STORMWATER BMP PLAN

CULLER LAKE

Situate at:

Southwest corner of W. 2nd St. and W. College Terrace: Frederick, MD

OWNER/DEVELOPER:

City of Frederick Parks & Recreation Department 121 North Bentz St. Frederick, MD 21701

ATTN: Roelkey Myers PHONE: (301) 600-1902 EMail: rmyers@cityoffrederick.com

FREDERICK SEIBERT &

ASSOCIATES, INC. ©2013

128 SOUTH POTOMAC STREET, HAGERSTOWN, MARYLAND 21740

MD-ENG-6A

Approvals

CIVIL ENGINEERS ■ SURVEYORS ■ LANDSCAPE ARCHITECTS ■ LAND PLANNERS (301) 416-7478

(301) 695-2803 ext. 3

G.8 The contractor shall be responsible for coordination of his construction with the construction of other contractors. G.9 The contractor shall notify the Architect/Engineer, before construction, of any conflicts between the plans and

SWM Narrative

This plan is intended to provide water quality treatment to runoff entering Culler Lake, located in Baker Park. Pre-treatment will be provided for the primary discharge point using a hydrodynamic separator. A flow splitter will be installed to redirect the WQv peak discharge into a proposed submerged gravel wetland BMP which then flows into the lake. Two other submerged gravel wetland cells will also be added to the south side of the lake for additional water quality treatment. The western cell is intended to treat the make-up water discharge, which is continuously pumper from Carrol Creek to provide water turn-over in the take. This plan also details the installation of three floating wetland cells to be anchored in the

lake and two floating aeration fountains. The existing fountain will also be renovated. The combined pre-treatment / trash removal, wetland BMF

General Notes

G.1 Any damage to adjoining public roads, utilities, etc. during construction will be repaired in kind by the contractor. G.2 No subsurface investigation has been performed by Frederick, Seibert and Associates, Inc. to determine ground

G.3 FSA, Inc. assumes no liability for the location of any above ground and below ground utilities. Existing utilities are shown from the best available information. Contractor to field verify location and depth of all above and below

G.4 The contractor shall locate existing utilities in advance of construction operations in the vicinity of proposed utilities. G.5 The contractor shall take all necessary precautions to protect the existing utilities and to maintain uninterrupted

G.7 The Contractor shall notify the following utilities or agencies at least 72 hours before start of construction as shown

G.6 All utilities shall be cleared by a minimum of 1'-0". All utility poles shall be cleared by a minimum of 2'-0" or

service. Any damage incurred due to the contractor's operation shall be repaired immediately at the contractor's

(800) 257-7777 (800) 255-3443

(888) 460-4332

(301) 600-1405

water, rock, sinkholes or any other natural or man-made existing features.

expense. Contractor to use caution in areas where low hanging wires exist.

City of Frederick Engineering

cells and aeration treat the water pumped through Culler Lake as well as the storm discharge from the neighborhood watershed

G.10 The contractor shall protect all utilities and culvert pipes during construction by insuring proper cover, increasing cover, or constructing final grade before loading site with heavy vehicles. G.11 All contractors must comply with all applicable City, State, and Federal Labor and Industry Regulations to include

City Safety & Health Policy, MOSHA, OSHA, etc. G.12 The contractor shall perform his own field inspection and surveys (if necessary) to determine the limit of earthwork needed to complete this project. Any earthwork quantities that may be shown hereon are preliminary estimates only, and are intended for Soil Erosion Control plan review, if required. There has been no correction made to the

earthwork quantities shown hereon due to the compaction of fill. G.13 The contractor shall be aware that in the event of discrepancy between scaled and figured dimensions shown on

the plan, the figured dimensions shall govern. G.14 Erosion and Sediment control measures shall be installed per erosion and sediment control plans, details and

specifications. G.15 Fills shall be placed in accordance with the geotechnical engineers specifications.

G.16 The entire area included within the proposed limits of cut and fill shall be stripped of all root material, trash and other organic and otherwise objectionable, non-complying and unsuitable soils and materials, unless otherwise

G.17 It shall be distinctly understood that failure to mention specifically any work which would naturally be required to complete the project shall not relieve the contractor of his responsibility to complete such work. G.18 Existing topography is from field run surveys during January 2013. Datum is NAD 83 (2007) horizontal, NAVD 88

vertical based on GPS surveys. G.19 Fill brought to this site and/or excavation/sediment exported from this site shall be imported/exported from a site with an approved and up-to-date erosion and sediment control plan and N.P.D.E.S. Permit, where applicable.

G.20 An MDE, WMA permit is required for fill/disturbance within the floodplain, including dredging the lake. G.21 This project is exempt from Forest Conservation per Section 721(a)(6)(a). G.22 All Benchmarks shall be maintained for the duration of construction until city has granted Final Approval to the

G.23 The contractor shall not (1) stage work, (2) store materials or (3) permit parking of equipment and/or construction-related vehicles in the public rights-of-way or publicly-owned property without prior approval of the City Traffic Engineer or designee. Where practical and to the degree possible, the Engineer shall designate on these plans appropriate space that can be utilized for the above purposes. It is the Contractor's ultimate responsibility to ensure that proper and appropriate areas are secured for these uses for the duration of the project.

G.24 Contractor is responsible for maintenance of traffic on existing roadways in accordance with the Manual of Uniform Traffic Control Devices (MUTCD) and Maryland State Highway Administration (SHA) Book of Standards, latest

G.25 Developer is responsible for all costs related to temporary and permanent traffic control (pavement markings, signage, signalization, traffic barriers, flaggers, etc.) G.26 Any lane and/or road closures require (4) weeks advance notice and a permit from the City of Frederick Traffic Engineer. The City Traffic Engineer can be reached by phone at 301-600-1498.

G.27 If road or any part of road is to be closed, a detailed Detour and/or Closure Plan shall be submitted to the City Traffic Engineer for approval.

G.28 If temporary parking, ingress/egress or pedestrian restrictions shall be required during a project, the Contractor shall be responsible for installing signs and notifying all affected residents/businesses at least 1 day in advance. Contractor is responsible for contacting appropriate City or County authority before any of the above modifications are enacted.

G.29 Contractor shall be responsible for preventing dust, debris and mud from entering all roadways. If dust, dirt, debris and/or mud happen to override the prevention measures and enter the roadway or sidewalk, the Contractor shall be required to clean the roadway or sidewalk as soon as possible, at his/her expense. See City of Frederick Mud Ordinance pursuant to Section 22-2 of the Frederick City Code. The Contractor shall be responsible for the

elimination of dust in the air by the required watering of the ground as needed. G.30 The Contractor shall be responsible for keeping silt and debris out of storm drain system during construction and shall clean the system thoroughly, at the Contractor's expense, prior to final acceptance by The City.

G.31 All handicap accessibility design and construction shall be in accordance with the State of MD Accessibility Code and the Americans with Disabilities Act (ADA), latest editions.

G.32 Place 4" min. of topsoil in all green areas before permanent seeding is performed.

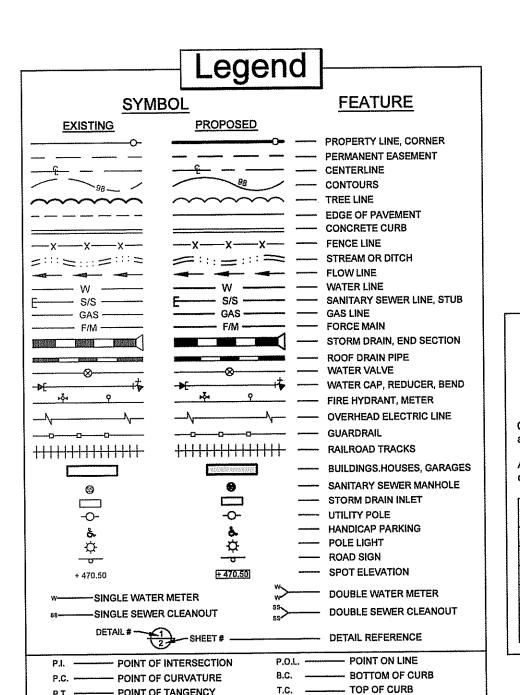
G.33 Minimum 2% slopes must be provided for adequate drainage of grassy areas. G.34 Only steel forms are to be used while placing sidewalk for straight sections and radii greater than 200'.

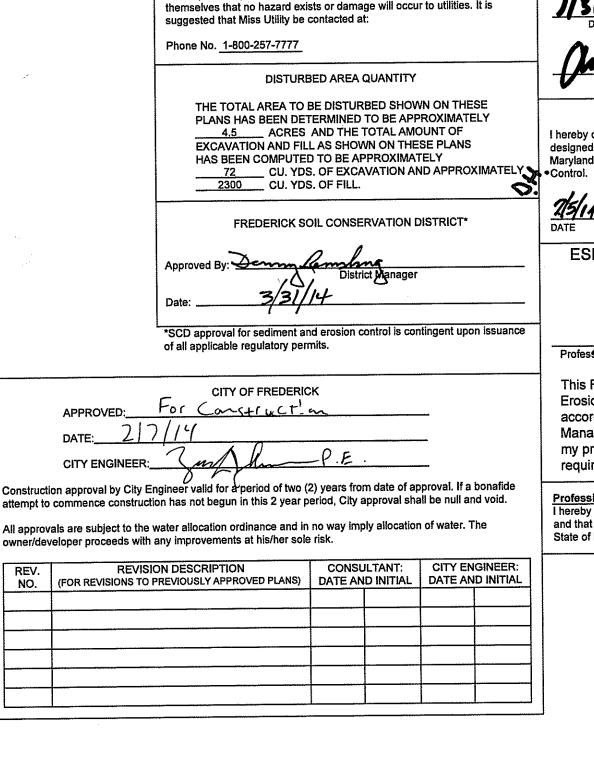
G.35 All contractors must comply with all applicable City, State and Federal Labor and Industry Regulations to include City Safety & Health Policy, MOSHA, OSHA, etc. G.36 Floodplains are present on site Zone AE, per FEMA Panel # 24021C0291D adopted on 9/14/07.

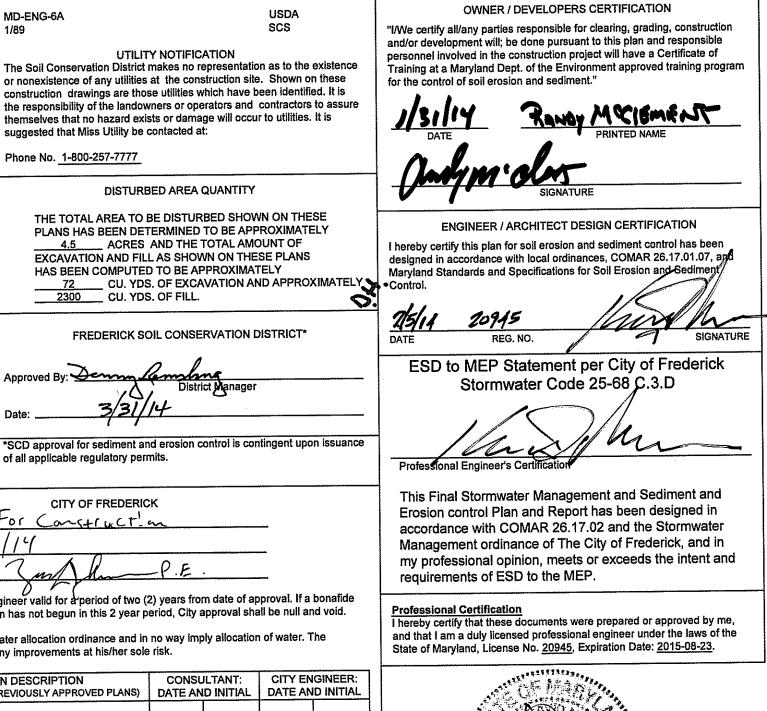
G 37 There are no wetlands present on site.

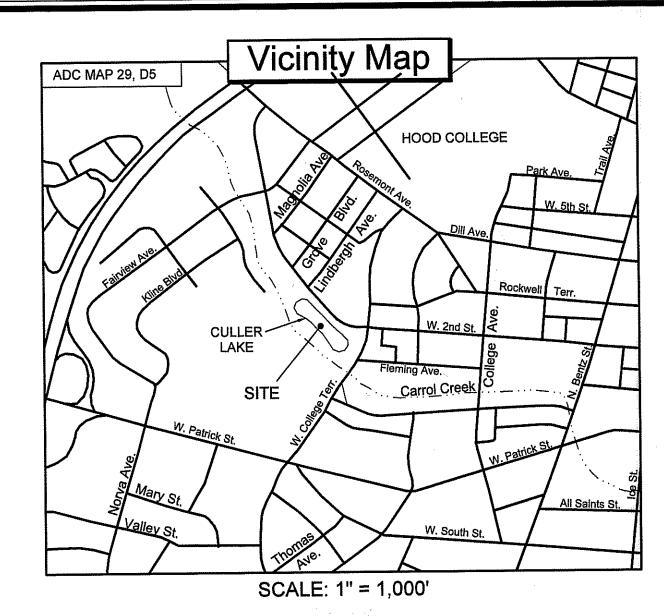
G.38 Following initial soil disturbance or re-disturbance, permanent or temporary stabilization must be completed within: A. Three (3) calendar days as to the surface of all perimeter dikes, swales, ditches, perimeter slopes, and all slopes steeper than 3 horizontal to 1 vertical (3:1); and

B. Seven (7) calendar days as to all other disturbed or graded areas on project site not under active grading.

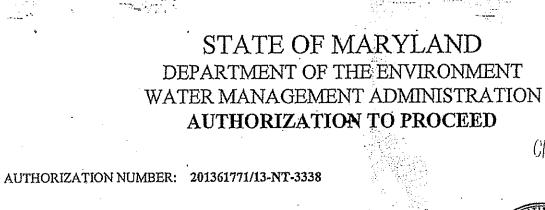








	Sheet Index	
TYPE NUMBER	TITLE	
G-001 SHEET 1 C-101 SHEET 2 C-102 SHEET 3 C-103 SHEET 4 C-501 SHEET 5 C-502 SHEET 6 C-503 SHEET 7	COVER SHEET EXISTING CONDITIONS PLAN SITE PLAN SEDIMENT EROSION CONTROL & LANDSCAPE PLAN SITE & SWM DETAILS SEC DETAILS & NOTES MISCELLANEOUS DETAILS	



DEC 17 2013

EFFECTIVE DATE:

EXPIRATION DATE: December 2, 2016

AUTHORIZED PERSON: City of Frederick 121 N Bentz St Frederick, Maryland 21701

Attn: Roelkey Myers

IN ACCORDANCE WITH ENVIRONMENT ARTICLE §5-503(a) AND §5-906(b), ANNOTATED CODE OF MARYLAND (2007 REPLACEMENT VOLUME); COMAR 26.17.04 AND 26.23.01, AND 26.08.02 AND THE ATTACHED CONDITIONS OF AUTHORIZATIONS, City of Frederick ("AUTHORIZED PERSON"), IS HEREBY AUTHORIZED BY THE WATER MANAGEMENT ADMINISTRATION ("ADMINISTRATION") TO CONDUCT A . REGULATED ACTIVITY IN A NONTIDAL WETLAND, BUFFER, OR EXPANDED BUFFER, AND/OR TO CHANGE THE COURSE, CURRENT OR CROSS-SECTION OF WATERS OF THE STATE, IN ACCORDANCE WITH THE ATTACHED PLANS APPROVED BY THE ADMINISTRATION ON December 3, 2013 ("APPROVED PLAN") AND PREPARED BY Frederick Seibert & Associates. Inc. AND INCORPORATED HEREIN, AS DESCRIBED BELOW:

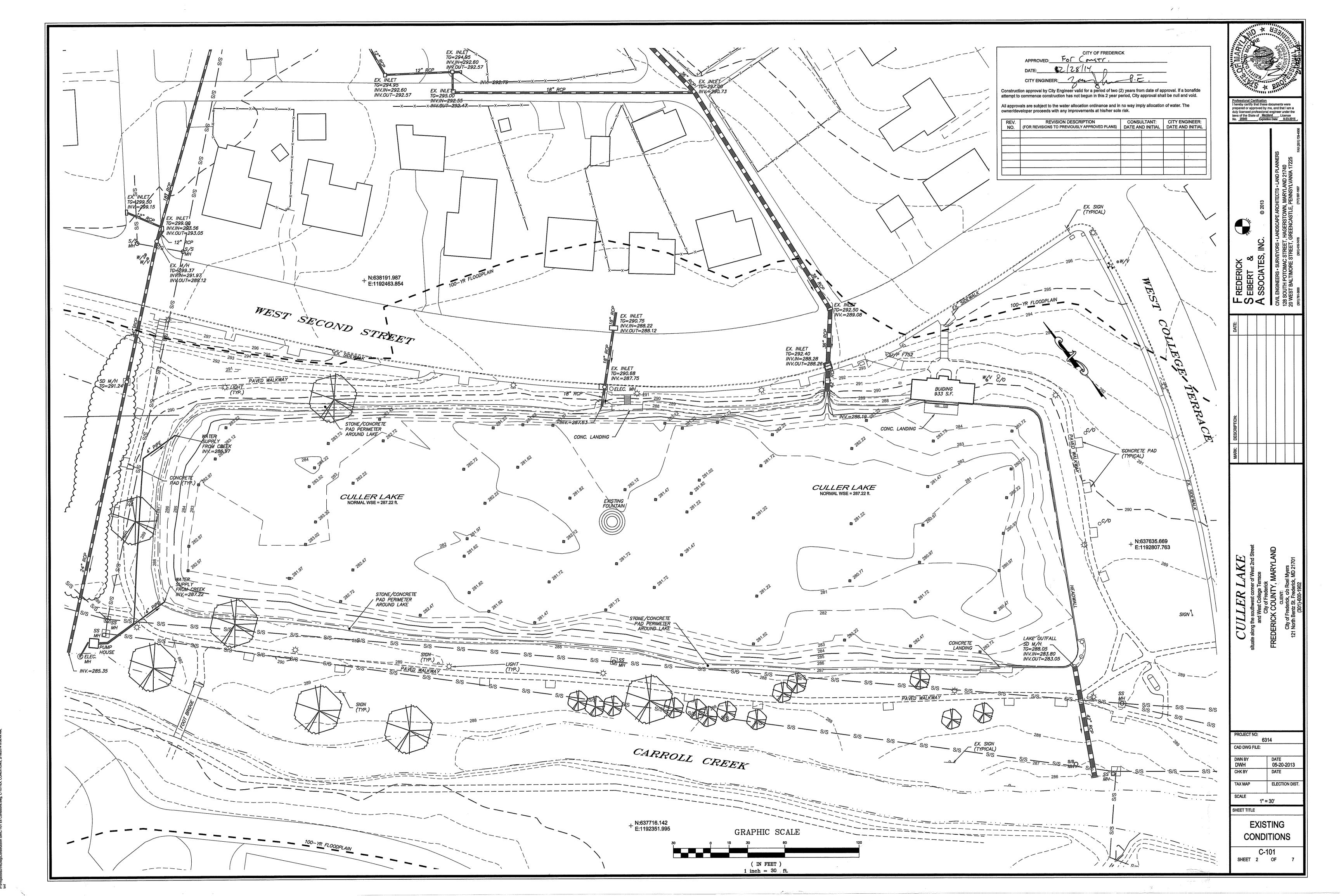
Provide Stormwater BMPs including floating islands and hydraulic separators. The project impacts 9,880 square feet of the 100-year floodplain. The project is located near West 2nd street, 0.5 miles south from the intersection with Rosemont Avenue, in

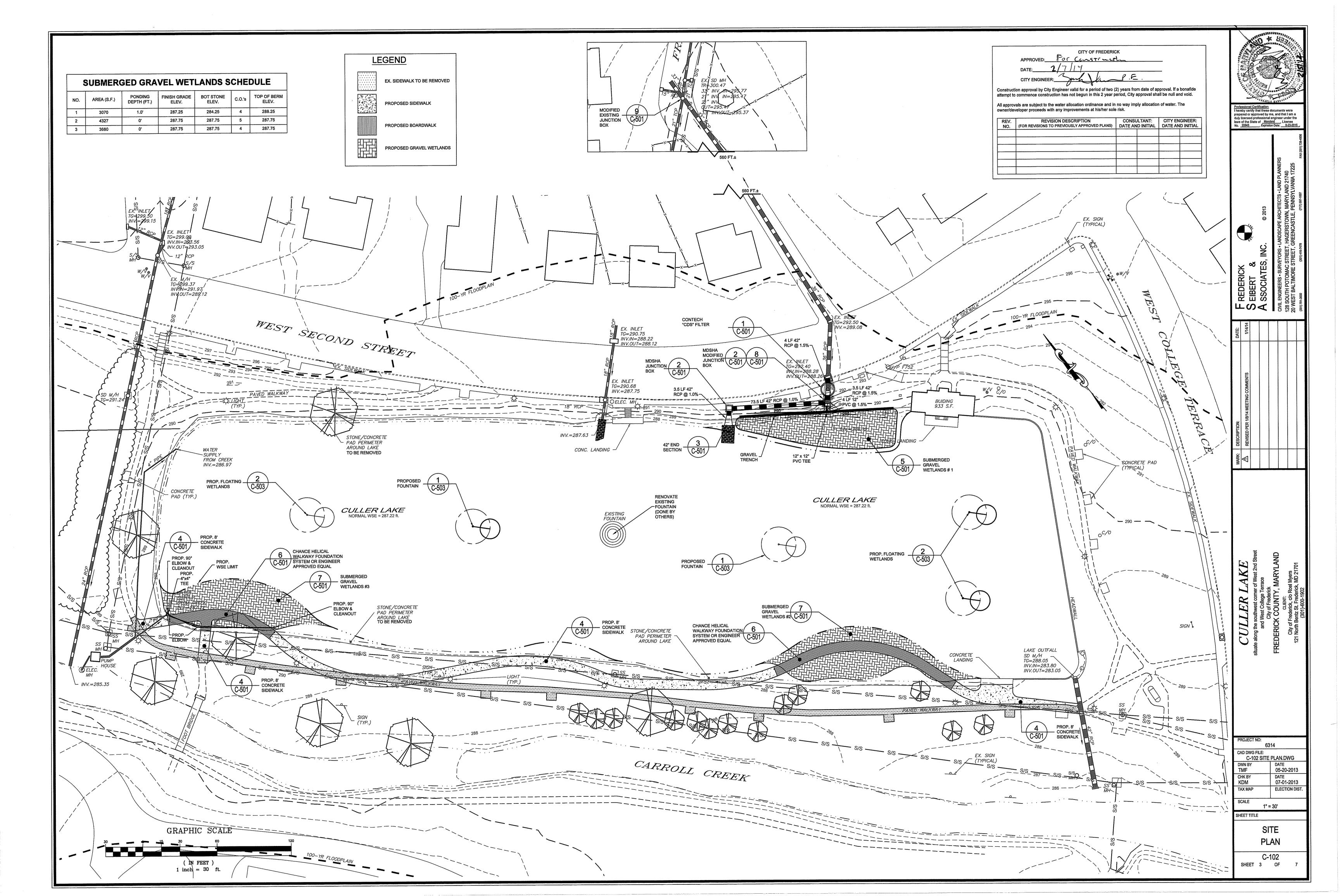
MD Grid Coordinates 194421 x 363483

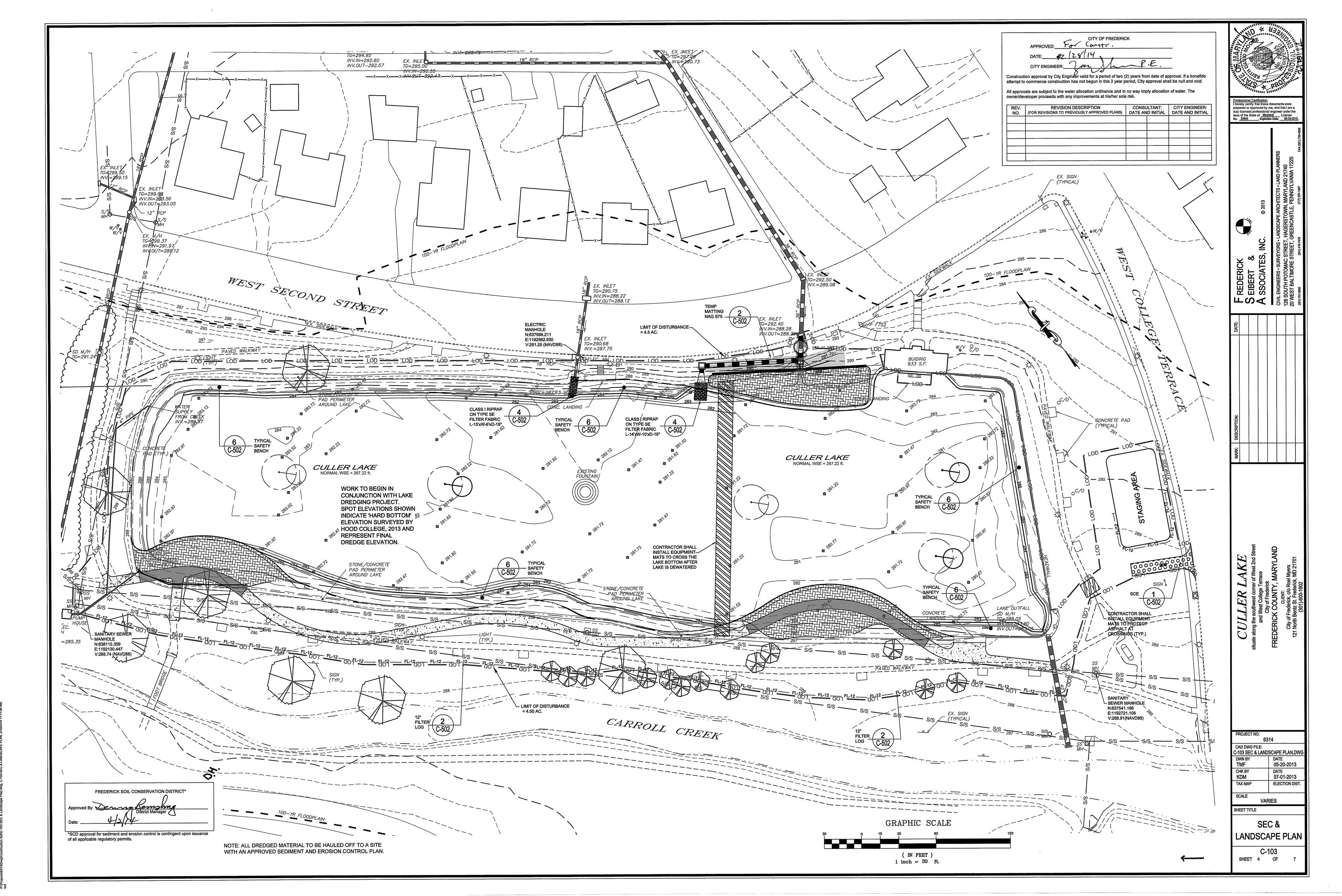
Waterway Construction Division

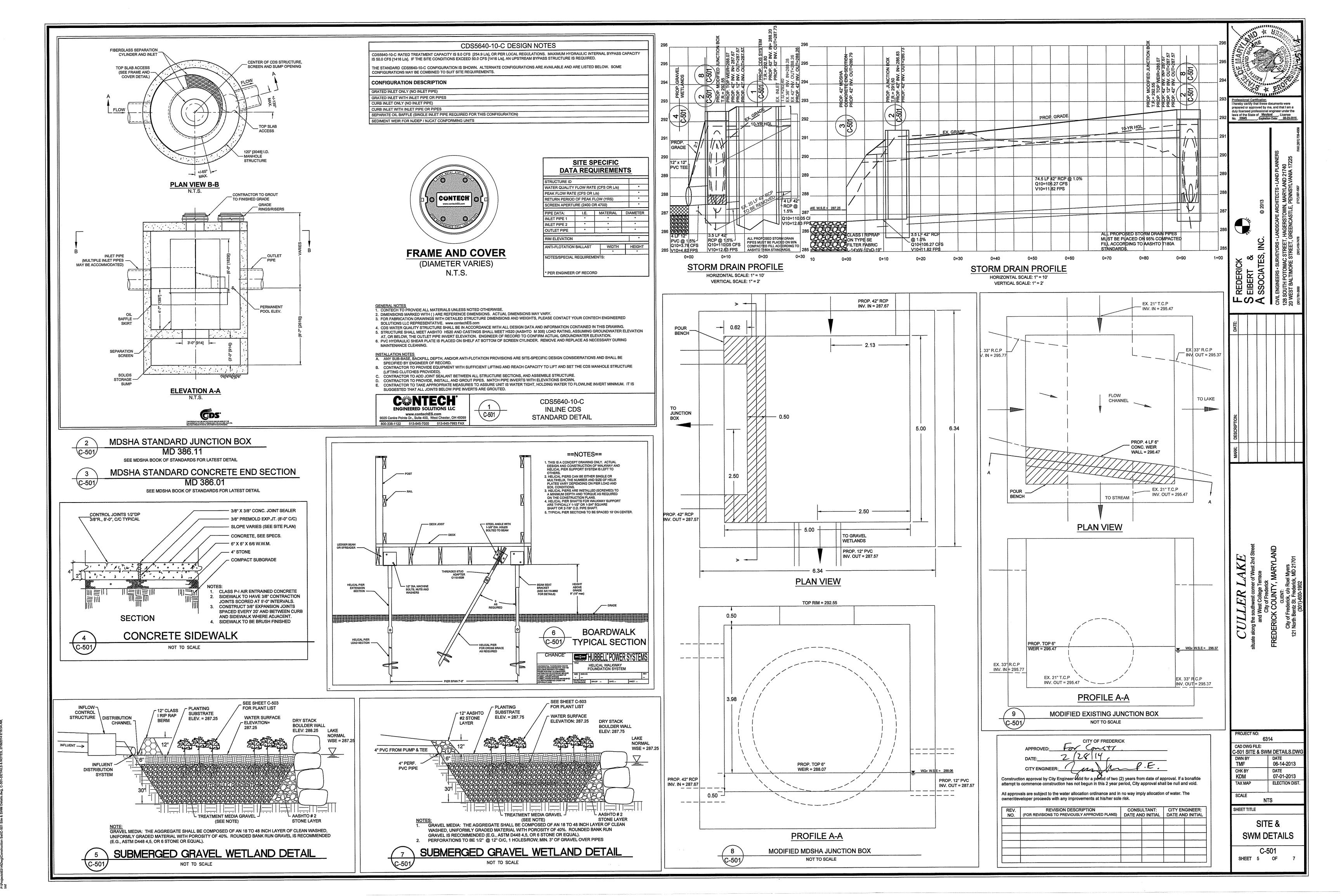
WMA Compliance Division w/ file (Frederick County)

		GRADING CHK BY:	DATE:	PROJECT NUMBER: 6314.0
				COVED
		SEC CHK BY:	DATE:	COVER SHEET
				_ SHEET
Revised Per Agency Comments 🛕	10-23-2013	SWM CHK BY:	DATE:	G-001
SUBMITTAL	08-29-2013	PLAN CHK BY:	DATE:	SHEET 1 OF 7
DESCRIPTION:	DATE:	PLAN ORN DT:	DATE:	









SOIL EROSION, SEDIMENT CONTROL & SEEDING NOTES

- All soil erosion/sediment control measures shall comply with the "2011 Maryland Standards and Specifications for Soil Erosion and Sediment Control" and the provisions of the approved plan.
- All grading and stabilization shall comply with the "2011 Maryland Standards and Specifications for Soil Erosion and Sediment Control*, "Section B - Grading and Stabilization" and the provisions of the
- All soil erosion and sediment control practices (BMP's) are to be constructed and/or installed prior to or at the initiation of grading in accordance with "2011 Maryland Standards and Specifications for Soil Erosion and Sediment Control", and the approved plan.
- A grading unit is the maximum contiguous area allowed to be graded at a given time and is limited to 20 acres. Work may proceed to a subsequent grading unit when at least 50 percent of the disturbed area in the preceding grading unit has been stabilized and approved by the enforcement authority and/or the Washington County Soil Conservation District (approval authority). Unless otherwise specified and approved by the approval authority, no more than 30 acres cumulatively may be disturbed at a given time.
- For initial soil disturbance or re-disturbance, temporary or permanent stabilization must be completed within:
- Three (3) calendar days as to the surface of all perimeter dikes, swales, ditches, perimeter slopes, and all slopes steeper than 3 horizontal to 1 vertical (3:1); and Seven (7) calendar days as to all other disturbed or graded areas on the project site not under active grading.
- Stockpiles must be stabilized in accordance within the 7 day stabilization requirement, as well as, Standard B-4-1 Incremental Stabilization and Standard B-4-4 Temporary Stabilization (as
- All constructed channels and swales shall have specified treatment installed to the design flow depth completed downstream to upstream as construction progresses. An installation detail shall be
- shown on the plans. All storm drain and sanitary sewer lines not in paved areas are to be mulched and seeded within 3
- days of initial backfill unless otherwise specified on plans. Electric Power, telephone, and gas lines are to be compacted, seeded, and mulched within 3 days
- after initial backfill unless otherwise specified on plans. 0. No slope shall be greater than 2:1.
- As required by Section B. of the Maryland Standards and Specifications for Soil Erosion and Sediment Control, "Adequate Vegetative Stabilization", is defined as 95 percent ground cover. The Washington County Soil Conservation District requires the project adhere to this for scheduling of the Final Site Closeout Review, and/or release of the site for soil erosion and sediment control.

For sites 1.0 acre or more, the following are required:

- A. Maryland Department of the Environment, General Permit for Stormwater Associated with a Construction Activity, NPDES Permit Number MDR10, State Discharge Permit Number 09GP, or an Individual Permit.
- B. The Maryland Department of the Environment (General/Individual Permit - Notice of Intent- NOI) application and permit shall be posted and/or available
- C. During construction, all soil erosion and sediment control practices (BMP's) shall be inspected and recorded on the "Standard Inspection Form", "General Permit for Stormwater Associated with Construction Activity" per the Maryland Department of the Environment (General/Individual Permit - Notice of Intent -
- D. Following construction and release of the sight for soil erosion and sediment control by the Washington County Soil Conservation District, i.e., all portions of a site have been permanently stabilized, and all stormwater discharges from construction sites that are authorized by the permit are eliminated, the authorized permittee shall submit the Maryland Department of the Environment, General/Individual Permit Notice of Termination-NOT

STANDARD UTILITY NOTES:

- Contractor to only open up length of trench that can be constructed and backfilled in one working day in paved areas. Contractor to place excavated materials in a dump truck and hauled to an approved location to wasted materials to paved areas.
- Contractor to backfill trench with approved materials and stabilize disturbed areas the same working day. In areas where the construction takes to place outside of the existing roadbed, Contractor to install silt fence along the downhill
- side of the trench before beginning construction and place excavated material from the trench on the uphill side. If dewatering of the trench is required, Contractor to pump water to a filter bag to dewater.
- Contractor to sweep streets of any debris or sediments caused by construction operations and dispose of at an approved location.
- Contractor to stabilize all disturbed areas with seed & mulch or appropriate street repair.

			TEMPORARY SEI	EDING SUM	MMARY	
***************************************			S ZONE (FIGURE B.3): 6a & 6D O MIXTURE (TABLE B.1)		FERTILIZER RATE (10-20-20)	LIME RATE
NO.	SPECIES	APPLICATION RATE (lb/ac)	SEEDING DATES	SEEDING DEPTHS	PERTILIZER MATE (10-20-20)	LIME RATE
1	Barley	96	Zone 6a: Mar 15-May 31/ Aug 1-Sept 30	1"	436 lb/ac. (10 lb/1000 s.f.)	2 tons/ac. (90 lb/1000 s.f.)

			PERMANENT SE	EDING SL	JMMARY				
	HARDINESS ZONE (FIGURE B.3): 6a &@D SEED MIXTURE (TABLE B.1)					FERTILIZER RATE (10-20-20)			
NO.	SPECIES	APPLICATION RATE (ib/ac)	SEEDING DATES	SEEDING DEPTH	N	P205	K20	LIME RATE	
	Tall Fescue	56	Zone 6a:					0.1	
6	Perennial Ryegrass	7	Mar 15-May 31/Jun 1-Jun 15 Zone 6b:	1/4"-1/2"	45 lb/ac. (1 lb/1000 s.f.)	90 lb/ac. (2 lb/1000 s.f.)	90 lb/ac. (2 lb/1000 s.f.)	2 tons/ac. (90 lb/1000 s.f.)	
	Blue Grass	7	Mar 1-May 15/May 16-Jun 15						

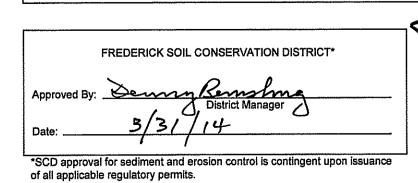
SEQUENCE OF CONSTRUCTION

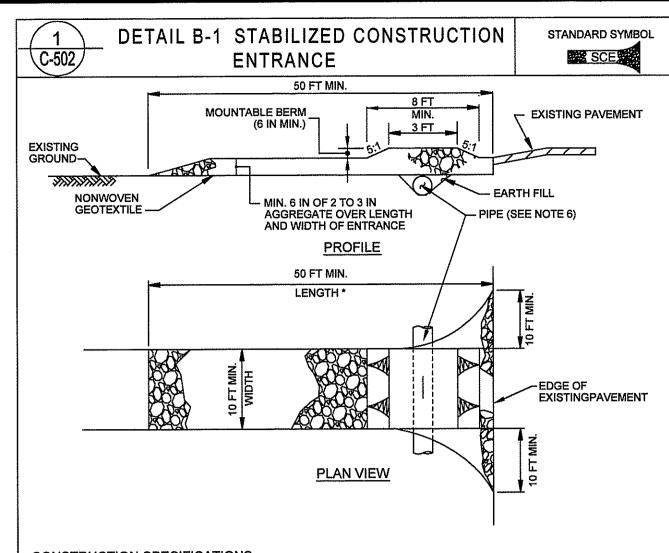
- CONTRACTOR TO CONTACT FSA, INC. (301) 791-3650, FREDERICK COUNTY SOIL CONSERVATION DISTRICT (301) 695-2803 EXT.3, MDE (301) 665-2850, AND THE CITY OF FREDERICK ENGINEERING (301) 600-1498 AT LEAST FIVE (5) DAYS PRIOR TO THE START OF ANY EARTHWORK TO SCHEDULE A PRE CONSTRUCTION MEETING
- THIS PROJECT IS INTENDED TO BE CONSTRUCTED CONCURRENTLY WITH THE CITY OF FREDERICK'S LAKE DREDGING PROJECT. THE LAKE WILL BE DEWATERED AND WILL PROVIDE SEDIMENT CONTROL FOR THE MAJORITY OF THE PROJECT WORK AREA. ALL DISTURBED AREAS NOT DRAINING TO THE LAKE SHALL HAVE SEDIMENT EROSION CONTROL DEVICES INSTALLED PRIOR TO EARTH DISTURBANCE. ALL DREDGED MATERIAL TO BE HAULED OFF TO A SITE WITH AN APPROVED SEDIMENT AND EROSION CONTROL PLAN.
- CONTRACTOR SHALL INSTALL THE STABILIZED CONSTRUCTION ENTRANCE AND FILTER LOG. CONTRACTOR TO BEGIN STORM DRAIN INSTALLATION BEGINNING FROM THE DOWNSTREAM END AND WORKING UPSTREAM. INSTALL TEMPORARY SLOPE MATTING ONCE FINAL GRADES HAVE BEEN MET.
- CONTRACTOR TO INSTALL NEW CONCRETE SIDEWALK ON SOUTHSIDE OF CULLER LAKE AND REMOVE EXISTING WALKWAY AS NEEDED.
- . STABILIZE ALL DISTURBED AREAS WITH SEED AND MULCH AFTER EXCAVATING OPERATIONS ARE COMPLETE. USE TEMPORARY SEEDING FOR AREAS LEFT EXPOSED FOR MORE THAN SEVEN (7) CONSECUTIVE DAYS.
- CONTRACTOR TO CONTACT FSA, INC. (301) 791-3650 AND THE CITY OF FREDERICK ENGINEERING (301) 600-1498 AT LEAST THREE (3) DAYS PRIOR TO THE START OF THE GRAVEL WETLANDS INSTALLATION.
- CONTRACTOR TO BEGIN GRAVEL WETLANDS INSTALLATION. ONCE THE GRAVEL WETLANDS HAVE BEEN INSTALLED, CONTRACTOR TO COMPLETE THE SIDEWALK AND BOARDWALK AREAS. REMOVE ANY EXISTING WALKWAY STILL REMAINING. FURTHER STABILIZE ANY AREAS IMPACTED BY THE GRAVEL WETLANDS/SIDEWALK. 10. CONTRACTOR TO CONTACT FREDERICK COUNTY SOIL CONSERVATION DISTRICT (301) 695-2803 EXT.3, AND THE CITY OF FREDERICK

ENGINEERING (301) 600-1498 AT LEAST 5 DAYS PRIOR TO THE REMOVAL OF ANY SEDIMENT CONTROL FEATURES TO SCHEDULE A FINAL

SITE CLOSE OUT REVIEW AND MEETING. CONTRACTOR TO GAIN FINAL APPROVAL FROM FCSCD PRIOR TO REMOVAL OF EROSION AND 11. REMOVE SEDIMENT AND EROSION CONTROL MEASURES, AND STABILIZE ACCORDINGLY

NOTICE OF REQUIRED STORMWATER MANA CONSTRUCTED WETLAN		NSPEC	TIONS	
The following inspections are required to be performed by the Qualified Professional for the cons needed based on professional engineering judgment. Each inspection is required at the start of e	truction of any V each stage.	etland Syste	em. Additional inspe	ctions may
Inspection Item	Certifying Engineer	Date	City Inspector	Date
SITE PREPARATION AND EXCAVATION - Prior to excavation, verify sediment and erosion control features are in place to prevent sediment inflow. Verify all flagging required in the area for sensitive area protection. Verify grading is accurately staked-out and re-staked as needed. Verify objectionable material removed from immediate area.				
SPILLWAY WEIR - Verify footing excavated on stable subgrade.		·		
POND EXCAVATION – Verify pond bottom topography. Verify pond side slopes and bench widths and locations. Verify maintenance access location, width and slope.				
LANDSCAPING - Verify planting area scarified prior to planting. Verify nutrient amendments added to excavated zones. Verify pond drain open 3 days prior to planting. Verify location, size, type and number of planted landscape material. Verify wetland mulch used for seeding. Verify installation location, size, material type of fencing or other safety barriers.				





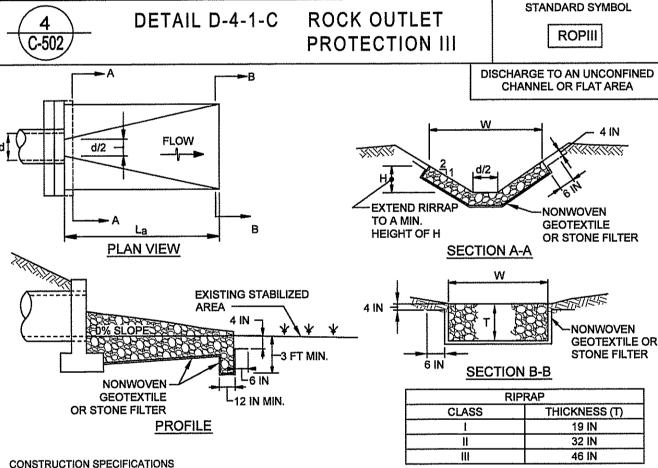
CONSTRUCTION SPECIFICATIONS

NATURAL RESOURCES CONSERVATION SERVICE

- PLACE STABILIZED CONSTRUCTION ENTRANCE IN ACCORDANCE WITH THE APPROVED PLAN. VEHICLES MUST TRAVEL OVER THE ENTIRE LENGTH OF THE SCE. USE MINIMUM LENGTH OF 50 FEET (*30 FEET FOR SINGLE RESIDENCE LOT), USE MINIMUM WIDTH OF 10 FEET. FLARE SCE 10 FEET MINIMUM AT THE EXISTING ROAD TO PROVIDE A TURNING RADIUS.
- PIPE ALL SURFACE WATER FLOWING TO OR DIVERTED TOWARD THE SCE UNDER THE ENTRANCE, MAINTAINING POSITIVE DRAINAGE. PROTECT PIPE INSTALLED THROUGH THE SCE WITH A MOUNTABLE BERM WITH 5:1 SLOPES AND A MINIMUM OF 12 INCHES OF STONE OVER THE PIPE, PROVIDE PIPE AS SPECIFIED ON APPROVED PLAN, WHEN THE SCE IS LOCATED AT A HIGH SPOT AND HAS NO DRAINAGE TO CONVEY, A PIPE IS NOT NECESSARY, A MOUNTABLE BERM IS REQUIRED WHEN SCE IS NOT LOCATED AT A HIGH SPOT.
- PREPARE SUBGRADE AND PLACE NONWOVEN GEOTEXTILE, AS SPECIFIED IN SECTION H-1 MATERIALS.
- 4. PLACE CRUSHED AGGREGATE (2 TO 3 INCHES IN SIZE) OR EQUIVALENT RECYCLED CONCRETE (WITHOUT REBAR) AT LEAST 6 INCHES DEEP OVER THE LENGTH AND WIDTH OF THE SCE.
- MAINTAIN ENTRANCE IN A CONDITION THAT MINIMIZES TRACKING OF SEDIMENT. ADD STONE OR MAKE OTHER REPAIRS AS CONDITIONS DEMAND TO MAINTAIN CLEAN SURFACE, MOUNTABLE BERM, AND SPECIFIED DIMENSIONS IMMEDIATELY REMOVE STONE AND/OR SEDIMENT SPILLED, DROPPED, OR TRACKED ONTO ADJACENT ROADWAY BY VACUUMING, SCRAPING, AND/OR SWEEPING. WASHING ROADWAY TO REMOVE MUD TRACKED ONTO PAVEMENT IS NOT ACCEPTABLE UNLESS WASH WATER IS DIRECTED TO AN APPROVED SEDIMENT CONTROL PRACTICE.

MARYLAND STANDARDS AND SPECIFICATIONS FOR SOIL EROSION AND SEDIMENT CONTROL MARYLAND DEPARTMENT OF ENVIRONMENT U.S. DEPARTMENT OF AGRICULTURE

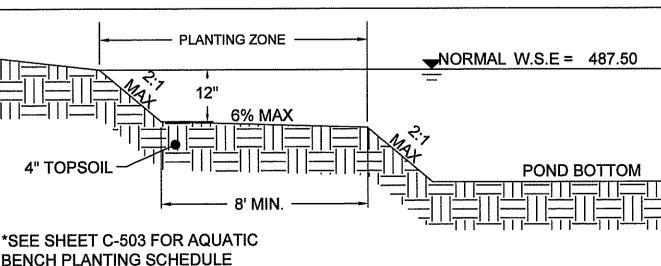
WATER MANAGEMENT ADMINISTRATION



CONSTRUCTION SPECIFICATIONS

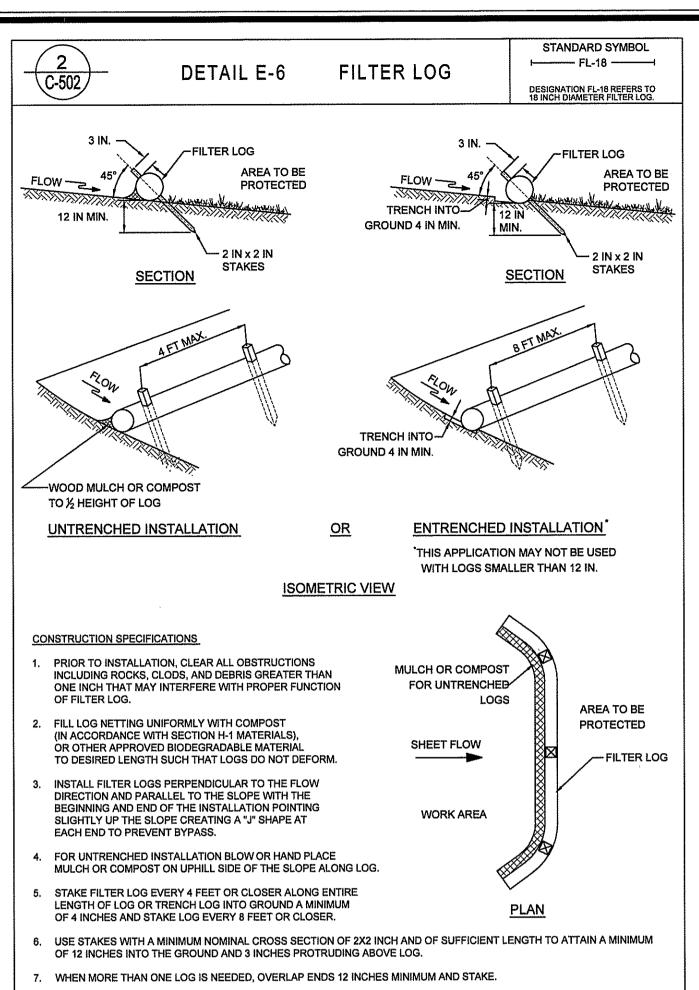
- RIPRAP AND STONE MUST CONFORM TO THE SPECIFIED CLASS.
- USE NONWOVEN GEOTEXTILE, AS SPECIFIED IN SECTION H-1 MATERIALS, AND PROTECT FROM PUNCTURING, CUTTING, OR TEARING, REPAIR ANY DAMAGE OTHER THAN AN OCCASIONAL SMALL HOLE BY PLACING ANOTHER PIECE OF GEOTEXTILE OVER THE DAMAGED PART OR BY COMPLETELY REPLACING THE GEOTEXTILE. PROVIDE A MINIMUM OF ONE FOOT OVERLAP
- PREPARE THE SUBGRADE FOR GEOTEXTILE OR STONE FILTER (¾ TO 1½ INCH MINIMUM STONE FOR 6 INCH MINIMUM DEPTH) AND RIPRAP TO THE REQUIRED LINES AND GRADES. COMPACT ANY FILL REQUIRED IN THE SUBGRADE TO A DENSITY OF APPROXIMATELY THAT OF THE SURROUNDING UNDISTURBED MATERIAL.
- EXTEND GEOTEXTILE AT LEAST 6 INCHES BEYOND EDGES OF RIPRAP AND EMBED AT LEAST 4 INCHES AT SIDES OF RIPRAP. CONSTRUCT RIPRAP OUTLET TO FULL COURSE THICKNESS IN ONE OPERATION AND IN SUCH A MANNER AS TO AVOID DISPLACEMENT OF UNDERLYING MATERIALS. PLACE STONE FOR RIPRAP OUTLET IN A MANNER THAT WILL ENSURE THAT IT IS REASONABLY HOMOGENOUS WITH THE SMALLER STONES AND SPALLS FILLING THE VOIDS BETWEEN THE LARGER STONES. PLACE RIPRAP IN A MANNER TO PREVENT DAMAGE TO THE FILTER BLANKET OR GEOTEXTILE. HAND PLACE TO THE EXTENT
- WHERE NO ENDWALL IS USED, CONSTRUCT THE UPSTREAM END OF THE APRON SO THAT THE WIDTH IS TWO TIMES THE DIAMETER OF THE OUTLET PIPE, AND EXTEND THE STONE UNDER THE OUTLET BY A MINIMUM OF 18 INCHES.
- CONSTRUCT APRON WITH 0% SLOPE ALONG ITS LENGTH AND WITHOUT OBSTRUCTIONS. PLACE STONE SO THAT IT BLENDS IN
- MAINTAIN LINE, GRADE, AND CROSS SECTION. KEEP OUTLET FREE OF EROSION. REMOVE ACCUMULATED SEDIMENT AND DEBRIS. AFTER HIGH FLOWS INSPECT FOR SCOUR AND RIPRAP DISLODGED RIPRAP. MAKE NECESSARY REPAIRS

MARYLAND STANDARDS AND SPECIFICATIONS FOR SOIL EROSION AND SEDIMENT CONTROL MARYLAND DEPARTMENT OF ENVIRONMENT WATER MANAGEMENT ADMINISTRATION NATURAL RESOURCES CONSERVATION SERVICE



TYPICAL AQUATIC/SAFETY BENCH ****C-502,

NOT TO SCALE



MARYLAND DEPARTMENT OF ENVIRONMENT U.S. DEPARTMENT OF AGRICULTURE WATER MANAGEMENT ADMINISTRATION NATURAL RESOURCES CONSERVATION SERVICE DETAIL F-4 FILTER BAG PUMP DISCHARGE HOSE ---MULCH, LEAFWOOD COMPOST, WOODCHIPS, SAND, OR STRAW BALES 5% MAX. ► FILTER BAG **ELEVATION**

REMOVE SEDIMENT WHEN IT HAS ACCUMULATED TO A DEPTH OF 1/2 THE EXPOSED HEIGHT OF LOG AND REPLACE MULCH.

REPLACE FILTER LOG IF TORN. REINSTALL FILTER LOG IF UNDERMINING OR DISLODGING OCCURS. REPLACE CLOGGED

FILTER LOGS. FOR PERMANENT APPLICATIONS, ESTABLISH AND CONTINUOUSLY MEET REQUIREMENTS FOR ADEQUATE

MARYLAND STANDARDS AND SPECIFICATIONS FOR SOIL EROSION AND SEDIMENT CONTROL

VEGETATIVE ESTABLISHMENT IN ACCORDANCE WITH SECTION B-4 VEGETATIVE STABILIZATION.

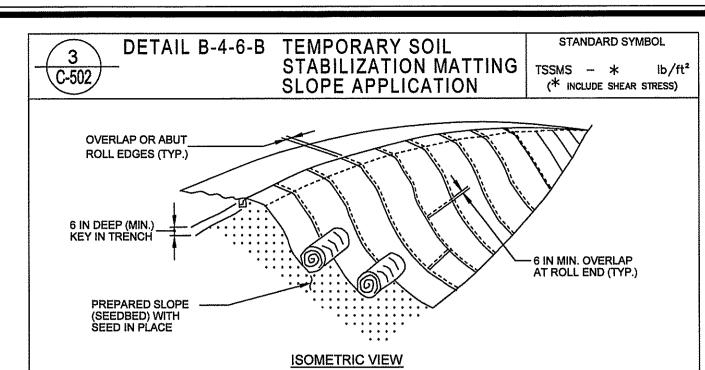
CONSTRUCTION SPECIFICATIONS

- TIGHTLY SEAL SLEEVE AROUND THE PUMP DISCHARGE HOSE WITH A STRAP OR SIMILAR DEVICE.
- PLACE FILTER BAG ON SUITABLE BASE (E.G., MULCH, LEAF/WOOD COMPOST, WOODCHIPS, SAND, OR STRAW BALES) LOCATED ON A LEVEL OR 5% MAXIMUM SLOPING SURFACE. DISCHARGE TO A STABILIZED AREA. EXTEND BASE A MINIMUM OF 12 INCHES FROM EDGES OF BAG.
- CONTROL PUMPING RATE TO PREVENT EXCESSIVE PRESSURE WITHIN THE FILTER BAG IN ACCORDANCE WITH THE MANUFACTURER RECOMMENDATIONS. AS THE BAG FILLS WITH SEDIMENT, REDUCE PUMPING RATE.
- REMOVE AND PROPERLY DISPOSE OF FILTER BAG UPON COMPLETION OF PUMPING OPERATIONS OR AFTER BAG HAS REACHED CAPACITY, WHICHEVER OCCURS FIRST. SPREAD THE DEWATERED SEDIMENT FROM THE BAG IN AN APPROVED UPLAND AREA AND STABILIZE WITH SEED AND MULCH BY THE END OF THE WORK DAY. RESTORE THE SURFACE AREA BENEATH THE BAG TO ORIGINAL CONDITION UPON REMOVAL OF THE DEVICE.
- USE NONWOVEN GEOTEXTILE WITH DOUBLE STITCHED SEAMS USING HIGH STRENGTH THREAD. SIZE SLEEVE TO ACCOMMODATE A MAXIMUM 4 INCH DIAMETER PUMP DISCHARGE HOSE. THE BAG MUST BE MANUFACTURED FROM A NONWOVEN GEOTEXTILE THAT MEETS OR EXCEEDS MINIMUM AVERAGE ROLL VALUES (MARV) FOR THE

FOLLOWING:		,
GRAB TENSILE	250 LB	ASTM D-46
PUNCTURE	150 LB	ASTM D-48
FLOW RATE	70 GAL/MIN/FT ²	ASTM D-44
PERMITTIVITY (SEC-1)	1.2 SEC ⁻¹	ASTM D-44
UV RESISTANCE	70% STRENGTH @ 500 HOURS	ASTM D-43
APPARENT OPENING SIZE (AOS)	0.15-0.18 MM	ASTM D-47
SEAM STRENGTH	90%	ASTM D-46

6. REPLACE FILTER BAG IF BAG CLOGS OR HAS RIPS, TEARS, OR PUNCTURES. DURING OPERATION KEEP CONNECTION BETWEEN PUMP HOSE AND FILTER BAG WATER TIGHT. REPLACE BEDDING IF IT BECOMES DISPLACED.

MARYLAND STANDARDS AND SPECIFICATIONS FOR SOIL EROSION AND SEDIMENT CONTROL MARYLAND DEPARTMENT OF ENVIRONMENT U.S. DEPARTMENT OF AGRICULTURE WATER MANAGEMENT ADMINISTRATION NATURAL RESOURCES CONSERVATION SERVICE



CONSTRUCTION SPECIFICATIONS

- . USE MATTING THAT HAS A DESIGN VALUE FOR SHEAR STRESS EQUAL TO OR HIGHER THAN THE SHEAR STRESS DESIGNATED ON APPROVED PLANS.
- 2. USE TEMPORARY SOIL STABILIZATION MATTING MADE OF DEGRADABLE (LASTS 6 MONTHS MINIMUM) NATURAL OR MAN-MADE FIBERS (MOSTLY ORGANIC). MAT MUST HAVE UNIFORM THICKNESS AND DISTRIBUTION OF FIBERS THROUGHOUT AND BE SMOLDER RESISTANT. CHEMICALS USED IN THE MAT MUST BE NON-LEACHING AND NON-TOXIC TO VEGETATION AND SEED GERMINATION AND NON-INJURIOUS TO THE SKIN, IF PRESENT, NETTING MUST BE EXTRUDED PLASTIC WITH A MAXIMUM MESH OPENING OF 2x2 INCHES AND SUFFICIENTLY BONDED OR SEWN ON 2 INCH CENTERS ALONG LONGITUDINAL AXIS OF THE MATERIAL TO PREVENT SEPARATION OF THE NET FROM THE PARENT MATERIAL
- B. SECURE MATTING USING STEEL STAPLES, WOOD STAKES, OR BIODEGRADABLE EQUIVALENT. STAPLES MUST BE "U" OR "T" SHAPED STEEL WIRE HAVING A MINIMUM GAUGE OF NO. 11 AND NO. 8 RESPECTIVELY. "U" SHAPED STAPLES MUST AVERAGE 1 TO 1% INCHES WIDE AND BE A MINIMUM OF 6 INCHES LONG. "T" SHAPED STAPLES MUST HAVE A MINIMUM 8 INCH MAIN LEG, A MINIMUM 1 INCH SECONDARY LEG, AND A MINIMUM 4 INCH HEAD. WOOD STAKES MUST BE ROUGH-SAWN HARDWOOD, 12 TO 24 INCHES IN LENGTH, 1x3 INCH IN CROSS SECTION, AND WEDGE SHAPED AT THE BOTTOM
- . PERFORM FINAL GRADING, TOPSOIL APPLICATION, SEEDBED PREPARATION, AND PERMANENT SEEDING IN ACCORDANCE WITH SPECIFICATIONS, PLACE MATTING WITHIN 48 HOURS OF COMPLETING SEEDING OPERATIONS UNLESS END OF WORKDAY STABILIZATION IS SPECIFIED ON THE APPROVED EROSION & SEDIMENT CONTROL PLAN.
- 5. UNROLL MATTING DOWNSLOPE, LAY MAT SMOOTHLY AND FIRMLY UPON THE SEEDED SURFACE. AVOID STRETCHING THE
- 3. OVERLAP OR ABUT ROLL EDGES PER MANUFACTURER RECOMMENDATIONS. OVERLAP ROLL ENDS BY 6 INCHES (MINIMUM), WITH THE UPSLOPE MAT OVERLAPPING ON TOP OF THE DOWNSLOPE MAT.
- 7. KEY IN THE UPSLOPE END OF MAT 6 INCHES (MINIMUM) BY DIGGING A TRENCH, PLACING THE MATTING ROLL END IN THE TRENCH, STAPLING THE MAT IN PLACE, REPLACING THE EXCAVATED MATERIAL, AND TAMPING TO SECURE THE MAT END IN
- 8. STAPLE/STAKE MAT IN A STAGGERED PATTERN ON 4 FOOT (MAXIMUM) CENTERS THROUGHOUT AND 2 FOOT (MAXIMUM) CENTERS ALONG SEAMS, JOINTS, AND ROLL ENDS.

CHECKLIST FOR REQUIRED INSPECTION

9. ESTABLISH AND MAINTAIN VEGETATION SO THAT REQUIREMENTS FOR ADEQUATE VEGETATIVE ESTABLISHMENT ARE CONTINUOUSLY MET IN ACCORDANCE WITH SECTION B-4 VEGETATIVE STABILIZATION.

MARYLAND STANDARDS AND SPECIFICATIONS FOR SOIL EROSION AND SEDIMENT CONTROL

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

TYPE OF INSPECTION	DEVELOPER ENGINEER APPROVAL/DATE	EEA INSPECTION/ DATE
1) PRECONSTRUCTION MEETINGS		
2) COMPLETION OF SEDIMENT CONTROL MEASURES (IF USING BASIN SEE #6 BELOW)		
3) PRIOR TO MODIFICATION OR REMOVAL OF SED. CNTRL.		
4) INFILTRATION SYSTEMS A. SITE READINESS PER SEQUENCE OF CONSTRUCTION B. INFILTRATION AREA PROTECTED FROM SEDIMENTATION C. DIMENSIONS D. FILTERING MATERIAL (TYPE/DEPTH)		
E. FILL MATERIAL F. SIZE, PLACEMENT, TYPE OF PIPING (IF APPLICABLE) G. OBSERVATION WELL H. COVER / STABILIZATION		
5) OPEN CHANNEL FLOW ATTENUATION A. SITE READINESS PER SEQUENCE OF CONSTRUCTION B. CROSS SECTION CONFORMANCE C. MATERIAL (TYPE/SIZE) D. STABILIZATION		
6) RETENTION / DETENTION STRUCTURES (BASIN/PONDS) A. SUBGRADE PREPARATION 1. CORE TRENCH		· · · · · · · · · · · · · · · · · · ·
2. SUITABLE FILL 3. COMPACTION		
B. EMBANKMENT CONSTRUCTION 1. SUITABLE MATERIAL		
2. SLOPE GRADE C. BARREL AND RISER ASSEMBLY 1. CORRECT MATERIAL ONSITE 2. SIZING		
3. ANTI-SEEP COLLARS 4. INSTALLATION / BACKELLI		

D. CONCRETE INLET STRUCTURES 1. FOOTER EXCAVATION AND SIZE 2. REINFORCING MATERIAL (TYPE, SIZE, PLACEMENT) 3. WEIR POUR 4. FORM STRIP AND FINISHING E. IMPOUNDING AREA 1. LOW FLOW CHANNELS

2. DEWATERING DEVICE

3. EMERGENCY SPILLWAY

F. OUTFALL AREA (LEVEL SPREADER,

RIPRAP CHANNEL, ETC.) G. VEGETATION STABILIZATION H. MISCELLANEOUS YOU MUST NOTIFY THE DIVISION OF ENVIRONMENTAL COMPLIANCE SECTION (ECS) AT (301 600-1132 BEFORE

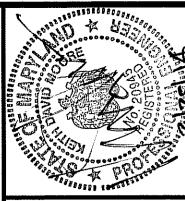
9:00 AM 24 HOURS PRIOR TO THE REQUIRED INSPECTION. FAILURE TO NOTIFY THE AGENCY WILL RESULT IN A STOP WORK ORDER OR OTHER PENALTIES AS OUTLINED IN FREDERICK COUNTY CODES.

THIS LIST IS FOR SEQUENCE OF CONSTRUCTION ONLY. FREDERICK COUNTY ASSUMES NO RESPONSIBILITY OR LIABILITY FOR IMPROPER INSTALLATION OF ANY ITEM ON THIS CHECKLIST. THE AGENCY RECOMMENDS

THAT A PROFESSIONAL ENGINEER BE PRESENT FOR EACH OF THE REQUIRED INSPECTIONS.

Construction approval by City Engineer 🕍 lid for a period of two (2) years from date of approval. If a bonafide attempt to commence construction has not begun in this 2 year period, City approval shall be null and void. All approvals are subject to the water allocation ordinance and in no way imply allocation of water. The

owner/developer proceeds with any improvements at his/her sole risk. CONSULTANT: CITY ENGINEER: REVISION DESCRIPTION (FOR REVISIONS TO PREVIOUSLY APPROVED PLANS) | DATE AND INITIAL | DATE AND INITIAL



repared or approved by me, and that I am a

aws of the State of Maryland License
No. 20945 Expiration Date: 08-23-201

CAD DWG FILE: 06-14-2013 DATE

TAX MAP ELECTION DIST SHEET TITLE

> SEC DETAILS & NOTES C-502

SHEET 6 OF

TRISTAR AERATING FOUNTAIN

PUMPING CAPACITIES: The aerator shall produce a tri-tier spray pattern; a geyser type center spray surrounded by a two fan shaped patterns. Inner spray dimensions are 12 feet or 4 meters in height and 2 feet or 0.6 meters in diameter. Middle spray dimensions are $\frac{7}{2}$ feet or $\frac{2.4}{2}$ meters in height and 10 feet or 3 meters in diameter. Outer spray dimensions are __4_ feet or __1.2_ meters in height and __17_ feet or 5.2 meters in diameter. The primary pumping rate of the unit is 210 GPM or 45.3 m³/hr and the secondary or induced circulation rate is 2100 GPM m³/hr.



FLOAT: The float shall be made of seamless, one-piece highdensity polyethylene plastic, filled with high density closed cell polyurethane foam. The float shall be capable of providing full floatation if the shell is punctured or cracked. The float shall have

protective pockets for lights and handles molded into the bottom for easy handling. Metal floats or those with an internal void for additional ballast are not acceptable.

IMPELLER: The impeller shall be injection molded from a polyurethane isoplast material with a brass insert. All Aerating Fountain impellers and pumping chambers are interchangeable.

MOTOR: The motor shall be a 2 HP, 230 volt, 1 phase, 60 Hz oil-cooled, submersible motor operating at 3450 RPM or 50 Hz operates at 2875 RPM. The service factor shall be 1.15 except for 5HP 1Ph which shall be 1.00. The motor shall operate in a reservoir of Otterbine oil for continuous lubrication of bearings and for efficient transfer of heat through the motor housing wall. Top mounted motors and waterlubricated motors are not acceptable. The rotor shall be dynamically balanced. The winding (stator) wires shall be covered with class F rated insulation designed for complete immersion in oil. The motor shall be attached to a thermoplastic motor base plate. The motor shall be protected against oil and water leakage by a combination of rotary seals, stationary seals, and molded rubber "O" rings. The rotary seal shall be accessible without removing the motor base plate. Motor shall be servicable.

MOTOR HOUSING: The external motor housing shall be a canister formed from deep drawn 316 stainless steel. The motor base plate shall be constructed of 420 Valox thermoplastic. A Valox boss will provide support and protection for the male electrical connector.

FASTENERS: All fasteners are to be metric and type 304 or 316 stainless steel.

ELECTRICAL CONNECTORS: The electrical connectors shall consist of a receptacle and a plug constructed of non-conductive polymers. The system shall create a vacuum seal when connected and have a threaded nut system as a backup. The plug shall have a keyway and be threaded into the motor base plate. The connector system shall be ETL and UL approved.

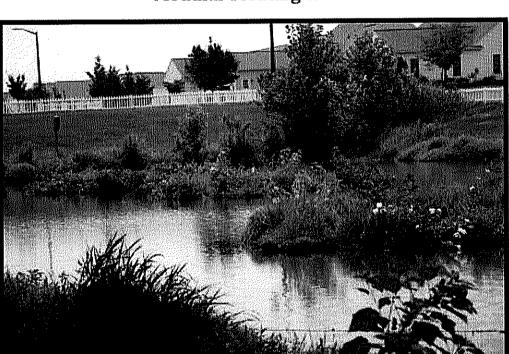
UNDERWATER POWER CABLE: The power cables shall be type SOOW specifically designed for underwater use. The conductors shall be flexible, stranded bare copper 12, 10 or 8 gauge, triple insulated to resist moisture, cracking, and softening. The outer jacket of the cable shall be a black CPE material. All underwater connections shall be vulcanized. Power cable shall be able to be furnished in unspliced lengths up to one thousand feet (305 m) if necessary.

POWER CONTROL CENTER: The electrical control components shall be mounted in a NEMA 3R enclosure with an externally mounted disconnect switch and a HAND - OFF - AUTO selector switch. The electrical system for units operating on 115, 208-230 volt, single or three phase, shall include a circuit breaker and a GFCI (Ground Fault Circuit Interrupter). To operate the GFCI on 208-230volt systems a grounded neutral

AERATING FOUNTAIN OR ENG. APPROVED EQUAL

The New American Pond 'Green Solutions for Water Pollution'

Modular Floating Wetlands



- Pollution Removal
- Beautification Wildlife Habitat

Our new and improved Modular Floating Wetlands have been designed to improve shipping, handling, installation, and to be horticulturally sound. Our modular floating wetlands are comprised of three components including bio matrix foam, closed cell foam, and coir inserts.

- > The bio matrix foam (recycled plastic) has improved the structural quality and longevity of the product while increasing surface area for microbial
- > The closed cell foam has been upgraded to improve the integrity of the
- > The coir inserts allow for each modular unit to be pre grown meeting the

We have created three different shapes to best suite your needs. Our modules can be connected easily to create any shape that is desired. Floating wetlands are available with or without plants.

FLOATING WETLANDS TO BE ANCHORED TO THE LAKE BOTTOM USING 'DUCK BILL' ANCHORS & 12 FT OF STAINLESS STEEL CABLE & CONNECTORS

1-800-566-3264 toll free Charleston@FloatingWetlands.com www.floatingwetlands.com

Maryland Aquatic Nurseries, Inc. 1-877-736-1807 toll free Maryland@FloatingWetlands.com

FLOATING WETLANDS OR ENG. APPROVED EQUAL

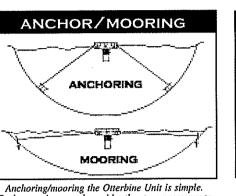
must be present or an optional control transformer may be supplied. The electrical system for units operating on 400 and 460 volt shall include fuses. Fuses, if used, shall be dual-element type, mounted in three pole fuse blocks, and with spring reinforced clips. For all units the motor starter shall be a combination magnetic full-voltage non-reversing type, 600 volts maximum, with bimetallic, ambient compensated overload relays. The electrical system shall include a lightning arrester, rated for a maximum of 100,000 amperes discharge for three phase and a maximum of 60,000 amperes discharge for single phase. The system will include a 24-

A. Safety: The aerator system shall be tested and approved as a unit. Separate component testing not allowed. Unit must be tested by ETL, ETL-C, CE, UL or other accredited testing facilities.

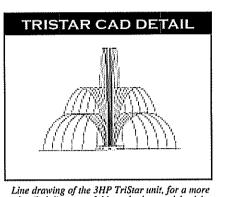
WARRANTY: Warranty shall be five years.

* ACCEPTABLE MANUFACTURER: This unit shall be an OTTERBINE OBT10 Model, 2 horsepower manufactured by OTTERBINE/BAREBO, INC., 3840 MAIN ROAD EAST, EMMAUS, PA 18049 U.S.A. PH: (610) 965-6018. www.otterbine.com

* OR ENGINEER APPROVED EQUAL



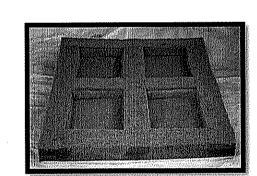




securely place your unit in the waterway.	ft. of SOOW cable. Int'l Package: Unit and 15m of cable (no cable on CE).	www.caaaeiaus.com
TRISTAI	R SPECIFIC	ATIONS

HP	Voltage Phase/Hz	Motor RPM	Running Amp Draw	Spray Dimensions in Inner Middle				*Pumping Rate GPM/m3/hr	Min. Oper. Depth	\$USA9935FFM.USAGGE+2	laximum Cable * Runs (in feet)		**Ship Weight 60Hz-lbs 50Hz dim. kg
8.1(K69291)93	2,1974,680,000,000,000,000	Kuusanywase	NAMES OF TAXABLE PARTY OF		Height/Width			-tousarille collector	12awg	10awg	8awg		
1	115/1/60	3450	14	8ft/2ft	5ft/9ft	3ft/13ft	150 GPM	30"	n/a	175	275	150 lbs	
	230/1/50	2875	7.2	3m/.6m	1.8m/2.7m	.9m/4m	32.4 m³/hr	75cm	385	610	975	68 kg	
	230/1/60	3450	8.3 - 7.5	8ft/2ft	5ft/9ft	3ft/13ft	150 GPM	30"	385	615	985	150 lbs	
(2)	230/1/50	2875	12.6	4m/.6m	2.4m/3m	1.2m/5.2m	45.3 m³/hr	75cm	220	350	565	68 kg	
	230/1/60	3450	13.7-12.4	12ft/2ft	7ft/10ft	4ft/17ft	(210 GPM)	(30")	210	340	535	150 lbs	
3	230/1/50	2875	13.5	4.6m/.9m	3.2m/3.8m	2m/6.1m	59.3 m³/hr	75cm	n/a	330	520	70 kg	
	230/1/60	3450	15.5 - 14	16ft/3ft	11ft/13ft	7ft/23ft	275 GPM	30"	n/a	315	500	155 lbs	
	230/3/60	3450	9.7 - 8.6	16ft/3ft	11ft/13ft	7ft/23ft	275 GPM	30"	380	610	965	155 lbs	
	400/3/50	2875	4	4.6m/.9m	3.2m/3.8m	2m/6.1m	59.3 m³/hr	75cm	1375	2200	3500	70 kg	
	460/3/60	3450	4.3	16ft/3ft	11ft/13ft	7ft/23ft	275 GPM	30"	1600	2525	4000	155 lbs	
5	230/1/60	3450	23	19ft/3ft	13ft/15ft	8ft/27ft	400 GPM	30"	n/a	n/a	370	160 lbs	
	230/3/60	3450	15.1 - 13.4	19ft/3ft	13ft/15ft	8ft/27ft	400 GPM	30"	235	375	590	160 lbs	
	400/3/50	2875	4	4.6m/.9m	3.2m/3.8m	2m/6.1m	59.3 m³/hr	75 cm	785	1275	2000	73 kg	
	460/3/60	3450	7.2	19ft/3ft	13ft/15ft	8ft/27ft	400 GPM	30"	925	1475	2350	160 lbs	

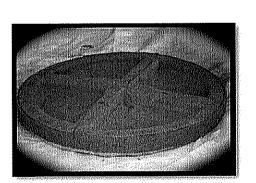
The New American Pond 'Green Solutions for Water Pollution



Rectangular modular 36"x 48"x3"

203.00

Installed Price 269.99



Full circle modular 48"x48"x3"

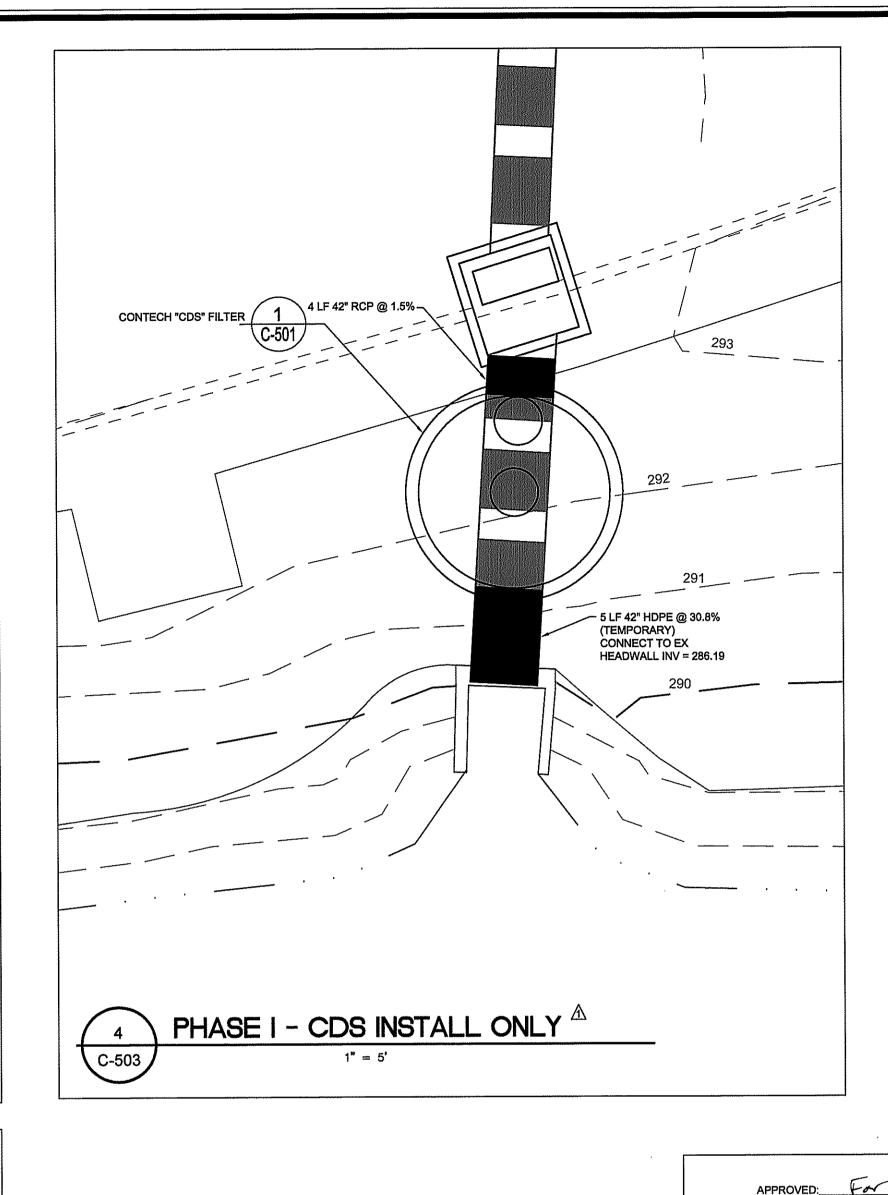
<u>Dealer Price</u> 195.76

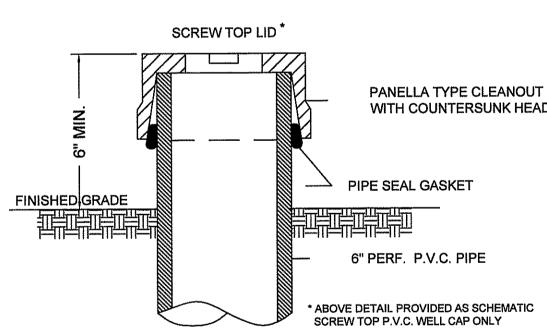
Installed Price 260.36

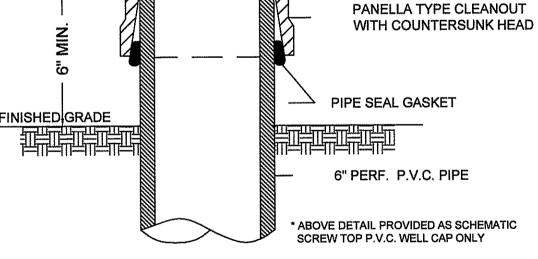
<u>Inserts</u> Replacement Replacement	18" quarter circle coir insert 18" x 12" rectangle coir insert	<u>Dealer Price</u> 7.15 6.85	<u>Installed Price</u> 12.25 11.75
Plant Mix	for quarter circle coir insert	25.00	33.25
Dlant Miv	for rectangle coir insert	20.00	26.60

Charleston Aquatic Nurseries, Inc. 1-800-566-3264 toll free Charleston@FioatingWetlands.com

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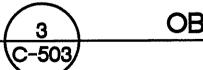




EACH OBSERVATION WELL/CLEANOUT SHALL INCLUDE THE FOLLOWING:

1. FOR AN UNDERGROUND FLUSH MOUNTED OBSERVATION WELL/CLEANOUT, PROVIDE A TUBE MADE OF NON-CORROSIVE MATERIAL, SCHEDULE 40 OR EQUAL, AT LEAST 3 FEET LONG WITH AN OUTSIDE DIAMETER OF AT LEAST 6 INCHES.

2. THE TUBE SHALL HAVE A FACTORY ATTACHED CAST IRON OR HIGH IMPACT PLASTIC COLLAR WITH RIBS TO PREVENT ROTATION WHEN REMOVING SCREW TOP LID. THE SCREW TOP LID SHALL BE CAST IRON OR HIGH IMPACT PLASTIC THAT WILL WITHSTAND ULTRA-VIOLET RAYS.



OBSERVATION WELL A

SUBMERGED GRAVEL WETLAND PLANTINGS

SHRUBS
Buttonbush / Cephalanthus occidentalis Winterberry Holly / Ilex Laevigata Virginia Willow / Itea Virginica

GRASSES/PERENNIALS
Blue Flag Iris / Iris Versicolor Duck Potato / Sagittaria latifolia Flowering Bulrush / Scirpus Validus Soft Rush / Juncus Effusus Shallow Sedge / Carex Lurida

Lobelia / Lobelia Dortmanna Shrubs to be planted 6' O.C. Grasses/Perennial plugs to be planted at random throughout the wetlands. Planting list subject to change by owners preference.

Scientific Name	Common Name	Depth Zone	Cont. Size	Typ. Spacing	Quantit
Eleocharis palustris	Common Spikerush	4-6"	plug	12" oc	2416
Orontium aquaticum	Golden Club	0-5"	plug	12" oc	1812
Heteranthera dubia	Grassleaf Mudplantain	0-12"	plug	12" oc	1812
Justicia americana	Water Willow	4-6"	plug	12" oc	1812
Menyanthes trifoliata	Buckbean	4-6"	plug	12" oc	1208
Hydrocotyle umbellata	Water Pennywort	0-1"	plug	12" oc	1208
Mentha aquatica	Aquatic Mint	0-2"	plug	12" oc	604
Proserpinaca palustris	Water Mermaid	0-12"	plug	12" oc	604
Polygonum amphibium	Water Smartweed	0-12"	plug	12" oc	604

CITY OF FREDERICK

Construction approval by City Engineer valid for a period of two (2) years from date of approval. If a bonafide attempt to commence construction has not begun in this 2 year period, City approval shall be null and void.

(FOR REVISIONS TO PREVIOUSLY APPROVED PLANS) DATE AND INITIAL DATE AND INITIAL

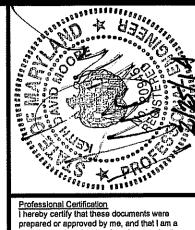
CONSULTANT: CITY ENGINEER:

All approvals are subject to the water allocation ordinance and in no way imply allocation of water. The

owner/developer proceeds with any improvements at his/her sole risk.

REVISION DESCRIPTION

AQUATIC BENCH PLANTINGS



CAD DWG FILE: 06-14-2013 CHK BY

SHEET TITLE MISC **DETAILS**

SHEET 7 OF

C-503/