INDEX OF SHEETS

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

LIMITS OF DISTURBANCE	—_LOD ——
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PROPOSED CONTOUR	350
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RANGE SAFETY FENCE	OSF
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MP	⊗ PUMP
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ischarge hose	
ISCHARGE HOSE XISTING ROAD/ ARKING LOT	

		ENGINEER'S CERTIFIC	ATE	
	. KNOWLEDGE OF THE S	EROSION CONTROL REPI SITE CONDITIONS AND TH SERVATION DISTRICT"		
Mantel	25		.E. • 25753	11/26/12
IGNATURE OF ENGINEER NATHEW SNYDER, P.E.	(PRINT NAME BELOW S	IGNATURE)		DATE
	- 10-2 - 10-00 - 10-00 - 10-00 - 10-00 - 10-00 - 10-00 - 10-00 - 10-00 - 10-00 - 10-00 - 10-00 - 10-00 - 10-00		diese little state utilite state kante utilite state dans dans deus reden dabb ment mehr me Mang dens state visite state visite state stat	to garage water hands desire desire and deliver and deliver and deliver come and deliver other and and all and

DEVELOPER'S CERTIFICATE

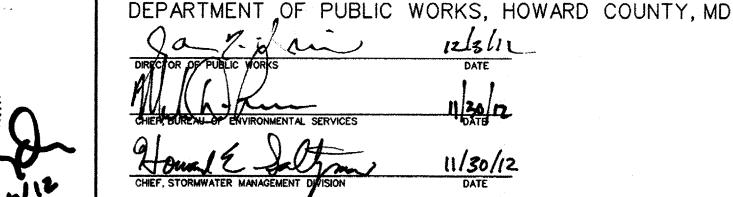
"I/WE CERTIFY THAT ALL DEVELOPMENT AND CONSTRUCTION WILL BE DONE ACCORDING TO THIS PLAN FOR SEDIMENT AND EROSION CONTROL, AND THAT ALL RESPONSIBLE PERSONNEL INVOLVED IN THE CONSTRUCTION PROJECT WILL HAVE A CERTIFICATE OF ATTENDANCE AT A DEPARTMENT OF THE ENVIRONMENT APPROVED TRAINING PROGRAM FOR THE CONTROL OF SEDIMENT AND EROSION BEFORE THE BEGINNING OF THE PROJECT. LALSO AUTHORIZE PERIODIC THE HOWARD SOIL CONSERVATION DISTRICT

VELOPER (PRINT NAME BELOW SIGNATURE) Howard Saltzman

THIS DEVELOPMENT PLAN IS APPROVED FOR SOIL EROSION AND SEDIMENT

CONTROL BY THE HOWARD SOIL

CONSERVATION DISTRICT.



DEPARTMENT OF RECREATION AND PARKS, HOWARD COUNTY, MD

11/30/12

I HEREBY CERTIFY THAT THESE DOCUMENTS WERE PREPARED OR APPROVED BY ME. AND THAT I AM A DULY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MARYLAND.
LICENSE NO. 25753. EXPIRATION DATE: 01-16-13

OAK WEST DRIVE STORMWATER POND RESTORATION PROJECT HOWARD COUNTY, MARYLAND DEPARTMENT OF PUBLIC WORKS CAPITAL PROJECT D-1160

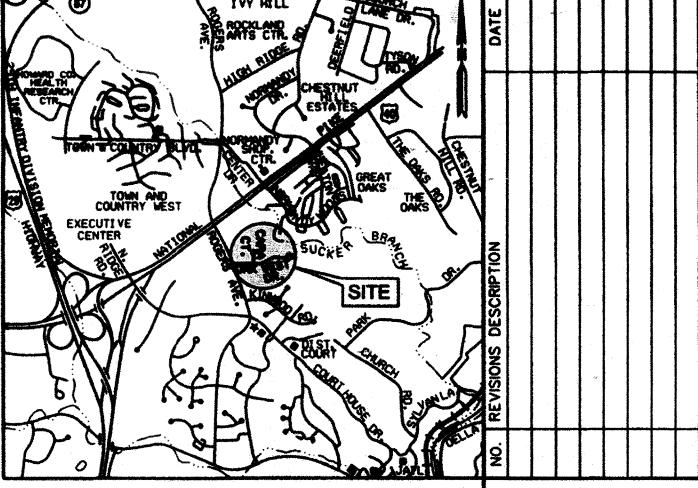
GENERAL NOTES

- 1. THE SUBJECT PROPERTIES ARE ZONED R-SC PER FEBRUARY 2, 2004 COMPREHENSIVE ZONING PLAN AND THE COMP-LITE ZONING AMENDMENTS DATED 7/28/2006.
- 2. THE HOWARD COUNTY DEPARTMENT OF PLANNING AND ZONING AND HOWARD SOIL CONSERVATION DISTRICT HAS DETERMINED THAT THE DISTURBANCES WITHIN THE 100-YEAR FLOODPLAIN, WETLANDS, STREAM AND REQUIRED BUFFERS FOR THE PROPOSED STREAM RESTORATION PROJECT ARE CONSIDERED ESSENTIAL OR NECESSARY IN ACCORDANCE WITH SECTIONS 16.115(C) AND 16.116(C) OF THE SUBDIVISION AND LAND DEVELOPMENT REGULATIONS. 3. THIS PROJECT WILL MEET THE PURPOSE AND INTENT OF SECTION 16.124 OF THE HOWARD
- COUNTY CODE AND THE LANDSCAPE MANUAL BY ALTERNATIVE COMPLIANCE. 4. THERE ARE NO KNOWN BURIAL GROUNDS OR CEMETERY SITES WITHIN THE PROJECT LIMITS.
- 5. THIS PLAN MEETS THE REQUIREMENTS OF THE FOREST CONSERVATION
- 6. ALL CONSTRUCTION SHALL BE IN ACCORDANCE WITH THE STANDARDS AND SPECIFICATIONS OF HOWARD COUNTY PLUS MSHA STANDARDS AND
- SPECIFICATIONS, IF APPLICABLE. 7. THE CONTRACTOR SHALL NOTIFY THE DEPARTMENT OF PUBLIC WORKS.
- BUREAU OF ENGINEERING/CONSTRUCTION INSPECTION DIVISION AT (410) 313-1880 24 HOURS IN ADVANCE OF ANY WORK BEING DONE. THE CONTRACTOR SHALL NOTIFY "MISS UTILITY" AT 1-800-257-7777 AT
- LEAST 48 HOURS PRIOR TO ANY EXCAVATION WORK BEING DONE. THE COORDINATES SHOWN HEREON ARE BASED ON HOWARD COUNTY GEODETIC CONTROL, WHICH IS BASED UPON THE MARYLAND STATE PLANE
- COORDINATE SYSTEM. HOWARD COUNTY MONUMENT NUMBER 25A2 WAS USED FOR THIS SITE.
- 10 WATER IS PUBLIC.
- 11. SEWER IS PUBLIC. 12. EXISTING UTILITIES ARE BASED ON FIELD SURVEYS AND AVAILABLE RECORD
- 13. THE EXISTING TOPOGRAPHY IS TAKEN FROM FIELD RUN SURVEY WITH ONE FOOT CONTOUR INTERVALS PREPARED BY AB CONSULTANTS, INC., IN FALL 2011.
- 14. ALL WORK SHALL BE CONSTRUCTED ACCORDING TO THE REQUIREMENTS OF THE NONTIDAL WETLANDS AND WATERWAYS PERMIT (MDE TRACKING *201261163).
- 15. A TRAFFIC STUDY IS NOT REQUIRED FOR THIS PROJECT. 16. OBSTRUCTIONS SHOWN ON THIS DRAWING ARE FOR THE CONVENIENCE OF THE CONTRACTOR ONLY AND KCITECHNOLOGIES, INC. DOES NOT WARRANT OR GUARANTEE THE CORRECTNESS OR COMPLETENESS OF THE INFORMATION GIVEN. SHOULD THE CONTRACTOR DISCOVER ANY DISCREPANCIES BETWEEN THE PLANS AND THE FIELD CONDITIONS, THE CONTRACTOR MUST VERIFY SUCH INFORMATION TO HIS OWN SATISFACTION, THE ENGINEER SHALL BE NOTIFIED IMMEDIATELY TO RESOLVE THE SITUATION. SHOULD THE CONTRACTOR MAKE FIELD CORRECTIONS OR ADJUSTMENTS WITHOUT NOTIFYING THE ENGINEER.
- THE CONTRACTOR ASSUMES ALL RESPONSIBILITY FOR THOSE CHANGES. 17. THE CONTRACTOR SHALL TAKE ALL NECESSARY PRECAUTIONS TO PROTECT THE EXISTING UTILITIES AND MAINTAIN UNINTERRUPTED SERVICE. ANY DAMAGE INCURRED DUE TO THE CONTRACTOR'S OPERATION SHALL BE
- REPAIRED IMMEDIATELY AT THE CONTRACTOR'S EXPENSE. 18. A WAIVER PETITION (WP-13-044) FROM SECTION 16.155(a)(1), 16.1201(n), AND 16.1205(a)(7) & (10) WAS APPROVED ON OCTOBER 24, 2012 THAT: ALLOWS THE USE OF THE AREA INSIDE THE LIMIT OF DISTURBANCE AS THE NET TRACT AREA IN THE FOREST CONSERVATION CALCULATIONS; NO SDP SUBMITTAL IS REQUIRED; AND STATE CHAMPION TREES, TREES 75% OF THE DIAMETER OF STATE CHAMPION TREES, AND TREES 30" IN DIAMETER OR LARGER ARE NOT REQUIRED TO BE RETAINED; SUBJECT TO THE FOLLOWING CONDITIONS:
 - A. THE WAIVER PETITION PLAN EXHIBIT SHALL SERVE AS THE SUBSTITUTE FOR A SITE DEVELOPMENT PLAN FOR DEVELOPMENT. NO DISTURBANCE IS PERMITTED BEYOND THE LIMIT OF DISTURBANCE AS SHOWN ON THE WAIVER EXHIBIT.
 - B. PRIOR TO THE COMMENCEMENT OF CAPITAL PROJECT D-1160 THE DEPARTMENT OF PUBLIC WORKS SHALL FORWARD THE EXECUTED RIGHT-OF-ENTRY DOCUMENT FOR SITE ACCESS TO THE OAK WEST ASSOCIATION, INC. LOT 77 TO THE DEPARTMENT OF PLANNING AND ZONING, DIVISION OF LAND DEVELOPMENT.
 - C. PRIOR TO THE COMMENCEMENT OF CAPITAL PROJECT D-1160 THE DEPARTMENT OF PUBLIC WORKS SHALL PAY A FEE-IN-LIEU IN THE AMOUNT OF \$6,534,00 FOR THE REFORESTATION OBLIGATION OF 0.20 ACRES AND MUST SUBMIT TO DPZ, DIVISION OF LAND DEVELOPMENT A COMPLETED FOREST CONSERVATION DATA SUMMARY FOR THIS
 - D. ONCE CAPITAL PROJECT D-1160 IS COMPLETE THE LIMIT OF DISTURBANCE SHALL BE RESTORED TO ITS PREVIOUS CONDITION THROUGH STABILIZATION AND REPLANTING OF FOREST RESOURCES.

THEREBY CERTIFY THAT THE FACILITY SHOWN ON THIS PLAN WAS CONSTRUCTED AS SHOWN ON THE "AS-BUILT" PLANS AND MEETS THE APPROVED PLANS AND SPECIFICATIONS

AS-BUILT CERTIFICATION

25753 5/14/2013



VICINITY MAP

ADC MAP NO. 12 GRID E7

THE HORIZONTAL AND VERTICAL DATUM SHOWN HEREON ARE BASED ON GPS OBSERVATIONS FROM THE FOLLOWING N.G.S. TRAVERSE POINTS HORIZONTAL NAD 1983/91 VERTICAL NAVD 1988

HOWARD COUNTY CONTROL POINTS

587502.7292 1366556.3776 25A2-VRS (2) 5875Ø2.6397 1366556.4192

ELEVATION 348.15

(1) HOWARD COUNTY REFERENCE MONUMENT 25A2. (2) SURVEY CONTROL WAS ESTABLISHED WITH ONE REFERENCE MONUMENT, 25A2, THAT WAS NEARBY THE PROJECT SITE. POSITION WAS ESTABLISHED USING GPS RTK VRS AND CHECKED AGAINST THE REFERENCE MONUMENT. VERTICAL CONTROL WAS ESTABLISHED BY PERFORMING A CLOSED DIFFERENTIAL LEVEL LOOP FROM MONUMENT 25A2. GPS RTK ELEVATIONS WERE NOT USED.

SPECIAL CONTRACTOR NOTES

- 100-YEAR FLOODPLAIN BOUNDARY IS SHOWN ON THE PLANS.
- 2. NO PERMANENT STOCKPILE OF ANY MATERIAL IS ALLOWED IN THE 100-YEAR FLOODPLAIN.
- IN-STREAM WORK IS PROHIBITED FROM MARCH 1ST TO MAY 31ST, INCLUSIVE, STREAM CLASSIFICATION: USE I.
- 4. CONTRACTOR SHALL CONTINUALLY MONITOR WEATHER FORECASTS DURING WORK ACTIVITIES AND SCHEDULE WORK DURING FAVORABLE CONDITIONS.
- 5. THE CONTRACTOR SHALL EXERCISE CARE IN ACTIVITIES INVOLVING EITHER CUT AND FILL OR GRADING IN THE VICINITY OF TREES THAT ARE TO REMAIN AT THE CONSTRUCTION SITE, ALL EARTH CUTS AND ACTIVITIES IN THE VICINITY OF TREES TO REMAIN SHALL BE MADE IN A MANNER THAT DOES NOT DISTURB THE CRITICAL ROOT ZONE WITHIN THE DRIPLINE OF THE TREE. PROTECTIVE ORANGE FENCING SHALL BE INSTALLED AROUND THE PERIMETER OF THE CRITICAL ROOT ZONE PRIOR TO CONSTRUCTION. THE LOCATION OF THE PROTECTIVE ORANGE FENCING SHALL BE APPROVED BY THE ENGINEER
- OR HIS/HER REPRESENTATIVE PRIOR TO CONSTRUCTION. 6. CONTRACTOR SHALL NOT STORE EQUIPMENT, MATERIALS AND/OR SUPPLIES BEYOND THE ORANGE FENCING SHOWN ON THE PLANS.
- 7. UPON COMPLETION OF THE WORK, BUT PRIOR TO DE-MOBILIZATION, THE CONTRACTOR SHALL REMOVE ALL REMNANTS OF CONSTRUCTION MATERIALS FROM THE SITE. THE CONTRACTOR SHALL RESTORE ALL DISTURBED AREAS TO A CONDITION EQUAL TO OR BETTER THAN THE PRE-CONSTRUCTION CONDITIONS.
- PRIOR TO BEGINNING ANY CONSTRUCTION ACTIVITIES, PHOTOGRAPHS OF THE PROPOSED WORK AREA AND ACCESS SHALL BE TAKEN.
- 9. ALL TREES TO BE REMOVED SHALL BE CUT AT THE BASE WITH A SAW AND NOT PUSHED OVER. TREE STUMPS MAY BE LEFT IN PLACE, UNLESS OTHERWISE DIRECTED ON THE PLANS OR BY THE ENGINEER.
- 10. ALL MATERIAL SHALL BE REMOVED AND DISPOSED OF OFFSITE. REMOVED TREES AND BRUSH MAY BE REDISTRIBUTED ON SITE AT THE DISCRETION OF THE ENGINEER OR HIS/HER REPRESENTATIVE.

DRIVE TO RE STORIMWATER F STREAM RESTC

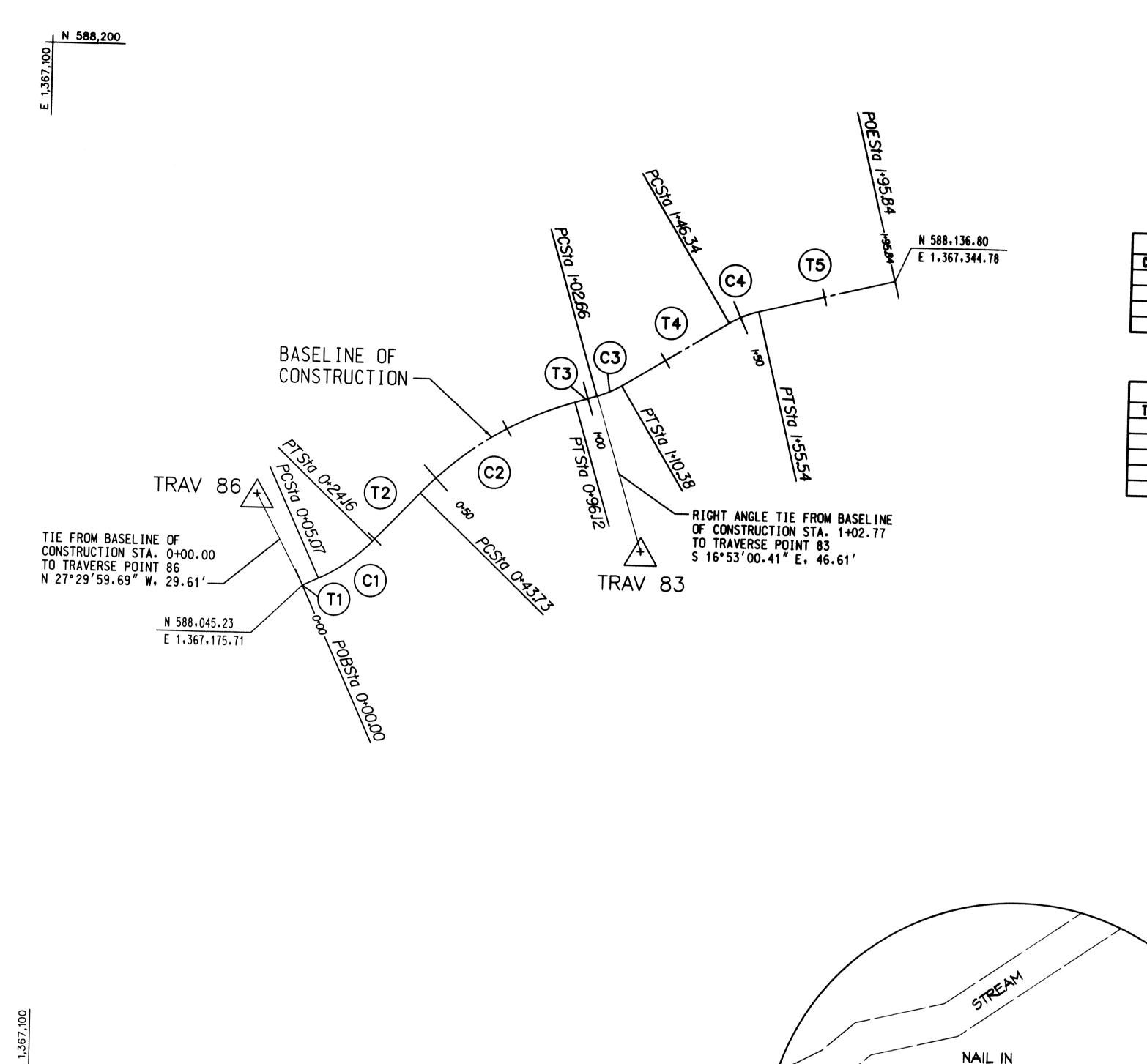
> TITLE SHEET

AS SHOWN NOVEMBER 2012 01-081795.61

CONSTRUCTION ISSUE:

SHEET NO.: 1 OF 15

AS-BUILT 05-14-2013



N 588,200

			CURVE DATA		
CURVE NO.	RADIUS	LENGTH	DELTA	TANGENT	CHORD BEARING
<u>C1</u>	50.00′	19.09'	21.52,17.86	9.66'	
C2	100.00′	52.40'	30°01′18.30″	26.82	
<u>C3</u>	30.00′	7.73'	14°45′25.44″	3.88	
C4	30.00'	9.20'	17°34′31.50″	4.64'	N 65*57'28.75" E 7.7 N 67*22'01.78" E 9.1

NAIL IN 13" SYCAMORE

19.99

TRAV. PT. 86

	TANGENT DATA	
TANGENT NO.	BEARING	DISTANCE
T1	N 65°11'11.03" E	5.07'
T2	N 43°18′53.18″ E	19.57'
T3	N 73°20'11.48" E	6.53'
T4	N 58°34′46.03″ E	35.95'
T5	N 76°09'17.53" E	40.30'

	INAVERSE CO	ORDINATE LIS	T
PT #	NORTHING	EASTING	ELEVATION
83	N 588,057.18	E 1.367.273.12	300.62
86	N 588.071.49	E 1.367.162.03	304.83

NAIL IN
() 18" POPLAR

TO TRAVERSE PT. 83

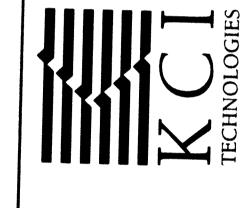
/ NAIL IN 12" HICKORY

TRAVERSE POINT 86

PIN AND CAP NOT TO SCALE

12.69

POND



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

STORMWATER POND RETROFIT & STORMWATER POND RETROFIT & STORMWATER PROJECT D-1160

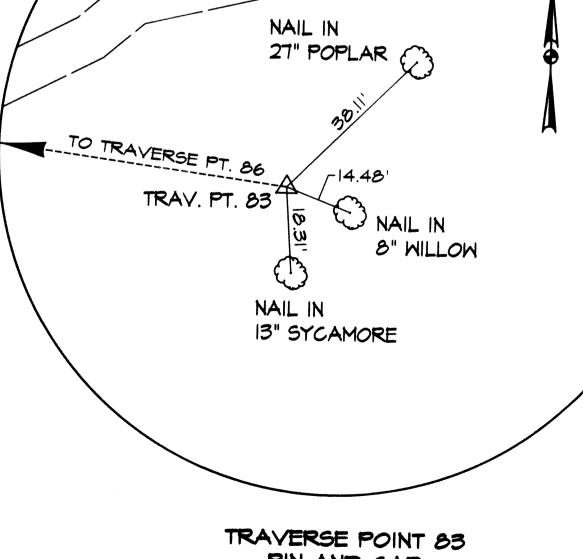
HOWARD COUNTY DEPARTMENT OF PUBLIC WORKS STORMWATER MANAGEMENT DIVISION FATEL COLLINARA CATEMAY DRIVE

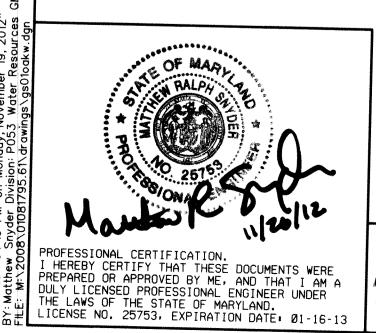
GEOMETRY SHEET

1" - 20' NOVEMBER 2012 KCIJOB NO.: 01-081795.61 CAPITAL PROJECT NO.:
D-1160 CONSTRUCTION ISSUE:

SHEET NO .: 2 OF 15

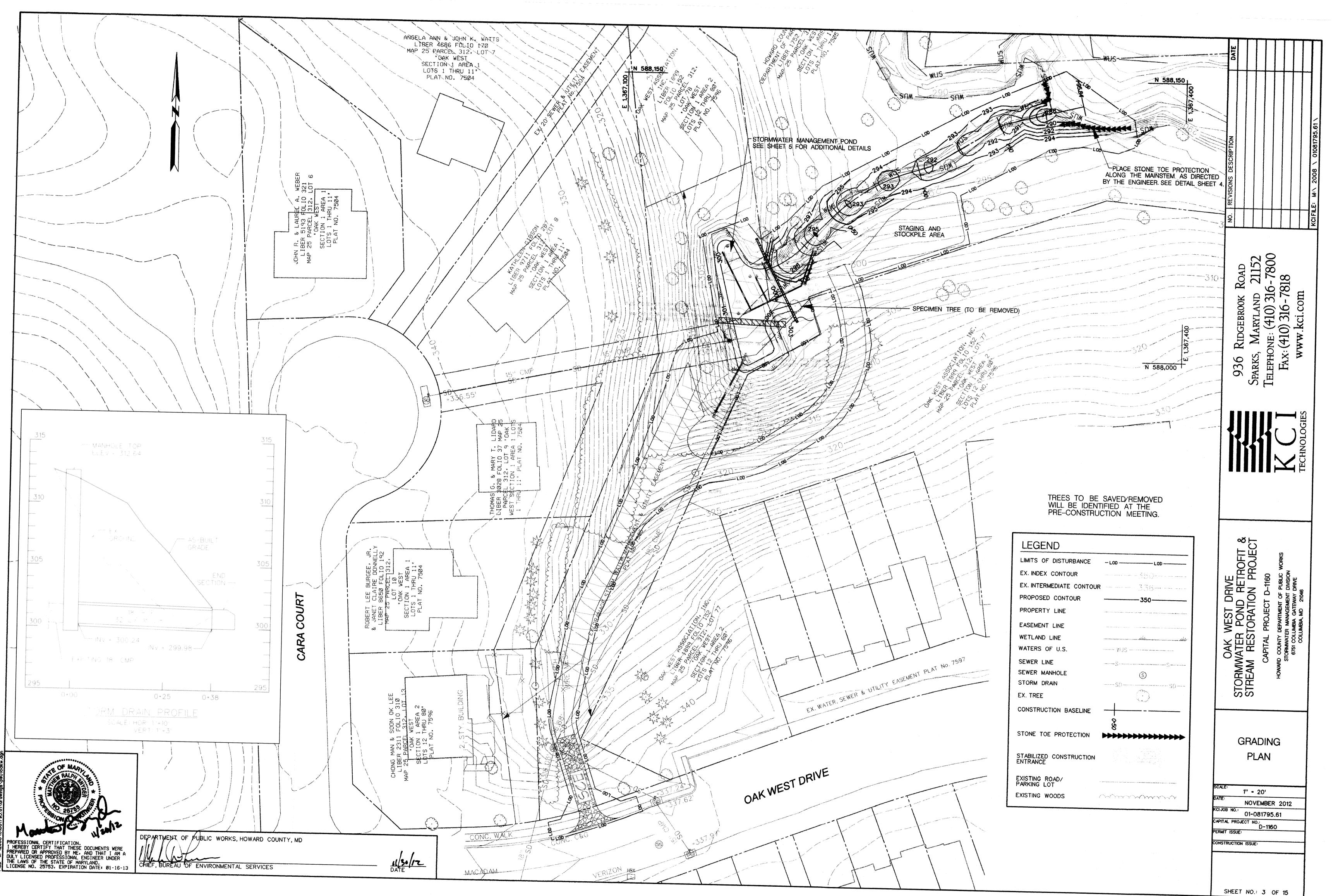
TRAVERSE POINT 83
PIN AND CAP
NOT TO SCALE

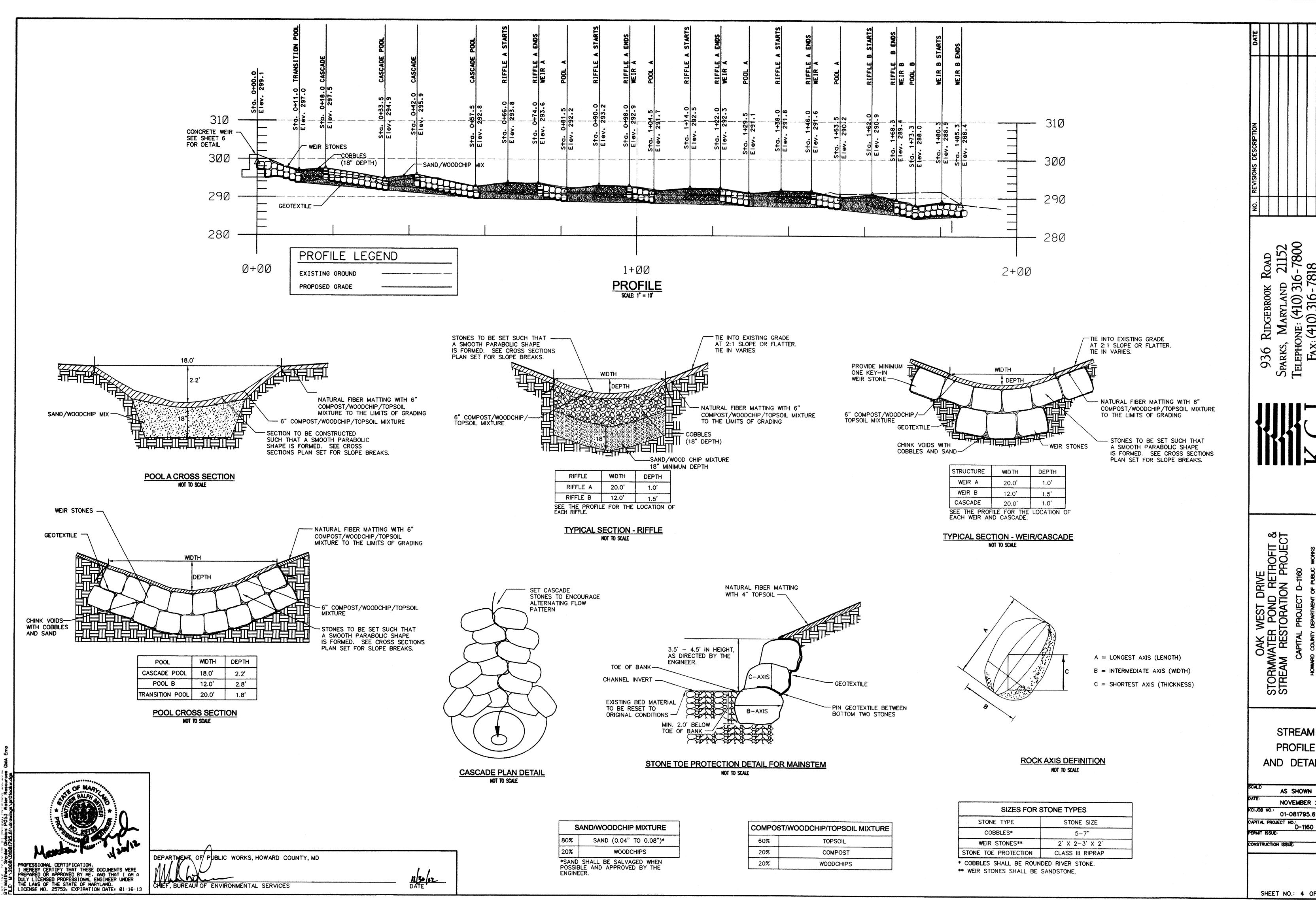




DEPARTMENT OF PUBLIC WORKS, HOWARD COUNTY, MD CHIEF, BUREAU OF ENVIRONMENTAL SERVICES 11/30/12 DATE

N 587,900



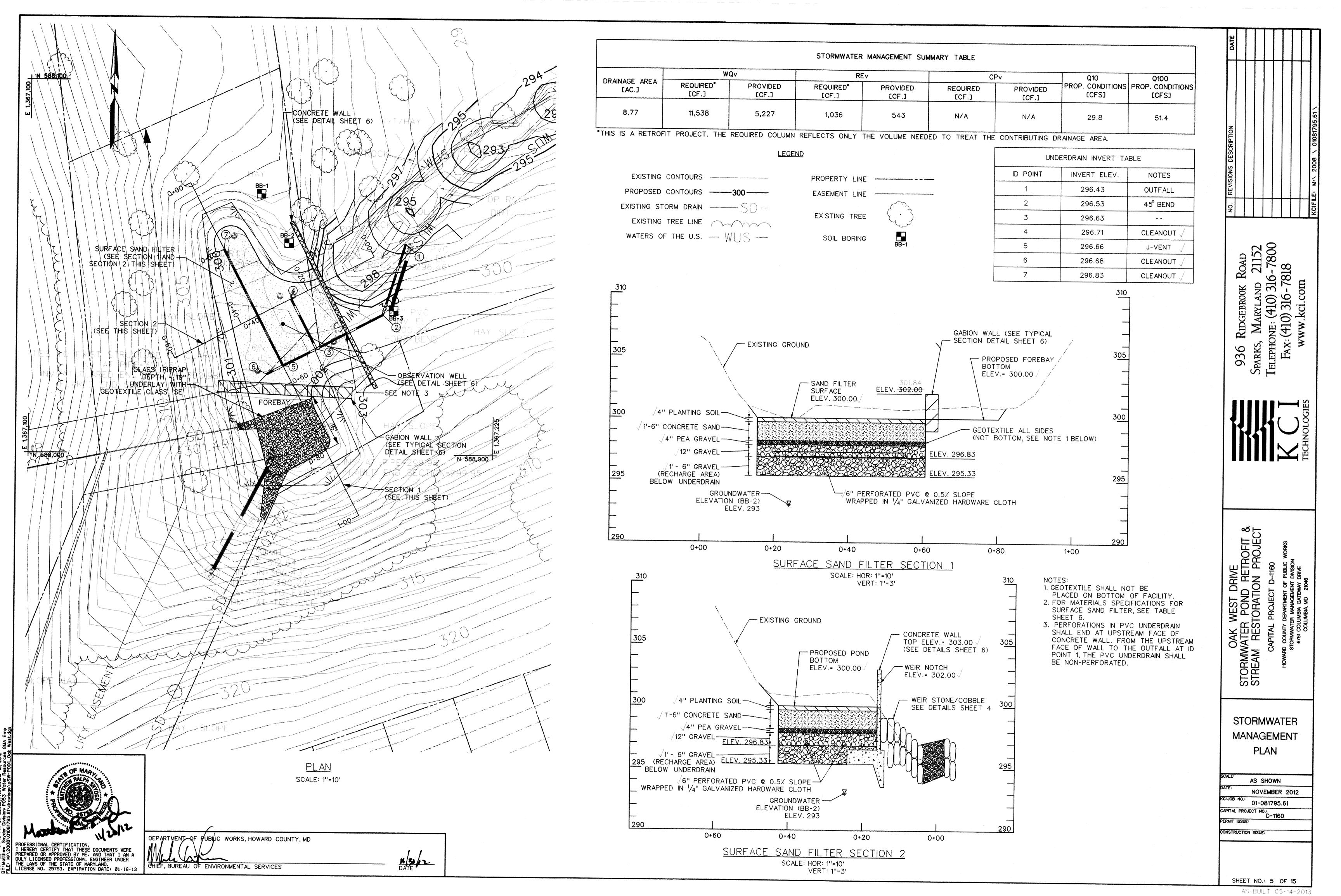


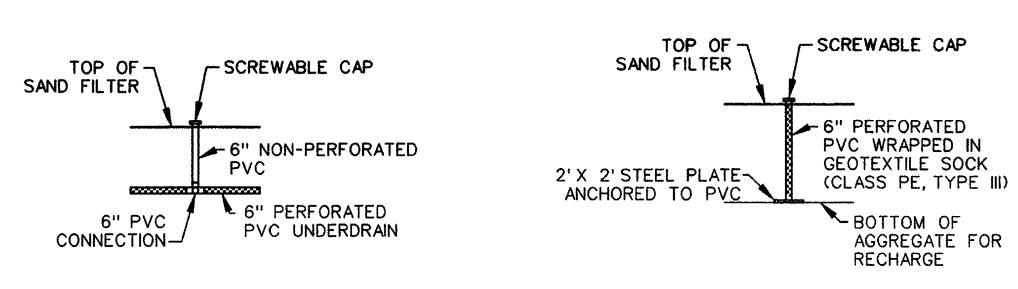
Fax: (410)

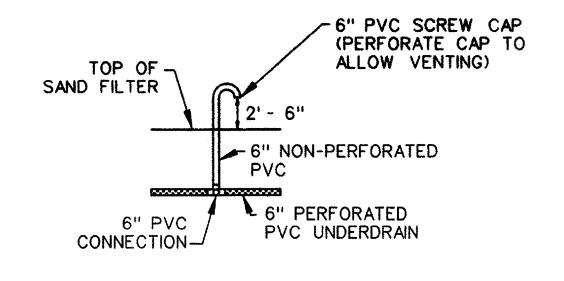
STREAM **PROFILE** AND DETAILS

AS SHOWN NOVEMBER 2012 01-081795.61

SHEET NO.: 4 OF 15







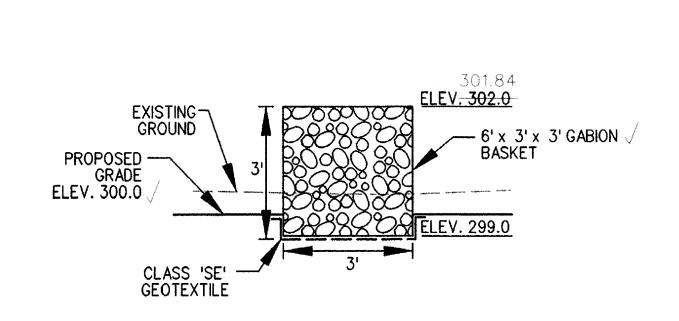
J-VENT DETAIL NOT TO SCALE

CLEANOUT DETAIL NOT TO SCALE

OBSERVATION WELL DETAIL NOT TO SCALE

NOTES:

- 1. PVC 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.
- 2. ALL VISIBLE PVC FEATURES ABOVE THE GROUND SURFACE SHALL BE BLACK IN COLOR.



GABION	WALL	TYPICAL	SECTION

NOT TO SCALE

CHIEF, BUREAU OF ENVIRONMENTAL SERVICES

MATERIA	ALS SPECIFICAT	TIONS FOR S	URFACE SAND FILTER
Material	Specification	Size	Notes
planting soil	sand 35 - 60% silt 30 - 55% clay 10 - 25%	n/a	USDA soil types loamy sand, sandy loam or loam
pea gravel	pea gravel: ASTM-D-448	No. 8 or No. 9 (1/8" to 3/8")	
geotextile		n/a	PE Type 1 nonwoven
gravel	AASHTO M-43	No. 57 or No. 6 Aggregate (3/8" to 3/4")	
underdrain piping	F 758, Type PS 28 or AASHTO M-278	4" to 6" rigid schedule 40 PVC or SDR35	Slotted or perforated pipe; 3/8" perf. © 6" on center, 4 holes per row; minimum of 3" of gravel over pipes; not necessary underneath pipes. Perforated pipe shall be wrapped with 1/4-inch galvanized hardware cloth
concrete sand	AASHTO-M-6 or ASTM-C-33	0.02" to 0.04"	Sand substitutions such as Diabase and Graystone (AASHTO) *10 are not acceptable. No calcium carbonated or dolomitic sand substitutions are acceptable. No "rock dust" can be used for sand.

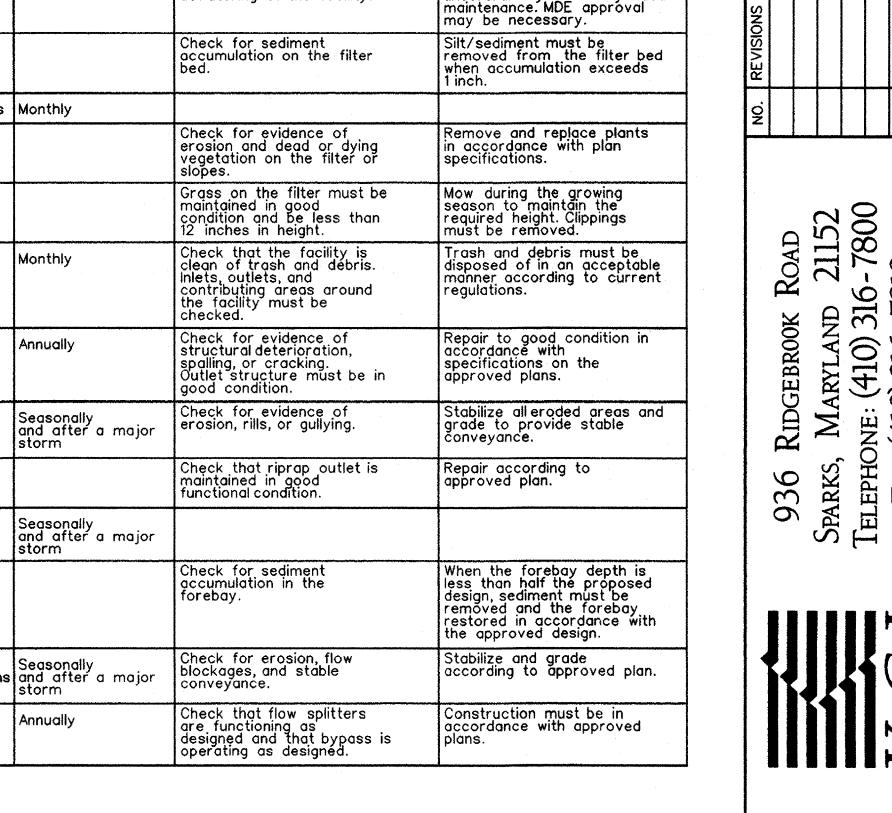
PROPOSED FILL — (TO TOP OF WALL)

TOP OF WALL-ELEV.= 303.00

16' - 8"

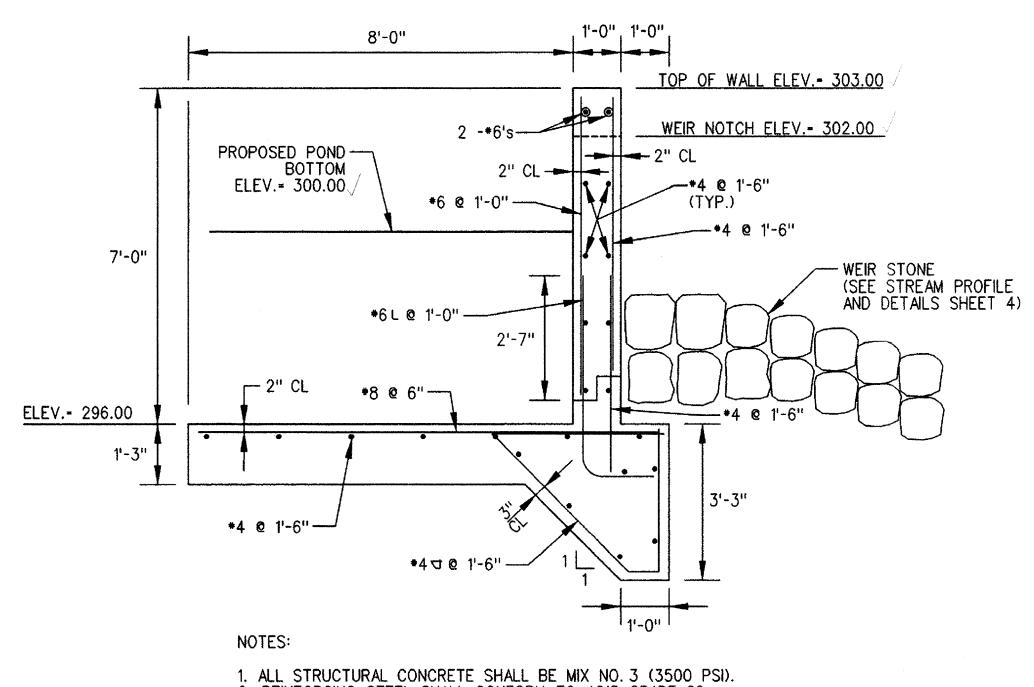
	Frequency of			
Inspection Item	Inspection	Inspection Requirements	Remedial Action	
Filter Surface	Seasonally and after a major storm			
Dewatering		Facility must dewater within 48 hours of rainfall. Noticeable odors, stained water on the filter surface or at the outlet, or the presence of algae or aquatic vegetation are indicators of anaerobic conditions and inadequate dewatering of the facility.	Remove the top three inches of sand and replace with sand material per plan specifications. Follow up inspections must confirm adequate dewatering. If the facility does not function as intended after the above action, the entire filter and underdrain system may need maintenance. MDE approval may be necessary.	
Sediment Accumulation		Check for sediment accumulation on the filter bed.	Silt/sediment must be removed from the filter bed when accumulation exceeds 1 inch.	
Vegetative Surfaces	Monthly			
Vegetative Cover		Check for evidence of erosion and dead or dying vegetation on the filter or slopes.	Remove and replace plants in accordance with plan specifications.	
Mowing		Grass on the filter must be maintained in good condition and be less than 12 inches in height.	Mow during the growing season to maintain the required height. Clippings must be removed.	
Debris and Trash Cleanout	Monthly	Check that the facility is clean of trash and debris. Inlets, outlets, and contributing areas around the facility must be checked.	Trash and debris must be disposed of in an acceptable manner according to current regulations.	
Structural Components	Annually	Check for evidence of structural deterioration, spalling, or cracking. Outlet structure must be in good condition.	Repair to good condition in accordance with specifications on the approved plans.	
Outlets	Seasonally and after a major storm	Check for evidence of erosion, rills, or gullying.	Stabilize all eroded areas and grade to provide stable conveyance.	
		Check that riprap outlet is maintained in good functional condition.	Repair according to approved plan.	
Pretreatment Forebays	Seasonally and after a major storm			
Sediment Accumulation		Check for sediment accumulation in the forebay.	When the forebay depth is less than half the proposed design, sediment must be removed and the forebay restored in accordance with the approved design.	
Grass Channel Conveyance Systems	Seasonally and after a major storm	Check for erosion, flow blockages, and stable conveyance.	Stabilize and grade according to approved plan.	
Overall Function of the Facility	Annually	Check that flow splitters are functioning as designed and that bypass is	Construction must be in accordance with approved plans.	

- PROPOSED GRADE (DOWNSTREAM SIDE OF WALL)



— EXISTING GROUND

ELEV.= 296.00



1. ALL STRUCTURAL CONCRETE SHALL BE MIX NO. 3 (3500 PSI). 2. REINFORCING STEEL SHALL CONFORM TO A615, GRADE 60.

CONCRETE WALL SECTION B-B SCALE: 1"-2"

DEPARTMENT OF PUBLIC WORKS, HOWARD COUNTY, MD

50' 6" PVC UNDERDRAIN

50'√

CONCRETE WALL SECTION A-A

SCALE: 1"=5"

ELEV.= 296.59 6" PVC UNDERDRAIN

20'√

CONCRETE WALL PLAN

SCALE: 1"=5"

MARYLAND 21152 ONE: (410) 316-7800 (410) 316-7818

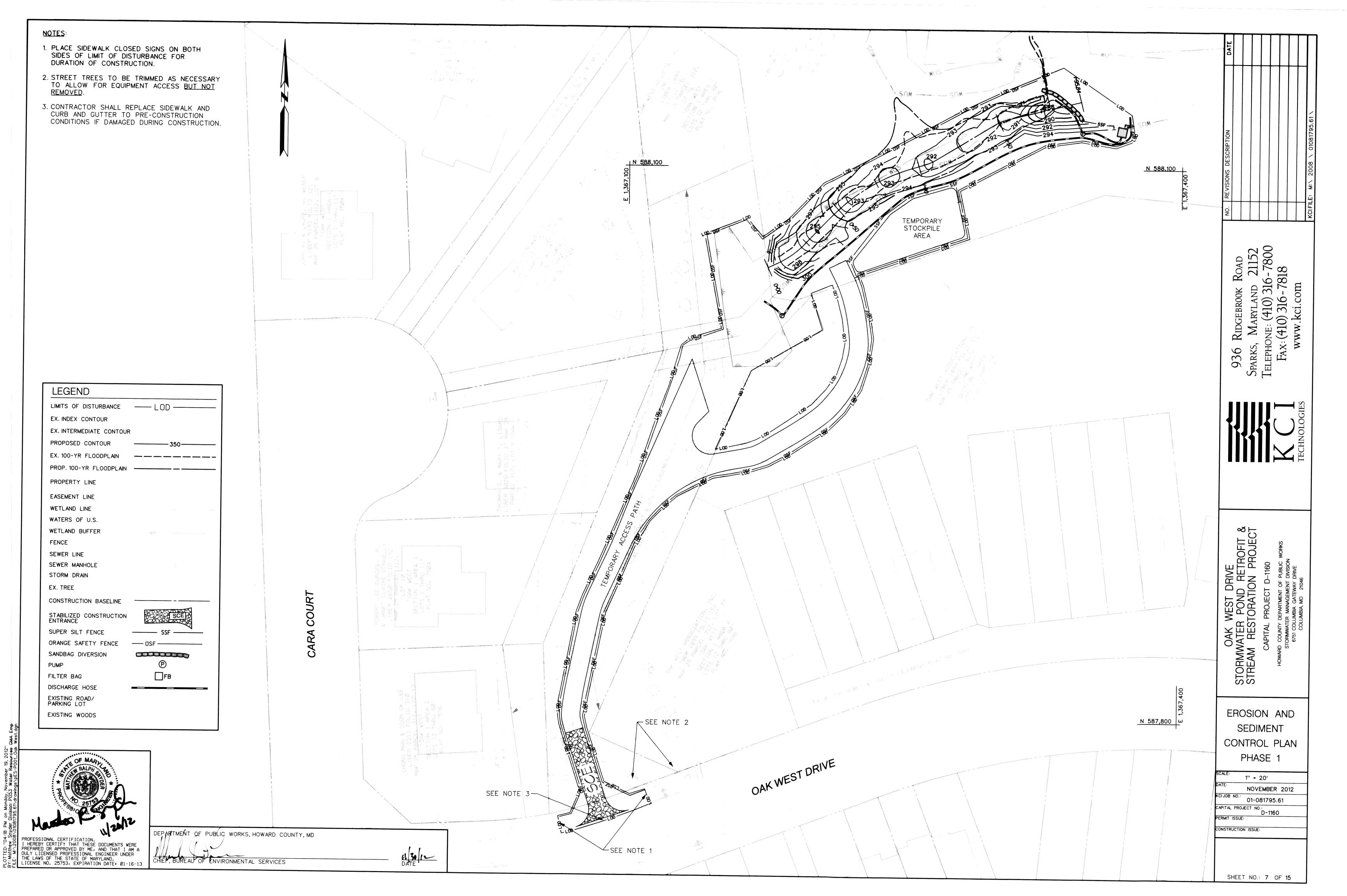


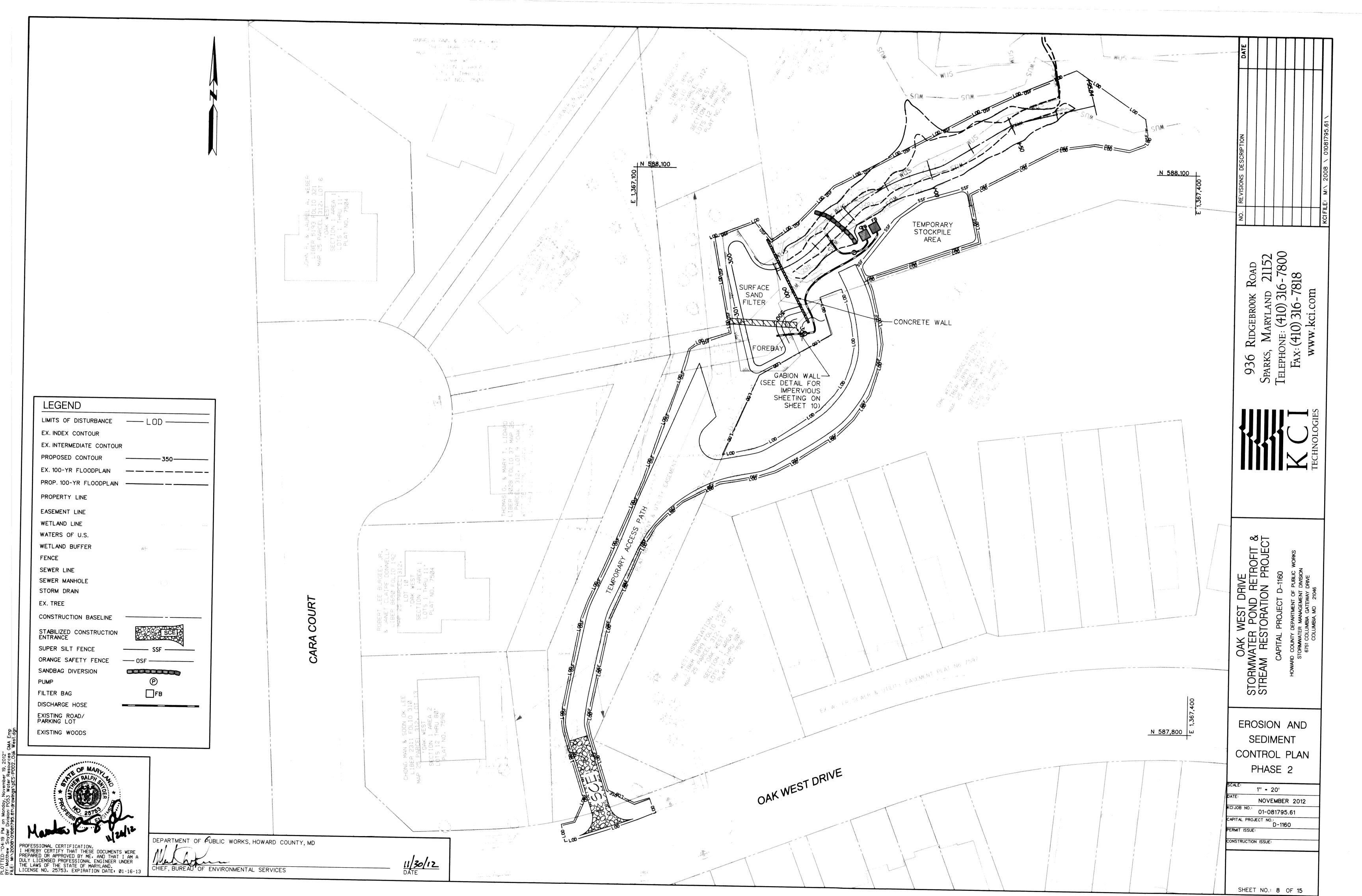
STORMWATER POND RETROFIT STREAM RESTORATION PROJEC

STORMWATER **MANAGEMENT** NOTES AND **DETAILS**

AS SHOWN NOVEMBER 2012 01-081795.61 CONSTRUCTION ISSUE:

SHEET NO.: 6 OF 15





SEQUENCE OF CONSTRUCTION

1. OBTAIN GRADING PERMIT. STREAM CLOSURE PERIOD IS MARCH 1-JUNE 15, INCLUSIVE. MDE PERMIT TRACKING *201261163. PRIOR TO BEGINNING ANY CONSTRUCTION ACTIVITIES, A VIDEOTAPE AND PHOTOGRAPHS OF THE PROPOSED WORK AREA SHALL BE TAKEN. (1 DAY)

2. CONTRACTOR SHALL COORDINATE AN ON-SITE PRE-CONSTRUCTION MEETING THAT SHALL INCLUDE, BUT NOT BE LIMITED TO, THE COUNTY PROJECT MANAGER, THE ENGINEER, AND A REPRESENTATIVE FROM HOWARD COUNTY CONSTRUCTION INSPECTION, THE LIMIT OF DISTURBANCE SHALL BE STAKED PRIOR TO THE MEETING. (1 DAY)

3. NOTIFY THE MARYLAND DEPARTMENT OF THE ENVIRONMENT'S NONTIDAL WETLANDS AND WATERWAYS INSPECTIONS AND COMPLIANCE DIVISION AT LEAST FIVE (5) DAYS PRIOR TO ANY EARTH MOVING CONSTRUCTION WITHIN NONTIDAL WETLANDS AND/OR THEIR BUFFERS. THE CONTRACTOR SHALL NOTIFY "MISS UTILITY" AT 1-800-257-7777 AT LEAST FIVE (5) WORKING DAYS PRIOR TO ANY WORK BEING DONE. THE CONTRACTOR SHALL NOTIFY THE HOWARD COUNTY CONSTRUCTION INSPECTION DIVISION (410-313-1880) A MINIMUM OF 24 HOURS PRIOR TO THE START OF ANY CONSTRUCTION. (5 DAYS)

4. CONSTRUCT ORANGE SAFETY FENCE AS SHOWN ON THE PLANS, HOWARD COUNTY STORMWATER MANAGEMENT DIVISION SHALL REVIEW AND APPROVE THE LOCATION OF THE ORANGE SAFETY FENCE PRIOR TO ANY EARTH MOVING OR REMOVING OF EXISTING TREES OR SHRUBS. (3 DAYS)

5. CLEAR AND GRUB ONLY AS NECESSARY FOR INSTALLATION OF EROSION AND SEDIMENT CONTROL MEASURES AND DEVICES. INSTALL SCE AND SILT FENCE AS SHOWN ON THE PLANS OR AS DIRECTED BY THE SEDIMENT CONTROL INSPECTOR THE ACCESS PATH SHALL BE STABILIZED WITH STONE OR PROTECTED WITH SILT FENCE AT THE INSPECTOR'S DISCRETION. WITH PERMISSION FROM INSPECTOR, CONTRACTOR SHALL PROCEED WITH PHASE 1. (3 DAYS)

6. INSTALL PUMP-AROUND PRACTICE AS SHOWN ON THE PHASE 1 PLANS. WITH APPROVAL OF INSPECTOR COMMENCE IN STREAM WORK. (2 DAYS)

7. PERFORM STREAM GRADING AND STREAM RESTORATION WORK ON CHANNEL, WORKING DOWNSTREAM TO UPSTREAM, AND STABILIZE ALL DISTURBED AREAS AT FINAL GRADE. CONTRACTOR SHALL DISTURB ONLY THAT MUCH AREA THAT CAN BE BROUGHT TO FINAL GRADE AND STABILIZED BY THE END OF EACH DAY. (2 WEEKS)

8. PERMANENTLY STABILIZE WORK AREA WITHIN PHASE 1, REMOVE PUMP-AROUND PRACTICE. AND WITH PERMISSION FROM INSPECTOR, CONTRACTOR SHALL PROCEED WITH PHASE 2. (2 DAYS)

9. INSTALL SAND BAG DAM AND DEWATERING DEVICE, INCLUDING FILTER BAG, JUST UPSTREAM OF SAND BAG DAM AS SHOWN ON THE PHASE 2 PLANS. INSTALL DEWATERING DEVICE FOR EXISTING POND AREA, INCLUDING FILTER BAG, AND DEWATER THE EXISTING POND. (2 DAYS)

NOTE: STEP 10 AND STEP 11 MAY BE DONE CONCURRENTLY DURING THE SAME EXPECTED DRY PERIOD.

10. DURING AN EXPECTED THREE-DAY DRY PERIOD, EXCAVATE FOREBAY AREA, BRING FOREBAY AREA TO FINAL GRADE, AND INSTALL GABION WALL AS SHOWN ON THE PLANS. INSTALL IMPERVIOUS SHEETING ON UPSTREAM FACE OF THE GABION WALL. (3 DAYS)

11. EXCAVATE FOR THE INSTALLATION OF THE CONCRETE WEIR WALL AND SAND FILTER AREA. (3 DAYS)

12. INSTALL CONCRETE WEIR WALL AS SHOWN ON THE PLANS. (4 DAYS)

13. INSTALL SAND FILTER, INCLUDING UNDERDRAIN SYSTEM, STONE, FILTER MEDIA, RIPRAP, AND TOP SOIL AS SHOWN ON THE PLANS. (5 DAYS)

14. INSTALL LANDSCAPING AS SPECIFIED ON THE PLAN. (5 DAYS)

15. UPON COMPLETION OF CONSTRUCTION ACTIVITIES, AND WITH APPROVAL FROM THE SEDIMENT CONTROL INSPECTOR, REMOVE SAND BAG DAM AND DEWATERING DEVICES. REMOVE IMPERVIOUS SHEETING FROM UPSTREAM FACE OF THE GABION WALL. (1 DAY)

16. WHEN VEGETATION IS ESTABLISHED AND WITH PERMISSION OF THE HOWARD COUNTY SEDIMENT CONTROL INSPECTOR, REMOVE ALL REMAINING EROSION AND SEDIMENT CONTROL MEASURES AND PERMANENTLY STABILIZE THOSE AREAS DISTURBED BY THIS PROCESS. (2 DAYS)

17. CONDUCT FINAL "AS-BUILT" SURVEY OF STREAM RESTORATION MEASURES AND STREAM PROFILE WITHIN RESTORATION AREAS AND SUBMIT "AS-BUILT" PLANS TO THE DEPARTMENT OF PUBLIC WORKS, STORMWATER MANAGEMENT DIVISION WITHIN 30 DAYS OF COMPLETION OF CONSTRUCTION. (30 DAYS)

NOTE: HARVESTING AND INSTALLATION OF LIVE STAKES SHALL ONLY OCCUR DURING THE DORMANT SEASON, I.E. NOVEMBER 1 THROUGH MARCH 1.

Musu

HOWARD COUNTY CONSERVATION DISTRICT

STANDARD SEDIMENT CONTROL NOTES

- 1. A minimum of 48 hours notice must be given to the Howard County Department of Inspections. Licenses and Permits, Sediment Control Division prior to the start of any construction (410 313-1855).
- 2. All vegetative and structural practices are to be installed according to the provisions of this plan and are to be in conformance with the most current MARYLAND STANDARDS AND SPECIFICATIONS FOR SOIL EROSION AND SEDIMENT CONTROL and revisions thereto
- 3. Following 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, perimeter slopes and all slopes greater than 3:1, b) 14 days as to all other disturbed or graded areas on the
- 4. All disturbed areas must be stabilized within the time period specified above in accordance with the 1994 MARYAND STANDARDS AND SPECIFICATIONS FOR SOIL EROSION AND SEDIMENT CONTROL for permanent seeding (Sec. 51), sod (Sec. 54), temporary seeding (Sec. 50) and mulching (Sec. 52). Temporary stabilization with mulch alone can only be done when recommended seeding dates do not allow for proper germination and establishment of grasses.
- 5. All sediment control structures are to remain in place and are to be maintained in operative condition until permission for their removal has been obtained from the Howard County Sediment Control Inspector.

5. Site Analysis:		
Total Area of Site	0.49	Acres
Area Disturbed	0.49	Acres
Area to be roofed or paved	0.00	Acres
Area to be vegetatively stabilized	0.49	Acres
Total Cut	310	Cu. Yds.
Total Fill	225	Cu. Yds.
Offsite waste/borrow area location	To Be De	etermined*

- 7. Any sediment control practice which is disturbed by grading activity for placement of utilities must be repaired on the same day of disturbance.
- 8. Additional sediment control must be provided, if deemed necessary by the Howard County Sediment Control Inspector.
- * Offsite waste/ borrow area, if needed, shall have an approved erosion and sediment control plan and active permit.

HOWARD SOIL CONSERVATION DISTRICT

TEMPORARY SEEDING NOTES

Apply to graded or cleared areas likely to be re-disturbed where a short-term vegetative cover is needed.

Seedbed preparation: -- Loosen upper three inches of soil by raking, disking or other acceptable means before seeding, if not previously loosened.

Soil Amendments: -- Apply 600 lbs/acre 10-10-10 fertilizer (14 lbs/1000 sq. ft.).

Seeding: -- For periods March 1 - May 15 and from August 1 -October 15, seed with 2-1/2 bushelper acre of annualrye (3.2 lbs/1000 sq. ft.). For the period May 16 - July 31, seed with 3 lbs/acre of weeping lovegrass (.07 lbs/1000 ft.). For the period October 16 - February 28, protect site by applying 2 tons/acre of well-anchored straw mulch and seed as soon as possible in the spring, or use sod.

Mulching: -- Apply 1-1/2 to 2 tons/acre (70 to 90 lbs/1000 sq. ft.) of unrotted weed-free, small grain straw immediately after seeding. Anchor mulch immediately after application using mulch anchoring tool. No asphalt emulsion shall be used for anchoring. Only a non-toxic, latex backing material is allowed.

Refer to the 1994 MARYLAND STANDARDS AND SPECIFICATIONS FOR SOIL EROSION AND SEDIMENT CONTROL for additional rates and methods not covered.

HOWARD SOIL CONSERVATION DISTRICT

Apply to graded or cleared areas not subject to immediate further disturbance where a permanent long-lived vegetative cover is needed.

<u>Seedbed Preparation</u>: Loosen upper three inches of soil by raking, disking

PERMANENT SEEDING NOTES

or other acceptable means before seeding, if not previously loosened. Soil Amendments: In lieu of soil test recommendations, use one of the

1. <u>Preferred</u> -- Apply 2 tons/acre dolomitic limestone (92 lbs/1000 sq. ft.) and 600 lbs/acre 10-10-10 fertilizer (14 lbs/1000 sq. ft.) before seeding. Harrow or disk into upper three inches of soil. At time of seeding, apply 400 lbs/acre 30-0-0 2 ureaform fertilizer (9 lbs/1000 sq. ft.)

Acceptable -- Apply 2 tons/acre dolomitic limestone (92 lbs/1000 sq. ft.) and 1000 lbs/acre 10-10-10 fertilizer (23 lbs/1000 sq. ft.) before seeding. Harrow or disk into upper three inches of soil.

seed with 60 lbs/acre (1.4 lbs/1000 sq. ft.) of Kentucky 31 Tall Fescue. For the period May 1 - July 31, seed with 60 lbs Kentucky 31 Tall Fescue per acre and 2 lbs/acre (.05 lbs/100sq. ft.) of weeping lovegrass. During the period of October 16 - February 28, protect site by: Option 1 - Two tons per acre of well anchored straw mulch and seed as soon as possible in the spring. Option 2 - Use sod.

unrotted small grain straw immediately after seeding. Anchor mulch immediately after application using mulch anchoring tool. No asphalt emulsion shall be used for anchoring. Only a non-toxic, latex backing material is allowed.

Maintenance - Inspect all seeding areas and make needed repairs,

mulch with 2 tons/acre well anchored straw.

21.0 STANDARD AND SPECIFICATIONS FOR TOPSOIL

Definition

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

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

This practice is limited to areas having 2:1 or flatter slopes

Conditions Where Practice Applies

a. The texture of the exposed subsoil/parent material is not

- adequate to produce vegetative growth. b. The soil material is so shallow that the rooting zone is not
- deep enough to support plants or furnish continuing supplies of moisture and plant nutrients.
- c. The original soil to be vegetated contains material toxic to
- d. The soil is so acidic that treatment with limestone is not
- II. For the purpose of these Standards and Specifications, areas having slopes steeper than 2:1 require special consideration and for adequate stabilization. Areas having slopes steeper than 2:1 shall have the appropriate stabilization shown on the

Construction and Material Specifications

- Topsoil salvaged from the existing site may be used provided that it meets the standards as set forth in these specifications.

 Typically, the depth of topsoil to be salvaged for a given soil type can be found in the representative soil profile section in the Soil Survey published by USDA-SCS in cooperation with Maryland Agricultural Experimental Station.
- II. Topsoil Specifications Soil to be used as topsoil must meet the
 - i. Topsoil shall be a loam, sandy loam, clay loam, silt loam, sandy clay loam, 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 mixutre 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 1/2" in diameter.
 - ii. Topsoilmust be free of plants or plant parts such as bermuda grass, quackgrass, Johnsongrass, nutsedge, poison ivy, thistle, or others as specified.
 - iii. Where the 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 disturbed uniformly over designated areas and worked into the soil in conjunction with tillage operations as described in the following proceures.
- III. For sites having disturbed areas under 5 acres:
 - i. Place topsoil (if required) and apply soil amendments as specified in 20.0 Vegetative Stabilization Section I Vegetative Stabilization Methods and Materials.
- IV. For sites 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 of less than 6.0. sufficient lime shall be prescribed to raise the pH to
 - b. Organic content of topsoil shall be not less than 1.5 percent by weight.
 - c. Topsoilhaving 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 to permit dissipation of phyto-toxic materials.
- Note: Topsoil substitutes or amendments, as recommended by a qualified agronomist or soil scientist and approved by the appropriate approval authority, may be used in lieu of natural topsoil.
 - ii. Place topsoil (if required) and apply soil amendments as specified in 20.0 Vegetative Stabilization Section I-Vegetative Stabilization Methods and Materials.

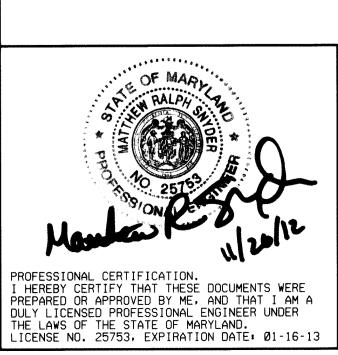
V. Topsoil Application

- i. When topsoiling, maintain needed erosion and sediment control practices such as diversions, Grade Stabilization Structures, Earth Dikes, Slope Silt Fence and Sediment raps and Basins.
- ii. Grades 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 minmum 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

detrimental to proper grading and seedbed preparation

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 my otherwise be



EPARTMENT OF PUBLIC WORKS, HOWARD COUNTY, MD

CHIEF, BUREAU OF ENVIRONMENTAL SERVICES

following schedules:

Seeding - For the periods March 1 - May 15, and August 15 - October 15, Option 3 - Seed with 60 lbs/acre Kentucky 31 Tall Fescue and

Mulching - Apply 1-1/2 to 2 tons per acre (70 to 90 lbs/1000 sq. ft.) of

replacements and reseedings.

21152 0-7800 318 9 ARKS, MARYLAND LEPHONE: (410) 316 FAX: (410) 316 - 78 RIDGE SPARKS, TELEPHO 36 6



WEST DRIVE POND RET O/ [ORMWA] [REAM r

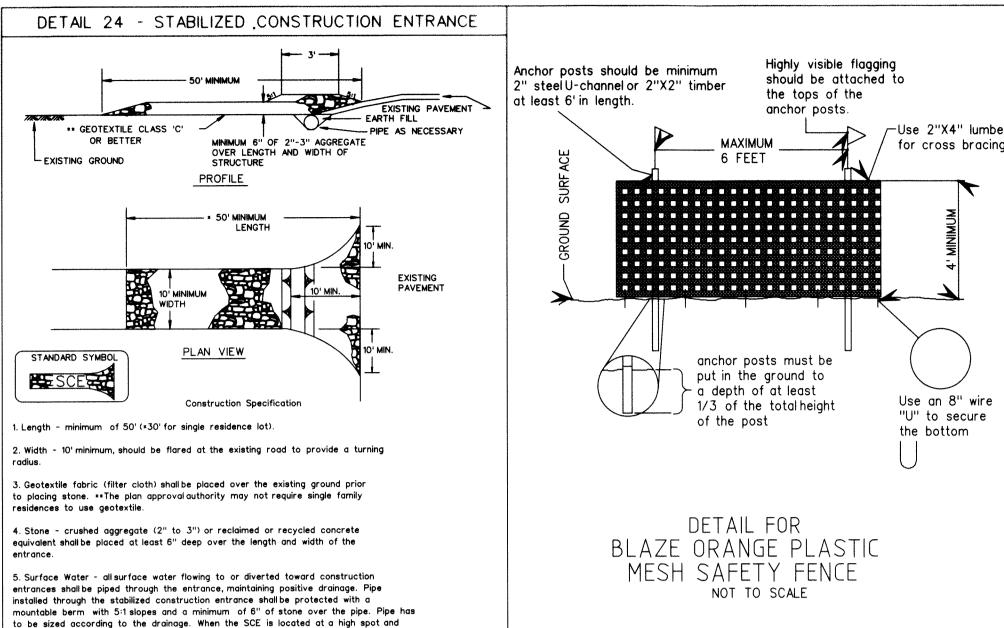
> **EROSION & SEDIMENT** CONTROL **NOTES**

E:	AS	SHOWN
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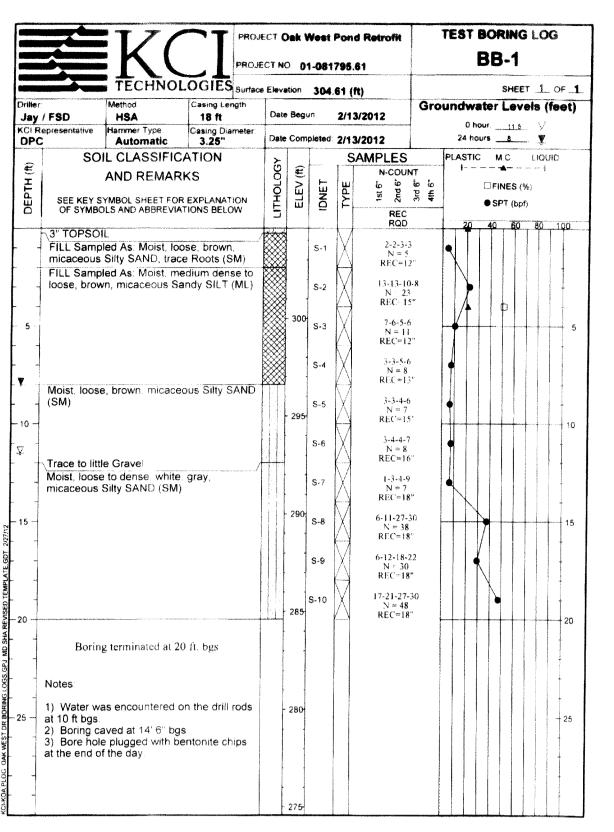
CONSTRUCTION ISSUE:

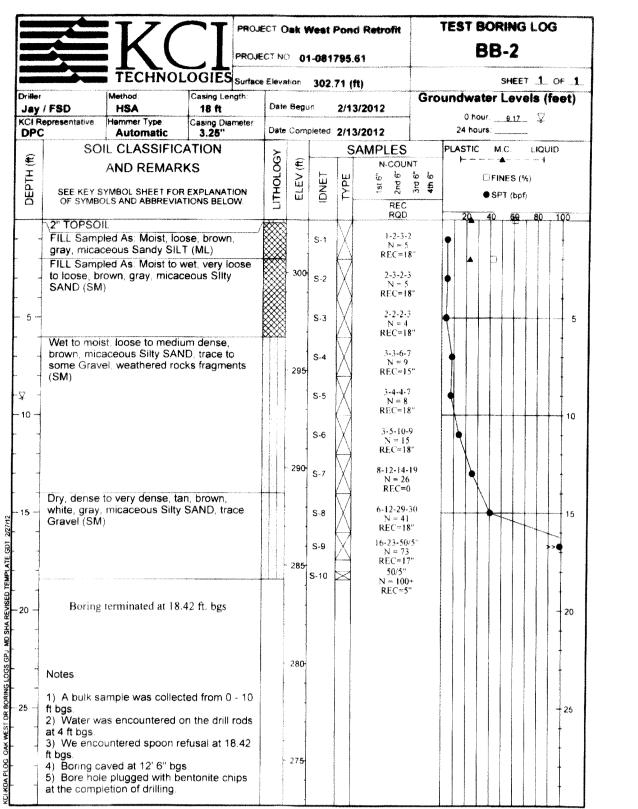
SHEET NO .: 9 OF 15

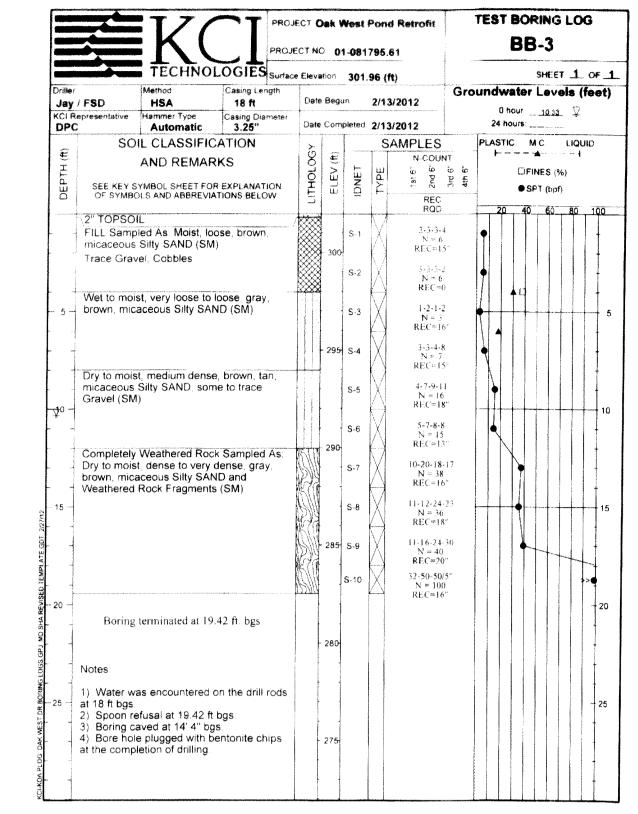


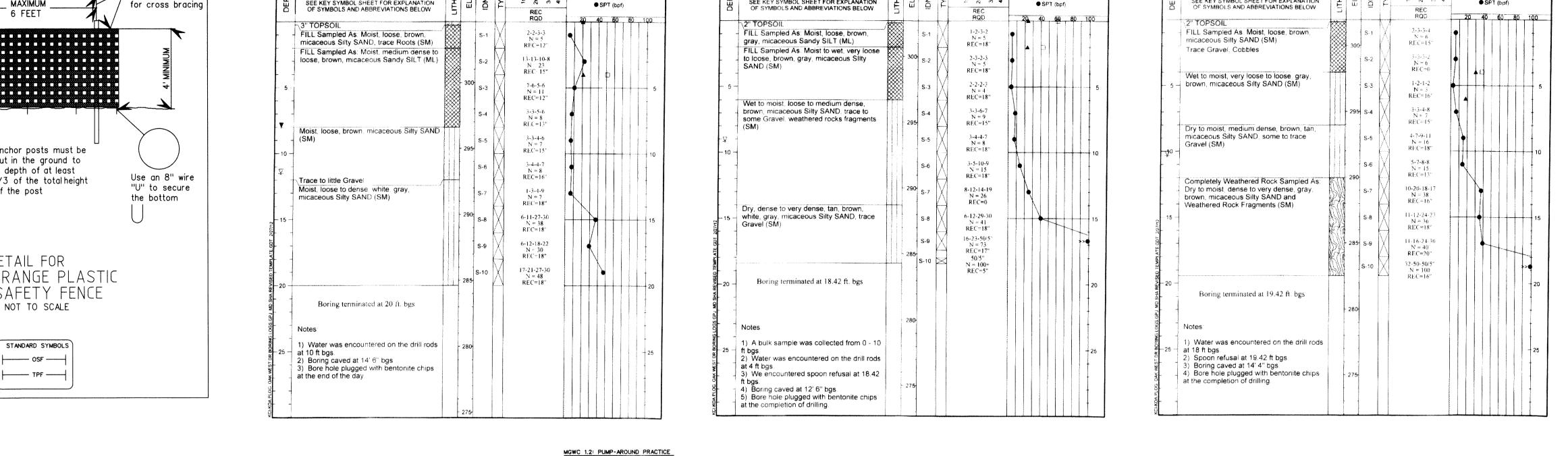
MARYLAND DEPARTMENT OF ENVIRONMENT

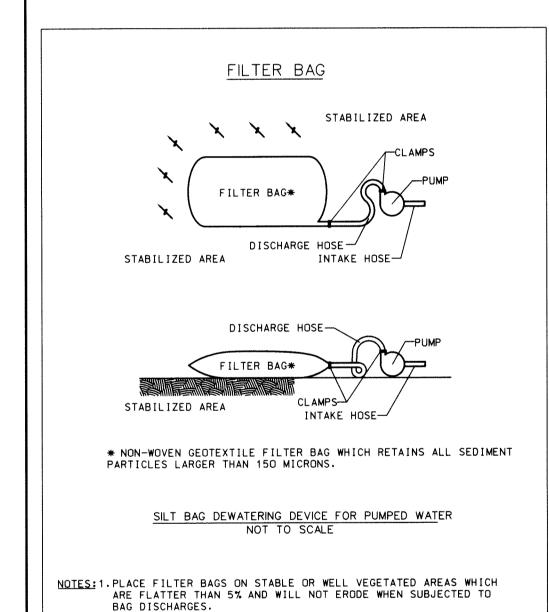
F - 17 - 3 · WATER MANAGEMENT ADMINISTRATION











2. CLAMP PUMP DISCHARGE HOSES SECURELY INTO FILTER BAGS.

3. LIMIT PUMPING RATE TO 1/2 THE MANUFACTURER'S MAXIMUM

has no drainage to convey a pipe will not be necessary. Pipe should be sized

6. Location - A stabilized construction entrance shall be located at every point

where construction traffic enters or leaves a construction site. Vehicles leaving

SOIL CONSERVATION SERVICE

the site must travelover the entire length of the stabilized construction entrance.

according to the amount of runoff to be conveyed. A 6" minimum will be required

FILTER BAG SPECIFICATIONS

- 1. FILTER BAG SHALL BE MADE OF NON-WOVEN GEOTEXTILE WITH A MINIMUM SURFACE AREA OF 225 SQUARE FEET PER SIDE. 2. ALL STRUCTURAL SEAMS SHALL BE SEWN WITH A DOUBLE STITCH USING A DOUBLE NEEDLE MACHINE WITH HIGH STRENGTH THREAD. SEAM STRENGTH SHALL WITHSTAND 100 LB/IN USING ASTM D-4884
- 3. FILTER BAG SHALL HAVE A NOZZLE LARGE ENOUGH TO ACCOMMODATE A FOUR(4) INCH DIAMETER PUMP DISCHARGE HOSE. 4. NOZZLE SHALL BE SEALED TIGHTLY AROUND THE PUMP DISCHARGE
- HOSE WITH A STRAP OR SIMILAR DEVICE TO PREVENT UNFILTERED 5. FILTER BAG SHALL BE PLACED ON A LEVEL OR GENTLY SLOPING (5%
- 6. FILTER BAG SHALL BE PLACED UPON A BASE OF STRAW BALES OR THREE (3) INCHES OF CLEAN STONE TO PROMOTE DEWATERING 7. PUMPING RATES SHALL BE CONTROLLED TO PREVENT EXCESSIVE PRESSURE WITHIN THE FILTER BAG. AS THE BAG BECOMES FILLED
- 8. THE FILTER BAG SHALL BE DEWATERED, REMOVED AND DISPOSED OF UPON COMPLETION OF PUMPING OPERATIONS OR AFTER IT HAS REACHED CAPACITY, WHICHEVER OCCURS FIRST. THE DEWATERED SEDIMENT FROM THE BAG SHALL BE SPREAD IN AN UPLAND AREA
- 9. THE GEOTEXTILE FABRIC SHALL MEET THE FOLLOWING MINIMUM REQUIREMENTS WITH PROPERTIES DETERMINED IN ACCORDANCE WITH THE FOLLOWING PROCEDURES:

AND STABILIZED WITHIN 24 HOURS.

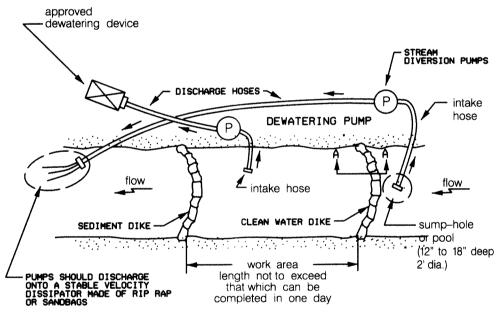
ASTM D-3776 GRAB TENSILE PUNCTURE 210 LBS. 150 LBS. ASTM D-4833 70 GAL/MIN/FT2 PERMITIVITY (SEC) APPARENT OPENING SIZE (AOS)

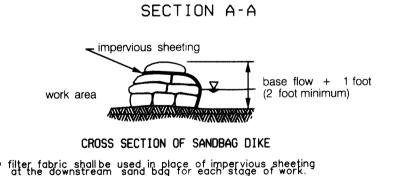
WATER DIVERTED AROUND THE WORK AREA)

SHALL BE PUMPED THROUGH THE FILTER BAG.

ASTM D-4991 ASTM D-4751 NOTE: ALL WATER COLLECTED WITHIN THE LIMIT OF DISTURBANCE (WITH THE EXCEPTION OF

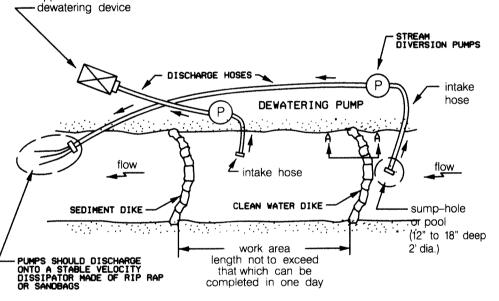
DETAIL 1.2: PUMP-AROUND PRACTICE

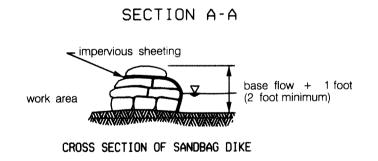




REVISED NOVEMBER 2000 PAGE 1.2 - 3

PLAN VIEW





The work should consist of installing a temporary pump around and supporting measures to divert flow around in-stream construction sites. Construction activities including the installation of erosion and sediment control measures should
not begin until all necessary easements and/or right-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 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. Upon installation of all sediment control measures and approval by the sediment control 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 workday, 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 area. The pump should discharge onto a stable velocity dissipater made of riprap or sandbags. 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 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 12. If a tributary is to be restored, construction should take place on the tributary before work on the main steam 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.

Temporary measure for dewatering in-channel construction sites

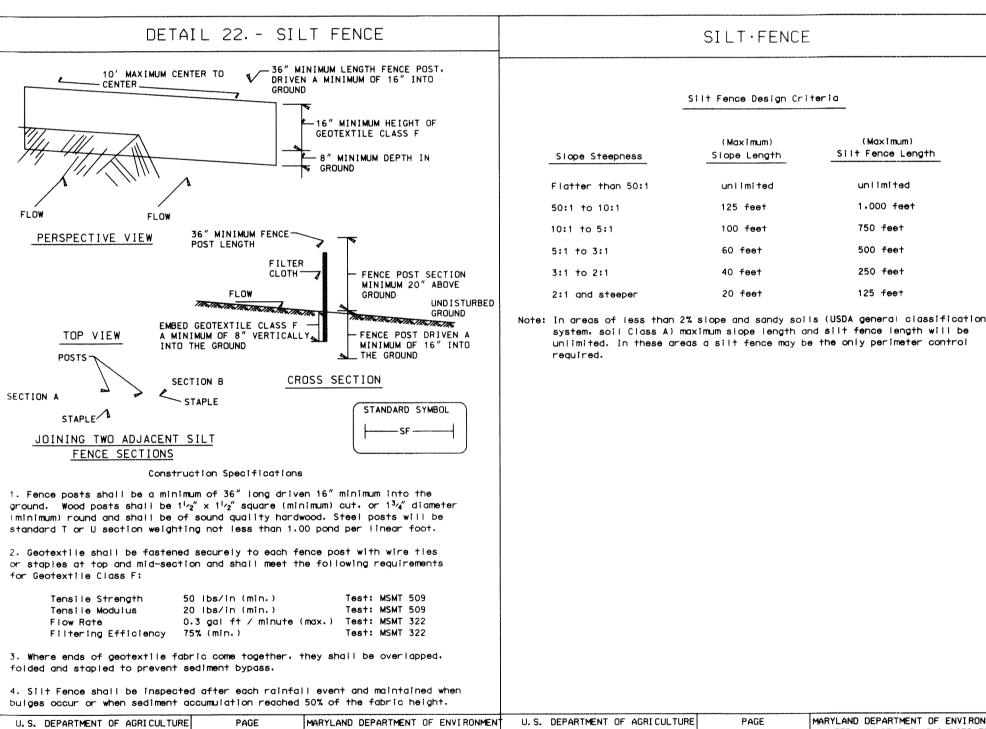
Sediment control measures, pump-around practices, and associated channel and bank construction should be completed in the following sequence (refer to Detail 1.2):

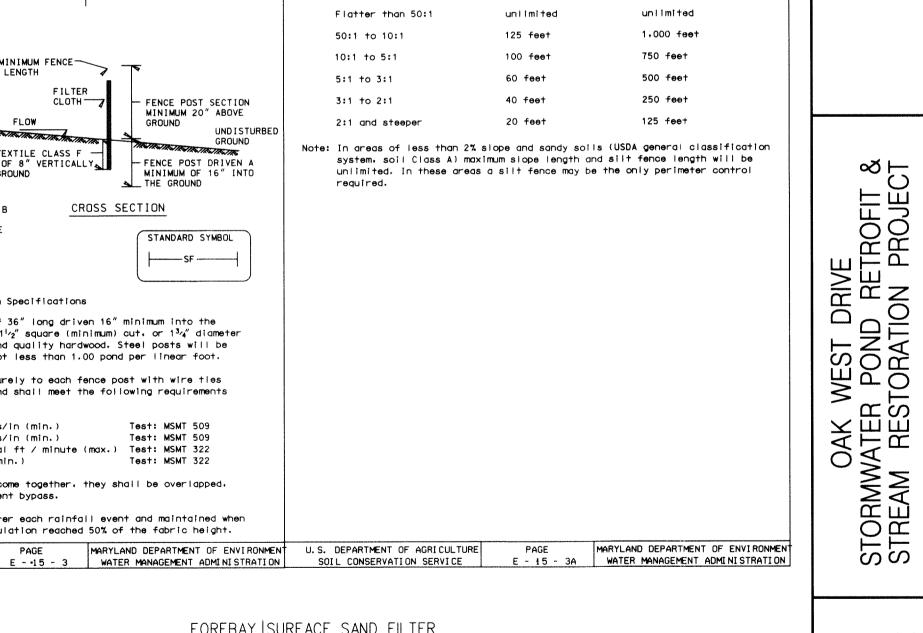
The contractor should conduct a pre-construction meeting on site with the WMA sediment ontrolinspector, the county project manager, and the engineer to review limits of disturbance. erosion and sediment control requirements, and the sequence of construction. The contracto

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

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 should 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.

14. After construction, all disturbed areas should be regraded and revegetated as per the planting





FOREBAY SURFACE SAND FILTER
ANCHOR SHEETING WITH
ONE ROW OF SANDBAGS
IMPERVIOUS PLASTIC SHEETING (MIN. 8-MIL
THICKNESS)
EXISTING
GROUND GROUND — 6' x 3' x 3' GABION
INO CALLO BASKET
ANCHOR SHEETING WITH ONE ROW OF SANDBAGS
PROPOSED — PO SOCIO GRADE
CLASS 'SE' ——/ GEOTEXTILE
OLO I LA TILL

GABION WALL TEMPORARY IMPERVIOUS SHEETING DETAIL NOT TO SCALE

DEPARTMENT OF PUBLIC WORKS, HOWARD COUNTY, MD

CHIEF, BUREAU OF ENVIRONMENTAL SERVICES

CIJOB NO.

RMIT ISSUE:

ONSTRUCTION ISSUE:

SHEET NO .: 10 OF 15

OK ROAD
ND 21152
316-7800
5-7818

SPARKS, MA Telephone:

RIDGEBROOK

936

MARYLAND NE: (410) 31((410) 316 - 78

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EROSION &

SEDIMENT

CONTROL NOTES

& DETAILS

AS SHOWN

01-081795.61

CAPITAL PROJECT NO.: D-1160

NOVEMBER 2012

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HEREBY CERTIFY THAT THESE DOCUMENTS WERE

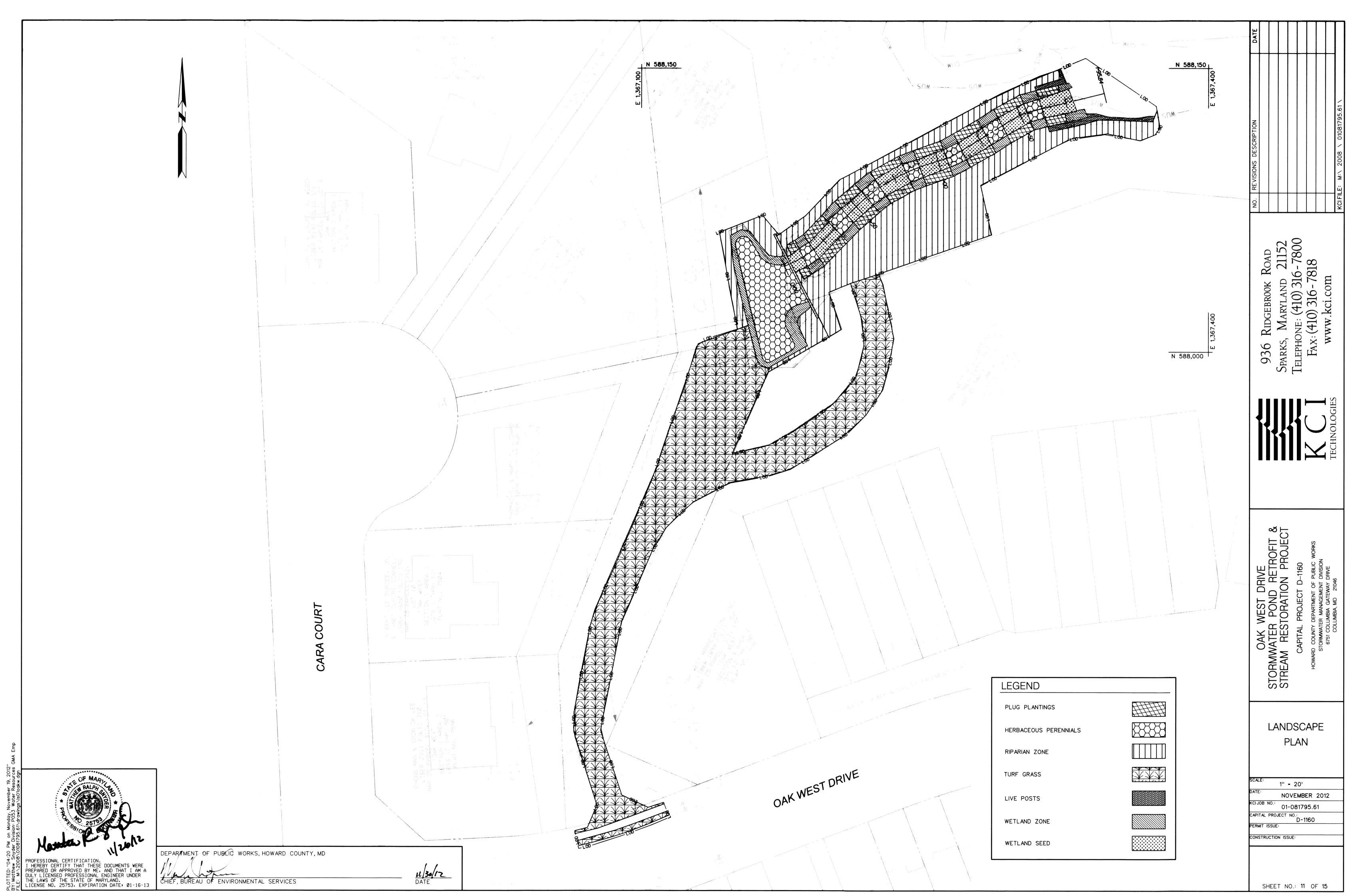
PREPARED OR APPROVED BY ME, AND THAT I AM A

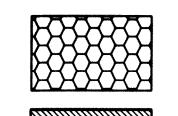
LICENSE NO. 25753, EXPIRATION DATE: Ø1-16-13

DULY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MARYLAND.

PUMPING RATE.

WITH THEIR SEDIMENTS.





HERBACEOUS PERENNIALS (SHEET 12 OF 15)

(2042 SQ FT*/0.05 AC)

Quantity	Botanical Name	Common Name	Size	Form	Spacing/Rate
HERBACEOUS	S PERENNIALS				
175	Carex blanda	Common woodland sedge	1 Quart	Container	18-24" O.C.
174	Arisaema triphyllum	Jack-in-the-pulpit	1 Quart	Container	18-24" O.C.
174	Chasmanthium latifolium	Wild oats	1 Quart	Container	18-24" O.C.
174	Athyrium filix-femina	Nothern lady fern	1 Quart	Container	18-24" O.C.
25% of the	area in the Wetland Zone is	s included in the Herbaceous	Perenniale	area to accom	odate spacina for

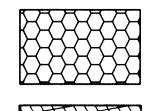
* 25% of the area in the Wetland Zone is included in the Herbaceous Perennials area to accomodate spacing for live stakes and shrubs.

VALETI AND ZONE

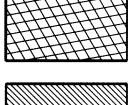
WEILAND ZONE	(SHEET 12 OF 15)
(651 SQ FT/0.01 AC)	

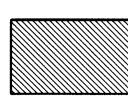
Quantity	Botanical Name	Common Name	Size	Form	Spacing/Rate
SHRUBS				-	×
7	Cephalanthus occidentalis	Common buttonbush	3' Height	Container	4' O.C.
7	Cornus sericea	Redosier dogwood	3' Height	Container	4' O.C.
6	Rhus aromatica	Fragrant sumac	3' Height	Container	4' O.C.
IVE STAKE	ES				
21	Salix nigra	Black willow	3' Length 0.5-1.5" dia.	Live stake	2' O.C.
20	Cornus amomum	Silky dogwood	3' Length 0.5-1.5" dia.	Live stake	2' O.C.

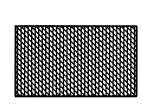
Live Stakes, Shrubs, and Herbaceous Perennials shall be randomly spaced.



WETLAND SEED ZONE (SHEET 12 OF 15)







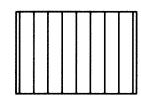


(5691 SQ FT/0.13 AC)

% OF MIX	Botanical Name	Common Name
23	Carex vulpinoidea	Fox sedge
20	Elmyus virginica	Virginia wild rye
10	Sparganium eurycarpum	Giant bur reed
5	Carex crinita	Fringed (nodding) sedge
5	Carex gynandra	Nodding sedge
5	Carex Iurida	Lurid (shallow) sedge
5	Juncus effusus	Soft rush
5	Scirpus cyperinus	Wool grass
5	Sparganium americanum	Eastern bur reed
4	Carex scoparia	Blunt broom sedge
4	Glyceria grandis	American mannagrass
3	Verbena hastata	Blue vervain
2	Osmunda cinnamomea	Cinnamon Fern
2	Eupatorium fistulosum	Joe Pye Weed
1	Glyceria canadensis	Rattlesnake grass
1	Leersia oryzoides	Rice cutgrass
TOTAL QUA	NTITY: 2.8 LBS.	

Application rate of 0.5 LBS/1,000 SF

RIPARIAN ZONE (5862 SQ FT/0.13 AC)



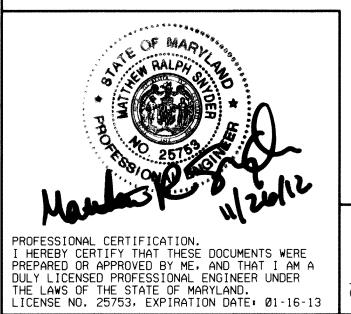
Quantity	Botanical Name	Common Name	Size	Form	Spacing/Rate
SHRUBS					
13	Cornus vulpinoidea	Flowering dogwood	3' Height	Container	6' O.C.
13	llex opaca	American Holly	3' Height	Container	6' O.C.
13	Rhus aromatica	Fragrant Sumac	3' Height	Container	6' O.C.
13	Hamamelis virginiana	American Witch Hazel	3' Height	Container	6' O.C.
13	Sambucus canadensis	Elderberry	3' Height	Container	6' O.C.
TREES					
9	Platanus occidentalis	American Sycamore	5' Height	Container	10' O.C.
9	Prunus serotina	Black cherry	5' Height	Container	10' O.C.
9	Quercus prinus	Chestnut Oak	5' Height	Container	10' O.C.
9	Quercus bicolor	Swamp White Oak	5' Height	Container	10' O.C.

(SHEET 12 OF 15)

RIPARIAN HE	ERBACEOUS SEED MIX	
% OF MIX	Botanical Name	Common Name
20	Elymus virginica	Virginia wild rye
20	Carex scoparia	Blunt broom sedge
20	Panicum virgatum	Switchgrass
5	Polystichum acrostichoides	Christmas fern
5	Scirpus pungens	Common three-square
5	Eurbyia divaricata	White wood aster
5	Eupatorium fistulosum	Joe pye weed
5	Aquifegia canadense	Red columbine
5	Lobelia cardinalis	Cardinal flower
2.5	Asarum candadense	Canadian ginger
2.5	Heuchera americana	Coral bells

Application rate of 0.5 LBS/1,000 SF

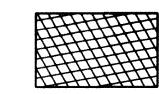
TOTAL QUANTITY: 3.1 LBS.



DEPARTMENT OF PUBLIC WORKS, HOWARD COUNTY, MD

CHIEF, BUREAU OF ENVIRONMENTAL SERVICES

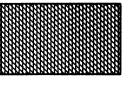




WETLAND PLUGS (1043 SQ FT/0.02 AC)

(SHEET 12 OF 15)

Quantity	Botanical Name	Common Name	Size	Form	Spacing/Rate
116	Cornus sericea	Redosier dogwood	2" Soil Diameter	Plugs	18" O.C.
116	Platanus occidentalis	American sycamore	2" Soil Diameter	Plugs	18" O.C.
116	Sambucus canadensis	Elderberry	2" Soil Diameter	Plugs	18" O.C.
116	Salix nigra	Black willow	2" Soil Diameter	Plugs	18" O.C.



LIVE POSTS (SHEET 12 OF 15)

(193 SQ FT/0 01 AC)

Quantity	Botanical Name	Common Name	Size	Form	Spacing/Rate
3	Cornus racemosa	Gray dogwood	6' Length 2" min. dia.	Dormant stems	4' O.C.
3	Cornus amomum	Silky dogwood	6' Length 2" min. dia.	Dormant stems	4' O.C.
3	Salix sericea	Silky willow	6' Length 2" min. dia.	Dormant stems	4' O.C.
3	Salix nigra	Black willow	6' Length 2" min. dia.	Dormant stems	4' O.C.

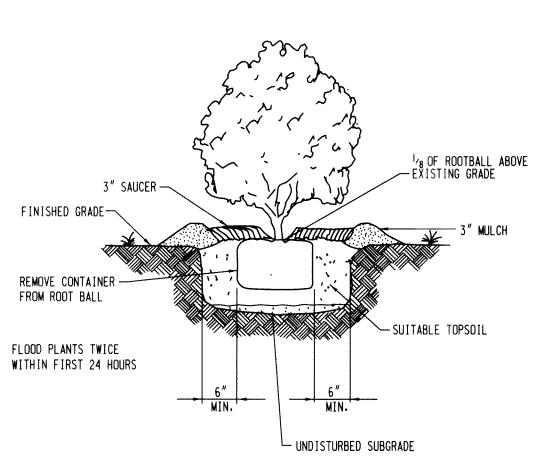
TURF GRASS

(SHEET 12 OF 15)

(8,571SQ FT /0.20 AC)

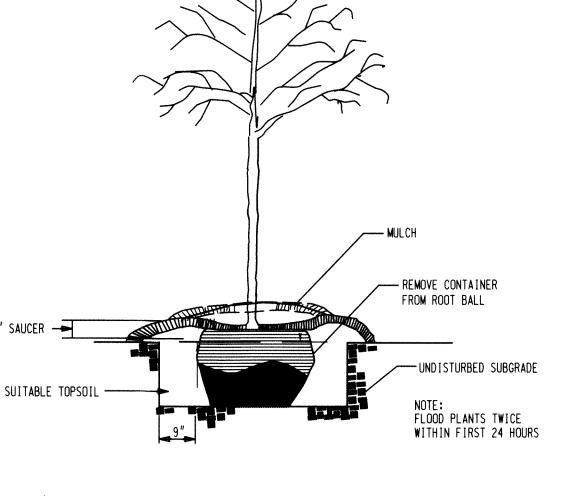
Qty(lbs)	Botanical Name
43	SHA Turf Grass Mix (920.06.07a)

Application Rate of 216 lbs/ AC

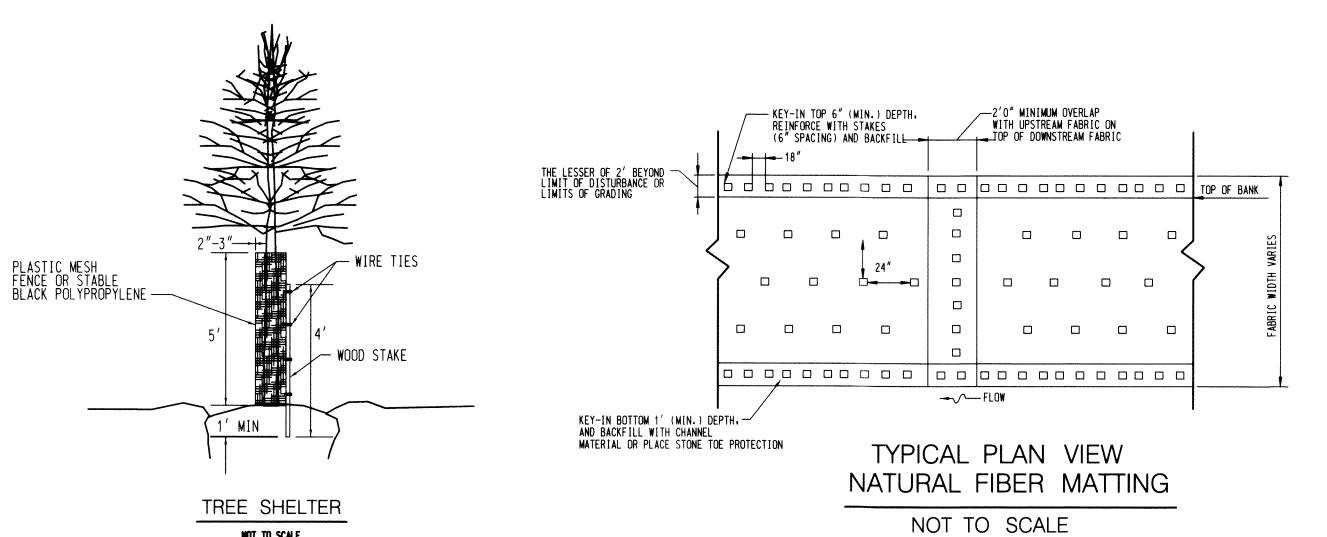


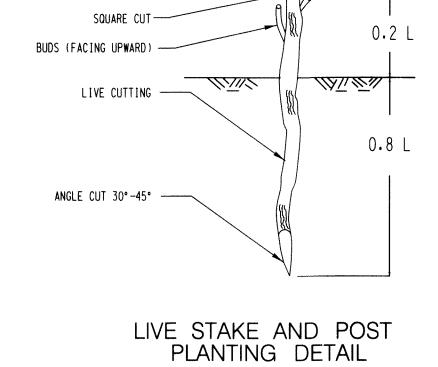
SHRUB PLANTING DETAIL NOT TO SCALE

NOT TO SCALE



TREE PLANTING DETAIL NOT TO SCALE

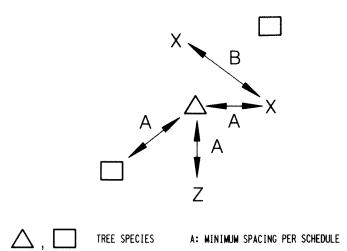




NOT TO SCALE

18" - 24" SPACING O.C. WETLAND PLUG AND HERBACEOUS PERENNIAL DETAIL

NOT TO SCALE

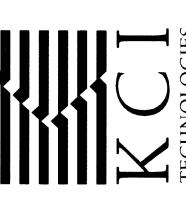


B: DUPLICATE SPECIES SPACING MINIMUM 2 TIMES MINIMUM SPACING

LANDSCAPE RANDOM SPACING NOT TO SCALE

SHEET NO .: 12 OF 15

936 RIDGEBROOK ROAD SPARKS, MARYLAND 21152 FELEPHONE: (410) 316-7800 FAX: (410) 316-7818



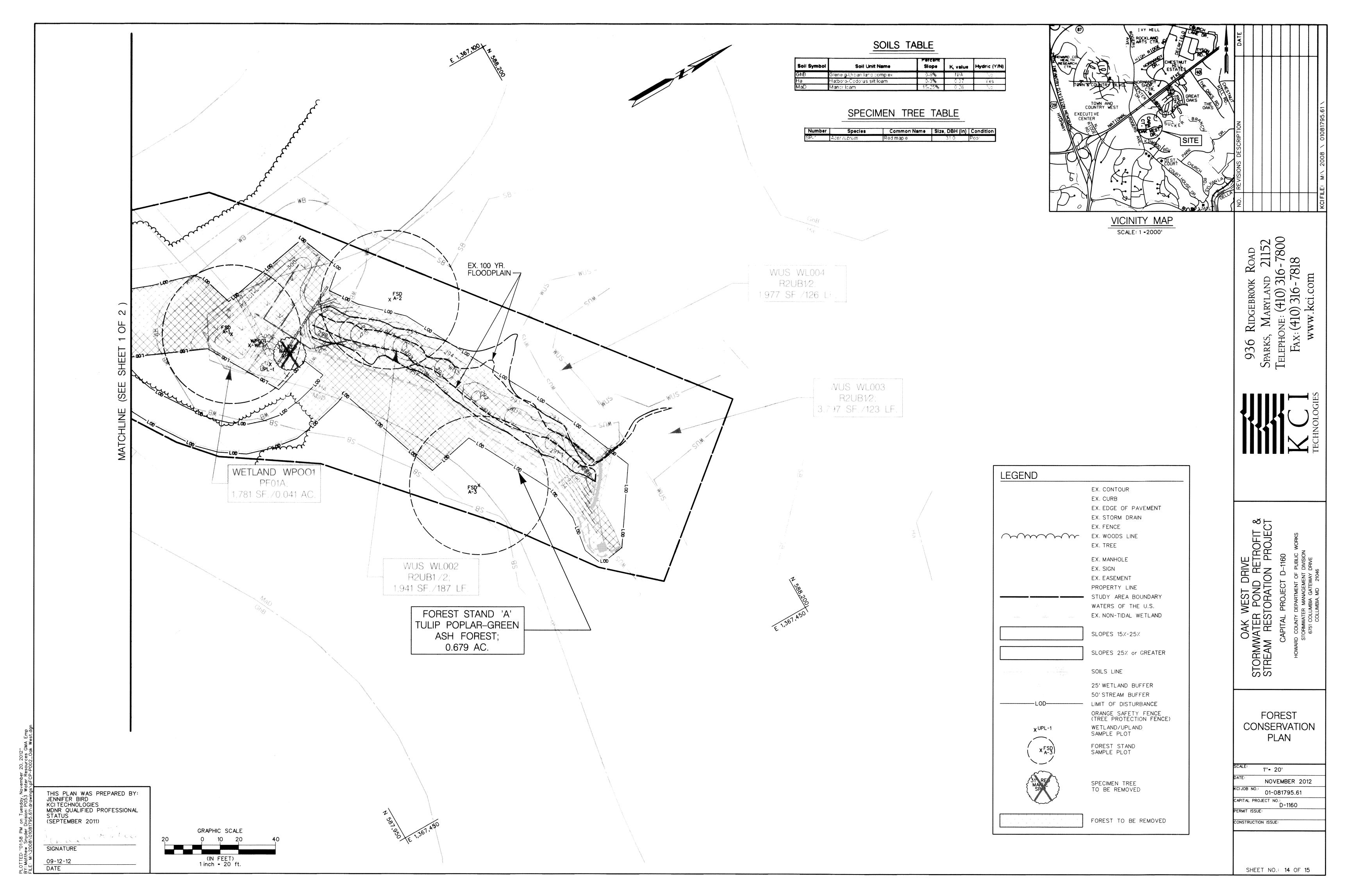
OAK WEST DRIVE STORMWATER POND RETROFIT & STREAM RESTORATION PROJECT

LANDSCAPE **DETAILS**

NOVEMBER 2012 01-081795.61 CAPITAL PROJECT NO.:
D-1160

ERMIT ISSUE: CONSTRUCTION ISSUE:





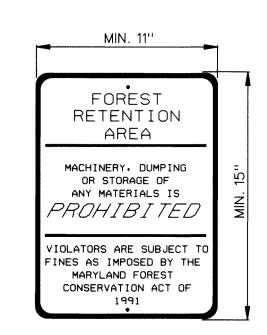
FOREST CONSERVATION NOTES

- 1. THE LOD WAS USED AS THE TOTAL TRACT AREA AND AS THE NET TRACT AREA (NTA) FOR FOREST CONSERVATION CALCULATIONS AS APPROVED UNDER WAIVER PETITION WP-13-044.
- 2. 0.33 ACRES OF CLEARING WILL BE REQUIRED TO COMPLETE THIS PROJECT. THESE AREAS WILL BE REPLANTED AS SEEN ON THE LANDSCAPE PLAN SHEET AND THE LANDSCAPE NOTES AND DETAILS SHEET.
- 3 ALL EFFORTS TO MINIMIZE THE AREA OF DISTURBANCE WILL BE MADE.
- 4 0.28 ACRES OF FOREST MITIGATION ARE REQUIRED.

GENERAL NOTES

- 1. THE PROJECT AREA IS LOCATED ON ONE PROPERTY OWNED BY OAK WEST ASSOCIATION INC. (MAP 0025, GRID 0001, PARCEL 0312).
- 2. EXISTING ZONING: R-SC
- 3. EXISTING LAND USE: RESIDENTIAL MEDIUM DENSITY
- 4. WATERS OF THE U.S. WERE DELINEATED BY KCI TECHNOLOGIES, INC. ON OCTOBER 11, 2011. WATERS OF THE U.S. SHOWN REPRESENT THE UNVERIFIED USACE/MDE WATER RESOURCE BOUNDARIES.
- 5. TOTAL AREA OF NONTIDAL WETLANDS WITHIN THE PROJECT AREA: 0.041 AC.
- 6. TOTAL LINEAR FEET OF PERENNIAL AND INTERMITTENT STREAMS: 436 LF.
- 7. TOTAL FORESTED AREA WITHIN LIMITS OF DISTURBANCE: 0.33 AC.
- 8. THERE ARE NO CRITICAL HABITAT AREAS WITHIN THE PROJECT AREA. NO RARE, THREATENED OR ENDANGERED SPECIES WERE ENCOUNTERED DURING THE FIELD INVESTIGATIONS. IN ADDITION. CORRESPONDENCE WITH THE MARYLAND HISTORIC TRUST, THE U.S. FISH AND WILDLIFE SERVICE, AND THE MARYLAND DEPARTMENT OF NATURAL RESOURCES INDICATE THERE ARE NO RECORDS OF HISTORIC RESOURCES OR SENSITIVE NATURAL RESOURCES WITHIN THE AFFECTED AREA.
- 9. ONE SPECIMEN TREE, IN POOR CONDITION, WILL BE REMOVED.
- 10. TREES WILL ONLY BE REMOVED IF NECESSARY FOR GRADING OR ACCESS.
- 11. THE COORDINATES SHOWN HEREON ARE BASED ON HOWARD COUNTY GEODETIC CONTROL, WHICH IS BASED UPON THE MARYLAND STATE PLANE COORDINATE SYSTEM. THE EXISTING TOPOGRAPHY IS TAKEN FROM FIELD RUN SURVEY WITH TWO FOOT CONTOUR INTERVALS PREPARED BY AB CONSULTANTS, INC., IN OCTOBER 2011.
- 12. ALL WETLAND AND WUS SYSTEMS DENOTED WITH AN ASTERISK (*) CONTINUE BEYOND THE LIMITS OF THE STUDY AREA.

SPECIMEN TREE DO NOT REMOVE MACHINERY, DUMPING OR STORAGE OF ANY MATERIALS IS PROHIBITED VIOLATORS ARE SUBJECT FINES AS IMPOSED BY TH MARYLAND FOREST CONSERVATION ACT OF



FOREST CONSERVATION SIGNAGE NOT TO SCALE

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

KC Technologies Inc.

Forest Conservation Worksheet

Total Tract Area 8= 0.08 ac. C= 0.00 ac. D= 0.43 ac. Area within 100-year Floodplain Area to Remain In Agricultural Production Net Tract Area (D=(A-B-C)) Land Use Category: E= 0.09 ac. F= 0.11 ac. Afforestation Threshold (D x 20%) Conservation Threshold $(D \times 25\%)$ **Existing Forest Cover** G= <u>0.33 ac.</u> H= <u>0.24 ac.</u> Existing Forest Cover (excluding floodplain) Area of Forest Above Afforestation Threshold (1) If G<=E then H=0 and I=0, go to L (2) If G>E then H=G-E, go to I Area of Forest Above Conservation Threshold = 0.22 ac. (1) If G<=F then I=0, go to L (2) If G>F then I=G-F, go to J **Break Even Point** Forest Retention Above Threshold with no Mitigation J = 0.15 ac.(1) If I>0 then J=(0.2 xl)+F, go to K (2) If I=0, J=0, go to L Clearing Permitted Without Mitigation (K=G-J) K= 0.18 ac. **Proposed Forest Clearing** Total Area of Forest to be Cleared i.= <u>0.33 ac.</u> M= <u>0.00 ac.</u> Total Area of Forest to be Retained (M=G-L) Planting Requirements Reforestation for Clearing Above the Conservation Threshold N= 0.06 ac. (1) If L=K then N=0, P=0, Q=0, R=0, S=0, go to T (2) If M>F then N=L x 0.25, P=0, go to Q (3) If M<=F then N=I x .025, go to P Reforestation for Clearing Below the Conservation Threshold P= 0.22 ac. (1) If G>F and M>F then P=0, Q=0, go to R (2) If G>F and M<=F then P=2.0 x (F-M), Q=0, go to R (3) If G<=F then $P=2.0 \times L$, Q=0, go to R Credit for Retention Above the Conservation Threshold Q= 0.00 ac. (1) If M>F then Q=M-F, go to R (2) If M<=F then Q=0, go to R Total Reforestation Required R= 0.28 ac. (1) If Q>N and M>E then R=0, S=0, go to T (2) If Q<=N and M>E then R=(N=P)-Q, S=0, go to T

(3) If Q<=N and M<=E then R=N+P, go to S

(1) If G<E and M<E then S=E-G, go to T

(2) If G<E and M=E then S=0, go to T Total Reforestation and Afforestation Requirement T=(R+S)

Total Afforestation Required

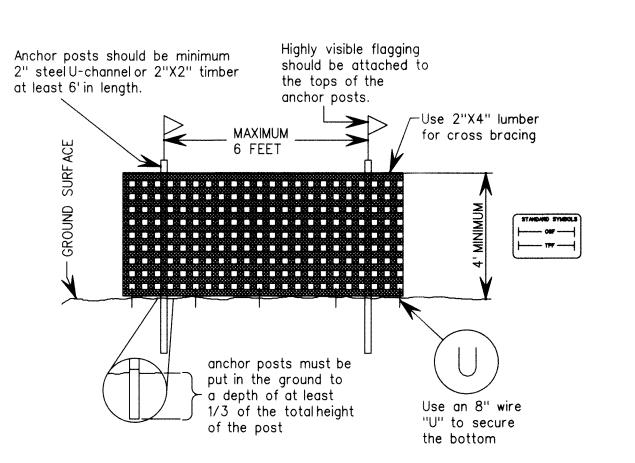
oak_west_FCW

T = 0.28 ac.Note: Use 0 for all negative numbers that result from the calculations.

S= 0.00 ac.

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9/21/2012

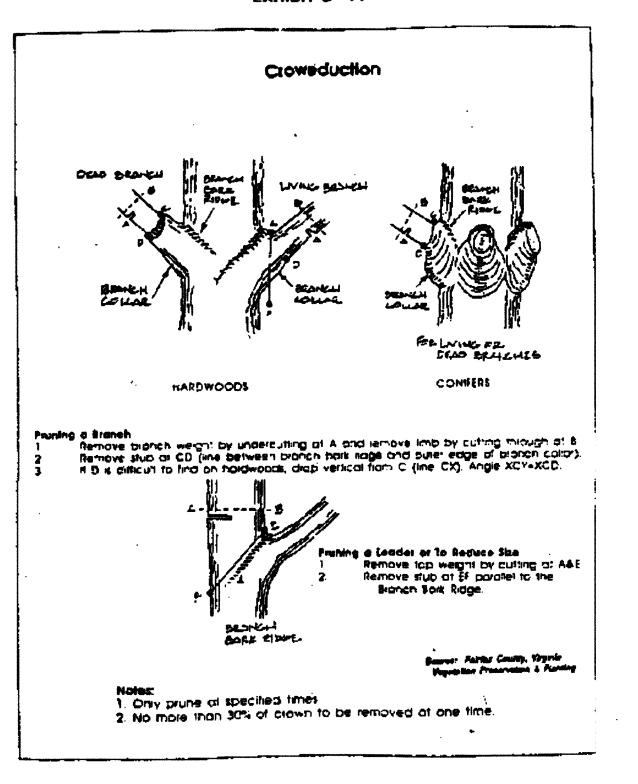


BLAZE ORANGE PLASTIC MESH SAFETY FENCE/TREE PROTECTION DETAIL NOT TO SCALE

PLACEMENT OF ORANGE HIGH VISIBILITY FENCE:

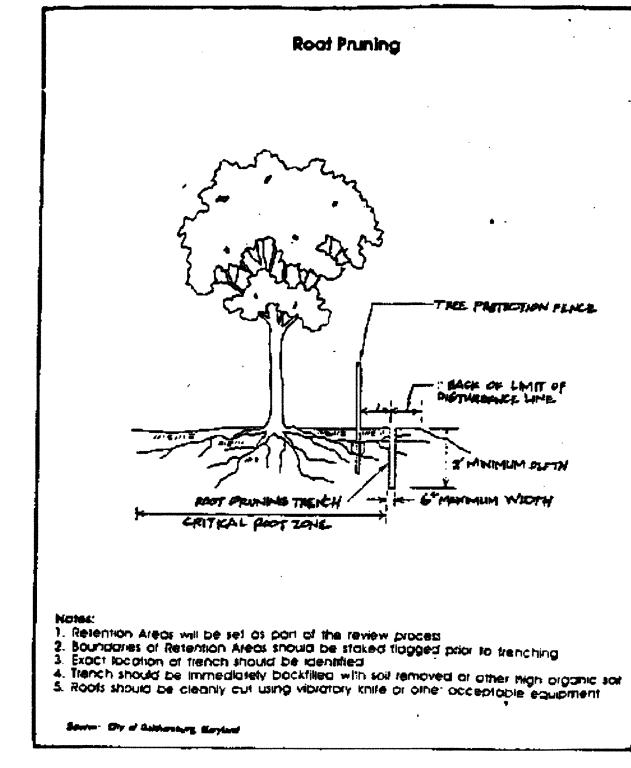
- 1. ORANGE HIGH VISIBILITY FENCE SHALL BE MANUALLY INSTALLED ALONG THE LIMITS OF DISTURBANCE, WHERE THAT LIMIT IS WITHIN 50' OF THE FOREST CONSERVATION/ FOREST BUFFER EASEMENTS AND SHALL FUNCTION AS A FOREST PROTECTION DEVICE.
- 2. RETENTION AREA WILL BE SET AS PART OF THE REVIEW PROCESS.
- 3. BOUNDARIES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

EXHIBIT G - 14



CROWN REDUCTION NOT TO SCALE

EXHIBIT G - 15



ROOT PRUNING NOT TO SCALE

KIDGEBROOK ROAD MARYLAND 21152 ONE: (410) 316-7800 (410) 316-7818

PARKS, ELEPHC

(410)

RIDGEBROOK

936

K WEST DRIVE ER POND RETROFIT ESTORATION PROJEC \Box OAK STORMWATEF STREAM RES

FOREST CONSERVATION PLAN NOTES AND DETAIL

AS SHOWN NOVEMBER 2012 01-081795.61 CAPITAL PROJECT NO.: ERMIT ISSUE:

CONSTRUCTION ISSUE:

SHEET NO.: 15 OF 15

THIS PLAN WAS PREPARED BY: JENNIFER BIRD KCI TECHNOLOGIES MDNR QUALIFIED PROFESSIONAL (SEPTEMBER 2011)

SIGNATURE