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## LEGEND

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EXISTING 100 YEAR FLOODPLAIN	
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EXISTING STORM DRAIN	
EXISTING SEWER MANHOLE	— SD——
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EXISTING SEWER LINE	
EXISTING EDGE OF PAVEMENT	
EXISTING EDGE OF WATER	
PROPOSED EDGE OF WATER	
EXISTING BUILDING	
PROPOSED RIPRAP	
PROPOSED DRAIN PIPE	DEA .
SOIL BORING LOCATION	<i>B</i> −1 <b>②</b>
SANDBAG DAM/BARRIER	
	PA
PUMP AROUND AND HOSES	
REMOVABLE PUMPING STATION	<b>⊠</b> RPS
FILTER BAG	■FB
SILT FENCE	SF -
SUPER SILT FENCE	- SSF
TEMPORARY ACCESS BRIDGE	
STABILIZED CONSTRUCTION ENTRANCE	
OTHERED CONCINCOTION ENTITION FILLIANDE	SA DOE BOOK
LIMIT OF DISTURBANCE/ORANGE SAFETY FENCE	- LOD -
EXISTING TREE TO BE SAVED	0

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

#### DEVELOPER'S CERTIFICATE

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

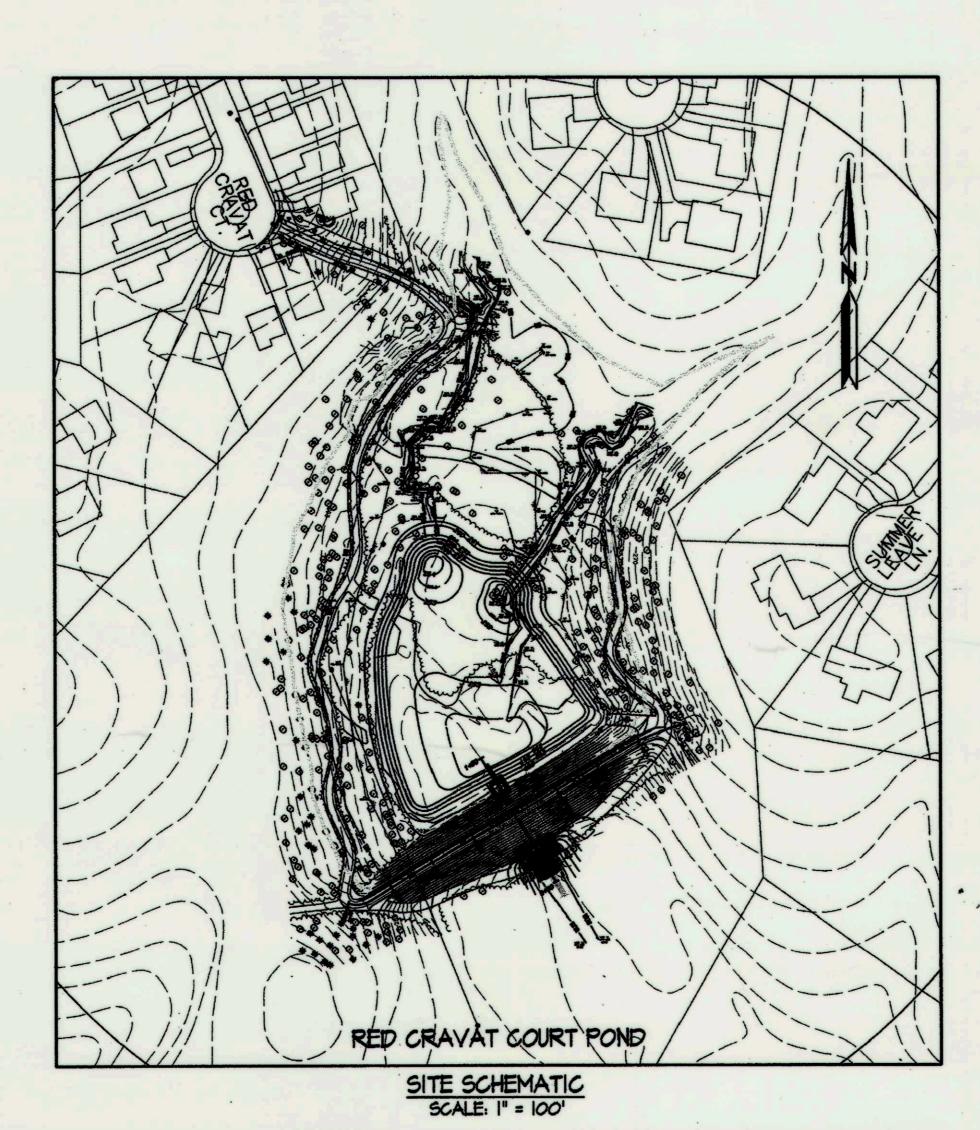
6.3.14 Mark S. Richmond

DEPARTMENT OF PUBLIC WORKS, HOWARD COUNTY, MD

# RED CRAVAT COURT PRINCIPAL SPILLWAY REPLACEMENT

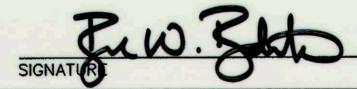
HOWARD COUNTY, MARYLAND

DEPARTMENT OF PUBLIC WORKS CAPITAL PROJECT CA 08-29



AS-BUILT CERTIFICATION

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



REVIEWED FOR HOWARD SCD AND MEETS TECHNICAL REQUIREMENTS

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



1. 100-YEAR FLOODPLAIN ELEVATION IS SHOWN ON THE PLANS. 2. NO STOCKPILE OF ANY MATERIAL IS

ALLOWED IN THE 100-YEAR FLOODPLAIN IN-STREAM WORK IS PROHIBITED FROM

MARCH IST TO MAY 31ST. THE CONTRACTOR SHALL EXERCISE CARE IN ACTIVITIES INVOLVING EITHER CUT AND THAT ARE TO REMAIN. ALL EARTH CUTS AND ACTIVITIES IN THE VICINITY OF TREES TO REMAIN SHALL BE MADE IN A MANNER THAT DOES NOT DISTURB THE CRITICAL ROOT ZONE WITHIN THE DRIPLINE OF THE TREE, PROTECTIVE ORANGE FENCING SHALL BE INSTALLED AROUND THE PERIMETER OF THE CRITICAL ROOT ZONE PRIOR TO CONSTRUCTION. THE LOCATION OF THE

PROTECTIVE ORANGE FENCING SHALL BE APPROVED BY THE ENGINEER OR HIS/HER REPRESENTATIVE PRIOR TO CONSTRUCTION. CONTRACTOR SHALL NOT STORE EQUIPMENT, MATERIALS AND/OR SUPPLIES BEYOND THE

LIMIT OF DISTURBANCE SHOWN ON THE PLANS. 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 8. WORK AREA AND ACCESS SHALL BE TAKEN. ALL TREES TO BE REMOVED SHALL BE CUT AT THE BASE WITH A SAW AND NOT PUSHED OVER TREE STUMPS MAY BE LEFT IN PLACE, UNLESS

9. OTHERWISE DIRECTED ON THE PLANS. DREDGED SEDIMENT SHALL BE TRANSPORTED TO CUNNINGHAM'S SAND AND GRAVEL PIT LOCATED IN CROFTON, MARYLAND FOR DISPOSAL.

## GENERAL INFORMATION

1. THE SUBJECT PROPERTIES ARE ZONED NT (NEW TOWN) PER AUGUST 2007

WITHIN THE 100-YEAR FLOODPLAIN, WETLANDS, STREAM AND REQUIRED BUFFERS FOR THE PROPOSED POND DREDGING PROJECT ARE CONSIDERED ESSENTIAL OR NECESSARY IN ACCORDANCE WITH SECTION 16.115(C) OF THE SUBDIVISION AND LAND

3. THERE ARE NO BURIAL GROUNDS OR CEMETERY SITES LOCATED ON THE PROJECT SITE. 4. THIS PLAN MEETS THE REQUIREMENTS OF THE FOREST CONSERVATION

5. ALL CONSTRUCTION SHALL BE IN ACCORDANCE WITH THE STANDARDS AND SPECIFICATIONS OF HOWARD COUNTY CONTAINED HEREIN PLUS MSHA STANDARDS AND SPECIFICATIONS, IF APPLICABLE.

6. THE CONTRACTOR SHALL NOTIFY THE DEPARTMENT OF PUBLIC WORKS, BUREAU OF ENGINEERING/CONSTRUCTION INSPECTION DIVISION AT (410) 313-1880 24 HOURS IN ADVANCE OF ANY WORK BEING DONE.

7. THE CONTRACTOR SHALL NOTIFY "MISS UTILITY" AT 1-800-257-7777 AT LEAST 48 HOURS PRIOR TO ANY EXCAVATION WORK BEING DONE. 8. THE COORDINATES SHOWN HEREON ARE BASED ON HOWARD COUNTY GEODETIC CONTROL, WHICH IS BASED UPON THE MARYLAND STATE PLANE COORDINATE SYSTEM.

9. WATER IS PUBLIC. 10.SEWER IS PUBLIC.

11. EXISTING UTILITIES ARE BASED ON FIELD SURVEYS AND AVAILABLE RECORD DRAWINGS. CONTRACTOR TO VERIFY INFORMATION TO HIS/HER OWN SATISFACTION. 12. THE WETLANDS DELINEATION FOR THIS PROJECT WAS PERFORMED BY KCI TECHNOLOGIES IN MARCH 2011.

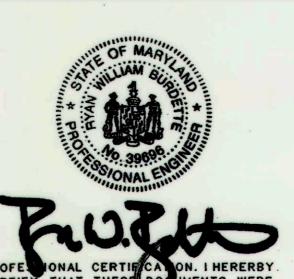
13.THE EXISTING TOPOGRAPHY IS TAKEN FROM FIELD RUN SURVEY WITH ONE FOOT CONTOUR INTERVALS PREPARED BY AB CONSULTANTS, INC., IN FEBRUARY 2011.

14.ALL WORK SHALL CONFORM TO THE MDE SET MANAGEMENT PRACTICES FOR WETLANDS AND WATERWAYS AS LISTED IN THE REQUIREMENTS OF THE NONTIDAL WETLANDS AND WATERWAYS PERMIT APPROVED MARCH 05, 2013 (MDE . 201360248/13-NT-3030) AND THE CONDITIONS INCLUDED IN USACE INDIVIDUAL PERMIT APPROVED JUNE 12, 2013

(CENAB-OP-RMN (HO DPW/RED CRAVAT COURT/POND DREDGING) 2013-60248-M02).
15.NO TRAFFIC STUDY IS REQUIRED FOR THIS PROJECT.
16.OBSTRUCTIONS SHOWN ON THIS DRAWING ARE FOR THE CONVENIENCE OF THE CONTRACTOR ONLY AND KCI TECHNOLOGIES, INC. DOES NOT WARRANT OR GUARANTEE THE CORRECTNESS OR COMPLETENESS OF THE INFORMATION GIVEN. SHOULD THE CONTRACTOR DISCOVER ANY DISCREPANCIES BETWEEN THE PLANS AND THE FIELD CONDITIONS, THE CONTRACTOR MUST VERIFY SUCH INFORMATION TO HIS OWN SATISFACTION. THE ENGINEER SHALL BE NOTIFIED IMMEDIATELY TO RESOLVE THE SITUATION. SHOULD THE CONTRACTOR MAKE

FIELD CORRECTIONS OR ADJUSTMENTS WITHOUT NOTIFYING THE ENGINEER, THE CONTRACTOR ASSUMES ALL RESPONSIBILITY FOR THOSE CHANGES. 17. THE CONTRACTOR SHALL TAKE ALL NECESSARY PRECAUTIONS TO 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.

AS-BUILT - DECEMBER 2015 (HSCD EP-13-13,



AM A DULY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MARYLAND, LICENSE NO. 39696.

EXPIRATION DATE: JANUARY 04, 2015

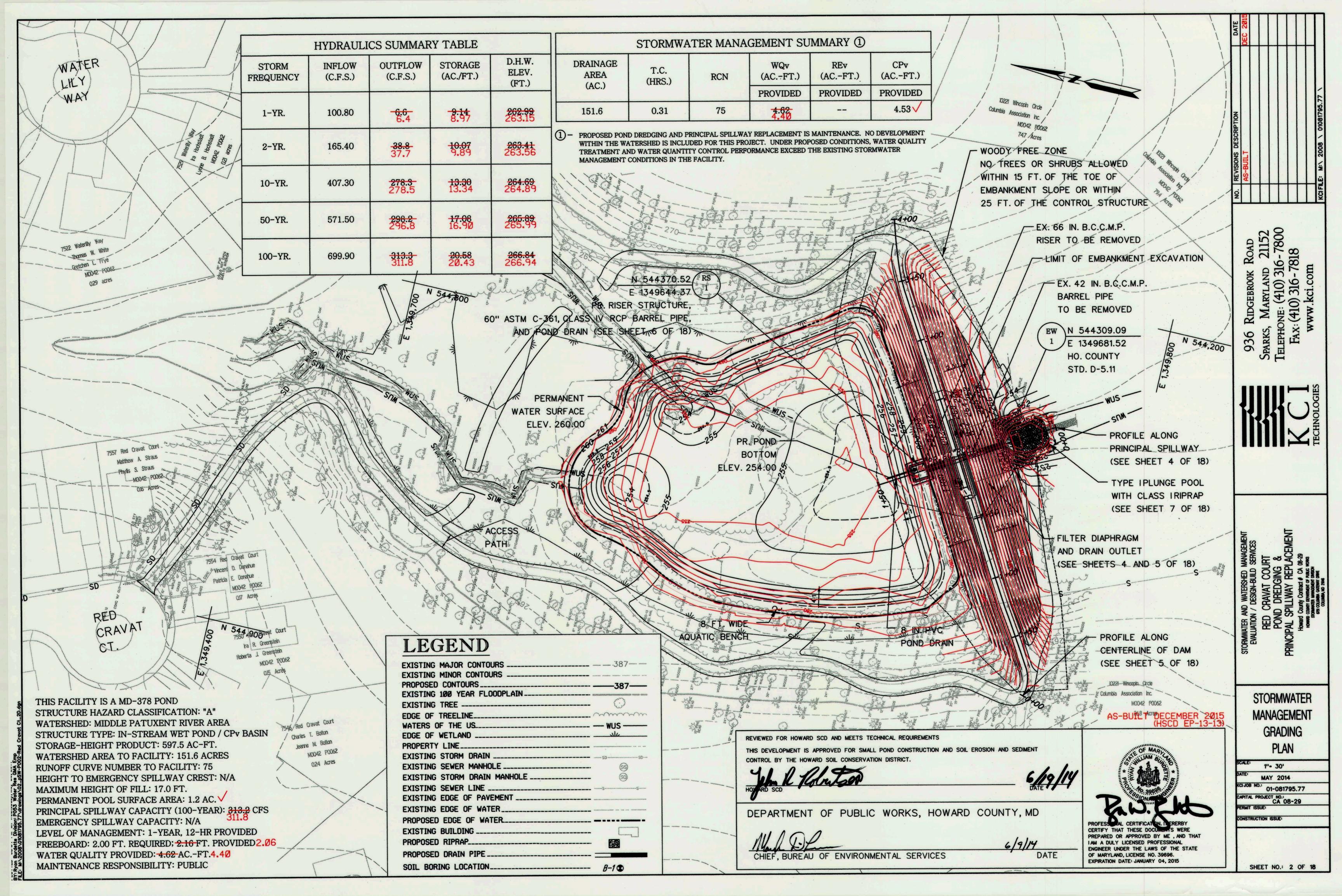
SITE ANALYSIS DATA CHART

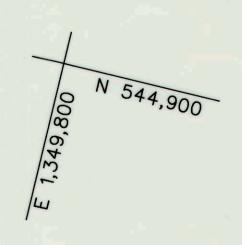
1. TOTAL PROJECT AREA: 26.78 ACRES. 2.DISTURBED AREA: 3.13 ACRES. 3.PROPOSED USE FOR THE SITE: DEMUCK SEDIMENT IN POND

REPLACE FACILITY PRINCIPAL SPILLWAY

HOWARD COUNTY DEPARTMENT OF PUBLIC WORKS 6751 COLUMBIA GATEWAY DRIVE COLUMBIA, MD 21046 410-313-6444

SHEET NWOHE ZA 2014

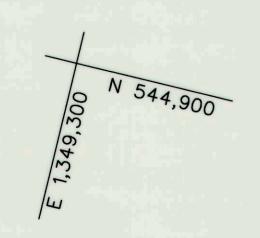


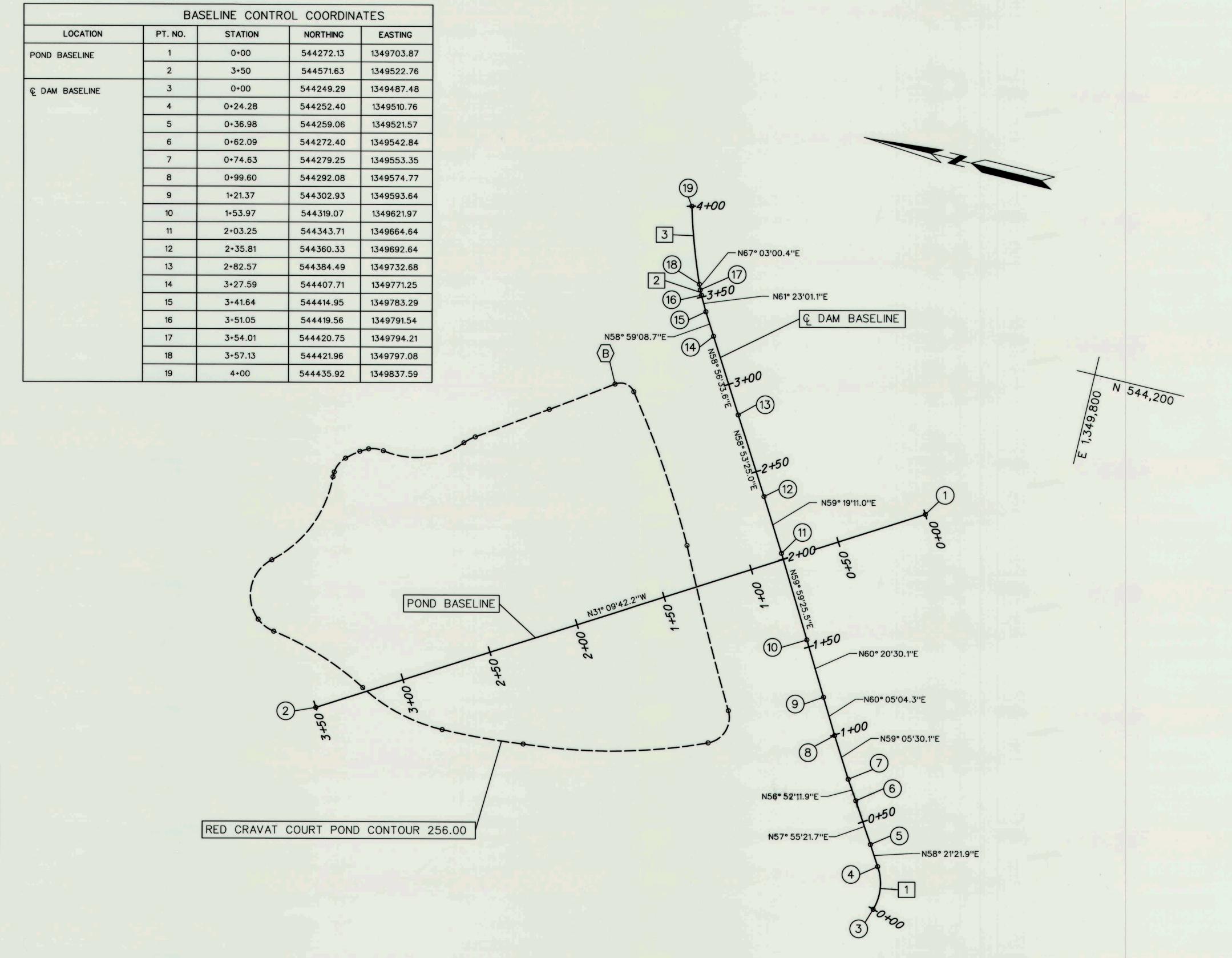


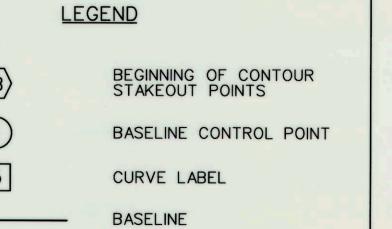
CON	TOUR STAKEOUT IN	<b>IFORMATION</b>		
LOCATION	STATION	NORTHING	EASTING	
RED_CRAVAT	0+00.00 8.00'R	544453.97	1349733.16	
COURT POND CONTOUR 256.00	0+12.29 555.97' R	544442.99	1349731.48	
	1+01.30 1616.11' R	544394.95	1349656.67	
	1+94.39 14.00' R	544351.79	1349574.20	
	2+17.82 310.67' R	544358.45	1349554.50	
	3+19.53 393.75' R	544456.71	1349530.04	
	3+64.50 98.00' R	544501.57	1349527.25	
	4+14.17 164.91' R	544549.20	1349539.33	
	4+72.09 20.00'R	544603.78	1349557.80	
	4+83.03 21.87' R	544613.62	1349562.24	
	5+20.83 64.00'R	544613.94	1349595.51	
	5+79.22 18.06' R	544592.06	1349647.48	
	5+81.91 14.00' R	544592.02	1349650.16	
	5+91.96 58.62' R	544587.73	1349659.03	
	6+00.60	544581.06	1349664.51	
	6+05.58 16.12' R	544576.73	1349666.95	
	6+13.82 45.68' R	544568.62	1349667.84	
	6+60.09 28.00' R	544526.80	1349682.49	
	6+67.07 9744.30'R	544521.56	1349687.07	
	7+10.44 1888.58' R	544485.69	1349711.19	

NOTE: CONTOUR STAKEOUT POINTS PROCEED IN A CLOCKWISE DIRECTION AROUND CONTOUR.

CURVE DATA									
CURVE	DELTA	DEGREE	RADIUS	TANGENT	LENGTH	EXTERNAL			
1	51° 18'08.3"	211° 25'24.7"	27.1'	13.02'	24.28'	2.97'			
2	5° 39'59.3''	190° 59'09.4"	30.0'	1.48'	2.97'	0.04'			
3	7° 02'50.2"	16° 25'52.5"	348.7'	21.47'	42.89'	0.66'			







CONTOUR LINE

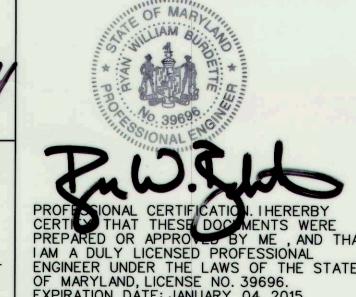
REVIEWED FOR HOWARD SCD AND MEETS TECHNICAL REQUIREMENTS

CHIÉF, BUREAU OF ENVIRONMENTAL SERVICES

THIS DEVELOPMENT IS APPROVED FOR SMALL POND CONSTRUCTION AND SOIL EROSION AND SEDIMENT

DEPARTMENT OF PUBLIC WORKS, HOWARD COUNTY, MD

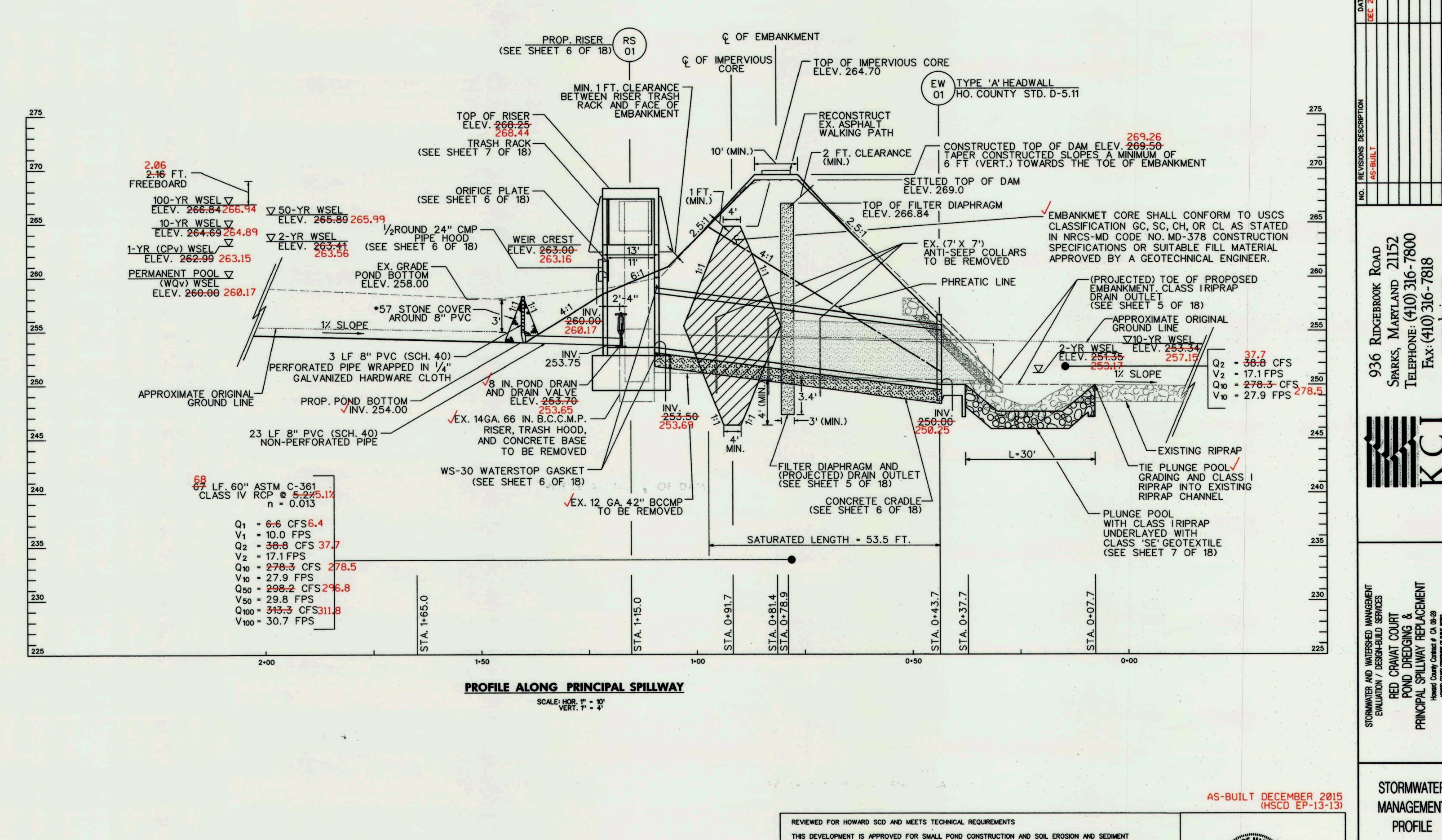
DATE



STORMWATER **MANAGEMENT GEOMETRY** SHEET 1"- 30' MAY 2014 01-081795.77 CAPITAL PROJECT NO.: CA 08-29 CONSTRUCTION ISSUE:

936 RIDGEBROOK ROAL SPARKS, MARYLAND 211, TELEPHONE: (410) 316-78 FAX: (410) 316-7818 www.kci.com

SHEET NO.: 3 OF 18



DEPARTMENT OF PUBLIC WORKS, HOWARD COUNTY, MD

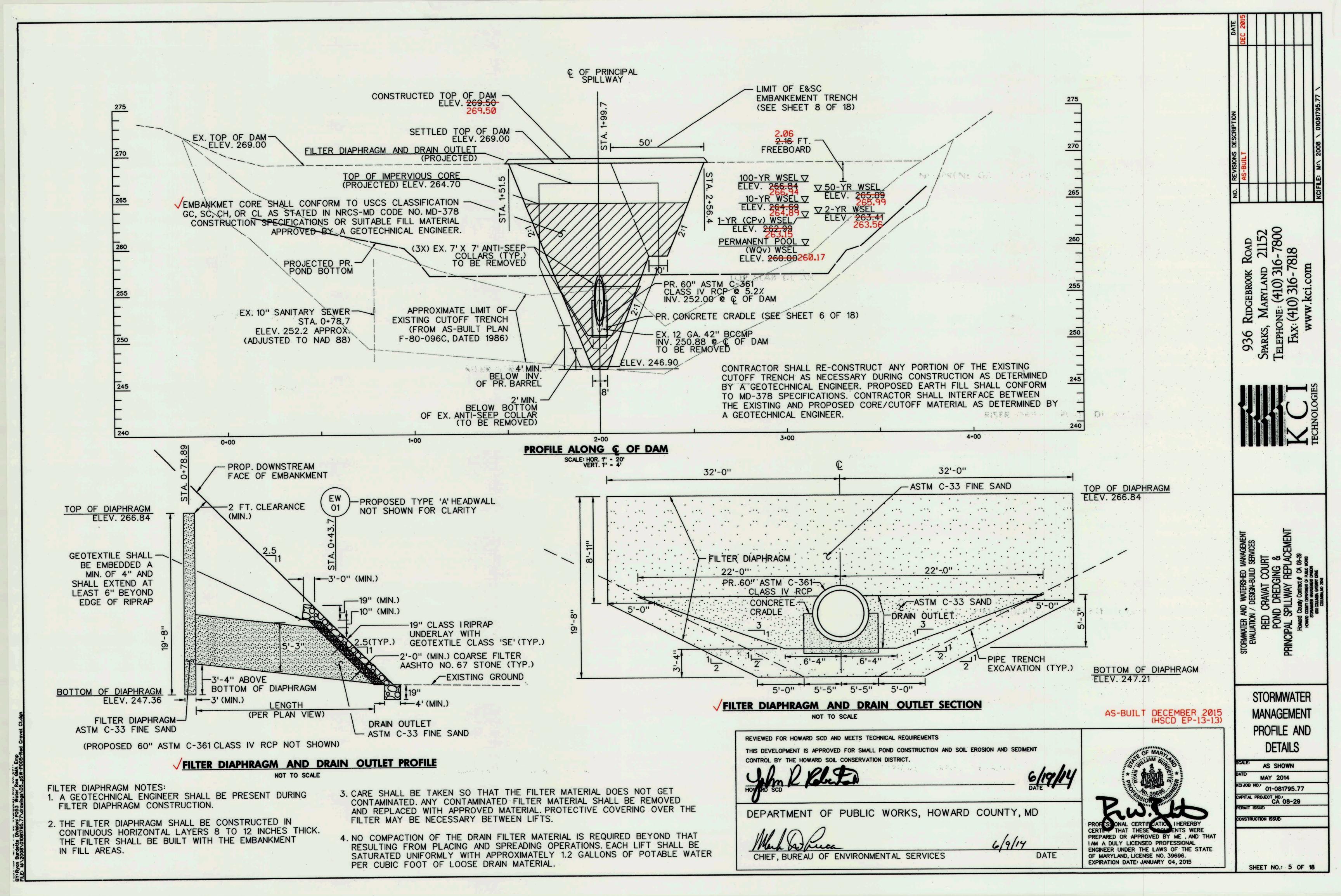
CHIEF, BUREAU OF ENVIRONMENTAL SERVICES

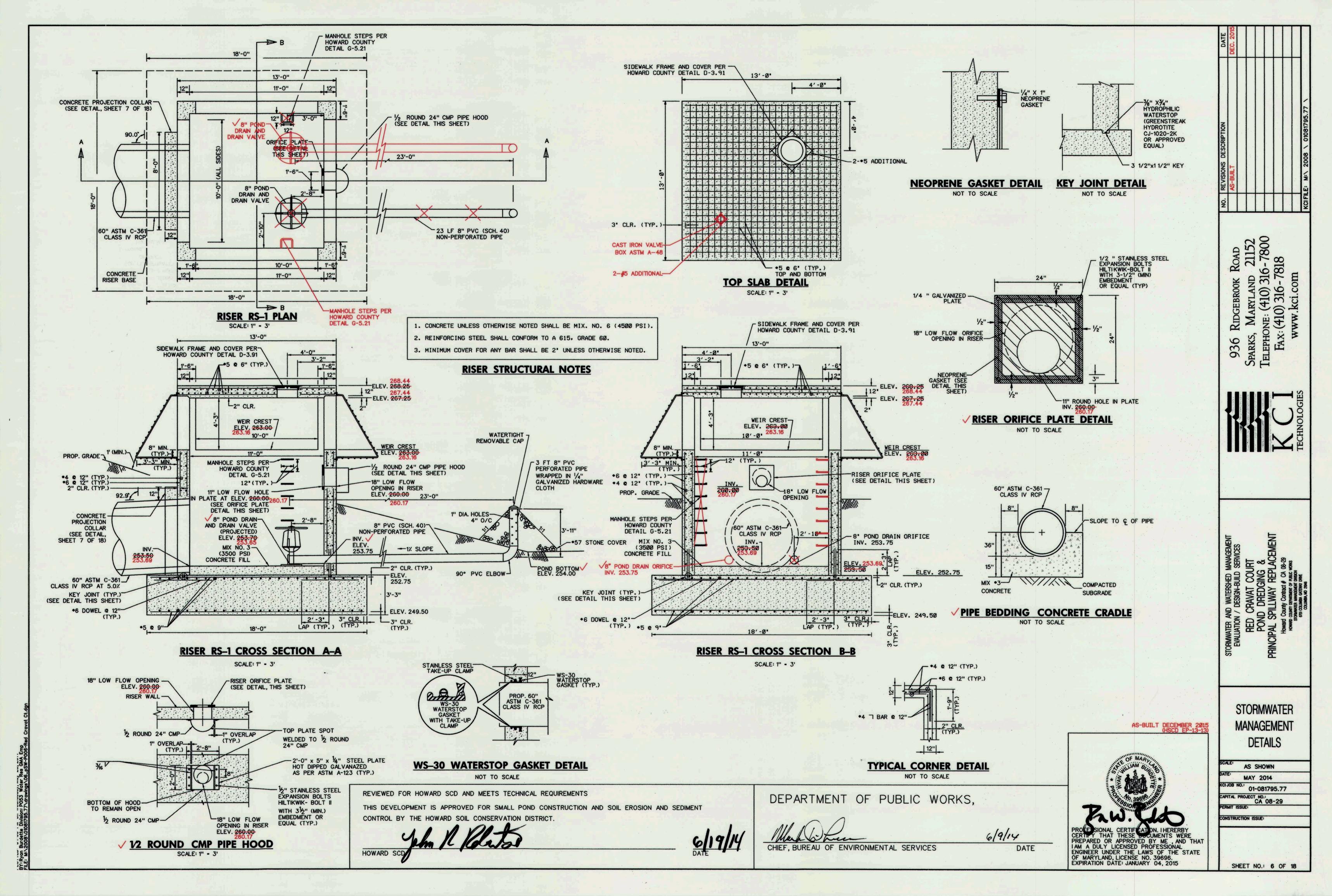
6/9/14

DATE

STORMWATER **MANAGEMENT PROFILE** AS SHOWN MAY 2014 01-081795.77 ITAL PROJECT NO.: CA 08-29 ONSTRUCTION ISSUE: PREPARED OR APPROVED BY ME, AND THAT IAM A DULY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MARYLAND, LICENSE NO. 39696. EXPIRATION DATE: JANUARY 04, 2015

SHEET NO.: 4 OF 18





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

AREAS DISIGNATED 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 THAT 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. EARTH FILE

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 CUTOFF TRENCH SHALL CONFORM TO UNIFIED SOIL CALSSIFICATION 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 OBTIANED 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 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 QUALI' 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 RIDGID 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 OR PIPE UNLESS THERE IS A COMPACTED FILL OF 24" OR GREATER OVER THE STRUCTURE OR PIPE. BACKFILL MATERIAL OUTSIDE THE 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 ON 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 ON 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.

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

MD LICENSE NUMBER

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 COMPLETLEY WATERTIGHT. DIMPLE BANDS ARE NOT CONSIDERED TO BE WATERTIGHT.

ALL CONNECTIONS SHALL USE A RUBBER OR NEOPRENE GASKET WHEN JOINING PIPE SECTIONS. THE END OF EACH PIPE SHALL BE RE-ROLLED AN ADEQUATE NUMBER OF CORRUGATIONS TO ACCOMMODATE THE BANDWIDTH. THE FOLLOWING TYPE CONNECTIONS ARE ACCEPTABLE FOR PIPES LESS THAN 24 INCHES IN DIAMETER: FLANGES ON BOTH ENDS OF THE PIPE WITH A CIRCULAR 36 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 36 INCH THICK CLOSED CELL CIRCULAR NEOPRENE GASKET; AND A 12 INCH WIDE HUGGER TYPE BAND WITH 0-RING GASKETS HAVING A MINIMUM DIAMETER OF 1/2 INCH GREATER THAN THE CORRUGATION DEPTH. PIPES 24 INCHES IN DIAMETER AND LARGER SHALL BE CONNECTED BY A 24 INCH LONG ANNULAR CORRUGATED BAND USING A MINIMUM OF 4 (FOUR) RODS AND LUGS, 2 ON EACH CONNECTING PIPE END. A 24 INCH WIDE BY 36 INCH THICK CLOSED CELL CIRCULAR NEOPRENE GASKET WILL BE INSTALLED WITH 12 INCHES ON THE END OF EACH PIPE. FLANGE IS ALSO ACCEPTABLE. HELICALLY CORRUGATED PIPE SHALL HAVE EITHER CONTINUOUSLY WELDED SEAMS OR HAVE LOCK SEAMS WITH INTERNAL CAULKING OR A NEOPRENE BEAD.

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

5. BACKFILLING SHALL CONFORM TO "STRUCTURE BACKFILL". 6. OTHER DETAILS (ANTI-SEEP COLLARS, VALVES, ETC.) SHALL BE AS SHOWN ON THE DRAWINGS.

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. MATERIAL - 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 M2 52 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 UNSUITABLE SOIL IS ENCOUNTERED, ALL SUCH MATERIAL SHALL BE REMOVED AND REPLACED WITH SUITABLE EARTH COMPACTED TO PROVIDE ADEQUATE SUPPORT.

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.

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 OR WATER FROM VARIOUS PARTS OF THE WORK AND FOR MAINTAINING THE EXCAVATIONS, FOUNDATION, AND OTHER PARTS OF THE WORK FREE FROM WATER AS REQUIRED 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 ACCOMPANING 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.

WOODY VEGETATION NOTE

HOWARD SCD

TREES, SHRUBS, OR OTHER WOODY VEGETATION WILL NOT BE ALLOWED WITHIN A 25' RADIUS OF THE INLET STRUCTURE IN THE POOL AREA, AND NOT ALLOWED ON, OR WITHIN 15' OF ANY PORTION OF THE EMBANKMENT.

CONTRACTOR'S AS-BUILT NOTE

AS-BUILT PLANS AND CERTIFICATION ARE REQUIRED FOR THIS STORM WATER MANAGEMENT FACILITY. THIS MUST BE PREPARED AND SEALED BY A REGISTERED PROFESSIONAL ENGINEER. AFTER FINAL ACCEPTANCE OF THE FACILITY, HOWARD COUNTY WILL PREPARE THE AS-BUILT PLANS AND THE AS BUILT CERTIFICATION.

TO PREPARE THE REQUIRED AS-BUILT PLANS AND CERTIFICATION, THE STORM WATER MANAGEMENT FACILITY MUST BE INSPECTED BY THE ENGINEER AT SPECIFIC STAGES DURING THE CONSTRUCTION AS REQUIRED BY THE CURRENT HOWARD COUNTY STORM WATER MANAGEMENT POLICY AND DESIGN MANUAL. THE CONTRACTOR SHALL NOTIFY THE ENGINEER AT LEAST FIVE (5) WORKING DAYS PRIOR TO STARTING ANY WORK SHOWN

#### CONSTRUCTION NOTE

UNLESS OTHERWISE NOTED, ALL CONSTRUCTION AND WORKMANSHIP SHALL BE IN ACCORDANCE WITH:

HOWARD COUNTY DEPARTMENT OF PUBLIC WORKS STANDARD SPECIFICATIONS AND DETAILS FOR

MARYLAND DEPARTMENT OF TRANSPORTATION STATE HIGHWAY ADMINISTRATION, JULY, 2008 STANDARD SPECIFICATIONS FOR CONSTRUCTION AND MATERIAL.

#### **GENERAL NOTES**

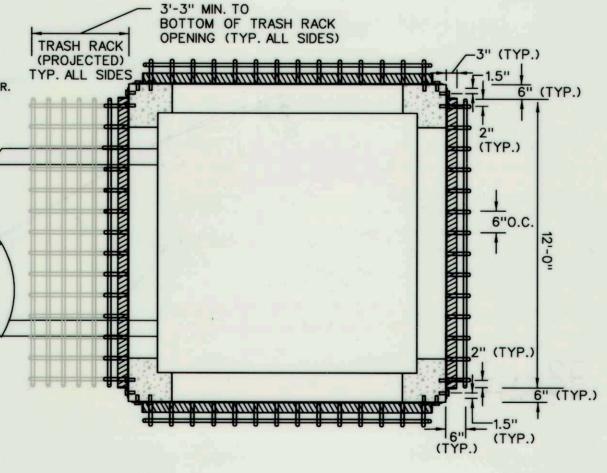
- 1. THE PROPOSED GRADING SHOWN ON THIS PLAN MEETS THE REQUIREMENTS SET FORTH BY THE HOWARD COUNTY, HOWEVER, DUE TO BUILDING TYPES AND LAYOUT, SOME FIELD ADJUSTMENTS MAY BE REQUIRED. ALL CHANGES MUST COMPLY WITH THE ABOVE MENTIONED REQUIREMENTS.
- 2. THERE SHALL BE NO CLEARING, GRADING, CONSTRUCTION, OR DISTURBANCE OF VEGETATION IN ANY FOREST RETENTION AREAS, EXCEPT AS PERMITTED BY HOWARD COUNTY 3. OBSTRUCTIONS SHOWN ON THIS DRAWING ARE FOR THE CONVENIENCE OF THE CONTRACTOR ONLY. KCI TECHNOLOGIES, INC. DOES NOT WARRANT OR GUARANTEE THE CORRECTNESS OR THE COMPLETENESS OF THE INFORMATION GIVEN. THE CONTRACTOR MUST VERIFY ALL SUCH
- NFORMATION TO HIS OWN SATISFACTION. 4. CONTRACTOR WILL CALL "MISS UTILITY" (800-257-7777) AT LEAST 48 HOURS PRIOR TO
- 5. SHOULD THE CONTRACTOR DISCOVER DISCREPANCIES BETWEEN THE PLANS AND FIELD CONDITIONS, THE ENGINEER IS TO BE NOTIFIED IMMEDIATELY TO RESOLVE THE SITUATION. SHOULD THE CONTRACTOR MAKE FIELD CORRECTIONS OR ADJUSTMENTS WITHOUT WRITTEN PERMISSION OF THE ENGINEER, THEN THE CONTRACTOR ASSUMES ALL RESPONSIBILITY FOR THOSE CHANGES.

## OPERATION AND MAINTENANCE SCHEDULE

- 1. FACILITY SHALL BE INSPECTED ANNUALLY AND AFTER MAJOR STORMS. INSPECTIONS SHALL BE PERFORMED DURING WET WEATHER TO DETERMINE IF THE POND IS FUNCTIONING PROPERLY.
- MINIMUM OF TWO (2) TIMES PER YEAR, ONCE IN JUNE AND ONCE IN SEPTEMBER. OTHER SIDE SLOPES AND MAINTENANCE ACCESS SHALL BE
- DEBRIS AND LITTER SHALL BE REMOVED DURING REGULAR MOWING OPERATIONS AND AS NEEDED.
- 4. VISIBLE SIGNS OF EROSION IN THE POND AS WELL AS THE RIP-RAP SPILLWAY AND OUTLET AREAS SHALL BE REPAIRED AS SOON AS IT IS NOTICED.
- 5. PLANTINGS SHALL BE REPLACED AS NEEDED TO ENSURE A SIGNIFICANT NUMBER OF SHRUBS ARE PRESENT AND FULL HERBACEOUS COVERAGE EXISTS WITHIN

NON-ROUTINE MAINTENANCE:

- STRUCTURAL COMPONENTS OF THE FACILITY SUCH AS THE EMBANKMENT, DEWATERING SYSTEM, AND OVERFLOWS SHALL BE REPAIRED UPON
- SEDIMENT SHALL BE REMOVED FROM THE FACILITY IF 25% OR MORE OF THE SURFACE AREA IS COVERED OR, WHEN DEEMED NECESSARY FOR AESTHETIC REASONS, UPON APPROVAL FROM THE DEPARTMENT OF



**PLAN VIEW** 

FRONT VIEW

1. ENTIRE TRASH RACK ASSEMBLY SHALL BE SHOP FABRICATED AND HOT-DIPPED GALVANIZED PER ASTM A-123 AFTER FABRICATION. 2. STEEL SHALL CONFORM TO ASTM A-35. 3. REBAR SHALL BE WELDABLE STEEL CONFORMING TO ASTM A-706

TRASH RACK DETAIL

NOT TO SCALE

REVIEWED FOR HOWARD SCD AND MEETS TECHNICAL REQUIREMENTS

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

DEPARTMENT OF PUBLIC WORKS

CHIEF, BUREAU OF ENVIRONMENTAL SERVICES

DATE

CONCRETE RISER-

1/4" THICK STEEL ANGLE BAR WITH

3/4" DIA.x2" LONG EXPANSION BOLTS (TYP.)

EXPANSION BOLT (TYP

(TYP.)

WEIR OPENING (SEE DETAIL SHEET 6 OF 18

MIN. (TYP.) BETWEEN BOTTOM OF TRASH RACK AND WEIR CREST

FOR DIMENSIONS)

(SHEET 6 OF 18)

DETAIL G-2-9 PROJECTION COLLAR CONCRETE COLLAR DETAIL نا CONCRETE PROJECTION COLLAR -CONCRETE CRADLE-ELEVATION CAST 1 FOOT THICK CONCRETE COLLAR TO OUTLET STRUCTURE WITH FOUR #4 U-SHAPED REBARS.

STANDARD SYMBOL

(PP)

B = 25.0 FTC = 30.0 FT

D = 1.6 FT.

E = 5.0 FT.

F = 2.5 FT. (TYPE I)

DETAIL D-4-2 PLUNGE POOL

PLAN VIEW

SECTION A-A

USE NONWOVEN GEOTEXTILE AS SPECIFIED IN SECTION H-1 MATERIALS, AND PROTECT FROM PUNCHING, CUTTING, OR TEARING. REPAIR ANY DAMAGE OTHER THAN AN OCCASIONAL SMALL HOLE BY PLACING ANOTHER PIECE OF GEOTEXTILE OVER THE DAMAGED PART OR BY COMPLETELY REPLACING THE GEOTEXTILE. PROVIDE A MINIMUM OF ONE FOOT OVERLAP FOR ALL REPAIRS AND FOR JOINING TWO PIECES OF GEOTEXTILE.

PREPARE THE SUBGRADE FOR THE PLUNGE POOL TO THE REQUIRED LINES AND GRADES. COMPACT ANY FILL REQUIRED IN THE SUBGRADE TO A DENSITY OF APPROXIMATELY THAT OF THE SURROUNDING UNDISTURBED MATERIAL.

STONE FOR THE PLUNGE POOL MAY BE PLACED BY EQUIPMENT. CONSTRUCT TO THE FULL COURSE THICKNESS IN ONE OPERATION AND IN SUCH A MANNER AS TO AVOID DISPLACEMENT OF UNDERLYING MATERIALS. DELIVER AND PLACE THE STONE FOR THE PLUNGE POOL IN A MANNER THAT WILL ENSURE THAT IT IS REASONABLY HOMOGENEOUS WITH THE SMALLER STONES AND SPALLS FILLING THE VOIDS BETWEEN THE LARGER STONES. PLACE STONE FOR THE PLUNGE POOL IN A MANNER TO PREVENT DAMAGE TO THE GEOTEXTILE. HAND PLACE TO THE EXTENT NECESSARY.

MARYLAND STANDARDS AND SPECIFICATIONS FOR SOIL EROSION AND SEDIMENT CONTROL

-6 "O.C.

**EXPANSION** 

BOLT (TYP.)

1/4" THICK STEEL

3/4" DIA.x2" LONG

CONCRETE RISER

(SHEET 6 OF 18)

ANGLE BAR WITH

EXPANSION BOLTS (TYP.)

BOTH HORIZONTAL

AND VERTICAL

EMBED THE GEOTEXTILE A MINIMUM OF 4 INCHES AND EXTEND THE GEOTEXTILE A MINIMUM OF 6 INCHES BEYOND THE EDGE OF THE SCOUR HOLE.

CONSTRUCTION SPECIFICATIONS

TYP. AT ANGLE BAR

TYP. AT ALL INTERSECTIONS

FLARE-V GROOVE

WELD, BOTH SIDES

6"O.C. BOTH HORIZONTAL AND VERTICAL

FLARE-V GROOVE WELD, BOTH SIDES

1.5"

3'-3" MIN.

(TYP.) ALL SIDES

SIDE VIEW

I AM A DULY LICENSED PROFESSIONAL

OF MARYLAND, LICENSE NO. 39696. EXPIRATION DATE: JANUARY 04, 2015

ENGINEER UNDER THE LAWS OF THE STATE

SPARKS 936

ROAD 21152 6-7800 818

RIDGEBROOK

316-

(410) (9316)

EPHONE: (... (410)

ALUATION / DESIGN-BUILD SERVICES

RED CRAVAT COURT

POND DREDGING &

CIPAL SPILLWAY REPLACEMENT

HOWARD COUNTY CONTRACT & CA 08-29

HOWARD COUNTY DEPARTMENT OF PUBLIC WORKS

STORMWATER MANAGEMENT DIVISION

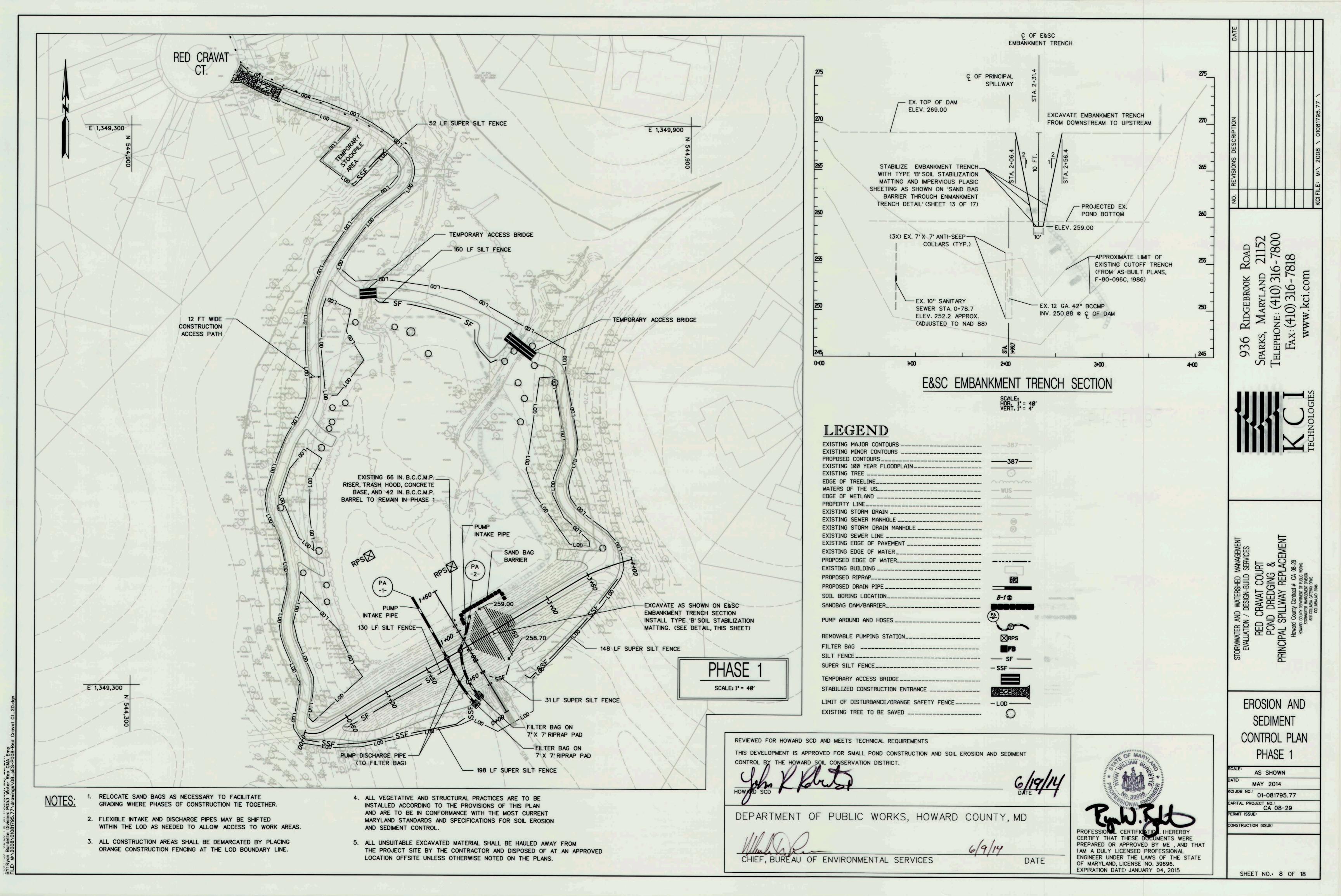
6751 COLUMBIA GATEWAY NEWS

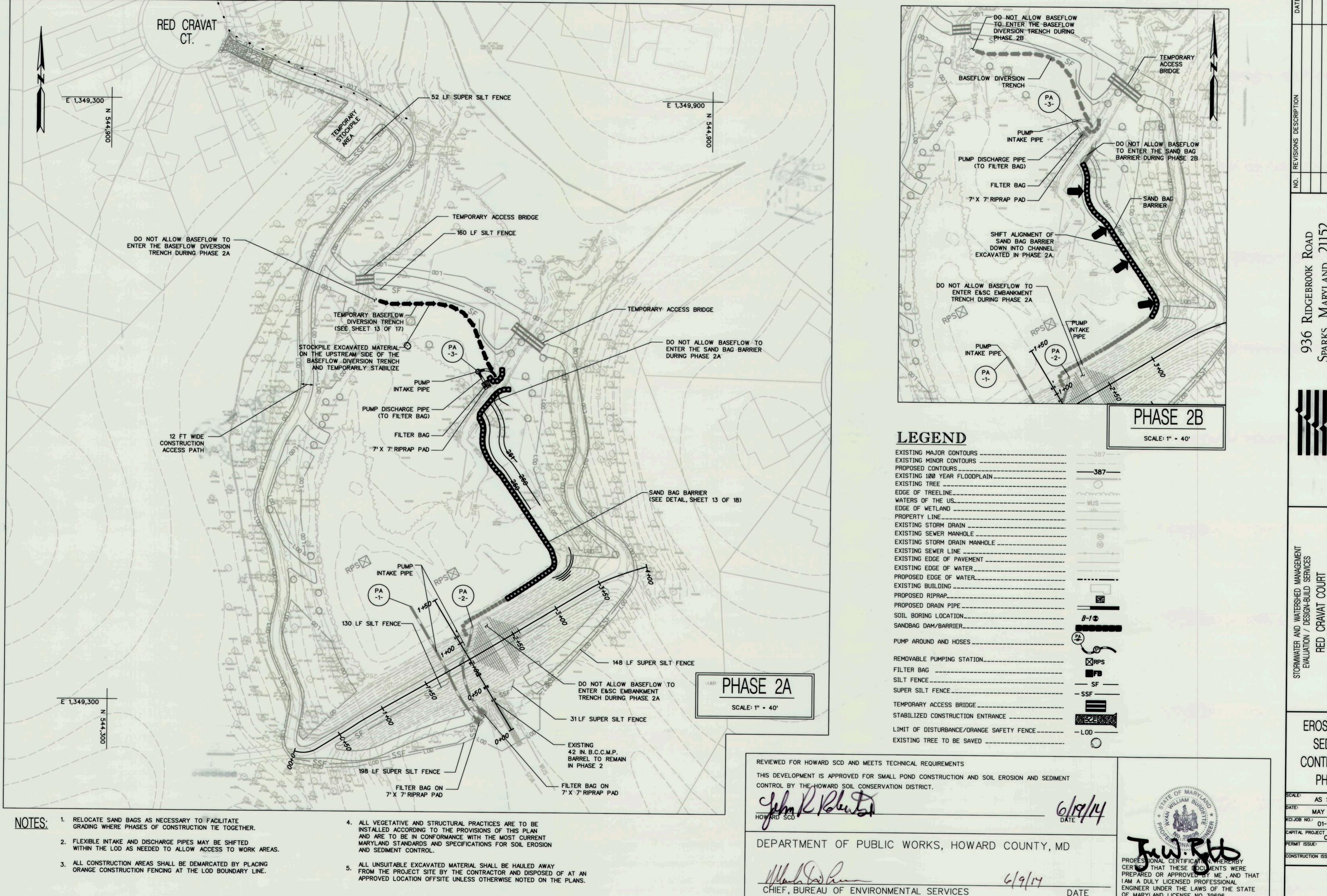
**STORMWATER MANAGEMENT** DETAILS AND **NOTES** 

AS SHOWN MAY 2014 01-081795.77 CAPITAL PROJECT NO.: CA 08-29 ONSTRUCTION ISSUE:

SHEET NO.: 7 OF 18

IY: Ryan Burdette Division: P053 Water Res GMA Emp ILE: M:\2008\01081795.77\drawings\07\_pSW-P007-





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EROSION AND SEDIMENT CONTROL PLAN PHASE 2

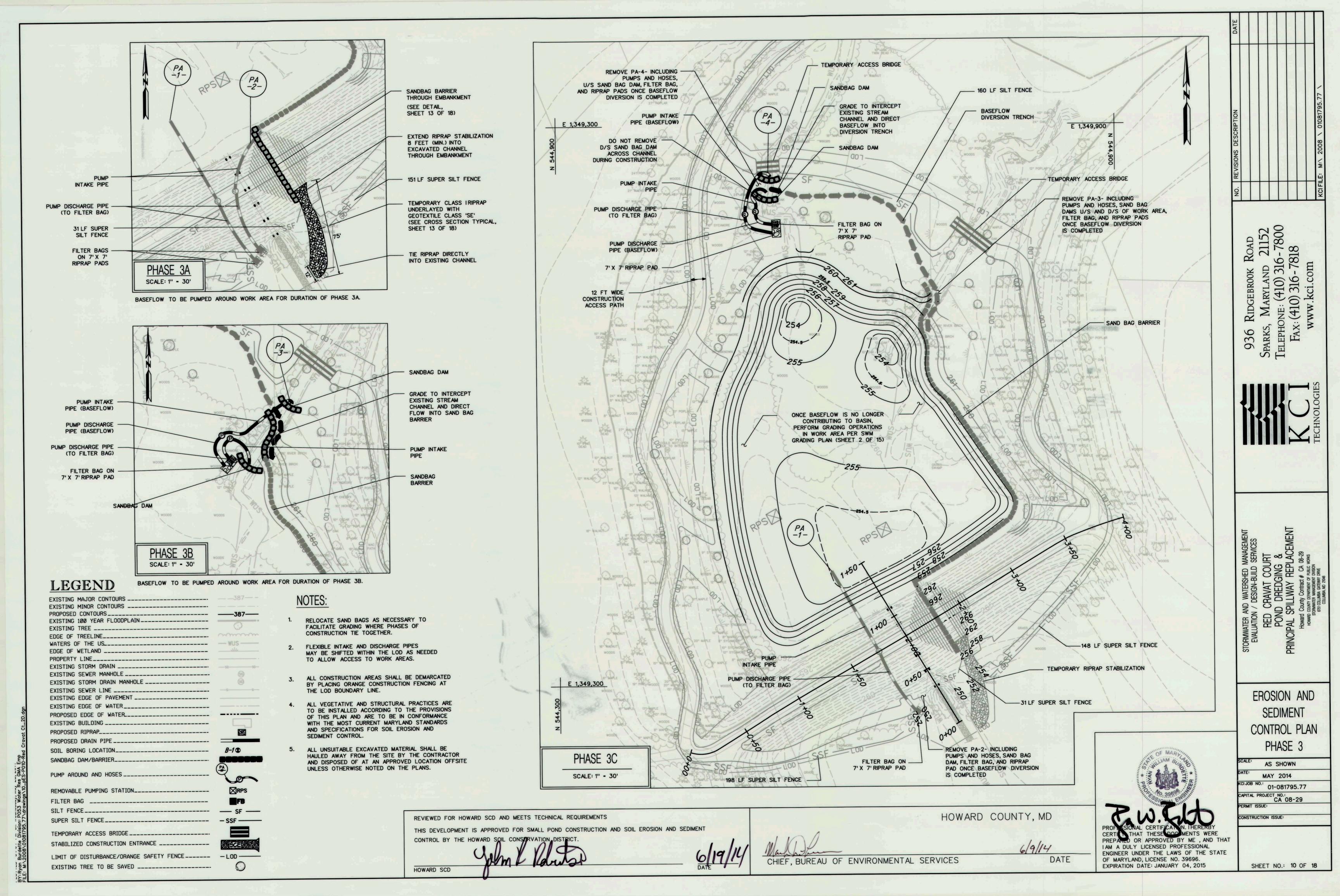
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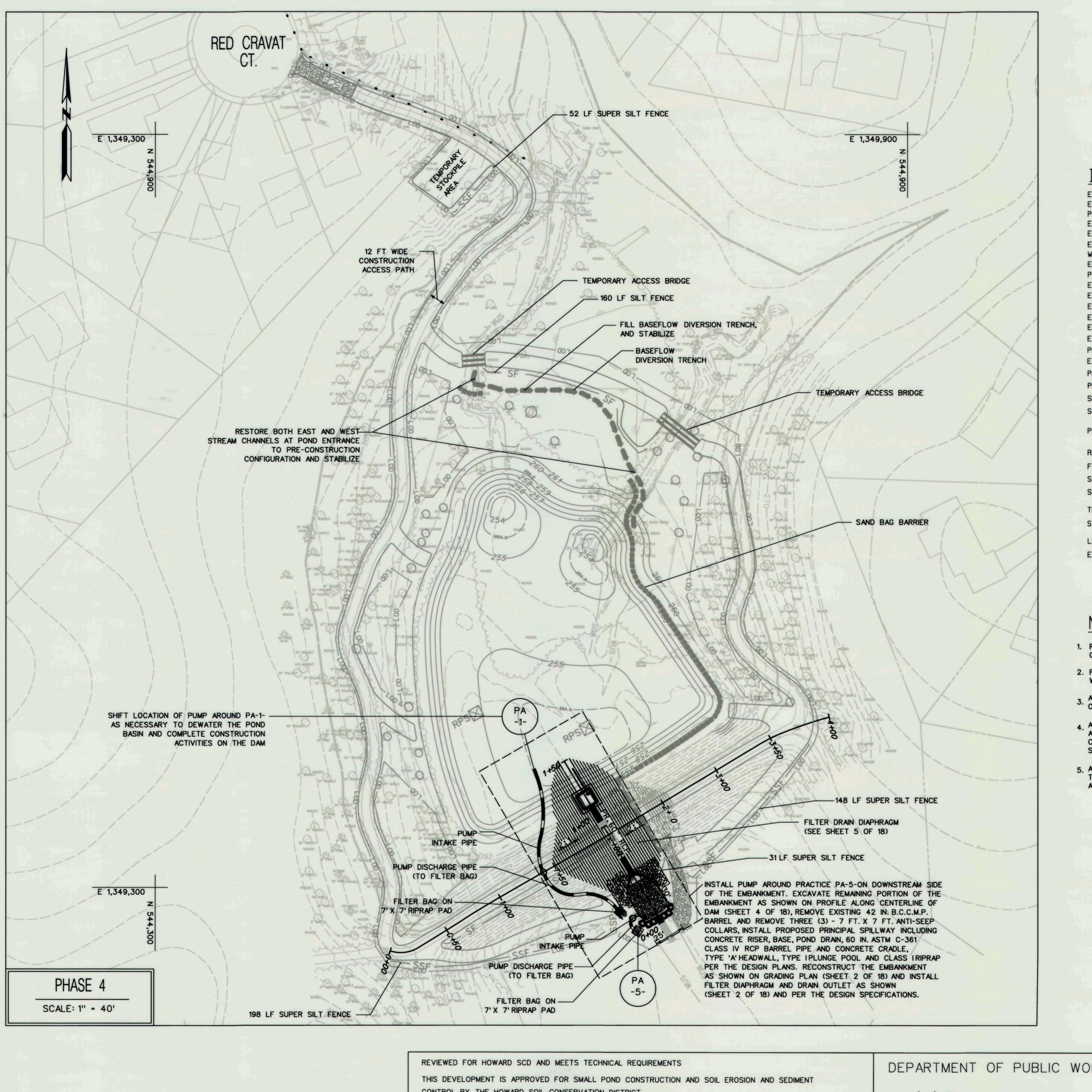
OF MARYLAND, LICENSE NO. 39696. EXPIRATION DATE: JANUARY 04, 2015

MAY 2014 KCI JOB NO.: 01-081795.77 CAPITAL PROJECT NO.: CA 08-29

CONSTRUCTION ISSUE:

SHEET NO .: 9 OF 18





LEGEND

EXISTING MAJOR CONTOURS	
PROPOSED CONTOURS	707
EXISTING 100 YEAR FLOODPLAIN	
EXISTING TREE	0
EDGE OF TREELINE	mmm
WATERS OF THE US	- WUS
EDGE OF WETLAND	
PROPERTY LINE	
EXISTING STORM DRAIN	—so——so—
EXISTING SEWER MANHOLE	
EXISTING STORM DRAIN MANHOLE	90
EXISTING SEWER LINE	_sss_
EXISTING EDGE OF PAVEMENT	
EXISTING EDGE OF WATER	
PROPOSED EDGE OF WATER	
EXISTING BUILDING	
PROPOSED RIPRAP	
PROPOSED DRAIN PIPE	75 CS
SOIL BORING LOCATION	8-1 ☎
SANDBAG DAM/BARRIER	
	(PA)
PUMP AROUND AND HOSES	4
REMOVABLE PUMPING STATION	<b>⊠RPS</b>
FILTER BAG	<b>III</b> FB
SILT FENCE	
SUPER SILT FENCE	— sF —
SUPER SILT PENCE	- SSF
TEMPORARY ACCESS BRIDGE	
STABILIZED CONSTRUCTION ENTRANCE	SECTIONS
	RESOLUTION NO.
LIMIT OF DISTURBANCE/ORANGE SAFETY FENCE	- LOD
EXISTING TREE TO BE SAVED	-LOD

## NOTES:

- 1. RELOCATE SAND BAGS AS NECESSARY TO FACILITATE GRADING WHERE PHASES OF CONSTRUCTION TIE TOGETHER.
- FLEXIBLE INTAKE AND DISCHARGE PIPES MAY BE SHIFTED WITHIN THE LOD AS NEEDED TO ALLOW ACCESS TO WORK AREAS.
- 3. ALL CONSTRUCTION AREAS SHALL BE DEMARCATED BY PLACING ORANGE CONSTRUCTION FENCING AT THE LOD BOUNDARY LINE.
- 4. ALL VEGETATIVE AND STRUCTURAL PRACTICES ARE TO BE INSTALLED ACCORDING TO THE PROVISIONS OF THIS PLAN AND ARE TO BE IN CONFORMANCE WITH THE MOST CURRENT MARYLAND STANDARDS AND SPECIFICATIONS FOR SOIL EROSION AND SEDIMENT CONTROL.
- 5. ALL UNSUITABLE EXCAVATED MATERIAL SHALL BE HAULED AWAY FROM THE PROJECT SITE BY THE CONTRACTOR AND DISPOSED OF AT AN APPROVED LOCATION OFFSITE UNLESS OTHERWISE NOTED ON THE PLANS.

EROSION AND **SEDIMENT** 

936 RIDGEBROOK ROAD SPARKS, MARYLAND 21152 TELEPHONE: (410) 316-7800 FAX: (410) 316-7818

SPARKS, MAKEL

TELEPHONE: (410) 3

FAX: (410) 316-

CONTROL PLAN PHASE 4

AS SHOWN MAY 2014 01-081795.77 CA 08-29 CONSTRUCTION ISSUE:

SHEET NO.: 11 OF 18

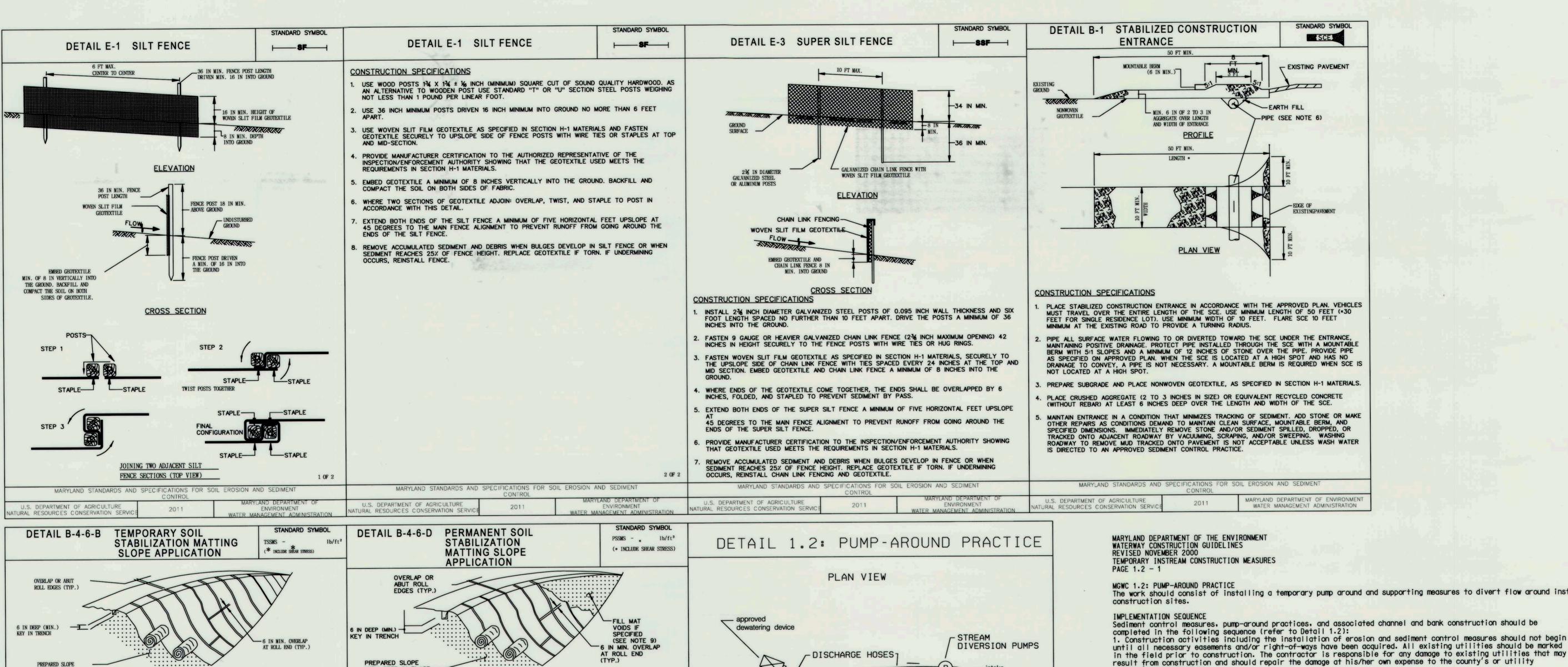
DEPARTMENT OF PUBLIC WORKS, HOWARD COUNTY, MD

CHIEF, BUREAU OF ENVIRONMENTAL SERVICES

DATE

ENGINEER UNDER THE LAWS OF THE STATE OF MARYLAND, LICENSE NO. 39696. EXPIRATION DATE: JANUARY 04, 2015

IAM A DULY LICENSED PROFESSIONAL



(SEEDBED) WITH SEED IN PLACE ISOMETRIC VIEW

CONSTRUCTION SPECIFICATIONS . USE MATTING THAT HAS A DESIGN VALUE FOR SHEAR STRESS EQUAL TO OR HIGHER THAN THE SHEAR STRESS DESIGNATED ON APPROVED PLANS.

2. USE TEMPORARY SOIL STABILIZATION MATTING MADE OF DEGRADABLE (LASTS 6 MONTHS MINIMUM)
NATURAL OR MAN-MADE FIBERS (MOSTLY ORGANIC). MAT MUST HAVE UNIFORM THICKNESS AND
DISTRIBUTION OF FIBERS THROUGHOUT AND BE SMOLDER RESISTANT. CHEMICALS USED IN THE MAT
MUST BE NON-LEACHING AND NON-TOXIC TO VEGETATION AND SEED GERMINATION AND NON-INJURIOUS TO THE SKIN. IF PRESENT, NETTING MUST BE EXTRUDED PLASTIC WITH A MAXIMUM MESH OPENING OF 2x2 INCHES AND SUFFICIENTLY BONDED OR SEWN ON 2 INCH CENTERS ALONG LONGITUDINAL AXIS OF THE MATERIAL TO PREVENT SEPARATION OF THE NET FROM THE PARENT

3. SECURE MATTING USING STEEL STAPLES, WOOD STAKES, OR BIODEGRADABLE EQUIVALENT. STAPLES MUST BE "U" OR "T" SHAPED STEEL WIRE HAVING A MINIMUM GAUGE OF NO. 11 AND NO. 8 RESPECTIVELY. "U" SHAPED STAPLES MUST AVERAGE 1 TO 1½ INCHES WIDE AND BE A MINIMUM OF 6 INCHES LONG. "T" SHAPED STAPLES MUST HAVE A MINIMUM 8 INCH MAIN LEG, A MINIMUM 1 INCH SECONDARY LEG, AND A MINIMUM 4 INCH HEAD. WOOD STAKES MUST BE ROUGH-SAWN HARDWOOD, 12 TO 24 INCHES IN LENGTH, 1x3 INCH IN CROSS SECTION, AND WEDGE SHAPED AT THE BOTTOM.

4. PERFORM FINAL GRADING, TOPSOIL APPLICATION, SEEDBED PREPARATION, AND PERMANENT SEEDING IN ACCORDANCE WITH SPECIFICATIONS. PLACE MATTING WITHIN 48 HOURS OF COMPLETING SEEDING OPERATIONS UNLESS END OF WORKDAY STABILIZATION IS SPECIFIED ON THE APPROVED EROSION &

5. UNROLL MATTING DOWNSLOPE. LAY MAT SMOOTHLY AND FIRMLY UPON THE SEEDED SURFACE. AVOID STRETCHING THE MATTING.

6. OVERLAP OR ABUT ROLL EDGES PER MANUFACTURER RECOMMENDATIONS. OVERLAP ROLL ENDS BY 6 INCHES (MINIMUM), WITH THE UPSLOPE MAT OVERLAPPING ON TOP OF THE DOWNSLOPE MAT.

7. KEY IN THE UPSLOPE END OF MAT 6 INCHES (MINIMUM) BY DIGGING A TRENCH, PLACING THE MATTING ROLL END IN THE TRENCH, STAPLING THE MAT IN PLACE, REPLACING THE EXCAVATED MATERIAL, AND TAMPING TO SECURE THE MAT END IN THE KEY.

8. STAPLE/STAKE MAT IN A STAGGERED PATTERN ON 4 FOOT (MAXIMUM) CENTERS THROUGHOUT AND 2 FOOT (MAXIMUM) CENTERS ALONG SEAMS, JOINTS, AND ROLL ENDS.

9. ESTABLISH AND MAINTAIN VEGETATION SO THAT REQUIREMENTS FOR ADEQUATE VEGETATIVE ESTABLISHMENT ARE CONTINUOUSLY MET IN ACCORDANCE WITH SECTION B-4 VEGETATIVE STABILIZATION. MARYLAND STANDARDS AND SPECIFICATIONS FOR SOIL EROSION AND SEDIMENT

2011

WITH SEED IN PLACE ISOMETRIC VIEW

CONSTRUCTION SPECIFICATIONS MATTING THAT HAS A DESIGN VALUE FOR SHEAR STRESS EQUAL TO OR HIGHER THAN THE SHEAR STRESS DESIGNATED ON APPROVED PLANS.

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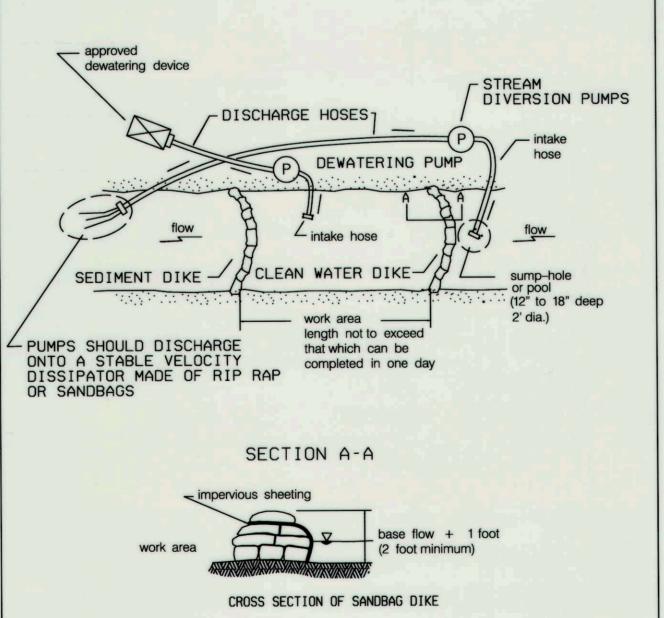
OVERLAP OR ABUT EDGES OF MATTING ROLLS PER MANUFACTURER RECOMMENDATIONS. OVERLAP ROLL ENDS BY 6 INCHES (MINIMUM), WITH THE UPSTREAM MAT OVERLAPPING ON TOP OF THE DOWNSLOPE MAT. KEY IN THE TOP OF SLOPE END OF MAT 6 INCHES (MINIMUM) BY DIGGING A TRENCH, PLACING THE MATTING ROLL END IN THE TRENCH, STAPLING THE MAT IN PLACE, REPLACING THE EXCAVATED MATERIAL,

STAPLE/STAKE MAT IN A STAGGERED PATTERN ON 4 FOOT (MAXIMUM) CENTERS THROUGHOUT AND 2 FOOT (MAXIMUM) CENTERS ALONG SEAMS, JOINTS, AND ROLL ENDS.

IF SPECIFIED BY THE DESIGNER OR MANUFACTURER AND DEPENDING ON THE TYPE OF MAT BEING INSTALLED, ONCE THE MATTING IS KEYED AND STAPLED IN PLACE, FILL THE MAT VOIDS WITH TOP SOIL OR GRANULAR MATERIAL AND LIGHTLY COMPACT OR ROLL TO MAXIMIZE SOIL/MAT CONTACT WITHOUT

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

MARYLAND STANDARDS AND SPECIFICATIONS FOR SOIL EROSION AND SEDIMENT U.S. DEPARTMENT OF AGRICULTURE ENVIRONMENT TURAL RESOURCES CONSERVATION SERV WATER MANAGEMENT ADMINISTRA



REVISED NOVEMBER 2000 CONSTRUCTION MEASURES

MARYLAND DEPARTMENT OF THE ENVIRONMENT WATER MANAGEMENT ADMINISTRATION

CERTIFY THAT THESE DOCUMENTS WERE PREPARED OR APPROVED BY ME , AND THAT IAM A DULY LICENSED PROFESSIONAL

ENGINEER UNDER THE LAWS OF THE STATE

OF MARYLAND, LICENSE NO. 39696.

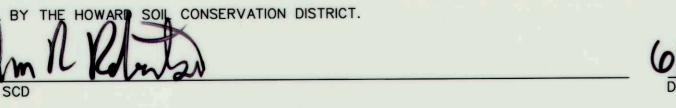
EXPIRATION DATE: JANUARY 04, 2015

U.S. DEPARTMENT OF AGRICULTURE

REVIEWED FOR HOWARD SCD AND MEETS TECHNICAL REQUIREMENTS

**ENVIRONMENT** 

THIS DEVELOPMENT IS APPROVED FOR SMALL POND CONSTRUCTION AND SOIL EROSION AND SEDIMENT



AND TAMPING TO SECURE THE MAT END IN THE KEY.

DEPARTMENT OF PUBLIC WORKS, HOWARD COUNTY, MD

CHIEF, BUREAU OF ENVIRONMENTAL SERVICES

DATE

The work should consist of installing a temporary pump around and supporting measures to divert flow around instream

Sediment control measures, pump-ground practices, and associated channel and bank construction should be 1. Construction activities including the installation of erosion and sediment control measures should not begin

company's satisfaction. 2. The contractor should notify the Maryland Department of the Environment or WMA sediment control inspector at least 5 days before beginning construction. Additionally, the contractor should 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 should 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 should 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 should not be removed within the limit of disturbance without approval from the WMA or local authority. 4. Construction should not begin until all sediment and erosion control measures have been installed and approved by the engineer and the sediment control inspector. The contractor should 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 should 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 should 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 day, the work area must be stabilized and the pump around removed from the channel. Work should not be conducted in the channel during rain events. 6. Sandbag dikes should be situated at the upstream and downstream ends of the work area as shown on the plans, and stream flow should be pumped around the work area. The pump should discharge onto a stable velocity dissipater made of riprap or sandbags.

7. Water from the work area should be pumped to a sediment filtering measure such as a dewatering basin, sediment bag, or other approved source. The measure should 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 should be avoided. If equipment has to traverse such a reach for access to another area, then timber mats or similar measures should be used to minimize disturbance to the channel. Temporary stream crossings should be used only when necessary and only where noted on the plans or specified. (See Section 4. Stream Crossings, Maryland Guidelines to Waterway Construction).

9. All stream restoration measures should 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 end 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 should be removed. After the first sediment flush, a new clean water dike should be established upstream from the old sediment dike. Finally, upon establishment of a new sediment dike below the old one, the old sediment dike should be removed. 11. A pump around must be installed on any tributary or storm drain outfall which contributes baseflow to the work area. This should 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 should discharge onto the same velocity dissipater used for the main stem pump around.

12. If a tributary is to be restored, construction should take place on the tributary before work on the main stem reaches the tributary confluence. Construction in the tributary, including pump around practices, should 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 should resume. Water from the tributary should 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 should be regraded and revegetated as per the planting plan.

D 21152 316-7800 7818 (410) (316) TELEPHONE: (4 FAX: (410) SPARK!



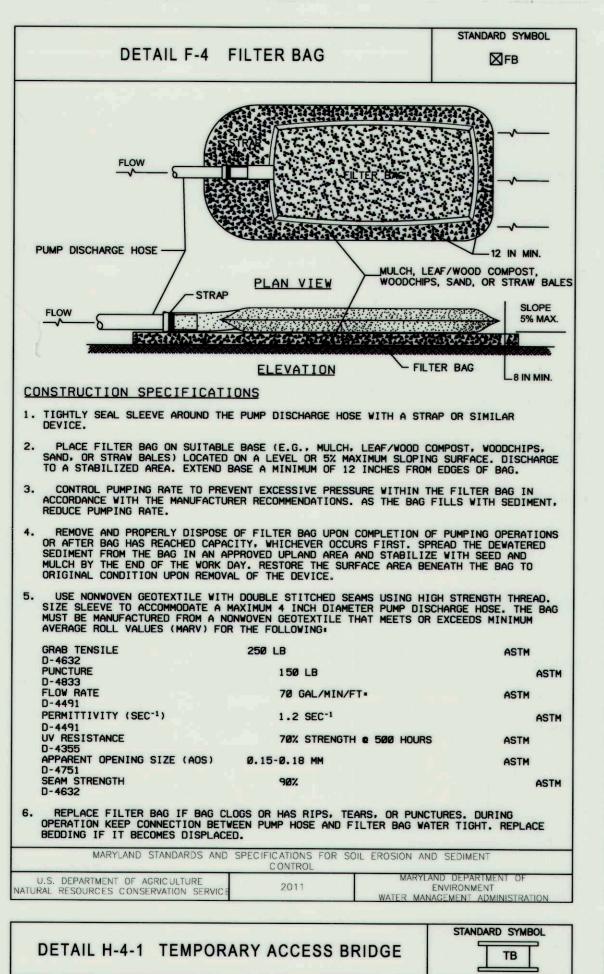
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**EROSION AND SEDIMENT** CONTROL NOTES & DETAILS

N/A MAY 2014 01-081795.77 CAPITAL PROJECT NO.: CA 08-29 CONSTRUCTION ISSUE:

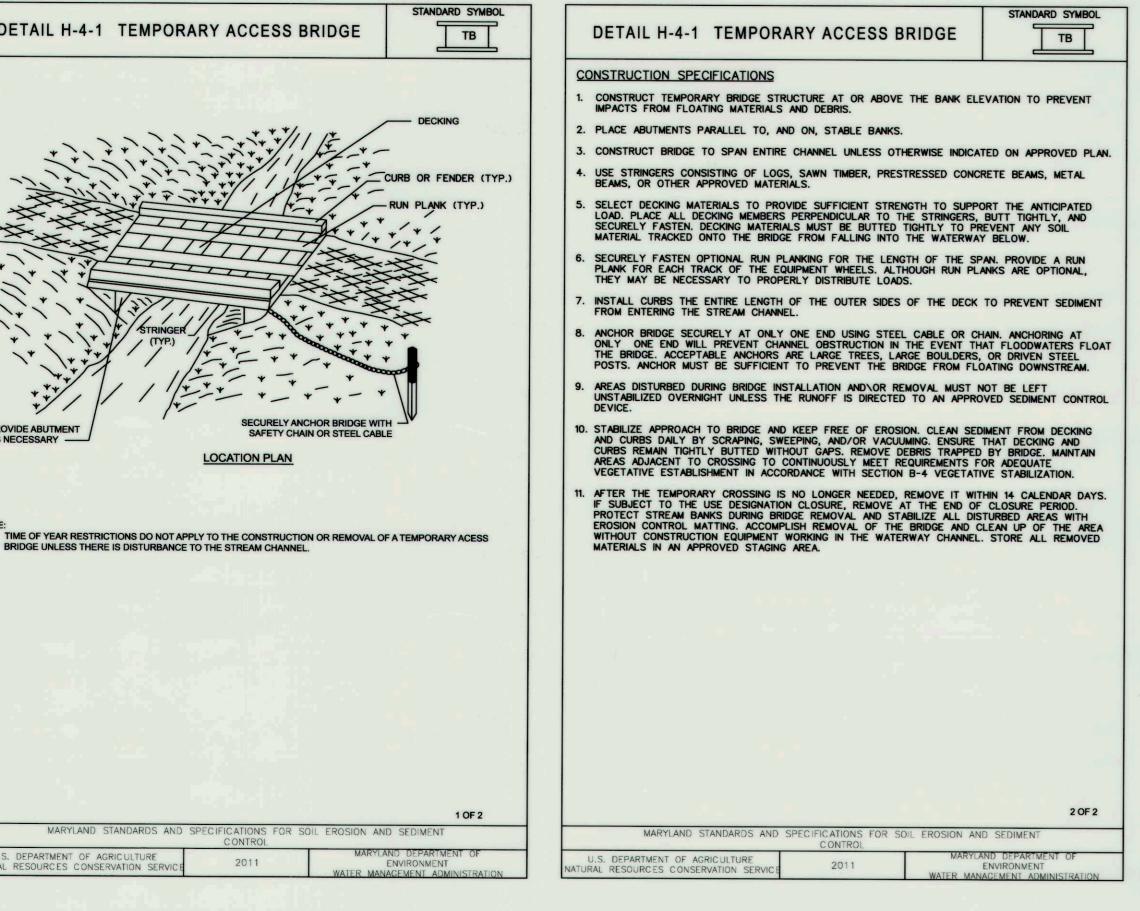
SHEET NO.: 12 OF 18



**LOCATION PLAN** 

MARYLAND STANDARDS AND SPECIFICATIONS FOR SOIL EROSION AND SEDIMEN

BRIDGE UNLESS THERE IS DISTURBANCE TO THE STREAM CHANNEL



DETAIL F-1 REMOVABLE PUMPING STATION

SECTION A-A

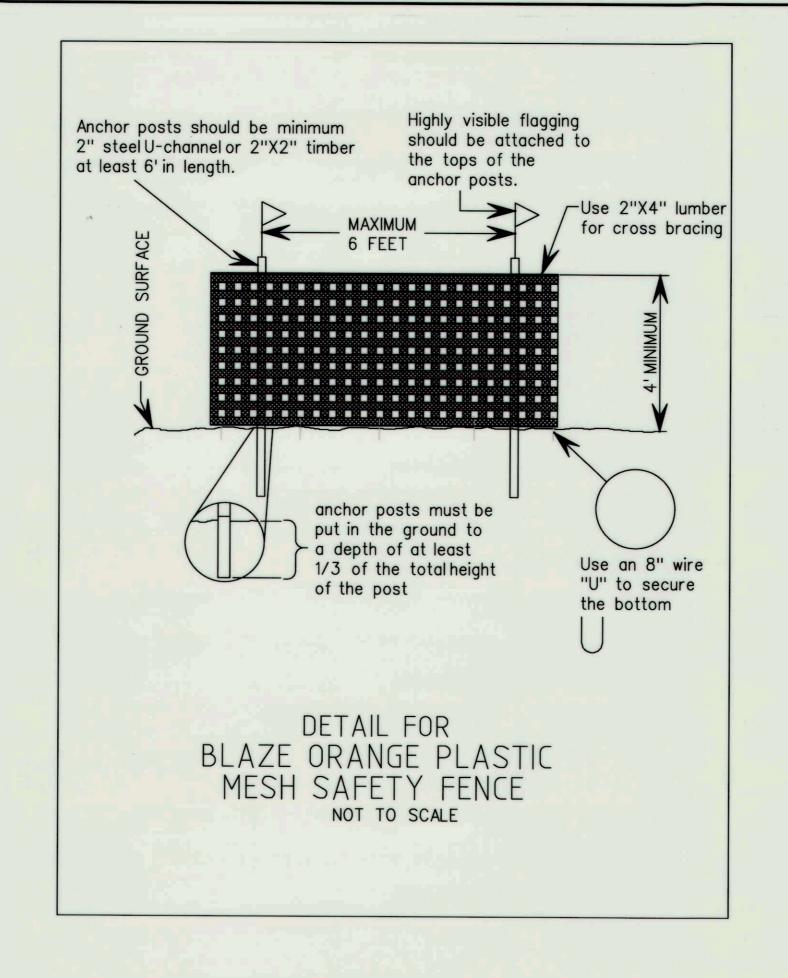
ANTICIPATED

CONSTRUCTION SPECIFICATIONS

DISCHARGE TO A STABLE AREA AT A NONEROSIVE RATE.

SURFACE

ELEV.



HOWARD SOIL CONSERVATION DISTRICT TEMPORARY SEEDING NOTES \*\*

Apply to graded or cleared areas likely to be re-disturbed where a short-term vegetative cover is needed

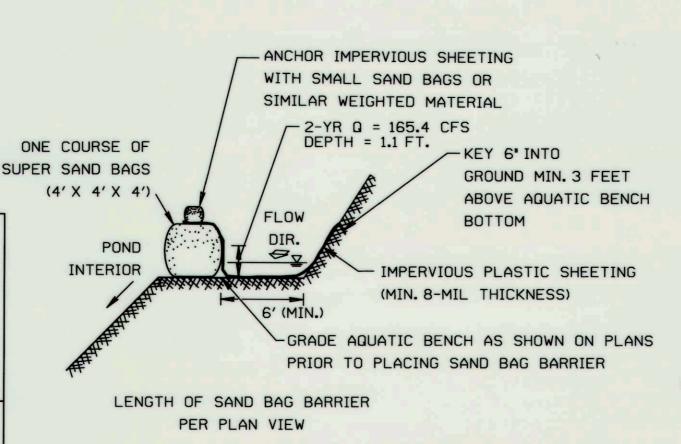
Seedbed preparation: -- Loosen upper three inches of soil by raking, disking or other acceptable means before seeding if not previously loosened.

Soil Amendments: -- Apply 600 lbs/acre 10-10-10 fertilizer (14 lbs/1000 sq. ft.).

Seeding: -- For periods March 1 - April 30 and from August 15 -October 15, seed with 2-1/2 bushelper acre of annualrye (3.2 lbs/1000 sq. ft.). For the period May 1 - August 14, seed with 3 lbs/acre of weeping lovegrass (.07 lbs/1000 ft.). For the period November 16 - February 28, protect site by applying 2 tons/acre of well anchored straw mulch and seed as soon as possible in the spring, or use sod.

Mulching: -- Apply 1-1/2 to 2 tons/acre (70 to 90 lbs/1000 sq. ft.) of unrotted weed-free, small grain straw immediately after seeding. Anchor mulch immediately after application using mulch anchoring tool. No asphalt emulsion shall be used for anchoring. Only a non-toxic, latex backing material is allowed.

Refer to the 2011 MARYLAND STANDARDS AND SPECIFICATIONS FOR SOIL EROSION AND SEDIMENT CONTROL for additional rates and methods not covered.



SAND BAG BARRIER DETAIL

NOT TO SCALE

TABLE 28 STONE SIZE SIZE RANGE D 50 D 100 AASHTO HEIGHT NUMBER 57= M-43 N/A NUMBER ' 2"-3" 3" M-43 N/A RIP-RAP\*\* 4"-7" 7" N/A N/A 15" N/A CLASS I N/A 150 LB. MAX. CLASS II 24' N/A 700 LB. MAX CLASS III N/A 34" 2000 LB. MAX

\* THIS CLASSIFICATION IS TO BE USED ON THE INSIDE FACE OF STONE OUTLETS AND CHECK DAMS.

\*\* THIS CLASSIFICATION IS TO BE USED WHENEVER SMALL RIP-RAP IS REQUIRED. THE STATE HIGHWAY ADMINISTRATION DESIGNATION FOR THIS STONE IS STONE FOR GABIONS ( 905.01.04).

24.0 MATERIALS AND SPECIFICATIONS TABLE 27 GEOTEXTILE FABRICS

CLASS	APPARENT OPENING SIZE MM. MAX.	GRAB TENSILE STRENGTH LB. MIN.	BURST STRENGTH PSI MIN.
A	0.30**	250	500
В	0.60	200	320
С	0.30	200	320
D	0.60	90	145
E	0.30	90	145
F (SILT FENCE)	0.40 - 0.80 =	90	190

\* US STD. SIEVE CW-02215 \*\* .50 MM. MAX. FOR SUPER SILT FENCE THE PROPERTIES SHALL BE DETERMINED IN ACCORDANCE WITH THE FOLLOWING PROCEDURES: - APPARENT OPENING SIZE MSMT 323

-GRAB TENSILE STRENGTH ASTM D 1682 4"x8" SPECIMEN 1"x2" CLAMPS, 12"/ MIM. STRAIN RATE IN BOTH PRINCIPAL DIRECTIONS OF GEOTEXTILEFABRIC.

-BURST STRENGTH ASTM D 3786

THE FABRIC SHALL BE INERT TO COMMONLY ENCOUNTERED CHEMICALS AND HYDRCARBONS, AND WILL BE ROT AND MILDEW RESISTANT. IT SHALL BE MANUFACTURED FROM FIBERS CONSISTING OF LONG CHAIN SYNTHETIC POLYMERS, AND COMPOSED OF A MINIMUM OF 85% BY WEIGHT OF POLYOLEPHINS, POLYESTERS, OR POLYAMIDES. THE GEOTEXTILE FABRIC SHALL RESIST DETERIORATION FROM ULTRAVIOLET EXPOSURE.

IN ADDITION CLASSES A THROUGH E SHALL HAVE A 0.01 CM/SEC. MINIMUM PERMEABILITY WHEN TESTED IN ACCORDANCE WITH MSMT 507, AND AN APPARENT MINIMUM ELONGATION OF 20 PERCENT (20%) WHEN TESTED IN ACCORDANCE WITH THE GRAB TENSILE STRENGTH REQUIREMENTS LISTED ABOVE.

SILT FENCE
CLASS F GEATEXTILE FABRICS FOR ALL SILT FENCE SHALL HAVE A 50LB./IN. MINIMUM TENSILE STRENGTH AND A 20 LB/IN
MINIMUM TENSILE MODULES WHEN TESTED IN ACCORDANCE WITH MSMT 509. MATERIAL SHALL ALSO HAVE A 0.3
GAL./FT.SQUARED/MIN. FLOW RATE AND SEVENTY-FIVE PERCENT (75%) MINIMUM FILTERING EFFICIENCY WHEN TESTED IN

GEOTEXTILE FABRICS USED IN THE CONSTRUCTION OF THE SILT FENCE SHALL RESIST DETERIORATION FROM ULTRAVIOLET EXPOSURE. THE FABRIC SHALL CONTAIN SUFFICIENT AMOUNTS OF ULTRAVIOLET RAY INHIBITORS AND STABILIZERS TO PROVIDE A MINIMUM OF 12 MONTHS OF EXPECTED USABLE CONSTRUCTION LIFE AT A TEMPERATURE RANGE OF 0 TO 120 DEGREES F. MATERIALS SPECIFICATIONS

EXISTING GROUND -CLASS I RIPRAP 2-YR Q = 165.4 CFS

UNDERLAYED WITH GEOTEXTILE CLASS 'SE' MATTING

LENGTH OF TEMPORARY RIPRAP CHANNEL PER PLAN VIEW

18" (MIN.)

DEPTH = 1.3 FT.

TEMPORARY RIPRAP CHANNEL NOT TO SCALE

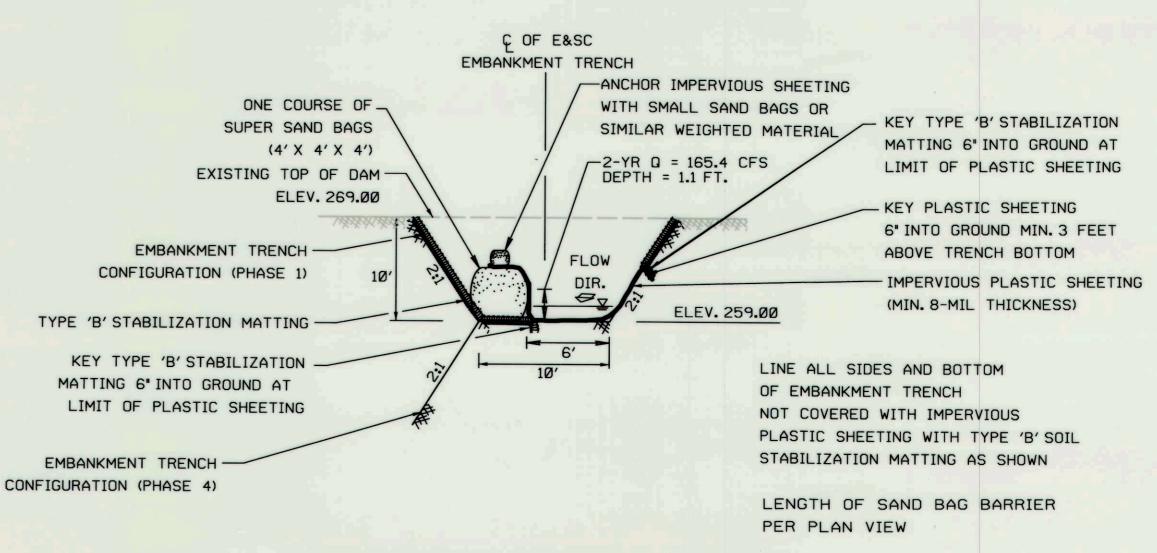
18" (MIN.) **EXISTING** GROUND (MIN. 8-MIL THICKNESS)

-ANCHOR IMPERVIOUS SHEETING WITH SMALL SAND BAGS OR SIMILAR WEIGHTED MATERIAL (BOTH SIDES) MPERVIOUS PLASTIC SHEETING

LENGTH OF TEMPORARY BASEFLOW DIVERSION TRENCH PER PLAN VIEW

TEMPORARY BASEFLOW DIVERSION TRENCH

NOT TO SCALE



SAND BAG BARRIER THROUGH EMBANKMENT TRENCH

NOT TO SCALE

OK ROAD
ND 21152
316-7800
5-7818 RIDGEBROOK MARYLAND (410) 3 (410) 3 )) 316-(410) Telephone: 936



**EROSION AND** SEDIMENT CONTROL NOTES & DETAILS

AS SHOWN MAY 2014 01-081795.77 CAPITAL PROJECT NO.: CA 08-29 ERMIT ISSUE:

CONSTRUCTION ISSUE:

SHEET NO.: 13 OF 18

CERTIFY THAT THESE DOCUMENTS WERE PREPARED OR APPROVED BY ME , AND THAT IAM A DULY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MARYLAND, LICENSE NO. 39696. EXPIRATION DATE: JANUARY 04, 2015

PROVIDE ABUTMENT AS NECESSARY —

U.S. DEPARTMENT OF AGRICULTURE ATURAL RESOURCES CONSERVATION SERV

REVIEWED FOR HOWARD SCD AND MEETS TECHNICAL REQUIREMENTS

THIS DEVELOPMENT IS APPROVED FOR SMALL POND CONSTRUCTION AND SOIL EROSION AND SEDIMENT

DEPARTMENT OF PUBLIC WORKS, HOWARD COUNTY, MD

CHIEF, BUREAU OF ENVIRONMENTAL SERVICES

DATE

STANDARD SYMBOL

SUCTION LINE TO PUMP

- PERFORATED PIPE WRAPPED WITH 14
IN HARDWARE CLOTH

EACH PIPE WITH WATERTIGHT SEAL

NECESSARY TO PREVENT FLOATATION OF INNER

- HOOK AND CHAIN FOR REMOVAL

WRAPPED FIRST WITH 14 IN GALVANIZED HARDWARE CLOTH, THEN NONWOVEN

GEOTEXTILE

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0000

0000

0000

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2000

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USE CORRUGATED METAL OR PLASTIC PIPE WITH 1 INCH DIAMETER PERFORATIONS 6 INCHES ON

USE A MINIMUM 12 INCH DIAMETER INNER PIPE WITH AN OUTER PIPE A MINIMUM 6 INCHES LARGER IN DIAMETER. BOTTOM OF EACH PIPE MUST BE CAPPED WITH WATERTIGHT SEAL.

WRAP EACH PIPE WITH 14 INCH GALVANIZED HARDWARE CLOTH. ON INNER PIPE WRAP NONWOVEN GEOTEXTILE, AS SPECIFIED IN SECTION H-1 MATERIALS, OVER THE HARDWARE CLOTH.

EXCAVATE 8 FEET X 8 FEET X 4 FEET DEEP PIT FOR PIPE PLACEMENT. PLACE CLEAN 34 TO 11/2 INCH STONE OR EQUIVALENT RECYCLED CONCRETE, 6 INCHES IN DEPTH PRIOR TO PIPE PLACEMENT

SET TOP OF INNER AND OUTER PIPES MINIMUM 12 INCHES ABOVE ANTICIPATED WATER SURFACE ELEVATION (OR RISER CREST ELEVATION WHEN DEWATERING A BASIN).

BACKFILL PIT AROUND THE OUTER PIPE WITH 34 TO 11/2 INCH CLEAN STONE OR EQUIVALENT RECYCLED CONCRETE AND EXTEND STONE A MINIMUM OF 6 INCHES ABOVE ANTICIPATED WATER

A REMOVABLE PUMPING STATION REQUIRES FREQUENT MAINTENANCE. IF SYSTEM CLOGS, PULL OUT INNER PIPE AND REPLACE GEOTEXTILE. KEEP POINT OF DISCHARGE FREE OF EROSION.

MARYLAND STANDARDS AND SPECIFICATIONS FOR SOIL EROSION AND SEDIMENT

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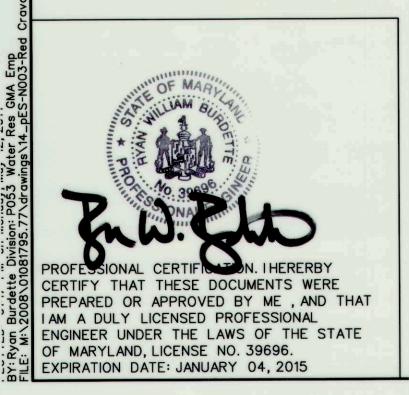
CLEAN STONE

#### HOWARD COUNTY CONSERVATION DISTRICT STANDARD SEDIMENT CONTROL NOTES

- 1. A minimum of 48 hours notice must be given to the Howard County Department of Inspections, Licenses and Permits, Sediment Control Division prior to the start of any construction (313-1855).
- 2. All vegetative and structural practices are to be installed according to the provisions of this plan and are to be in conformance with the most current MARYLAND STANDARDS AND SPECIFICATIONS FOR SOIL EROSION AND SEDIMENT CONTROL and revisions thereto.
- 3. Following initial soil disturbance or re-disturbance, permanent or temporary stabilization shall be completed within: a) 3 calendar days for all perimeter sediment control structures, dikes, perimeter slopes and all slopes greater than 3:1, b) 7 days as to all other disturbed or graded areas on the project site.
- 4. 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 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 done when recommended seeding dates do not allow for proper germination and establishment of grasses.
- 5. 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 Howard County Sediment Control Inspector.
- 6. Site Analysis:

Total Area of Site	26.78 Acres
Area Disturbed	3.13 Acres
Area to be roofed or paved	0.00 Acres
Area to be vegetatively stabilized	1.89 Acres
Total Cut	8,567 Cu. Yds.
Total Fill	1,775 Cu. Yds.
Offsite waste/borrow area location and permit	CUNNINGHAM'S SAND
	AND ODAYEL DIT OD

- AND GRAVEL PIT, CROFTON MD.
- 7. Any sediment control practice that is disturbed by grading activity for placement of utilities must be repaired on the same day of disturbance.
- 8. Additional sediment control must be provided, if deemed necessary by the Howard County Sediment Control Inspector.
- 9. On all sites with disturbed areas in excess of 2 acres, approval of the inspection agency shall be requested upon completion of installation of perimeter erosion and sediment controls, but before proceeding with any other earth disturbance or grading. Other building or grading inspection approvals may not be authorized until this initial approval by the inspection agency is made.
- 10. Trenches for the construction of utilities is limited to three pipe lengths or that which shall be back-filled and stabilized by the end of each workday, whichever is shorter.
- 11. Any changes or revisions to the sequence of construction must be reviewed and approved by the plan approval authority prior to proceeding with construction.
- 12. 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 be stabilized and approved by the enforcement authority. Unless otherwise specified and approved by the approval authority, no more than 30 acres cumulatively may be disturbed at a given time.



#### B-4-5 STANDARDS AND SPECIFICATIONS

**FOR** 

#### PERMANENT STABILIZATION

Definition

To stabilize disturbed soils with permanent vegetation.

Purpose

To use long-lived perennial grasses and legumes to establish permanent ground cover on disturbed soils.

Conditions Where Practice Applies

Exposed soils where ground cover is needed for 6 months or more.

#### Criteria

#### Seed Mixtures

- 1. General Use
- a. Select one or more of the species or mixtures listed in Table B.3 for the appropriate Plant Hardiness Zone (from Figure B.3) and based on the site condition or purpose found on Table B.2. Enter selected mixture(s), application rates, and seeding dates in the Permanent Seeding Summary. The Summary is to be placed on the plan.
- b. Additional planting specifications for exceptional sites such as shorelines, stream banks, or dunes or for special purposes such as wildlife or aesthetic treatment may be found in USDA-NRCS Technical Field Office Guide, Section 342 - Critical Area Planting.
- c. For sites having disturbed area over 5 acres, use and show the rates recommended by the soil testing agency.
- d. For areas receiving low maintenance, apply urea form fertilizer (46-0-0) at 3 ½ pounds per 1000 square feet (150 pounds per acre) at the time of seeding in addition to the soil amendments shown in the Permanent Seeding Summary .

#### Turfgrass Mixtures

- a. Areas where turfgrass may be desired include lawns, parks, playgrounds, and commercial sites which will receive a medium to high level of maintenance.
- b. Select one or more of the species or mixtures listed below based on the site conditions or purpose. Enter selected mixture(s), application rates, and seeding dates in the Permanent Seeding Summary. The summary is to be placed on the plan.
  - i. Kentucky Bluegrass: Full Sun Mixture: For use in areas that receive intensive management. Irrigation required in the areas of central Maryland and Eastern Shore. Recommended Certified Kentucky Bluegrass Cultivars Seeding Rate: 1.5 to 2.0 pounds per 1000 square feet. Choose a minimum of three Kentucky bluegrass cultivars with each ranging from 10 to 35 percent of the total mixture by weight.
- ii. Kentucky Bluegrass/Perennial Rye: Full Sun Mixture: For use in full sun areas where

rapid establishment is necessary and when turf will receive medium to intensive management. Certified Perennial Ryegrass Cultivars/Certified Kentucky Bluegrass Seeding Rate: 2 pounds mixture per 1000 square feet. Choose a minimum of three Kentucky bluegrass cultivars with each ranging from 10 to 35 percent of the total mixture by weight.

- iii. Tall Fescue/Kentucky Bluegrass: Full Sun Mixture: For use in drought prone areas and/or for areas receiving low to medium management in full sun to medium shade. Recommended mixture includes; Certified Tall Fescue Cultivars 95 to 100 percent, Certified Kentucky Bluegrass Cultivars 0 to 5 percent. Seeding Rate: 5 to 8 pounds per 1000 square feet. One or more cultivars may be blended.
- iv. Kentucky Bluegrass/Fine Fescue: Shade Mixture: For use in areas with shade in Bluegrass lawns. For establishment in high quality, intensively managed turf area. Mixture includes; Certified Kentucky Bluegrass Cultivars 30 to 40 percent and Certified Fine Fescue and 60 to 70 percent. Seeding Rate: 11/2 to 3 pounds per 1000 square feet.

Select turfgrass varieties from those listed in the most current University of Maryland Publication, Agronomy Memo #77, "Turfgrass Cultivar Recommendations for Maryland"

Choose certified material. Certified material is the best guarantee of cultivar purity. The certification program of the Maryland Department of Agriculture, Turf and Seed Section, provides a reliable means of consumer protection and assures a pure genetic line

c. Ideal Times of Seeding for Turf Grass Mixtures

Western MD: March 15 to June 1, August 1 to October 1 (Hardiness Zones: 5b, 6a)

Central MD: March 1 to May 15, August 15 to October 15 (Hardiness Zone: 6b)

Southern MD, Eastern Shore: March 1 to May 15, August 15 to October 15 (Hardiness Zones: 7a, 7b)

- d. Till areas to receive seed by disking or other approved methods to a depth of 2 to 4 inches, level and rake the areas to prepare a proper seedbed. Remove stones and debris over 11/2 inches in diameter. The resulting seedbed must be in such condition that future moving of grasses will pose no difficulty.
- e. If soil moisture is deficient, supply new seedings with adequate water for plant growth (1/2 to 1 inch every 3 to 4 days depending on soil texture) until they are firmly established. This is especially true when seedings are made late in the planting season, in abnormally dry or hot seasons, or on adverse sites.

#### Permanent Seeding Summary

		<b>Zone</b> (from Figur re (from Table B				Fertilizer Ra (10-20-20)	te	Lime Rat
No.	Species	Application Rate (lb/ac)	Seeding Dates	Seeding Depths	N	P <sub>2</sub> O <sub>5</sub>	K <sub>2</sub> 0	
	ANNUAL PUEGRASS	40	3/1-5/354	⅓- ½ in	per acre	90 lb/ac	90 lb/ac (2 lb/	2 tons/ac
	oats	72	3/69-5/05	⅓- ½ in		(2 lb/		(90 lb/
-	Geraal Rya	112	3,05-5/88	¼- ½ in	1000 sf)	1000 sf)	1000 sf)	1000 sf)

#### Sod: To provide quick cover on disturbed areas (2:1 grade or flatter).

#### General Specifications

- a. Class of turfgrass sod must be Maryland State Certified. Sod labels must be made available to the job foreman and inspector.
- b. Sod must be machine cut at a uniform soil thickness of \% inch, plus or minus \% inch, at the time of cutting. Measurement for thickness must exclude top growth and thatch. Broken pads and torn or uneven ends will not be acceptable.
- c. Standard size sections of sod must be strong enough to support their own weight and retain their size and shape when suspended vertically with a firm grasp on the upper 10 percent of the section.
- d. Sod must not be harvested or transplanted when moisture content (excessively dry or wet) may adversely affect its survival.
- e. Sod must be harvested, delivered, and installed within a period of 36 hours. Sod not transplanted within this period must be approved by an agronomist or soil scientist prior to its installation.

#### Sod Installation

- a. During periods of excessively high temperature or in areas having dry subsoil, lightly irrigate the subsoil immediately prior to laying the sod.
- b. Lay the first row of sod in a straight line with subsequent rows placed parallel to it and tightly wedged against each other. Stagger lateral joints to promote more uniform growth and strength. Ensure that sod is not stretched or overlapped and that all joints are butted tight in order to prevent voids which would cause air drying of the roots.
- c. Wherever possible, lay sod with the long edges parallel to the contour and with staggering joints. Roll and tamp, peg or otherwise secure the sod to prevent slippage on slopes. Ensure solid contact exists between sod roots and the underlying soil surface.
- Water the sod immediately following rolling and tamping until the underside of the new sod pad and soil surface below the sod are thoroughly wet. Complete the operations of laying, tamping and irrigating for any piece of sod within eight hours.

#### Sod Maintenance

- a. In the absence of adequate rainfall, water daily during the first week or as often and sufficiently as necessary to maintain moist soil to a depth of 4 inches. Water sod during the heat of the day to prevent wilting.
- b. After the first week, sod watering is required as necessary to maintain adequate moisture content.
- c. Do not mow until the sod is firmly rooted. No more than 1/2 of the grass leaf must be removed by the initial cutting or subsequent cuttings. Maintain a grass height of at least 3 inches unless otherwise specified.

REVIEWED FOR HOWARD SCD AND MEETS TECHNICAL REQUIREMENTS

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

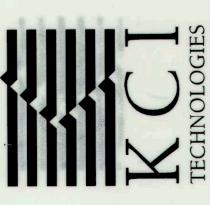
DEPARTMENT OF PUBLIC WORKS, HOWARD COUNTY, MD

CHIEF, BUREAU OF ENVIRONMENTAL SERVICES

DATE

SHEET NO .: 14 OF 18

MARYLAND 21152 ONE: (410) 316-7800 (410) 316-7818 ww.kci.com RIDGEBROOK EPHONE: (4) FAX: (410) 936



**EROSION AND** SEDIMENT CONTROL NOTES

N/A MAY 2014 01-081795.77 CA 08-29

CONSTRUCTION ISSUE:

#### **B-4-1 STANDARDS AND SPECIFICATIONS**

FOR

#### INCREMENTAL STABILIZATION

Definition

Establishment of vegetative cover on cut and fill slopes.

To provide timely vegetative cover on cut and fill slopes as work progresses.

Conditions Where Practice Applies

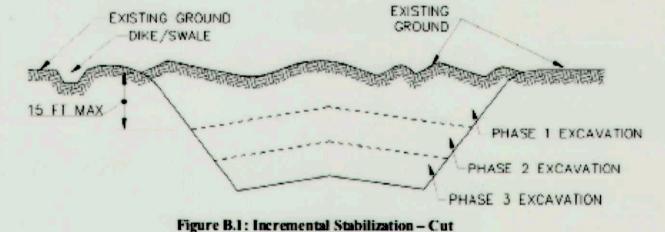
Any cut or fill slope greater than 15 feet in height. This practice also applies to stockpiles.

#### Criteria

#### A. Incremental Stabilization - Cut Slopes

- 1. Excavate and stabilize cut slopes in increments not to exceed 15 feet in height. Prepare seedbed and apply seed and mulch on all cut slopes as the work progresses.
- 2. Construction sequence example (Refer to Figure B.1):
- a. Construct and stabilize all temporary swales or dikes that will be used to convey runoff around the excavation.
- b. Perform Phase 1 excavation, prepare seedbed, and stabilize.
- c. Perform Phase 2 excavation, prepare seedbed, and stabilize. Overseed Phase 1 areas as necessary.
- d. Perform final phase excavation, prepare seedbed, and stabilize. Overseed previously seeded areas as necessary.

Note: Once excavation has begun the operation should be continuous from grubbing through the completion of grading and placement of topsoil (if required) and permanent seed and mulch. Any interruptions in the operation or completing the operation out of the seeding season will necessitate the application of temporary stabilization.



B.10

#### Incremental Stabilization - Fill Slopes

- 1. Construct and stabilize fill slopes in increments not to exceed 15 feet in height. Prepare seedbed and apply seed and mulch on all slopes as the work progresses.
- 2. Stabilize slopes immediately when the vertical height of a lift reaches 15 feet, or when the grading operation ceases as prescribed in the plans.
- 3. At the end of each day, install temporary water conveyance practice(s), as necessary, to intercept surface runoff and convey it down the slope in a non-erosive manner.
- 4. Construction sequence example (Refer to Figure B.2):
- Construct and stabilize all temporary swales or dikes that will be used to divert runoff around the fill. Construct silt fence on low side of fill unless other methods shown on the plans address
- b. At the end of each day, install temporary water conveyance practice(s), as necessary, to intercept surface runoff and convey it down the slope in a non-erosive manner.
- c. Place Phase 1 fill, prepare seedbed, and stabilize.
- Place Phase 2 fill, prepare seedbed, and stabilize.
- e. Place final phase fill, prepare seedbed, and stabilize. Overseed previously seeded areas as

Note: Once the placement of fill has begun the operation should be continuous from grubbing through the completion of grading and placement of topsoil (if required) and permanent seed and mulch. Any interruptions in the operation or completing the operation out of the seeding season will necessitate the application of temporary stabilization.

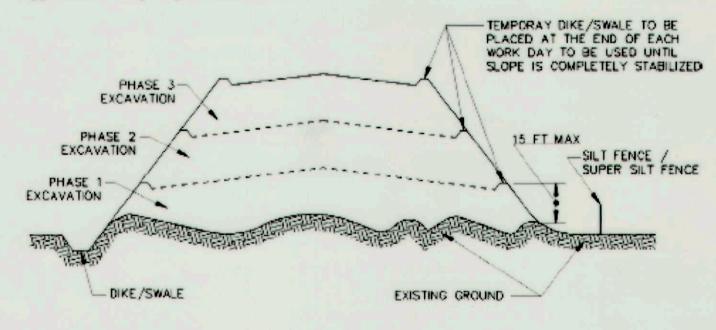


Figure B.2: Incremental Stabilization - Fill

B.11

#### B-4-2 STANDARDS AND SPECIFICATIONS

**FOR** 

#### SOIL PREPARATION, TOPSOILING, AND SOIL AMENDMENTS

Definition

The process of preparing the soils to sustain adequate vegetative stabilization.

To provide a suitable soil medium for vegetative growth.

Conditions Where Practice Applies

Where vegetative stabilization is to be established.

#### A. Soil Preparation

- 1. Temporary Stabilization
- 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 construction equipment. After the soil is loosened, it must not be rolled or dragged smooth but left in 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.
- c. Incorporate lime and fertilizer into the top 3 to 5 inches of soil by disking or other suitable

#### Permanent Stabilization

- a. A soil test is required for any earth disturbance of 5 acres or more. The minimum soil conditions required for permanent vegetative establishment are:
- Soil pH between 6.0 and 7.0.
- ii. Soluble salts less than 500 parts per million (ppm).
- iii. 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.
- iv. Soil contains 1.5 percent minimum organic matter by weight.
- V. Soil contains sufficient pore space to permit adequate root penetration.
- b. Application of amendments or topsoil is required if on-site soils do not meet the above conditions.
- c. Graded areas must be maintained in a true and even grade as specified on the approved plan. then scarified or otherwise loosened to a depth of 3 to 5 inches.
- d. Apply soil amendments as specified on the approved plan or as indicated by the results of a soil
- e. 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.

#### Topsoiling

- Topsoil is placed over prepared subsoil prior to establishment of permanent vegetation. The purpose is to 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.
- 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.
- 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.
- b. 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.

Topsoil Specifications: Soil to be used as topsoil must meet the following criteria:

- The soil is so acidic that treatment with limestone is not feasible.
- 4. Areas having slopes steeper than 2:1 require special consideration and design.
- a. 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 subsoils and must contain less than 5 percent by volume of cinders, stones, slag, coarse fragments,
- gravel, sticks, roots, trash, or other materials larger than 11/2 inches in diameter. b. Topsoil must be free of noxious plants or plant parts such as Bermuda grass, quack grass, Johnson grass, 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.

#### 6. Topsoil Application

- a. Erosion and sediment control practices must be maintained when applying topsoil.
- b. Uniformly distribute topsoil in a 5 to 8 inch layer and lightly compact to a minimum thickness of 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.
- c. 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)

- 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 commercial laboratory. Soil samples taken for engineering purposes may also be used for chemical analyses.
- 2. Fertilizers must be uniform in composition, free flowing and suitable for accurate application by appropriate 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.
- 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.
- 4. Lime and fertilizer are to be evenly distributed and incorporated into the top 3 to 5 inches of soil by disking or other suitable means.
- 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.

## PERMANENT SEEDING SUMMARY

			m Figure B.3):61 Table B.3):	<u> </u>	1	Fertilizer Rat (10-20-20)	e	Lines Dete
No.	Species	Application Rate (lb/ac)	Seeding Dates	Seeding Depths	N	P <sub>2</sub> O <sub>5</sub>	К 20	Lime Rate
	Deertongue	20	Table 1	ALAKARIN SERBESA	ERIC IN		90 lb/ac (2 lb/ 1000 sf)	
Mix #3	Canada Wild Rye	3	Mar 1-June 15		-			
MIX #3	Redtop	1		1/4-1/2 in	45 pounds per acre (1.0 lb/ 1000 sf)			
	Common Lespedeza	10				90 lb/ac (2 lb/ 1000 sf)		
	Orchard Grass	25	and the state of t					
	Creeping Red Fescue	10						2 tons/ac
Mix #10	Redtop	1	Mar 1-May 15 Aug 1-Oct 15					(90 lb/ 1000 sf)
MIX #10	Alsike Clover	3						
	White Clover	3						
	Foxtail	2	May 16-July 31					
	Foxtail	4	May 16-July 31		-			
Mix #12	Creeping Red Fescue	25				EIE I		
mix #1≈	Hard Fescue	25		1/4-1/2 in				
	Sheep Fescue	25	Mar 1-May 15 Aug 1-Oct 15					
	White Clover	3						
	Red Clover	3						

PREPARED OR APPROVED BY ME, AND THAT I AM A DULY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MARYLAND, LICENSE NO. 39696. EXPIRATION DATE: JANUARY 04, 2015

REVIEWED FOR HOWARD SCD AND MEETS TECHNICAL REQUIREMENTS

THIS DEVELOPMENT IS APPROVED FOR SMALL POND CONSTRUCTION AND SOIL EROSION AND SEDIMENT

DEPARTMENT OF PUBLIC WORKS, HOWARD COUNTY, MD

CHIEF, BUREAU OF ENVIRONMENTAL SERVICES

6/9/14 DATE

IY: Ryan Burdette Division: P053 Water Res GMA Emp ILE: M:\2008\01081795.77\drawings\15\_pES-N003-Red Cr

SHEET NO.: 15 OF 18

**EROSION AND** 

**SEDIMENT** 

CONTROL NOTES

MAY 2014

CA 08-29

CONSTRUCTION ISSUE:

01-081795.77

ROAD 21152 6-7800 818

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316-

(410) (316)

## **BEST MANAGEMENT PRACTICES** FOR WORKING IN NONTIDAL WETLANDS, WETLAND BUFFERS, WATERWAYS, AND 100-YEAR FLOODPLAINS

- 1. NO EXCESS FILL, CONSTRUCTION MATERIAL, OR DEBRIS SHALL BE STOCKPILED OR STORED IN NONTIDAL WETLANDS, NONTIDAL WETLAND BUFFERS, WATERWAYS, OR THE 100-YEAR FLOODPLAIN.
- 2. PLACE MATERIALS IN A LOCATION AND MANNER WHICH DOES NOT ADVERSELY IMPACT SURFACE OR SUBSURFACE WATER FLOW INTO OR OUT OF NONTIDAL WETLANDS, NONTIDAL WETLAND BUFFERS, WATERWAYS, OR THE 100-YEAR FLOODPLAIN.
- 3. DO NOT USE THE EXCAVATED MATERIAL AS BACKFILL IF IT CONTAINS WASTE METAL PRODUCTS, UNSIGHTLY DEBRIS, TOXIC MATERIAL, OR ANY OTHER DELETERIOUS SUBSTANCE. IF ADDITIONAL BACKFILL IS REQUIRED, USE CLEAN MATERIALS FREE OF WASTE METAL PRODUCTS, UNSIGHTLY DEBRIS, TOXIC MATERIAL, OR ANY OTHER DELETERIOUS SUBSTANCE.
- 4. PLACE HEAVY EQUIPMENT ON MATS OR SUITABLY OPERATE THE EQUIPMENT TO PREVENT DAMAGE TO NONTIDAL WETLANDS, NONTIDAL WETLAND BUFFERS, WATERWAYS, OR THE 100-YEAR FLOODPLAIN.
- 5. REPAIR AND MAINTAIN ANY SERVICEABLE STRUCTURE OR FILL SO THERE IS NO PERMANENT LOSS OF NONTIDAL WETLANDS, NONTIDAL WETLAND BUFFERS, OR WATERWAYS. OR PERMANENT MODIFICATION OF THE 100-YEAR FLOODPLAIN IN EXCESS OF THAT LOST UNDER THE ORIGINALLY AUTHORIZED STRUCTURE OR FILL.
- 6. RECTIFY ANY NONTIDAL WETLANDS, WETLAND BUFFERS, WATERWAYS, OR 100-YEAR FLOODPLAIN TEMPORARILY IMPACTED BY ANY CONSTRUCTION.
- 7. ALL STABILIZATION IN THE NONTIDAL WETLAND AND NONTIDAL WETLAND BUFFER SHALL CONSIST OF THE FOLLOWING SPECIES:
- \* ANNUAL RYEGRASS (LOLIUM MULTIFLORUM), MILLET (SETARIA ITALICA), BARLEY (HORDEUM SP.), DATS (UNIOLA SP.)AND/OR RYE (SECALE CEREALE). THESE SPECIES WILL ALLOW FOR THE STABILIZATIONOF THE SITE WHILE ALSO
- \* VOLUNTARY REVEGETATION OF NATURAL WETLAND SPECIES. OTHER NON-PERSISTENT VEGETATION MAY BE ACCEPTABLE, BUT MUST BE APPROVED BY THE NONTIDAL WETLANDS AND WATERWAYS DIVISION. KENTUCKY 31 FESCUE SHALL NOT BE UTILIZED IN WETLAND OR BUFFER AREAS. THE AREA SHOULD BE SEEDED AND MULCHED TO REDUCE EROSION AFTER CONSTRUCTION ACTIVITIES HAVE BEEN COMPLETED.
- 8. AFTER INSTALLATION HAS BEEN COMPLETED, MAKE POST CONSTRUCTION GRADES AND ELEVATIONS THE SAME AS THE ORIGINAL GRADES AND ELEVATIONS IN TEMPORARILY IMPACTED AREAS.
- 9. TO PROTECT AQUATIC SPECIES, IN-STREAM WORK IS PROHIBITED AS DETERMINED BY THE CLASSIFICATION OF THE STREAM:
- A. USE I WATERS: IN-STREAM WORK SHALL NOT BE CONDUCTED DURING THE PERIOD MARCH 1 THROUGH JUNE 15, INCLUSIVE DURING ANY YEAR.
- B. USE III WATERS: IN-STREAM WORK SHALL NOT BE CONDUCTED DURING THE PERIOD OCTOBER 1 THORUGH APRIL 30, INCLUSIVE, DURING ANY YEAR.
- C. USE IV WATERS: IN-STREAM WORK SHALL NOT BE CONDUCTED DURING THE PERIOD MARCH 1 THROUGH MAY 31, INCLUSIVE, DURING ANY YEAR.
- 10. STORMWATER RUNOFF FROM IMPERVIOUS SURFACES SHALL BE CONTROLLED TO PREVENT THE WASHING OF DEBRIS INTO THE WATERWAY.
- 11. CULVERTS SHALL BE CONSTRUCTED AND ANY RIPRAP PLACED SO AS NOT TO OBSTRUCT THE MOVEMENT OF AQUATIC SPECIES, UNLESS THE PURPOSE OF THE ACTIVITY IS TO IMPOUND WATER.

#### **B-4-4 STANDARDS AND SPECIFICATIONS**

FOR

#### TEMPORARY STABILIZATION

Definition

To stabilize disturbed soils with vegetation for up to 6 months.

Purpose

To use fast growing vegetation that provides cover on disturbed soils.

#### Conditions Where Practice Applies

Exposed soils where ground cover is needed for a period of 6 months or less. For longer duration of time, permanent stabilization practices are required.

- Select one or more of the species or seed mixtures listed in Table B.1 for the appropriate Plant Hardiness Zone (from Figure B.3), and enter them in the Temporary Seeding Summary below along with application rates, seeding dates and seeding depths. If this Summary is not put on the plan and completed, then Table B.1 plus fertilizer and lime rates must be put on the plan.
- 2. For sites having soil tests performed, use and show the recommended rates by the testing agency. Soil tests are not required for Temporary Seeding.
- 3. When stabilization is required outside of a seeding season, apply seed and mulch or straw mulch alone as prescribed in Section B-4-3.A.I.b and maintain until the next seeding season.

#### **Temporary Seeding Summary**

	Hardiness Z Seed Mixtur	Fertilizer Rate	Lime Rate			
No.	Species	Application Rate (lb/ac)	Seeding Dates	Seeding Depths	(10-20-20)	Dinic Rate
-					436 lb/ac (10 lb/1000 sf)	
-		1	e commendata e em Mercon eta Marineca e e e			

#### Table B.1: Temporary Seeding for Site Stabilization

Plant Species	Seeding Rate 1/		Seeding	Recommended Seeding Dates by Plant Hardiness Zone 3				
i mut opecies	lb/ac   lb/1000 ft <sup>2</sup>		Depth 2/ (inches)	5b and 6a	6b	7a and 7b		
Cool-Season Grasses						L		
Annual Ryegrass (Lolium perenne ssp. multiflorum)	40	1.0	0.5	Mar 15 to May 31; Aug 1 to Sep 30	Mar 1 to May 15; Aug 1 to Oct 15	Feb 15 to Apr 30; Aug 15 to Nov 30		
Barley (Hordeum vulgare)	96	2.2	1.0	Mar 15 to May 31; Aug 1 to Sep 30	Mar 1 to May 15; Aug 1 to Oct 15	Feb 15 to Apr 30; Aug 15 to Nov 30		
Oats (Avena sativa)	72	1.7	1.0	Mar 15 to May 31; Aug 1 to Sep 30	Mar 1 to May 15; Aug 1 to Oct 15	Feb 15 to Apr 30; Aug 15 to Nov 30		
Wheat (Triticum aestivum)	120	2.8	1.0	Mar 15 to May 31; Aug 1 to Sep 30	Mar 1 to May 15; Aug 1 to Oct 15	Feb 15 to Apr 30; Aug 15 to Nov 30		
Cereal Rye (Secale cereale)	112	2.8	1.0	Mar 15 to May 31; Aug I to Oct 31	Mar 1 to May 15; Aug 1 to Nov 15	Feb 15 to Apr 30; Aug 15 to Dec 15		
Warm-Season Grasses								
Foxtail Millet (Setaria italica)	30	0.7	0.5	Jun 1 to Jul 31	May 16 to Jul 31	May 1 to Aug 14		
Pearl Millet (Pennisetum glaucum)	20	0.5	0.5	Jun 1 to Jul 31	May 16 to Jul 31	May I to Aug 14		

1/ Seeding rates for the warm-season grasses are in pounds of Pure Live Seed (PLS). Actual planting rates shall be adjusted to reflect percent seed germination and purity, as tested. Adjustments are usually not needed for the cool-season grasses.

Seeding rates listed above are for temporary seedings, when planted alone. When planted as a nurse crop with permanent seed mixes, use 1/3 of the seeding rate listed above for barley, oats, and wheat. For smaller-seeded grasses (annual ryegrass, pearl millet, foxtail millet), do not exceed more than 5% (by weight) of the overall permanent seeding mix. Cereal rye generally should not be used as a nurse crop, unless planting will occur in very late fall beyond the seeding dates for other temporary seedings. Cereal tye has allelopathic properties that inhibit the germination and growth of other plants. If it must be used as a nurse crop, seed at 1/3 of the rate listed above.

Oats are the recommended nurse crop for warm-season grasses.

2/ For sandy soils, plant seeds at twice the depth listed above.

3/ The planting dates listed are averages for each Zone and may require adjustment to reflect local conditions, especially near the boundaries of the zone.

B.20

#### **B-48 STANDARDS AND SPECIFICATIONS**

#### FOR

#### STOCKPILE AREA

A mound or pile of soil protected by appropriately designed erosion and sediment control measures.

#### Purpose

To provide a designated location for the temporary storage of soil that controls the potential for erosion, sedimentation, and changes to drainage patterns.

#### Conditions Where Practice Applies

Stockpile areas are utilized when it is necessary to salvage and store soil for later use.

- 1. The stockpile location and all related sediment control practices must be clearly indicated on the erosion and 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.
- Runoff from the stockpile area must drain to a suitable sediment control practice.
- Access the stockpile area from the upgrade side.
- 5. Clear water runoff into the stockpile area must be minimized by use of a diversion device such as an earth dike, temporary swale or diversion fence. Provisions must be made for discharging concentrated flow in a non-erosive manner.
- 6. Where runoff concentrates along the toe of the stockpile fill, an appropriate erosion/sediment control practice must be used to intercept the discharge.
- 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.

B.43

REVIEWED FOR HOWARD SCD AND MEETS TECHNICAL REQUIREMENTS THIS DEVELOPMENT IS APPROVED FOR SMALL POND CONSTRUCTION AND SOIL EROSION AND SEDIMENT

DEPARTMENT OF PUBLIC WORKS, HOWARD COUNTY, MD

PREPARED OR APPROVED BY ME , AND THAT

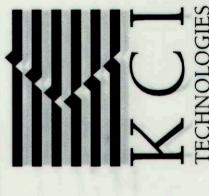
ENGINEER UNDER THE LAWS OF THE STATE

IAM A DULY LICENSED PROFESSIONAL

OF MARYLAND, LICENSE NO. 39696. EXPIRATION DATE: JANUARY 04, 2015 CHIEF, BUREAU OF ENVIRONMENTAL SERVICES

SHEET NO .: 16 OF 18

RIDGEBROOK ROAD s, MARYLAND 21152 ione: (410) 316-7800 k: (410) 316-7818 www.kci.com



**EROSION AND** SEDIMENT CONTROL NOTES

N/A MAY 2014 01-081795.77 AL PROJECT NO.: CA 08-29

CONSTRUCTION ISSUE:

#### B-43 STANDARDS AND SPECIFICATIONS

## FOR

#### SEEDING AND MULCHING

#### Definition

The application of seed and mulch to establish vegetative cover.

#### Purpose

To 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. Seeding

#### 1. Specifications

- 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.
- b. 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.
- c. 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.
- d. 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.

#### 2. Application

- Dry Seeding: This includes use of conventional drop or broadcast spreaders.
  - i. Incorporate seed into the subsoil at the rates prescribed on Temporary Seeding Table B.1, Permanent Seeding Table B.3, or site-specific seeding summaries.
  - ii. 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
- b. Drill or Cultipacker Seeding: Mechanized seeders that apply and cover seed with soil.
- i. 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.
- ii. Apply seed in two directions, perpendicular to each other. Apply half the seeding rate in each direction.
- c. Hydroseeding: Apply seed uniformly with hydroseeder (slurry includes seed and fertilizer).
  - i 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; K2O (potassium), 200 pounds per acre.
  - ii. 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.
  - iii Mix seed and fertilizer on site and seed immediately and without interruption.
  - When hydroseeding do not incorporate seed into the soil.

#### B. Mulching

#### Mulch Materials (in order of preference)

- a. 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 grass is desired.
- b. Wood Cellulose Fiber Mulch (WCFM) consisting of specially prepared wood cellulose processed into a uniform fibrous physical state.
  - i WCFM is to be dyed green or contain a green dye in the package that will provide an appropriate color to facilitate visual inspection of the uniformly spread shury.
  - ii. WCFM, including dye, must contain no germination or growth inhibiting factors.
  - iii 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 shurry. 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.
- iv. WCFM material must not contain elements or compounds at concentration levels that will be phyto-toxic.
- v. 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.

#### 2. Application

a. Apply mulch to all seeded areas immediately after seeding.

OF MARYLAND, LICENSE NO. 39696. EXPIRATION DATE: JANUARY 04, 2015

- b. 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 acre.
- 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.

#### 3. Anchoring

- a. 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 erosion hazard:
  - i. A mulch anchoring tool is a tractor drawn implement designed to punch and anchor mulch into the soil surface 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 contour.
  - ii. 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.
  - iii. 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.
  - iv. 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.

REVIEWED FOR HOWARD SCD AND MEETS TECHNICAL REQUIREMENTS

THIS DEVELOPMENT IS APPROVED FOR SMALL POND CONSTRUCTION AND SOIL EROSION AND SEDIMENT

6/19/14

DEPARTMENT OF PUBLIC WORKS, HOWARD COUNTY, MD

CHIEF, BUREAU OF ENVIRONMENTAL SERVICES

6/9/14

DATE

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936 RIDGEBROOK



EROSION AND SEDIMENT CONTROL NOTES

N/A MAY 2014 01-081795.77 ONSTRUCTION ISSUE:

SHEET NO.: 17 OF 18

THE CONTRACTOR SHALL NOTIFY "MISS UTILITY" AT 1-800-257-7777, HOWARD COUNTY DEPARTMENT OF PUBLIC WORKS/BUREAU OF ENGINEERING/ CONSTRUCTION INSPECTION DIVISION (410)-313-1880 AND DEPARTMENT OF THE ENVIRONMENT WATER MANAGEMENT ADMINISTRATION (410)-537-3510 AT LEAST SEVEN (7) DAYS PRIOR TO BEGINNING ANY WORK.

CONTRACTOR SHALL COORDINATE AN ON-SITE PRE-CONSTRUCTION MEETING THAT SHALL INCLUDE COUNTY PROJECT MANAGER, ENGINEER, A REPRESENTATIVE FROM MARYLAND DEPARTMENT OF THE ENVIRONMENT, AND HOWARD COUNTY CONSTRUCTION INSPECTION, BUREAU OF UTILITY.

CONTRACTOR SHALL STAKE OUT LOD AND TREE SAVES PRIOR TO PRE-CONSTRUCTION MEETING.

CONTRACTOR SHALL CAUTION THE TRUCK DRIVERS TO TAKE EXTRA PRECAUTION WHILE TRANSPORTING MATERIALS UP AND DOWN THE ACCESS ROAD AND ON THE TEMPORARY ACCESS PATHWAYS.

CONTRACTOR SHALL MINIMIZE THE IMPACT ON EXISTING TREES, WETLANDS, U.S. WATERS, EXISTING UTILITY AND OTHER EXISTING FEATURES.

ALL DREDGING OPERATIONS SHALL BE DONE IN STRICT ACCORDANCE WITH THE PUMP AROUND CRITERIA.

ALL EXCAVATED SEDIMENT SHALL BE TRANSPORTED TO AN APPROVED LOCATION OFFSITE.

WITH APPROVAL OF THE INSPECTOR, UTILIZE REMOVABLE PUMP STATIONS TO DRAW DOWN THE PERMANENT POOL IN THE WORK AREA WHERE NECESSARY.

#### SEQUENCE OF CONSTRUCTION

#### PHASE 1

THE CONTRACTOR SHALL OBTAIN GRADING PERMIT AND ALL NECESSARY PERMITS FOR CONSTRUCTION (INCLUDING MDE PERMIT FOR STORMWATER ASSOCIATED WITH CONSTRUCTION ACTIVITY).

CLEAR AND GRUB AS NECESSARY TO INSTALL THE ACCESS PATH AND EROSION AND SEDIMENT CONTROL MEASURES WITHIN THE LIMIT OF DISTURBANCE.

INSTALL STABILIZED CONSTRUCTION ENTRANCE, TEMPORARY ACCESS BRIDGES, SILT FENCE, SUPER SILT FENCE, AND ORANGE SAFETY FENCE USING ACCESS PATHS AS SHOWN ON THE PLANS OR AS DIRECTED BY THE SEDIMENT CONTROL INSPECTOR. THE ACCESS PATHS SHALL BE STABILIZED WITH STONE AND PROTECTED WITH ADDITIONAL SILT FENCE AT THE INSPECTOR'S DISCRETION.

WITH PERMISSION FROM THE INSPECTOR, CONTRACTOR SHALL PROCEED WITH CONSTRUCTION ACTIVITY.

SET UP PUMP AROUND PRACTICES, PA-1 AND PA-2, OVER THE POND EMBANKMENT TO DRAW DOWN THE PERMANENT POOL OF THE POND. PLACE FILTER BAGS ON RIPRAP PADS POSITIONED ON THE DOWNSTREAM SIDE OF THE EMBANKMENT TO INTERCEPT ALL PUMP DISCHARGE FROM DISTURBED AREAS AS SHOWN. ONCE THE PERMANENT POOL HAS RECEDED, INSTALL SECTION OF SAND BAG BARRIER ON THE UPSTREAM FACE OF THE EMBANKMENT AS SHOWN.

WORKING FROM DOWNSTREAM TO UPSTREAM, EXCAVATE THE E&SC EMBANKMENT TRENCH SECTION AS SHOWN FOR PHASE 1. CONTINUE TO RUN PUMP AROUND PRACTICE, PA-1 TO DEWATER THE MAIN POOL AND POSITION PA-2 TO DEWATER THE WORK AREA WHILE INSTALLING THE SAND BAG BARRIER. DO NOT ALLOW BASEFLOW TO ENTER THE SAND BAG BARRIER DURING PHASE 1. STABILIZE THE EMBANKMENT TRENCH WITH TYPE 'B' SOIL STABILIZATION MATTING OR AS DIRECTED BY THE INSPECTOR.

ONCE THE PERMANENT POOL DRAWN DOWN, SAND BAG BARRIER INSTALLED, AND EMBANKMENT TRENCH EXCAVATED AND STABILIZED AS SHOWN FOR PHASE 1, WITH PERMISSION FROM INSPECTOR, CONTRACTOR SHALL PROCEED WITH PHASE 2A.

#### PHASE 2

PHASE 2A

RUN PUMP AROUND PRACTICE PA-1 TO DRAW DOWN THE MAIN POOL AND PA-2 TO DEWATER THE WORK AREA WITHIN THE SANDBAG BARRIER INSTALLED IN PHASE 1 AS NEEDED.

WORKING FROM DOWNSTREAM TO UPSTREAM, CONTINUE TO INSTALL THE SAND BAG BARRIER ON THE UPSTREAM FACE OF THE EMBANKMENT AND ALONG THE EAST BANK OF THE POND. GRADE THE WORK AREA BETWEEN THE SAND BAG BARRIER AND THE EAST BANK OF THE POND AS SHOWN FOR PHASE 2A. DO NOT INTERCEPT THE EXISTING STREAM CHANNEL INFLOW AT THE UPSTREAM LIMIT OF THE SAND BAG BARRIER. DO NOT ALLOW BASEFLOW TO ENTER THE SAND BAG BARRIER DURING PHASE 2A.

INSTALL PUMP AROUND PRACTICE PA-3 PRIOR TO EXCAVATING THE BASEFLOW DIVERSION TRENCH TO ENSURE THAT NO FLOW FROM DISTURBED AREAS ENTER THE EAST CHANNEL OR MAIN POOL. WORKING FROM DOWNSTREAM TO UPSTREAM EXCAVATE THE BASEFLOW DIVERSION TRENCH ALONG THE NORTH END OF THE POND BETWEEN THE TWO STREAM CHANNEL INFLOWS.

NOTE: THE CONTRACTOR SHALL LINE THE BASEFLOW DIVERSION TRENCH WITH IMPERVIOUS PLASTIC SHEETING AND ANCHOR WITH SANDBAGS TO ENSURE TOTAL CONTAINMENT OF BASEFLOW. DO NOT INTERCEPT THE EXISTING WEST STREAM CHANNEL INFLOW AT THE UPSTREAM LIMIT OF THE BASEFLOW DIVERSION TRENCH. DO NOT ALLOW BASEFLOW TO ENTER THE BASEFLOW DIVERSION TRENCH DURING PHASE 2A.

ALL BASEFLOW FROM BOTH EAST AND WEST STREAM CHANNEL ENTRANCES SHOULD CONTINUE THROUGH THE EXISTING PILOT CHANNELS WITHIN THE POND DURING PHASE 2A. CONTINUE TO UTILIZE PUMP AROUND PRACTICE PA-1 TO DRAW DOWN THE MAIN POOL, AND PUMP AROUND PRACTICES PA-2 AND PA-3 TO DEWATER THE RESPECTIVE WORK AREAS.

#### PHASE 2B

ONCE THE PERMANENT POOL IS DRAWN DOWN, SAND BAG BARRIER AND BASEFLOW DIVERSION TRENCH INSTALLED AND GRADED TO THE EXTENT SHOWN IN PHASE 2A, AND DISTURBED AREA STABILIZED PER DIRECTION OF THE INSPECTOR, WORKING FROM DOWNSTREAM TO UPSTREAM, SHIFT ALIGNMENT OF THE SAND BAG BARRIER ALONG THE EAST BANK OF THE POND DOWN INTO THE CHANNEL/BENCH AREA EXCAVATED IN PHASE 2A.

DO NOT ALLOW BASEFLOW TO ENTER THE SAND BAG BARRIER OR BASEFLOW DIVERSION TRENCH WORK AREAS DURING PHASE 2B.

WITH PERMISSION FROM INSPECTOR, CONTRACTOR SHALL PROCEED WITH PHASE 3A.

#### PHASE 3

#### PHASE 3A

WORKING FROM DOWNSTREAM TO UPSTREAM, INSTALL CLASS I RIPRAP STABILIZATION AND SAND BAG BARRIER THROUGH THE EMBANKMENT TRENCH AS SHOWN. UNDERLAY THE CLASS I RIPRAP WITH GEOTEXTILE CLASS 'SE' AND TIE DIRECTLY INTO THE EXISTING RIPRAP OUTFALL PROTECTION LOCATED IN THE DOWNSTREAM CHANNEL.

CONTINUE TO RUN PUMP AROUND PRACTICE PA-1 TO DEWATER THE MAIN POOL AND POSITION PA-2 TO DEWATER THE WORK AREA. DO NOT ALLOW BASEFLOW TO ENTER THE SAND BAG BARRIER DURING PHASE 3A. WITH PERMISSION FROM THE INSPECTOR, PROCEED WITH PHASE 3B.

#### PHASE 3B

SET UP THE PUMP AROUND PRACTICE PA-3 INCLUDING PUMPS, HOSES, FILTER BAG, AND RIPRAP PADS AS SHOWN FOR PHASE 3B. PLACE BOTH DISCHARGE PIPES ON RIPRAP PADS. INSTALL SAND BAG DAM ACROSS THE CHANNEL UPSTREAM AND DOWNSTREAM OF THE WORK AREA, RESPECTIVELY. ONCE PUMP AROUND PA-3 AND SAND BAG DAM ARE INSTALLED AND FUNCTIONING, GRADE TO INTERCEPT THE EAST INFLOW STREAM CHANNEL. EXTEND THE UPSTREAM END OF THE SAND BAG BARRIER TO CONNECT TO THE DOWNSTREAM END OF THE BASEFLOW DIVERSION TRENCH AS SHOWN.

ONCE THE SAND BAG BARRIER IS INSTALLED ACROSS THE EAST STREAM CHANNEL AND CONNECTED TO THE BASEFLOW DIVERSION TRENCH, WITH PERMISSION FROM THE INSPECTOR, REMOVE THE SAND BAG DAMS UPSTREAM AND DOWNSTREAM OF THE WORK AREA, REMOVE PUMP AROUND PRACTICE PA-3, FILTER BAG AND RIPRAP PADS. BASEFLOW FROM THE EAST INFLOW CHANNEL SHOULD NO LONGER CONTRIBUTE TO THE POND BASIN. WITH PERMISSION FROM THE INSPECTOR, PROCEED WITH PHASE 3C.

#### PHASE 3C

SET UP THE PUMP AROUND PRACTICE PA-4 INCLUDING PUMPS, HOSES, FILTER BAG, AND RIPRAP PADS AS SHOWN FOR PHASE 3C. PLACE BOTH DISCHARGE PIPES ON RIPRAP PADS. INSTALL SAND BAG DAM ACROSS THE CHANNEL UPSTREAM AND DOWNSTREAM OF THE WORK AREA, RESPECTIVELY. ONCE PUMP AROUND PA-4 AND SAND BAG DAM ARE INSTALLED AND FUNCTIONING, GRADE TO CONNECT THE UPSTREAM END OF THE BASEFLOW DIVERSION TRENCH TO THE WEST INFLOW STREAM CHANNEL.

ONCE THE WEST INFLOW STREAM CHANNEL IS CONNECTED TO THE BASEFLOW DIVERSION TRENCH, WITH PERMISSION FROM THE INSPECTOR, REMOVE THE SAND BAG DAM UPSTREAM OF THE WORK AREA, REMOVE PUMP AROUND PRACTICE PA-4, FILTER BAG AND RIPRAP PADS. DO NOT REMOVE THE SAND BAG DAM ACROSS THE CHANNEL DOWNSTREAM OF THE PHASE 3C WORK AREA. BASEFLOW FROM THE WEST INFLOW CHANNEL SHOULD NO LONGER CONTRIBUTE TO THE POND BASIN.

ONCE THE DIVERSION CHANNEL AND SAND BAG BARRIER ARE COMPLETED AND ALL BASE FLOW IS NOT LONGER CONTRIBUTING TO THE MAIN BASIN, WITH PERMISSION FROM INSPECTOR, CONTRACTOR SHALL PROCEED WITH PHASE 4.

#### PHASE 4

SET UP THE PUMP AROUND PRACTICE PA-5 INCLUDING PUMP, HOSES, FILTER BAG, AND RIPRAP PAD AS SHOWN. PLACE DISCHARGE PIPE DIRECTLY ON RIPRAP PAD. INSTALL SAND BAG DAM ACROSS THE CHANNEL DOWNSTREAM OF THE WORK AREA. ONCE PUMP AROUND PA-5 AND SAND BAG DAM ARE INSTALLED AND FUNCTIONING, WORKING FROM DOWNSTREAM TO UPSTREAM, EXCAVATE THE REMAINING PORTION OF THE EMBANKMENT AS SHOWN FOR PHASE 4. REMOVE EXISTING SPILLWAY INCLUDING 66 INCH B.C.C.M.P. RISER AND BASE, 42 INCH B.C.C.M.P. BARREL PIPE, AND THREE ANTI-SEEP COLLARS.

INSTALL PROPOSED PRINCIPAL SPILLWAY INCLUDING CONCRETE RISER, BASE AND POND DRAIN, 60 INCH ASTM C-361 CLASS IV R.C.P. BARREL PIPE AND CONCRETE CRADLE, TYPE 'A' HEADWALL, TYPE I PLUNGE POOL AND CLASS I RIPRAP PER THE DESIGN PLANS. RECONSTRUCT THE EMBANKMENT AS SHOWN FOR PHASE 4 AND INSTALL FILTER DIAPHRAGM AND DRAIN OUTLET AS SHOWN ON SHEET 5 AND PER THE SPECIFICATIONS.

ONCE ALL GRADING AND DREDGING OPERATIONS ARE COMPLETED, PRINCIPAL SPILLWAY REPLACED, AND EMBANKMENT RECONSTRUCTED AND STABILIZED, WITH PERMISSION FROM THE INSPECTOR, CONTRACTOR SHALL RESTORE THE EAST AND WEST STREAM CHANNELS TO PRE-CONSTRUCTION CONFIGURATION, AND FILL AND COMPACT THE BASEFLOW DIVERSION TRENCH AND STABILIZE AS DIRECTED BY THE INSPECTOR. REMOVE ALL REMAINING SAND BAGS/SUPER SAND BAGS, PUMP AROUND PRACTICES, FILTER BAGS, RIPRAP PADS, AND ANY OTHER DEWATERING PRACTICES UTILIZED TO DEWATER/DRAW DOWN THE BASIN DURING CONSTRUCTION.

REPLACE/REPAIR THE EXISTING ASPHALT PATH ON THE EMBANKMENT AND SURROUNDING THE FACILITY PRIOR TO COMPLETION OF PROJECT.

PERMANENTLY STABILIZE ANY REMAINING DISTURBED AREAS OR AS DIRECTED BY THE INSPECTOR, REMOVE SILT FENCE, SUPER SILT FENCE, TEMPORARY ACCESS BRIDGES, ORANGE SAFETY FENCING, AND ANY REMAINING EQUIPMENT FROM THE SITE.

REVIEWED FOR HOWARD SCD AND MEETS TECHNICAL REQUIREMENTS

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

DEPARTMENT OF PUBLIC WORKS, HOWARD COUNTY, MD

CHIEF, BUREAU OF ENVIRONMENTAL SERVICES

6/9/14 DATE

PROFESSIONAL CERTIFICATION. I HERERBY CERTIFY THAT THESE DECIMENTS WERE PREPARED OR APPROVED BY ME, AND THAT I AM A DULY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MARYLAND, LICENSE NO. 39696. EXPIRATION DATE: JANUARY 04, 2015

NO. REVISIONS DESCRIPTION

DA

SPARKS, MARYLAND 21152
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EVALUATION / DESIGN-BUILD SERVICES

RED CRAVAT COURT
POND DREDGING &

SINCIPAL SPILLWAY REPLACEMENT
Howard County Contract # CA 08-29
HOWARD COUNTY DEPARTMENT OF PUBLIC WORKS

EROSION AND
SEDIMENT
CONTROL
SEQUENCE

SCALE: N/A

DATE: MAY 2014

KCI JOB NO.: 01-081795.77

CAPITAL PROJECT NO.: CA 08-29

PERMIT ISSUE:

CONSTRUCTION ISSUE:

SHEET NO.: 18 OF 18