

AO-6 PHILLIPS CREEK WETLANDS MITIGATION SITE

NASSAWADOX
NORTHAMPTON COUNTY, VIRGINIA

MITIGATION DEVELOPMENT PLAN



PROJECT LOCATION

SITE DATA

GENERAL INFORMATION:

<u>GENERAL INFORMATION:</u>	
TAX MAP #:	22-A-7
CURRENT ZONING:	A/RB - AGRICULTURAL/RURAL BUSINESS
PLAT:A:A:A:A:	PB8-56
LOCATION:	NASSAWADOX, VA NORTHAMPTON COUNTY WETLAND MITIGATION BANK
TYPE OF PLAN:	

SITE DATA:

SIZE OF PARCEL: 18.13 ACRES
NAME & TYPE OF ROAD: BROWNVILLE ROAD

ENVIRONMENTAL FEATURES:

CURRENT FORESTED WETLANDS: +/-3.72 ACRES
TIDAL WETLANDS: NONE
OPEN WATER PONDS: 2.30 ACRES
FLOODPLAIN PANEL: 51131C0090E; DATE AUGUST 28, 2008
FLOOD ZONE: X

ACREAGE TABLE

PROPOSED WETLAND 1:	5.66 ACRES
PROPOSED WETLAND 2:	1.70 ACRES
EXISTING UPLAND FOREST CONVERTED TO WETLANDS BY HYDROLOGIC MODIFICATIONS:	1.43 ACRES
TOTAL WETLAND ACREAGE:	11.08 ACRES

VOLUME TABLE














EXISTING

EXISTING POND 1:	17,477.12 CUBIC YARDS
EXISTING POND 2:	17,999.09 CUBIC YARDS

PROPOSED

TOTAL PROPOSED SITE CUT:	37,433.69 CUBIC YARDS
TOTAL PROPOSED SITE FILL:	36,960.74 CUBIC YARDS

NET: 236.47 CUBIC YARDS (CUT)

LEGEND			
	EXISTING MONITORING WELL		PROPERTY BOUNDARY
	EXISTING WETLANDS		ADJACENT PROPERTY BOUNDARY
	EXISTING WETLANDS BOUNDARY		PROPOSED WETLANDS
	EXISTING MAJOR CONTOURS		PROPOSED WETLANDS BOUNDARY
	EXISTING MINOR CONTOURS		PROPOSED MAJOR CONTOURS
	EXISTING TREELINE		PROPOSED MINOR CONTOURS
	EXISTING WATERLINE		
	TEST PIT		

INDEX OF SHEETS

[illegible]

CONSULTANTS

OWNER:

The Nature Conservancy
PO Box 158
Nassawadox, Virginia 23413
Phone

SURVEYOR, PLANNER, CIVIL ENGINEER,
LANDSCAPE ARCHITECT:

Atlantic Group & Associates, Inc.
10044 Old Ocean City Boulevard
Berlin, MD 21811
Ph: (410) 629-1160

ENVIRONMENTAL CONSULTANTS:

Barney Environmental
P.O. Box 1595
Virginia Beach, VA 23451
Ph: (757) 641-5004

PROFESSIONAL CERTIFICATION

"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."

NAME: _____

LICENSE NO.:

EXPIRATION DATE:

SEAL

PLANS ISSUED FOR:
Review

REVISIONS:

[illegible]

**AO-6 PHILLIPS CREEK
WETLANDS MITIGATION SITE**

NASSWADOX
NORTHAMPTON COUNTY, VIRGINIA

Civil Engineers
Land Planners
Landscape Architects
Surveyors

Atlantic Group
& Associates, Inc.

10044 Old Ocean City Boulevard
Berlin, Maryland 21811
Ph: (410) 629-1160
Fax: (410) 629-1710
www.the-atlanticgrp.com

BARNEY ENVIRONMENTAL, INC.
Environmental and Land Development Consulting

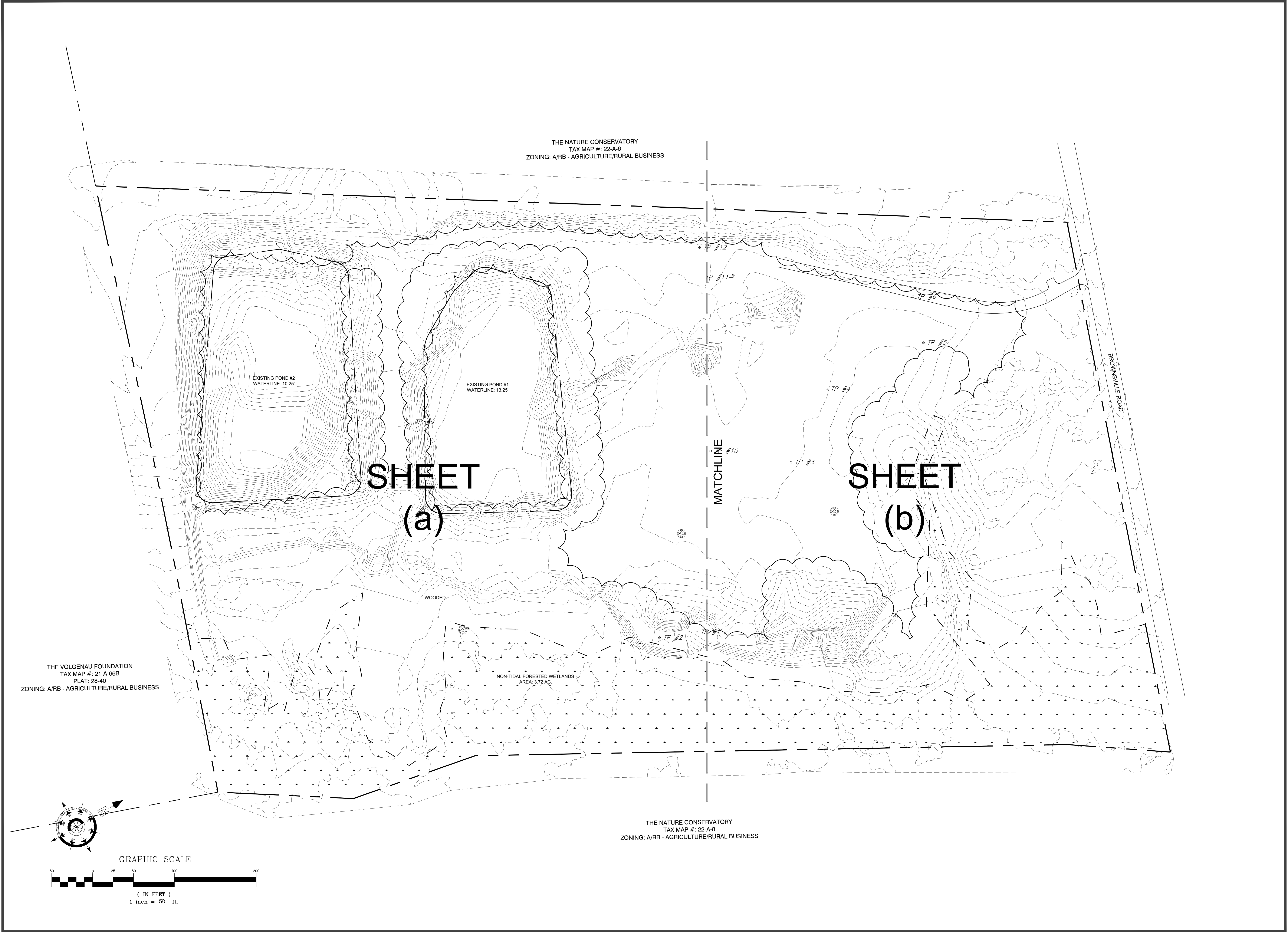
PO BOX 1099
11620 N. 165th St. VA. 2160
757-688-9094
www.barneyenvironmental.com

PROJECT: 16-120	DATE: 12/22/2016
-----------------	------------------

DRAWN BY: BUJ	SCALE: None
---------------	-------------

SHEET:

C-001



PLANS ISSUED FOR:
Review

REVISIONS:

No.	Revision/Issue	Date

AO-6 PHILLIPS CREEK
WETLANDS MITIGATION SITE

NASSWADOX
NORTHAMPTON COUNTY, VIRGINIA

Civil Engineers
and Planners
Landscape Architects
Surveyors

**Atlantic Group
& Associates, Inc.**

10044 Old Ocean City Boulevard
Berlin, Maryland 21811
Ph: (410) 629-1160
Fax: (410) 629-1770
www.the-atlanticgrp.com

BANKY ENVIRONMENTAL, INC.
Environmental and Land Development Consulting
www.bankyenv.com

KEY SHEET

PROJECT: 16-120 DATE: 12/22/2016
DRAWN BY: BJU SCALE: 1" = 50'
SHEET: C-002



PLANS ISSUED FOR:
Review

REVISIONS:

No.	Revision/Issue	Date

AO-6 PHILLIPS CREEK
WETLANDS MITIGATION SITE

NASSWADOX
NORTHAMPTON COUNTY, VIRGINIA

Civil Engineers
and Planners
Landmark Architects
Surveyors

**Atlantic Group
& Associates, Inc.**

10044 Old Ocean City Boulevard
Berlin, Maryland 21811
Ph: (410) 629-1160
Fax: (410) 629-1770
www.the-atlanticgrp.com

BANKS ENVIRONMENTAL & INC.
WETLANDS AND LAND USE CONSULTANTS
10000 WETLANDS DRIVE
WETLANDS AND LAND USE CONSULTANTS

EXISTING
CONDITIONS

PROJECT: 16-120 DATE: 12/22/2016
DRAWN BY: BJU SCALE: 1" = 30'
SHEET:
C-100(a)



PLANS ISSUED FOR:		
Review		
REVISIONS:		
No.	Revision/Issue:	Date

AO-6 PHILLIPS CREEK
WETLANDS MITIGATION SITE

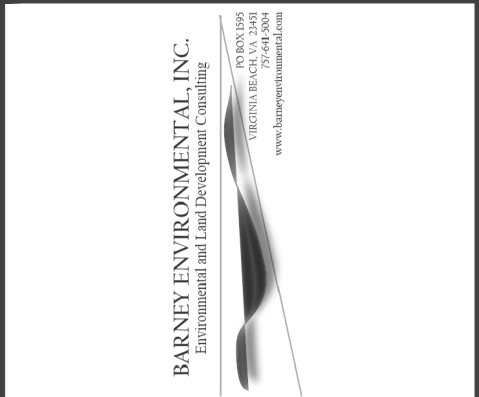
NASSWADOX
NORTHAMPTON COUNTY, VIRGINIA



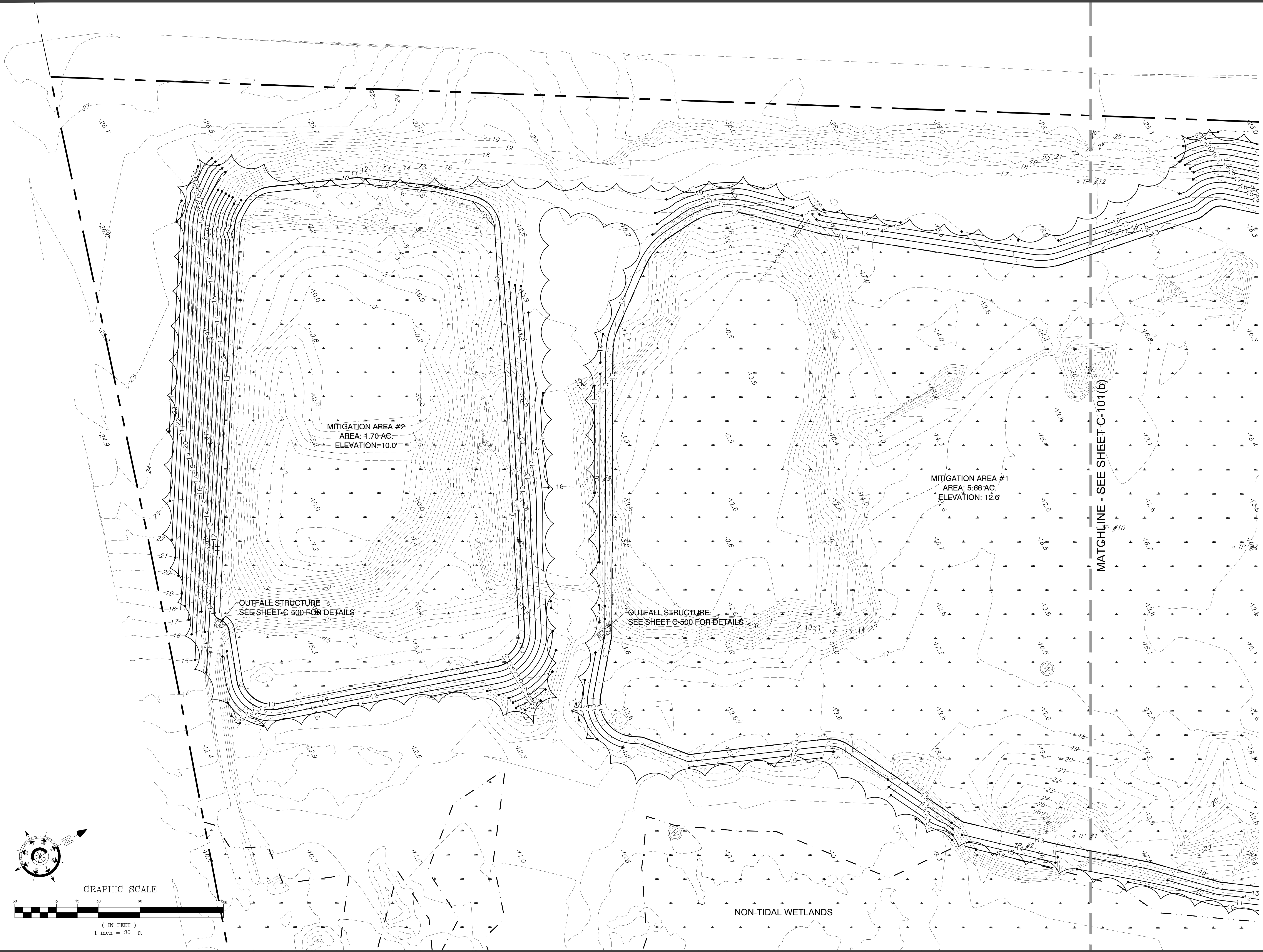
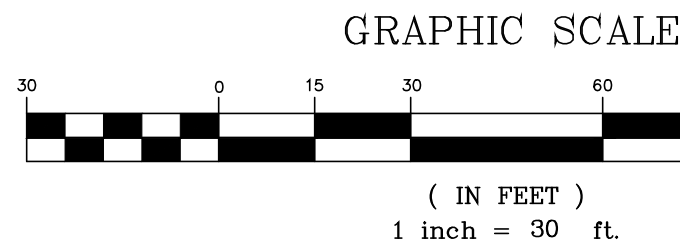
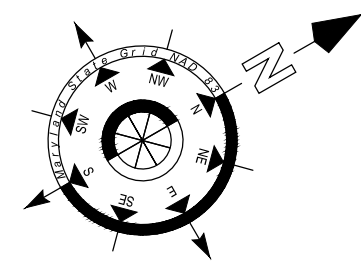
**Atlantic Group
& Associates, Inc.**

Civil Engineers
Land Planners
Landscape Architects
Surveyors

10044 Old Ocean City Boulevard
Berlin, Maryland 21811
Ph: (410) 629-1160
Fax: (410) 629-1710
www.the-atlanticgrp.com



EXISTING CONDITIONS	
PROJECT: 16-120	DATE: 12/22/2016
DRAWN BY: BJU	SCALE: 1" = 30'
SHEET: C-100(b)	



PLANS ISSUED FOR: Review		
REVISIONS:		
No.	Revision/Issue	Date

**AO-6 PHILLIPS CREEK
WETLANDS MITIGATION SITE**

NASSWADOX
NORTHAMPTON COUNTY, VIRGINIA

**American Group
& Associates, Inc.**

Civil Engineers
and Planners
Landscapes Architects
Surveyors

**Atlantic Group
& Associates, Inc.**

10044 Old Ocean City Boulevard
Berlin, Maryland 21811
Ph: (410) 629-1160
Fax: (410) 629-1770
www.the-atlanticgrp.com

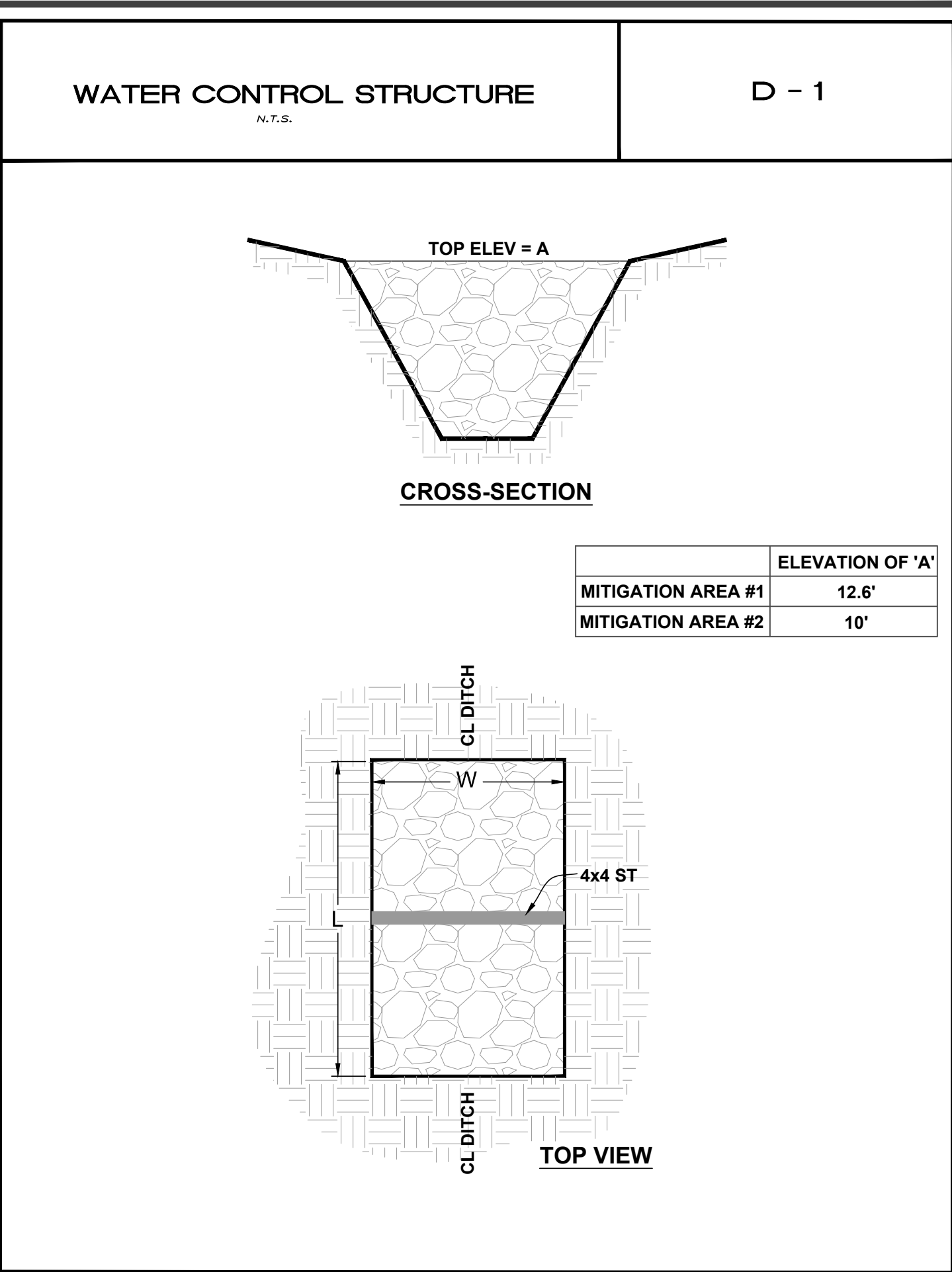
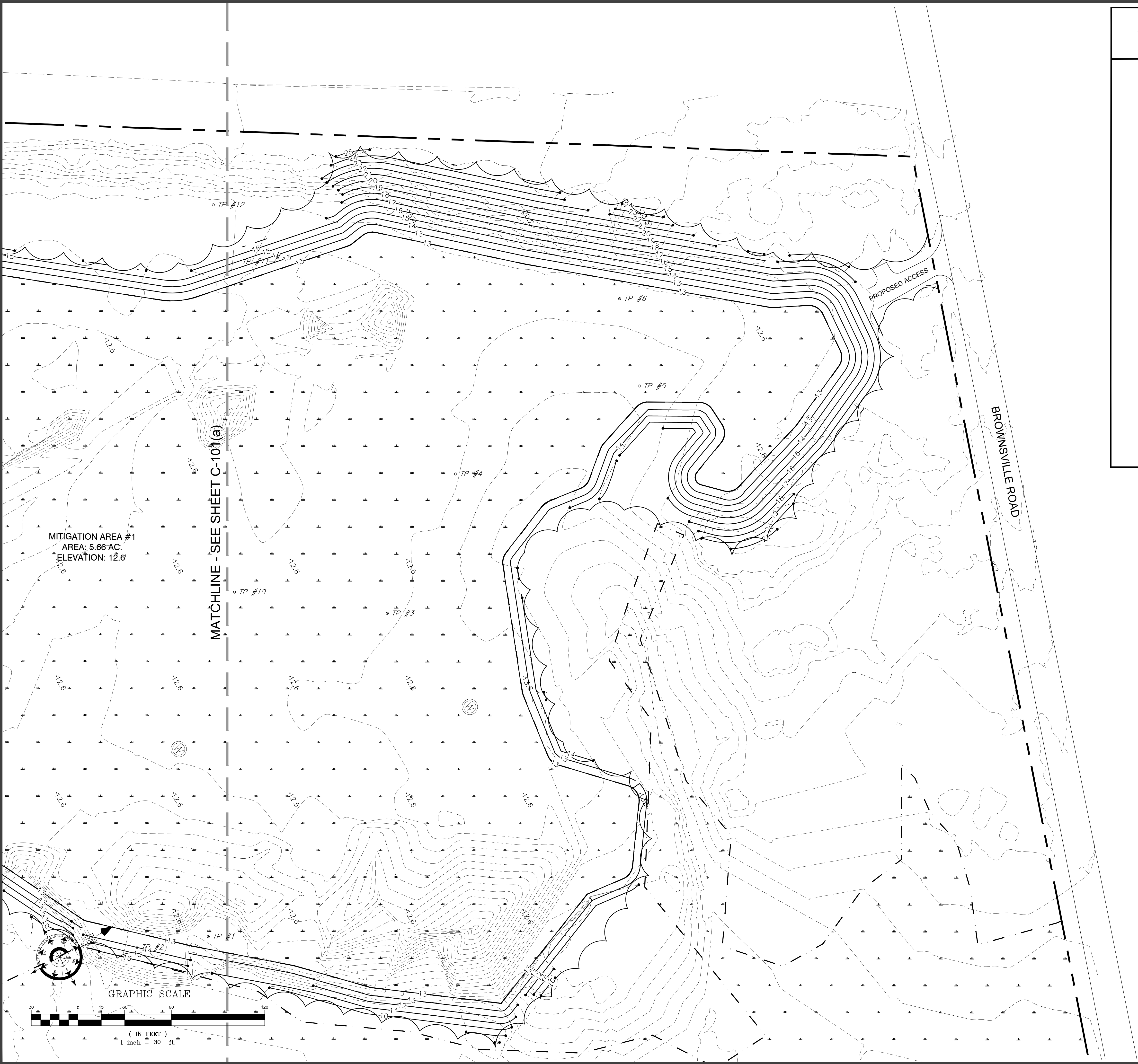
BAKER ENVIRONMENTAL, INC.

Environmental and Land Use Consultants
10000 Old Ocean City Boulevard
Suite 200
Berlin, Maryland 21811
Ph: (410) 629-1160
Fax: (410) 629-1770
www.bakerenv.com

SITE PLAN

PROJECT:	16-120	DATE:	12/22/2016
DRAWN BY:	BJU	SCALE:	1" = 30'

C-101(a)



PLANS ISSUED FOR:
Review

REVISIONS:

No.	Revision/Issue	Date

**AO-6 PHILLIPS CREEK
WETLANDS MITIGATION SITE**

NASSWADOX
NORTHAMPTON COUNTY, VIRGINIA

Civil Engineers
and Planners
Landmark Architects
Surveyors

**Atlantic Group
& Associates, Inc.**

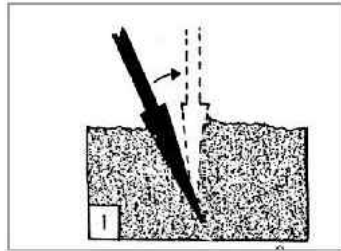
10044 Old Ocean City Boulevard
Berlin, Maryland 21811
Ph: (410) 629-1160
Fax: (410) 629-1710
www.the-atlanticgrp.com

BANKS ENVIRONMENTAL, INC.
WETLANDS AND LAND DEVELOPMENT CONSULTANTS
www.banksenv.com

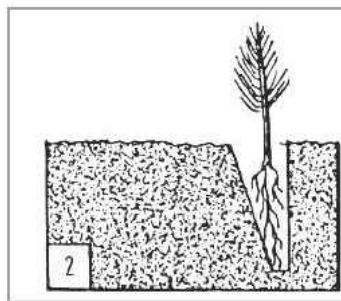
SITE PLAN

PROJECT: 16-120 DATE: 12/22/2016
DRAWN BY: BJU SCALE: 1" = 30'
SHEET: **C-101(b)**

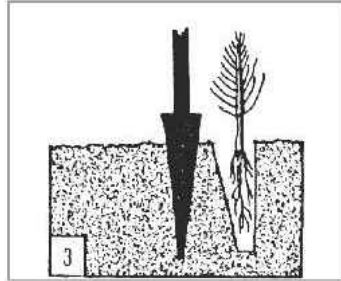
PLANTING PROCEDURE WITH KBC/OST BAR (DIBBLE BAR)



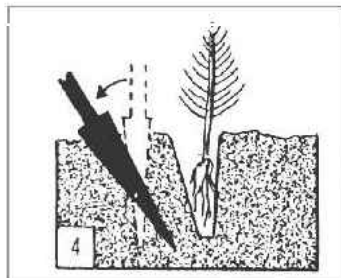
Insert bar at 45 degree angle. Push forward to upright position.



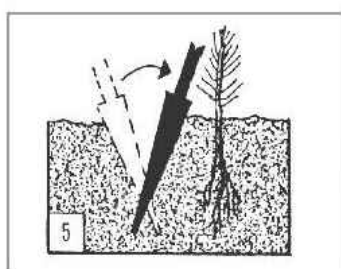
Remove bar and place seedling at correct depth.



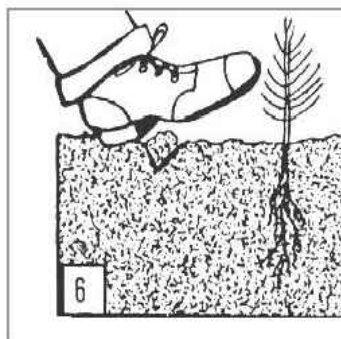
Hold seedling at correct depth. Insert bar 3 inches from seedling.



Pull bar handle toward planter to close hole at bottom of roots.



Push bar handle forward to close hole at top of roots.



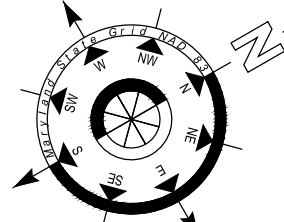
Stomp with heel to fill in the last hole.

EMERGENT & FORESTED WETLAND MEADOW SEED MIX

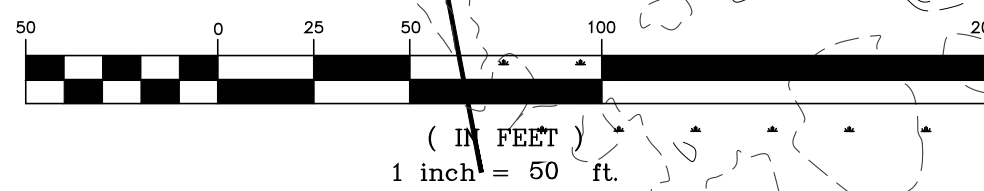
Percent of Mix	Scientific Name	Common Name	Wetland Indicator Status
1	<i>Asclepias incarnata</i>	Swamp milkweed	OBL
1	<i>Aster novae-angliae</i>	New England aster	FacW-
2	<i>Bidens fondosa</i>	Common beggar-ticks	FacW
8	<i>Carex comosa</i>	Cosmos sedge	OBL
1	<i>Carex stipata</i>	Awl sedge	OBL
1/2	<i>Carex stricta</i>	Tussock sedge	OBL
8	<i>Carex vulpinoidea</i>	Fox sedge	OBL
1/2	<i>Eupatorium perfoliatum</i>	Common bonset	FacW+
10	<i>Glyceria canadensis</i>	Rattlesnake grass	OBL
10	<i>Glyceria striata</i>	Fowl manna grass	OBL
5	<i>Juncus effusus</i>	Soft rush	FacW+
18	<i>Panicum virgatum</i>	Switchgrass	Fac
18	<i>Poa palustris</i>	Fowl meadowgrass	FacW
6	<i>Polygonum pennsylvanicum</i>	Pennsylvania smart weed	FacW
2	<i>Rudbeckia hirta</i>	Black-eyed Susan	FacU-
2	<i>Rudbeckia triloba</i>	Brown-eyed Susan	FacU
5	<i>Scirpus cyperinus</i>	Woolgrass	FacW+
2	<i>Verbena hastata</i>	Blue vervain	FacW+

WETLAND TREE AND SHRUB PLANTING LIST
7.36-ACRE AFFORESTATION OF RESTORATION AREA

Quality	Scientific Name	Common Name	Type	Wetland Indicator Status
888	<i>Quercus phellos</i>	Willow oak	12" to 24" 1-yr.-old seedling	Fac+
444	<i>Quercus palustris</i>	Pin oak	12" to 24" 1-yr.-old seedling	FacW
888	<i>Quercus bicolor</i>	Swamp white oak	12" to 20" 1-yr.-old seedling	FacW+
311	<i>Acer rubrum</i>	Red maple	8" to 16" 1-yr.-old seedling	Fac
888	<i>Liquidambar styraciflua</i>	Sweet gum	8" to 16" 1-yr.-old seedling	Fac
311	<i>Nyssa aquatica</i>	Black gum	12" to 24" 2-yr.-old seedling	Fac
178	<i>Fraxinus pennsylvanica</i>	Green ash	12" to 24" 1-yr.-old seedling	FacW
444	<i>Pinus taeda</i>	Loblolly pin	8" to 12" 1-yr.-old seedling	Fac
222	<i>Cornus amomom</i>	Silky dogwood	12" to 24" 1-yr.-old seedling	FacW
222	<i>Ilex verticillata</i>	Winterberry holly	6" to 12" 1-yr.-old seedling	FacW+
222	<i>Viburnum dentatum</i>	Arrowwood	6" to 12" 2-yr.-old seedling	Fac
5,019	Total			



GRAPHIC SCALE



PLANTING NOTES

SEEDING OF EMERGENT & FORESTED WETLAND MEADOW SEED MIX

- TOPSOIL SHALL NOT BE SPREAD FOR THIS SEED MIX
- REFORESTATION AREAS BEING DEVELOPED AS WETLANDS (7.36 ACRES) SHALL BE PERMANENTLY STABILIZED BY SEEDING WITH THE EMERGENT & FORESTED WETLAND MEADOW SEED MIX AND ANNUAL RYEGRASS AT THE RATE SPECIFIED BY THE PLANTING PLAN.
- SEEDING SHALL OCCUR DURING THE PERIOD OF APRIL 1 THROUGH MAY 30 OR NOVEMBER 15 THROUGH DECEMBER 30. ORDER SEED AT LEAST ONE (1) MONTH IN ADVANCE OF PLANTING.
- INCORPORATE THE SEED MIX INTO THE SOIL BY TRACKING SEEDED AREAS WITH A HEAVY BULLDOZER HAVING CLEATS AT LEAST 1 1/4 INCHES DEEP, OFFSETTING EACH PASS UNTIL THE ENTIRE SITE IS COVERED WITH TRACKS. TRACKING SHALL OCCUR ON THE SAME DAY AS SEEDING.
- SEEDING MAY ALSO BE ACCOMPLISHED ON A CULTIVATED BED PREPARED WITH LIME AND FERTILIZER AS SPECIFIED IN ITEM 3. DRILL SEED 3/8 TO 1/4 INCH IN DEPTH AT RATES SPECIFIED IN ITEM 1.
- HYDROSEEDING IS PERMITTED, HOWEVER TRACKING OF SEEDED AREA BY A BULLDOZER AS PREVIOUSLY DESCRIBED IS REQUIRED.
- FOLLOWING GERMINATION, THE SITE SHALL BE EVALUATED TO DETERMINE THE NEED FOR MOVING OR HERBICIDE APPLICATION TO CONTROL WEEDS. THE NEED FOR APPLICATION OF NITROGEN FERTILIZER WILL ALSO BE DETERMINED AT THAT TIME.
- IN OCTOBER FOLLOWING SEEDING, ALL WETLAND REFORESTATION AREAS WILL BE EVALUATED IN REGARD TO PERCENT COVERAGE OF WETLAND GRASSES AND SEDGES. SUPPLEMENT SEEDING OR FERTILIZATION WILL BE RECOMMENDED OR UNDERTAKE AT THAT TIME FOR ANY AREA LACKING 85% COVERAGE.

Reforestation with seedling consists of furnishing all plants, labor, materials, equipment, transportation, storage and the proper planting of the plant materials by approved methods, as hereinafter specified, in the locations shown on the planting plans or as directed by the operator of the Brownsville Wetland Mitigation Bank (BWMB). D The word "trees" is used as a general term for seedling and saplings of both tree and shrub species.

All plants shall be true to type and nomenclature and typical of their species of variety. They shall have a normal habit of growth with well-developed branch systems and vigorous root systems. They shall be sound, healthy, and vigorous plants, free from visible defects, disfigurement, injury, recognizable disease of any kind, insect eggs, borers and any infestation.

All seedlings shall conform to all sizes and measurements detailed on the planting plan tree and shrub lists. Unacceptable plants shall be culled and replacements provided at the Contractor's cost. No substitutions for ant materials shall be made unless agreed to in writing by operator of the BWMB. Plants larger in size than specified may be utilized, but such plants shall not increase the contract price.

REFORESTATION PLANTING METHODS AND SCHEDULE

A key responsibility of the Contractor is proper tending of the planting stock throughout all phases of the reforestation program. During all work, including plant transport, off-site or on-site storage and on-site plant handling, the plant material shall be handled carefully to prevent injuries and desiccation. The plants shall be kept from freezing, kept covered, kept moist, kept cool, and kept out of the wind and sun. During all phases of the work, all shipping bags, shipping boxes and plants shall be handled gently, according to best forestry practices. This shall include cold storage of plant materials at 35° to 39°F, and relative humidity of 90% where it is necessary to store seedlings during the course of planting.

Planting shall begin as soon after March 1 as weather and ground conditions permit, as solely determined by the operator of the BWMB. Unless directed by the operator of the BWMB, all reforestation planting shall be completed by May 30.

Trees shall not be planted in frozen ground or during periods of freezing air temperatures. The Contractor shall stop planting due to weather or any other conditions that are not favorable to tree planting. Unsatisfactory planting conditions include, but are not restricted to, temperatures above 70° F., relative humidity below 40%, wind speed greater than 15 miles/hour, or available soil moisture less than 50%. Planting may also be postponed if ground freezing temperatures are forecasted for several days immediately following the planting.

During installation, at all times, trees in planting bags shall be kept moist. As needed, tree planting bags shall be lined with moist burlap cloth. Bare root trees can also be carried in moss-lined planting bags or in bags holding a water slurry. Shade moves with time. It is sole responsibility of the Contractor to insure that, once materials are placed in the field stockpiling sites, the plant materials remain shaded as the day progresses.

Do not allow the trees to be outside the shipping container of planting bag for more than two minutes. Additional exposure time shall not be allowed for counting trees.

Once the trees have been removed from the shipping containers, the trees shall be planted immediately. Once placed in the planting bags, trees shall not be subsequently replaced into the shipping containers. Prolonged or unnecessary exposure of trees while in planting bags shall not be allowed. Planting bags shall not be used for tree transport or for temporary storage. When in active use, including break periods, empty planting bags kept shaded.

Planting tools shall not be utilized to maneuver the trees or roots into any planting hole. Planting holes shall be large enough to allow easy placement of the tree at the appropriate depth without tangling, catching, or forcing upland the orientation of the root system.

Wax-impregnated boxes, tubes, tube racks, plant trays, shipping materials and all crew debris shall not be left on site, but shall be disposed of by the Contractor. The Contractor shall maintain a sufficient supply of freshwater on site for any water needs during the planting operation.

PLANTING NOTES & SPECIFICATIONS FOR WETLAND FORESTATION WITH TREES AND SHRUBS

Planting - OST Bar (Dibble Bar)

1. Insert the entire usable blade of a planting bar straight down into the soil near the center of the planting spot and open the planting hole by firmly pulling back the bar handle (the planting bar shall be used so that blade is parallel to the planter's front side). Where the soil is tight and the hole does not open cleanly, rock the handle back and forth until a clean hole is formed. However, excessive rocking of the bar during its insertion can result in an "hourglass hole", which will be difficult to plant or close properly because of the creation of a constriction point below which a large air pocket can form. "Hourglass hole" plantings will not be accepted. Excessive rocking can also cause the soil in the planting hole to be compacted.

The hole needs to be large enough so that the tree roots can be placed in a nearly natural position and deep enough to accept the entire root structure without the development of J-rooting, L-rooting or binding of the roots during the planting operation.

2. Remove the planting bar from the planting hole. Remove a tree from the planting bag an immediately place the tree into the planting hole. The tree roots should be gently placed into the planting hole so that the root collar of the seedling is one (1) or two (2) inches below the desired planting depth, but not far enough to damage the tree roots. The tree should then be pulled gently upward until the desired planting depth is reached, as shown in the details. The tree should be shaken slightly to loosen and spread the roots. The tree roots shall be in nearly natural position, orientated downward and outward. The root collar shall be placed so that the collar is one (1) inch below the ground line at the planting spot.

3. Secure the tree in place at the proper planting depth with soil. This is done by inserting the planting bar about two (2) inches behind the tree and parallel to the planting hole. Push the blade about halfway straight down. While holding the tree at the proper depth with the hand, push the handle of the planting bar forward, causing soil to move forward, thereby closing the planting slit and holding the tree temporarily in place.

4. Push the planting bar down to the full length of the usable blade. To close the bottom of the planting hole, pull back firmly on the bar handles. This packs the soil against the tree roots at the bottom of the planting hole, tightens the soil around the bottom of the roots, and prevents air pockets. Next, push the bar handle forward to pack the soil firmly against the entire portion of the tree in the ground and to prevent any air pockets from forming around the roots. If necessary to remove the bar from the ground leaving a clean closing hole, the bar may be rocked back and forth prior to withdrawal.

5. Move back away from the tree about two (2) inches and insert the planting bar into the soil the full length of the usable blade. Twist the planting bar to loosen soil, then firmly push forward and then back on the bar, filling the previous hole. Fill this closing hole by firmly (stamping) with the heel and toe or other methods. Then apply firm foot pressure immediately adjacent to the tree. This is done to compact the soil, insure proper planting, and eliminate air pockets. Firm foot pressure shall be applied in several different positions immediately adjacent to the tree. The placement of the firm foot pressure shall occur while maintaining a gentle hold of the tree, thus promoting vertical placement of the tree. Do not step on, bruise, or walk through the tree, or cause the tree to lean. Check tightness by pulling gently on the tip of the tree.

PLANS ISSUED FOR:
Review

REVISIONS:

No.	Revision/Issue	Date

AO-6 PHILLIPS CREEK
WETLANDS MITIGATION SITE

NASSWADOX
NORTHAMPTON COUNTY, VIRGINIA

Civil Engineers
and Planners
Landmark Architects
Surveyors



10044 Old Ocean City Boulevard
Berlin, Maryland 21811
Ph: (410) 629-1160
Fax: (410) 629-1770
www.theatlanticgrp.com



PLANTING PLAN
&
SPECIFICATIONS

PROJECT: 16-120 DATE: 12/22/2016

DRAWN BY: BJU SCALE: 1" = 50'

SHEET: