THIS PROJECT SCOPE IS THE RETROFIT OF THE EXISTING STORMWATER MANAGEMENT FACILITY AND STABILIZATION OF THE RECEIVING TRIBUTARY STREAM CHANNEL LOCATED IMMEDIATELY WEST OF 7640 KINDLER ROAD, LAUREL, MARYLAND. THE GOAL OF THE PROJECT IS TO INCREASE POLLUTANT LOAD REDUCTION AND IMPERVIOUS AREA TREATED TO HELP MEET HOWARD COUNTY'S NPDES PERMIT GOALS AS WELL AS MAKE SAFETY AND MAINTENANCE UPGRADES TO THE POND AND STABILIZE THE STREAM CHANNEL. THE SPECIFIC RETROFIT ACTIONS TAKEN INCLUDE: • REPLACE THE PRINCIPAL SPILLWAY OUTFALL, BARREL, RISER AND LOW FLOW WITH CONCRETE SPILLWAY BARREL AND RISER ENHANCE THE OUTFALL WITH ADDITIONAL RIPRAP TO MITIGATE DISCHARGE VELOCITIES AT THE PRINCIPAL SPILLWAY UPGRADE THE LOW FLOW PIPE INTAKE BY PROVIDING A DUCTILE IRON PIPE, HEADWALL & CONCRETE PAD RE-GRADE THE UPSTREAM EMBANKMENT INSTALL A CLAY CORE AND EXPAND CUTOFF TRENCH • INSTALL A FILTER DIAPHRAGM AROUND THE PRINCIPAL SPILLWAY PIPE • EXPAND GRADING IN BASIN TO CREATE FOUR-FOOT-DEEP NORMAL POOL PROVIDE 15-FOOT SAFETY BENCH AROUND THE POOL INSTALL GABION WEIR TO CREATE FOREBAY STABILIZE AND IMPROVE THE STREAM CHANNEL BY INSTALLING ROCK CASCADE/POOL STRUCTURES TO ITS CONFLUENCE WITH THE DOWNSTREAM TRIBUTARY. NATURAL RESOURCE PROTECTION AND ENHANCEMENT THE PROJECT DESIGN WILL SEEK TO MINIMIZE IMPACTS TO THE EXISTING NATURAL RESOURCES ON SITE. HOWEVER, DUE TO NECESSARY CONSTRUCTION ACCESS. STAGING REQUIREMENTS AND TO MEET PROJECT OBJECTIVES. THERE WILL BE SOME IMPACTS TO EXISTING NATURAL SUFFICIENT CLEARANCE FOR CONSTRUCTION VEHICLES SOME SMALL TREES MAY NEED TO BE REMOVED AND SOME BRANCHES MAY NEED TO BE

NO INCREASES IN IMPERVIOUS AREA ARE PROPOSED BY THIS PROJECT. IMPERVIOUS AREA IN THE FORM OF AN EXISTING ASPHALT PATH WILL BE

REPLACED DUE TO EXPECTED DAMAGE SUSTAINED BY TRAVERSING CONSTRUCTION VEHICLES. HOWEVER, THIS REPLACEMENT WILL BE IN-KIND

THE CONSTRUCTION APPROACH OF THE PROJECT WAS DESIGNED TO MAXIMIZE BYPASS OF CLEANWATER AROUND THE CONSTRUCTION AREA.

HALF OF THE SITE (THE POND AREA) TO BE COMPLETELY BYPASSED WITH A CLEANWATER BYPASS PIPE INSTALLED THROUGH THE TEMPORAR

AREAS OF RUNOFF ALONG THE PERIMETER OF THE SITE, PARTICULARLY ALONG THE EMBANKMENT ABUTMENTS AND DOWNSTREAM OF THE

TIME WHERE A PUMP-AROUND MEASURE WILL NEED TO BE UTILIZED, PARTICULARLY IN TIGHT TOPOGRAPHIC AREAS WHERE BEDROCK IS PREVALENT. THESE SITAUTIONS WILL BE MINIMIZED AND ONLY USED IF ABSOLUTELY NECESSARY. TEMPORARY STABILIZATION MATTING IS

THIS SITE IS ALREADY BUILT OUT AND THE PROJECT SCOPE IS THE RETROFIT OF AN EXISTING STORMWATER STRUCTURE. NO WAIVERS ARE

MD REGISTRATION NO.

(P.E.) P.L.S., OR R.L.A. (CIRCLE ONE)

DATE

THIS SITE IS ALREADY DEVELOPED AND THE PROJECT OBJECTIVE IS TO RETROFIT AN EXISTING FACILITY. THEREFORE, ESD PLANNING

REQUEST FOR DESIGN MANUAL AND WAIVER PETITION FOR ENVIRONMENTAL AND STORMWATER DESIGN

BECAUSE MOST OF THE SITE IS EITHER AN EXISTING POND OR AN EXISTING STREAM CHANNEL, BYPASSING CLEAN WATER IS THE MOST EFFECTIVE

REMOVED, A TEMPORARY VERTICAL DRAW-DOWN DEVICE WILL BE ATTACHED TO THE POND DRAIN PIPE TO FILTER SEDIMENT LADEN WATER FROM THE POND CONSTRUCTION AREA UNTIL PERMANENT STABILIZATION IS COMPLETE. SILT AND SUPER SILT FENCE IS PROPOSED TO FILTER SMALL

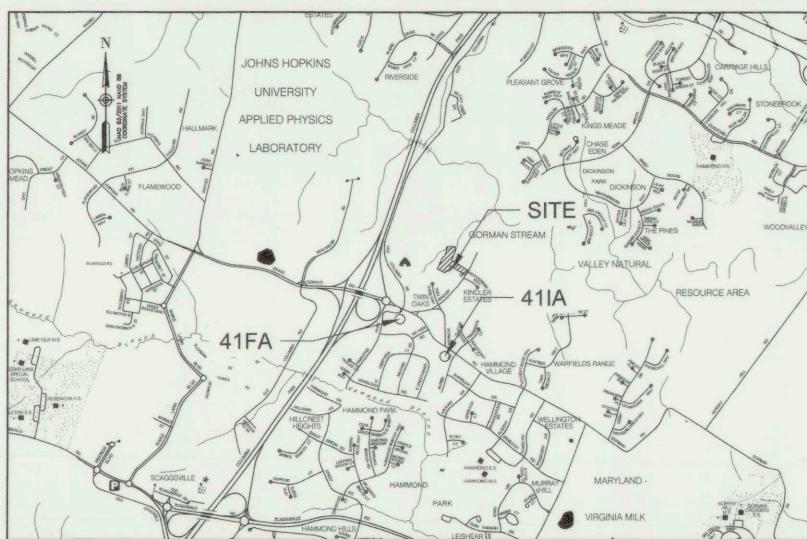
ACCESS ROAD AND STAGING AREA. THE STREAM WORK AREA DOWNSTREAM OF THE DAM ALSO UTILIZE A CLEANWATER BYPASS PIPE WHICH WILL

CONNECT FIRST TO THE BYPASS PIPE THROUGH THE POND AND LATER TO THE PRINCIPAL SPILLWAY PIPE. THERE MAY BE SHORT DURATIONS OF

TWIN OAKS POND #1 SWM BMP & STREAM CHANNEL

REHABILITATION RIMMED. OVERALL, THE LEVEL OF IMPACTS IS EXPECTED TO BE MINIMAL AND NOT REQUIRE MITIGATION. WETLANDS WERE LOCATED WITHIN THE Howard County Department of Public Works, Bureau of Environmental Services

> Stormwater Management Division, Capital Project No. D-1159 6TH ELECTION DISTRICT HOWARD COUNTY, MARYLAND



VICINITY MAP SCALE: 1"=2000" HOWARD COUNTY, MD

ADC MAP 5640 GRID J-5

SITE ANALYSIS DATA SHEET (LOD) APPROVALS / PERMITS 1.04 ACRES AGENCY # DATE APPLIED DATE APPROVED MDE WETLANDS 0.00 ACRES WATERWAY 17-NT-3051 02.16.17 04.06.17 0.00 ACRES AUTHORIZATION 0.00 ACRES MDE DAM SAFETY 17-XP-0067 02.16.17 03.20.17 0.00 ACRES 30% - 10.27.16 30% - 11.29.16 HOWARD SOIL 65% - 02.06.17 65% - 02.28.17 0.24 ACRES EP-17-15 CONSERVATION 90% - 04.21.17 | 90% - 05.24.17 DISTRICT 0.49 ACRES HOWARD COUNTY DPZ GmC ALTERNATIVE WP-17-097 03.21.17 05.05.17 0.54 ACRES COMPLIANCE 1.04 ACRES

0.00 ACRES AS-BUILT CERTIFICATION 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.

WETLAND

DISTURBANCE

(SF)

STREAM

(LF)

525

REMOVAL DISTURBANCE

SIGNATURE P.E. NUMBER DATE PERMIT INFORMATION CHART SUBDIVISION NAME SECTION AREA LOT/PARCEL 34, 20, 10, PARCEL II TWIN OAKS NA TAX ELECTION CENSUS PLAT # OF L/F NO. ZONING MAP NO. DIST. TRACT 23146, 20099, 6460 24 R-20 6068.06 WATER CODE SEWER CODE

THE PROPOSED PERMANENT POND SHOULD BE DESIGNED TO MEET ALL SOIL CONSERVATION DISTRICT, HOWARD COUNTY AND MARYLAND DEPARTMENT OF ENVIRONMENT (MDE) REQUIREMENTS FOR STORAGE, TREATMENT AND DAM SAFETY. 2. ALL WORK SHALL OCCUR ON PUBLICLY OWNED LAND (OR LAND WITHIN A PUBLIC EASEMENT) AND THE PROPOSED SWM POND SHALL BE PUBLICLY OWNED AND MAINTAINED NO DISTURBANCE IS PERMITTED BEYOND THE LIMIT OF DISTURBANCE SHOWN ON THE PER HOWARD COUNTY RECREATION AND PARKS STANDARDS. ALL DISTURBED AREAS MUST BE STABILIZED AND REPLANTED AS APPROPRIATE. PRIOR TO THE COMMENCEMENT OF CAPITAL PROJECT D-1159, THE DEPARTMENT OF PUBLIC WORKS SHALL PAY A FEE-IN-LIEU IN THE AMOUNT OF \$6,207.00 FOR THE REFORESTATION OF 0.19 ACRES. THE PAYMENT SHALL BE MADE THROUGH THE TRANSFER OF

PR-02 STREAM PROFILE CS-01 STREAM CROSS SECTIONS 8 DE-01 9 POND DETAILS 10 DE-02 RISER DESIGN PLAN 11 DE-03 RISER DETAILS 12 DE-04 FILTER DIAPHRAGM DETAILS 13 DE-05 MD-378 CONSTRUCTION SPECIFICATIONS 14 DE-06 STREAM DETAILS 15 SC-01 **EROSION AND SEDIMENT CONTROL OVERALL** 16 SC-02 EROSION AND SEDIMENT CONTROL PLAN - POND SC-03 EROSION AND SEDIMENT CONTROL PLAN - STREAM ROSION AND SEDIMENT CONTROL PLAN - OFF-SITE SC-04 STAGING AREA SC-05 EROSION AND SEDIMENT CONTROL DETAILS (1) SC-06 **EROSION AND SEDIMENT CONTROL DETAILS (2)** SC-07 **EROSION AND SEDIMENT CONTROL NOTES** 21 22 LS-01 LANDSCAPE PLAN 23 LS-02 LANDSCAPE NOTES AND DETAILS

SHEET INDEX

DESCRIPTION

TITLE SHEET

DRAINAGE AREA MAP

EXISTING CONDITIONS

GRADING PLAN - POND

GRADING PLAN - STREAM

POND PROFILES

CALL "MISS UTILITY" AT 1.800.257.7777, 48 HOURS PRIOR TO THE START OF WORK, THE EXCAVATOR MUST NOTIFY ALL PUBLIC UTILITY COMPANIES WITH UNDERGROUND FACILITIES IN THE AREA OF THE PROPOSED EXCAVATION AND HAVE THOSE FACILITIES LOCATED BY THE UTILITY COMPANIES PRIOR TO

1. THE CONTRACTOR SHALL NOTIFY THE HOWARD COUNTY DEPARTMENT OF PUBLIC WORKS/BUREAU OF ENGINEERING CONSTRUCTION INSPECTION DIVISION AT 410.313.1880 AT LEAST FIVE (5) WORKING DAYS BEFORE STARTING WORK. THE CONTRACTOR SHALL NOTIFY MISS UTILITY AT 1.800.257.7777 AT LEAST TWO (2) WORKING DAYS BEFORE STARTING WORK.

THE HORIZONTAL AND VERTICAL CONTROL FOR THESE PLANS ARE BASED ON THE MARYLAND STATE SYSTEM OF PLANE COORDINATES AS ESTABLISHED FROM THE FOLLOWING HOWARD COUNTY CONTROL POINTS.

2.1. 41FA NORTHING 543109.832 EASTING 1344797.547 ELEVATION 407.533 2.2. 41IA NORTHING 558667.508 EASTING 1366857.542 ELEVATION 400.242

3. THE SYSTEM OF COORDINATES USED IS BASED ON THE FOLLOWING DATUMS:

3.1. HORIZONTAL: MARYLAND STATE PLANE NAD OF 1983/2011

3.2. VERTICAL: NORTH AMERICAN VERTICAL DATUM (NAVD) OF 1988 GEOID 12A 4. THE ORIGINAL DESIGN PLAN FOR THIS POND WAS APPROVED BY HOWARD SCD JULY 19, 1985 (F-85-139). THE AS-BUILT WAS APPROVED BY HOWARD SCD NOVEMBER 11

5. ALL CONSTRUCTION SHALL BE IN ACCORDANCE WITH THE LATEST STANDARDS AND SPECIFICATIONS OF HOWARD COUNTY.

TOPOGRAPHIC SURVEYS WERE PERFORMED BY CENTURY ENGINEERING IN MAY 201 7. PROPERTY LINES AND EASEMENTS SHOWN ON THIS PLAN ARE APPROXIMATE AND

8. SHOULD THE CONTRACTOR DISCOVER ANY DISCREPANCIES BETWEEN THE PLANS AND FIELD CONDITIONS. THE COUNTY IS TO BE NOTIFIED IMMEDIATELY TO RESOLVE THE SITUATION. SHOULD THE CONTRACTOR MAKE FIELD CORRECTIONS OR ADJUSTMENTS WITHOUT NOTIFYING THE COUNTY, THEN THE CONTRACTOR ASSUMES ALL RESPONSIBILITY FOR THOSE CHANGES.

THE CONTRACTOR IS SOLELY RESPONSIBLE FOR CONSTRUCTION MEANS, METHODS, TECHNIQUES, SEQUENCES, PROCEDURES, AND SAFETY PRECAUTIONS AND

10. UTILITY LOCATIONS SHOWN ON THE PLANS ARE APPROXIMATE AND TAKEN FROM AVAILABLE PLANS, RECORDS, AND/OR FIELD RECONNAISSANCE. THE CONTRACTOR SHALL TAKE ALL NECESSARY MEASURES TO LOCATE AND PROTECT THE EXISTING UTILITIES AND MAINTAIN UNINTERRUPTED SERVICE. ANY DAMAGE INCURRED DUE TO THE CONTRACTOR'S OPERATION SHALL BE REPAIRED IMMEDIATELY AT THE CONTRACTOR'S EXPENSE.

10.1. UTILITY CONTACTS: 10.1.1. BALTIMORE GAS AND ELECTRIC - ELECTRIC: 410.597.7920

BALTIMORE GAS AND ELECTRIC - GAS: 410.291.4844 10.1.3. VERIZON: 410.224.9285 301.630.7094

10.1.5. COLONIAL PIPELINE CORPORATION 443.821.1797 11. THE WETLAND DELINEATION FOR THIS SITE WAS PERFORMED BY CENTURY ENGINEERING IN MARCH 2016.

12. A WETLANDS PERMIT IS REQUIRED FOR THIS PROJECT. THE PERMIT NUMBER IS

13. THE HOWARD COUNTY DEPARTMENT OF PUBLIC WORKS HAS NO OBLIGATION OF REFORESTATION ON THIS PROJECT.

14. ALL SPECIFIED OR PROPRIETARY PRODUCTS SHOWN HEREON MAY BE SUBJECT TO SUBSTITUTION WITH OTHER PRODUCTS RECOMMENDED BY THE CONTRACTOR SUBJECT TO WRITTEN REVIEW AND APPROVAL BY THE COUNTY.

THIS WORK TAKES PLACE IN USE IV WATERS. IN-STREAM WORK IS PROHIBITED BETWEEN MARCH 1 AND MAY 31 OF ANY CALENDAR YEAR INCLUSIVE. 2. NO REGULATED FEMA FLOOD PLAINS ARE LOCATED IN THE AREA (FEMA FIRM

240270145D - EFFECTIVE NOVEMBER 2013) 3. NATURAL RESOURCES DELINEATED ON THIS PLAN WERE FIELD VERIFIED BY CENTURY

ENGINEERING UNDER THE DIRECTION OF DAN YEAGER. A MARYLAND DEPARTMENT OF NATURAL RESOURCES QUALIFIED PROFESSIONAL IN MARCH 2016. 4. THE SITE IS NOT LOCATED IN NOR DOES IT DISCHARGE TO A TIER II WATERBODY.

5. THE SITE IS LOCATED IN THE MIDDLE PATUXENT RIVER WATERSHED. THIS PORTION OF THE WATERSHED IS NOTED AS NOT IMPAIRED BY THE MARYLAND DEPARTMENT OF THE ENVIRONMENT

6. THE CONTRACTOR SHALL CONTINUALLY MONITOR WEATHER FORECASTS DURING WORK ACTIVITIES AND SCHEDULE WORK DURING FAVORABLE CONDITIONS.

THE CONTRACTOR SHALL EXERCISE CARE IN ACTIVITIES THAT INVOLVE CUTTING, FILLING, OR GRADING IN THE VICINITY OF TREES THAT ARE TO REMAIN. THESE ACTIVITIES SHALL BE PERFORMED IN A MANNER THAT DOES NOT DISTURB THE CRITICAL ROOT ZONE WITHIN THE DRIP LINE OF THE TREE. PROTECTIVE ORANGE FENCING SHALL BE INSTALLED AROUND THE PERIMETER OF THE CRITICAL ROOT ZONE PRIOR TO CONSTRUCTION.

THE CONTRACTOR SHALL NOT STORE EQUIPMENT, MATERIALS, AND/OR SUPPLIES

BEYOND THE ORANGE FENCING SHOWN ON THE PLANS. 9. UPON COMPLETION OF THE WORK, BUT PRIOR TO DE-MOBILIZATION, THE CONTRACTOR SHALL REMOVE ALL REMNANTS OF CONSTRUCTION MATERIALS FROM THE SITE. THE CONTRACTOR SHALL RESTORE ALL DISTURBED AREAS TO A CONDITION EQUAL TO OR BETTER THAN THE PRE-CONSTRUCTION CONDITIONS.

PRIOR TO BEGINNING ANY CONSTRUCTION ACTIVITIES, PHOTOGRAPHS OF THE PROPOSED WORK AREA AND ACCESS SHALL BE TAKEN BY THE CONTRACTOR. TREES WITHIN THE "NO WOODY VEGETATION ZONE" SHOWN ON THE PLANS SHALL BE REMOVED ACCORDING TO TECHNICAL NOTE 705, "OPERATIONS AND MAINTENANCE ALTERNATIVES FOR REMOVING TREES ON DAMS". ALL OTHER TREES TO BE REMOVED

MAY BE LEFT IN PLACE, UNLESS OTHERWISE DIRECTED ON THE PLANS. 12. ALL MATERIAL SHALL BE REMOVED AND DISPOSED OF OFFSITE. REMOVED TREES AND BRUSH MAY BE REDISTRIBUTED ON SITE AT THE DISCRETION OF THE COUNTY.

SHALL BE CUT AT THE BASED WITH A SAW AND NOT PUSHED OVER. TREE STUMPS

13. THE CONTRACTOR SHALL USE EXTREME CAUTION WHEN EXITING THE PROJECT SITE AND PAY CLOSE ATTENTION TO PEDESTRIANS WALKING NEAR THE PROJECT SITE.

 WORKING HOURS ARE 7AM TO 7PM MONDAY THROUGH FRIDAY THE CONTRACTOR SHALL AVOID TRACKING HEAVY EQUIPMENT OVER THE CRITICAL ROOT ZONE OF SPECIMEN TREES. IF UNAVOIDABLE, SPECIAL PRECAUTIONS SHOULD BE USED WHEN TRACKING OVER THE CRITICAL ROOT ZONES.

16. FOR STREAM CHANNEL WORK, THE CONTRACTOR SHALL ONLY DISTURB THE LENGTH OF CHANNEL THAT CAN AND SHALL BE STABILIZED AT THE END OF EACH WORK DAY. 17. THIS DAM IS A CLASS 'A' (LOW) HAZARD DAM BASED ON DOWNSTREAM DANGER REACH LENGTH ANALYSES COMPLETED BY CENTURY ENGINEERING, OCTOBER 2015.

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, SCS "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 AN UNUSUAL OBSERVATIONS THAT MAY BE INDICATIONS OF DISTRESS SUCH AS EXCESSIVE SEEPAGE, TURBID SEEPAGE, SLIDING OR SLUMPING.

CLIENT/LAND OWNER: HOWARD COUNTY DEPARTMENT OF PUBLIC WORKS BUREAU OF ENVIRONMENTAL SERVICES STORMWATER MANAGEMENT DIVISION 6751 COLUMBIA GATEWAY DRIVE, SUITE 514 COLUMBIA, MARYLAND 21046-3143 PHONE: 410.313.0844

REVISIONS

AS-BUILT CERTIFICATION CERTIFY THAT THE FACILITY SHOWN ON THIS PLAN WAS INSTRUCTED AS SHOWN ON THE "AS-BUILT" PLANS AND MEET



SITE INFORMATION

STREET ADDRESS: ADJACENT TO 7640 KINDLER ROAD LAUREL, MARYLAND 20723

LOTS 34, 20, 10, PARCEL II PARCELS: 16, 395, 386, 363 TAX MAP: 41

ZONING: R-20 PLAT NO.: 23146, 20099, 6460

CONSULTING ENGINEERS - PLANNERS 10710 GILROY ROAD HUNT VALLEY, MARYLAND 21031 PHONE: (443) 589-2400 FAX: (443) 589-2401

TWIN OAKS POND #1 SWM BMP AND STREAM CHANNEL REHABILITATION

TITLE SHEET

PROJECT NO.: 121104.33	1"=2000'	6/23/20
SEAL	DESIGN: JB/AB	CHECK: CL
THE OF MACH	TS-01	OF TS-0
5007	SHEET NO:	of 23

DEVELOPMENT WILL BE DONE PURSUANT TO THIS APPROVED EROSION AND SEDIMENT CONTROL PLAN, INCLUDING INSPECTING AND MAINTAINING CONTROLS, (EA) AND THAT THE REPSONSIBLE PERSONNEL INVOLVED IN THE CONSTRUCTION PROJECT WILL HAVE A CERTIFICATE OF TRAINING AT A MARYLAND DEPARTMENT OF THE ENVIRONMENT (MDE) APPROVED TRAINING PROGRAM FOR THE CONTROL OF EROSION AND SEDIMENT PRIOR TO BEGINNING THE PROJECT. I SHALL ENGAGE A MARYLAND REGISTERED PROFESSIONAL ENGINEER TO SUPERVISE POND CONSTRUCTION, AND PROVIDE THE HOWARD SOIL CONSERVATION DISTRICT WITH AN "AS-BUILT" PLAN OF THE THE POND WITHIN 30 DAYS OF COMPLETION. I CERTIFY RIGHT-OF-ENTRY FOR PERIODIC ON-SITE EVALUATION BY HOWARD COUNTY, THE HOWARD SOIL CONSERVATION DISTRICT AND/OR MDE. | WETLAND AREA IM IRVIN, DIRECTOR, DEPARTMENT OF PUBLIC WORKS PRINTED NAME & TITLE THIS PLAN IS APPROVED FOR SMALL POND CONSTRUCTION AND SOIL EROSION AND SEDIMENT CONTROL BY THE HOWARD SOIL CONSERVATION DISTRICT. HOWARD SOIL CONSERVATION DISTRICT DEPARTMENT OF RECREATION AND PARKS, HOWARD COUNTY, MD 7/12/17 DIRECTOR OF RECREATION AND PARKS

DEPARTMENT OF PUBLIC WORKS, HOWARD COUNTY, MD

CHIEF, BUREAU OF ENVIRONMENTAL SERVICES

CHIEF, STORMWATER MANAGEMENT DIVISION

DIRECTOR OF PUBLIC WORKS

MAINTENANCE OF NATURAL FLOW PATTERNS

THIS PROJECT DOES NOT ALTER THE EXISTING CONDITION FLOW PATTERNS OF THE SITE.

AND NO INCREASE IN AREA IS PROPOSED. THE REMAINDER OF THE SITE IS PERVIOUS COVER.

REDUCTION OF IMPERVIOUS AREAS THROUGH BETTER SITE DESIGN

INTEGRATION OF EROSION AND SEDIMENT CONTROLS INTO SWM STRATEGY

PROPOSED FOR ALL SLOPED SEEDED AREAS TO PROVIDE RAPID STABILIZATION.

HEREBY CERTIFY THAT THIS PLAN HAS BEEN DESIGN IN ACCORDANCE WITH

CURRENT MARYLAND EROSION AND SEDIMENT CONTROL LAWS, REGULATIONS

BASED ON MY PERSONAL KNOWLEDGE OF THE SITE, AND THAT IT WAS PREPAREI

CONSERVATION DISTRICT. I HAVE NOTIFIED THE DEVELOPER THAT HE/SHE MUST

CONSTRUCTION AND PROVIDE THE HOWARD SOIL CONSERVATION DISTRICT WITH

AND STANDARDS, THAT IT REPRESENTS A PRACTICAL AND WORKABLE PLAN

ENGAGE A REGISTERED PROFESSIONAL ENGINEER TO SUPERVISE POND

I/WE HEREBY CERTIFY THAT ANY CLEARING, GRADING, CONSTRUCTION OR

IN ACCORDANCE WITH THE REQUIREMENTS OF THE HOWARD SOIL

AN "AS-BUILT" PLAN OF THE POND WITHIN 30 DAYS OF COMPLETION.

OWNER/DEVELOPER'S CERTIFICATION

IMPLEMENTATION OF ESD PLANNING TECHNIQUES AND PRACTICES

TECHNIQUES AND PRACTICES ARE NOT RELEVANT TO THIS PROJECT.

SITE AREA WETLAND BUFFER AREA FLOODPLAIN AREA FLOODPLAIN BUFFER AREA FOREST STAND AREA STEEP SLOPES (>=15%) **ERODIBLE SOILS ERODIBLE SOILS AREA** DISTURBED AREA MDE GENERAL MDRCNO35X 05.30.17 DISCHARGE PERMIT PROPOSED SITE USE SWM DNR ROADSIDE TREE SF 2017-0367 03.20.17 04.06.17 PERMIT PROPOSED IMPERVIOUS AREA DPZ ALTERNATIVE COMPLIANCE APPROVAL (WP-17-097) CONDITIONS

LIMIT OF

DISTURBANCE DISTURBANCE CUT FILL

(AC)

1.04

SUMMARY OF ENVIRONMENTAL IMPACTS

LIMIT OF

(SF)

45,461

(APPROVED 05.05.2017

NET

(CY)

140

(FILL)

(CY) (CY)

1,110 1,250

. ALL MDE AND ARMY CORPS OF ENGINEERS PERMITS AND APPROVALS MUST BE OBTAINED. ALTERNATIVE COMPLIANCE PLAN EXHIBIT. THE PROPOSED LOD AREA SHALL BE REPLANTED

FUNDS TO SAP ACCOUNT 2060000000-3000-30000000000-PWPZ00000000000-432521. A COPY OF THE TRANSFER RECEIPT SHALL BE SUBMITTED TO DPZ (DIVISION OF LAND DEVELOPMENT) FOR FILE RETENTION RECORDS.

COMMENCING EXCAVATION.

SHEET DRAWING

NAME

TS-01

DA-01

EC-01

GP-01

GP-02

PR-01

NO.

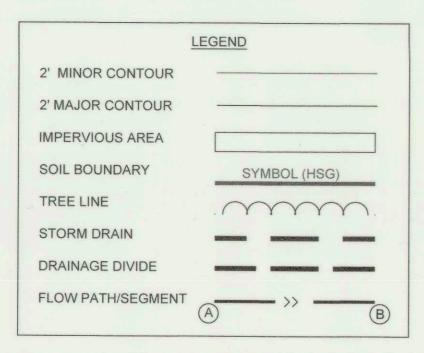
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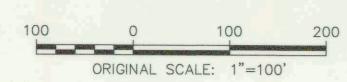
L	AND USE DETAI	ILS	
DI	RAINAGE AREA	#1	
LAND USE	HSG	AREA (AC)	RCN
RESIDENTIAL DISTRICTS (1/3 AC)	В	9.931	72
TOTAL		9.931	72
DF	RAINAGE AREA	#2	
LAND USE	HSG	AREA (AC)	RCN
RESIDENTIAL DISTRICTS (¹ / ₃ AC)	В	2.732	72
TOTAL		2.732	72
DF	RAINAGE AREA	#3	
LAND USE	HSG	AREA (AC)	RCN
RESIDENTIAL DISTRICTS (¹ / ₃ AC)	В	1.45	72
RESIDENTIAL DISTRICTS (1/3 AC)	С	0.109	81
TOTAL		1.559	72

*RCN COMPUTED BASED ON LAND USE (ZONING)

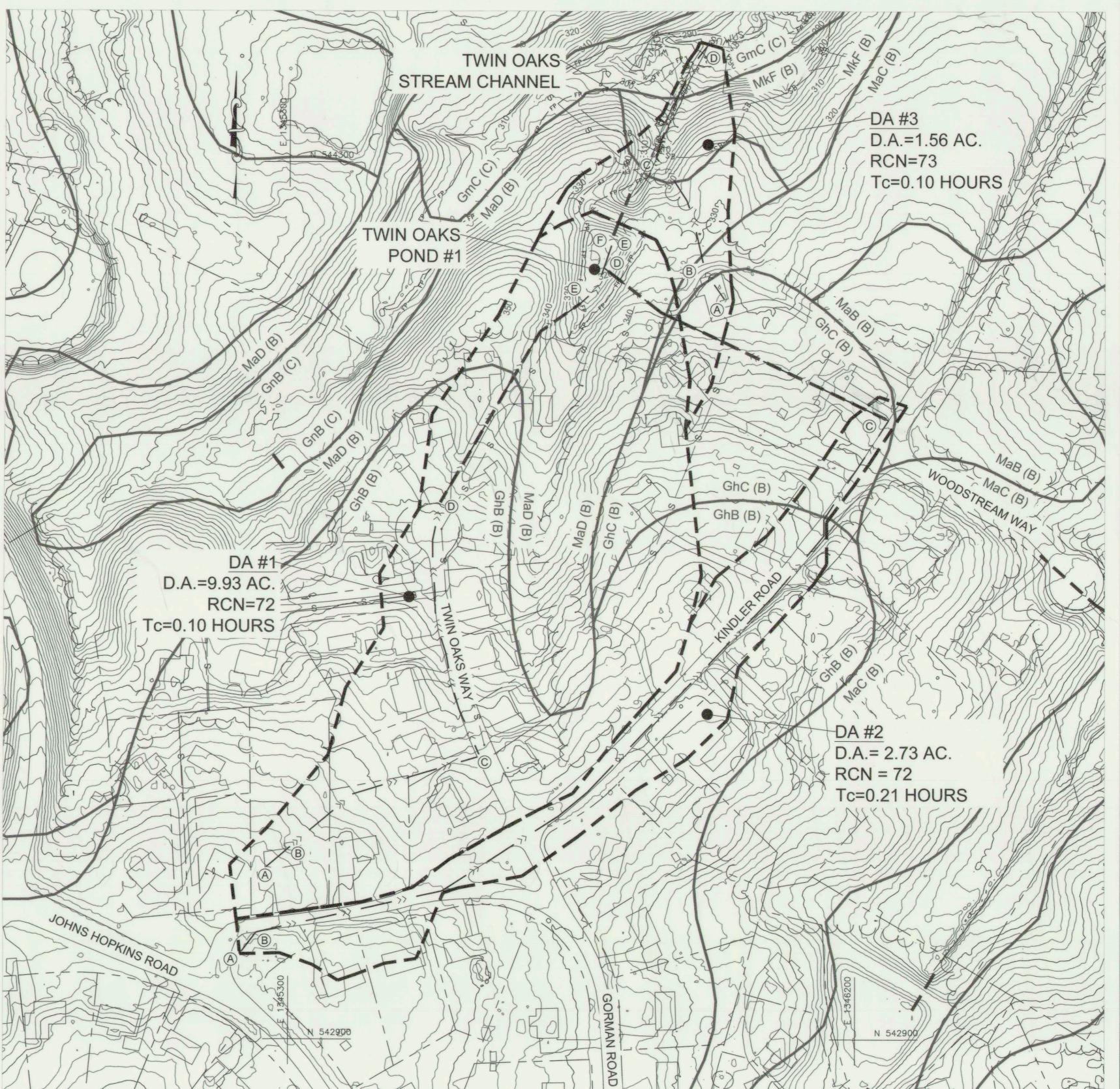
SEGMENT	FLOW TYPE	LENGTH (LF)	SLOPE (FT/FT)	MANNING'S N	END AREA (SQ FT)	WETTED PERIMETER (FT)	VELOCITY (FPS)	TIME (HRS)
A-B	SHEET	50	0.140	0.011		-	-	0.005
B-C	SHALLOW CONC.	341	0.044	0.050	· -	-	-	0.028
C-D	SHALLOW CONC.	419	0.064	0.025	-		-	0.023
D-E	CHANNEL	394	-	-	-	1 7 -	7.000	0.016
E-F	CHANNEL	108	0.074	0.040	1.20	8.90	2.727	0.011

			DRAINAGE A	REA #2: TIME OF C	ONCENTRATION			
SEGMENT	FLOW TYPE	LENGTH (LF)	SLOPE (FT/FT)	MANNING'S N	END AREA (SQ FT)	WETTED PERIMETER (FT)	VELOCITY (FPS)	TIME (HRS)
A-B	SHEET	39	0.053	0.150		-	-	0.053
B-C	SHALLOW CONC.	1353	0.019	0.025	-	-	-	0.133
C-D	CHANNEL	517			-	-	7.000	0.021
E-F	CHANNEL	38	0.054	0.040	1.20	8.90	2.727	0.005
						Time of Concentration		0.212

			DRAINAGE ARI	EA #3: TIME OF	CONCENTRATION			
SEGMENT	FLOW TYPE	LENGTH (LF)	SLOPE (FT/FT)	MANNING'S N	END AREA (SQ FT)	WETTED PERIMETER (FT)	VELOCITY (FPS)	TIME (HRS)
A-B	SHEET	50	0.100	0.011	**= *	-		0.006
B-C	SHALLOW CONC.	207	0.135	0.050	-	-		0.010
C-D	CHANNEL	201	0.095	0.040	1.20	8.90	3.102	0.018
						Time of Concentration		0.100



Male Language 1/1/17
CHIEF, BUREAU OF ENVIRONMENTAL SERVICES DATE



CLIENT/LAND OWNER:
HOWARD COUNTY
DEPARTMENT OF PUBLIC WORKS
BUREAU OF ENVIRONMENTAL SERVICES
STORMWATER MANAGEMENT DIVISION
6751 COLUMBIA GATEWAY DRIVE, SUITE 514
COLUMBIA, MARYLAND 21046-3143
PHONE: 410.313.0844

		REVISIONS
NO.	DATE	DESCRIPTION

SITE INFORMATION

STREET ADDRESS: ADJACENT TO 7640 KINDLER ROAD LAUREL, MARYLAND 20723

TWIN OAKS
LOTS 34, 20, 10, PARCEL II
PARCELS: 16, 395, 386, 363 TAX MAP: 41
ELECTION DISTRICT: 6
ZONING: R-20
PLAT NO.: 23146, 20099, 6460

CENTURY

ENGINEERING

CONSULTING ENGINEERS - PLANNERS

10710 GILROY ROAD

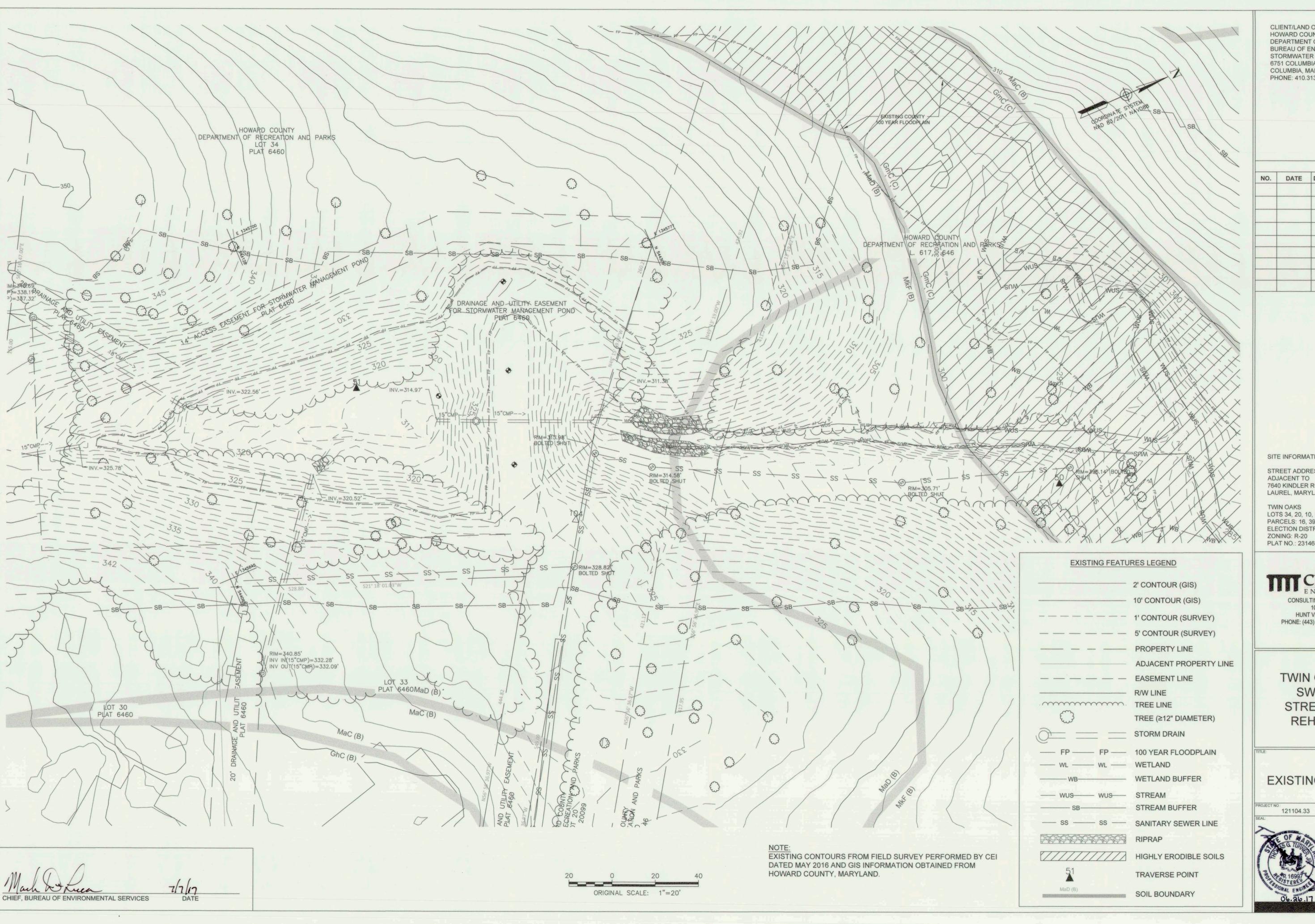
HUNT VALLEY, MARYLAND 21031

PHONE: (443) 589-2400 FAX: (443) 589-2401

TWIN OAKS POND #1
SWM BMP AND
STREAM CHANNEL
REHABILITATION

DRAINAGE AREA MAP

PROJECT NO.: 121104.33	SCALE: 1"=100'	DATE: 9/15/16
SEAL:	DESIGN:	CHECK:
The state of the s	JB DWG NO:	RG
SG TUNE		OF DA-01
78 20, 16997	SHEET NO:	OF 23
SONAL ENGINE	PREPARED OR APPROV	T THESE DOCUMENTS WER /ED BY ME, AND THAT I AM A ESSIONAL ENGINEER UNDER TE OF MARYLAND.
06.26.17	LICENSE #: 16997	EXPIRES: 07.19.2018



CLIENT/LAND OWNER: HOWARD COUNTY DEPARTMENT OF PUBLIC WORKS BUREAU OF ENVIRONMENTAL SERVICES STORMWATER MANAGEMENT DIVISION 6751 COLUMBIA GATEWAY DRIVE, SUITE 514 COLUMBIA, MARYLAND 21046-3143 PHONE: 410.313.0844

		REVISIONS	Contract of the Contract of th
NO.	DATE	DESCRIPTION	
- *			

SITE INFORMATION

STREET ADDRESS: ADJACENT TO 7640 KINDLER ROAD LAUREL, MARYLAND 20723

TWIN OAKS LOTS 34, 20, 10, PARCEL II PARCELS: 16, 395, 386, 363 TAX MAP: 41 **ELECTION DISTRICT: 6** ZONING: R-20 PLAT NO.: 23146, 20099, 6460

CENTURY ENGINEERING CONSULTING ENGINEERS - PLANNERS 10710 GILROY ROAD HUNT VALLEY, MARYLAND 21031 PHONE: (443) 589-2400 FAX: (443) 589-2401

TWIN OAKS POND #1 SWM BMP AND STREAM CHANNEL REHABILITATION

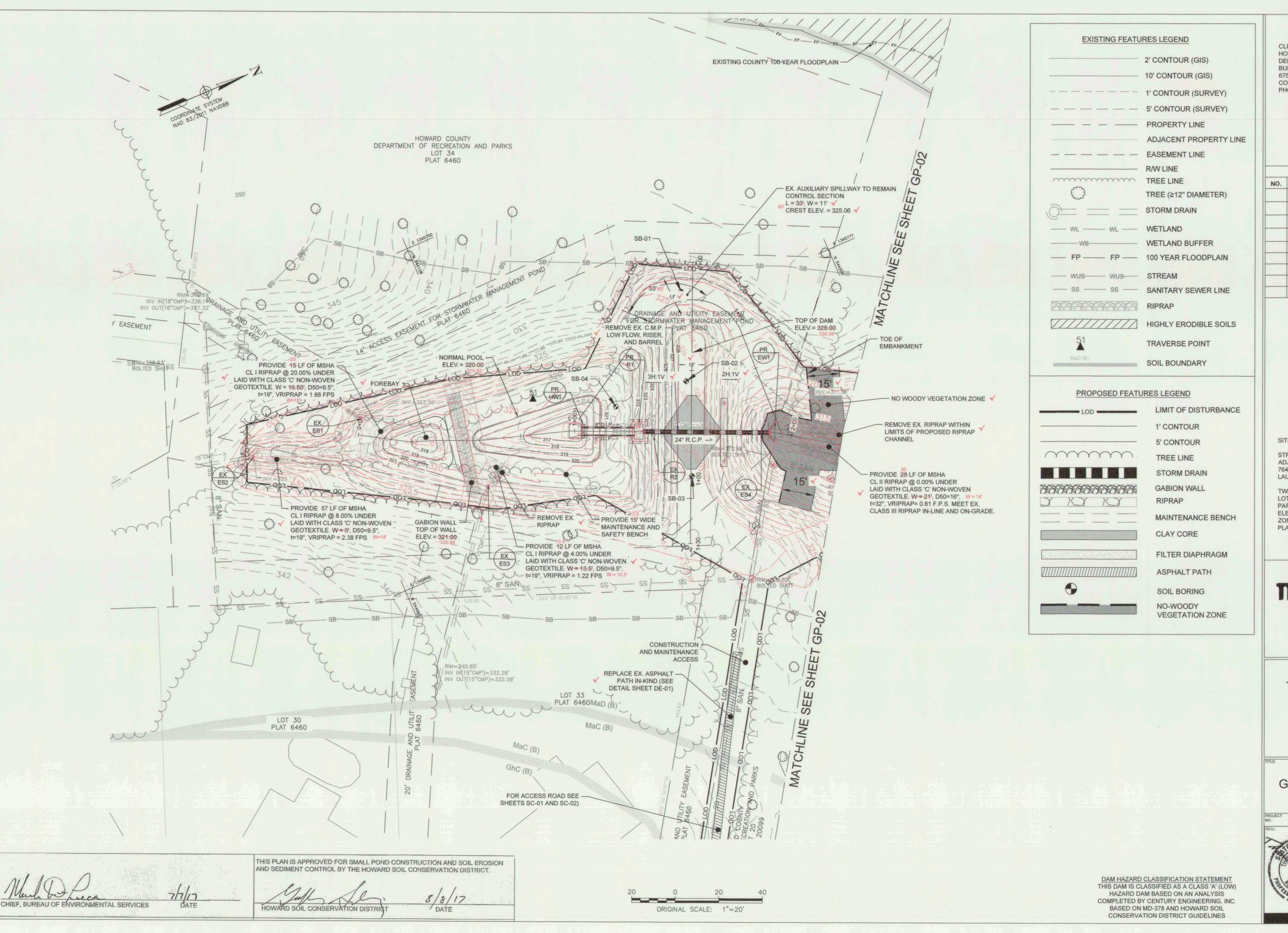
EXISTING CONDITIONS

SEAL:
> manual
SG TURN P
19/2
20 16997 SIONAL ENGINEE
ONAL ENGINE
06.26.17

1"=20' 6/23/2017 CHECK: JB/AB

EC-01 of EC-01 3 of 23

ICENSE #: 16997 EXPIRES: 07.19.2018



CLIENT/LAND OWNER:
HOWARD COUNTY
DEPARTMENT OF PUBLIC WORKS
BUREAU OF ENVIRONMENTAL SERVICES
6751 COLUMBIA GATEWAY DRIVE, SUITE 514
COLUMBIA, MARYLAND 21046-3143
PHONE: 410.313.0844

REVISIONS

NO. DATE DESCRIPTION

SITE INFORMATION

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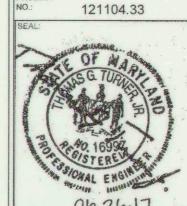
TWIN OAKS
LOTS 34, 20, 10, PARCEL II
PARCEL: 16, 395, 386, 363 TAX MAP: 41
ELECTION DISTRICT: 6
ZONING: R-20
PLAT NO.: 23146, 20099, 6460

CENTURY ENGINEERING

CONSULTING ENGINEERS - PLANNERS 10710 GILROY ROAD HUNT VALLEY, MARYLAND 21031 PHONE: (443) 589-2400 FAX: (443) 589-2401

TWIN OAKS POND #1
SWM BMP AND
STREAM CHANNEL
REHABILITATION

GRADING PLAN - POND



SCALE: 1"=20"	DATE: 6/15/2018	
DESIGN: JB/AB	CL	
DWG NO:	GP-01	OF GP-02
SHEET NO:	DATE: 6/15/2018	
CHECK: CL		
CHEC		

4 OF 23

EREBY CERTIFY THAT THESE DOCUMENTS
RE PREPARED OR APPROVED BY ME, AND
ATI AM A DULY LICENSED PROFESSIONAL
BINEER UNDER THE LAWS OF THE STATE OF
RYLAND.

LICENSE #. 16997 EXPIRES: 07.19.2018



EXISTING FEATURES LEGEND 2' CONTOUR (GIS) 10' CONTOUR (GIS) 1' CONTOUR (SURVEY) — — 5' CONTOUR (SURVEY) - - PROPERTY LINE ADJACENT PROPERTY LINE — — — EASEMENT LINE R/W LINE TREE LINE TREE (≥12" DIAMETER) ____ STORM DRAIN --- FP --- 100 YEAR FLOODPLAIN --- WL --- WETLAND --- WUS--- WUS-- STREAM --- SS --- SS --- SANITARY SEWER LINE RIPRAP HIGHLY ERODIBLE SOILS TRAVERSE POINT SOIL BOUNDARY PROPOSED FEATURES LEGEND

LIMIT OF DISTURBANCE

1' CONTOUR

5' CONTOUR

ROCK CASCADE

TREE LINE

		T			
R	C#	STA FROM	ELEV	STA TO	ELEV
DO #4	CHUTE	2+24.33 ✓	310.00 310.37	2+29.43 🗸	309.03 309.42
RC #1	RUN	2+29.43 🗸	309.03 309.42	2+36.43 🗸	309.06 309.42
DC #2	CHUTE	2+36.43 🗸	309.06 309.42	2+41.83 🗸	308.15 308.42
RC #2	RUN	2+41.83 🗸	308.15 308.42	2+48.83 🗸	308.04 308.42
BC #2	CHUTE	2+48.83 🗸	308.04 308.42	2+59.64 🗸	306.42 🗸
RC #3	RUN	2+59.64 🗸	306.42 ✓	2+66.64 🗸	306.00 306.42
DC #4	CHUTE	2+66.64 🗸	306.00 306.42	2+77.45 🗸	304.06 304.42
RC #4	RUN	2+77.45 🗸	304.06 304.42	2+84.45 🗸	304.08 304.42
DC #5	CHUTE	2+84.45 🗸	304.08 304.42	3+02.64 ✓	302.00 302.42
KC #5	RUN	3+02.64 🗸	302.00 302.42	3+12.64 🗸	302.02 302.42
PC #6	CHUTE	3+12.64 🗸	302.02 302.42	3+26.15 🗸	299.92 🗸
	RUN	3+26.15 ✓	299.92 🗸	3+33.15 ✓	299.45
PC #7	CHUTE	3+33.15 ✓	299.45 299.92	3+46.66 ✓	297.42 297.42
RC #6	RUN	3+46.66 🗸	297.19 297.42	3+53.66 🗸	297.50 297.42
PC #9	CHUTE	3+53.66 ✓	297.50 297.42	3+67.18 🗸	294.93 294.92
NC #0	RUN	3+67.18 ✓	294.93 294.92	3+74.18 🗸	294.44 294.92
PC #0	CHUTE	3+74.18 🗸	294.44 294.92	3+84.99 🗸	292.85 292.92
NO #5	RUN	3+84.99 🗸	292.85 292.92	3+91.99 🗸	292.61 292.92
RC #1 RC #1 RC #2 RC #3 RC #4 RC #4 RC #5 RC #6 RC #7 RC #8 RC #9 RC #10 RC #11 RC #11 RC #12 RC #13	CHUTE	3+91.99 🗸	292.61 292.92	4+14.72 🗸	290.19 290.42
KC#10	RUN	4+14.72 🗸	290.19 290.42	4+24.72 🗸	290.00 290.42
DC #11	CHUTE	4+24.72 🗸	290.00 290.42	4+35.53 🗸	288.00 288.42
KC #11	RUN	4+35.53 🗸	288.00	4+42.53 🗸	288.01 288.42
DC #12	CHUTE	4+42.53 🗸	288.01 288.42	4+50.63 🗸	287.00 286.92
10#12	RUN	4+50.63 🗸	287.00 286.92	4+57.63 🗸	287.00 286.92
RC #3 RC #4 RC #5 RC #6 RC #7 RC #8 RC #9 RC #10 RC #11 RC #12	CHUTE	4+57.63 ✓	287.00 286.92	4+62.13 🗸	287.00 286.43
	RUN	4+62.13 🗸	287.00 286.43	4+70.44 🗸	286.43

CLIENT/LAND OWNER: HOWARD COUNTY DEPARTMENT OF PUBLIC WORKS BUREAU OF ENVIRONMENTAL SERVICES 6751 COLUMBIA GATEWAY DRIVE, SUITE 514 COLUMBIA, MARYLAND 21046-3143 PHONE: 410.313.0844

		REVISIONS	
NO.	DATE	DESCRIPTION	
			_
			_

SITE INFORMATION

STREET ADDRESS: ADJACENT TO: 7640 KINDLER ROAD LAUREL, MARYLAND 20723

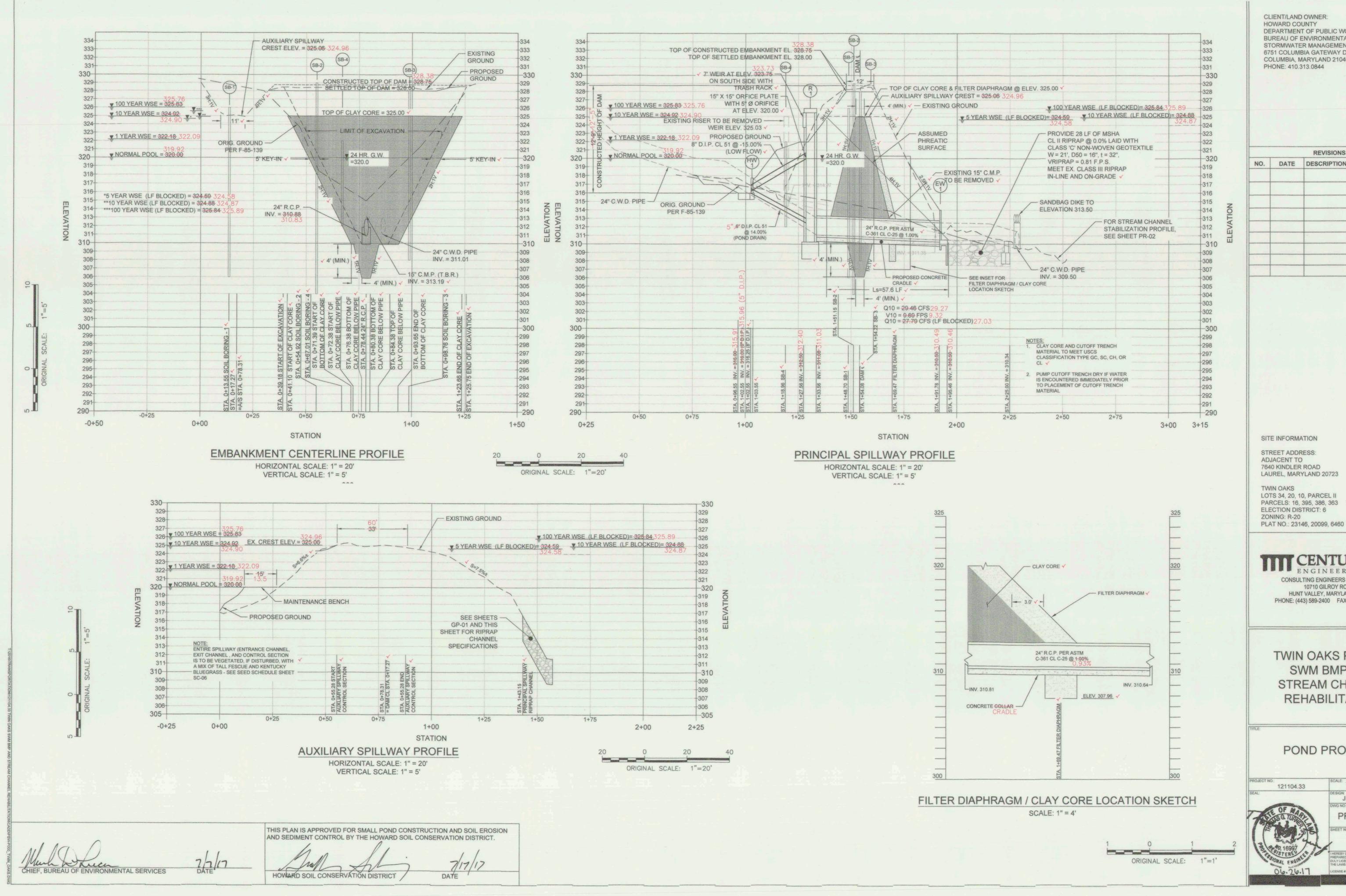
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CENTURY CONSULTING ENGINEERS - PLANNERS 10710 GILROY ROAD HUNT VALLEY, MARYLAND 21031 PHONE: (443) 589-2400 FAX: (443) 589-2401

TWIN OAKS POND #1 SWM BMP AND STREAM CHANNEL REHABILITATION

GRADING PLAN - STREAM





DEPARTMENT OF PUBLIC WORKS BUREAU OF ENVIRONMENTAL SERVICES STORMWATER MANAGEMENT DIVISION 6751 COLUMBIA GATEWAY DRIVE, SUITE 514 COLUMBIA, MARYLAND 21046-3143

		REVISIONS
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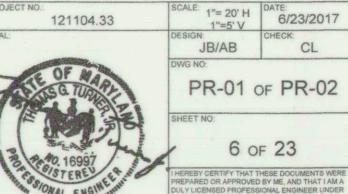
LOTS 34, 20, 10, PARCEL II PARCELS: 16, 395, 386, 363 TAX MAP: 41

CENTURY

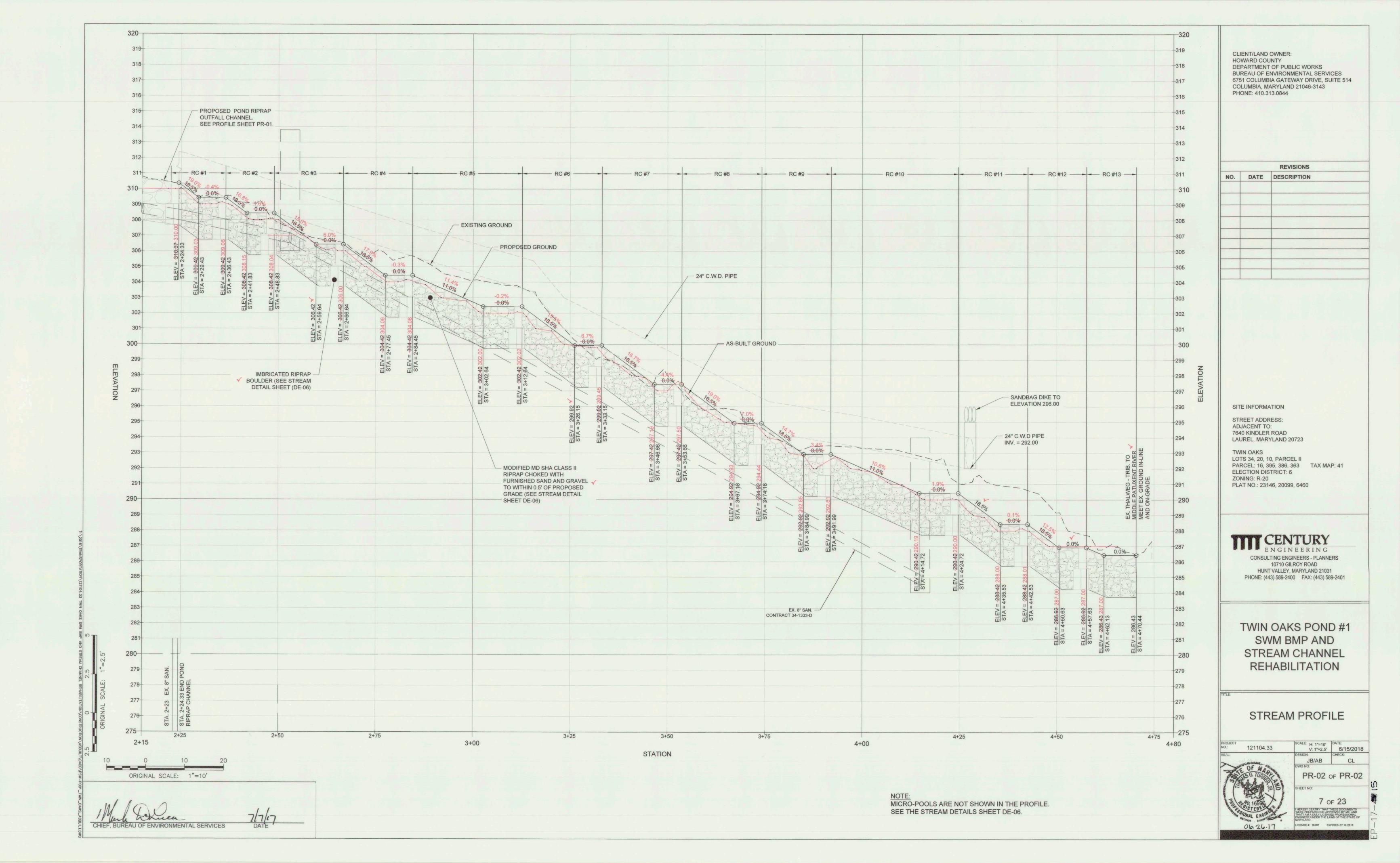
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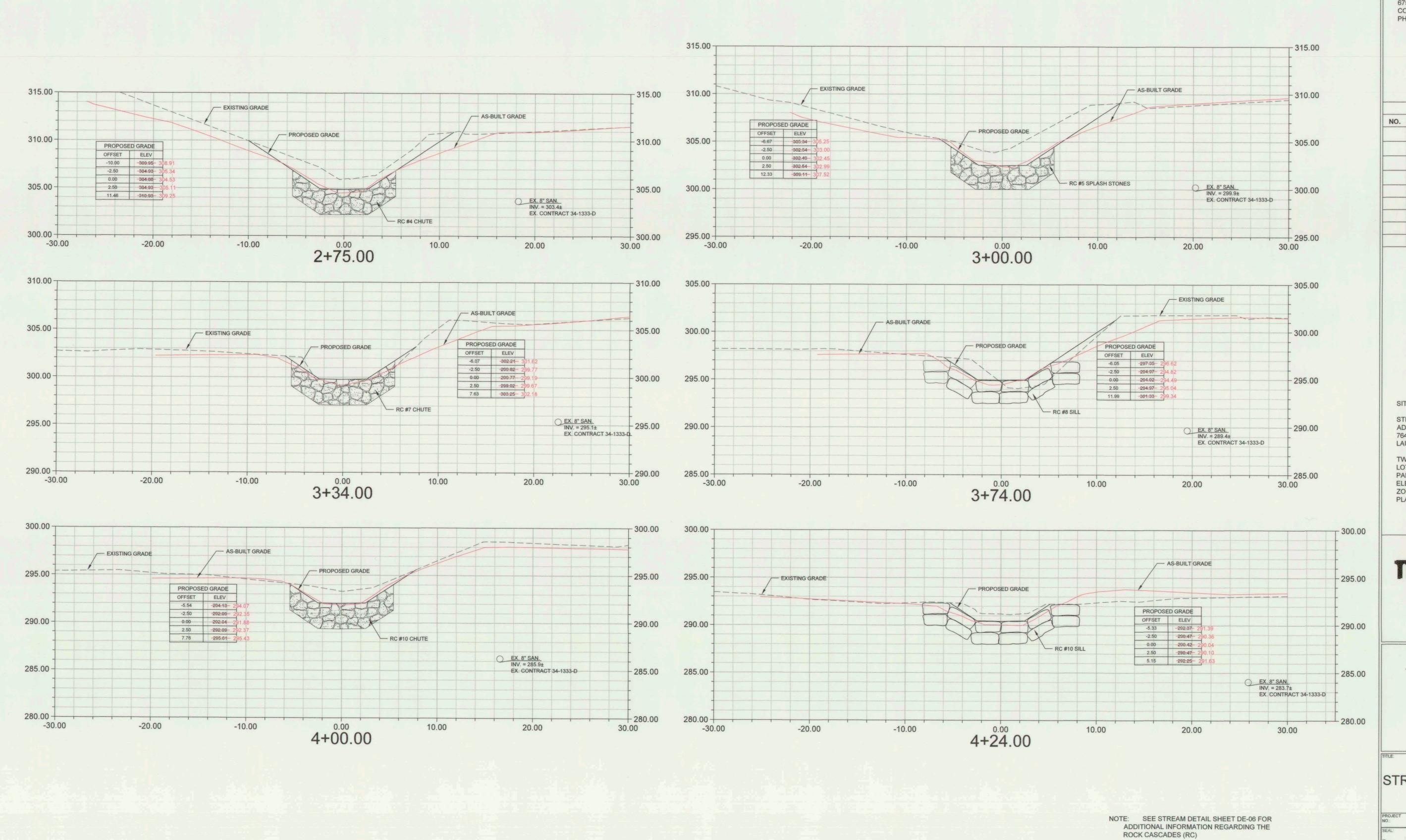
TWIN OAKS POND #1 SWM BMP AND STREAM CHANNEL REHABILITATION

POND PROFILES



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, BUREAU OF ENVIRONMENTAL SERVICES

CLIENT/LAND OWNER: HOWARD COUNTY DEPARTMENT OF PUBLIC WORKS BUREAU OF ENVIRONMENTAL SERVICES 6751 COLUMBIA GATEWAY DRIVE, SUITE 514 COLUMBIA, MARYLAND 21046-3143 PHONE: 410.313.0844

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TWIN OAKS POND #1 SWM BMP AND STREAM CHANNEL REHABILITATION

STREAM CROSS SECTIONS



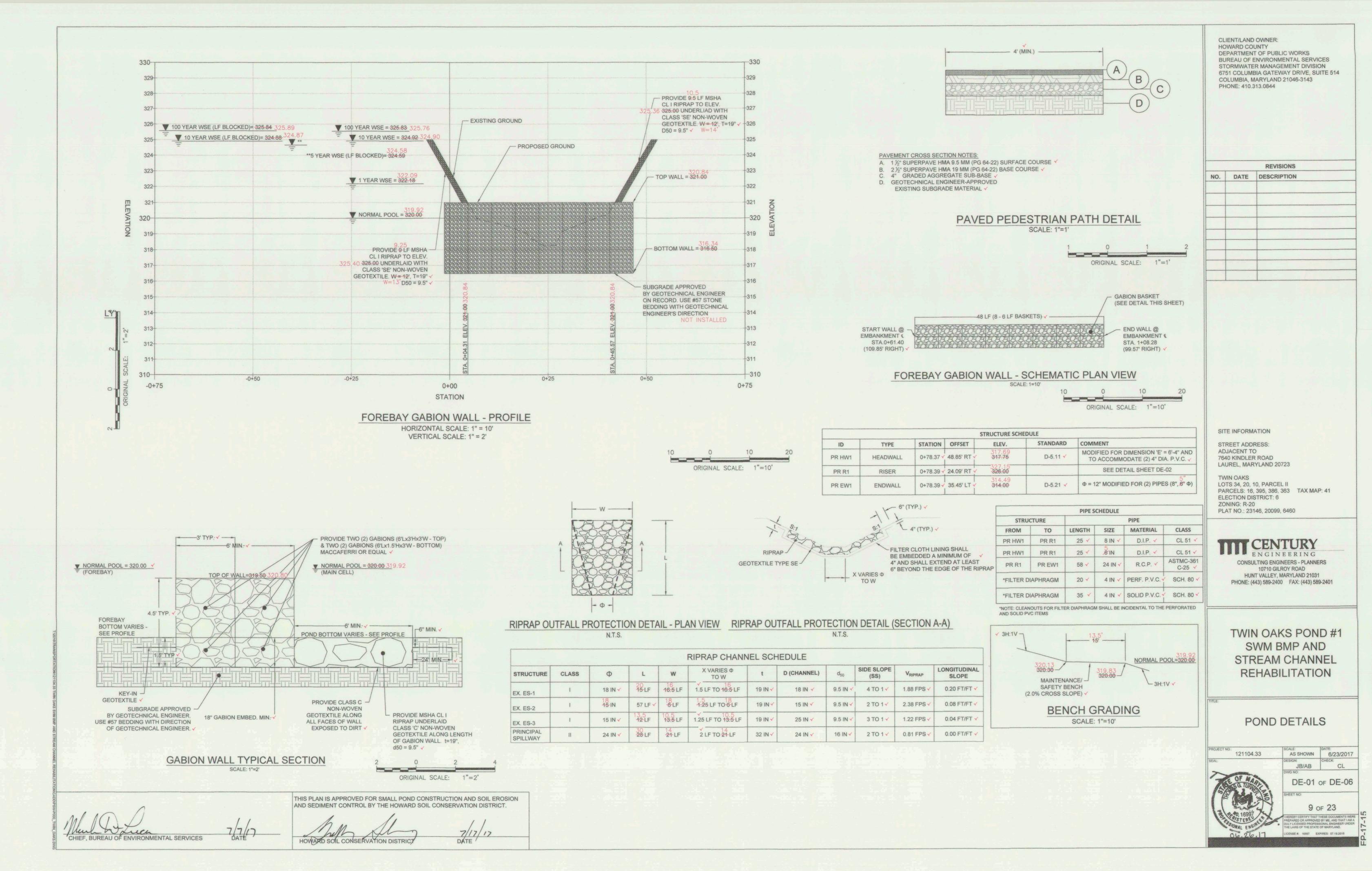
HORIZONTAL & VERTICAL SCALE: 1"=5"

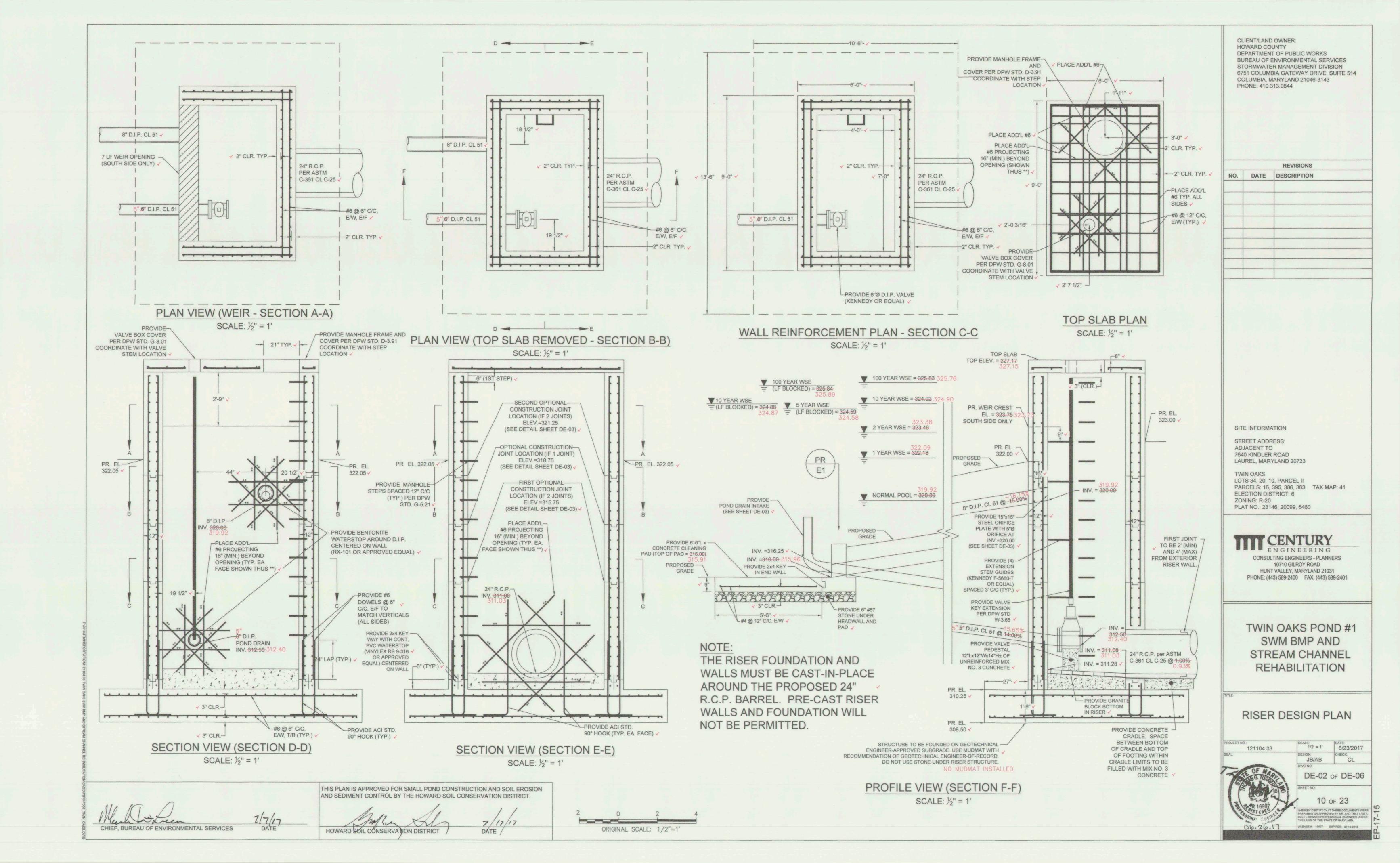
CS-01 of CS-01 8 of 23 LICENSE #: 16997 EXPIRES: 07.19.2018

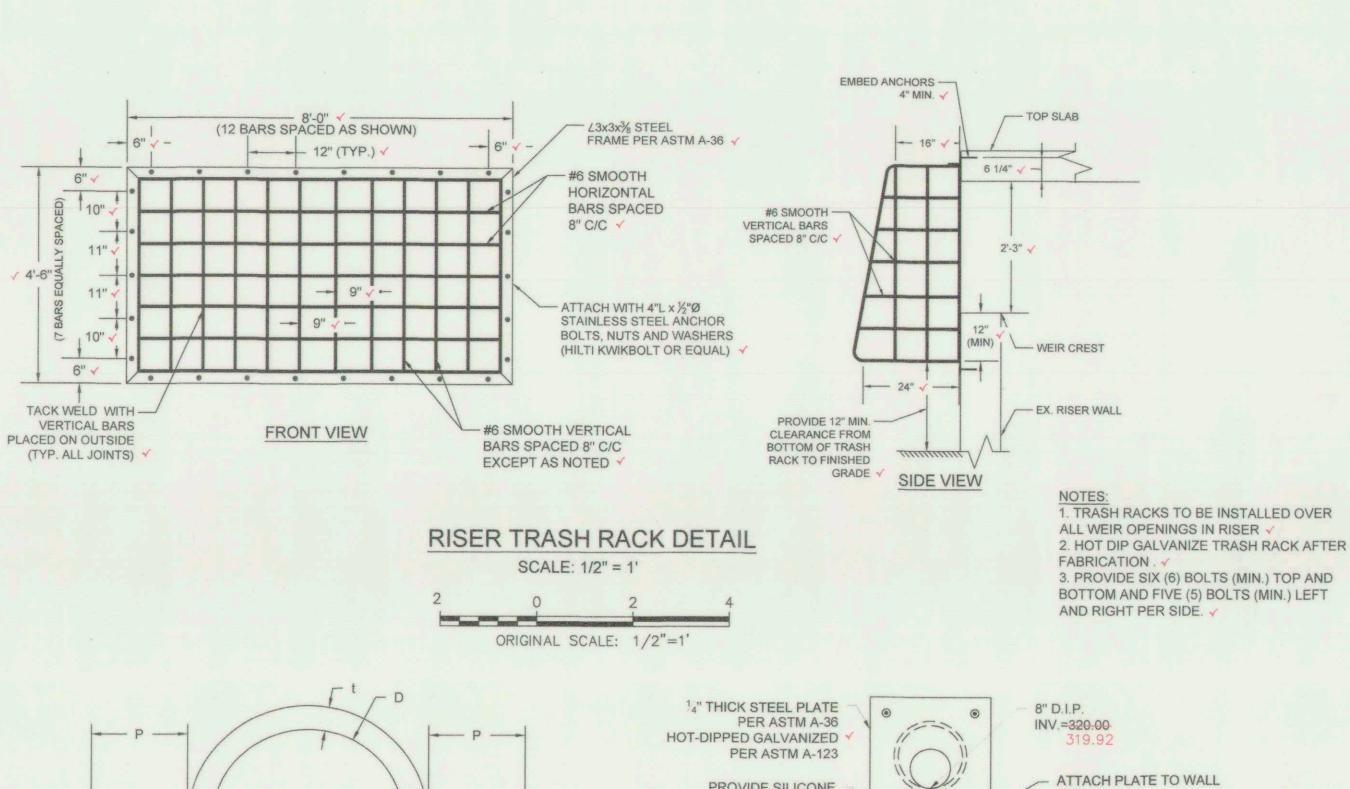
JB/AB

1" = 5' DATE: 6/15/2018

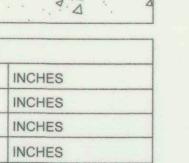
CL







ATTACH PLATE TO WALL PROVIDE SILICONE WITH 4"L x 1/2" Ø STAINLESS CAULK BEAD AROUND STEEL ANCHOR BOLTS, EDGES OF PLATE. **NUTS AND WASHERS** DO NOT USE GROUT (HILTI KWIKBOLT OR EQUAL) ON PLATE. PROVIDE 5" Φ ORIFICE IN PLATE AT INV. 320.00



INCHES

NOTES:

1%D+t

1/4D (>= 6")

CHIEF, BUREAU OF ENVIRONMENTAL SERVICES

DO NOT PLACE GRAVEL UNDER CRADLE.

2. DEWATER ALL GROUNDWATER THROUGH FILTER BAG. 3. CRADLE SHALL BE POURED AGAINST UNDISTURBED EARTH OR FORMED. FORMS SHALL BE REMOVED PRIOR TO

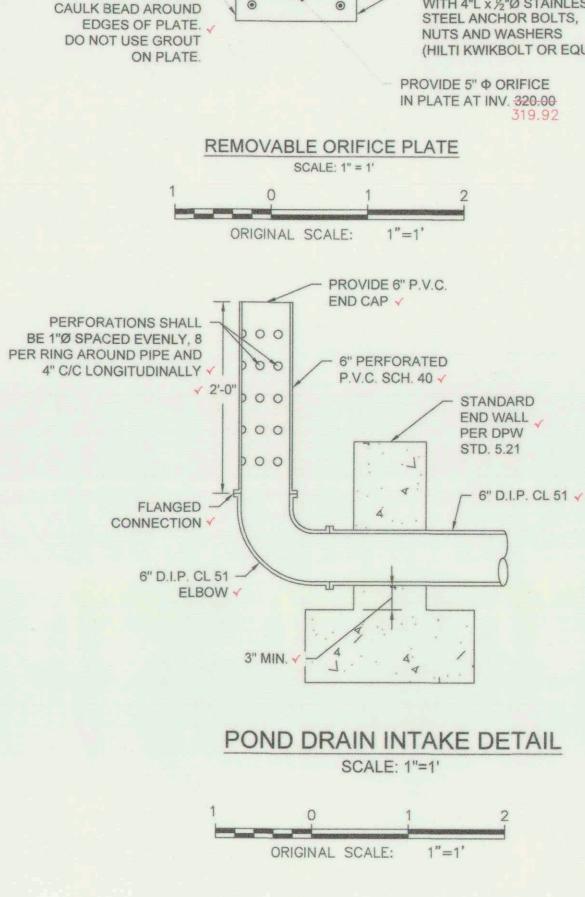
DIMENSION TABLE

12 🗸

15 🗸

BACKFILL. 4. CONCRETE SHALL MEET MD SHA MIX NO. 3 (fc = 3,500 PSI). 5. POUR CRADLE IN ONE CONTINUOUS POUR.

> CONCRETE CRADLE N.T.S.



CONCRETE CONSTRUCTION NOTES

GOVERNING SPECIFICATIONS

a. ALL REINFORCED CONCRETE CONSTRUCTION SHALL MEET OR EXCEED CONCRETE CONSTRUCTION SPECIFICATIONS OF:

ACI 318: BUILDING CODE REQUIREMENTS FOR STRUCTURAL CONCRETE, LATEST EDITION

ii. ACI 350: ENVIRONMENTAL ENGINEERING CONCRETE STRUCTURES, LATEST EDITION iii. MARYLAND DEPARTMENT OF TRANSPORTATION, MARYLAND STATE HIGHWAY ADMINISTRATION STANDARD SPECIFICATIONS FOR CONSTRUCTION AND MATERIALS, LATEST EDITION

ENGINEER WITH ALL FIELD DIMENSIONS REQUIRED TO CHECK DETAIL DRAWINGS. THE ± MARKS SHOWN WITH DIMENSIONS DO NOT

2. EXISTING CONDITIONS a. EXISTING DIMENSIONS SHOWN ARE APPROXIMATE. ALL DIMENSIONS AFFECTED BY THE GEOMETRY AND/OR LOCATION OF THE EXISTING STRUCTURE SHALL BE FIELD-VERIFIED BY THE CONTRACTOR BEFORE PROCEEDING WITH ANY CONSTRUCTION AND BEFORE ANY MATERIALS ARE ORDERED OR FABRICATED. IT IS THE RESPONSIBILITY OF THE CONTRACTOR TO SUPPLY THE

INDICATE ANY DEGREE OF PRECISION. THESE MARKS (±) INDICATE EXISTING DIMENSIONS THAT MAY VARY AND REQUIRE FIELD VERIFICATION BY THE CONTRACTOR. b. THE CONTRACTOR SHALL WORK WITH EXTREME CARE AROUND EXISTING STRUCTURES DURING DEMOLITION AND CONSTRUCTION. IT IS THE CONTRACTOR'S RESPONSIBILITY TO DOCUMENT AND REPORT ANY EXISTING DEFECTS ON EXISTING STRUCTURES TO THE OWNER PRIOR TO PROCEEDING WITH DEMOLITION. ANY DAMAGE CAUSED TO EXISTING STRUCTURES DURING DEMOLITION SHALL

3. CONCRETE a. ALL REINFORCED CONCRETE SHALL MEET MD SHA MIX NO. 6 (fc = 4,500 PSI) FOR CAST-IN-PLACE CONCRETE AS DETAILED IN THE MD SHA STANDARDS AND SPECIFICATIONS FOR CONSTRUCTION AND MATERIALS, LATEST EDITION.

a. ALL REINFORCING STEEL SHALL CONFORM TO ASTM A-615 GRADE 60.

b. MINIMUM COVER FOR ALL REINFORCING STEEL IN WALLS, SLABS, AND BEAMS SHALL BE TWO (2) INCHES.

BE REPAIRED OR REPLACED IN-KIND BY THE CONTRACTOR AT NO ADDITIONAL COST TO THE OWNER.

c. MINIMUM COVER FOR ALL REINFORCING STEEL IN FOUNDATIONS SHALL BE THREE (3) INCHES. 4. FORMWORK

a. FORMWORK SHALL CONFORM TO SPECIFICATIONS FOR ACI 347, LATEST EDITION

b. CHAMFER ALL EDGES WITH 3/" X 3/" WOOD CHAMFER STRIPS 5. SUBMITTALS

a. CONTRACTOR SHALL OBTAIN APPROVAL FROM THE OWNER'S ENGINEER OF THE FOLLOWING SUBMITTALS: i. REINFORCING STEEL SHOP DRAWING PREPARED BY THE STEEL SUPPLIER. REPRODUCTION OF THE REINFORCEMENT PLAN DRAWINGS IS NOT ACCEPTABLE. STEEL DRAWING SHALL INCLUDE A SCHEDULE OF ALL REQUIRED BENDS DETAILING BEND DIMENSIONS, BAR SIZES AND REQUIRED QUANTITIES.

ii. CONCRETE MIX DESIGNS iii. WATER STOPS IF EQUIVALENT TO THE SPECIFIED PRODUCT(S) IS PROPOSED TO BE USED

iv. ASSOCIATED CONCRETE PRODUCTS SUCH AS BONDING AGENT, EPOXY GROUT, ETC. IF EQUIVALENT TO THE SPECIFIED PRODUCT IS PROPOSED TO BE USED

v. APPURTENANCES INCLUDING ORIFICE PLATES, TRASH RACKS, MANHOLE COVERS, VALVES, STEM EXTENSIONS, ETC. 6. SUPERVISION AND INSPECTION

a. CONCRETE CONSTRUCTION SHALL BE COMPLETED UNDER SUPERVISION OF A TECHNICIAN OPERATING UNDER RESPONSIBLE

CHARGE OF A PROFESSIONAL GEOTECHNICAL ENGINEER. b. PRIOR TO INSTALLING FORM WORK, REINFORCEMENT OR CONSTRUCTION OF ANY KIND FOR ANY CONCRETE STRUCTURE FOUNDATION, THE SUBGRADE SHALL BE INSPECTED BY THE GEOTECHNICAL ENGINEER OF RECORD. A MUD MAT MAY BE USED TO

PROVIDE SUITABLE SUBGRADE AS SPECIFIED BY THE GEOTECHNICAL ENGINEER IF THE EXISTING SUBGRADE IS UNSUITABLE. DO NOT USE GRAVEL UNDER THE RISER. c. ALL CONCRETE DEMOLITION WORK SHALL BE INSPECTED AFTER COMPLETION OF DEMOLITION. THE CONTRACTOR SHALL NOT PROCEED WITH NEW CONSTRUCTION UNTIL THE ALL DEMOLITION WORK HAS BEEN INSPECTED.

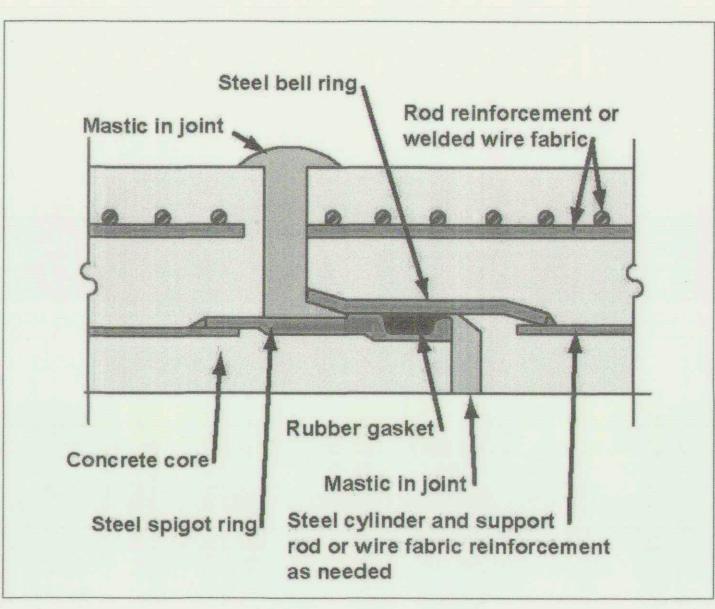
d. ALL REINFORCEMENT AND FORM WORK SHALL BE INSPECTED PRIOR TO CLOSING FORMS AND POURING CONCRETE. 7. CURING a. ALL CONCRETE CONSTRUCTION AND CURING TO BE PERFORMED AS APPLICABLE ACCORDING PER SPECIFICATIONS OF:

i. ACI 308: GUIDE TO CURING CONCRETE, LATEST EDITION

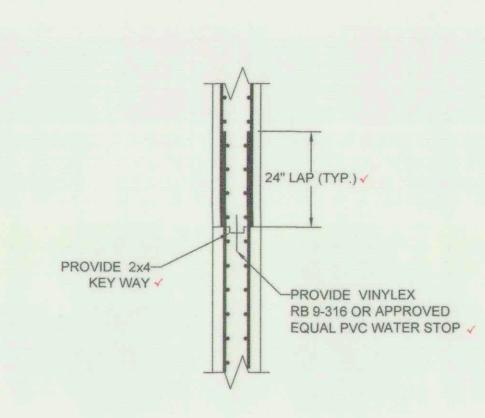
ii. ACI 305: GUIDE TO HOT WEATHER CONCRETING, LATEST EDITION

iii. ACI 306: GUIDE TO COLD WEATHER CONCRETING, LATEST EDITION b. FORMWORK SHALL REMAIN ON CURING CONCRETE FOR A MINIMUM OF THREE (3) DAYS AFTER POUR.

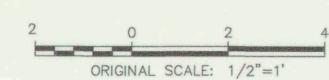
c. DO NOT BACKFILL AROUND CURED CONCRETE UNTIL TESTING HAS CONFIRMED IT HAS REACHED THE DESIGN 28-DAY STRENGTH.



PIPE JOINT DETAIL



CONSTRUCTION JOINT DETAIL SCALE: 1/2" = 1'



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-		
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ENGINEERING **CONSULTING ENGINEERS - PLANNERS**

10710 GILROY ROAD **HUNT VALLEY, MARYLAND 21031** PHONE: (443) 589-2400 FAX: (443) 589-2401

TWIN OAKS POND #1 SWM BMP AND STREAM CHANNEL REHABILITATION

RISER DETAILS

121104.33

JB/AB CL DE-03 of DE-06

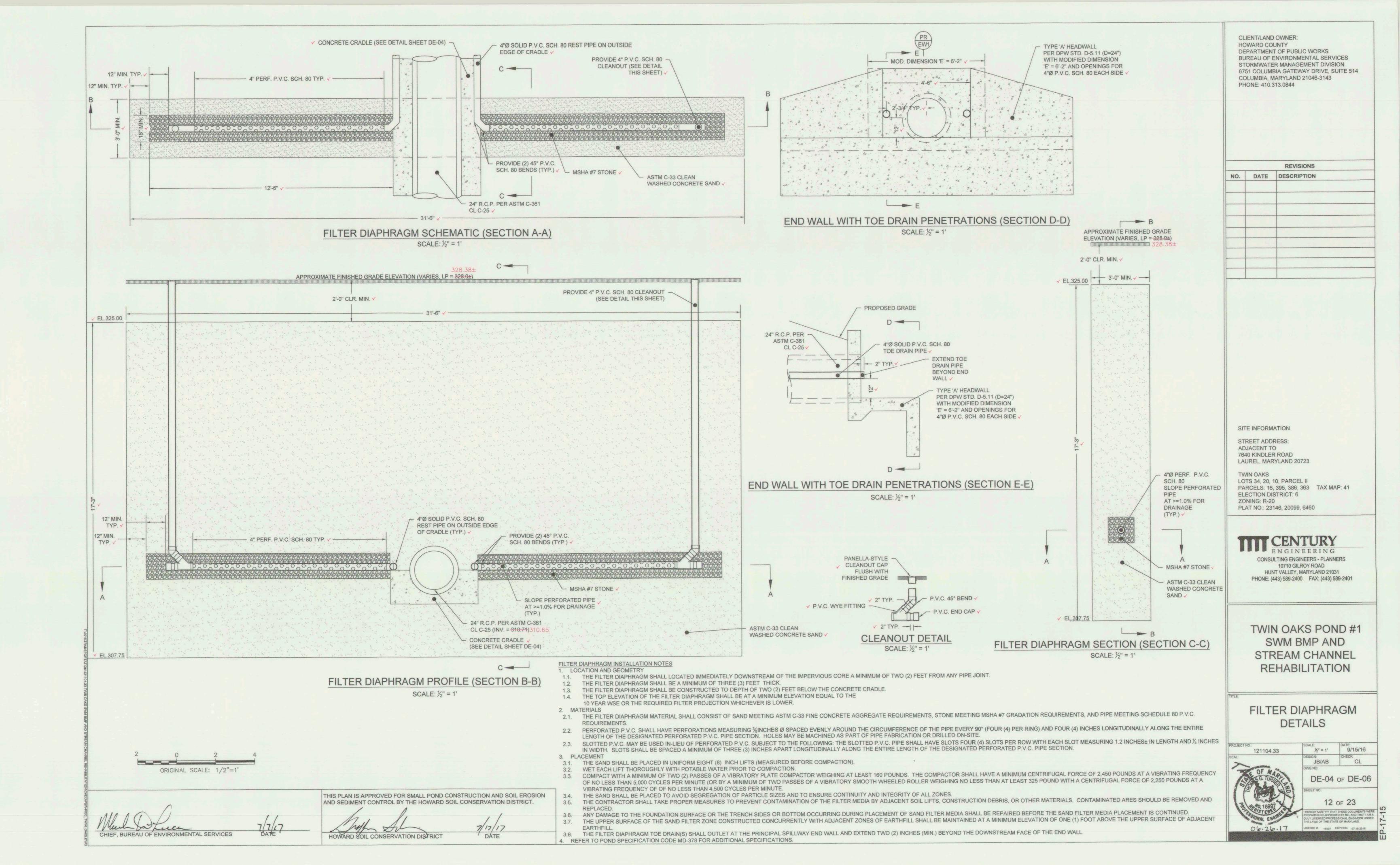
11 OF 23

LICENSE # 16997 EXPIRES: 07.19.2018

9/15/16

HOWARD SOIL CONSERVATION DISTRIC

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



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

CHIEF, BUREAU OF ENVIRONMENTAL SERVICES

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

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.

MATERIAL - THE FILL MATERIAL SHALL BE TAKEN FROM APPROVED DESIGNATED BORROW AREAS. IT SHALL BE FREE OF ROOTS, STUMPS, WOOD, RUBBISH, STONES GREATER THAN 6", FROZEN OR OTHER OBJECTIONABLE MATERIALS. FILL MATERIAL FOR THE CENTER OF THE EMBANKMENT, AND CUT OFF TRENCH SHALL CONFORM TO UNIFIED SOIL CLASSIFICATION GC, SC, CH, OR CL AND MUST HAVE AT LEAST 30% PASSING THE #200 SIEVE. CONSIDERATION MAY BE GIVEN TO THE USE OF OTHER MATERIALS IN THE EMBANKMENT IF DESIGNED BY A GEOTECHNICAL ENGINEER. SUCH SPECIAL DESIGNS MUST HAVE CONSTRUCTION SUPERVISED BY A GEOTECHNICAL ENGINEER. MATERIALS USED IN THE OUTER SHELL OF THE EMBANKMENT MUST HAVE THE CAPABILITY TO SUPPORT VEGETATION OF THE QUALITY REQUIRED TO PREVENT EROSION OF THE EMBANKMENT PLACEMENT - AREAS ON WHICH FILL IS TO BE PLACED SHALL BE SCARIFIED PRIOR TO PLACEMENT OF FILL. FILL MATERIALS SHALL BE PLACED IN MAXIMUM 8-INCH THICK (BEFORE COMPACTION) LAYERS WHICH ARE TO BE CONTINUOUS OVER THE ENTIRE LENGTH OF THE FILL. THE MOST PERMEABLE BORROW MATERIAL SHALL BE PLACED IN THE DOWNSTREAM PORTIONS OF THE EMBANKMENT. THE PRINCIPAL SPILLWAY MUST BE INSTALLED CONCURRENTLY WITH FILL PLACEMENT AND NOT EXCAVATED INTO THE EMBANKMENT.

COMPACTION - THE MOVEMENT OF THE HAULING AND SPREADING EQUIPMENT OVER THE FILL SHALL BE CONTROLLED SO THAT THE ENTIRE SURFACE OF EACH LIFT SHALL BE TRAVERSED BY NOT LESS THAN ONE TREAD TRACK 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 IS TO BE CERTIFIED BY THE ENGINEER AT THE TIME OF CONSTRUCTION. ALL COMPACTION IS TO BE DETERMINED BY AASHTO METHOD T-99 (STANDARD PROCTOR).

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

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

BACKFILL ADJACENT TO PIPES OR STRUCTURES SHALL BE OF THE TYPE AND QUALITY CONFORMING TO THAT SPECIFIED FOR THE ADJOINING FILL MATERIAL. THE FILL SHALL BE PLACED IN HORIZONTAL LAYERS NOT TO EXCEED FOUR INCHES IN THICKNESS AND COMPACTED BY HAND TAMPERS OR OTHER MANUALLY DIRECTED COMPACTION EQUIPMENT. THE MATERIAL NEEDS TO FILL COMPLETELY ALL SPACES UNDER AND ADJACENT TO THE PIPE. AT NO TIME DURING THE BACKFILLING OPERATION SHALL DRIVEN-EQUIPMENT BE ALLOWED TO OPERATE CLOSER THAN FOUR FEET, 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 PH OF 4.0 AND A MINIMUM RESISTIVITY OF 2,000 OHM-CM. MATERIAL SHALL BE PLACED SUCH THAT A MINIMUM OF 6" (MEASURED PERPENDICULAR TO THE OUTSIDE OF THE PIPE) OF FLOWABLE FILL SHALL BE UNDER (BEDDING), OVER AND, ON THE SIDES OF THE PIPE. IT ONLY NEEDS TO EXTEND UP TO THE SPRING LINE FOR RIGID CONDUITS. AVERAGE SLUMP OF THE FILL SHALL BE 7" TO ASSURE FLOWABILITY OF THE MATERIAL. ADEQUATE MEASURES SHALL BE TAKEN (SAND BAGS, ETC.) TO PREVENT FLOATING THE PIPE. WHEN USING FLOWABLE FILL, ALL METAL PIPE SHALL BE BITUMINOUS COATED. ANY ADJOINING SOIL FILL SHALL BE PLACED IN HORIZONTAL LAYERS NOT TO EXCEED FOUR INCHES IN THICKNESS AND COMPACTED BY HAND TAMPERS OR OTHER MANUALLY DIRECTED COMPACTION EQUIPMENT. THE MATERIAL SHALL COMPLETELY FILL ALL VOIDS ADJACENT TO THE FLOWABLE FILL ZONE. AT NO TIME DURING THE BACKFILLING OPERATION SHALL DRIVEN-EQUIPMENT BE ALLOWED TO OPERATE CLOSER THAN FOUR FEET, MEASURED HORIZONTALLY, TO ANY PART OF A STRUCTURE. UNDER NO CIRCUMSTANCES SHALL EQUIPMENT BE DRIVEN OVER ANY PART OF A STRUCTURE OR PIPE UNLESS THERE IS A COMPACTED FILL OF 24" OR GREATER OVER THE STRUCTURE OR PIPE. BACKFILL MATERIAL OUTSIDE THE STRUCTURAL BACKFILL (FLOWABLE FILL) ZONE SHALL BE OF THE TYPE AND QUALITY CONFORMING TO THAT SPECIFIED FOR THE CORE OF THE **EMBANKMENT**

OR OTHER EMBANKMENT MATERIALS.

PIPE CONDUITS ALL PIPES SHALL BE CIRCULAR IN CROSS SECTION.

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

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

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

- 2. COUPLING BANDS, ANTI-SEEP COLLARS, END SECTIONS, ETC., MUST BE COMPOSED OF THE SAME MATERIAL AND COATINGS AS THE PIPE. METALS MUST BE INSULATED FROM DISSIMILAR MATERIALS WITH USE OF RUBBER OR PLASTIC INSULATING MATERIALS AT LEAST 24 MILS IN THICKNESS
- 3. CONNECTIONS ALL CONNECTIONS WITH PIPES MUST BE COMPLETELY WATERTIGHT. THE DRAIN PIPE OR BARREL CONNECTION TO THE RISER SHALL BE WELDED ALL AROUND WHEN THE PIPE AND RISER ARE METAL. ANTI-SEEP COLLARS SHALL BE CONNECTED TO THE PIPE IN SUCH A MANNER AS TO BE COMPLETELY WATERTIGHT. DIMPLE BANDS ARE NOT CONSIDERED TO BE WATERTIGHT.

OF EACH PIPE SHALL BE RE-ROLLED AN ADEQUATE NUMBER OF CORRUGATIONS TO ACCOMMODATE THE BANDWIDTH. THE FOLLOWING TYPE CONNECTIONS ARE ACCEPTABLE FOR PIPES LESS THAN 24 INCHES IN DIAMETER: FLANGES ON BOTH ENDS OF THE PIPE WITH A CIRCULAR 3/8 INCH CLOSED CELL NEOPRENE GASKET, PRE-PUNCHED TO THE FLANGE BOLT CIRCLE, SANDWICHED BETWEEN ADJACENT FLANGES; A 12-INCH WIDE STANDARD LAP TYPE BAND WITH 12-INCH WIDE BY 3/8-INCH THICK CLOSED CELL CIRCULAR NEOPRENE GASKET; AND A 12-INCH WIDE HUGGER TYPE BAND WITH ORING 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 LUGS, 2 ON EACH CONNECTING PIPE END. A 24-INCH WIDE BY 3/8-INCH THICK CLOSED CELL CIRCULAR NEOPRENE GASKET WILL BE INSTALLED WITH 12 INCHES ON THE END OF EACH PIPE. FLANGED JOINTS WITH 3/8 INCH CLOSED CELL GASKETS THE FULL WIDTH OF THE FLANGE IS ALSO

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

- 4. BEDDING THE PIPE SHALL BE FIRMLY AND UNIFORMLY BEDDED THROUGHOUT ITS ENTIRE LENGTH. WHERE ROCK OR SOFT, SPONGY OR OTHER UNSTABLE SOIL IS ENCOUNTERED, ALL SUCH MATERIAL SHALL BE REMOVED AND REPLACED WITH SUITABLE EARTH COMPACTED TO PROVIDE ADEQUATE SUPPORT. 5. BACKFILLING SHALL CONFORM TO "STRUCTURE BACKFILL".
- 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

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

- 2. BEDDING REINFORCED CONCRETE PIPE CONDUITS SHALL BE LAID IN A CONCRETE BEDDING/CRADLE FOR THEIR ENTIRE LENGTH. THIS BEDDING/CRADLE SHALL CONSIST OF HIGH SLUMP CONCRETE PLACED UNDER THE PIPE AND UP THE SIDES OF THE PIPE AT LEAST 50% OF ITS OUTSIDE DIAMETER WITH A MINIMUM THICKNESS OF 6 INCHES. WHERE A CONCRETE CRADLE IS NOT NEEDED FOR STRUCTURAL REASONS, FLOWABLE FILL MAY BE USED AS DESCRIBED IN THE "STRUCTURE BACKFILL" SECTION OF THIS STANDARD. GRAVEL BEDDING IS NOT PERMITTED.
- 3. LAYING PIPE BELL AND SPIGOT PIPE SHALL BE PLACED WITH THE BELL END UPSTREAM. JOINTS SHALL BE MADE IN ACCORDANCE WITH RECOMMENDATIONS OF THE MANUFACTURER OF THE MATERIAL. AFTER THE JOINTS ARE SEALED FOR THE ENTIRE LINE, THE BEDDING SHALL BE PLACED SO THAT ALL SPACES UNDER THE PIPE ARE FILLED. CARE SHALL BE 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-1120 OR PVC-1220 CONFORMING TO ASTM D-1785 OR ASTM D-2241. CORRUGATED HIGH DENSITY POLYETHYLENE (HDPE) PIPE, COUPLINGS AND FITTINGS SHALL CONFORM TO THE FOLLOWING: 4" - 10" INCH PIPE SHALL MEET THE REQUIREMENTS OF AASHTO M252 TYPE S, AND 12" THROUGH 24" INCH SHALL MEET THE REQUIREMENTS OF AASHTO M294 TYPE S.
- 2. JOINTS AND CONNECTIONS TO ANTI-SEEP COLLARS SHALL BE COMPLETELY WATERTIGHT. 3. BEDDING -THE PIPE SHALL BE FIRMLY AND UNIFORMLY BEDDED THROUGHOUT ITS ENTIRE LENGTH. WHERE ROCK OR SOFT, SPONGY OR OTHER UNSTABLE SOIL IS ENCOUNTERED, ALL SUCH MATERIAL SHALL BE REMOVED AND REPLACED WITH SUITABLE EARTH COMPACTED TO PROVIDE ADEQUATE SUPPORT. 4. BACKFILLING SHALL CONFORM TO "STRUCTURE BACKFILL".
- 5. OTHER DETAILS (ANTI-SEEP COLLARS, VALVES, ETC.) SHALL BE AS SHOWN ON THE DRAWINGS. DRAINAGE DIAPHRAGMS - WHEN A DRAINAGE DIAPHRAGM IS USED, A REGISTERED PROFESSIONAL ENGINEER WILL SUPERVISE THE DESIGN AND CONSTRUCTION INSPECTION.

CONCRETE 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 SHALL MEET THE REQUIREMENTS OF MARYLAND DEPARTMENT OF TRANSPORTATION, STATE HIGHWAY ADMINISTRATION STANDARD SPECIFICATIONS FOR CONSTRUCTION AND MATERIALS, SECTION 311.

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

CARE OF WATER DURING CONSTRUCTION

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

STABILIZATION

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

EROSION AND SEDIMENT CONTROL

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

OPERATION AND MAINTENANCE

AN OPERATION AND MAINTENANCE PLAN IN ACCORDANCE WITH LOCAL OR STATE REGULATIONS WILL BE PREPARED FOR ALL PONDS. AS A MINIMUM, THE DAM INSPECTION CHECKLIST LOCATED IN APPENDIX A SHALL BE INCLUDED AS PART OF THE OPERATION AND MAINTENANCE PLAN AND PERFORMED AT LEAST ANNUALLY. WRITTEN RECORDS OF MAINTENANCE AND MAJOR REPAIRS NEEDS TO BE RETAINED IN A FILE. THE ISSUANCE OF A MAINTENANCE AND REPAIR PERMIT FOR ANY REPAIRS OR MAINTENANCE THAT INVOLVES THE MODIFICATION OF THE DAM OR SPILLWAY FROM ITS ORIGINAL DESIGN AND SPECIFICATIONS IS REQUIRED. A PERMIT IS ALSO REQUIRED FOR ANY REPAIRS OR RECONSTRUCTION THAT INVOLVE A SUBSTANTIAL PORTION OF THE STRUCTURE. ALL INDICATED REPAIRS ARE TO BE MADE AS SOON AS PRACTICAL.

CLIENT/LAND OWNER: HOWARD COUNTY DEPARTMENT OF PUBLIC WORKS BUREAU OF ENVIRONMENTAL SERVICES STORMWATER MANAGEMENT DIVISION 6751 COLUMBIA GATEWAY DRIVE, SUITE 514 COLUMBIA, MARYLAND 21046-3143 PHONE: 410.313.0844

REVISIONS			
NO.	DATE	DESCRIPTION	

SITE INFORMATION

STREET ADDRESS: ADJACENT TO 7640 KINDLER ROAD LAUREL, MARYLAND 20723

TWIN OAKS LOTS 34, 20, 10, PARCEL II PARCELS: 16, 395, 386, 363 TAX MAP: 41 **ELECTION DISTRICT: 6** ZONING: R-20 PLAT NO.: 23146, 20099, 6460

CONSULTING ENGINEERS - PLANNERS 10710 GILROY ROAD

TWIN OAKS POND #1 SWM BMP AND STREAM CHANNEL REHABILITATION

HUNT VALLEY, MARYLAND 21031

PHONE: (443) 589-2400 FAX: (443) 589-2401

MD-378 CONSTRUCTION **SPECIFICATIONS**

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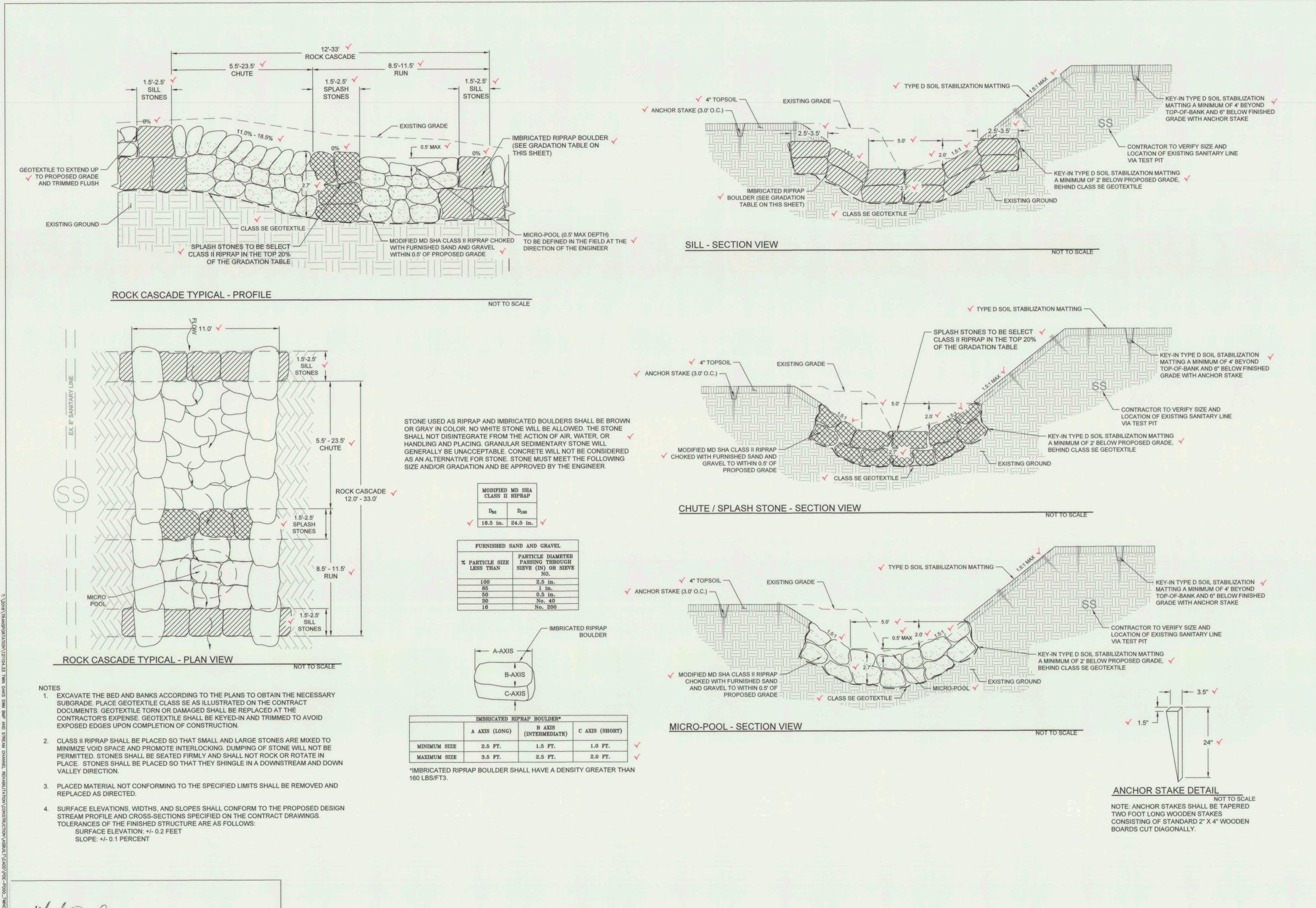
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13 of 23

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HE LAWS OF THE STATE OF MARYLAND. CENSE #: 16997 EXPIRES: 07.19.2018

ALL CONNECTIONS SHALL USE A RUBBER OR NEOPRENE GASKET WHEN JOINING PIPE SECTIONS. THE END



CLIENT/LAND OWNER:
HOWARD COUNTY
DEPARTMENT OF PUBLIC WORKS
BUREAU OF ENVIRONMENTAL SERVICES
6751 COLUMBIA GATEWAY DRIVE, SUITE 514
COLUMBIA, MARYLAND 21046-3143
PHONE: 410.313.0844

REVISIONS			
NO.	DATE	DESCRIPTION	
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SITE INFORMATION

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TWIN OAKS
LOTS 34, 20, 10, PARCEL II
PARCEL: 16, 395, 386, 363 TAX MAP: 41
ELECTION DISTRICT: 6
ZONING: R-20
PLAT NO.: 23146, 20099, 6460

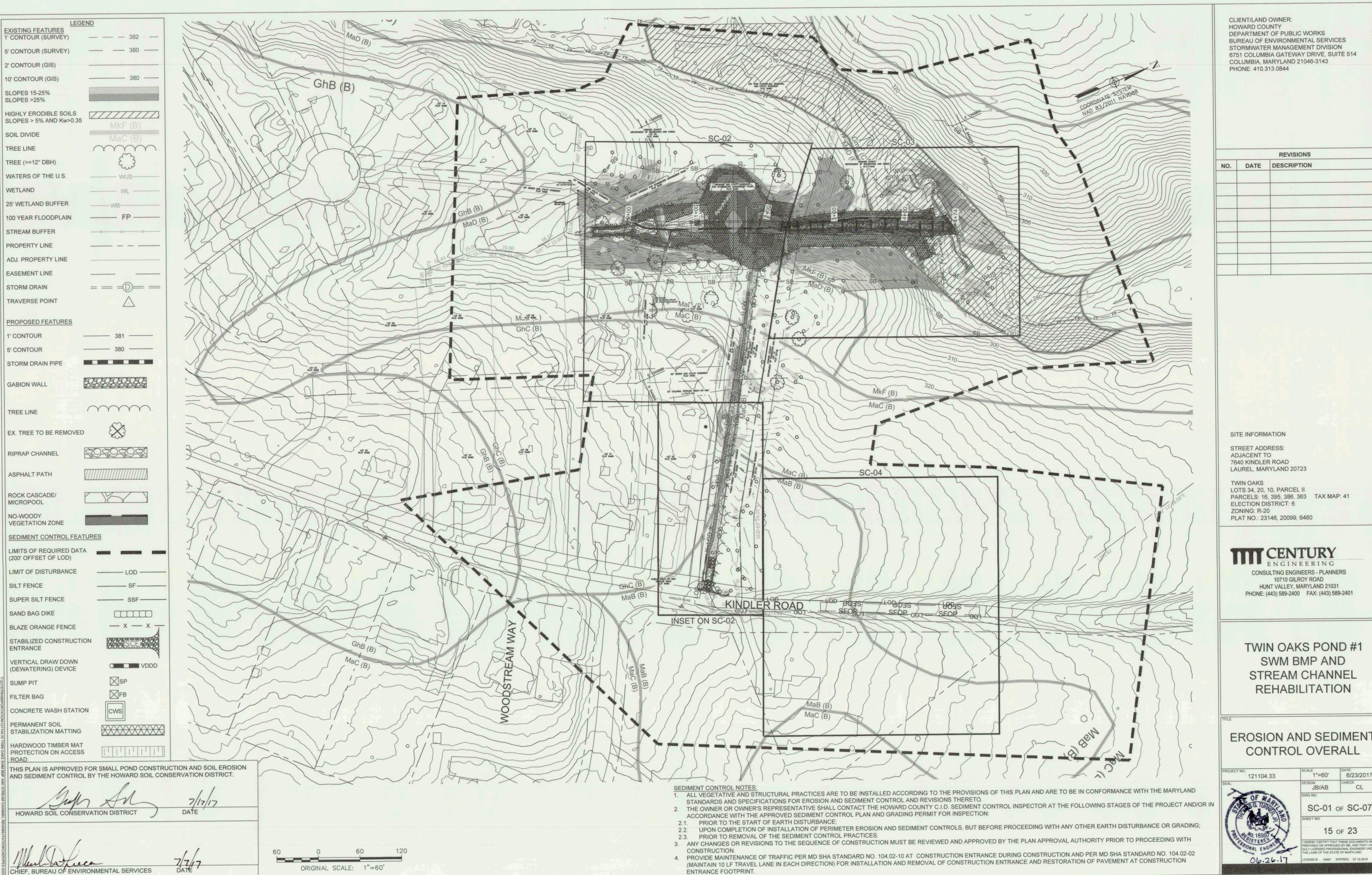
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CONSULTING ENGINEERS - PLANNERS
10710 GILROY ROAD
HUNT VALLEY, MARYLAND 21031
PHONE: (443) 589-2400 FAX: (443) 589-2401

TWIN OAKS POND #1
SWM BMP AND
STREAM CHANNEL
REHABILITATION

STREAM DETAILS

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DEPARTMENT OF PUBLIC WORKS BUREAU OF ENVIRONMENTAL SERVICES STORMWATER MANAGEMENT DIVISION 6751 COLUMBIA GATEWAY DRIVE, SUITE 514 COLUMBIA, MARYLAND 21046-3143

		REVISIONS
NO.	DATE	DESCRIPTION

LOTS 34, 20, 10, PARCEL II PARCELS: 16, 395, 386, 363 TAX MAP: 41 PLAT NO.: 23146, 20099, 6460

CONSULTING ENGINEERS - PLANNERS 10710 GILROY ROAD HUNT VALLEY, MARYLAND 21031 PHONE: (443) 589-2400 FAX: (443) 589-2401

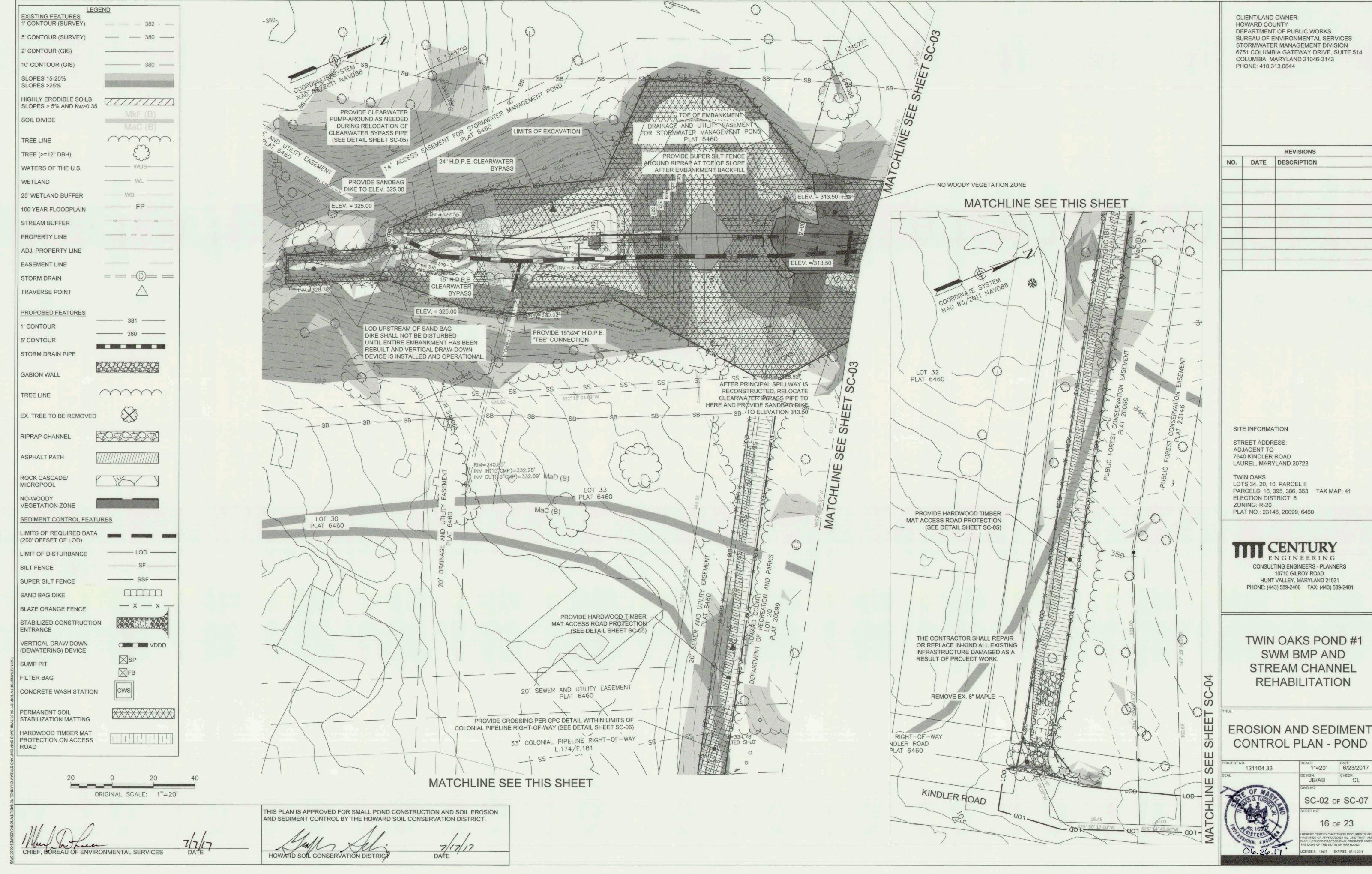
TWIN OAKS POND #1 SWM BMP AND STREAM CHANNEL REHABILITATION

EROSION AND SEDIMENT CONTROL OVERALL

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B/AB CL C-01 OF SC-07

15 of 23



CONTROL PLAN - POND

1"=20' 6/23/2017 SC-02 of SC-07



CLIENT/LAND OWNER: HOWARD COUNTY DEPARTMENT OF PUBLIC WORKS BUREAU OF ENVIRONMENTAL SERVICES STORMWATER MANAGEMENT DIVISION 6751 COLUMBIA GATEWAY DRIVE, SUITE 514 COLUMBIA, MARYLAND 21046-3143 PHONE: 410.313.0844

	REVISIONS		
NO.	DATE	DESCRIPTION	

SITE INFORMATION

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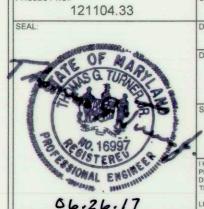
TWIN OAKS LOTS 34, 20, 10, PARCEL II PARCELS: 16, 395, 386, 363 TAX MAP: 41 **ELECTION DISTRICT: 6** ZONING: R-20 PLAT NO.: 23146, 20099, 6460

CENTURY ENGINEERING

CONSULTING ENGINEERS - PLANNERS 10710 GILROY ROAD HUNT VALLEY, MARYLAND 21031 PHONE: (443) 589-2400 FAX: (443) 589-2401

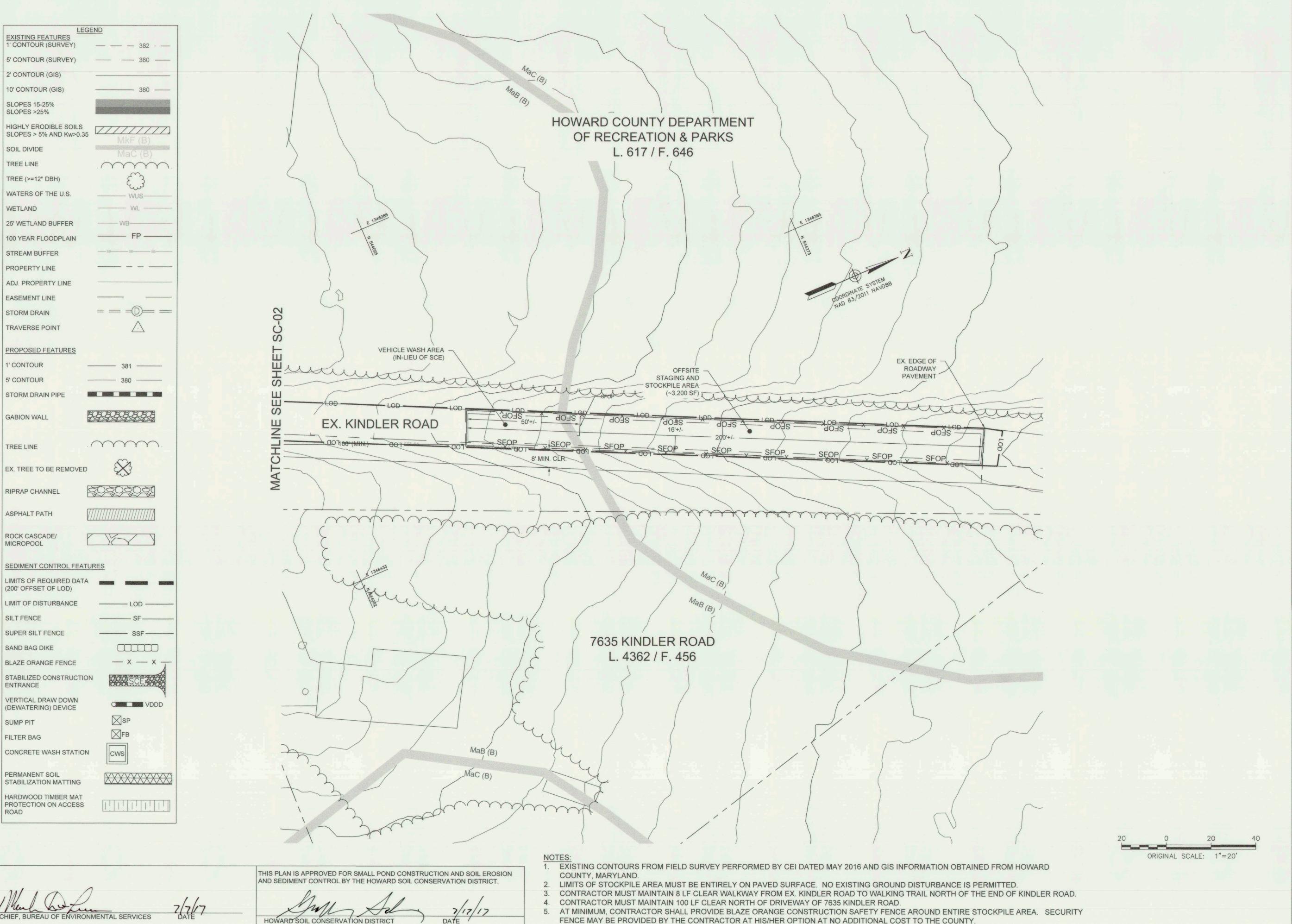
TWIN OAKS POND #1 SWM BMP AND STREAM CHANNEL REHABILITATION

EROSION AND SEDIMENT CONTROL PLAN - STREAM



JB/AB SC-03 OF SC-07

1"=20' 6/23/2017



CLIENT/LAND OWNER: HOWARD COUNTY DEPARTMENT OF PUBLIC WORKS BUREAU OF ENVIRONMENTAL SERVICES STORMWATER MANAGEMENT DIVISION 6751 COLUMBIA GATEWAY DRIVE, SUITE 514 COLUMBIA, MARYLAND 21046-3143 PHONE: 410.313.0844

		REVISIONS
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TWIN OAKS LOTS 34, 20, 10, PARCEL II PARCELS: 16, 395, 386, 363 TAX MAP: 41 **ELECTION DISTRICT: 6** ZONING: R-20 PLAT NO.: 23146, 20099, 6460

CENTURY

CONSULTING ENGINEERS - PLANNERS 10710 GILROY ROAD HUNT VALLEY, MARYLAND 21031 PHONE: (443) 589-2400 FAX: (443) 589-2401

TWIN OAKS POND #1 SWM BMP AND STREAM CHANNEL REHABILITATION

EROSION & SEDIMENT CONTROL PLAN -OFF-SITE STAGING AREA

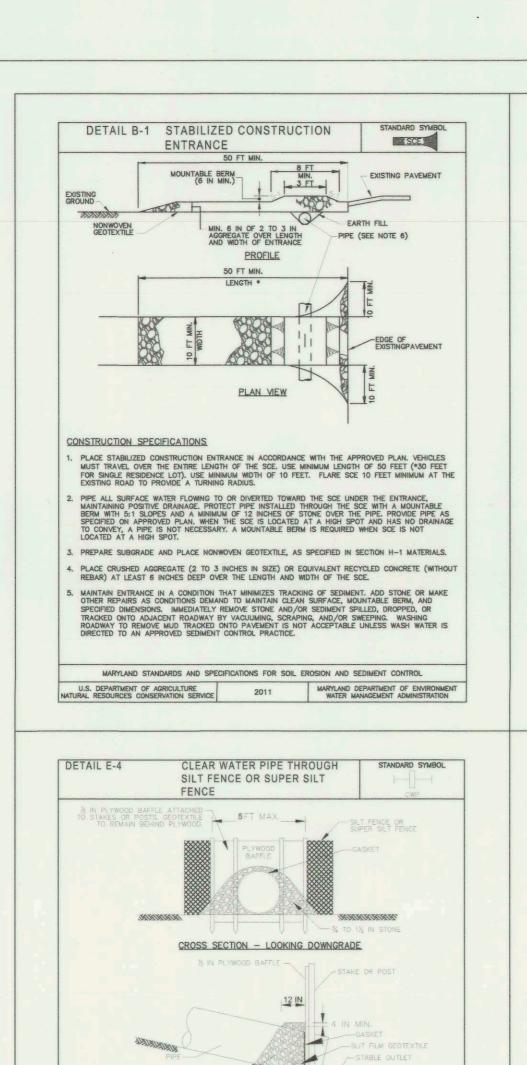
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JB/AB SC-04 of SC-07

1"=20' 6/23/2017

18 of 23

06.26.17 LICENSE #: 16997 EXPIRES: 07.19.2018



F THE FENCE STAKES OR POSTS. BAFFLE SHOULD BE AT LEAST THE HEIGHT OF THE FENCE

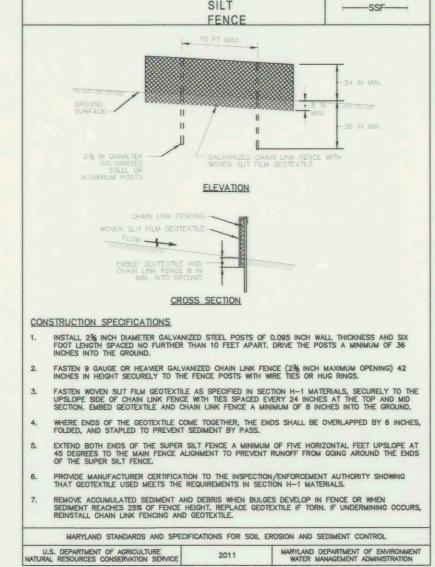
PLACE 1/4 TO 1/5 INCH STONE OR EQUIVALENT RECYCLED CONCRETE BEHIND THE PLYWOOD BAFFLE ON NONWOVEN GEOTEXTILE AND EXTEND 12 INCH MIN, ALONG TOP OF PIPE AND TO A HEIGHT OF INCHES ABOVE THE TOP OF PIPE.

MARYLAND STANDARDS AND SPECIFICATIONS FOR SOIL EROSION AND SEDIMENT CONTROL

U.S. DEPARTMENT OF AGRICULTURE
NATURAL RESOURCES CONSERVATION SERVICE

2011

MARYLAND DEPARTMENT OF ENVIRONMENT
WATER MANAGEMENT ADMINISTRATION



STANDARD SYMBOL

ROPIII

STANDARD SYMBOL

SECTION A-A

6 IN SECTION B-B

ROCK OUTLET

PROTECTION III

DETAIL D-4-1-C

CONSTRUCTION SPECIFICATIONS

RIPRAP AND STONE MUST CONFORM TO THE SPECIFIED CLASS.

PREPARE THE SUBGRADE FOR GEOTEXTILE OR STONE FILTER (% TO 1½ INCH MINIMUM STONE FOR 6 INCH MINIMUM DEPTH) AND RIPRAP TO THE REQUIRED LINES AND GRADES. COMPACT ANY FILL REQUIRED IN THE SUBGRADE TO A DENSITY OF APPROXIMATELY THAT OF THE SURROUNDING UNDISTURBED MATERIAL.

EXTEND GEOTEXTILE AT LEAST 6 INCHES BEYOND EDGES OF RIPRAP AND EMBED AT LEAST 4 INCHES AT SIDES OF RIPRAP.

CONSTRUCT RIPRAP QUILET TO FULL COURSE THICKNESS IN ONE OPERATION AND IN SUCH A MANNER AS TO AVOID DISPLACEMENT OF UNDERLYING MATERIALS. PLACE STONE FOR RIPRAP OUTLET IN A MANNER THAT WILL ENSURE THAT IT IS REASONABLY HOMOGENOUS WITH THE STONES AND SPALLS FILLING THE VOIDS BETWEEN THE LARGER STONES. PLACE RIPRAP IN A MANNER TO PREVENT DAMAGE TO THE FILTER BLANKET OR GEOTEXTILE. HAND PLACE TO THE EXTENT NECESSARY.

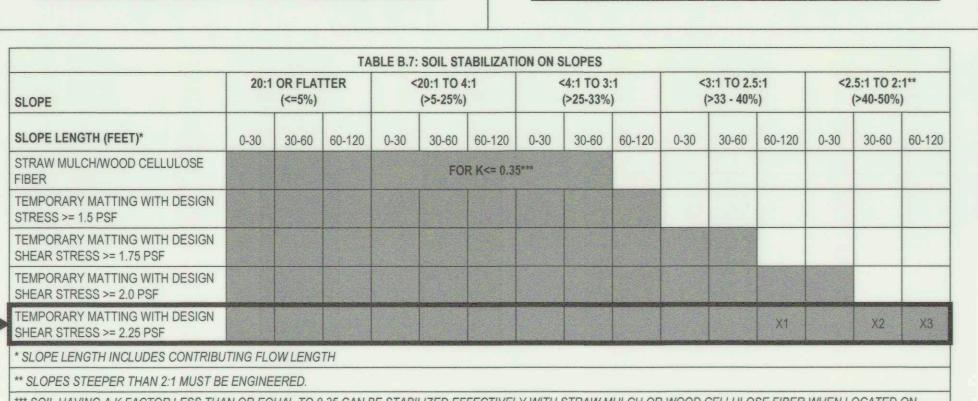
WHERE NO ENDWALL IS USED, CONSTRUCT THE UPSTREAM END OF THE APRON SO THAT THE WIDTH IS TWO TIMES THE DIAMETER OF THE OUTLET PIPE, AND EXTEND THE STONE UNDER THE OUTLET BY A MINIMUM OF 18 INCHES.

CONSTRUCT APRON WITH 0% SLOPE ALONG ITS LENGTH AND WITHOUT OBSTRUCTIONS. PLACE STONE SO THAT IT BLENDS IN WITH EXISTING GROUND.

MARYLAND STANDARDS AND SPECIFICATIONS FOR SOIL EROSION AND SEDIMENT CONTROL

U.S. DEPARTMENT OF AGRICULTURE
NATURAL RESOURCES CONSERVATION SERVICE 2011 WARYLAND DEPARTMENT OF ENVIRONMENT
WATER MANAGEMENT ADMINISTRATION

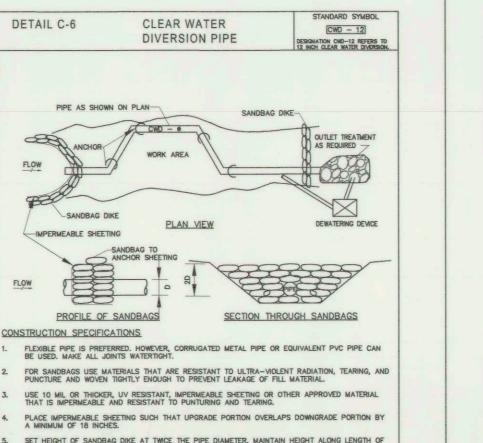
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*** SOIL HAVING A K FACTOR LESS THAN OR EQUAL TO 0.35 CAN BE STABILIZED EFFECTIVELY WITH STRAW MULCH OR WOOD CELLULOSE FIBER WHEN LOCATED ON SLOPES STEEPER THAN 5%. SOIL STBAILIZATION MATTING IS REQUIRED ON ALL SLOPES STEEPER THAN 5% THAT HAVE SOIL WITH A K FACTOR GREATER THAN 0.35.

X1 = EAST SIDE SLOPE OF POND (S VARIES 2:1 TO 3:1, L~120 LF)

X2 = DOWNSTREAM SLOPE OF DAM (S = 2:1, L = 40 LF) X3 = EAST SIDE OF DOWNSTREAM CHANNEL STABILIZATION (S = 2:1, L~120 LF)



SET HEIGHT OF SANDBAG DIKE AT TWICE THE PIPE DIAMETER. MAINTAIN HEIGHT ALONG LENGTH OF SANDBAG DIKE. PLACE DOUBLE ROW OF SANDBAGS. AT A MINIMUM, SECURELY ANCHOR DIVERSION PIPE AT EACH DOWNGRADE JOINT. SET OUTLET END OF DIVERSION PIPE LOWER THAN INLET END. PROVIDE OUTLET PROTECTION AS REQUIRED ON APPROVED PLAN. DEWATER WORK AREA USING AN APPROVED EROSION AND SEDIMENT CONTROL PRACTICE AS SPECIFIED ON APPROVED PLAN. KEEP POINT OF DISCHARGE FREE OF EROSION. MAINTAIN WATER TIGHT CONNECTIONS AND POSITIVE DRAINAGE. REPLACE SANDBAGS AND IMPERMEABLE SHEETING IF TORN.

U.S. DEPARTMENT OF AGRICULTURE
NATURAL RESOURCES CONSERVATION SERVICE

2011

MARYLAND DEPARTMENT OF ENVIRONMEN
WATER MANAGEMENT ADMINISTRATION

ELEVATION

. USE 12 INCH OR LARGER DIAMETER CORRUGATED METAL, HDPE, OR PVC PIPE WITH 1 INCH DIAMETER PERFORATIONS, 6 INCHES ON CENTER. BOTTOM OF PIPE MUST BE CAPPED WITH WATERTIGHT SEAL.

I. EXCAVATE PIT TO THREE TIMES THE PIPE DIAMETER AND FOUR FEET IN DEPTH. PLACE % TO 1½ INCH STONE OR EQUIVALENT RECYCLED CONCRETE, 6 INCHES IN DEPTH PRIOR TO PIPE PLACEMENT.

ESTABLISH AND MAINTAIN VEGETATION SO THAT REQUIREMENTS FOR ADEQUATE VEGETATIVE ESTABLISHMENT ARE CONTINUOUSLY MET IN ACCORDANCE WITH SECTION B-4 VEGETATIVE STABILIZATION.

U.S. DEPARTMENT OF AGRICULTURE
NATURAL RESOURCES CONSERVATION SERVICE

2011

MARYLAND DEPARTMENT OF ENVIRONMENT
WATER MANAGEMENT ADMINISTRATION

4. SET TOP OF PIPE MINIMUM 12 INCHES ABOVE ANTICIPATED WATER SURFACE ELEVATION.

CONSTRUCTION SPECIFICATIONS

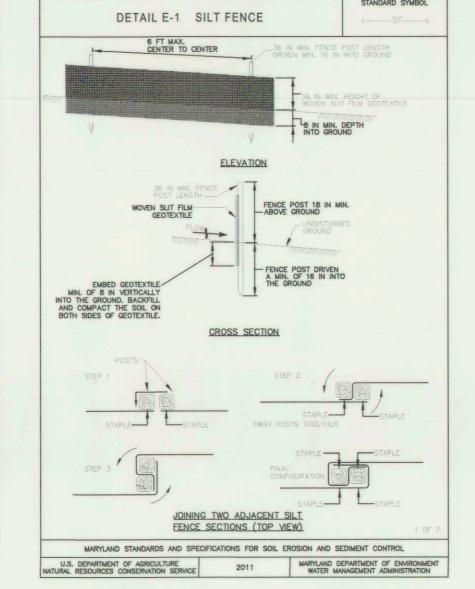
STANDARD SYMBOL

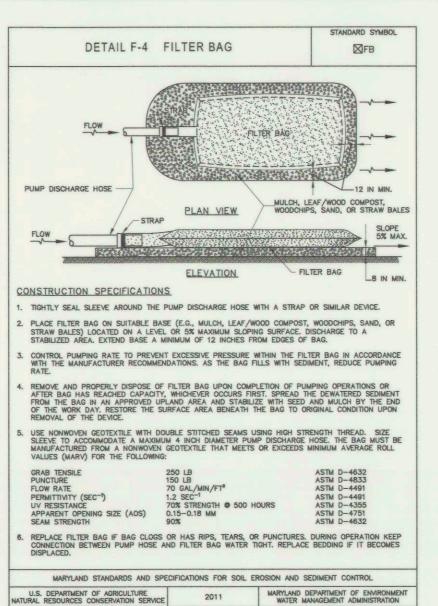
⊠SP

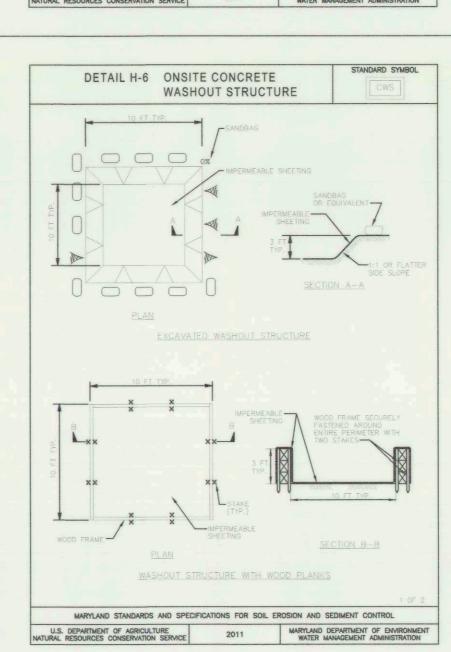
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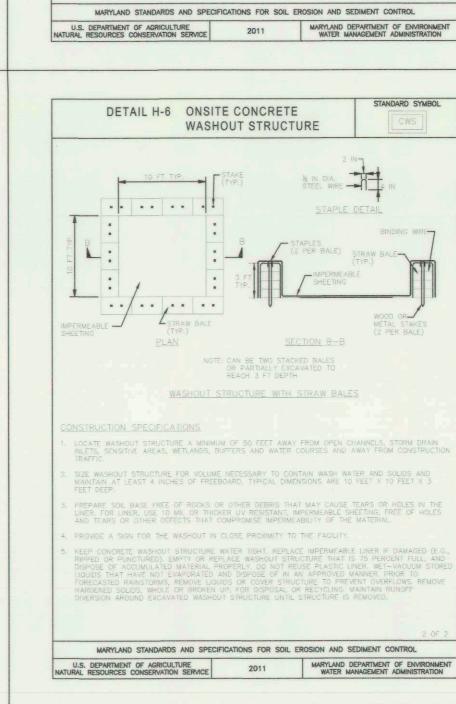
D=24", 2D=48"

DETAIL F-2 SUMP PIT









STORMWATER MANAGEMENT DIVISION 6751 COLUMBIA GATEWAY DRIVE, SUITE 514 COLUMBIA, MARYLAND 21046-3143 . USE WOOD POSTS 1% x 1% \pm 3% INCH (MINIMUM) SQUARE CUT OF SOUND QUALITY HARDWOOD. AS AN ALTERNATIVE TO WOODEN POST USE STANDARD "T" OR "U" SECTION STEEL POSTS WEIGHING NOT LESS THAN 1 POUND PER LINEAR FOOT. PHONE: 410.313.0844 2. USE 36 INCH MINIMUM POSTS DRIVEN 16 INCH MINIMUM INTO GROUND NO MORE THAN 6 FEET APART. PROVIDE MANUFACTURER CERTIFICATION TO THE AUTHORIZED REPRESENTATIVE OF THE INSPECTION/ENFORCEMENT AUTHORITY SHOWING THAT THE GEOTEXTILE USED MEETS THE REQUIREMENTS IN SECTION H-1 MATERIALS. 5. EMBED GEOTEXTILE A MINIMUM OF 8 INCHES VERTICALLY INTO THE GROUND. BACKFILL AND COMPACT THE SOIL ON BOTH SIDES OF FABRIC. N. WHERE TWO SECTIONS OF GEOTEXTILE ADJOIN: OVERLAP, TWIST, AND STAPLE TO POST IN ACCORDANCE WITH THIS DETAIL. EXTEND BOTH ENDS OF THE SILT FENCE A MINIMUM OF FIVE HORIZONTAL FEET UPSLOPE AT 45 DEGREES TO THE MAIN FENCE ALIGNMENT TO PREVENT RUNOFF FROM GOING AROUND THE ENDS OF THE SILT FENCE. REMOVE ACCUMULATED SEDIMENT AND DEBRIS WHEN BULGES DEVELOP IN SILT FENCE OR WHEN SEDIMENT REACHES 25% OF FENCE HEIGHT. REPLACE GEOTEXTILE IF TORN. IF UNDERMINING OCCURS, REINSTALL FENCE. REVISIONS NO. DATE DESCRIPTION

STANDARD SYMBOL

DETAIL E-1 SILT FENCE

MARYLAND STANDARDS AND SPECIFICATIONS FOR SOIL EROSION AND SEDIMENT CONTROL

U.S. DEPARTMENT OF AGRICULTURE
NATURAL RESOURCES CONSERVATION SERVICE

WARYLAND DEPARTMENT OF ENVIRONMENT
WATER MANAGEMENT ADMINISTRATION

VERTICAL DRAW-DOWN DEVICE

TOP OF EMBANKMENT

111

PERFORATION SPACING

DETAIL G-2-7 SEDIMENT BASIN SCHEMATIC

SITE INFORMATION

STREET ADDRESS: ADJACENT TO 7640 KINDLER ROAD LAUREL, MARYLAND 20723

CLIENT/LAND OWNER: HOWARD COUNTY

DEPARTMENT OF PUBLIC WORKS

BUREAU OF ENVIRONMENTAL SERVICES

TWIN OAKS LOTS 34, 20, 10, PARCEL II PARCELS: 16, 395, 386, 363 TAX MAP: 41 **ELECTION DISTRICT: 6** ZONING: R-20 PLAT NO.: 23146, 20099, 6460

CONSULTING ENGINEERS - PLANNERS 10710 GILROY ROAD HUNT VALLEY, MARYLAND 21031 PHONE: (443) 589-2400 FAX: (443) 589-2401

TWIN OAKS POND #1 SWM BMP AND STREAM CHANNEL REHABILITATION

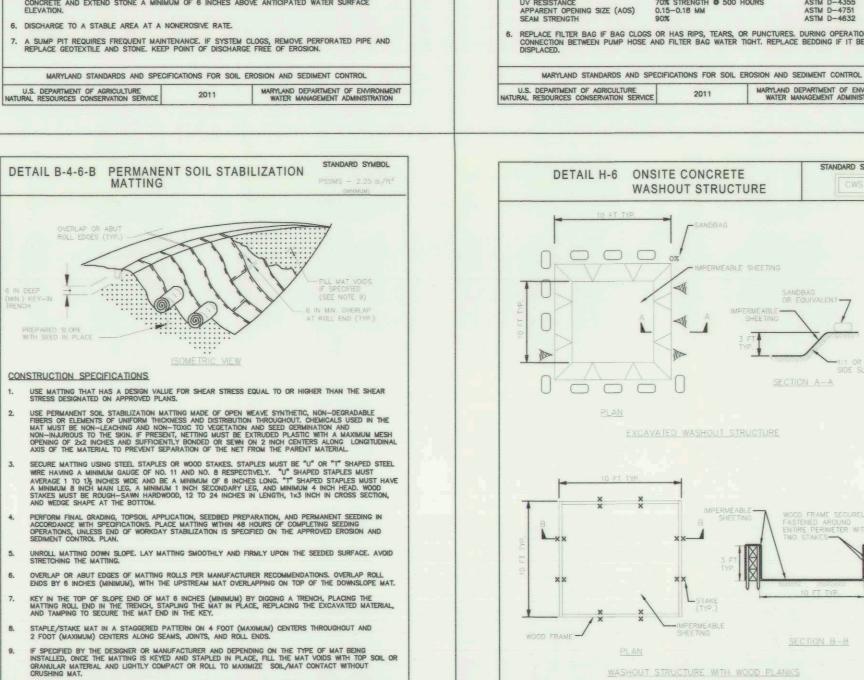
EROSION AND SEDIMENT CONTROL DETAILS (1)

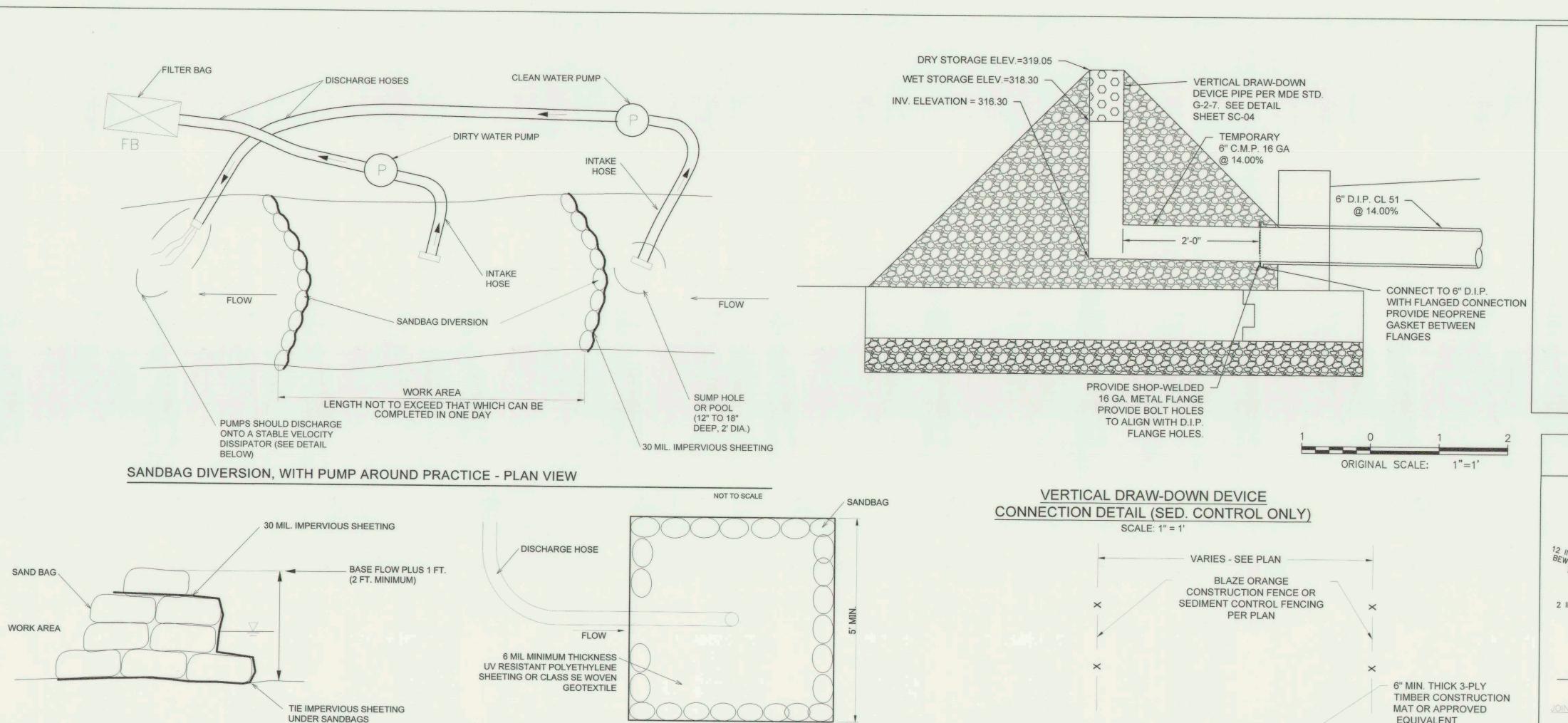


7/17/17

THIS PLAN IS APPROVED FOR SMALL POND CONSTRUCTION AND SOIL EROSION

AND SEDIMENT CONTROL BY THE HOWARD SOIL CONSERVATION DISTRICT.





5' MIN.

PLAN VIEW

NOT TO SCALE

1. PLACE DISCHARGE HOSE IN CENTER OF OUTLET PROTECTION.

2. OUTLET PROTECTION SHALL BE LOCATED INSIDE THE LOD.

OUTLET PROTECTION (OP)

MGWC 1.2: PUMP-AROUND PRACTICE

SANDBAG DIVERSION, WITH PUMP AROUND

PRACTICE - TYPICAL CROSS SECTION

DESCRIPTION THE WORK SHALL CONSIST OF INSTALLING A TEMPORARY PUMP AROUND AND SUPPORTING MEASURES TO DIVERT FLOW AROUND INSTREAM CONSTRUCTION SITES.

NOT TO SCALE

ATION SEQUENCE SEDIMENT CONTROL MEASURES, PUMP-AROUND PRACTICES, AND ASSOCIATED CHANNEL AND BANK CONSTRUCTION SHALL BE COMPLETED IN THE FOLLOWING SEQUENCE (REFER TO DETAIL 1.2):

. CONSTRUCTION ACTIVITIES INCLUDING THE INSTALLATION OF EROSION AND SEDIMENT CONTROL MEASURES SHALL NOT BEGIN UNTIL ALL NECESSARY EASEMENTS AND/OR RIGHT-OF-WAYS HAVE BEEN ACQUIRED. ALL EXISTING UTILITIES HALL BE MARKED IN THE FIELD PRIOR TO CONSTRUCTION. THE CONTRACTOR IS RESPONSIBLE FOR ANY DAMAGE TO EXISTING UTILITIES THAT MAY RESULT FROM CONSTRUCTION AND SHALL REPAIR THE DAMAGE AT HIS/HER OWN EXPENSE TO THE COUNTY'S OR UTILITY COMPANY'S SATISFACTION.

2. THE CONTRACTOR SHALL NOTIFY THE MARYLAND DEPARTMENT OF THE ENVIRONMENT OR WMA SEDIMENT CONTROL INSPECTOR AT LEAST 5 DAYS BEFORE BEGINNING CONSTRUCTION. ADDITIONALLY, THE CONTRACTOR SHALL INFORM THE LOCAL ENVIRONMENTAL PROTECTION AND RESOURCE MANAGEMENT INSPECTION AND ENFORCEMENT DIVISION AND THE PROVIDER OF LOCAL UTILITIES A MINIMUM OF 48 HOURS BEFORE STARTING CONSTRUCTION.

3. THE CONTRACTOR SHALL CONDUCT A PRE-CONSTRUCTION MEETING ON SITE WITH THE WMA SEDIMENT CONTROL INSPECTOR, THE COUNTY PROJECT MANAGER, AND THE ENGINEER TO REVIEW LIMITS OF DISTURBANCE, EROSION AND SEDIMENT CONTROL REQUIREMENTS, AND THE SEQUENCE OF CONSTRUCTION. THE CONTRACTOR SHALL STAKE OUT ALL LIMITS OF DISTURBANCE PRIOR TO THE PRE-CONSTRUCTION MEETING SO THEY MAY BE REVIEWED. THE PARTICIPANTS WILL ALSO DESIGNATE THE CONTRACTOR'S STAGING AREAS AND FLAG ALL TREES WITHIN THE LIMIT OF DISTURBANCE WHICH WILL BE REMOVED FOR CONSTRUCTION ACCESS. TREES SHALL NOT BE REMOVED WITHIN THE LIMIT OF DISTURBANCE WITHOUT APPROVAL FROM THE WMA OR LOCAL AUTHORITY.

4. CONSTRUCTION SHALL NOT BEGIN UNTIL ALL SEDIMENT AND EROSION CONTROL MEASURES HAVE BEEN INSTALLED AND APPROVED BY THE ENGINEER AND THE SEDIMENT CONTROL INSPECTOR, THE CONTRACTOR SHALL STAY WITHIN THE LIMITS OF THE DISTURBANCE AS SHOWN ON THE PLANS AND MINIMIZE DISTURBANCE WITHIN THE WORK AREA WHENEVER POSSIBLE

5. UPON INSTALLATION OF ALL SEDIMENT CONTROL MEASURES AND APPROVAL BY THE SEDIMENT CONTROL INSPECTOR AND THE LOCAL ENVIRONMENTAL PROTECTION AND RESOURCE MANAGEMENT INSPECTION AND ENFORCEMENT DIVISION, THE CONTRACTOR SHALL BEGIN WORK AT THE UPSTREAM SECTION AND PROCEED DOWNSTREAM BEGINNING WITH THE ESTABLISHMENT OF STABILIZED CONSTRUCTION ENTRANCES. IN SOME CASES, WORK MAY BEGIN DOWNSTREAM IF APPROPRIATE. THE SEQUENCE OF CONSTRUCTION MUST BE FOLLOWED UNLESS THE CONTRACTOR GETS WRITTEN APPROVAL FOR DEVIATIONS FROM THE WMA OR LOCAL AUTHORITY. THE CONTRACTOR SHALL ONLY BEGIN WORK IN AN AREA WHICH CAN BE COMPLETED BY THE END OF THE DAY INCLUDING GRADING ADJACENT TO THE CHANNEL. AT THE END OF EACH WORK AREA MUST BE STABILIZED AND THE PUMP AROUND REMOVED FROM THE CHANNEL. WORK SHALL NOT BE CONDUCTED IN THE CHANNEL DURING RAIN EVENTS.

6. SANDBAG DIKES SHALL BE SITUATED AT THE UPSTREAM AND DOWNSTREAM ENDS OF THE WORK AREA AS SHOWN ON THE PLANS, AND STREAM FLOW SHALL BE PUMPED AROUND THE WORK AREA. THE PUMP SHALL DISCHARGE ONTO A STABLE VELOCITY DISSIPATER MADE OF RIPRAP OR SANDBAGS. TEMPORARY MEASURE FOR DEWATERING INCHANNEL CONSTRUCTION SITES.

7. WATER FROM THE WORK AREA SHALL BE PUMPED TO A SEDIMENT FILTERING MEASURE SUCH AS A DEWATERING BASIN, SEDIMENT BAG, OR OTHER APPROVED SOURCE. THE MEASURE SHALL BE LOCATED SUCH THAT THE WATER DRAINS BACK INTO THE CHANNEL BELOW THE DOWNSTREAM SANDBAG DIKE. 8. TRAVERSING A CHANNEL REACH WITH EQUIPMENT WITHIN THE WORK AREA WHERE NO WORK IS PROPOSED SHALL BE AVOIDED. IF EQUIPMENT HAS TO TRAVERSE SUCH A REACH FOR ACCESS TO ANOTHER AREA, THEN TIMBER MATS OR

SIMILAR MEASURES SHALL BE USED TO MINIMIZE DISTURBANCE TO THE CHANNEL, TEMPORARY STREAM CROSSINGS SHALL BE USED ONLY WHEN NECESSARY AND SHALL BE USED ONLY WHERE NOTED ON THE PLANS OR SPECIFIED. (SEE SECTION 4, STREAM CROSSINGS, MARYLAND GUIDELINES TO WATERWAY CONSTRUCTION). 9. ALL STREAM RESTORATION MEASURES SHALL BE INSTALLED AS INDICATED BY THE PLANS AND ALL BANKS GRADED IN ACCORDANCE WITH THE GRADING PLANS AND TYPICAL CROSS-SECTIONS. ALL GRADING MUST BE STABILIZED AT THE ND OF EACH DAY WITH SEED AND MULCH OR SEED AND MATTING AS SPECIFIED ON THE PLANS.

10. AFTER AN AREA IS COMPLETED AND STABILIZED, THE CLEAN WATER DIKE SHALL BE REMOVED. AFTER THE FIRST SEDIMENT FLUSH, A NEW CLEAN WATER DIKE SHALL BE ESTABLISHED UPSTREAM FROM THE OLD SEDIMENT DIKE. FINALLY, UPON ESTABLISHMENT OF A NEW SEDIMENT DIKE BELOW THE OLD ONE, THE OLD SEDIMENT DIKE SHALL BE REMOVED.

11. A PUMP AROUND MUST BE INSTALLED ON ANY TRIBUTARY OR STORM DRAIN OUTFALL WHICH CONTRIBUTES BASEFLOW TO THE WORK AREA. THIS SHALL BE ACCOMPLISHED BY LOCATING A SANDBAG DIKE AT THE DOWNSTREAM END OF THE TRIBUTARY OR STORM DRAIN OUTFALL AND PUMPING THE STREAM FLOW AROUND THE WORK AREA. THIS WATER SHALL DISCHARGE ONTO THE SAME VELOCITY DISSIPATER USED FOR THE MAIN STEM PUMP AROUND. 12. IF A TRIBUTARY IS TO BE RESTORED, CONSTRUCTION SHALL TAKE PLACE ON THE TRIBUTARY BEFORE WORK ON THE MAIN STEM REACHES THE TRIBUTARY CONFLUENCE. CONSTRUCTION IN THE TRIBUTARY, INCLUDING PUMP AROUND

PRACTICES, SHALL FOLLOW THE SAME SEQUENCE AS FOR THE MAIN STEM OF THE RIVER OR STREAM. WHEN CONSTRUCTION ON THE TRIBUTARY IS COMPLETED, WORK ON THE MAIN STEM SHALL RESUME. WATER FROM THE TRIBUTARY SHALL CONTINUE TO BE PUMPED AROUND THE WORK AREA IN THE MAIN STEM.

13. THE CONTRACTOR IS RESPONSIBLE FOR PROVIDING ACCESS TO AND MAINTAINING ALL EROSION AND SEDIMENT CONTROL DEVICES UNTIL THE SEDIMENT CONTROL INSPECTOR APPROVES THEIR REMOVAL.

14. AFTER CONSTRUCTION, ALL DISTURBED AREAS SHALL BE REGRADED AND REVEGETATED AS PER THE PLANTING PLAN.

15. IF, IN THE JUDGMENT OF THE ENGINEER, INADEQUATE ENERGY DISSIPATION OR CHANNEL BED EROSION IS OCCURRING, THE CONTRACTOR SHALL BE REQUIRED TO INCREASE THE MATERIAL OR PLACEMENT SIZE OF THE OUTFALL PROTECTION AT THE DIRECTION OF THE ENGINEER.

16. THE CONDITION OF THE OUTLET PROTECTION SANDBAGS IS TO BE CHECKED TWICE PER DAY (START OF WORK DAY AND MID-DAY) TO ENSURE THAT SAND IS NOT ESCAPING BAGS. DAMAGED OR LEAKING BAGS ARE TO BE REMOVED

17. OUTFALL PROTECTION MATERIALS AND GEOTEXTILE SHALL BE REMOVED FROM THE CHANNEL AT THE COMPLETION OF EACH CONSTRUCTION STAGE.

BUREAU OF ENVIRONMENTAL SERVICES

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

HOWARD SOIL CONSERVATION DISTRICT DATE

EQUIVALENT 6" MIN. THICK WOOD CHIP MULCH REPLENISHED AS-**NEEDED DURING** CONSTRUCTION UNDISTURBED GROUND

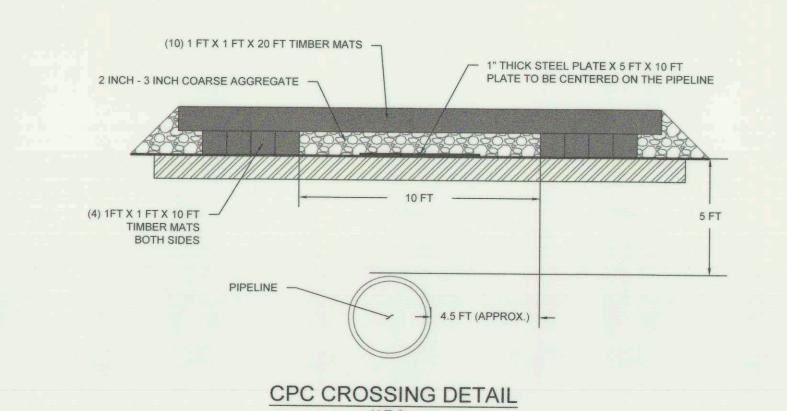
NOTES: 1. TIMBER MATS TO BE INSTALLED AS NEEDED AS SHOWN ON THE APPROVED PLAN AND OVER CRITICAL ROOT ZONES OF TREES, IN WETLANDS, AND OVER SANITARY PIPES AT THE

DIRECTION OF THE ENGINEER 2. MULCH AND TIMBER MATS SHALL BE PLACED PRIOR TO HEAVY EQUIPMENT TRAVERSING THE ACCESS ROUTE

3. ACCESS ROUTES TO BE VERIFIED BY ENGINEER AT PRE-CONSTRUCTION MEETING. REVISIONS TO THE ALIGNMENT THAT MINIMIZE TREE DISTURBANCE ARE ENCOURAGED AND REQUIRE REVIEW AND APPROVAL BY THE ENGINEER AND INSPECTORS

5. THE CONTRACTOR SHALL MAINTAIN MULCH MAT THROUGHOUT CONSTRUCTION. UPON COMPLETION OF THE PROJECT, THE MULCH AND TIMBER MATTING SHALL BE REMOVED IN THEIR ENTIRETY AND THE ACCESS ROUTE RESTORED TO PRE-CONSTRUCTION CONDITION UNLESS OTHERWISE NOTED ON THE PLANS OR DIRECTED BY THE ENGINEER.

TEMPORARY TIMBER MATTING AND MULCH ACCESS ROUTE DETAIL SCALE: N.T.S.



ANCHOR POSTS SHOULD BE MINIMUM 2" STEEL " BLAZE ORANGE TIMBER, 6' IN LENGTH USE 8" WIRE 'U' TO -SECURE FENCE BOTTOM INSTALLED TO A DEPTH OF NO LESS THAN 1/3 OF THE TOTAL HEIGHT OF POST

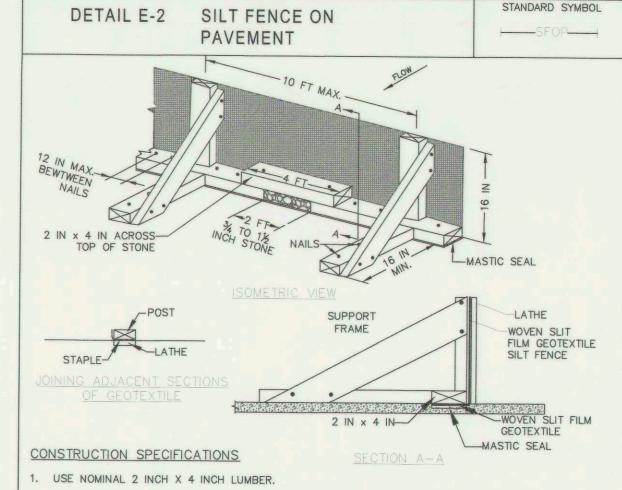
BLAZE ORANGE PLASTIC FENCE

NOT TO SCALE

PROTECTION AREA WILL BE SET AS PART OF THE REVIEW PROCESS. 2. BOUNDARIES OF PROTECTION AREA SHOULD BE STAKED AND FLAGGED PRIOR TO INSTALLING DEVICES

4. DEVICE SHOULD BE MAINTAINED THROUGHOUT CONSTRUCTION

3. AVOID DAMAGE TO CRITICAL ROOT ZONES. DO NOT DAMAGE OR SEVER LARGE



. USE WOVEN SLIT FILM GEOTEXTILE, AS SPECIFIED IN SECTION H-1 MATERIALS.

3. PROVIDE MANUFACTURER CERTIFICATION TO THE AUTHORIZED REPRESENTATIVE OF THE INSPECTION/ENFORCEMENT AUTHORITY SHOWING THAT THE GEOTEXTILE USED MEETS THE REQUIREMENTS IN SECTION H-1 MATERIALS.

4. SPACE UPRIGHT SUPPORTS NO MORE THAN 10 FEET APART.

5. PROVIDE A TWO FOOT OPENING BETWEEN EVERY SET OF SUPPORTS AND PLACE STONE IN THE

6. KEEP SILT FENCE TAUT AND SECURELY STAPLE TO THE UPSLOPE SIDE OF UPRIGHT SUPPORTS. EXTEND GEOTEXTILE UNDER 2x4.

WHERE TWO SECTIONS OF GEOTEXTILE ADJOIN: OVERLAP, FOLD, AND STAPLE TO POST IN

ACCORDANCE WITH THIS DETAIL. ATTACH LATHE.

3. PROVIDE A MASTIC SEAL BETWEEN PAVEMENT, GEOTEXTILE, AND 2x4 TO PREVENT SEDIMENT-LADEN WATER FROM ESCAPING BENEATH SILT FENCE INSTALLATION.

9. SECURE BOARDS TO PAVEMENT WITH 40D 5 INCH MINIMUM LENGTH NAILS.

10. REMOVE ACCUMULATED SEDIMENT AND DEBRIS WHEN BULGES DEVELOP IN SILT FENCE OR WHEN SEDIMENT REACHES 25% OF FENCE HEIGHT. REPLACE GEOTEXTILE IF TORN. MAINTAIN WATER TIGHT SEAL ALONG BOTTOM. REPLACE STONE IF DISPLACED.

MARYLAND STANDARDS AND SPECIFICATIONS FOR SOIL EROSION AND SEDIMENT CONTROL U.S. DEPARTMENT OF AGRICULTURE MARYLAND DEPARTMENT OF ENVIRONMENT NATURAL RESOURCES CONSERVATION SERVICE WATER MANAGEMENT ADMINISTRATION

HOWARD COUNTY DEPARTMENT OF PUBLIC WORKS BUREAU OF ENVIRONMENTAL SERVICES STORMWATER MANAGEMENT DIVISION 6751 COLUMBIA GATEWAY DRIVE, SUITE 514 COLUMBIA, MARYLAND 21046-3143 PHONE: 410.313.0844

CLIENT/LAND OWNER:

		REVISIONS	
NO.	DATE	DESCRIPTION	

SITE INFORMATION

STREET ADDRESS: ADJACENT TO 7640 KINDLER ROAD LAUREL, MARYLAND 20723

TWIN OAKS LOTS 34, 20, 10, PARCEL II PARCELS: 16, 395, 386, 363 TAX MAP: 41 **ELECTION DISTRICT: 6** ZONING: R-20 PLAT NO.: 23146, 20099, 6460

CONSULTING ENGINEERS - PLANNERS 10710 GILROY ROAD

TWIN OAKS POND #1 SWM BMP AND STREAM CHANNEL

REHABILITATION

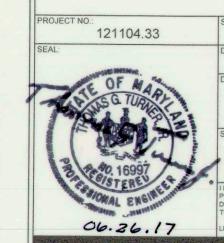
HUNT VALLEY, MARYLAND 21031

PHONE: (443) 589-2400 FAX: (443) 589-2401

EROSION AND SEDIMENT CONTROL DETAILS (2)

N/A

JB/AB



20 of 23 BY CERTIFY THAT THESE DOCUMENTS WERE ULY LICENSED PROFESSIONAL ENGINEER UNDER HE LAWS OF THE STATE OF MARYLAND. ICENSE #: 16997 EXPIRES: 07.19.2018

SC-06 OF SC-07

6/23/2017

CL

OTHER BUILDING OR GRADING INSPECTION APPROVALS MAY NOT BE AUTHORIZED UNTIL THIS INITIAL APPROVAL BY THE INSPECTION AGENCY IS MADE. OTHER RELATED STATE AND FEDERAL PERMITS SHALL BE REFERENCED, TO ENSURE COORDINATION AND TO AVOID CONFLICTS WITH THIS PLAN. ALL VEGETATIVE AND STRUCTURAL PRACTICES ARE TO BE INSTALLED ACCORDING TO THE PROVISIONS OF THIS PLAN AND ARE

TO BE IN CONFORMANCE WITH THE 2011 MARYLAND STANDARDS AND SPECIFICATIONS FOR SOIL EROSION AND SEDIMENT CONTROL. AND REVISIONS THERETO FOLLOWING INITIAL SOIL DISTURBANCE OR RE-DISTURBANCE, PERMANENT OR TEMPORARY STABILIZATION IS REQUIRED WITHIN THREE (3) CALENDAR DAYS AS TO THE SURFACE OF ALL PERIMETER CONTROLS, DIKES, SWALES, DITCHES, PERIMETER SLOPES AND ALL SLOPES GREATER THAN 3H:1V; AND SEVEN (7) DAYS AS TO ALL OTHER DISTURBED AREAS ON THE PROJECT SITE EXCEPT

FOR THOSE AREAS UNDER ACTIVE GRADING. ALL DISTURBED AREAS MUST BE STABILIZED WITHIN THE TIME PERIOD SPECIFIED ABOVE IN ACCORDANCE WITH THE 2011 MARYLAND STANDARDS AND SPECIFICATIONS FOR SOIL EROSION AND SEDIMENT CONTROL FOR TOPSOIL (SEC. B-4-2), PERMANENT SEEDING (SEC. B-4-5), TEMPORARY SEEDING (SEC. B-4-4), AND MULCHING (SEC. B-4-3). TEMPORARY STABILIZATION WITH MULCH ALONE CAN ONLY BE APPLIED BETWEEN THE FALL AND SPRING SEEDING DATES IF THE GROUND IS FROZEN. INCREMENTAL STABILIZATION (SEC. B-4-1) SPECIFICATIONS SHALL BE ENFORCED IN AREAS WITH >15' OF CUT AND/OR FILL. STOCKPILES (SEC. B-4-8) IN EXCESS OF 20 FT. MUST BE BENCHED WITH STABLE OUTLET. ALL CONCENTRATED FLOW, STEEP SLOPE, AND HIGHLY ERODIBLE AREAS SHALL RECEIVE SOIL STABILIZATION MATTING (SEC. B-4-6). ALL SEDIMENT CONTROL STRUCTURES ARE TO REMAIN IN PLACE AND ARE TO BE MAINTAINED IN OPERATIVE CONDITION UNTIL

PERMISSION FOR THEIR REMOVAL HAS BEEN OBTAINED FROM THE C.I.D. SITE ANALYSIS: TOTAL AREA OF SITE 45,461 SF (1.04 ACRES) AREA DISTURBED 45,461 SF (1.04 ACRES AREA TO BE ROOFED OR PAVED 1,607 SF (0.04 ACRES) AREA TO BE VEGETATIVELY STABILIZED 29,841 SF (0.69 ACRES (AREA ABOVE NORMAL POOL (0.18 AC.) NOT STABILIZED BY RIPRAP OR GABIONS) TOTAL CUT TOTAL FILL OFFSITE WASTE/BORROW AREA LOCATION TBD BY CONTRACTOR* ANY SEDIMENT CONTROL PRACTICE THAT IS DISTURBED BY GRADING ACTIVITY FOR PLACEMENT OF UTILITIES MUST BE REPAIRED B.3.a.

ON THE SAME DAY OF DISTURBANCE. ANY SEDIMENT CONTROL MUST BE PROVIDED, IF DEEMED NECESSARY BY THE C.I.D. THE SITE AND ALL CONTROLS SHALL BE INSPECTED BY THE CONTRACTOR WEEKLY; AND THE NEXT DAY AFTER EACH RAIN EVENT. A WRITTEN REPORT BY THE CONTRACTOR, MADE AVAILABLE UPON REQUEST, IS PART OF EVERY INSPECTION AND SHOULD INCLUDE: INSPECTION DATE

INSPECTION TYPE (ROUTINE, PRE-STORM EVENT, DURING RAIN EVENT) NAME AND TITLE OF INSPECTOR WEATHER INFORMATION (CURRENT CONDITIONS AS WELL AS TIME AND AMOUNT OF LAST RECORDED PRECIPITATION) BRIEF DESCRIPTION OF PROJECT'S STATUS (E.G. PERCENT COMPLETE) AND/OR CURRENT ACTIVITIES EVIDENCE OF SEDIMENT DISCHARGES IDENTIFICATION OF PLAN DEFICIENCIES IDENTIFICATION OF SEDIMENT CONTROLS THAT REQUIRE MAINTENANCE IDENTIFICATION OF MISSING OR IMPROPERLY INSTALLED SEDIMENT CONTROLS 8.10. COMPLIANCE STATUS REGARDING THE SEQUENCE OF CONSTRUCTION AND STABILIZATION REQUIREMENTS 8.11. **PHOTOGRAPHS** 8.12. MONITORING/SAMPLING

OTHER INSPECTION ITEMS AS REQUIRED BY THE GENERAL PERMIT FOR STORMWATER ASSOCIATED WITH CONSTRUCTION ACTIVITIES (NPDES, MDE) TRENCHES FOR THE CONSTRUCTION OF UTILITIES IS LIMITED TO THREE PIPE LENGTHS OR THAT WHICH CAN BE BACK-FILLED AND STABILIZED BY THE END OF EACH WORKDAY, WHICHEVER IS SHORTER.

THE HSCD PRIOR TO PROCEEDING WITH CONSTRUCTION. MINOR REVISIONS MAY BE ALLOWED BY THE C.I.D. PER THE LIST OF HSCD-APPROVED FIELD CHANGES. DISTURBANCE SHALL NOT OCCUR OUTSIDE THE L.O.D. A PROJECT IS TO BE SEQUENCED SO THAT GRADING ACTIVITIES BEGIN ON ONE GRADING UNIT (MAXIMUM ACREAGE OF 20 AC. PER GRADING UNIT) AT A TIME. WORK MAY PROCEED TO A SUBSEQUENT GRADING UNIT WHEN AT LEAST 50 PERCENT OF THE DISTURBED AREA IN THE PRECEDING GRADING UNIT HAS BEEN STABILIZED AND APPROVED BY THE C.I.D. UNLESS OTHERWISE SPECIFIED AND APPROVED BY THEC.I.D., NO MORE THAN 30 ACRES

CUMULATIVELY MAY BE DISTURBED AT A GIVEN TIME. WASH WATER FROM ANY EQUIPMENT, VEHICLES, WHEELS, PAVEMENT, AND OTHER SOURCES MUST BE TREATED IN A SEDIMENT BASIN OR OTHER APPROVED WASHOUT STRUCTURE.

TOPSOIL SHALL BE STOCKPILED AND PRESERVED ON-SITE FOR REDISTRIBUTION ONTO FINAL GRADE. WITH LOWER ENDS CURLED UP BY 2' IN ELEVATION.

STREAM CHANNELS MUST NOT BE DISTURBED DURING THE FOLLOWING RESTRICTED TIME PERIODS (INCLUSIVE): USE I AND I-P (MARCH 1 - JUNE 15) 15.1.

USE III AND III-P (OCTOBER 1 - APRIL 30) USE IV (MARCH 1 - MAY 31)

MAINTENANCE AND/OR CORRECTIVE ACTION REQUIRED

8.13.

15.2.

15.3.

A COPY OF THIS PLAN, THE 2011 MARYLAND STANDARDS AND SPECIFICATIONS FOR SOIL EROSION AND SEDIMENT CONTROL. THE ASSOCIATED PERMITS SHALL BE ON-SITE AND AVAILABLE WHEN THE SITE IS ACTIVE.

MDE STANDARD B-4-2 STANDARDS AND SPECIFICATIONS FOR SOIL PREPARATION, TOPSOILING, AND SOIL AMENDMENTS

THE PROCESS OF PREPARING THE SOILS TO SUSTAIN ADEQUATE VEGETATIVE STABILIZATION.

O PROVIDE A SUITABLE SOIL MEDIUM FOR VEGETATIVE GROWTH.

A. SOIL PREPARATION A.1. TEMPORARY STABILIZATION A.1.a. SEEDBED PREPARATION CONSISTS OF LOOSENING SOIL TO A DEPTH OF 3 TO 5 INCHES BY MEANS OF SUITABLE AGRICULTURAL OR CONSTRUCTION EQUIPMENT, SUCH AS DISC HARROWS OR CHISEL PLOWS OR RIPPERS MOUNTED ON A. SEEDING CONSTRUCTION EQUIPMENT. AFTER THE SOIL IS LOOSENED, IT MUST NOT BE ROLLED OR DRAGGED SMOOTH BUT LEFT IN A.1. SPECIFICATIONS

THE ROUGHENED CONDITION. SLOPES 3:1 OR FLATTER ARE TO BE TRACKED WITH RIDGES RUNNING PARALLEL TO THE CONTOUR OF THE SLOPE APPLY FERTILIZER AND LIME AS PRESCRIBED ON THE PLANS. INCORPORATE LIME AND FERTILIZER INTO THE TOP 3 TO 5 INCHES OF SOIL BY DISKING OR OTHER SUITABLE MEANS. A.2. PERMANENT STABILIZATION

A.2.a. A SOIL TEST IS REQUIRED FOR ANY EARTH DISTURBANCE OF 5 ACRES OR MORE. THE MINIMUM SOIL CONDITIONS REQUIRED A.1.b. FOR PERMANENT VEGETATIVE ESTABLISHMENT ARE: SOIL PH BETWEEN 6 0 AND 7 0 SOLUBLE SALTS LESS THAN 500 PARTS PER MILLION (PPM). SOIL CONTAINS LESS THAN 40 PERCENT CLAY BUT ENOUGH FINE GRAINED MATERIAL (GREATER THAN 30 PERCENT SILT PLUS CLAY) TO PROVIDE THE CAPACITY TO HOLD A MODERATE AMOUNT OF MOISTURE. AN EXCEPTION: IF LOVEGRASS WILL BE PLANTED, THEN A SANDY SOIL (LESS THAN 30 PERCENT SILT PLUS CLAY) WOULD BE ACCEPTABLE. SOIL CONTAINS 1.5 PERCENT MINIMUM ORGANIC MATTER BY WEIGHT. SOIL CONTAINS SUFFICIENT PORE SPACE TO PERMIT ADEQUATE ROOT PENETRATION. A.2.b. APPLICATION OF AMENDMENTS OR TOPSOIL IS REQUIRED IF ON-SITE SOILS DO NOT MEET THE ABOVE CONDITIONS.

GRADED AREAS MUST BE MAINTAINED IN A TRUE AND EVEN GRADE AS SPECIFIED ON THE APPROVED PLAN, THEN SCARIFIED A.2. APPLICATION OR OTHERWISE LOOSENED TO A DEPTH OF 3 TO 5 INCHES. APPLY SOIL AMENDMENTS AS SPECIFIED ON THE APPROVED PLAN OR AS INDICATED BY THE RESULTS OF A SOIL TEST. MIX SOIL AMENDMENTS INTO THE TOP 3 TO 5 INCHES OF SOIL BY DISKING OR OTHER SUITABLE MEANS. RAKE LAWN AREAS TO SMOOTH THE SURFACE, REMOVE LARGE OBJECTS LIKE STONES AND BRANCHES, AND READY THE AREA FOR SEED APPLICATION. LOOSEN SURFACE SOIL BY DRAGGING WITH A HEAVY CHAIN OR OTHER EQUIPMENT TO ROUGHEN THE SURFACE WHERE SITE CONDITIONS WILL NOT PERMIT NORMAL SEEDBED PREPARATION. TRACK SLOPES 3:1 OR FLATTER WITH TRACKED EQUIPMENT LEAVING THE SOIL IN AN IRREGULAR CONDITION WITH RIDGES RUNNING PARALLEL TO THE CONTOUR OF THE SLOPE. LEAVE THE TOP 1 TO 3 INCHES OF SOIL LOOSE AND FRIABLE. SEEDBED LOOSENING MAY BE UNNECESSARY ON NEWLY DISTURBED AREAS.

B.1. TOPSOIL IS PLACED OVER PREPARED SUBSOIL PRIOR TO ESTABLISHMENT OF PERMANENT VEGETATION. THE PURPOSE IS TO A.2.c. HYDROSEEDING: APPLY SEED UNIFORMLY WITH HYDROSEEDER (SLURRY INCLUDES SEED AND FERTILIZER). PROVIDE A SUITABLE SOIL MEDIUM FOR VEGETATIVE GROWTH. SOILS OF CONCERN HAVE LOW MOISTURE CONTENT, LOW NUTRIENT LEVELS, LOW PH, MATERIALS TOXIC TO PLANTS, AND/OR UNACCEPTABLE SOIL GRADATION. B.2. TOPSOIL SALVAGED FROM AN EXISTING SITE MAY BE USED PROVIDED 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-NRCS.

B.3. TOPSOILING IS LIMITED TO AREAS HAVING 2:1 OR FLATTER SLOPES WHERE THE TEXTURE OF THE EXPOSED SUBSOIL/PARENT MATERIAL IS NOT ADEQUATE TO PRODUCE VEGETATIVE GROWTH. THE SOIL MATERIAL IS SO SHALLOW THAT THE ROOTING ZONE IS NOT DEEP ENOUGH TO SUPPORT PLANTS OR FURNISH CONTINUING SUPPLIES OF MOISTURE AND PLANT NUTRIENTS THE ORIGINAL SOIL TO BE VEGETATED CONTAINS MATERIAL TOXIC TO PLANT GROWTH.

THE SOIL IS SO ACIDIC THAT TREATMENT WITH LIMESTONE IS NOT FEASIBLE. B.4. AREAS HAVING SLOPES STEEPER THAN 2:1 REQUIRE SPECIAL CONSIDERATION AND DESIGN. B.5. TOPSOIL SPECIFICATIONS: SOIL TO BE USED AS TOPSOIL MUST MEET THE FOLLOWING CRITERIA: TOPSOIL MUST BE A LOAM, SANDY LOAM, CLAY LOAM, SILT LOAM, SANDY CLAY LOAM, OR LOAMY SAND OTHER SOILS MAY BE USED IF RECOMMENDED BY AN AGRONOMIST OR SOIL SCIENTIST AND APPROVED BY THE APPROPRIATE APPROVAL AUTHORITY. TOPSOIL MUST NOT BE A MIXTURE OF CONTRASTING TEXTURED SUB-SOILS AND MUST CONTAIN LESS THAN 5 PERCENT BY VOLUME OF CINDERS, STONES, SLAG, COARSE FRAGMENTS, GRAVEL, STICKS, ROOTS, B.1.b. TRASH, OR OTHER MATERIALS LARGER THAN 1½ INCHES IN DIAMETER. TOPSOIL MUST BE FREE OF NOXIOUS PLANTS OR PLANT PARTS SUCH AS BERMUDA GRASS, QUACK GRASS, JOHNSON GRASS, B.1.b. NUT SEDGE, POISON IVY, THISTLE, OR OTHERS AS SPECIFIED.

TOPSOIL SUBSTITUTES OR AMENDMENTS, AS RECOMMENDED BY A QUALIFIED AGRONOMIST OR SOIL SCIENTIST AND APPROVED BY THE APPROPRIATE APPROVAL AUTHORITY, MAY BE USED IN LIEU OF NATURAL TOPSOIL. B.6. TOPSOIL APPLICATION EROSION AND SEDIMENT CONTROL PRACTICES MUST BE MAINTAINED WHEN APPLYING TOPSOIL. UNIFORMLY DISTRIBUTE TOPSOIL IN A 5 TO 8 INCH LAYER AND LIGHTLY COMPACT TO A MINIMUM THICKNESSOF 4 INCHES. SPREADING IS TO BE PERFORMED IN SUCH A MANNER THAT SODDING OR SEEDING CAN PROCEED WITH A MINIMUM OF ADDITIONAL SOIL PREPARATION AND TILLAGE. ANY IRREGULARITIES IN THE SURFACE RESULTING FROM TOPSOILING OR OTHER OPERATIONS MUST BE CORRECTED IN ORDER TO PREVENT THE FORMATION OF DEPRESSIONS OR WATER POCKETS. TOPSOIL MUST NOT BE PLACED IF THE TOPSOIL OR SUBSOIL IS IN A FROZEN OR MUDDY CONDITION, WHEN THE SUBSOIL IS EXCESSIVELY WET OR IN A CONDITION THAT MAY OTHERWISE BE DETRIMENTAL TO PROPER GRADING AND SEEDBED

PREPARATION C. SOIL AMENDMENTS (FERTILIZER AND LIME SPECIFICATIONS) ANY MAJOR CHANGES OR REVISIONS TO THE PLAN OR SEQUENCE OF CONSTRUCTION MUST BE REVIEWED AND APPROVED BY C.1. SOIL TESTS MUST BE PERFORMED TO DETERMINE THE EXACT RATIOS AND APPLICATION RATES FOR BOTH LIME AND FERTILIZER ON SITES HAVING DISTURBED AREAS OF 5 ACRES OR MORE. SOIL ANALYSIS MAY BE PERFORMED BY A RECOGNIZED PRIVATE OR OMMERCIAL LABORATORY. SOIL SAMPLES TAKEN FOR ENGINEERING PURPOSES MAY ALSO BE USED FOR CHEMICAL ANALYSES. FERTILIZERS MUST BE UNIFORM IN COMPOSITION, FREE FLOWING AND SUITABLE FOR ACCURATE APPLICATION BY APPROPRIATE B.2.c. EQUIPMENT. MANURE MAY BE SUBSTITUTED FOR FERTILIZER WITH PRIOR APPROVAL FROM THE APPROPRIATE APPROVAL AUTHORITY, FERTILIZERS MUST ALL BE DELIVERED TO THE SITE FULLY LABELED ACCORDING TO THE APPLICABLE LAWS AND MUST BEAR THE NAME, TRADE NAME OR TRADEMARK AND WARRANTY OF THE PRODUCER. C.3. LIME MATERIALS MUST BE GROUND LIMESTONE (HYDRATED OR BURNT LIME MAY BE SUBSTITUTED EXCEPT WHEN HYDROSEEDING) WHICH CONTAINS AT LEAST 50 PERCENT TOTAL OXIDES (CALCIUM OXIDE PLUS MAGNESIUM OXIDE). LIMESTONE MUST BE GROUND TO SUCH FINENESS THAT AT LEAST 50 PERCENT WILL PASS THROUGH A #100 MESH SIEVE AND 98 TO 100 PERCENT WILL PASS THROUGH A #20 MESH SIEVE.

OTHER SUITABLE MEANS ALL SILT FENCE AND SUPER SILT FENCE SHALL BE PLACED ON-THE-CONTOUR, AND BE IMBRICATED AT 25' MINIMUM INTERVALS. C.5. WHERE THE SUBSOIL IS EITHER HIGHLY ACIDIC OR COMPOSED OF HEAVY CLAYS, SPREAD GROUND LIMESTONE AT THE RATE OF 4 TO 8 TONS/ACRE (200-400 POUNDS PER 1,000 SQUARE FEET) PRIOR TO THE PLACEMENT OF TOPSOIL.

SUPPLEMENTAL REQUIREMENTS TOPSOIL SHALL CONTAIN 50-75% SAND, 15-25% SILT, AND 10-20% CLAY AND NOT LESS THAN 2.5% ORGANIC MATTER BY WEIGHT. TOPSOIL SHALL NOT HAVE A pH VALUE LESS THAN 5.8.

			PERMANEN	IT SEEDING SUI	MMARY				
	SEED MIXTURE	(HARDINESS ZON	E 6B) FROM TABLE B.3		FERT	ILIZER RATE (10-2	0-20)		
NO.	SPECIES	APPLICATION RATE (LB/AC.)	SEEDING DATES	SEEDING DEPTHS	N	P205	K20	LIME RATE	
1	SWITCH GRASS	120							
	CREEPING RED FESCUE	181	1 MARCH TO 45 MANY						
	PARTRIDGE PEA	49	1 MARCH TO 15 MAY; 16 MAY TO 15 JUNE WITH ADDITIONAL WATERING						
	DEER TONGUE	131							
3	CREEPING RED FESCUE	175		1/4" TO 1/2"	45LB/AC (1 LB/1,000 SF)	90 LB/AC (2 LB/1,000 SF)	90 LB/AC (2 LB/1,000 SF)	2 TONS/AC (90 LB/1000 SF	
	VIRGINIA WILD RYE	43							
9	TALL FESCUE	175	15 AUGUST TO 15 OCTOBER						, , ,
	KENTUCKY BLUEGRASS	117							

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

HOWARD SOIL CONSERVATION DISTRICT

		TEI	MPORARY SEEDING SUN	MARY					
	SEED MIXTURE	SEED MIXTURE (HARDINESS ZONE 6B) FROM TABLE B.1							
NO.	SPECIES	APPLICATION RATE (LB/AC.)	SEEDING DATES	SEEDING DEPTHS	FERTILIZER RATE (10-10-10)	LIME RATE			
1	ANNUAL RYEGRASS	40	1 MARCH TO 31 MAY 1 AUG. TO 15 OCT.	1"	436 LB/AC (10 LB/1,000 SF)	2 TONS/AC (90 LB/1000 SF)			
2	BARLEY	96	1 MARCH TO 31 MAY 1 AUG. TO 15 OCT.	1/2"	436 LB/AC (10 LB/1,000 SF)	2 TONS/AC (90 LB/1000 SF)			
3	FOXTAIL MILLET	30	16 MAY TO 31 JULY	1/2"	436 LB/AC (10 LB/1,000 SF)	2 TONS/AC (90 LB/1000 SF)			

NOTE: IF PERMANENT STABILIZATION IS REQUIRED OUTSIDE OF SPECIFIED SEEDING DATES, THE CONTRACTOR SHALL PROVIDE TEMPORARY STABILIZATION MEASURES (SEED AND MULCH) UNTIL THE APPROPRIATE SEEDING DATES FOR THE SPECFIED SEED MIXES OCCUR. THE CONTRACTOR SHALL PROVIDE PERMANENT STABILIZATION SEEDING WITHIN THE SPECIFIED SEEDING DATES.

MDE STANDARD B-4-3 STANDARDS AND SPECIFICATIONS FOR SEEDING AND MULCHING

THE APPLICATION OF SEED AND MULCH TO ESTABLISH VEGETATIVE COVER.

O PROTECT DISTURBED SOILS FROM EROSION DURING AND AT THE END OF CONSTRUCTION.

CONDITIONS WHERE PRACTICE APPLIES
TO THE SURFACE OF ALL PERIMETER CONTROLS, SLOPES, AND ANY DISTURBED AREA NOT UNDER ACTIVE GRADING.

A.1.a. ALL SEED MUST MEET THE REQUIREMENTS OF THE MARYLAND STATE SEED LAW. ALL SEED MUST BE SUBJECT TO RE-TESTING BY A RECOGNIZED SEED LABORATORY. ALL SEED USED MUST HAVE BEEN TESTED WITHIN THE 6 MONTHS IMMEDIATELY PRECEDING THE DATE OF SOWING SUCH MATERIAL ON ANY PROJECT. REFER TO TABLE B.4 REGARDING THE QUALITY OF SEED. SEED TAGS MUST BE AVAILABLE UPON REQUEST TO THE INSPECTOR TO VERIFY TYPE OF SEED AND SEEDING RATE MULCH ALONE MAY BE APPLIED BETWEEN THE FALL AND SPRING SEEDING DATES ONLY IF THE GROUND IS FROZEN. THE APPROPRIATE SEEDING MIXTURE MUST BE APPLIED WHEN THE GROUND THAWS. INOCULANTS: THE INOCULANT FOR TREATING LEGUME SEED IN THE SEED MIXTURES MUST BE A PURE CULTURE OF NITROGEN FIXING BACTERIA PREPARED SPECIFICALLY FOR THE SPECIES. INOCULANTS MUST NOT BE USED LATER THAN THE DATE INDICATED ON THE CONTAINER. ADD FRESH INOCULANTS AS DIRECTED ON THE PACKAGE. USE FOUR TIMES THE

RECOMMENDED RATE WHEN HYDROSEEDING. NOTE: IT IS VERY IMPORTANT TO KEEP INOCULANT AS COOL AS POSSIBLE UNTIL USED. TEMPERATURES ABOVE 75 TO 80 DEGREES FAHRENHEIT CAN WEAKEN BACTERIA AND MAKE THE INOCULANT LESS EFFECTIVE SOD OR SEED MUST NOT BE PLACED ON SOIL WHICH HAS BEEN TREATED WITH SOIL STERILANTS OR CHEMICALS USED FOR

WEED CONTROL UNTIL SUFFICIENT TIME HAS ELAPSED (14 DAYS MIN.) TO PERMIT DISSIPATION OF PHYTO-TOXIC MATERIALS. A.2.a. DRY SEEDING: THIS INCLUDES USE OF CONVENTIONAL DROP OR BROADCAST SPREADERS. INCORPORATE SEED INTO THE SOIL AT THE RATES PRESCRIBED ON TEMPORARY SEEDING TABLE B.1, PERMANENT

SEEDING TABLE B.3, OR SITE-SPECIFIC SEEDING SUMMARIES. APPLY SEED IN TWO DIRECTIONS, PERPENDICULAR TO EACH OTHER, APPLY HALF THE SEEDING RATE IN EACH DIRECTION. ROLL THE SEEDED AREA WITH A WEIGHTED ROLLER TO PROVIDE GOOD SEED TO SOIL CONTACT. DRILL OR CULTIPACKER SEEDING: MECHANIZED SEEDERS THAT APPLY AND COVER SEED WITH SOIL. CULTIPACKING SEEDERS ARE REQUIRED TO BURY THE SEED IN SUCH A FASHION AS TO PROVIDE AT LEAST 1/4 INCH OF SOIL COVERING. SEEDBED MUST BE FIRM AFTER PLANTING. APPLY SEED IN TWO DIRECTIONS, PERPENDICULAR TO EACH OTHER. APPLY HALF THE SEEDING RATE IN EACH

IF FERTILIZER IS BEING APPLIED AT THE TIME OF SEEDING, THE APPLICATION RATES SHOULD NOT EXCEED THE FOLLOWING: NITROGEN, 100 POUNDS PER ACRE TOTAL OF SOLUBLE NITROGEN; P2O5 (PHOSPHOROUS), 200 POUNDS PER ACRE: K20 (POTASSIUM), 200 POUNDS PER ACRE. A.2.c. LIME: USE ONLY GROUND AGRICULTURAL LIMESTONE (UP TO 3 TONS PER ACRE MAY BE APPLIED BY HYDROSEEDING). NORMALLY, NOT MORE THAN 2 TONS ARE APPLIED BY HYDROSEEDING AT ANY ONE TIME. DO NOT USE BURNT OR HYDRATED LIME WHEN HYDROSEEDING

MIX SEED AND FERTILIZER ON SITE AND SEED IMMEDIATELY AND WITHOUT INTERRUPTION. A.2.c.

WHEN HYDROSEEDING DO NOT INCORPORATE SEED INTO THE SOIL.

A.2.c. B. MULCHING

B.1. MULCH MATERIALS (IN ORDER OF PREFERENCE) STRAW CONSISTING OF THOROUGHLY THRESHED WHEAT, RYE, OAT, OR BARLEY AND REASONABLY BRIGHT IN COLOR. STRAW IS TO BE FREE OF NOXIOUS WEED SEEDS AS SPECIFIED IN THE MARYLAND SEED LAW AND NOT MUSTY, MOLDY, CAKED, DECAYED, OR EXCESSIVELY DUSTY. NOTE: USE ONLY STERILE STRAW MULCH IN AREAS WHERE ONE SPECIES OF

WOOD CELLULOSE FIBER MULCH (WCFM) CONSISTING OF SPECIALLY PREPARED WOOD CELLULOSE PROCESSED INTO A UNIFORM FIBROUS PHYSICAL STATE. WCFM IS TO BE DYED GREEN OR CONTAIN A GREEN DYE IN THE PACKAGE THAT WILL PROVIDE AN APPROPRIATE COLOR

O FACILITATE VISUAL INSPECTION OF THE UNIFORMLY SPREAD SLURRY. WCFM, INCLUDING DYE, MUST CONTAIN NO GERMINATION OR GROWTH INHIBITING FACTORS. WCFM MATERIALS ARE TO BE MANUFACTURED AND PROCESSED IN SUCH A MANNER THAT THE WOOD CELLULOSE FIBER MULCH WILL REMAIN IN UNIFORM SUSPENSION IN WATER UNDER AGITATION AND WILL BLEND WITH SEED, FERTILIZER AND OTHER ADDITIVES TO FORM A HOMOGENEOUS SLURRY. THE MULCH MATERIAL MUST FORM A BLOTTER-LIKE GROUND COVER, ON APPLICATION, HAVING MOISTURE ABSORPTION AND PERCOLATION PROPERTIES AND MUST COVER AND HOLD GRASS SEED IN CONTACT WITH THE SOIL WITHOUT INHIBITING THE GROWTH OF THE GRASS SEEDLINGS. WCFM MATERIAL MUST NOT CONTAIN ELEMENTS OR COMPOUNDS AT CONCENTRATION LEVELS THAT WILL BE

WCFM MUST CONFORM TO THE FOLLOWING PHYSICAL REQUIREMENTS: FIBER LENGTH OF APPROXIMATELY 10 MILLIMETERS, DIAMETER APPROXIMATELY 1 MILLIMETER, PH RANGE OF 4.0 TO 8.5, ASH CONTENT OF 1.6 PERCENT MAXIMUM AND WATER HOLDING CAPACITY OF 90 PERCENT MINIMUM.

APPLICATION APPLY MULCH TO ALL SEEDED AREAS IMMEDIATELY AFTER SEEDING. WHEN STRAW MULCH IS USED, SPREAD IT OVER ALL SEEDED AREAS AT THE RATE OF 2 TONS PER ACRE TO A UNIFORM LOOSE DEPTH OF 1 TO 2 INCHES, APPLY MULCH TO ACHIEVE A UNIFORM DISTRIBUTION AND DEPTH SO THAT THE SOIL

SURFACE IS NOT EXPOSED. WHEN USING A MULCH ANCHORING TOOL, INCREASE THE APPLICATION RATE TO 2.5 TONS PER WOOD CELLULOSE FIBER USED AS MULCH MUST BE APPLIED AT A NET DRY WEIGHT OF 1500 POUNDS PER ACRE. MIX THE WOOD CELLULOSE FIBER WITH WATER TO ATTAIN A MIXTURE WITH A MAXIMUM OF 50 POUNDS OF WOOD CELLULOSE FIBER

PER 100 GALLONS OF WATER ANCHORING PERFORM MULCH ANCHORING IMMEDIATELY FOLLOWING APPLICATION OF MULCH TO MINIMIZE LOSS BY WIND OR WATER. THIS MAY BE DONE BY ONE OF THE FOLLOWING METHODS (LISTED BY PREFERENCE), DEPENDING UPON THE SIZE OF THE

AREA AND FROSION HAZARD A MULCH ANCHORING TOOL IS A TRACTOR DRAWN IMPLEMENT DESIGNED TO PUNCH AND ANCHOR MULCH INTO THE SOIL 25. (DAYS 54-60) COMPLETE EXCAVATION AND GRADING OF BASIN TO FINISHED GRADE AS SHOWN JRFACE A MINIMUM OF 2 INCHES. THIS PRACTICE IS MOST EFFECTIVE ON LARGE AREAS, BUT IS LIMITED TO FLATTER SLOPES WHERE EQUIPMENT CAN OPERATE SAFELY. IF USED ON SLOPING LAND, THIS PRACTICE SHOULD FOLLOW THE WOOD CELLULOSE FIBER MAY BE USED FOR ANCHORING STRAW. APPLY THE FIBER BINDER AT A NET DRY WEIGHT OF 750

POUNDS PER ACRE. MIX THE WOOD CELLULOSE FIBER WITH WATER AT A MAXIMUM OF 50 POUNDS OF WOOD CELLULOSE FIBER PER 100 GALLONS OF WATER. SYNTHETIC BINDERS SUCH AS ACRYLIC DLR (AGRO-TACK), DCA-70, PETROSET, TERRA TAX II, TERRA TACK AR OR OTHER APPROVED EQUAL MAY BE USED. FOLLOW APPLICATION RATES AS SPECIFIED BY THE MANUFACTURER. APPLICATION OF LIQUID BINDERS NEEDS TO BE HEAVIER AT THE EDGES WHERE WIND CATCHES MULCH, SUCH AS IN VALLEYS AND ON

CRESTS OF BANKS. USE OF ASPHALT BINDERS IS STRICTLY PROHIBITED. LIGHTWEIGHT PLASTIC NETTING MAY BE STAPLED OVER THE MULCH ACCORDING TO MANUFACTURER RECOMMENDATIONS. NETTING IS USUALLY AVAILABLE IN ROLLS 4 TO 15 FEET WIDE AND 300 TO 3,000 FEET LONG.

MDE STANDARD B-4-8 STANDARDS AND SPECIFICATIONS FOR STOCKPILE AREA

A MOUND OR PILE OF SOIL PROTECTED BY APPROPRIATELY DESIGNED EROSION AND SEDIMENT CONTROL MEASURES.

O PROVIDE A DESIGNATED LOCATION FOR THE TEMPORARY STORAGE OF SOIL THAT CONTROLS THE POTENTIAL FOR EROSION, SEDIMENTATION, AND CHANGES TO DRAINAGE PATTERNS.

STOCKPILE AREAS ARE UTILIZED WHEN IT IS NECESSARY TO SALVAGE AND STORE SOIL FOR LATER USE.

Manor loam

Manor-Brinklow complex | 25-65%

1. THE STOCKPILE LOCATION AND ALL RELATED SEDIMENT CONTROL PRACTICES MUST BE CLEARLY INDICATED ON THE EROSION AND

MaD

SEDIMENT CONTROL PLAN

2. THE FOOTPRINT OF THE STOCKPILE MUST BE SIZED TO ACCOMMODATE THE ANTICIPATED VOLUME OF MATERIAL AND BASED ON A SIDE SLOPE RATIO NO STEEPER THAN 2:1. BENCHING MUST BE PROVIDED IN ACCORDANCE WITH SECTION B-3 LAND GRADING. 3. RUNOFF FROM THE STOCKPILE AREA MUST DRAIN TO A SUITABLE SEDIMENT CONTROL PRACTICE. 4. ACCESS THE STOCKPILE AREA FROM THE UPGRADE SIDE.

TEMPORARY SWALE OR DIVERSION FENCE. PROVISIONS MUST BE MADE FOR DISCHARGING CONCENTRATED FLOW IN A NON-EROSIVE 6. WHERE RUNOFF CONCENTRATES ALONG THE TOE OF THE STOCKPILE FILL, AN APPROPRIATE EROSION/SEDIMENT CONTROL PRACTICE MUST BE USED TO INTERCEPT THE DISCHARGE.

5. CLEAR WATER RUNOFF INTO THE STOCKPILE AREA MUST BE MINIMIZED BY USE OF A DIVERSION DEVICE SUCH AS AN EARTH DIKE.

7. STOCKPILES MUST BE STABILIZED IN ACCORDANCE WITH THE 3/7 DAY STABILIZATION REQUIREMENT AS WELL AS STANDARD B-4-1 INCREMENTAL STABILIZATION AND STANDARD B-4-4 TEMPORARY STABILIZATION. 8. IF THE STOCKPILE IS LOCATED ON AN IMPERVIOUS SURFACE, A LINER SHOULD BE PROVIDED BELOW THE STOCKPILE TO FACILITATE

CLEANUP. STOCKPILES CONTAINING CONTAMINATED MATERIAL MUST BE COVERED WITH IMPERMEABLE SHEETING. THE STOCKPILE AREA MUST CONTINUOUSLY MEET THE REQUIREMENTS FOR ADEQUATE VEGETATIVE ESTABLISHMENT IN ACCORDANCE WITH SECTION B-4 VEGETATIVE STABILIZATION. SIDE SLOPES MUST BE MAINTAINED AT NO STEEPER THAN A 2:1 RATIO. THE STOCKPILE

AREA MUST BE KEPT FREE OF EROSION. IF THE VERTICAL HEIGHT OF A STOCKPILE EXCEEDS 20 FEET FOR 2:1 SLOPES, 30 FEET FOR 3:1

SLOPES, OR 40 FEET FOR 4:1 SLOPES, BENCHING MUST BE PROVIDED IN ACCORDANCE WITH SECTION B-3 LAND GRADING.

SYMBOL SLOPES TYPE HSG KW HYDRIC NAME Glenelg-Urban land GhC complex 8-15% B 0.28 GmC 8-15% silt loam C 0.43 NO Glenville silt loam MaB 3-8% B 0.28 NO Manor loam loam MaC 8-15% B 0.28 NO Manor loam loam

15-25%

loam

B 0.28 NO B 0.32 NO

SEQUENCE OF CONSTRUCTION

1. OBTAIN ALL PERMITS (HOWARD COUNTY GRADING, MDE NON-TIDAL WETLANDS AND WATERWAYS AUTHORIZATION) PRIOR TO MOBILIZATION. THIS PROJECT IS LOCATED IN USE IV WATERS. NO CONSTRUCTION SHALL TAKE PLACE BETWEEN MARCH 1 AND MAY 31 INCLUSIVE OF ANY YEAR.

(DAY 1) PRIOR TO CLEARING, GRUBBING, GRADING, OR ANY LAND DISTURBANCE OF ANY KIND, THE CONTRACTOR SHALL HOLD A PRE-CONSTRUCTION MEETING ON-SITE TO REVIEW THE LIMITS OF DISTURBANCE, EROSION AND SEDIMENT CONTROL REQUIREMENTS AND THE SEQUENCE OF CONSTRUCTION WITH THE FOLLOWING PARTIES:

 SEDIMENT AND EROSION CONTROL INSPECTOR - HOWARD COUNTY CONSTRUCTION INSPECTION DIVISION (C.I.D.) (410.313.1855 - 48 HOURS' NOTICE).

• MARYLAND DEPARTMENT OF THE ENVIRONMENT INSPECTOR(S) (NON-TIDAL WETLANDS AND WATERWAYS - FIVE DAYS' NOTICE) OWNER - HOWARD COUNTY DEPARTMENT OF PUBLIC WORKS BUREAU OF ENVIRONMENTAL SERVICES ENGINEER (410.313.0844 - 48 HOURS' NOTICE).

 OWNER'S ENGINEER - CENTURY ENGINEERING, INC. (443.589.2400 - 48 HOURS' NOTICE) THE MEETING WILL ALSO SERVE AS A FORUM TO VERIFY THE LOCATION OF ANY STAGING/STOCKPILE AREAS AND FLAG ANY TREES WITHIN THE LIMITS OF DISTURBANCE TO

BE REMOVED FOR CONSTRUCTION AND ACCESS. THE LIMITS OF DISTURBANCE SHALL BE FIELD-MARKED PRIOR TO HOLDING THIS MEETING. (DAYS 2-3) WITH THREE DAY CLEAR WEATHER FORECAST, CLEAR AND GRUB FOR

INSTALLATION OF CONSTRUCTION SAFETY FENCING, PERIMETER SEDIMENT CONTROLS AND CONSTRUCTION ENTRANCE (DAYS 4-7) INSTALL STABILIZED CONSTRUCTION ENTRANCE, CONSTRUCTION SAFETY FENCIN

AND PERIMETER SEDIMENT CONTROLS. (DAY 8) OBTAIN APPROVAL FROM THE C.I.D. INSPECTOR OF EROSION AND SEDIMENT CONTROLS BEFORE PROCEEDING WITH ANY FURTHER CLEARING, GRUBBING, GRADING, OR OTHER CONSTRUCTION ACTIVITIES.

(DAYS 9-13) EXCAVATE EXISTING EMBANKMENT AND INSTALL CLEAN WATER BYPASS PIPES.

RIPRAP OUTFALL, SANDBAG DIKE, PUMP-AROUND, AND DE-WATERING SYSTEMS (SUMP PIT, PUMP, FILTER BAG). NO DISTURBED AREA UPSTREAM OF THE SAND BAG DIKE AT THE SOUT (UPSTREAM) END OF THE POND IS PERMITTED UNTIL THE EMBANKMENT IS RE-BUILT AT THE VERTICAL DRAW-DOWN DEVICE IS INSTALLED AT OPERATIONAL. SEE SEQUENCE ITEM 22. 7. (DAY 14) IF NOT DONE AS PART OF EXCAVATION, REMOVE EXISTING PRINCIPAL SPILLWAY

RISER AND PIPE.

PRINCIPAL SPILLWAY INSTALLATION (DAYS 15-16) EXCAVATE FOR CLAY CUTOFF TRENCH AND BOTTOM OF FILTER DIAPHRAGM AN INSTALL CLAY CUT OFF TRENCH AND BOTTOM PORTION OF FILTER DIAPHRAGM TO THE ELEVATION OF THE BOTTON OF THE CONCRETE CRADLE.

(DAYS 17-18) INSTALL PRINCIPAL SPILLWAY PIPE FROM DOWNSTREAM TO UPSTREAM. 10. (DAY 19) FORM AND POUR CONCRETE CRADLE AROUND PRINCIPAL SPILLWAY PIPE. 11. (DAY 20) INSTALL STRUCTURE EW-1 AND FILTER DIAPHRAGM TOE DRAIN PIPE STUBS. 12. (DAY 21) INSTALL RIPRAP AT STRUCTURE EW-1.

. (DAY 22) EXCAVATE FOR THE RISER FOUNDATION 14. (DAYS 23-25) INSTALL REINFORCEMENT AND FORM WORK FOR RISER FOUNDATION. DO NOT CLOSE FORMS UNTIL INSPECTION HAS BEEN COMPLETED BY GEOTECHNICAL ENGINEER OF

15. (DAYS 26-28) POUR CONCRETE FOR RISER FOUNDATION. DO NOT REMOVE FORMS FOR MINIMUM OF THREE (3) DAYS AFTER POUR. 16. (DAYS 29-31) INSTALL REINFORCEMENT AND FORM WORK FOR RISER WALLS INCLUDING PIPE

STUBS FOR LOW FLOW AND POND DRAIN PIPES. DO NOT CLOSE FORMS UNTIL INSPECTION HAS BEEN COMPLETED BY GEOTECHNICAL ENGINEER OF RECORD (DAYS 32-34) POUR CONCRETE FOR RISER WALLS. DO NOT REMOVE FORMS FOR MINIMUM OF THREE (3) DAYS AFTER POUR.

. (DAYS 35-37) INSTALL REINFORCEMENT AND FORM WORK FOR TOP SLAB. DO NOT CLOSE FORMS UNTIL INSPECTION HAS BEEN COMPLETED BY GEOTECHNICAL ENGINEER OF RECORD. 19. (DAY 38) INSTALL THE RISER TOP SLAB.

0. (DAYS 39-40) INSTALL RISER APPURTENANCES (MANHOLE COVER, ORIFICE PLATE, LOW FLOW TRASH RACK, RISER TRASH RACKS, POND DRAIN VALVE, STEM EXTENSION AND GUIDES, AND MANHOLE STEPS).

(DAY 41) INSTALL REMAINDER OF LOW FLOW AND POND DRAIN PIPES AND STRUCTURE HW-1. 22. (DAY 42) INSTALL VERTICAL DRAW-DOWN DEVICE AND CONNECT TO POND DRAIN PIPE. (DAY 43) REMOVE THE UPSTREAM SECTION OF THE CLEAN WATER BYPASS PIPE TO THE DOWNSTREAM END OF THE PRINCIPAL SPILLWAY RIPRAP CHANNEL. RELOCATE THE SAND BAG DIVERSION WALL TO THIS POINT SO IT WILL CONTINUE TO FUNCTION AS A CLEAN WATER BYPASS AROUND THE STREAM CHANNEL STABILIZATION AREA.

I. (DAYS 44-53) BACKFILL THE EMBANKMENT TO FINISHED GRADE. INSTALL CLAY CORE AND REMAINDER OF FILTER DIAPHRAGM AND TOE DRAIN PIPES DURING BACKFILL. ADJUST SUPER SILT FENCE AT DOWNSTREAM END OF EMBANKMENT AS BACKFILL PROGRESSES.

OTE: ITEMS 25, 26, AND 27 MAY BE DONE CONCURRENTLY. ON THE PLANS. MAINTAIN THE VERTICAL AREA DURING GRADING OF THE BASIN. THE CONTRACTOR SHALL STABILIZE (TEMPORARILY

AT MINIMUM) NEWLY GRADED AREAS AS THEY ARE PLACED ON GRADE 26. (DAYS 61-67) EXCAVATE AND INSTALL GABION WALL PER MANUFACTURER'S INSTRUCTIONS, DIRECTIONS, AND SPECIFICATIONS, COVER GABION WALL WITH NON-WOVEN GEOTEXTILE UPON COMPLETION OF INSTALLATION UNTIL BASIN IS PERMANENTLY STABILIZED.

(DAYS 68-69) WITH NOAA THREE (3) DAY DRY WEATHER FORECAST AND PERMISSION FROM THE CID INPSECTOR, INSTALL RIPRAP OUTFALL CHANNELS AT DOWNSTREAM END OF 15" C.M.P.'S AND 18" C.M.P. INFLOW POINTS TO POND. PROVIDE SAME-DAY STABILIZATION FOR ALL DISTURBED AREAS UPSTREAM OF THE SANDBAG DIKE.

28. (DAYS 70-74) INSTALL LANDSCAPING PER APPROVED PLAN IN POND. 29. (DAYS 75-76) PERMANENTLY STABILIZE WITH SEED/MULCH AND STABILIZATION MATTING. ONCE STABILIZATION HAS BEEN ACHIEVED AND WITH THE APPROVAL OF THE C.I.D. INSPECTOR, REMOVE THE DE-WATERING DEVICE AND INSTALL THE POND DRAIN INTAKE.

NOTE: WITH THE WRITTEN APPROVAL OF THE CID AND MDE INSPECTORS, STREAM CHANNEL STABILIZATION MAY BE DONE CONCURRENTLY WITH POND CONSTRUCTION (ITEMS 8-29). 30. (DAYS 15-68) INSTALL ROCK CASCADE/POOL STRUCTURES FROM DOWNSTREAM TO UPSTREAM USING THE FOLLOWING SEQUENCE:

a. EXCAVATE AND GRADE FOR STRUCTURE INSTALLATION. b. INSTALL FILTER FABRIC FOR ALL STRUCTURE COMPONENTS.

c. INSTALL MICRO-POOL, SPLASH STONE, ROCK CASCADE, AND SILL STONE STRUCTURE COMPONENTS d. COMPLETE ENTIRE STRUCTURE (ALL COMPONENTS AS LISTED) PRIOR TO MOVING TO THE NEXT STRUCTURE.

e. FOR THIS ITEM, DAILY LIMITS OF DISTURBANCE ARE LIMITED TO WHAT CAN BE CONSTRUCTED AND PERMANENTLY STABILIZED AT THE END OF THE WORK DAY. ADJUST THE CLEAN WATER DIVERSION PIPE ACCORDINGLY TO MAINTAIN BYPASS FLOW AND COMPLETE WORK.

31. (DAY 69) UPON COMPLETION OF ENTIRE STRUCTURE SERIES, REMOVE THE CLEAN WATER BYPASS, SAND BAG DIVERSION, RIPRAP OUTFALL CHANNEL, AND PUMP AROUND MEASURES. 32 (DAYS 70-74) INSTALL LANDSCAPING PER APPROVED PLAN IN STREAM CHANNEL 33. (DAYS 75-76) PERMANENTLY STABILIZE WITH TOPSOIL, SEED/MULCH, AND STABILIZATION MATTING. STABILIZATION MATTING SHALL EXTEND TO PERMANENT POOL AND TO LOD IN ALL AREAS ON-SITE EXCEPT ACCESS ROAD.

(DAYS 77-78) REMOVE REMAINING SECTIONS OF EXISTING ASPHALT PATH EXTENDING TOWARD SITE FROM KINDLER AND INSTALL NEW ASPHALT PATH PER APPROVED PLAN. 35. (DAYS 79-81) COMPLETE IN-KIND RESTORATION OF ANY DAMAGE TO EXISTING

INFRASTRUCTURE EITHER ON-SITE OR OFF-SITE. THIS INCLUDES BUT IS NOT LIMITED TO: SIDEWALK, CURB AND GUTTER, PAVEMENT, UTILITY APPURTENANCES, TREES, SIGNS, ETC.) 36. (DAY 82) COMPLETE FINAL PERMANENT VEGETATIVE STABILIZATION OF SITE

37. (DAYS 83-84) WITH THE APPROVAL OF THE C.I.D. INSPECTOR, REMOVE REMAINING SEDIMENT CONTROLS AND STABILIZE ANY REMAINING DISTURBED AREAS.

SOILS DESCRIPTION

THE SITE CONSISTS GENERALLY OF THREE SOIL GROUPS WITH SMALL AMOUNTS OF THREE OTHER SOIL GROUPS ALONG THE SITE ACCESS. THE PROPOSED POND AREA CONSISTS ENTIRELY OF MANOR LOAM, 15 TO 25 PERCENT SLOPES. THIS SOIL HAS A MODERATE INFILTRATION RATE WHEN THOROUGHLY WET AND IS CLASSIFIED AS HYDROLOGIC SOIL GROUP B. THE UPPER SECTION OF THE STREAM CHANNEL CONSISTS OF MANOR-BRINKLOW COMPLEX, 25 TO 65 PERCENT SLOPES. THIS SOIL IS CLASSIFIED AS HYDROLOGIC SOIL GROUP B AND CONSIDERED VERY ROCKY.. THE LOWER SECTION OF THE STREAM CHANNEL WITHIN THE PROJECT LIMITS CONSISTS OF GLENVILLE SILT LOAM, 8 TO 15 PERCENT SLOPES. THIS SOIL IS CLASSIFIED AS HYDROLOGIC SOIL GROUP C AND THEREFORE HAS A SLOW INFILTRATION RATE WHEN THOROUGHLY WET. THIS SOIL GROUP IS ALSO CONSIDERED HIGHLY ERODIBLE BY COMAR 27.02.01.01 NONE OF THE SOILS WITHIN THE PROJECT LIMITS IS CONSIDERED HYDRIC.

CLIENT/LAND OWNER: HOWARD COUNTY DEPARTMENT OF PUBLIC WORKS BUREAU OF ENVIRONMENTAL SERVICES STORMWATER MANAGEMENT DIVISION 6751 COLUMBIA GATEWAY DRIVE, SUITE 514 COLUMBIA, MARYLAND 21046-3143 PHONE: 410.313.0844

NO.	DATE	DESCRIPTION		
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SITE INFORMATION

STREET ADDRESS: ADJACENT TO 7640 KINDLER ROAD LAUREL, MARYLAND 20723

TWIN OAKS LOTS 34, 20, 10, PARCEL II PARCELS: 16, 395, 386, 363 TAX MAP: 41 **ELECTION DISTRICT: 6** ZONING: R-20 PLAT NO.: 23146, 20099, 6460

CONSULTING ENGINEERS - PLANNERS 10710 GILROY ROAD HUNT VALLEY, MARYLAND 21031

> TWIN OAKS POND #1 SWM BMP AND STREAM CHANNEL REHABILITATION

PHONE: (443) 589-2400 FAX: (443) 589-2401

EROSION AND SEDIMENT CONTROL NOTES

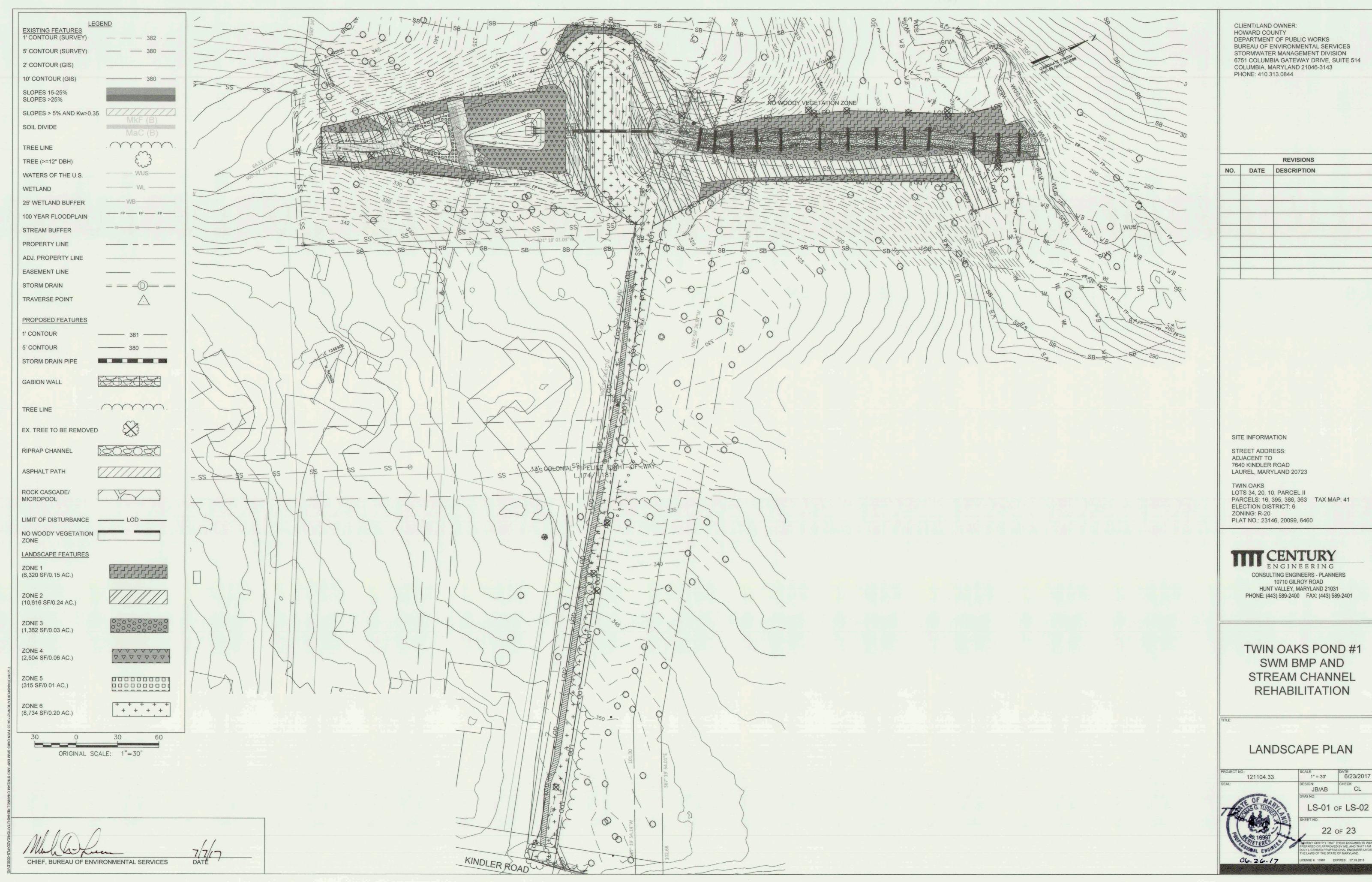
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SC-07 OF SC-07

N/A

JB/AB

6/23/2017



		REVISIONS	
NO.	DATE	DESCRIPTION	

LS-01 of LS-02

30% Understory Coverage

Riparian Trees (Total Area: 6,320 SF // 0.15 AC; see composition percent note) Type Spacing Quantity Size Northern red oak (Quercus rubra) 6-8' Height Container 16-18' O.C White oak (Quercus alba) 6-8' Height Container 16-18' O.C. 6-8' Height Chestnut oak (Quercus prinus) Container 16-18' O.C Tuliptree (Liriodendron tulipifera) 6-8' Height Container 16-18' O.C American hornbeam (Carpinus caroliniana) 5' Height Container 12-14' O.C. 4 American holly (Ilex opaca) 5' Height Container 12-14' O.C.

Container 12-14' O.C.

TC - Canopy Tree TU - Understory Tree

Black cherry (Prunus serotina)

Note: Assume 100% Canopy Coverage and

Riparian Seed (18,298 SF // 0.42 AC)

Botanical Name	Common Name	Percent of Mix	Application Rate (lbs/AC)	Quantity
Sorghastrum nutans	Indiangrass	36.00%	14.4	6.048
Andropogon gerardii	Big Bluestem	25.00%	10	4.2
Elymus virginicus	Virginia wildrye	20.00%	8	3.36
Agrostis perennans	Autumn bentgrass	10.00%	4	1.68
Pycnanthemum tenuifolium	Mountain mint	5.00%	2	0.84
Eupatorium perfoliatum	Boneset	2.00%	0.8	0.336
Asclepias incarnata	Swamp milkweed	2.00%	0.8	0.336
			Total:	16.8

Total Application Rate of 40 lbs/ac. To be applied with 15lbs/ac of perennial ryegrass (Lolium perenne) and 60lbs/ac of hard fescue (Festuca trachyphylla) during the periods of March 1 to May 15 and August 1 to October 15 of foxtail millet (Setaria italica) if during May 16 to July 31.

Note: Assume 20% Shrub Layer Coverage. Cluster shrubs in groups of 5-7 shrubs.

Note: Assume 100% Coverage

Riparian Shrubs (2,624 SF // 0.06 AC)

Species	Common Name	Size	Туре	Spacing	Quantity
Alnus serrulata	Smooth alder	3' Height	Container	6-8' O.C.	15
Lindera benzoin	Spicebush	3' Height	Container	6-8' O.C.	15
Cornus amomum	Silky dogwood	3' Height	Container	6-8' O.C.	12
Kalmia latifolia	Mountain laurel	3' Height	Container	6-8' O.C.	12

Aquatic Bench Pluas (2.504 SF // 0.06 AC)

Botanical Name	Common Name	Size	Туре	Spacing	Quantity
Juncus effusus	Common soft rush	2" Plug	Container	2' O.C.	110
Onoclea sensibilis	Sensitive fern	2" Plug	Container	2' O.C.	110
Scirpus cyperinus	Wool grass	2" Plug	Container	2' O.C.	110
Iris versicolor	Blue flag	2" Plug	Container	2' O.C.	100
Verbena hastata	Swamp verbena	2" Plug	Container	2' O.C.	100
Elymus riparius	Riverbank wildrye	2" Plug	Container	2' O.C.	100

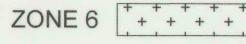
ZONE 4

ZONE 5 V V V V V V

Aquatic Rench Seed 12 819 SE // 0.06 ACL

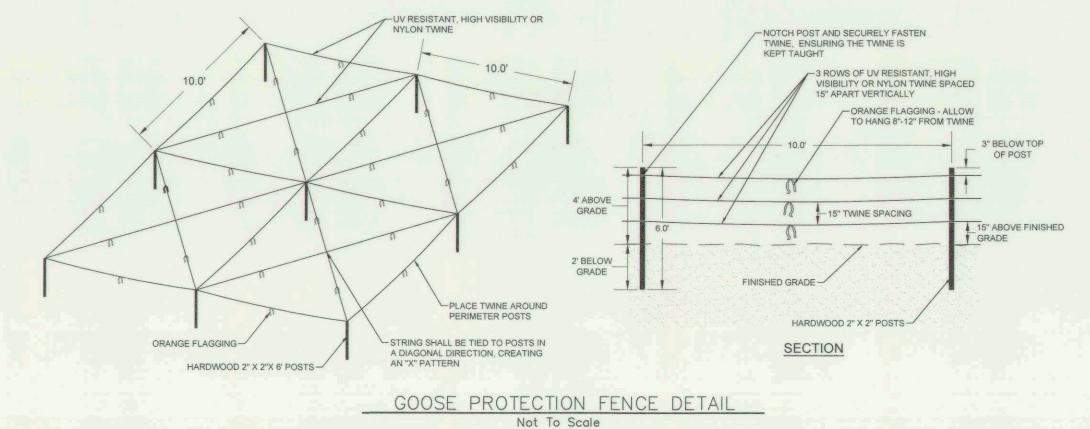
Botanical Name	Common Name	Percent of Mix	Application Rate (lbs/AC)	Quantity
Carex vulpinoidea	Fox sedge	33.00%	13.2	0.792
Elymus virginicus	Virginia wild rye	25.00%	10	0.6
Carex scoparia	Blunt broom sedge	10.00%	4	0.24
Carex Iurida	Lurid sedge	10.00%	4	0.24
Scirpus atrovirens	Green bulrush	8.00%	3.2	0.192
Verbena hastata	Swamp verbena	5.00%	2	0.12
Cirpus pungens	Common three-square	3.00%	1.2	0.072
Eupatorium fistulosum	Joe pye weed	3.00%	1.2	0.072
Lobelia siphilitica	Blue lobelia	3.00%	1.2	0.072

Total Application Rate of 40 lbs/ac. To be applied with 15lbs/ac of perennial ryegrass (Lolium perenne) and 60lbs/ac of hard fescue (Festuca trachyphylla) during the periods of March 1 to May 15 and August 1 to October 15 of foxtail millet (Setaria italica) if during May 16 to July 31.



Turgrass (8,734 SF // 0.20 AC) Quantity (lbs) SHA Turfgrass Seed Mix 920.06.07 (a) 40 Total Application Rate of 200 lbs/AC or 4.6 lbs per 1,000 SF

NOTE: COORDINATE LANDSCAPE INSTALLATION WITH SEEDING AND STABILIZATION MATTING INSTALLATION. SEE SHEETS SC-02 TO SC-05 FOR LIMITS, DETAILS, AND SCHEDULES.



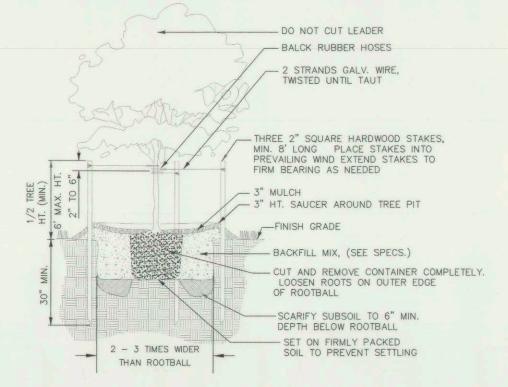
PLANT PLUG UPRIGHT -

PLACE PLUG AT CORRECT DEPTH LEVEL

1. TO BE PLACED WITHIN THE AQUATIC BENCH PLANTING ZONES (ZONE 4 AND 5). 2. SEE GOOSE PROTECTION FENCE SPECIFICATION FOR ADDITIONAL INFORMATION

REGARDING MATERIALS AND CONSTRUCTION

EQUALLY SPACED -ROOTBALL PREVAILING WIND SAUCER -PLAN



DECIDUOUS TREE PLANTING Not To Scale

-PLACE TOPSOIL AROUND PLUG TO COVER

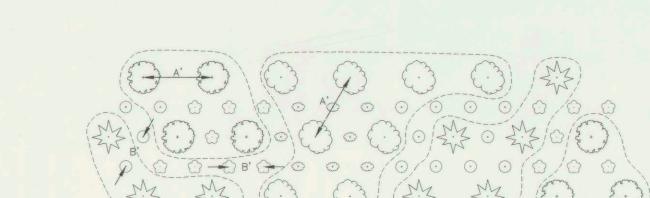
ROOT CROWN BY 1" TO 2"

DO NOT BEND OR BREAK ROOTS

PERENNIAL PLUG DETAIL

Not To Scale

1. DO NOT DAMAGE MAIN ROOTS OR DESTROY ROOT BALL WHEN INSTALLING STAKES.
2. WATER THOROUGHLY AFTER INSTALLATION.
3. REMOVE ALL HOSE, WIRE, AND STAKES AT THE END OF GUARANTEE PERIOD.



EVERGREEN TREE PLANTING

Not To Scale

PLAN

ZiZ (·) { · } - TREE CANOPY SPECIES (T-C) (·) - TREE UNDERSTORY (T-US) A' - T-C SPACING PER PLANT SCHEDULE B' - T-US SPACING PER PLANT SCHEDULE

-- DO NOT CUT LEADER

2" SQUARE HARDWOOD STAKES, MIN. 8' LONG;

-TREE PIT TO BE SEEDED

WITH PERMANENT SEED. SEE LANDSCAPE PLAN.

-CUT AND REMOVE CONTAINER

SCARIFY SUBSOIL TO 6" MIN. DEPTH

- 2 STRANDS 12 OR 14 GAUGE GALV.

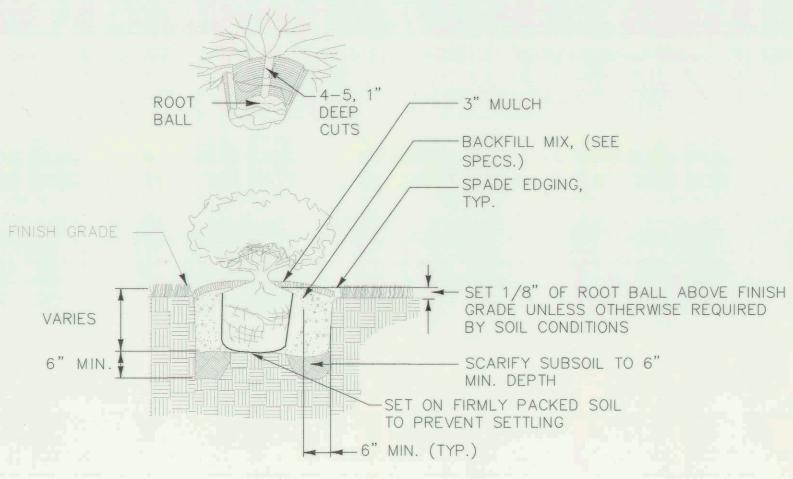
BACKFILL MIX. (SEE BA. CO. SPECIFICATION 710.03.02)

- SET ON FIRMLY PACKED SOIL TO PREVENT FOR SETTLING

1. THIS PLANTING IS TO MIMIC NATURAL SEED DISPERSAL.
2. EACH SPECIES IS TO BE PLANTED IN A GROUP OF COMMON VEGETATION SPECIES.
3. THE MINIMUM CLUSTER IS A GROUP OF 3 TREES OF THE SAME SPECIES.
4. THE MAXIMUM CLUSTER IS A OF 15 TREES OF THE SAME SPECIES.

CLUSTER PLANTING DETAIL

Not To Scale



1. FOR CONTAINER SHRUBS, COMPLETELY REMOVE ALL NON-BIODEGRADABLE CONTAINERS AND SCARIFY ROOTBALL BY USING A SHARP BLADE AND MAKING 4 TO 5 ONE INCH CUTS THE LENGTH OF THE ROOTBALL.

> SHRUB PLANTING Not To Scale

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REVISIONS NO. DATE DESCRIPTION

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CENTURY

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TWIN OAKS POND #1 SWM BMP AND STREAM CHANNEL REHABILITATION

LANDSCAPE NOTES AND DETAILS

AS SHOWN 6/23/2017 121104.33 JB/AB CL

LS-02 of LS-02 23 of 23

CHIEF, BUREAU OF ENVIRONMENTAL SERVICES