND USE CATEGORY

INPUT THE NUMBER "1" UNDER THE APPROPRIATE LAND USE ZONING, AND LIMIT TO ONLY ONE ENTRY. ZONED R-ED.

ARA MDR IDA HDR MPD CIA

0 0 0 1 0 0

E. AFFOREST THRESHOLD: 15% X D = 0.56 AC

F. CONSERVATION THRESHOLD: 20% X D = 0.75 AC

G. EXISTING FOREST COVER: 3.58 AC

H. AREA OF FOREST ABOVE AFFORESTATION THRESHOLD: 3.02 AC

I. AREA OF FOREST ABOVE CONSERVATION THRESHOLD: 2.83 AC

J. BREAK EVEN POINT: 1.31 AC

K. CLEARING PERMITTED WITHOUT MITIGATION: 2.27 AC

PROPOSED FOREST CLEARING:

L. TOTAL AREA OF FOREST TO BE CLEARED: 2.65 AC

M. TOTAL AREA OF FOREST TO BE RETAINED: 0.93 AC

PLANTING REQUIREMENTS:

N. REFORESTATION FOR CLEARING ABOVE CONSERVATION THRESHOLD: 0.66 AC

O. REFORESTATION FOR CLEARING BELOW CONSERVATION THRESHOLD: 0.00 AC

P. CREDIT FOR RETENTION ABOVE CONSERVATION THRESHOLD: 0.18 AC

Q. TOTAL REFORESTATION REQUIRED (N+P-Q): 0.48 AC

S. TOTAL AFFORESTATION REQUIRED: 0.00 AC

T. TOTAL REFORESTATION AND AFFORESTATION REQUIRED: 0.48 AC

1. FOREST CONSERVATION OBLIGATION TO BE FULLFILLED BY RETENTION OF 0.93 AC, AND A FEE-IN-LIEU PAYMENT OF \$10,454.40 TO THE HOWARD COUNTY FOREST CONSERVATION FUND FOR THE REMAINING 0.48 AC. OF REQUIRED REFORESTATION.
2. FOREST CONSERVATION SURETY IN THE AMOUNT OF \$8,102.16.

TOTAL FOREST CONSERVATION OBLIGATION FOR THE PROJECT - 1.41 AC. OBLIGATION TO BE FULLFILLED BY ON-SITE RETENTION OF 0.93 AC. (40,510.80 SF)

FEE-IN-LIEU FOR THE (0.48 AC.) 20,908.80 SF X 0.50 = \$10,454.40 (RETENTION - (0.93 AC.) 40,510.80 SF X .20 = \$8,102.16

NOTE: PROVIDE TREE PROTECTION FENCING WHERE LOD IS ADJACENT TO TREE PROTECTION AREAS.

1	ELIMINATE STREET TREES ALONG NORTH SIDE OF TIBER RIDGE COURT; ADD 53 LEYLAND CYPRESS	12-17-09
NO.	REVISION	DATE

LANDSCAPING AND FOREST CONSERVATION PLAN TIBER RIDGE

LOTS 1 - 9 AND OPEN SPACE LOTS 10 AND 11

TAX MAP 24 BLOCK 11 PARCEL 821
2ND ELECTION DISTRICT HOWARD COUNTY, MARYLAND

ROBERT H. VOGEL ENGINEERING, INC.
ENGINEERS • SURVEYORS • PLANNERS
8407 MAIN STREET TEL: 410.461.7666
ELLICOTT CITY, MD 21043 FAX: 410.461.8961

DESIGN BY: RHW/RJ
DRAWN BY: RJ
CHECKED BY: RHW
DATE: 5/14/07
SCALE: 1"=50'
W.G. NO.: 04-84.00
2019134.00

DPZ REF: S-00-09, WP-00-110, P-05-10

4 SHEET OF 10

APPROVED: HOWARD COUNTY DEPARTMENT OF PUBLIC WORKS

5-14-07 DATE

APPROVED: HOWARD COUNTY DEPARTMENT OF PLANNING AND ZONING

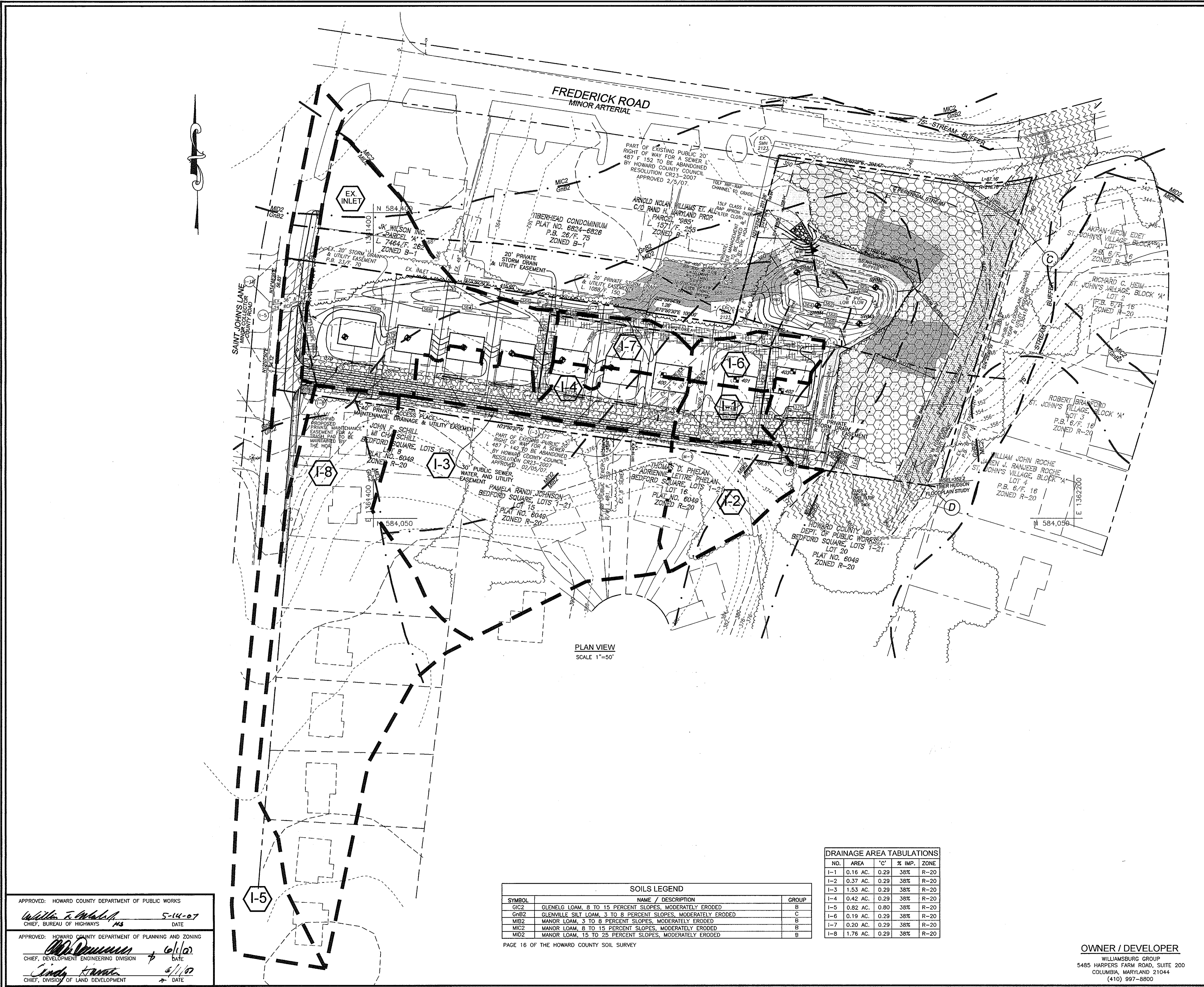
6/1/07 DATE

6/1/07 DATE

"AS-BUILT" CERTIFICATION

ROBERT H. VOGEL, P.E. #16193 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 INSPECTION AND TESTS DURING 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 COMMONLY ACCEPTED INDUSTRY PRACTICES.



LEGEND

- 202--- EXISTING 2 FT CONTOUR
- 200--- EXISTING 10 FT CONTOUR
- 200--- PROPOSED 2 FT CONTOUR
- 200--- PROPOSED 10 FT CONTOUR
- 100--- LIMIT OF DISTURBANCE
- EXISTING TREELINE
- PROPOSED TREELINE
- UNMITIGATED NOISE CONTOUR
- ☆ PROPOSED STREET LIGHT
- PROPOSED STREET TREE
- NO WOODY VEGETATION BUFFER
- ▨ PROP. PUBLIC WATER, SEWER, AND UTILITY EASEMENT
- ▩ PRIVATE ACCESS PLACE, STORMWATER MAINTENANCE, DRAINAGE & UTILITY EASEMENT
- ▧ FOREST CONSERVATION EASEMENT (RETENTION)
- ▦ AREA OF 15 TO 24.9 PERCENT SLOPES
- ▤ AREA OF 24 PERCENT OR GREATER SLOPES
- SIB2 SOILS
- SsE SOILS
- ▨ 1-1/2" PAVING OVERLAY
- ▧ 100 YEAR FLOOD PLAIN DRAINAGE & UTILITY EASEMENT
- ▦ PROP. ROAD PAVING
- ▩ AREA DEDICATED TO PUBLIC R/W
- DA DIVIDE
- ⊕ SOIL BORING
- ⊙ TEST PITS

PLAN VIEW
SCALE 1"=50'

DRAINAGE AREA TABULATIONS

NO.	AREA	"C"	% IMP.	ZONE
I-1	0.16 AC.	0.29	38%	R-20
I-2	0.37 AC.	0.29	38%	R-20
I-3	1.53 AC.	0.29	38%	R-20
I-4	0.42 AC.	0.29	38%	R-20
I-5	0.82 AC.	0.80	38%	R-20
I-6	0.19 AC.	0.29	38%	R-20
I-7	0.20 AC.	0.29	38%	R-20
I-8	1.76 AC.	0.29	38%	R-20

SOILS LEGEND

SYMBOL	NAME / DESCRIPTION	GROUP
GIC2	GLENELG LOAM, 8 TO 15 PERCENT SLOPES, MODERATELY ERODED	B
GnB2	GLENNVILLE SILT LOAM, 3 TO 8 PERCENT SLOPES, MODERATELY ERODED	C
MB2	MANOR LOAM, 3 TO 8 PERCENT SLOPES, MODERATELY ERODED	B
MIC2	MANOR LOAM, 8 TO 15 PERCENT SLOPES, MODERATELY ERODED	B
MID2	MANOR LOAM, 15 TO 25 PERCENT SLOPES, MODERATELY ERODED	B

PAGE 16 OF THE HOWARD COUNTY SOIL SURVEY

APPROVED: HOWARD COUNTY DEPARTMENT OF PUBLIC WORKS
William F. Madala 5-14-07
 CHIEF, BUREAU OF HIGHWAYS DATE

APPROVED: HOWARD COUNTY DEPARTMENT OF PLANNING AND ZONING
John J. Schill 6/1/07
 CHIEF, DEVELOPMENT ENGINEERING DIVISION DATE

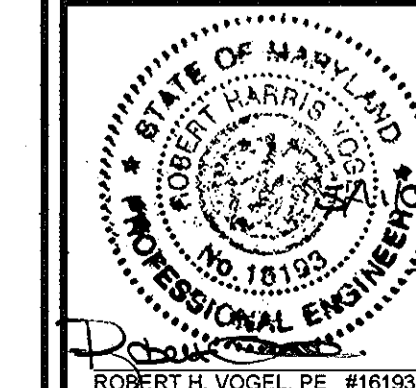
Sindy Kavanagh 6/1/07
 CHIEF, DIVISION OF LAND DEVELOPMENT DATE

NO.	REVISION	DATE

STORMDRAIN DRAINAGE AREA MAP
TIBER RIDGE
 LOTS 1 - 9 AND OPEN SPACE LOTS 10 AND 11

TAX MAP 24 BLOCK 11 PARCEL 821
 2ND ELECTION DISTRICT HOWARD COUNTY, MARYLAND

ROBERT H. VOGEL ENGINEERING, INC.
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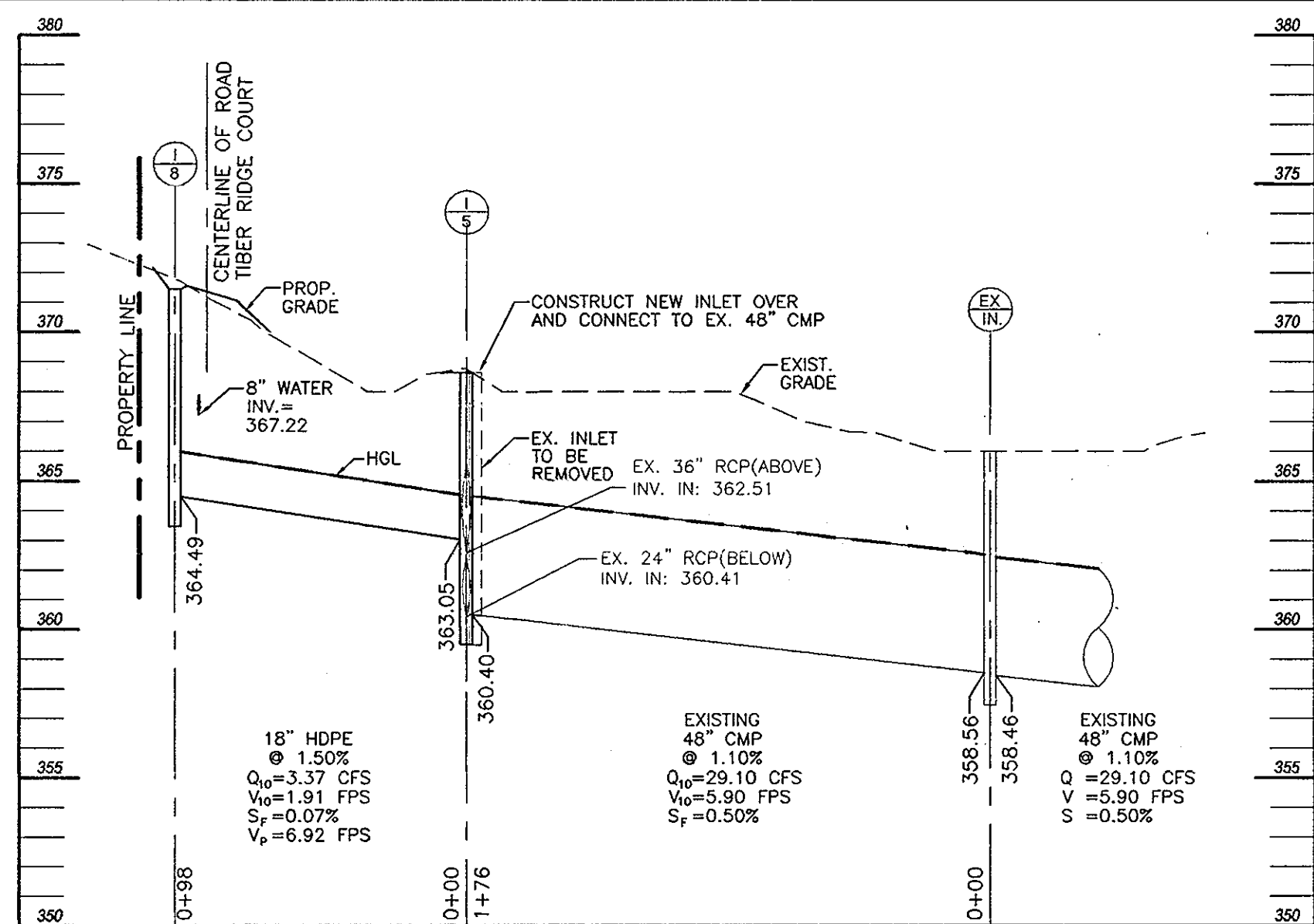


DESIGN BY: RHV/RJ
 DRAWN BY: RJ
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 DATE: 05/29/2007
 SCALE: 1"=50'
 W.O. NO.: 04-84.00 2019134.00

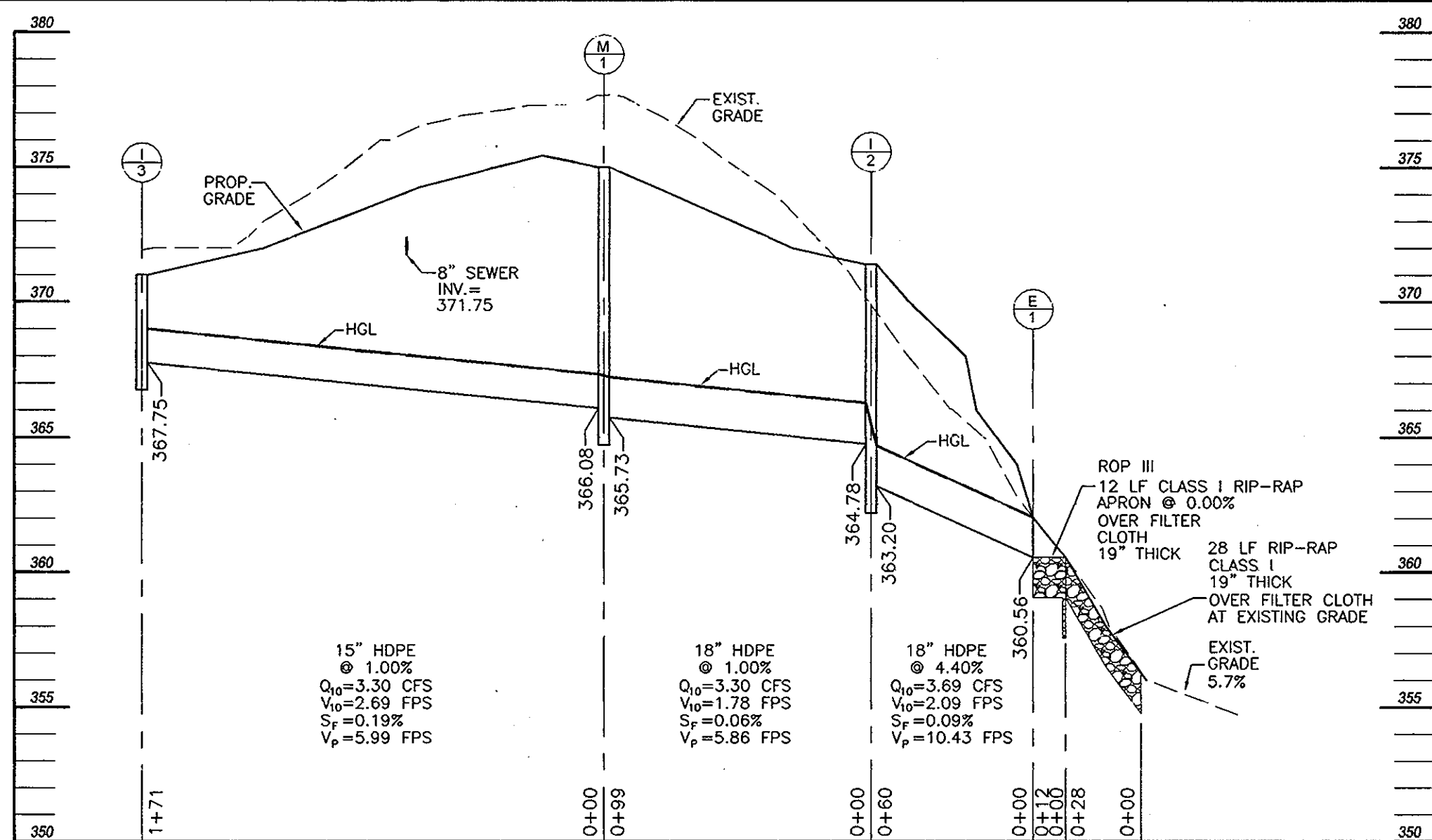
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5 SHEET OF 10

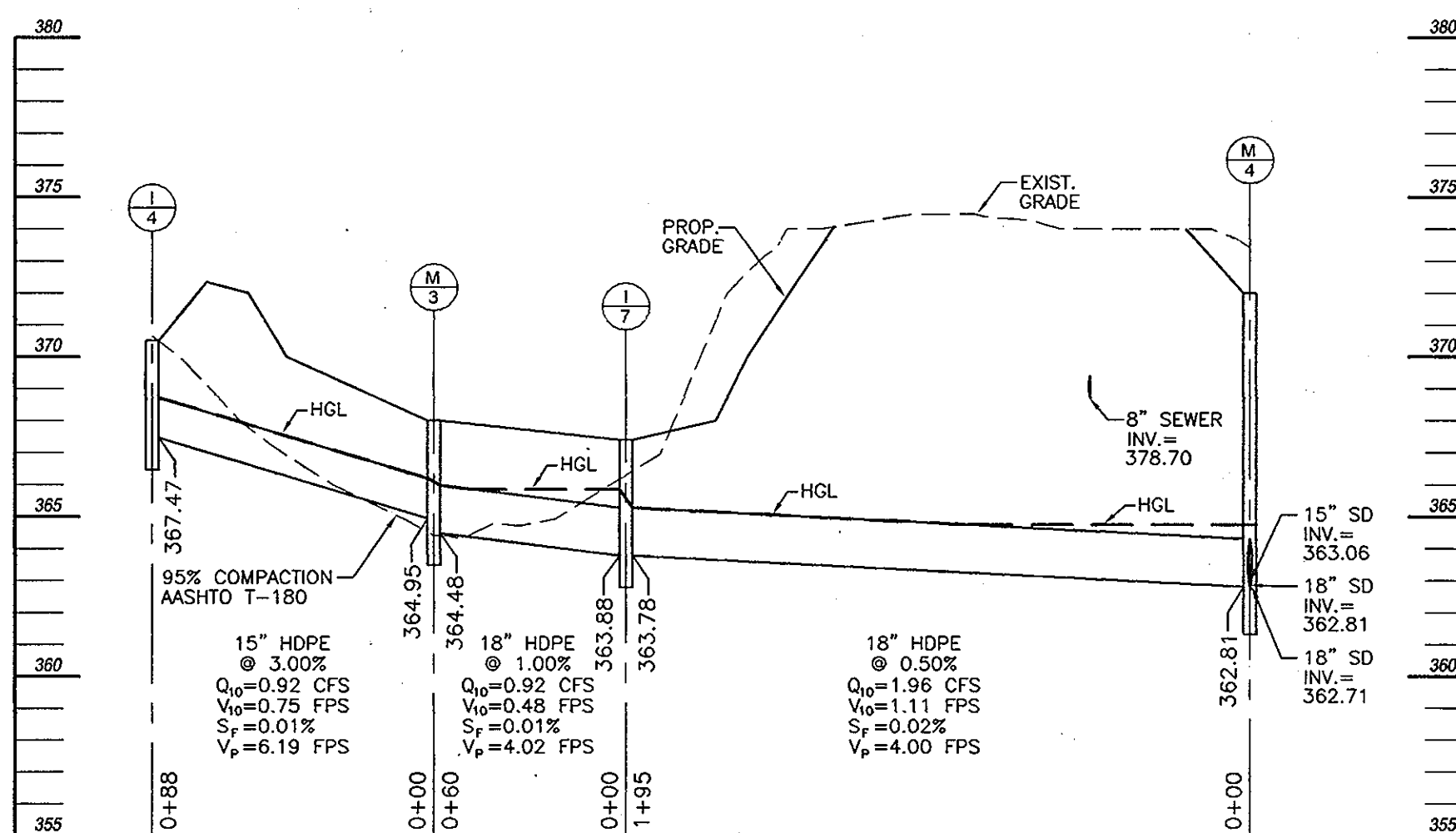
OWNER / DEVELOPER
 WILLIAMSBURG GROUP
 5485 HARPERS FARM ROAD, SUITE 200
 COLUMBIA, MARYLAND 21044
 (410) 997-8800



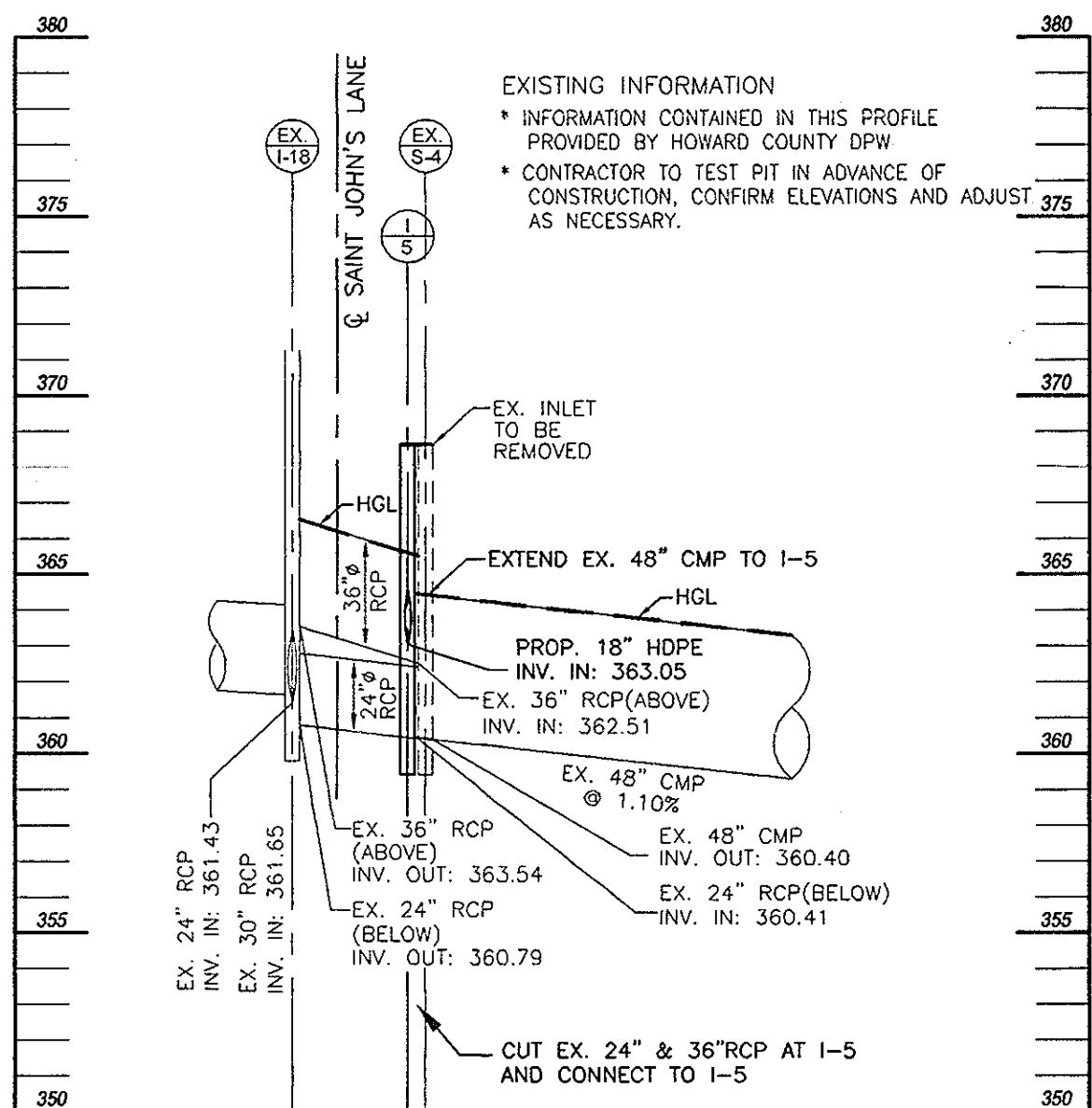
STORM DRAIN PROFILE
SCALE: 1"=50' HORZ
1"=5' VERT.



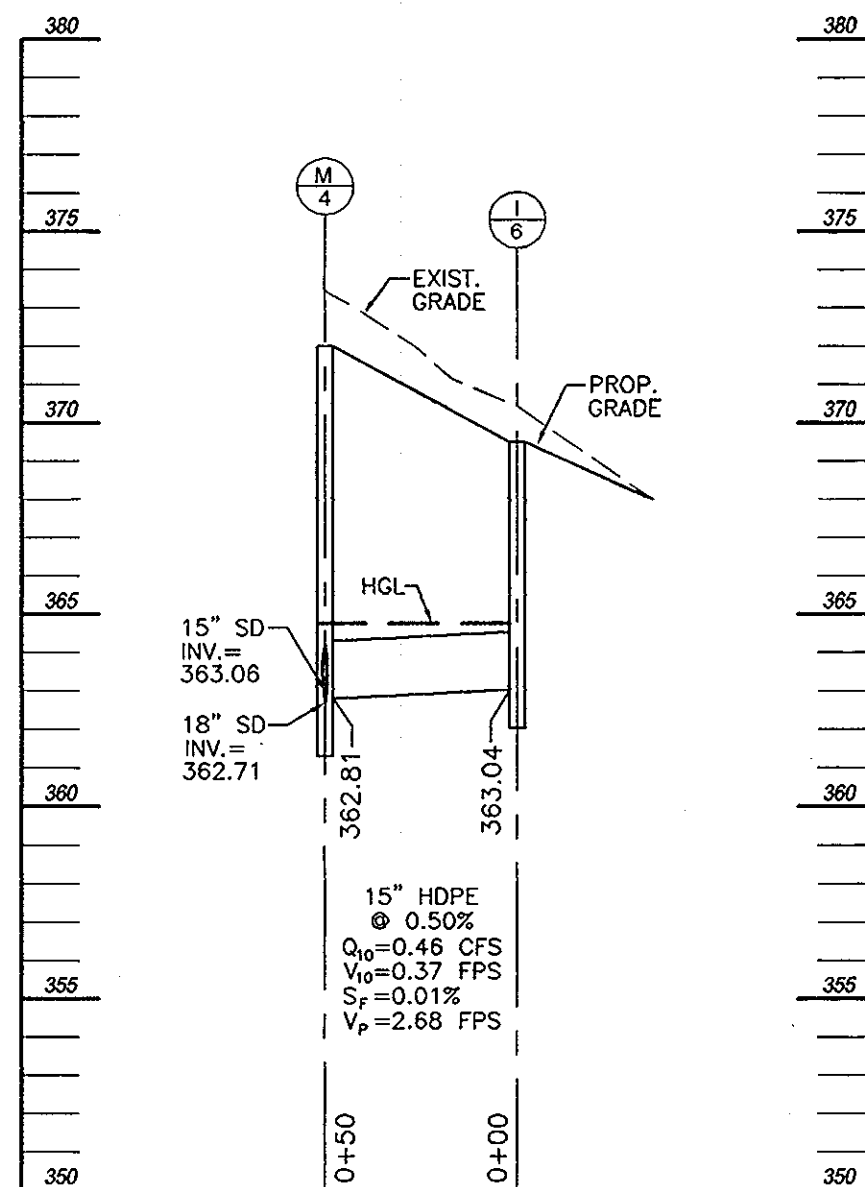
STORM DRAIN PROFILE
SCALE: 1"=50' HORZ
1"=5' VERT.



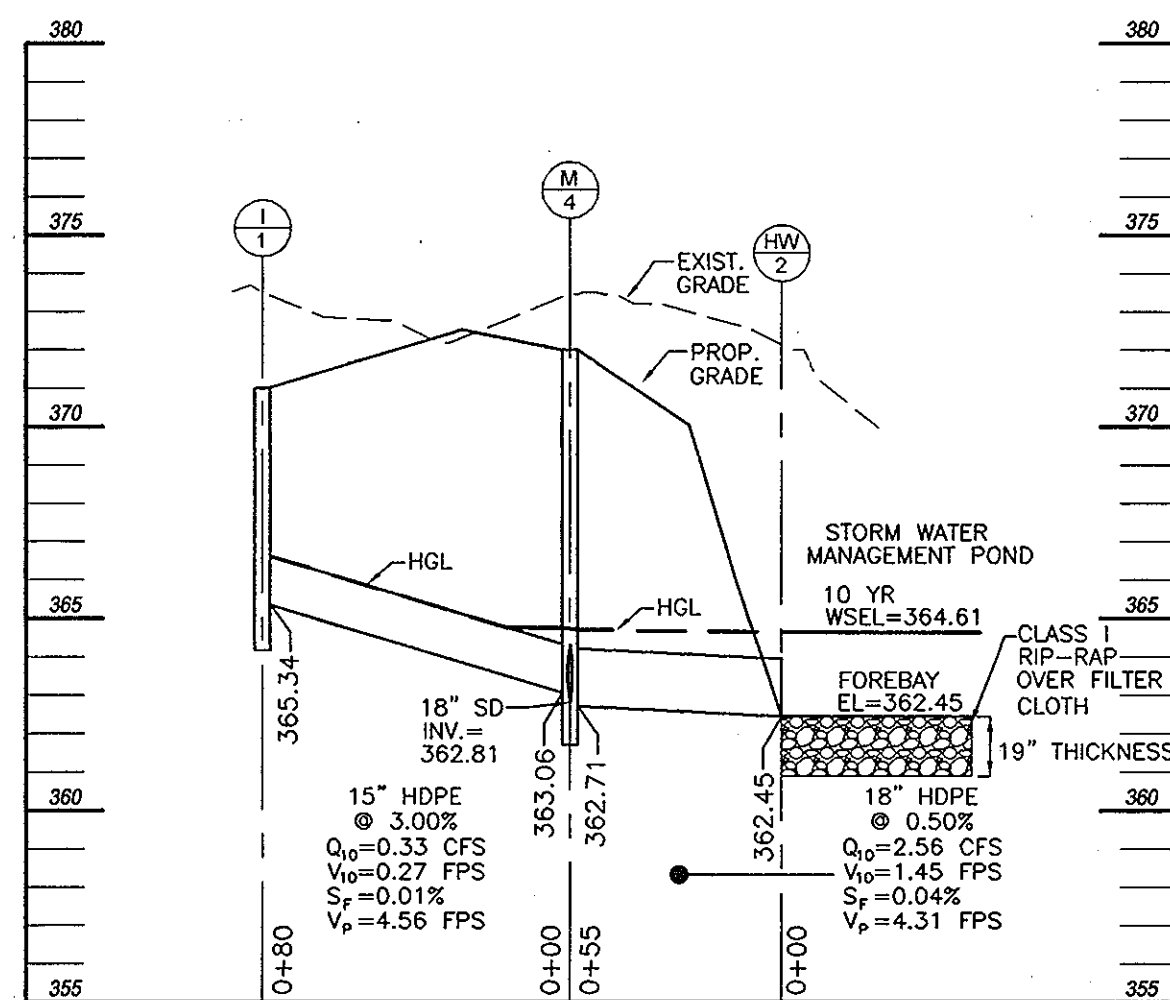
STORM DRAIN PROFILE
SCALE: 1"=50' HORZ
1"=5' VERT.



STORM DRAIN PROFILE
SCALE: 1"=50' HORZ
1"=5' VERT.



STORM DRAIN PROFILE
SCALE: 1"=50' HORZ
1"=5' VERT.



STORM DRAIN PROFILE
SCALE: 1"=50' HORZ
1"=5' VERT.

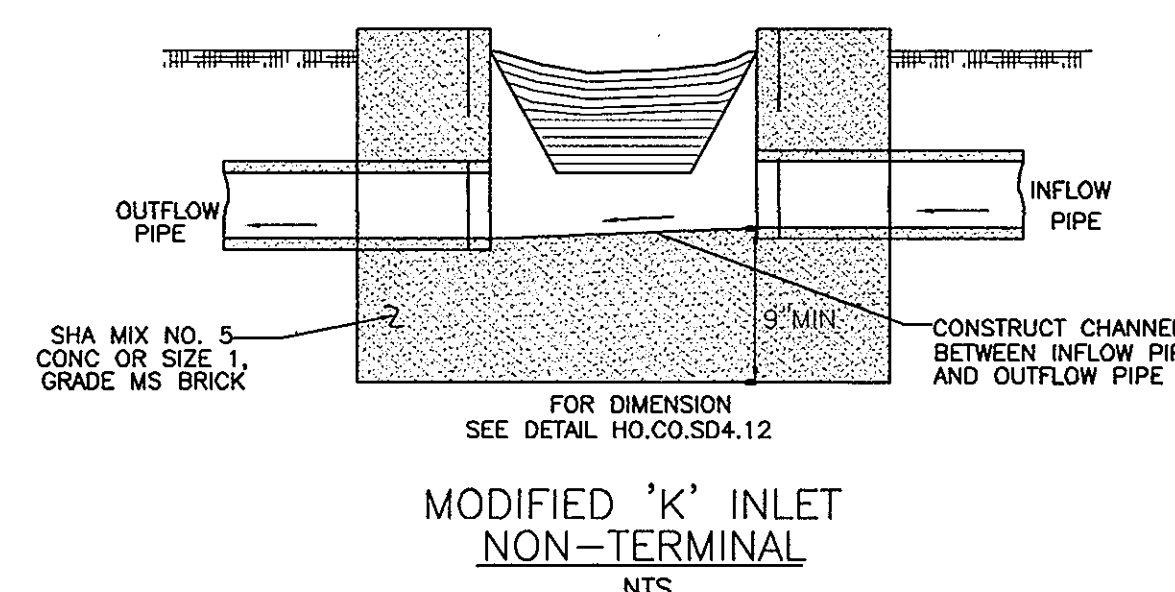
PUBLIC/PRIVATE	NO.	TYPE	LOCATION		TOP ELEV.*	INV. IN	INV. OUT	REMARKS
			NORTHING	EASTING				
PRIVATE	I-1	STANDARD PRECAST TYPE K	584167	1361842	371.00	---	363.34	SD-4.12
PRIVATE	I-2	STANDARD PRECAST TYPE K	584133	1361858	371.40	364.78	363.20	SD-4.12
PRIVATE	I-3	STANDARD PRECAST TYPE K	584163	1361590	371.00	---	367.75	SD-4.12
PRIVATE	I-4	STANDARD PRECAST TYPE K	584196	1361588	370.50	---	367.47	SD-4.12
PUBLIC	I-5	STANDARD PRECAST TYPE A-10	584299	1361314	368.64**	363.05	360.50	SD-4.02
PRIVATE	I-6	STANDARD PRECAST TYPE K	584238	1361903	369.50	---	363.04	SD-4.12
PRIVATE	I-7	STANDARD PRECAST TYPE K	584274	1361660	367.40	363.88	363.78	SD-4.12
PRIVATE	I-8	STANDARD PRECAST TYPE K	584201	1361334	371.60	---	364.49	SD-4.12

*TOP ELEV.=TOP OF CURB FOR CURB INLETS
*TOP ELEV.=SLOT OPENING ELEVATION FOR TYPE K INLETS
**ADJUST TOP OF INLET TO CONFORM TO EXISTING ROAD AS REQUIRED

PUBLIC/PRIVATE	NO.	TYPE	LOCATION		TOP ELEV.	INV. IN	INV. OUT	REMARKS
			NORTHING	EASTING				
PRIVATE	M-1	STANDARD 4' PRECAST MANHOLE	584138	1361759	375.00	366.08	365.73	G-5.12
PRIVATE	M-3	STANDARD 4' PRECAST MANHOLE	584283	1361601	368.00	364.95	364.48	G-5.12
PRIVATE	M-4	STANDARD 4' PRECAST MANHOLE	584246	1361853	372.00	363.06 362.81	362.71	G-5.12

PUBLIC/PRIVATE	NO.	TYPE	LOCATION		TOP ELEV.	INV. IN	INV. OUT	REMARKS
			NORTHING	EASTING				
PRIVATE	CS-1	CONTROL STRUCTURE	584311	1361918	366.33	---	355.60	SEE SWM DETAILS
PRIVATE	HW-1	TYPE 'A' HEADWALL (FOR 30")	584386	1361880	357.00	---	353.00	SD-5.11
PRIVATE	E-1	24" ROUND CMP END SECTION	584124	1361919	363.54	---	360.56	SD-5.61 & SD-5.62
PRIVATE	HW-2	TYPE 'A' HEADWALL	365.45	1361876	363.95	---	362.45	SD-5.11

PUBLIC/PRIVATE	PIPE SIZE	TYPE	TOTAL LENGTH
			218
PRIVATE	15"	HDPE	218
PRIVATE	18"	HDPE	567
PRIVATE	24"	RCP- ASTM C-361	50
PUBLIC	48"	14 GAUGE CMP	5



STORM DRAIN PROFILES
TIBER RIDGE
 LOTS 1 - 9 AND OPEN SPACE LOTS 10 AND 11

TAX MAP 24 BLOCK 11 PARCEL 821
 2ND ELECTION DISTRICT HOWARD COUNTY, MARYLAND

ROBERT H. VOGEL ENGINEERING, INC.
 ENGINEERS • SURVEYORS • PLANNERS
 8407 MAIN STREET ELLICOTT CITY, MD 21043 TEL: 410.461.7666 FAX: 410.461.8961

DESIGN BY: RHW/RJ
 DRAWN BY: RJ
 CHECKED BY: RHW
 DATE: 05/08/2007
 SCALE: AS NOTED
 W.O. NO.: 04-84.00 2019134.00

DPZ REF: S-00-09, WP-00-110, P-05-10
 6 SHEET OF 10

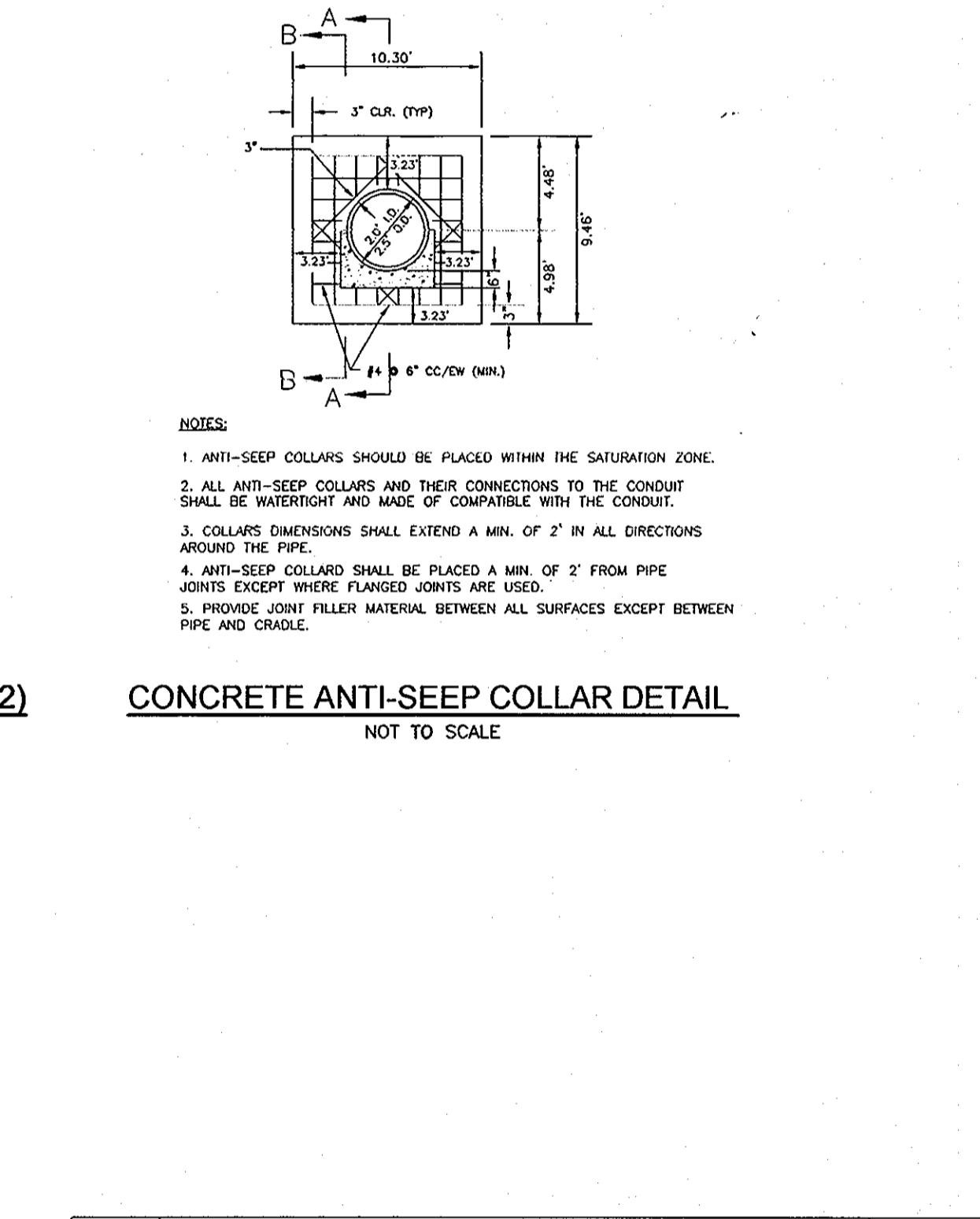
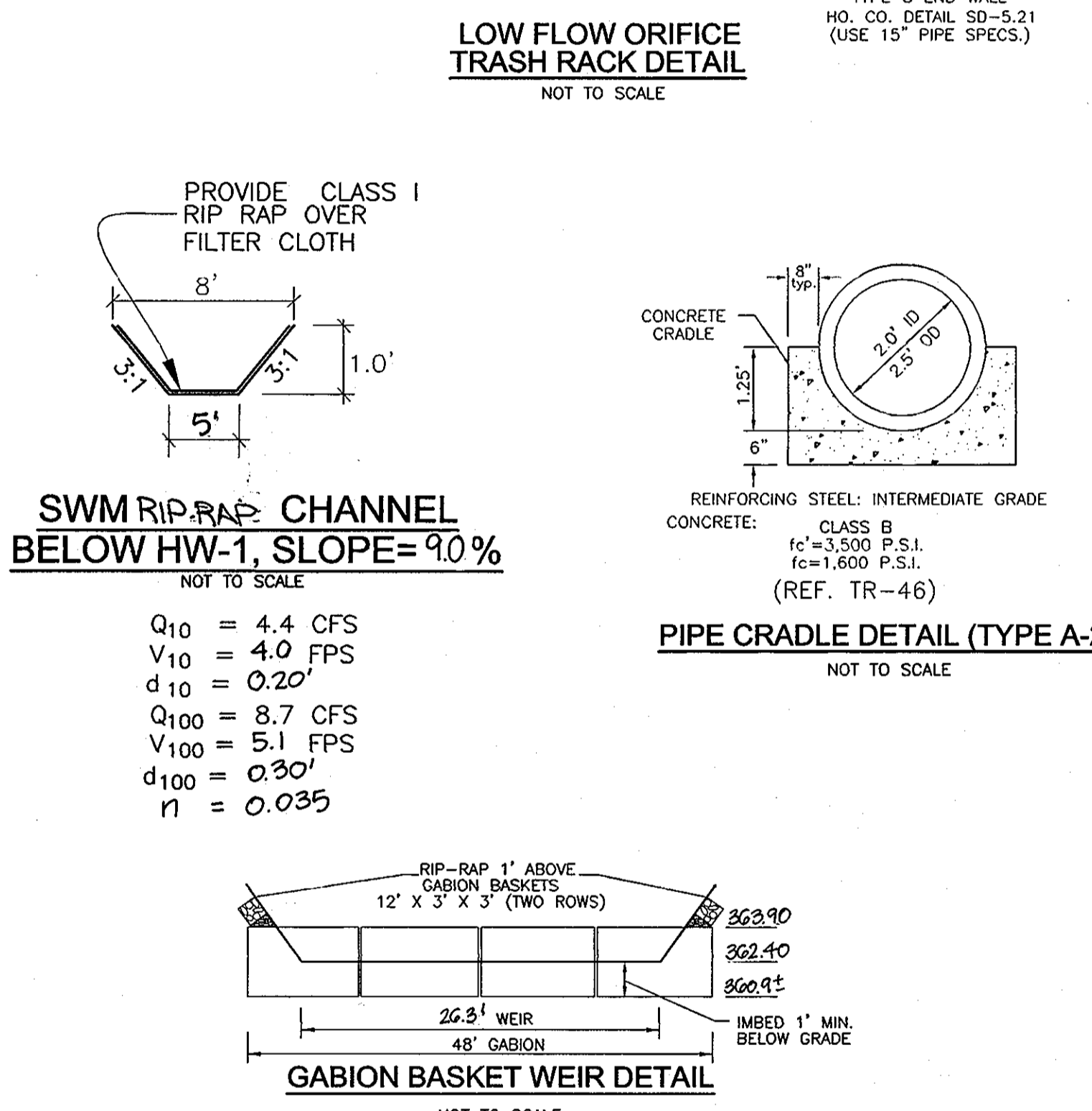
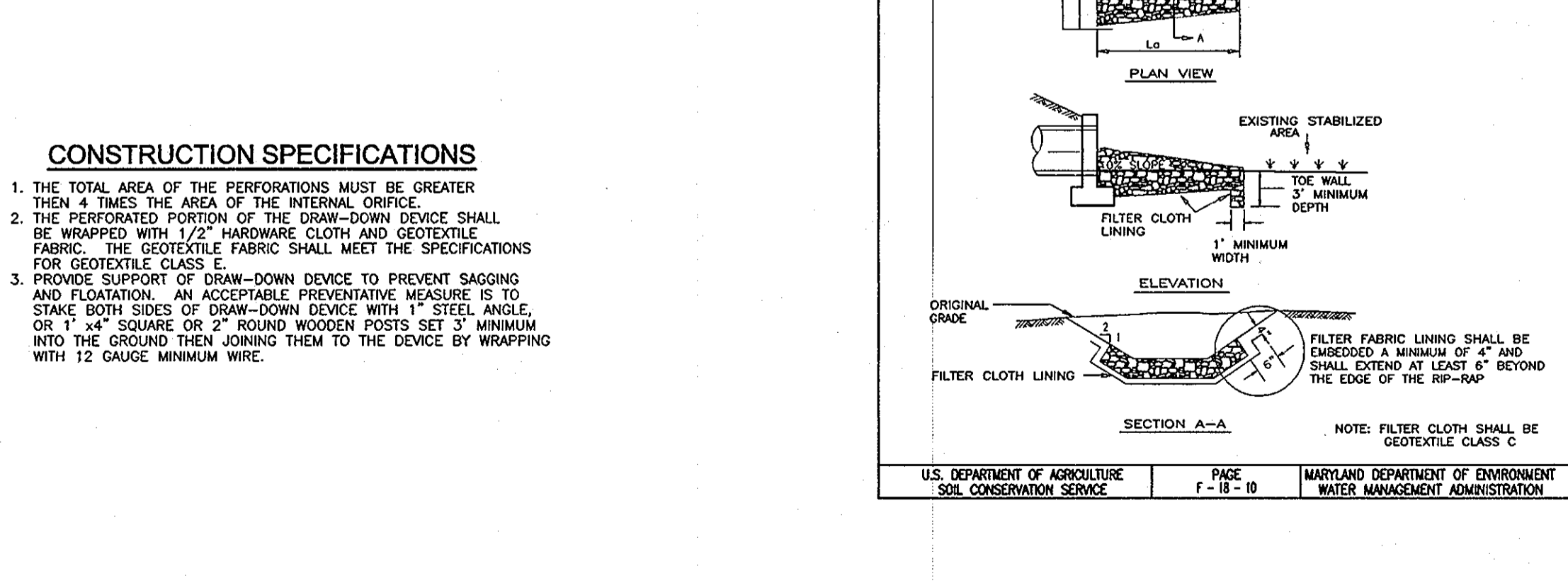
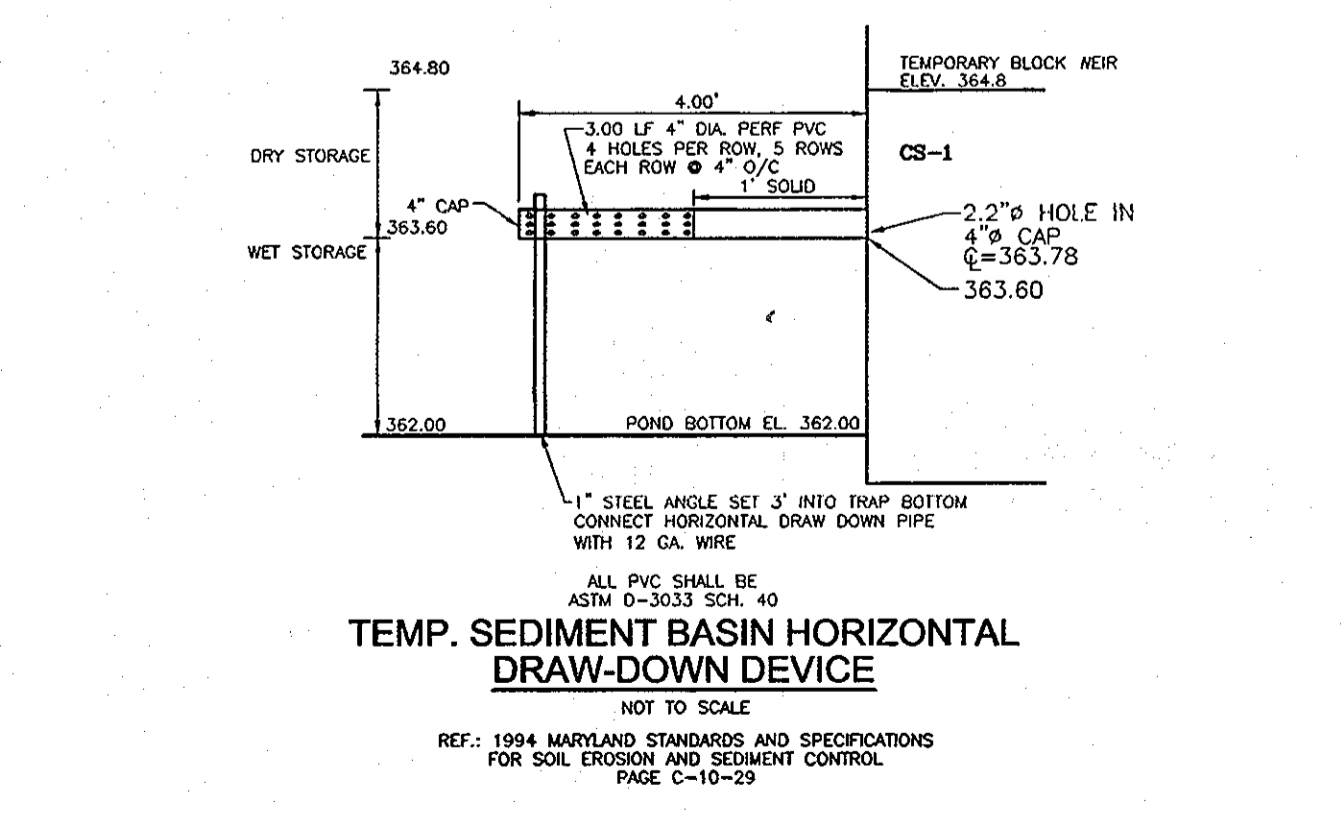
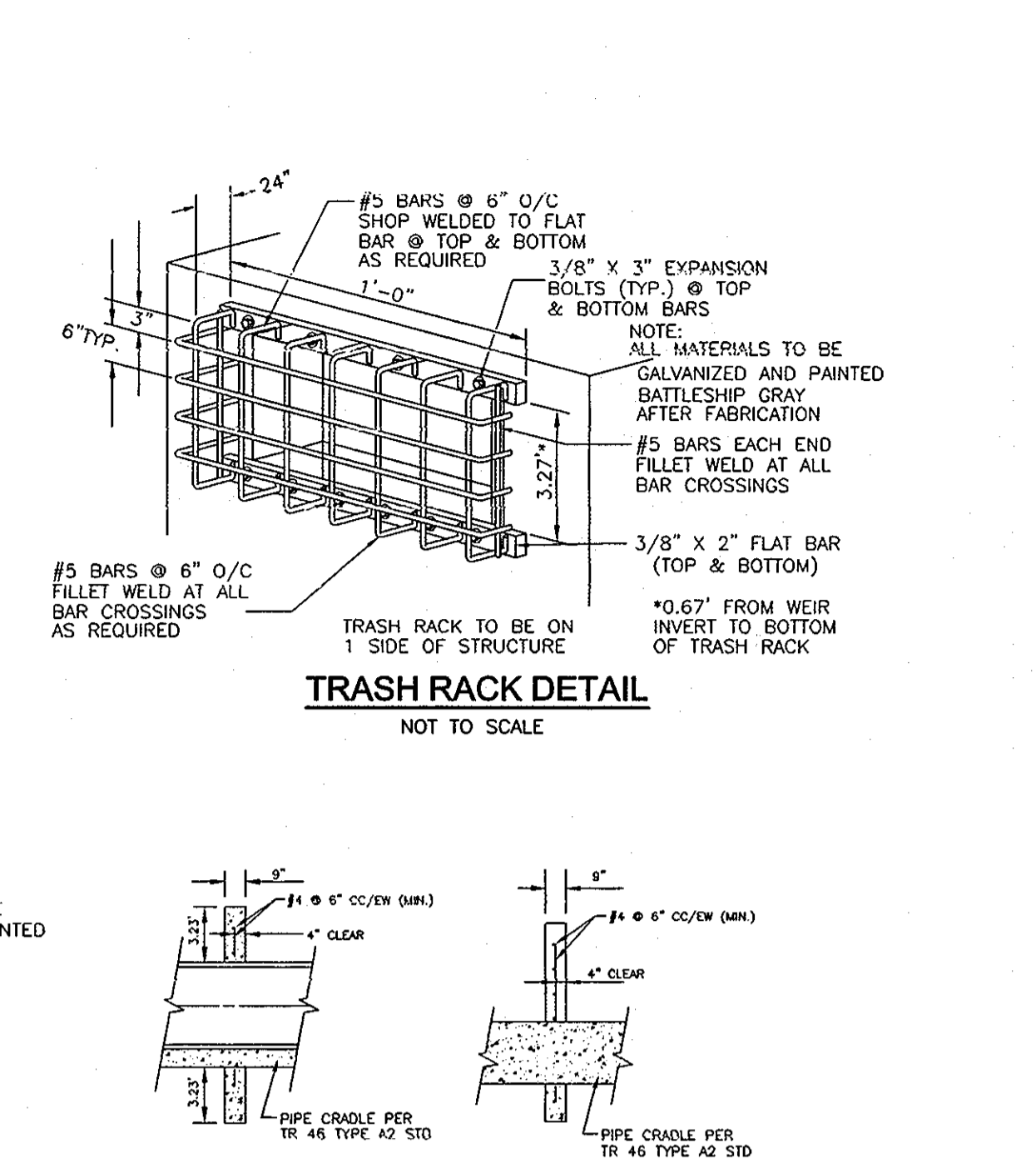
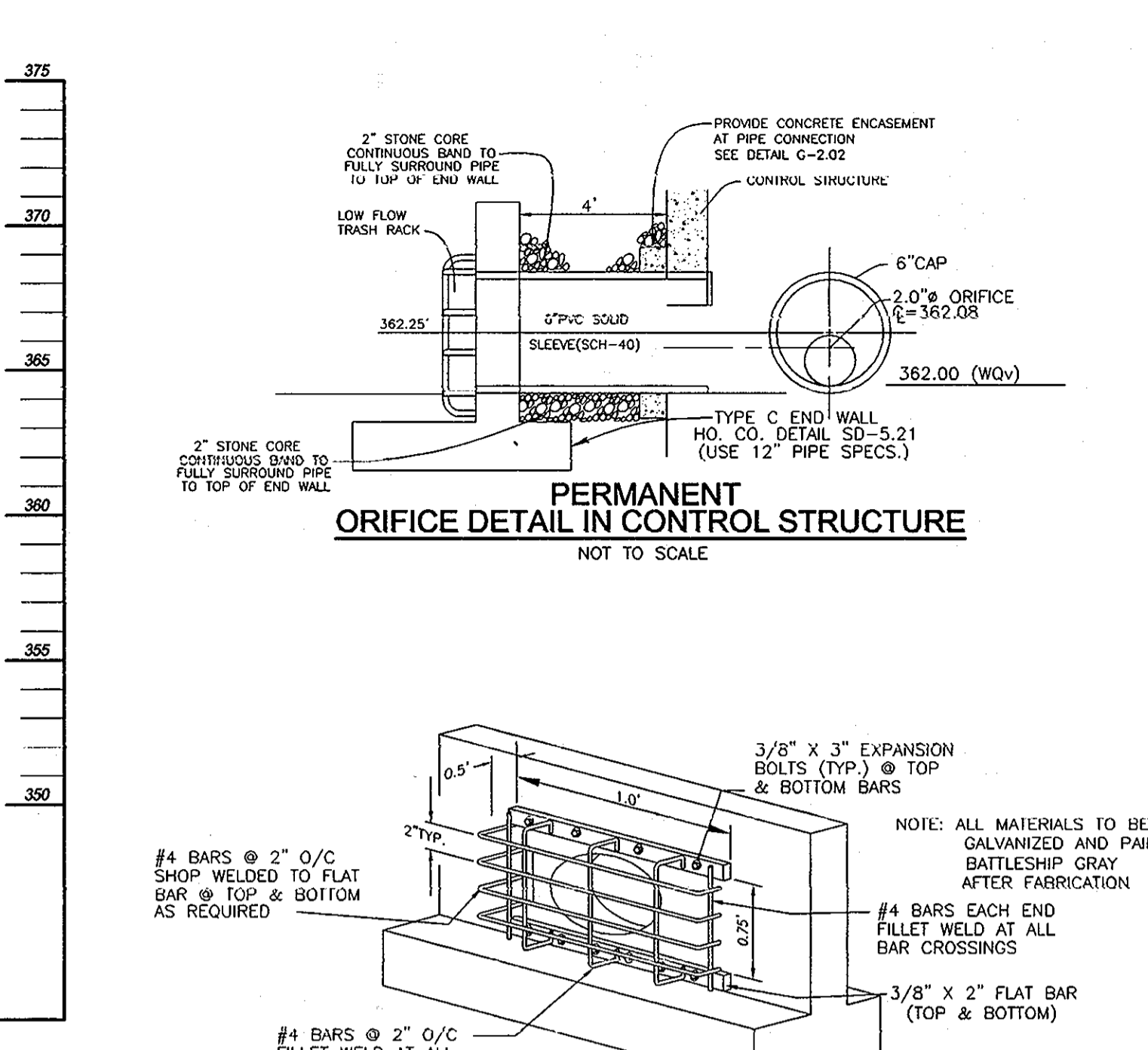
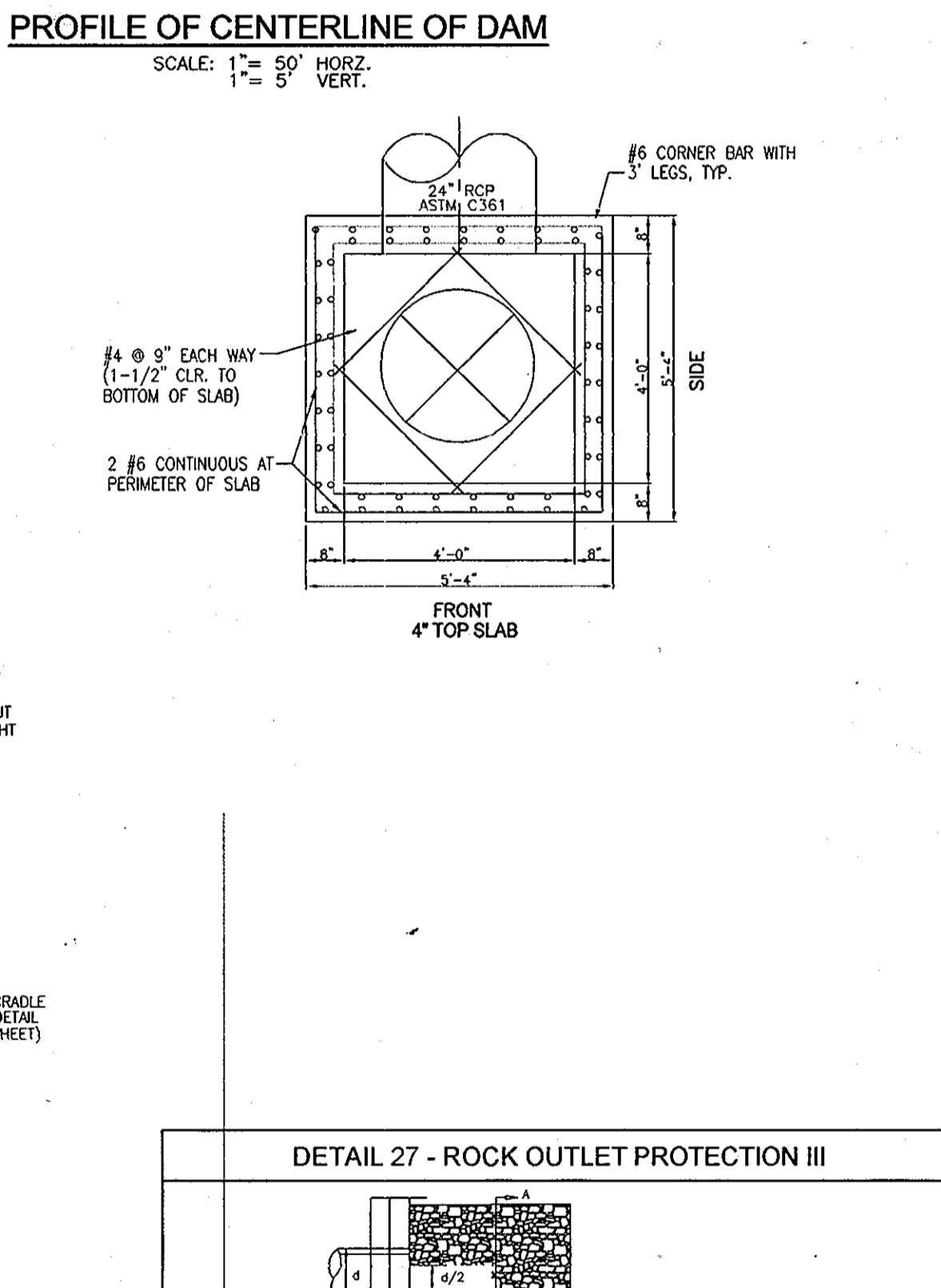
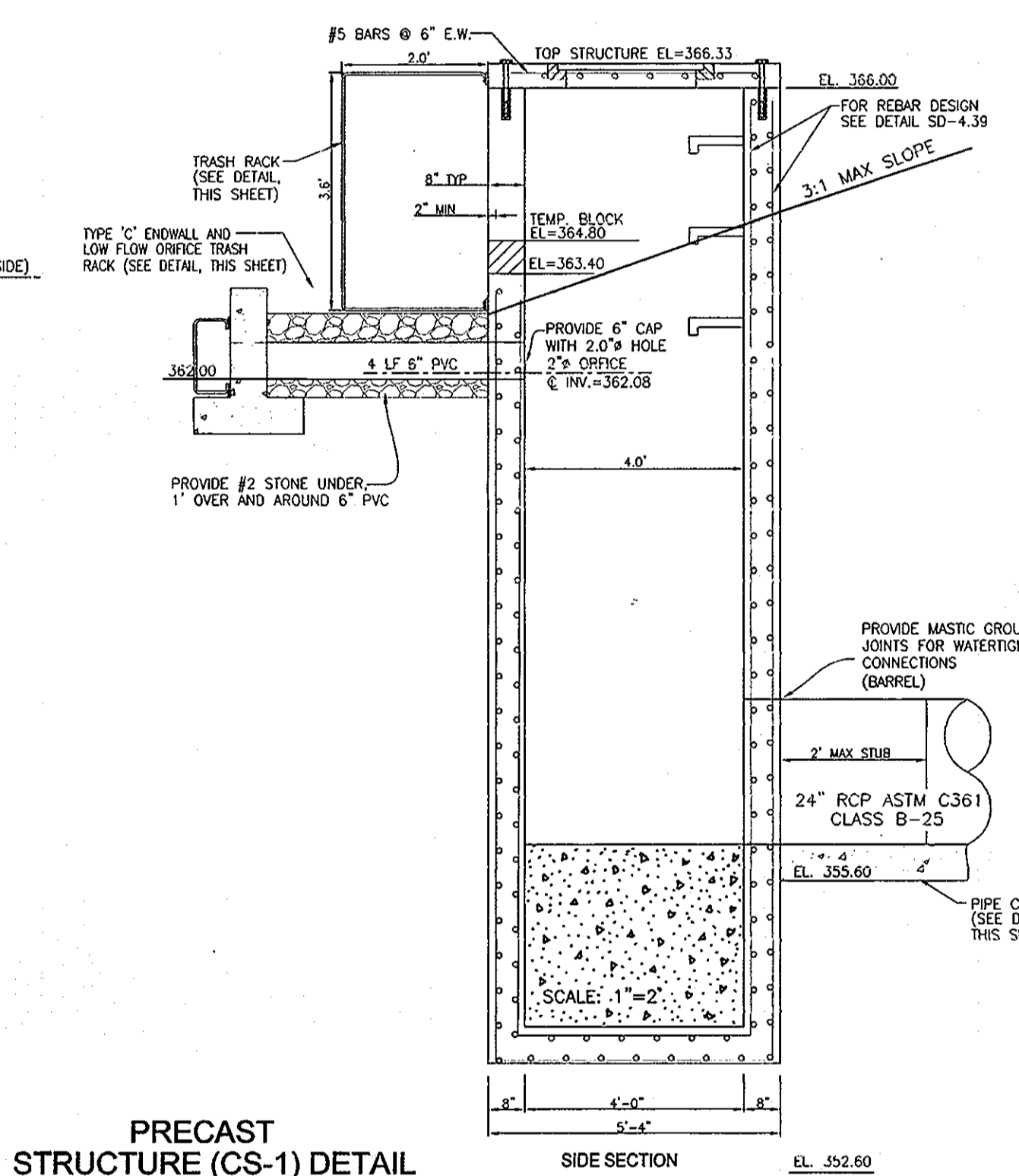
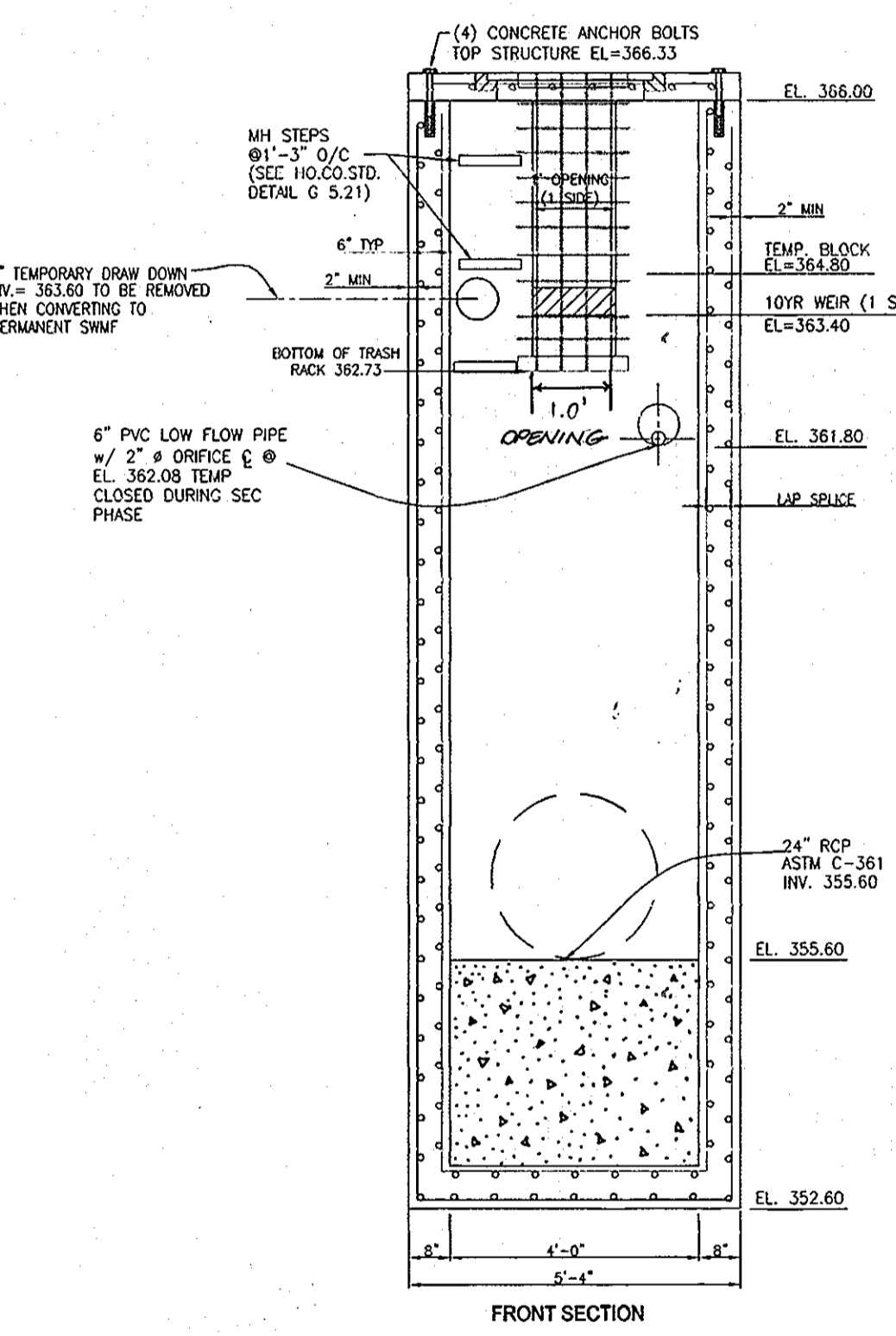
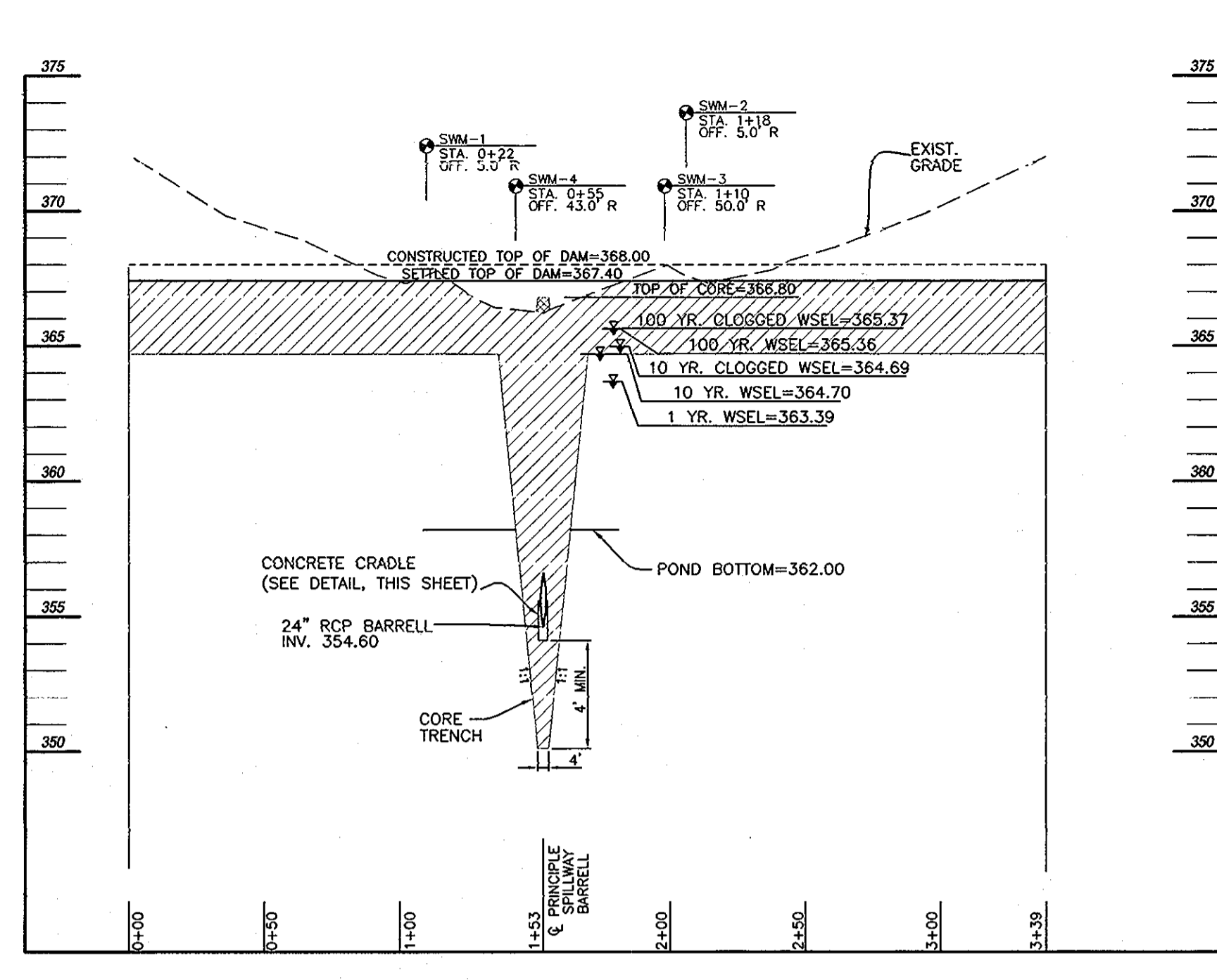
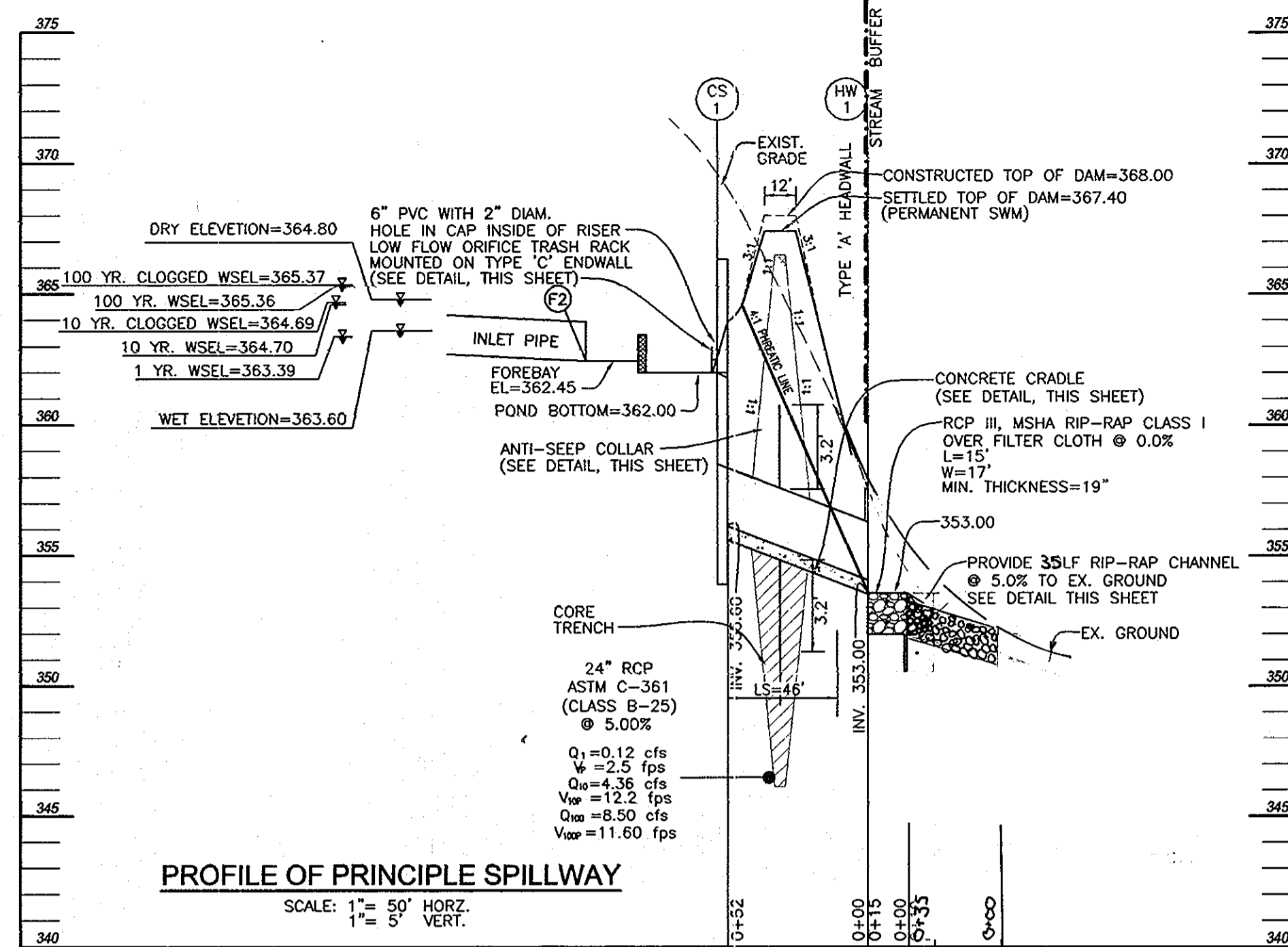
OWNER / DEVELOPER
 WILLIAMSBURG GROUP
 5485 HARPERS FARM ROAD, SUITE 200
 COLUMBIA, MARYLAND 21044
 (410) 997-8800

APPROVED: HOWARD COUNTY DEPARTMENT OF PUBLIC WORKS
 [Signature] 5-14-07
 CHIEF, BUREAU OF HIGHWAYS

APPROVED: HOWARD COUNTY DEPARTMENT OF PLANNING AND ZONING
 [Signature] 6/1/07
 CHIEF, DEVELOPMENT ENGINEERING DIVISION

APPROVED: [Signature] 6/1/07
 CHIEF, DIVISION OF LAND DEVELOPMENT

"AS-BUILT" CERTIFICATION
 ROBERT H. VOGEL, P.E. #16193 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 SITE INSPECTION AND TESTS DEEMED 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 COMMONLY ACCEPTED INDUSTRY PRACTICES.



APPROVED: HOWARD COUNTY DEPARTMENT OF PUBLIC WORKS
 Chief, Bureau of Highways
 DATE: 5/14/07

REVIEWED FOR HOWARD SCD AND MEETS TECHNICAL REQUIREMENTS
 USDA-NATURAL RESOURCES CONSERVATION SERVICE
 DATE: 5/23/07

ENGINEER'S CERTIFICATE
 I HEREBY CERTIFY THAT THIS PLAN FOR POND CONSTRUCTION, EROSION AND SEDIMENT CONTROL REPRESENTS A PRACTICAL AND WORKABLE PLAN BASED ON MY PERSONAL KNOWLEDGE OF THE SITE CONDITIONS. THIS PLAN WAS PREPARED IN ACCORDANCE WITH THE REQUIREMENTS OF THE HOWARD SOIL CONSERVATION DISTRICT. I HAVE NOTIFIED THE DEVELOPER THAT HE/SHE MUST ENGAGE A REGISTERED PROFESSIONAL ENGINEER TO SUPERVISE POND CONSTRUCTION AND PROVIDE THE HOWARD SOIL CONSERVATION DISTRICT WITH AN "AS-BUILT" PLAN OF THE POND WITHIN 30 DAYS OF COMPLETION.
 ROBERT H. VOGEL, PE #16193 DATE: 5/14/07

DEVELOPER'S CERTIFICATE
 I/WE CERTIFY THAT ALL DEVELOPMENT AND/OR CONSTRUCTION WILL BE DONE IN ACCORDANCE TO THESE PLANS, AND THAT ANY RESPONSIBLE PERSONNEL INVOLVED IN THE CONSTRUCTION PROJECT WILL HAVE A CERTIFICATE OF ATTENDANCE AT A DEPARTMENT OF THE ENVIRONMENT APPROVED TRAINING PROGRAM FOR THE CONTROL OF SEDIMENT AND EROSION BEFORE BEGINNING THE PROJECT. I SHALL ENGAGE A REGISTERED PROFESSIONAL ENGINEER TO SUPERVISE POND CONSTRUCTION AND PROVIDE THE HOWARD SOIL CONSERVATION DISTRICT WITH AN "AS-BUILT" PLAN OF THE POND WITHIN 30 DAYS OF COMPLETION.
 DATE: 5/14/07

"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.
 ROBERT H. VOGEL, P.E. #16193 DATE: 5/14/07

OWNER / DEVELOPER
 WILLIAMSBURG GROUP
 5485 HARPERS FARM ROAD, SUITE 200
 COLUMBIA, MARYLAND 21044
 (410) 997-8800

1	CLARIFY WEIR OPENING OF CONTROL STRUCTURE, REVISE RIP-RAP CHANNEL, FOREBAY WEIR LENGTH AND ELEV. PER AS-BUILT CONDITIONS	11/30/09
NO.	REVISION	DATE

STORMWATER MANAGEMENT DETAILS
TIBER RIDGE
 LOTS 1 - 9 AND OPEN SPACE LOTS 10 AND 11

TAX MAP 24 BLOCK 11 PARCEL 821
 2ND ELECTION DISTRICT HOWARD COUNTY, MARYLAND

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7 SHEET OF 10

RECOMMENDATIONS

Stormwater Management Pond and Drywells

At the time this subsurface investigation was performed, stormwater management pond details were not indicated on the site plan provided to us. However, based on the site topography it is anticipated that the pond embankment will consist of both cuts and fills.

Infiltration Rates for SWM Pond and Drywells

Field infiltration tests were originally planned to be performed at a total of three (3) locations on the site, one (1) at the proposed SWM pond location and two (2) within the area of the proposed drywells. However, after evaluating the samples and reviewing the boring logs it was determined that generally the materials encountered at a depth of about 3 feet to the maximum depths evolved, consisted of extremely dense residual materials identified as decomposed rock which should be considered to be a non-permeable material. Therefore, field infiltration tests were not performed and infiltration at the proposed SWM Pond and drywells was considered not feasible.

Pond Construction

Riser Structure

The soil encountered within the Stormwater Management Pond at this site are generally suitable for the construction of conventional spread footing bearing on natural firm soils for a net allowable soil bearing pressure of 3,000 pounds per square foot (psf). The net allowable soil bearing pressure refers to that pressure which may be transmitted to the foundation bearing soils in excess of the full overburden pressure at the footing bearing level.

Total settlements of individual footings is anticipated to be on the order of 1 inch; and maximum differential settlements are expected to be on the order of 1/4 inch over 30 feet horizontally.

In order to reduce the possibility of foundation bearing failure and excessive settlement due to local shear or "punching" action, we recommend that footings have a minimum lateral dimension of 4 feet. In addition, footings should be placed at least 30 inches below final exterior grade to provide adequate protection against frost heave.

Cut-Off Trench and Impervious Core Construction

According to the site grading plan, cut-off trenches and impervious cores might be required at the north section of the proposed SWM pond.

In accordance with Maryland Code 97B requirements, the cutoff trench should extend at least 4 feet below the principal pileway pipes, have a minimum width of 4 feet, and have side slopes of 1H:1V, or flatter. The impervious core should extend vertically upward from the cutoff trench to the 10-year stormwater surface elevation. Fill materials for the cutoff trench and impervious core construction should consist of OC, SC, CL, or CH soil types, having at least 30 percent by weight passing the No. 200 sieve.

Based upon the results of the soil borings, there appears to be an insufficient quantity of OC, SC, CL, and CH fill materials at the project site for use in cutoff trench and impervious core construction. These materials will need to be imported to the project site after prior approval for use in construction by the Geotechnical Engineer.

General Embankment Construction

Detailed plan of the SWM pond was not available at the time this report was prepared. However, it is anticipated that embankments will be required at the northern section of the pond. The results of the borings indicate that the cut slopes should primarily contain medium dense to extremely dense sand soils classified SW per ASTM D-2487. Based on the results of the test borings, the natural soils encountered in the cut slopes should be suitable for a 2:1H:1V or flatter slope. The fill slopes should consist of embankment fill as recommended in the **Fill Placement and Compaction** Section.

Embankment soils placed outside the limits of the cut-off trench and impervious core should consist of soils classified as CL, ML, SO, SM, SC-SF, or SM-SF in accordance with ASTM D-2487. Soils of these types should be readily available from excavated materials associated with the pond construction, although care will need to be exercised to ensure that the materials do not contain excessive amounts of organics.

Earthwork Operations

Subgrade Preparation

Subgrade preparation generally should include the removal of the topsoil and the removal of soft or loose soils and other unsuitable materials from the base pad areas and any proposed pavement areas. The actual depths, quantities, and quality of surface materials must be determined during the removal operations. We recommend that subgrade materials be extended a minimum of 10 feet beyond the building and pavement limits. Striping limits should be extended an additional 1 foot for each foot of fill required at the base of the exterior edge.

For construction purposes, excavation differently may be correlated to SPT results. It should be possible to excavate materials displaying SPT results of 50 blows per 4 inches of penetration or less with conventional shoring equipment which may include isolated rigging. Materials exhibiting SPT results greater than 50 blows per 4 inches or at a greater residual level most likely will require bar rammers, and possibly blasting, particularly in narrow trench excavations.

In addition to the excavation guidelines outlined above, it should be pointed out that the physical characteristics of the extremely dense residual soils and underlying rock, such as foliation, jointing, fracturing and lithology, along with the type of excavation equipment used, will greatly influence this aspect of the earthwork operations. We recommend that the applicable contractor consider a test pit program, which can assist in correlating the subsurface data with anticipated excavation difficulties during construction with the type of equipment planned for use on the project site. It is also imperative that all contract documents related to the excavation of rock materials include specific criteria (i.e. equipment type and power ratings) to define rock excavation for mass grading and removal in narrow excavations. The applicable contractor should also be required to visit the site to observe the existing conditions and should be encouraged to perform their own explorations to determine the impact that rock may have on their working on the project site.

Prior to the placement of any fill materials or slab subbase materials, the exposed subgrade soils should be examined by a qualified representative of the Geotechnical Engineer. The exposed soils should be thoroughly profiled by a vehicle having an axle weight of at least 10 tons, such as a loaded tandem axle dump truck. This procedure is intended to assist in identifying any localized yielding materials. In the event that any yielding areas are encountered during the profiling operation, the subgrade should be either thoroughly identified in-place, scarified/graded and recompacted, or undercut to firm ground and replaced with compacted, compacted fill.

Fill Placement and Compaction

Prior to placement of compacted fill, representative bulk samples (about 50 pounds) should be taken of the proposed fill soils and laboratory tests should be conducted to determine Atterberg Limits, natural moisture content, grain-size distribution, and moisture-density relationships for compaction. In general, any materials to be used as structural fill should consist of those materials previously described in the previous sections pertaining to **Cut-Off Trench and Impervious Core Construction** and **General Embankment Construction**. Materials acceptable for use in embankment construction should be of equal or better quality than 2 percent by weight and debris, containing no rocks greater than 4 inches in their largest dimension. Any off-site borrow soils, if required, should meet the same material standards and should be approved by the Geotechnical Engineer.

The on-site soils generally should be acceptable for reuse as embankment fill, with the restrictions previously addressed. As previously mentioned, there appears to be an insufficient quantity of the on-site soils suitable for use in the construction of the cutoff trenches and impervious cores. This material will need to be imported to the project site. This material should be taken of the proposed impervious soils and submitted to the Geotechnical Engineer for approval prior to the importation of this material to the site.

Due to the textural variations of the on-site soils, variations in moisture-density relationships should be anticipated. Such changes must be determined in the field by the Geotechnical Engineer, or his authorized representative, during the earthwork operations and treated appropriately.

All structural fill should be placed in loose lifts which do not exceed 8 inches in thickness, and should be compacted to at least 95 percent of the maximum dry density, as determined by the Standard Proctor compaction test method (ASTM D 698). Generally, the moisture content of the fill materials should be maintained within ±2 percentage points of the optimum moisture content (OMC) for the fill materials, as determined by ASTM D 698.

The footprints of the proposed houses and SWM embankment should be well defined, including the limits of the fill areas, at the time of fill placement. Grade controls should be maintained throughout the filling operations. All filling operations should be observed on a full-time basis by a qualified representative of the Geotechnical Engineer to determine that the minimum compaction requirements are being addressed. A minimum of one compaction test per lift and every 2,500 square feet of lift area should be made. The elevations and locations of the tests should be clearly identified at the time of fill placement.

At the end of each work day, all fill areas should be graded to facilitate positive drainage of any precipitation and the surface should be sealed by use of a smooth-drum roller to limit infiltration of surface water. During placement and compaction of new fill at the beginning of each workday, the contractor should carefully examine subgrade to that a weak plane will not be formed between the new fill and the existing subgrade soils. We recommend that subgrade soils be scarified to depths of about 6 inches prior to placement of new fill.

Fill materials should not be placed on frozen soils or frost-heaved soils and/or on soils that are excessively wet. Borrow fill materials should not contain frozen materials at the time of placement. All frozen or frost-heaved soils should be removed prior to placement of compacted and compacted fill, granular subbase materials, foundation or slab concrete, and/or asphalt pavement materials. Similarly, excessively wet soils should be scarified and aerated and properly compacted.

From those measurements during the earthwork operations, if the conditions change from those measured during our subsurface exploration, the Geotechnical Engineer should be notified immediately.

Construction Considerations

Due to the presence of fines, some of the near surface on-site soils will be sensitive to moisture and disturbance. Construction activities in the presence of excess moisture can lead to softening of the subgrade soils and loss of bearing capacity. Therefore, it will be advised to conduct earthwork operations during the warmer and drier seasons that typically extend from late spring to early fall. Measures should also be taken to limit site disturbance, especially from rubber-tired heavy construction equipment, and to control and remove surface water from development areas, including structural and pavement areas. It is advisable to designate haul roads and traffic areas to limit the area of disturbance and to prevent construction traffic from excessively degrading the sensitive subgrade soils, especially the very moisture sensitive clayey soils.

A firm work surface should be established prior to construction of new fills. Also, the moisture contents of the fill soils at the time of placement should be carefully controlled. These measures are necessary to ensure that the required compaction effort can be achieved without excessive pumping or movement of the fill mass.

Groundwater was only encountered in the Boring DW-1 as noted in the **Water Level Observations** section of this report. However, this groundwater is believed to be either perched or restricted to the area in the vicinity of DW-1. Any groundwater encountered during the construction of the building will most likely be a result of surface water infiltration and perched water conditions, and should be readily managed by intercept trenches and localized systems of pumps and pumps.

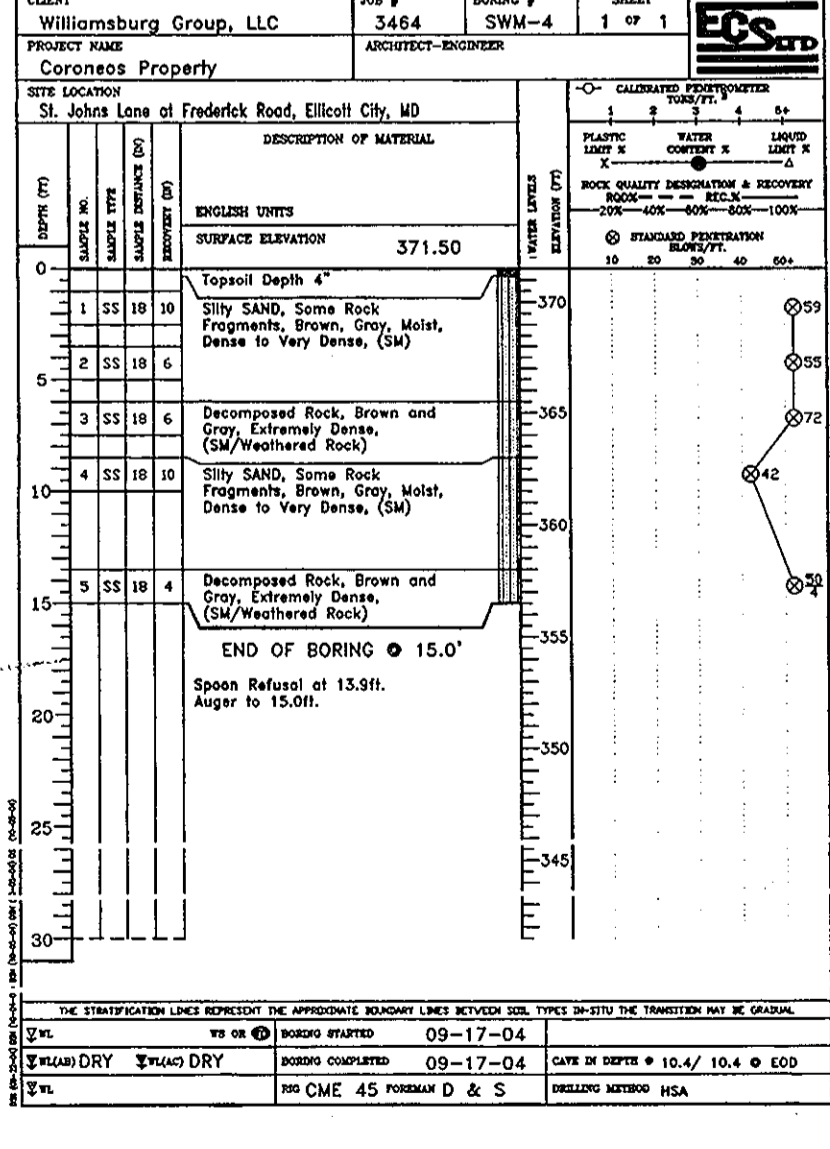
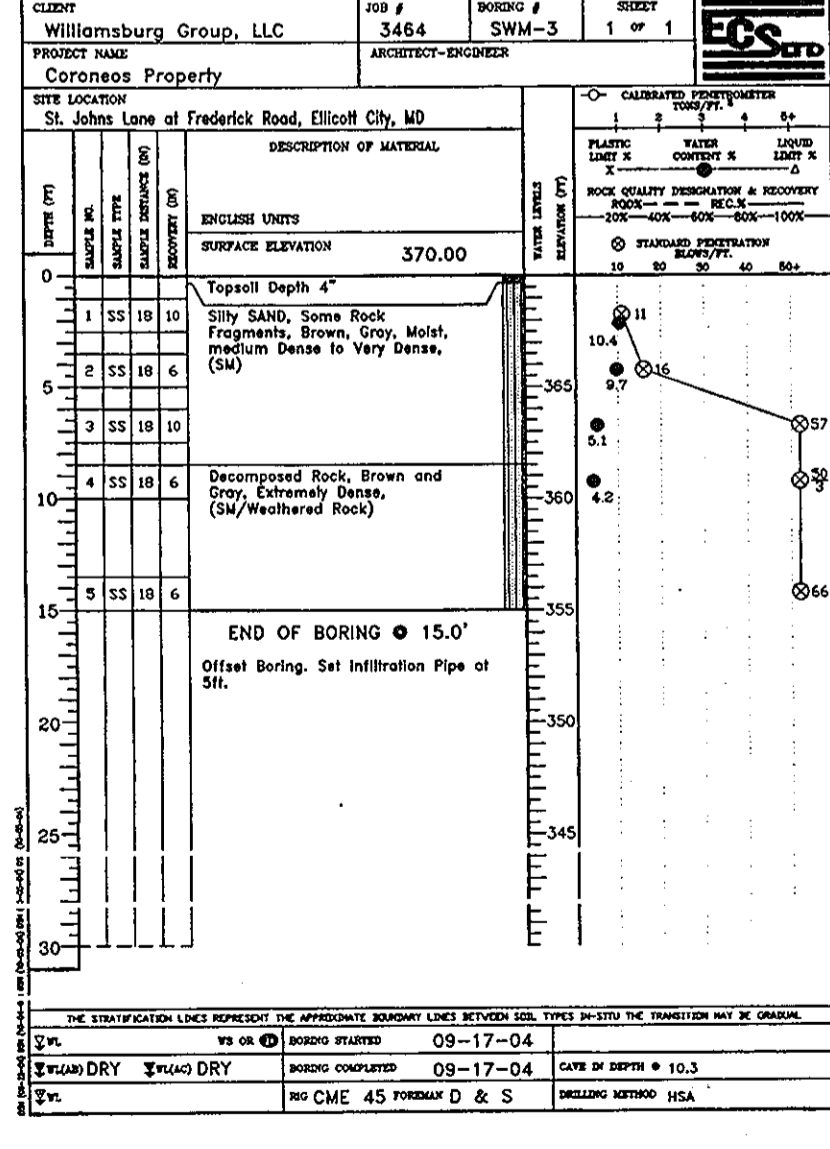
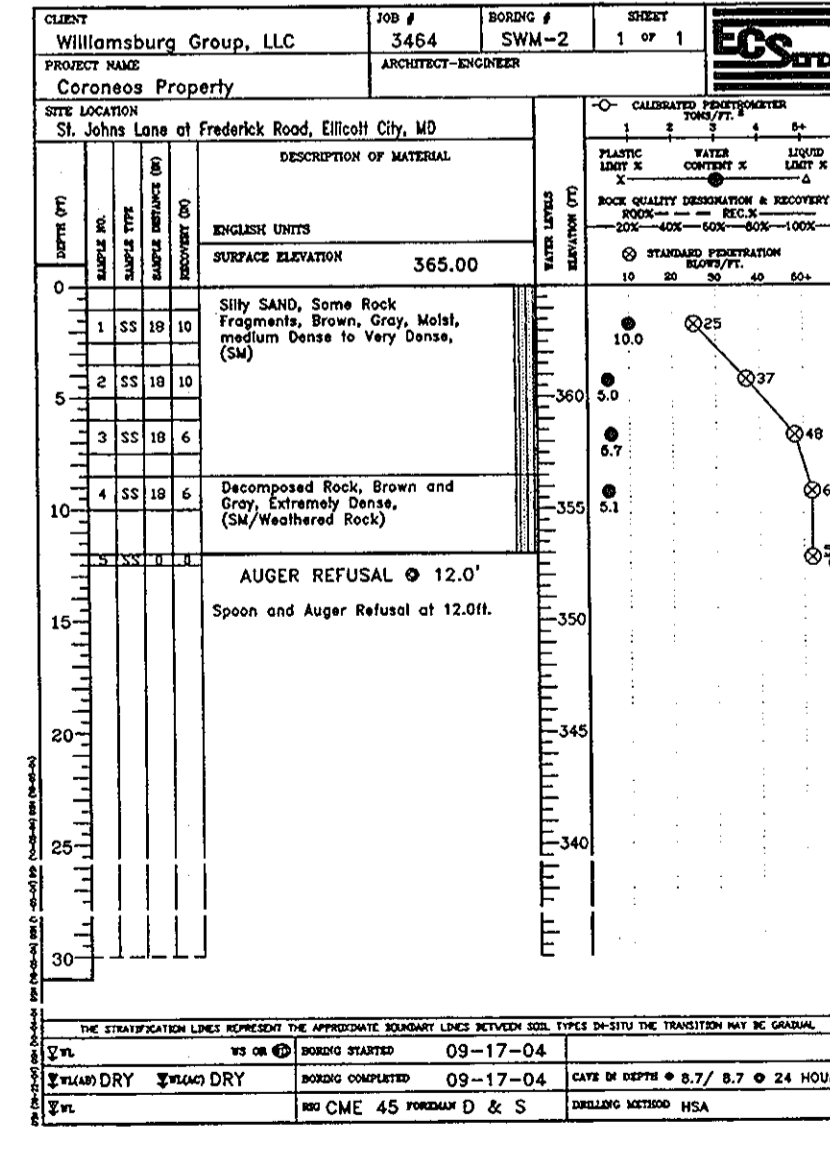
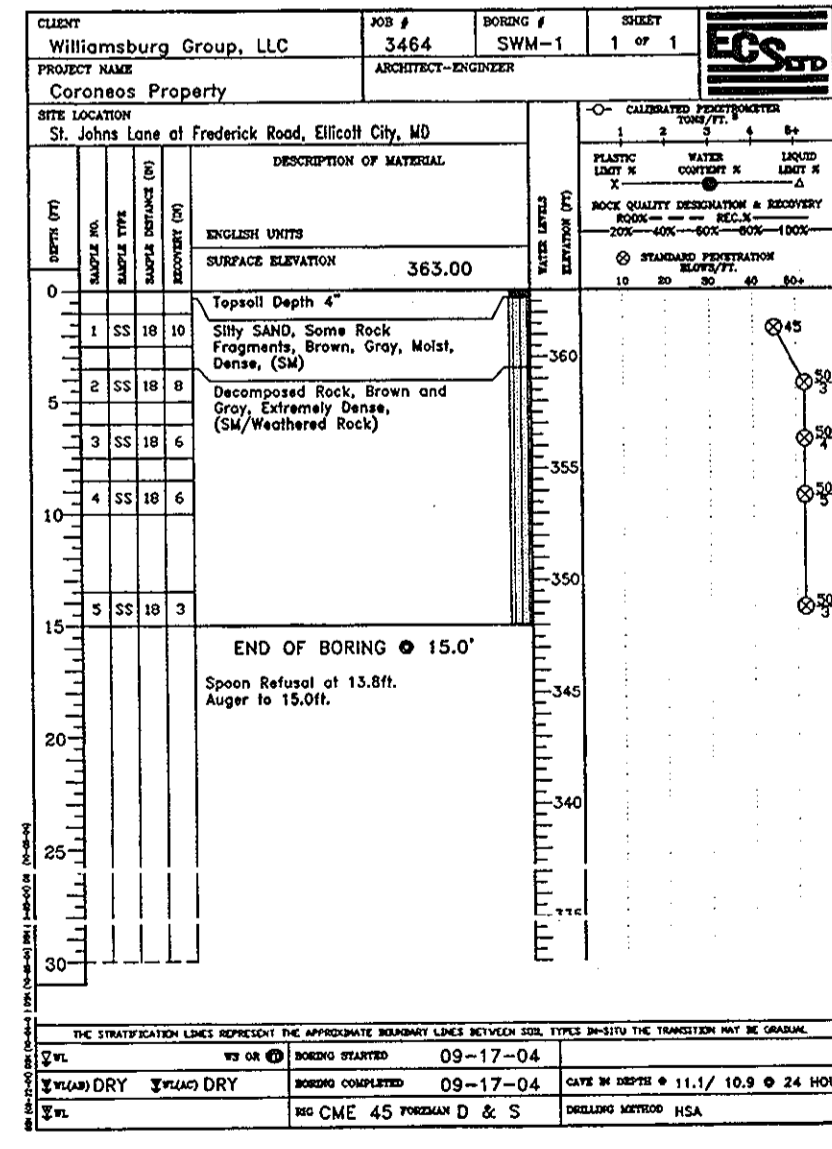
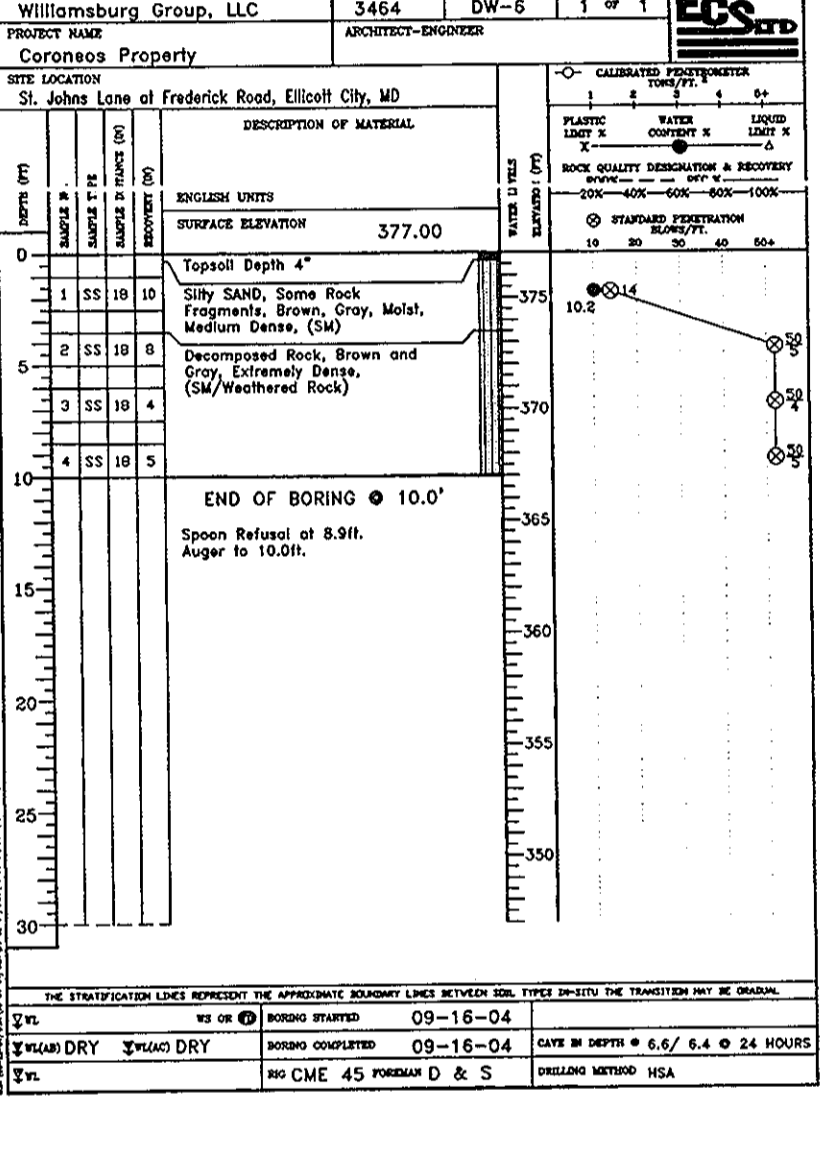
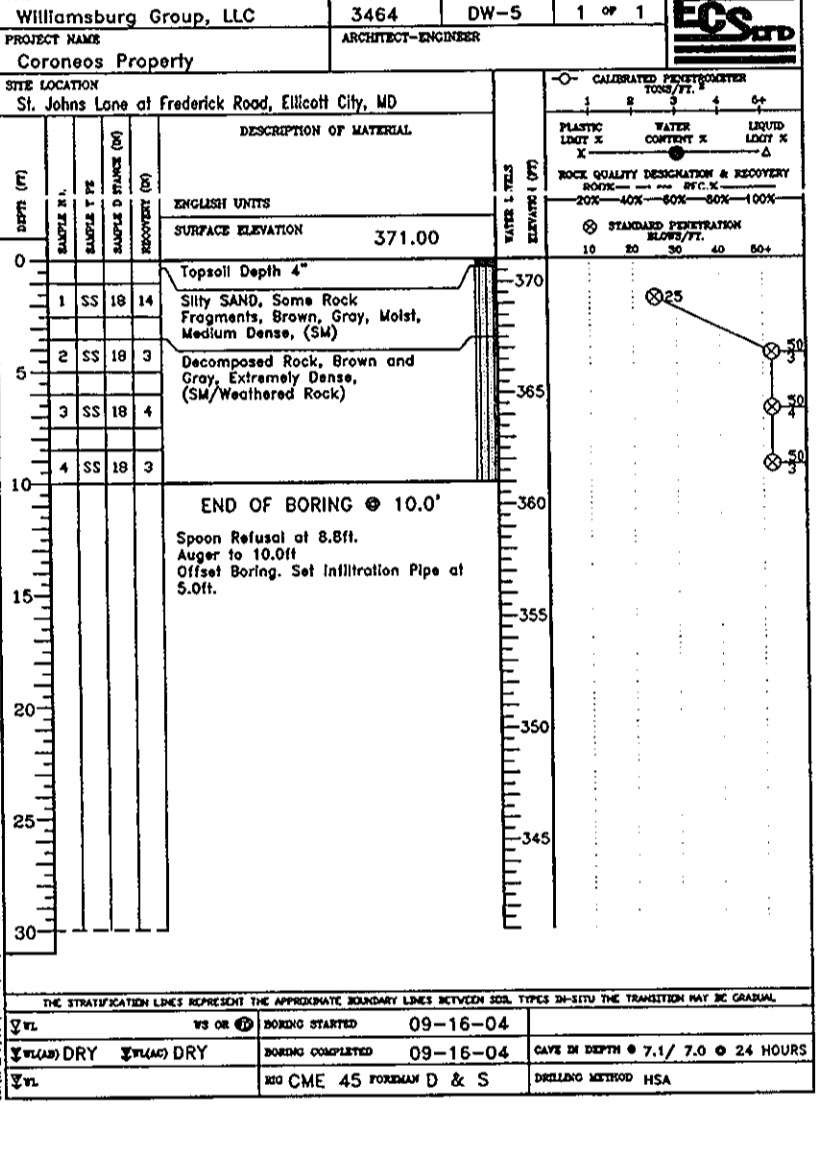
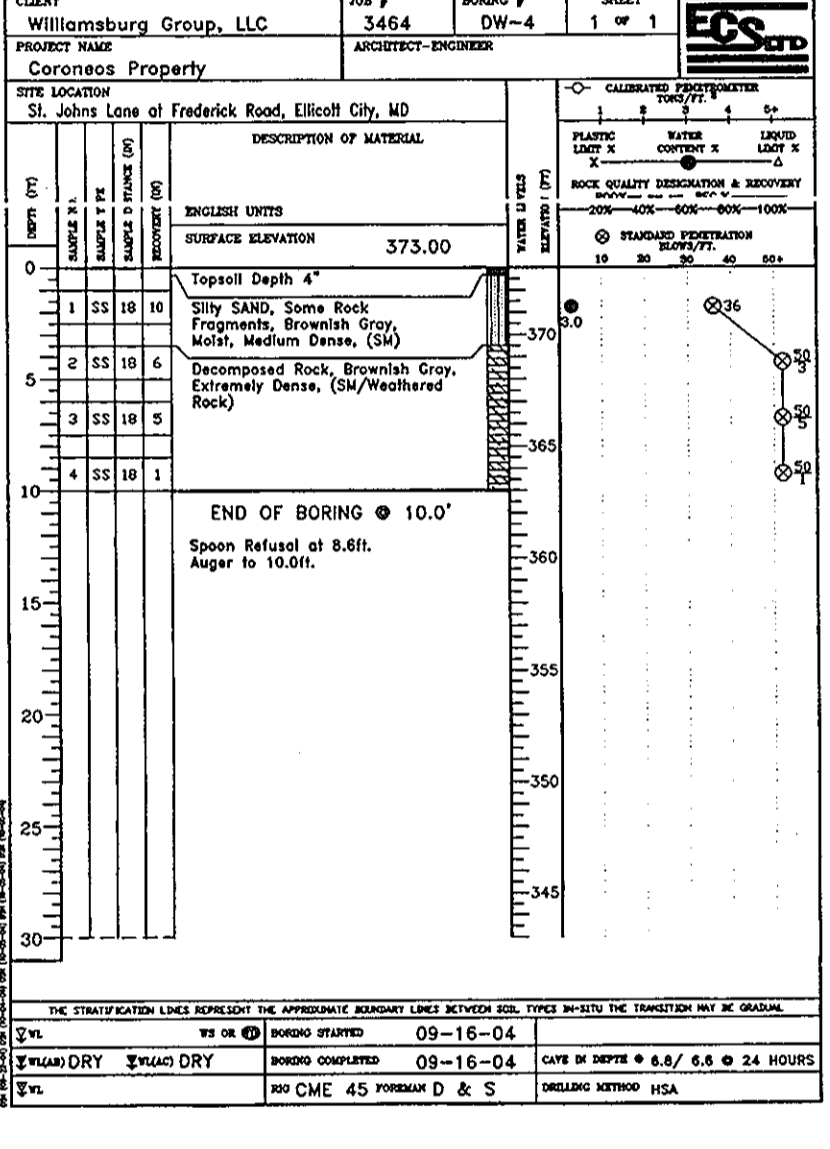
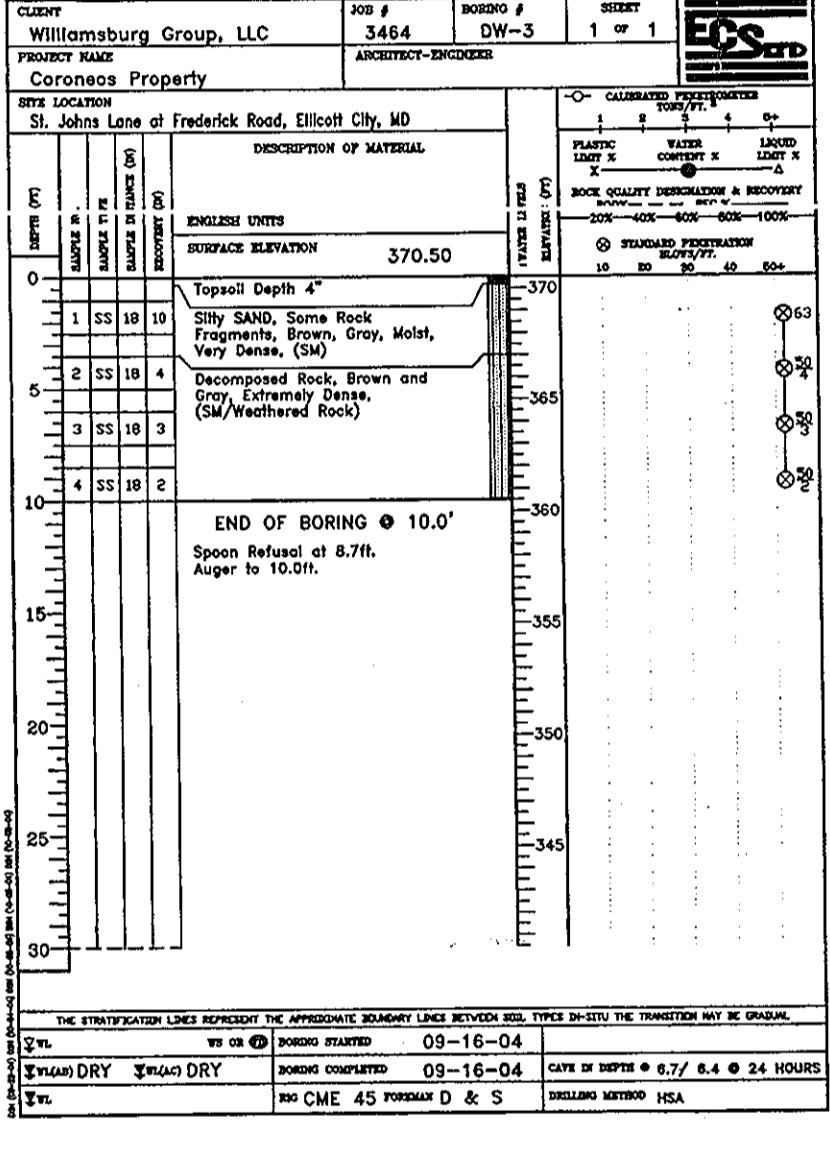
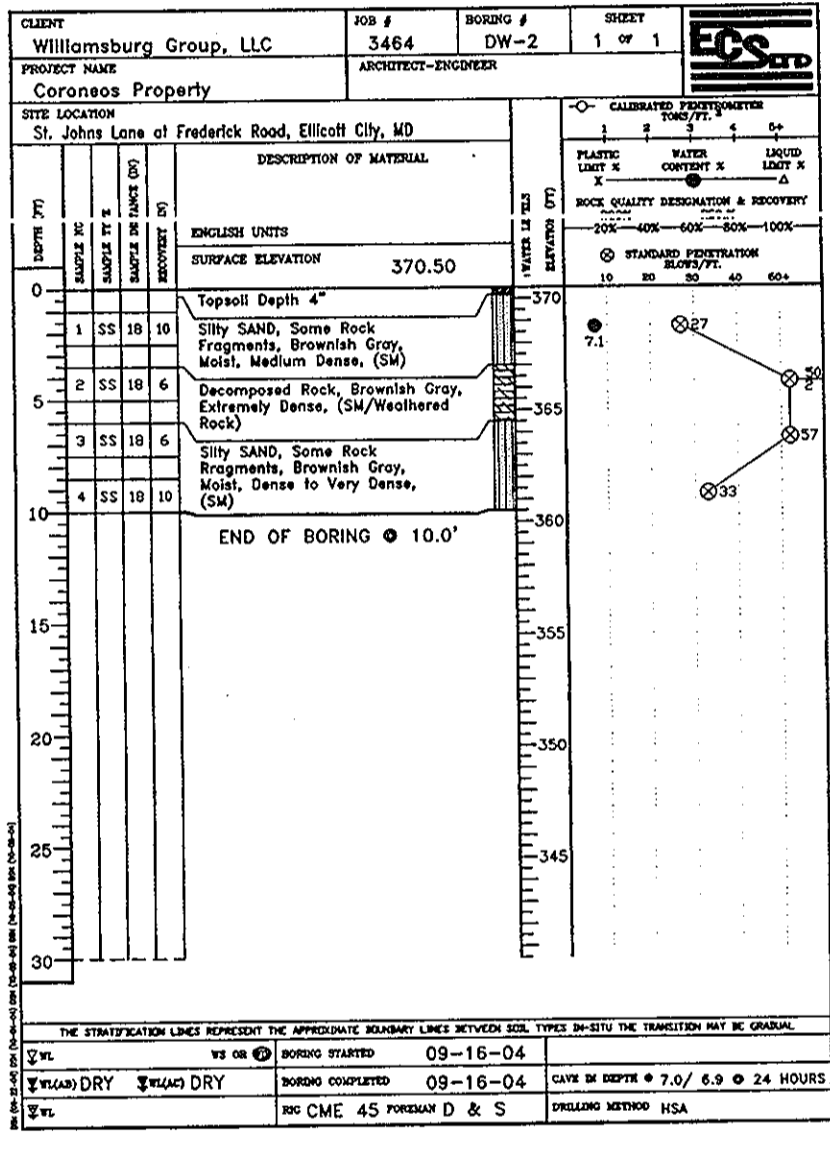
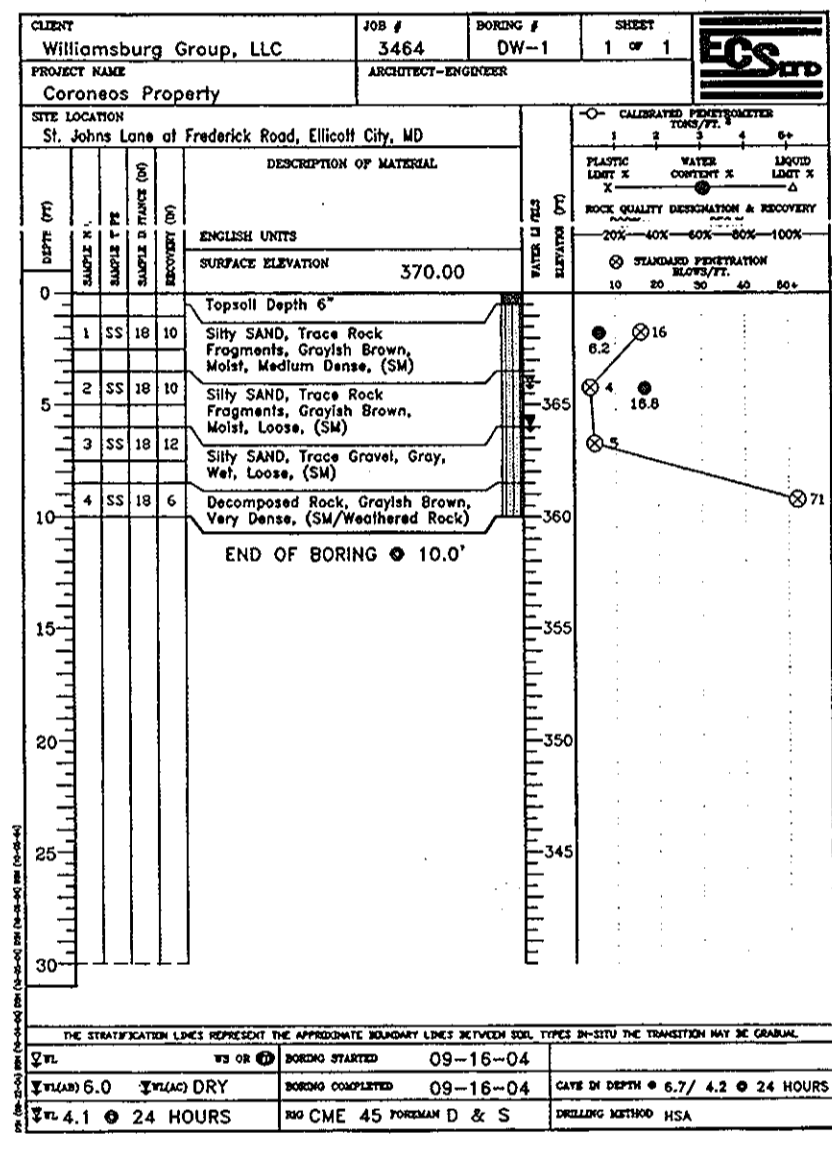
Surface drainage conditions should be properly maintained. Surface water should be directed away from the construction area, and the work area should be sloped at a grade of 1 to 2 percent to reduce the potential of ponding water and the subsequent saturation of the surface soils. At the end of each work day, the subgrade should be sealed by rolling the surface with a smooth-drum roller to minimize infiltration of surface water.

All foundation excavations must be protected to prevent the disturbance of the subgrade materials and to minimize any potential loss of support capacity. Foundation concrete should be placed on the same day that foundation excavations are excavated and approved. Should

excavation and placement of foundation concrete the same day not be practical, we recommend that a concrete seal coat, 2 inches to 3 inches thick, be placed to protect the subgrade soils from moisture changes, and disturbance during construction activity. If protection of the soils is not necessary prior to the placement of the foundation concrete, the subgrade soils must be carefully examined and tested by the Geotechnical Engineer to confirm the availability of the design soil bearing capacity. To minimize disturbance to the subgrade soils during excavation, we recommend that a backhoe without excavation teeth and hand excavation be utilized during the final phases of the excavation for the foundation.

Cuts or excavations associated with building and utility excavations may require forming or bracing, slope flattening or other physical measures to control sloughing and/or prevent slope failures. Contractors should be familiar with applicable OSHA and MDTA codes to ensure that adequate protection of the excavations and trench walls is provided.

The surface soils will be erodible. Therefore, the contractor should provide and maintain good site drainage during earthwork operations to maintain the integrity of the surface soils. All erosion control sedimentation shall be controlled in accordance with sound engineering practice and current local requirements.



NO. REVISION DATE

STORMWATER MANAGEMENT NOTES

TIBER RIDGE

LOTS 1 - 9 AND OPEN SPACE LOTS 10 AND 11

TAX MAP 24 BLOCK 11 PARCEL 821
2ND ELECTION DISTRICT HOWARD COUNTY, MARYLAND

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DESIGN BY: RHW/RJ
DRAWN BY: RJ
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SCALE: AS NOTED
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2019134.00

DPZ REF:
S-00-09, WP-00-110,
P-05-10

8 SHEET OF 10

ROBERT H. VOGEL, PE #16183

APPROVED: HOWARD COUNTY DEPARTMENT OF PUBLIC WORKS
William Z. ... 5/14/07
CHIEF, BUREAU OF HIGHWAYS

APPROVED: HOWARD COUNTY DEPARTMENT OF PLANNING AND ZONING
... 6/1/07
CHIEF, DEVELOPMENT ENGINEERING DIVISION

... 5/1/07
CHIEF, DIVISION OF LAND DEVELOPMENT

OWNER / DEVELOPER
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**MARYLAND 378
STORMWATER MANAGEMENT POND CONSTRUCTION SPECIFICATIONS**

CONSTRUCTION SPECIFICATIONS
These specifications are applicable to all ponds within the scope of the Standard for practice MD-378. All references to ASTM and ASHTO 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 no steeper than 1:1. All trees shall be cleared and grubbed within 15 feet of the toe of the embankment.

Areas to be covered by the reservoir will be cleared of all trees, brush, logs, fences, rubbish and other objectionable material unless otherwise designated on the plans. Trees, brush, and stumps shall be cut approximately level with the ground surface. For dry stormwater management ponds, a minimum of a 25-foot radius around the inlet structure shall be cleared.

All cleared and grubbed material shall be disposed of outside and below the limits of the dam and reservoir as directed by the owner or his representative. When specified, a sufficient quantity of topsoil will be stockpiled in a suitable location for use on the embankment and other designated areas.

Soil 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 8" frozen or other objectionable materials. Fill material for the center of the embankment and cut off trench shall conform to Unified Soil Classification CC, CL or CU, and must have at least 30% passing the #200 sieve. Consideration may be given to the use of other materials in the embankment if designed by a geotechnical engineer. Such special design 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 seepage must be isolated concurrently with placement and not excavated into the embankment.

Compaction - The movement of the hauling and spreading equipment over the fill shall be controlled so that the entire surface of each fill shall be traversed by less than one track load of heavy equipment or compaction shall be achieved by a minimum of four complete passes of a sheepsfoot, rubber tired or vibratory roller. Fill material shall contain sufficient moisture such that the required degree of compaction will be obtained with the equipment used. The fill material shall contain sufficient moisture so that, if formed into a ball, it will not crumble, yet not be so wet that water can be squeezed out.

When required by the reviewing agency the minimum required density shall not be less than 95% of 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 to be determined by the Engineer at the time of construction. All compaction to be determined by ASHTO 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 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 around the pipe. All no time during the backfilling operation shall allow equipment to be operated closer than four feet, measured horizontally, to any part of a structure. Under no circumstances shall equipment be driven over any part of a concrete structure or pipe, unless there is a compacted fill of 24" or greater over the structure or pipe.

Structure backfill may be flowable fill meeting the requirements of Maryland Department of Transportation, State Highway Administration Standard Specifications for Construction and Materials, Section 313 as modified. The mixture shall have a 100-200 psi, 28 day unconfined compressive strength. The flowable fill shall have a minimum unit weight of 120 pcf and a minimum of 7000 lb/cu yd. Material shall be placed such that minimum 4" (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 fluidity 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 the 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 (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 coating 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 ASHTO Specifications M-245 & M-246 with watertight coupling bonds or flanges.

Materials - (Aluminum Coated Steel Pipe) - This pipe and its appurtenances shall conform to the requirements of ASHTO Specification M-274 with watertight coupling bonds 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 ASHTO 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 primed with one coat of zinc chromate primer or two coats of asphalt.

POND BOTTOM SOIL CONDITIONS

If broken rock fragments are encountered at finished pond bottom, under cut a minimum of 12" below basin grade and to a horizontal distance of at least 18" beyond each edge of the broken rock and backfill with fine-grained ML or CL soils compacted to a firm condition. This procedure should be performed under the supervision of the project Geotechnical Engineer.

In order to lower the infiltration rate into the sands with gravel, it is recommended that the sands with gravel be undercut and replaced with a minimum of 12 inches of soils classified as SM per ASTM D-2487 or Sandy Loam per USDA classification. The fill soil should be compacted to at least 95 percent of its maximum dry density per ASTM D-698.

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.

**OPERATION AND MAINTENANCE SCHEDULE FOR
STORMWATER MANAGEMENT
DETENTION FACILITY**

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

NON-ROUTINE MAINTENANCE
1. STRUCTURAL COMPONENTS OF THE POND SUCH AS THE DAM, THE RISER, AND THE PIPES SHALL BE REPAIRED UPON DETECTION OF ANY DAMAGE. THE COMPONENTS SHOULD BE INSPECTED DURING ROUTINE MAINTENANCE OPERATIONS.
2. SEDIMENT SHOULD BE REMOVED WHEN ITS ACCUMULATION SIGNIFICANTLY REDUCES THE DESIGN STORAGE, INTERFERE WITH THE FUNCTION OF THE RISER, WHEN DEEMED NECESSARY FOR AESTHETIC REASONS, OR WHEN DEEMED NECESSARY BY THE HOWARD COUNTY DEPARTMENT OF PUBLIC WORKS.

Materials - (Aluminum Pipe) - This pipe and its appurtenances shall conform to the requirements of ASHTO Specification M-196 or M-211 with watertight coupling bonds or flanges. Aluminum Pipe, when used with flowable fill or when soil and/or water conditions warrant for increased durability, shall be fully bituminous coated per requirements of ASHTO Specification M-190 Type A. Aluminum surfaces that are to be in contact with concrete shall be primed 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. Couplings, bands, anti-seep collars, and 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 bonds 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 reinforced on adequate number of corrugations to accommodate the handwidth. The following type connections are acceptable for pipes less than 24 inches diameter: flanges on both ends of the pipe with a circular 3/8 inch thick closed cell circular neoprene gasket; and a 12-inch wide hagger 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 annular corrugated band using a minimum of 4(four) rods and nuts, 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.

Materials - (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-501.
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. Concrete bedding is not permitted.
3. Laying pipe - Bell and spigot pipe shall be placed with the bell end upstream. Joints shall be made in accordance with recommendations of the manufacturer of the material. After the joints are sealed for the entire line, the bedding shall be placed so that all spaces under the pipe are filled. Care shall be exercised to prevent any deviation from the original line and grade of the pipe. The first joint must be located within 4 feet from the riser.
4. Backfilling shall conform to "Structure Backfill."
5. 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-501.
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. Concrete bedding is not permitted.
3. Laying pipe - Bell and spigot pipe shall be placed with the bell end upstream. Joints shall be made in accordance with recommendations of the manufacturer of the material. After the joints are sealed for the entire line, the bedding shall be placed so that all spaces under the pipe are filled. Care shall be exercised to prevent any deviation from the original line and grade of the pipe. The first joint must be located within 4 feet from the riser.
4. Backfilling shall conform to "Structure Backfill."
5. 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-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 ASHTO M252 Type S, and 12" through 24" inch shall meet the requirements of ASHTO M29 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 requirements of Maryland Department of Transportation, State Highway Administration Standard Specifications for Construction and Materials, Section 921.09, Class C.

Core 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 to be occupied by the permanent works. The contractor shall also furnish, install, operate, and maintain all necessary cofferdams 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 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 compaction 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 slightly 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-142) 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 PRIVATELY OWNED AND MAINTAINED STORMWATER INFILTRATION TRENCHES

1. THE MONITORING WELLS AND STRUCTURES SHALL BE INSPECTED ON A QUARTERLY BASIS AND AFTER EVERY LARGE STORM EVENT.
2. WATER LEVELS AND SEDIMENT BUILD UP IN THE MONITORING WELLS SHALL BE RECORDED OVER A PERIOD OF SEVERAL DAYS TO INSURE TRENCH DRAINAGE.
3. A LOGBOOK SHALL BE MAINTAINED TO DETERMINE THE RATE AT WHICH THE FACILITY DRAINS.
4. WHEN THE FACILITY BECOMES CLOGGED SO THAT IT DOES NOT DRAIN DOWN WITHIN THE INDICATED HOUR TIME PERIOD, CORRECTIVE ACTION SHALL BE TAKEN.
5. THE MAINTENANCE LOGBOOK SHALL BE AVAILABLE TO HOWARD COUNTY FOR INSPECTION TO INSURE COMPLIANCE WITH OPERATION AND MAINTENANCE CRITERIA.
6. ONCE THE PERFORMANCE CHARACTERISTICS OF THE INFILTRATION FACILITY HAVE BEEN VERIFIED, THE MONITORING SCHEDULE CAN BE REDUCED TO AN ANNUAL BASIS UNLESS THE PERFORMANCE DATA INDICATES THAT A MORE FREQUENT SCHEDULE IS REQUIRED.

**OPERATION AND MAINTENANCE SCHEDULE FOR
STORMWATER MANAGEMENT
EXTENDED DETENTION FACILITY**

STORMWATER MANAGEMENT FACILITY
ROUTINE MAINTENANCE
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3. DEBRIS AND LITTER NEXT TO THE OUTLET STRUCTURE SHALL BE REMOVED DURING REGULAR MOWING OPERATIONS AND AS NEEDED.
4. VISIBLE SIGNS OF EROSION IN THE POND AS WELL AS RIPRAP OUTLET AREAS SHALL BE REPAIRED AS SOON AS IT IS NOTICED.

NON-ROUTINE MAINTENANCE
1. STRUCTURAL COMPONENTS OF THE POND SUCH AS THE DAM, THE RISER, AND THE PIPES SHALL BE REPAIRED UPON DETECTION OF ANY DAMAGE. THE COMPONENTS SHOULD BE INSPECTED DURING ROUTINE MAINTENANCE OPERATIONS.
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OPERATION, MAINTENANCE AND INSPECTION

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NO.	REVISION	DATE

STORMWATER MANAGEMENT NOTES
TIBER RIDGE
LOTS 1 - 9 AND OPEN SPACE LOTS 10 AND 11

TAX MAP 24 BLOCK 11 PARCEL 821
2ND ELECTION DISTRICT HOWARD COUNTY, MARYLAND

ROBERT H. VOGEL
ENGINEERING, INC.
ENGINEERS • SURVEYORS • PLANNERS
8407 MAIN STREET TEL: 410.461.7666
ELLICOTT CITY, MD 21043 FAX: 410.461.8961

DESIGN BY: RHW/RJ
DRAWN BY: RJ
CHECKED BY: RHW
DATE: 03-01-2007
SCALE: AS NOTED
W.O. NO.: 04-84.00
2019134.00

DPZ REF:
S-00-09, WP-00-11,
P-05-10

9 SHEET OF 10

OWNER / DEVELOPER
WILLIAMSBURG GROUP
5485 HARPERS FARM ROAD, SUITE 200
COLUMBIA, MARYLAND 21044
(410) 997-8800

APPROVED: HOWARD COUNTY DEPARTMENT OF PUBLIC WORKS
William J. Washburn 5-14-07
CHIEF, BUREAU OF HIGHWAYS DATE

APPROVED: HOWARD COUNTY DEPARTMENT OF PLANNING AND ZONING
Robert J. Williams 6/1/07
CHIEF, DEVELOPMENT ENGINEERING DIVISION DATE

Conrad Hanover 6/1/07
CHIEF, DIVISION OF LAND DEVELOPMENT DATE

21.0 STANDARDS AND SPECIFICATIONS FOR TOPSOIL

DEFINITION
 PLACEMENT OF TOPSOIL OVER A PREPARED SUBSOIL PRIOR TO ESTABLISHMENT OF PERMANENT VEGETATION.

PURPOSE
 TO PROVIDE A SUITABLE SOIL MEDIUM FOR VEGETABLE GROWTH. SOILS OF CONCERN HAVE LOW MOISTURE CONTENT, LOW NUTRIENT LEVELS, LOW PH, MATERIALS TOXIC TO PLANTS, AND/OR UNACCEPTABLE SOIL GRADATION.

CONDITIONS WHERE PRACTICE APPLIES

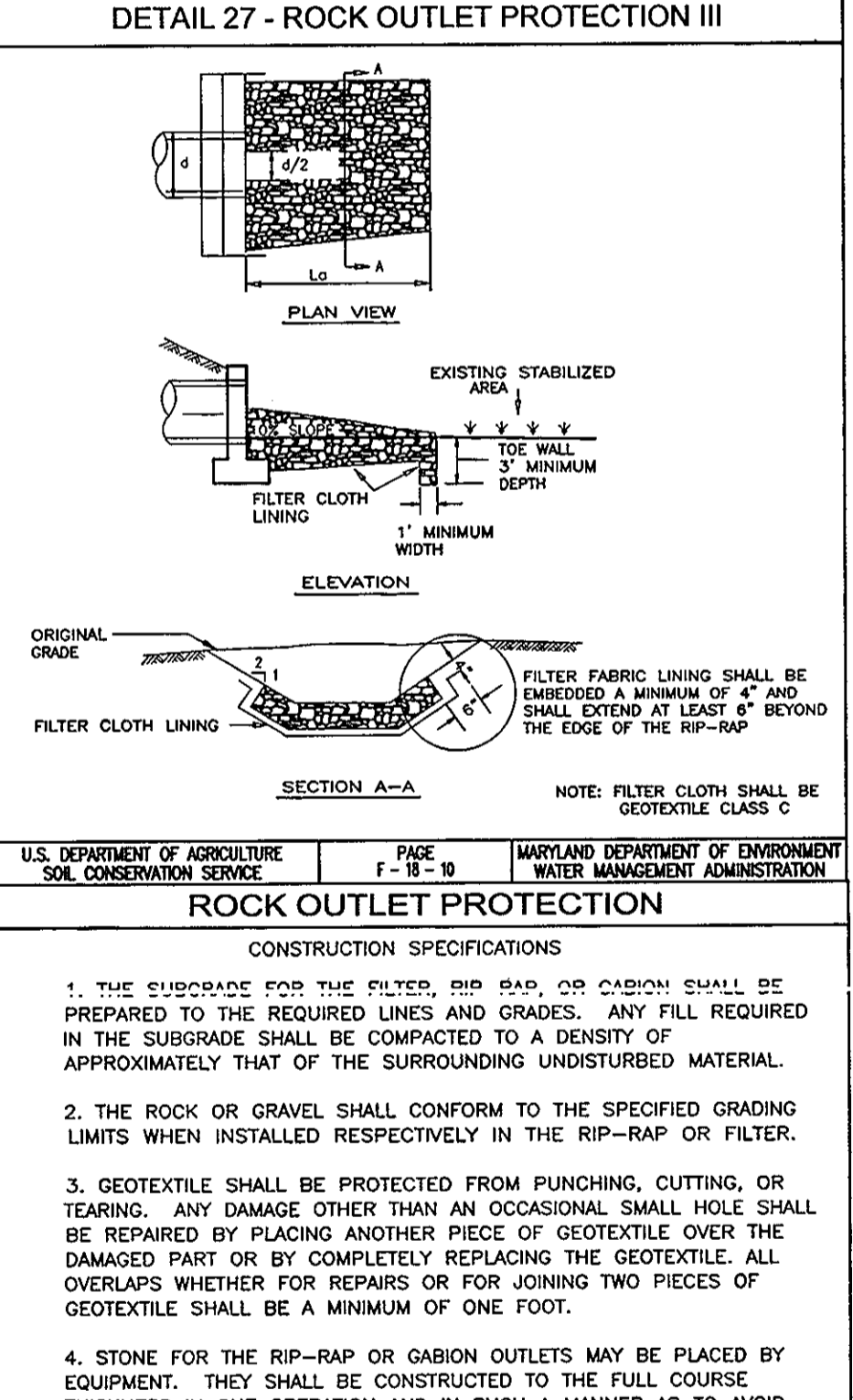
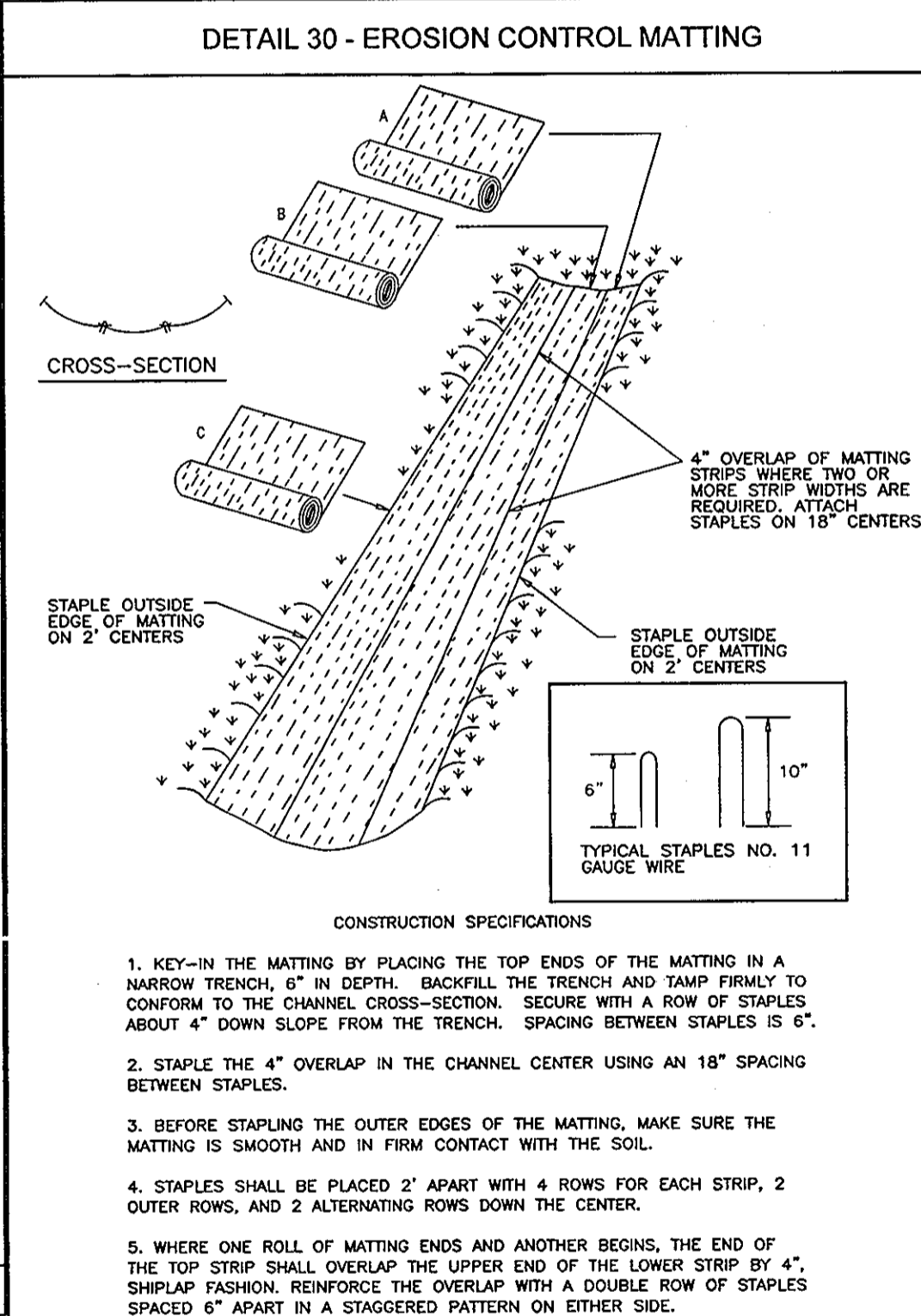
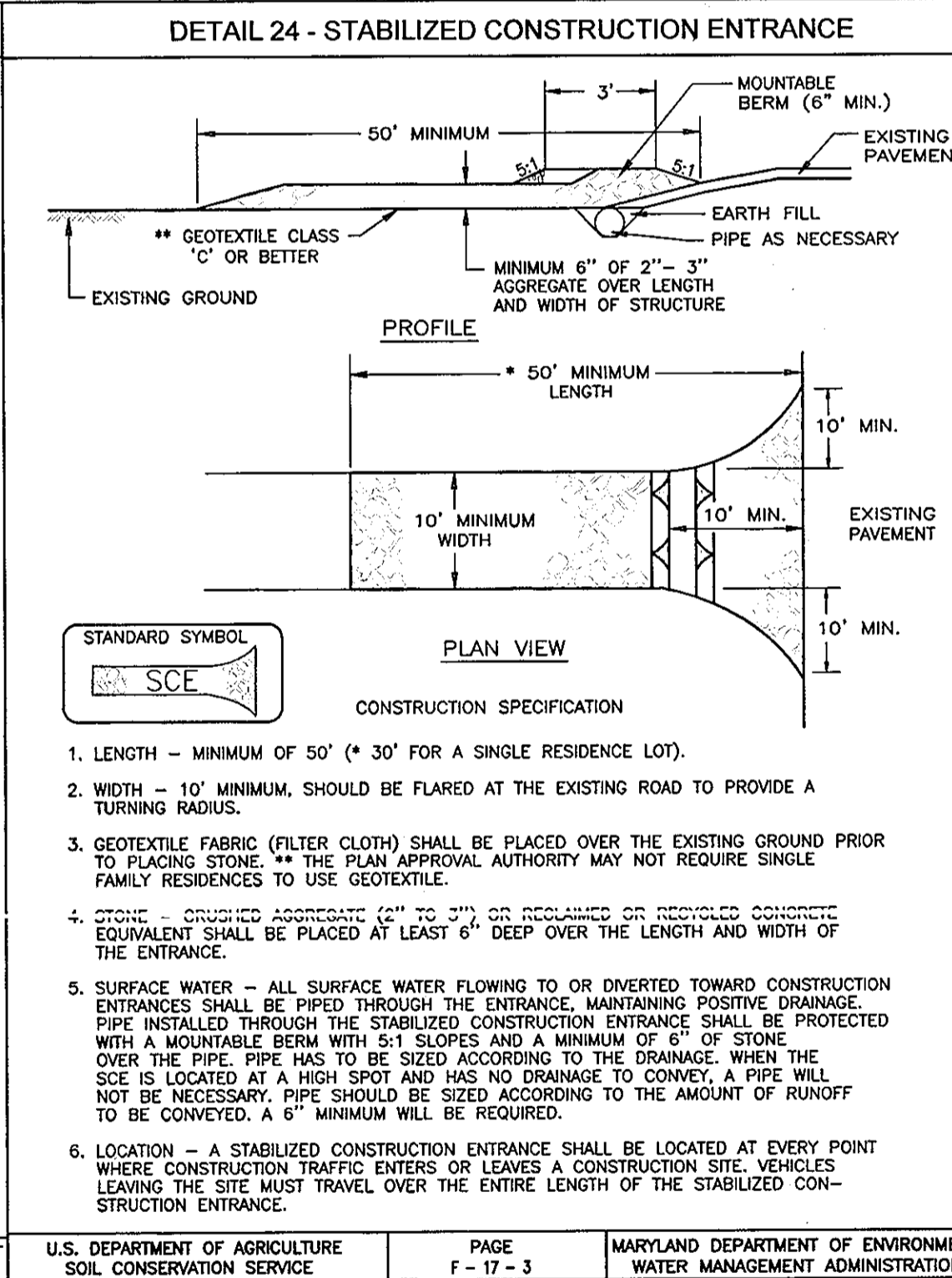
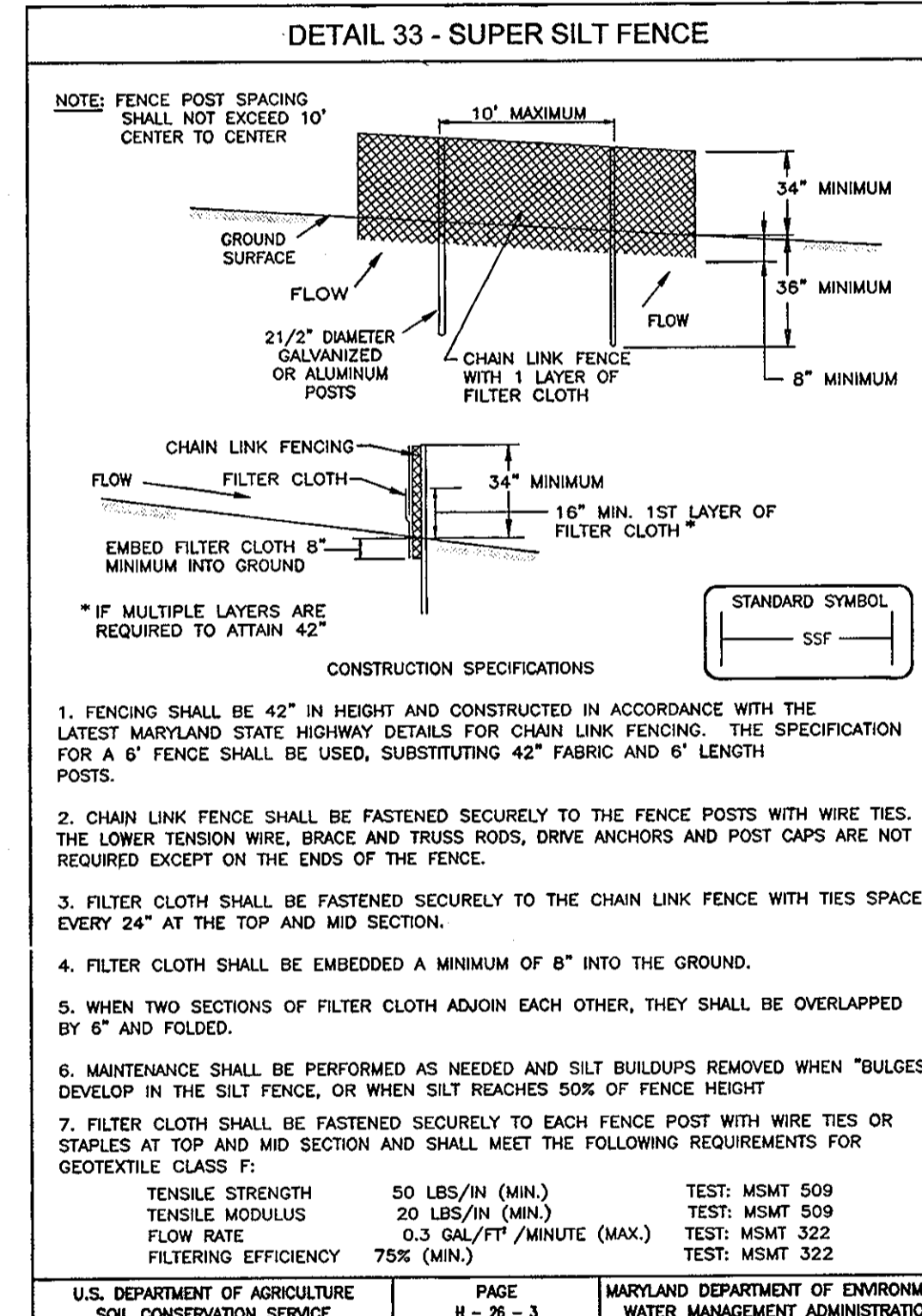
- THIS PRACTICE IS LIMITED TO AREAS HAVING 2:1 OR FLATTER SLOPES WHERE:
 - THE TEXTURE OF THE EXPOSED SUBSOIL/PARENT MATERIAL IS NOT ADEQUATE TO PRODUCE VEGETATIVE GROWTH.
 - THE SOIL MATERIAL IS SO SHALLOW THAT THE ROOTING ZONE IS NOT DEEP ENOUGH TO SUPPORT PLANTS OR FURNISH CONTINUING SUPPLIES OF MOISTURE AND PLANT NUTRIENTS.
 - THE ORIGINAL SOIL TO BE VEGETATED CONTAINS MATERIAL TOXIC TO SOIL GROWTH.
 - THE SOIL IS SO ACIDIC THAT TREATMENT WITH LIMESTONE IS NOT FEASIBLE.

II. FOR THE PURPOSE OF THESE STANDARDS AND SPECIFICATIONS, AREAS HAVING SLOPES STEEPER THAN 2:1 REQUIRE SPECIAL CONSIDERATION AND DESIGN FOR ADEQUATE STABILIZATION. AREAS HAVING SLOPES STEEPER THAN 2:1 SHALL HAVE THE APPROPRIATE STABILIZATION SHOWN ON THE PLANS.

CONSTRUCTION AND MATERIAL SPECIFICATIONS

- TOPSOIL SALVAGED FROM THE EXISTING SITE MAY BE USED PROVIDED THAT IT MEETS THE STANDARDS AS SET FORTH IN THESE SPECIFICATIONS. TYPICALLY, THE DEPTH OF TOPSOIL TO BE SALVAGED FOR A GIVEN SOIL TYPE CAN BE FOUND IN THE REPRESENTATIVE SOIL PROFILE SECTION IN THE SOIL SURVEY PUBLISHED BY USDA-SCS IN COOPERATION WITH MARYLAND AGRICULTURAL EXPERIMENTAL STATION.
- TOPSOIL SPECIFICATIONS - SOIL TO BE USED AS TOPSOIL MUST MEET THE FOLLOWING:
 - TOPSOIL SHALL BE A LOAM, SANDY LOAM, CLAY LOAM, SILT LOAM, SANDY CLAY LOAM, LOAMY SAND. OTHER SOILS MAY BE USED IF RECOMMENDED BY AN AGRONOMIST OR A SOIL SCIENTIST AND APPROVED BY THE APPROPRIATE APPROVAL AUTHORITY. REGARDLESS, TOPSOIL SHALL NOT BE A MIXTURE OF CONTRASTING TEXTURED SUBSOILS AND SHALL CONTAIN LESS THAN 5% BY VOLUME OF CONCRETE, STONES, SLAG, COMBUSTIBLES, GRAVEL, STICKS, ROOTS, TRASH, OR OTHER MATERIALS LARGER THAN 1 AND 1/2" IN DIAMETER.
 - TOPSOIL MUST BE FREE OF PLANTS OR PLANT PARTS SUCH AS BERMUDA GRASS, QUACKGRASS, JOHNSONGRASS, NUTSEDGE, POISON IVY, THISTLE, OR OTHERS AS SPECIFIED.
 - WHERE THE SUBSOIL IS EITHER HIGHLY ACIDIC OR COMPOSED OF HEAVY CLAYS, GROUND LIMESTONE SHALL BE SPREAD AT THE RATE OF 4-8 TONS/ACRE (200-400 POUNDS PER 1,000 SQUARE FEET) PRIOR TO THE PLACEMENT OF TOPSOIL. LIME SHALL BE DISTRIBUTED UNIFORMLY OVER DESIGNATED AREAS AND WORKED INTO THE SOIL IN CONJUNCTION WITH TILLAGE OPERATIONS AS DESCRIBED IN THE FOLLOWING PROCEDURES.

II. FOR SITES HAVING DISTURBED AREAS UNDER 5 ACRES:
 PLACE TOPSOIL (IF REQUIRED) AND APPLY SOIL AMENDMENTS AS SPECIFIED IN 20.0 VEGETATIVE STABILIZATION - SECTION 1 - VEGETATIVE STABILIZATION METHODS AND MATERIALS.



PERMANENT SEEDING NOTES

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

SEEDING PREPARATION: LOOSEN UPPER THREE 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:

- PREFERRED-APPLY 2 TONS PER ACRE DOLOMITIC LIMESTONE (92 LBS./100 SQ.FT.) AND 600 LBS. PER ACRE 10-10-10 FERTILIZER (14 LBS./1000 SQ.FT.) BEFORE SEEDING. HARROW OR DISC INTO UPPER THREE INCHES OF SOIL. AT THE TIME OF SEEDING, APPLY 400 LBS. PER ACRE 30-0-0 UREAFORM FERTILIZER (9 LBS./1000 SQ.FT.)
- ACCEPTABLE-APPLY 2 TONS PER ACRE DOLOMITIC LIMESTONE (92 LBS./1000 SQ.FT.) AND APPLY 1000 LBS. PER ACRE 10-10-10 FERTILIZER (23 LBS./1000 SQ.FT.) BEFORE SEEDING. HARROW OR DISC INTO UPPER THREE INCHES OF SOIL.

SEEDING: FOR THE PERIODS MARCH 1 THRU APRIL 30, AND AUGUST 1 THRU OCTOBER 15, SEED WITH 60 LBS. PER ACRE (1.4 LBS./1000 SQ.FT.) OF KENTUCKY 31 TALL FESCUE FOR THE PERIOD MAY 1 THRU JULY 31, SEED WITH 60 LBS. KENTUCKY 31 TALL FESCUE PER ACRE AND 2 LBS. PER ACRE (25 LBS./1000 SQ.FT.) OF WEEPING LOVEGRASS. DURING THE PERIOD OF OCTOBER 16 THRU FEBRUARY 28, PROTECT SITE BY: OPTION (1) 2 TONS PER ACRE WELL ANCHORED STRAW MULCH AND SEED AS SOON AS POSSIBLE IN THE SPRING. OPTION (2) USE SOO. OPTION (3) SEED WITH 60 LBS./ACRE KENTUCKY 31 TALL FESCUE AND MULCH WITH 2 TONS/ACRE WELL ANCHORED STRAW.

MULCHING: APPLY 1 1/2 TO 2 TONS PER ACRE (70 TO 90 LBS./1000 SQ. FT.) OF UNROTTED SMALL GRAIN STRAW IMMEDIATELY AFTER SEEDING. ANCHOR MULCH IMMEDIATELY AFTER APPLICATION USING MULCH ANCHORING TOOL OR 218 GALLONS PER ACRE (5 GAL/1000 SQ.FT.) OF EMULSIFIED ASPHALT ON FLAT AREAS, ON SLOPES 8 FEET OR HIGHER, USE 348 GALLONS PER ACRE (8 GAL/1000 SQ.FT.) FOR ANCHORING.

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

TEMPORARY SEEDING NOTES

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

SOIL AMENDMENTS: APPLY 600 LBS. PER ACRE 10-10-10 FERTILIZER (1.4 LBS./1000 SQ.FT.)

SEEDING: FOR PERIODS MARCH 1 THRU APRIL 30, AND FROM AUGUST 15 THRU NOVEMBER 15, SEED WITH 2 1/2 BUSHEL PER ACRE OF ANNUAL RYE (3.2 LBS./1000 SQ.FT.) FOR THE PERIOD MAY 1 THRU AUGUST 14, SEED WITH 3 LBS. PER ACRE OF WEEPING LOVEGRASS (0.7 LBS./1000 SQ.FT.) FOR THE PERIOD NOVEMBER 1 THRU FEBRUARY 28, PROTECT SITE BY APPLYING 2 TONS PER ACRE OF WELL ANCHORED STRAW MULCH AND SEED AS SOON AS POSSIBLE IN THE SPRING, OR USE SOO.

MULCHING: APPLY 1 1/2 TO 2 TONS PER ACRE (70 TO 90 LBS./1000 SQ.FT.) OF UNROTTED SMALL GRAIN STRAW IMMEDIATELY AFTER SEEDING. ANCHOR MULCH IMMEDIATELY AFTER APPLICATION USING MULCH ANCHORING TOOL OR 218 GALLONS PER ACRE (5 GAL/1000 SQ.FT.) OF EMULSIFIED ASPHALT ON FLAT AREAS, ON SLOPES 8 FEET OR HIGHER, USE 348 GALLONS PER ACRE (8 GAL/1000 SQ.FT.) FOR ANCHORING.

REFER TO THE 1994 MARYLAND STANDARDS AND SPECIFICATIONS FOR SOIL EROSION AND SEDIMENT CONTROL FOR RATE AND METHODS NOT COVERED.

SEDIMENT CONTROL NOTES

- A MINIMUM OF 48 HOURS NOTICE MUST BE GIVEN TO THE HOWARD COUNTY DEPARTMENT OF INSPECTION, LICENSE AND PERMITS SEDIMENT CONTROL DIVISION PRIOR TO THE START OF ANY CONSTRUCTION (31-1855).
- ALL VEGETATION 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.
- FOLLOWING INITIAL SOIL DISTURBANCE OR REDISTURBANCE, PERMANENT OR TEMPORARY STABILIZATION SHALL BE COMPLETED WITHIN (A) 7 CALENDAR DAYS FOR ALL PERIMETER SEDIMENT CONTROL STRUCTURES, DIKES, PERIMETER SLOPES, AND ALL SLOPES GREATER THAN 3:1, (B) 14 DAYS AS TO ALL OTHER DISTURBED OR GRADED AREAS ON THE PROJECT SITE.
- ALL SEDIMENT TRAPS/BASINS SHOWN MUST BE FENCED AND WARNING SIGNS POSTED AROUND THEIR PERIMETER IN ACCORDANCE WITH VOL. 1, CHAPTER 7, HOWARD COUNTY DESIGN MANUAL, STORM DRAINAGE.
- 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, SOO, TEMPORARY SEEDING, AND MULCHING (SEC. C). TEMPORARY STABILIZATION WITH MULCH ALONE SHALL BE DONE WHEN RECOMMENDED SEEDING DATES DO NOT ALLOW FOR PERMANENT GERMINATION AND ESTABLISHMENT OF GRASSES.
- ALL SEDIMENT CONTROL STRUCTURES ARE TO REMAIN IN PLACE AND ARE TO BE MAINTAINED IN OPERATIVE CONDITION UNTIL PERMITS FOR THEIR REMOVAL HAS BEEN OBTAINED FROM THE HOWARD COUNTY SEDIMENT CONTROL INSPECTOR.
- SITE ANALYSIS:

TOTAL AREA	4.91 AC.
AREA DISTURBED	2.42 AC.
AREA TO BE ROOFED OR PAVED	0.60 AC.
AREA TO BE VEGETATIVELY STABILIZED	1.82 AC.
TOTAL CUT	1000 CY
TOTAL FILL	5,000 CY
OFFSITE WASTE/BORROW AREA LOCATION	*
- ANY SEDIMENT CONTROL PRACTICE WHICH IS DISTURBED BY GRADING ACTIVITY FOR PLACEMENT OF UTILITIES MUST BE REPAIRED ON THE SAME DAY OF DISTURBANCE.
- ADDITIONAL SEDIMENT CONTROLS MUST BE PROVIDED, IF DEEMED NECESSARY BY THE HOWARD COUNTY SEDIMENT CONTROL INSPECTOR.
- 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 IS MADE.
- TRENCHES FOR THE CONSTRUCTION OF UTILITIES IS LIMITED TO THREE PIPE LENGTHS OR THAT WHICH SHALL BE BACK-FILLED AND STABILIZED WITHIN ONE WORKING DAY, WHICHEVER IS SHORTER.
- TO BE DETERMINED BY CONTRACTOR, WITH PRE-APPROVAL OF THE SEDIMENT CONTROL INSPECTOR WITH AN APPROVED AND ACTIVE GRADING PERMIT

SEQUENCE OF CONSTRUCTION

- OBTAIN GRADING PERMIT.
- NOTIFY HOWARD COUNTY BUREAU OF INSPECTIONS AND PERMITS (313-1880) AT LEAST 24 HOURS BEFORE STARTING ANY WORK.
- CONSTRUCT STABILIZED CONSTRUCTION ENTRANCE 1 DAY
- INSTALL SUPER SILT FENCE 1 WEEK
- INSTALL BYPASS STORMDRAIN SYSTEMS (I-B TO EX. INLET AND I-3 TO E-1) AND SWALES ON HIGH SIDE OF DRIVEWAY. 5 DAYS
- CONSTRUCT SEDIMENT BASIN/STORMWATER MANAGEMENT FACILITY 3 WEEKS
- AFTER OBTAINING PERMISSION FROM SEDIMENT CONTROL INSPECTOR TO PROCEED, ROUGH GRADE TO LOD. 3 WEEKS
- CONSTRUCT BALANCE OF STORMDRAIN SYSTEM. 2 WEEKS
- GRADE PRIVATE ACCESS PLACE TO SUB-BASE AND INSTALL UTILITIES. 1 WEEK
- WITH ROAD GRADED TO SUB-BASE BEGIN ROAD PAVING. 2 WEEKS
- FINE GRADE SITE IN CONFORMANCE WITH PLAN. 1 WEEK
- WITH INSPECTOR APPROVAL AND FINAL ROAD PAVING COMPLETE STABILIZE ANY REMAINING DISTURBED AREAS. 3 DAYS
- WITH APPROVAL OF SEDIMENT CONTROL INSPECTOR REMOVE SEDIMENT CONTROL MEASURES AND CONVERT SEDIMENT BASIN TO PERMANENT STORMWATER MANAGEMENT FACILITY. 1 WEEK

NOTES

DURING GRADING AND AFTER EACH RAINFALL, THE CONTRACTOR SHALL INSPECT AND PROVIDE THE NECESSARY MAINTENANCE ON THE SEDIMENT AND EROSION CONTROL MEASURES SHOWN HEREON.

- FOLLOWING INITIAL SOIL DISTURBANCE OR REDISTURBANCE PERMANENT OR TEMPORARY STABILIZATION SHALL BE COMPLIED WITH:
- 7 CALENDAR DAYS FOR ALL PERIMETER SEDIMENT CONTROL STRUCTURES, DIKES, SWALES, DITCH PERIMETER SLOPES SLOPES AND ALL SLOPES GREATER THAN 3:1.
 - 14 CALENDAR DAYS FOR ALL OTHER DISTURBED AREAS.

APPROVED: HOWARD COUNTY DEPARTMENT OF PUBLIC WORKS
 [Signature] 5-14-07
 CHIEF, BUREAU OF HIGHWAYS

APPROVED: HOWARD COUNTY DEPARTMENT OF PLANNING AND ZONING
 [Signature] 6/1/07
 CHIEF, DEVELOPMENT ENGINEERING DIVISION

APPROVED: HOWARD COUNTY DEPARTMENT OF LAND DEVELOPMENT
 [Signature] 6/1/07
 CHIEF, DIVISION OF LAND DEVELOPMENT

REVIEWED FOR HOWARD SCD AND MEETS TECHNICAL REQUIREMENTS
 [Signature] 5/23/07
 USDA-NATURAL RESOURCES CONSERVATION SERVICE

THIS DEVELOPMENT PLAN IS APPROVED FOR SOIL EROSION AND SEDIMENT CONTROL BY THE HOWARD SOIL CONSERVATION DISTRICT
 [Signature] 5/23/07
 HOWARD SCD

ENGINEER'S CERTIFICATE
 "I HEREBY CERTIFY THAT THIS PLAN FOR POND CONSTRUCTION, EROSION AND SEDIMENT CONTROL REPRESENTS A PRACTICAL AND WORKABLE PLAN BASED ON PERSONAL KNOWLEDGE OF THE SITE CONDITIONS. THIS PLAN WAS PREPARED IN ACCORDANCE WITH THE REQUIREMENTS OF THE HOWARD SOIL CONSERVATION DISTRICT. I HAVE NOTIFIED THE DEVELOPER THAT HE/SHE MUST ENGAGE A REGISTERED PROFESSIONAL ENGINEER TO SUPERVISE POND CONSTRUCTION AND PROVIDE THE HOWARD SOIL CONSERVATION DISTRICT WITH AN "AS-BUILT" PLAN OF THE POND WITHIN 30 DAYS OF COMPLETION."
 [Signature] 4/10/07
 ROBERT H. VOGEL, PE #16193

DEVELOPER'S CERTIFICATE
 "I/WE CERTIFY THAT ALL DEVELOPMENT AND/OR CONSTRUCTION WILL BE DONE IN ACCORDANCE TO THESE PLANS, AND THAT ANY RESPONSIBLE PARTY INVOLVED IN THE CONSTRUCTION PROJECT WILL HAVE OBTAINED 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."
 [Signature] 4-10-07

"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."
 [Signature] DATE
 ROBERT H. VOGEL, P.E. #16193
 CERTIFY MEANS TO EXAMINE OR DECLARE A PROFESSIONAL OPINION BASED UPON ON-SITE INSPECTIONS AND MATERIAL TESTS WHICH ARE CONDUCTED DURING CONSTRUCTION. THE ON-SITE SITE INSPECTION AND TESTS DEEMED SUFFICIENT AND APPROPRIATE BY COMPAETED AND REGISTERED 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 COMMONLY ACCEPTED INDUSTRY PRACTICES.

OWNER / DEVELOPER
 WILLIAMSBURG GROUP
 5485 HARPETS FARM ROAD, SUITE 200
 COLUMBIA, MARYLAND 21044
 (410) 997-8800

NO. REVISION DATE

SEDIMENT AND EROSION CONTROL DETAILS
TIBER RIDGE
 LOTS 1 - 9 AND OPEN SPACE LOTS 10 AND 11

TAX MAP 24 BLOCK 11 PARCEL 821
 2ND ELECTION DISTRICT HOWARD COUNTY, MARYLAND

ROBERT H. VOGEL ENGINEERING, INC.
 ENGINEERS • SURVEYORS • PLANNERS
 8407 MAIN STREET ELLICOTT CITY, MD 21043 TEL: 410.461.7666 FAX: 410.461.8991

DESIGN BY: RHV/RJ
 DRAWN BY: RJ
 CHECKED BY: RHV
 DATE: 03-01-2007
 SCALE: AS NOTED
 W.O. NO.: 04-84.00 2019134.00

DPZ REF: S-00-09, WP-00-110, P-05-10

10 SHEET OF 10