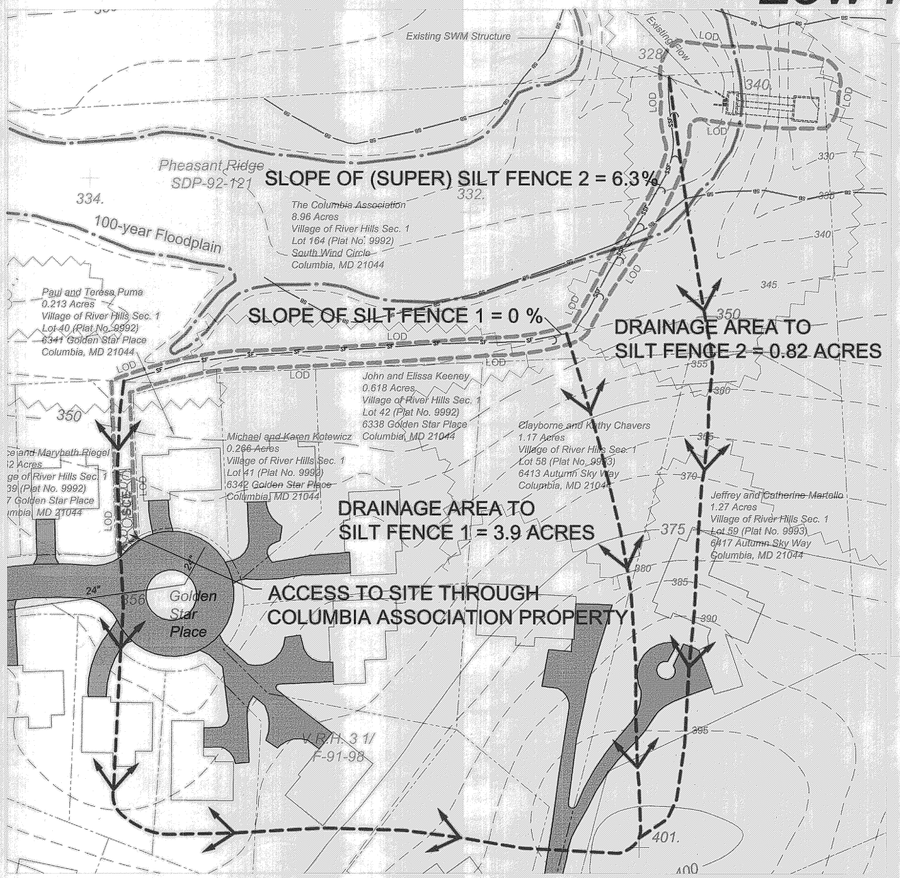
Golden Star SWM Facility

Low Flow Trash Rack Retrofit



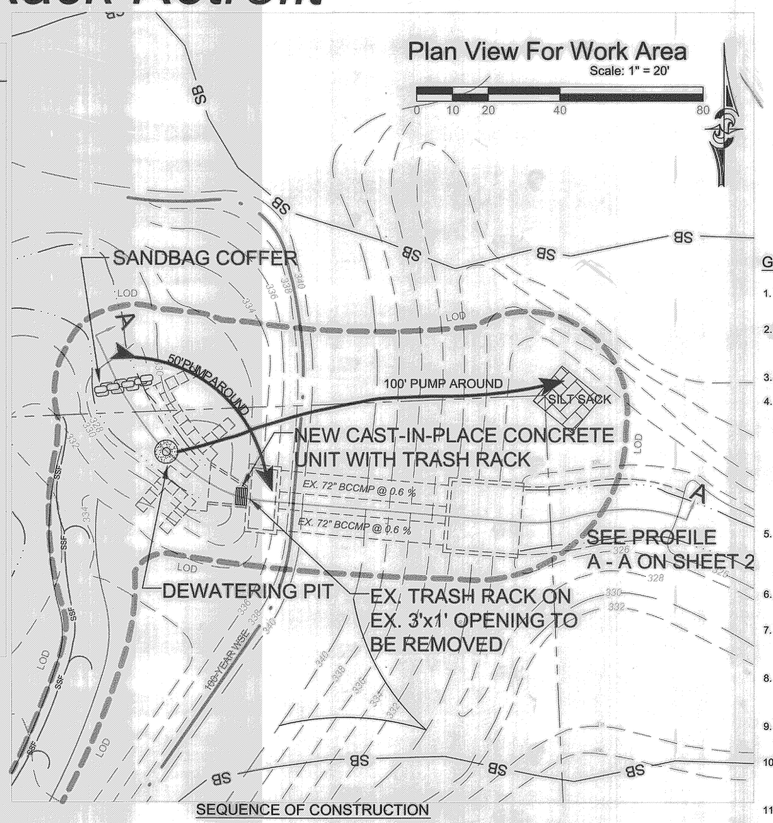
LEGEND

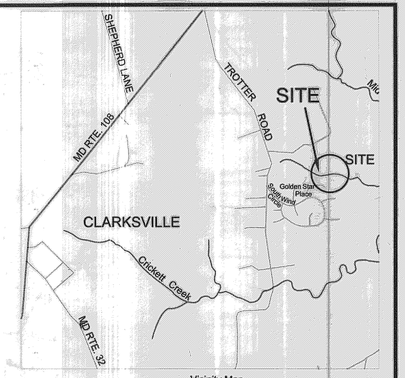
- EXISTING CONTOUR (180)
- LIMITS OF DISTURBANCE (LOD)
- PROPERTY LINE
- STABILIZED CONSTRUCTION ENTRANCE (DETAIL 4/ SHEET 4) (SCE)
- 100-YEAR FLOODPLAIN
- SAND BAG DIVERSION (DETAIL 1/ SHEET 3)
- PUMP AROUND (DETAIL 7/ SHEET 4)
- DEWATERING PIT (DETAIL 2/ SHEET 3)
- SILT SACK (DETAIL 3/ SHEET 4) (Silt Sack)
- EXISTING STREAM BOUNDARY
- SILT FENCE (SF)
- SUPER SILT FENCE (SSF)
- STREAM BUFFER (SB)
- DRAINAGE DIVIDE FOR SEDIMENT CONTROL

Plan View For Work Area

Scale: 1" = 20'

0 10 20 40 80





Vicinity Map
Scale 1"=2000'
Source: ADC Howard County, MD: 21st Edition
Map 19, J11

GENERAL NOTES

1. DE-WATERED AREAS SHALL BE PUMPED TO A SILT SACK OR OTHER ACCEPTABLE DEVICE.
2. UTILITIES HAVE NOT BEEN LOCATED ON THIS PLAN. IT IS THE RESPONSIBILITY OF THE CONTRACTOR TO CONFIRM AND AVOID ALL EXISTING UTILITIES, INCLUDING UNDERGROUND UTILITIES.
3. MDE TRACKING NO.: 04NT0031200461568. PERMIT DATED NOVEMBER 2004.
4. THESE PLANS WERE PREPARED WITH THE FIELD INFORMATION AT THE TIME OF PROJECT SURVEY. IT IS POSSIBLE THAT FIELD CONDITIONS AS OF THE THE DATE CONSTRUCTION VARY FROM THESE PLANS AND IT IS THE CONTRACTOR'S RESPONSIBILITY TO VERIFY FIELD CONDITIONS SUCH AS ELEVATIONS, DEPTHS, ETC. PRIOR TO PROCEEDING WITH WORK. IT IS THE CONTRACTOR'S RESPONSIBILITY TO VERIFY WITH THE SUPPLIER/MANUFACTURER OF ANY PROPRIETARY PRODUCT THAT THEIR PRODUCT WILL FUNCTION PER THE DESIGN FOR THE FIELD CONDITIONS AT TIME OF CONSTRUCTION. THE DESIGN ENGINEER SHOULD BE NOTIFIED IMMEDIATELY IF ANY DEVIATIONS FROM THE DESIGN PLAN ARE FOUND.
5. ALL SPECIFIED AND/OR PROPRIETARY PRODUCTS SHOWN HEREON MAY BE SUBJECT TO SUBSTITUTION WITH OTHER PRODUCTS RECOMMENDED BY THE CONTRACTOR, SUBJECT TO WRITTEN REVIEW AND APPROVAL BY THE DESIGN ENGINEER.
6. ALL CONSTRUCTION SHALL BE IN ACCORDANCE WITH THE LATEST STANDARDS AND SPECIFICATIONS OF HOWARD COUNTY.
7. THE CONTRACTOR SHALL NOTIFY THE DEPARTMENT OF PUBLIC WORKS/BUREAU OF ENGINEERING/CONSTRUCTION INSPECTION DIVISION AT (410) 313-4900 AT LEAST FIVE (5) WORKING DAYS PRIOR TO THE START OF WORK.
8. THE CONTRACTOR SHALL NOTIFY THE MARYLAND DEPARTMENT OF THE ENVIRONMENT, INSPECTION DIVISION AT 410-631-3510 AT LEAST FIVE (5) DAYS PRIOR TO START OF WORK.
9. THE CONTRACTOR SHALL NOTIFY "MISS UTILITY" AT 1-800-257-7777 AT LEAST 48 HOURS PRIOR TO ANY EXCAVATION WORK.
10. THE COORDINATES SHOWN HEREON ARE BASED UPON THE HOWARD COUNTY GEODETIC CONTROL WHICH IS BASED UPON THE MARYLAND STATE PLANE COORDINATE SYSTEM.
11. APPROXIMATE LOCATION OF EXISTING UTILITIES ARE SHOWN. THE CONTRACTOR SHALL TAKE ALL NECESSARY PRECAUTIONS TO PROTECT THE EXISTING UTILITIES AND MAINTAIN UNINTERRUPTED SERVICE. ANY DAMAGE INCURRED DUE TO CONTRACTOR'S OPERATION SHALL BE REPAIRED IMMEDIATELY AT THE CONTRACTOR'S EXPENSE. EXISTING UTILITIES ARE SHOWN BASED ON AVAILABLE INFORMATION.
12. UTILITY LOCATIONS OBTAINED BY PLANS PREPARED BY WHITMAN, REQUARDT AND ASSOCIATES ENGINEERS APRIL 1991, PROVIDED BY HOWARD COUNTY.
13. THE CONTRACTOR SHALL FIELD VISIT AND FAMILIARIZE THEMSELVES WITH THE SITE PRIOR TO BIDDING AND CONSTRUCTION.
14. NO IN-STREAM CONSTRUCTION SHALL OCCUR MARCH 1 THROUGH JUNE 15. INCLUSIVE DURING ANY YEAR.
15. THE APPROPRIATE FEDERAL/STATE AND LOCAL PERMITS MUST BE OBTAINED BEFORE WORK COMMENCES.
16. THE EXISTING TOPOGRAPHY IS TAKEN FROM WHITMAN, REQUARDT AND ASSOCIATES ENGINEERS.
17. THE ORIGINAL GOLDEN STAR SWM FACILITY WAS DESIGNED BY WHITMAN, REQUARDT AND ASSOCIATES ENGINEERS. CONSTRUCTION PLANS ARE DETAILED IN THE 'VILLAGE OF RIVER HILL, SECTION 1, AREA 3, PHASE II', DATED APRIL 1991. COMPUTATIONS WERE RECEIVED BY HOWARD COUNTY LAND DEVELOPMENT/ BUREAU OF ENGINEERING IN DECEMBER 1990 AND APRIL 1991.
18. CONTRACTOR SHALL NOT STORE ANY MATERIAL AND/OR EQUIPMENT WITHIN 2' OF PRIVATE PROPERTY.
19. CONTRACTOR SHALL TAKE CAUTION NOT TO DAMAGE ANY EXISTING TREES, EXCEPT THOSE DESIGNATED ON THE PLAN TO BE REMOVED. ANY DAMAGED TREE SHALL BE REPLACED AT CONTRACTOR'S EXPENSE.
20. 100 YEAR FLOODPLAIN SHOWN HEREON FROM WHITMAN, REQUARDT AND ASSOCIATES ENGINEERS.
21. HOWARD SOIL CONSERVATION DISTRICT DID NOT REVIEW THIS STRUCTURE PER MD-378. HOWARD SCD REVIEWED THIS PLAN FOR SEDIMENT CONTROL COMPLIANCE ONLY.

Plan View For Access

Scale: 1" = 60'

0 30 60 120 240

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	14,632	0.34

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

1. NO EXCESS FILL, CONSTRUCTION MATERIAL, OR DEBRIS SHALL BE STOCKPILED OR STORED IN THE WETLANDS OR BUFFER.
2. PLACE MATERIALS IN A LOCATION AND MANNER WHICH DOES NOT ADVERSELY IMPACT SURFACE OR SUBSURFACE WATER FLOW INTO OR OUT OF THE NONTIDAL WETLAND.
3. DO NOT USE THE EXCAVATED MATERIAL AS BACKFILL IF IT CONTAINS WASTE METAL PRODUCTS, UNSIGHTLY DEBRIS, TOXIC MATERIAL OR ANY OTHER DELETERIOUS SUBSTANCE. IF ADDITIONAL BACKFILL IS REQUIRED, USE CLEAN MATERIAL FREE OF WASTE METAL PRODUCTS, UNSIGHTLY DEBRIS, TOXIC MATERIALS OR ANY OTHER DELETERIOUS SUBSTANCE.
4. PLACE HEAVY EQUIPMENT ON MATS OR SUITABLY OPERATE THE EQUIPMENT TO PREVENT DAMAGE TO THE NONTIDAL WETLANDS OR BUFFER.
5. REPAIR AND MAINTAIN ANY SERVICEABLE STRUCTURE OR FILL SO THERE IS NO PERMANENT LOSS OF NONTIDAL WETLANDS IN EXCESS OF NONTIDAL WETLANDS LOST UNDER THE ORIGINAL STRUCTURE OR FILL.
6. RECTIFY ANY NONTIDAL WETLANDS TEMPORARILY IMPACTED BY ANY CONSTRUCTION.
7. ALL STABILIZATION IN THE WETLAND AND BUFFER SHALL BE OF THE FOLLOWING RECOMMENDED SPECIES: ANNUAL RYEGRASS (LOLIUM MULTIFLORUM), MILLET (SETARIA ITALICA), BARLEY (HORDEUM SP.), OATS (UNIOLA SP.), AND/OR RYE (SECALE CEREALE). THESE SPECIES WILL ALLOW FOR THE STABILIZATION OF THE SITE WHILE ALSO ALLOWING FOR THE VOLUNTARY REVEGETATION OF NATURAL WETLAND SPECIES. OTHER NON-PERSISTENT VEGETATION MAY BE ACCEPTABLE, BUT MUST BE APPROVED BY THE DIVISION. KENTUCKY 31 FESCUE SHALL NOT BE UTILIZED IN THE WETLAND OR BUFFER AREAS. THE AREA SHOULD BE SEEDED AND MULCHED TO REDUCE EROSION AFTER CONSTRUCTION ACTIVITIES HAVE BEEN COMPLETED.
8. AFTER INSTALLATION HAS BEEN COMPLETED, MAKE POST CONSTRUCTION GRADES AND ELEVATIONS OF NONTIDAL WETLANDS THE SAME AS THE ORIGINAL GRADES AND ELEVATIONS IN TEMPORARILY IMPACTED AREAS, WHERE APPLICABLE.
9. TO PROTECT AQUATIC SPECIES, IN-STREAM WORK IS PROHIBITED AS DETERMINED BY THE CLASSIFICATION OF THE STREAM. USE I WATERS: IN-STREAM WORK SHALL NOT BE CONDUCTED DURING THE PERIOD MARCH 1 THROUGH JUNE 15, INCLUSIVE, DURING ANY YEAR.

SEQUENCE OF CONSTRUCTION

1. THE CONTRACTOR SHALL OBTAIN COUNTY AND STATE PERMITS. (0 DAY) TO PROTECT AQUATIC SPECIES, IN-STREAM WORK IS PROHIBITED AS DETERMINED BY THE CLASSIFICATION OF THE STREAM. USE I WATERS: IN-STREAM WORK SHALL NOT BE CONDUCTED DURING THE PERIOD MARCH 1 THROUGH JUNE 15, INCLUSIVE, DURING ANY YEAR. REFER TO MDE PERMIT FOR SPECIFIC PERMIT REQUIREMENTS.
2. CLEAR AND GRUB TO INSTALL THE STABILIZED CONSTRUCTION ENTRANCE, SILT FENCE, PUMP AROUND, DEWATERING PIT, AND SILT SACK. DO NOT DISTURB EXISTING STANDING TREES. THEN INSTALL THE LISTED ITEMS (3 DAYS).
3. PLACE A DOUBLE SANDBAG WALL (2 FT MIN. HEIGHT) ACROSS THE EXISTING STREAM AS SHOWN ON PLANS. RUN PUMP AROUND AND DEWATER PUMP. (1 DAY)
4. REMOVE MATERIAL IN FRONT OF RISER. DRILL FOR REBAR HOLES WITHIN EXISTING SLAB AND RISER FACE (2 DAYS).
5. CAST IN PLACE NEW CONCRETE STRUCTURE AND RUN PUMP AROUND CONTINUOUSLY FOR 24 HOURS. COMPLETE THIS STEP ONLY IF THE NATIONAL WEATHER SERVICE HAS PREDICTED 48 HOURS WITHOUT PRECIPITATION (1 DAY).
6. REMOVE FORMS AND INSTALL TRASH RACKS (0.5 DAY)
7. STABILIZE ALL DISTURBED AREAS PER PERMANENT SEEDING SPECIFICATIONS. (1 DAY)
8. WITH PERMISSION OF THE SEDIMENT AND EROSION CONTROL INSPECTOR, REMOVE THE REMAINING SEDIMENT AND EROSION CONTROLS AND STABILIZE AREAS DISTURBED BY THIS PROCESS. (1 DAY)

TOTAL = 9.5 DAYS

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.

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

USDA - NATURAL RESOURCES CONSERVATION SERVICE — DATE 3/29/05

THESE PLANS FOR STORMWATER MANAGEMENT, SOIL EROSION AND SEDIMENT CONTROL MEET THE REQUIREMENTS OF THE HOWARD SOIL CONSERVATION DISTRICT.

HOWARD SOIL CONSERVATION DISTRICT — DATE 3/29/05

BY THE ENGINEER :

I CERTIFY THAT THIS PLAN FOR STORMWATER MANAGEMENT, 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.

ENGINEER/TIMOTHY SCHUELER P.E. # 20207 — DATE 3/10/05

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 ALSO AUTHORIZE PERIODIC ON-SITE INSPECTIONS BY THE HOWARD SOIL CONSERVATION DISTRICT.

OWNER — DATE 3/18/05

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

BY THE OWNER :

Lot 164 Group 80 Plat Number 9992
Village of River Hill
5th Election District
Howard County, MD

Golden Star SWM Facility
Low Flow Trash Rack Retrofit
Village of River Hill
Columbia, Maryland

DATE: 11/04
DESIGNED: TCS/CAW
DRAFTED: CAW
CHECKED: TCS
BASE DATA: W. R. and Ass. Engineers

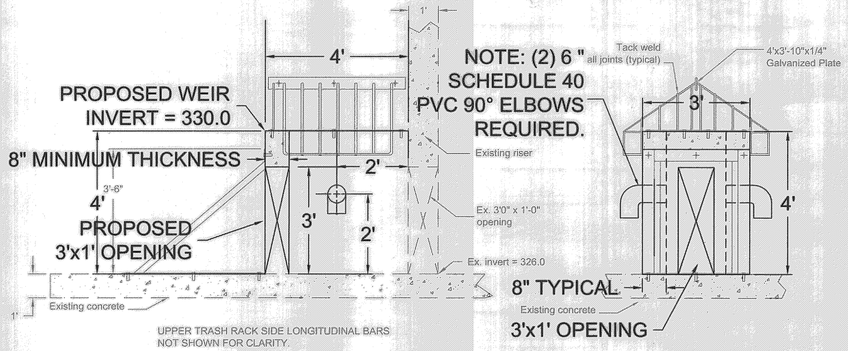
NO.	REVISIONS	BY	DATE

STATE OF MARYLAND — TIMOTHY C. SCHUELER — No. 20207 — REGISTERED PROFESSIONAL ENGINEER — 3/10/05

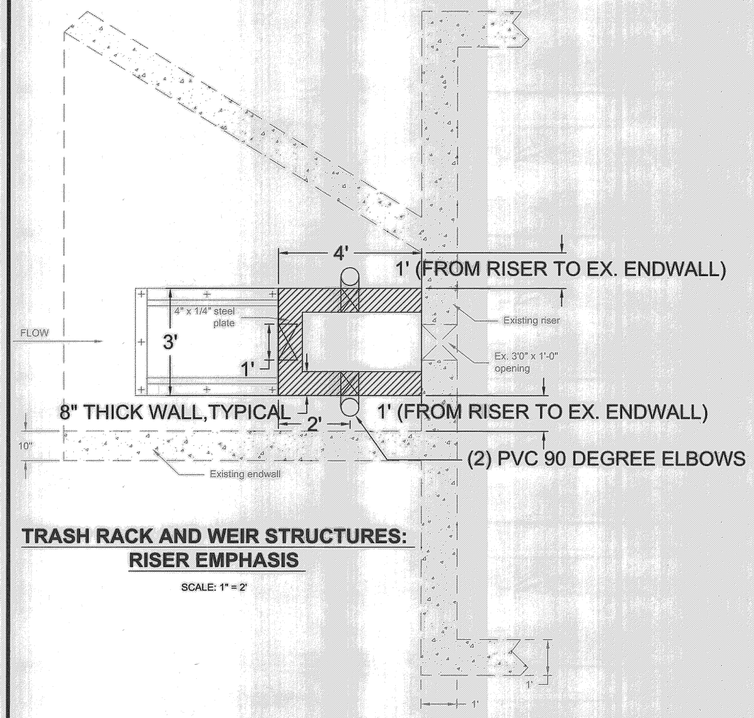
CPJ Associates

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

SCALE AS SHOWN
SHEET 1 OF 5 SHEETS
JOB NO. 34-514

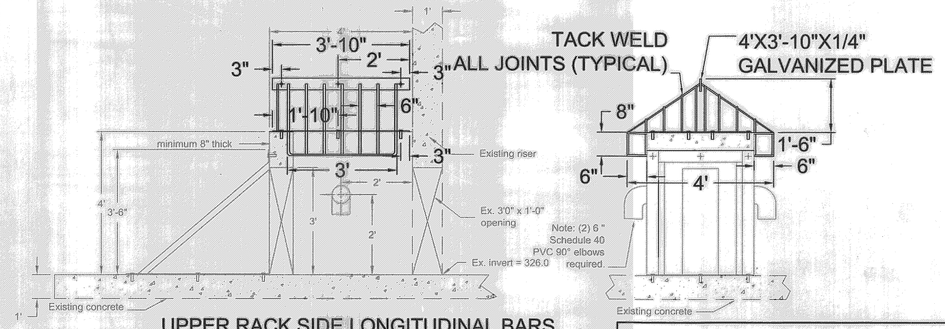


UPPER TRASH RACK SIDE LONGITUDINAL BARS
NOT SHOWN FOR CLARITY.

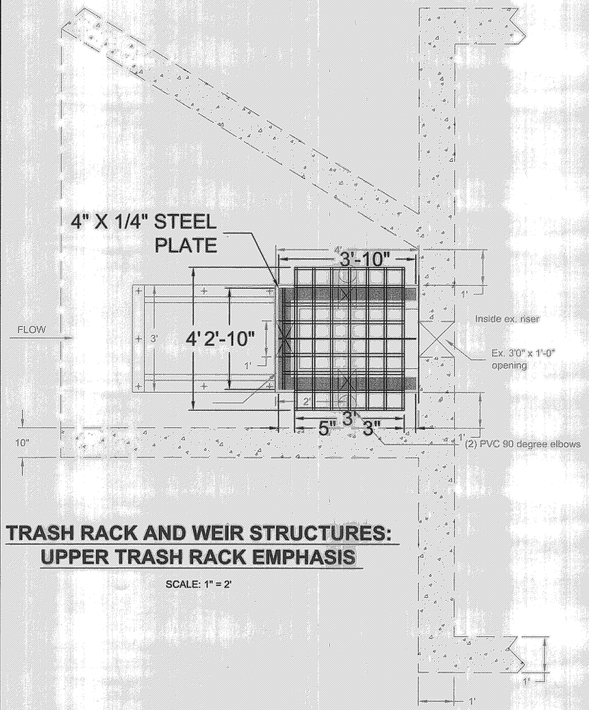


TRASH RACK AND WEIR STRUCTURES: RISER EMPHASIS

SCALE: 1" = 2'

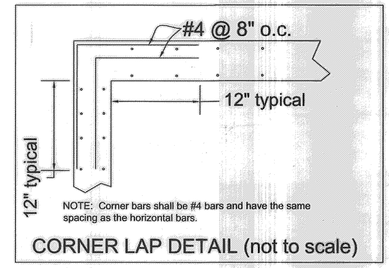


UPPER RACK SIDE LONGITUDINAL BARS
NOT SHOWN FOR CLARITY.

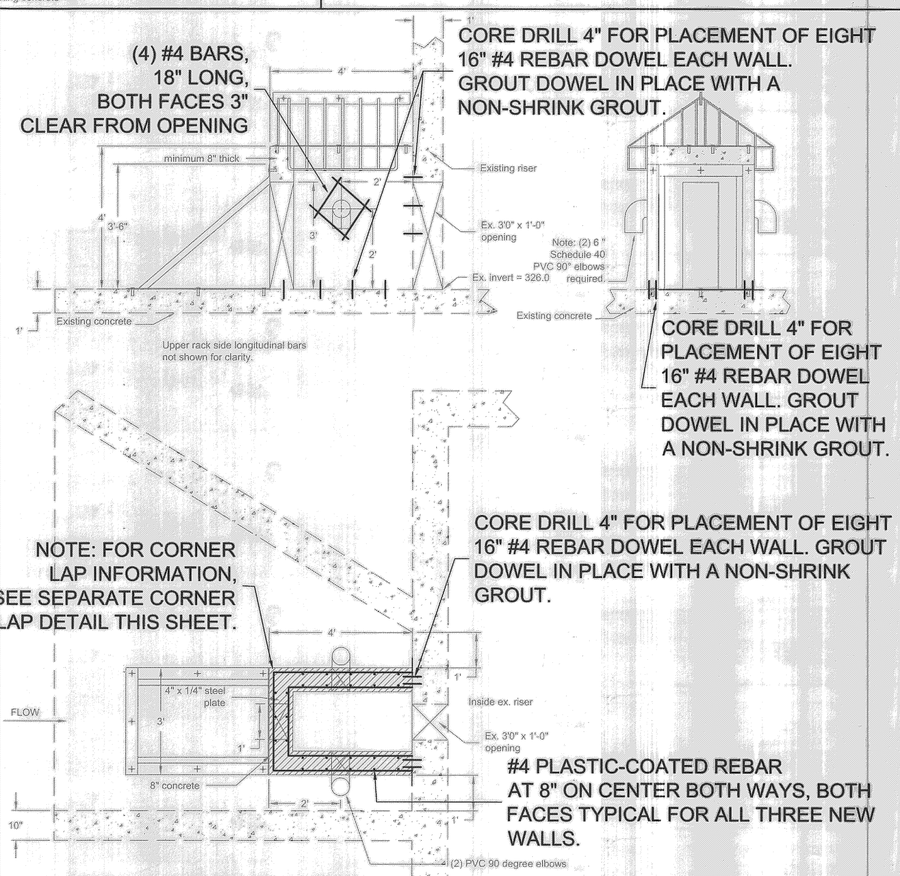


TRASH RACK AND WEIR STRUCTURES: UPPER TRASH RACK EMPHASIS

SCALE: 1" = 2'



CORNER LAP DETAIL (not to scale)



TRASH RACK AND WEIR STRUCTURES: REINFORCEMENT EMPHASIS

SCALE: 1" = 2'

NOTE: WALL STEEL ONLY SHOWN
THIS VIEW FOR CLARITY.

STRUCTURAL CERTIFICATION FOR DESIGN

BY THE ENGINEER :

I HEREBY CERTIFY THAT THE CONCRETE VAULT SHOWN HAS BEEN DESIGNED WITH APPROPRIATE DIMENSIONS AND ADEQUATE REINFORCING STEEL.

ENGINEER/TIMOTHY SCHUELER P.E. # 20207 DATE

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

USDA - NATURAL RESOURCES CONSERVATION SERVICE DATE

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

HOWARD SOIL CONSERVATION DISTRICT DATE

Cast in Place Concrete Notes

1. Proper forms (MSHA Standard, Section 414.03.02) shall be laid providing the required depth for the concrete as shown on the plans. Forms shall be heavy and secured in place so as not to move during the construction process.

2. Maximum slump for concrete at the time of placement shall be 4 inches.

3. Concrete shall be laid in a temperature range between 50° and 90° F. Heaters and/or blankets may be used if placed under the supervision of a qualified geotechnical engineer.

4. All concrete shall have a compressive strength of 4,500 PSI @ 28 days in accordance with MSHA Standards (most current version) Section 902.10, and Table 902A. The Contractor shall send test cylinders for testing (slump, compressive strength, air content) and the results shall be forwarded to the Design Engineer.

5. The base on which concrete is to be poured shall be free of water, mud, debris, loose materials, oil, frost and ice.

6. The Design Engineer shall be notified at least 24 hours in advance of concrete laying. Form-work must be approved for lines and grades by the Design Engineer prior to pouring cement. Concrete shall be laid only in the presence of the Design Engineer.

7. A qualified geotechnical engineer shall take three cylinder samples per day of pouring concrete for testing and approval.

8. If any concrete is found to be defective, the contractor will, at the direction of the Design Engineer or Inspector, remove and repair defective concrete at no cost to the Owner. Concrete shall be deemed defective if the surface is not finished properly to the satisfaction of the Design Engineer, if it does not meet the strength requirements, or if it is not cured properly.

9. Reinforcing steel shall conform to ASTM A-615 grade 60. Steel reinforcement shall be placed in accordance with the plans. Reinforcing shall be spliced together with at least 12" overlap. All reinforcement will stop 1.5" inside the edges of the concrete slab. Reinforcement will have to be approved by the Design Engineer. All reinforcement shall correspond to MSHA Standards, Section 908, most current version.

10. Waterproofing: The entire outside face of the concrete box shall be made waterproof by the application of Ditchithane or approved equal to be placed on the box as per manufacturer's specifications. The Contractor may also substitute the method described on MSHA Standard Specifications for Construction and Materials, as amended to date (MSHA, Section 417.03.04).

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

Lot 164 Group 80 Plat Number 9992
Village of River Hill
5th Election District
Howard County, MD

Golden Star SWM Facility

Low Flow Trash Rack Retrofit

Village of River Hill
Columbia, Maryland

DATE:	11/04
DESIGNED:	TCS/CAW
DRAFTED:	CAW
CHECKED:	TCS
BASE DATA:	W. R. and Ass. Engineers

NO.	REVISIONS	BY	DATE

STATE OF MARYLAND — TIMOTHY C. SCHUELER — No. 20207 — REGISTERED PROFESSIONAL ENGINEER

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@eqri.com Fax:(301)926-4551
SILVER SPRING, MD FREDERICK, MD FAIRFAX, VA

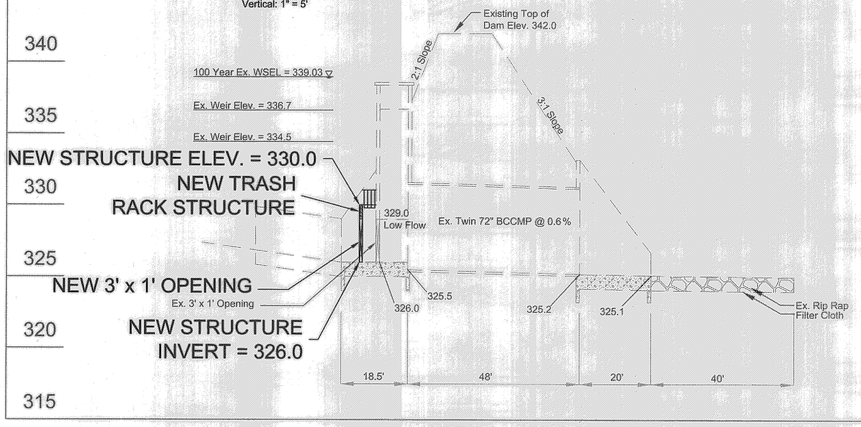
SCALE
AS SHOWN

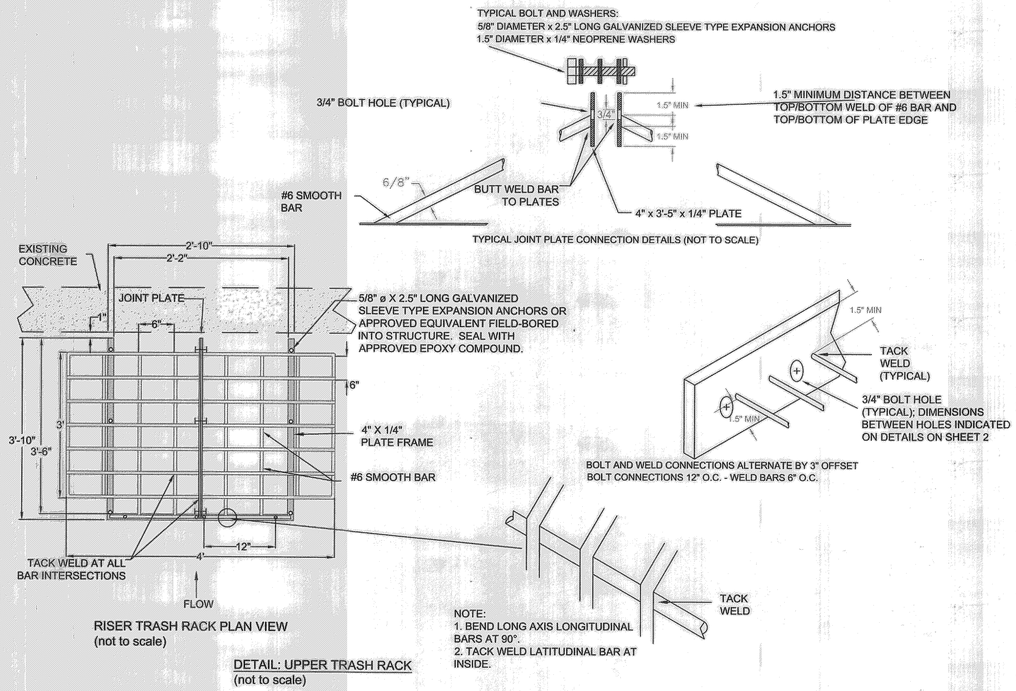
SHEET
2
OF 5 SHEETS

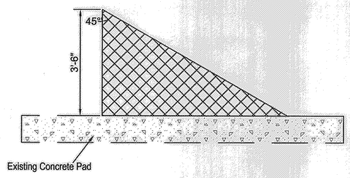
JOB NO.
34-514

PROFILE A -A ALONG EXISTING CENTERLINE SPILLWAY

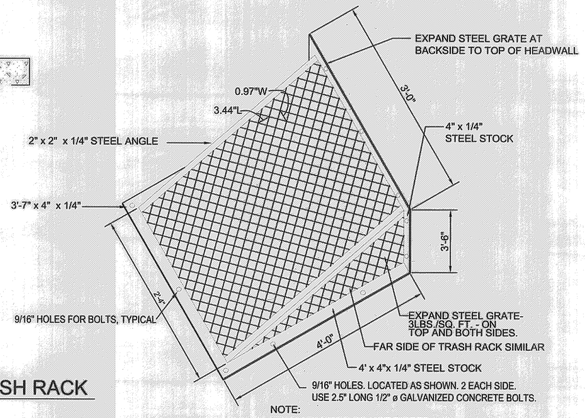
Scale: Horizontal: 1" = 20'
Vertical: 1" = 5'







Profile View Through Ex. Slab



DETAIL: LOW FLOW TRASH RACK

NOT TO SCALE

LOW FLOW ORIFICE CALCULATIONS

1. Area to protect (3' x 1') = 3 square feet
2. Surface area of trash rack is more than 21sq. ft. >15 sq.ft. (ok); 15 sq. ft. is five times the area of the inflow opening.

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 1994 MARYLAND STANDARDS FOR SOIL EROSION AND SEDIMENT CONTROL AND REVISIONS THERETO.
3. FOLLOWING INITIAL SOIL DISTURBANCE OR RE-DISTURBANCE, PERMANENT OR TEMPORARY STABILIZATION SHALL BE COMPLETED WITHIN: A)7 CALENDAR DAYS FOR ALL PERIMETER SEDIMENT CONTROL STRUCTURES, DIKES, FOR ALL PERIMETER SLOPES, AND ALL SLOPES STEEPER THAN 3:1, B) 14 DAYS AS TO ALL OTHER AND ALL SLOPES DISTURBED OR GRADED AREAS ON THE PROJECT SITE.
4. ALL SEDIMENT TRAPS/BASINS SHOWN MUST BE FENCED AND WARNING SIGNS POSTED AROUND THE PERIMETER IN ACCORDANCE WITH VOL. 1, CHAPTER 7, 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 SOILE EROSION AND SEDIMENT CONTROL FOR PERMANENT SEEDING, SOD, TEMPORARY SEEDING, AND MULCHING (SEC. G). TEMPORARY STABILIZATION WITH MULCH ALONE SHALL 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	9.0 ACRES
DRAINAGE AREA	305 ACRES
AREA DISTURBED	0.34 ACRES
AREA TO BE ROOFED OR PAVED	0 ACRES
AREA TO BE VEGETATIVELY STABILIZED	0.33 ACRES
TOTAL CUT	0 CU. YARDS
TOTAL FILL	0 CU. YARDS

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 CONTROLS 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 WITHIN ONE WORKING DAY, WHICHEVER IS SHORTER.
12. SITE GRADING WILL BEGIN ONLY AFTER ALL PERIMETER SEDIMENT CONTROL MEASURES HAVE BEEN INSTALLED AND ARE IN A FUNCTIONING CONDITION.
13. SEDIMENT WILL BE REMOVED FROM TRAPS WHEN ITS DEPTH REACHES CLEAN OUT ELEVATION SHOWN ON THE PLANS.
14. CUT AND FILL QUANTITIES PROVIDED UNDER SITE ANALYSIS DO NOT REPRESENT BID QUANTITES. THESE QUANTITES DO NOT DISTINGUISH BETWEEN TOPSOIL, STRUCTURAL FILL OR EMBANKMENTMATERIAL, NOR DO THEY REFLECT CONSIDERATION OF UNDERCUTTING OR REMOVAL OF UNSUITABLE MATERIAL. THE CONTRACTOR SHALL FAMILIARIZE HIMSELF WITH SITE CONDITIONS WHICH MAY AFFECT THE WORK.

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

USDA - NATURAL RESOURCES CONSERVATION SERVICE — DATE

THESE PLANS FOR STORMWATER MANAGEMENT, SOIL EROSION AND SEDIMENT CONTROL MEET THE REQUIREMENTS OF THE HOWARD SOIL CONSERVATION DISTRICT.

HOWARD SOIL CONSERVATION DISTRICT — DATE

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

Lot 164 Group 80 Plat Number 9992
Village of River Hill
5th Election District
Howard County, MD

Golden Star SWM Facility
Low Flow Trash Rack Retrofit
Village of River Hill
Columbia, Maryland

DATE:	11/04
DESIGNED:	TCS/CAW
DRAFTED:	CAW
CHECKED:	TCS
BASE DATA:	W. R. and Ass. Engineers

NO.	REVISIONS	BY	DATE

STATE OF MARYLAND — RICHARD C. POWELL — No. 21237 — REGISTERED PROFESSIONAL ENGINEER — 3.10.05

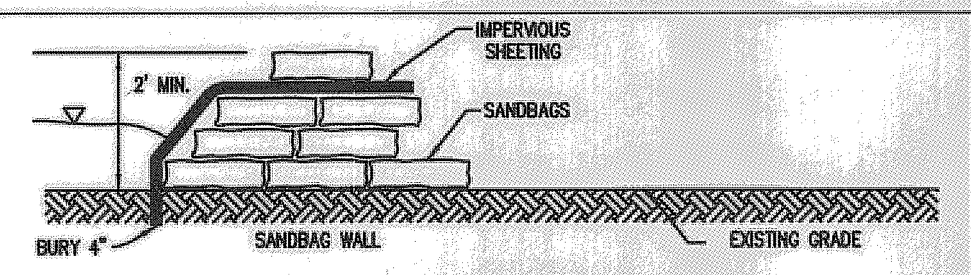
CPJ Associates

CPJ/EQR Environmental Services Division
STREAM RESTORATION • STORMWATER MANAGEMENT • INSPECTION
895 QUINCE ORCHARD ROAD GAITHERSBURG MARYLAND 20878
Phone:(301)208-9573 E-mail:info@eqri.com Fax:(301)926-4851
SILVER SPRING, MD FREDERICK, MD FAIRFAX, VA

SCALE AS SHOWN

SHEET 3 OF 5 SHEETS

JOB NO. 34-514



DESCRIPTION

THE WORK SHALL CONSIST OF INSTALLING A FLOW DIVERSION STRUCTURE WHEN CONSTRUCTION ACTIVITIES TAKE PLACE WITHIN THE STREAM CHANNEL SUCH AS CULVERT CONSTRUCTION OR STORM DRAIN CONSTRUCTION.

MATERIAL SPECIFICATIONS

1. SANDBAGS: SANDBAGS SHALL CONSIST OF MATERIALS WHICH ARE RESISTANT TO ULTRA-VIOLET RADIATION, TEARING AND PUNCTURE AND WOVEN TIGHTLY ENOUGH TO PREVENT LEAKAGE OF FILL MATERIAL (i.e., SAND, FINE GRAVEL, ETC.).
2. SHEETING: SHEETING SHALL CONSIST OF POLYETHYLENE OR OTHER MATERIAL WHICH IS IMPERVIOUS AND RESISTANT TO PUNCTURE AND TEARING.

CONSTRUCTION REQUIREMENTS

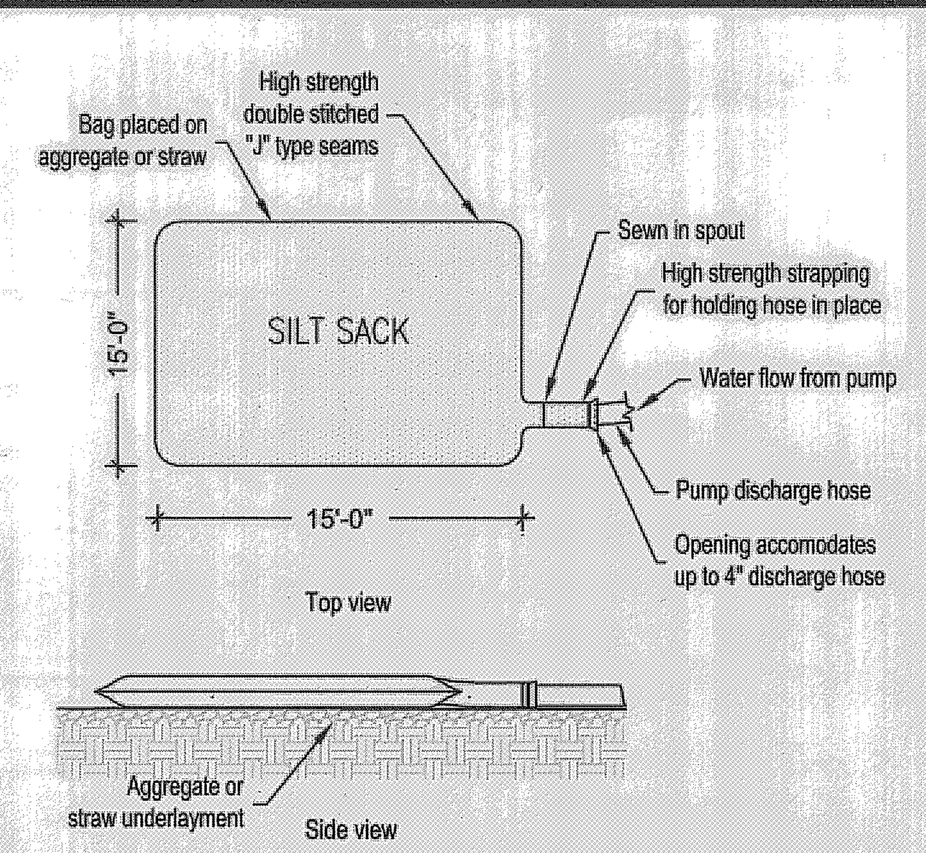
1. ALL EROSION AND SEDIMENT CONTROL DEVICES SHALL BE INSTALLED AS THE FIRST ORDER OF WORK
2. THE WALL STRUCTURE SHALL BE INSTALLED FROM UPSTREAM TO DOWNSTREAM.
3. THE TOP WIDTH OF DIKE IS TO BE FROM 2 – 4 FEET.
4. THE HEIGHT OF THE DIVERSION STRUCTURE SHALL BE TWO TIMES THE DIVERSION PIPE DIAMETER.
5. ALL EXCAVATED MATERIALS SHALL BE DISPOSED OF IN A SCD APPROVED DISPOSAL AREA OUTSIDE THE 100-YEAR FLOODPLAIN UNLESS OTHERWISE APPROVED ON THE PLANS BY THE WRA.
6. ALL DEWATERING OF THE CONSTRUCTION AREA SHALL BE PUMPED FROM A SUMP PIT PRIOR TO RE-ENTERING THE SYSTEM.
7. SHEETING SHALL BE OVERLAPPED SUCH THAT THE UPSTREAM PORTION COVERS THE DOWNSTREAM PORTION WITH AT LEAST AN 18 – INCH OVERLAP.
8. SEDIMENT CONTROL DEVICES ARE TO REMAIN IN PLACE UNTIL ALL DISTURBED AREAS ARE STABILIZED IN ACCORDANCE WITH AN APPROVED SEDIMENT AND EROSION CONTROL PLAN AND THE INSPECTING AUTHORITY APPROVES THE REMOVAL.

SANDBAG WALL

NO SCALE

(1) SANDBAG WALL

Not to scale



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.

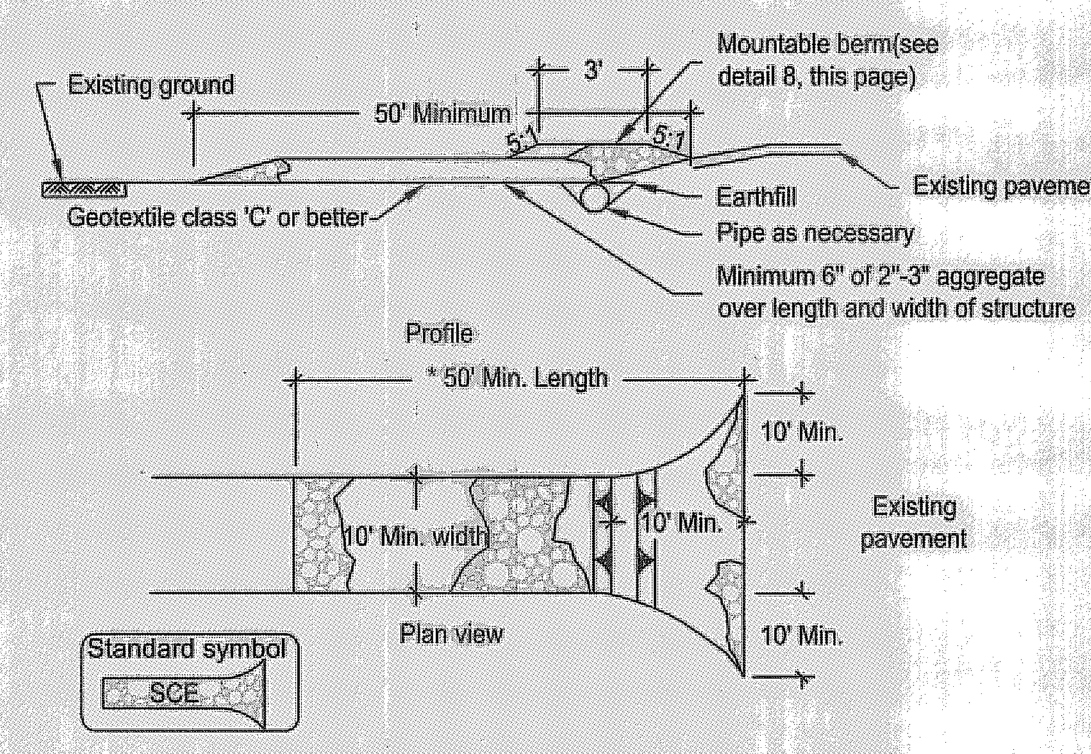
Dewatering/Filter Bag Materials Specifications:
The dewatering/filter bag shall be made of non-woven geotextile with a minimum surface area of 225 square feet per side. All structural seams shall be sewn with a double stitch using a double needle machine with high strength thread. The seam strength shall 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.

(2) SILT CONTROL SYSTEM

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.

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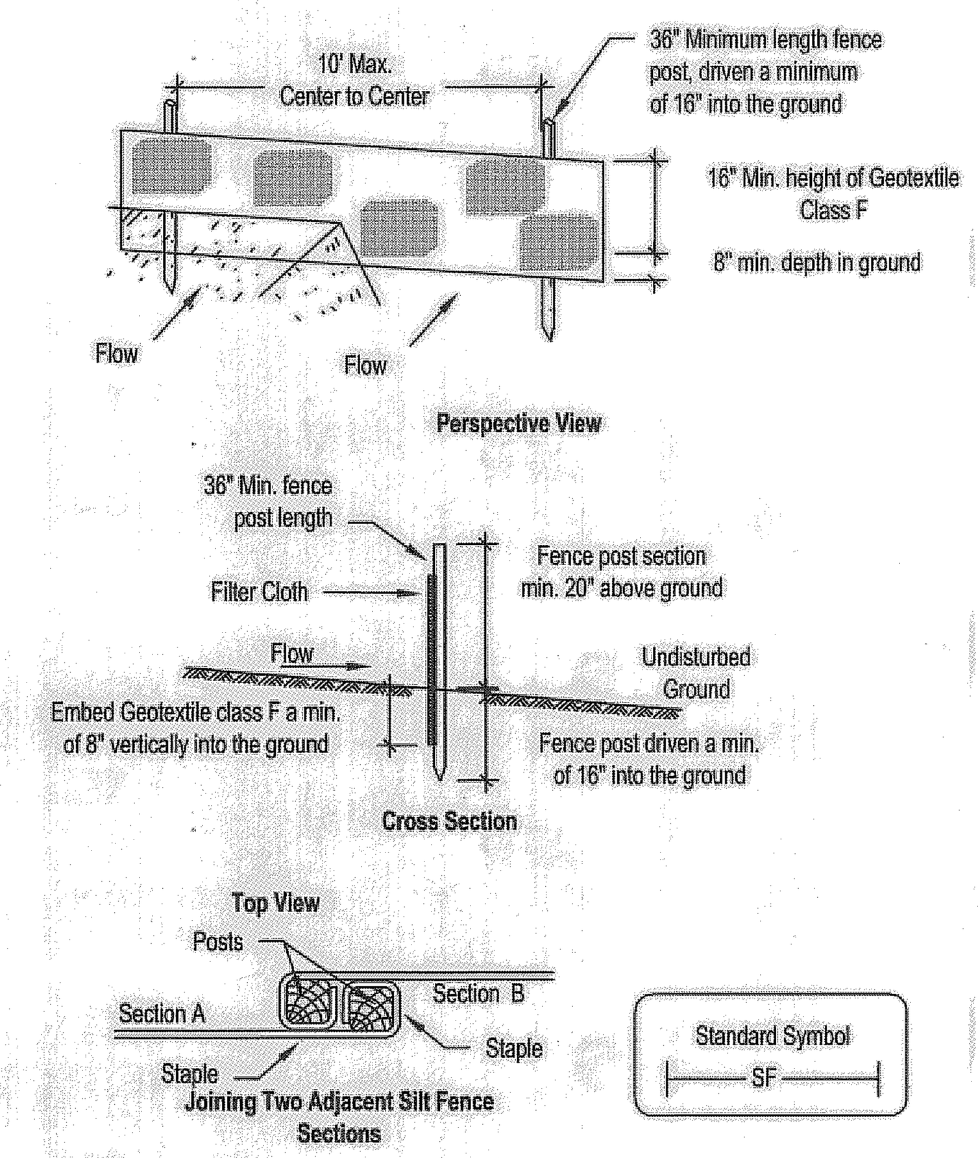
SOIL CONSERVATION SERVICE

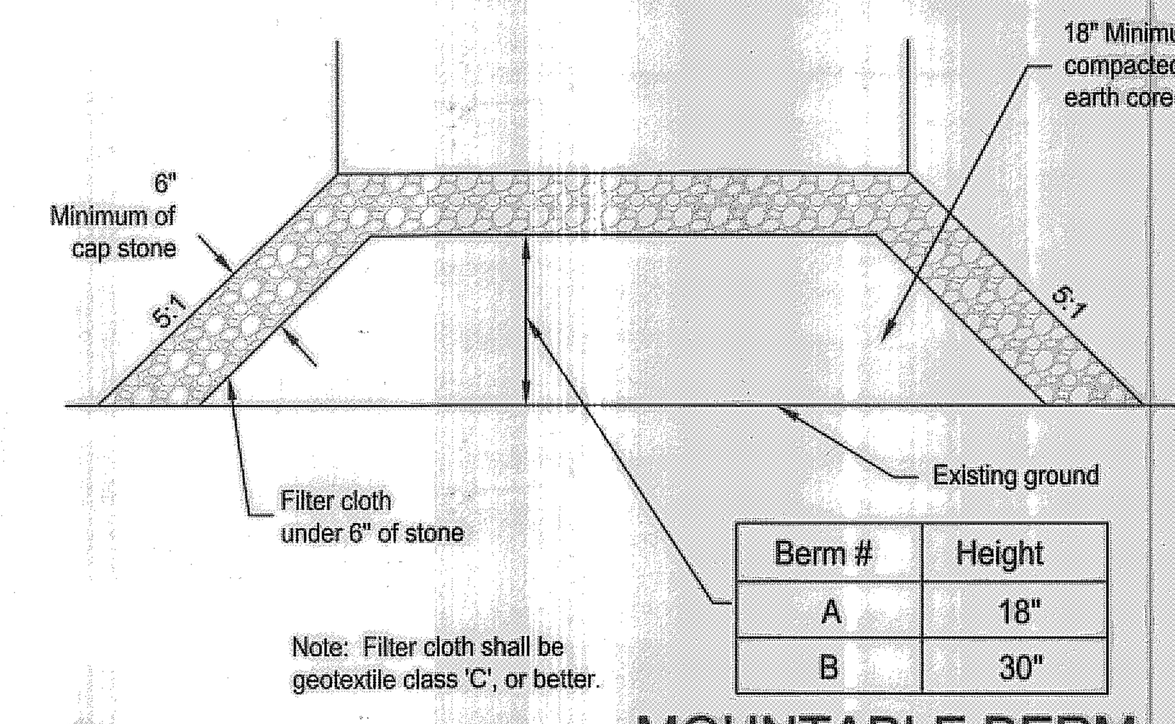
(3) STABILIZED CONSTRUCTION ENTRANCE

Not to scale



(4) SILT FENCE DETAIL

Not to scale



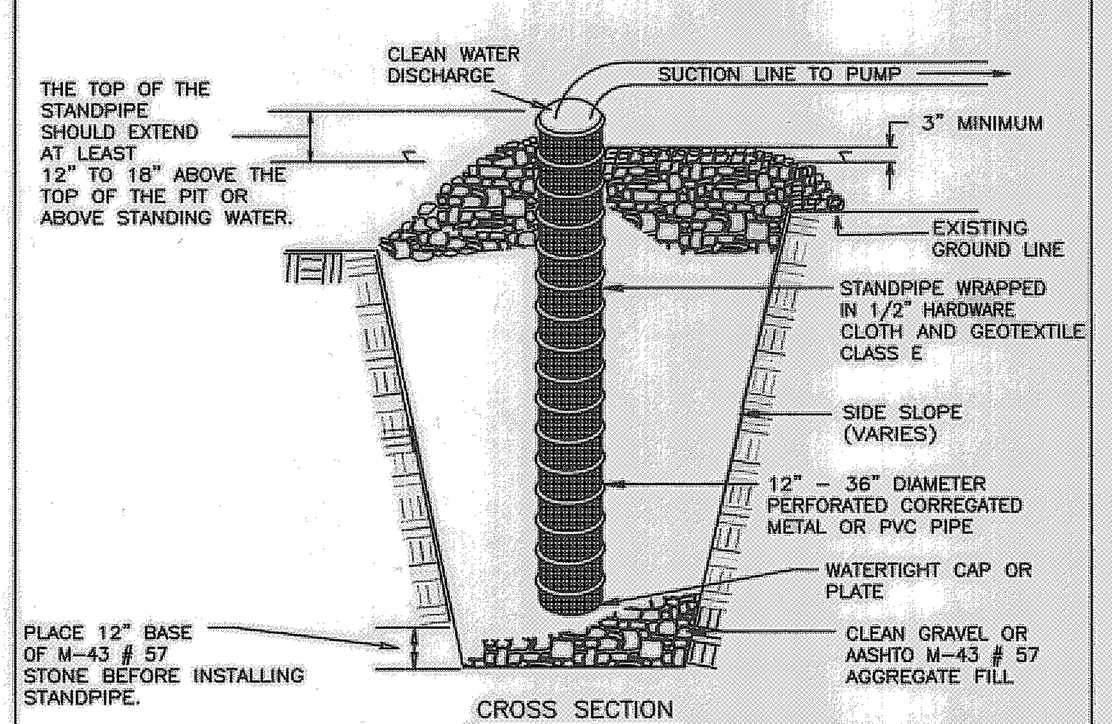
Berm #	Height
A	18"
B	30"

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

(5) MOUNTABLE BERM

Not to scale

DETAIL 20B – SUMP PIT



STANDARD SYMBOL

SP

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.

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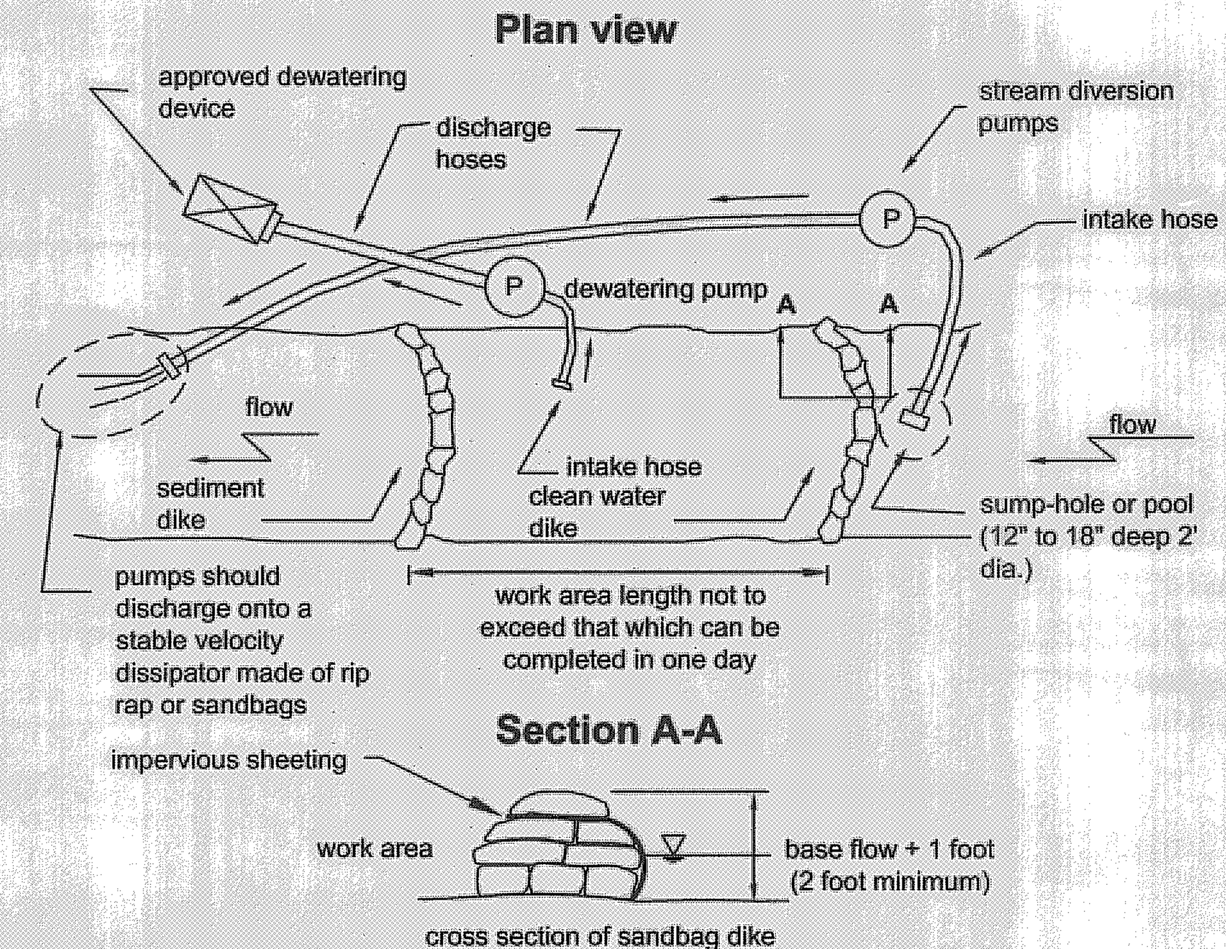
(6) SUMP PIT

Not to scale



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

(8) PUMP-AROUND PRACTICE

Not to scale

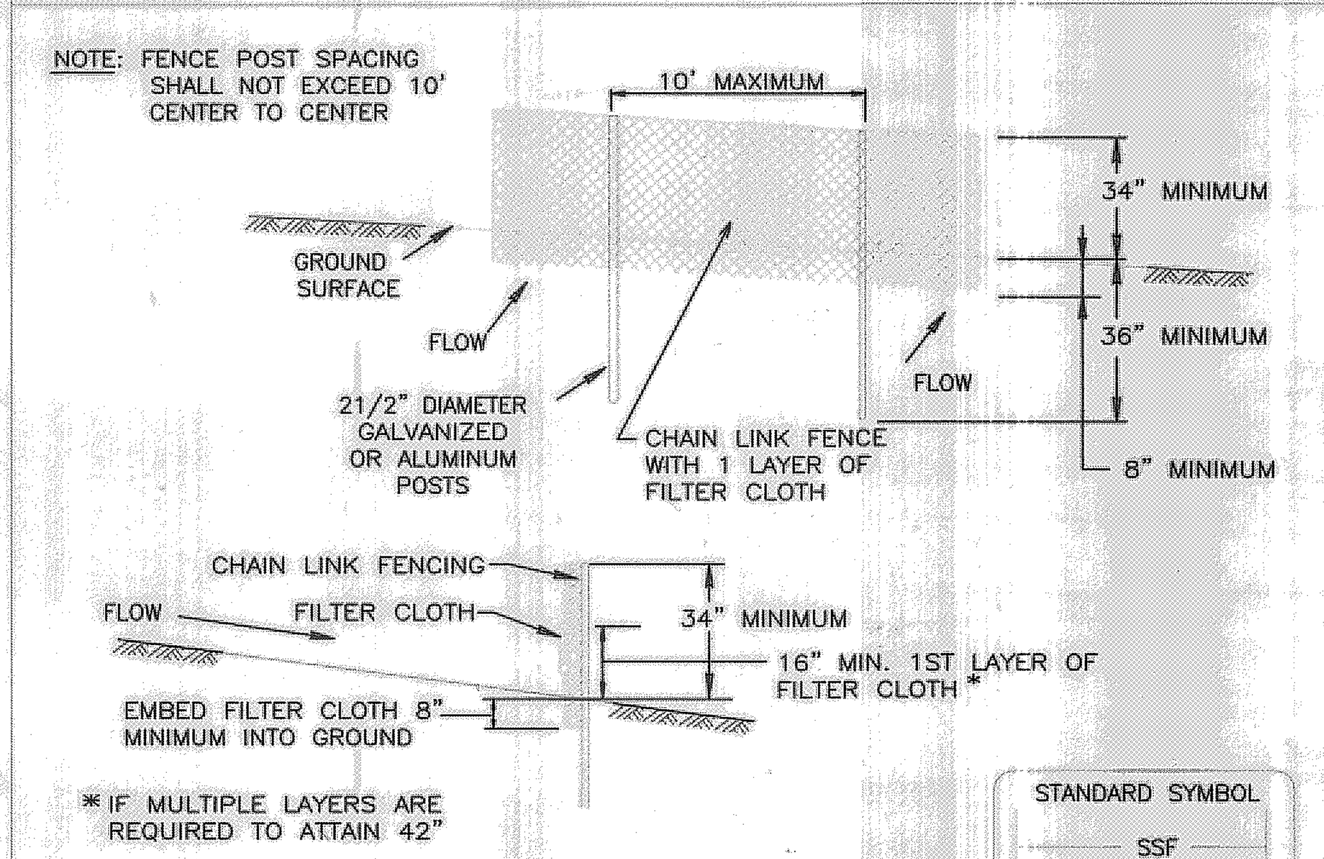
Pump-Around Practice
Temporary measure for dewatering in-channel construction sites.

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 area, then timber mats or similar measures should be used to minimize disturbance to the channel. Temporary stream crossings should be used only when necessary and only where noted on the plans or specified. (See Section 4, Stream Crossings, Maryland Guidelines to Waterway Construction).
9. All stream restoration measures should be installed as indicated by the plans and all banks graded in accordance with the grading plans and typical cross-sections. All grading must be stabilized at the end of each day with seed and mulch or seed and matting as specified on the plans.
10. After an area is completed and stabilized, the clean water dike should be removed. After the first sediment flush, a new clean water dike 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.

DETAIL 33 – SUPER SILT FENCE



STANDARD SYMBOL

SSF

Construction Specifications

1. Fencing shall be 42" in height and constructed in accordance with the latest Maryland State Highway Details for Chain Link Fencing. The specification for a 6' fence shall be used, substituting 42" fabric and 6' length posts.

2. Chain link fence shall be fastened securely to the fence posts with wire ties. The lower tension wire, brace and truss rods, drive anchors and post caps are not required except on the ends of the fence.

3. Filter cloth shall be fastened securely to the chain link fence with ties spaced every 24" at the top and mid section.

4. Filter cloth shall be embedded a minimum of 8" into the ground.

5. When two sections of filter cloth adjoin each other, they shall be overlapped by 6" and folded.

6. Maintenance shall be performed as needed and silt buildups removed when "bulges" develop in the silt fence, or when silt reaches 50% of fence height

7. Filter cloth shall be fastened securely to each fence post with wire ties or staples at top and mid section and shall meet the following requirements for Geotextile Class F:

Tensile Strength	50 lbs/in (min.)	Test: MSMT 509
Tensile Modulus	20 lbs/in (min.)	Test: MSMT 509
Flow Rate	0.3 gal/ft /minute (max.)	Test: MSMT 322
Filtering Efficiency	75% (min.)	Test: MSMT 322

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(9) SUPER SILT FENCE

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

Jim Myers 3/29/05

USDA - NATURAL RESOURCES CONSERVATION SERVICE DATE

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

John R Robertson 3/29/05

HOWARD SOIL CONSERVATION DISTRICT DATE

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

Lot 164 Group 80 Plat Number 9992
Village of River Hill
5th Election District
Howard County, MD

Golden Star SWM Facility
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Village of River Hill
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NO.	REVISIONS	BY	DATE

STATE OF MARYLAND ... PROFESSIONAL ENGINEER 3-16-05

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@eqri.com Fax:(301)926-4551
SILVER SPRING, MD FREDERICK, MD FAIRFAX, VA

SCALE AS SHOWN
SHEET 4 OF 5 SHEETS
JOB NO. 34-514

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 *serecia 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:l 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.

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

Jim Meyer 3/29/05

USDA NATURAL RESOURCES CONSERVATION SERVICE — DATE

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

John R Robertson 3/29/05

HOWARD SOIL CONSERVATION DISTRICT — DATE

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/l000 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 6b) (From Table 25, MDE 1994)					Fertilizer Rate (10-20-20)			Lime Rate
No.	Species	Aplication Rate (lb/ac)	Seeding Dates	Seeding Depths	N	P205	K20	
10	Tall Fescue Hard Fescue	120 30	3/1-5/15 8/15-10/15	1/2-1 inch	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)

Temporary Seed Mixture (For Hardiness Zone 7a) (From Table 26, MDE 1994)					Fertilizer Rate (10-10-10)	Lime Rate
No.	Species	Aplication 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.

SEDIMENT CONTROL NOTES
1. 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 (see Standard Sediment Control Note #2.)

21.0 STANDARD AND SPECIFICATIONS FOR TOPSOIL (IF REQUIRED)

Definition

Placement of topsoil over prepared subsoil prior to establishment of permanent vegetation.

Purpose

To provide a suitable soil medium for vegetation growth. Soils of concern have low moisture content, low nutrient levels, low pH, materials toxic to plants, and/or unacceptable soil gradation.

Condition where practice applies

I. This practice is limited to areas having 2:1 or flatter slops where:
   a. The texture of the exposed subsoil/parent material is mot adequate to produce vegetative growth
   b. The soil material is so shallow that the rooting zone is not deep enough to support plants or furnish continuing supplies of moisture and plant nutrients.
   c. The original soil to be vegetated contains material toxic to plant growth.
   d. The soil is so acidic that treatment with limestone is not feasible.

II. For the purpose of these Standard and Specifications, areas having slopes steeper that 2:1 require special consideration and design for adequate stabilization. Areas having slopes steeper that 2:1 shall have the appropriate stabilization shown on the plans.

Construction and Material Specification

I. Topsoil salvaged from the existing site may be used provided that it meets the standard as set forth in these specifications. Typically, the depth of topsoil to be salvaged for a given soil type can be found in the representative soil profile section in the Soil Survey published be USDA-SCS in cooperation with Maryland Agricultural Experimentation Station.

II. Topsoil Specifications - Soil to be used as topsoil must meet the following:

   i. Topsoil shall be a loam, sandy loam, clay loam, silt loam, sandy clay loam, and loamy sand. Other soils may be used if recommended by an agronomist or soil scientist and approved by the appropriate approval authority. Regardless, topsoil shall not be a mixture of contrasting textured subsoils and shall contain less than 5 % by volume of cinders, stones, slag, coarse fragments, gravel, sticks, roots, trash, or other materials larger than 1" in diameter.
   ii. Topsoil must be free of plants or plant parts such as Bermuda grass, quackgrass, Johnsongrass, nutsedge, poison ivy, thistle, or other as specified.
   iii. Where subsoil is either highly acidic or composed of heavy clays, ground limestone shall be spread at the rate of 4-8 tons/acre (200-400 pounds per 1,000 square feet) prior to the placement of topsoil. Lime shall be distributed uniformly over designated areas and worked into the soil in conjunction with tillage operation as described in the following procedures.

III. For site having disturbed areas under 5 acres:

   i. Place topsoil (if required) and apply soil amendments as specified in 20.0 vegetation Stabilization - bSection I - Vegetation Stabilization Method and Materials.

IV. For site having disturbed areas over 5 acres:

   i. On soil meeting Topsoil Specifications, obtain test results dictating fertilizer and lime amendments required to bring the soil into compliance with the following: a. pH for topsoil shall be between 6.0 and 7.5. If the tested soil demonstrates a pH less than 6.0, sufficient lime shall be prescribed to raise the pH to 6.5 or higher.
   b. Organic content of topsoil shall be not less than 1.5 percent by weight.
   c. Topsoil having soluble salt content greater than 500 parts per million shall not be used.
   d. No sod or seed shall be placed on soil which has been treated with soil sterilants or chemicals used for weed control until sufficient time has elapsed (14days min.) to permit dissipation of phyto-toxic materials.

* Note: Topsoil substitutes to amendments, as recommended by a qualified agronomist or soil scientist and approved by the appropriated approval authority may be used in lieu of natural topsoil.

V. Topsoil application

   i. When topsoiling, maintain needed erosion and sediment control practices such as diversions, grade Stabilization Structures, Earth Dikes, Slope Silt Fence and sediment Traps and Basins.
   ii. Grade on the areas to be topsoiled, which have been previously established, shall be maintained, albeit 4"-8" higher in elevation.
   iii. Topsoil shall be uniformly distributed in a 4" - 8" layer and lightly compacted to a minimum thickness of 4". Spreading shall 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 shall be corrected in order to prevent the formation of depressions or water pockets.
   iv. Topsoil shall not be placed while the topsoil or subsoil is in a frozen or muddy condition, when the subsoil is excessively wet or in a condition that may otherwise be detrimental to proper grading and seedbed preparation.

VI. Alternative for Permanent Seeding - instead of applying the full amounts of lime and commercial fertilizer, composted sludge and amendments may be applies as specified below:

   i. Composted Sludge Material for used as a soil conditioner for sites having areas over 5 acres shall be tested to prescribe amendments and for site having disturbed areas under 5 acres shall conform to the following requirements:
   a. Composted sludge shall be supplied by, or originate from, a person or persons that are permitted (at the time of acquisition of the compost) by the Maryland Department of the Environment under COMAR 26.04.06.
   b. Composted sludge shall contain at least 1 percent nitrogen, 1.5 percent phosphorus, and 0.2 percent potassium and have a pH of 7.0 to 8.0. If composted does not meet these requirements, the appropriated constituents must be added to meet the requirement prior to use.
   c. Composted sludge shall be applied at a rate of 1 ton/1,000 square feet.
   d. Composted sludge shall be amended with a potassium fertilizer applied at the rate of 4 lb/1,000 square feet and 1/3 the normal lime application rate.

* Reference: Guideline Specifications, Soil Preparation and Sodding. MD - VA, Pub. #1, Cooperative Extension Service, University of Maryland and Virginia polytechnic Institutes. Revised 1973.

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

Lot 164 Group 80 Plat Number 9992
Village of River Hill
5th Election District
Howard County, MD

Golden Star SWM Facility
Low Flow Trash Rack Retrofit
Village of River Hill
Columbia, Maryland

DATE: 11/04
DESIGNED: TCS/CAW
DRAFTED: CAW
CHECKED: TCS
BASE DATA: W. R. and Ass. Engineers

NO.	REVISIONS	BY	DATE

STATE OF MARYLAND · REGISTERED PROFESSIONAL ENGINEER · No. 20207 — 3.16.05

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 AS SHOWN

SHEET 5 OF 5 SHEETS

JOB NO. 34-514