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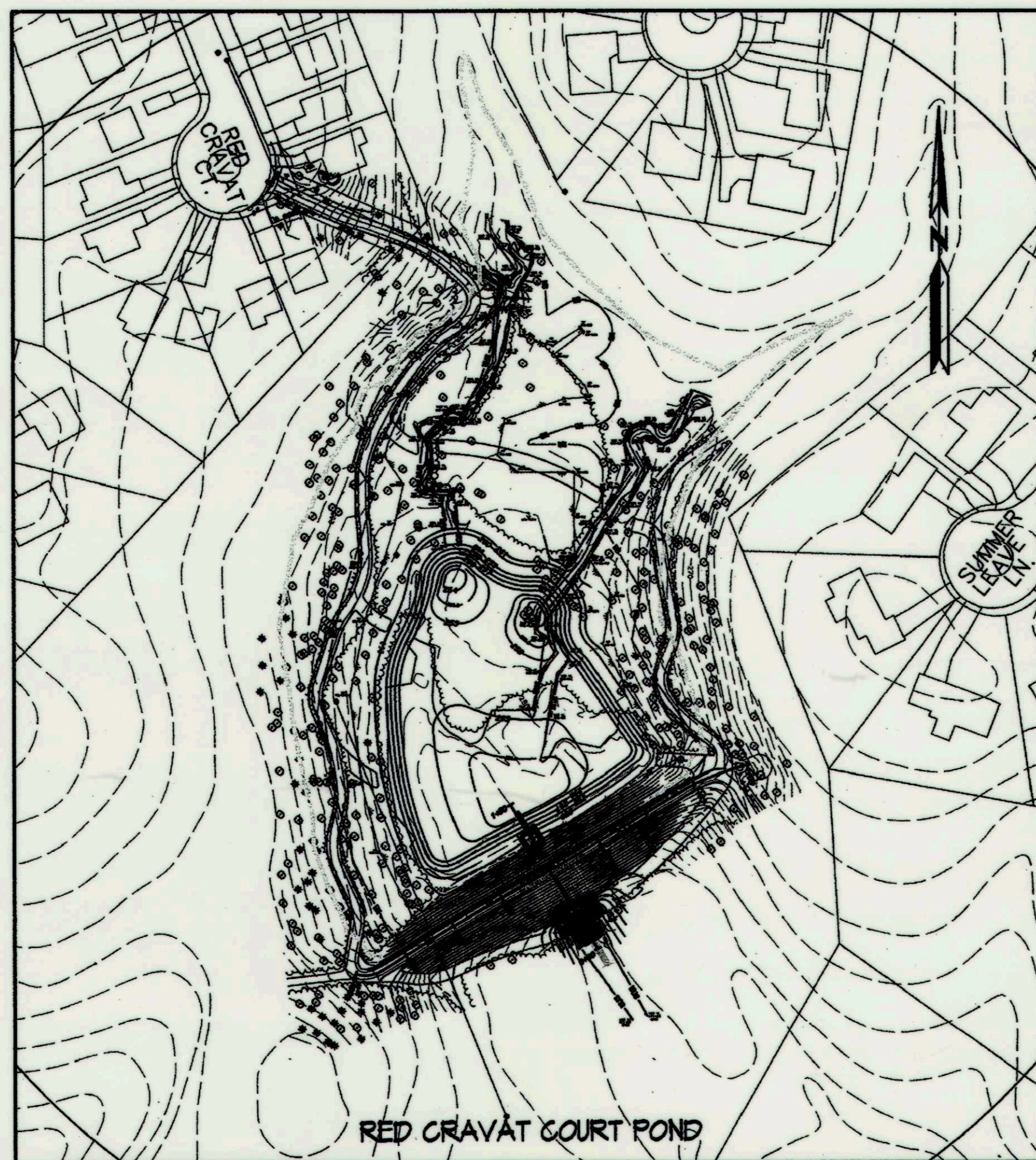
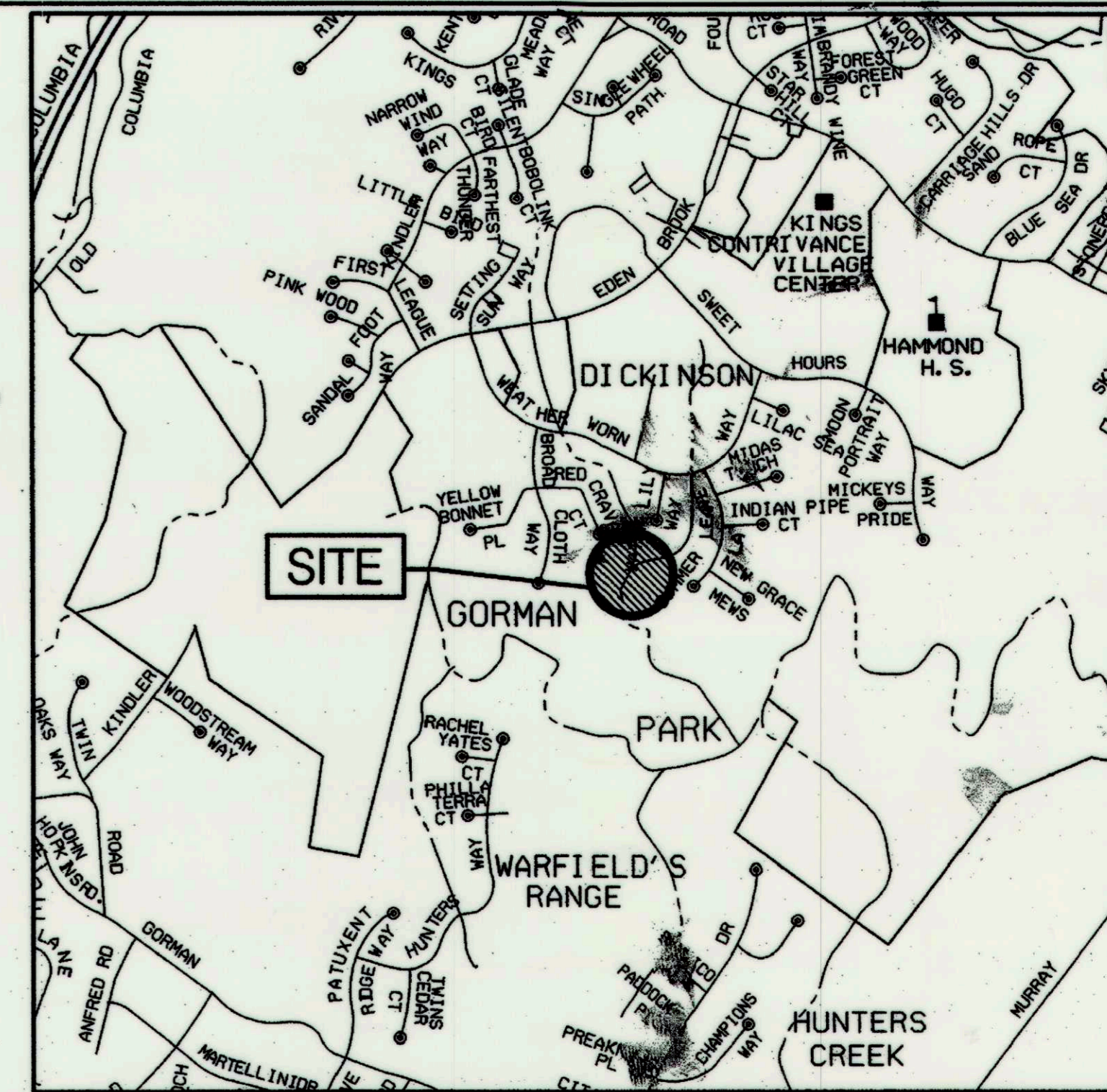
LEGEND

EXISTING MAJOR CONTOURS	-----387-----
EXISTING MINOR CONTOURS	-----387-----
PROPOSED CONTOURS	-----387-----
EXISTING 100 YEAR FLOODPLAIN	-----387-----
EXISTING TREE	
EDGE OF TREELINE	
WATERS OF THE US	
EDGE OF WETLAND	
PROPERTY LINE	-----
EXISTING STORM DRAIN	SD
EXISTING SEWER MANHOLE	
EXISTING STORM DRAIN MANHOLE	
EXISTING SEWER LINE	S
EXISTING EDGE OF PAVEMENT	-----
EXISTING EDGE OF WATER	-----
PROPOSED EDGE OF WATER	-----
EXISTING BUILDING	
PROPOSED RIPRAP	
PROPOSED DRAIN PIPE	
SOIL BORING LOCATION	B-1
SANDBAG DAM/BARRIER	
PUMP AROUND AND HOSES	
REMOVABLE PUMPING STATION	
FILTER BAG	
SILT FENCE	SF
SUPER SILT FENCE	SSF
TEMPORARY ACCESS BRIDGE	
STABILIZED CONSTRUCTION ENTRANCE	
LIMIT OF DISTURBANCE/ORANGE SAFETY FENCE	LOD
EXISTING TREE TO BE SAVED	

RED CRAVAT COURT POND DREDGING & PRINCIPAL SPILLWAY REPLACEMENT

HOWARD COUNTY, MARYLAND

DEPARTMENT OF PUBLIC WORKS
CAPITAL PROJECT CA 08-29



SPECIAL CONTRACTOR NOTES

- 100-YEAR FLOODPLAIN ELEVATION IS SHOWN ON THE PLANS.
- NO STOCKPILE OF ANY MATERIAL IS ALLOWED IN THE 100-YEAR FLOODPLAIN.
- IN-STREAM WORK IS PROHIBITED FROM MARCH 1ST TO MAY 31ST.
- THE CONTRACTOR SHALL EXERCISE CARE IN ACTIVITIES INVOLVING EITHER CUT AND FILL OR GRADING IN THE VICINITY OF TREES 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 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 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

- THE SUBJECT PROPERTIES ARE ZONED RT (NEW TOWN) PER AUGUST 2007 COMPREHENSIVE ZONING PLAN AND THE COMP-LITE ZONING AMENDMENTS DATED 6/9/2009.
- THE DEPARTMENT OF PUBLIC WORKS HAS DETERMINED THAT THE DISTURBANCES 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 DEVELOPMENT REGULATIONS.
- THERE ARE NO BURIAL GROUNDS OR CEMETERY SITES LOCATED ON THE PROJECT SITE.
- THIS PLAN MEETS THE REQUIREMENTS OF THE FOREST CONSERVATION REGULATIONS.
- ALL CONSTRUCTION SHALL BE IN ACCORDANCE WITH THE STANDARDS AND SPECIFICATIONS OF HOWARD COUNTY CONTAINED HEREIN PLUS MSHA STANDARDS AND SPECIFICATIONS, IF APPLICABLE.
- 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.
- THE CONTRACTOR SHALL NOTIFY "MISS UTILITY" AT 1-800-257-7777 AT LEAST 48 HOURS PRIOR TO ANY EXCAVATION WORK BEING DONE.
- THE COORDINATES SHOWN HEREON ARE BASED ON HOWARD COUNTY GEODETIC CONTROL WHICH IS BASED UPON THE MARYLAND STATE PLANE COORDINATE SYSTEM.
- SEWER IS PUBLIC.
- EXISTING UTILITIES ARE BASED ON FIELD SURVEYS AND AVAILABLE RECORD DRAWINGS. CONTRACTOR TO VERIFY INFORMATION TO HIS/HER OWN SATISFACTION.
- THE WETLANDS DELINEATION FOR THIS PROJECT WAS PERFORMED BY KCI TECHNOLOGIES IN MARCH 2011.
- THE EXISTING TOPOGRAPHY IS TAKEN FROM FIELD RUN SURVEY WITH ONE FOOT CONTOUR INTERVALS PREPARED BY AS CONSULTANTS, INC. IN FEBRUARY 2011.
- ALL WORK SHALL CONFORM TO THE MDE BEST 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-NW-3030) AND THE CONDITIONS INCLUDED IN USACE INDIVIDUAL PERMIT APPROVED JUNE 12, 2013 (GENAB-OP-RMN (HO DPW/RED CRAVAT COURT/POND DREDGING) 2013-60248-M02).
- NO TRAFFIC STUDY IS REQUIRED FOR THIS PROJECT.
- 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 NOTIFY 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.
- 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.

ENGINEER'S CERTIFICATE
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 COUNTY SOIL CONSERVATION DISTRICT WITH "AS-BUILT" PLANS OF THE POND WITHIN 30 DAYS OF COMPLETION.

Ryan W. Burdette P.E. # 39696 05-29-2014
SIGNATURE OF ENGINEER (PRINT NAME BELOW SIGNATURE) DATE
RYAN W. BURDETTE, PE

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.

Mark S. Richmond 6-3-14
SIGNATURE OF DEVELOPER (PRINT NAME BELOW SIGNATURE) DATE
Mark S. Richmond

DEPARTMENT OF PUBLIC WORKS, HOWARD COUNTY, MD

Jaydon 6/12/14
DIRECTOR OF PUBLIC WORKS DATE
Mark S. Richmond 6/19/14
CHIEF, BUREAU OF ENVIRONMENTAL SERVICES DATE
Mark S. Richmond 6-3-14
CHIEF, STORMWATER MANAGEMENT DIVISION DATE

AS-BUILT CERTIFICATION

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

Ryan W. Burdette 39696 12/21/15
SIGNATURE PE NO. DATE

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.

John Robertson 6/19/14
HOWARD SCD DATE

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



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

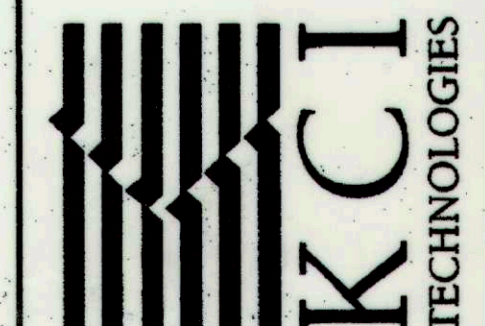
SITE ANALYSIS DATA CHART

- TOTAL PROJECT AREA: 26.78 ACRES.
- DISTURBED AREA: 3.13 ACRES.
- PROPOSED USE FOR THE SITE: DEMUCK SEDIMENT IN POND AND REPLACE FACILITY PRINCIPAL SPILLWAY
- APPLICABLE DPZ FILE REFERENCES: # 00-0966 DATED 10/01/1985

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

NO.	REVISIONS DESCRIPTION	DATE
1	AS-BUILT - DECEMBER 2015	

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



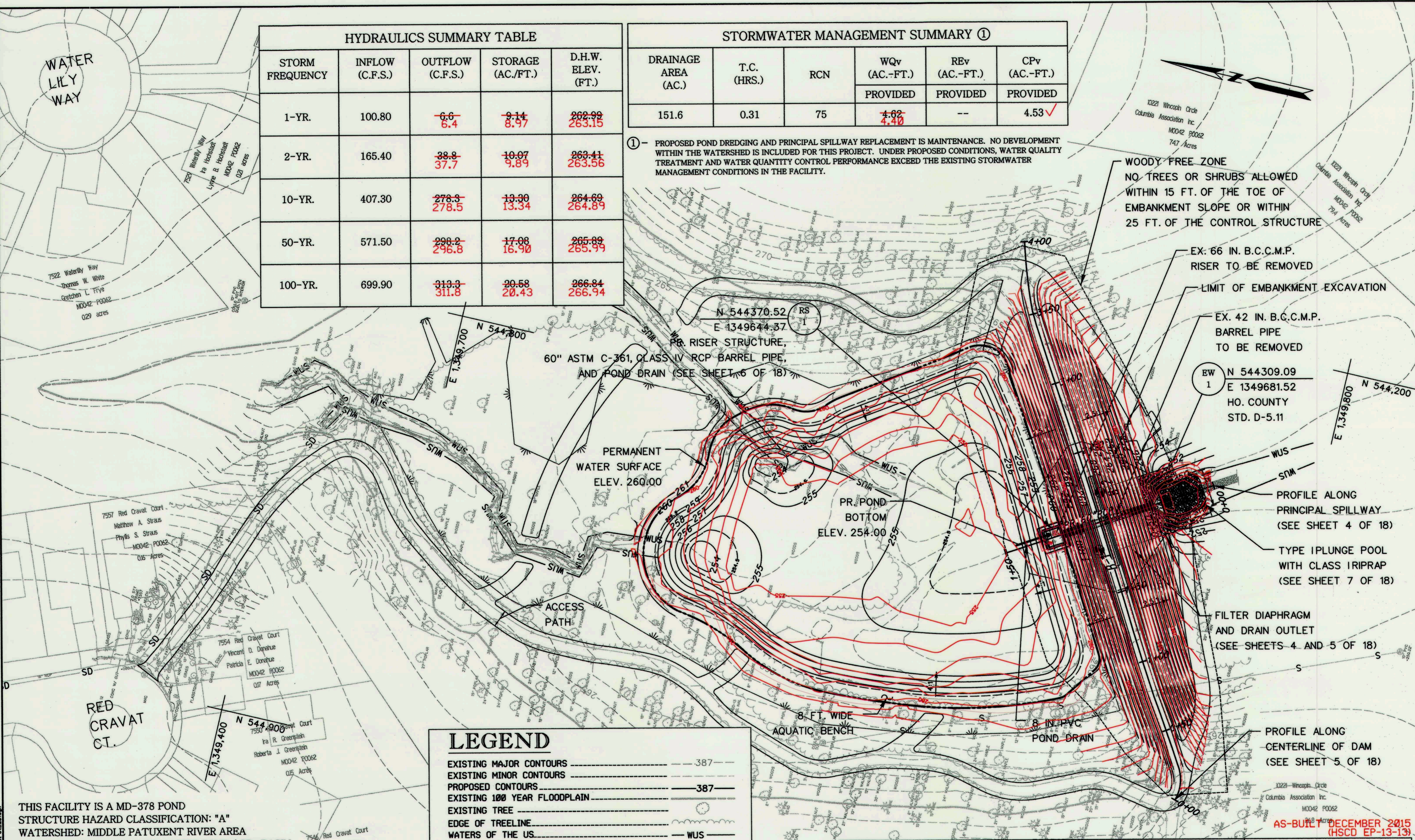
STORMWATER AND WATERSHED MANAGEMENT
EVALUATION / DESIGN-BUILD SERVICES
RED CRAVAT COURT
POND DREDGING &
PRINCIPAL SPILLWAY REPLACEMENT
Howard County Contract # CA 08-29
HOWARD COUNTY DEPARTMENT OF PUBLIC WORKS
STORMWATER MANAGEMENT DIVISION
6751 COLUMBIA GATEWAY DRIVE
COLUMBIA, MD 21046

TITLE SHEET
AS SHOWN
MAY 2014
01-081795.77
SHEET NO. 1 OF 48
D-1159

HYDRAULICS SUMMARY TABLE				
STORM FREQUENCY	INFLOW (C.F.S.)	OUTFLOW (C.F.S.)	STORAGE (AC./FT.)	D.H.W. ELEV. (FT.)
1-YR.	100.80	6.6 6.4	9.14 8.97	262.99 263.15
2-YR.	165.40	38.8 37.7	10.07 9.89	263.41 263.56
10-YR.	407.30	278.3 278.5	13.30 13.34	264.69 264.89
50-YR.	571.50	298.2 296.8	17.08 16.90	265.89 265.99
100-YR.	699.90	313.3 311.8	20.58 20.43	266.84 266.94

STORMWATER MANAGEMENT SUMMARY ①					
DRAINAGE AREA (AC.)	T.C. (HRS.)	RCN	WQv (AC.-FT.)	REv (AC.-FT.)	CPv (AC.-FT.)
			PROVIDED	PROVIDED	PROVIDED
151.6	0.31	75	4.82 4.40	--	4.53 ✓

① - PROPOSED POND DREDGING AND PRINCIPAL SPILLWAY REPLACEMENT IS MAINTENANCE. NO DEVELOPMENT WITHIN THE WATERSHED IS INCLUDED FOR THIS PROJECT. UNDER PROPOSED CONDITIONS, WATER QUALITY TREATMENT AND WATER QUANTITY CONTROL PERFORMANCE EXCEED THE EXISTING STORMWATER MANAGEMENT CONDITIONS IN THE FACILITY.



WOODY FREE ZONE
NO TREES OR SHRUBS ALLOWED WITHIN 15 FT. OF THE TOE OF EMBANKMENT SLOPE OR WITHIN 25 FT. OF THE CONTROL STRUCTURE

EX. 66 IN. B.C.C.M.P. RISER TO BE REMOVED

LIMIT OF EMBANKMENT EXCAVATION

EX. 42 IN. B.C.C.M.P. BARREL PIPE TO BE REMOVED

BW 1
N 544309.09
E 1349681.52
HO. COUNTY
STD. D-5.11

PROFILE ALONG PRINCIPAL SPILLWAY (SEE SHEET 4 OF 18)

TYPE I PLUNGE POOL WITH CLASS I RIPRAP (SEE SHEET 7 OF 18)

FILTER DIAPHRAGM AND DRAIN OUTLET (SEE SHEETS 4 AND 5 OF 18)

PROFILE ALONG CENTERLINE OF DAM (SEE SHEET 5 OF 18)

LEGEND	
EXISTING MAJOR CONTOURS	--- 387 ---
EXISTING MINOR CONTOURS	--- 387 ---
PROPOSED CONTOURS	--- 387 ---
EXISTING 100 YEAR FLOODPLAIN	---
EXISTING TREE	○
EDGE OF TREELINE	---
WATERS OF THE US	WUS
EDGE OF WETLAND	---
PROPERTY LINE	---
EXISTING STORM DRAIN	SD
EXISTING SEWER MANHOLE	SM
EXISTING STORM DRAIN MANHOLE	SDM
EXISTING SEWER LINE	---
EXISTING EDGE OF PAVEMENT	---
EXISTING EDGE OF WATER	---
PROPOSED EDGE OF WATER	---
EXISTING BUILDING	---
PROPOSED RIPRAP	---
PROPOSED DRAIN PIPE	---
SOIL BORING LOCATION	BS

THIS FACILITY IS A MD-378 POND STRUCTURE HAZARD CLASSIFICATION: "A" WATERSHED: MIDDLE PATUXENT RIVER AREA STRUCTURE TYPE: IN-STREAM WET POND / CPV BASIN STORAGE-HEIGHT PRODUCT: 597.5 AC.-FT. WATERSHED AREA TO FACILITY: 151.6 ACRES RUNOFF CURVE NUMBER TO FACILITY: 75 HEIGHT TO EMERGENCY SPILLWAY CREST: N/A MAXIMUM HEIGHT OF FILL: 17.0 FT. PERMANENT POOL SURFACE AREA: 1.2 AC. ✓ PRINCIPAL SPILLWAY CAPACITY (100-YEAR): 311.8 CFS EMERGENCY SPILLWAY CAPACITY: N/A LEVEL OF MANAGEMENT: 1-YEAR, 12-HR PROVIDED FREEBOARD: 2.00 FT. REQUIRED; 2.16 FT. PROVIDED 2.06 WATER QUALITY PROVIDED: 4.62 AC.-FT. 4.40 MAINTENANCE RESPONSIBILITY: PUBLIC

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.

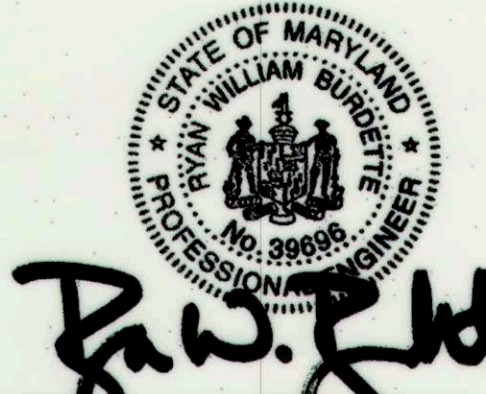
John R. Robertson
HOWARD SCD

6/9/14
DATE

DEPARTMENT OF PUBLIC WORKS, HOWARD COUNTY, MD

Mark D. L.
CHIEF, BUREAU OF ENVIRONMENTAL SERVICES

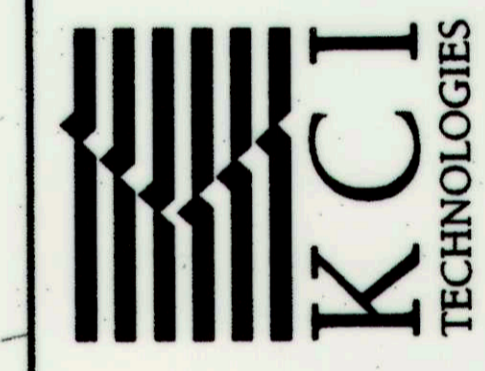
6/9/14
DATE



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NO.	REVISIONS DESCRIPTION	DATE
AS-BUILT		DEC 2015

936 RIDGEBROOK ROAD
SPARKS, MARYLAND 21152
TELEPHONE: (410) 316-7800
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www.kci.com

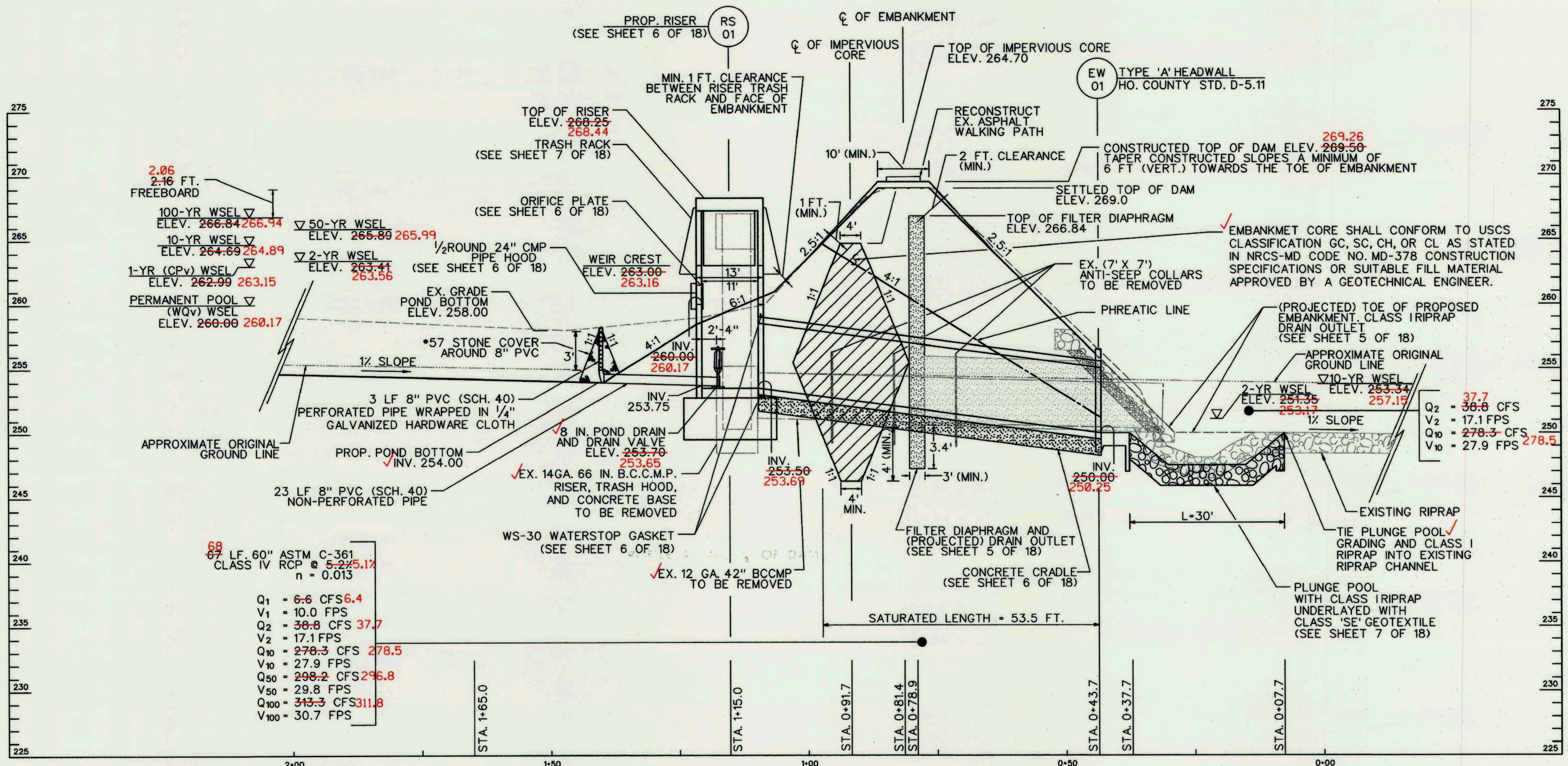


STORMWATER AND WATERSHED MANAGEMENT EVALUATION / DESIGN-BUILD SERVICES
RED CRAVAT COURT
POND DREDGING & PRINCIPAL SPILLWAY REPLACEMENT
Howard County Contract # CA 08-29
HOWARD COUNTY DEPARTMENT OF PUBLIC WORKS
ENR COLUMBIA, MARYLAND 21046

STORMWATER MANAGEMENT GRADING PLAN

SCALE: 1" = 30'
DATE: MAY 2014
KCI JOB NO.: 01-081795.77
CAPITAL PROJECT NO.: CA 08-29
PERMIT ISSUE:
CONSTRUCTION ISSUE:

SHEET NO.: 2 OF 18



NO.	REVISIONS DESCRIPTION	DATE
AS-BUILT		DEC 2015

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



STORMWATER AND WATERSHED MANAGEMENT
EVALUATION / DESIGN-BUILD SERVICES
RED CRAVAT COURT
POND DREDGING &
PRINCIPAL SPILLWAY REPLACEMENT
Howard County Contract # CA 08-29
Stormwater Management of Red Cravat Court
for Columbia Landmark Park
for Columbia Landmark Park

**STORMWATER
MANAGEMENT
PROFILE**

SCALE:	AS SHOWN
DATE:	MAY 2014
PROJECT NO.:	01-081795.77
CAPITAL PROJECT NO.:	CA 08-29
PERMIT ISSUE:	
CONSTRUCTION ISSUE:	

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.

John R. Roberts
HOWARD SCD

6/19/14
DATE

DEPARTMENT OF PUBLIC WORKS, HOWARD COUNTY, MD

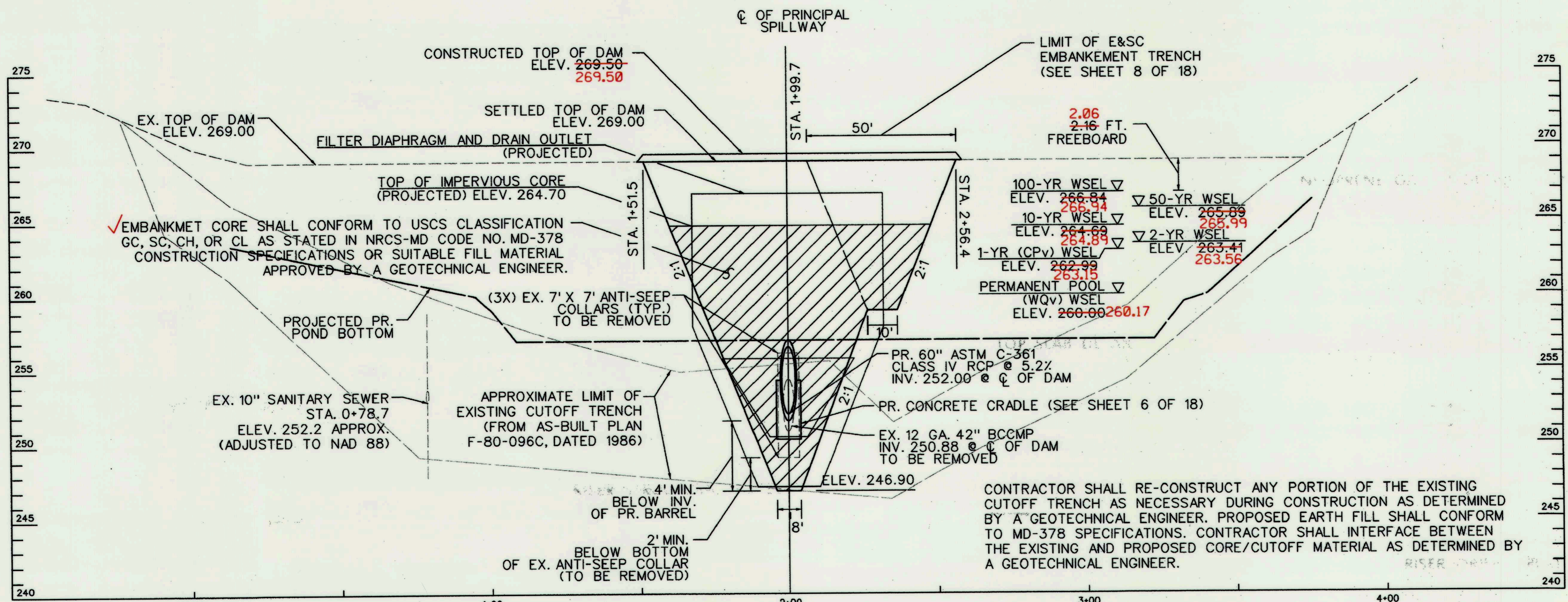
Madeline...
CHIEF, BUREAU OF ENVIRONMENTAL SERVICES

6/9/14
DATE

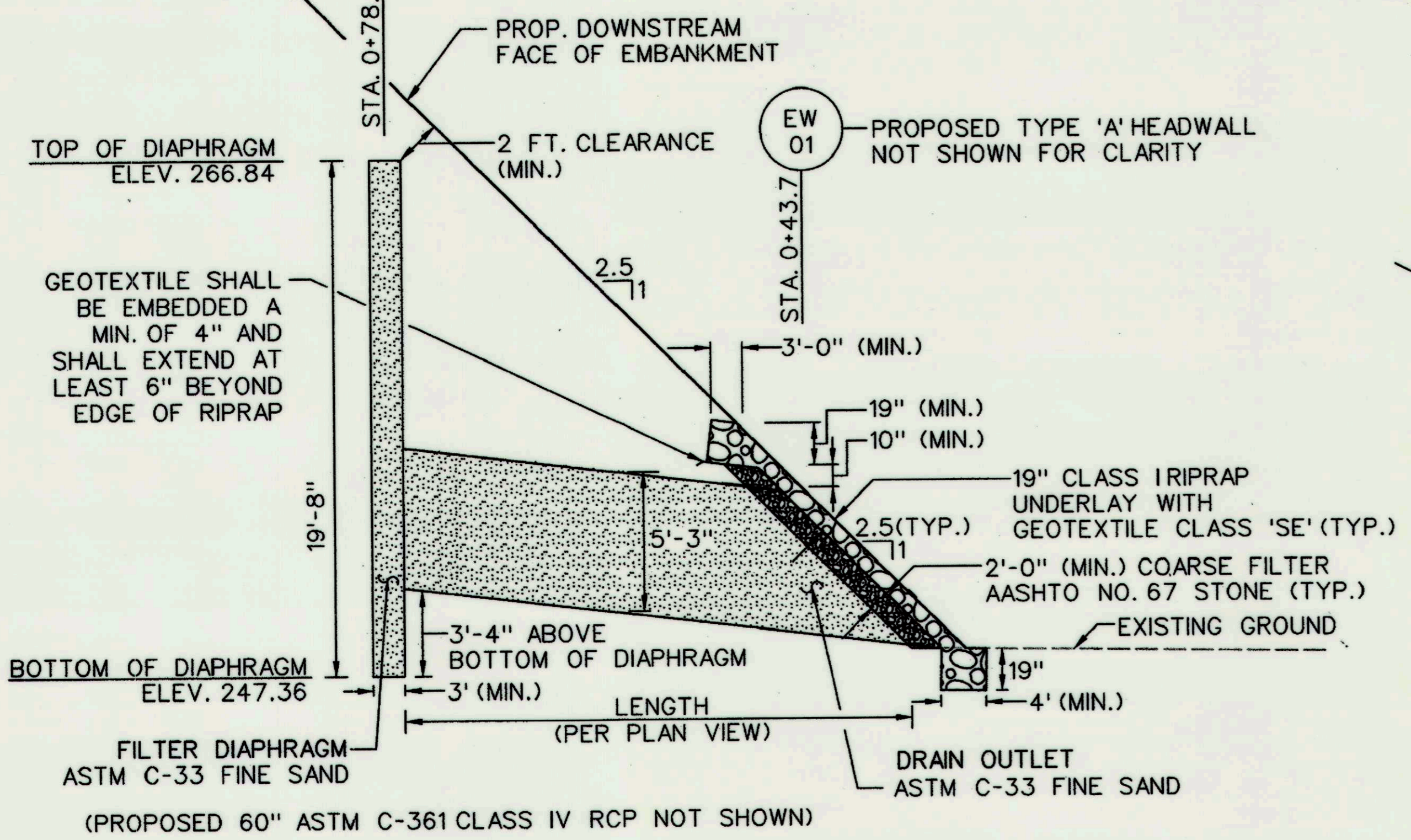
William B. Roberts
PROFESSIONAL ENGINEER

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

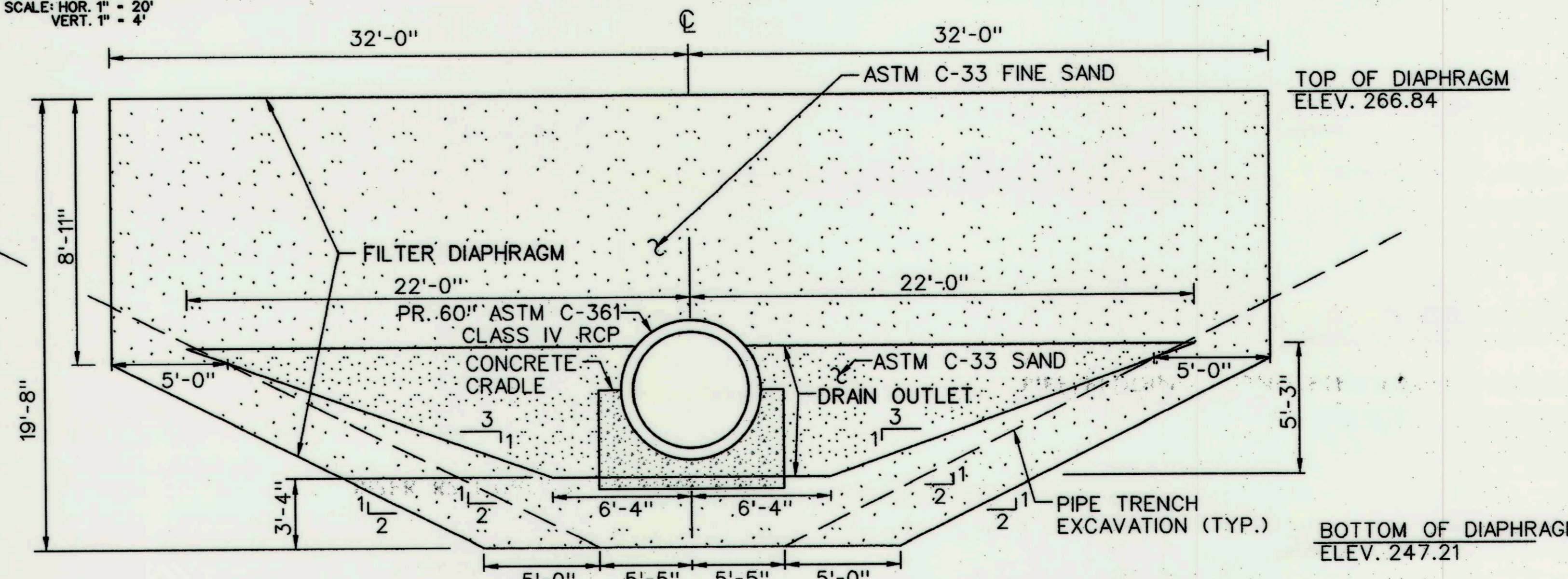
BY: Ryan Burdette, Division: P083 Water Resources, Date: 6/19/14, File: M:\2008\081795.77\Stormwater\CA-08-29-Red Cravat Court.dwg



PROFILE ALONG C OF DAM
SCALE: HOR. 1" = 20'
VERT. 1" = 4'



FILTER DIAPHRAGM AND DRAIN OUTLET PROFILE
NOT TO SCALE



FILTER DIAPHRAGM AND DRAIN OUTLET SECTION
NOT TO SCALE

- FILTER DIAPHRAGM NOTES:**
1. A GEOTECHNICAL ENGINEER SHALL BE PRESENT DURING FILTER DIAPHRAGM CONSTRUCTION.
 2. THE FILTER DIAPHRAGM SHALL BE CONSTRUCTED IN CONTINUOUS HORIZONTAL LAYERS 8 TO 12 INCHES THICK. THE FILTER SHALL BE BUILT WITH THE EMBANKMENT IN FILL AREAS.
 3. CARE SHALL BE TAKEN SO THAT THE FILTER MATERIAL DOES NOT GET CONTAMINATED. ANY CONTAMINATED FILTER MATERIAL SHALL BE REMOVED AND REPLACED WITH APPROVED MATERIAL. PROTECTIVE COVERING OVER THE FILTER MAY BE NECESSARY BETWEEN LIFTS.
 4. NO COMPACTION OF THE DRAIN FILTER MATERIAL IS REQUIRED BEYOND THAT RESULTING FROM PLACING AND SPREADING OPERATIONS. EACH LIFT SHALL BE SATURATED UNIFORMLY WITH APPROXIMATELY 1.2 GALLONS OF POTABLE WATER PER CUBIC FOOT OF LOOSE DRAIN MATERIAL.

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.

John R. Roberts
HOWARD SCD
DATE: 6/19/14

DEPARTMENT OF PUBLIC WORKS, HOWARD COUNTY, MD

Mark DePue
CHIEF, BUREAU OF ENVIRONMENTAL SERVICES
DATE: 6/9/14

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

STATE OF MARYLAND
WILLIAM BUDGETE
PROFESSIONAL ENGINEER
No. 39696

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

DATE	DEC 2015
NO.	AS-BUILT
REVISIONS DESCRIPTION	

936 RIDGEBROOK ROAD
SPARKS, MARYLAND 21152
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FAX: (410) 316-7818
www.kci.com

KCI
TECHNOLOGIES

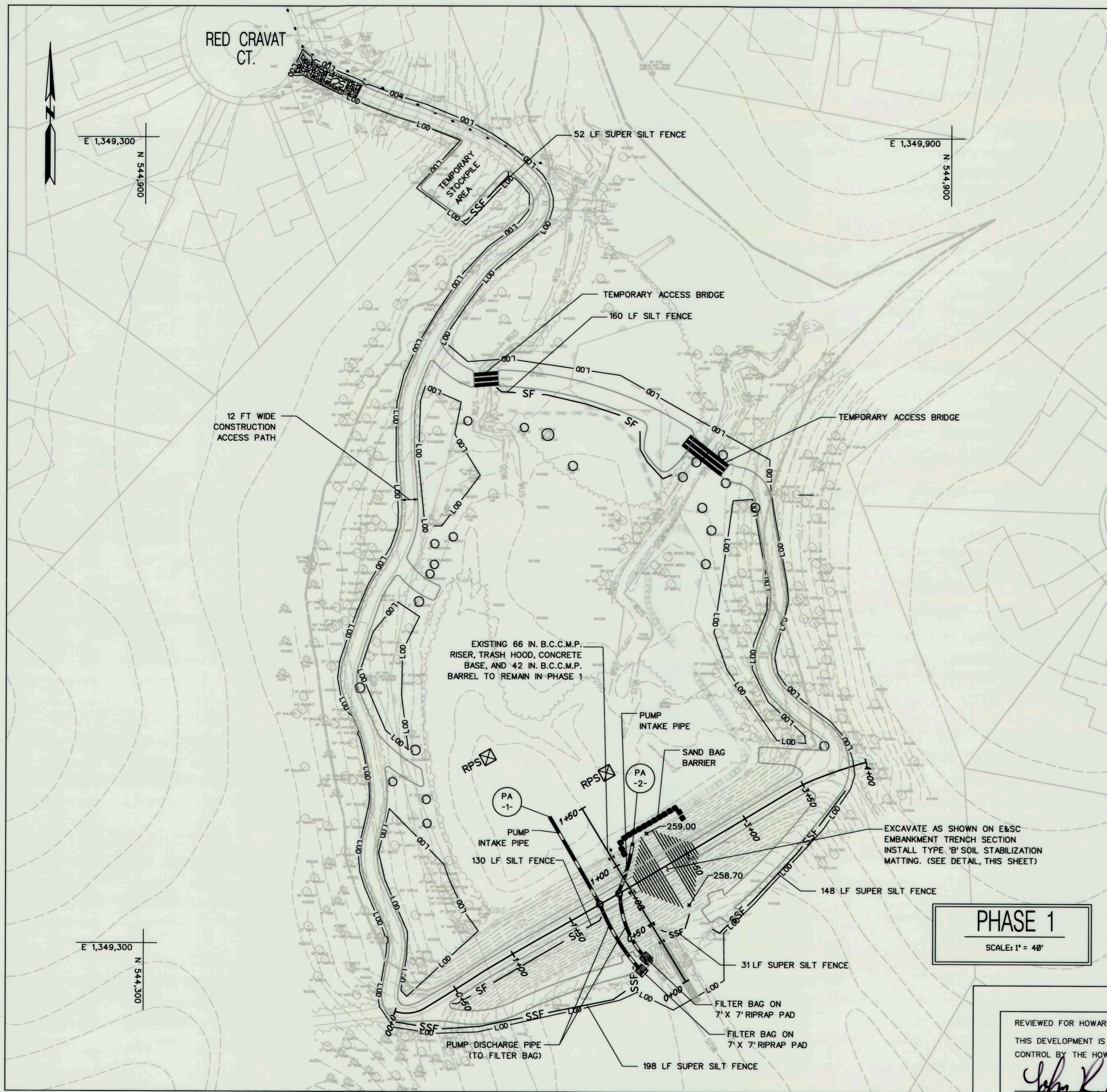
STORMWATER AND WATERSHED MANAGEMENT
EVALUATION / DESIGN-BUILD SERVICES
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Howard County Contract # CA 08-29
HOWARD COUNTY DEPARTMENT OF PUBLIC WORKS
100 COLUMBIA AVENUE
COLUMBIA, MD 21046

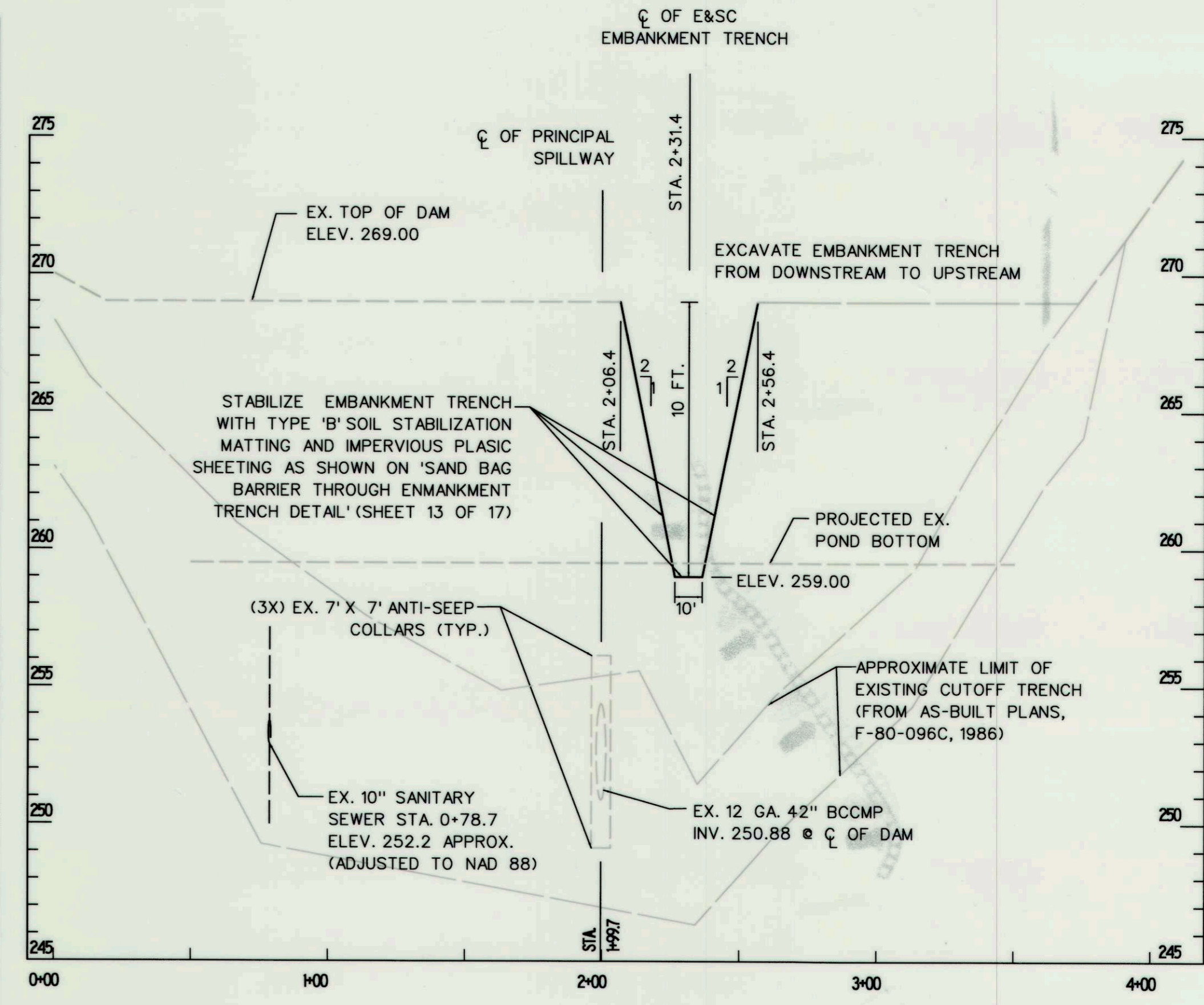
SCALE: AS SHOWN
DATE: MAY 2014
JOB NO.: 01-081795.77
CAPITAL PROJECT NO.: CA 08-29
PERMIT ISSUE:

STORMWATER MANAGEMENT
PROFILE AND
DETAILS

SHEET NO.: 5 OF 18



PHASE 1
SCALE: 1" = 40'



E&S C EMBANKMENT TRENCH SECTION

SCALE:
HOR. 1" = 40'
VERT. 1" = 4'

LEGEND

- EXISTING MAJOR CONTOURS -----
- EXISTING MINOR CONTOURS -----
- PROPOSED CONTOURS -----
- EXISTING 100 YEAR FLOODPLAIN -----
- EXISTING TREE -----
- EDGE OF TREELINE -----
- WATERS OF THE US -----
- EDGE OF WETLAND -----
- PROPERTY LINE -----
- EXISTING STORM DRAIN -----
- EXISTING SEWER MANHOLE -----
- EXISTING STORM DRAIN MANHOLE -----
- EXISTING SEWER LINE -----
- EXISTING EDGE OF PAVEMENT -----
- EXISTING EDGE OF WATER -----
- PROPOSED EDGE OF WATER -----
- EXISTING BUILDING -----
- PROPOSED RIPRAP -----
- PROPOSED DRAIN PIPE -----
- SOIL BORING LOCATION -----
- SANDBAG DAM/BARRIER -----
- PUMP AROUND AND HOSES -----
- REMOVABLE PUMPING STATION -----
- FILTER BAG -----
- SILT FENCE -----
- SUPER SILT FENCE -----
- TEMPORARY ACCESS BRIDGE -----
- STABILIZED CONSTRUCTION ENTRANCE -----
- LIMIT OF DISTURBANCE/ORANGE SAFETY FENCE -----
- EXISTING TREE TO BE SAVED -----

- NOTES:**
- 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.
 - ALL CONSTRUCTION AREAS SHALL BE DEMARCATED BY PLACING ORANGE CONSTRUCTION FENCING AT THE LOD BOUNDARY LINE.
 - 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.
 - 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.

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.
John K. Roberts
HOWARD SCD
DATE: 6/19/14

DEPARTMENT OF PUBLIC WORKS, HOWARD COUNTY, MD
William J. ...
CHIEF, BUREAU OF ENVIRONMENTAL SERVICES
DATE: 6/9/14

STATE OF MARYLAND
WILLIAM BURDETTE
PROFESSIONAL ENGINEER
NO. 38996
William J. ...
PROFESSIONAL CERTIFICATION. I HEREBY CERTIFY THAT THESE DOCUMENTS WERE PREPARED OR APPROVED BY ME, AND THAT I AM A DULY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MARYLAND, LICENSE NO. 38996. EXPIRATION DATE: JANUARY 04, 2015

NO.	REVISIONS DESCRIPTION	DATE

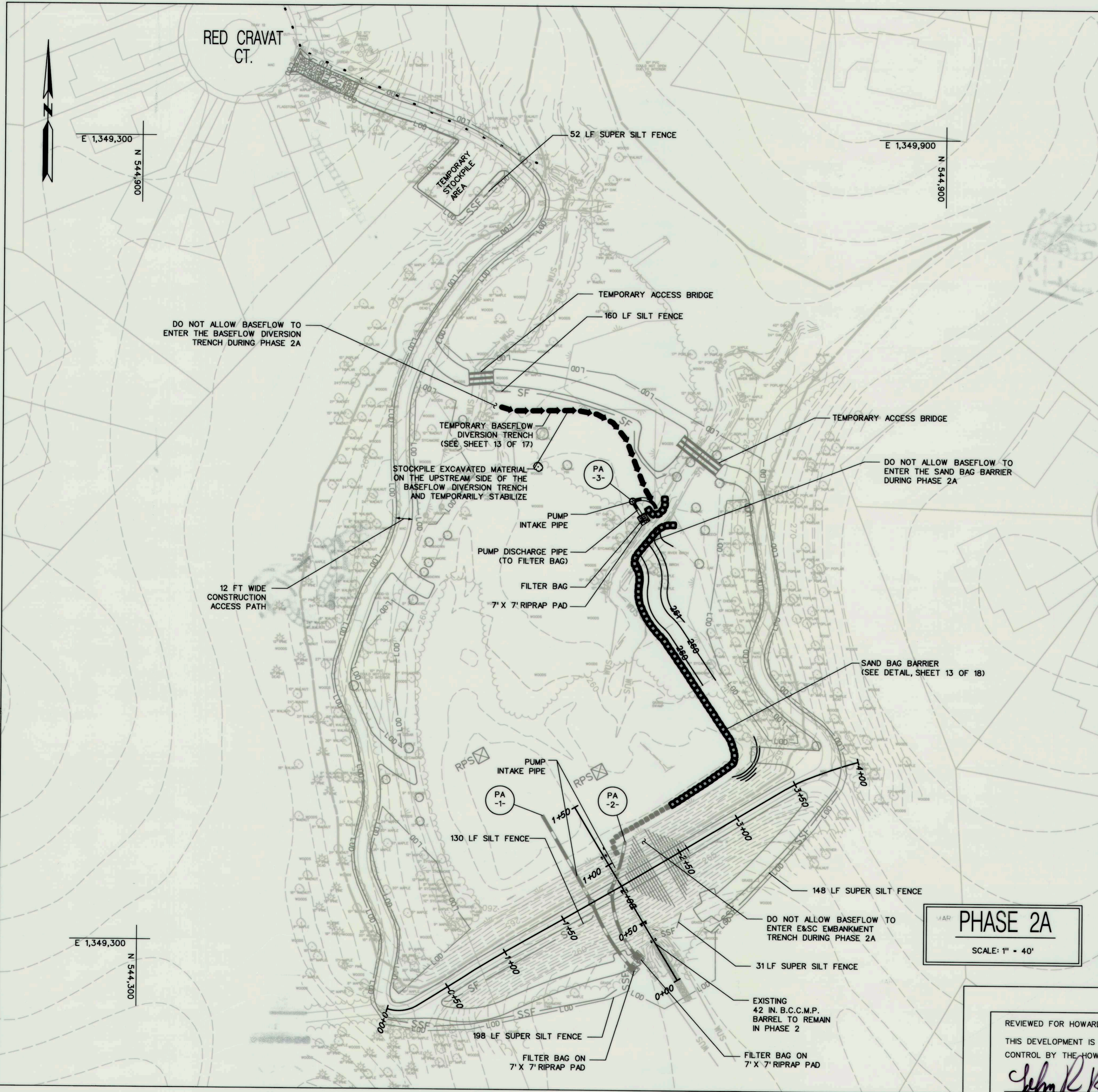
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TELEPHONE: (410) 316-7800
FAX: (410) 316-7818
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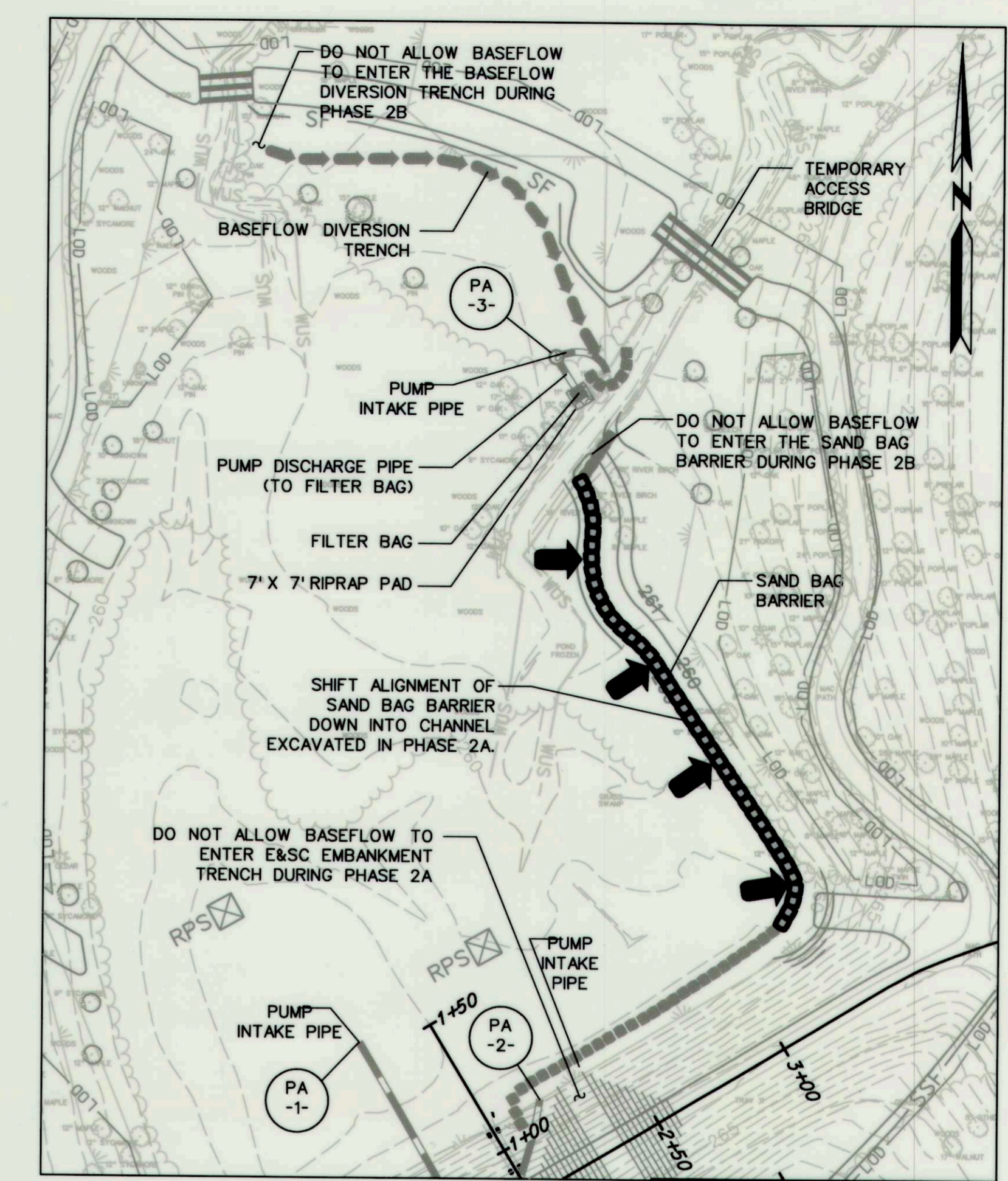
STORMWATER AND WATERSHED MANAGEMENT
EVALUATION / DESIGN-BUILD SERVICES
RED CRAVAT COURT
POND DREDGING &
PRINCIPAL SPILLWAY REPLACEMENT
Howard County Contract # CA 08-29
HOWARD COUNTY DEPARTMENT OF PUBLIC WORKS
1575 COLUMBIA GREENWAY DRIVE
COLUMBIA, MD 21046

**EROSION AND
SEDIMENT
CONTROL PLAN
PHASE 1**

SCALE: AS SHOWN
DATE: MAY 2014
KCI JOB NO.: 01-081795.77
CAPITAL PROJECT NO.: CA 08-29
PERMIT ISSUE:
CONSTRUCTION ISSUE:



PHASE 2A
SCALE: 1" = 40'



PHASE 2B
SCALE: 1" = 40'

LEGEND

- EXISTING MAJOR CONTOURS -----
- EXISTING MINOR CONTOURS -----
- PROPOSED CONTOURS -----
- EXISTING 100 YEAR FLOODPLAIN -----
- EXISTING TREE -----
- EDGE OF TREELINE -----
- WATERS OF THE US -----
- EDGE OF WETLAND -----
- PROPERTY LINE -----
- EXISTING STORM DRAIN -----
- EXISTING SEWER MANHOLE -----
- EXISTING STORM DRAIN MANHOLE -----
- EXISTING SEWER LINE -----
- EXISTING EDGE OF PAVEMENT -----
- EXISTING EDGE OF WATER -----
- PROPOSED EDGE OF WATER -----
- EXISTING BUILDING -----
- PROPOSED RIPRAP -----
- PROPOSED DRAIN PIPE -----
- SOIL BORING LOCATION -----
- SANDBAG DAM/BARRIER -----
- PUMP AROUND AND HOSES -----
- REMOVABLE PUMPING STATION -----
- FILTER BAG -----
- SILT FENCE -----
- SUPER SILT FENCE -----
- TEMPORARY ACCESS BRIDGE -----
- STABILIZED CONSTRUCTION ENTRANCE -----
- LIMIT OF DISTURBANCE/ORANGE SAFETY FENCE -----
- EXISTING TREE TO BE SAVED -----

- NOTES:**
1. RELOCATE SAND BAGS AS NECESSARY TO FACILITATE GRADING WHERE PHASES OF CONSTRUCTION TIE TOGETHER.
 2. 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.

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John R. Roberts
 HOWARD SCD

DATE: 6/19/14

DEPARTMENT OF PUBLIC WORKS, HOWARD COUNTY, MD

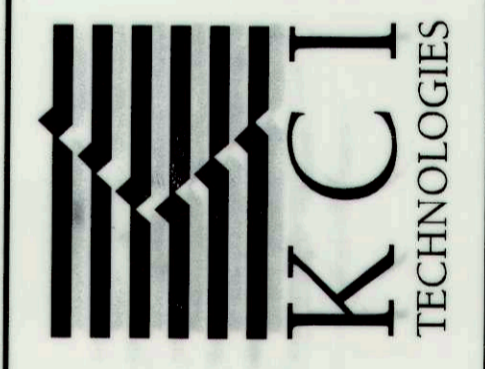
Mark D. ...
 CHIEF, BUREAU OF ENVIRONMENTAL SERVICES

DATE: 6/19/14

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

NO.	REVISIONS DESCRIPTION	DATE

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 SPARKS, MARYLAND 21152
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 FAX: (410) 316-7818
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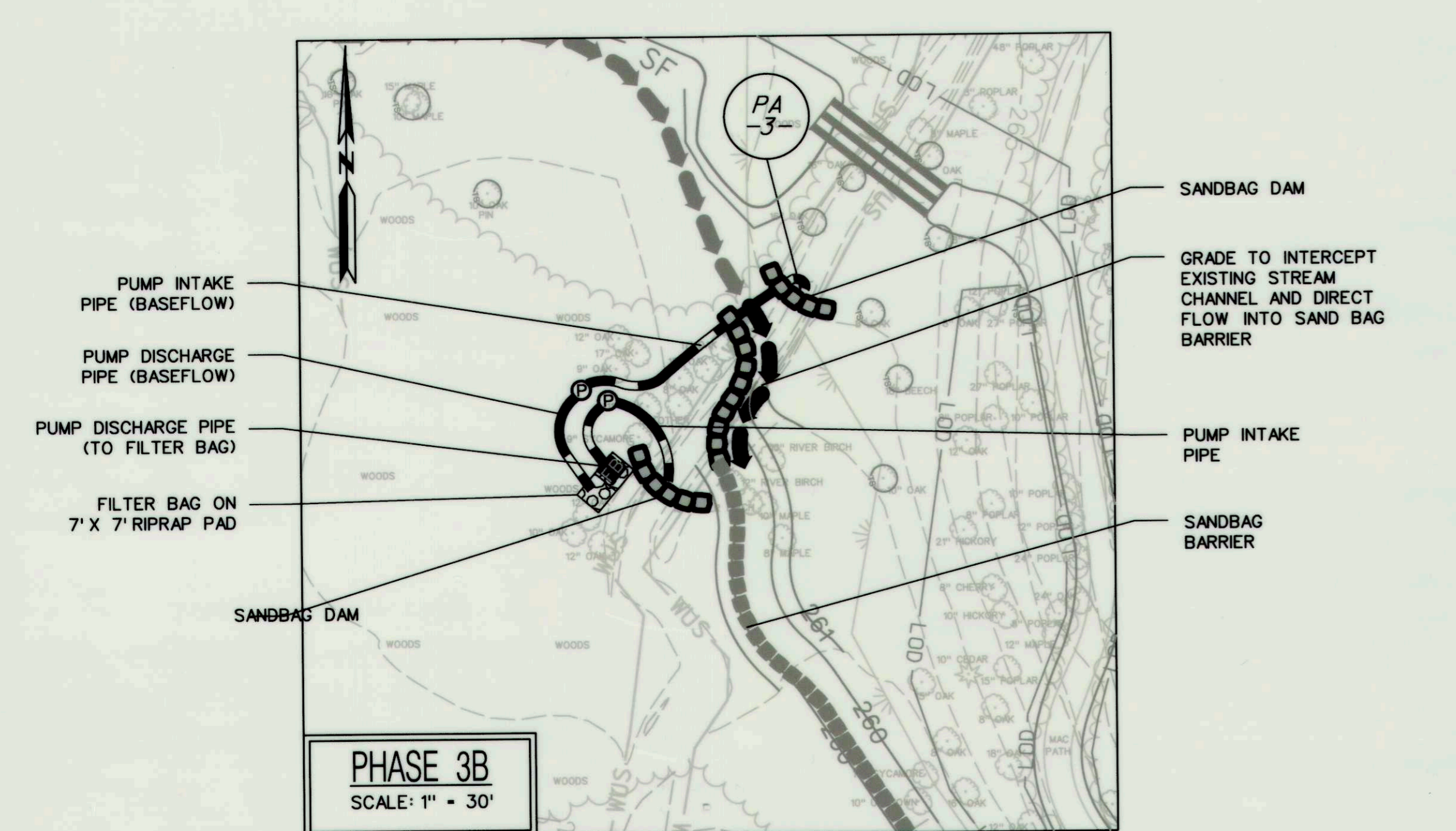
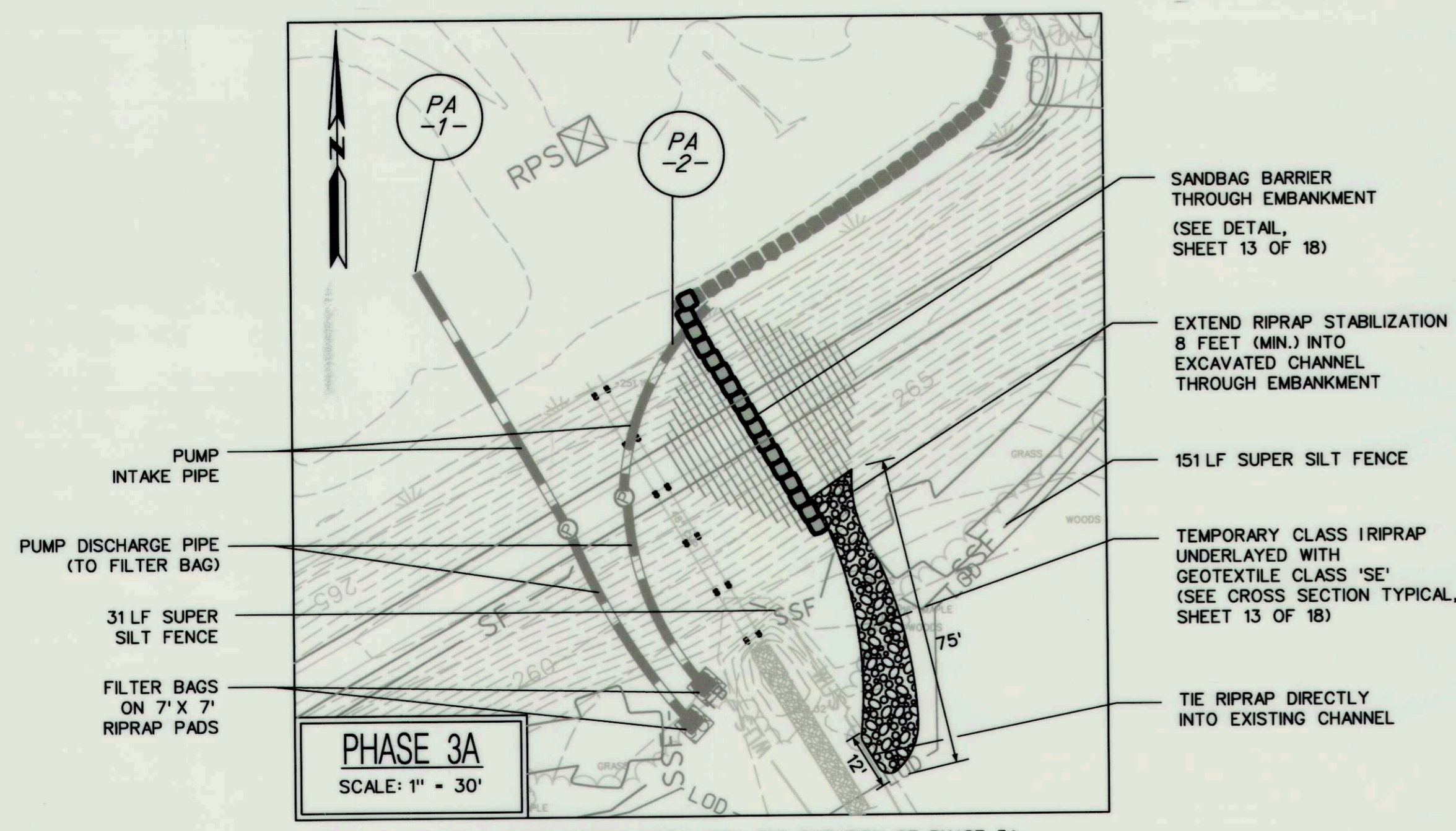


STORMWATER AND WATERSHED MANAGEMENT
 EVALUATION / DESIGN-BUILD SERVICES
 RED CRAVAT COURT
 POND DREDGING &
 PRINCIPAL SPILLWAY REPLACEMENT

Howard County Contract # CA 08-29
 HOWARD COUNTY DEPARTMENT OF PUBLIC WORKS
 STORMWATER MANAGEMENT DIVISION
 875 COLUMBIA GATEWAY DRIVE
 COLUMBIA, MD 21046

EROSION AND SEDIMENT CONTROL PLAN PHASE 2

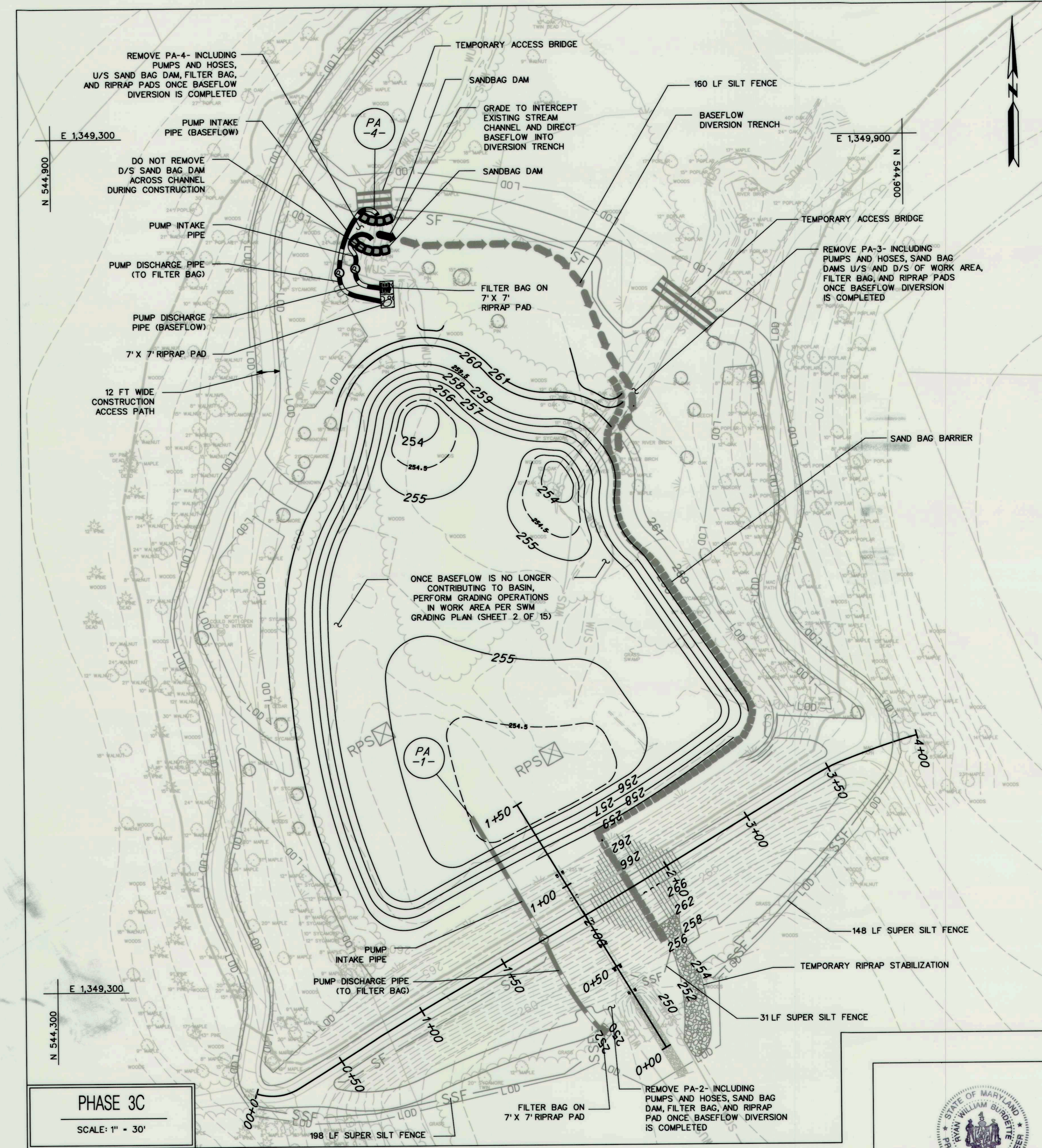
SCALE: AS SHOWN
 DATE: MAY 2014
 KCI JOB NO.: 01-081795.77
 CAPITAL PROJECT NO.: CA 08-29
 PERMIT ISSUE: CONSTRUCTION ISSUE:



LEGEND

EXISTING MAJOR CONTOURS	---	387
EXISTING MINOR CONTOURS	---	387
PROPOSED CONTOURS	---	387
EXISTING 100 YEAR FLOODPLAIN	---	
EXISTING TREE	---	
EDGE OF TREELINE	---	
WATERS OF THE US	---	
EDGE OF WETLAND	---	
PROPERTY LINE	---	
EXISTING STORM DRAIN	---	
EXISTING SEWER MANHOLE	---	
EXISTING STORM DRAIN MANHOLE	---	
EXISTING SEWER LINE	---	
EXISTING EDGE OF PAVEMENT	---	
EXISTING EDGE OF WATER	---	
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EXISTING BUILDING	---	
PROPOSED RIPRAP	---	
PROPOSED DRAIN PIPE	---	
SOIL BORING LOCATION	---	
SANDBAG DAM/BARRIER	---	
PUMP AROUND AND HOSES	---	
REMOVABLE PUMPING STATION	---	
FILTER BAG	---	
SILT FENCE	---	
SUPER SILT FENCE	---	
TEMPORARY ACCESS BRIDGE	---	
STABILIZED CONSTRUCTION ENTRANCE	---	
LIMIT OF DISTURBANCE/ORANGE SAFETY FENCE	---	
EXISTING TREE TO BE SAVED	---	

- NOTES:**
- RELOCATE SAND BAGS AS NECESSARY TO FACILITATE GRADING WHERE PHASES OF CONSTRUCTION TIE TOGETHER.
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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.

HOWARD SCD

HOWARD COUNTY, MD

6/19/14 DATE

6/9/14 DATE

CHIEF, BUREAU OF ENVIRONMENTAL SERVICES

STATE OF MARYLAND
WILLIAM BURDETTE
PROFESSIONAL ENGINEER

F.W. Galt

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

NO.	REVISIONS DESCRIPTION	DATE

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KCI
TECHNOLOGIES

STORMWATER AND WATERSHED MANAGEMENT
EVALUATION / DESIGN-BUILD SERVICES

RED CRAVAT COURT
POND DREDGING &
PRINCIPAL SPILLWAY REPLACEMENT

Howard County Contract # CA 08-29
HOWARD COUNTY DEPARTMENT OF PUBLIC WORKS
ESTIMATOR/MANAGEMENT ENGINEER
COLUMBIA, MD 21046

EROSION AND SEDIMENT CONTROL PLAN PHASE 3

SCALE: AS SHOWN

DATE: MAY 2014

KCI JOB NO.: 01-081795.77

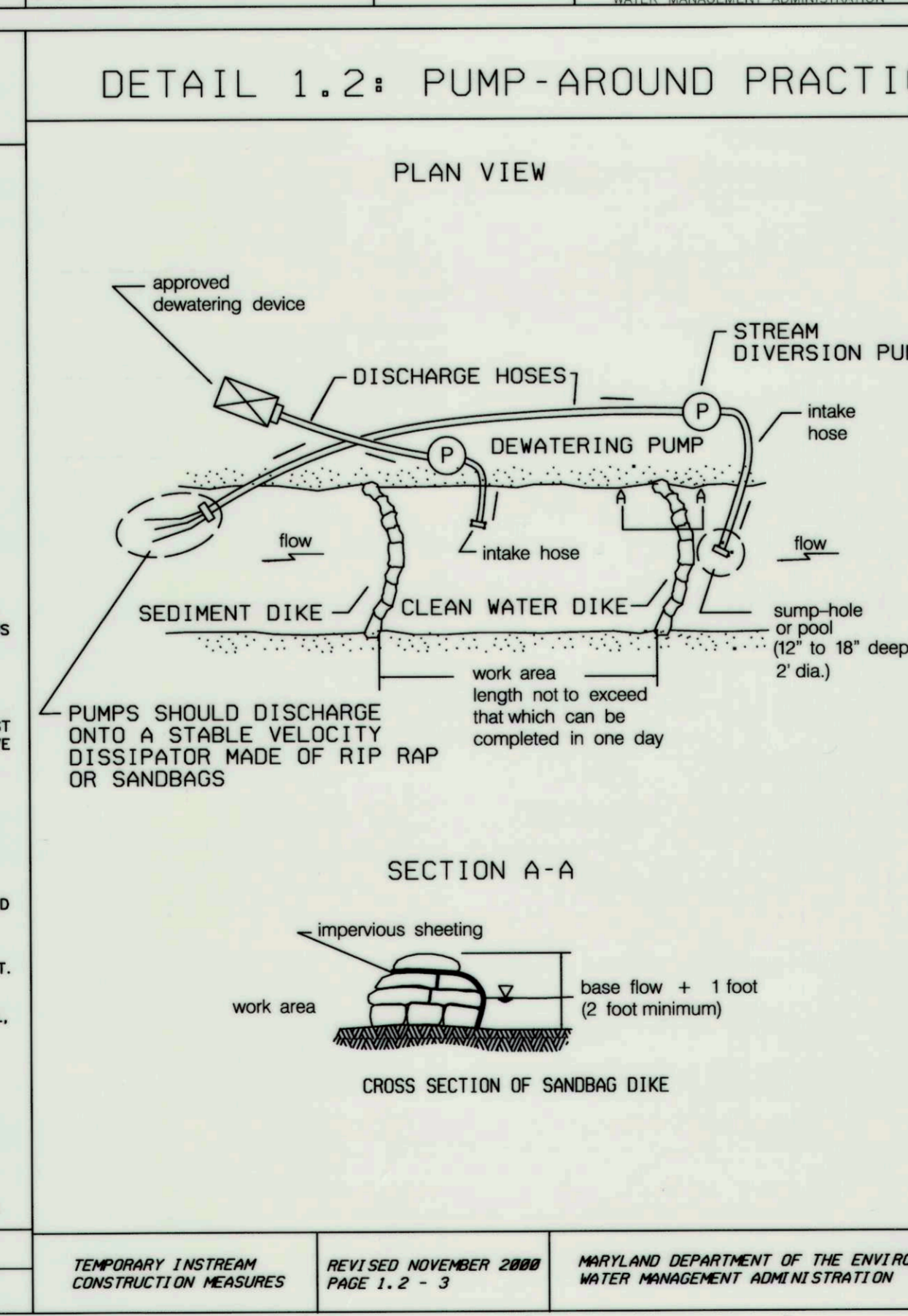
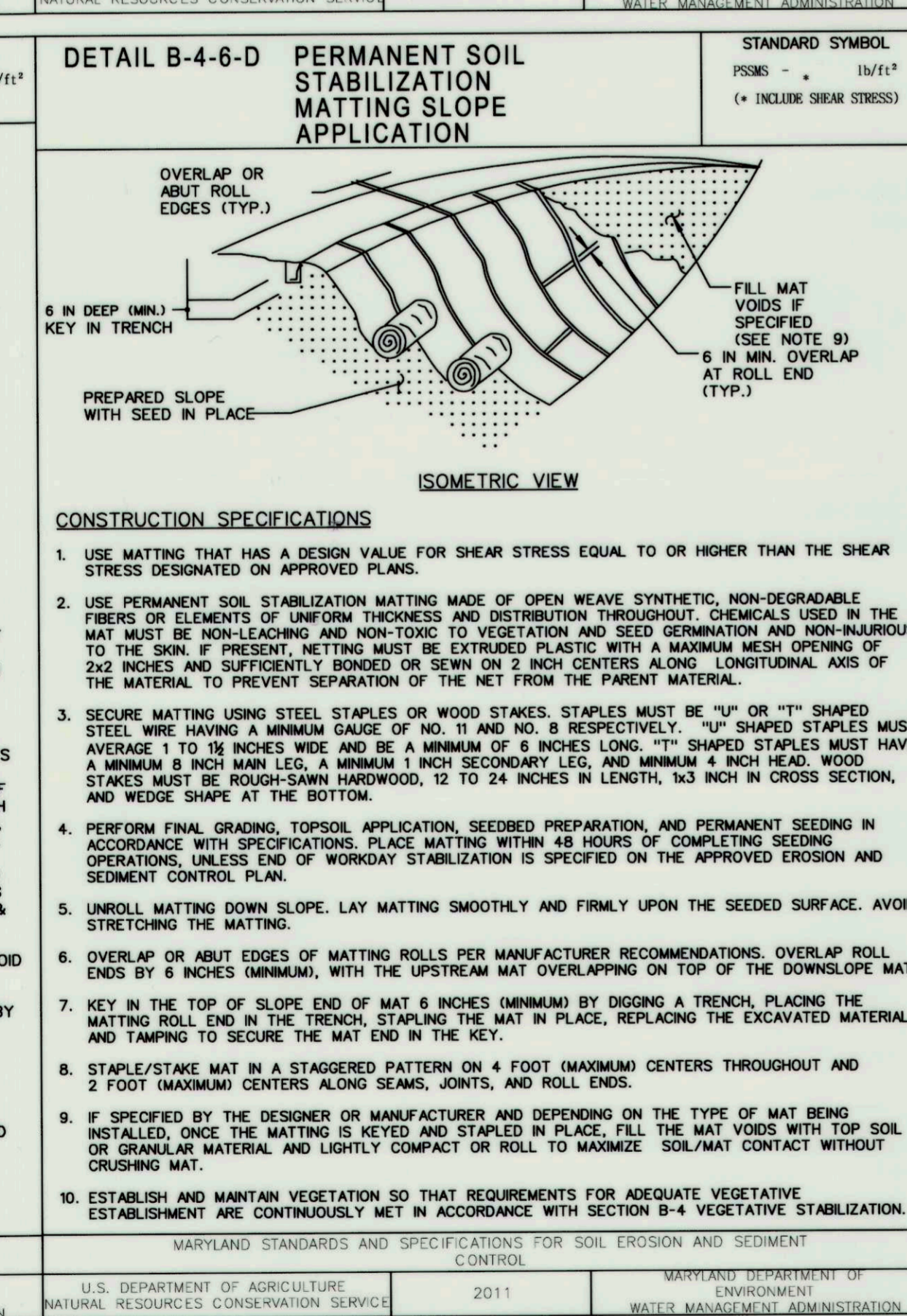
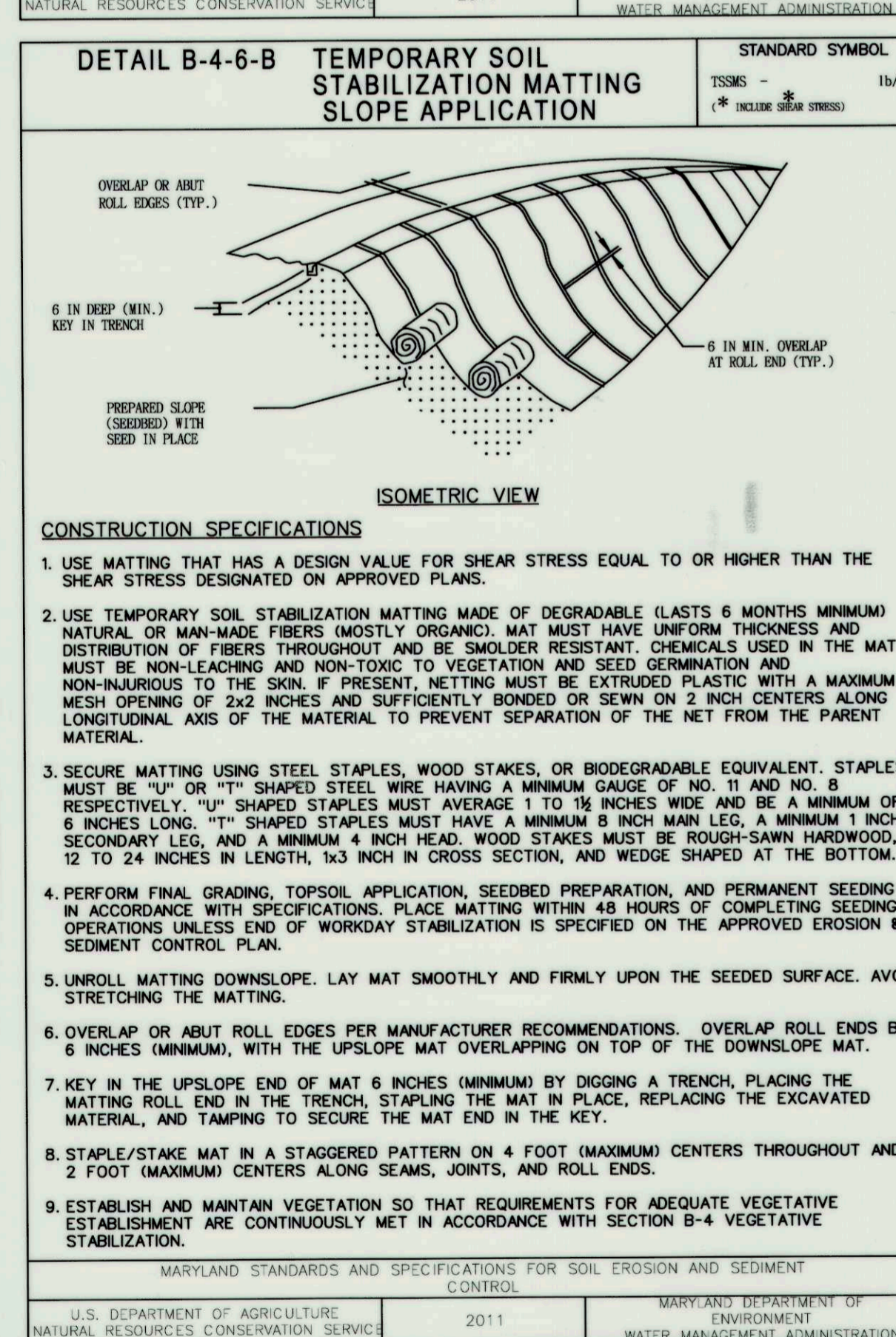
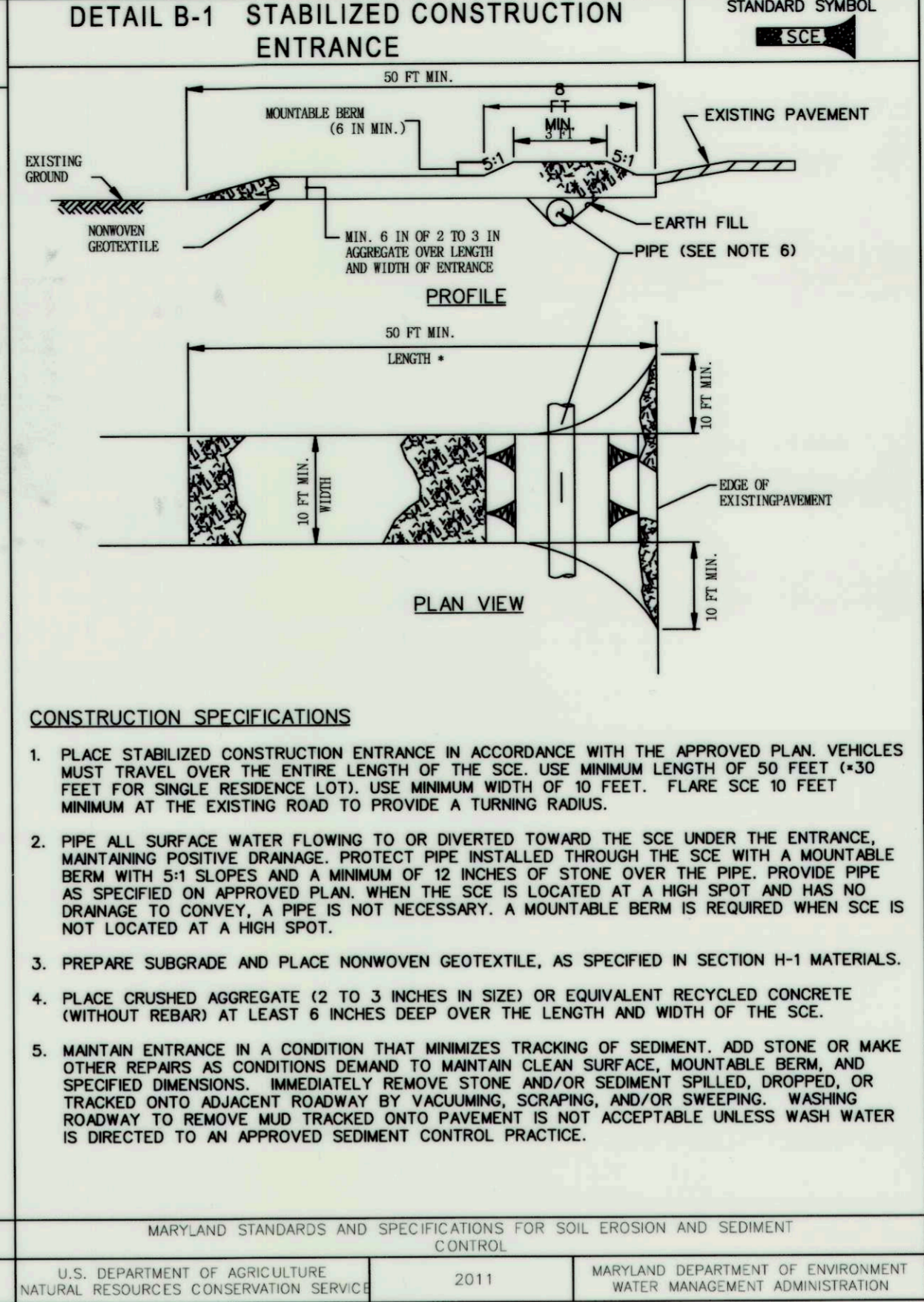
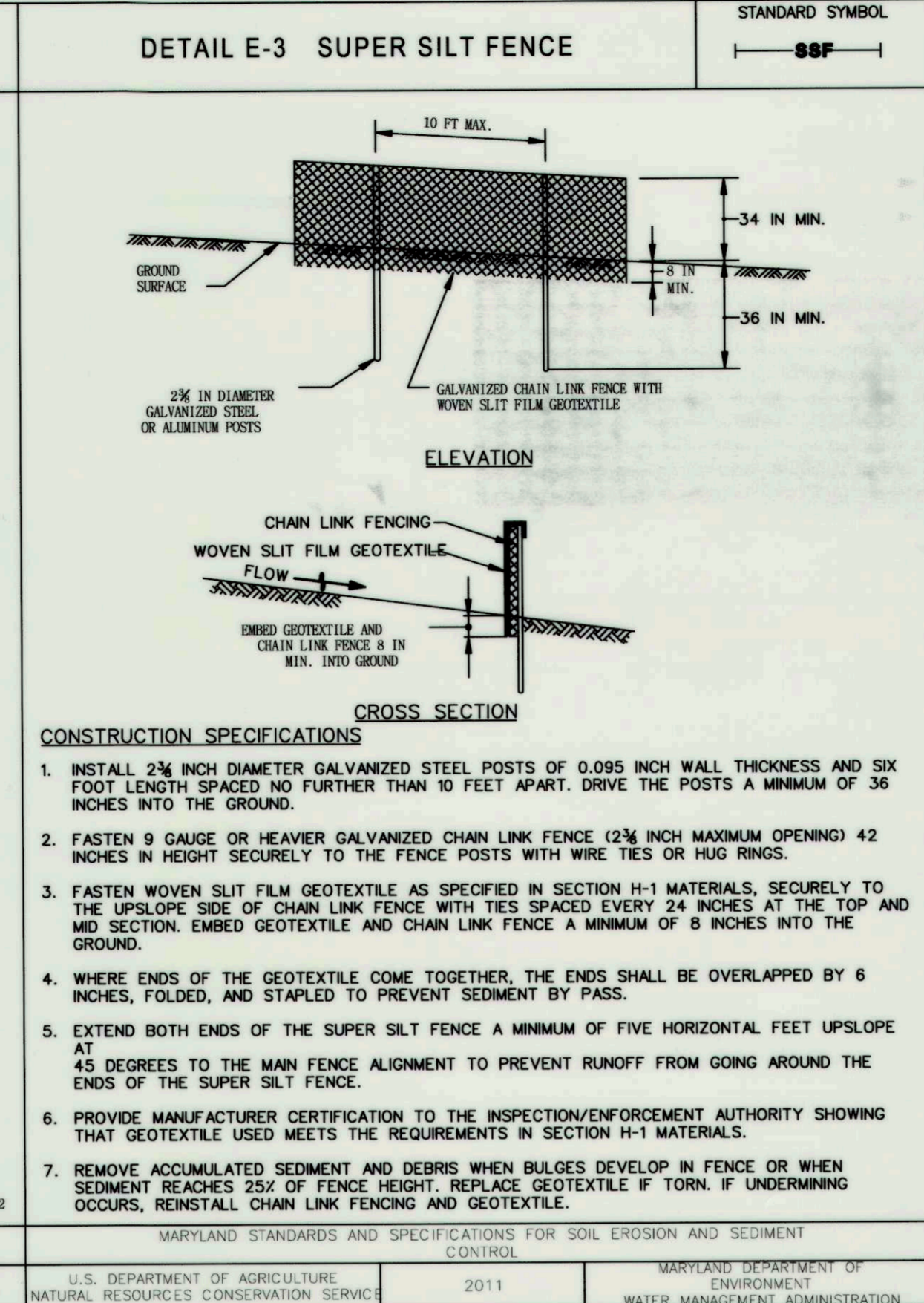
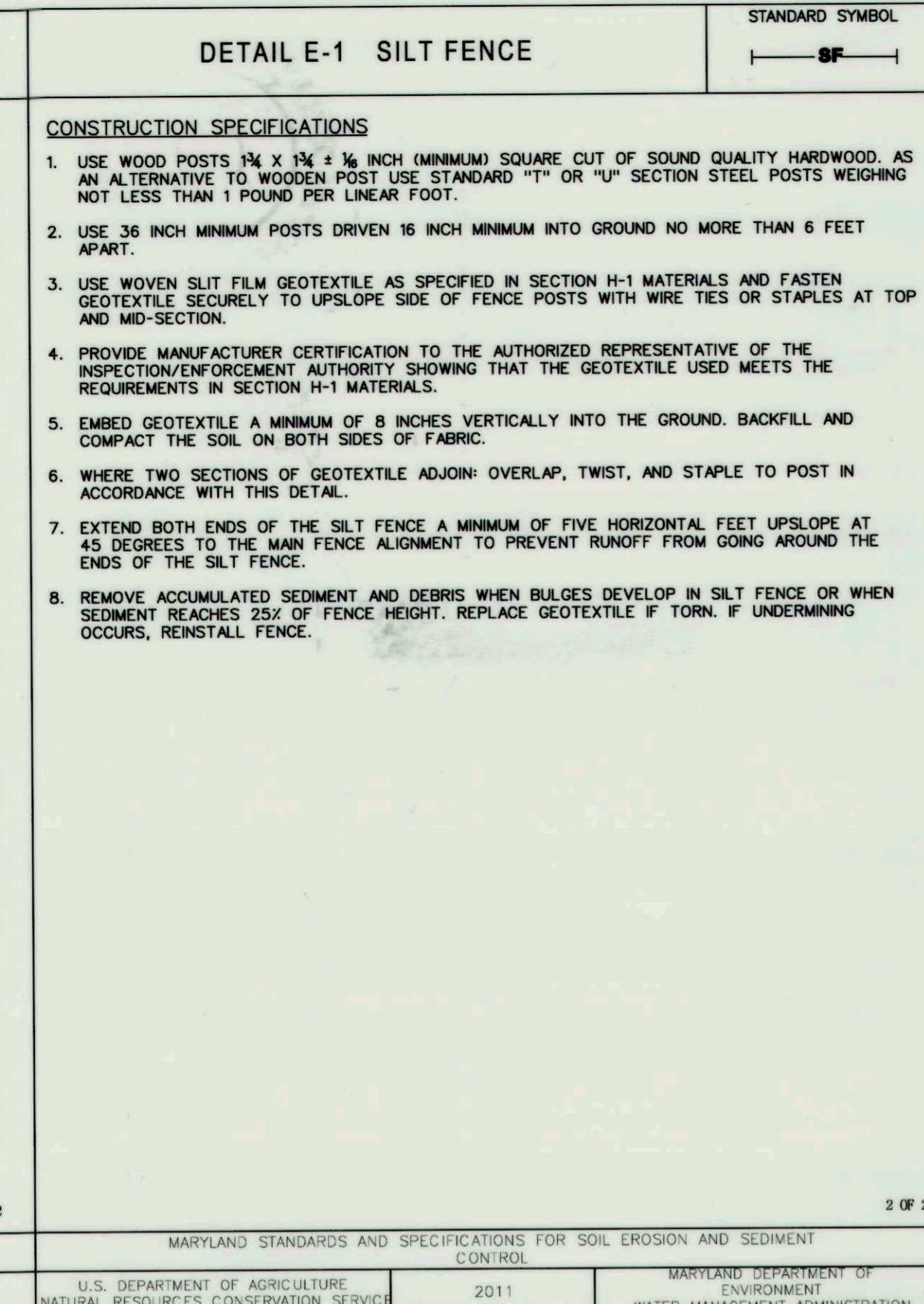
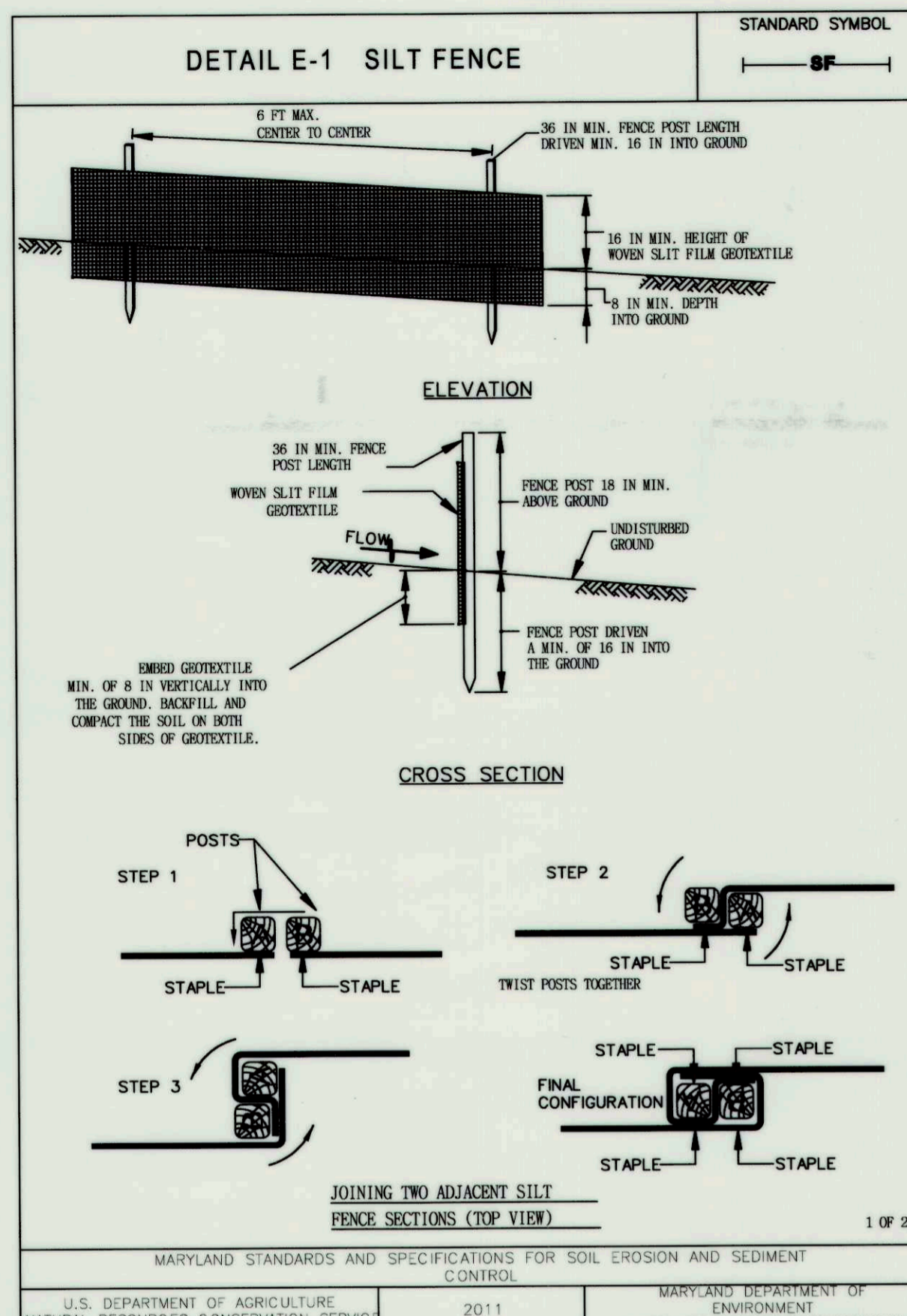
CAPITAL PROJECT NO.: CA 08-29

PERMIT ISSUE:

CONSTRUCTION ISSUE:

SHEET NO.: 10 OF 18

BY: Ryan Burdette (Division: P033 Water Res GWA Emp FILE: M:\2008\01081795.77\Drawings\10_PES-1010-Red Cravat CL_2D.dgn



MARYLAND DEPARTMENT OF THE ENVIRONMENT
WATERWAY CONSTRUCTION GUIDELINES
REVISED NOVEMBER 2008
TEMPORARY INSTREAM CONSTRUCTION MEASURES
PAGE 1.2 - 1

MGWC 1.2: PUMP-AROUND PRACTICE
The work should consist of installing a temporary pump around and supporting measures to divert flow around instream construction sites.

IMPLEMENTATION SEQUENCE
Sediment control measures, pump-around practices, and associated channel and bank construction should be completed in the following sequence (refer to Detail 1.1):

1. Construction activities including the installation of erosion and sediment control measures should not begin until all necessary easements and/or right-of-ways have been acquired. All existing utilities should be marked in the field prior to construction. The contractor is responsible for any damage to existing utilities that may result from construction and should repair the damage at his/her own expense to the county's or utility 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 the additional details. 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 filter, 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.

MARYLAND STANDARDS AND SPECIFICATIONS FOR SOIL EROSION AND SEDIMENT CONTROL
U.S. DEPARTMENT OF AGRICULTURE, NATURAL RESOURCES CONSERVATION SERVICE, 2011

MARYLAND DEPARTMENT OF THE ENVIRONMENT, WATER MANAGEMENT ADMINISTRATION

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.
John R. Roberts
HOWARD SCD
6/19/14

DEPARTMENT OF PUBLIC WORKS, HOWARD COUNTY, MD
Mark DeLuca
CHIEF, BUREAU OF ENVIRONMENTAL SERVICES
6/19/14

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

MARYLAND STANDARDS AND SPECIFICATIONS FOR SOIL EROSION AND SEDIMENT CONTROL
U.S. DEPARTMENT OF AGRICULTURE, NATURAL RESOURCES CONSERVATION SERVICE, 2011

MARYLAND DEPARTMENT OF THE ENVIRONMENT, WATER MANAGEMENT ADMINISTRATION

TEMPORARY INSTREAM CONSTRUCTION MEASURES
REVISED NOVEMBER 2008
PAGE 1.2 - 3

MARYLAND DEPARTMENT OF THE ENVIRONMENT, WATER MANAGEMENT ADMINISTRATION

MARYLAND STANDARDS AND SPECIFICATIONS FOR SOIL EROSION AND SEDIMENT CONTROL
U.S. DEPARTMENT OF AGRICULTURE, NATURAL RESOURCES CONSERVATION SERVICE, 2011

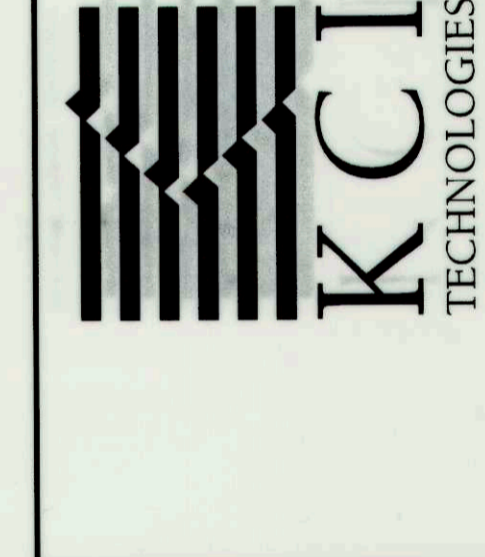
MARYLAND DEPARTMENT OF THE ENVIRONMENT, WATER MANAGEMENT ADMINISTRATION

MARYLAND STANDARDS AND SPECIFICATIONS FOR SOIL EROSION AND SEDIMENT CONTROL
U.S. DEPARTMENT OF AGRICULTURE, NATURAL RESOURCES CONSERVATION SERVICE, 2011

MARYLAND DEPARTMENT OF THE ENVIRONMENT, WATER MANAGEMENT ADMINISTRATION

NO.	REVISIONS DESCRIPTION	DATE

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STORMWATER AND WATERSHED MANAGEMENT
EVALUATION / DESIGN-BUILD SERVICES
RED CRAVAT COURT
POND DREDGING & PRINCIPAL SPILLWAY REPLACEMENT
Howard County Contract # CA 08-29
HOWARD COUNTY DEPARTMENT OF PUBLIC WORKS
1000 COLUMBIA GARDEN DRIVE
SPRINGFIELD, MARYLAND 21151

EROSION AND SEDIMENT CONTROL NOTES & DETAILS

SCALE: N/A
DATE: MAY 2014
KCI JOB NO.: 01-081795.77
CAPITAL PROJECT NO.: CA 08-29
PERMIT ISSUE:
CONSTRUCTION ISSUE:
SHEET NO.: 12 OF 18

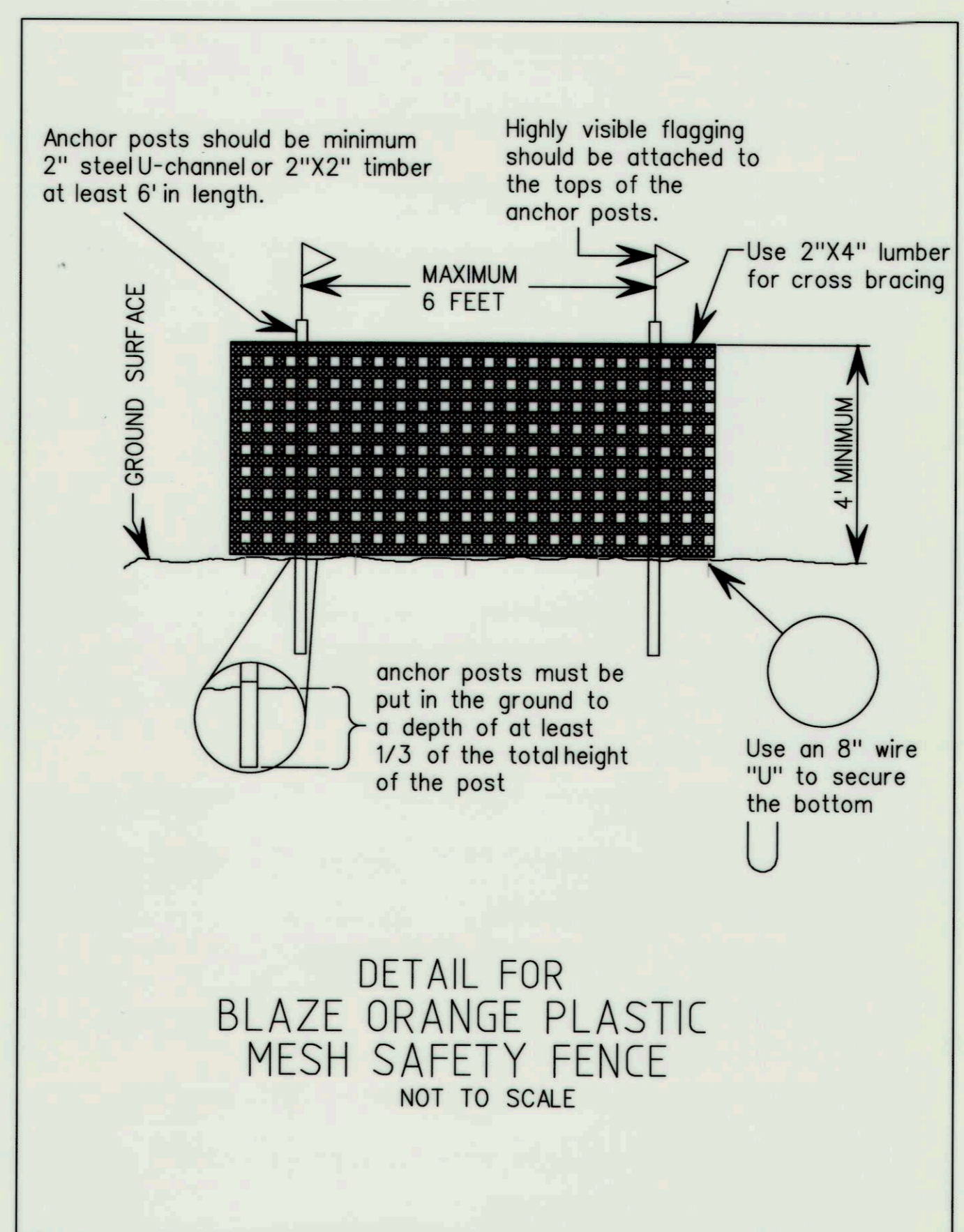
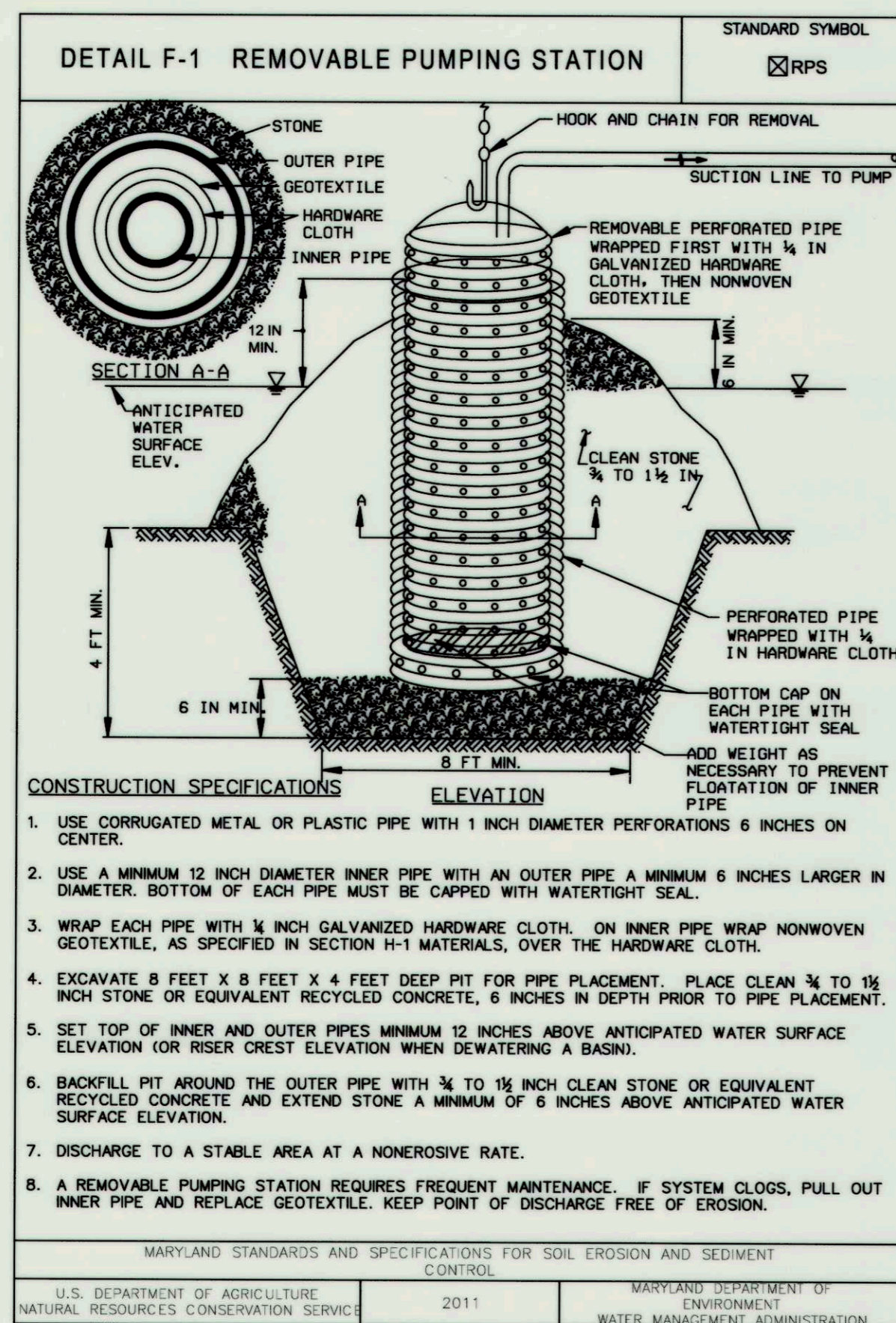
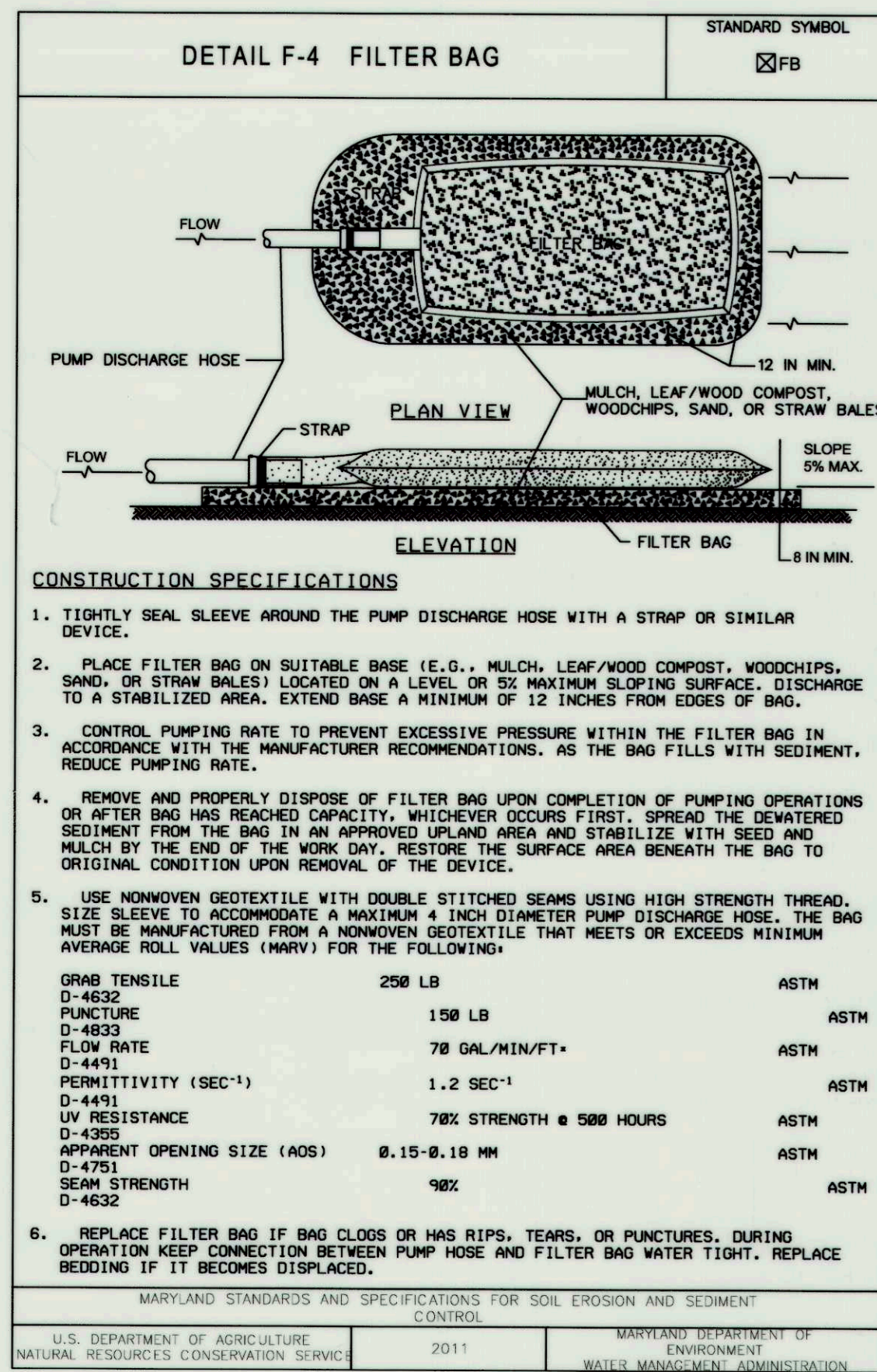


TABLE 28 STONE SIZE

NUMBER	SIZE RANGE	D 50	D 100	AASHTO	HEIGHT
57*	3/8"-1 1/2"			M-43	N/A
1	2"-3"	3"		M-43	N/A
RIP-RAP**	4"-7"	7"		N/A	N/A
CLASS I	N/A	15"		N/A	150 LB. MAX.
CLASS II	N/A	24"		N/A	700 LB. MAX.
CLASS III	N/A	34"		N/A	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 PS/IN.
A	0.30**	250	500
B	0.60	200	320
C	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"/MIN. STRAIN RATE IN BOTH PRINCIPAL DIRECTIONS OF GEOTEXTILE FABRIC.
- BURST STRENGTH ASTM D 3786

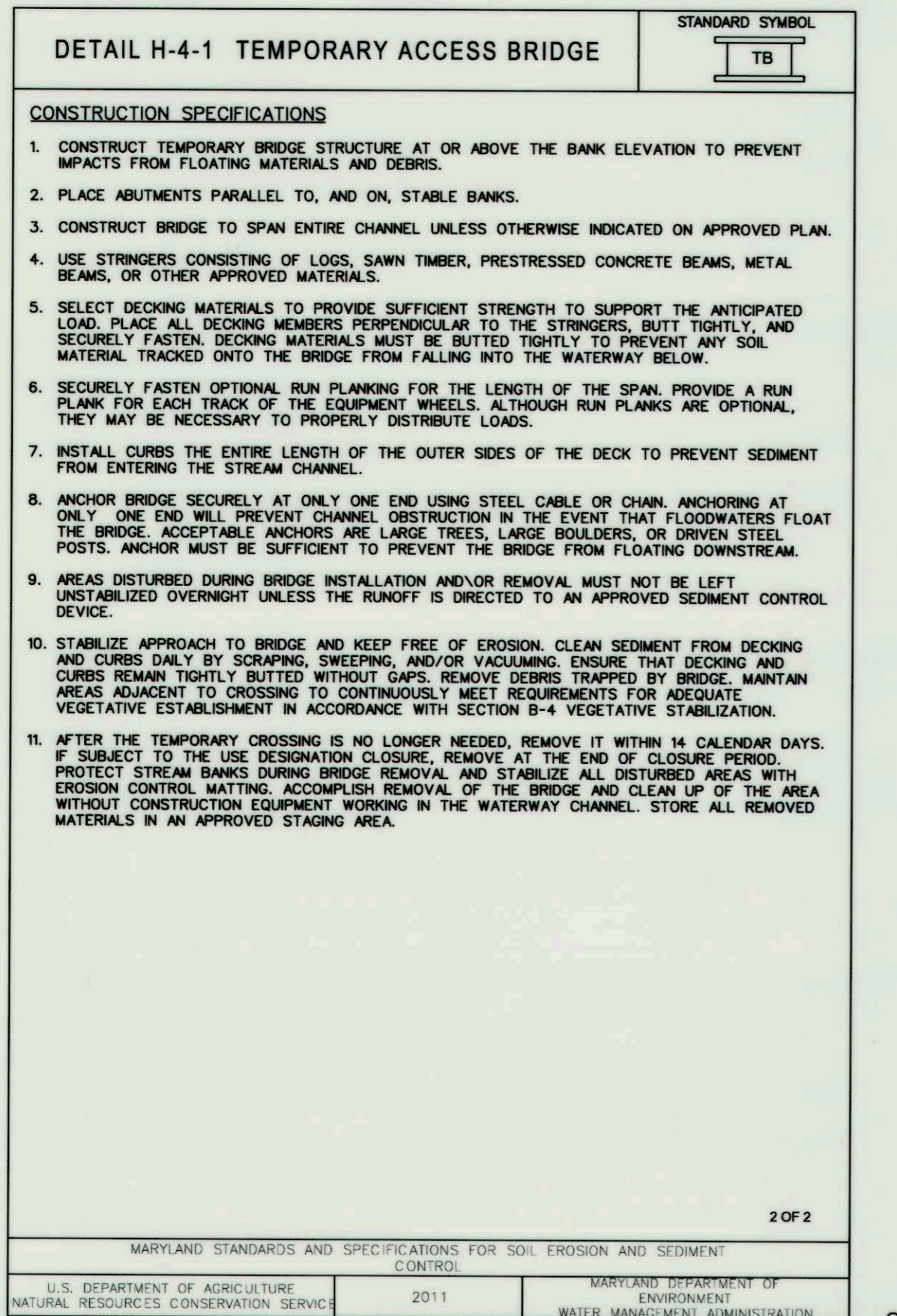
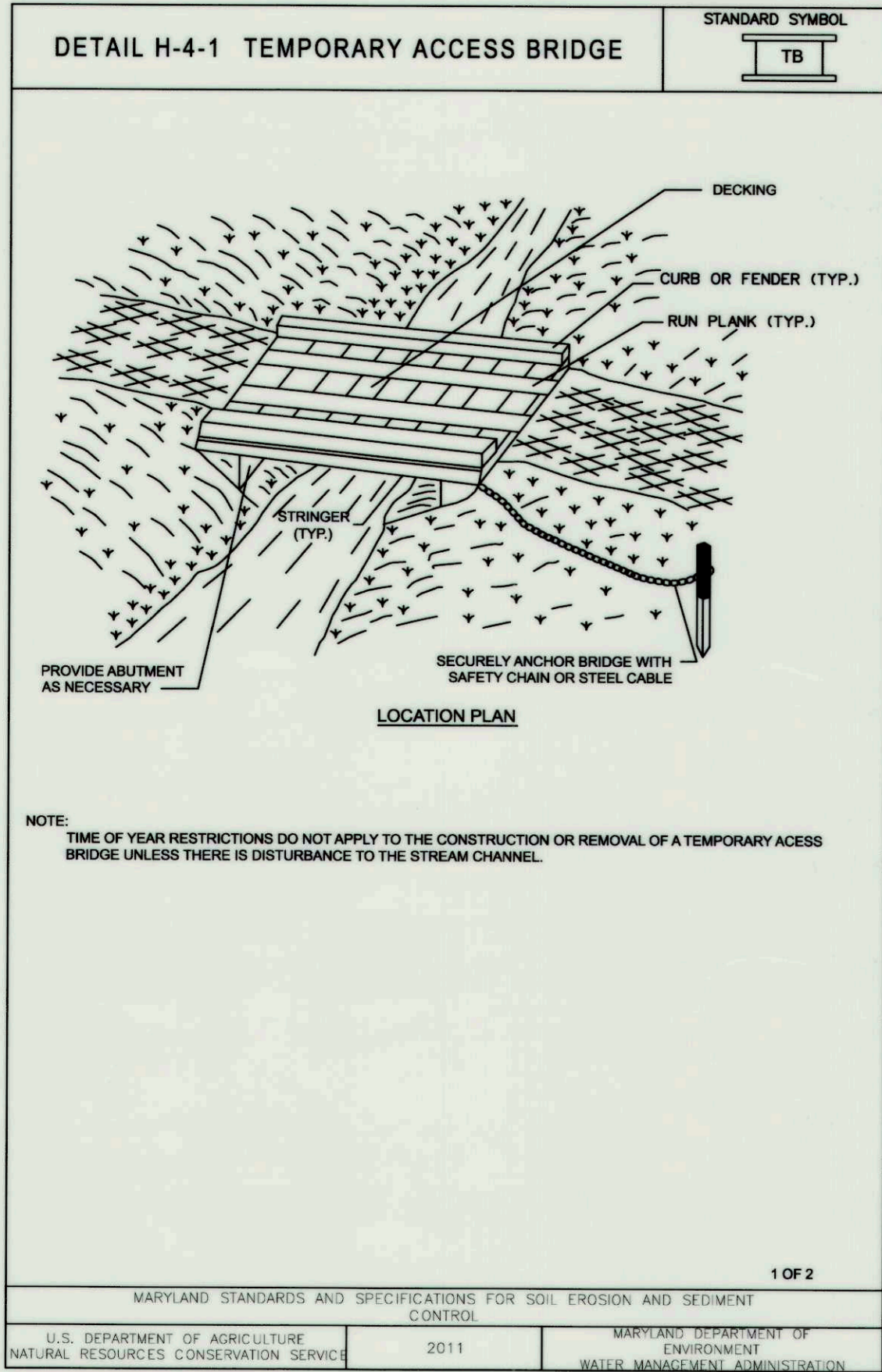
THE FABRIC SHALL BE INERT TO COMMONLY ENCOUNTERED CHEMICALS AND HYDROCARBONS, AND WILL BE ROT AND MILDEW RESISTANT. IT SHALL BE MANUFACTURED FROM FIBERS CONSISTING OF LONG CHAIN SYNTHETIC POLYMERS, AND COMPOSED OF A MINIMUM OF 85% BY WEIGHT OF POLYOLEPHINS, POLYESTERS, OR POLYAMIDES. THE GEOTEXTILE FABRIC 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 GEOTEXTILE FABRICS FOR ALL SILT FENCE SHALL HAVE A 50 LB./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 ACCORDANCE WITH MSMT 322.

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



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.

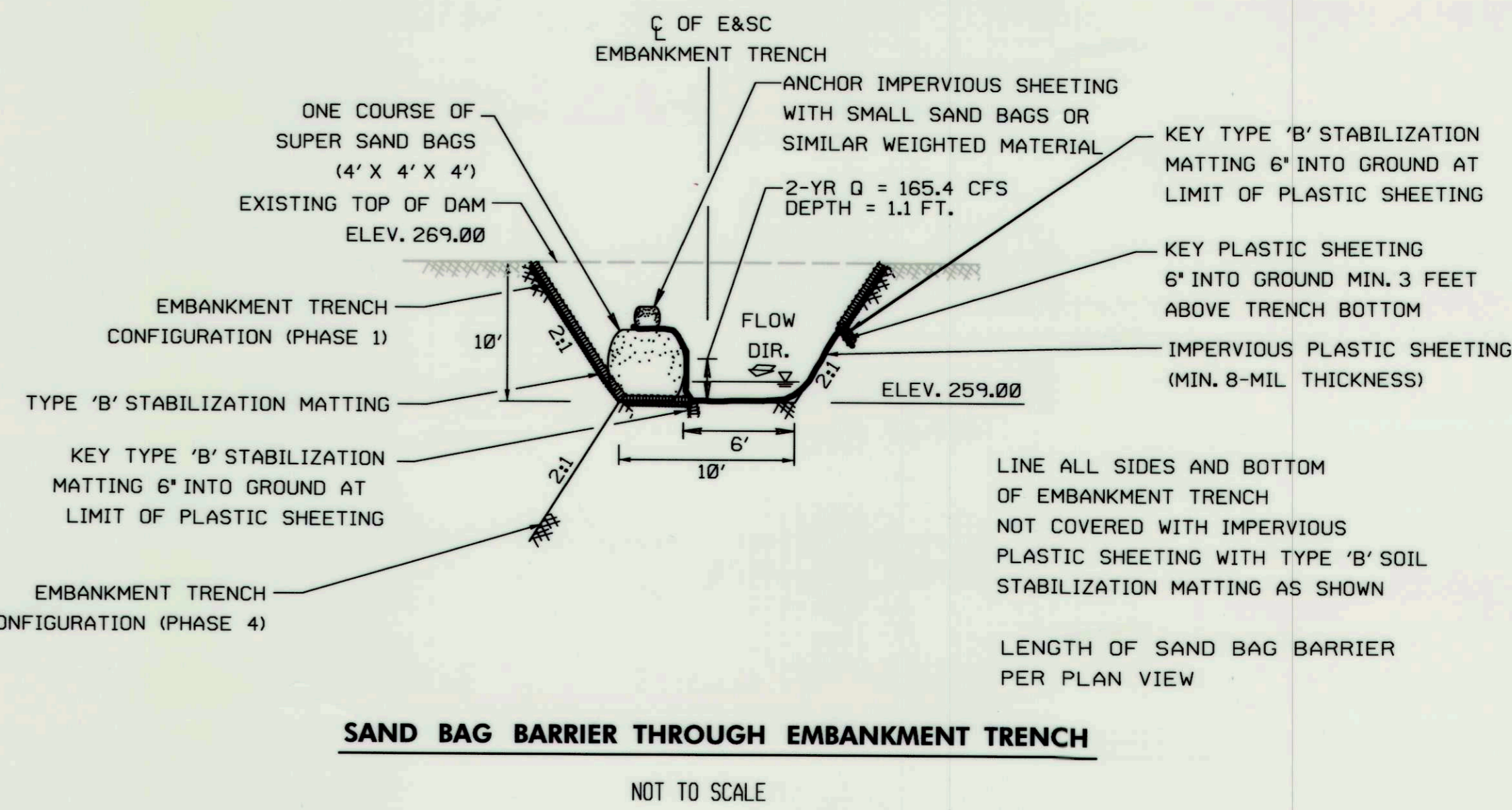
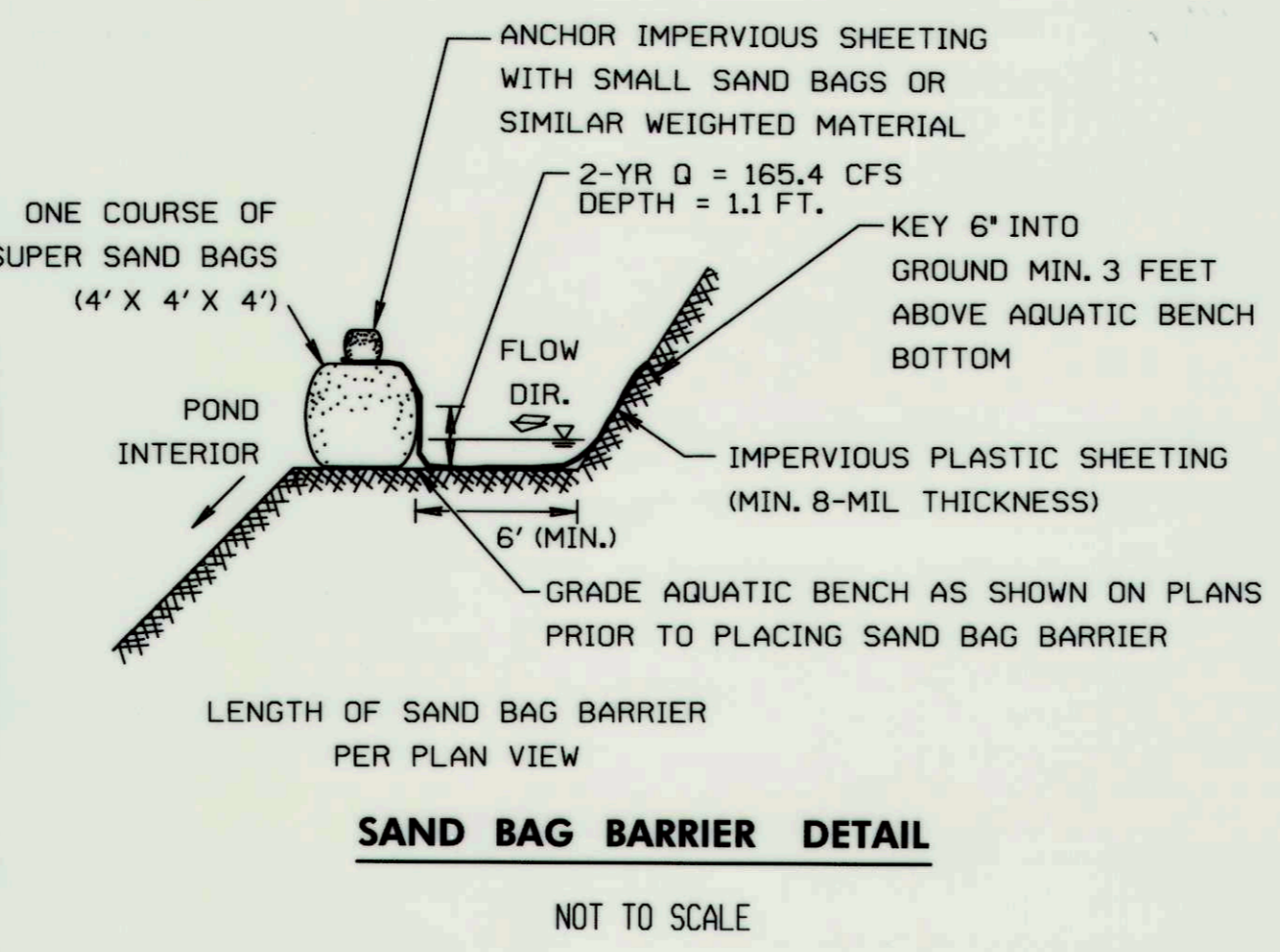
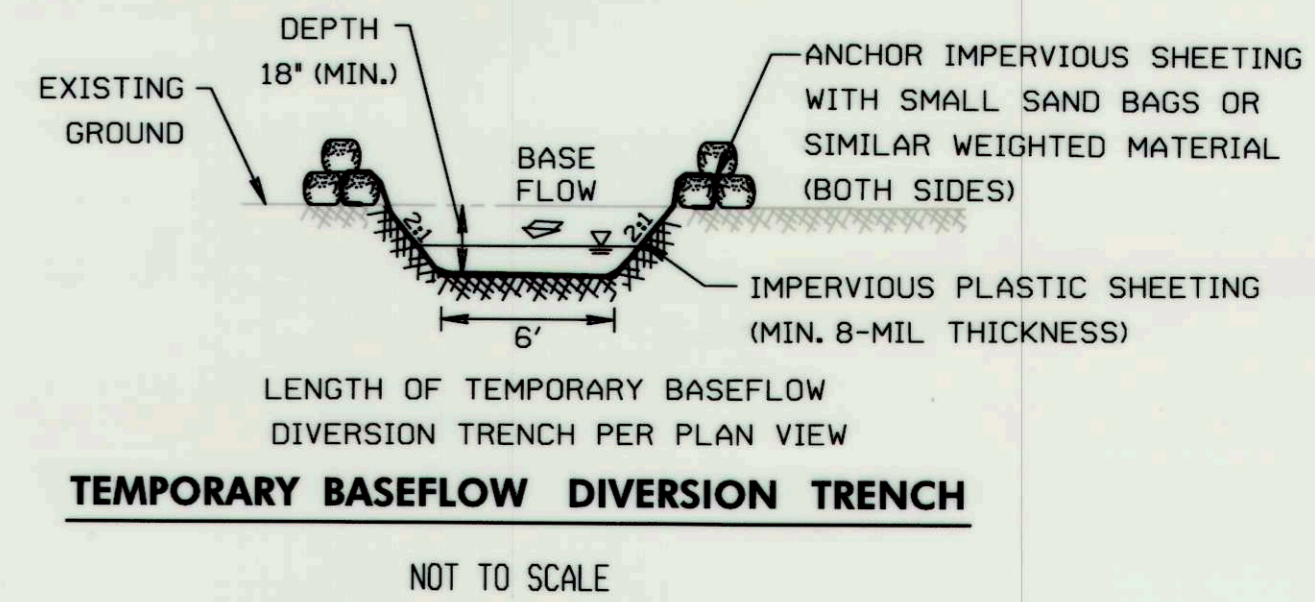
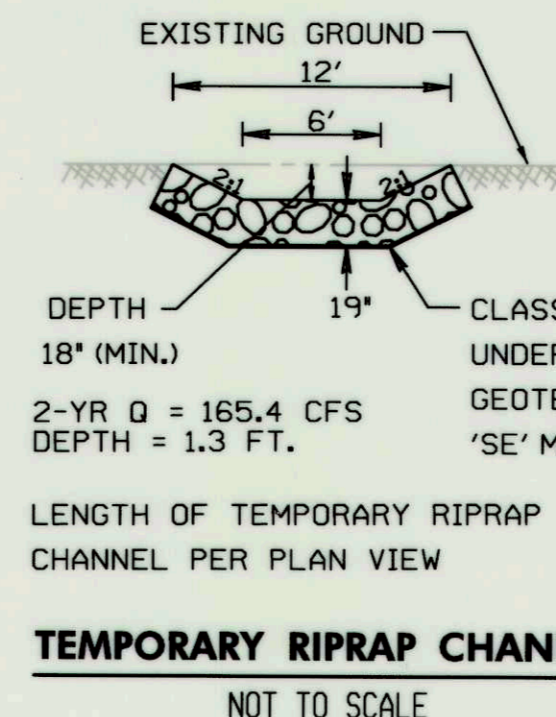
Seedbed preparation: -- Loosen upper three inches of soil by raking, disking or other acceptable means before seeding, if not previously loosened.

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 bushel/acre of annual ryegrass (3.2 lbs/1000 sq. ft.). For the period May 1 - August 14, seed with 3 lbs/acre of weeping lovegrass (.07 lbs/1000 sq. 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.



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

John W. Galt

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.

John W. Galt

HOWARD SCD DATE: 6/17/14

DEPARTMENT OF PUBLIC WORKS, HOWARD COUNTY, MD

CHIEF, BUREAU OF ENVIRONMENTAL SERVICES DATE

DATE

NO. REVISIONS DESCRIPTION

936 RIDGEBROOK ROAD
SPARKS, MARYLAND 21152
TELEPHONE: (410) 316-7800
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STORMWATER AND WATERSHED MANAGEMENT
EVALUATION / DESIGN-BUILD SERVICES

RED CRAVAT COURT
POND DREDGING &
PRINCIPAL SPILLWAY REPLACEMENT

Howard County Contract # CA 08-29
10010 WOODS
STORMWATER MANAGEMENT DIVISION
100 COLUMBIA MARLBOROUGH DRIVE
COLUMBIA, MD 21046

EROSION AND
SEDIMENT
CONTROL NOTES
& DETAILS

SCALE: AS SHOWN

DATE: MAY 2014

KCI JOB NO.: 01-081795.77

CAPITAL PROJECT NO.: CA 08-29

PERMIT ISSUE:

CONSTRUCTION ISSUE:

SHEET NO.: 13 OF 18

KCI FILE: M. 2008 \ 01081795.77 \

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

A. 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 1/2 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.

2. 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: 1 1/2 to 3 pounds per 1000 square feet.

Notes:
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 1 1/2 inches in diameter. The resulting seedbed must be in such condition that future mowing of grasses will pose no difficulty.

e. If soil moisture is deficient, supply new seedlings 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 seedlings are made late in the planting season, in abnormally dry or hot seasons, or on adverse sites.

Permanent Seeding Summary

No.	Species	Application Rate (lb/ac)	Seeding Dates	Seeding Depths	Fertilizer Rate (10-20-20)			Lime Rate
					N	P ₂ O ₅	K ₂ O	
	Annual Ryegrass	40	3/1-5/16/14	1/4-1/2 in	45 pounds per acre (1.0 lb/1000 sf)	90 lb/ac (2 lb/1000 sf)	90 lb/ac (2 lb/1000 sf)	2 tons/ac (90 lb/1000 sf)
	Orchard Grass	72	3/1-5/16/14	1/4-1/2 in				
	Cereal Rye	112	3/1-5/16/14	1/4-1/2 in				

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

1. 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 3/4 inch, plus or minus 1/4 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.

2. 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.
- d. 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.

3. 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 1/4 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 CONTROL BY THE HOWARD SOIL CONSERVATION DISTRICT.

John K. Roberts
HOWARD SCD
DATE: 6/19/14

DEPARTMENT OF PUBLIC WORKS, HOWARD COUNTY, MD

Alfred DeLuca
CHIEF, BUREAU OF ENVIRONMENTAL SERVICES
DATE: 6/9/14

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 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 been 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.

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

NO.	REVISIONS DESCRIPTION	DATE

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STORMWATER AND WATERSHED MANAGEMENT EVALUATION / DESIGN-BUILD SERVICES
RED CRAWAT COURT
POND DREDGING & PRINCIPAL SPILLWAY REPLACEMENT
Howard County Contract # CA 08-29
HOWARD COUNTY DEPARTMENT OF PUBLIC WORKS
STORMWATER MANAGEMENT DIVISION
100 COLUMBIA GREENWAY DRIVE
COLUMBIA, MD 21046

EROSION AND SEDIMENT CONTROL NOTES

SCALE: N/A
DATE: MAY 2014
KCI JOB NO.: 01-081795.77
CAPITAL PROJECT NO.: CA 08-29
PERMIT ISSUE:
CONSTRUCTION ISSUE:

SHEET NO.: 14 OF 18

B-4-1 STANDARDS AND SPECIFICATIONS

FOR

INCREMENTAL STABILIZATION

Definition

Establishment of vegetative cover on cut and fill slopes.

Purpose

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.

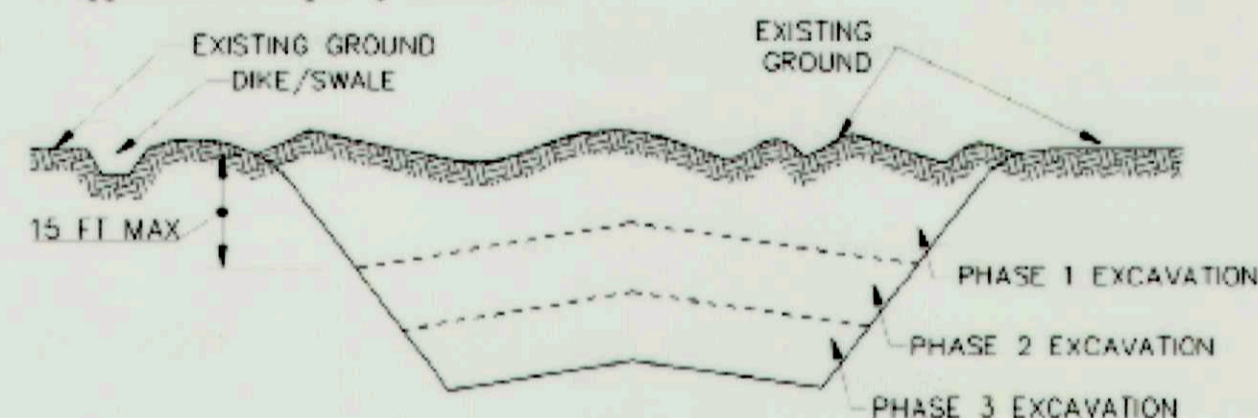


Figure B.1: Incremental Stabilization - Cut

B.10

B. 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):
 - a. 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 this area.
 - 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.
 - d. Place Phase 2 fill, prepare seedbed, and stabilize.
 - e. Place final phase fill, prepare seedbed, and stabilize. Overseed previously seeded areas as necessary.

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.

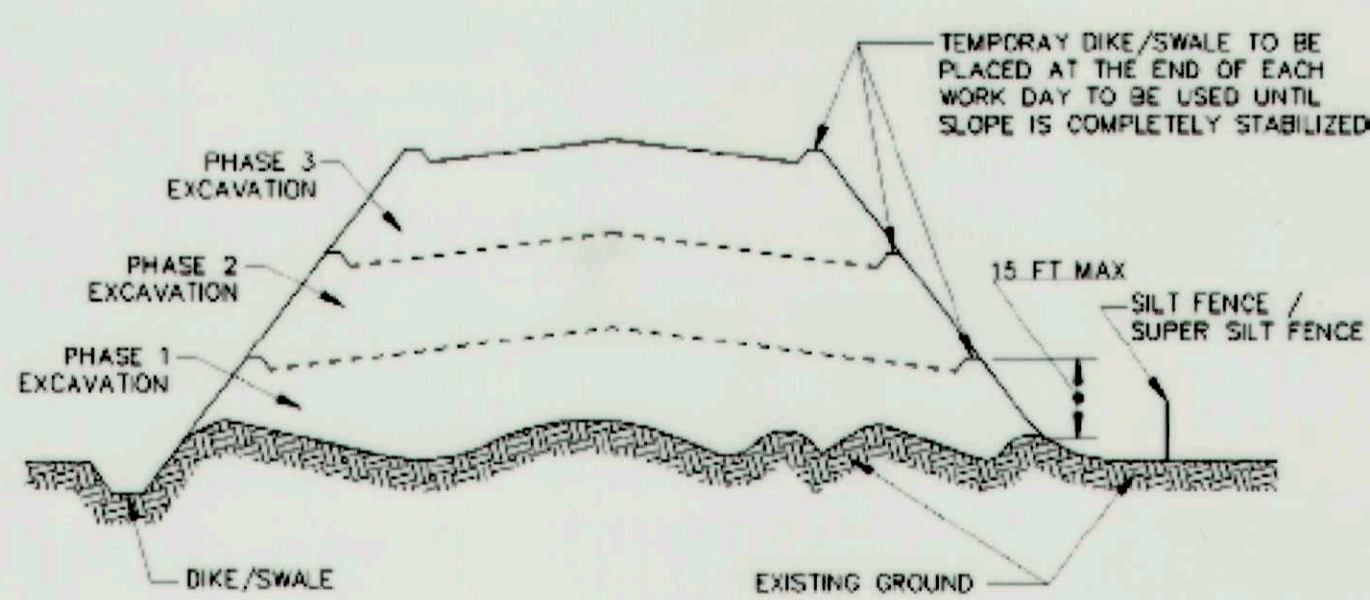


Figure B.2: Incremental Stabilization - Fill

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.

Purpose

To provide a suitable soil medium for vegetative growth.

Conditions Where Practice Applies

Where vegetative stabilization is to be established.

Criteria

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.
 - b. 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 means.
2. 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:
 - i. 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.

B. Topsoiling

1. 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.
3. Topsoiling is limited to areas having 2:1 or flatter slopes where:
 - a. 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.
 - c. The original soil to be vegetated contains material toxic to plant growth.
 - d. 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.
5. Topsoil Specifications: Soil to be used as topsoil must meet the following criteria:
 - 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 1 1/2 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.
 - c. 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

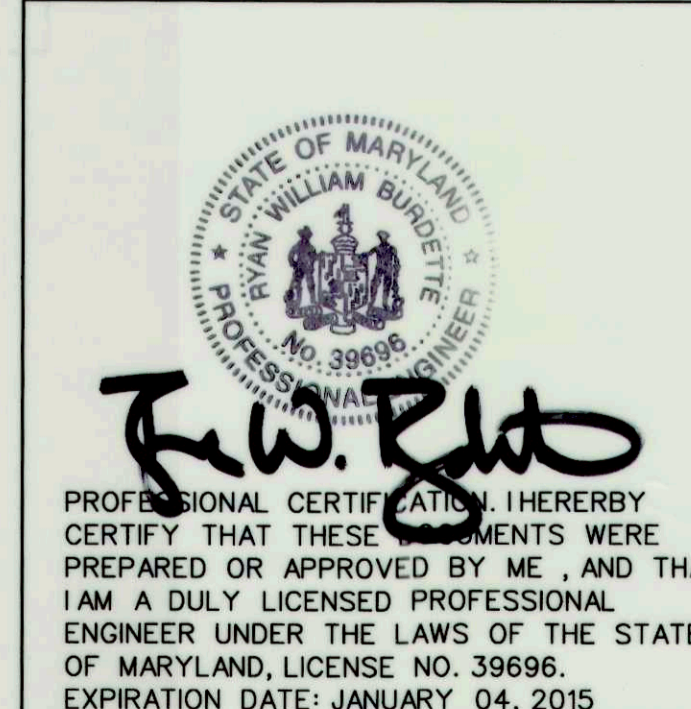
and seedbed preparation.

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

No.	Species	Application Rate (lb/ac)	Seeding Dates	Seeding Depths	Fertilizer Rate (10-20-20)			Lime Rate
					N	P ₂ O ₅	K ₂ O	
Mix #3	Deer tongue	20	Mar 1-June 15	1/4-1/2 in				
	Canada Wild Rye	3						
	Redtop	1						
	Common Lespedeza	10						
Mix #10	Orchard Grass	25	Mar 1-May 15 Aug 1-Oct 15	1/4-1/2 in	45 pounds per acre (1.0 lb/1000 sf)	90 lb/ac (2 lb/1000 sf)	90 lb/ac (2 lb/1000 sf)	2 tons/ac (90 lb/1000 sf)
	Creeping Red Fescue	10						
	Redtop	1						
	Alsike Clover	3						
	White Clover	3						
Mix #12	Foxtail	2	May 16-July 31	1/4-1/2 in				
	Foxtail	4						
	Creeping Red Fescue	25						
	Hard Fescue	25						
	Sheep Fescue	25						
	White Clover	3						
Red Clover	3							



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.
 John R. Roberts
 HOWARD SCD
 DATE: 6/19/14
 DEPARTMENT OF PUBLIC WORKS, HOWARD COUNTY, MD
 Chief, Bureau of Environmental Services
 DATE: 6/9/14

NO.	REVISIONS DESCRIPTION	DATE

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STORMWATER AND WATERSHED MANAGEMENT
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 Howard County Contract # CA 08-29
 HOWARD COUNTY DEPARTMENT OF PUBLIC WORKS
 STORMWATER MANAGEMENT DIVISION
 ESTABLISHED 1987
 COLUMBIA, MD 21046

EROSION AND SEDIMENT CONTROL NOTES

SCALE: N/A
 DATE: MAY 2014
 KCI JOB NO.: 01-081795.77
 CAPITAL PROJECT NO.: CA 08-29
 PERMIT ISSUE:
 CONSTRUCTION ISSUE:

SHEET NO.: 15 OF 18

BY: Ryan Burdette, Division P053, Water Res GWA, Eng
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