

CONSTRUCTION SPECIFICATIONS (Maryland Code 378 Pond - January 2000)

These specifications are appropriate to all ponds within the scope of the Standard for practice MD-378. All references to ASTM and AASHTO specifications apply to the most recent version.

Site Preparation

Areas designated for borrow areas, embankment, and structural works shall be cleared, grubbed and stripped of topsoil. All trees, vegetation, roots and other objectionable material shall be removed. Channel banks and sharp breaks shall be sloped to no steeper than 1:1. All trees shall be cleared and grubbed within 15 feet of the toe of the embankment.

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

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

Earth Fill

Material - The fill material shall be taken from approved designated borrow areas. It shall be free of roots, stumps, wood, rubbish, stones greater than 6" frozen or other objectionable materials. Fill material for the center of the embankment, and cut off trench shall conform to Unified Soil Classification GC, SC, CH, or CL and must have at least 30% passing the #200 sieve. Consideration may be given to the use of other materials in the embankment if designed by a geotechnical engineer. Such special designs must have construction supervised by a geotechnical engineer. Materials used in the outer shell of the embankment must have the capability to support vegetation of the quality required to prevent erosion of the embankment.

Placement - Areas on which fill is to be placed shall be scarified prior to placement of fill. Fill materials shall be placed in maximum 8 inch thick (before compaction) layers which are to be continuous over the entire length of the fill. The most permeable borrow material shall be placed in the downstream portions of the embankment. The principal spillway must be installed concurrently with fill placement and not excavated into the embankment.

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

When required by the reviewing agency the minimum required density shall not be less than 95% of maximum dry density with a moisture content within ±2% of the optimum. Each layer of fill shall be compacted as necessary to obtain that density, and is to be certified by the Engineer at the time of construction. All compaction is to be determined by AASHTO Method T-99 (Standard Proctor).

Cut Off Trench - The cutoff trench shall be excavated into impervious material along or parallel to the centerline of the embankment as shown on the plans. The bottom width of the trench shall be governed by the equipment used for excavation, with the minimum width being four feet. The depth shall be at least four feet below existing grade or as shown on the plans. The side slopes of the trench shall be 1 to 1 or flatter. The backfill shall be compacted with construction equipment, rollers, or hand tampers to assure maximum density and minimum permeability.

Embankment Core - The core shall be parallel to the centerline of the embankment as shown on the plans. The top width of the core shall be a minimum of four feet. The height shall extend up to at least the 10 year water elevation or as shown on the plans. The side slopes shall be 1 to 1 or flatter. The core shall be compacted with construction equipment, rollers, or hand tampers to assure maximum density and minimum permeability. In addition, the core shall be placed concurrently with the outer shell of the embankment.

Structure Backfill

Backfill adjacent to pipes or structures shall be of the type and quality conforming to that specified for the adjoining fill material. The fill shall be placed in horizontal layers not to exceed four inches in thickness and compacted by hand tampers or other manually directed compaction equipment. The material needs to fill completely all spaces under and adjacent to the pipe. At no time during the backfilling operation shall driven equipment be allowed to operate closer than four feet, measured horizontally, to any part of a structure. Under no circumstances shall equipment be driven over any part of a concrete structure or pipe, unless there is a compacted fill of 24" or greater over the structure or pipe.

Structure backfill may be flowable fill meeting the requirements of Maryland Department of Transportation, State Highway Administration Standard Specifications for Construction and Materials, Section 313 as modified. The mixture shall have a 100-200 psi; 28 day unconfined compressive strength. The flowable fill shall have a minimum pH of 4.0 and a minimum resistivity of 2,000 ohm-cm. Material shall be placed such that a minimum of 6" (measured perpendicular to the outside of the pipe) of flowable fill shall be under (bedding), over and, on the sides of the pipe. It only needs to extend up to the spring line for rigid conduits. Average slump of the fill shall be 7" to assure flowability of the material. Adequate measures shall be taken (sand bags, etc.) to prevent floating the pipe. When using flowable fill, all metal pipe shall be bituminous coated. Any adjoining soil fill shall be placed in horizontal layers not to exceed four inches in thickness and compacted by hand tampers or other manually directed compaction equipment. The material shall completely fill all voids adjacent to the flowable fill zone. At no time during the backfilling operation shall driven equipment be allowed to operate closer than four feet, measured horizontally, to any part of a structure. Under no circumstances shall equipment be driven over any part of a structure or pipe unless there is a compacted fill of 24" or greater over the structure or pipe. Backfill material outside the structural backfill (flowable fill) zone shall be of the type and quality conforming to that specified for the core of the embankment or other embankment materials.

Pipe Conduits

All pipes shall be circular in cross section.

Corrugated Metal Pipe - All of the following criteria shall apply for corrugated metal pipe:

- Materials** - (Polymer Coated steel pipe) - Steel pipes with polymeric coatings shall have a minimum coating thickness of 0.01 inch (10 mil) on both sides of the pipe. This pipe and its appurtenances shall conform to the requirements of AASHTO Specifications M-245 & M-246 with watertight coupling bands or flanges.
- Materials** - (Aluminum Coated Steel Pipe) - This pipe and its appurtenances shall conform to the requirements of AASHTO Specification M-274 with watertight coupling bands or flanges. Aluminum Coated Steel Pipe, when used with flowable fill or when soil and/or water conditions warrant the increased durability, shall be fully bituminous coated per requirements of AASHTO Specification M-190 Type A. Any aluminum coating damaged or otherwise removed shall be replaced with cold applied bituminous coating compound. Aluminum surfaces that are to be in contact with concrete shall be painted with one coat of zinc chromate primer or two coats of asphalt.

Materials - (Aluminum Pipe) - This pipe and its appurtenances shall conform to the requirements of AASHTO Specification M-196 or M-211 with watertight coupling bands or flanges. Aluminum Pipe, when used with flowable fill or when soil and/or water conditions warrant for increased durability, shall be fully bituminous coated per requirements of AASHTO Specification M-190 Type A. Aluminum surfaces that are to be in contact with concrete shall be painted with one coat of zinc chromate primer or two coats of asphalt. Hot dip galvanized bolts may be used for connections. The pH of the surrounding soils shall be between 4 and 9.

Coupling bands, anti-seep collars, end sections, etc., must be composed of the same material and coatings as the pipe. Metals must be insulated from dissimilar materials with use of rubber or plastic insulating materials at least 24 mils in thickness.

Connections - All connections with pipes must be completely watertight. The drain pipe or barrel connection to the riser shall be welded all around when the pipe and riser are metal. Anti-seep collars shall be connected to the pipe in such a manner as to be completely watertight. Dimple bands are not considered to be watertight.

All connections shall use a rubber or neoprene gasket when joining pipe sections. The end of each pipe shall be re-rolled an adequate number of corrugations to accommodate the bandwidth. The following type connections are acceptable for pipes less than 24 inches in diameter: flanges on both ends of the pipe with a circular 3/8 inch closed cell neoprene gasket, pre-punched to the flange bolt circle, sandwiched between adjacent flanges; a 12-inch wide standard lap type band with 12-inch wide by 3/8-inch thick closed cell circular neoprene gasket; and a 12-inch wide hugger type band with o-ring gaskets having a minimum diameter of 1/2 inch greater than the corrugation depth. Pipes 24 inches in diameter and larger shall be connected by a 24 inch long annular corrugated band using a minimum of 4 (four) rods and lugs, 2 on each connecting pipe end. A 24-inch wide by 3/8-inch thick closed cell circular neoprene gasket will be installed with 12 inches on the end of each pipe. Flanged joints with 3/8 inch closed cell gaskets the full width of the flange is also acceptable. Helically corrugated pipe shall have either continuously welded seams or have lock seams with internal caulking or a neoprene bead.

Bedding - The pipe shall be firmly and uniformly bedded throughout its entire length. Where rock or soft, spongy or other unstable soil is encountered, all such material shall be removed and replaced with suitable earth compacted to provide adequate support.

Backfilling shall conform to "Structure Backfill".

Other details (anti-seep collars, valves, etc.) shall be as shown on the drawings.

Reinforced Concrete Pipe - All of the following criteria shall apply for reinforced concrete pipe:

- Materials** - Reinforced concrete pipe shall have bell and spigot joints with rubber gaskets and shall equal or exceed ASTM C-361.
- Bedding** - Reinforced concrete pipe conduits shall be laid in a concrete bedding/cradle for their entire length. This bed-ding/cradle shall consist of high slump concrete placed under the pipe and up the sides of the pipe to at least 50% of its outside diameter with a minimum thickness of 6 inches. Where a concrete cradle is not needed for structural reasons, flowable fill may be used as described in the "Structure Backfill" section of this standard. Gravel bedding is not permitted.
- Laying pipe** - Bell and spigot pipe shall be placed with the bell end upstream. Joints shall be made in accordance with recommendations of the manufacturer of the material. After the joints are sealed for the entire line, the bedding shall be placed so that all spaces under the pipe are filled. Care shall be exercised to prevent any deviation from the original line and grade of the pipe. The first joint must be located within 4 feet from the riser.
- Backfilling shall conform to "Structure Backfill".**
- Other details** (anti-seep collars, valves, etc.) shall be as shown on the drawings.

Plastic Pipe - The following criteria shall apply for plastic pipe:

- Materials** - PVC pipe shall be PVC-1120 or PVC-1220 conforming to ASTM D-1785 or ASTM D-2241. Corrugated High Density Polyethylene (HDPE) pipe, couplings and fittings shall conform to the following: 4" - 10" inch pipe shall meet the requirements of AASHTO M252 Type S, and 12" through 24" inch shall meet the requirements of AASHTO M294 Type S.
- Joints and connections** to anti-seep collars shall be completely watertight.
- Bedding** - The pipe shall be firmly and uniformly bedded throughout its entire length. Where rock or soft, spongy or other unstable soil is encountered, all such material shall be removed and replaced with suitable earth compacted to provide adequate support.
- Backfilling shall conform to "Structure Backfill".**
- Other details** (anti-seep collars, valves, etc.) shall be as shown on the drawings.

Drainage Diaphragms - When a drainage diaphragm is used, a registered professional engineer will supervise the design and construction inspection.

Concrete

Concrete shall meet the requirements of Maryland Department of Transportation, State Highway Administration Standard Specifications for Construction and Materials, Section 414, Mix No. 3.

Rock Riprap

Rock riprap shall meet the requirements of Maryland Department of Transportation, State Highway Administration Standard Specifications for Construction and Materials, Section 311. Geotextile shall be placed under all riprap and shall meet the requirements of Maryland Department of Transportation, State Highway Administration Standard Specifications for Construction and Materials, Section 921.09, Class SE.

Care of Water during Construction

All work on permanent structures shall be carried out in areas free from water. The Contractor shall construct and maintain all temporary dikes, levees, cofferdams, drainage channels, and stream diversions necessary to protect the areas to be occupied by the permanent works. The contractor shall also furnish, install, operate, and maintain all necessary pumping and other equipment required for removal of water from various parts of the work and for maintaining the excavations, foundation, and other parts of the work free from water as required or directed by the engineer for constructing each part of the work. After having served their purpose, all temporary protective works shall be removed or leveled and graded to the extent required to prevent obstruction in any degree whatsoever of the flow of water to the spillway or outlet works and so as not to interfere in any way with the operation or maintenance of the structure. Stream diversions shall be maintained until the full flow can be passed through the permanent works. The removal of water from the required excavation and the foundation shall be accomplished in a manner and to the extent that will maintain stability of the excavated slopes and bottom required excavations and will allow satisfactory performance of all construction operations. During the placing and compacting of material in required excavations, the water level at the locations being refilled shall be maintained below the bottom of the excavation at such locations which may require draining the water sumps from which the water shall be pumped.

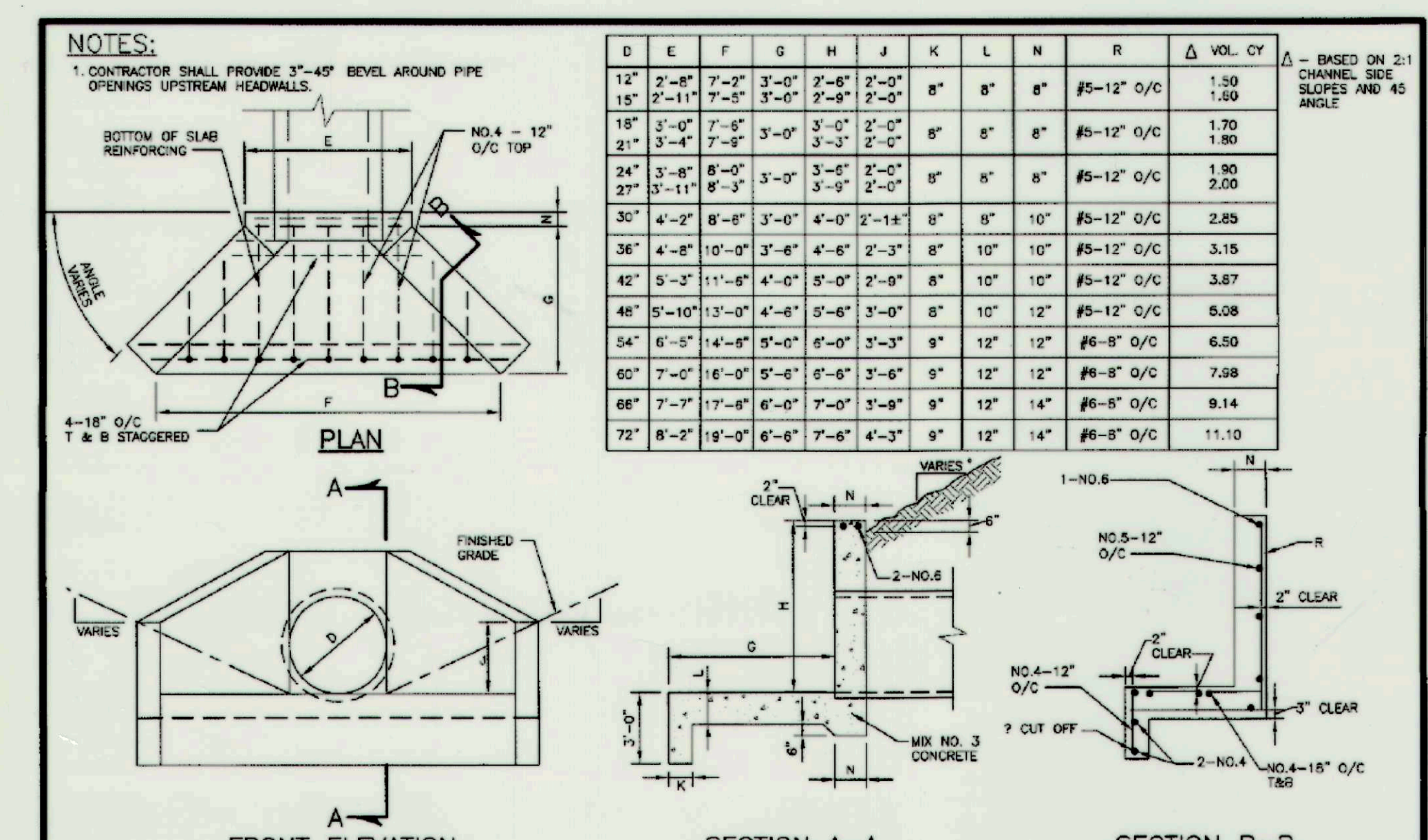
Stabilization

All borrow areas shall be graded to provide proper drainage and left in a slightly condition. All exposed surfaces of the embankment, spillway, spoil and borrow areas, and berms shall be stabilized by seeding, liming, fertilizing and mulching in accordance with the Natural Resources Conservation Service Standards and Specifications for Critical Area Planting (MD-342) or as shown on the accompanying drawings.

Erosion and Sediment Control

Construction operations will be carried out in such a manner that erosion will be controlled and water and air pollution minimized. State and local laws concerning pollution abatement will be followed. Construction plans shall detail erosion and sediment control measures.

DEPTH	A	B	C	D	E	F	H	L	N	R	Δ VOL. CY	Δ
0	12"	2'-8"	7'-2"	3'-0"	2'-0"	7'-0"	8"	8"	8"	8"	1.50	0.00
18"	2'-11"	7'-5"	3'-3"	2'-8"	2'-0"	7'-0"	8"	8"	8"	8"	1.50	0.00
36"	3'-0"	7'-8"	3'-6"	3'-0"	2'-0"	7'-0"	8"	8"	8"	8"	1.50	0.00
54"	3'-11"	8'-1"	3'-9"	3'-3"	2'-0"	7'-0"	8"	8"	8"	8"	1.50	0.00
72"	4'-2"	8'-4"	3'-6"	3'-0"	2'-0"	7'-0"	8"	8"	8"	8"	1.50	0.00
90"	4'-8"	9'-0"	3'-6"	3'-0"	2'-0"	7'-0"	8"	8"	8"	8"	1.50	0.00
108"	5'-2"	9'-6"	3'-6"	3'-0"	2'-0"	7'-0"	8"	8"	8"	8"	1.50	0.00
126"	5'-8"	10'-2"	3'-6"	3'-0"	2'-0"	7'-0"	8"	8"	8"	8"	1.50	0.00
144"	6'-2"	10'-8"	3'-6"	3'-0"	2'-0"	7'-0"	8"	8"	8"	8"	1.50	0.00
162"	6'-8"	11'-4"	3'-6"	3'-0"	2'-0"	7'-0"	8"	8"	8"	8"	1.50	0.00
180"	7'-2"	12'-0"	3'-6"	3'-0"	2'-0"	7'-0"	8"	8"	8"	8"	1.50	0.00
198"	7'-8"	12'-6"	3'-6"	3'-0"	2'-0"	7'-0"	8"	8"	8"	8"	1.50	0.00
216"	8'-2"	13'-2"	3'-6"	3'-0"	2'-0"	7'-0"	8"	8"	8"	8"	1.50	0.00
234"	8'-8"	13'-8"	3'-6"	3'-0"	2'-0"	7'-0"	8"	8"	8"	8"	1.50	0.00
252"	9'-2"	14'-4"	3'-6"	3'-0"	2'-0"	7'-0"	8"	8"	8"	8"	1.50	0.00



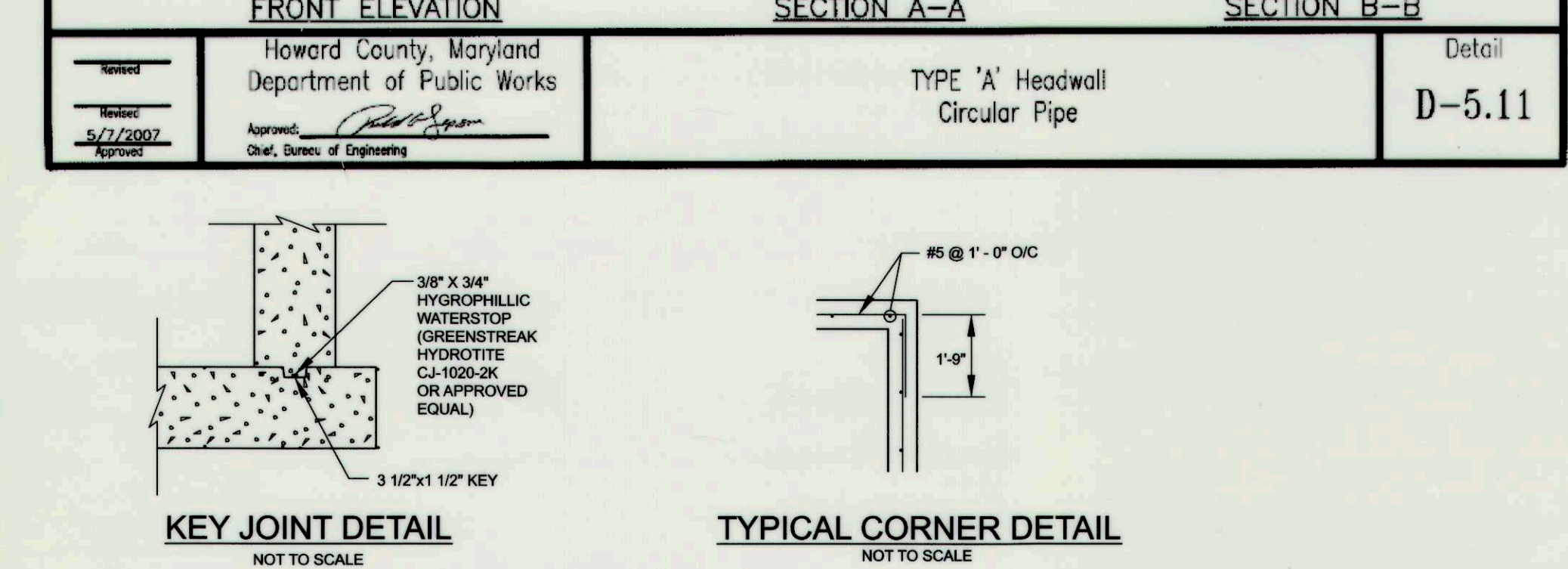
DETAIL D-4-2 PLUNGE POOL

CONSTRUCTION SPECIFICATIONS

- USE SPECIFIED CLASS OF RIPRAP.
- USE NONWOVEN GEOTEXTILE AS SPECIFIED IN SECTION H-1 MATERIALS, AND PROTECT FROM PLUNGING, CUTTING, OR TIPPING, REMOVE ANY DAMAGE OTHER THAN OCCASIONAL SMALL HOLE BY PLACING ANOTHER PIECE OF GEOTEXTILE OVER THE DAMAGED PART OR BY COMPLETELY REPLACING THE GEOTEXTILE. PROVIDE A MINIMUM OF ONE FOOT OVERLAP FOR ALL REPAIRS AND FOR JOINTING TWO PIECES OF GEOTEXTILE.
- PREPARE THE SUBGRADE FOR THE PLUNGE POOL TO THE REQUIRED LINES AND GRADES. COMPACT ANY FILL REQUIRED IN THE SUBGRADE TO A DENSITY OF APPROXIMATELY THAT OF THE SURROUNDING UNDISTURBED MATERIAL.
- EMBED THE GEOTEXTILE A MINIMUM OF 4 INCHES AND EXTEND THE GEOTEXTILE A MINIMUM OF 6 INCHES BEYOND THE EDGE OF THE SCOUR HOLE.
- STONE FOR THE PLUNGE POOL MAY BE PLACED BY EQUIPMENT, CONSTRUCT TO THE FULL COURSE, THINNESS IN ONE OPERATION AND BY SUCH A MANNER AS TO AVOID SEPARATION OF THE SPILLING MATERIALS. DELIVER AND PLACE THE STONE FOR THE PLUNGE POOL IN A MANNER THAT WILL ENSURE THAT IT IS NEARLY HORIZONTAL WITH THE SHALLER SIDING AND SHALL FILL THE VIEWS BETWEEN THE LARGER STONES. PLACE STONE FOR THE PLUNGE POOL IN A MANNER TO PREVENT DAMAGE TO THE GEOTEXTILE. HAND PLACE TO THE EXTENT NECESSARY.
- AT THE PLUNGE POOL OUTLET, PLACE THE STONE SO THAT IT MEETS THE EXISTING GRADE.
- MAINTAIN LINE, GRADE, AND CROSS SECTION, KEEP OUTLET FREE OF EXCESS, REMOVE ACCUMULATED SEDIMENT AND DEBRIS. AFTER MAIN FLOODS INSPECT FOR SCOUR AND DELOGGED RIPRAP. MAKE NECESSARY REPAIRS IMMEDIATELY.

PLUNGE POOL DIMENSIONS

	d (ft.)	B (ft.)	C (ft.)	D (ft.)	E (ft.)	F (ft.)
POND 1	1'-6"	7'-6"	10'-6"	7"	1'-6"	1'
POND 2	1'-3"	6'-3"	9'-9"	7"	1'-3"	1'



DEPARTMENT OF PUBLIC WORKS, HOWARD COUNTY, MD

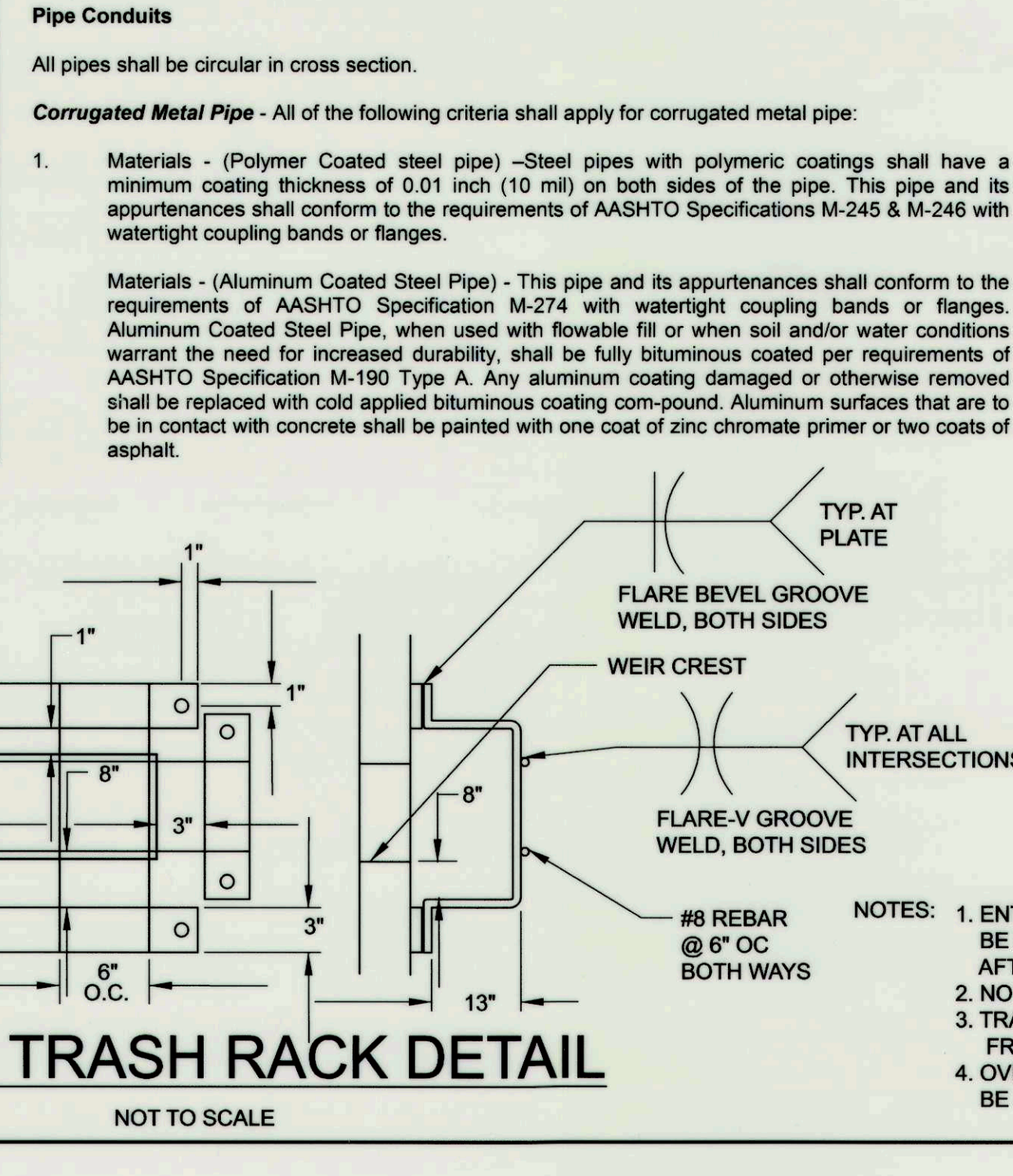
10/5/12 DATE

10/16/12 DATE

REVIEWED FOR HOWARD SCD AND MEETS TECHNICAL REQUIREMENTS

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

HOWARD SCD



DATE

NO. REVISIONS DESCRIPTION

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

KCI TECHNOLOGIES

COUNTRY LANE
SWM POND ENHANCEMENT

STATE OF MARYLAND
MORTGAGE
PROFESSIONAL CERTIFICATION: LIBRARY PREPARED AND MAINTAINED AS PER WHAT IS REQUIRED BY THE MARYLAND STATE BOARD OF PROFESSIONAL ENGINEERS AND SURVEYORS.

HOWARD COUNTY DEPARTMENT OF PUBLIC WORKS
STORMWATER MANAGEMENT DIVISION
6751 COLUMBIA, MD 21046

SCALE: AS SHOWN

DATE: SEPTEMBER 2012

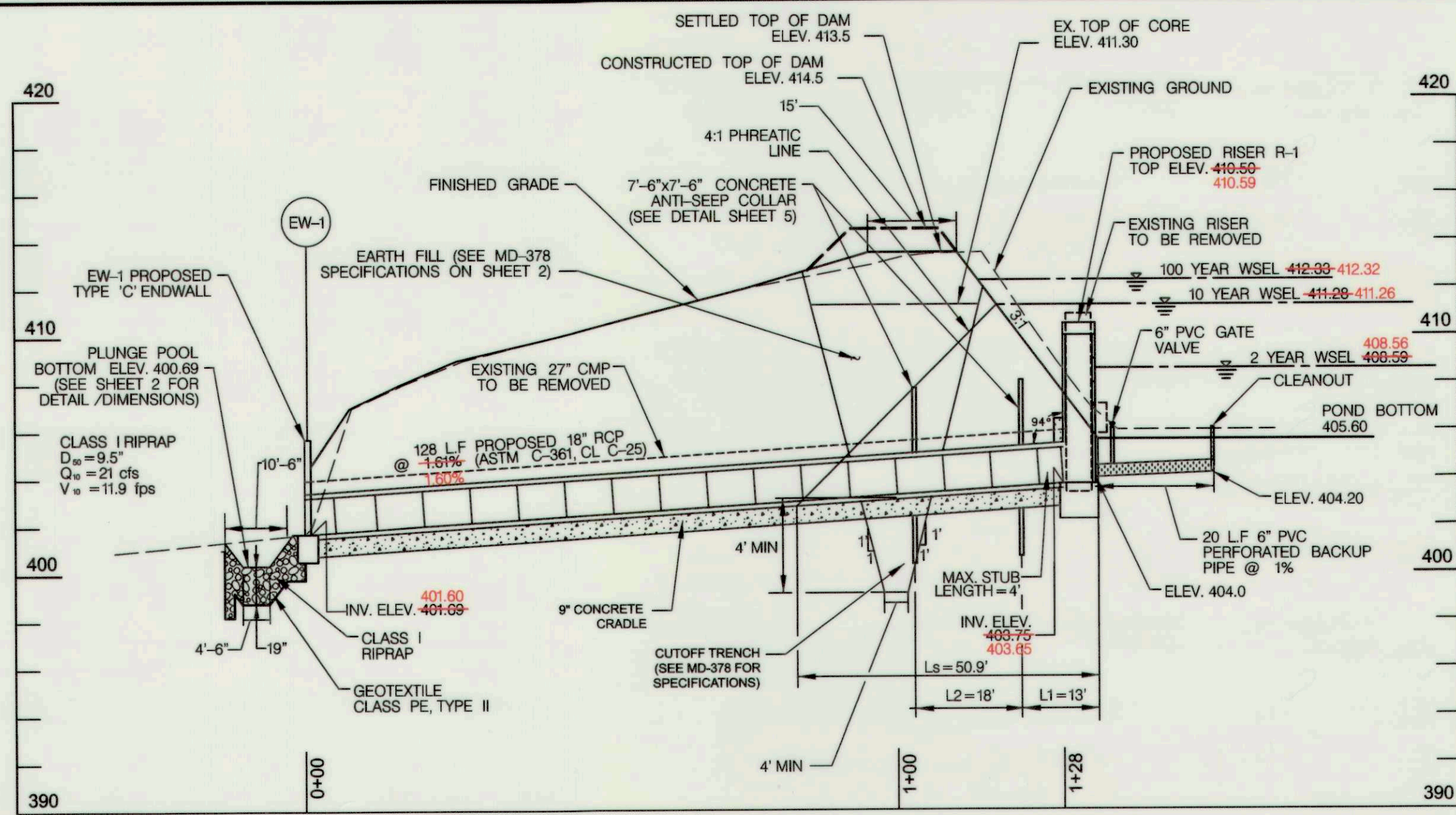
KCI JOB NO.: 01-081795.66

CAPITAL PROJECT NO.: D1160

PERMIT ISSUE:

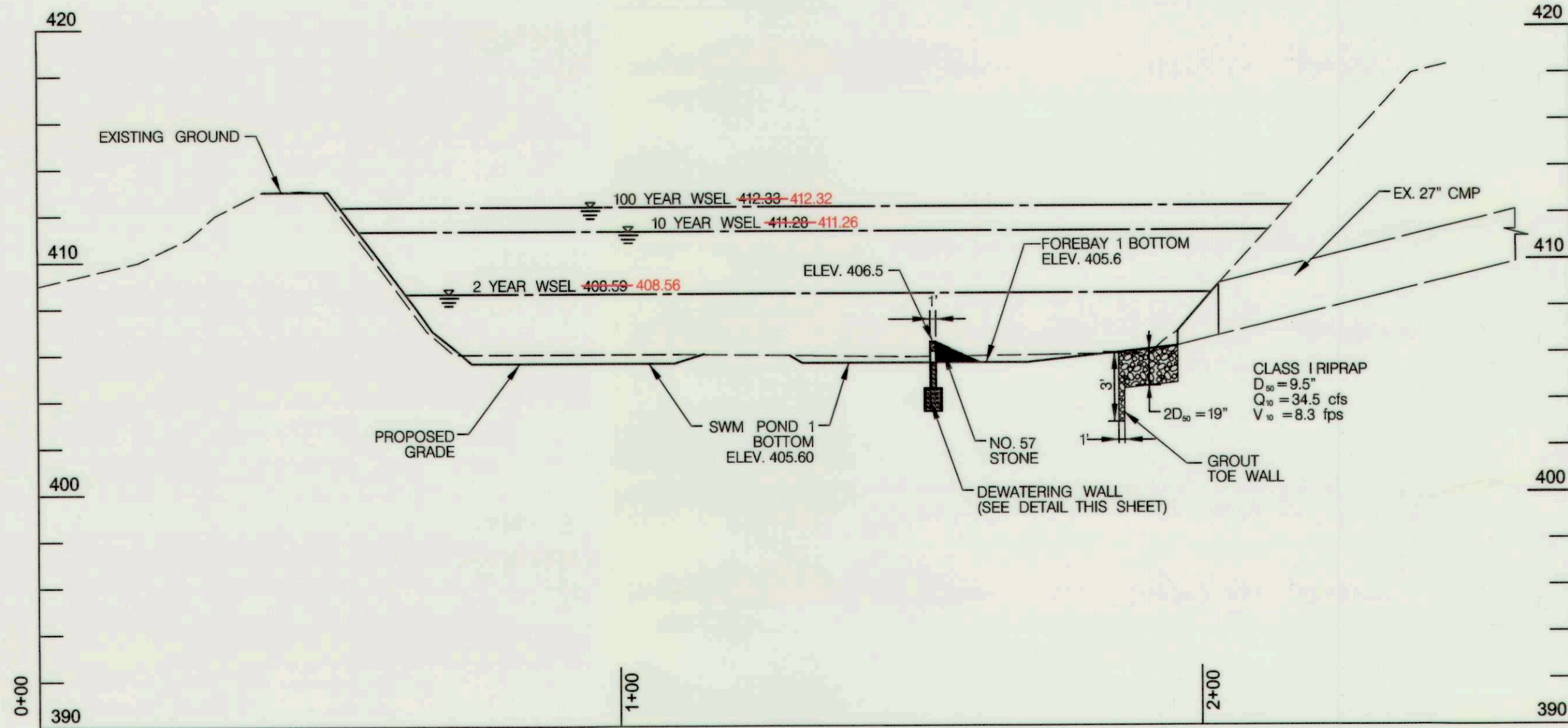
CONSTRUCTION ISSUE:

SHEET NO.: 2 OF 16



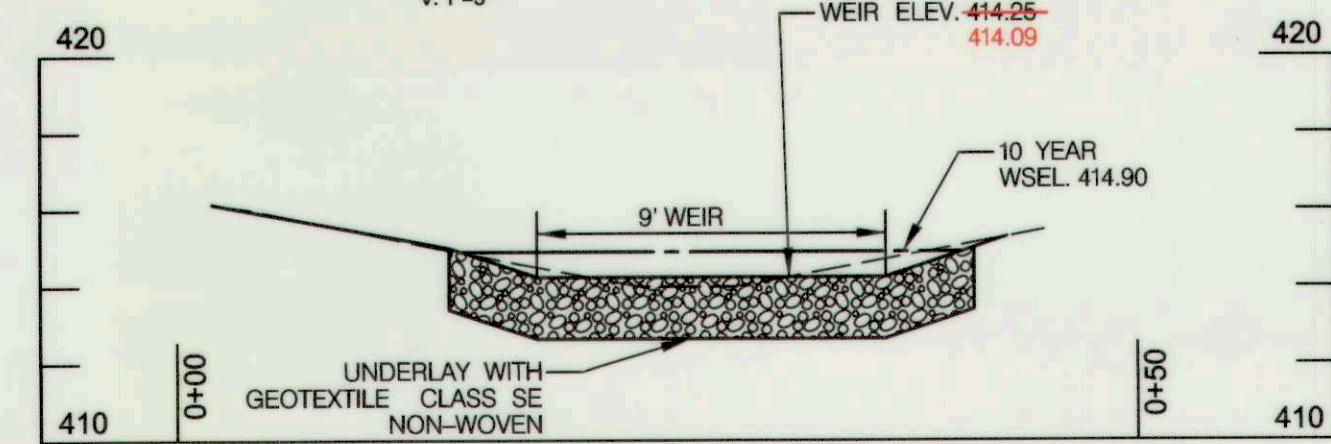
SWM PROFILE ALONG SECTION 1-1

SCALE: H: 1"=20'
V: 1"=5'



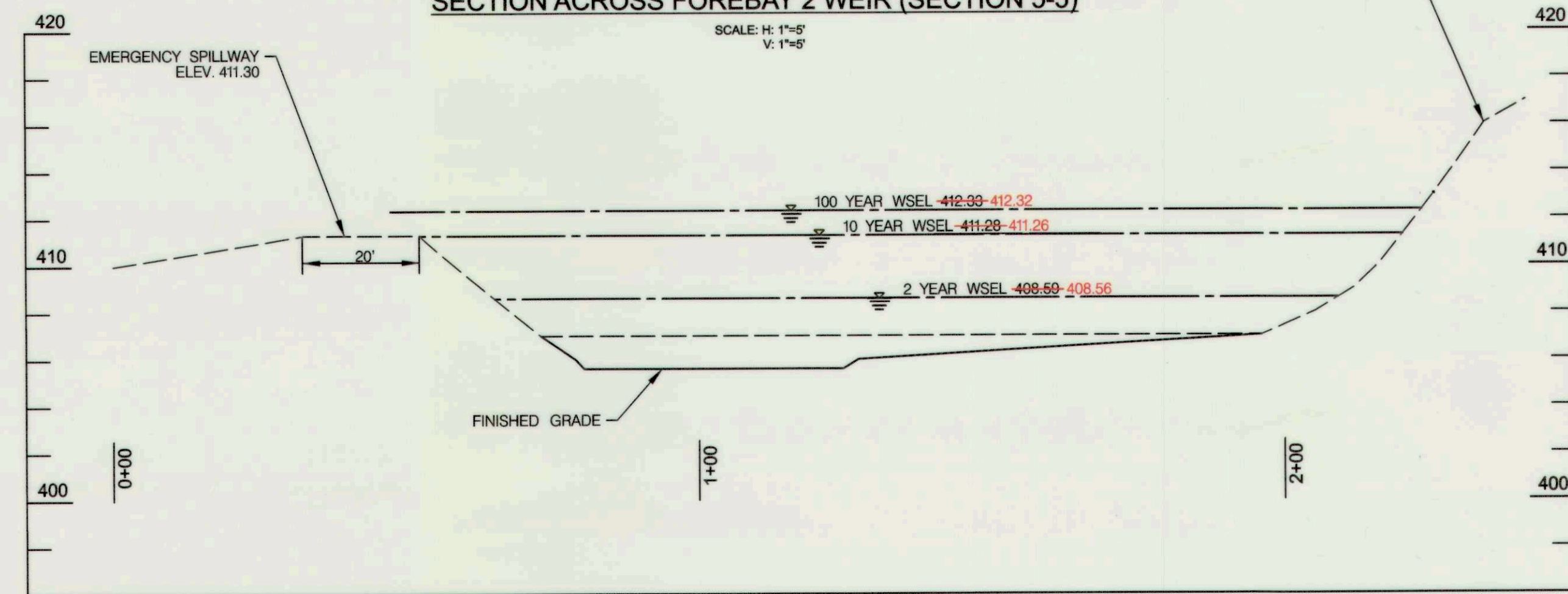
SWM PROFILE ALONG SECTION 2-2

SCALE: H: 1"=20'
V: 1"=5'



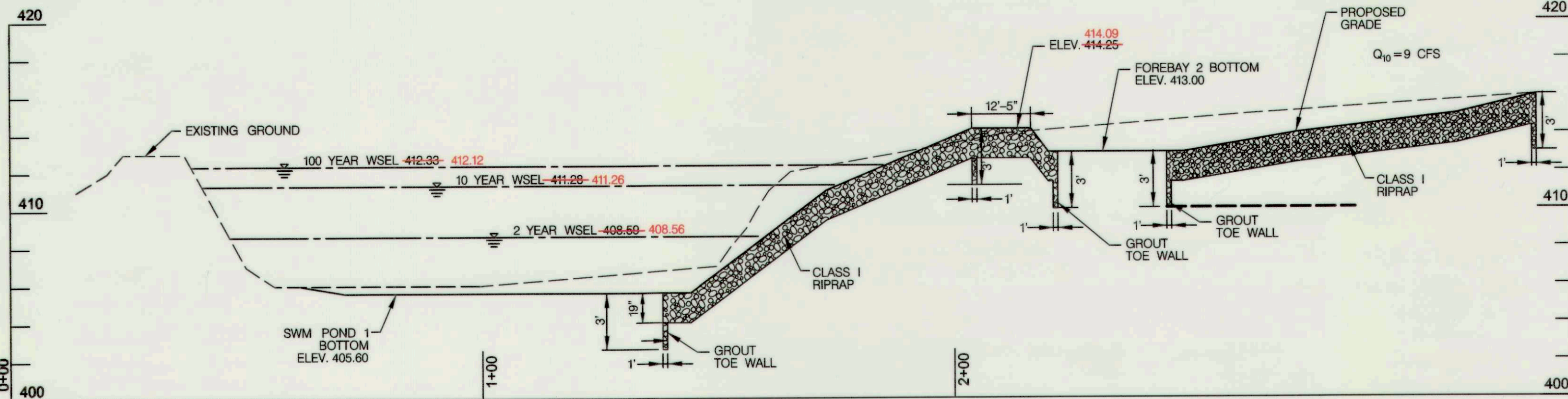
SECTION ACROSS FOREBAY 2 WEIR (SECTION 5-5)

SCALE: H: 1"=5'
V: 1"=5'



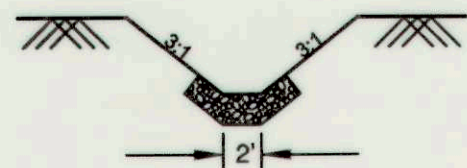
SWM PROFILE ALONG EMERGENCY SPILLWAY SECTION 5-5

SCALE: H: 1"=20'
V: 1"=5'



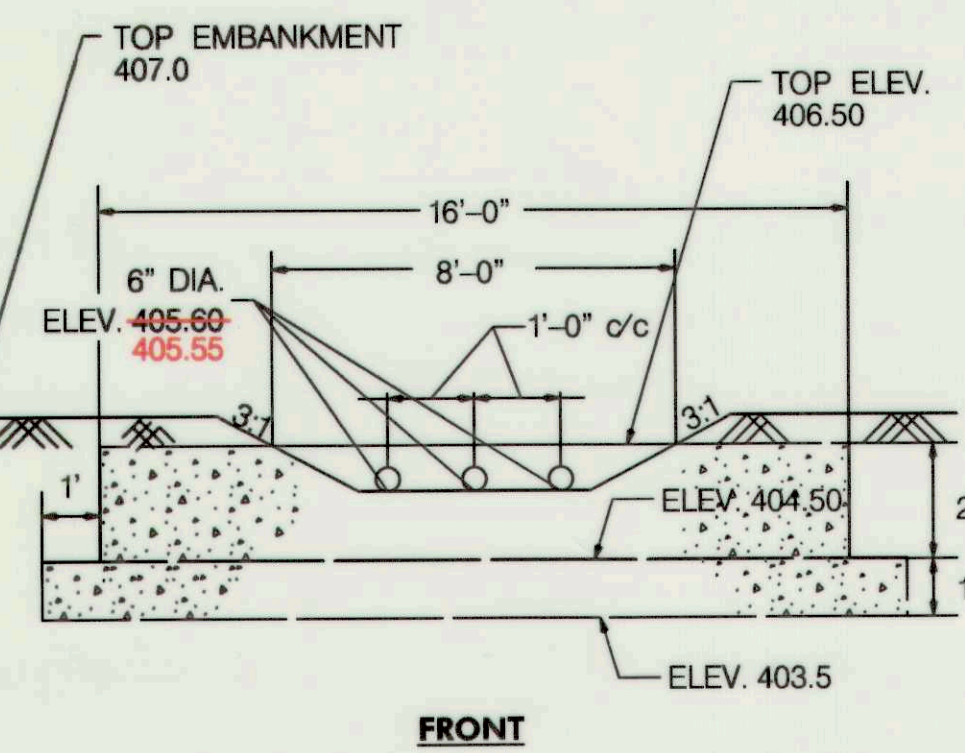
SWM PROFILE ALONG SECTION 4-4

SCALE: H: 1"=20'
V: 1"=5'

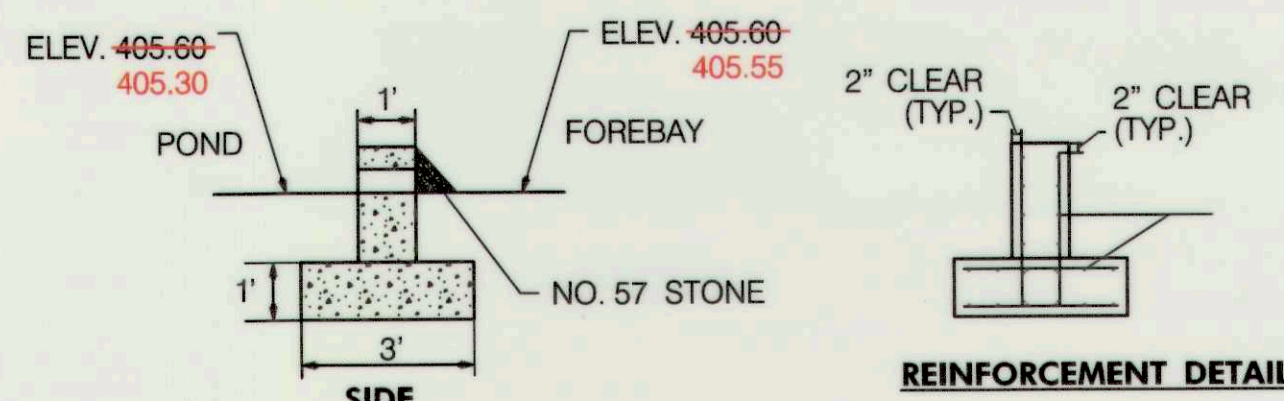


TYP. CROSS SECTION OF FOREBAY 2 RECEIVING CHANNEL

NOT TO SCALE



FRONT

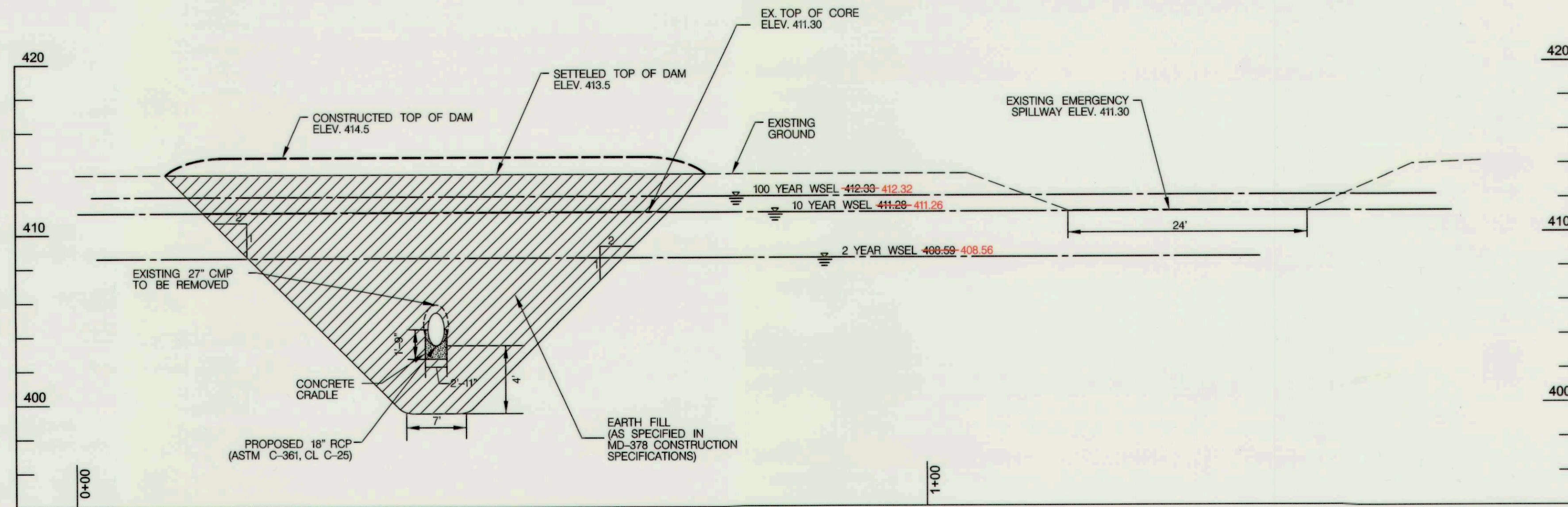


REINFORCEMENT DETAIL

- GENERAL NOTES:**
1. CONCRETE SHALL BE SHA MIX NO. 3.
 2. REINFORCEMENT SHALL BE DEFORMED STEEL BARS - NO. 4.

FOREBAY DEWATERING WALL

NOT TO SCALE



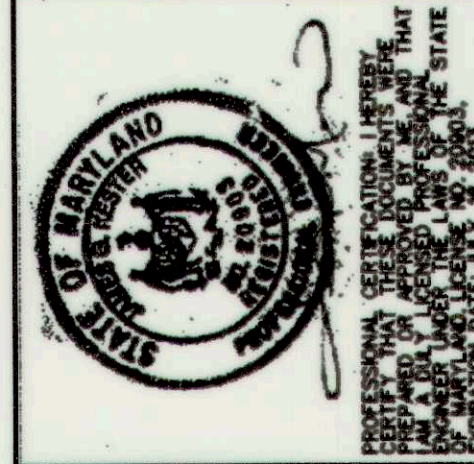
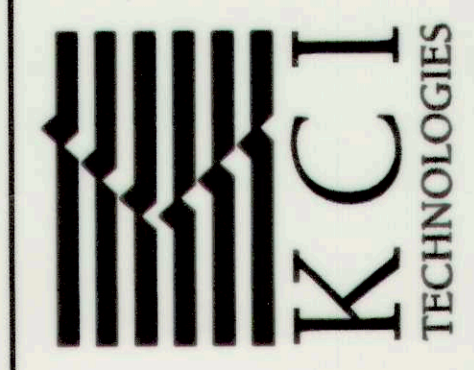
SWM PROFILE ALONG DAM C (SECTION 3-3)

SCALE: H: 1"=10'
V: 1"=5'

DEPARTMENT OF PUBLIC WORKS, HOWARD COUNTY, MD
 10/5/12
 DATE
 REVIEWED FOR HOWARD SCD AND MEETS TECHNICAL REQUIREMENTS AND SHADE Pond
 HIS DEVELOPMENT IS APPROVED FOR SOIL EROSION AND SEDIMENT CONTROL BY THE
 HOWARD SOIL CONSERVATION DISTRICT.
 10/16/12
 DATE

NO.	REVISIONS DESCRIPTION	DATE

936 RIDGEBROOK ROAD
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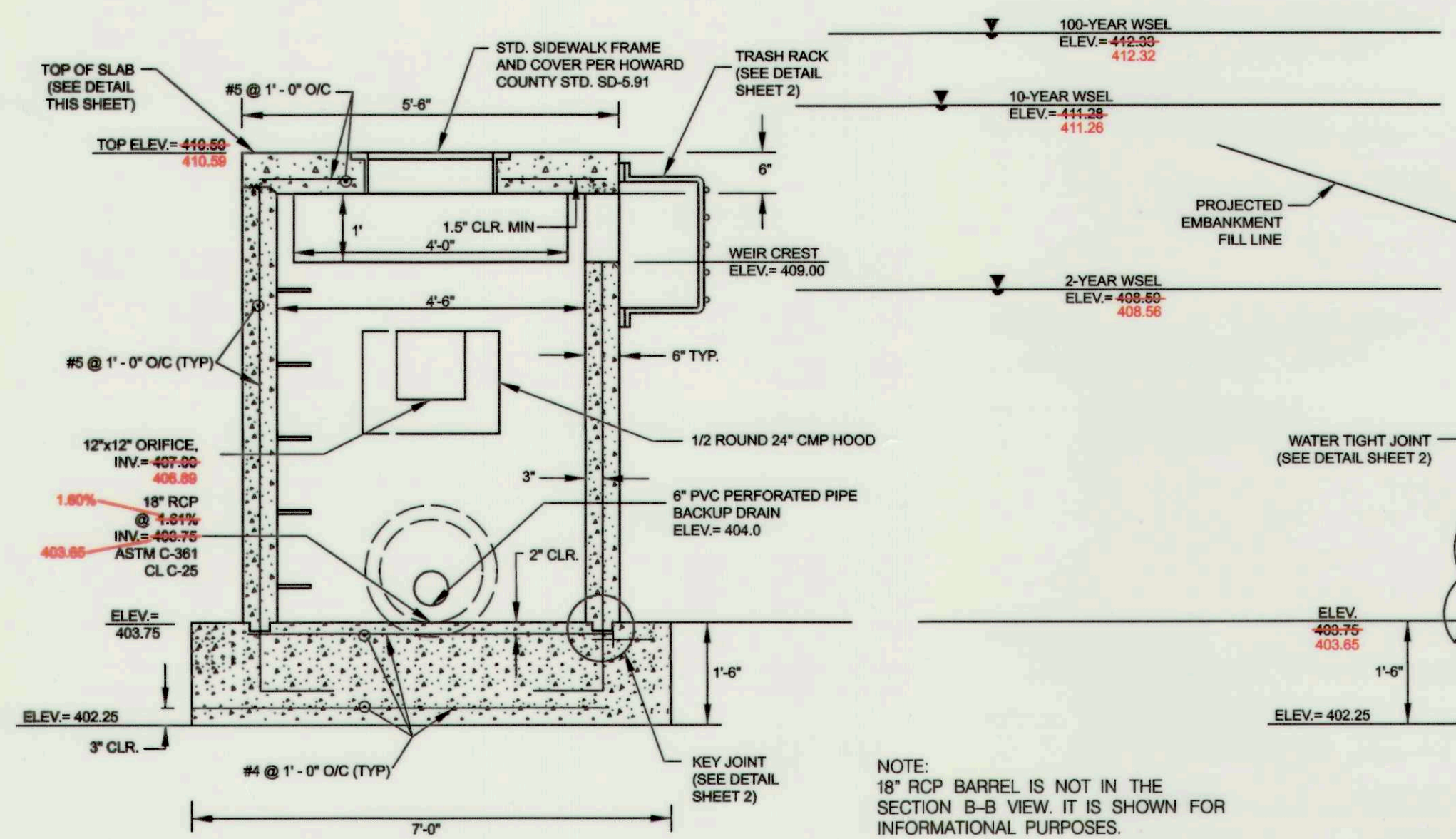


COUNTRY LANE
 SWM POND ENHANCEMENT
 BOONE FARM
 SECTION 1, AREA 1
 OPEN SPACE LOT 78
 HOWARD COUNTY DEPARTMENT OF PUBLIC WORKS
 6701 COLUMBIA, GATEWAY DRIVE
 21046 COLUMBIA, MD 21046

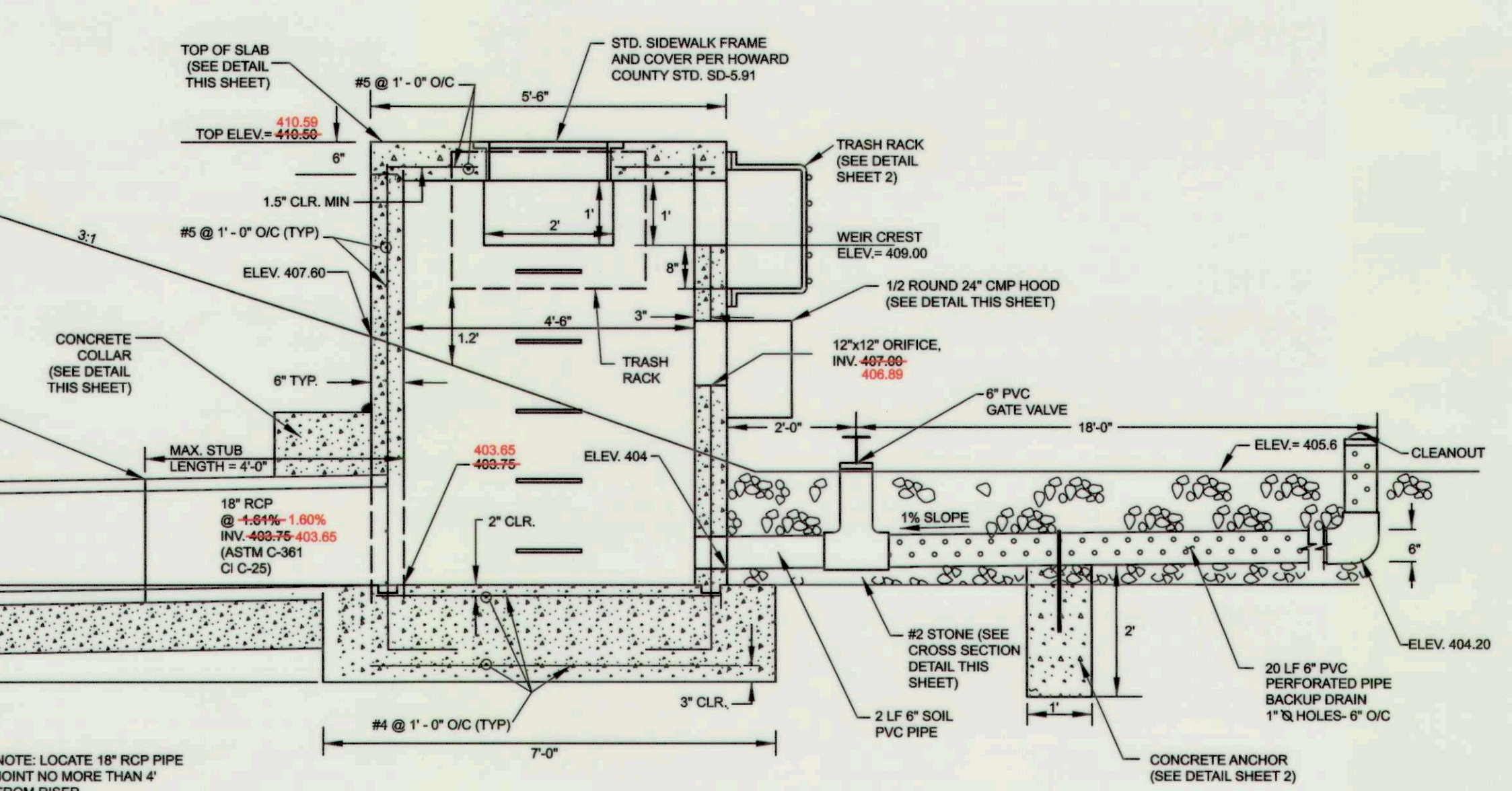
POND 1
 PROFILES

SCALE: AS SHOWN
 DATE: SEPTEMBER 2012
 KCI JOB NO.: 01-081795.66
 CAPITAL PROJECT NO.: D1160
 PERMIT ISSUE:
 CONSTRUCTION ISSUE:

AS-BUILT 3/29/13

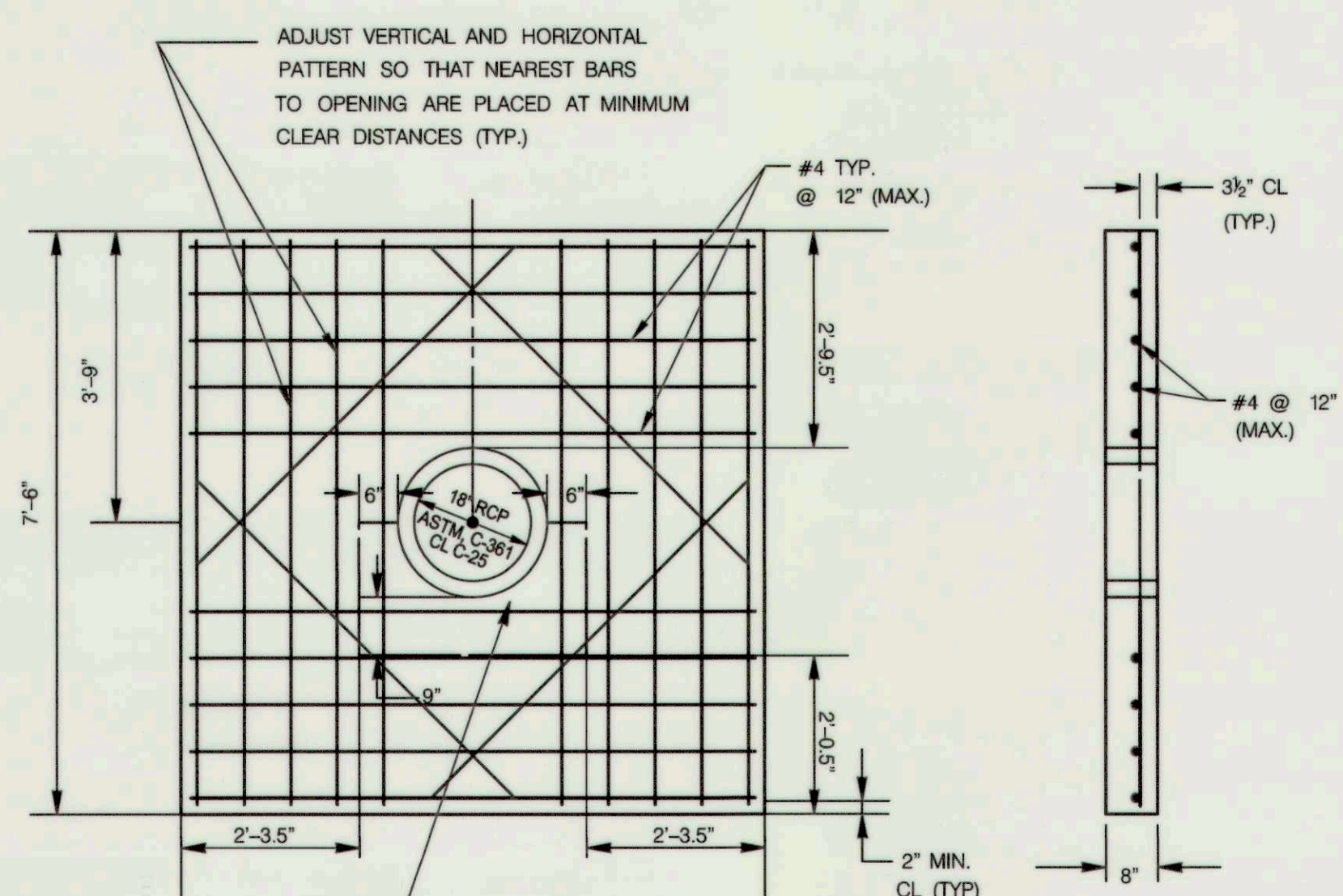
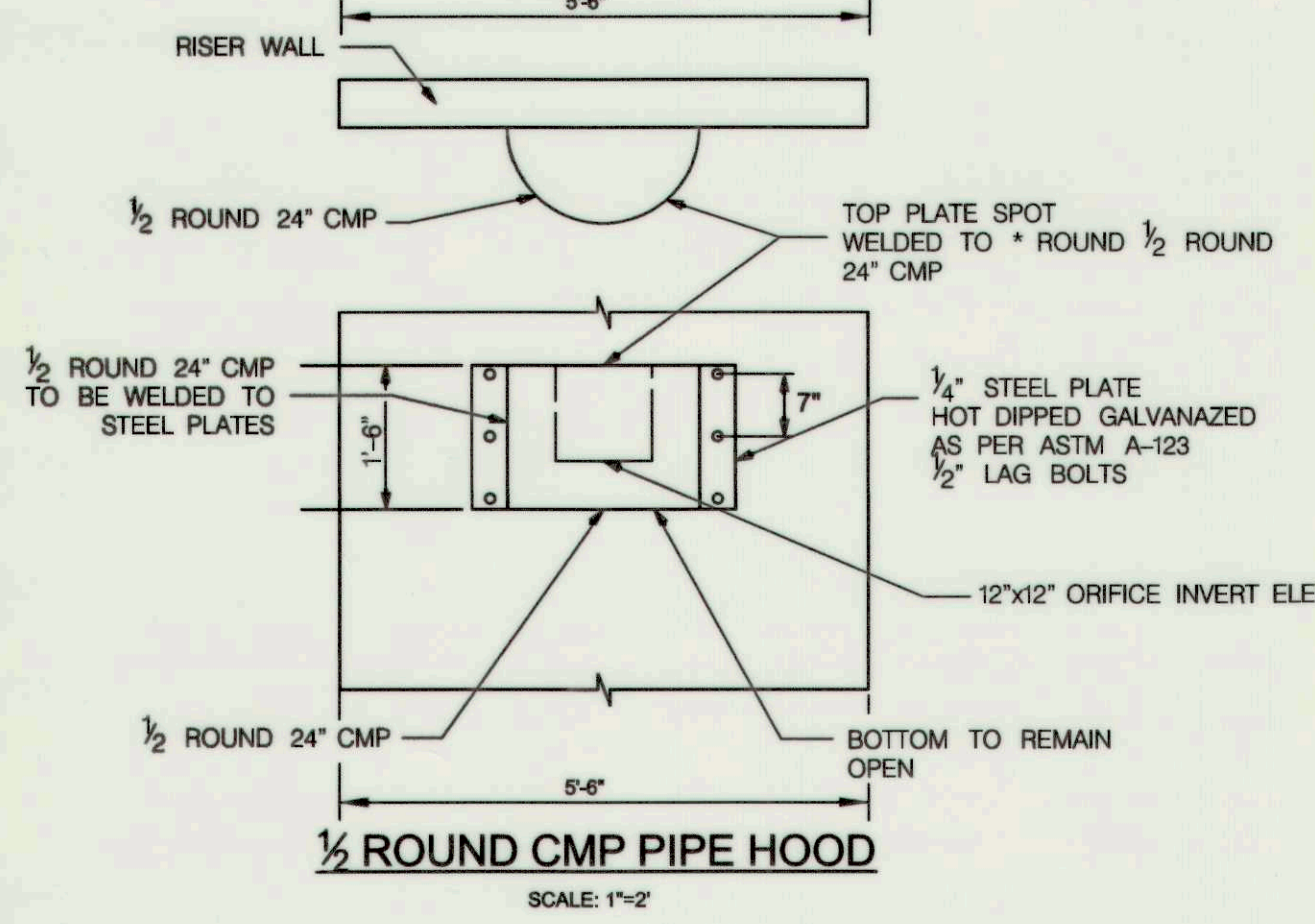


SECTION B-B

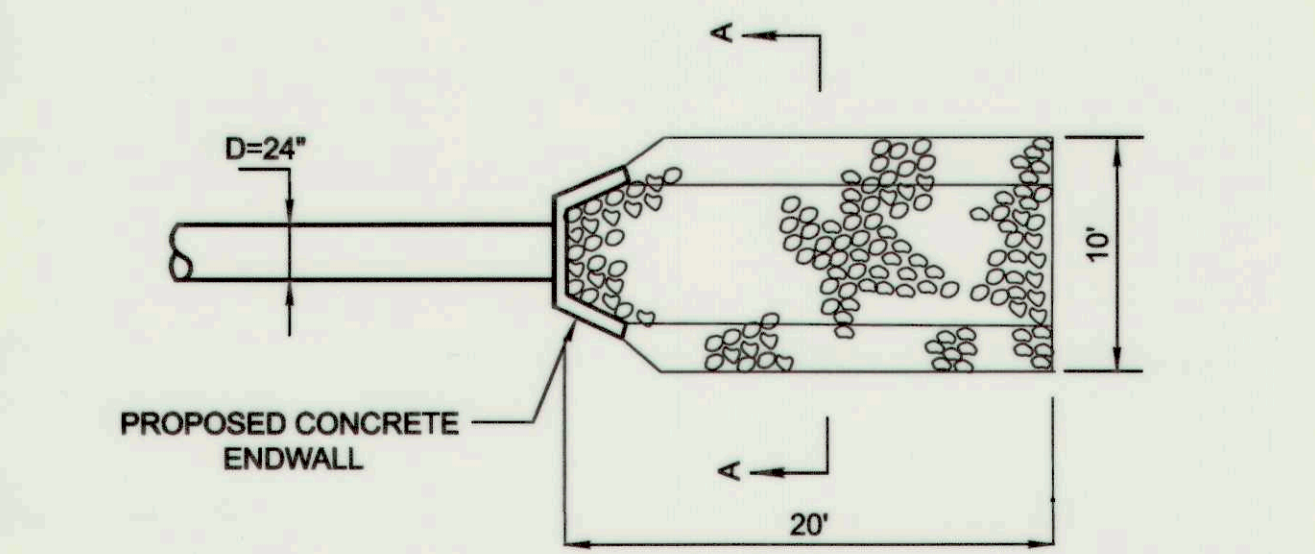


SECTION A-A

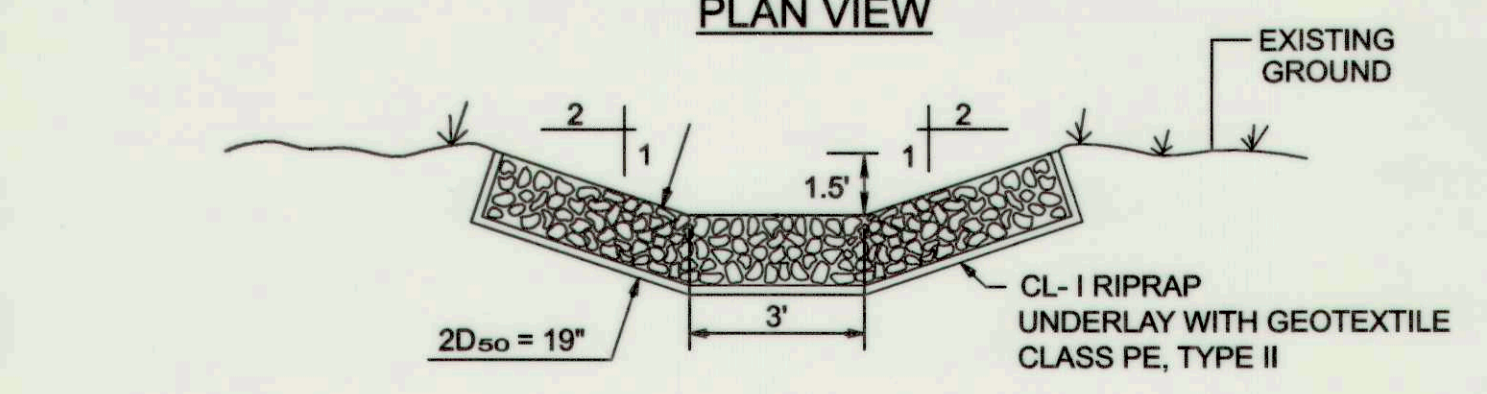
RISER DETAIL
SCALE: 1"=2'



CONCRETE ANTI-SEEP COLLAR DETAIL
SCALE: 1"=2'

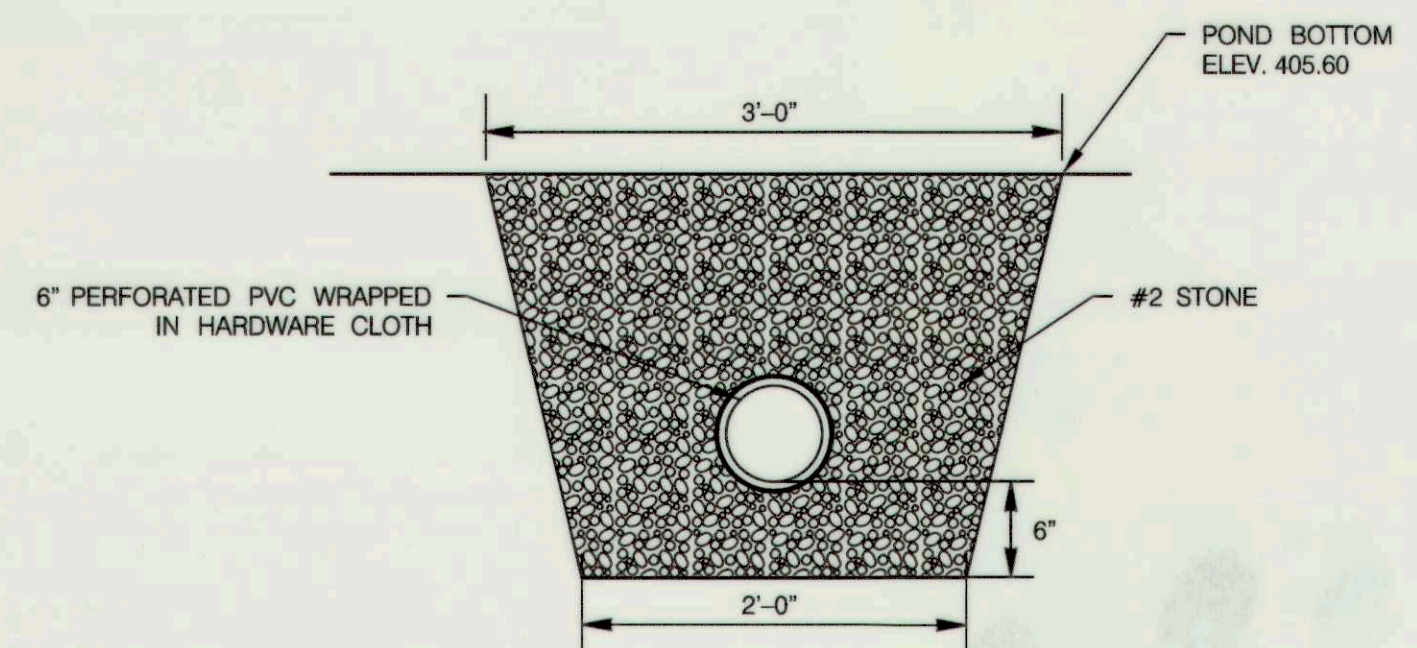


PLAN VIEW

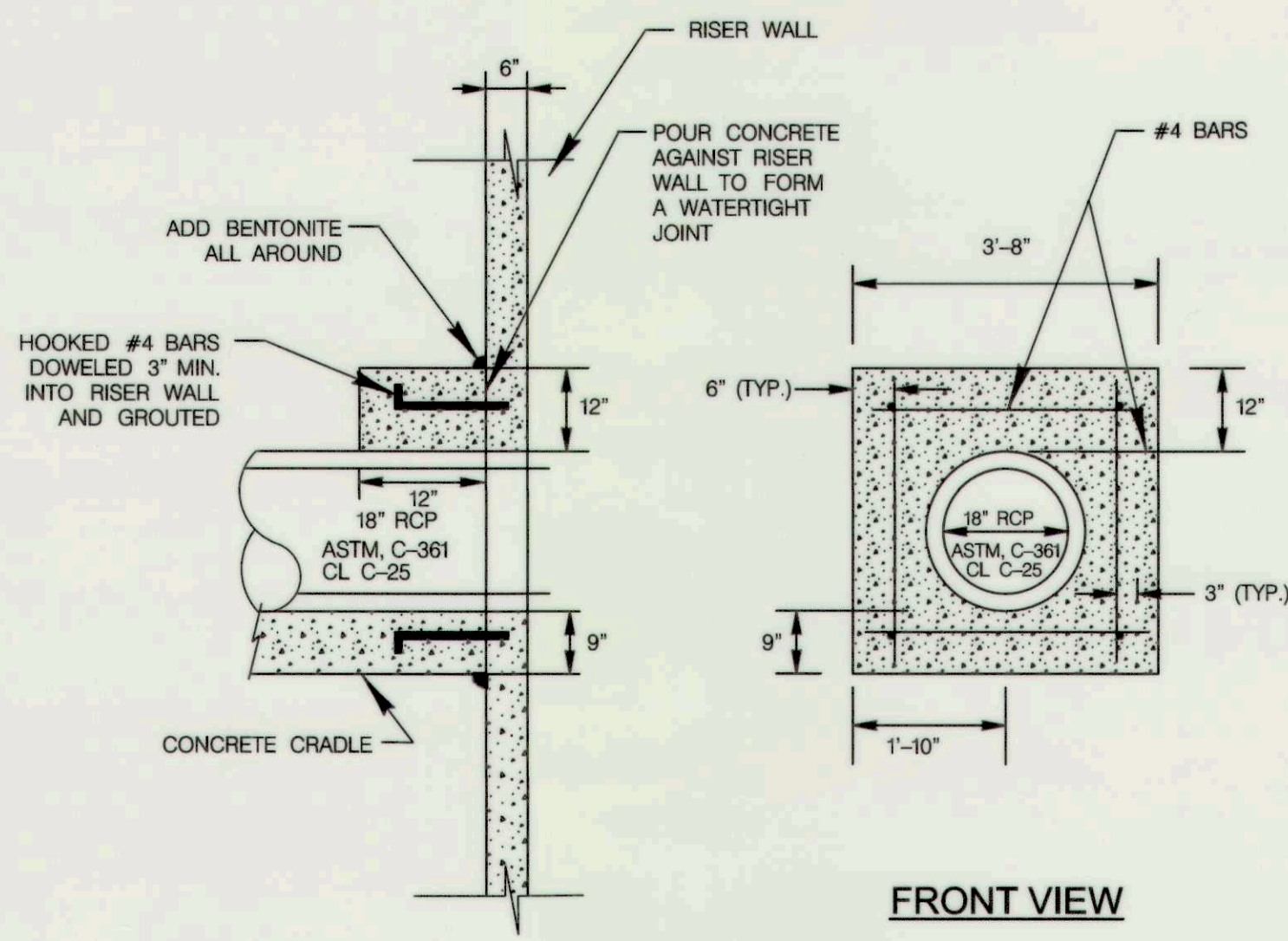


CROSS SECTION A-A

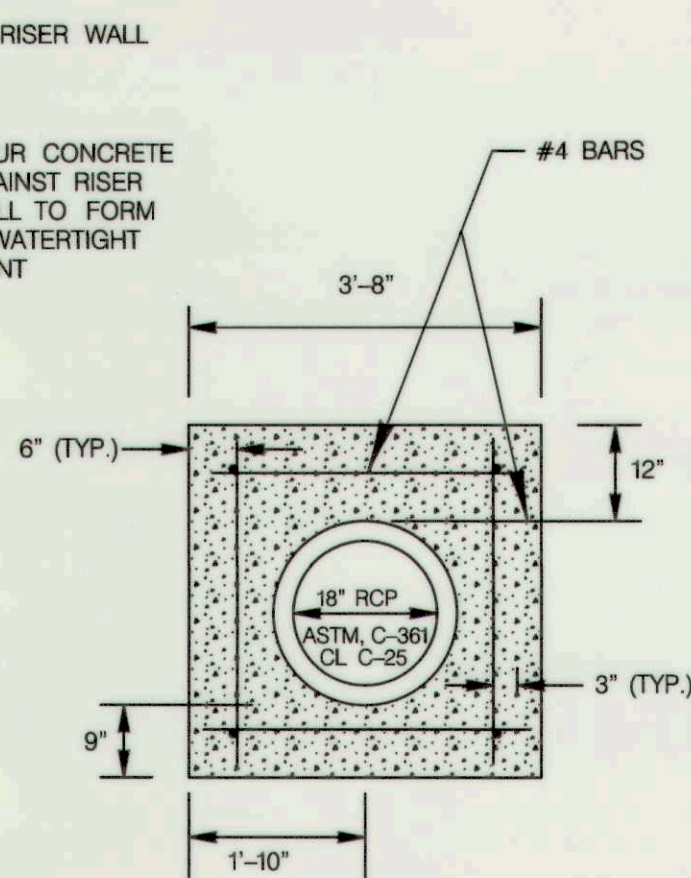
RIPRAP OUTLET PROTECTION
NOT TO SCALE



6" PERFORATED PVC CROSS SECTION
N.T.S.

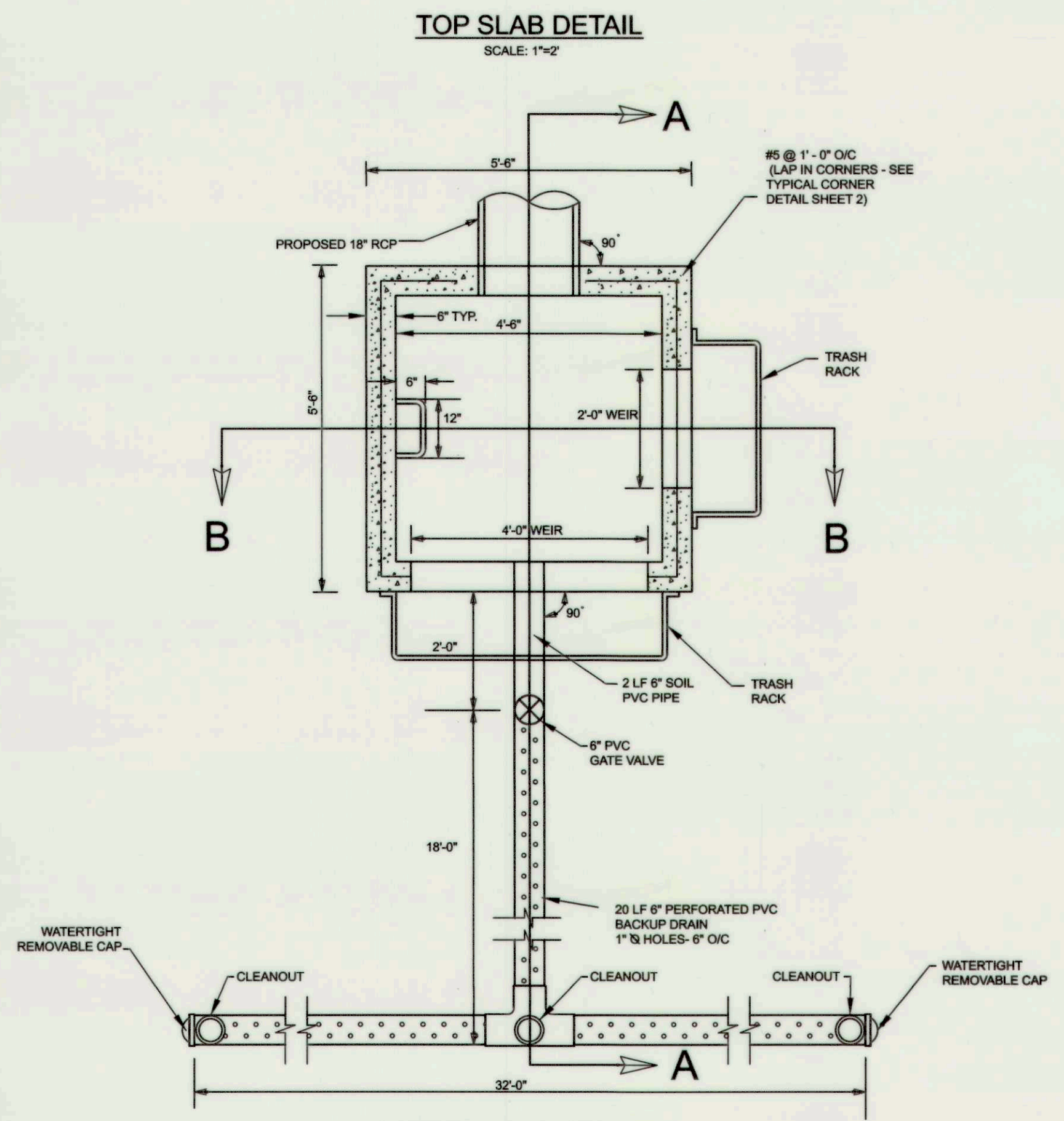


SIDE VIEW



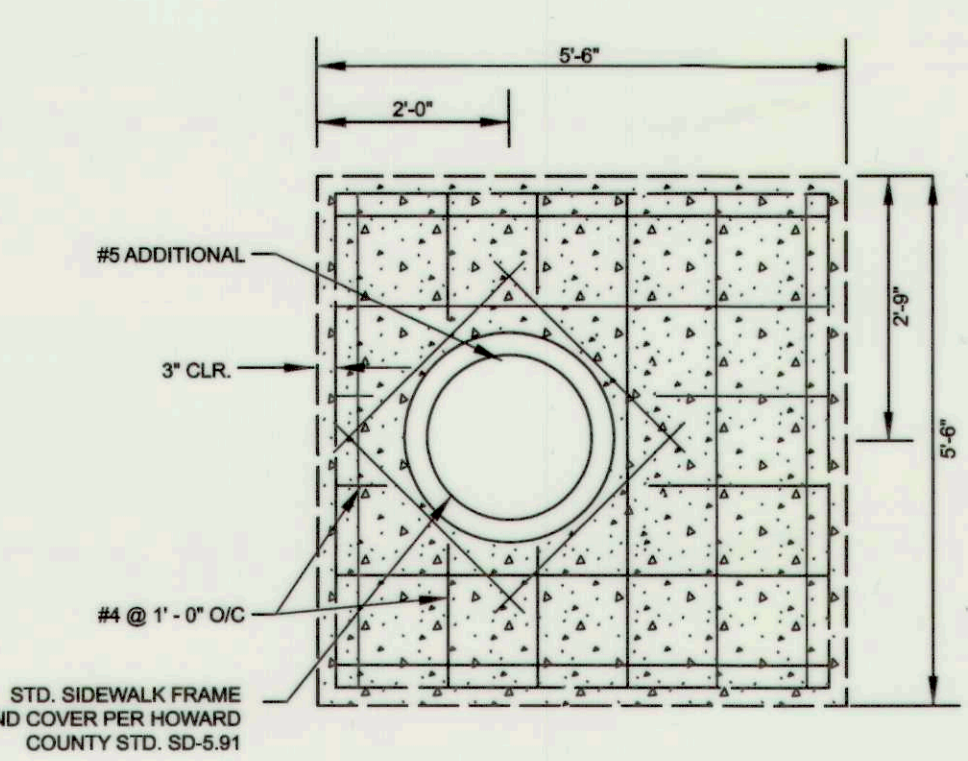
FRONT VIEW

CONCRETE COLLAR DETAIL FOR 18" RCP
SCALE: 1"=2'



RISER R-1 PLAN VIEW
SCALE: 1"=2'

PRINCIPAL SPILLWAY CONCRETE CRADLE DETAIL
SCALE: 1"=2'

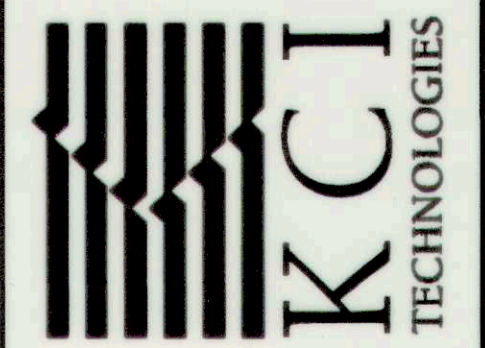


TOP SLAB DETAIL
SCALE: 1"=2'

DEPARTMENT OF PUBLIC WORKS, HOWARD COUNTY, MD
 10/5/12
 DATE
 JOHN R. ROBERTSON
 CHIEF, BUREAU OF ENVIRONMENTAL SERVICES
 REVIEWED FOR HOWARD SCD AND MEETS TECHNICAL REQUIREMENTS
 THIS DEVELOPMENT IS APPROVED FOR SOIL EROSION AND SEDIMENT CONTROL BY THE
 HOWARD SOIL CONSERVATION DISTRICT.
 10/16/12
 DATE

NO.	REVISIONS DESCRIPTION	DATE

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

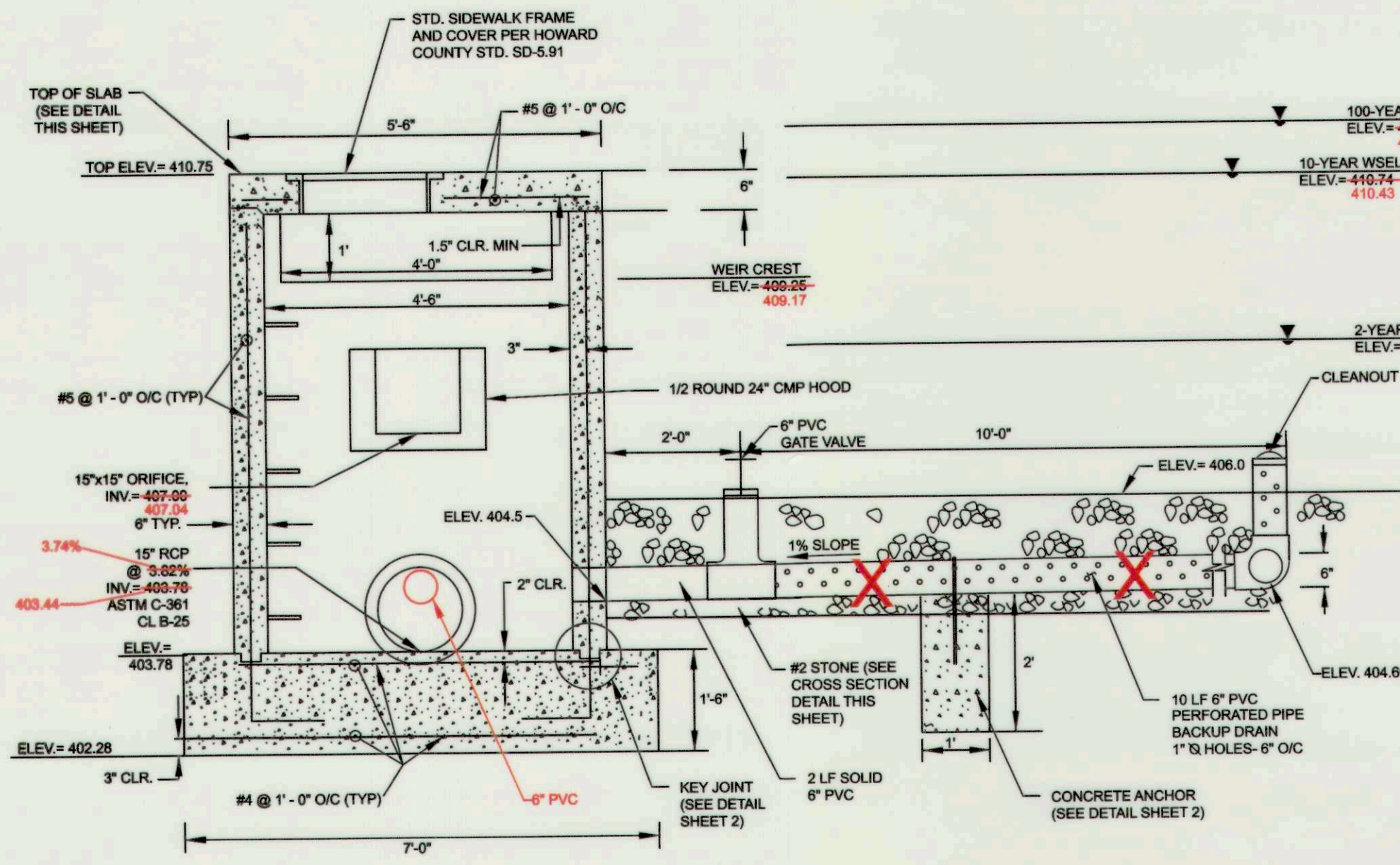


COUNTRY LANE
 SWM POND ENHANCEMENT
 HOWARD COUNTY DEPARTMENT OF PUBLIC WORKS
 STORMWATER MANAGEMENT DIVISION
 6751 COLUMBIA RD #2046
 GREENBELT, MD 21740

POND 1
 DETAILS

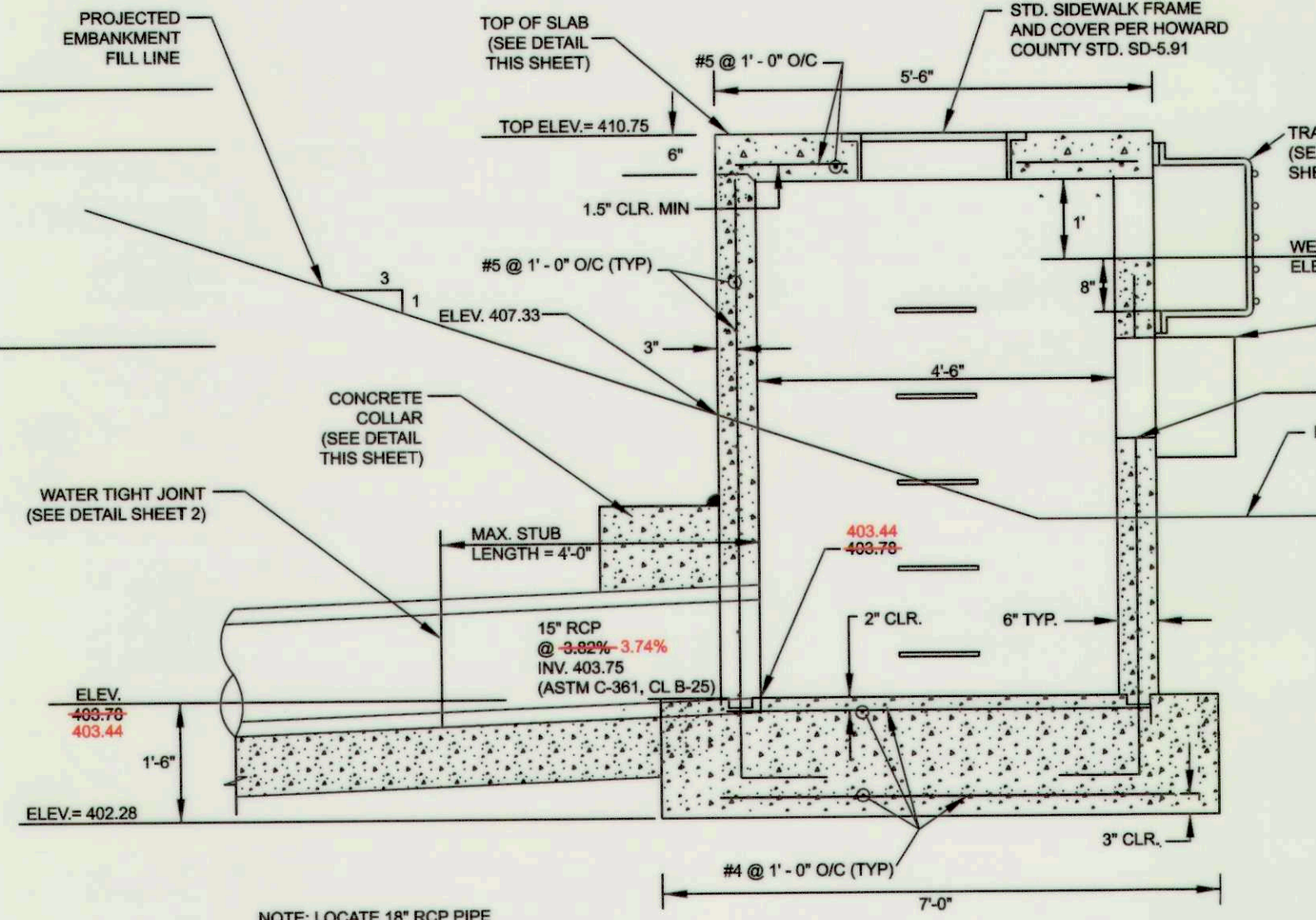
SCALE: AS SHOWN
 DATE: SEPTEMBER 2012
 KCI JOB NO.: 01-081795.66
 CAPITAL PROJECT NO.: D1160
 PERMIT ISSUE:
 CONSTRUCTION ISSUE:

AS-BUILT 3/29/13

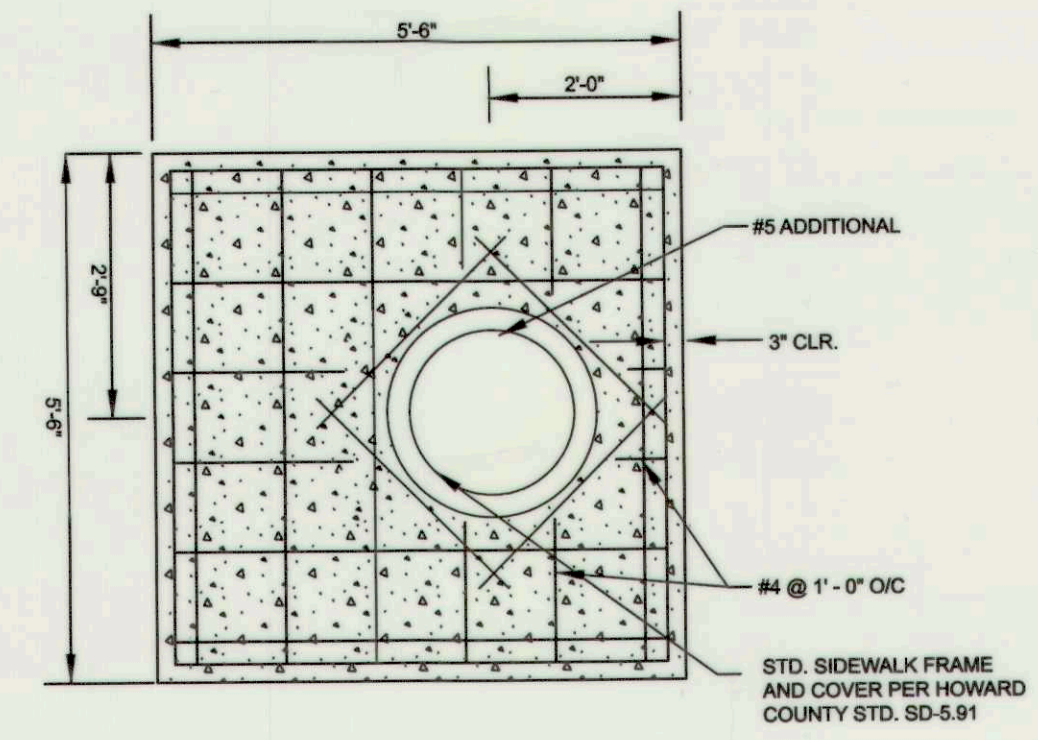


SECTION B-B

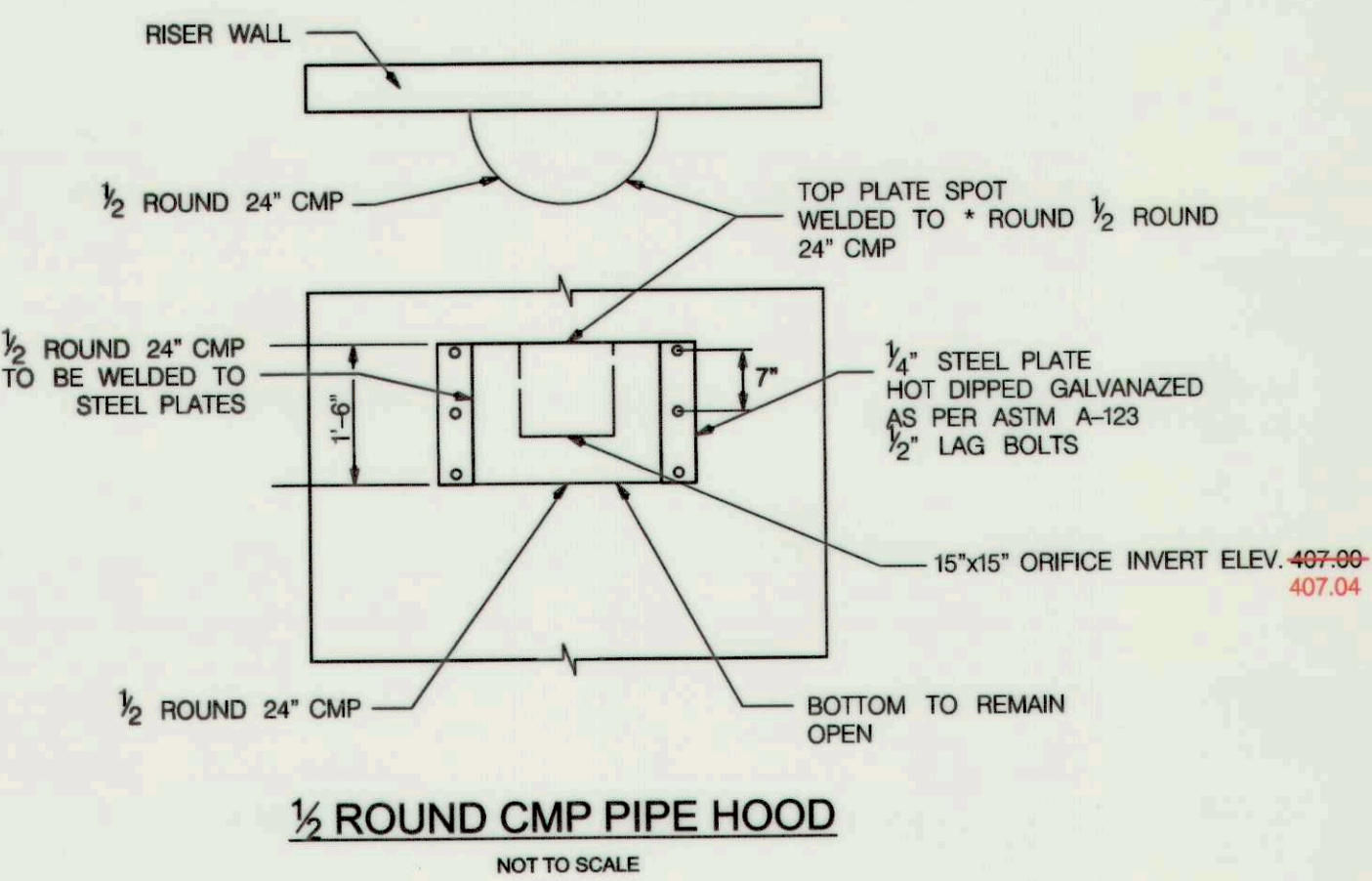
NOTE:
18" RCP BARREL IS NOT IN THE SECTION B-B VIEW. IT IS SHOWN FOR INFORMATIONAL PURPOSES.



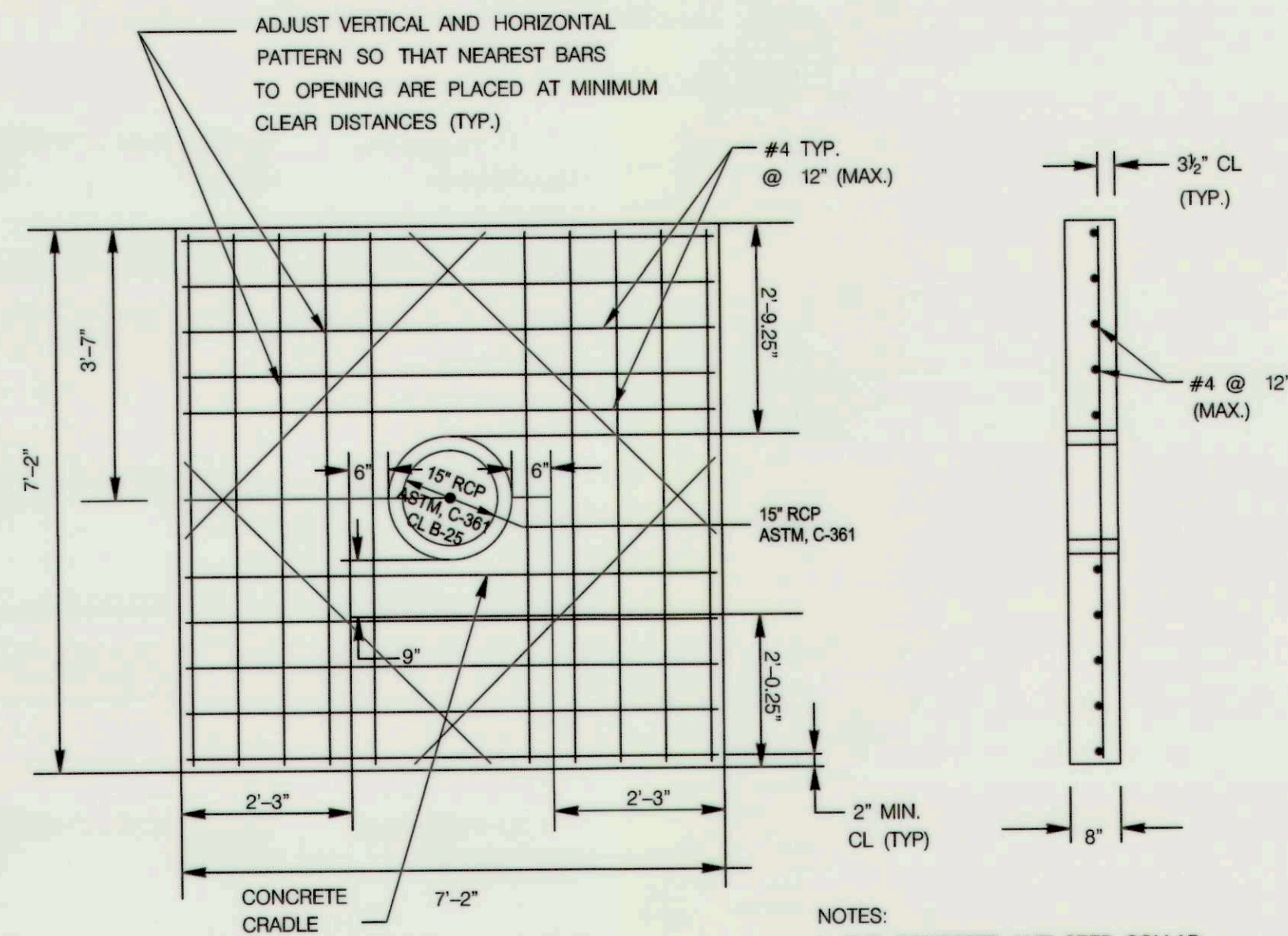
SECTION A-A



TOP SLAB DETAIL

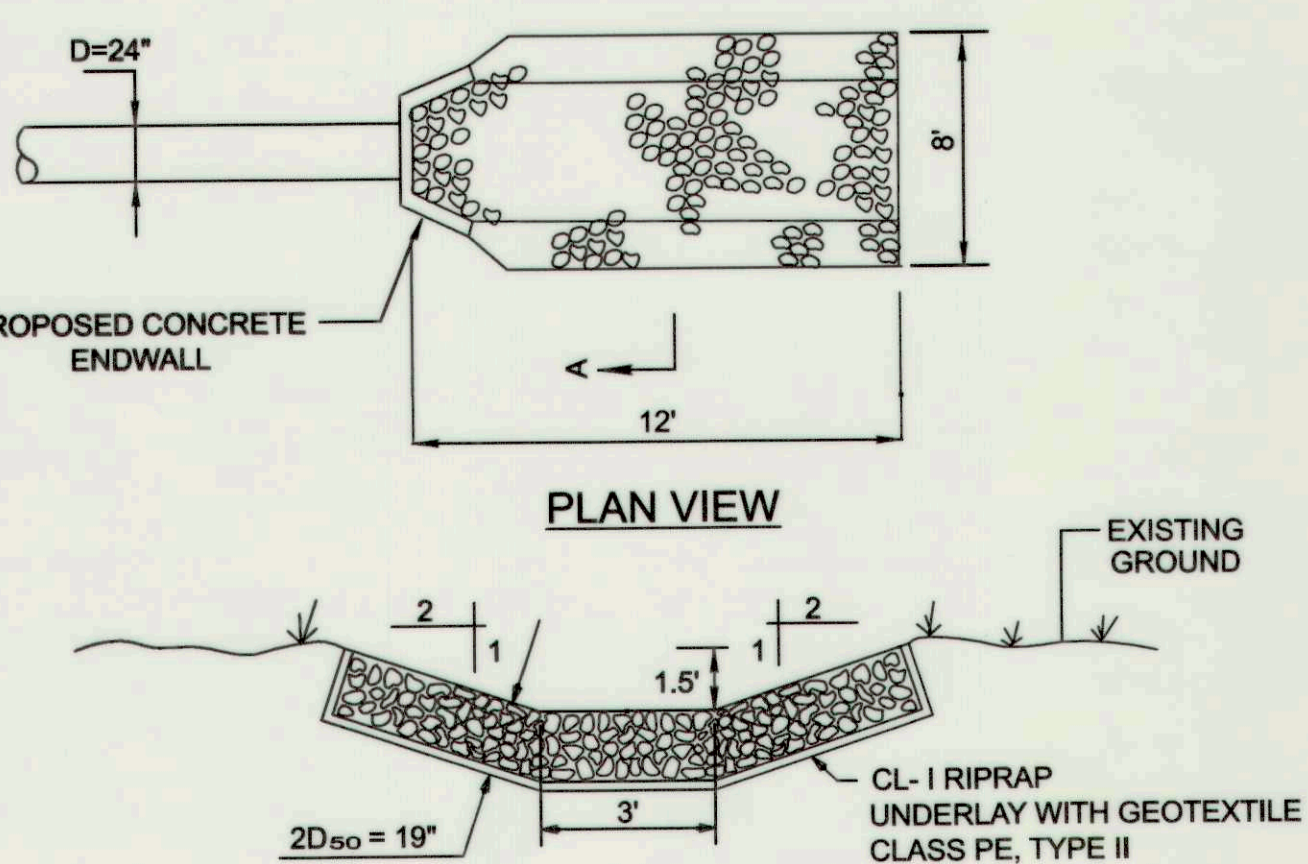


RISER DETAIL



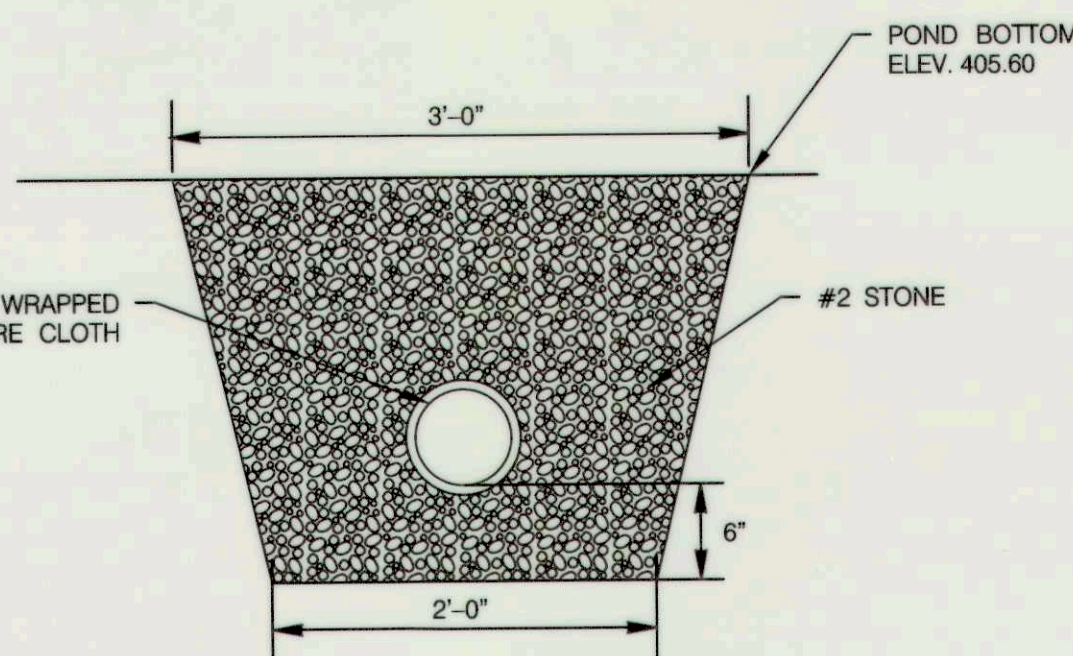
CONCRETE ANTI-SEEP COLLAR DETAIL

NOTES:
1. THE CONCRETE ANTI-SEEP COLLAR SHALL BE FINISHED IN ONE POUR.
2. MAINTAIN MINIMUM OF 2'-0" FROM FACE OF COLLAR TO NEAREST RCP JOINT

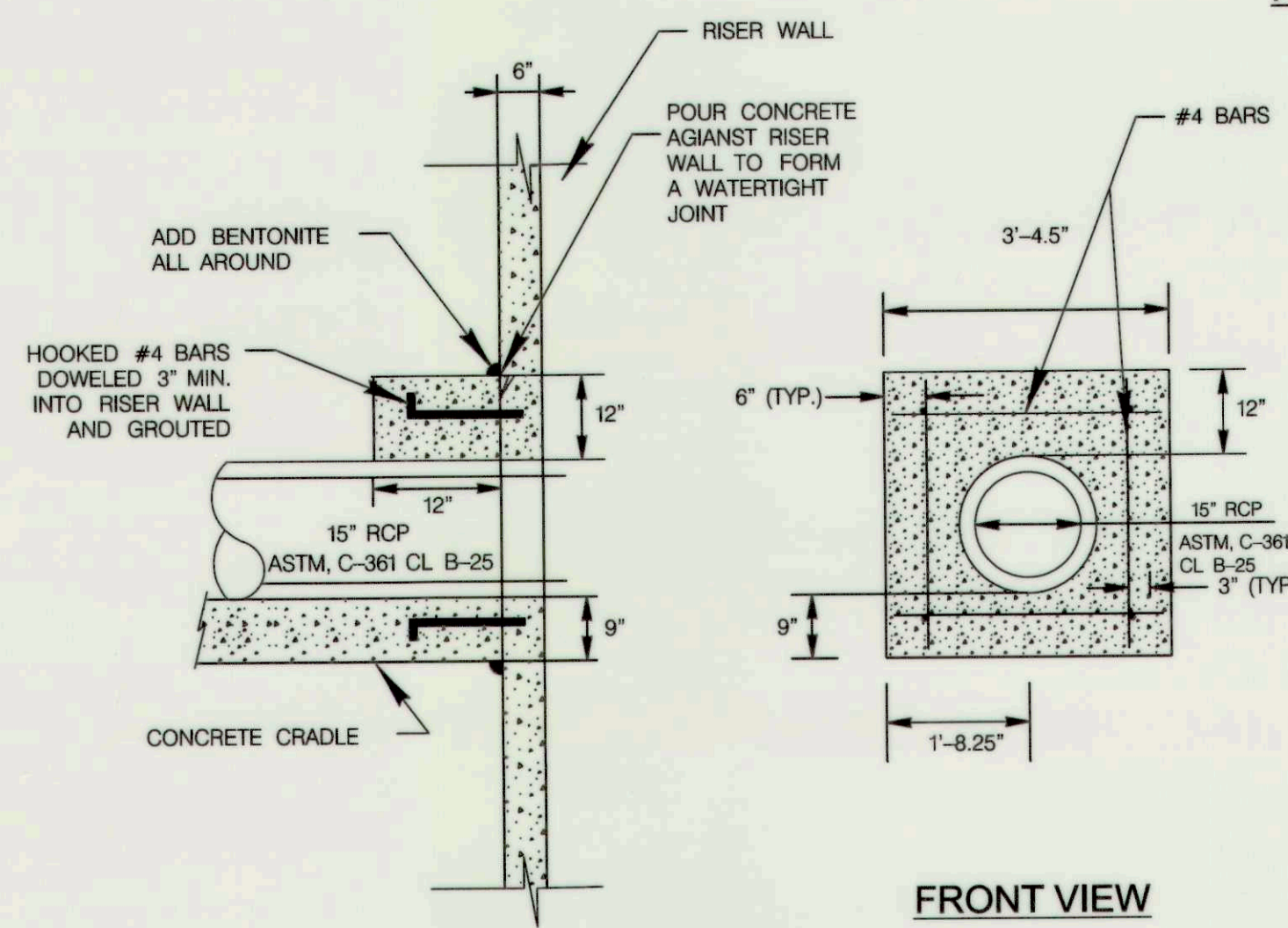


CROSS SECTION A-A

RIPRAP OUTLET PROTECTION



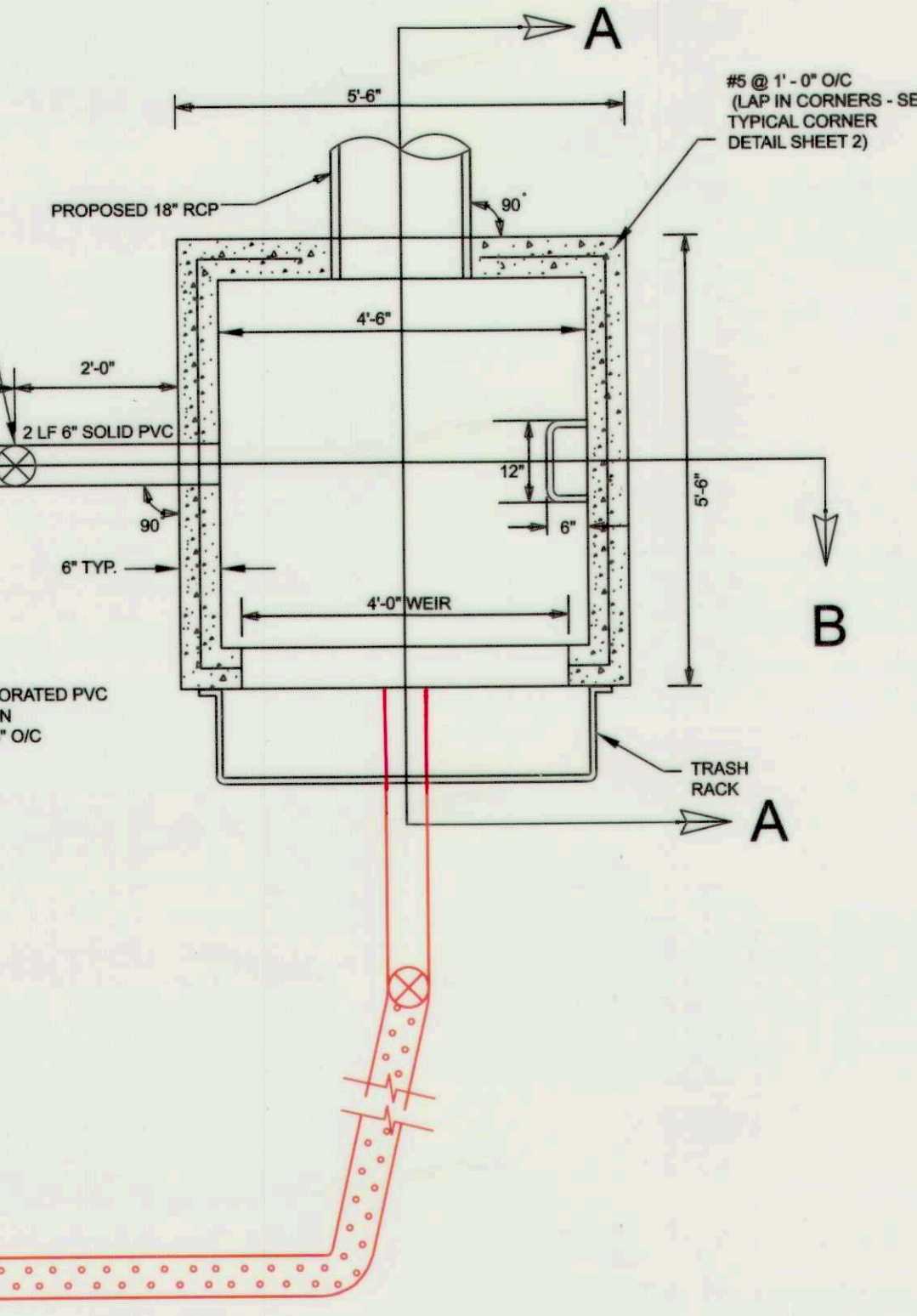
6" PERFORATED PVC CROSS SECTION



SIDE VIEW

FRONT VIEW

CONCRETE COLLAR DETAIL FOR 18" RCP



RISER R-2 PLAN VIEW

SCALE: 1"=2'

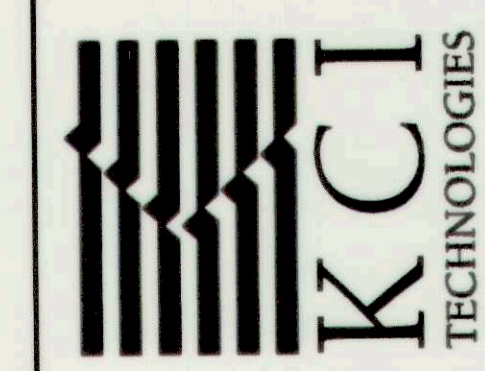
PRINCIPAL SPILLWAY CONCRETE CRADLE DETAIL

SCALE: 1"=2'

AS-BUILT 3/29/13

NO.	REVISIONS DESCRIPTION	DATE

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



COUNTRY LANE
SWIM POND ENHANCEMENT
BOONE PARK, LOT 1
OPEN SPACE LOT 78
HOWARD COUNTY DEPARTMENT OF PUBLIC WORKS
STORMWATER MANAGEMENT DIVISION
6751 COLUMBIA, MD 21046

POND 2 DETAILS

SCALE:	AS SHOWN
DATE:	SEPTEMBER 2012
KCI JOB NO.:	01-081795.66
CAPITAL PROJECT NO.:	D1160
PERMIT ISSUE:	
CONSTRUCTION ISSUE:	

BY: Anna Eppley, Director, P053, Water Res. GMA, Emp. FILE: W-2008-0081795.66, Howard County, Maryland, 10/5/12

DEPARTMENT OF PUBLIC WORKS, HOWARD COUNTY, MD

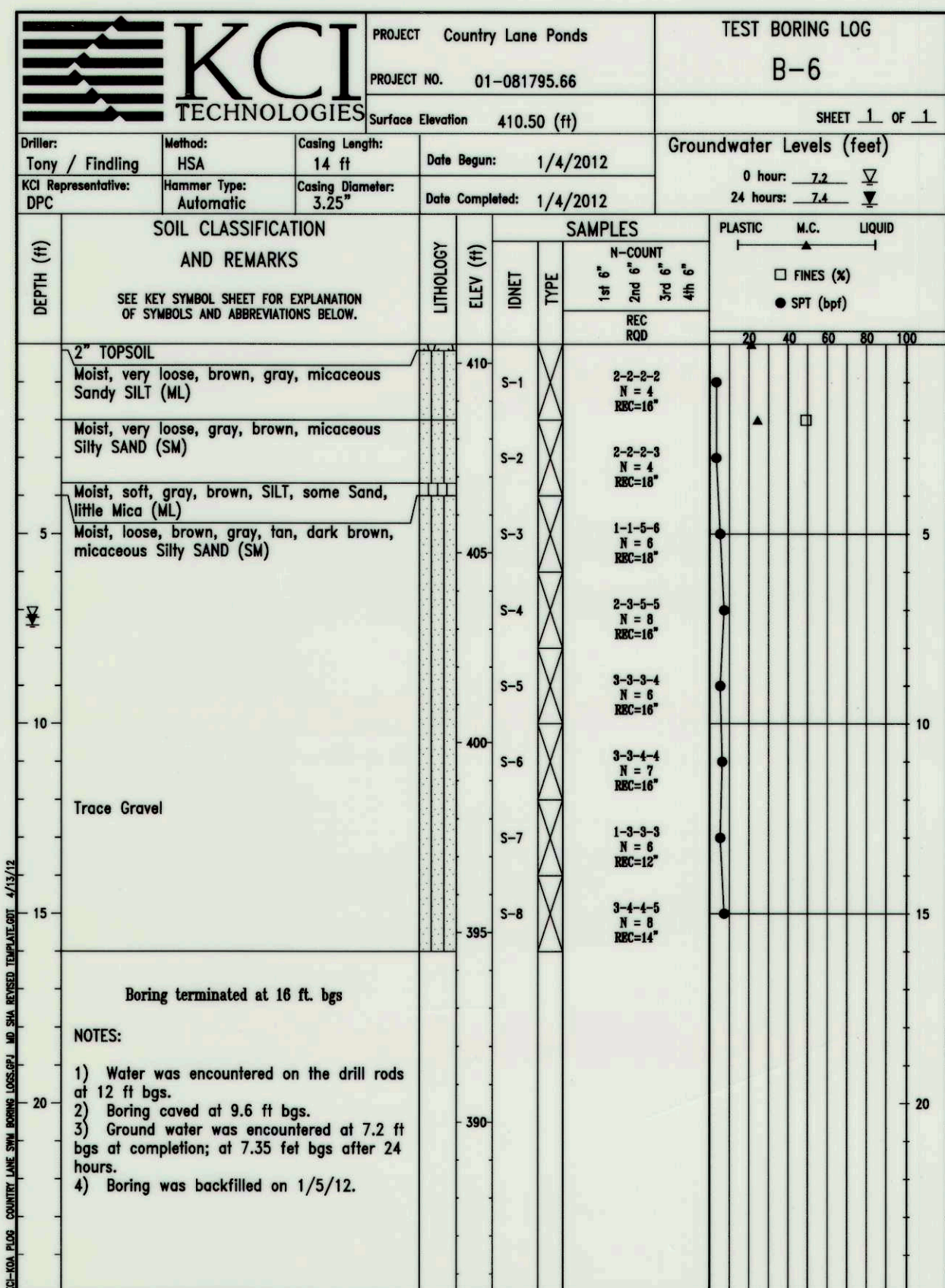
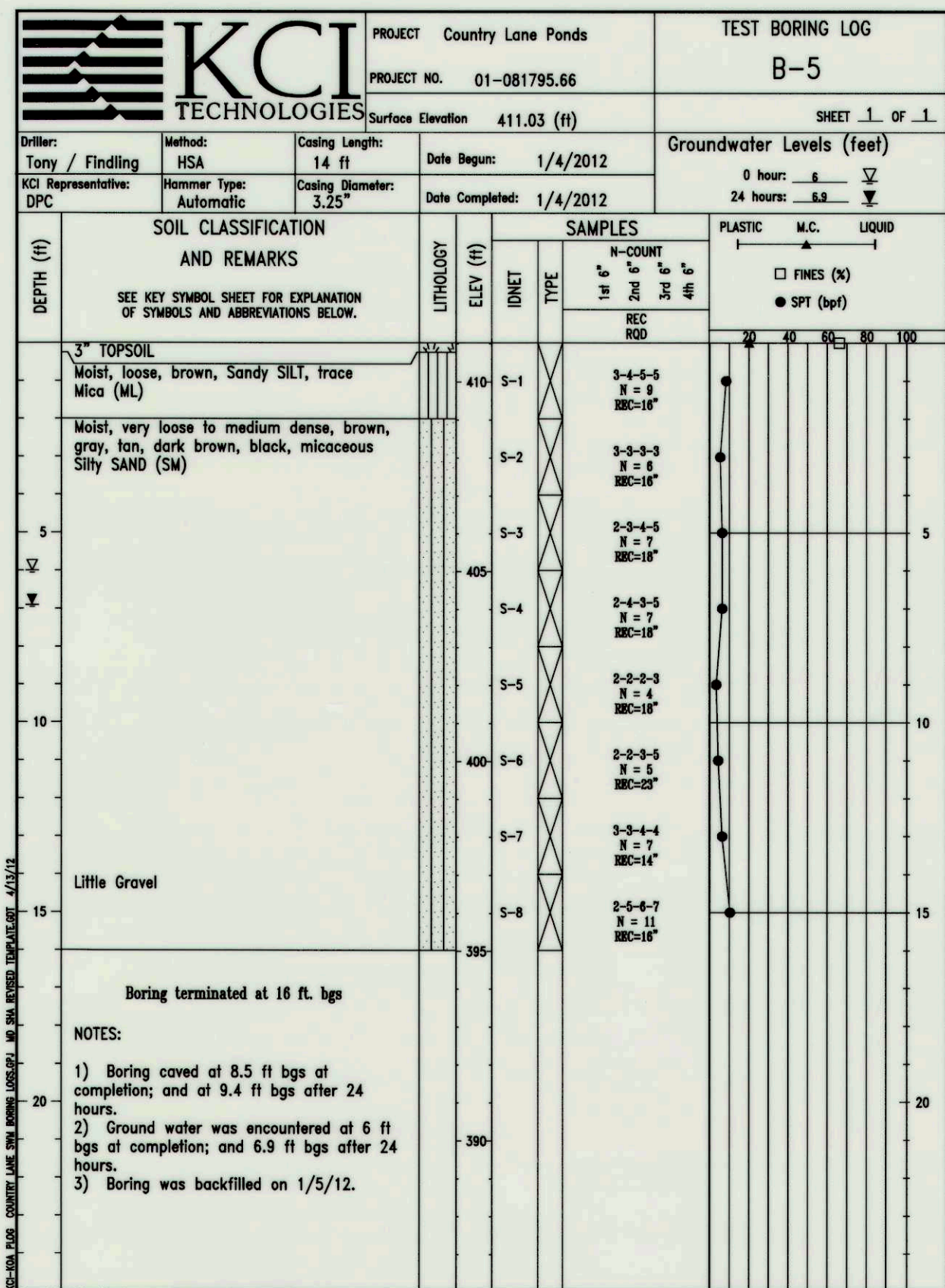
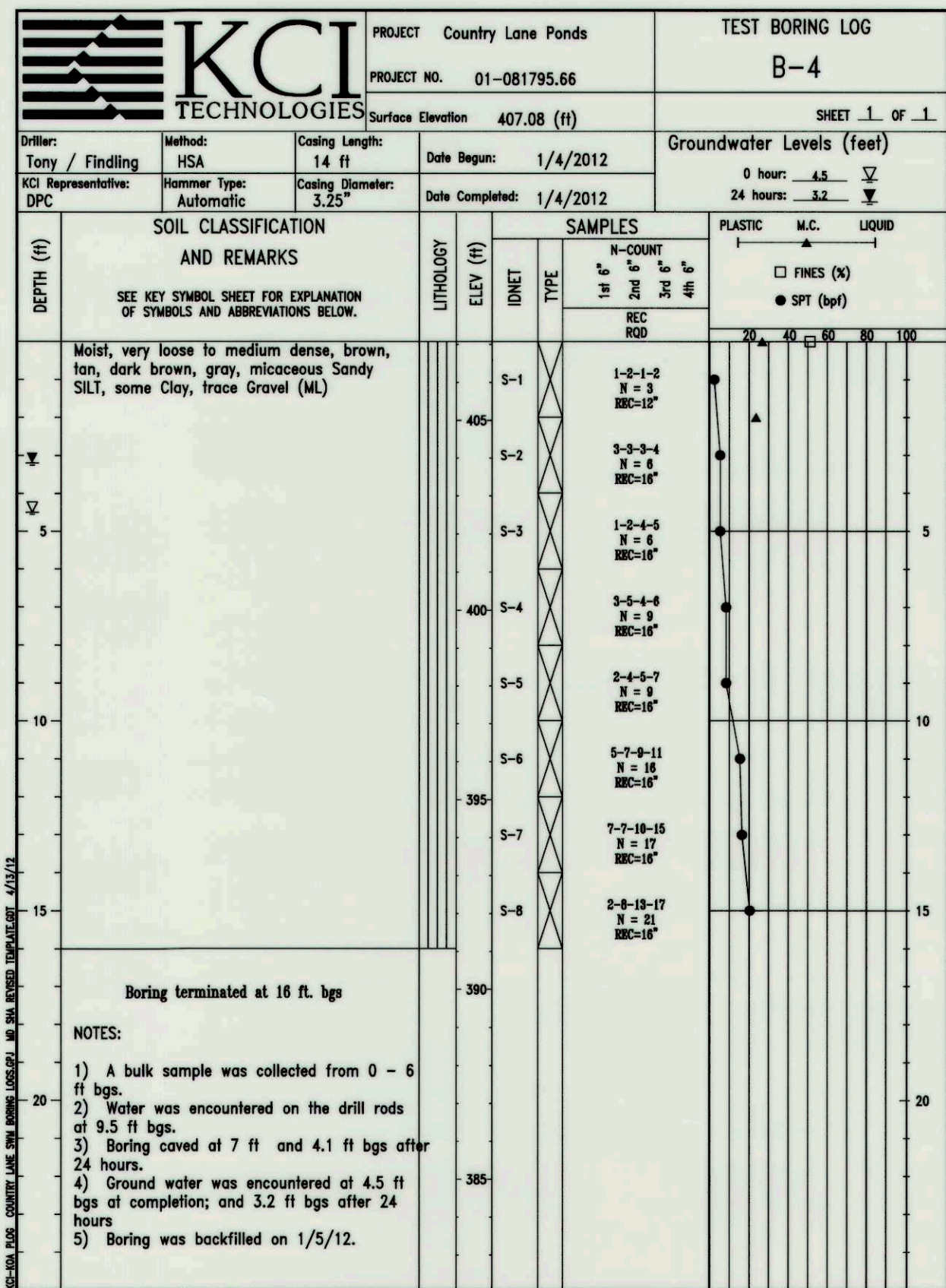
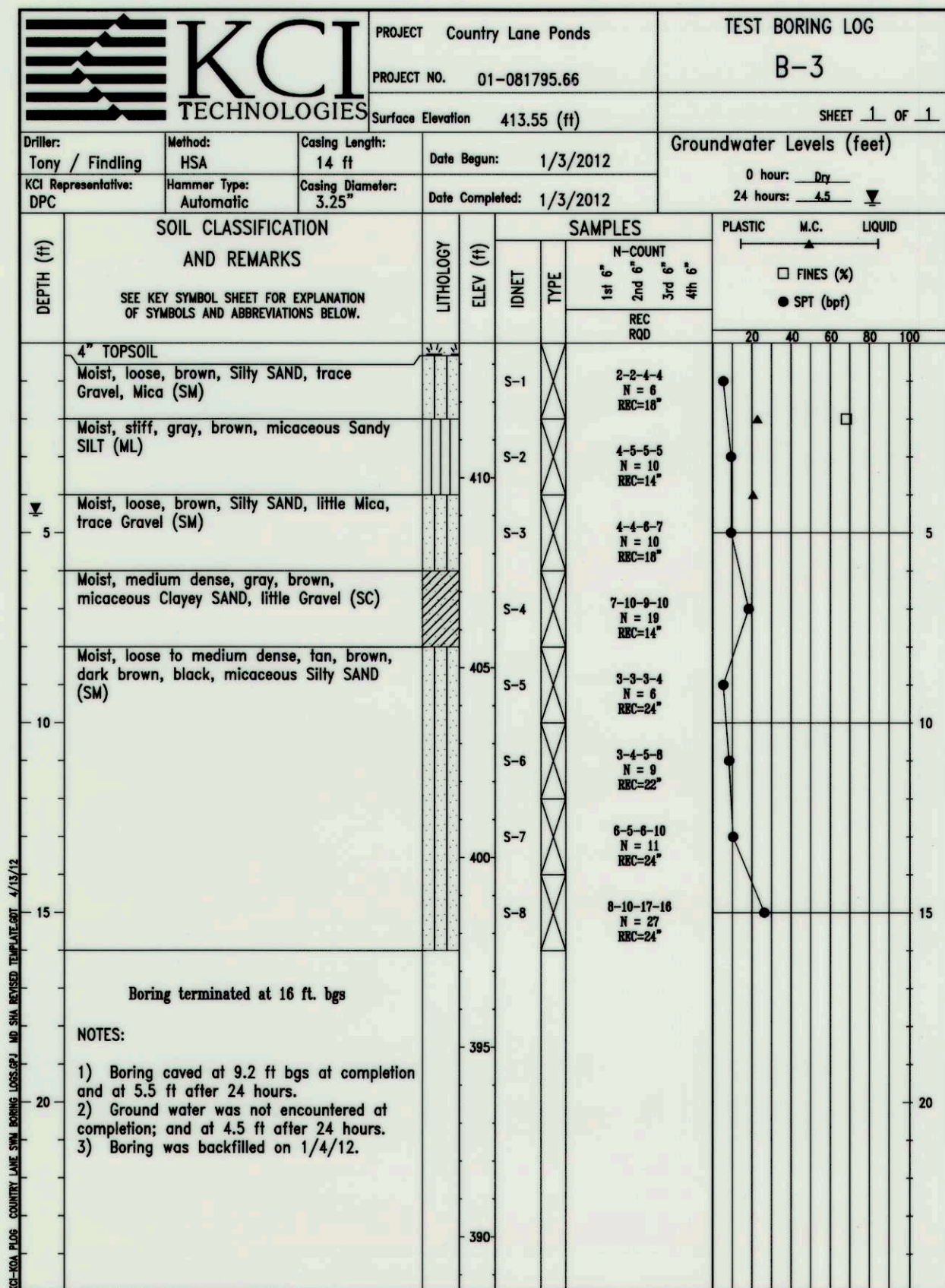
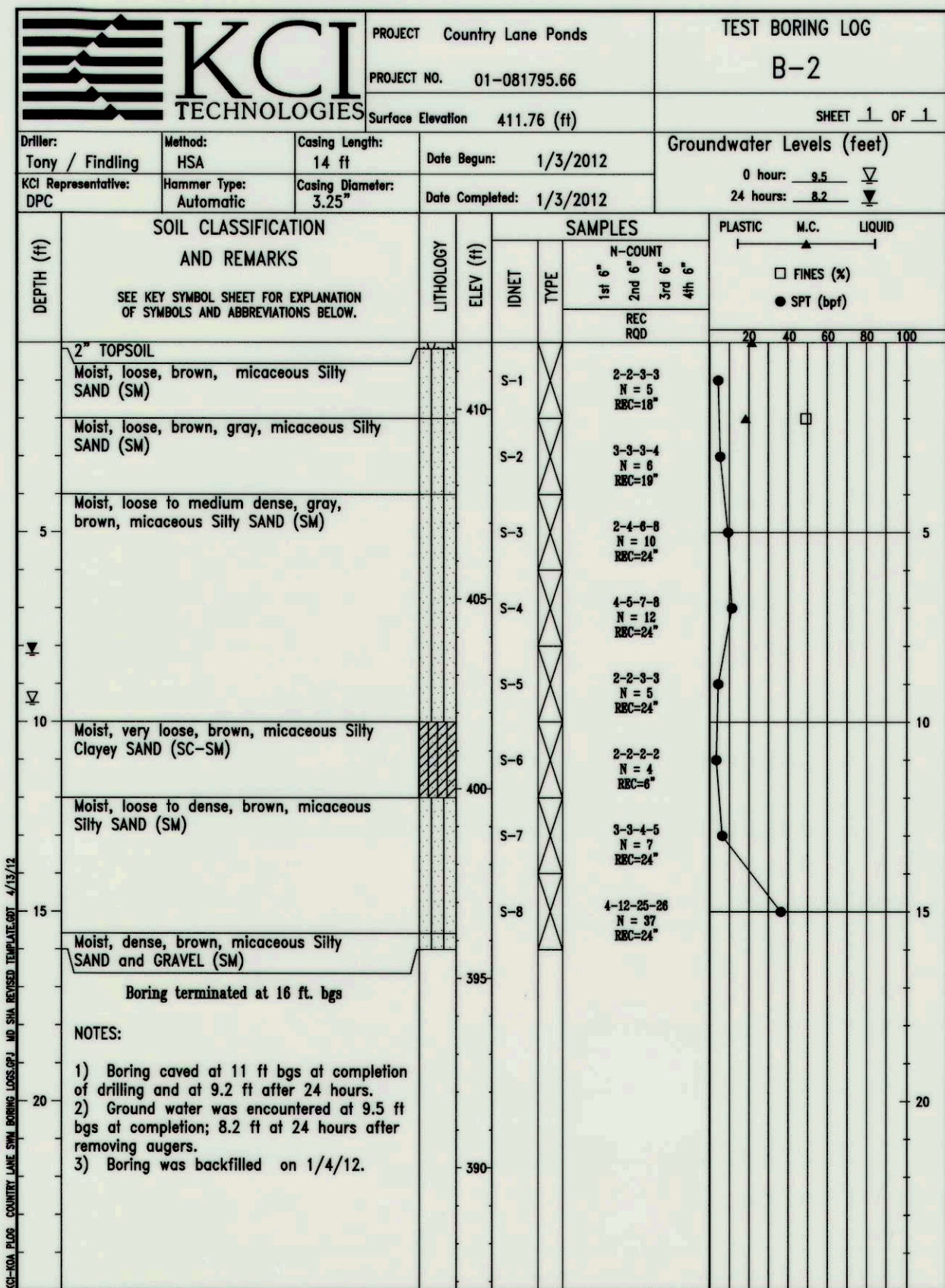
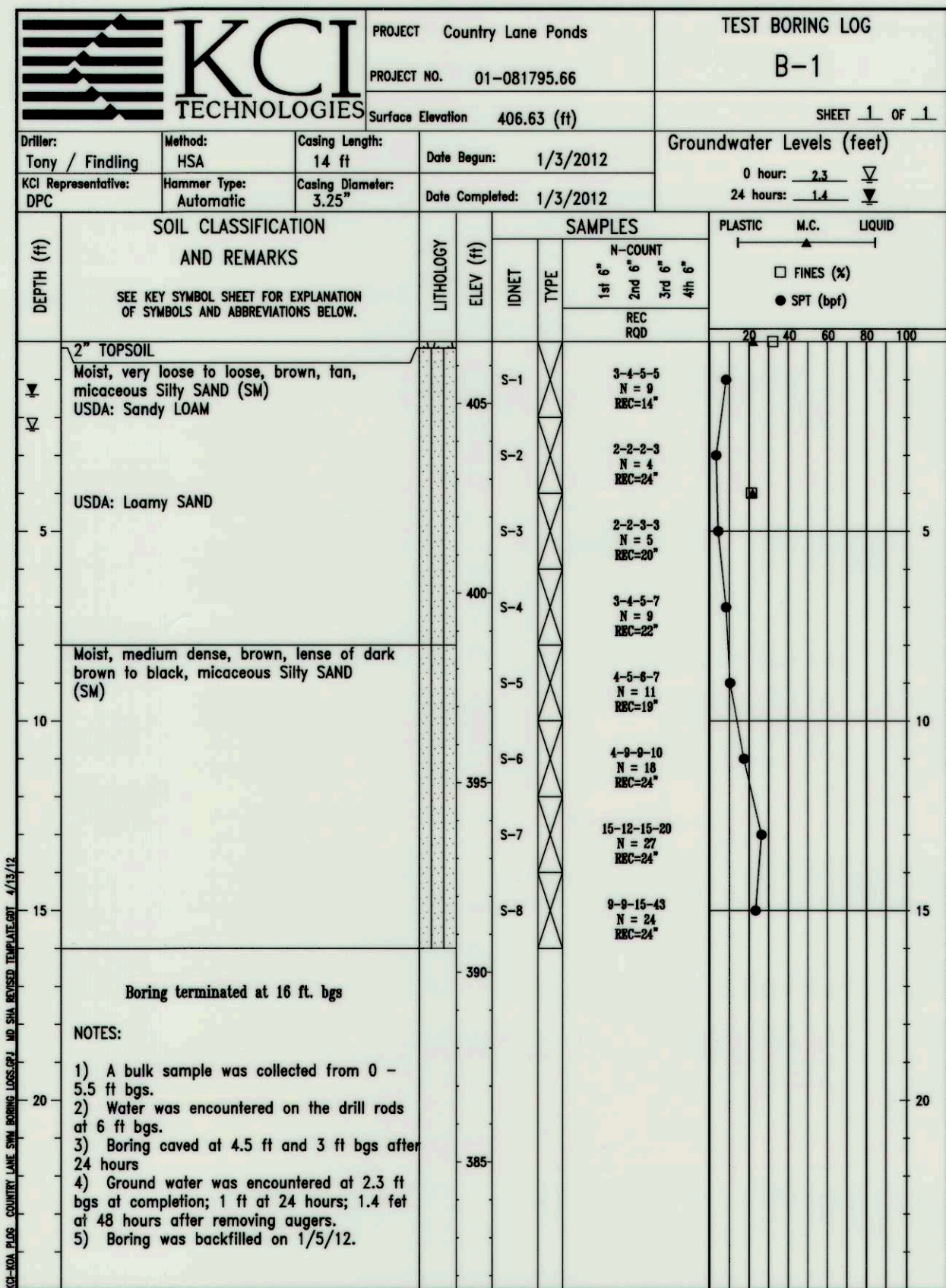
[Signature] 10/5/12
CHIEF, BUREAU OF ENVIRONMENTAL SERVICES DATE

REVIEWED FOR HOWARD SCD AND MEETS TECHNICAL REQUIREMENTS

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

[Signature] 10/16/12
DATE

ADD SMALL POND



PLOTTED: 02:05 PM on Friday, September 28, 2012.
 FILE: H:\2008\01-081795.66\Country Lane.dgn
 User: JRE

DEPARTMENT OF PUBLIC WORKS, HOWARD COUNTY, MD

[Signature]
 CHIEF, BUREAU OF ENVIRONMENTAL SERVICES

10/5/12
 DATE

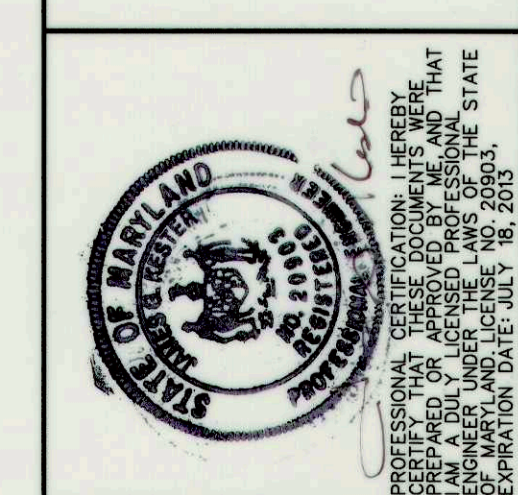
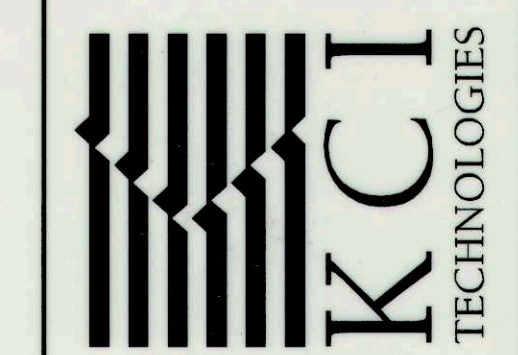
REVIEWED FOR HOWARD SCD AND MEETS TECHNICAL REQUIREMENTS
 THIS DEVELOPMENT IS APPROVED FOR SOIL EROSION AND SEDIMENT CONTROL BY THE
 HOWARD SOIL CONSERVATION DISTRICT.

[Signature]
 HOWARD SCD

10/16/12
 DATE

NO.	REVISIONS DESCRIPTION	DATE

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



COUNTRY LANE
 SWM POND ENHANCEMENT
 BOONE FARM
 SEEN SPACE LOT 1
 OPEN SPACE LOT 1
 HOWARD COUNTY DEPARTMENT OF PUBLIC WORKS
 STORMWATER MANAGEMENT DIVISION
 6751 COLUMBIA AVE., 2ND FLOOR
 COLUMBIA, MD 21046

SOIL BORING LOGS

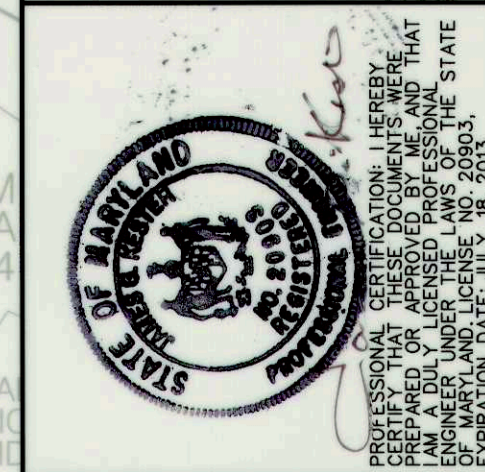
SCALE:	AS SHOWN
DATE:	SEPTEMBER 2012
KCI JOB NO.:	01-081795.66
CAPITAL PROJECT NO.:	D1160
PERMIT ISSUE:	
CONSTRUCTION ISSUE:	
SHEET NO.:	9 OF 16

KCI FILE: M:\2008\01-081795.66\



NO.	REVISIONS DESCRIPTION	DATE

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



COUNTRY LANE
 SWM POND ENHANCEMENT

BOONE FARM SECTION I, AREA 1
 OPEN SPACE LOT 78

HOWARD COUNTY DEPARTMENT OF PUBLIC WORKS
 5100 COLUMBIA GATEWAY DRIVE
 21046 COLUMBIA, MD

EROSION AND SEDIMENT CONTROL CONSTRUCTION ACCESS

SCALE: 1" = 30'

DATE: SEPTEMBER 2012

KCI JOB NO.: 01-081795.66

CAPITAL PROJECT NO.: D1160

PERMIT ISSUE:

CONSTRUCTION ISSUE:

SHEET NO.: 10 OF 16

DEPARTMENT OF PUBLIC WORKS, HOWARD COUNTY, MD

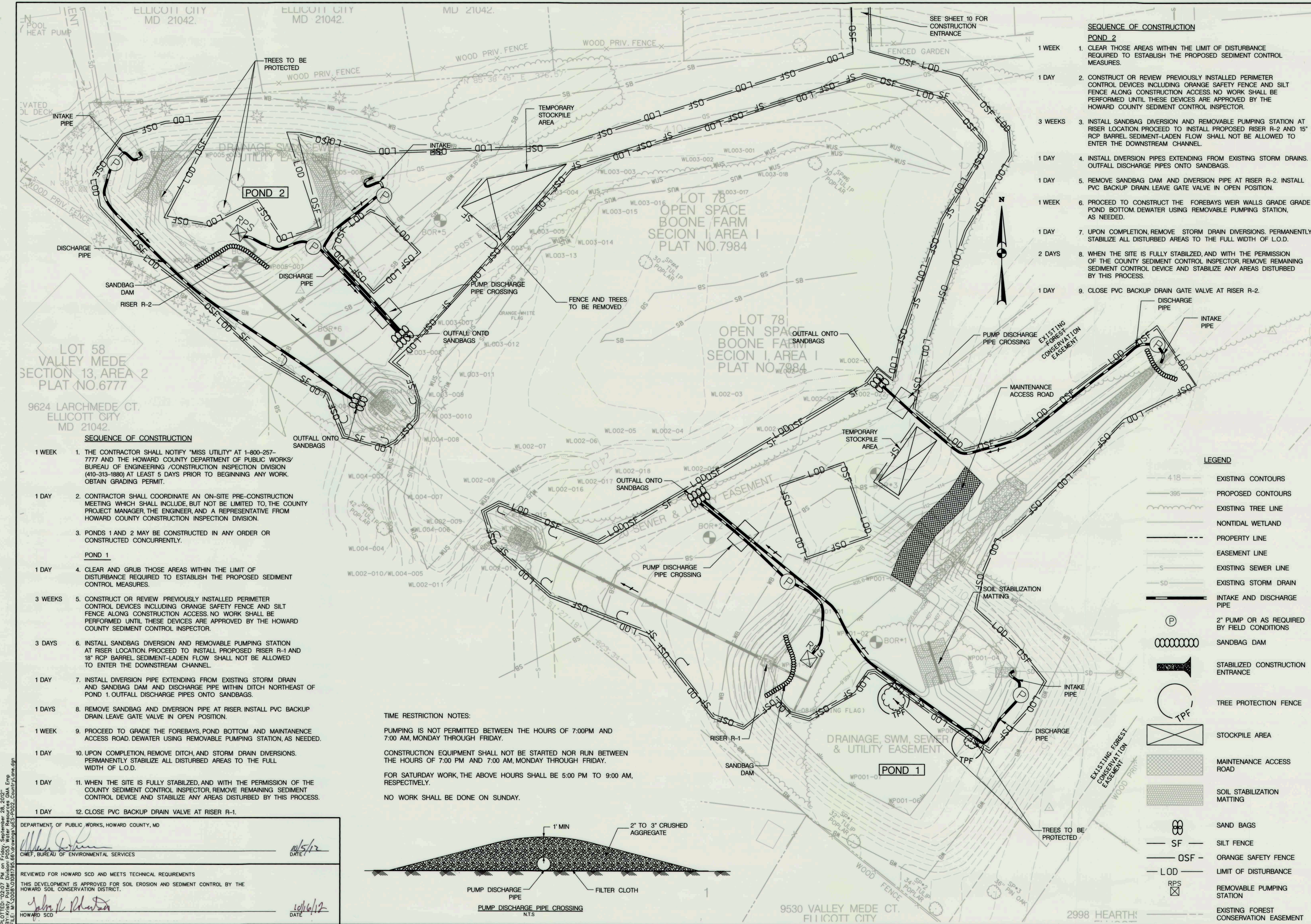
John R. Blunt
 CHIEF, BUREAU OF ENVIRONMENTAL SERVICES
 DATE: 10/5/12

REVIEWED FOR HOWARD SCD AND MEETS TECHNICAL REQUIREMENTS

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

John R. Blunt
 HOWARD SCD
 DATE: 10/16/12

PLOTTED: 10/20/12 PM on Friday, September 28, 2012
 BY: KIRBY FORTE, Division P053, Water Resources, GMA Emp
 FILE: H:\2008\01081795.66\Drawings\YES-P001_CountryLane.dgn



- SEQUENCE OF CONSTRUCTION**
POND 2
- 1 WEEK 1. CLEAR THOSE AREAS WITHIN THE LIMIT OF DISTURBANCE REQUIRED TO ESTABLISH THE PROPOSED SEDIMENT CONTROL MEASURES.
 - 1 DAY 2. CONSTRUCT OR REVIEW PREVIOUSLY INSTALLED PERIMETER CONTROL DEVICES INCLUDING ORANGE SAFETY FENCE AND SILT FENCE ALONG CONSTRUCTION ACCESS. NO WORK SHALL BE PERFORMED UNTIL THESE DEVICES ARE APPROVED BY THE HOWARD COUNTY SEDIMENT CONTROL INSPECTOR.
 - 3 WEEKS 3. INSTALL SANDBAG DIVERSION AND REMOVABLE PUMPING STATION AT RISER LOCATION. PROCEED TO INSTALL PROPOSED RISER R-2 AND 15" RCP BARREL SEDIMENT-LADEN FLOW SHALL NOT BE ALLOWED TO ENTER THE DOWNSTREAM CHANNEL.
 - 1 DAY 4. INSTALL DIVERSION PIPES EXTENDING FROM EXISTING STORM DRAINS. OUTFALL DISCHARGE PIPES ONTO SANDBAGS.
 - 1 DAY 5. REMOVE SANDBAG DAM AND DIVERSION PIPE AT RISER R-2. INSTALL PVC BACKUP DRAIN. LEAVE GATE VALVE IN OPEN POSITION.
 - 1 WEEK 6. PROCEED TO CONSTRUCT THE FOREBAYS WEIR WALLS GRADE GRADE POND BOTTOM. DEWATER USING REMOVABLE PUMPING STATION, AS NEEDED.
 - 1 DAY 7. UPON COMPLETION, REMOVE STORM DRAIN DIVERSIONS. PERMANENTLY STABILIZE ALL DISTURBED AREAS TO THE FULL WIDTH OF L.O.D.
 - 2 DAYS 8. WHEN THE SITE IS FULLY STABILIZED, AND WITH THE PERMISSION OF THE COUNTY SEDIMENT CONTROL INSPECTOR, REMOVE REMAINING SEDIMENT CONTROL DEVICE AND STABILIZE ANY AREAS DISTURBED BY THIS PROCESS.
 - 1 DAY 9. CLOSE PVC BACKUP DRAIN GATE VALVE AT RISER R-2.

- SEQUENCE OF CONSTRUCTION**
- 1 WEEK 1. THE CONTRACTOR SHALL NOTIFY "MISS UTILITY" AT 1-800-257-7777 AND THE HOWARD COUNTY DEPARTMENT OF PUBLIC WORKS' BUREAU OF ENGINEERING /CONSTRUCTION INSPECTION DIVISION (410-313-1880) AT LEAST 5 DAYS PRIOR TO BEGINNING ANY WORK. OBTAIN GRADING PERMIT.
 - 1 DAY 2. CONTRACTOR SHALL COORDINATE AN ON-SITE PRE-CONSTRUCTION MEETING WHICH SHALL INCLUDE, BUT NOT BE LIMITED TO, THE COUNTY PROJECT MANAGER, THE ENGINEER, AND A REPRESENTATIVE FROM HOWARD COUNTY CONSTRUCTION INSPECTION DIVISION.
 - 3 WEEKS 3. PONDS 1 AND 2 MAY BE CONSTRUCTED IN ANY ORDER OR CONSTRUCTED CONCURRENTLY.
 - 1 DAY 4. CLEAR AND GRUB THOSE AREAS WITHIN THE LIMIT OF DISTURBANCE REQUIRED TO ESTABLISH THE PROPOSED SEDIMENT CONTROL MEASURES.
 - 3 WEEKS 5. CONSTRUCT OR REVIEW PREVIOUSLY INSTALLED PERIMETER CONTROL DEVICES INCLUDING ORANGE SAFETY FENCE AND SILT FENCE ALONG CONSTRUCTION ACCESS. NO WORK SHALL BE PERFORMED UNTIL THESE DEVICES ARE APPROVED BY THE HOWARD COUNTY SEDIMENT CONTROL INSPECTOR.
 - 3 DAYS 6. INSTALL SANDBAG DIVERSION AND REMOVABLE PUMPING STATION AT RISER LOCATION. PROCEED TO INSTALL PROPOSED RISER R-1 AND 18" RCP BARREL SEDIMENT-LADEN FLOW SHALL NOT BE ALLOWED TO ENTER THE DOWNSTREAM CHANNEL.
 - 1 DAY 7. INSTALL DIVERSION PIPE EXTENDING FROM EXISTING STORM DRAIN AND SANDBAG DAM AND DISCHARGE PIPE WITHIN DITCH NORTHEAST OF POND 1. OUTFALL DISCHARGE PIPES ONTO SANDBAGS.
 - 1 DAY 8. REMOVE SANDBAG AND DIVERSION PIPE AT RISER. INSTALL PVC BACKUP DRAIN. LEAVE GATE VALVE IN OPEN POSITION.
 - 1 WEEK 9. PROCEED TO GRADE THE FOREBAYS, POND BOTTOM AND MAINTENANCE ACCESS ROAD. DEWATER USING REMOVABLE PUMPING STATION, AS NEEDED.
 - 1 DAY 10. UPON COMPLETION, REMOVE DITCH AND STORM DRAIN DIVERSIONS. PERMANENTLY STABILIZE ALL DISTURBED AREAS TO THE FULL WIDTH OF L.O.D.
 - 1 DAY 11. WHEN THE SITE IS FULLY STABILIZED, AND WITH THE PERMISSION OF THE COUNTY SEDIMENT CONTROL INSPECTOR, REMOVE REMAINING SEDIMENT CONTROL DEVICE AND STABILIZE ANY AREAS DISTURBED BY THIS PROCESS.
 - 1 DAY 12. CLOSE PVC BACKUP DRAIN VALVE AT RISER R-1.

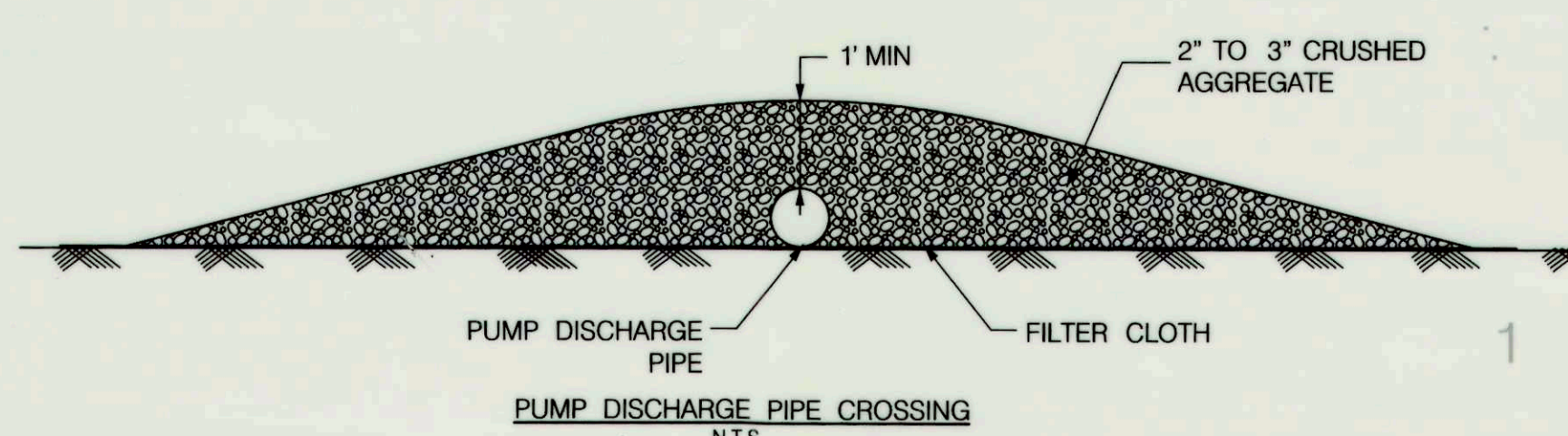
TIME RESTRICTION NOTES:

PUMPING IS NOT PERMITTED BETWEEN THE HOURS OF 7:00PM AND 7:00 AM, MONDAY THROUGH FRIDAY.

CONSTRUCTION EQUIPMENT SHALL NOT BE STARTED NOR RUN BETWEEN THE HOURS OF 7:00 PM AND 7:00 AM, MONDAY THROUGH FRIDAY.

FOR SATURDAY WORK, THE ABOVE HOURS SHALL BE 5:00 PM TO 9:00 AM, RESPECTIVELY.

NO WORK SHALL BE DONE ON SUNDAY.



- LEGEND**
- 418 ——— EXISTING CONTOURS
 - 395 ——— PROPOSED CONTOURS
 - EXISTING TREE LINE
 - NONTIDAL WETLAND
 - PROPERTY LINE
 - EASEMENT LINE
 - EXISTING SEWER LINE
 - SD ——— EXISTING STORM DRAIN
 - INTAKE AND DISCHARGE PIPE
 - (P) 2" PUMP OR AS REQUIRED BY FIELD CONDITIONS
 - SANDBAG DAM
 - STABILIZED CONSTRUCTION ENTRANCE
 - (TPF) TREE PROTECTION FENCE
 - STOCKPILE AREA
 - MAINTENANCE ACCESS ROAD
 - SOIL STABILIZATION MATTING
 - SAND BAGS
 - SF ——— SILT FENCE
 - OSF ——— ORANGE SAFETY FENCE
 - LOD ——— LIMIT OF DISTURBANCE
 - RPS REMOVABLE PUMPING STATION
 - EXISTING FOREST CONSERVATION EASEMENT

DEPARTMENT OF PUBLIC WORKS, HOWARD COUNTY, MD

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

DATE: 10/5/12

REVIEWED FOR HOWARD SCD AND MEETS TECHNICAL REQUIREMENTS

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

John R. ...
HOWARD SCD

DATE: 10/16/12

DATE: _____

NO. REVISIONS DESCRIPTION: _____

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

KCI TECHNOLOGIES

EROSION AND SEDIMENT CONTROL PLAN SHEET

SCALE: 1" = 20'

DATE: SEPTEMBER 2012

KCI JOB NO.: 01-081795.66

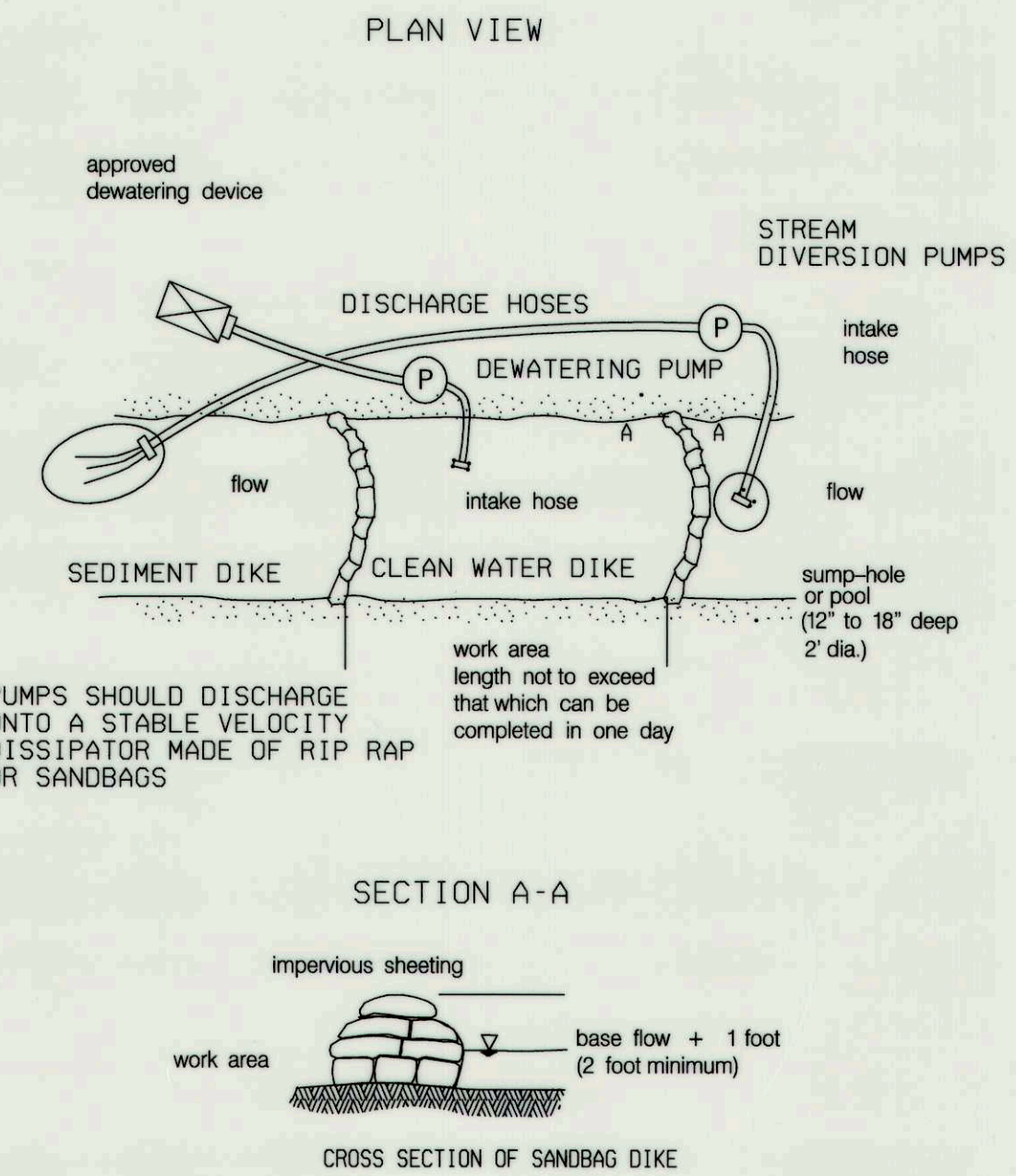
CAPITAL PROJECT NO.: D1160

PERMIT ISSUE: _____

CONSTRUCTION ISSUE: _____

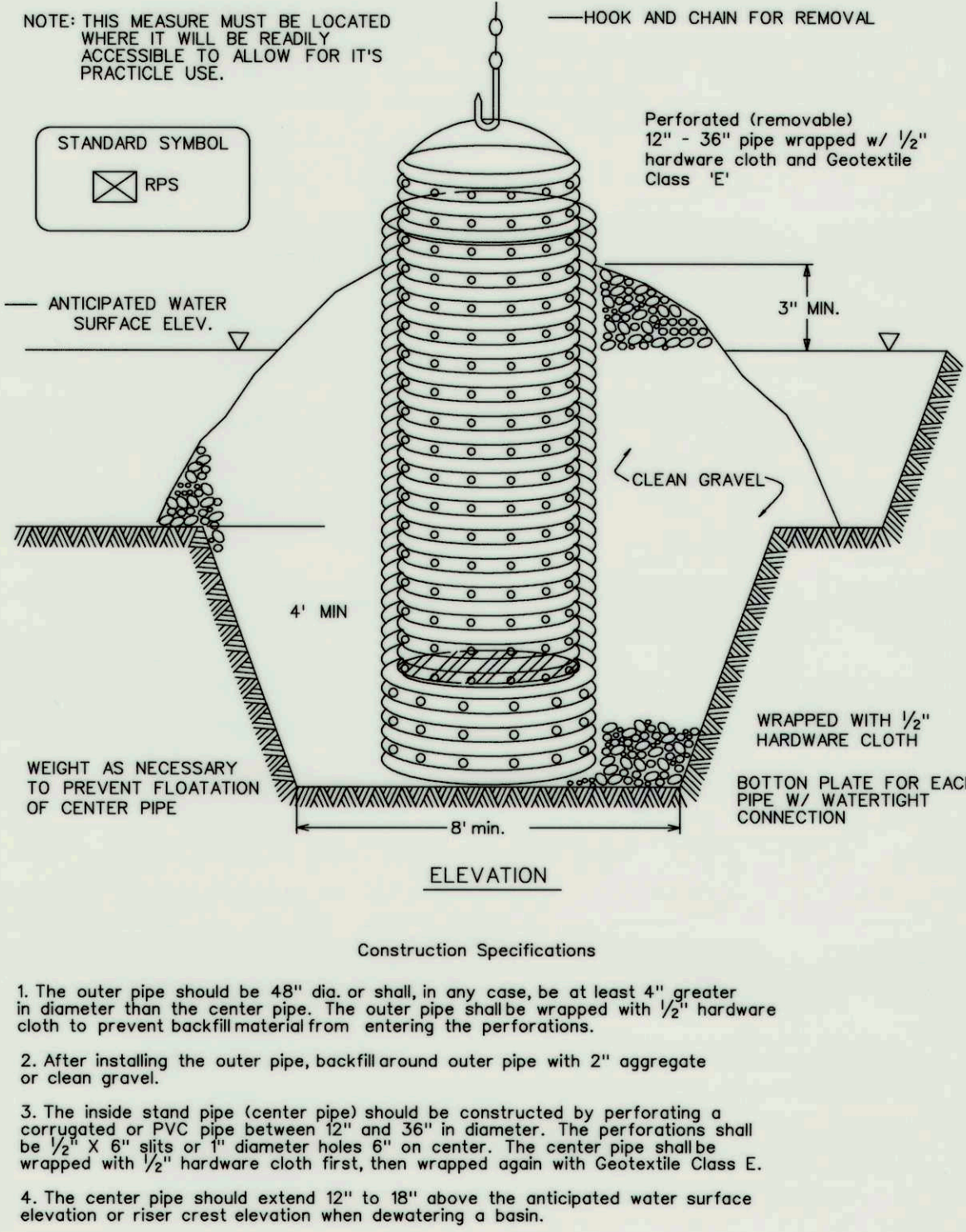
SHEET NO.: 11 OF _____

DETAIL 1.2: PUMP-AROUND PRACTICE



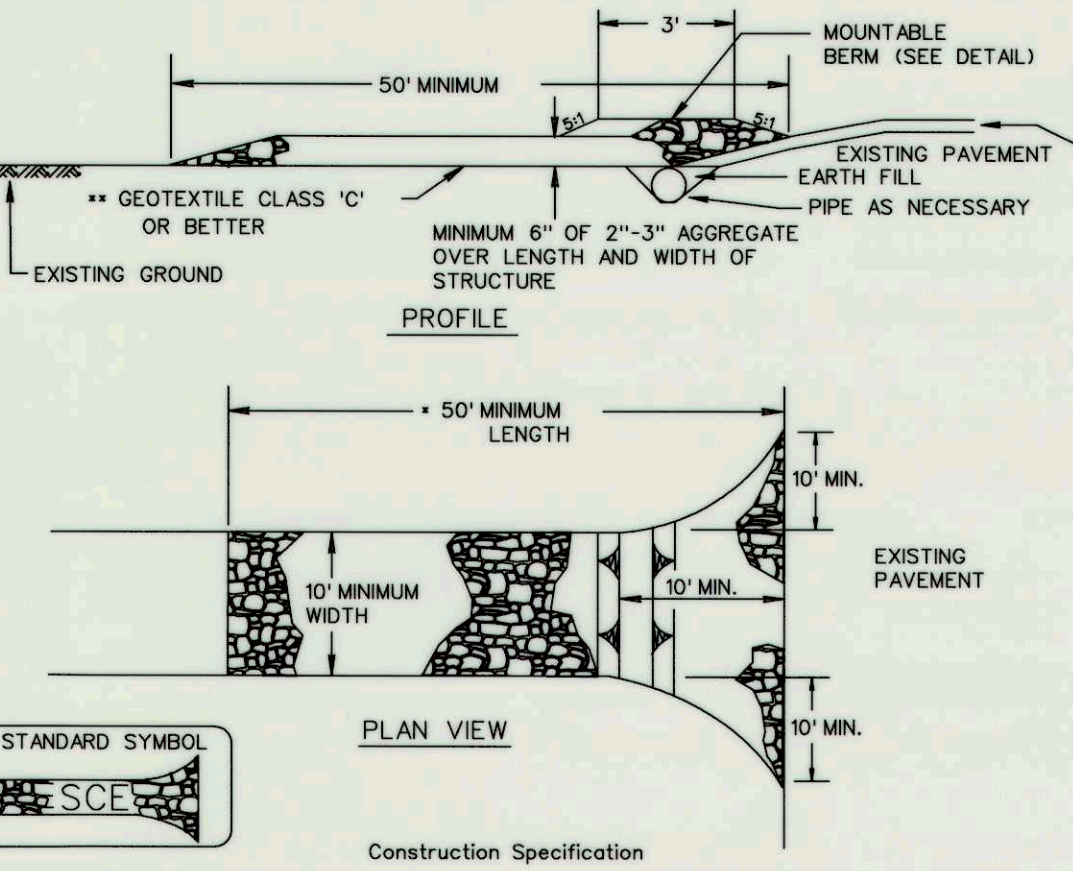
TEMPORARY INSTREAM CONSTRUCTION MEASURES REVISED NOVEMBER 2000 PAGE 1, 2 - 3 MARYLAND DEPARTMENT OF THE ENVIRONMENT WATER MANAGEMENT ADMINISTRATION

DETAIL 20A - REMOVABLE PUMPING STATION



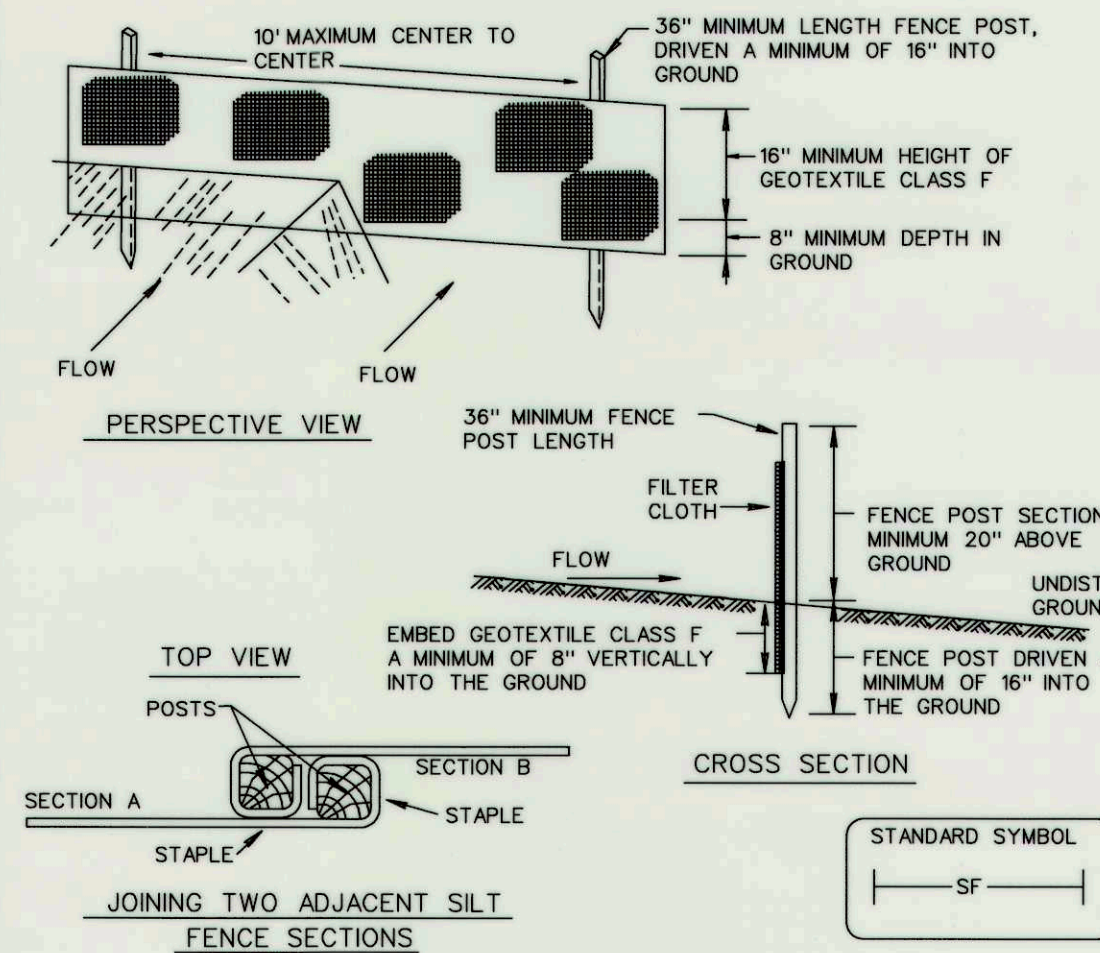
U.S. DEPARTMENT OF AGRICULTURE SOIL CONSERVATION SERVICE PAGE D - 12 - 5 MARYLAND DEPARTMENT OF ENVIRONMENT WATER MANAGEMENT ADMINISTRATION

DETAIL 24 - STABILIZED CONSTRUCTION ENTRANCE



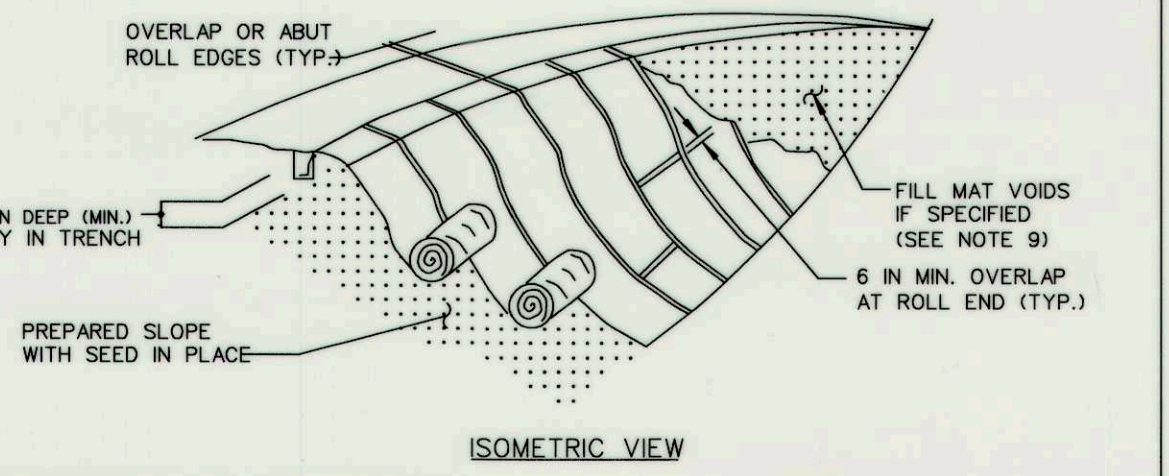
U.S. DEPARTMENT OF AGRICULTURE SOIL CONSERVATION SERVICE PAGE F - 17 - 3 MARYLAND DEPARTMENT OF ENVIRONMENT WATER MANAGEMENT ADMINISTRATION

DETAIL 22 - SILT FENCE



U.S. DEPARTMENT OF AGRICULTURE SOIL CONSERVATION SERVICE PAGE E - 15 - 3 MARYLAND DEPARTMENT OF ENVIRONMENT WATER MANAGEMENT ADMINISTRATION

DETAIL B-4-6-D PERMANENT SOIL STABILIZATION MATTING SLOPE APPLICATION



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

HOWARD COUNTY CONSERVATION DISTRICT STANDARD SEDIMENT CONTROL NOTES

- A MINIMUM OF 48 HOURS NOTICE MUST BE GIVEN TO THE HOWARD COUNTY DEPARTMENT OF INSPECTIONS, LICENSES AND PERMITS, SEDIMENT CONTROL DIVISION PRIOR TO THE START OF ANY CONSTRUCTION (313-1855).
- ALL VEGETATIVE AND STRUCTURAL PRACTICES ARE TO BE INSTALLED ACCORDING TO THE PROVISIONS OF THIS PLAN AND ARE TO BE IN CONFORMANCE WITH THE MOST CURRENT MARYLAND STANDARDS AND SPECIFICATION FOR SOIL EROSION AND SEDIMENT CONTROL, AND REVISIONS THERETO.
- FOLLOWING INITIAL SOIL DISTURBANCE OR RE-DISTURBANCE, PERMANENT OR TEMPORARY STABILIZATION SHALL BE COMPLETED WITHIN 7 CALENDAR DAYS FOR ALL PERMETER STRUCTURES, DIKES, PERMETER SLOPES AND ALL SLOPES GREATER THAN 3:1, BY 14 DAYS AS TO ALL OTHER DISTURBED OR GRADED AREAS ON THE PROJECT SITE.
- ALL SEDIMENT TRAPS/BASINS SHOWN MUST BE FENCED AND WARNING SIGN POSTED AROUND THEIR PERMETER IN ACCORDANCE WITH VOL. 1, CHAPTER 12 OF THE HOWARD COUNTY DESIGN MANUAL, STORM DRAINAGE.
- ALL DISTURBED AREAS MUST BE STABILIZED WITHIN THE TIME PERIOD SPECIFIED ABOVE IN ACCORDANCE WITH THE 1994 MARYLAND STANDARDS AND SPECIFICATION FOR SOIL EROSION AND SEDIMENT CONTROL, FOR PERMANENT SEEDING (SEC. 51), SOD (SEC. 54), TEMPORARY SEEDING (SEC. 50) AND MULCHING (SEC. 52). TEMPORARY STABILIZATION WITH MULCH ALONE CAN ONLY BE DONE WHEN RECOMMENDED SEEDING DATES DO NOT ALLOW FOR PROPER GERMINATION AND ESTABLISHMENT OF GRASSES.
- ALL SEDIMENT CONTROL STRUCTURES ARE TO REMAIN IN PLACE AND ARE TO BE MAINTAINED IN OPERATIVE CONDITION UNTIL PERMISSION FOR THEIR REMOVAL HAS BEEN OBTAINED FROM THE HOWARD COUNTY SEDIMENT CONTROL INSPECTOR.
- SITE ANALYSIS:**
TOTAL AREA OF SITE: 1.30 ACRES
AREA DISTURBED: 1.30 ACRES
AREA TO BE ROOFED OR PAVED: 0 ACRES
AREA TO BE VEGETATIVELY STABILIZED: 1.30 ACRES
TOTAL CUT: 150 CU. YARDS
TOTAL FILL: 45 CU. YARDS
OFFSITE WASTE/BORROW AREA LOCATION TO BE DETERMINED.
- ANY SEDIMENT CONTROL PRACTICE WHICH IS DISTURBED BY GRADING ACTIVITY FOR PLACEMENT OF UTILITIES MUST BE REPAIRED ON THE SAME DAY OF DISTURBANCE.
- ADDITIONAL SEDIMENT CONTROL MUST BE PROVIDED, IF DEEMED NECESSARY BY THE HOWARD COUNTY SEDIMENT CONTROL INSPECTOR.
- ON ALL SITES WITH DISTURBED AREAS IN EXCESS OF 2 ACRES, APPROVAL OF THE INSPECTION AGENCY SHALL BE REQUESTED UPON COMPLETION OF INSTALLATION OF PERMETER EROSION AND SEDIMENT CONTROLS, BUT BEFORE PROCEEDING WITH ANY OTHER EARTH DISTURBANCE OR GRADING. OTHER BUILDING OR GRADING INSPECTION APPROVALS MAY NOT BE AUTHORIZED UNTIL THIS INITIAL APPROVAL BY THE INSPECTION AGENCY IS MADE.
- TRENCHES FOR THE CONSTRUCTION OF UTILITIES IS LIMITED TO THREE PIPE LENGTHS OR THAT WHICH SHALL BE BACK-FILLED AND STABILIZED BY THE END OF EACH WORK DAY, WHICHEVER IS SHORTER.

OFFSITE WASTE/BORROW SITE SHALL HAVE AN APPROVED SEDIMENT CONTROL PLAN.

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**
- Soil Preparation**
 - Temporary Stabilization**
 - Seeded 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.
 - The original soil to be vegetated contains material toxic to plant growth.
 - The soil is so acidic that treatment with limestone is not feasible.
 - Areas having slopes steeper than 2:1 require special consideration and design.
 - Topsoiling Specifications:** Soil to be used as topsoil must meet the following criteria:
 - Topsoil must be a loam, sandy loam, clay loam, silt loam, sandy clay loam, or loamy sand. Other soils may be used if recommended by an agronomist or soil scientist and approved by the appropriate approval authority. Topsoil must not be a mixture of contrasting textured 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 1/4 inches in diameter.
 - Topsoil must be free of noxious plants or plant parts such as Bermuda grass, quack grass, Johnson grass, nut sedge, poison ivy, thistle, or others as specified.
 - Topsoil substitutes or amendments, as recommended by a qualified agronomist or soil scientist and approved by the appropriate approval authority, may be used in lieu of natural topsoil.
 - Topsoil Application**
 - Erosion and sediment control practices must be maintained when applying topsoil.
 - Uniformly distribute topsoil in a 5 to 8 inch layer and lightly compact to a minimum 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.
 - 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 seeded preparation.

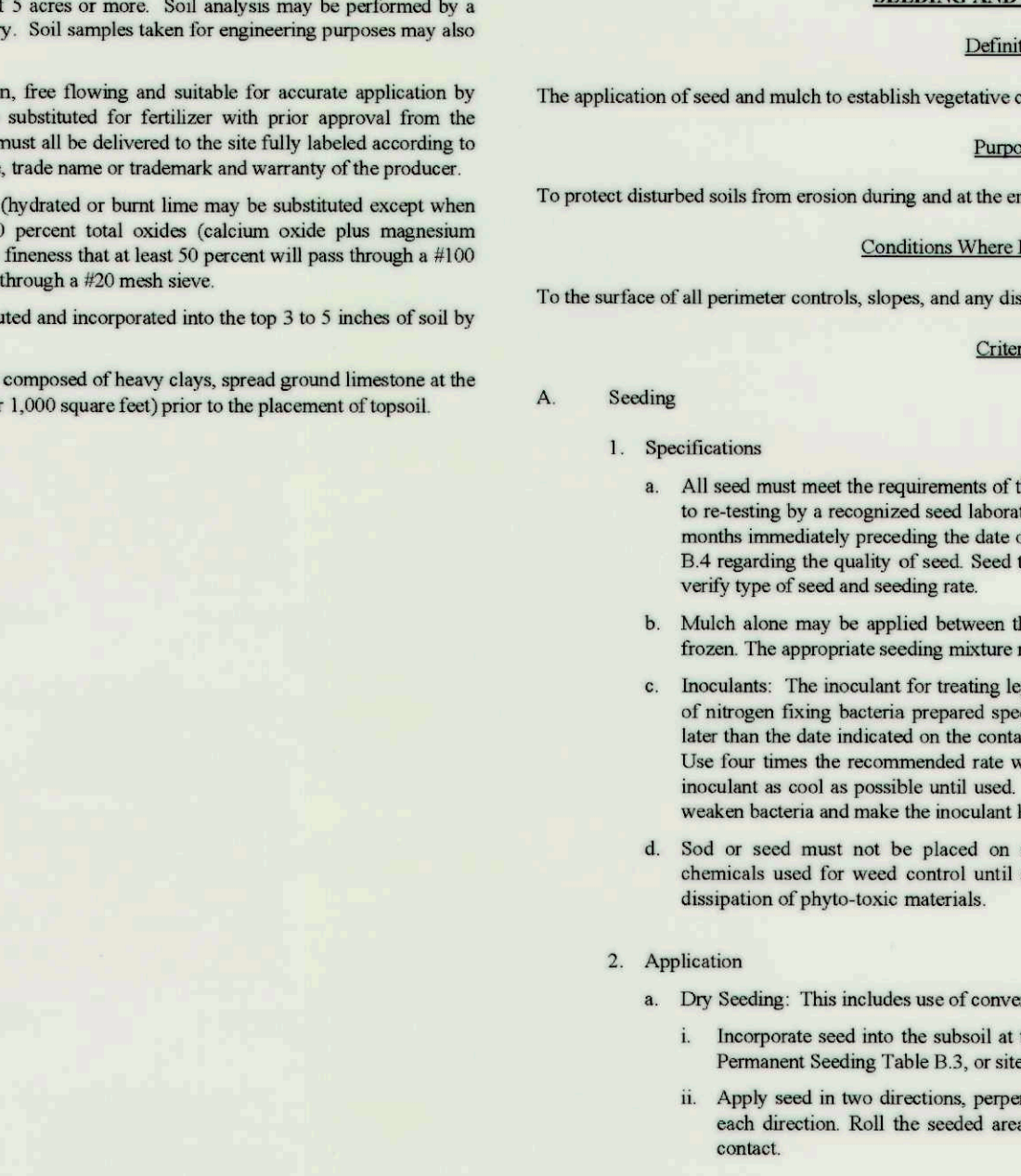
B-4.3 STANDARDS AND SPECIFICATIONS

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**
- Seeding**
 - Specifications**
 - All seed must meet the requirements of the Maryland State Seed Law. All seed must be subject to re-testing by a recognized seed laboratory. All seed used must have been tested within the 6 months immediately preceding the date of sowing such material on any project. Refer to Table B-4 regarding the quality of seed. Seed tags must be available upon request to the inspector to verify type of seed and seeding rate.
 - Mulch alone may be applied between the fall and spring seeding dates only if the ground is frozen. The appropriate seeding mixture must be applied when the ground thaws.
 - Inoculants: The inoculant for treating legume seed in the seed mixtures must be a pure culture of nitrogen fixing bacteria prepared specifically for the species. Inoculants must not be used later than the date indicated on the container. Add fresh inoculants as directed on the package. Use four times the recommended rate when hydroseeding. Note: It is very important to keep inoculant as cool as possible until used. Temperatures above 75 to 80 degrees Fahrenheit can weaken bacteria and make the inoculant less effective.
 - Soil 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 phytotoxic materials.
 - Application**
 - Dry Seeding:** This includes use of conventional drop or broadcast seeders.
 - 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.
 - 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-4.4 STANDARDS AND SPECIFICATIONS

FOR MOUNTABLE BERM DETAIL FOR STABILIZED CONSTRUCTION ENTRANCE



TOTAL DISTURBED AREA: 1.30 AC.

PERMANENT SEEDING SUMMARY

SEED MIXTURE (HARDINESS ZONE 6B) FROM TABLE 25				FERTILIZER RATE (10-20-20)			LIME
NO.	SPECIES	APPLICATION RATE (LB/AC)	SEEDING DATES	SEEDING DEPTHS	N	P2O5	K2O
1	TALL FESCUE (85%)	125	3/1-5/15	1-2 INCH	90 LB/AC	175 lb/ac	175 lb/ac
	PERENNIAL RYEGRASS (10%)	15	8/15-10/15		(2.0 LB/1000 SF)	(4.0 LB/1000 SF)	(4.0 LB/1000 SF)
	KENTUCKY BLUEGRASS (5%)	10					
2	KENTUCKY BLUEGRASS (50%)	150	3/1-5/15	1-2 INCH	1000 SF)	1000 SF)	1000 SF)
	HARD FESCUE (40%)		8/15-10/15				
	RED TOP (10%)						

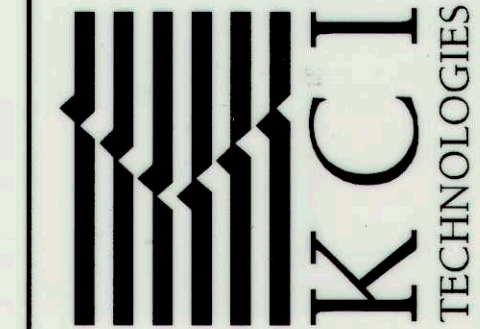
REVIEWED FOR HOWARD SCD AND MEETS TECHNICAL REQUIREMENTS. THIS DEVELOPMENT IS APPROVED FOR SOIL EROSION AND SEDIMENT CONTROL BY THE HOWARD SOIL CONSERVATION DISTRICT. DATE: 10/16/12. HOWARD SCD. DEPARTMENT OF PUBLIC WORKS, HOWARD COUNTY, MD. CHIEF, BUREAU OF ENVIRONMENTAL SERVICES. DATE: 10/5/12.

TEMPORARY SEEDING SUMMARY

SEED MIXTURE (HARDINESS ZONE 6B) FROM TABLE 26				FERTILIZER RATE (10-10-10)			LIME
NO.	SPECIES	APPLICATION RATE (LB/AC)	SEEDING DATES	SEEDING DEPTHS	N	P2O5	K2O
1	RYE	140	3/1-4/30	1-2 INCH	600 LB/AC	15 LB/1000 SF)	2 tons/ac
			8/15-11/15				(100 LB/1000 SF)
2	RYE PLUS FOXTAIL MILLET	150	3/1-4/30	1 INCH			1000 SF)
			5/1-8/14				
			8/15-11/15				

SCALE: NOT TO SCALE. DATE: SEPTEMBER 2012. KCIJOB NO.: 01-081795.66. CAPITAL PROJECT NO.: D1160. PERMIT ISSUE: CONSTRUCTION ISSUE: SHEET NO.: 12 OF 16.

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COUNTRY LANE SWM POND ENHANCEMENT BOONE FARM, SECTION 1, AREA 1, OPEN SPACE LOT 78 HOWARD COUNTY DEPARTMENT OF PUBLIC WORKS STATION 1, AREA 1, 6781 COLUMBIA GATEWAY DRIVE, GREENBELT, MARYLAND 21046

EROSION & SEDIMENT CONTROL NOTES & DETAILS

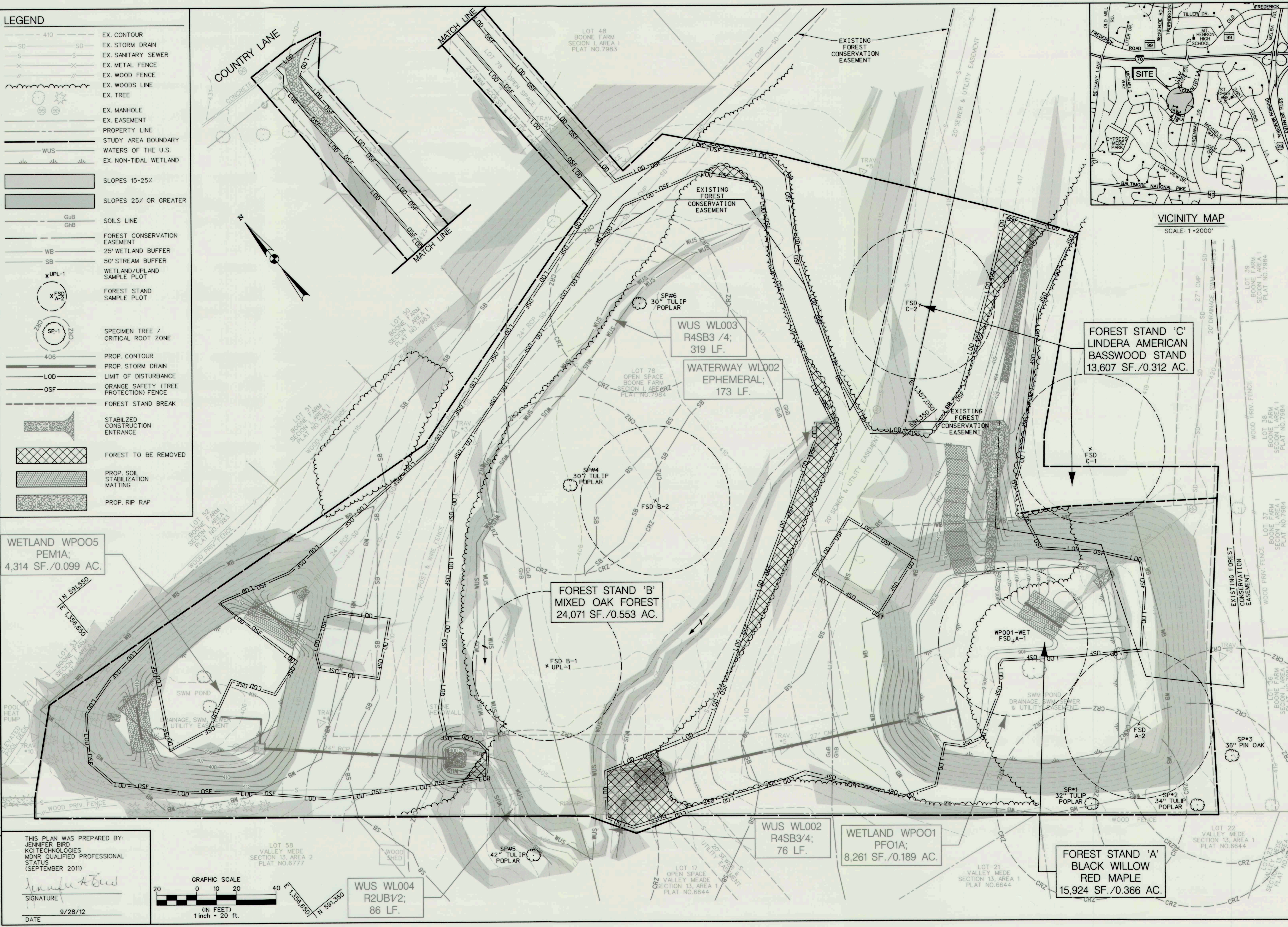
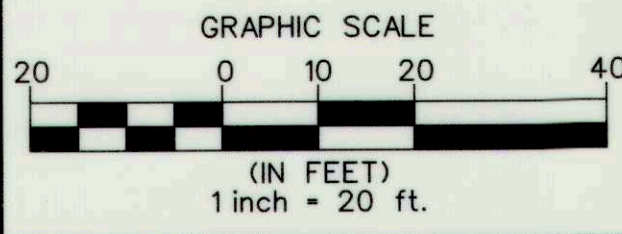
SCALE: NOT TO SCALE. DATE: SEPTEMBER 2012. KCIJOB NO.: 01-081795.66. CAPITAL PROJECT NO.: D1160. PERMIT ISSUE: CONSTRUCTION ISSUE: SHEET NO.: 12 OF 16.

LEGEND

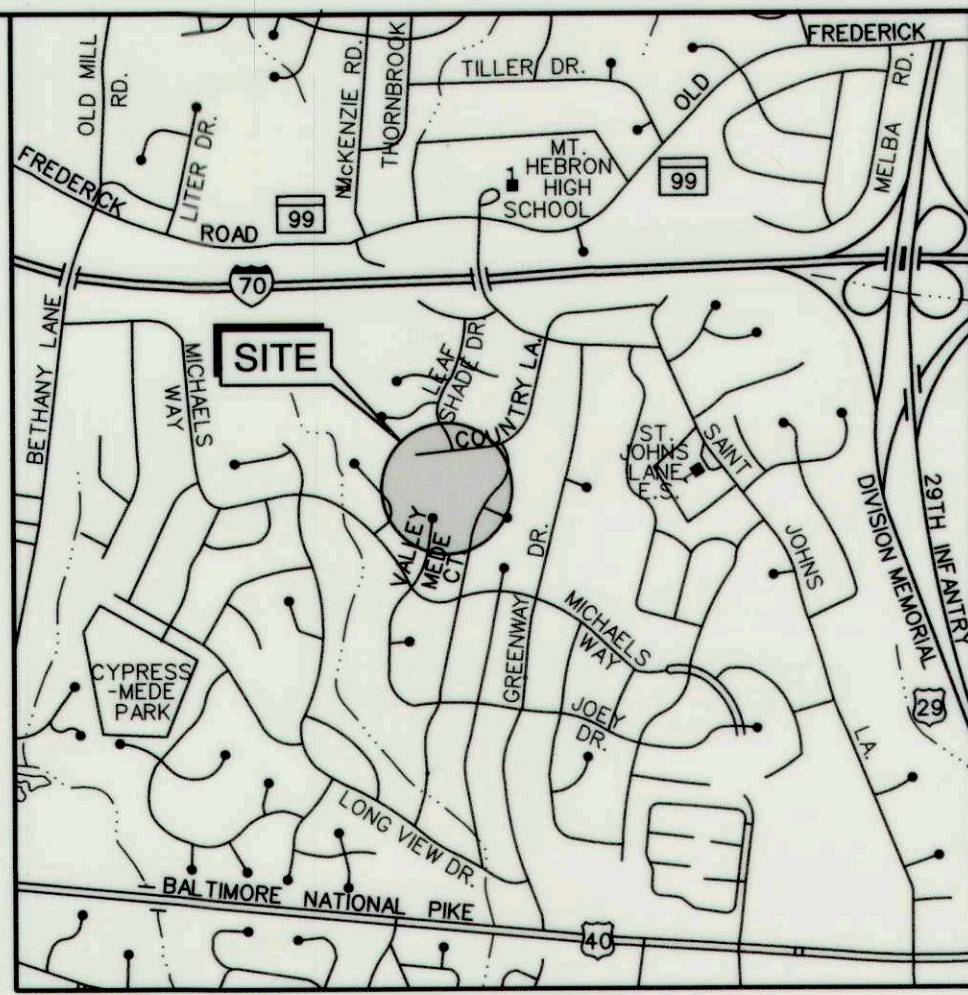
- 410 --- EX. CONTOUR
- SD --- EX. STORM DRAIN
- S --- EX. SANITARY SEWER
- X --- EX. METAL FENCE
- W --- EX. WOOD FENCE
- W --- EX. WOODS LINE
- T --- EX. TREE
- M --- EX. MANHOLE
- E --- EX. EASEMENT
- P --- PROPERTY LINE
- S --- STUDY AREA BOUNDARY
- WUS --- WATERS OF THE U.S.
- W --- EX. NON-TIDAL WETLAND
- SLOPES 15-25% --- SLOPES 15-25%
- SLOPES 25% OR GREATER --- SLOPES 25% OR GREATER
- GuB --- SOILS LINE
- GhB --- SOILS LINE
- WB --- FOREST CONSERVATION EASEMENT
- SB --- 25' WETLAND BUFFER
- SB --- 50' STREAM BUFFER
- xUPL-1 --- WETLAND/UPLAND SAMPLE PLOT
- xFSD --- FOREST STAND SAMPLE PLOT
- SP-1 --- SPECIMEN TREE / CRITICAL ROOT ZONE
- 406 --- PROP. CONTOUR
- LOD --- PROP. STORM DRAIN
- LOD --- LIMIT OF DISTURBANCE
- OSF --- ORANGE SAFETY (TREE PROTECTION) FENCE
- OSF --- FOREST STAND BREAK
- I --- STABILIZED CONSTRUCTION ENTRANCE
- X --- FOREST TO BE REMOVED
- M --- PROP. SOIL STABILIZATION MATTING
- R --- PROP. RIP RAP

WETLAND WPO05
PEM1A;
4,314 SF./0.099 AC.

THIS PLAN WAS PREPARED BY:
JENNIFER BIRD
KCI TECHNOLOGIES
MDNR QUALIFIED PROFESSIONAL
STATUS
(SEPTEMBER 2011)
Jennifer Bird
SIGNATURE
DATE 9/28/12

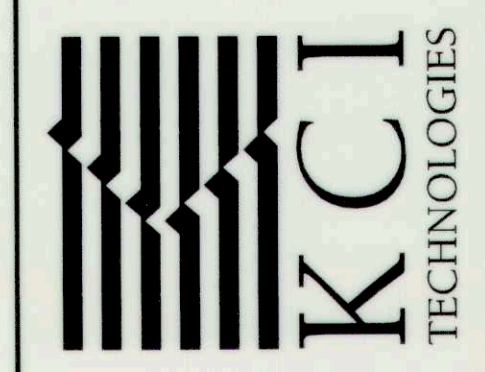


VICINITY MAP
SCALE: 1" = 2000'



NO.	REVISIONS DESCRIPTION	DATE

936 RIDGEBROOK ROAD
SPARKS, MARYLAND 21152
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**COUNTRY LANE
SWM POND ENHANCEMENT**
BOONE FARM
SECTION 13, AREA 1
OPEN SPACE LOT 76

FOREST CONSERVATION PLAN

SCALE: 1" = 20'
DATE: SEPTEMBER 2012
KCI JOB NO.: 01-081795.66
CAPITAL PROJECT NO.: D1160
PERMIT ISSUE:
CONSTRUCTION ISSUE:

FOREST CONSERVATION NOTES

- THE LOD WAS USED AS THE TOTAL TRACT AREA AND AS THE NET TRACT AREA (NTA) FOR FOREST CONSERVATION CALCULATIONS.
- NO CLEARING WILL OCCUR WITHIN A 100-YEAR FLOODPLAIN.
- APPROXIMATELY 0.14 ACRES OF FOREST CLEARING IS PROPOSED, REQUIRING 0.39 ACRES OF MITIGATION. APPROXIMATELY 1,065 SF. OF CLEARING IS WITHIN A FOREST CONSERVATION EASEMENT. THE FOREST CONSERVATION EASEMENT WILL BE REPLACED AT A 1:1 RATIO AS SHOWN ON THE LANDSCAPE PLAN.
- ALL EFFORTS TO MINIMIZE THE AREA OF DISTURBANCE WILL BE MADE.

GENERAL NOTES

- PROJECT AREA IS LOCATED ON ONE PROPERTY OWNED BY HOWARD COUNTY RECREATION AND PARKS (MAP 0024, GRID 0002, PARCEL 0020).
- EXISTING ZONING: R-20, SINGLE
- EXISTING LAND USE: RESIDENTIAL - RURAL MEDIUM DENSITY
- WATERS OF THE U.S. WERE DELINEATED BY KCI TECHNOLOGIES, INC. ON DECEMBER 2, 2011 AND MARCH 9, 2012. WATERS OF THE U.S. SHOWN REPRESENT THE UNVERIFIED USACE/MDE WATER RESOURCE BOUNDARIES.
- TOTAL AREA OF NONTIDAL WETLANDS WITHIN THE PROJECT AREA: 0.288 AC.
- TOTAL LINEAR FEET OF PERENNIAL AND INTERMITTENT STREAMS: 481 LF.
- TOTAL FORESTED AREA WITHIN LIMITS OF DISTURBANCE: 0.14 AC.
- THERE ARE NO CRITICAL HABITAT AREAS WITHIN THE PROJECT AREA. NO RARE, THREATENED OR ENDANGERED SPECIES WERE ENCOUNTERED DURING THE FIELD INVESTIGATIONS. IN ADDITION, CORRESPONDENCE WITH THE MARYLAND HISTORIC TRUST, THE U.S. FISH AND WILDLIFE SERVICE, AND THE MARYLAND DEPARTMENT OF NATURAL RESOURCES INDICATE THERE ARE NO RECORDS OF HISTORIC RESOURCES OR SENSITIVE NATURAL RESOURCES WITHIN THE AFFECTED AREA.
- NO SPECIMEN TREES WILL BE REMOVED.
- TREES WILL ONLY BE REMOVED IF NECESSARY FOR GRADING OR ACCESS.
- THE COORDINATES SHOWN HEREON ARE BASED ON HOWARD COUNTY GEODETIC CONTROL, WHICH IS BASED UPON THE MARYLAND STATE PLANE COORDINATE SYSTEM. HOWARD COUNTY MONUMENT NUMBERS 30EC AND 31GB WERE USED FOR THIS SITE. THE EXISTING TOPOGRAPHY IS TAKEN FROM FIELD RUN SURVEY WITH ONE FOOT CONTOUR INTERVALS PREPARED BY KCI TECHNOLOGIES, INC., IN JANUARY 2011.
- ALL WETLAND AND WUS SYSTEMS DENOTED WITH AN ASTERISK (*) CONTINUE BEYOND THE LIMITS OF THE STUDY AREA.

SOILS TABLE

Soil Symbol	Soil Unit Name	Percent Slope	K _s value	Hydric (Y/N)
GtE	Glenaleg-Urban land complex	0-8%	N/A	No
GtB	Glenville-Urban land-Udorthents complex	0-8%	0.37	No

SPECIMEN TREE TABLE

Number	Species	Common Name	Size, DBH (in)	Condition
SP-1	<i>Liriodendron tulipifera</i>	Tulip poplar	32.0	Good
SP-2	<i>Liriodendron tulipifera</i>	Tulip poplar	34.0	Good
SP-3	<i>Quercus palustris</i>	Pin oak	36.0	Good
SP-4	<i>Liriodendron tulipifera</i>	Tulip poplar	30.0	Good
SP-5	<i>Liriodendron tulipifera</i>	Tulip poplar	42.0	Good
SP-6	<i>Liriodendron tulipifera</i>	Tulip poplar	30.0	Good

KCI Technologies, Inc. 3/15/2012

Forest Conservation Worksheet

Net Tract Area

A. Total Tract Area	A= 1.26 ac.
B. Area within 100-year Floodplain	B= 0.00 ac.
C. Area to Remain in Agricultural Production	C= 0.00 ac.
D. Net Tract Area (D=A-B-C)	D= 1.26 ac.

Land Use Category:

E. Afforestation Threshold (D x 20%)	E= 0.25 ac.
F. Conservation Threshold (D x 25%)	F= 0.32 ac.

Existing Forest Cover

G. Existing Forest Cover (excluding floodplain)	G= 0.14 ac.
H. Area of Forest Above Afforestation Threshold	H= 0.00 ac.
(1) If G<E then H=0 and I=0, go to L	
(2) If G>E then H=G-E, go to I	
I. Area of Forest Above Conservation Threshold	I= 0.00 ac.
(1) If G<F then I=0, go to L	
(2) If G>F then I=G-F, go to J	

Break Even Point

J. Forest Retention Above Threshold with no Mitigation	J= 0.00 ac.
(1) If I>0 then J=(0.2 x I) + F, go to K	
(2) If I=0, J=0, go to L	
K. Clearing Permitted Without Mitigation (K=G-J)	K= 0.00 ac.

Proposed Forest Clearing

L. Total Area of Forest to be Cleared	L= 0.14 ac.
M. Total Area of Forest to be Retained (M=G-L)	M= 0.00 ac.

Planting Requirements

N. Reforestation for Clearing Above the Conservation Threshold	N= 0.00 ac.
(1) If L=K then N=0, P=0, Q=0, R=0, S=0, go to T	
(2) If M>F then N=L x 0.25, P=0, go to Q	
(3) If M<F then N=L x 0.25, go to P	
P. Reforestation for Clearing Below the Conservation Threshold	P= 0.28 ac.
(1) If G>F and M>F then P=0, Q=0, go to R	
(2) If G>F and M<F then P=2.0 x (F-M), Q=0, go to R	
(3) If G<F then P=2.0 x L, Q=0, go to R	
Q. Credit for Retention Above the Conservation Threshold	Q= 0.00 ac.
(1) If M>F then Q=M-F, go to R	
(2) If M<F then Q=0, go to R	
R. Total Reforestation Required	R= 0.28 ac.
(1) If Q>N and M>E then R=0, S=0, go to T	
(2) If Q<N and M>E then R=(N-P) - Q, S=0, go to T	
(3) If Q<N and M<E then R=N+P, go to S	
S. Total Afforestation Required	S= 0.11 ac.
(1) If G<E and M<E then S=E-G, go to T	
(2) If G>E and M<E then S=0, go to T	
T. Total Reforestation and Afforestation Requirement T=(R+S)	T= 0.39 ac.

Note: Use 0 for all negative numbers that result from the calculations.

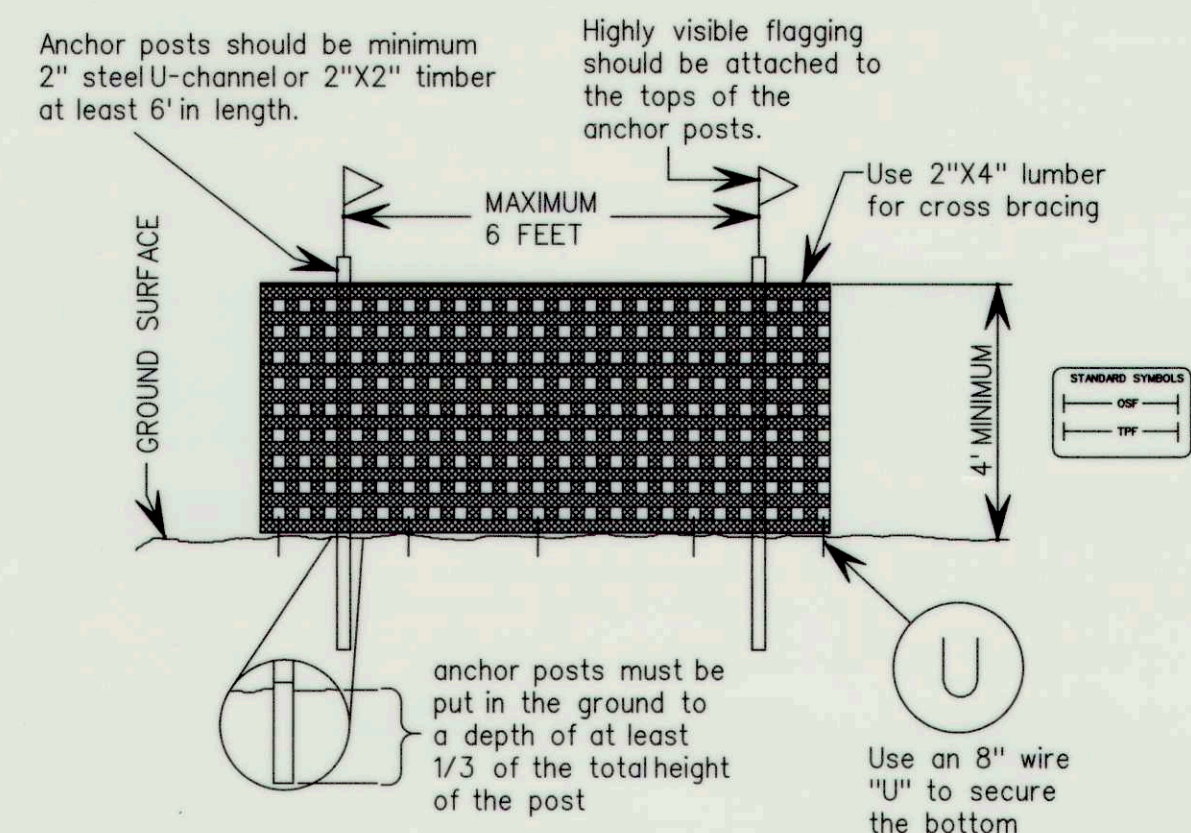
StateFCW_country_lane.xls Page 1 of 1

FOREST CONSERVATION SIGNAGE

NOT TO SCALE

NOTES:

- BOTTOM OF SIGN TO BE HIGHER THAN TREE PROTECTION FENCE.
- SIGNS TO BE PLACED 50 TO 100' APART. CONDITIONS ON SITE AFFECTING VISIBILITY MAY WARRANT PLACING SIGNS CLOSER OR FARTHER APART WITHIN THE ACCEPTABLE NOTED RANGE.
- ATTACHMENT OF SIGNS TO TREES IS PROHIBITED.
- SIGNS MAY BE REMOVED FROM RESIDENTIAL LOTS UPON ISSUANCE OF USE AND OCCUPANCY RETENTION FOREST ONLY.
- ALL SIGNAGE MUST REMAIN DURING THE MAINTENANCE PERIOD.
- THE SIGNS NOTIFY CONSTRUCTION WORKERS AND FUTURE RESIDENTS OF THE NEWLY PLANTED MATERIAL, IMPROVING THE TREES' SURVIVAL RATES.
- SIGNS MAY BE ADAPTED BY RESIDENTS FOR IDENTIFICATION OF FOREST RETENTION AREAS.



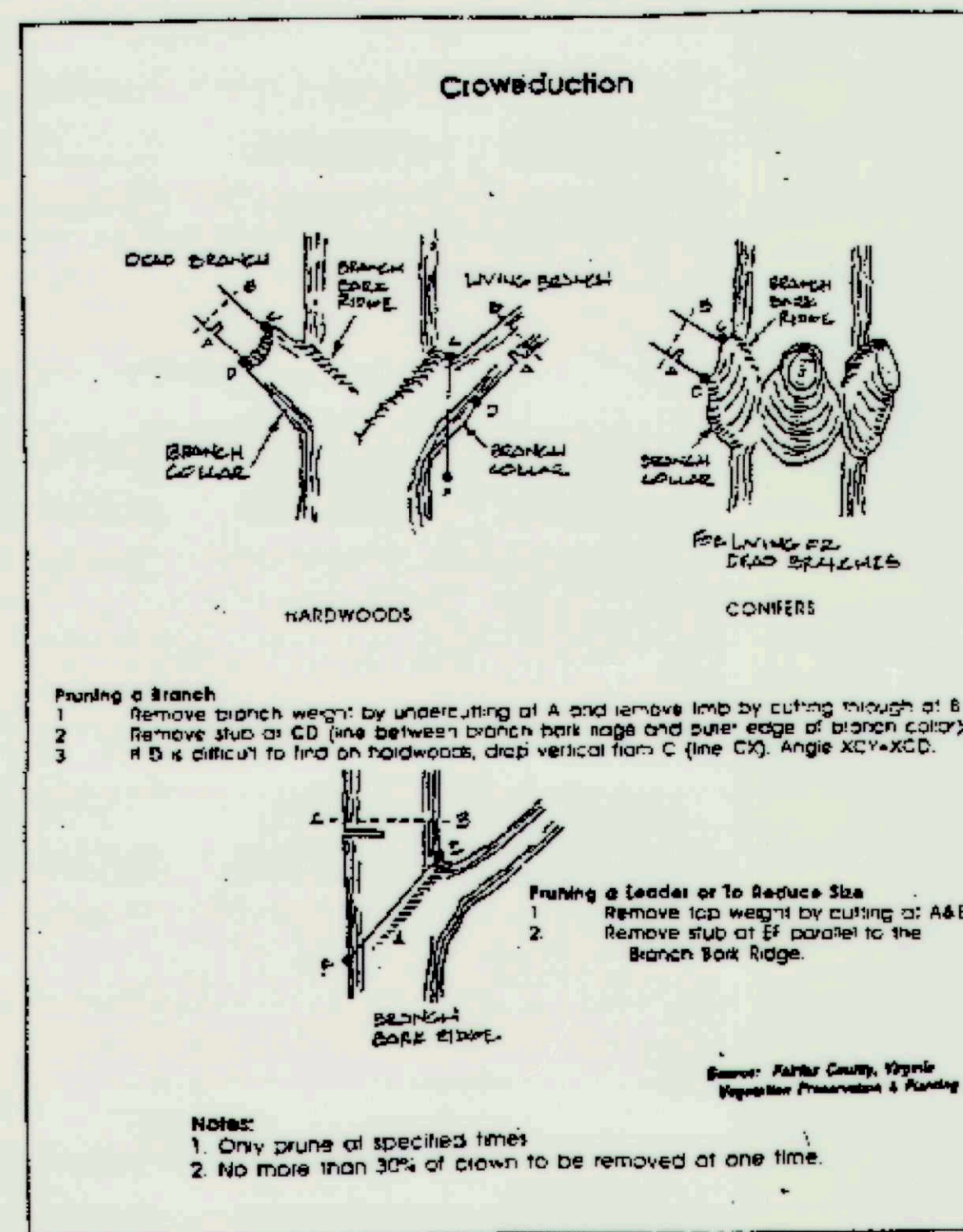
BLAZE ORANGE PLASTIC MESH SAFETY FENCE/TREE PROTECTION DETAIL

NOT TO SCALE

PLACEMENT OF ORANGE HIGH VISIBILITY FENCE:

- ORANGE HIGH VISIBILITY FENCE SHALL BE MANUALLY INSTALLED ALONG THE LIMITS OF DISTURBANCE, WHERE THAT LIMIT IS WITHIN 50' OF THE FOREST CONSERVATION/FOREST BUFFER EASEMENTS AND SHALL FUNCTION AS A FOREST PROTECTION DEVICE.
- RETENTION AREA WILL BE SET AS PART OF THE REVIEW PROCESS.
- BOUNDARIES OF THE RETENTION AREA SHALL BE STAKES AND FLAGGED PRIOR TO INSTALLING THE DEVICE.
- ROOT DAMAGE SHALL BE AVOIDED.
- PROTECTIVE SIGNAGE MAY ALSO BE USED.
- DEVICE SHALL BE MAINTAINED THROUGHOUT CONSTRUCTION.

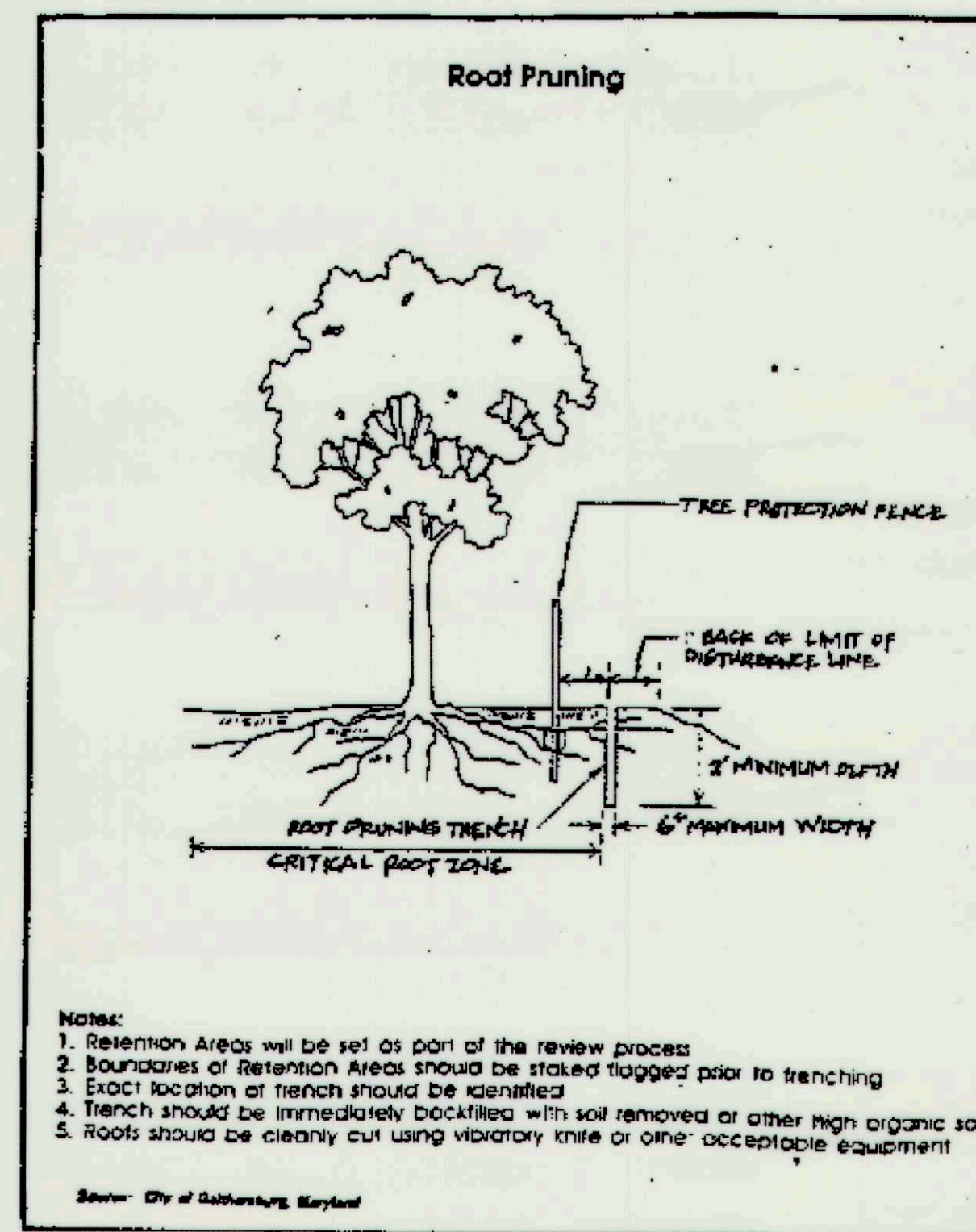
EXHIBIT G - 14



CROWN REDUCTION

NOT TO SCALE

EXHIBIT G - 15



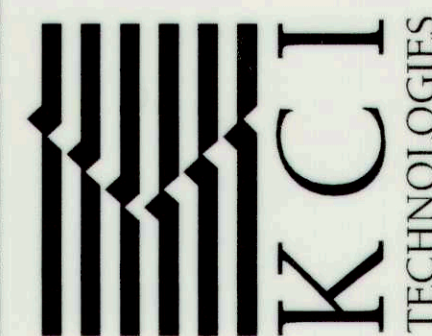
ROOT PRUNING

NOT TO SCALE

THIS PLAN WAS PREPARED BY:
JENNIFER BIRD
KCI TECHNOLOGIES
MDNR QUALIFIED PROFESSIONAL
STATUS
(SEPTEMBER 2011)
SIGNATURE
DATE 9/28/2012

NO.	REVISIONS DESCRIPTION	DATE

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SPARKS, MARYLAND 21152
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www.kci.com



COUNTRY LANE
SWM POND ENHANCEMENT
BLOCK AREA 1
SECTION 1 AREA 7B
OPEN SPACE LOT 7B
HOWARD COUNTY DEPARTMENT OF PUBLIC WORKS
STORMWATER MANAGEMENT DIVISION
6751 COLUMBIA RD., 20404

FOREST CONSERVATION PLAN NOTES AND DETAILS

SCALE: AS SHOWN
DATE: SEPTEMBER 2012
KCI JOB NO.: 01-081795.66
CAPITAL PROJECT NO.: D1160
PERMIT ISSUE:
CONSTRUCTION ISSUE:

GENERAL NOTES

1. TOPOGRAPHICAL SURVEY DATA PROVIDED BY AD CONSULTANTS, INC. WAS COMPLETED IN NOVEMBER 2011.
2. THE EXISTING LAND USE IS OPEN SPACE WITH A HOWARD COUNTY EASEMENT. SURROUNDING LAND USE IS RESIDENTIAL.
3. EXISTING ZONING IS RESIDENTIAL SINGLE (R-20).
4. CRITICAL HABITATS CONSIST OF NONTIDAL WETLANDS, THEIR BUFFERS, STEEP SLOPES, AND THE PERENNIAL UNNAMED TRIBUTARY TO PLUMTREE BRANCH.
5. NO RARE, THREATENED OR ENDANGERED SPECIES WERE ENCOUNTERED DURING THE FIELD INVESTIGATIONS. CORRESPONDENCE WITH THE MARYLAND HISTORIC TRUST INDICATE NO HISTORIC RESOURCES WITHIN THE STUDY AREA. IN ADDITION, CORRESPONDENCE WITH THE U.S. FISH & WILDLIFE SERVICE AND THE MARYLAND DEPARTMENT OF NATURAL RESOURCES INDICATE NO RARE, THREATENED OR ENDANGERED SPECIES WITHIN THE STUDY AREA.

WATER RESOURCES NOTES

1. WATERS OF THE UNITED STATES (WUS) AND WETLANDS WERE DELINEATED BY KCI IN DECEMBER 2011.
2. TWO NONTIDAL WETLAND AND THREE WUS WERE LOCATED WITHIN THE STUDY AREA AND THREE WUS SYSTEMS EXTEND BEYOND THE STUDY AREA BOUNDARIES.
3. WETLANDS SHOWN REPRESENT THE UNVERIFIED USACE BOUNDARIES.

FOREST RESOURCES NOTES

1. THE STUDY AREA BOUNDARY IS APPROXIMATELY A 175-FOOT WIDE CORRIDOR.
2. FOREST STANDS EXTEND BEYOND THE STUDY AREA BOUNDARY.
3. THREE FOREST STANDS WERE OBSERVED DURING FIELD INVESTIGATIONS AND ARE CLASSIFIED AS PRIORITY RETENTION.
4. FIVE SPECIMEN TREES WERE LOCATED DURING FIELD INVESTIGATIONS (SEE TABLE 1, THIS SHEET).

SPECIMEN TREES

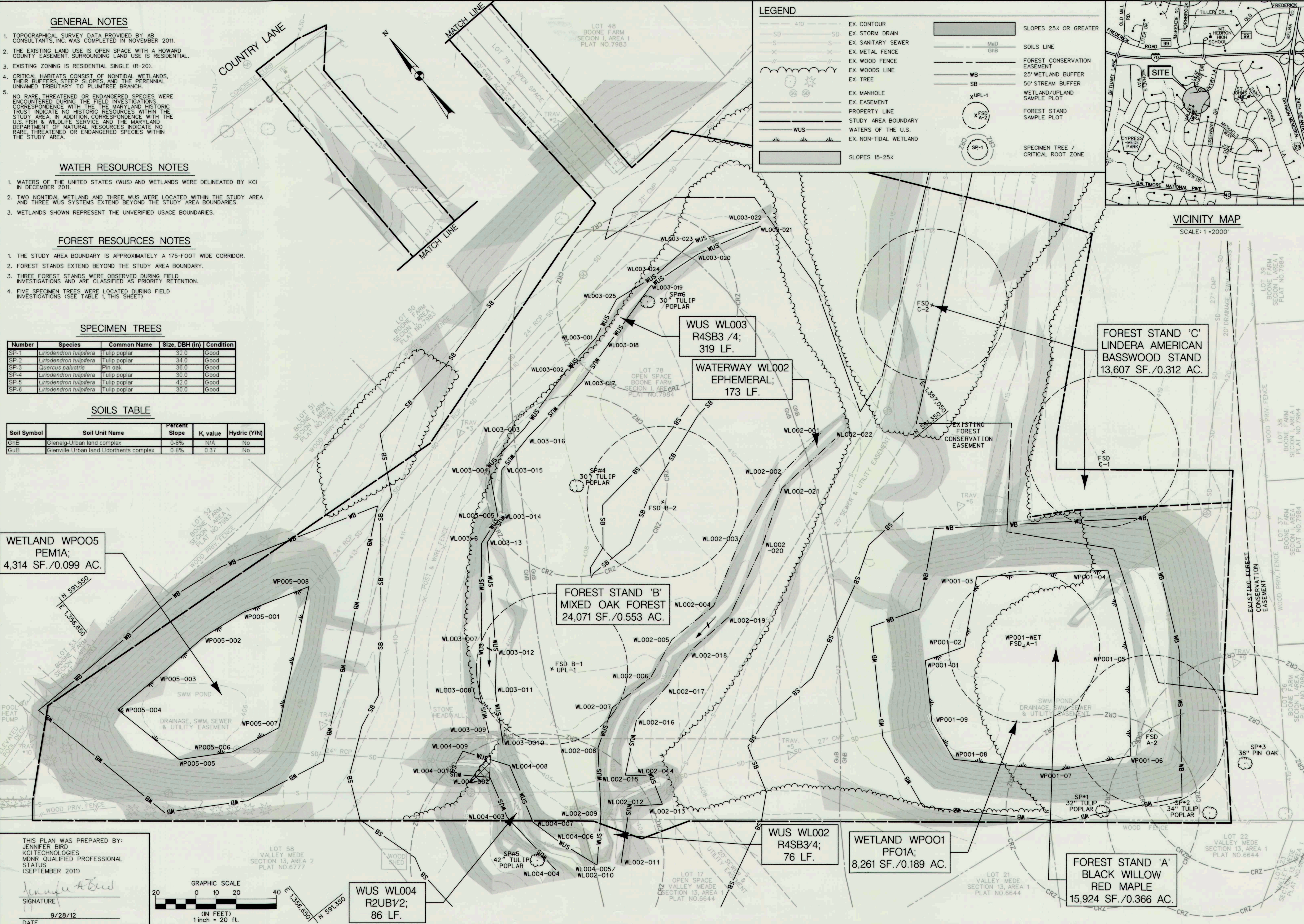
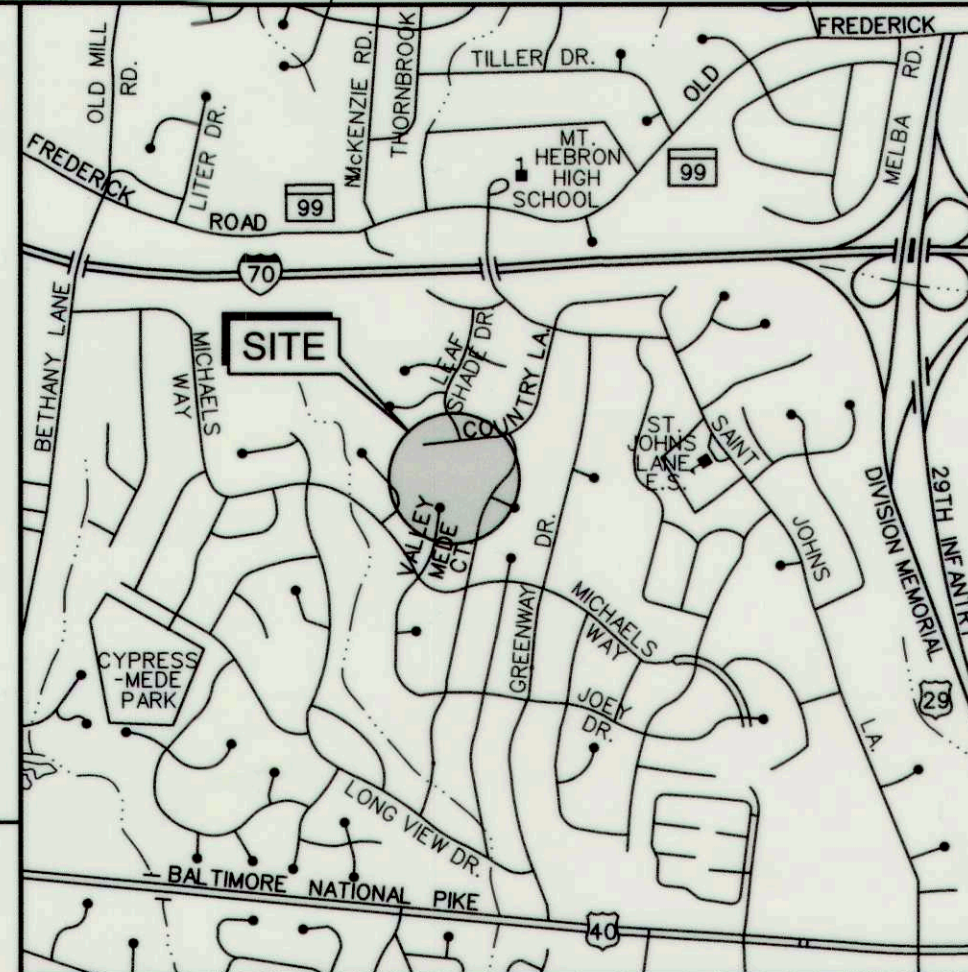
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SOILS TABLE

Soil Symbol	Soil Unit Name	Percent Slope	K value	Hydric (Y/N)
GhB	Glenelg-Urban land complex	0-8%	N/A	No
GvB	Glenville-Urban land-Udorthents complex	0-8%	0.37	No

LEGEND

SD 410	EX. CONTOUR	MaD	SLOPES 25% OR GREATER
S	EX. STORM DRAIN	GhB	SOILS LINE
X	EX. SANITARY SEWER	WB	FOREST CONSERVATION EASEMENT
X	EX. METAL FENCE	SB	25' WETLAND BUFFER
X	EX. WOOD FENCE	X UPL-1	50' STREAM BUFFER
X	EX. WOODS LINE	X FSD A-2	WETLAND/UPLAND SAMPLE PLOT
X	EX. TREE	SP-1	FOREST STAND SAMPLE PLOT
X	EX. MANHOLE		SPECIMEN TREE / CRITICAL ROOT ZONE
X	EX. EASEMENT		
---	PROPERTY LINE		
---	STUDY AREA BOUNDARY		
---	WATERS OF THE U.S.		
---	EX. NON-TIDAL WETLAND		
---	SLOPES 15-25%		



WETLAND WPO05
PEM1A;
4,314 SF./0.099 AC.

WUS WL003
R4SB3 /4;
319 LF.

WATERWAY WL002
EPHEMERAL;
173 LF.

FOREST STAND 'C'
LINDERA AMERICAN
BASSWOOD STAND
13,607 SF./0.312 AC.

FOREST STAND 'B'
MIXED OAK FOREST
24,071 SF./0.553 AC.

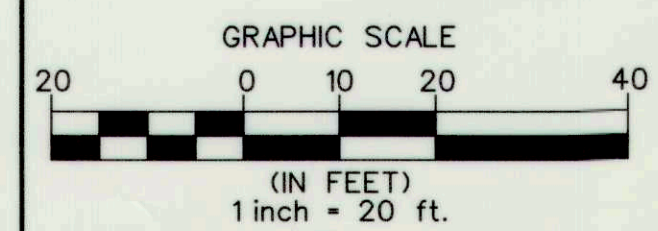
WUS WL002
R4SB3/4;
76 LF.

WETLAND WPO01
PFO1A;
8,261 SF./0.189 AC.

FOREST STAND 'A'
BLACK WILLOW
RED MAPLE
15,924 SF./0.366 AC.

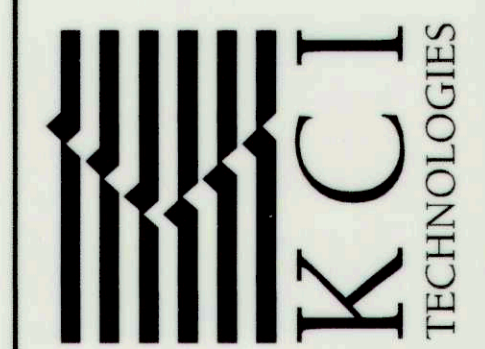
WUS WL004
R2UB1/2;
86 LF.

THIS PLAN WAS PREPARED BY:
JENNIFER BIRD
KCI TECHNOLOGIES
MGNR QUALIFIED PROFESSIONAL
STATUS (SEPTEMBER 2011)
Jennifer Bird
SIGNATURE
9/28/12
DATE



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www.kci.com



COUNTRY LANE
SWM POND ENHANCEMENT

NATURAL RESOURCES
INVENTORY /
FOREST STAND
DELINEATION MAP

SCALE:	1" = 20'
DATE:	SEPTEMBER 2012
KCI JOB NO.:	01-081795.66
CAPITAL PROJECT NO.:	D1160
PERMIT ISSUE:	
CONSTRUCTION ISSUE:	