

INDEX OF SHEETS

SHEET NO.	DESCRIPTION
1	TITLE SHEET
2	STORMWATER MANAGEMENT GRADING PLAN
3	STORMWATER MANAGEMENT GEOMETRY SHEET
4	STORMWATER MANAGEMENT PROFILES
5	STORMWATER MANAGEMENT PROFILES
6	STORMWATER MANAGEMENT DETAILS
7	STORMWATER MANAGEMENT DETAILS AND NOTES
8	EROSION & SEDIMENT CONTROL PLAN - PHASE 1
9	EROSION & SEDIMENT CONTROL PLAN - PHASE 2
10	EROSION & SEDIMENT CONTROL DETAILS
11	EROSION & SEDIMENT CONTROL DETAILS
12	EROSION & SEDIMENT CONTROL NOTES
13	EROSION & SEDIMENT CONTROL NOTES
14	EROSION & SEDIMENT CONTROL NOTES
15	EROSION & SEDIMENT CONTROL SEQUENCE

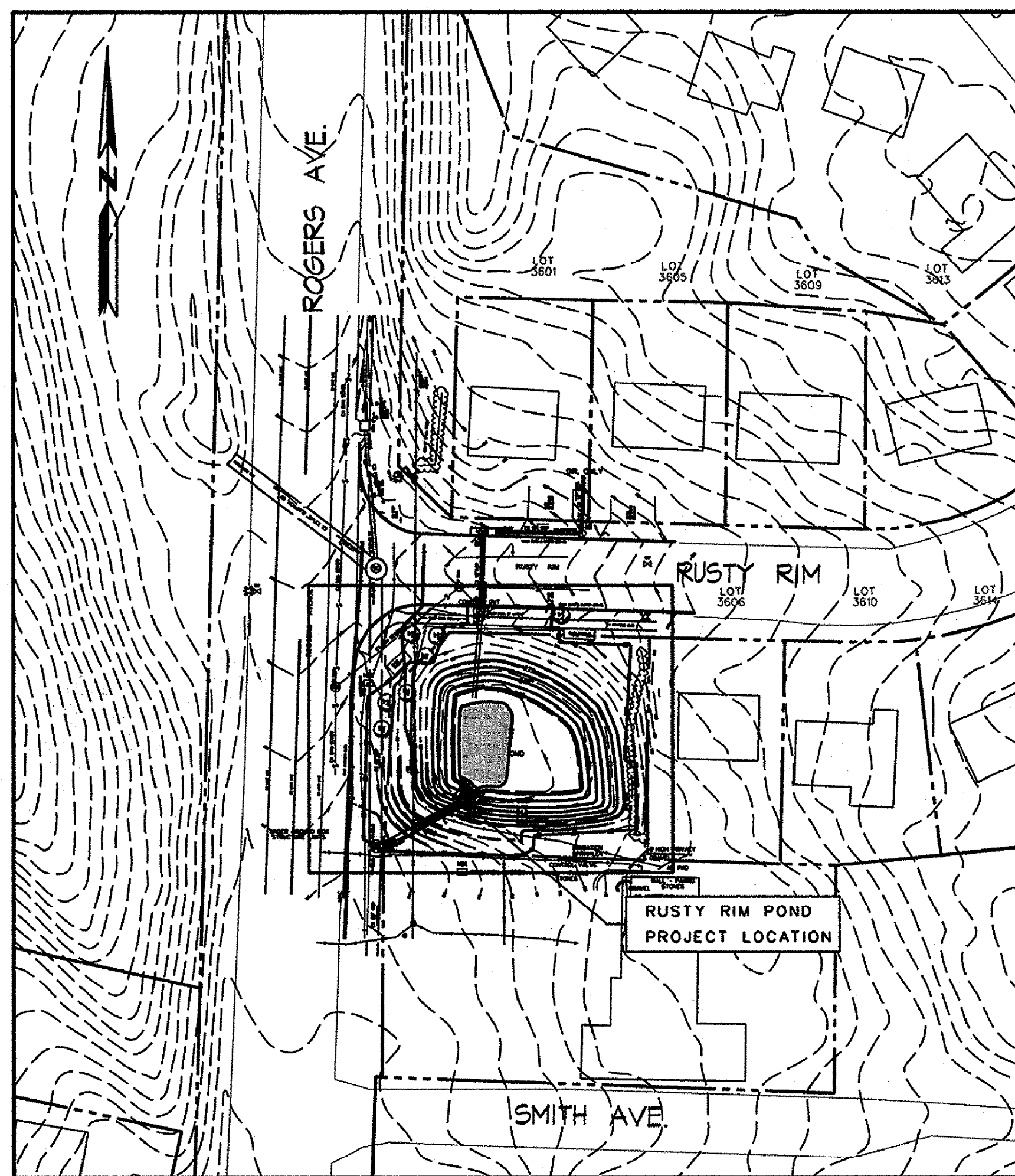
LEGEND

LIMIT OF DISTURBANCE/ORANGE SAFETY FENCE	---	L00
EXISTING MAJOR CONTOURS	---	380
EXISTING MINOR CONTOURS	---	
PROPOSED CONTOURS	---	387
EXISTING 100 YEAR FLOODPLAIN	---	FP
EXISTING TREE	○	
EXISTING TREE TO BE REMOVED	⊗	
EXISTING TREE TO BE SAVED	⊙	
EDGE OF TREELINE	---	
WATERS OF THE US	---	WUS
EDGE OF WETLAND	---	
PROPERTY LINE	---	
EXISTING STORM DRAIN	---	
EXISTING SEWER MANHOLE	⊙	
EXISTING STORM DRAIN MANHOLE	⊙	
EXISTING SEWER LINE	---	S
EXISTING WATER LINE	---	W
EXISTING ELECTRIC LINE	---	E
EXISTING TELEPHONE LINE	---	T
EXISTING CABLE TV LINE	---	TV
EXISTING GAS LINE	---	G
EXISTING EDGE OF PAVEMENT	---	
EX. OVERHEAD UTILITY LINE	---	DHW
EXISTING BUILDING	---	
SOIL TYPE BOUNDARY AND MAP UNIT SYMBOLS	---	CbC7p
PROPOSED RIPRAP	---	
PROPOSED STORM DRAIN	---	
SOIL BORING LOCATION	---	B-1
SANDBAG DAM/BARRIER	---	
SILT FENCE	---	SF
SUPER SILT FENCE	---	SSF
STABILIZED CONSTRUCTION ENTRANCE	---	
PUMP AND HOSES	---	
REMOVABLE PUMPING STATION	---	RPS
FILTER BAG	---	FB
EROSION CONTROL MATTING	---	

RUSTY RIM POND ENHANCEMENTS

HOWARD COUNTY, MARYLAND

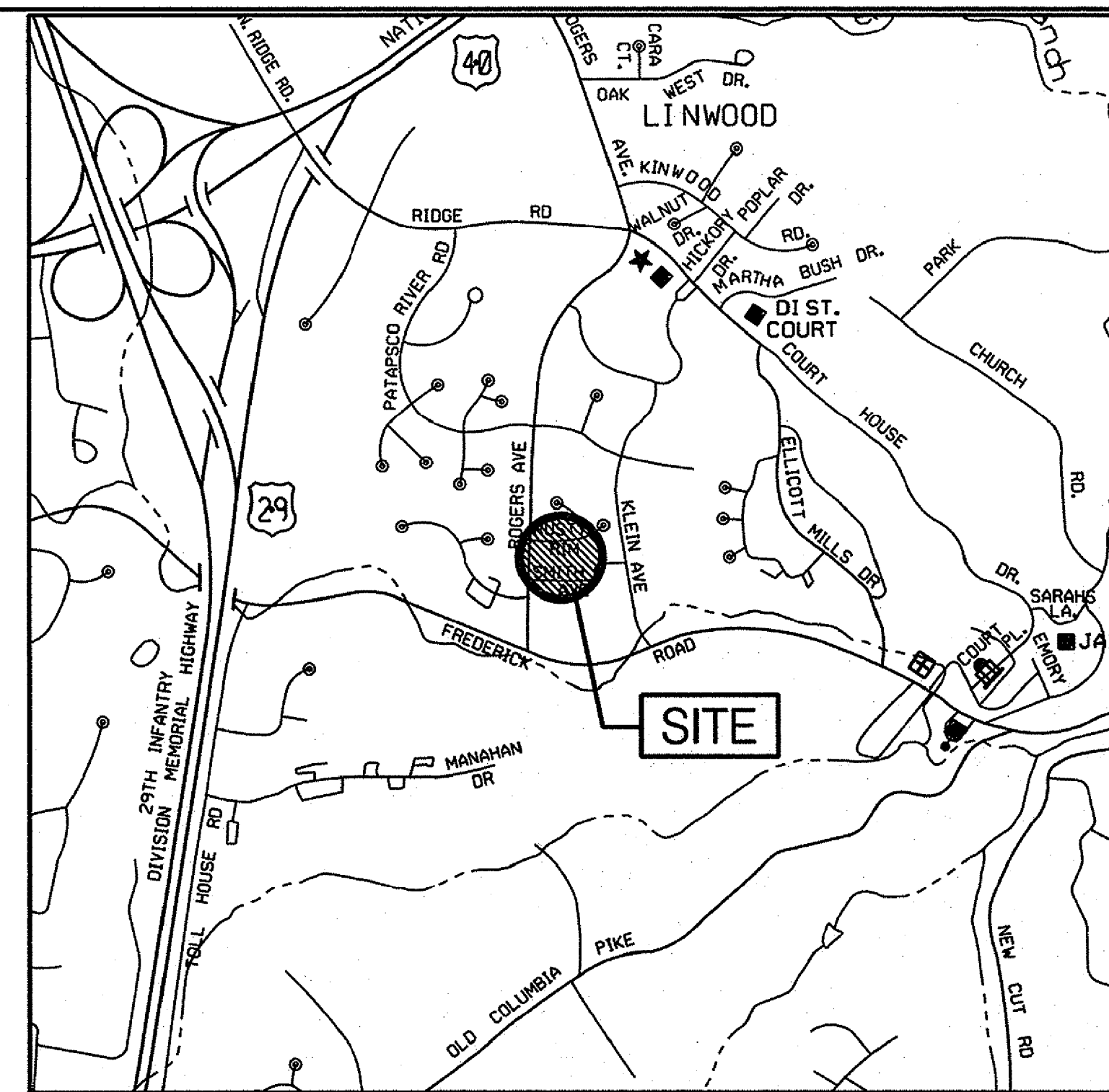
DEPARTMENT OF PUBLIC WORKS
CAPITAL PROJECT CA 23-2013



SITE SCHEMATIC
SCALE: 1" = 50'

SPECIAL CONTRACTOR NOTES

- WARNING: SITE INVESTIGATIONS REVEAL A MULTITUDE OF EXISTING UNDERGROUND UTILITIES THAT ARE IN DIRECT CONFLICT WITH PROJECT IMPACTS. SEE CONTRACTORS GENERAL NOTES IN SEQUENCE OF CONSTRUCTION (SHEET 15 OF 15) REGARDING PRESENCE OF EXISTING SUBSURFACE UTILITIES LOCATED WITHIN THE WORK AREA.
- PROJECT SITE IS NOT LOCATED WITHIN THE 100-YEAR FLOODPLAIN.
- 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.
- TREE STUMPS LESS THAN EIGHT INCHES IN DIAMETER MAY BE LEFT IN PLACE IF CUT FLUSH WITH THE GROUND AND TREATED REGULARLY WITH A SILVICIDE. FOR STUMPS GREATER THAN EIGHT INCHES IN DIAMETER, ALL WOODY MATERIAL SHOULD BE REMOVED TO 24 INCHES BELOW THE GROUND SURFACE. THE CAVITY SHOULD BE FILLED WITH WELL COMPACTED SOIL AND GRASS VEGETATION ESTABLISHED.
- THE CONTRACTOR SHALL USE EXTREME CAUTION WHEN OPERATING MACHINERY WITHIN CLOSE PROXIMITY TO EXISTING POWER LINES.



VICINITY MAP
SCALE: 1" = 1000'

GENERAL INFORMATION

- EXISTING FACILITY WAS CONSTRUCTED UNDER ELLICOTT HILLS, 2ND ELECTION DISTRICT, HOWARD COUNTY, MARYLAND STORMWATER MANAGEMENT AS-BUILT PLAN F-80-86, DATED NOVEMBER 1982, AS ACCEPTED BY HOWARD COUNTY SOIL CONSERVATION DISTRICT.
- 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.
- WATER IS PUBLIC.
- SEWER IS PUBLIC.
- EXISTING UTILITIES ARE BASED ON FIELD SURVEYS AND AVAILABLE RECORD DRAWINGS. CONTRACTOR TO VERIFY INFORMATION TO HIS/HER OWN SATISFACTION.
- KCI PERFORMED A SITE VISIT ON OCTOBER 28, 2014 TO VERIFY THE PRESENCE OR ABSENCE OF WETLANDS AND "WATERS OF THE U.S." AT THE SITE. NO WETLANDS OR "WATERS OF THE U.S." WERE IDENTIFIED WITHIN THE PROJECT LIMITS.
- THE EXISTING TOPOGRAPHY IS TAKEN FROM FIELD RUN SURVEY WITH ONE FOOT CONTOUR INTERVALS PROVIDED BY CWP IN AUGUST 2014. ADDITIONAL SURVEY OF THE POND EMBANKMENT AND PRINCIPAL SPILLWAY WAS PREPARED BY AB CONSULTANTS, INC., IN SEPTEMBER 2011.
- 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 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.
- 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 SOIL CONSERVATION DISTRICT WITH "AS-BUILT" PLANS OF THE POND WITHIN 30 DAYS OF COMPLETION"

Ryan W. Burdette
SIGNATURE OF ENGINEER (PRINT NAME BELOW SIGNATURE)
RYAN W. BURDETTE, PE

P.E. # 39696

Dec 16, 2015
DATE

DEVELOPER'S CERTIFICATE
"I/WE CERTIFY THAT ALL DEVELOPMENT AND CONSTRUCTION WILL BE DONE ACCORDING TO THIS PLAN FOR SEDIMENT AND EROSION CONTROL, AND THAT ALL RESPONSIBLE PERSONNEL INVOLVED IN 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
SIGNATURE OF DEVELOPER (PRINT NAME BELOW SIGNATURE)
Mark S. Richmond

12/18/15
DATE

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.

Ryan W. Burdette
SIGNATURE

39696 PE NO.

8/10/2016 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 R. Klotter (EP-15-026)
SIGNATURE

1/19/16 DATE

HOWARD SCD

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, 2017

Ryan W. Burdette
SIGNATURE

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

SITE ANALYSIS DATA CHART

- TOTAL PROJECT AREA: 0.28 ACRES.
- DISTURBED AREA: 0.25 ACRES.
- PROPOSED USE FOR THE SITE: REPLACE FACILITY PRINCIPAL SPILLWAY AND BIORETENTION CELL RETROFIT
- APPLICABLE DPZ FILE REFERENCES: F-80-86: AS-BUILT PLANS DATED NOV. 1982

NO.	REVISIONS DESCRIPTION	DATE
1	AS-BUILT	AUG. 2016

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

RUSTY RIM
POND ENHANCEMENTS

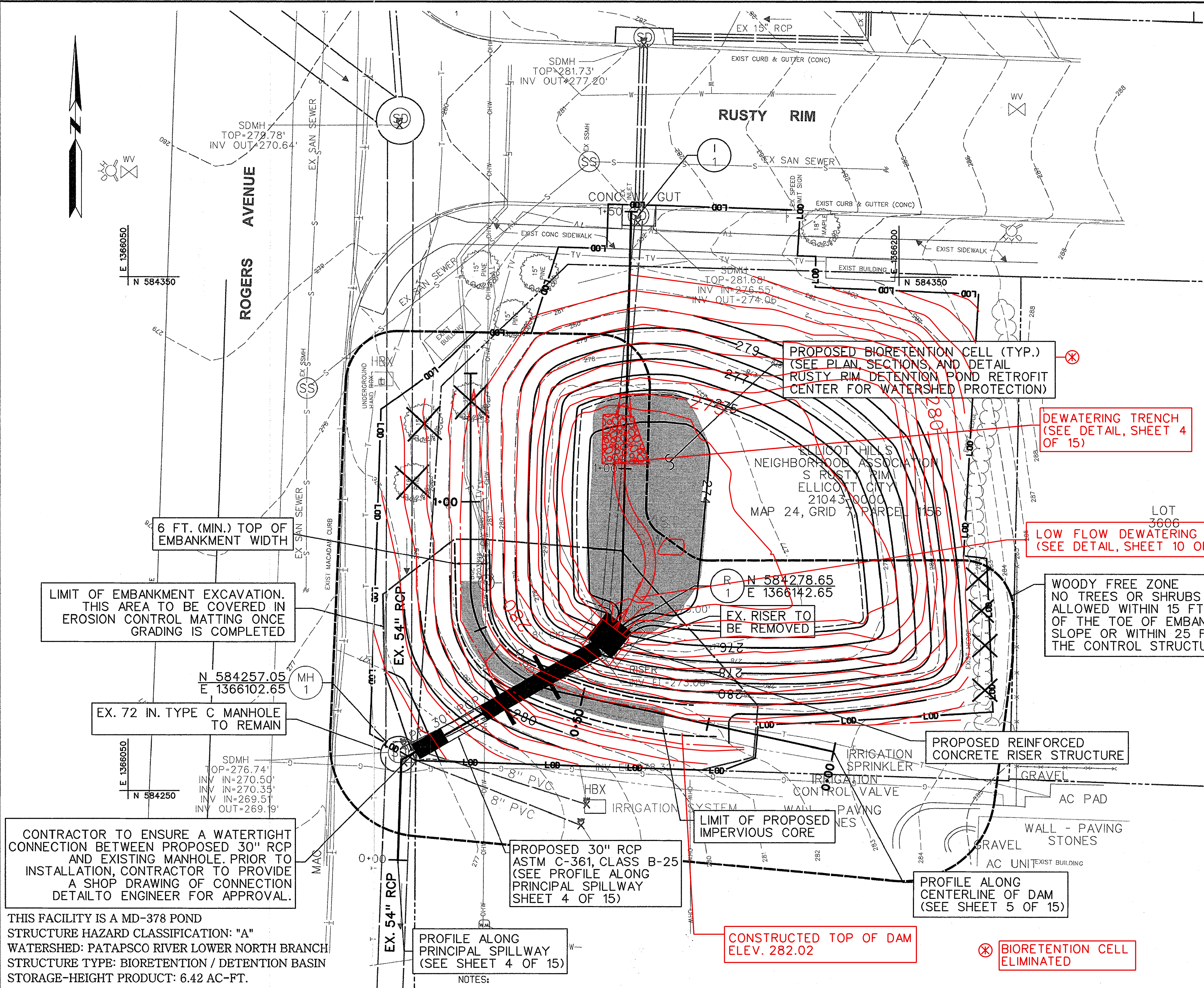
Howard County Contract # CA 23-2013
HOWARD COUNTY, MARYLAND
EXAMINER: MANUELO J. PARRA
PRO COLUMBIA GATEWAY DRIVE
COLUMBIA, MD 21046

TITLE SHEET

SCALE:	AS SHOWN
DATE:	DECEMBER 2015
KCI JOB NO.:	17133314.40
CAPITAL PROJECT NO.:	CA 13-2013
PERMIT ISSUE:	
CONSTRUCTION ISSUE:	

SHEET NO.: 1 OF 15

B:\Ryan_Burdette_Division\2013\Water_Reg\CA_23-2013\Drawings\VD_LTD_Rusty_Rim.dgn
FILE: M:\2015\17133314_40\Drawings\VD_LTD_Rusty_Rim.dgn



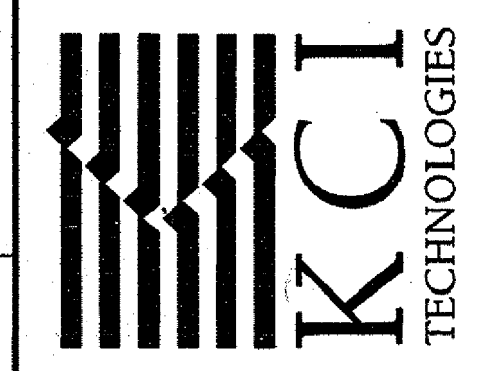
HYDRAULICS SUMMARY TABLE					
STORM FREQUENCY	INFLOW (C.F.S.)	OUTFLOW (C.F.S.)	STORAGE (AC/FT.)	D.H.W. ELEV. (FT.)	D.H.W. ELEV. CLOGGED (FT.)
1-YR.	10.4 ✓	5.1 4.4	0.218 0.244	277.89 277.40	277.68
2-YR.	13.7 ✓	7.7 6.9	0.273 0.300	278.40 277.98	278.28
10-YR.	24.6 ✓	22.5 21.4	0.343 0.417	279.08 ✓	279.10
25-YR.	32.5 ✓	30.6 ✓	0.369 0.448	279.31 ✓	279.32
100-YR.	46.7 ✓	46.8 ✓	0.373 0.451	279.34 ✓	279.53

SITE HYDROLOGY ①		
DRAINAGE AREA (AC.)	T.C. (HRS.)	RCN
4.86	0.10	87

① - NO DEVELOPMENT WITHIN THE WATERSHED IS INCLUDED FOR THIS PROJECT. UNDER PROPOSED CONDITIONS, WATER QUALITY TREATMENT IS ENHANCED VIA INCORPORATION OF A BIORETENTION CELL. WATER QUANTITY MANAGEMENT RESEMBLES EXISTING CONDITIONS.

NO.	REVISIONS DESCRIPTION	DATE
AS-BUILT		AUG. 2016

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

RUSTY RIM
 POND ENHANCEMENTS
 Howard County Contract # CA 23-2016
 HOWARD COUNTY DEPARTMENT OF PUBLIC WORKS
 ENVIRONMENTAL SERVICES DIVISION
 100 COLUMBIA GREENWAY DRIVE
 COLUMBIA, MD 21046

STORMWATER
 MANAGEMENT
 GRADING
 PLAN

SCALE: 1" = 10'
 DATE: DECEMBER 2015
 KCI JOB NO.: 17133314.40
 CAPITAL PROJECT NO.: CA 13-2013
 PERMIT ISSUE:
 CONSTRUCTION ISSUE:

6 FT. (MIN.) TOP OF EMBANKMENT WIDTH

LIMIT OF EMBANKMENT EXCAVATION. THIS AREA TO BE COVERED IN EROSION CONTROL MATTING ONCE GRADING IS COMPLETED

EX. 72 IN. TYPE C MANHOLE TO REMAIN

CONTRACTOR TO ENSURE A WATERTIGHT CONNECTION BETWEEN PROPOSED 30" RCP AND EXISTING MANHOLE. PRIOR TO INSTALLATION, CONTRACTOR TO PROVIDE A SHOP DRAWING OF CONNECTION DETAIL TO ENGINEER FOR APPROVAL.

THIS FACILITY IS A MD-378 POND
 STRUCTURE HAZARD CLASSIFICATION: "A"
 WATERSHED: PATAPSCO RIVER LOWER NORTH BRANCH
 STRUCTURE TYPE: BIORETENTION / DETENTION BASIN
 STORAGE-HEIGHT PRODUCT: 6.42 AC-FT.
 WATERSHED AREA TO FACILITY: 4.86 ACRES
 RUNOFF CURVE NUMBER TO FACILITY: 87
 HEIGHT TO EMERGENCY SPILLWAY CREST: N/A
 MAXIMUM HEIGHT OF FILL: 14.5 FT.
 PERMANENT POOL SURFACE AREA: N/A
 PRINCIPAL SPILLWAY CAPACITY (100-YEAR): 46.8 CFS
 EMERGENCY SPILLWAY CAPACITY: N/A
 LEVEL OF MANAGEMENT: VARIES
 FREEBOARD: 2.00 FT. REQUIRED; 2.00 FT. PROVIDED ✓
 WATER QUALITY PROVIDED: ~~SEE RUSTY RIM DETENTION POND RETROFIT PLANS, CENTER FOR WATERSHED PROTECTION (UNDER SEPARATE COVER) N/A~~
 MAINTENANCE RESPONSIBILITY: PUBLIC

PROFILE ALONG PRINCIPAL SPILLWAY (SEE SHEET 4 OF 15)

PROPOSED 30" RCP ASTM C-361, CLASS B-25 (SEE PROFILE ALONG PRINCIPAL SPILLWAY SHEET 4 OF 15)

LIMIT OF PROPOSED IMPERVIOUS CORE

CONSTRUCTED TOP OF DAM ELEV. 282.02

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.

DEWATERING TRENCH (SEE DETAIL, SHEET 4 OF 15)

LOW FLOW DEWATERING DEVICE (SEE DETAIL, SHEET 10 OF 15)

PROPOSED BIORETENTION CELL (TYP.) (SEE PLAN, SECTIONS, AND DETAIL RUSTY RIM DETENTION POND RETROFIT CENTER FOR WATERSHED PROTECTION)

BIORETENTION CELL ELIMINATED

PROFILE ALONG CENTERLINE OF DAM (SEE SHEET 5 OF 15)

- NOTES:
- WARNING: SITE INVESTIGATIONS REVEAL A MULTITUDE OF EXISTING UNDERGROUND UTILITIES THAT ARE IN DIRECT CONFLICT WITH PROJECT IMPACTS. SEE CONTRACTORS GENERAL NOTES IN SEQUENCE OF CONSTRUCTION (SHEET 15 OF 15) REGARDING PRESENCE OF EXISTING SUBSURFACE UTILITIES LOCATED WITHIN THE WORK AREA.
 - EXTREME CAUTION MUST BE USED WHEN WORKING NEAR OVERHEAD LINES.
 - CARE MUST BE TAKEN TO NOT DISTURB THE EXISTING IRRIGATION SYSTEM. ANY DAMAGE TO EXISTING FEATURES MUST BE REPAIRED AT THE EXPENSE OF THE CONTRACTOR.
 - CONTRACTORS WORK AREA IS RESTRICTED TO HOWARD COUNTY PROPERTY AND UTILITY EASEMENT.
 - ALL CONSTRUCTION AREAS SHALL BE DEMARCATED BY PLACING ORANGE CONSTRUCTION FENCING AT THE LOD BOUNDARY LINE.
 - NO WETLANDS OR "WATERS OF THE U.S." WERE IDENTIFIED WITHIN THE PROJECT LIMITS.
 - PROJECT SITE IS NOT LOCATED WITHIN THE 100-YEAR FLOODPLAIN.

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

1/19/16
 DATE

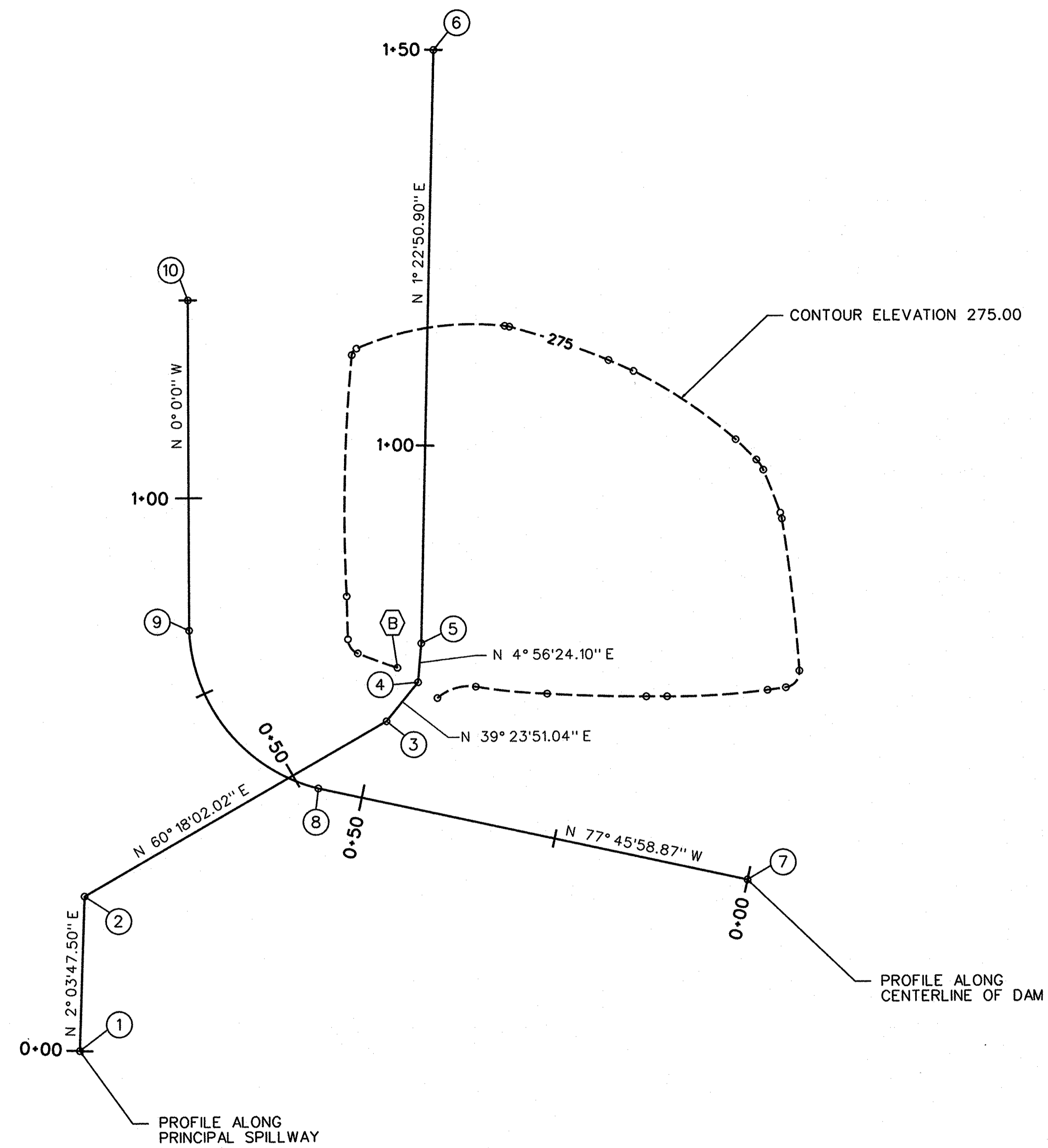
DEPARTMENT OF PUBLIC WORKS, HOWARD COUNTY, MD

Mark DeLuca
 CHIEF, BUREAU OF ENVIRONMENTAL SERVICES

12/18/15
 DATE

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, 2017

BY: Division: E:\LE_M\2015\17133314_40\Drawings\02_PSW-RFP-Rusty_Rim.dgn



BASELINE CONTROL COORDINATES PRINCIPAL SPILLWAY BASELINE			
PT. NO.	STATION	NORTHING	EASTING
1	0+00.00	584236.49	1366102.48
2	0+19.52	584255.99	1366103.18
3	0+63.71	584277.88	1366141.56
4	0+70.05	584282.78	1366145.59
5	0+75.00	584287.71	1366146.01
6	1+50.00	584362.69	1366147.82

BASELINE CONTROL COORDINATES CENTERLINE OF DAM BASELINE			
PT. NO.	STATION	NORTHING	EASTING
7	0+00.00	584257.66	1366187.23
8	0+55.62	584269.44	1366132.87
9	0+83.28	584289.46	1366116.60
10	1+25.00	584331.18	1366116.60

CONTOUR STAKEOUT INFORMATION			
LOCATION	STATION	NORTHING	EASTING
CONTOUR ELEVATION 275.00	0+00.00	584284.62	1366142.99
	0+05.36	584286.47	1366137.96
	0+07.65	584288.26	1366136.72
	0+13.09	584293.69	1366136.59
	0+43.59	584324.16	1366137.35
	0+44.65	584324.98	1366137.95
	0+63.90	584327.80	1366156.76
	0+64.49	584327.70	1366157.365
	0+77.78	584323.42	1366169.92
	0+81.24	584322.02	1366173.09
	0+96.84	584313.34	1366186.01
	1+00.52	584310.76	1366188.62
	1+02.08	584309.47	1366189.49
	1+07.93	584304.04	1366191.63
	1+08.69	584303.30	1366191.82
	1+28.09	584284.02	1366193.95
	1+31.09	584281.92	1366192.23
1+33.43	584281.61	1366189.90	
1+46.19	584280.85	1366177.18	
1+48.84	584280.87	1366174.53	
1+61.43	584281.26	1366161.95	
1+70.52	584282.18	1366152.91	
1+75.75	584280.77	1366148.04	

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

- LEGEND**
- BEGINNING OF CONTOUR STAKEOUT POINTS
 - BASELINE CONTROL POINT
 - BASELINE
 - CONTOUR LINE

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: 1/19/16

DEPARTMENT OF PUBLIC WORKS, HOWARD COUNTY, MD

Mark D. Luca
 CHIEF, BUREAU OF ENVIRONMENTAL SERVICES
 DATE: 12/15/15

STATE OF MARYLAND
 PROFESSIONAL ENGINEER
Paul 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. 39696. EXPIRATION DATE: JANUARY 04, 2017

NO.	REVISIONS DESCRIPTION	DATE

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

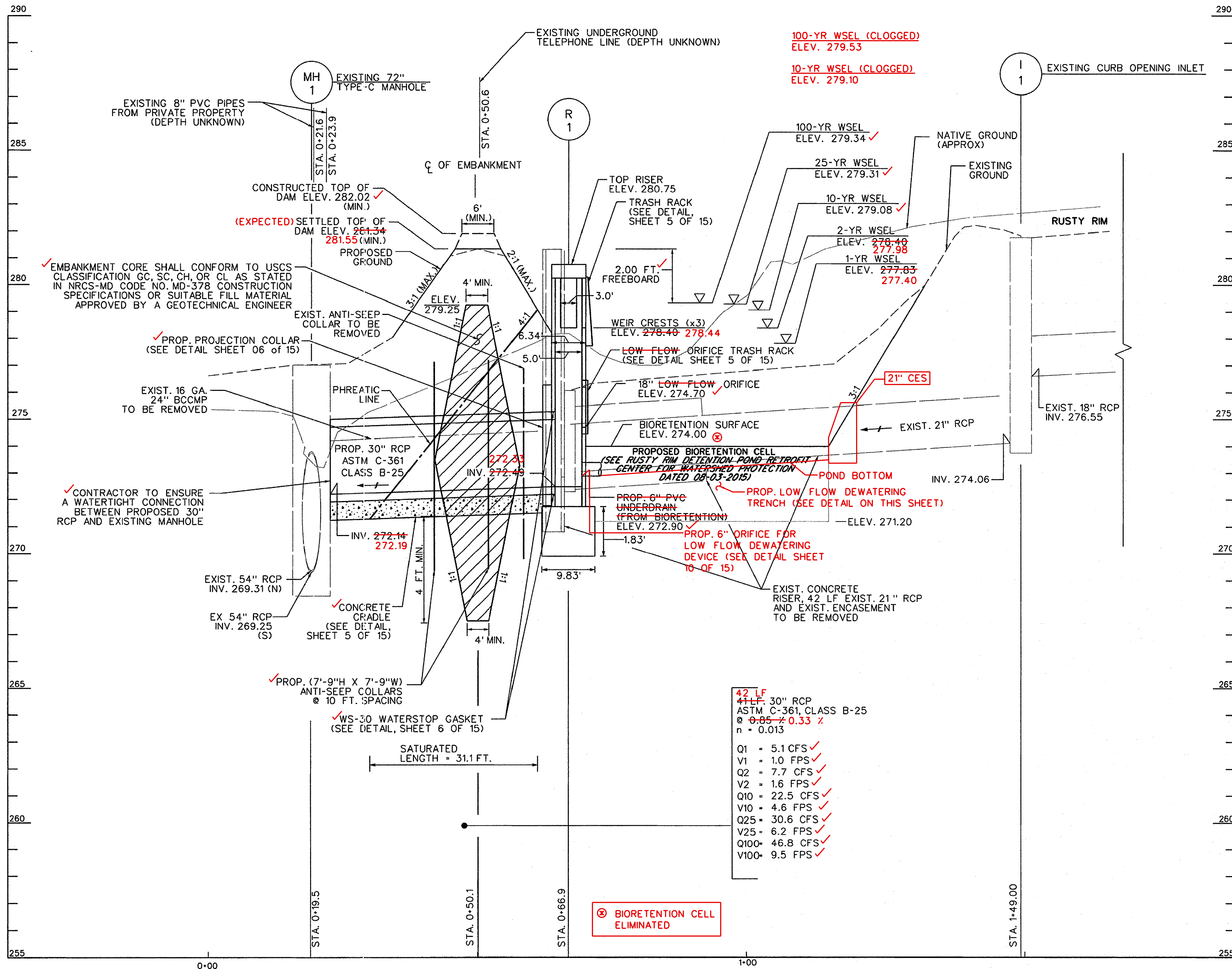
RUSTY RIM
 POND ENHANCEMENTS

Howard County Contract # CA 13-2013
 HOWARD COUNTY DEPARTMENT OF PUBLIC WORKS
 601 COLLIER GREENWAY DRIVE
 COLUMBIA, MD 21046

STORMWATER
 MANAGEMENT
 GEOMETRY
 SHEET

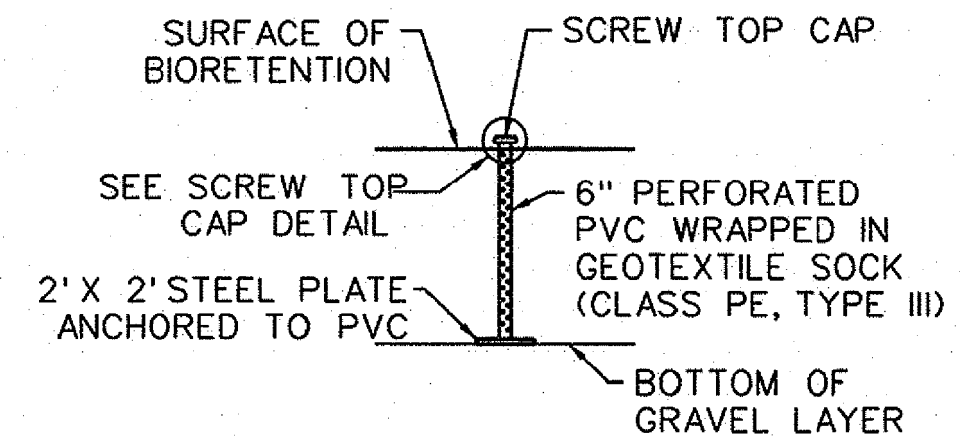
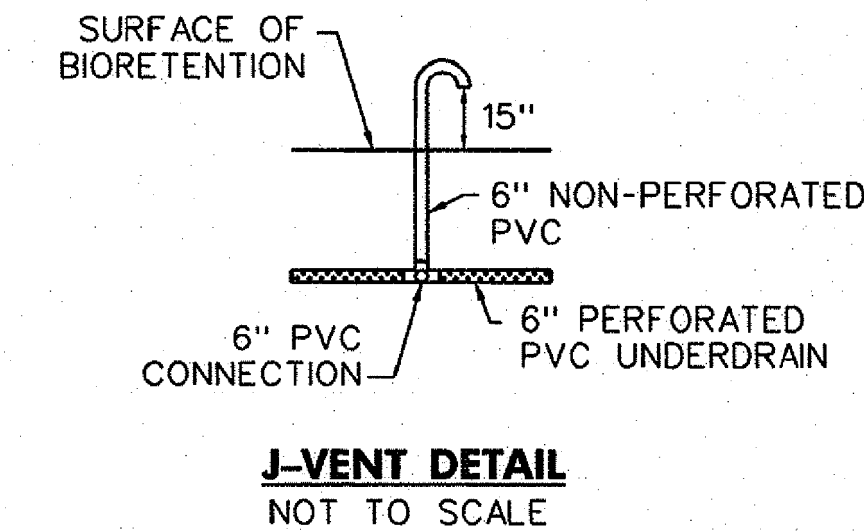
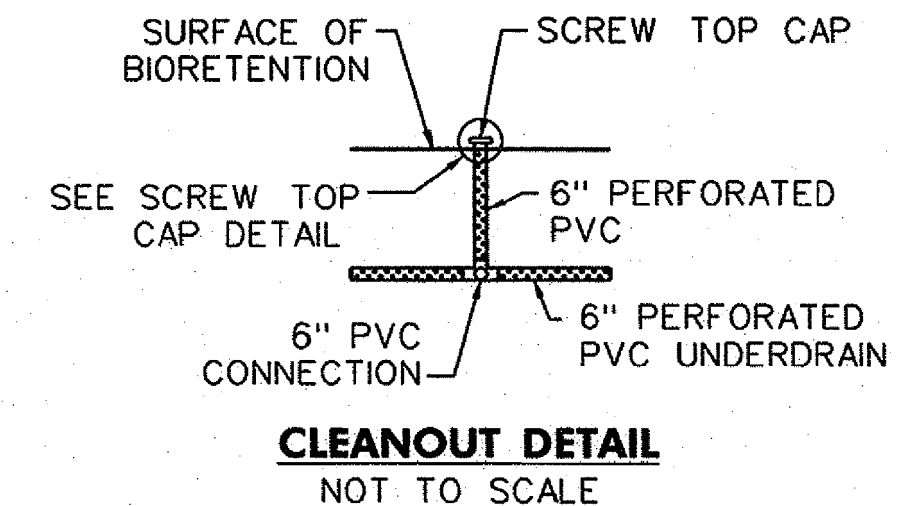
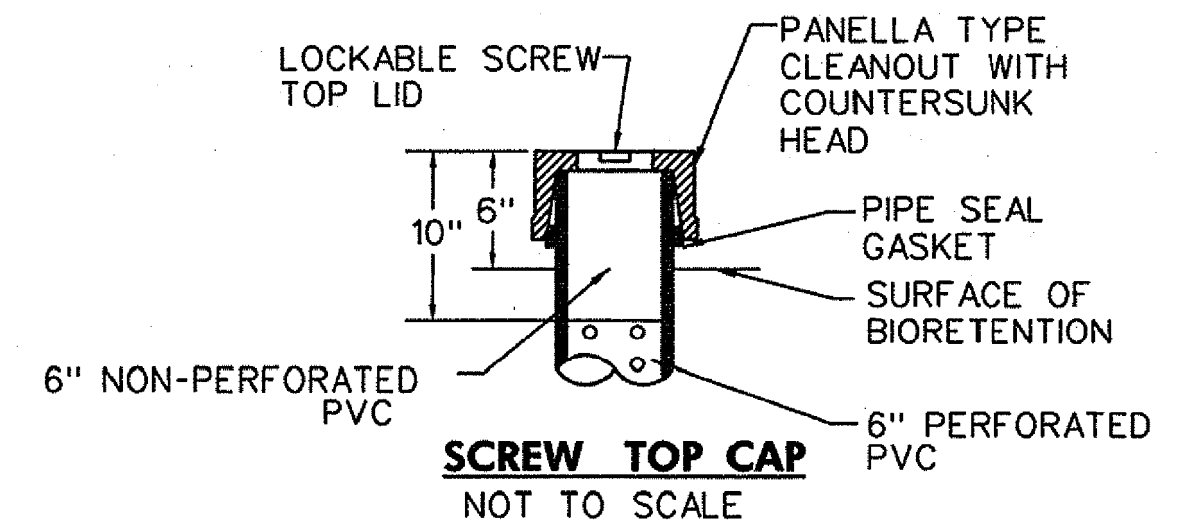
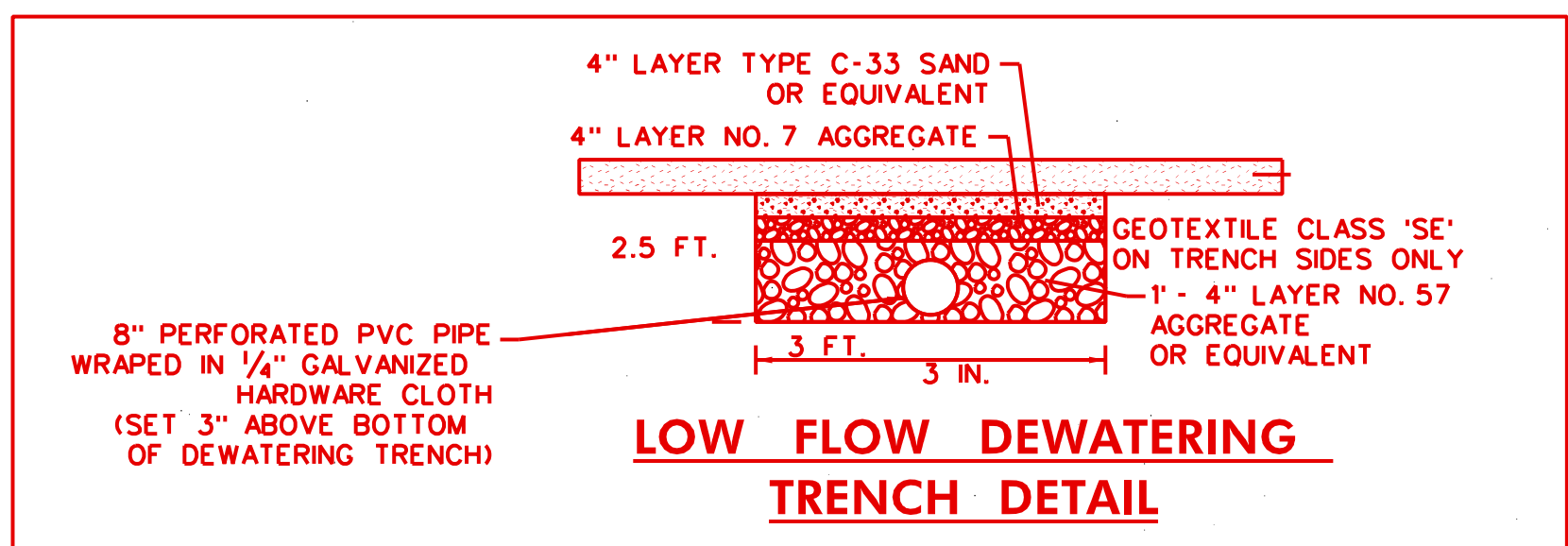
SCALE:	1" = 10'
DATE:	DECEMBER 2015
KCI JOB NO.:	17133314.40
CAPITAL PROJECT NO.:	CA 13-2013
PERMIT ISSUE:	
CONSTRUCTION ISSUE:	

PLOT: 02-13-2015 17:13:33.14.dwg
 FILE: M:\2013\17133314_40\Drawings\02_PSW-P003-Rusty_Rim.dgn



PROFILE ALONG PRINCIPAL SPILLWAY

SCALE: HOR. 1" = 10'
VERT. 1" = 2'



- NOTES:**
- FOR OBSERVATION WELL/CLEANOUT, PROVIDE A TUBE MADE OF NON-CORROSIVE MATERIAL, AT LEAST THREE FEET LONG WITH AN INSIDE DIAMETER OF AT LEAST 6 INCHES.
 - THE TUBE SHALL HAVE A FACTORY ATTACHED CAST IRON OR HIGH IMPACT PLASTIC COLLAR WITH RIBS TO PREVENT ROTATION WHEN REMOVING SCREW TOP LID. THE SCREW TOP LID SHALL BE CAST IRON OR HIGH IMPACT PLASTIC THAT WILL WITHSTAND ULTRA-VIOLET RAYS.

TYPICAL ITEMS FOR BIORETENTION CELL (SEE CWP PLANS "RUSTY RIM DETENTION POND RETROFIT" DATED AUGUST 3, 2015)

- NOTES:**
- WARNING: SITE INVESTIGATIONS REVEAL A MULTITUDE OF EXISTING UNDERGROUND UTILITIES THAT ARE IN DIRECT CONFLICT WITH PROJECT IMPACTS. SEE CONTRACTORS GENERAL NOTES IN SEQUENCE OF CONSTRUCTION (SHEET 15 OF 15) REGARDING PRESENCE OF EXISTING SUBSURFACE UTILITIES LOCATED WITHIN THE WORK AREA.
 - PRIOR TO CONNECTION OF PROPOSED 30" RCP TO EXISTING MANHOLE, CONTRACTOR TO PROVIDE A SHOP DRAWING OF CONNECTION DETAIL TO ENGINEER FOR APPROVAL.

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

DEPARTMENT OF PUBLIC WORKS, HOWARD COUNTY, MD

Michael D. Lee
CHIEF, BUREAU OF ENVIRONMENTAL SERVICES

1/19/16
DATE

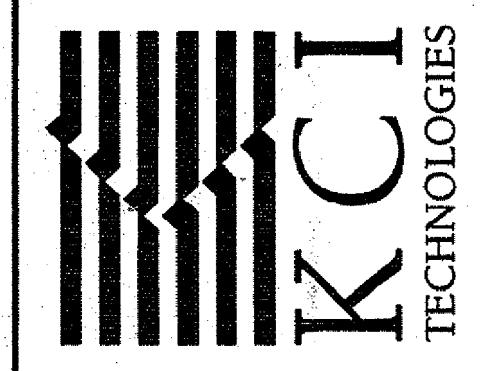
12/18/15
DATE



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, 2017

NO.	REVISIONS DESCRIPTION	DATE
1	AS-BUILT	AUG. 2016

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



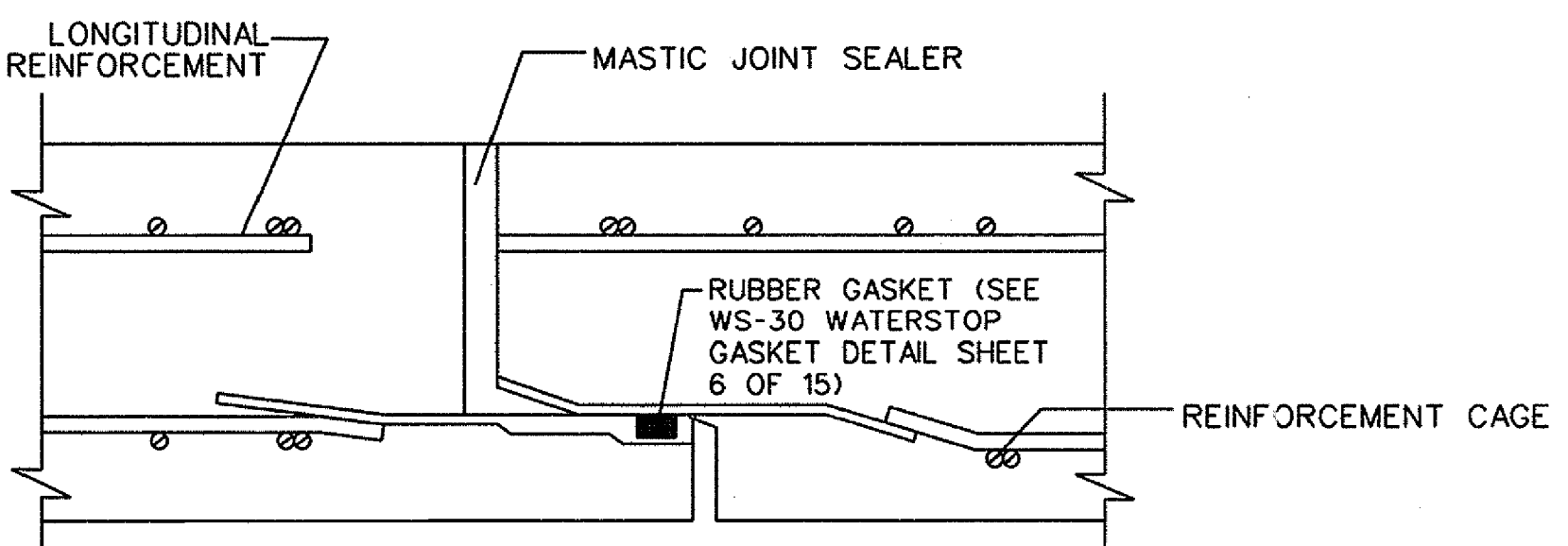
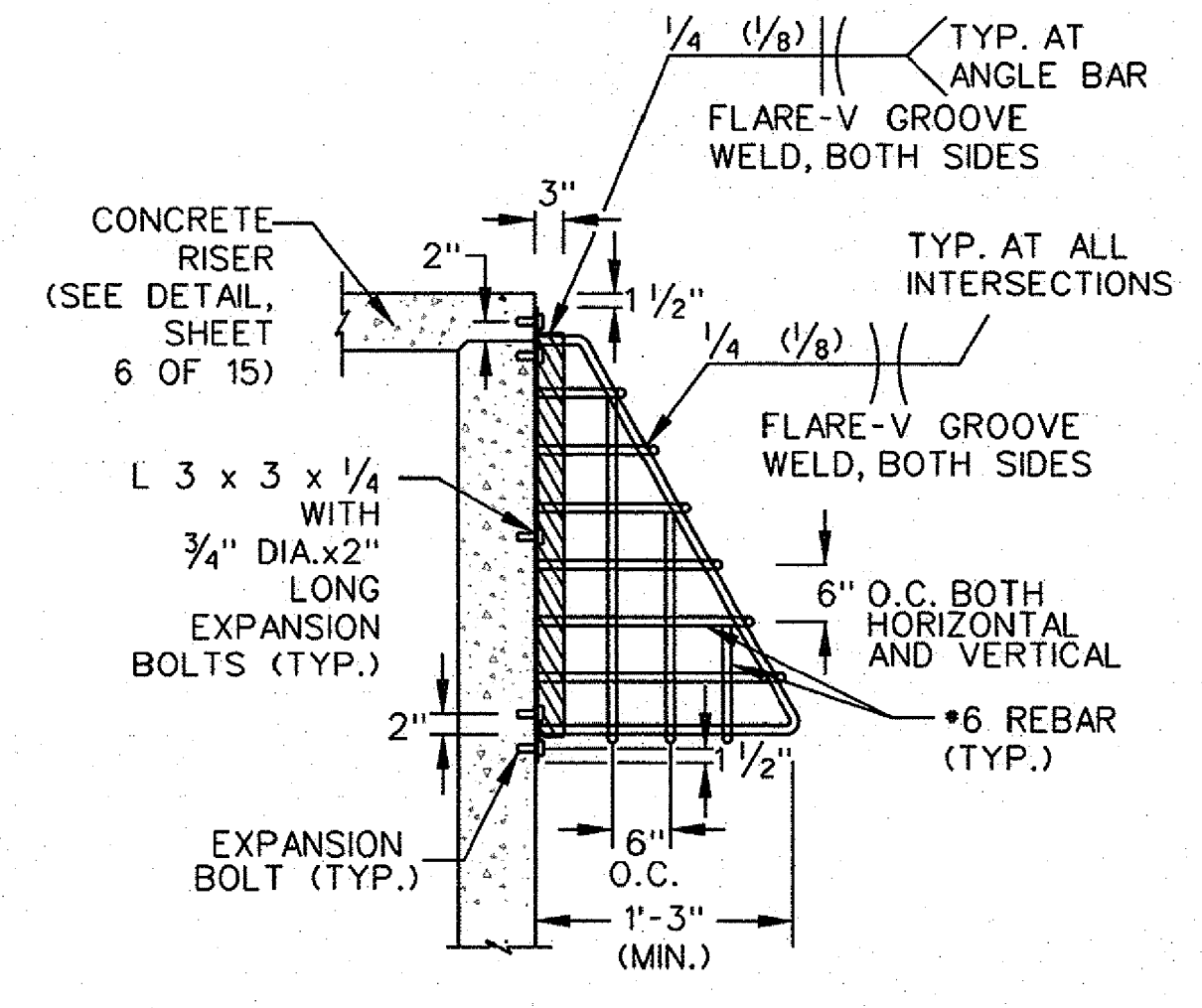
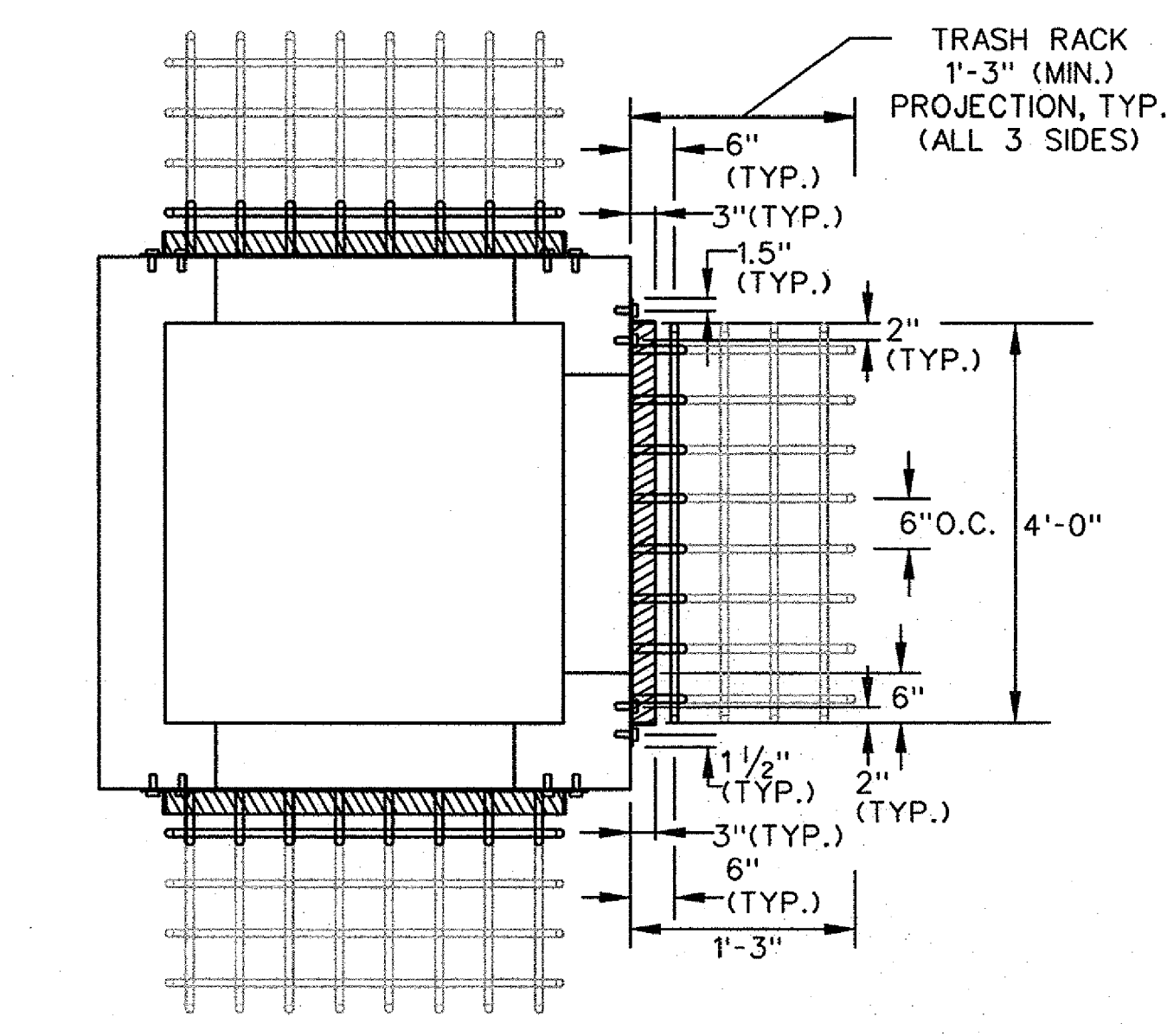
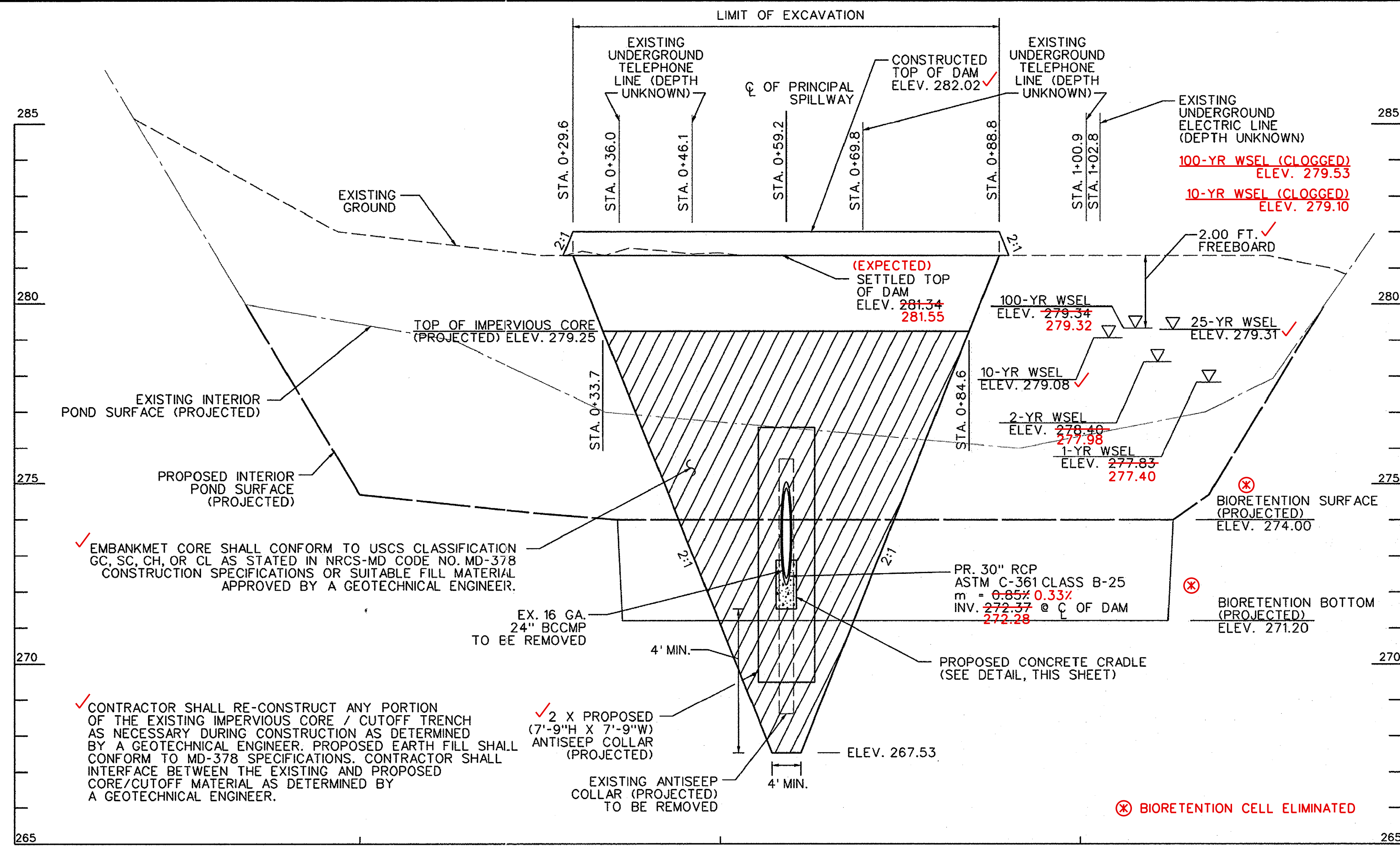
STORMWATER AND WATERSHED MANAGEMENT
EVALUATION / DESIGN-BUILD SERVICES

**RUSTY RIM
POND ENHANCEMENTS**

Howard County Contract # CA 23-2010
HOWARD COUNTY DEPARTMENT OF PUBLIC WORKS
STORMWATER MANAGEMENT DISTRICT
100 COLUMBIA GARDENS DRIVE
COLUMBIA, MD 21046

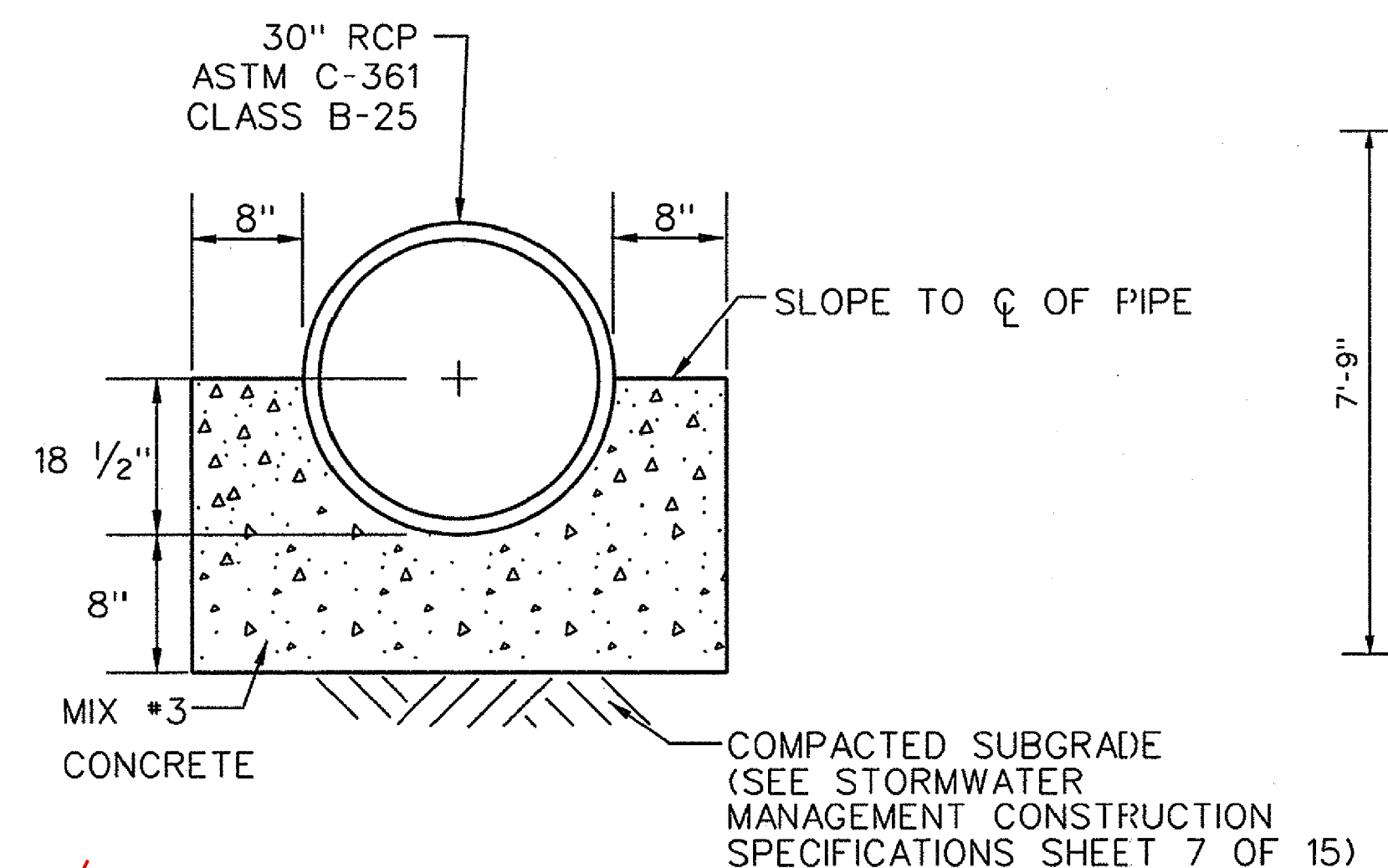
STORMWATER
MANAGEMENT
PROFILES

SCALE:	AS SHOWN
DATE:	DECEMBER 2015
KCI JOB NO.:	17133314.40
CAPITAL PROJECT NO.:	CA 13-2013
PERMIT ISSUE:	
CONSTRUCTION ISSUE:	

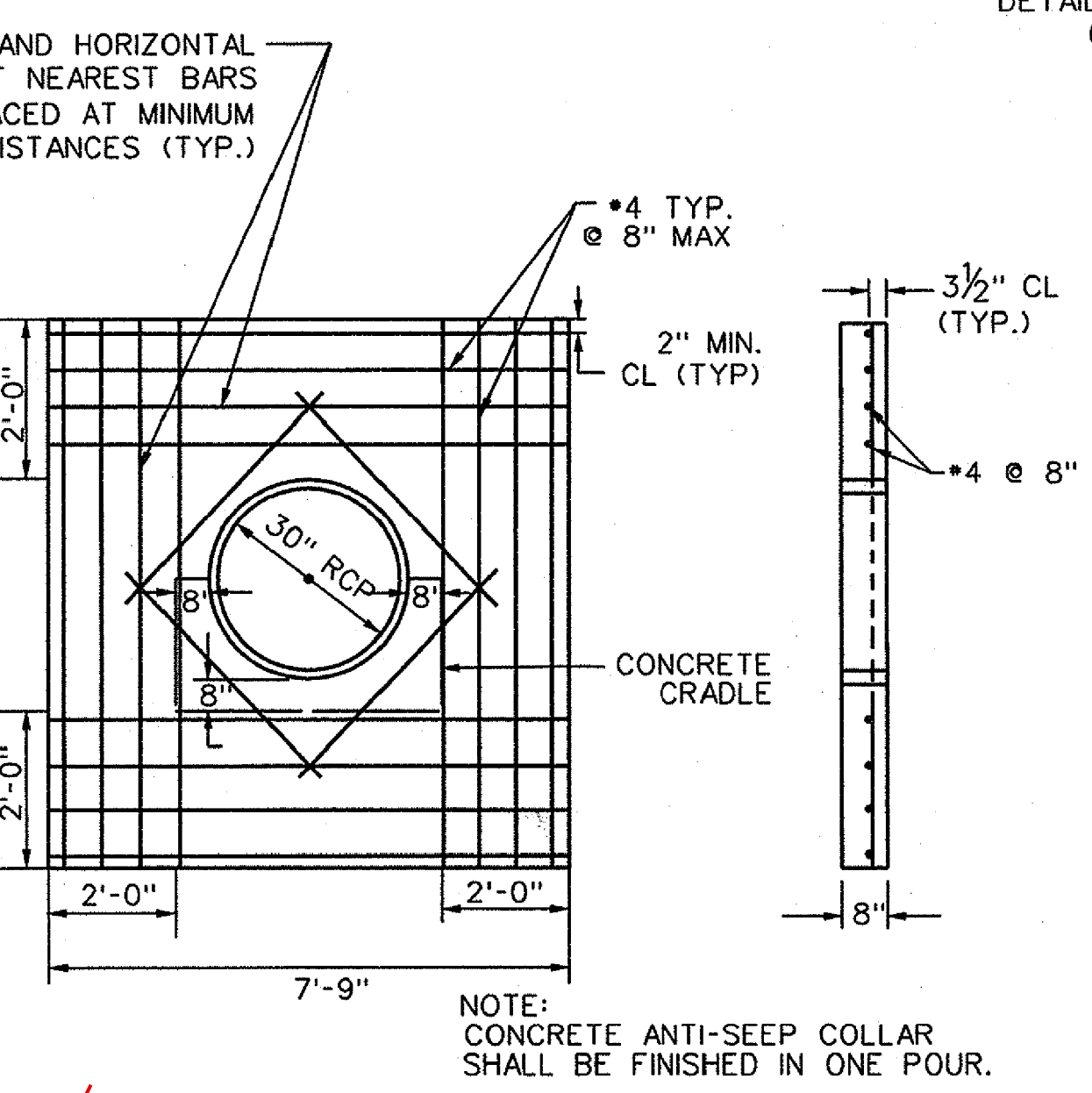


NOTE: THE FIRST 30" RCP BARREL PIPE JOINT MUST BE LOCATED WITHIN 4 FT. FROM THE RISER.

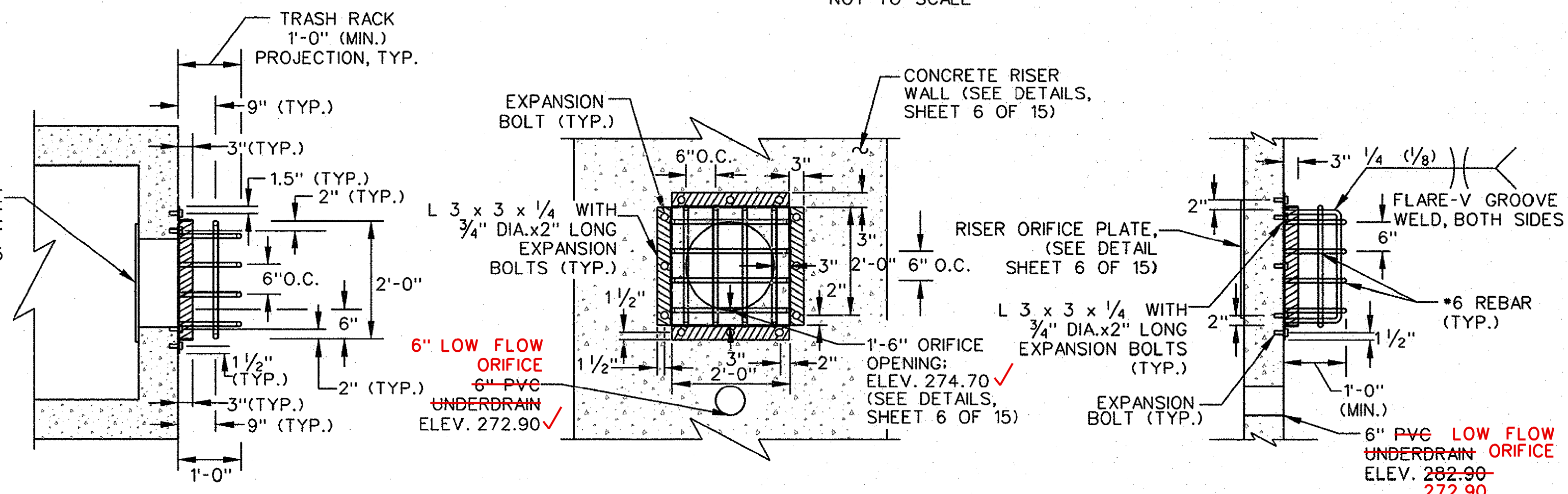
BARREL JOINT SEAL DETAIL
NOT TO SCALE



PIPE BEDDING CONCRETE CRADLE
NOT TO SCALE



CONCRETE ANTI-SEEP COLLAR DETAIL
30" RCP BARREL PIPE
NOT TO SCALE



LOW FLOW ORIFICE 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.

John P. Ruster
HOWARD SCD

John W. Gato
DATE: 1/19/16

DEPARTMENT OF PUBLIC WORKS, HOWARD COUNTY, MD

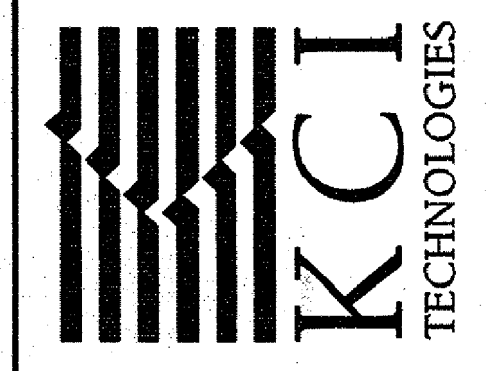
Mark DeLuca
CHIEF, BUREAU OF ENVIRONMENTAL SERVICES

DATE: 12/18/15

PROFESSIONAL CERTIFICATION: 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, 2017

NO.	REVISIONS DESCRIPTION	DATE
1	AS-BUILT	AUG. 2016

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

RUSTY RIM
POND ENHANCEMENTS

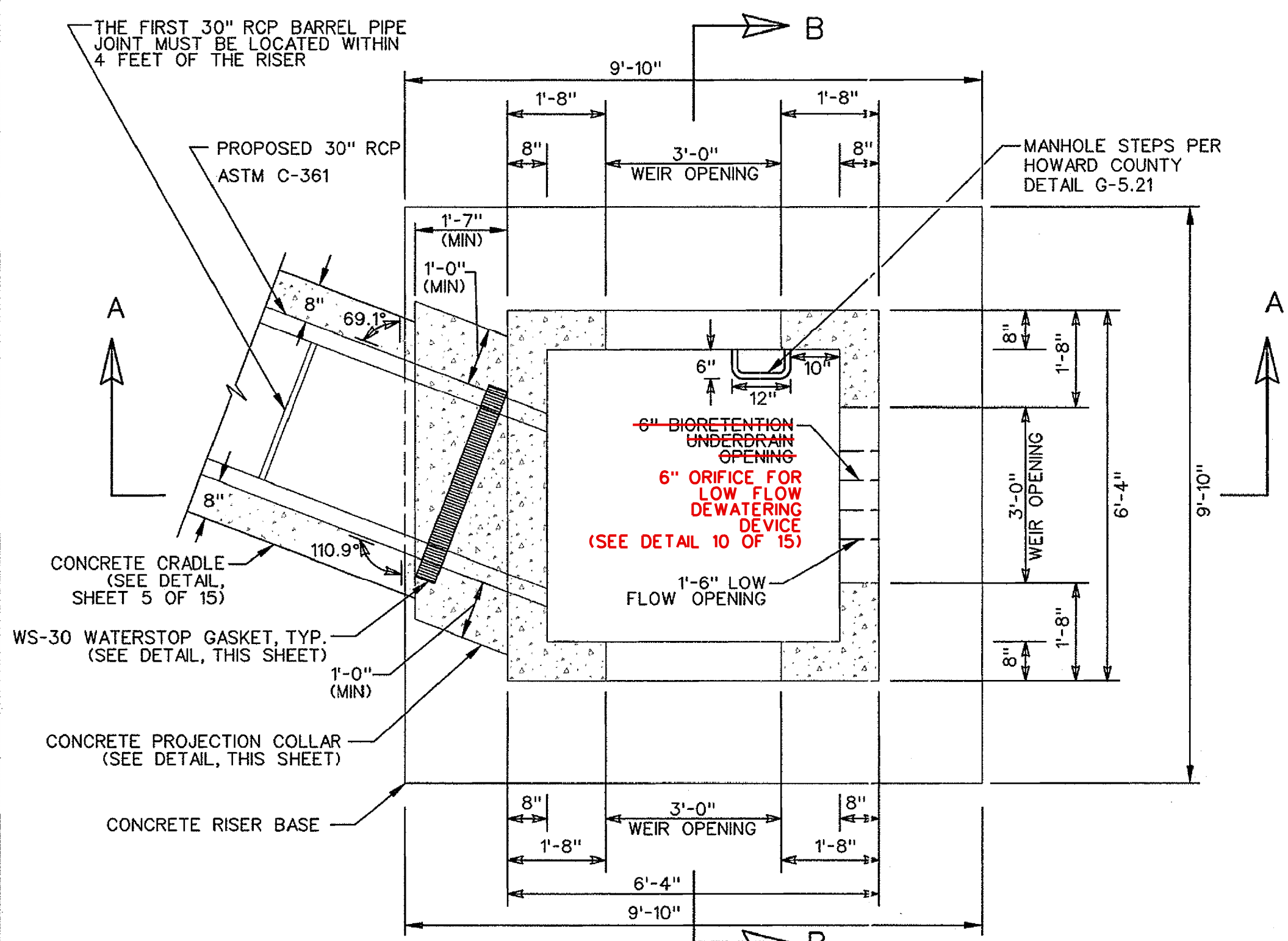
Howard County Contract # CA 23-2013
HOWARD COUNTY, MARYLAND
10000 WATERSHED MANAGEMENT DISTRICT
681 COLLIERIA GARDEN DRIVE
COLUMBIA, MD 21046

STORMWATER
MANAGEMENT
PROFILES

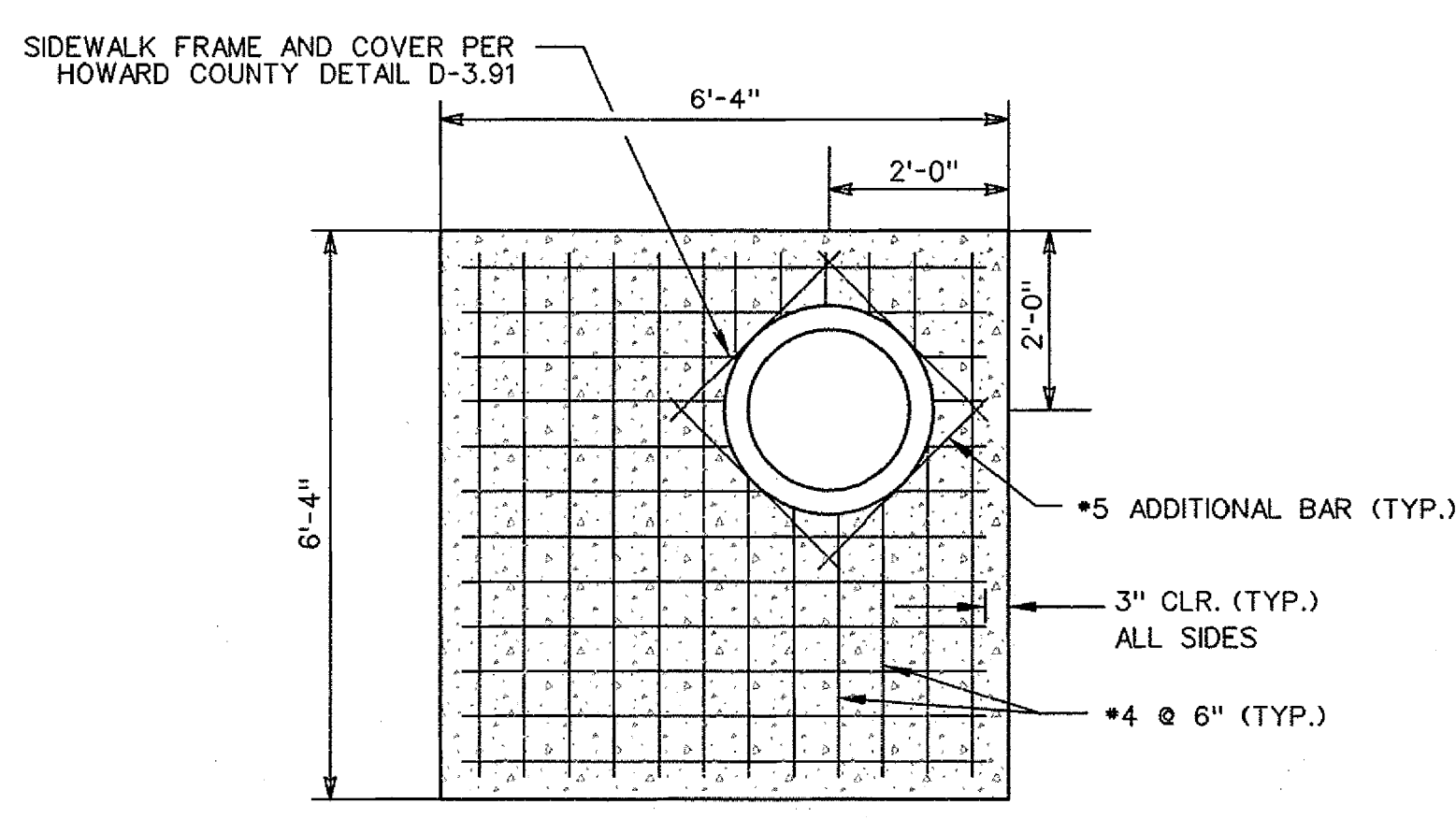
SCALE: AS SHOWN

DATE:	DECEMBER 2015
KCI JOB NO.:	17133314.40
CAPITAL PROJECT NO.:	CA 13-2013
PERMIT ISSUE:	
CONSTRUCTION ISSUE:	

SHEET NO.: 5 OF 15

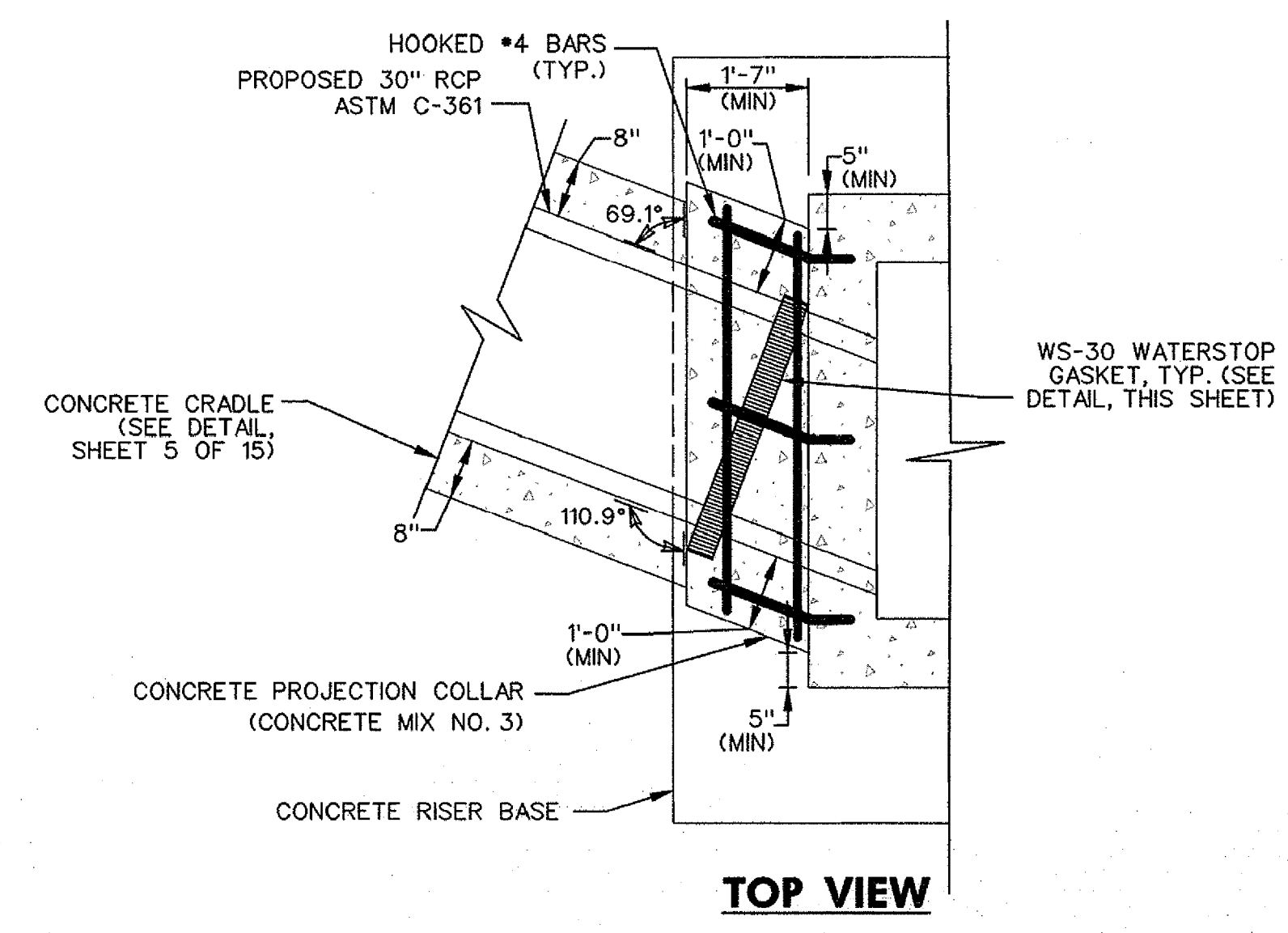


RISER R-1 PLAN
SCALE: 1/2" = 1'-0"

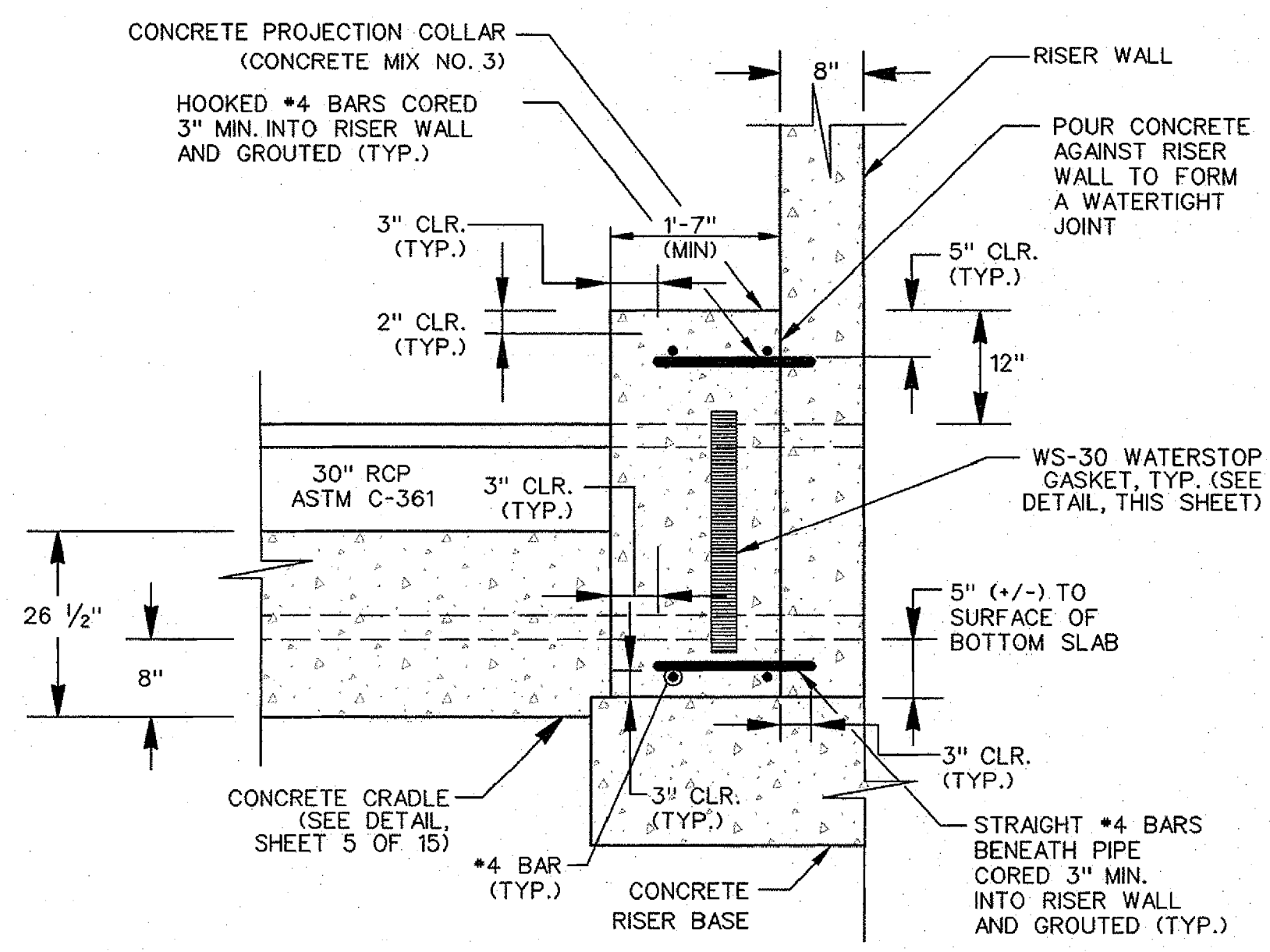


TOP SLAB DETAIL
SCALE: 1/2" = 1'-0"

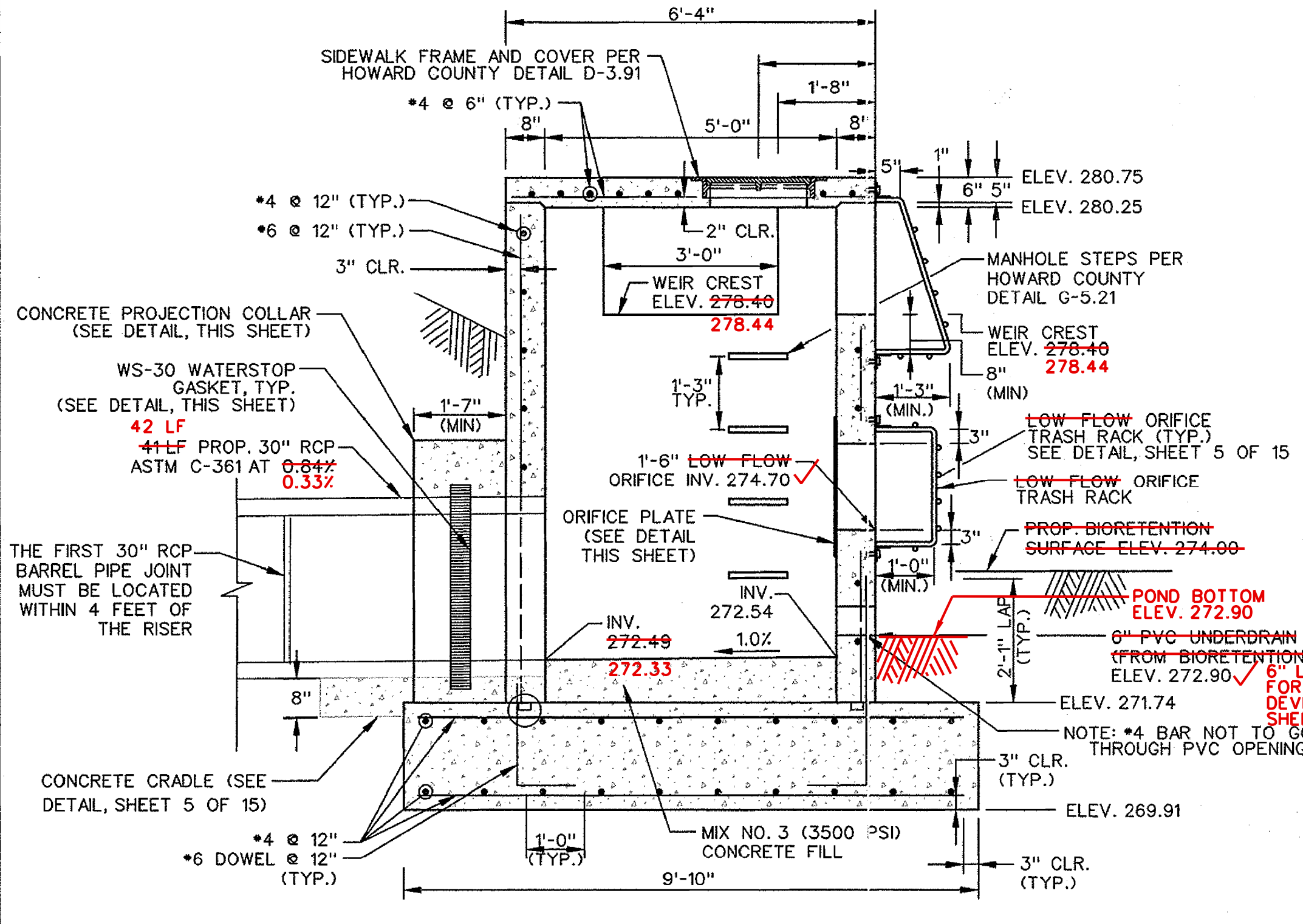
- RISER STRUCTURAL NOTES**
1. CONCRETE UNLESS OTHERWISE NOTED SHALL BE MIX. NO. 6 (4500 PSI).
 2. REINFORCING STEEL SHALL CONFORM TO A 615, GRADE 60.
 3. MINIMUM COVER FOR ANY BAR SHALL BE 2" UNLESS OTHERWISE NOTED.
 4. RISER SHALL BE CAST AND POURED IN PLACE.
 5. GROUT SHALL CONFORM TO 902.11 (C).



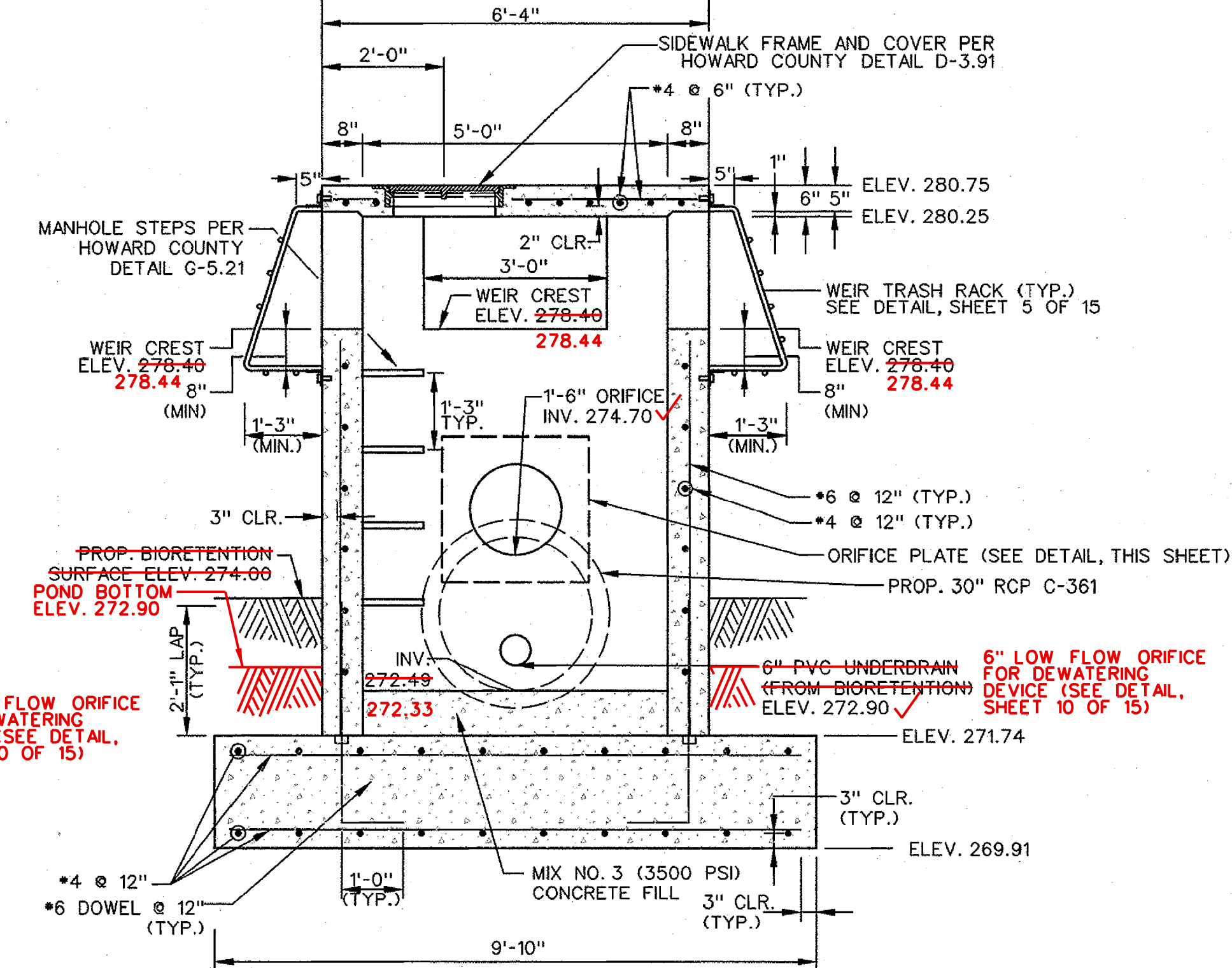
TOP VIEW



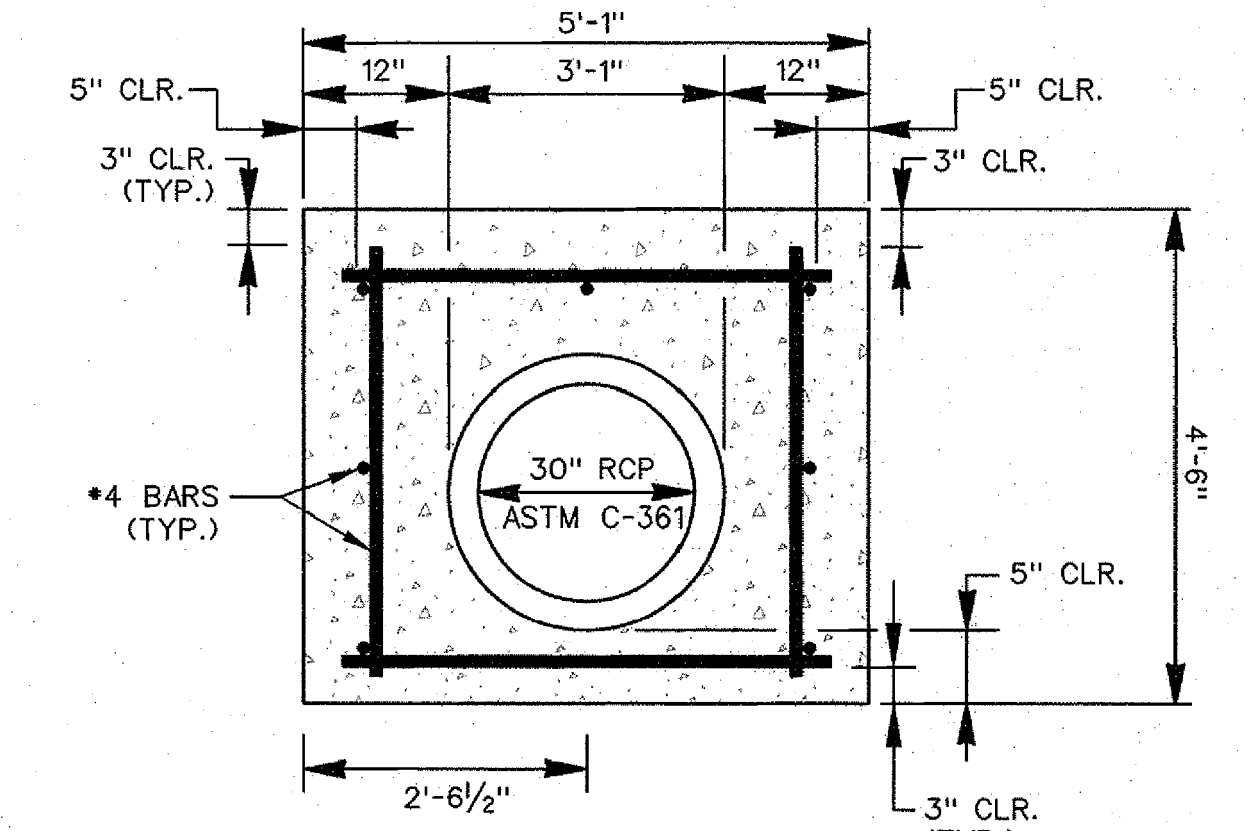
SIDE VIEW



RISER R-1 CROSS SECTION A-A
SCALE: 1/2" = 1'-0"

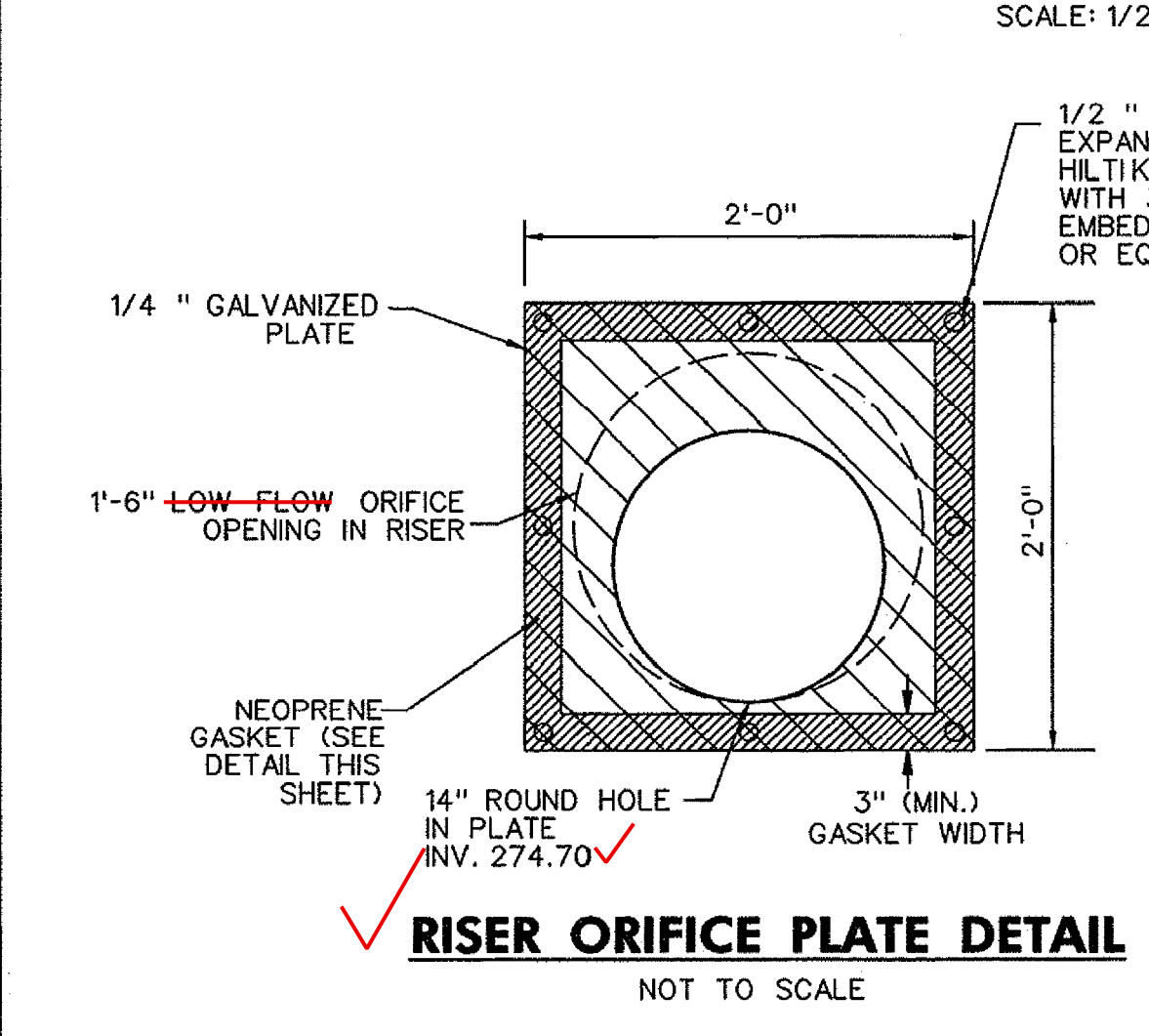


RISER R-1 CROSS SECTION B-B
SCALE: 1/2" = 1'-0"

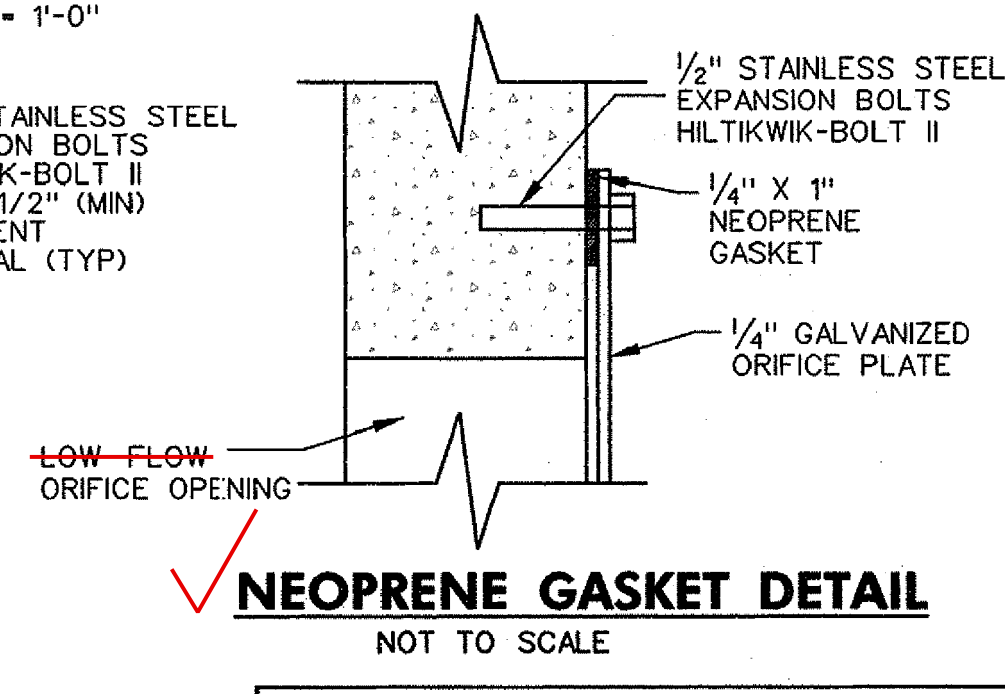


FRONT VIEW

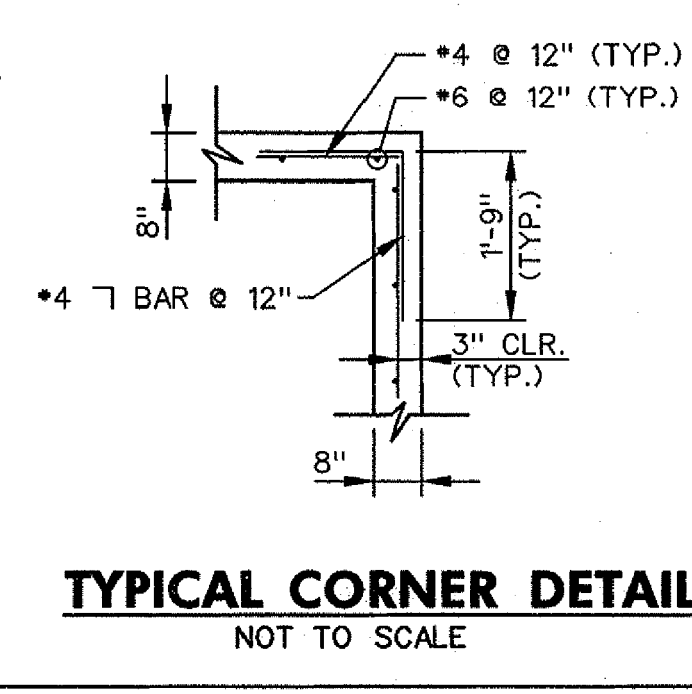
PROJECTION COLLAR DETAIL
NOT TO SCALE



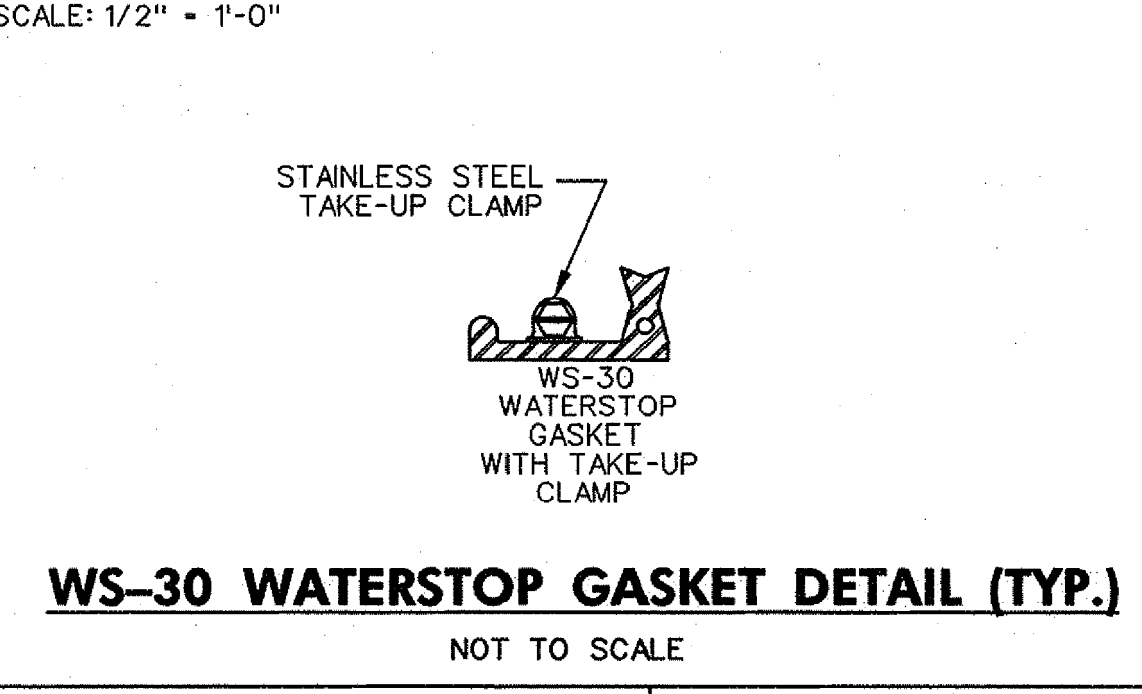
RISER ORIFICE PLATE DETAIL
NOT TO SCALE



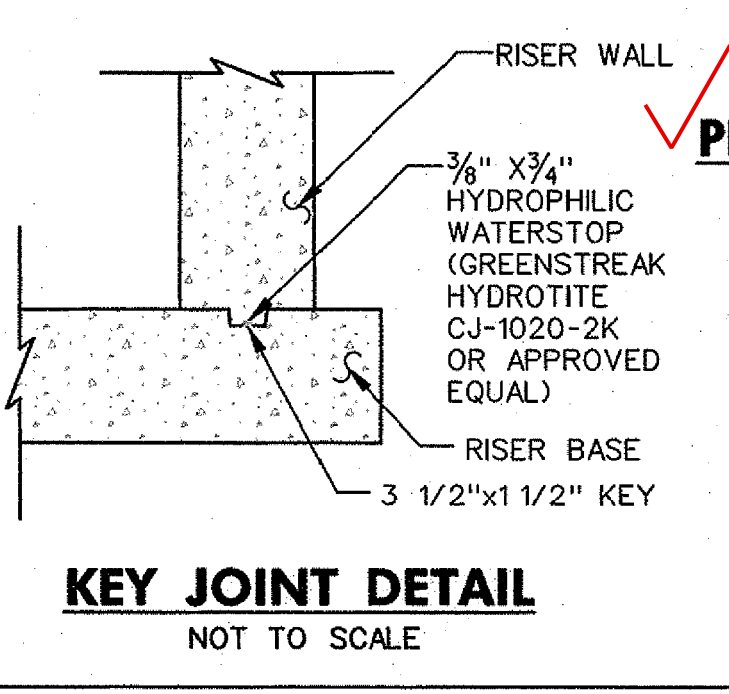
NEOPRENE GASKET DETAIL
NOT TO SCALE



TYPICAL CORNER DETAIL
NOT TO SCALE



WS-30 WATERSTOP GASKET DETAIL (TYP.)
NOT TO SCALE



KEY JOINT 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.

John P. Roberts
HOWARD SCD

1/19/16
DATE

DEPARTMENT OF PUBLIC WORKS, HOWARD COUNTY, MD

M. Patricia
CHIEF, BUREAU OF ENVIRONMENTAL SERVICES

12/19/15
DATE

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, 2017

NO.	REVISIONS DESCRIPTION	DATE
AS-BUILT		AUG. 2016

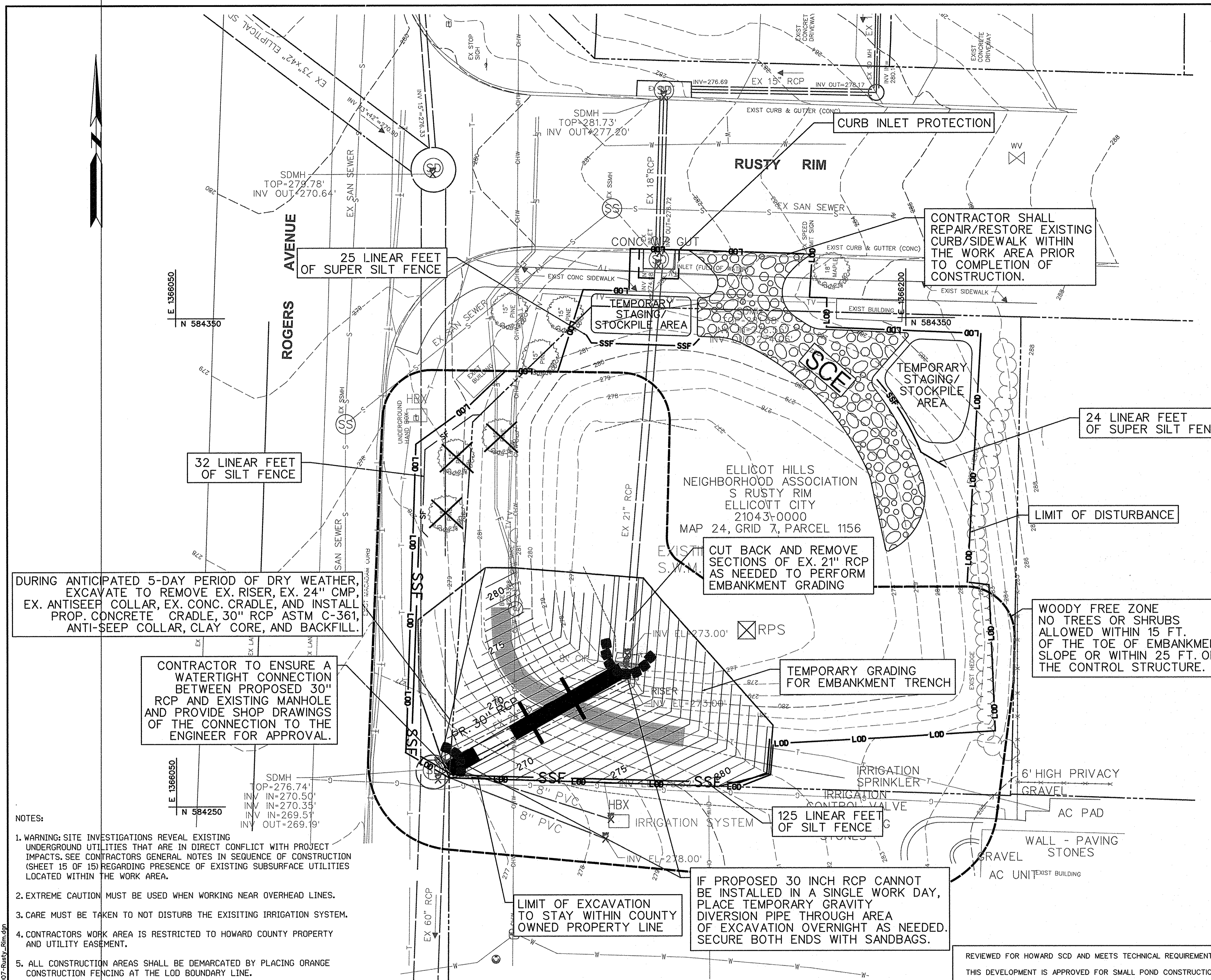
936 RIDGEBROOK ROAD
SPARKS, MARYLAND 21152
TELEPHONE: (410) 316-7800
FAX: (410) 316-7818
www.kci.com



STORMWATER AND WATERSHED MANAGEMENT
EVALUATION / DESIGN-BUILD SERVICES
**RUSTY RIM
POND ENHANCEMENTS**
Howard County Contract # CA 23-2013
HOWARD COUNTY WATERSHED DISTRICT
670 COLUMBIA AVENUE, SUITE 200
COLUMBIA, MD 21046

**STORMWATER
MANAGEMENT
DETAILS**

SCALE:	AS SHOWN
DATE:	DECEMBER 2015
KCI JOB NO.:	17133314.40
CAPITAL PROJECT NO.:	CA 13-2013
PERMIT ISSUE:	
CONSTRUCTION ISSUE:	



DURING ANTICIPATED 5-DAY PERIOD OF DRY WEATHER, EXCAVATE TO REMOVE EX. RISER, EX. 24" CMP, EX. ANTISEEP COLLAR, EX. CONC. CRADLE, AND INSTALL PROP. CONCRETE CRADLE, 30" RCP ASTM C-361, ANTI-SEEP COLLAR, CLAY CORE, AND BACKFILL.

CONTRACTOR TO ENSURE A WATERTIGHT CONNECTION BETWEEN PROPOSED 30" RCP AND EXISTING MANHOLE AND PROVIDE SHOP DRAWINGS OF THE CONNECTION TO THE ENGINEER FOR APPROVAL.

CUT BACK AND REMOVE SECTIONS OF EX. 21" RCP AS NEEDED TO PERFORM EMBANKMENT GRADING

CONTRACTOR SHALL REPAIR/RESTORE EXISTING CURB/SIDEWALK WITHIN THE WORK AREA PRIOR TO COMPLETION OF CONSTRUCTION.

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.

IF PROPOSED 30 INCH RCP CANNOT BE INSTALLED IN A SINGLE WORK DAY, PLACE TEMPORARY GRAVITY DIVERSION PIPE THROUGH AREA OF EXCAVATION OVERNIGHT AS NEEDED. SECURE BOTH ENDS WITH SANDBAGS.

- NOTES:
- WARNING: SITE INVESTIGATIONS REVEAL EXISTING UNDERGROUND UTILITIES THAT ARE IN DIRECT CONFLICT WITH PROJECT IMPACTS. SEE CONTRACTORS GENERAL NOTES IN SEQUENCE OF CONSTRUCTION (SHEET 15 OF 15) REGARDING PRESENCE OF EXISTING SUBSURFACE UTILITIES LOCATED WITHIN THE WORK AREA.
 - EXTREME CAUTION MUST BE USED WHEN WORKING NEAR OVERHEAD LINES.
 - CARE MUST BE TAKEN TO NOT DISTURB THE EXISTING IRRIGATION SYSTEM.
 - CONTRACTORS WORK AREA IS RESTRICTED TO HOWARD COUNTY PROPERTY AND UTILITY EASEMENT.
 - ALL CONSTRUCTION AREAS SHALL BE DEMARCATED BY PLACING ORANGE CONSTRUCTION FENCING AT THE LOD BOUNDARY LINE.
 - ALL EROSION AND SEDIMENT CONTROL MEASURES MUST BE MAINTAINED AND STANDING UP THROUGHOUT THE DURATION OF THE PROJECT.
 - FLEXIBLE INTAKE AND DISCHARGE PIPES MAY BE SHIFTED WITHIN THE LOD AS NEEDED TO ALLOW ACCESS TO WORK AREAS.
 - NO WETLANDS OR "WATERS OF THE U.S." WERE IDENTIFIED WITHIN THE PROJECT LIMITS.
 - PROJECT SITE IS NOT LOCATED WITHIN THE 100-YEAR FLOODPLAIN.
 - PARKING AND MATERIAL STORAGE ARE NOT ALLOWED ON RUSTY RIM ROADWAY. THERE IS A MAIL KIOSK ON RUSTY RIM THAT CANNOT BE BLOCKED. MAIL SERVICE AND RESIDENTS MUST HAVE ACCESS TO MAIL KIOSK AT ALL TIMES.

LEGEND

LIMIT OF DISTURBANCE/ORANGE SAFETY FENCE	---	LOD
EXISTING MAJOR CONTOURS	---	380
EXISTING MINOR CONTOURS	---	387
PROPOSED CONTOURS	---	387
EXISTING 100 YEAR FLOODPLAIN	---	FP
EXISTING TREE	⊗	
EXISTING TREE TO BE REMOVED	⊗	
EXISTING TREE TO BE SAVED	⊗	
EDGE OF TREELINE	---	
WATERS OF THE U.S.	---	WUS
EDGE OF WETLAND	---	
PROPERTY LINE	---	
EXISTING STORM DRAIN	---	
EXISTING SEWER MANHOLE	⊗	
EXISTING STORM DRAIN MANHOLE	⊗	
EXISTING SEWER LINE	---	S
EXISTING WATER LINE	---	W
EXISTING ELECTRIC LINE	---	E
EXISTING TELEPHONE LINE	---	T
EXISTING CABLE TV LINE	---	TV
EXISTING GAS LINE	---	G
EXISTING EDGE OF PAVEMENT	---	
EXISTING EDGE OF WATER	---	
PROPOSED EDGE OF WATER	---	
EXISTING BUILDING	---	
SOIL TYPE BOUNDARY AND MAP UNIT SYMBOLS	---	GbC-B
PROPOSED RIPRAP	---	
PROPOSED DRAIN PIPE	---	
SOIL BORING LOCATION	⊗	B-1
SANDBAG DAM/BARRIER	---	
SILT FENCE	---	SF
SUPER SILT FENCE	---	SSF
STABILIZED CONSTRUCTION ENTRANCE	---	
PUMP AND HOSES	---	
REMOVABLE PUMPING STATION	⊗	RPS
FILETR BAG	---	FB

NO.	REVISIONS DESCRIPTION	DATE

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

KCI TECHNOLOGIES

STORMWATER AND WATERSHED MANAGEMENT
 EVALUATION / DESIGN-BUILD SERVICES

RUSTY RIM
 POND ENHANCEMENTS

Howard County Contract # CA 13-2013
 HOWARD COUNTY DEPARTMENT OF PUBLIC WORKS
 STORMWATER MANAGEMENT DIVISION
 675 COLUMBIA GREENWAY DRIVE
 COLUMBIA, MD 21046

EROSION & SEDIMENT CONTROL PLAN PHASE I

SCALE: 1" = 10'
 DATE: DECEMBER 2015
 KCI JOB NO.: 17133314-40
 CAPITAL PROJECT NO.: CA 13-2013
 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 K. Ralston
 HOWARD SCD

DATE: 1/19/16

DEPARTMENT OF PUBLIC WORKS, HOWARD COUNTY, MD

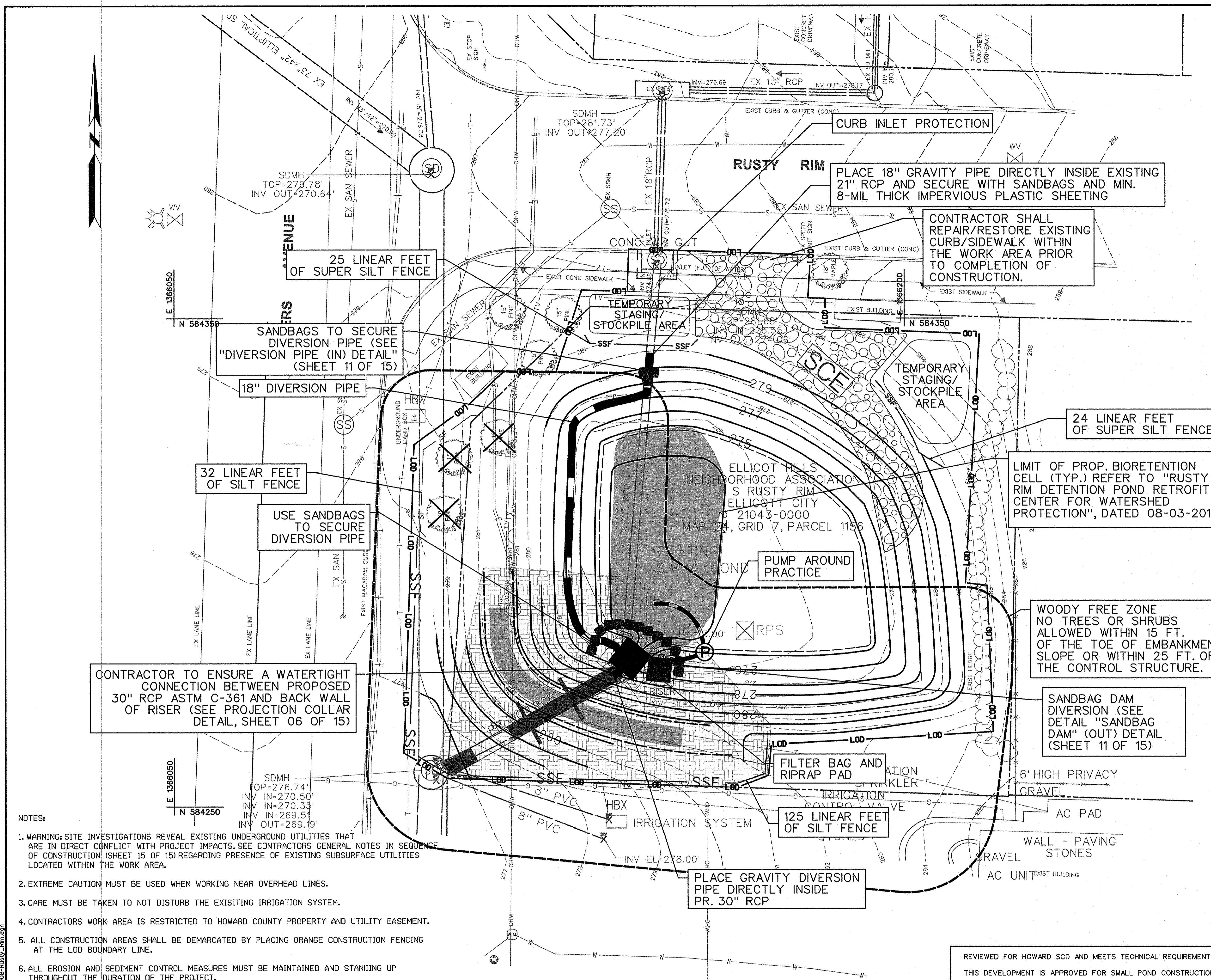
Mark D. Lucas
 CHIEF, BUREAU OF ENVIRONMENTAL SERVICES

DATE: 12/18/15

STATE OF MARYLAND
 WILLIAM BUDGETE
 PROFESSIONAL ENGINEER
 LICENSE NO. 14800

John K. Ralston

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, 2017



- NOTES:
- WARNING: SITE INVESTIGATIONS REVEAL EXISTING UNDERGROUND UTILITIES THAT ARE IN DIRECT CONFLICT WITH PROJECT IMPACTS. SEE CONTRACTORS GENERAL NOTES IN SEQUENCE OF CONSTRUCTION (SHEET 15 OF 15) REGARDING PRESENCE OF EXISTING SUBSURFACE UTILITIES LOCATED WITHIN THE WORK AREA.
 - EXTREME CAUTION MUST BE USED WHEN WORKING NEAR OVERHEAD LINES.
 - CARE MUST BE TAKEN TO NOT DISTURB THE EXISTING IRRIGATION SYSTEM.
 - CONTRACTORS WORK AREA IS RESTRICTED TO HOWARD COUNTY PROPERTY AND UTILITY EASEMENT.
 - ALL CONSTRUCTION AREAS SHALL BE DEMARCATED BY PLACING ORANGE CONSTRUCTION FENCING AT THE LOD BOUNDARY LINE.
 - ALL EROSION AND SEDIMENT CONTROL MEASURES MUST BE MAINTAINED AND STANDING UP THROUGHOUT THE DURATION OF THE PROJECT.
 - FLEXIBLE INTAKE AND DISCHARGE PIPES MAY BE SHIFTED WITHIN THE LOD AS NEEDED TO ALLOW ACCESS TO WORK AREAS.
 - NO WETLANDS OR "WATERS OF THE U.S." WERE IDENTIFIED WITHIN THE PROJECT LIMITS.
 - PROJECT SITE IS NOT LOCATED WITHIN THE 100-YEAR FLOODPLAIN.
 - ALL DISTURBED AREAS TO BE STABILIZED PER HSCD TEMPORARY SEEDING NOTES (SHEET 11 OF 15), WITH THE EXCEPTION OF AREA TO BE STABILIZED WITH TEMPORARY EROSION CONTROL MATTING, AS SHOWN ON THIS SHEET.
 - PARKING AND MATERIAL STORAGE ARE NOT ALLOWED ON RUSTY RIM ROADWAY. THERE IS A MAIL KIOSK ON RUSTY RIM THAT CANNOT BE BLOCKED. MAIL SERVICE AND RESIDENTS MUST HAVE ACCESS TO MAIL KIOSK AT ALL TIMES.

LEGEND

LIMIT OF DISTURBANCE/ORANGE SAFETY FENCE	---	LOD
EXISTING MAJOR CONTOURS	---	380
EXISTING MINOR CONTOURS	---	387
PROPOSED CONTOURS	---	387
EXISTING 100 YEAR FLOODPLAIN	---	FP
EXISTING TREE	○	
EXISTING TREE TO BE REMOVED	⊗	
EXISTING TREE TO BE SAVED	⊙	
EDGE OF TREELINE	---	
WATERS OF THE U.S.	---	WUS
EDGE OF WETLAND	---	
PROPERTY LINE	---	
EXISTING STORM DRAIN	---	
EXISTING SEWER MANHOLE	⊙	
EXISTING STORM DRAIN MANHOLE	⊙	
EXISTING SEWER LINE	---	S
EXISTING WATER LINE	---	W
EXISTING ELECTRIC LINE	---	E
EXISTING TELEPHONE LINE	---	T
EXISTING CABLE TV LINE	---	TV
EXISTING GAS LINE	---	G
EXISTING EDGE OF PAVEMENT	---	
EXISTING EDGE OF WATER	---	
PROPOSED EDGE OF WATER	---	
EXISTING BUILDING	▭	
SOIL TYPE BOUNDARY AND MAP UNIT SYMBOLS	---	GbC-B
PROPOSED RIPRAP	▨	
PROPOSED DRAIN PIPE	---	
SOIL BORING LOCATION	⊙	B-1
SANDBAG DAM/BARRIER	▬	
SILT FENCE	---	SF
SUPER SILT FENCE	---	SSF
STABILIZED CONSTRUCTION ENTRANCE	---	SCE
PUMP AND HOSES	⊗	
REMOVABLE PUMPING STATION	⊗	RPS
FILETR BAG	▬	FB
DIVERSION FENCE	---	DF
EROSION CONTROL MATTING AREA	---	

NO.	REVISIONS DESCRIPTION	DATE

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

KCI TECHNOLOGIES

STORMWATER AND WATERSHED MANAGEMENT
 EVALUATION / DESIGN-BUILD SERVICES

**RUSTY RIM
 POND ENHANCEMENTS**

Howard County Contract # CA 13-2013
 HOWARD COUNTY DEPARTMENT OF PUBLIC WORKS
 STORMWATER MANAGEMENT DIVISION
 605 COLLEEN AVE. #206
 COLLEEN, MD 21034

EROSION & SEDIMENT CONTROL PLAN PHASE 2

SCALE: 1" = 10'
 DATE: DECEMBER 2015
 KCI JOB NO.: 17133314.40
 CAPITAL PROJECT NO.: CA 13-2013
 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 H. Klotz
 HOWARD SCD

DATE: 1/19/16

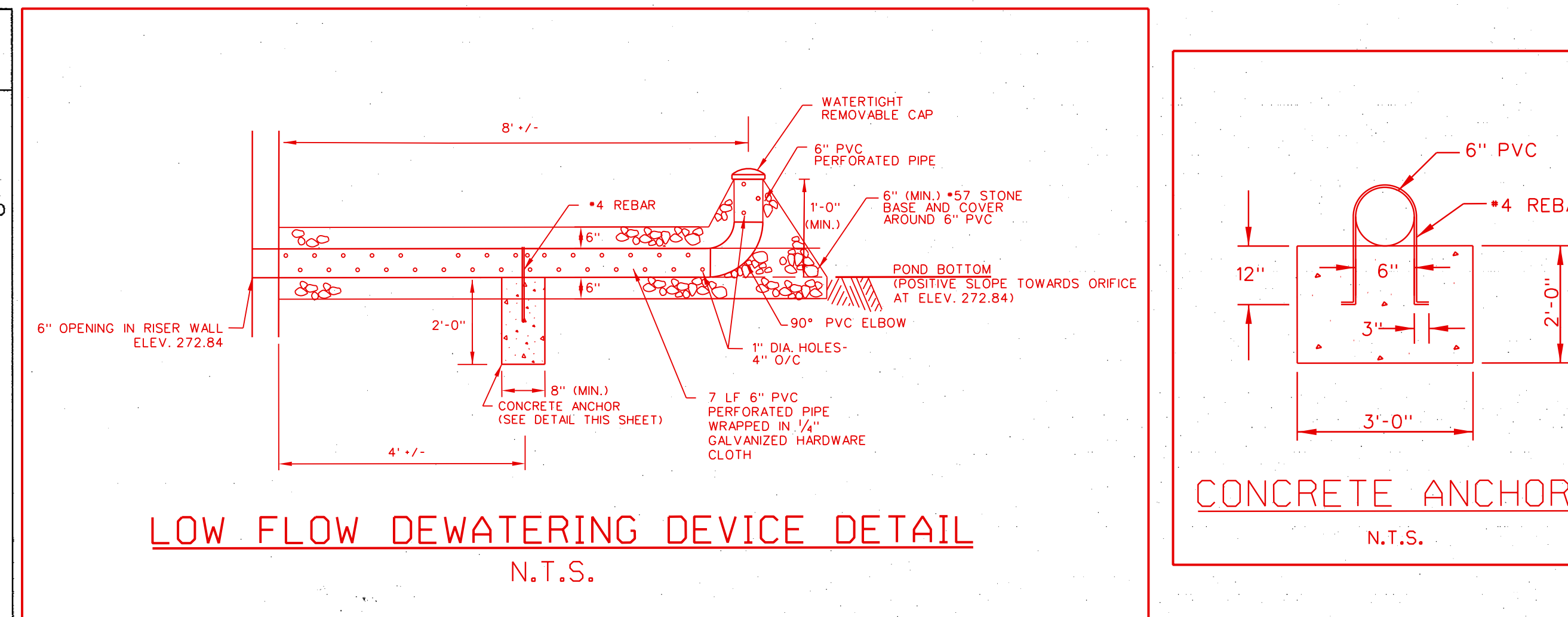
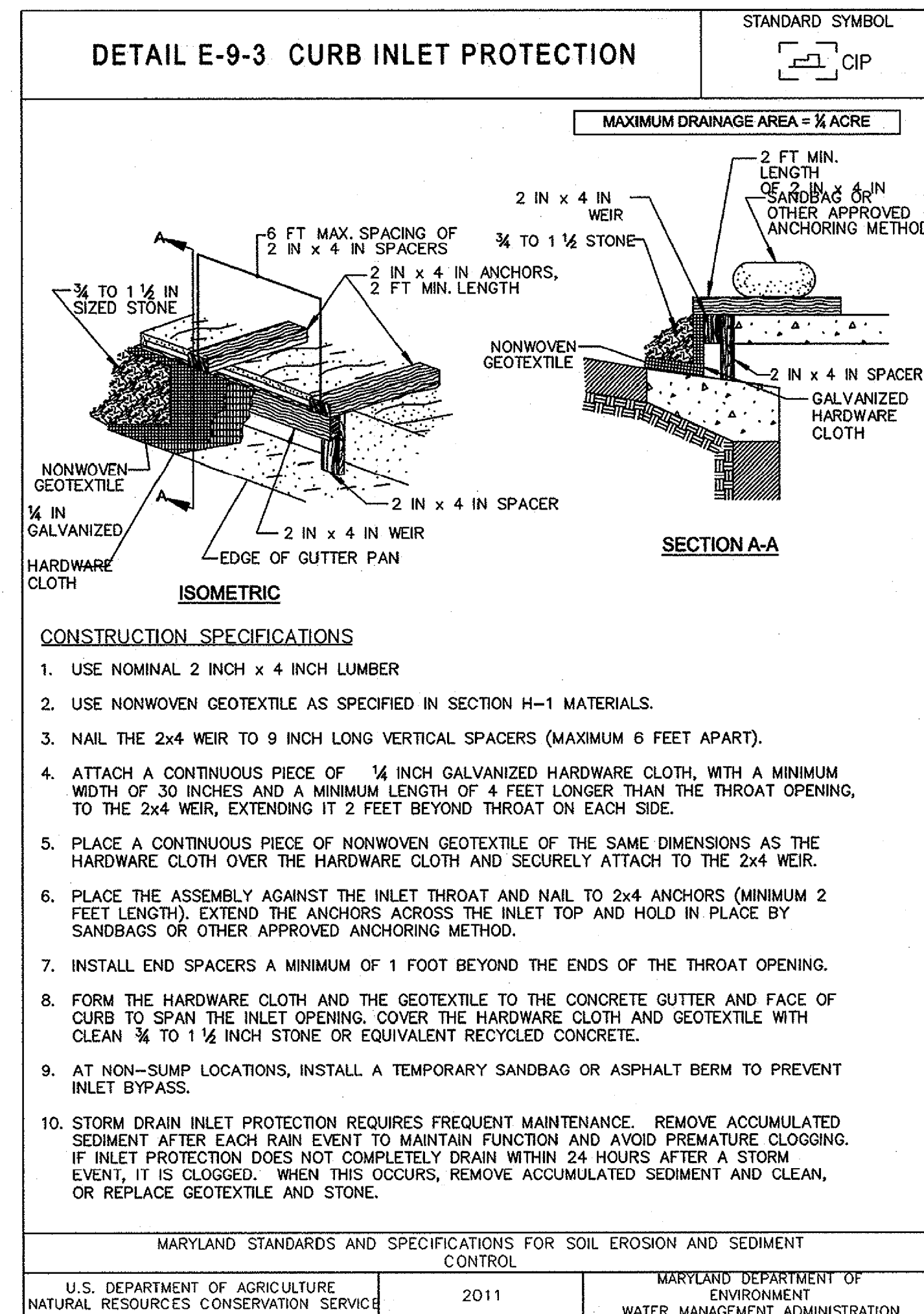
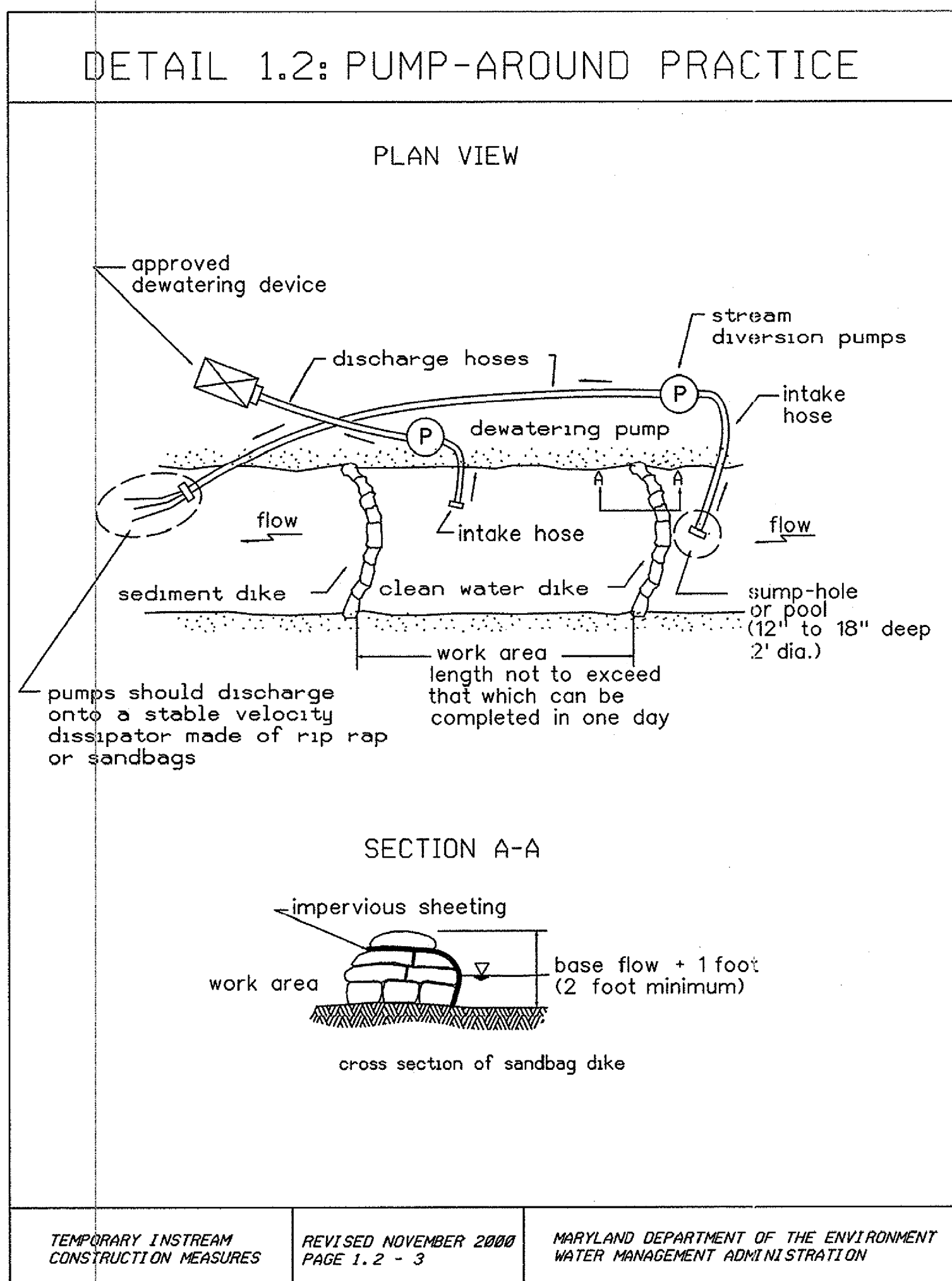
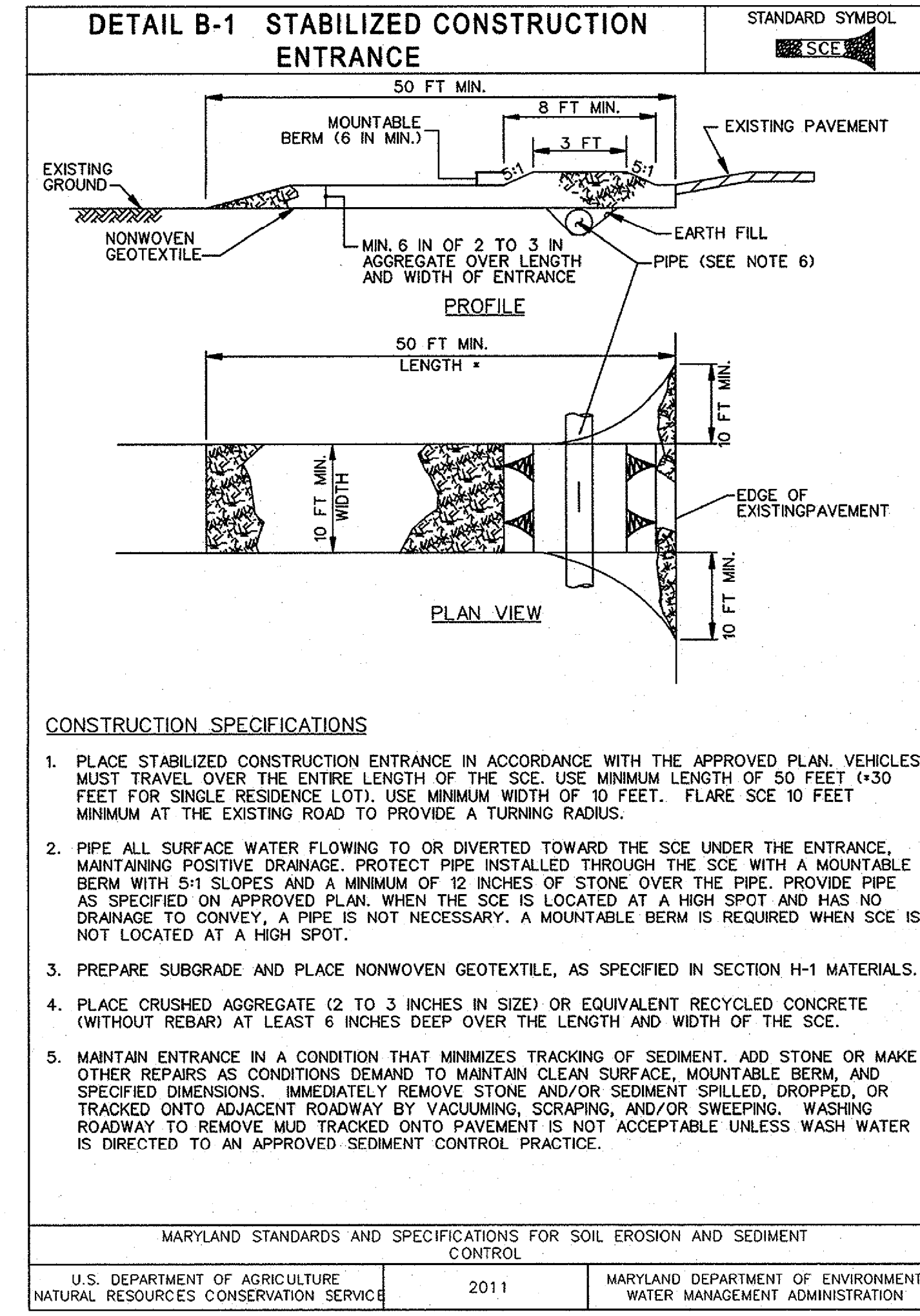
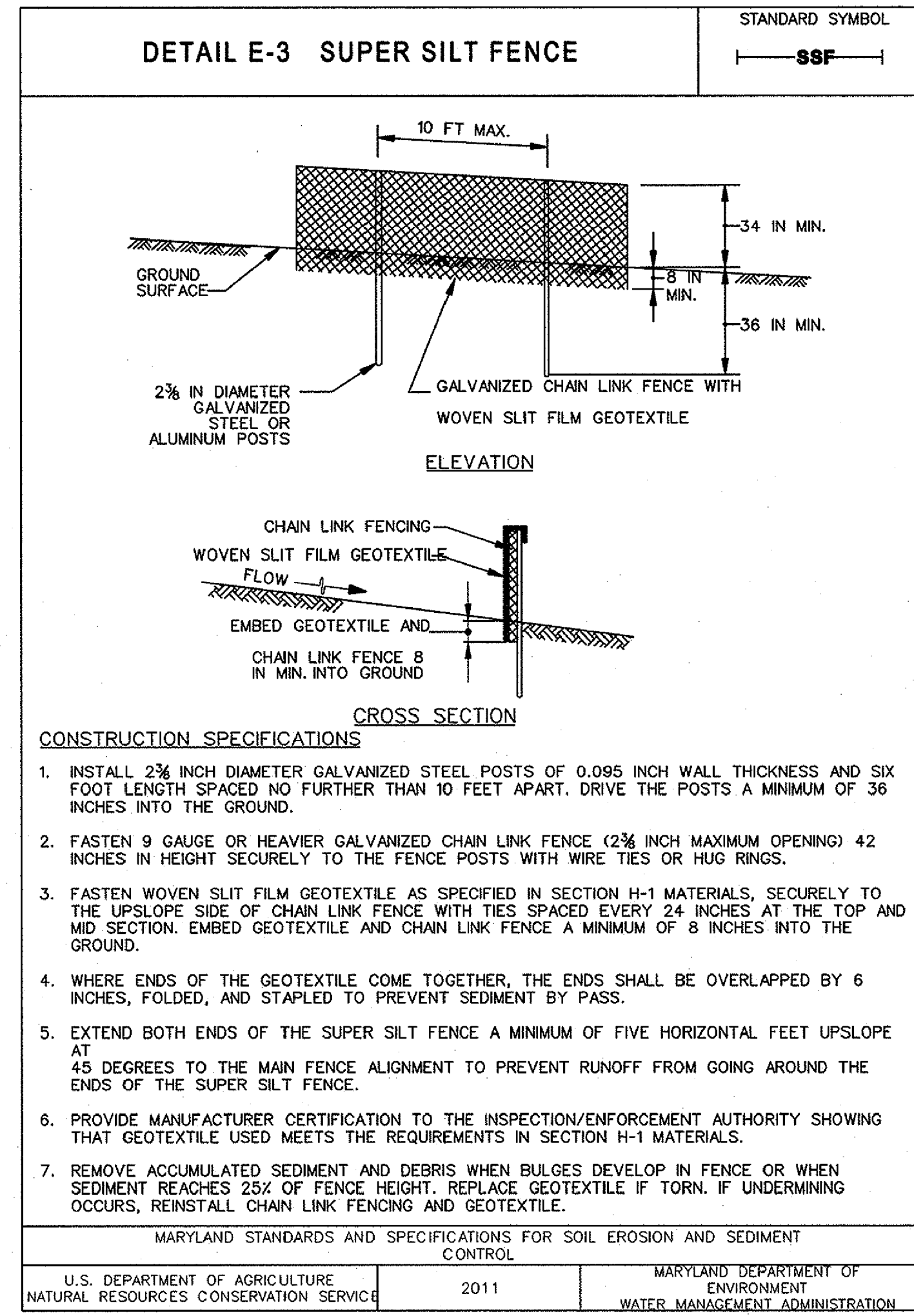
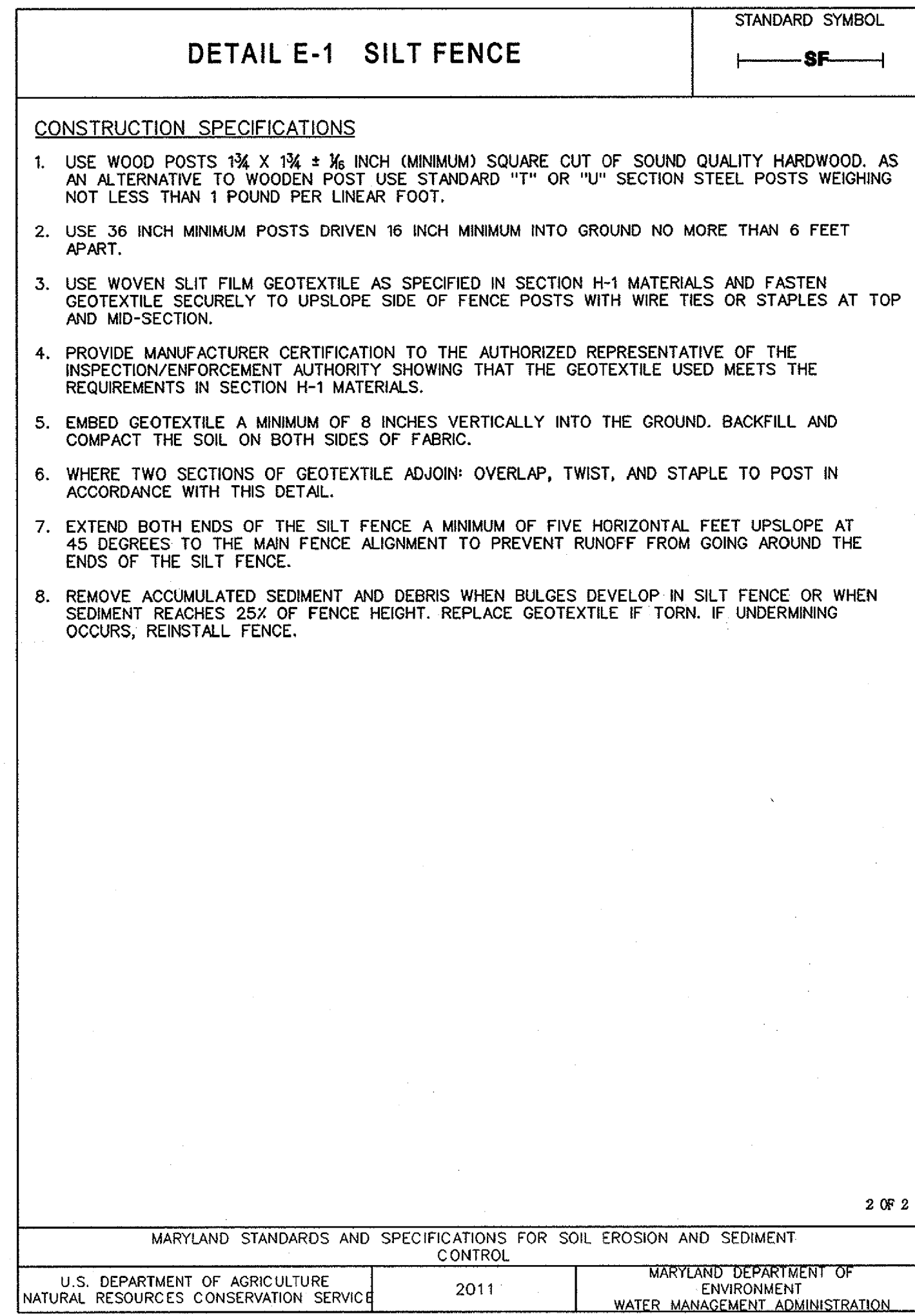
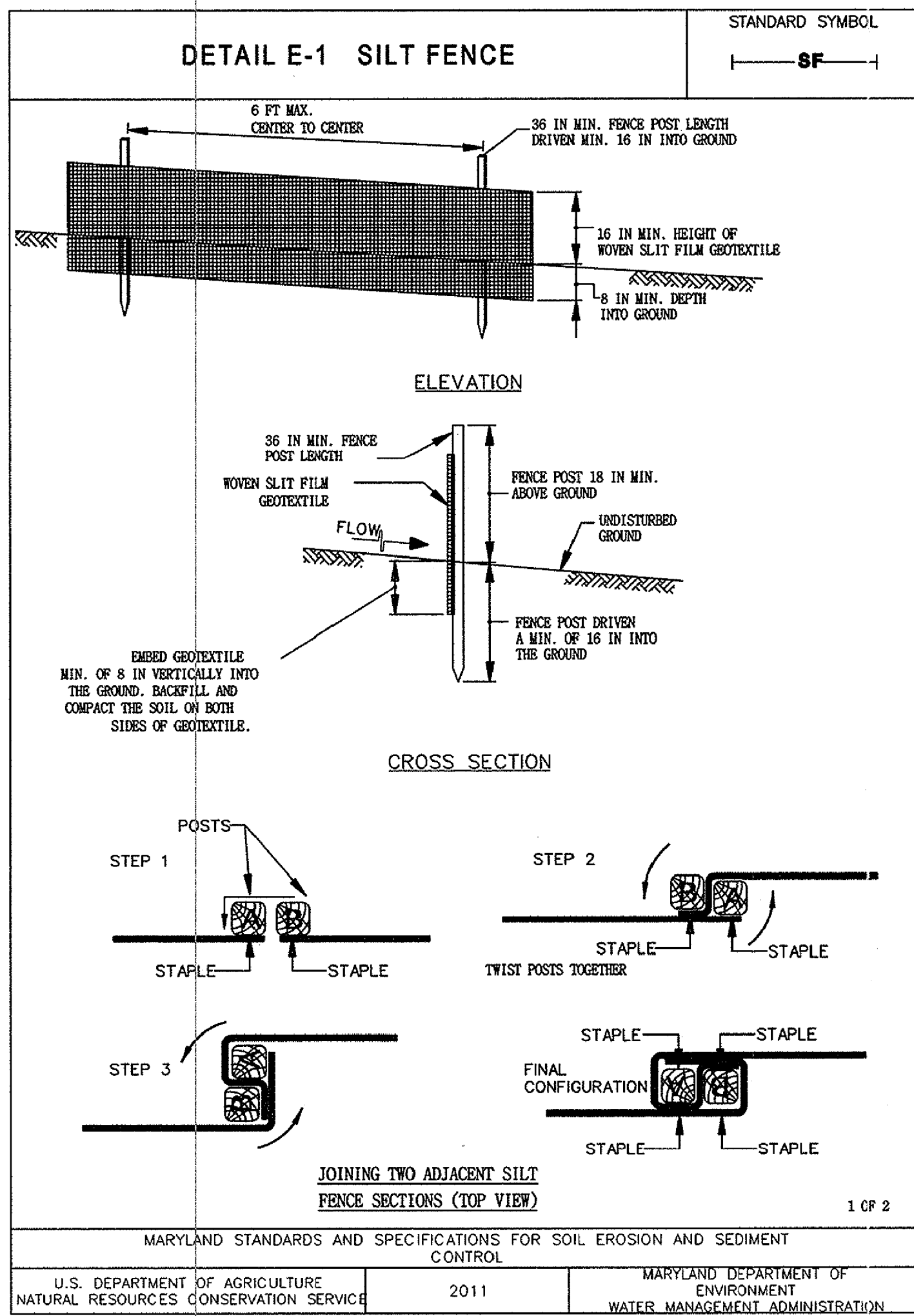
DEPARTMENT OF PUBLIC WORKS, HOWARD COUNTY, MD

Mark DeLuca
 CHIEF, BUREAU OF ENVIRONMENTAL SERVICES

DATE: 12/18/15

STATE OF MARYLAND
 WILLIAM W. DIEHL
 GOVERNOR

R.W. [Signature]
 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, 2017



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. [Signature]
HOWARD SCD

[Signature]
DATE: 1/19/16

DEPARTMENT OF PUBLIC WORKS, HOWARD COUNTY, MD

[Signature]
CHIEF, BUREAU OF ENVIRONMENTAL SERVICES

DATE: 12/18/15

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, 2017

[Signature]

DATE: AUG. 2016

NO. REVISIONS DESCRIPTION: AS-BUILT

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

KCI TECHNOLOGIES

STORMWATER AND WATERSHED MANAGEMENT EVALUATION / DESIGN-BUILD SERVICES

RUSTY RIM POND ENHANCEMENTS

Howard County Contract # CA-28-2013
HOWARD COUNTY DEPARTMENT OF PUBLIC WORKS
STORMWATER MANAGEMENT DIVISION
680 COLUMBIA AVENUE, SUITE 200
COLUMBIA, MD 21046

EROSION AND SEDIMENT CONTROL NOTES & DETAILS

SCALE: N/A

DATE: DECEMBER 2015

KCI JOB NO.: 17133314.40

CAPITAL PROJECT NO.: CA 13-2013

PERMIT ISSUE:

CONSTRUCTION ISSUE:

SHEET NO.: 10 OF 15

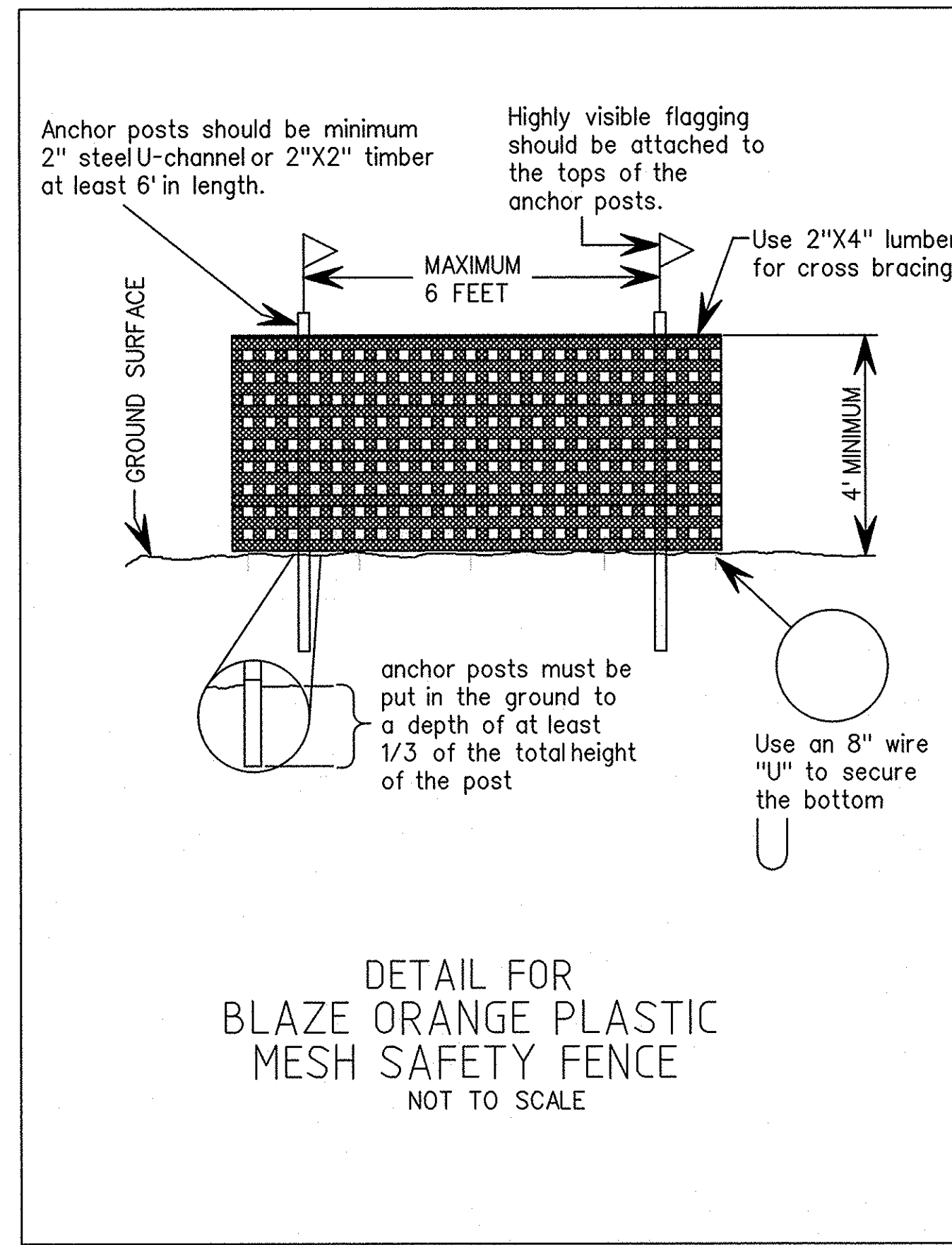
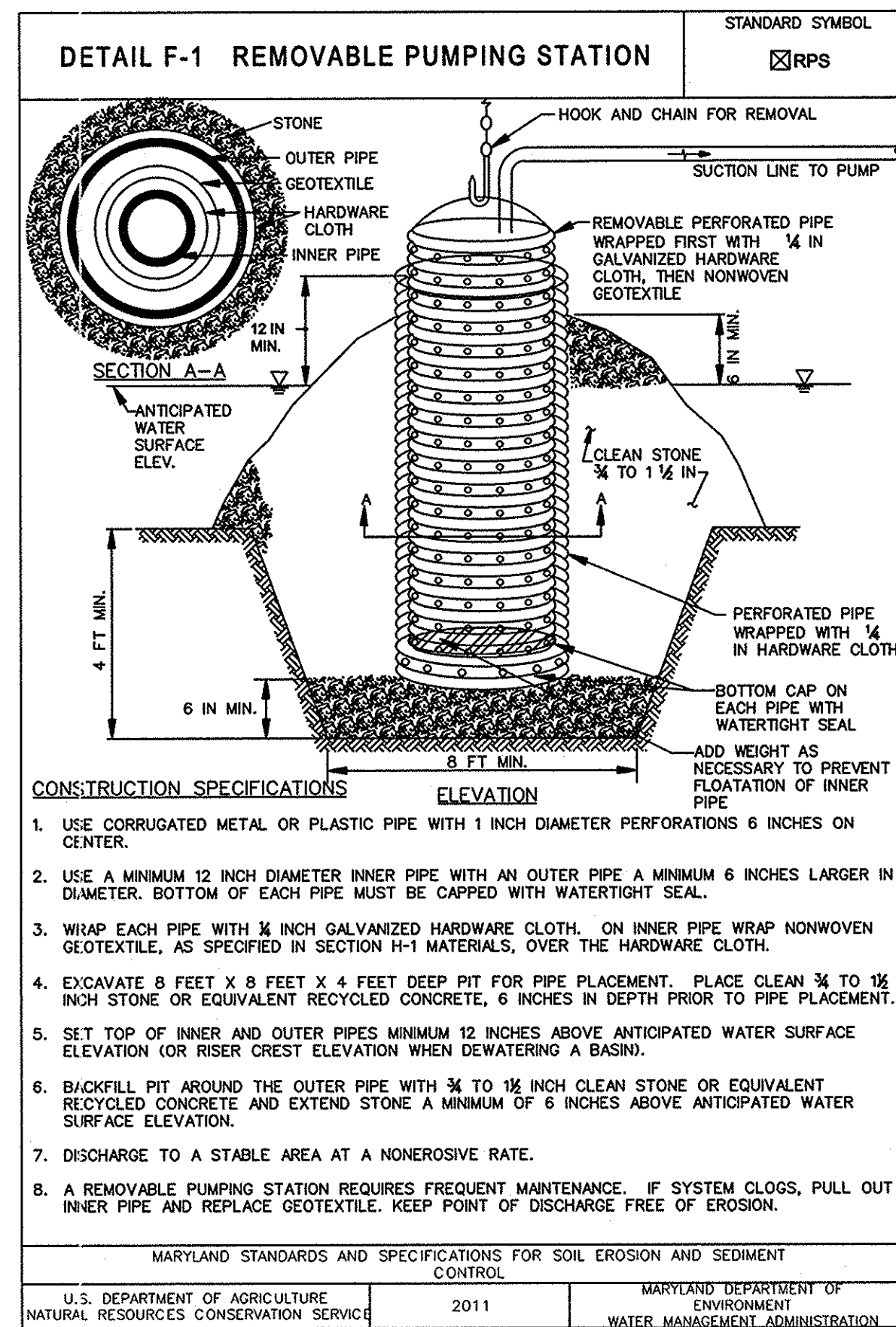
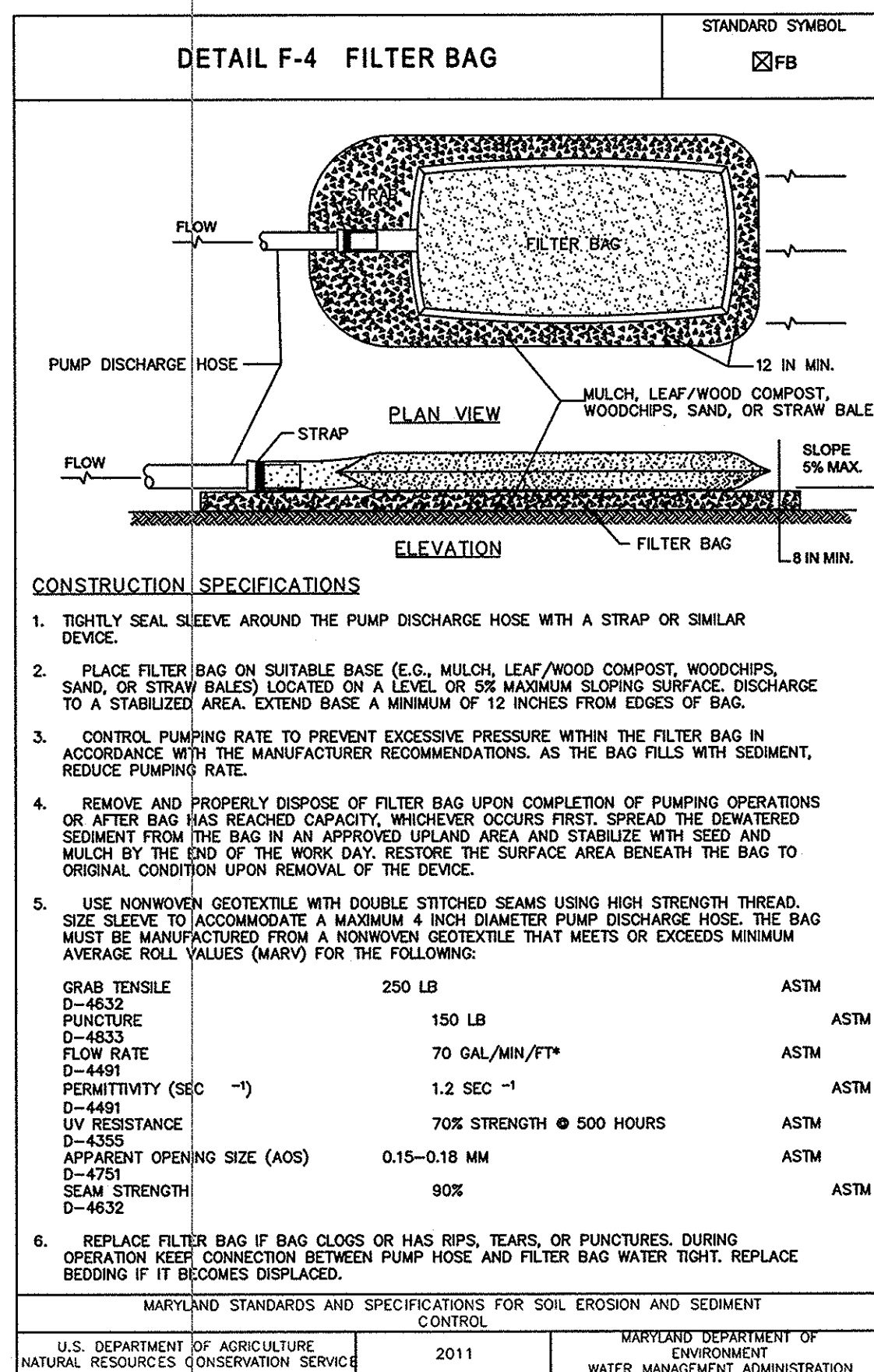


TABLE 28 STONE SIZE

NUMBER	SIZE RANGE	D 50	D 100	AASHTO	HEIGHT
NUMBER 57*	3/8"-1 1/2"			M-43	N/A
NUMBER 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 PSIMIN.
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

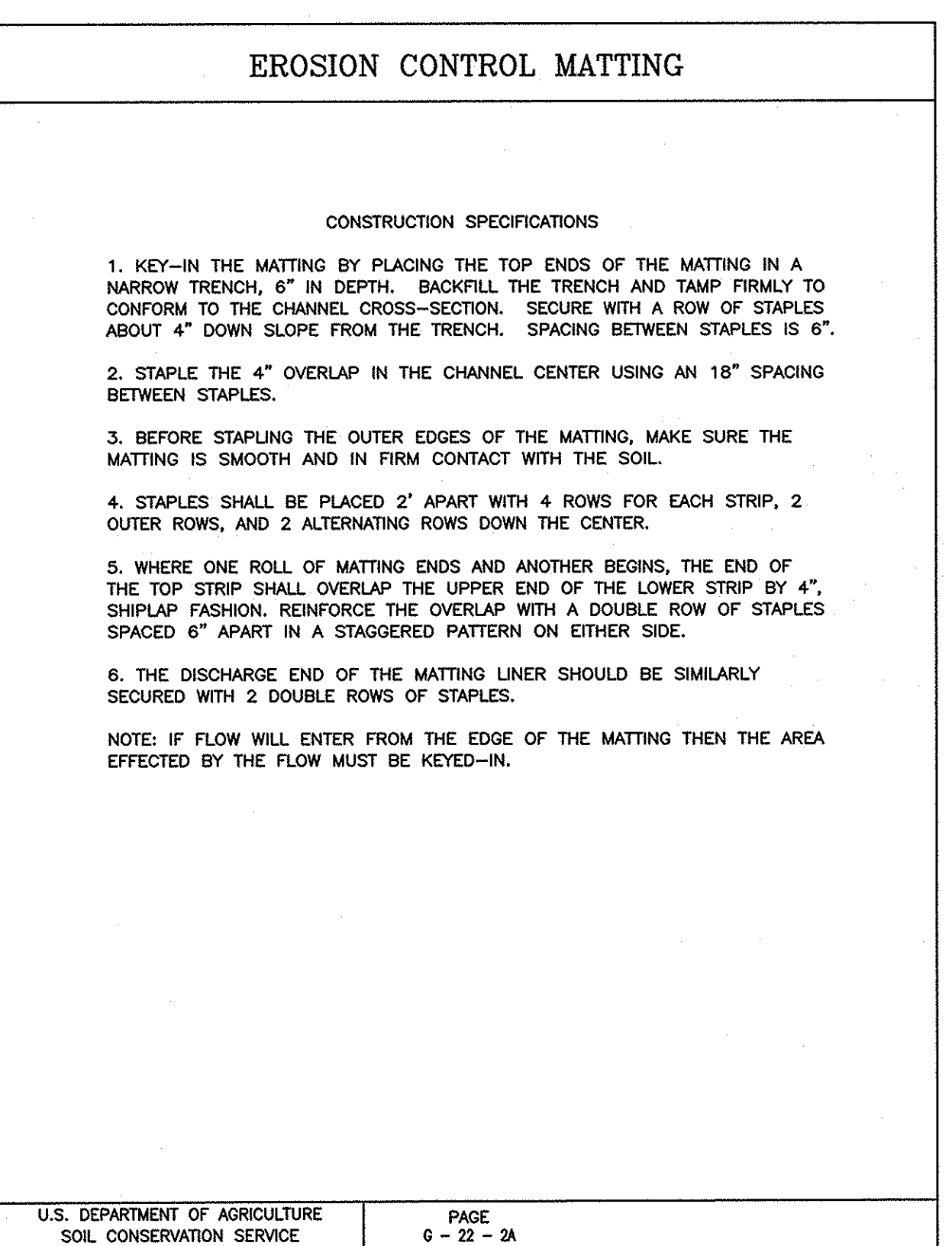
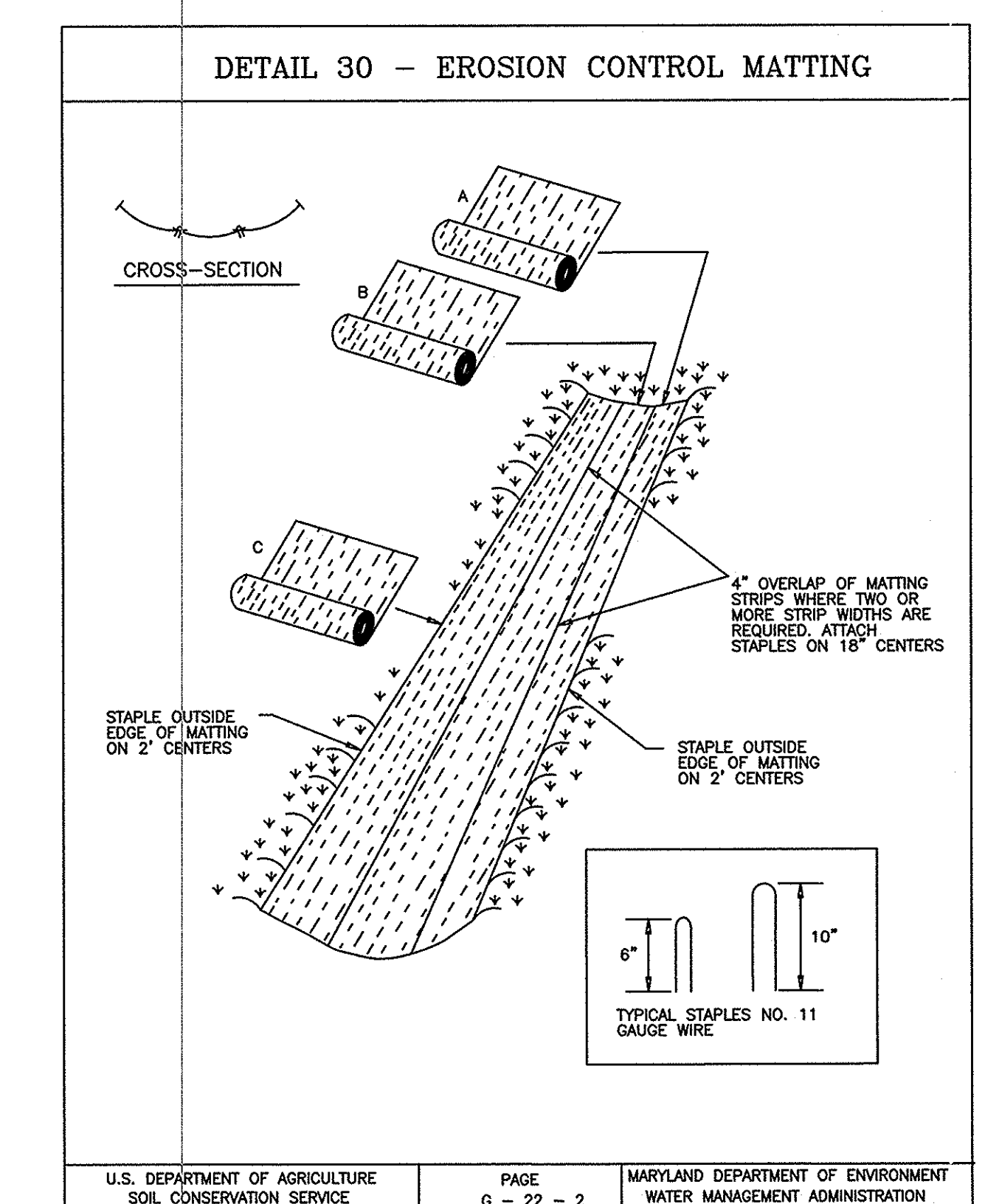
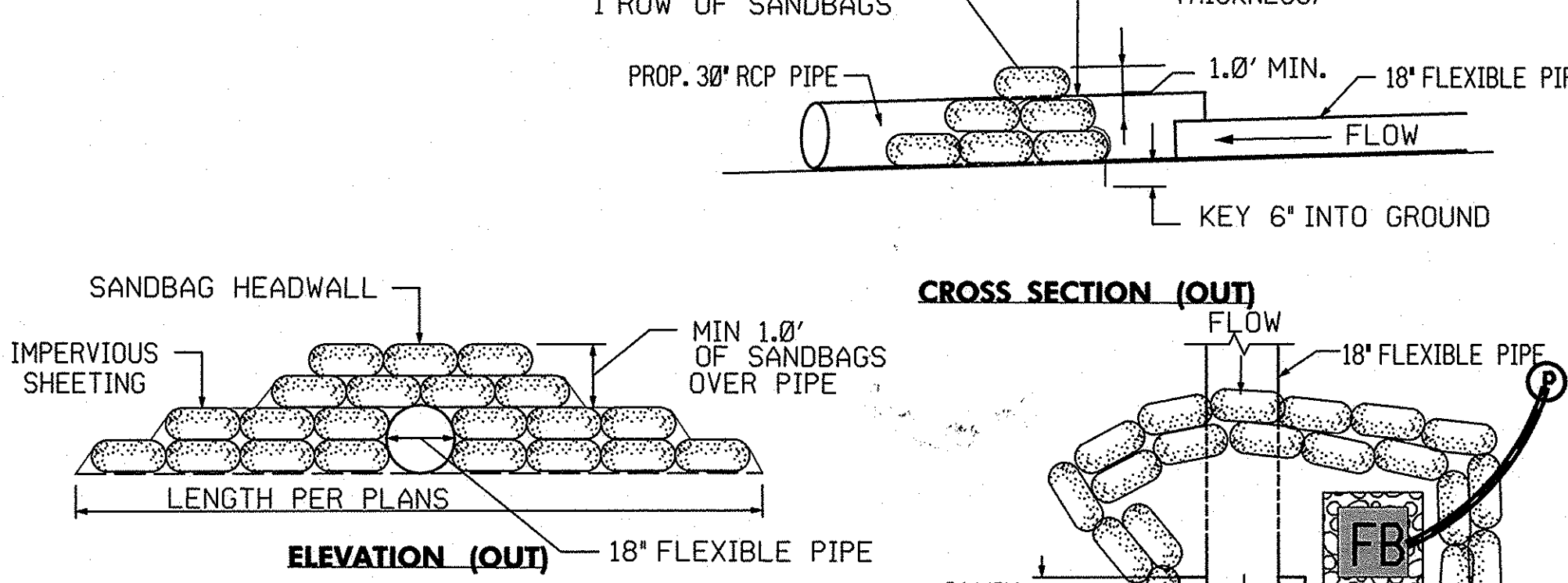
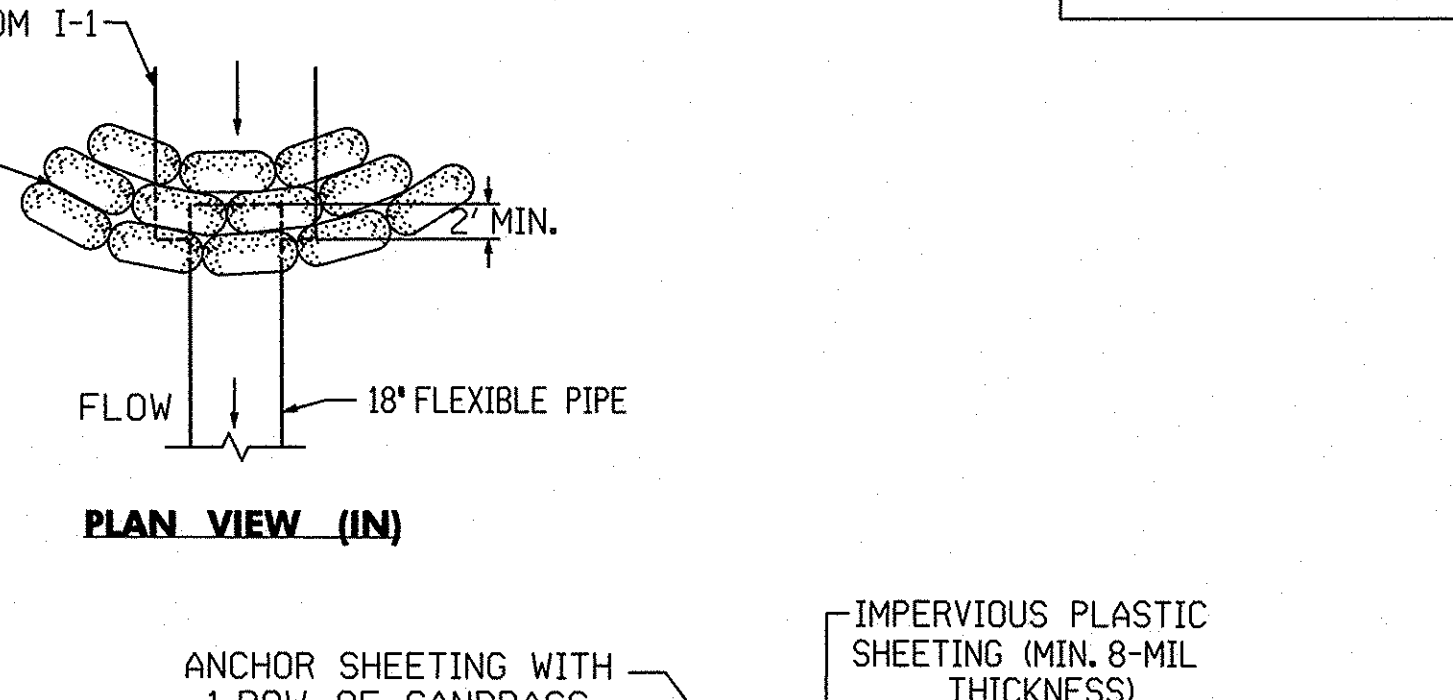
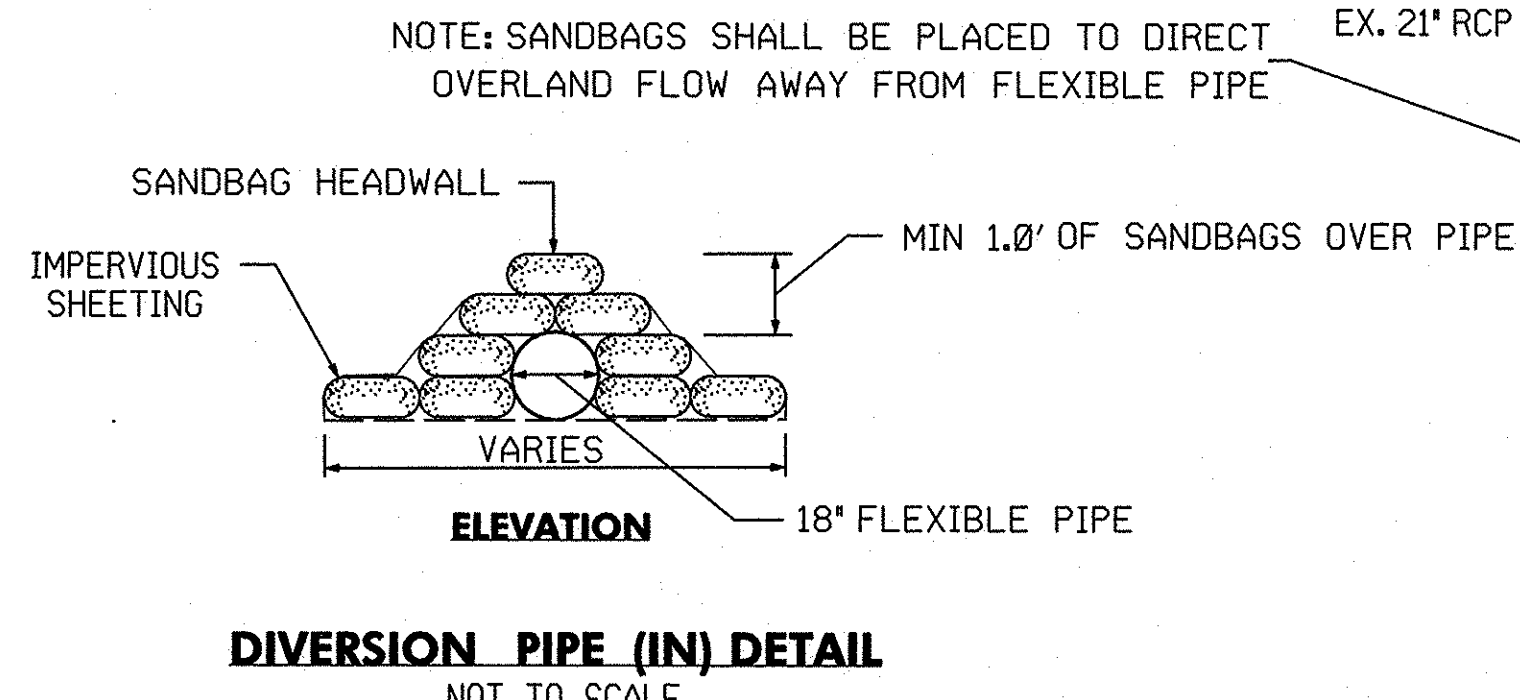
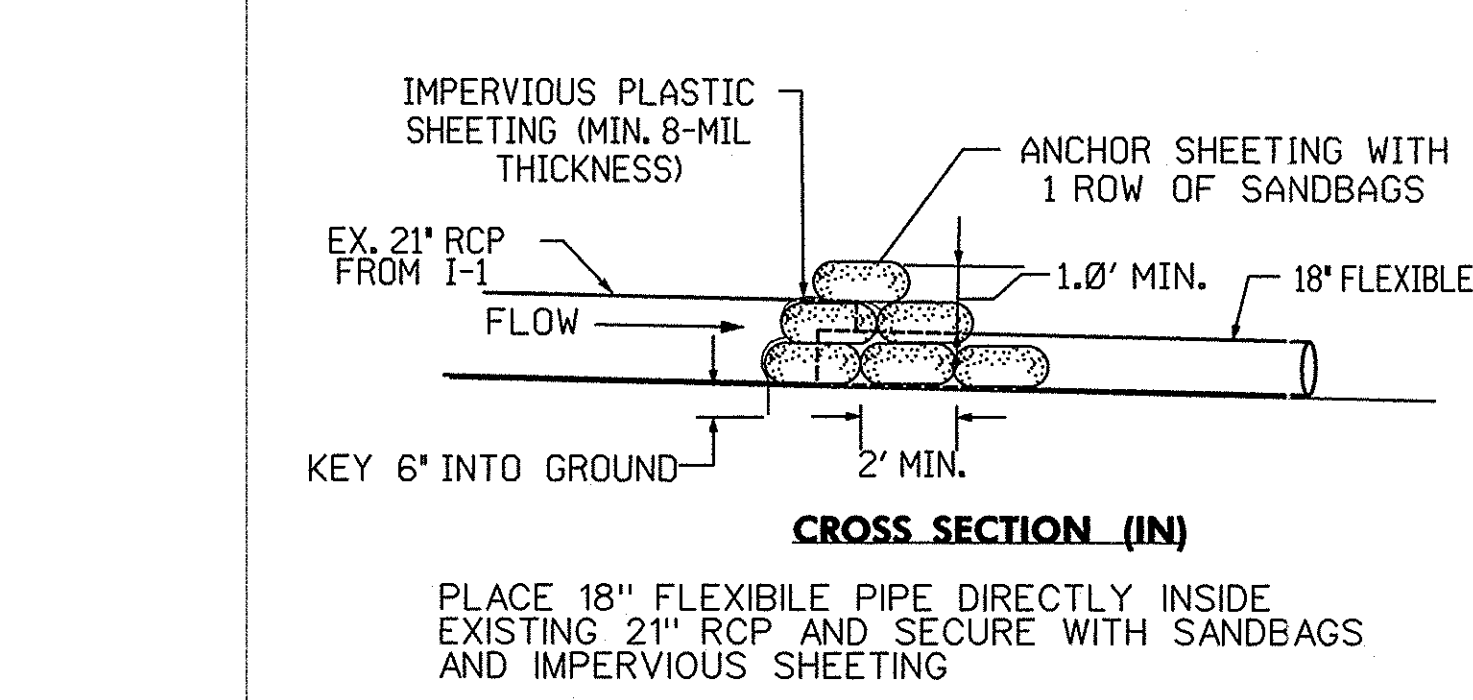
THE FABRIC SHALL BE INERT TO COMMONLY ENCOUNTERED CHEMICALS AND HYDROCARBONS, AND WILL BE ROT AND MILDWEAR RESISTANT. IT SHALL BE MANUFACTURED FROM FIBERS CONSISTING OF LONG CHAIN SYNTHETIC POLYMERS, AND COMPOSED OF A MINIMUM OF 85% BY WEIGHT OF POLYOLEPHINS, POLYESTERS, OR POLYAMIDES. THE GEOTEXTILE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

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: 11/9/16

DEPARTMENT OF PUBLIC WORKS, HOWARD COUNTY, MD

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

DATE: 12/15/15

PROFESSIONAL CERTIFICATION 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, 2017

John K. Roberts

DATE: _____

NO. _____ REVISIONS DESCRIPTION _____

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

HOWARD COUNTY CONTRACT # CA 13-2013
HOWARD COUNTY DEPARTMENT OF PUBLIC WORKS
STORMWATER MANAGEMENT DIVISION
670 COLUMBIA GREENWAY DRIVE
COLUMBIA, MD 21046

STORMWATER AND WATERSHED MANAGEMENT
EVALUATION / DESIGN-BUILD SERVICES

RUSTY RIM
POND ENHANCEMENTS

EROSION AND SEDIMENT CONTROL NOTES & DETAILS

SCALE: AS SHOWN
DATE: DECEMBER 2015
KCI JOB NO.: 17133314.40
CAPITAL PROJECT NO.: CA 13-2013
PERMIT ISSUE: _____
CONSTRUCTION ISSUE: _____

SHEET NO.: 11 OF 15

KCI FILE#: M.A. 2014 \ 17133314.40 \

**HOWARD SOIL CONSERVATION DISTRICT (HSCD)
STANDARD SEDIMENT CONTROL NOTES**

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

- 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.
- 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.
- For sites having disturbed area over 5 acres, use and show the rates recommended by the soil testing agency.
- 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

- Areas where turfgrass may be desired include lawns, parks, playgrounds, and commercial sites which will receive a medium to high level of maintenance.
- 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.
 - 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.
 - 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.
 - 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.
 - 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)

***NOTE:**

SPECIFICATIONS AND STANDARDS CONTAINED HEREIN ARE FOR RISER/BAREL REPLACEMENT. REFER TO CENTER FOR WATERSHED PROTECTION SHEET 2 OF 8 FOR BIORETENTION SPECIFICATIONS.

- 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.
- 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	
Mix 6	Tall Fescue	40	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)
	Perennial Ryegrass	25	Mar 1-May 15 Aug 1-Oct 15	1/4- 1/2 in				
	White Clover	5	Mar 1-May 15 Aug 1-Oct 15	1/4- 1/2 in				

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

1. General Specifications

- Class of turfgrass sod must be Maryland State Certified. Sod labels must be made available to the job foreman and inspector.
- 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.
- 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.
- Sod must not be harvested or transplanted when moisture content (excessively dry or wet) may adversely affect its survival.
- 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

- During periods of excessively high temperature or in areas having dry subsoil, lightly irrigate the subsoil immediately prior to laying the sod.
- 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.
- 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.

3. Sod Maintenance

- 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.
- After the first week, sod watering is required as necessary to maintain adequate moisture content.
- 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.

1. A pre-construction meeting must occur with the Howard County Department of Public Works, Construction Inspection Division (CID), 410-313-1855 after the future LOD and protected areas are marked clearly in the field. A minimum of 48 hour notice to CID must be given at the following stages:

- Prior to the start of earth disturbance,
- Upon completion of the installation of perimeter erosion and sediment controls, but before proceeding with any other earth disturbance or grading,
- Prior to the start of another phase of construction or opening of another grading unit,
- Prior to the removal or modification of sediment control practices.

Other building or grading inspection approvals may not be authorized until this initial approval by the inspection agency is made. Other related state and federal permits shall be referenced, to ensure coordination and to avoid conflicts with this plan.

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 2011 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 is required within three (3) calendar days as to the surface of all perimeter controls, dikes, swales, ditches, perimeter slopes, and all slopes steeper than 3 horizontal to 1 vertical (3:1); and seven (7) calendar days as to all other disturbed areas on the project site except for those areas under active grading.

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 topsoil (Sec. B-4-2), permanent seeding (Sec. B-4-5), temporary seeding (Sec. B-4-4) and mulching (Sec. B-4-3). Temporary stabilization with mulch alone can only be applied between the fall and spring seeding dates if the ground is frozen. Incremental stabilization (Sec. B-4-1) specifications shall be enforced in areas with >15' of cut and/or fill. Stockpiles (Sec. B-4-8) in excess of 20 ft. must be benched with stable outlet. All concentrated flow, steep slope, and highly erodible areas shall receive soil stabilization matting (Sec. B-4-6).

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 CID.

6. Site Analysis:

Total Area of Site:	0.28	Acres
Area Disturbed:	0.25	Acres
Area to be roofed or paved:	0.00	Acres
Area to be vegetatively stabilized:	0.25	Acres
Total Cut:	766	Cu. Yds.
Total Fill:	554	Cu. Yds.
Offsite waste/borrow area location:	TO BE DETERMINED	

7. Any sediment control practice which 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 CID. The site and all controls shall be inspected by the contractor weekly; and the next day after each rain event. A written report by the contractor, made available upon request, is part of every inspection and should include:

- Inspection date
- Inspection type (routine, pre-storm event, during rain event)
- Name and title of inspector
- Weather information (current conditions as well as time and amount of last recorded precipitation)
- Brief description of project's status (e.g., percent complete) and/or current activities
- Evidence of sediment discharges
- Identification of plan deficiencies
- Identification of sediment controls that require maintenance
- Identification of missing or improperly installed sediment controls
- Compliance status regarding the sequence of construction and stabilization requirements
- Photographs
- Monitoring/sampling
- Maintenance and/or corrective action performed
- Other inspection items as required by the General Permit for Stormwater Associated with Construction Activities (NPDES, MDE).

9. Trenches for the construction of utilities is limited to three pipe lengths or that which can and shall be back-filled and stabilized by the end of each workday, whichever is shorter.

10. Any major changes or revisions to the plan or sequence of construction must be reviewed and approved by the HSCD prior to proceeding with construction. Minor revisions may be allowed by the CID per the list of HSCD-approved field changes.

11. Disturbance shall not occur outside the L.O.D. A project is to be sequenced so that grading activities begin on one grading unit (maximum acreage of 20 ac. per grading unit) at a time. Work may proceed to a subsequent grading unit when at least 50 percent of the disturbed area in the preceding grading unit has been stabilized and approved by the CID. Unless otherwise specified and approved by the CID, no more than 30 acres cumulatively may be disturbed at a given time.

12. Wash water from any equipment, vehicles, wheels, pavement, and other sources must be treated in a sediment basin or other approved washout structure.

13. Topsoil shall be stockpiled and preserved on-site for redistribution onto final grade.

14. All Silt Fence and Super Silt Fence shall be placed on-the-contour, and be imbricated at 25' minimum intervals, with lower ends curled uphill by 2' in elevation.

15. Stream channels must not be disturbed during the following restricted time periods (inclusive):

- Use I and IP March 1 - June 15
- Use III and IIIP October 1 - April 30
- Use IV March 1 - May 31

16. A copy of this plan, the 2011 MARYLAND STANDARDS AND SPECIFICATIONS FOR SOIL EROSION AND SEDIMENT CONTROL, and associated permits shall be on-site and available when the site is active.

NO.	REVISIONS DESCRIPTION	DATE

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

RUSTY RIM
POND ENHANCEMENTS

Howard County Contract # CA 13-2013
HOWARD COUNTY DEPARTMENT OF PUBLIC WORKS
STORMWATER MANAGEMENT DIVISION
1000 WASHINGTON BLVD
COLUMBIA, MD 21046

**EROSION AND
SEDIMENT
CONTROL NOTES**

SCALE:	N/A
DATE:	DECEMBER 2015
KCI JOB NO.:	17133314-40
CAPITAL PROJECT NO.:	CA 13-2013
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 K. Roberts
HOWARD COUNTY DEPARTMENT OF PUBLIC WORKS

DEPARTMENT OF PUBLIC WORKS, HOWARD COUNTY, MD

Mark D. Rhea
CHIEF, BUREAU OF ENVIRONMENTAL SERVICES

11/19/16
12/18/15
DATE

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. 39896. EXPIRATION DATE: JANUARY 04, 2017

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.

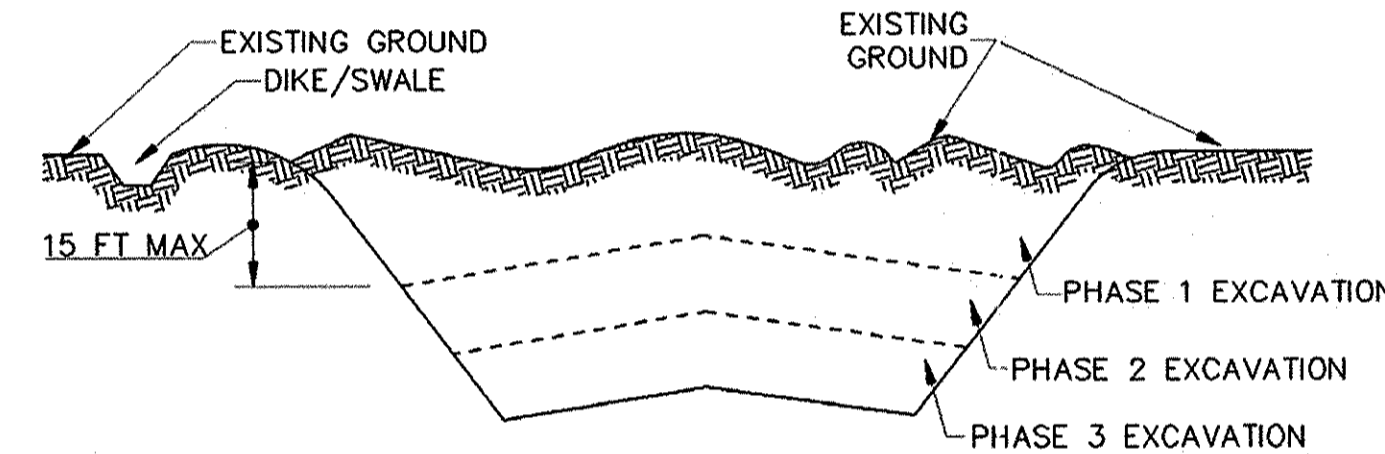


Figure B.1: Incremental Stabilization - Cut

B. 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.

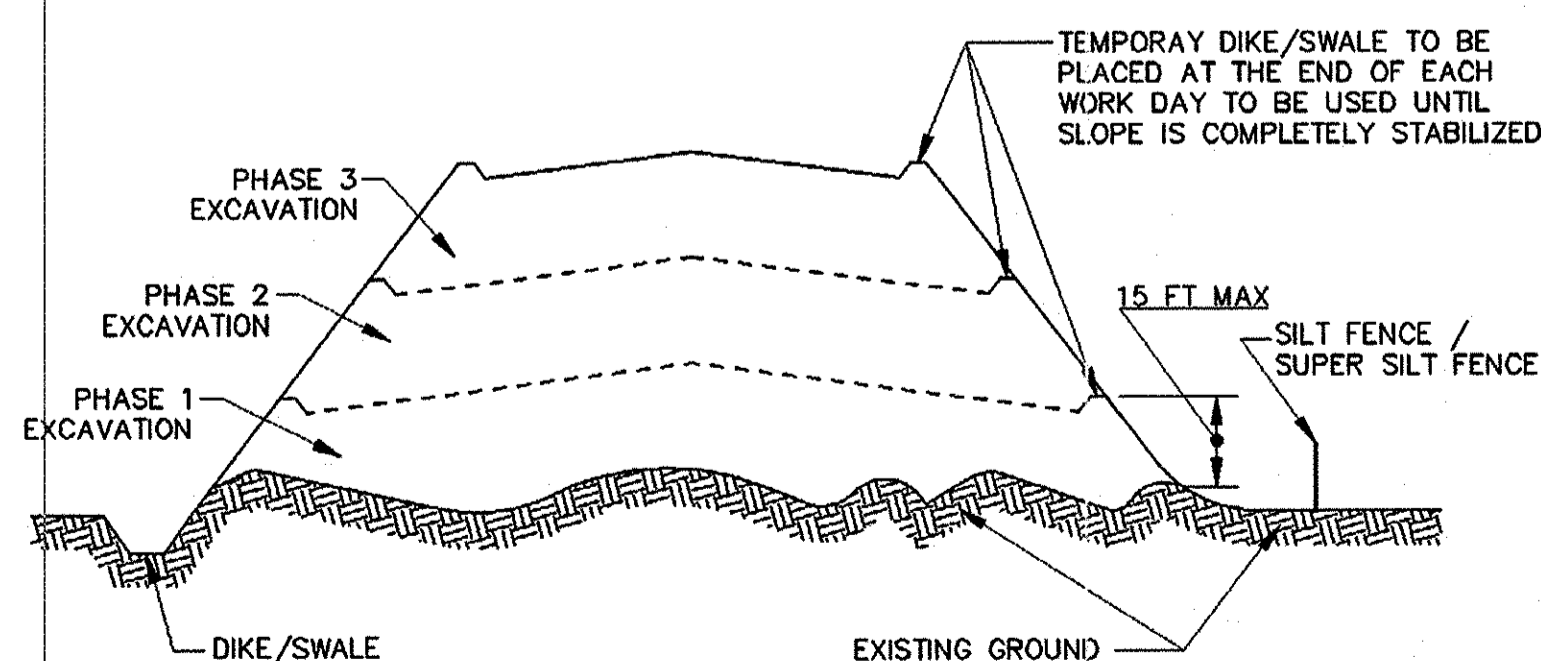


Figure B.2: Incremental Stabilization - Fill

B-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.

- d. Apply soil amendments as specified on the approved plan or as indicated by the results of a soil test.
- 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.

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.

*NOTE:
SPECIFICATIONS AND STANDARDS CONTAINED HEREIN ARE FOR RISER/BAREL REPLACEMENT. REFER TO CENTER FOR WATERSHED PROTECTION SHEET 2 OF 8 FOR BIORETENTION SPECIFICATIONS.

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, 2017

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 SCD
11/19/16
DATE

DEPARTMENT OF PUBLIC WORKS, HOWARD COUNTY, MD

Mark D. Lucas
CHIEF, BUREAU OF ENVIRONMENTAL SERVICES
12/18/15
DATE

NO.	REVISIONS DESCRIPTION	DATE

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

RUSTY RIM
POND ENHANCEMENTS

Howard County Contract # CA 13-2013
HOWARD COUNTY DEPARTMENT OF PUBLIC WORKS
STORMWATER MANAGEMENT DIVISION
EST. COLUMBIA UNIVERSITY DRIVE
COLUMBIA, MD 21046

**EROSION AND
SEDIMENT
CONTROL NOTES**

SCALE:	N/A
DATE:	DECEMBER 2015
KCI JOB NO.:	17133314.40
CAPITAL PROJECT NO.:	CA 13-2013
PERMIT ISSUE:	
CONSTRUCTION ISSUE:	

B-4-3 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.

Criteria

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

- a. 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 contact.
- 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.
 - iv. When hydroseeding do not incorporate seed into the soil.

B. Mulching

1. 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 slurry.
 - 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 slurry. The mulch material must form a blotter-like ground cover, on application, having moisture absorption and percolation properties and must cover and hold grass seed in contact with the soil without inhibiting the growth of the grass seedlings.
 - 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.
- 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.
- c. 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.

B-4-8 STANDARDS AND SPECIFICATIONS

FOR

STOCKPILE AREA

Definition

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.

Criteria

- 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.
- 3. Runoff from the stockpile area must drain to a suitable sediment control practice.
- 4. 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.

*NOTE: SPECIFICATIONS AND STANDARDS CONTAINED HEREIN ARE FOR RISER/BAREL REPLACEMENT. REFER TO CENTER FOR WATERSHED PROTECTION SHEET 2 OF 8 FOR BIORETENTION SPECIFICATIONS.

Maintenance

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-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.

Criteria

- 1. 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.1.b and maintain until the next seeding season.

Temporary Seeding Summary

Hardiness Zone (from Figure B.3): <u>6B</u> Seed Mixture (from Table B.1):					Fertilizer Rate (10-20-20)	Lime Rate
No.	Species	Application Rate (lb/ac)	Seeding Dates	Seeding Depths		
	Annual Ryegrass	40	Mar 1 to May 15; Aug 1 to Oct 15	1/2 in.	436 lb/ac (10 lb/1000 sf)	2 tons/ac (90 lb/1000 sf)
	Oats	72	Mar 1 to May 15; Aug 1 to Oct 15	1.0 in.		
	Cereal Rye	112	Mar 1 to May 15; Aug 1 to Oct 15	1.0 in.		

NOTES:

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 rye 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.

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, 2017

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. Blatas 11/9/16
HOWARD SCD DATE

DEPARTMENT OF PUBLIC WORKS, HOWARD COUNTY, MD
Michael D. Preece 12/15/15
CHIEF, BUREAU OF ENVIRONMENTAL SERVICES DATE

NO.	REVISIONS	DESCRIPTION	DATE

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

RUSTY RIM
POND ENHANCEMENTS

Howard County Contract # CA 13-2013
HOWARD COUNTY DEPARTMENT OF PUBLIC WORKS
STORMWATER MANAGEMENT DIVISION
605 COLUMBIA AVENUE, SUITE 200
COLUMBIA, MD 21046

EROSION AND SEDIMENT CONTROL NOTES

SCALE: N/A
DATE: DECEMBER 2015
KCI JOB NO.: 17133314.40
CAPITAL PROJECT NO.: CA 13-2013
PERMIT ISSUE:
CONSTRUCTION ISSUE:

SHEET NO.: 14 OF 15

GENERAL CONSTRUCTION NOTES

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

WARNING! SITE INVESTIGATIONS REVEAL EXISTING UNDERGROUND UTILITIES THAT ARE IN DIRECT CONFLICT WITH PROJECT IMPACTS.

TELEPHONE SERVICE LINE - AN EXISTING SUBSURFACE TELEPHONE LINE RUNS ALONG THE CENTERLINE OF EMBANKMENT AND PASSES DIRECTLY THROUGH THE AREA TO BE EXCAVATED IN ORDER TO REPLACE THE PRINCIPAL SPILLWAY.

NATURAL GAS LINE- AN EXISTING UNDERGROUND NATURAL GAS LINE IS PRESENT IN THE VICINITY OF MANHOLE MH-1 AND ALSO RUNS THROUGH THE DOWNSTREAM END OF THE PROPOSED EXCAVATION TRENCH.

PVC UNDERDRAINS FROM PRIVATE PROPERTY - THERE APPEARS TO BE TWO 8 INCH PVC UNDERDRAINS ORIGINATING FROM THE PRIVATE PROPERTY DOWNSTREAM OF THE POND THAT RUN THROUGH THE DOWNSTREAM END OF THE PROPOSED EXCAVATION TRENCH AND TIE INTO EXISTING MANHOLE MH-1.

CONTRACTOR SHALL COORDINATE AN ON-SITE PRE-CONSTRUCTION MEETING THAT SHALL INCLUDE COUNTY PROJECT MANAGER, ENGINEER, AND HOWARD COUNTY CONSTRUCTION INSPECTION, BUREAU OF UTILITY.

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

CONTRACTOR SHALL TAKE EXTRA PRECAUTION WHEN OPERATION EQUIPMENT AND TRANSPORTING MATERIALS IN THIS RESIDENTIAL AREA. USE CAUTION TO MINIMIZE IMPACTS TO EXISTING TREES, EXISTING UTILITIES AND ALL OTHER EXISTING FEATURES.

CONTRACTOR SHALL CAUTION EQUIPMENT OPERATORS TO TAKE EXTRA PRECAUTION WHILE TRAVERSING BENEATH EXISTING OVERHEAD UTILITY LINES SURROUNDING THE FACILITY.

ALL GRADING OPERATIONS SHALL BE DONE IN STRICT ACCORDANCE WITH THE PUMP AROUND CRITERIA. ALL EXCAVATED SEDIMENT SHALL BE TRANSPORTED TO AN APPROVED LOCATION OFFSITE.

CONSTRUCTION VEHICLE PARKING AND MATERIAL STORAGE ARE NOT PERMITTED ON RUSTY RIM ROADWAY. THERE IS A MAIL KIOSK ON RUSTY RIM THAT CANNOT BE BLOCKED, POSTAL SERVICE AND RESIDENTS MUST HAVE ACCESS TO KIOSK AT ALL TIMES.

SEQUENCE OF CONSTRUCTION

PRE-CONSTRUCTION ACTIVITIES

THE CONTRACTOR SHALL OBTAIN ALL NECESSARY PERMITS FOR CONSTRUCTION, INCLUDING GRADING PERMIT, FROM THE COUNTY.

CLEAR AND GRUB AREAS AS NEEDED WITHIN THE LIMIT OF DISTURBANCE REQUIRED TO ESTABLISH THE PROPOSED SEDIMENT CONTROL MEASURES.

INSTALL STABILIZED CONSTRUCTION ENTRANCE, STOCKPILE AREAS, ALL PERIMETER CONTROL DEVICES INCLUDING ORANGE SAFETY FENCE, SILT FENCE, SUPER SILT FENCE, AND CURB INLET PROTECTION AS SHOWN ON THE EROSION AND SEDIMENT CONTROL PLAN (SHEET 8 OF 15) OR AS DIRECTED BY THE SEDIMENT CONTROL INSPECTOR.

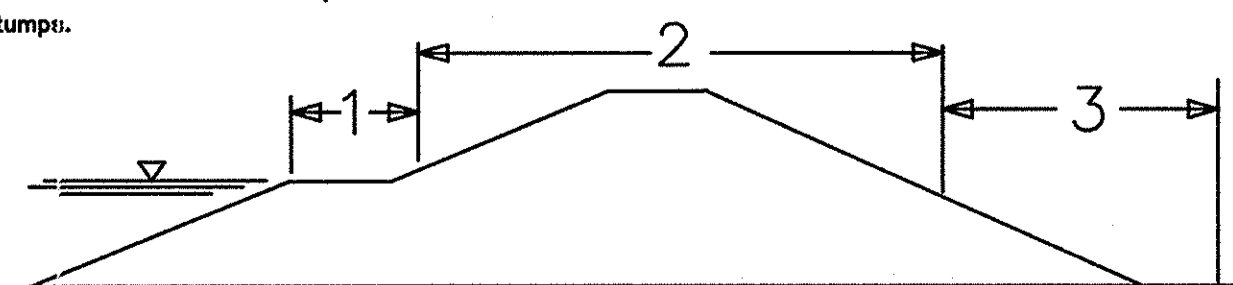
PERFORM TREE REMOVAL WITHIN WOODY FREE ZONE ON THE EMBANKMENT (SEE TABLE "A" FOR GENERAL RECOMMENDATIONS FOR TREE REMOVAL)

WITH PERMISSION FROM THE INSPECTOR, PROCEED WITH CONSTRUCTION ACTIVITIES ASSOCIATED WITH PHASE 1 .

TABLE A
GENERAL RECOMMENDATIONS FOR TREE REMOVAL 2-1-81

TREE LOCATION ZONE	TREE TYPE A (TAP ROOT) DBH < 8"				TREE TYPE B (SPREADING ROOTS) DBH > 8"			
	LIGHT COVER	HEAVY COVER	LIGHT COVER	HEAVY COVER	LIGHT COVER	HEAVY COVER	LIGHT COVER	HEAVY COVER
1 1/	Cut and kill stumps.	Cut and kill stumps.	Cut and kill stumps.	Cut and kill stumps.	Cut and kill stumps.	Cut and kill stumps.	Cut and kill stumps.	Cut and kill stumps.
2 4/	Cut and kill stumps. 2/	Cut and grub stumps and root mass to 18" depth uniformly.	Cut and grub stumps and root mass to 24" depth in 1/2 crown width diameter area.	Cut and grub stumps and root mass to 24" depth uniformly.	Cut and kill stumps. 2/	Cut and grub stumps and root mass to 12" depth uniformly.	Cut and grub stumps and root mass to 18" depth in crown width diameter area. 3/	Cut and grub stumps and root mass to 18" depth uniformly.
3 2/	Cut and kill stumps.	Cut and grub stumps and root mass to 18" depth uniformly.	Cut and grub stumps and root mass to 24" depth in 1/2 crown width diameter area. 3/	Cut and grub stumps and root mass to 18" depth uniformly.	Cut and kill stumps. 5/	Cut and grub stumps and root mass to 12" depth uniformly. 5/	Cut and grub stumps and root mass to 18" depth in crown width diameter area. 3/ 5/	Cut and grub stumps and root mass to 12" depth uniformly. 5/

- 1/ Tree growth smaller than 2" DBH will be removed by spraying, injection or cutting and stump killing. Trees and shrubs planted for shoreline protection in Zone 1 shall be maintained at heights < 4 feet.
- 2/ In embankment type (a) dispersed soil--cut stumps 12 inches below surface and backfill with compacted soil.
- 3/ In embankment type (a) earthfill with low piping potential--cut and kill stumps.
- 4/ In riprapped or heavy rockfill sections grubbing is not required.
- 5/ For water-loving trees such as willows, remove stump and root mass in twice the crown width area.
- 6/ For water-loving trees such as willows, remove stumps and root mass to 18" depth uniformly.
- 7/ Individual large trees in this zone may need the special treatment as described in Section 3.



705-8

SEQUENCE OF CONSTRUCTION (CONTINUED)

PHASE 1 * REPLACE BARREL PIPE

DURING ANTICIPATED 5-DAY PERIOD OF DRY WEATHER, EXCAVATE TO OPEN CUT THE EXISTING DAM, REMOVE THE EXISTING 24 INCH CORRUGATED METAL PIPE (CMP), EXISTING ANTI-SEEP COLLAR, AND EXISTING CONCRETE CRADLE. CONTRACTOR SHALL USE CAUTION TO MINIMIZE DAMAGE TO THE EXISTING MANHOLE (MH-1) DOWNSTREAM WHEN DISCONNECTING/REMOVING THE 24 INCH CMP. NOTE THAT THE EXISTING 54 INCH MAIN LINE RUNNING THROUGH MH-1 MAY CONTAIN STREAM BASEFLOW. ONCE THE 24 INCH CMP IS DISCONNECTED FROM MH-1, IF NECESSARY AND WITH APPROVAL FROM THE INSPECTOR, CONTRACTOR MAY TEMPORARILY STACK SANDBAGS AGAINST MANHOLE (MH-1) TO COVER THE TEMPORARY OPENING CAUSED BY REMOVING THE 24 INCH CMP.

ONCE THE EXISTING 24 INCH CMP, EXISTING CONCRETE CRADLE, AND EXISTING ANTI-SEEP COLLAR ARE REMOVED, CONTRACTOR SHALL COMPACT AND GROOM THE NATIVE SOIL IN THE EXPOSED TRENCH TO PREPARE FOR INSTALLATION OF THE PROPOSED SPILLWAY.

WORKING FROM DOWNSTREAM TO UPSTREAM, INSTALL THE PROPOSED 30 INCH REINFORCED CONCRETE PIPE (RCP), PROPOSED PROJECTION COLLAR, PROPOSED CONCRETE CRADLE, PROPOSED ANTI-SEEP COLLARS, AND PROPOSED CLAY CORE. PRIOR TO INSTALLATION OF PROPOSED 30" RCP, CONTRACTOR IS REQUIRED TO DETERMINE A WATERTIGHT CONNECTION STRATEGY AT THE JUNCTION OF EXISTING MANHOLE AND PROPOSED PIPE AND PROVIDE SHOP DRAWING TO THE ENGINEER FOR APPROVAL. REPAIR/RESTORE ANY POTENTIAL DAMAGE TO EXISTING MANHOLE (MH-1). OBTAIN ALL SPOT ELEVATIONS/INVERTS/AS-BUILT SURVEY AS REQUIRED PRIOR TO RESTORING THE EMBANKMENT.

NOTE: IF PROPOSED 30 INCH RCP CANNOT BE INSTALLED IN A SINGLE WORK DAY, PLACE TEMPORARY GRAVITY DIVERSION PIPE THROUGH AREA OF EXCAVATION OVERNIGHT AS NEEDED. SECURE BOTH ENDS WITH SANDBAGS.

ONCE PROPOSED CONCRETE CRADLE, PROPOSED 30 INCH REINFORCED CONCRETE PIPE (RCP), PROPOSED ANTI-SEEP COLLARS, AND CLAY CORE ARE INSTALLED AND EMBANKMENT RESTORATION COMPLETED, WITH PERMISSION FROM THE INSPECTOR, PROCEED WITH CONSTRUCTION ACTIVITIES ASSOCIATED WITH PHASE 2.

PHASE 2* INSTALL BIORETENTION CELL AND PROPOSED RISER

* NOTE: UNDER DRY WEATHER CONDITIONS AND WITH PERMISSION FROM THE SEDIMENT CONTROL INSPECTOR, CONTRACTOR MAY INSTALL BIORETENTION CELL AND CONSTRUCT PROPOSED RISER STRUCTURE SIMULTANEOUSLY. HOWEVER, THE GRAVITY DIVERSION PIPE MUST BE RECONNECTED TO THE 30" RCP BARREL PIPE AND FUNCTION RESTORED AT THE END OF EACH WORK DAY UNTIL INSTALLATION OF THE BIORETENTION CELL IS COMPLETE AND STABLE.

PERIMETER CONTROLS INSTALLED IN PHASE 1 SHOULD REMAIN IN PLACE AND FUNCTIONAL FOR THE DURATION OF PHASE 2.

DURING NEXT ANTICIPATED 3-DAY PERIOD OF DRY WEATHER, EXCAVATE AND REMOVE SEGMENT OF EXISTING 21 INCH PIPE AS INDICATED ON THE CONTRACT DOCUMENTS RUSTY RIM DETENTION POND RETROFIT, CENTER FOR WATERSHED PROTECTION, DATED 08-03-2015. CONNECT 18 INCH GRAVITY DIVERSION PIPE TO EXISTING 21 INCH RCP. PLACE THE UPSTREAM END OF THE GRAVITY DIVERSION PIPE DIRECTLY INSIDE OF THE EXISTING 21 INCH RCP AND SECURE USING SANDBAGS. CONNECT THE DOWNSTREAM END OF THE GRAVITY DIVERSION TO THE 30 INCH RCP BARREL PIPE INSTALLED IN PHASE 1 AND SECURE WITH SANDBAGS. SEE DIVERSION PIPE (IN) DETAIL AND SAND BAG DAM (OUT) DETAIL ON SHEET 11 OF 15 FOR TEMPORARY CONNECTION DETAILS.

SET UP PUMP AROUND PRACTICE, HOSES, RIPRAP PAD AND FILTER BAG AS SHOWN ON SHEET 9 OF 15. ONCE THE GRAVITY DIVERSION PIPE IS INSTALLED AND PUMP AROUND PRACTICE AND FILTER BAG IN PLACE, WITH PERMISSION FROM THE INSPECTOR, PROCEED WITH GRADING/INSTALLATION OF THE BIORETENTION CELL IN THE POND BASIN.

BIORETENTION CELL

DURING NEXT ANTICIPATED 3-DAY PERIOD OF DRY WEATHER, EXCAVATE TO INSTALL THE PROPOSED BIORETENTION CELL PER THE CONTRACT DOCUMENTS RUSTY RIM DETENTION POND RETROFIT, CENTER FOR WATERSHED PROTECTION, DATED 08-03-2015 INCLUDING CLASS I RIPRAP FOREBAY, PVC UNDER DRAINS, CLEANOUTS, AND BIORETENTION MEDIA. REPLACE THE GRAVITY DIVERSION PIPE AND STABILIZE WITH SANDBAGS AS SHOWN ON DETAIL SHEET 11 OF 15 AT THE END OF EACH WORK DAY.

PROPOSED RISER

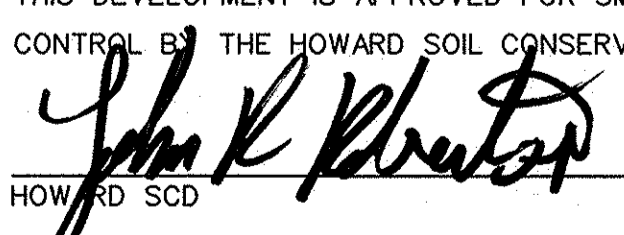
WITH PERMISSION FROM THE INSPECTOR, DURING ANTICIPATED 3-DAY PERIOD OF DRY WEATHER, INSTALL PROPOSED CONCRETE BASE, RISER, PROJECTION COLLAR, TRASH RACKS, AND TOP SLAB AS SHOWN ON RISER DETAIL SHEET 6 OF 15.

PRIOR TO COMPLETION OF CONSTRUCTION, CONTRACTOR SHALL REPAIR/RESTORE THE EXISTING CURB AND SIDEWALK WITHIN THE WORK AREA. WITH PERMISSION FROM THE INSPECTOR, PERMANENTLY STABILIZE ALL REMAINING DISTURBED AREAS, REMOVE SILT FENCE, SUPER SILT FENCE, DIVERSION FENCING, STABILIZED CONSTRUCTION ENTRANCE AND STOCKPILE AREAS, ORANGE SAFETY FENCING, AND ANY REMAINING EQUIPMENT FROM THE SITE.

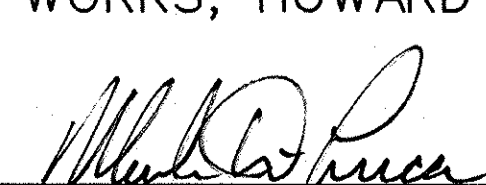
REVIEWED FOR HOWARD SCD AND MEETS TECHNICAL REQUIREMENTS

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

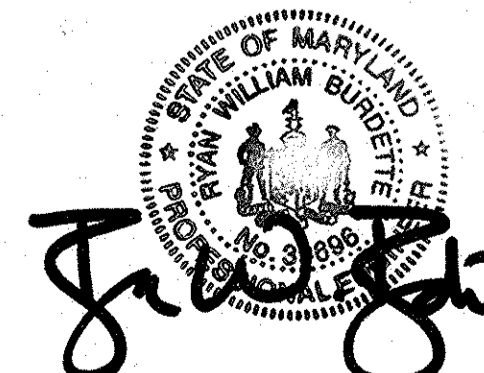
1/19/16
DATE


 HOWARD SCD

DEPARTMENT OF PUBLIC WORKS, HOWARD COUNTY, MD


 CHIEF, BUREAU OF ENVIRONMENTAL SERVICES

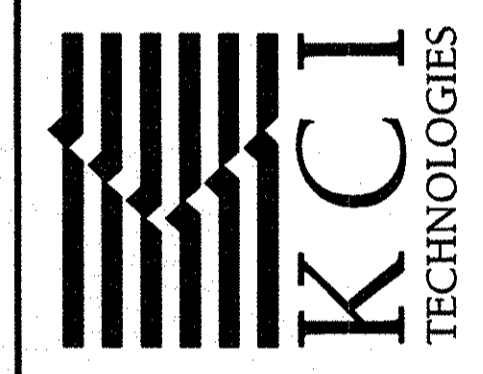
12/18/15
DATE


 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, 2017

NO.	REVISIONS DESCRIPTION	DATE

KCI FILE: M\2013\17133314_40 \ 17133314_40

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



KCI TECHNOLOGIES

STORMWATER AND WATERSHED MANAGEMENT
EVALUATION / DESIGN-BUILD SERVICES

RUSTY RIM
POND ENHANCEMENTS

Howard County Contract # CA 13-2013
HOWARD COUNTY DEPARTMENT OF PUBLIC WORKS
800 COLLEGE COUNTRY DRIVE
COLUMBIA, MD 21046

EROSION AND
SEDIMENT
CONTROL
SEQUENCE

SCALE: N/A
DATE: DECEMBER 2015
KCI JOB NO.: 17133314_40
CAPITAL PROJECT NO.: CA 13-2013
PERMIT ISSUE:
CONSTRUCTION ISSUE:

SHEET NO.: 15 OF 15

P:\2013\17133314_40\Drawings\15_PES-N004-Rusty_Rim.dgn
DATE: 01/19/16
FILE: M\2013\17133314_40\Drawings\15_PES-N004-Rusty_Rim.dgn