Columbia Gateway SWM Pond Retrofit

General Notes

1. All construction shall be in accordance with the latest standards and specifications of Howard County plus MSHA standards and specifications if applicable.
2. The contractor shall notify the Department of Public Works/Bureau of Engineering/Construction Inspection Division at (410) 313-1880 at least five (5) working days prior to the start of work.
3. The contractor shall notify "Miss Utility" at 1-800-257-7777 at least 48 hours prior to any excavation work being done.
4. The existing topography is taken from field run survey with one foot contour intervals prepared by J.A. Rice dated Oct 15., 2002.
5. The coordinates shown hereon are based upon the Howard County Geodetic Control which is based upon Maryland State Plane Coordinate System. Howard County Monument Nos. 43AA, 43A1 and 37GB were used for this project.
6. This facility provides stormwater management for Columbia Gateway Parcels D1, D2, E1 and E2. Water quality treatment is provided as well as water quantity control for the 2, 10, and 100-year storms. The facility is and will continue to be publicly owned and maintained.
7. Existing utilities are based on field survey data by J.A. Rice dated Oct. 15, 2002.
8. There is no floodplain on this site.
9. There are no wetlands on this site.
10. No traffic study is required for this project.
11. The existing/proposed facility has a dam classification 'A', low hazard.

SHEET INDEX

NOTE: SEQUENCE OF CONSTRUCTION ON SHEET 5.

THESE PLANS HAVE BEEN REVIEWED FOR THE HOWARD SOIL CONSERVATION DISTRICT AND MEET THE TECHNICAL REQUIREMENTS FOR SMALL POND CONSTRUCTION, SOIL EROSION AND SEDIMENT CONTROL.

USDA - NATURAL RESOURCES CONSERVATION SERVICE — DATE 4/22/04

THESE PLANS FOR SMALL POND CONSTRUCTION, SOIL EROSION AND SEDIMENT CONTROL MEET THE REQUIREMENTS OF THE HOWARD SOIL CONSERVATION DISTRICT.

HOWARD SOIL CONSERVATION DISTRICT — DATE 4/22/04

BY THE ENGINEER :

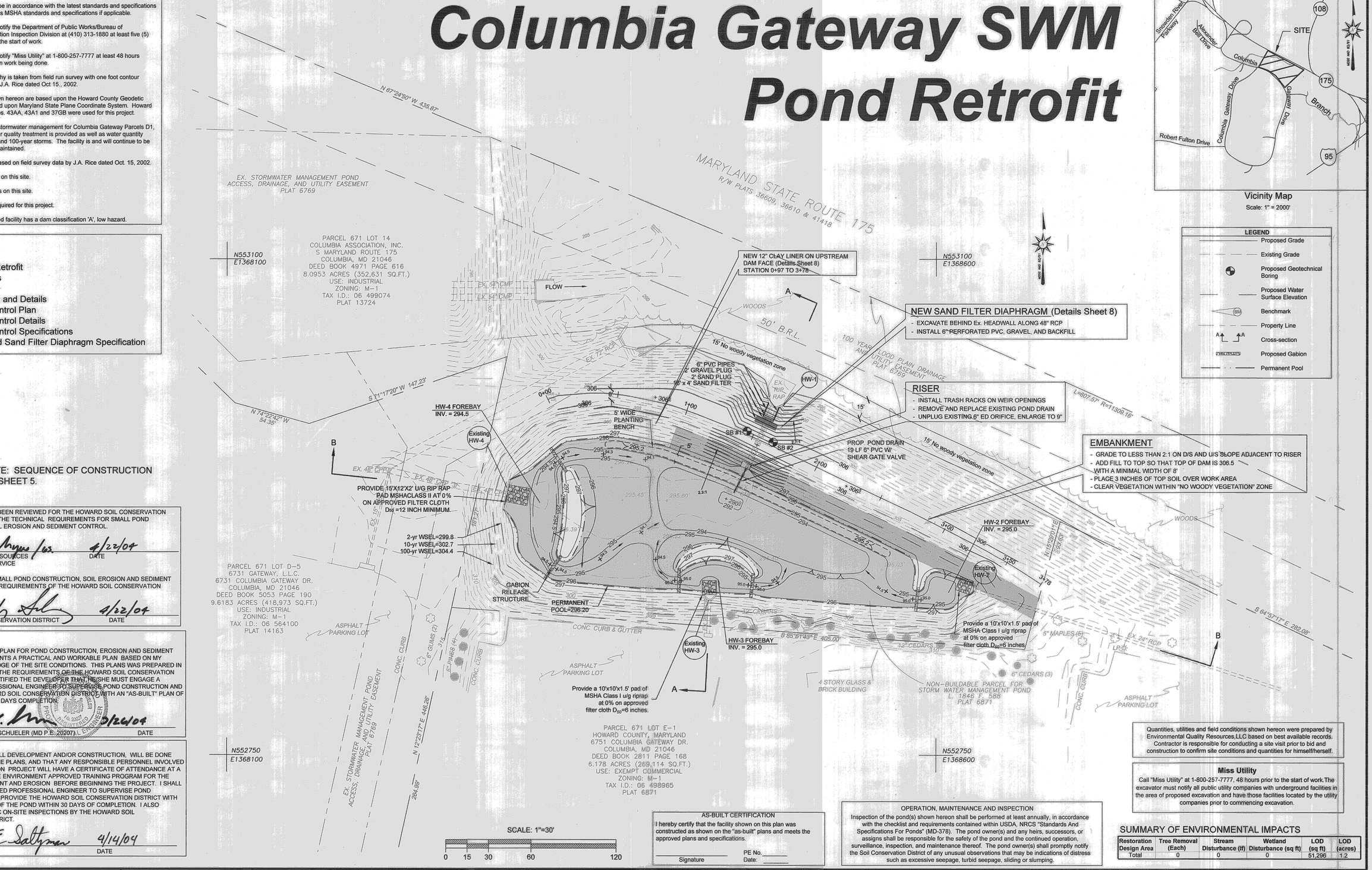
I CERTIFY THAT THIS PLAN FOR POND CONSTRUCTION, EROSION AND SEDIMENT CONTROL, REPRESENTS A PRACTICAL AND WORKABLE PLAN BASED ON MY PERSONAL KNOWLEDGE OF THE SITE CONDITIONS. THIS PLANS WAS PREPARED IN ACCORDANCE WITH THE REQUIREMENTS OF THE HOWARD SOIL CONSERVATION DISTRICT. I HAVE NOTIFIED THE DEVELOPER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

ENGINEER/TIMOTHY SCHUELER (MD P.E. 20207) — DATE 3/24/04

BY THE DEVELOPER :

I/WE CERTIFY THAT ALL DEVELOPMENT AND/OR CONSTRUCTION, WILL BE DONE ACCORDING TO THESE PLANS, AND THAT ANY 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 BEGINNING THE PROJECT. I SHALL ENGAGE A REGISTERED PROFESSIONAL ENGINEER TO SUPERVISE POND CONSTRUCTION AND PROVIDE THE HOWARD SOIL CONSERVATION DISTRICT WITH AN "AS-BUILT" PLAN OF THE POND WITHIN 30 DAYS OF COMPLETION. I ALSO AUTHORIZE PERIODIC ON-SITE INSPECTIONS BY THE HOWARD SOIL CONSERVATION DISTRICT.

Howard E. Saltzman — DEVELOPER — DATE 4/14/04



Vicinity Map
Scale: 1" = 2000'

LEGEND
- Proposed Grade
- Existing Grade
- Proposed Geotechnical Boring
- Proposed Water Surface Elevation
- Benchmark
- Property Line
- Cross-section
- Proposed Gabion
- Permanent Pool

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.

Signature — PE No. _____ Date: _____

OPERATION, MAINTENANCE AND INSPECTION

Inspection of the pond(s) shown hereon shall be performed at least annually, in accordance with the checklist and requirements contained within USDA, NRCS "Standards And Specifications For Ponds" (MD-378). The pond owner(s) and any heirs, successors, or assigns shall be responsible for the safety of the pond and the continued operation, surveillance, inspection, and maintenance thereof. The pond owner(s) shall promptly notify the Soil Conservation District of any unusual observations that may be indications of distress such as excessive seepage, turbid seepage, sliding or slumping.

Quantities, utilities and field conditions shown hereon were prepared by Environmental Quality Resources,LLC based on best available records. Contractor is responsible for conducting a site visit prior to bid and construction to confirm site conditions and quantities for himself/herself.

Miss Utility

Call "Miss Utility" at 1-800-257-7777, 48 hours prior to the start of work.The excavator must notify all public utility companies with underground facilities in the area of proposed excavation and have those facilities located by the utility companies prior to commencing excavation.

SUMMARY OF ENVIRONMENTAL IMPACTS

Restoration Design Area	Tree Removal (Each)	Stream Disturbance (lf)	Wetland Disturbance (sq ft)	LOD (sq ft)	LOD (acres)
Total	0	0	0	51,296	1.2

HOWARD COUNTY DPW - ENVIRONMENTAL SERVICES
6751 COLUMBIA GATEWAY DRIVE, SUITE 514
COLUMBIA, MD 21046
PHONE: (410) 313-6417
ATTN: RICHARD POWELL

COLUMBIA GATEWAY
PARCEL E-2
ELECTION DISTRICT #6
TAX MAP 43

Columbia Gateway SWM Pond Retrofit
SWM Pond Retrofit
SDP 89-80

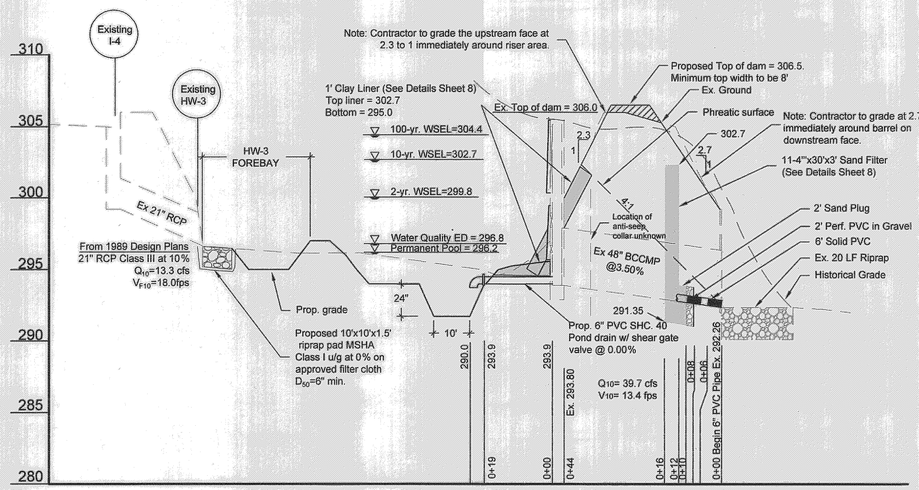
DATE: 03/04
DESIGNED: ACD/TCS
DRAFTED: ACD/GBN
CHECKED: TCS
BASE DATA: J.A. RICE

NO.	REVISIONS	BY	DATE

CPJ Associates
CPJ/EQR Environmental Services Division
STREAM RESTORATION STORMWATER MANAGEMENT INSPECTION
895 QUINCE ORCHARD ROAD GAITHERSBURG MARYLAND 20878
Phone:(301)208-9573 E-mail:info eqrt.com Fax:(301)926-4581
SILVER SPRING, MD FREDERICK, MD FAIRFAX, VA

SCALE 1"=30'
SHEET 1 OF 8 SHEETS
JOB NO. 1411

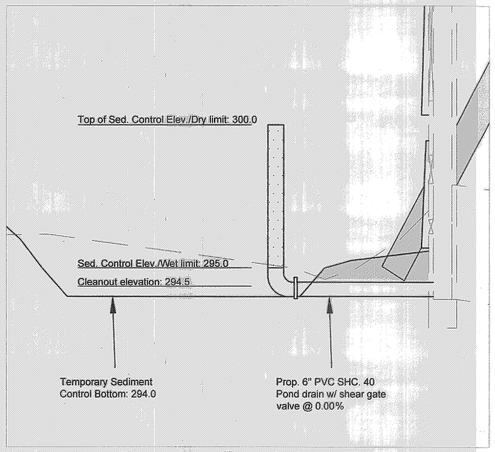
EP-04-05



Section A-A Principal Spillway Profile

Scale: Horizontal: 1" = 20'
Vertical: 1" = 5'

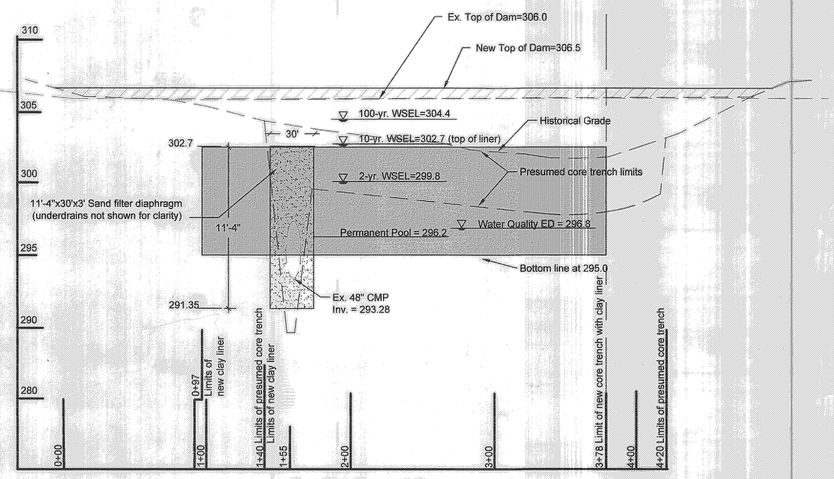
NOTE: Existence and location of anti-seep collars and core trench are not verified at this time.



Temporary Dewatering Inset

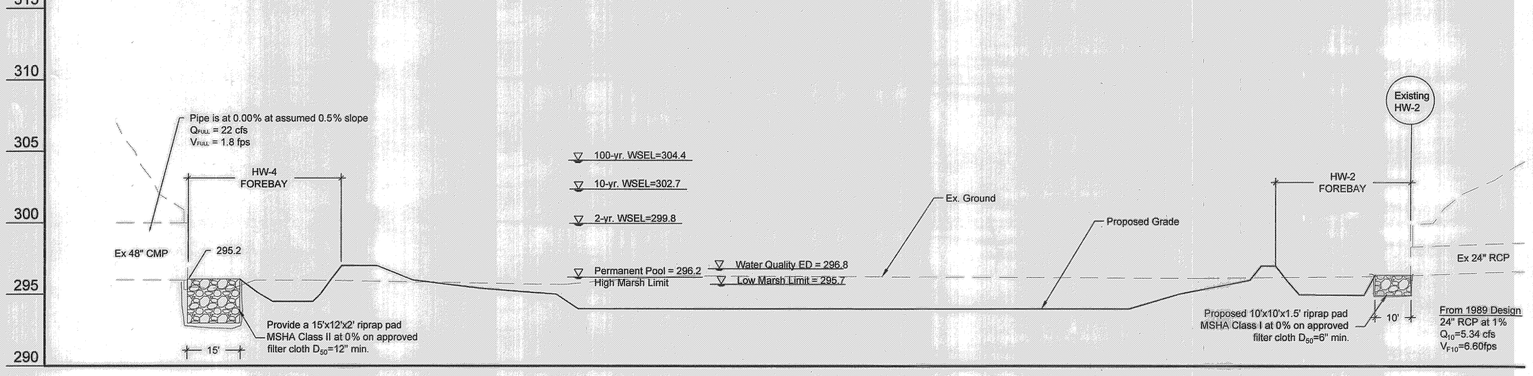
Scale: Horizontal: 1" = 10'
Vertical: 1" = 2.5'

Note:
1. Required temporary sediment control basin volume is 1.5 acres (direct drainage) times 3600 cf or 5400 cf, of which one half should be wet and one half dry.
2. Per the design stage-storage curve, the device as designed will treat 8,124 cf of wet storage and 24,115 cf of dry storage. Wet storage is from 294.0 to 295.0. Dry storage is from 295.0 to 300.0.
3. The 6-inch pipe to function as dewatering conduit is set at 294.0. Perforations start at 295.0.
4. The required perforation area is twice the 6-inch opening or 0.2 sf x 2 = 0.4 sf. One-inch perforations, four to a row, rows spaced 3 inches apart, yields 0.87 sf per foot. With 5 feet of perforated pipe, this yields 5 x 0.87 or 0.44sf>0.4 required [ok].
5. Cleanout volume and elevation are set at one-half the wet volume or 294.5 feet.



Profile Top of Dam

Scale: Horizontal: 1" = 50'
Vertical: 1" = 5'
(Looking Downstream)



Section B-B Thru Facility

Scale: Horizontal: 1" = 20'
Vertical: 1" = 5'

CONSTRUCTION SPECIFICATIONS

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

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 sheepsfoot, rubber tired or vibratory roller. Fill material shall contain sufficient moisture such that the required degree of compaction will be obtained with the equipment used. The fill material shall contain sufficient moisture so that if formed into a ball it will not crumble, yet not be so wet that water can be squeezed out.

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

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

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

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:
1. Materials - (Polymer Coated steel pipe) - Steel pipes with polymeric coatings shall have a minimum coating thickness of 0.01 inch (10 mil) on both sides of the pipe. This pipe and its appurtenances shall conform to the requirements of AASHTO Specifications M-245 & M-246 with watertight coupling bands or flanges.
Materials - (Aluminum Coated Steel Pipe) - This pipe and its appurtenances shall conform to the requirements of AASHTO Specification M-274 with watertight coupling bands or flanges. Aluminum Coated Steel Pipe, when used with flowable fill or when soil and/or water conditions warrant the need for increased durability, shall be fully bituminous coated per requirements of AASHTO Specification M-190 Type A. Any aluminum coating damaged or otherwise removed shall be replaced with cold applied bituminous coating compound. Aluminum surfaces that are to be in contact with concrete shall be painted with one coat of zinc chromate primer or two coats of asphalt.
Materials - (Aluminum Pipe) - This pipe and its appurtenances shall conform to the requirements of AASHTO Specification M-196 or M-211 with watertight coupling bands or flanges. Aluminum Pipe, when used with flowable fill or when soil and/or water conditions warrant for increased durability, shall be fully bituminous coated per requirements of AASHTO Specification M-190 Type A. Aluminum surfaces that are to be in contact with concrete shall be painted with one coat of zinc chromate primer or two coats of asphalt. Hot dip galvanized bolts may be used for connections. The pH of the surrounding soils shall be between 4 and 9.
2. Coupling bands, anti-seep collars, end sections, etc., must be composed of the same material and coatings as the pipe. Metals must be insulated from dissimilar materials with use of rubber or plastic insulating materials at least 24 mils in thickness.
3. Connections - All connections with pipes must be completely watertight. The drain pipe or barrel connection to the riser shall be welded all around when the pipe and riser are metal. Anti-seep collars shall be connected to the pipe in such a manner as to be completely watertight. Dimple bands are not considered to be watertight. 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 oring gaskets having a minimum diameter of 1/2 inch greater than the corrugation depth. Pipes 24 inches in diameter and larger shall be connected by a 24 inch long annular corrugated band using a minimum of 4 (four) rods and lugs, 2 on each connecting pipe end.

A 24-inch wide by 3/8-inch thick closed cell circular neoprene gasket will be installed with 12 inches on the end of each pipe. Flanged joints with 3/8 inch closed cell gaskets the full width of the flange is also acceptable. Helically corrugated pipe shall have either continuously welded seams or have lock seams with internal caulking or a neoprene bead.
4. Bedding - The pipe shall be firmly and uniformly bedded throughout its entire length. Where rock or soft, spongy or other unstable soil is encountered, all such material shall be removed and replaced with suitable earth compacted to provide adequate support.
5. Backfilling shall conform to " **Structure Backfill**".
6. Other details (anti-seep collars, valves, etc.) shall be as shown on the drawings.

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

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

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

Concrete

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 an shall meet the requirements of Maryland Department of Transportation, State Highway Ha Administration Standard Specifications for Construction and Materials, Section 921.09, Class C.

Care of Water during Construction

All work on permanent structures shall be carried out in areas free from water. The Contractor shall construct and maintain all temporary dikes, levees, cofferdams, drainag channels, and stream diversions necessary t 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 to Rol 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 tempor protective works shall be removed or leveled and graded to the extent required to prevent obstruction in any degree whatsoeve 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 maintai 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 manne and to the extent that will maintain stability of the excavated slopes and bottom required excavations and will allow satisfactory per- formance of all construction operations. Durir 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 wat sumps from which the water shall be pumped.

Stabilization

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

Erosion and Sediment Control

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

BY THE DEVELOPER :

I/WE CERTIFY THAT ALL DEVELOPMENT AND/OR CONSTRUCTION, WILL BE DONE ACCORDING TO THESE PLANS, AND THAT ANY 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 BEGINNING THE PROJECT. I SHALL ENGAGE A REGISTERED PROFESSIONAL ENGINEER TO SUPERVISE POND CONSTRUCTION AND PROVIDE THE HOWARD SOIL CONSERVATION DISTRICT WITH AN "AS-BUILT" PLAN OF THE POND WITHIN 30 DAYS OF COMPLETION. I ALSO AUTHORIZE PERIODIC ON-SITE INSPECTIONS BY THE HOWARD SOIL CONSERVATION DISTRICT.

Howard E. Saltzman 4/14/04
DEVELOPER DATE

BY THE ENGINEER :

I CERTIFY THAT THIS PLAN FOR POND CONSTRUCTION, EROSION AND SEDIMENT CONTROL, REPRESENTS A PRACTICAL AND WORKABLE PLAN BASED ON MY PERSONAL KNOWLEDGE OF THE SITE CONDITIONS. THIS PLANS WAS PREPARED IN ACCORDANCE WITH THE REQUIREMENTS OF THE HOWARD 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 AN "AS-BUILT" PLAN OF THE POND WITHIN 30 DAYS COMPLETION.

3/22/04
ENGINEER/TIMOTHY SCHUELER (MD P.E. 20207) DATE

THESE PLANS HAVE BEEN REVIEWED FOR THE HOWARD SOIL CONSERVATION DISTRICT AND MEET THE TECHNICAL REQUIREMENTS FOR SMALL POND CONSTRUCTION, SOIL EROSION AND SEDIMENT CONTROL.

4/22/04
USDA - NATURAL RESOURCES CONSERVATION SERVICE DATE

THESE PLANS FOR SMALL POND CONSTRUCTION, SOIL EROSION AND SEDIMENT CONTROL MEET THE REQUIREMENTS OF THE HOWARD SOIL CONSERVATION DISTRICT.

4/22/04
HOWARD SOIL CONSERVATION DISTRICT DATE

HOWARD COUNTY DPW - ENVIRONMENTAL SERVICES
6751 COLUMBIA GATEWAY DRIVE, SUITE 514
COLUMBIA, MD 21046
PHONE: (410) 313-6417
ATTN: RICHARD POWELL

COLUMBIA GATEWAY
PARCEL E-2
ELECTION DISTRICT #6
TAX MAP 43

Columbia Gateway SWM Pond Retrofit

SWM Profiles

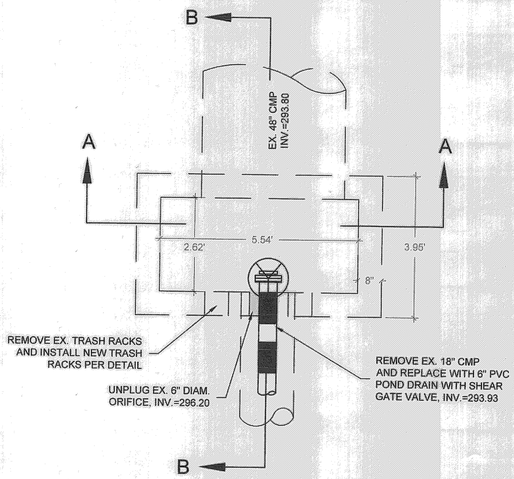
SDP 89-80

DATE: 03/04
DESIGNED: ACD/TCS
DRAFTED: ACD/GBN
CHECKED: TCS
BASE DATA: J.A. RICE

NO.	REVISIONS	BY	DATE

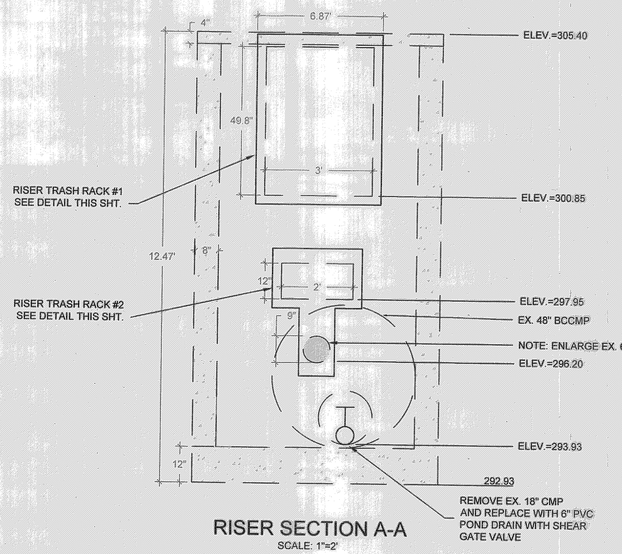
CPJ Associates
CPJ/EQR Environmental Services Division
STREAM RESTORATION STORMWATER MANAGEMENT INSPECTION
805 QUINCE ORCHARD ROAD GAITHERSBURG MARYLAND 20878
Phone:(301)208-9573 E-mail:info eqrl.com Fax:(301)926-4551
SILVER SPRING, MD FREDERICK, MD FAIRFAX, VA

SCALE AS SHOWN
SHEET 2 OF 8 SHEETS
JOB NO. 1411



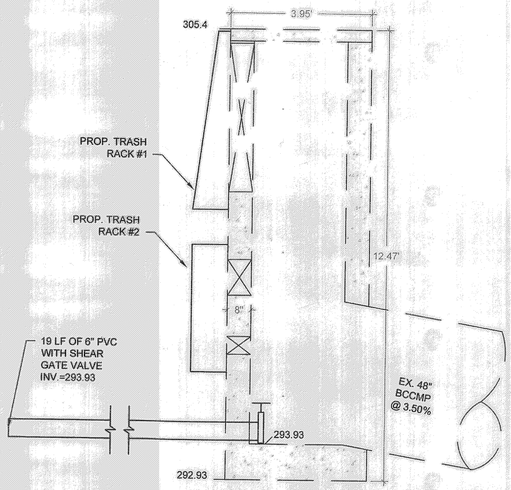
RISER PLAN

SCALE: 1"=2'



RISER SECTION A-A

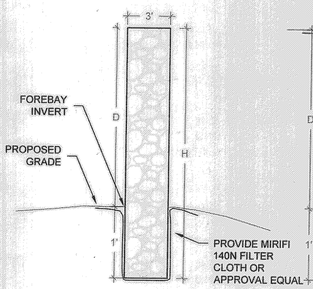
SCALE: 1"=2'



RISER SECTION B-B

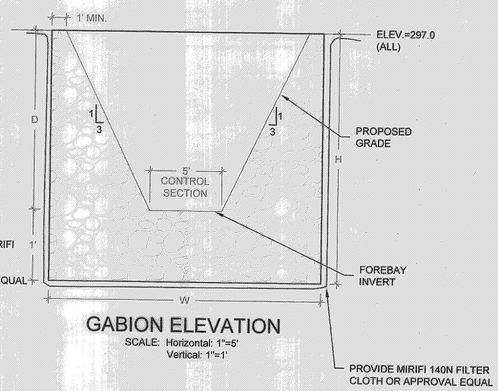
SCALE: 1"=2'

LOCATION	INVERT	D	H	W
HW-2	295.0	2.0'	3.0'	19'
HW-3	295.0	2.0'	3.0'	19'
HW-4	294.5	2.5'	3.5'	22'



GABION SECTION

SCALE: Horizontal: 1"=5'
Vertical: 1"=1'



GABION ELEVATION

SCALE: Horizontal: 1"=5'
Vertical: 1"=1'

Removable Trash Rack Notes

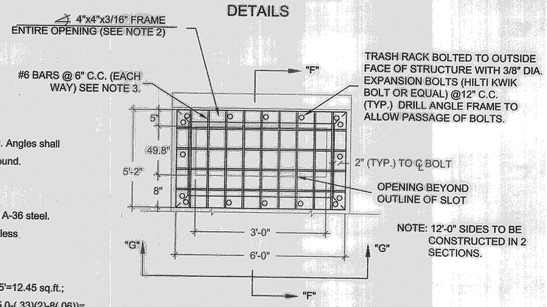
1. For exposed steel rebar shall be hot dipped galvanized. Angles shall be painted with 2 coats of ZRC cold galvanizing compound.
2. Butt weld frame angle. Fillet weld bars to angle frame.
3. Provide 3/16" fillet weld at bar crossings.
4. Angle frames and bars shall be fabricated using ASTM A-36 steel.
5. Trash rack shall be mounted to riser with 3/8" dia. stainless steel hex head bolts.
6. Horizontal bars to be behind vertical bars.

7.A. Area of protection required for Trash Rack #1=3.0'x4.5'=12.45 sq.ft.; Area bottom of opening of TR#1=(6.0-(.33)(2)-12(0.06))x(5.0-(.33)(2)-8(.06))= 17.8 sq.ft; 17.8 sq.ft >12.45sq.ft (ok). Note that 0.33 equals thickness of angle iron (4") and 0.06 equals thickness of rebar.

7B. Area of protection required for Trash Rack #2 (9" orifice)= (π)(0.375)²=0.44 sq.ft.
Area of bottom of opening for TR#2 for 9" orifice= (1.5-(.33)(2)-3(0.06))x(2.0-(.33)(2)-4(0.06))= 0.73 sq.ft.;0.73sq.ft>0.44 sq.ft (ok)

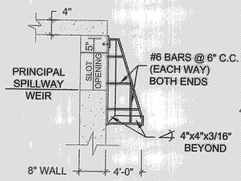
7C. Area of protection required for Trash Rack #2 (2x1 opening)= 2.0 sq.ft. Subtract 1.5 ft. from overall length due to 9" opening requirements. Area of bottom of opening for 2.0 sq.ft. opening= (4.5-1.5-(.33)(2)-(.06)(6))x(2.0-(.33)(2)-(.06)(1))=2.53 sq.ft; 2.53 sq.ft.>2.0 sq.ft. (ok).

RISER TRASH RACK #1 DETAILS



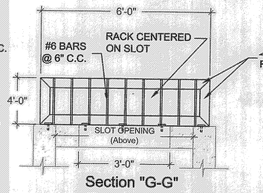
FRONT ELEVATION

Not to Scale



Section "F-F"
(Side View)

Not to Scale

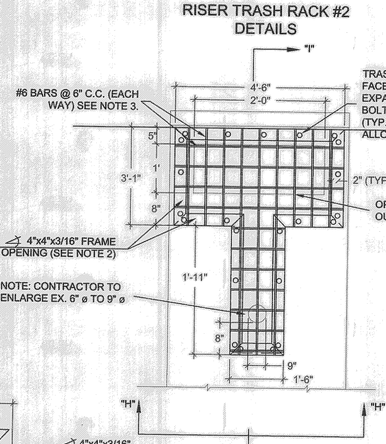


Section "G-G"
(Bottom View)

Not to Scale

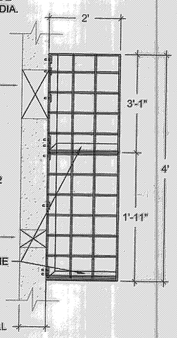
NOTE: CROSS BARS NOT SHOWN FOR CLARITY

RISER TRASH RACK #2 DETAILS



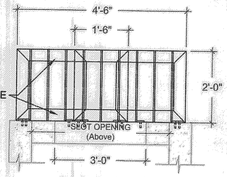
FRONT ELEVATION

Not to Scale



Section "I-I"
(Side View)

Not to Scale



Section "H-H"
(Bottom View)

Not to Scale

NOTE: CROSS BARS NOT SHOWN FOR CLARITY

BY THE DEVELOPER :

I/WE CERTIFY THAT ALL DEVELOPMENT AND/OR CONSTRUCTION, WILL BE DONE ACCORDING TO THESE PLANS, AND THAT ANY 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 BEGINNING THE PROJECT. I SHALL ENGAGE A REGISTERED PROFESSIONAL ENGINEER TO SUPERVISE POND CONSTRUCTION AND PROVIDE THE HOWARD SOIL CONSERVATION DISTRICT WITH AN "AS-BUILT" PLAN OF THE POND WITHIN 30 DAYS OF COMPLETION. I ALSO AUTHORIZE PERIODIC ON-SITE INSPECTIONS BY THE HOWARD SOIL CONSERVATION DISTRICT.

Howard E. Saltzman — 4/14/04

DEVELOPER — DATE

BY THE ENGINEER :

I CERTIFY THAT THIS PLAN FOR POND CONSTRUCTION, EROSION AND SEDIMENT CONTROL, REPRESENTS A PRACTICAL AND WORKABLE PLAN BASED ON MY PERSONAL KNOWLEDGE OF THE SITE CONDITIONS. THIS PLANS WAS PREPARED IN ACCORDANCE WITH THE REQUIREMENTS OF THE HOWARD 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 AN "AS-BUILT" PLAN OF THE POND WITHIN 30 DAYS COMPLETION.

ENGINEER/TIMOTHY SCHUELER (MD P.E.20207) — 3/26/04 — DATE

THESE PLANS HAVE BEEN REVIEWED FOR THE HOWARD SOIL CONSERVATION DISTRICT AND MEET THE TECHNICAL REQUIREMENTS FOR SMALL POND CONSTRUCTION, SOIL EROSION AND SEDIMENT CONTROL.

USDA - NATURAL RESOURCES CONSERVATION SERVICE — DATE 4/22/04

THESE PLANS FOR SMALL POND CONSTRUCTION, SOIL EROSION AND SEDIMENT CONTROL MEET THE REQUIREMENTS OF THE HOWARD SOIL CONSERVATION DISTRICT.

HOWARD SOIL CONSERVATION DISTRICT — DATE 4/22/04

HOWARD COUNTY DPW -
ENVIRONMENTAL SERVICES
6751 COLUMBIA GATEWAY DRIVE, SUITE 514
COLUMBIA, MD 21046
PHONE: (410) 313-6417
ATTN: RICHARD POWELL

COLUMBIA GATEWAY
PARCEL E-2
ELECTION DISTRICT #6
TAX MAP 43

Columbia Gateway SWM Pond Retrofit

SWM Details

SDP 89-80

DATE: 03/04
DESIGNED: ACD/TCS
DRAFTED: ACD/GBN
CHECKED: TCS
BASE DATA: J.A. RICE

NO.	REVISIONS	BY	DATE

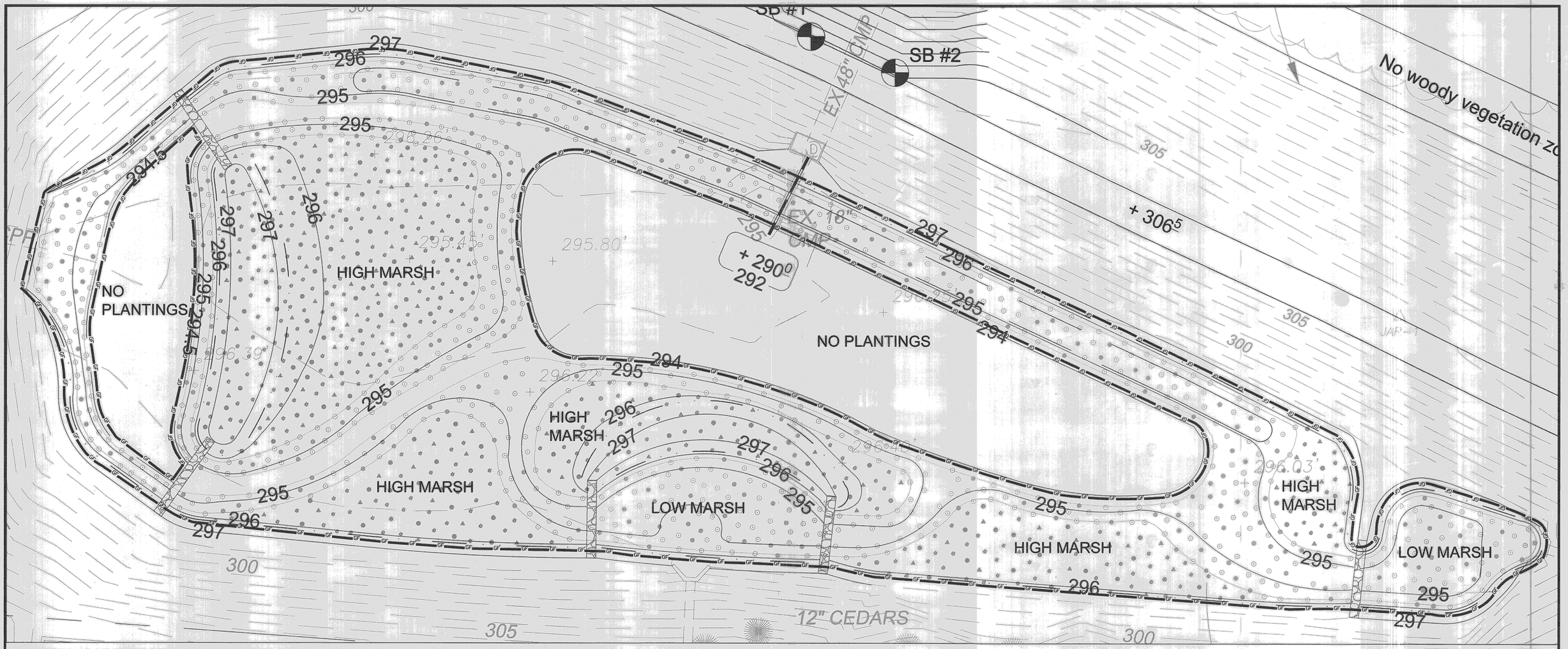
CPJ Associates

CPJ/EQR Environmental Services Division
STREAM RESTORATION STORMWATER MANAGEMENT INSPECTION
898 QUINCE ORCHARD ROAD GAITHERSBURG MARYLAND 20878
Phones:(301)208-9575 E-mail:info eqr.com Fax:(301)926-4551
SILVER SPRING, MD FREDERICK, MD FAIRFAX, VA

SCALE AS SHOWN

SHEET 3 OF 8 SHEETS

JOB NO. 1411



CONSTRUCTION AND SITE PREPARATION PLANTING SPECIFICATIONS

PLANT INSTALLATION METHODS

- Wetland planting shall commence after final grading has been completed.
- Planting window for herbaceous plugs - March 1 - May 15 and September 15 - November 15. When planting in June and August, careful consideration should be given to weather conditions (drought, high temperatures, etc.) and the ability to water during adverse weather conditions.
- Herbaceous peat pot plugs - Firmly place plants into the saturated pond bottom keeping top of root system even with the pool bottom (finish grade). If necessary, anchor the root system with metal landscape staples. Firm soil thoroughly around the root system with hands or boots (see emergent planting, this sheet).

NEWLY GRADED PLANTING AREA

- Hydroseed and fertilize upon the completion of final grading (see wetland seed list and seeding specifications). Fertilizer type, rate and analysis to be as determined by the University of Maryland Cooperative Extension Service and or a qualified Ecologist based on soil test results.
- Herbicide applications for the control of invasive species after planting should be done as part of a maintenance plan.

PLANT CRITERIA

- Plants supplied shall conform in all respects to the current edition of the *American Standard for Nursery Stock* (ANSI Z60.2.) They shall be nursery grown in accordance with good horticultural practice and grown under climatic conditions similar to those in the locality of the project. Plant names shall be those given in the edition of *Standard Plant Names*
- Prior to planting, protect plants at all times from sun and drying winds. Plants that cannot be planted immediately shall be kept in the shade, and kept well watered. Plants shall not remain unplanted for more than three (3) calendar days unless adequate irrigation and protection from the elements is provided on site.
- Plants shall be sound, vigorous and healthy. They shall be free of disease and insect pests and shall have healthy, well developed root systems. Trunks and branches of woody plants shall be free of cuts and abrasions over one inch (1") in any dimension. Herbaceous peat pot plugs and containerized stock should exhibit light colored buds or shoots free of wounds, disease, insect infestation/damage or other defects.
- Groups of plants shall be tagged with labels identifying the botanical names of the plants. No change in the kind, quantity, quality or size of plants specified shall be made without the written approval from the Environmental Consultant for the project.
- All plants shall be certified pest free by the Department of Agriculture of the state of origin.

GOOSE FENCING NOTES

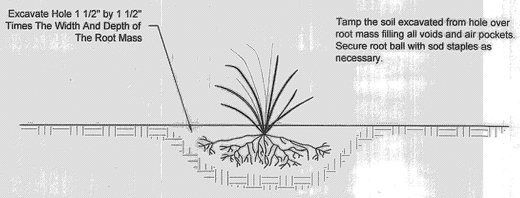
- Goose fencing shall be installed per detail, this sheet
- Goose fencing will be installed immediately after completion of all herbaceous plantings, and is to be removed upon expiration of plant warranty
- Total linear feet of fencing: 1,321 feet (as shown)
  Total pond area: 24,060 s.f.
  Area excluded from goose fencing: 6,245 s.f.
  Total area to be strung for fencing: 17,815 s.f

PLANTING PLAN NOTES

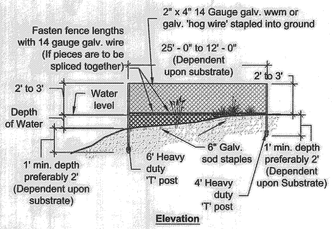
- Herbaceous plants should be placed in areas shown, per the instruction of the on-site consultant representative. This will involved placement of plants in either clusters, allowing for spread through the aggregate drift theory, or evenly spaced to provide immediate planting coverage of the site.
- Herbaceous plants have been selected based on tolerance to maximum inundation depth, and the survival of plants depends on their correct placement. *Sagittaria latifolia* (Duck Potato) and *Peltandra virginica* (Arrow Arum) are to be planted in areas of the pond where water depths range from 6 to 18 inches. The remainder of the plants are intolerant to deep water conditions, and should be planted in shallower areas of the pond, where maximum water depths are between 0 and 6 inches. See Plant List, this sheet, and planting plan for appropriate planting locations.
- Plants should not be planted along flow paths

PLANT LIST

Symbol	Quantity	PLANT NAME	SPACING	SIZE
	200	*Sagittaria latifolia* (Duck Potato)	3' O.C.	Peat Pot
	450	*Peltandra virginica* (Arrow Arum)	3' O.C.	Bare Root
	250	*Nuphar lutea* (Spatterdock)	3' O.C.	Bare Root
	460	*Pontederia cordata* (Pickerelweed)	3' O.C.	Bare Root
	250	*Scirpus pungens* (Common Three-Square)	3' O.C.	Bare Root



1 **Emergent Planting Detail**
Not to scale



2 **Goose Fencing**
Not to scale

LEGEND
- Proposed Grade
- Existing Grade
- Proposed Geotechnical Boring
- Proposed Water Surface Elevation
- Benchmark
- Property Line
- Limit of Disturbance
- Proposed Gabion
- Emergent Plants
- Goose Fencing

SCALE: 1"=10'
0 5 10 20 40

HOWARD COUNTY DPW - ENVIRONMENTAL SERVICES
6751 COLUMBIA GATEWAY DRIVE, SUITE 514
COLUMBIA, MD 21046
PHONE: (410) 313-6417
ATTN: RICHARD POWELL

COLUMBIA GATEWAY
PARCEL E-2
ELECTION DISTRICT #6
TAX MAP 43

Columbia Gateway SWM Pond Retrofit

Planting Plan and Details

SDP 89-80

DATE: 03/04
DESIGNED: ACD/TCS
DRAFTED: ACD/GBN
CHECKED: TCS
BASE DATA: J.A. RICE

NO.	REVISIONS	BY	DATE

CPJ Associates
CPJ/EQR Environmental Services Division
STREAM RESTORATION STORMWATER MANAGEMENT INSPECTION
895 QUINCE ORCHARD ROAD GAITHERSBURG MARYLAND 20878
Phone:(301)208-9573 E-mail:info eqrl.com Fax:(301)926-4551
SILVER SPRING, MD FREDERICK, MD FAIRFAX, VA

SCALE 1"=10'
SHEET 4 OF 8 SHEETS
JOB NO. 1411

SEQUENCE OF CONSTRUCTION FOR POND REAPAIR

1. Obtain Howard County grading permit.
2. Contractor to conduct a pre-construction meeting with owner, design engineer, contractor and Howard County Sediment and Erosion Control Inspector (SCI) at least 48 hours prior to the start of construction. (1 day)
3. Clear and grub to install the stabilized construction entrance and silt fence. (1 day)
4. Install stabilized construction entrance and silt fence. (1 day)
5. Install sandbag diversions, dewatering sumpit, and temporary dewatering device as well as siltbag pump arounds and engage system with the approval of the SCI. Note to contractor: no water from construction area to leave site without first passing through a filter device (filter bag). (1 day)
6. Clear and grub remaining areas. (1 day)
7. Fine grade pond bottom, clay liner and construct forebays including gabion release structures.

   (8 days)
8. Stabilize areas upon reaching design grades. (1 Day)

8a. Excavate for sand filter diaphragm placement along existing 48" RCP and place filter materials.
(2 days)

9. Install pond drain and riser trash racks. (2 days)
10. Permanently stabilize all disturbed areas per permanent seeding specifications. (1 day)
11. Install wetland plantings. (2 days)
12. With permission of the sediment and erosion control inspector, remove sediment control features and stabilize all areas disturbed by this process. (1 day)
13. Conduct "punch list" walk through with all parties mentioned in step 1. (1 day)
14. Note: contractor to provide as-built record drawing to HCSD.

TOTAL = 23 days

THESE PLANS HAVE BEEN REVIEWED FOR THE HOWARD SOIL CONSERVATION DISTRICT AND MEET THE TECHNICAL REQUIREMENTS FOR SMALL POND CONSTRUCTION, SOIL EROSION AND SEDIMENT CONTROL.

USDA - NATURAL RESOURCES CONSERVATION SERVICE — DATE 4/22/04

THESE PLANS FOR SMALL POND CONSTRUCTION, SOIL EROSION AND SEDIMENT CONTROL MEET THE REQUIREMENTS OF THE HOWARD SOIL CONSERVATION DISTRICT.

HOWARD SOIL CONSERVATION DISTRICT — DATE 4/22/04

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ENGINEER/ TIMOTHY SCHUELER (MD P.E.20207) — DATE 3/26/04

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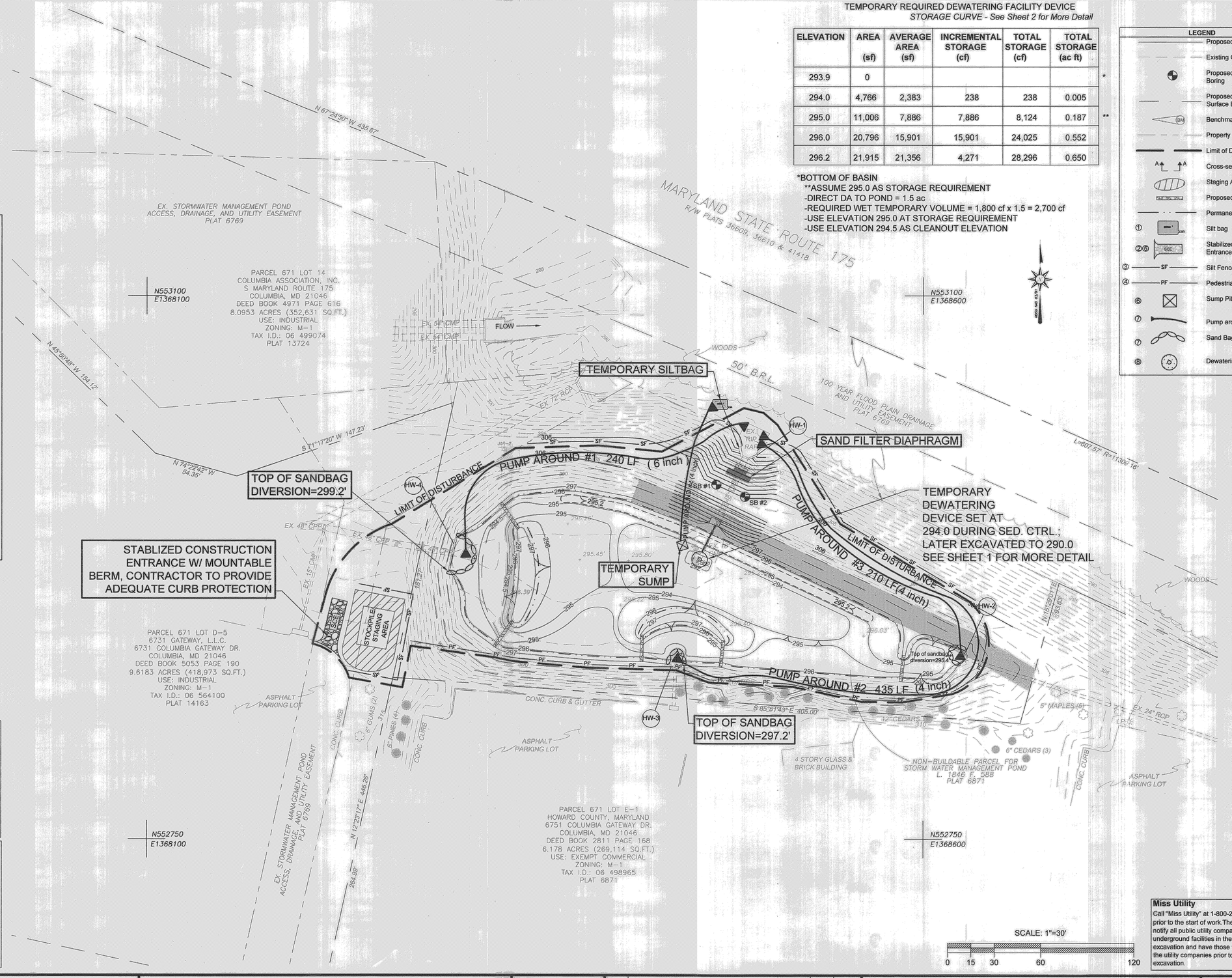
DEVELOPER — DATE 4/14/04

TEMPORARY REQUIRED DEWATERING FACILITY DEVICE
STORAGE CURVE - See Sheet 2 for More Detail

ELEVATION	AREA (sf)	AVERAGE AREA (sf)	INCREMENTAL STORAGE (cf)	TOTAL STORAGE (cf)	TOTAL STORAGE (ac ft)	
293.9	0					*
294.0	4,766	2,383	238	238	0.005	
295.0	11,006	7,886	7,886	8,124	0.187	**
296.0	20,796	15,901	15,901	24,025	0.552	
296.2	21,915	21,356	4,271	28,296	0.650	

*BOTTOM OF BASIN
**ASSUME 295.0 AS STORAGE REQUIREMENT
-DIRECT DA TO POND = 1.5 ac
-REQUIRED WET TEMPORARY VOLUME = 1,800 cf x 1.5 = 2,700 cf
-USE ELEVATION 295.0 AT STORAGE REQUIREMENT
-USE ELEVATION 294.5 AS CLEANOUT ELEVATION

LEGEND
- Proposed Grade
- Existing Grade
- Proposed Geotechnical Boring
- Proposed Water Surface Elevation
- Benchmark
- Property Line
- Limit of Disturbance
- Cross-section
- Staging Area
- Proposed Gabion
- Permanent Pool
- ① Silt bag
- ②⑤ Stabilized Construction Entrance
- ③ SF Silt Fence
- ④ PF Pedestrian Fence
- ⑥ Sump Pit
- ⑦ Pump around
- ⑦ Sand Bag Diversion
- ⑧ Dewatering Device



Miss Utility
Call "Miss Utility" at 1-800-257-7777, 48 hours prior to the start of work.The excavator must notify all public utility companies with underground facilities in the area of proposed excavation and have those facilities located by the utility companies prior to commencing excavation.

HOWARD COUNTY DPW - ENVIRONMENTAL SERVICES
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PHONE: (410) 313-6417
ATTN: RICHARD POWELL

COLUMBIA GATEWAY
PARCEL E-2
ELECTION DISTRICT #6
TAX MAP 43

Columbia Gateway SWM Pond Retrofit

Sediment Control Plan

SDP 89-80

DATE: 03/04
DESIGNED: ACD/TCS
DRAFTED: ACD/GBN
CHECKED: TCS
BASE DATA: J.A. RICE

NO.	REVISIONS	BY	DATE

CPJ Associates
CPJ/EQR Environmental Services Division
STREAM RESTORATION STORMWATER MANAGEMENT INSPECTION
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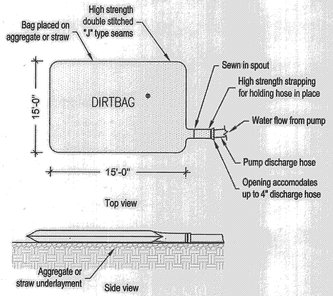
SILVER SPRING, MD FREDERICK, MD FAIRFAX, VA

SCALE 1"=30'
SHEET 5 OF 8 SHEETS
JOB NO. 1411



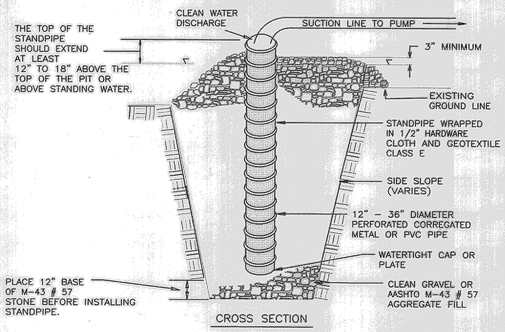
Note:
Silt control system to be used in conjunction with pump around if deemed necessary by sediment control inspector to treat any sediment-laden water within the dry work area.

Dewatering/Filter Bag Materials Specifications:
The dewatering/filter bag shall be made of non-woven geotextile with a minimum surface area of 225 square feet per side. All structural seams shall be sewn with a double stitch using a double needle machine with high strength thread. The seam strength shall withstand 100lb/in using ASTM D-4884 test method. The dewatering/filter bag shall have a nozzle large enough to accommodate a four inch discharge hose. The nozzle shall be sealed tightly around the discharge hose with a strap or similar device to prevent untreated water from escaping. The geotextile fabric shall be a non-woven fabric with the following properties:

Weight	ASTM D-3776	10 oz/yd
Grab Tensile	ASTM D-4632	270 lbs
Puncture	ASTM D-4833	150 lbs
Flow Rate	ASTM D-4491	70 Gal/min/sq ft
Permitivity	ASTM D-4991	1/1.3 sec
UV Resistance	ASTM D-4355	70 %
AOS % Retained	ASTM D-4751	100

Construction:
The dewatering/filter bag shall be installed over a 3 inch gravel base or a straw bale base to promote infiltration and dewatering of the filter bag.

1 SILT CONTROL SYSTEM® DIRTBAG
Not to scale



Construction Specifications

1. Pit dimensions are variable, with the minimum diameter being 2 times the standpipe diameter.

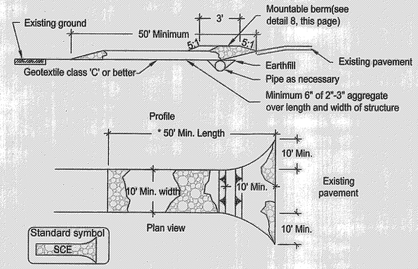
2. The standpipe should be constructed by perforating a 12" to 24" diameter corrugated or PVC pipe. Then wrapping with 1/2" hardware cloth and Geotextile Class E. The perforations shall be 1/2" x 6" slits or 1" diameter holes.

3. A base of filter material consisting of clean gravel or #57 stone should be placed in the pit to a depth of 12". After installing the standpipe, the pit surrounding the standpipe should then be backfilled with the same filter material.

4. The standpipe should extend 12" to 18" above the lip of the pit or the riser crest elevation (basin dewatering only) and the filter material should extend 3" minimum above the anticipated standing water elevation.

U.S. DEPARTMENT OF AGRICULTURE SOIL CONSERVATION SERVICE
MARYLAND DEPARTMENT OF ENVIRONMENT
WATER MANAGEMENT ADMINISTRATION
PAGE D – 13 – 2

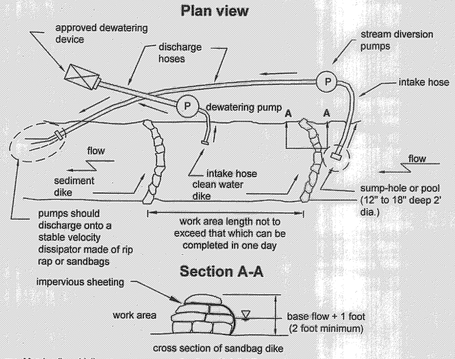
6 SUMP PIT
Not to scale



Construction Specifications:
1. Length - minimum of 50' (*30' for single residence lot).
2. Width - 10' minimum, should be flared at the existing road to provide a turning radius.
3. Geotextile fabric (filter cloth) shall be placed over the existing ground prior to placing stone. **The plan approval authority may not require single family residences to use geotextile.
4. Stone - crushed aggregate (2" to 3") or reclaimed or recycled concrete equivalent shall be placed at least 6" deep over the length and width of the entrance.
5. Surface Water - all surface water flowing to or diverted toward construction entrances shall be piped through the entrance, maintaining positive drainage. Pipe installed through the stabilized construction entrance shall be protected with a mountable berm with 5:1 slopes and a minimum of 6" of stone over the pipe. Pipe has to be sized according to the drainage. When the SCE is located at a high spot and has no drainage to convey a pipe will not be necessary. Pipe should be sized according to the amount of runoff to be conveyed. A 6" minimum will be required.
6. Location - A stabilized construction entrance shall be located at every point where construction traffic enters or leaves a construction site. Vehicles leaving the site must travel over the entire length of the stabilized construction entrance.

U.S. DEPARTMENT OF AGRICULTURE
SOIL CONSERVATION SERVICE

2 STABILIZED CONSTRUCTION ENTRANCE
Not to scale



Source: Maryland's guidelines to waterway construction - Detail 1.2

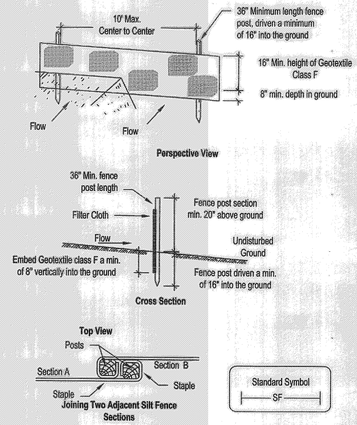
Pump-Around Practice
Temporary measure for dewatering in-channel construction sites.

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

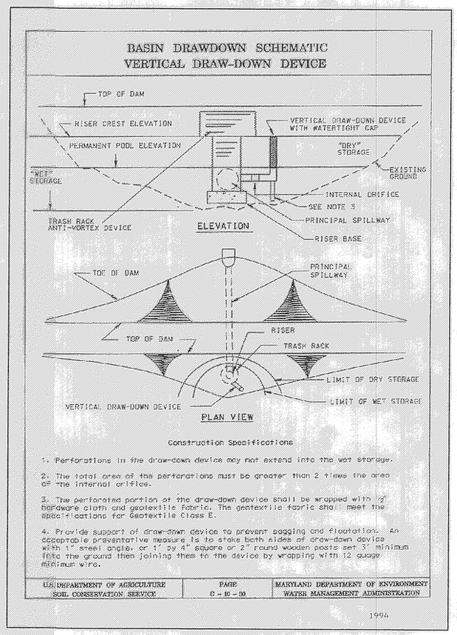
Implementation Sequence for Pump-Around
Sediment control measures, pump-around practices, and associated channel and bank construction should be completed in the following sequence (refer to detail).

1. Construction activities including the installation of erosion and sediment control measures should not begin until all necessary easements and/or rights-of-ways have been acquired. All existing utilities should be marked in the field prior to construction. The contractor is responsible for any damage to existing utilities that may result from construction and should repair the damage at his/her own expense to the county's or utility company's satisfaction.
2. The contractor should notify the Maryland Department of the Environment or WMA sediment control inspector at least 5 days before beginning construction. Additionally, the contractor should inform the local environmental protection and resource management inspection and enforcement division and the provider of local utilities a minimum of 48 hours before starting construction.
3. The contractor should conduct a pre-construction meeting on site with the WMA sediment control inspector, the county project manager, and the engineer to review limits of disturbance, erosion and sediment control requirements, and the sequence of construction. The contractor should stake out all limits of disturbance prior to the pre-construction meeting so they may be reviewed. The participants will also designate the contractor's staging areas and flag all trees within the limits of disturbance which will be removed for construction access. Trees should not be removed within the limits of disturbance without approval from the WMA or local authority.
4. Construction should not begin until all sediment and erosion control measures have been installed and approved by the engineer and the sediment control inspector. The contractor should stay within the limits of the disturbance as shown on the plans and minimize disturbance within the work area whenever possible.
5. Upon installation of all sediment control measures and approval by the sediment control inspector and the local environmental protection and resource management inspection and enforcement division, the contractor should begin work at the upstream section and proceed downstream beginning with the establishment of stabilized construction entrances. In some cases, work may begin downstream if appropriate. The sequence of construction must be followed unless the contractor gets written approval for deviations from the WMA or local authority. The contractor should only begin work in an area which can be completed by the end of the day including grading adjacent to the channel. At the end of each work day, the work area must be stabilized and the pump around removed from the channel. Work should not be conducted in the channel during rain events.
6. Sandbag dikes should be situated at the upstream and downstream ends of the work area as shown on the plans, and stream flow should be pumped around the work areas. The pump should discharge onto a stable velocity dissipated made of riprap or sandbags.
7. Water from the work area should be pumped to a sediment filtering measure such as a dewatering basin, sediment bag, or other approved source. The measure should be located such that the water drains back into the channel below the downstream sandbag dike.
8. Traversing a channel reach with equipment within the work area where no work is proposed should be avoided. If equipment has to traverse such a reach for access to another a>rea, then timber mats or similar measures should be used to minimize disturbance to the channel. Temporary stream crossings should be used only when necessary and only where noted on the plans or specified. (See Section 4, Stream Crossings, Maryland Guidelines to Waterway Construction).
9. All stream restoration measures should be installed as indicated by the plans and all banks graded in accordance with the grading plans and typical cross-sections. All grading must be stabilized at the end of each day with seed and mulch or seed and matting as specified on the plans.
10. After an area is completed and stabilized, the clean water dike should be removed. After the first sediment flush, a new clean water dike whould be established upstream from the old sediment dike. Finally, upon establishment of a new sediment dike below the old one, the old sediment dike should be removed.
11. A pump around must be installed on any tributary or storm drain outfall which contributes baseflow to the work area. This should be accomplished by locating a sandbag dike at the downstream end of the tributary or storm drain outfall and pumping the stream flow around the work area. This water should discharge onto the same velocity dissipater used for the main stem pump around.
12. If a tributary is to be restored, construction should take place on the tributary before work on the main stem reaches the tributary confluence. Construction in the tributary, including pump around practices, should follow the same sequence as for the main stem of the river or stream. When construction on the tributary is completed, work on the main stem should resume. Water from the tributary should continue to be pumped around the work area in the main stem.
13. The contractor is responsible for providing access to and maintaining all erosion and sediment control devices until the sediment control inspector approves their removal.
14. After construction, all disturbed areas should be regraded and revegetated as per the planting plan.

7 PUMP-AROUND PRACTICE
Not to scale

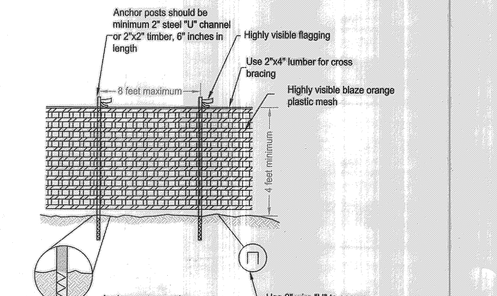


3 SILT FENCE DETAIL
Not to scale



Note: see Sheet 2 for specific sizing.

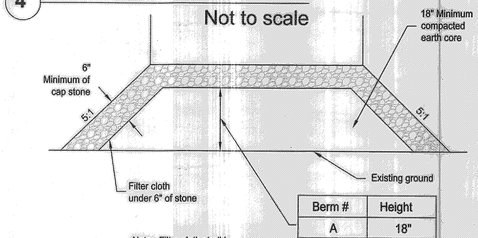
8 DEWATERING DEVICE
Not to scale



Notes:
1. Forest protection device only.
2. Retention area will be set as part of the review process.
3. Boundaries of retention area should be staked and flagged prior to installing devices.
4. Avoid root damage when placing anchor posts.
5. Device should be properly maintained during construction.
6. Protective signage is also required.

Source: :Prince Georges County, Maryland: Woodland Conservation Manual from Maryland State Forest Conservation Manual

4 PEDESTRIAN AND TREE SAVE FENCE DETAIL
Not to scale



Berm #	Height
A	18"
B	30"

Note: Filter cloth shall be geotextile class 'C', or better.

5 MOUNTABLE BERM
Not to scale

THESE PLANS HAVE BEEN REVIEWED FOR THE HOWARD SOIL CONSERVATION DISTRICT AND MEET THE TECHNICAL REQUIREMENTS FOR SMALL POND CONSTRUCTION, SOIL EROSION AND SEDIMENT CONTROL.

USDA - NATURAL RESOURCES CONSERVATION SERVICE — DATE 4/22/04

THESE PLANS FOR SMALL POND CONSTRUCTION, SOIL EROSION AND SEDIMENT CONTROL MEET THE REQUIREMENTS OF THE HOWARD SOIL CONSERVATION DISTRICT.

HOWARD SOIL CONSERVATION DISTRICT — DATE 4/22/04

BY THE ENGINEER :

I CERTIFY THAT THIS PLAN FOR POND CONSTRUCTION, EROSION AND SEDIMENT CONTROL, REPRESENTS A PRACTICAL AND WORKABLE PLAN BASED ON MY PERSONAL KNOWLEDGE OF THE SITE CONDITIONS. THIS PLANS WAS PREPARED IN ACCORDANCE WITH THE REQUIREMENTS OF THE HOWARD 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 AN "AS-BUILT" PLAN OF THE POND WITHIN 30 DAYS COMPLETION.

ENGINEER/TIMOTHY SCHUELER (MD P.E. 20207) — DATE 3/24/04

BY THE DEVELOPER :

I/WE CERTIFY THAT ALL DEVELOPMENT AND/OR CONSTRUCTION, WILL BE DONE ACCORDING TO THESE PLANS, AND THAT ANY 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 BEGINNING THE PROJECT. I SHALL ENGAGE A REGISTERED PROFESSIONAL ENGINEER TO SUPERVISE POND CONSTRUCTION AND PROVIDE THE HOWARD SOIL CONSERVATION DISTRICT WITH AN "AS-BUILT" PLAN OF THE POND WITHIN 30 DAYS OF COMPLETION. I ALSO AUTHORIZE PERIODIC ON-SITE INSPECTIONS BY THE HOWARD SOIL CONSERVATION DISTRICT.

Howard E. Saltzman — 4/14/04
DEVELOPER — DATE

HOWARD COUNTY DPW - ENVIRONMENTAL SERVICES
6751 COLUMBIA GATEWAY DRIVE, SUITE 514
COLUMBIA, MD 21046
PHONE: (410) 313-6417
ATTN: RICHARD POWELL

COLUMBIA GATEWAY
PARCEL E-2
ELECTION DISTRICT #6
TAX MAP 43

Columbia Gateway SWM Pond Retrofit
Sediment Control Details
SDP 89-80

DATE: 03/04
DESIGNED: ACD/TCS
DRAFTED: ACD/GBN
CHECKED: TCS
BASE DATA: J.A. RICE

NO.	REVISIONS	BY	DATE

CPJ Associates
CPJ/EQR Environmental Services Division
STREAM RESTORATION STORMWATER MANAGEMENT INSPECTION
895 QUINCE ORCHARD ROAD GAITHERSBURG MARYLAND 20878
Phone:(301)208-9875 E-mail:info cpj.cons Fax:(301)926-4581
SILVER SPRING, MD FREDERICK, MD FAIRFAX, VA

SCALE AS SHOWN
SHEET 6 OF 8 SHEETS
JOB NO. 1411

SECTION I - VEGETATIVE STABILIZATION METHODS AND MATERIALS

A. Site Preparation

i) Install erosion and sediment control structures (either temporary or permanent) such as diversions, grade stabilization structures, berms, waterways, or sediment control basins.

ii) Perform all grading operations at right angles to the slope. Final grading and shaping is not usually necessary for temporary seeding.

iii) Schedule required soil tests to determine soil amendment composition and application rates for sites having disturbed area over 5 acres.

B. Soil Amendments (Fertilizer and Lime Specifications)

i) Soil tests must be performed to determine the exact ratios and application rates for both lime and fertilizer on sites having disturbed areas over 5 acres. Soil analysis may be performed by the University of Maryland or a recognized commercial laboratory .Soil samples taken for engineering purposes may also be used for chemical analyses.

ii) Fertilizers shall be uniform in composition, free flowing and suitable for accurate application by approved equipment. Manure may be substituted for fertilizer with prior approval from the appropriate approval authority. Fertilizers shall all be delivered to the site fully labeled according to the applicable state fertilizer laws and shall bear the name, trade name or trademark and warrantee of the producer .

iii) Lime materials shall be ground limestone (hydrated or burnt lime may be substituted) which contains at least 50 % total oxides (calcium oxide plus magnesium oxide). Limestone shall be ground to such fineness that at least 50 % will pass through a #100 mesh sieve and 98- 100 % will pass through a #20 mesh sieve.

iv) Incorporate lime and fertilizer into the top 3 -5" of soil by disking or other suitable means.

C. Seedbed Preparation

i) Temporary Seeding

a. Seedbed preparation shall consist of loosening soil to a depth of 3" to 5" 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 should not be rolled or dragged smooth but left in the roughened condition. Sloped areas (greater than 3: I) should be tracked leaving the surface in an irregular condition 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 -5" of soil by disking or other suitable means.

ii) Permanent Seeding

a. Minimum soil conditions required for permanent vegetative establishment:

1. Soil pH shall be between 6.0 and 7.0.
2. Soluble salts shall be less than 500 parts per million (ppm).
3. The soil shall contain less than 40 % clay but enough fine grained material (> 30 % silt plus clay) to provide the capacity to hold a moderate amount of moisture. An exception is if lovegrass or *sereicia lespedeza* is to be planted, then a sandy soil (< 30 % silt plus clay) would be acceptable.
4. Soil shall contain 1.5 % minimum organic matter by weight.
5. Soil must contain sufficient pore space to permit adequate root penetration.
6. If these conditions cannot be met by soils on site, adding topsoil is required in accordance with Section 21 Standard and Specification for Topsoil.

b. Areas previously graded in conformance with the drawings shall be maintained in a true and even grade, then scarified or otherwise loosened to a depth of 3 -5" to permit bonding of the topsoil to the surface area and to create horizontal erosion check slots to prevent topsoil from sliding down a slope.

c. Apply soil amendments as per soil test or as included on the plans.

d. Mix soil amendments into the top 3- 5" of topsoil by disking or other suitable means. Lawn areas should be raked to smooth the surface, remove large objects like stones and branches, and ready the area for seed application. Where site conditions will not permit normal seedbed preparation, loosen surface soil by dragging with a heavy chain or other equipment to roughen the surface. Steep slopes (steeper than 3:I should be tracked by a dozer leaving the soil in an irregular condition with ridges running parallel to the contour of the slope. The top 1 -3" of soil should be loose and friable. Seedbed loosening may not be necessary on newly disturbed areas.

D. Seed Specifications

i) All seed must meet the requirements of the Maryland State Seed Law. All seed shall be subject to re-testing by a recognized seed laboratory. All seed used shall have been tested within the 6 months immediately preceding the date of sowing such material on this job.

Note: Seed tags shall be made available to the inspector to verify type and rate of seed used.

ii) Inoculant -The inoculant for treating legume seed in the seed mixtures shall be a pure culture of nitrogen-fixing bacteria prepared specifically for the species. Inoculants shall not be used later than the date indicated on the container. Add fresh inoculant as directed on 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 75-80 F. can weaken bacteria and make the inoculant less effective.

E. Methods of Seeding

i. Hydroseeding: Apply seed uniformly with hydroseeder (slurry includes seed and fertilizer), broadcast or drop seeder, or a cultipacker seeder.

a. If fertilizer is being applied at the time of seeding, the application rates amounts will not exceed the following: nitrogen; maximum of 100 lbs. per acre total of soluble nitrogen; P20S (phosphorous): 200 lbs/ac; K20 (potassium): 200 lbs/ac.

b. 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 anyone time. Do not use burnt or hydrated lime when hydroseeding.

c. Seed and fertilizer shall be mixed on site and seeding shall be done immediately and without interruption.

ii) Dry Seeding: This includes use of conventional drop or broadcast spreaders.

a. Seed spread dry shall be incorporated into the subsoil at the rates prescribed on the Temporary or Permanent Seeding Summaries or Tables 25 or 26. The seeded area shall then be rolled with a weighted roller to provide good seed to soil contact.

b. Where practical, seed should be applied in two directions perpendicular to each other. Apply half the seeding rate in each direction.

iii) Drill or Cultipacker Seeding: Mechanized seeders that apply and cover seed with soil.

a. 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.

b. Where practical, seed should be applied in two directions perpendicular to each other. Apply half the seeding rate in each direction.

F. Mulch Specifications (In order of preference)

i) Straw shall consist of thoroughly threshed wheat, rye or oat straw, reasonably bright in color, and shall not be musty, moldy, caked, decayed, or excessively dusty and shall be free of noxious weed seeds as specified in the Maryland Seed Law.

ii) Wood Cellulose Fiber Mulch (WCFM)

a. WCFM shall consist of specially prepared wood cellulose processed into a uniform fibrous physical state. down a sl

b. WCFM shall 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.

c. WCFM, including dye, shall contain no germination or growth inhibiting factors.

d. WCFM materials shall 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 shall form a blotter-like ground cover, on application, having moisture absorption and percolation properties and shall cover and hold grass seed in contact with the soil without inhibiting the growth of the grass seedlings.

e. WCFM material shall contain no elements or compounds at concentration levels that will be phyto-toxic.

f. WCFM must conform to the following physical requirements: fiber length to approximately 10 mm, diameter approximately 1 mm, pH range of 4.0 to 8.5, ash content of 1.6 % maximum and water holding capacity of 90 % minimum.

Note: Only sterile straw mulch should be used in areas where one species of grass is desired.

G. Mulching Seeded Areas - Mulch shall be applied to all seeded areas immediately after seeding.

i) If grading is completed outside of the seeding season, mulch alone shall be applied as prescribed in this section and maintained until the seeding season returns and seeding can be performed in accordance with these specifications.

ii) When straw mulch is used, it shall be spread over all seeded areas at the rate of 2 tons/acre. Mulch shall be applied to a uniform loose depth of between 1" and 2". Mulch applied shall achieve a uniform distribution and depth so that the soil surface is not exposed. If a mulch anchoring tool is to be used, the rate should be increased to 2.5 tons/acre.

iii) Wood cellulose fiber used as a mulch shall be applied at a net dry weight of 1,500 lbs. per acre. The wood cellulose fiber shall be mixed with water, and the mixture shall contain a maximum of 50 lbs. of wood cellulose fiber per 100 gallons of water .

H. Securing Straw Mulch (Mulch Anchoring): Mulch anchoring shall be performed immediately following mulch application to minimize loss by wind or water. This may be done by one of the following methods (listed by preference), depending upon size of 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 two (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 be used on the contour if possible.

ii) Wood cellulose fiber may be used for anchoring straw. The fiber binder shall be applied at a net dry weight of 750 pounds/acre. The wood cellulose fiber shall be mixed with water and the mixture shall contain a maximum of 50 pounds of wood cellulose fiber per 100 gallons of water.

iii) Application of liquid binders should be heavier at the edges where wind catches mulch, such as in valleys and on crests of banks. The remainder of area should be appear uniform after binder application. Synthetic binders -such as Acrylic DLR (Agro-Tack), DCA-70, Petroset, Terra Tax II, Terra Tack AR or other approved equal may be used at rates recommended by the manufacturer to anchor mulch.

iv) Lightweight plastic netting may be stapled over the mulch according to manufacturer's recommendations. Netting is usually abailable in roll 4' to 15' wide and 300 to 3,000 feet long.

SECTION II -TEMPORARY SEEDING

Vegetation -annual grass or grain used to provide cover on disturbed areas for up to 12 months. For longer duration of vegetative cover, Permanent Seeding is required.

A. Seed Mixtures - Temporary Seeding

i) Select one or more of the species or mixtures listed in Table 26 for the appropriate Plant Hardiness Zone (from Figure 5) 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 plans and completed, then Table 26 must be put on the plans.

ii) For sites having soil tests performed, the rates shown on this table shall be deleted and the rates recommended by the testing agency shall be written in. Soil tests are not required for Temporary Seeding.

SECTION III: PERMANENT SEEDING

Seeding grass and legumes to establish ground cover for a minimum period of one year on disturbed areas generally receiving low maintenance.

A. Seed Mixtures -Permanent Seeding

i) Select one or more of the species or mixtures listed in Table 25 for the appropriate Plant Hardiness Zone (from Figure 5) and enter them in the Permanent Seeding summary below, along with application rates and seeding dates. Seeding depths can be estimated using Table 26. If this Summary is not put on the construction plans and completed, then Table 25 must be put on the plans. Additional planting specifications for exceptional sites such as shorelines, streambanks, or dunes or for special purposes such as wildlife or aesthetic treatment may be found in USDA-SCS Technical Field Office Guide, Section 342- Critical Area Planting. For special lawn maintenance areas, see Sections IV Sod and V Turfgrass.

ii) For sites having disturbed area over 5 acres, the rates shown on this table shall be deleted and the rates recommended by the soil testing agency shall be written in.

iii) For areas receiving low maintenance, apply ureaform fertilizer (46-0-0) at 3 1/2 lbs/1000 sq.ft. (150 lbs/ac), in addition to the above soil amendments shown in the table below, to be performed at the time of seeding.

Permanent Seed Mixture (For Hardiness Zone 7a) (From Table 25, MDE 1994)					Fertilizer Rate (10-20-20)			Lime Rate
No.	Species	Application Rate (lb/ac)	Seeding Dates	Seeding Depths	N	P20S	K20	
7	Tall Fescue	110	3/1-11/15	1-2 inches	90 lb/ac (2.0 lb/1000sf)	175 lb/ac (4 lb/1000 sf)	175 lb/ac (4 lb/1000 sf)	2 tons/ac (100 lb/1000 sf)
	Weeping Lovegrass	3						
	Sereicia Lespedeza	20						

Temporary Seed Mixture (For Hardiness Zone 7a) (From Table 25, MDE 1994)					Fertilizer Rate (10-10-10)	Lime Rate
No.	Species	Application Rate (lb/ac)	Seeding Dates	Seeding Depths		
2	Rye plus Foxtail Millet	150	2/1-11/30	1/4-1/2 in.	600 lb/ac (15 lb/1000sf)	2 tons/ac (100 lb/1000 sf)

SECTION IV -SOD: TO PROVIDE QUICK COVER ON DISTURBED AREAS (2:1 GRADE OR FLATTER).

A. General specifications

i) Class of turf grass sod shall be Maryland or Virginia State Certified or Approved. Sod labels shall be made available to the job foreman and inspector.

ii) Sod shall be machine cut at a uniform soil thickness of 3/4", plus or minus 1/4", at the time of cutting. Measurement for thickness shall exclude top growth and thatch. Individual pieces of sod shall be cut to the suppliers width and length. Maximum allowable deviation from standard widths and lengths shall be 5 percent. Broken pads and torn or uneven ends will not be acceptable.

iii) Standard size sections of sod shall 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.

iv) Sod shall not be harvested or transplanted when moisture content (excessively dry or wet) may adversely affect its survival.

v) Sod shall be harvested, delivered, and installed within a period of 36 hours. Sod not transplanted within this period shall be approved by an agronomist or soil scientist prior to its installation.

B. Sod Installation

i) During periods of excessively high temperature or in areas having dry subsoil, the subsoil shall be lightly irrigated immediately prior to laying the sod.

ii) The first row of sod shall be laid in a straight line with subsequent rows placed parallel to and tightly wedged against each other. Lateral joints shall be staggered 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.

iii) Wherever possible, sod shall be laid with the long edges parallel to the contour and with staggering joints. Sod shall be rolled and tamped, pegged or otherwise secured to prevent slippage on slopes and to ensure solid contact between sod roots and the underlying soil surface.

iv) Sod shall be watered immediately following rolling or tamping until the underside of the new sod pad and soil surface below the sod are thoroughly wet. The operations of laying, tamping and irrigating for any piece of sod shall be completed within eight hours.

C. Sod Maintenance

i) In the absence of adequate rainfall, watering shall be performed daily or as often as necessary during the first week and in sufficient quantities to maintain moist soil to a depth of 4" .Watering should be done during the heat of the day to prevent wilting.

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

iii) The first mowing of sod should not be attempted until the sod is firmly rooted. No more than 113 of the grass leaf shall be removed by the initial cutting or subsequent cuttings. Grass height shall be maintained between 2" and 3" unless otherwise specified.

GEOTEXTILE FABRICS MATERIALS SPECIFICATIONS:

CLASS	APPARENT OPENING SIZE MM. MAX	GRAB TENSILE STRENGTH LB. MIN	BURST STRENGTH P.S.I. MIN
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	0.40-0.80*	90	190

*US Std Sieve CW - 02215 ** 0.50 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. 4x8" specimen, 1x2" clamps, 12"/min. strain rate in both principal directions of geotextile fabric.

-Burst strength ASTM D 3786

The fabric shall be inert to commonly encountered chemicals and hydrocarbons, and will be rot and mildew resistant. It shall be manufactured from fibers consisting of long chain synthetic polymers, and composed of a minimum of 85 % by weight of polyolephins, polyesters, or polyamides. The geotextile fabric shall resist deterioration from ultraviolet exposure.

In addition, Classes A through E shall have a 0.01 cm./sec. minimum permeability when tested in accordance with MSMT 507, and an apparent minimum elongation of 20 percent (20 %) when tested in accordance with the grab tensile strength requirements listed above.

SILT FENCE MATERIALS:
Class F geotextile fabrics for silt fence shall have a 50 lb./in. minimum tensile strength and a 20 lb./in. minimum tensile modules when tested in accordance with MSMT 509. The material shall also have a 0.3 gal./ft.2/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 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 of 0 to 120 degrees F.

HOWARD SOIL CONSERVATION DISTRICT STANDARD SEDIMENT CONTROL NOTES

1. A minimum of 48 hours notice must be given to the Howard County Department of Inspections, Licenses and Permits, Sediment Control Division prior to the start of any construction (313-1855).
2. All vegetative and structural practices are to be installed according to the provisions of this plan and are to be in conformance with the most current MARYLAND STANDARDS AND SPECIFICATIONS FOR SOIL EROSION AND SEDIMENT CONTROL and revisions thereto.
3. Following intial soil disturbance or re-disturbance, permanant or temporary stabilization shall be completed within: a) 7 calender days for all perimeter sediment control structures, dikes, perimeter slopes and all slopes greater than 3:1, b) 14 days as to all other disturbed or graded areas on the project site.
4. All sediment traps/basins shown must be fenced and warning signs posted around their perimeter in accordance with Vol 1, Chapter 12 of the HOWARD COUNTY DESIGN MANUAL, Storm Drainage.
5. All disturbed areas must be stabilized within the time period specified above in accordance with the 1994 MARYLAND STANDARDS AND SPECIFICATIONS FOR SOIL EROSION AND SEDIMENT CONTROL for permanent seeding (Sec. 51), sod (Sec. 54), temporary seeding (Sec. 50) and mulching (Sec.52). Temporary stabilization and mulch alone can only be done when recommended seeding dates do not allow for proper germination and establishment of grasses.
6. All sediment control structures are to remain in place and are to be maintained in operative condition until permission for their removal has been obtained from the Howard County Sediment Control Inspector.
7. Site Analysis:

Total Area of site	1.6 acres.
Area Disturbed	1.2 acres.
Area to be roofed or paved	0 acres.
Area to be vegetatively stabilized	1.2 acres.
Total Cut	1,760 Cu. Yds.
Total Fill	495 Cu. Yds.
Offsite waste/borrow area location	To be Provided by the Contractor for Approval by the Project Manager

8. Any sediment control practice which is disturbed by grading activity for placement of utilities must be repaired on the same day of disturbance.
9. Additional sediment control must be provided, if deemed necessary by the Howard County Sediment Control Inspector.
10. On all sites with disturbed areas in excess of 2 acres, approval of the inspection agency shall be requested upon completion of installation of perimeter erosion and sediment controls, but before proceeding with any other earth disturbance or grading . Other building or grading inspection approvals may not be authorized until this initial approval by the inspection agency is made.
11. 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.

BY THE DEVELOPER :

I/WE CERTIFY THAT ALL DEVELOPMENT AND/OR CONSTRUCTION, WILL BE DONE ACCORDING TO THESE PLANS, AND THAT ANY 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 BEGINNING THE PROJECT. I SHALL ENGAGE A REGISTERED PROFESSIONAL ENGINEER TO SUPERVISE POND CONSTRUCTION AND PROVIDE THE HOWARD SOIL CONSERVATION DISTRICT WITH AN "AS-BUILT" PLAN OF THE POND WITHIN 30 DAYS OF COMPLETION. I ALSO AUTHORIZE PERIODIC ON-SITE INSPECTIONS BY THE HOWARD SOIL CONSERVATION DISTRICT.

Howard E. Saltzman 4/14/04
DEVELOPER DATE

BY THE ENGINEER :

I CERTIFY THAT THESE PLANS FOR POND CONSTRUCTION, EROSION AND SEDIMENT CONTROL, REPRESENTS A PRACTICAL AND WORKABLE PLAN BASED ON MY PERSONAL KNOWLEDGE OF THE SITE CONDITIONS. THIS PLAN WAS PREPARED IN ACCORDANCE WITH THE REQUIREMENTS OF THE HOWARD 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 AN "AS-BUILT" PLAN OF THE POND WITHIN 30 DAYS COMPLETION.

ENGINEER/TIMOTHY SCHUELER (MD P.E. 20207) 3/26/04
DATE

THESE PLANS HAVE BEEN REVIEWED FOR THE HOWARD SOIL CONSERVATION DISTRICT AND MEET THE TECHNICAL REQUIREMENTS FOR SMALL POND CONSTRUCTION, SOIL EROSION AND SEDIMENT CONTROL.

USDA - NATURAL RESOURCES CONSERVATION SERVICE 4/22/04
DATE

THESE PLANS FOR SMALL POND CONSTRUCTION, SOIL EROSION AND SEDIMENT CONTROL MEET THE REQUIREMENTS OF THE HOWARD SOIL CONSERVATION DISTRICT.

HOWARD SOIL CONSERVATION DISTRICT 4/22/04
DATE

HOWARD COUNTY DPW - ENVIRONMENTAL SERVICES
6751 COLUMBIA GATEWAY DRIVE, SUITE 514
COLUMBIA, MD 21046
PHONE: (410) 313-6417
ATTN: RICHARD POWELL

COLUMBIA GATEWAY
PARCEL E-2
ELECTION DISTRICT #6
TAX MAP 43

Columbia Gateway SWM Pond Retrofit

Sediment Control Specifications

SDP 89-80

DATE: 03/04
DESIGNED: ACD/TCS
DRAFTED: ACD/GBN
CHECKED: TCS
BASE DATA: J.A. RICE

NO.	REVISIONS	BY	DATE

CPJ Associates
CPJ/EQR Environmental Services Division
STREAM RESTORATION STORMWATER MANAGEMENT INSPECTION
895 QUINCE ORCHARD ROAD GAITHERSBURG MARYLAND 20878
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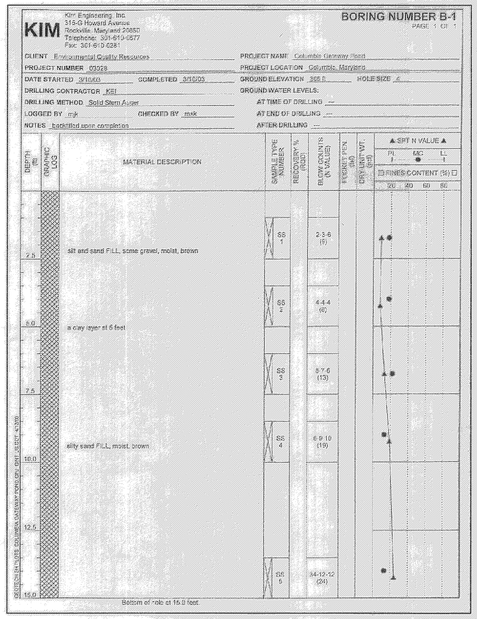
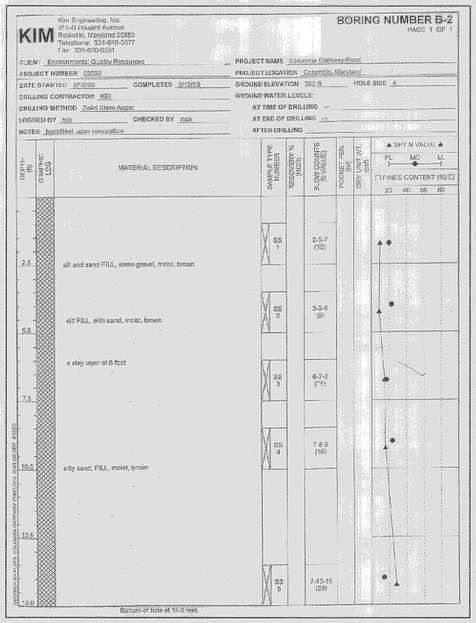
SILVER SPRING, MD FREDERICK, MD FAIRFAX, VA

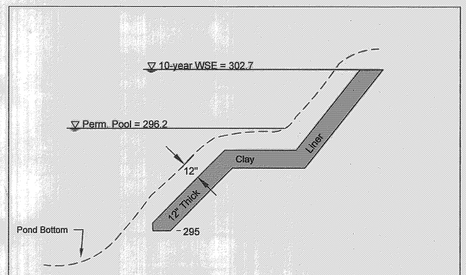
SCALE AS SHOWN
SHEET 7 OF 8 SHEETS
JOB NO. 1411



Profile SB#1



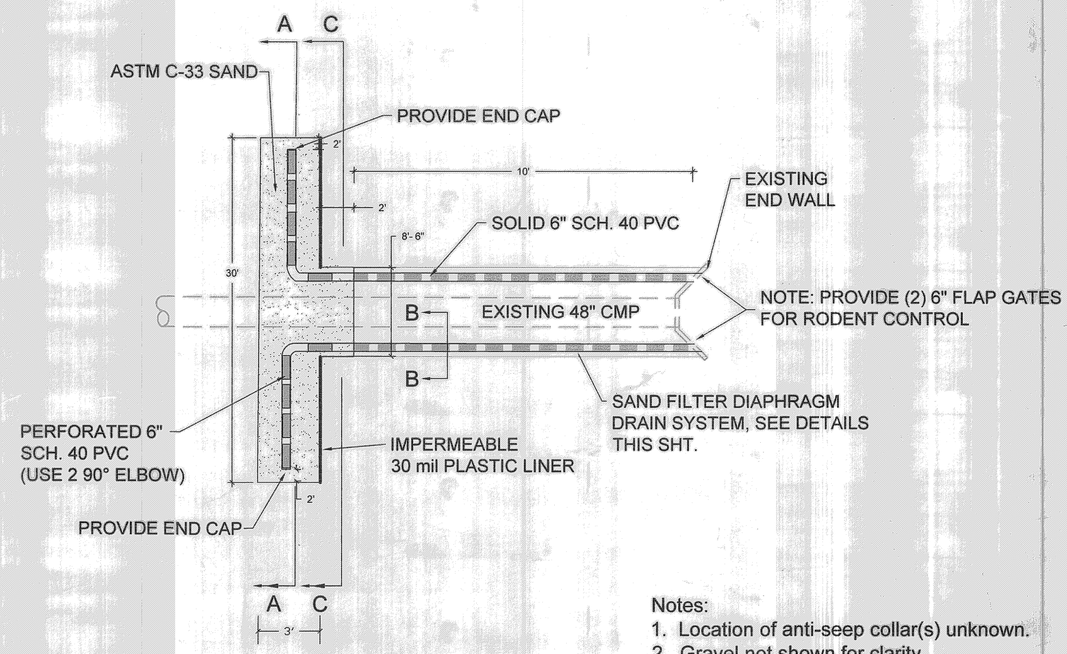
Profile SB#2



NOTE: Excavate 2' to place liner
Place 12" of clay material
Backfill with soil suitable for grass growth

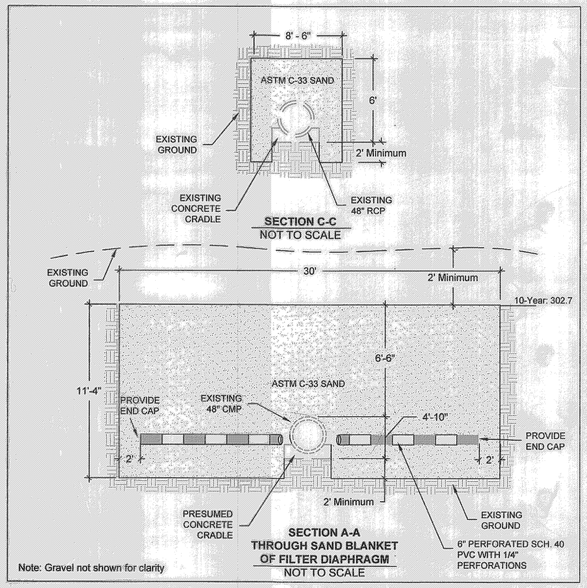
LOWER PERMEABILITY LINER SPECIFICATIONS
- One foot of clay with a permeability of less than 10^{-7} cm/sec, or;
- Two feet of clay with a permeability of less than 10^{-6} cm/sec

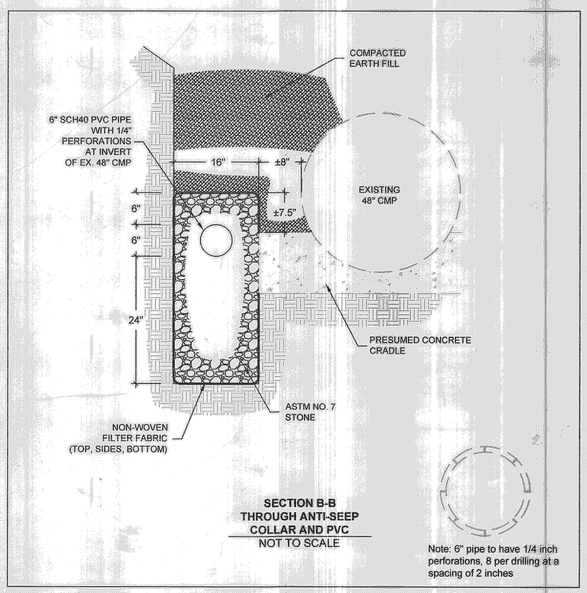
CLAY LINER SCHEMATIC
NOT TO SCALE



Notes:
1. Location of anti-seep collar(s) unknown.
2. Gravel not shown for clarity.

PLAN SCHEMATIC FOR SAND FILTER DIAPHRAGM
NOT TO SCALE





BY THE DEVELOPER :

I/WE CERTIFY THAT ALL DEVELOPMENT AND/OR CONSTRUCTION, WILL BE DONE ACCORDING TO THESE PLANS, AND THAT ANY 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 BEGINNING THE PROJECT. I SHALL ENGAGE A REGISTERED PROFESSIONAL ENGINEER TO SUPERVISE POND CONSTRUCTION AND PROVIDE THE HOWARD SOIL CONSERVATION DISTRICT WITH AN "AS-BUILT" PLAN OF THE POND WITHIN 30 DAYS OF COMPLETION. I ALSO AUTHORIZE PERIODIC ON-SITE INSPECTIONS BY THE HOWARD SOIL CONSERVATION DISTRICT.

Howard E. Saltzman — 4/14/04
DEVELOPER — DATE
Howard E. Saltzman, Chief
PRINTED NAME AND TITLE — Stormwater Management Division

BY THE ENGINEER :

I CERTIFY THAT THIS PLAN FOR POND CONSTRUCTION, EROSION AND SEDIMENT CONTROL, REPRESENTS A PRACTICAL AND WORKABLE PLAN BASED ON MY PERSONAL KNOWLEDGE OF THE SITE CONDITIONS. THIS PLANS WAS PREPARED IN ACCORDANCE WITH THE REQUIREMENTS OF THE HOWARD 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 AN "AS-BUILT" PLAN OF THE POND WITHIN 30 DAYS COMPLETION.

ENGINEER/TIMOTHY SCHUELER (MD P.E.20207) — 3/24/04
DATE
PRINTED NAME AND TITLE

THESE PLANS HAVE BEEN REVIEWED FOR THE HOWARD SOIL CONSERVATION DISTRICT AND MEET THE TECHNICAL REQUIREMENTS FOR SMALL POND CONSTRUCTION, SOIL EROSION AND SEDIMENT CONTROL.

USDA - NATURAL RESOURCES CONSERVATION SERVICE — DATE 4/22/04

THESE PLANS FOR SMALL POND CONSTRUCTION, SOIL EROSION AND SEDIMENT CONTROL MEET THE REQUIREMENTS OF THE HOWARD SOIL CONSERVATION DISTRICT.

HOWARD SOIL CONSERVATION DISTRICT — DATE 4/22/04

HOWARD COUNTY DPW -
ENVIRONMENTAL SERVICES
6751 COLUMBIA GATEWAY DRIVE, SUITE 514
COLUMBIA, MD 21046
PHONE: (410) 313-6417
ATTN: RICHARD POWELL

COLUMBIA GATEWAY
PARCEL E-2
ELECTION DISTRICT #6
TAX MAP 43

Columbia Gateway SWM Pond Retrofit

SDP 89-80

DATE: 03/04
DESIGNED: ACD/TCS
DRAFTED: ACD/GBN
CHECKED: TCS
BASE DATA: J.A. RICE

NO.	REVISIONS	BY	DATE

CPJ Associates
CPJ/EQR Environmental Services Division
STREAM RESTORATION STORMWATER MANAGEMENT INSPECTION
895 QUINCE ORCHARD ROAD GAITHERSBURG MARYLAND 20878
Phone:(301)208-9573 E-mail:info eqrl.com Fax:(301)926-4551
SILVER SPRING, MD FREDERICK, MD FAIRFAX, VA

SCALE

SHEET 8 OF 8 SHEETS

JOB NO. 1411