



November 3, 2014

Mr. Justin Green, Program Administrator
Office of Siting Coordination
Department of Environmental Protection
3900 Commonwealth Blvd., MS#48
Tallahassee, FL 32399-3000

RE: Florida Power & Light Company
Riviera Beach Energy Center
Power Plant Site Certification No. PA 12-57
Site Certification Amendment Request

Dear Mr. Green,

Florida Power & Light Company (FPL) is requesting a post certification amendment to the Site Certification for FPL's Port Everglades Energy Center (PEEC), pursuant to Chapter 62-17.205 (1)(A) F.A.C. The purpose of this amendment request is to fortify the banks of the intake and discharge canals (Canals) at the Port Everglades Energy Center (PEEC) by installing anchored concrete articulating matting. The project will require the removal of less than 0.1 acres of mangroves along the canal banks. To mitigate for the loss of mangroves along the banks of the Canals, FPL will purchase 0.1 saltwater/mangrove mitigation credits from the Everglades Mitigation Bank.

We have included the following additional information in this submittal as required by condition XXIX A1 of the conditions of certification:

- Section "A" of the environmental resource permit application;
- The permit sketches – Appendix A;
- A summary of the construction methodology – Appendix B;
- Vegetation surveys for the Intake and Discharge Canals – Appendix C; and
- A copy of the W.A.T.E.R assessment for the proposed mangrove impacts – Appendix D.

The permit processing fee and mitigation agreement and payment confirmation will be submitted under separate cover. If you have any questions regarding this submittal, please do not hesitate to Stacy Foster at 561-691-7065 or Daniel Moretz at 561-691-2914.

Sincerely yours,
Florida Power & Light Company

A handwritten signature in black ink, appearing to read 'Matthew J. Raffenberg', written over a horizontal line.

Matthew J. Raffenberg
Director, FPL Licensing and Permitting

cc: Benny Luedike, FDEP
Linda Sunderland, Broward County

**JOINT APPLICATION FOR
INDIVIDUAL AND CONCEPTUAL ENVIRONMENTAL
RESOURCE PERMIT/
AUTHORIZATION TO USE STATE-OWNED
SUBMERGED LANDS/
FEDERAL DREDGE AND FILL PERMIT**

FLORIDA DEPARTMENT OF ENVIRONMENTAL PROTECTION/
WATER MANAGEMENT DISTRICTS/
U.S. ARMY CORPS OF ENGINEERS

Effective October 1, 2013



**US Army Corps
of Engineers®**

INSTRUCTIONS FOR USE OF THIS FORM:

This form is designed to assist you in submitting a complete application. All applications must include Section A-General Information for All Activities. Sections B through H list typical information that is needed based on the proposed activities, and are only required as applicable. Part 1-C of Section A will guide you to the correct sections needed based on your proposed activities. Applicants are advised to consult Chapter 62-330, F.A.C., and the Environmental Resource Permit Applicant's Handbook Volumes I and II for information regarding the ERP permitting process and requirements while preparing their application. Internet addresses for Chapter 62-330, F.A.C. and the Applicant's Handbook, Agency contact information, and additional instructions for this form can be found in Attachment 1.

What Sections of the Application Must I Fill Out?

Does the project involve....	Section						
	A- General Information	B- Single Family Projects	C- Wetlands and other Surface Waters	D- Structures or Works in Surface Waters	E- Stormwater Management System	F- State-owned Submerged Lands	H- Mines
Fill in wetlands or waters for a single family residence?	X	X					
Docks, shoreline stabilization, seawalls associated with a single family residence?	X	X				X, if applicable	
Wetland impacts (other than associated with an individual residence)?	X		X				
Boating facilities, a marina, jetty, reef, or dredging?	X		X	X		X if applicable	
Any work on state owned submerged land?	X		X			X	
Construction of a stormwater management system?	X		X, if applicable		X		
Constructing a mitigation bank?	X		X		X, if applicable		X
Creating a mine?	X		X, if applicable				X

Note- if you are required to provide Section B, then you do not have to provide any other Sections, unless the activities are on state-owned submerged lands. In that case, Section F will also be required.

If you have any questions, or would like assistance completing this form, please contact the staff of the nearest office of either the Florida Department of Environmental Protection (DEP) or a Water Management District (WMD) (see Attachment 2).

Section A: General Information for All Activities

PART 1: NAME, APPLICATION TYPE, LOCATION, AND DESCRIPTION OF ACTIVITY

A. Name of project, including phase if applicable: Port Everglades Energy Center - Storm Surge Mitigation

B. This is for (check all that apply):

- ☐ Construction or operation of **new** works, activities and/ or a stormwater management system
- ☐ **Conceptual Approval** of proposed works, activities and/ or a stormwater management system
- ☒ Modification or Alteration of **existing** works activities and / or a stormwater management system.
Provide the existing DEP or WMD permit #, if known: _____ Note: Minor modifications do not require completion of this form, and may instead be requested by letter.
- ☐ **Maintenance or repair** of works, activities and/ or stormwater management system previously permitted by the DEP or WMD Provide existing permit #, if known: _____
- ☐ Abandonment or removal of works, activities and/ or stormwater management system
Provide existing DEP or WMD permit #, if known: _____
- ☐ Operation of an **existing unpermitted** stormwater management system.
- ☐ Construction of additional phases of a permitted work, activity and/ or stormwater management system.
Provide the existing DEP or WMD permit #, if known: _____

C. **List the type of activities proposed. Check all that apply, and provide the supplemental information requested in each of the referenced application sections. Please also reference Applicant's Handbooks I and II for the type of information that may be needed.**

- ☐ Activities associated with one single-family residence, duplex, triplex, or quadruplex that do not qualify for an exemption or a General Permit: **Provide the information requested in Section B. Do not complete Section C.**
- ☐ Activities within wetlands or surface waters, or within 25 feet of a wetland or surface water, (not including the activities associated with an individual residence). *Examples include dredging, filling, outfall structures, docks, piers, over-water structures, shoreline stabilization, mitigation, reclamation, restoration/enhancement.* **Provide the information requested in Section C.**
- ☐ Activities within navigable or flowing surface waters such as a multi-slip dock or marina, dry storage facility, dredging, bridge, breakwaters, reefs, or other offshore structures: **In addition to Section C, also provide the information requested in Section D.**
- ☐ Activities that are (or may be) located within, on or over state-owned submerged lands (See Chapter 18-21, F.A.C. <https://www.flrules.org/gateway/ChapterHome.asp?Chapter=18-21>): **In addition to Section B or C, also provide the information requested in Section F**

- ☐ Construction or alteration of a stormwater management system serving residential, commercial, transportation, industrial, agricultural, or other land uses, or a solid waste facility (excluding mines that are regulated by DEP). **Provide the information requested in Section E.**
- ☐ Creation or modification of Mitigation Bank (refer to Chapter 62-342, F.A.C. <https://www.flrules.org/gateway/ChapterHome.asp?Chapter=62-342>): **Provide the information requested in Section G.**
- ☐ Mines (as defined in Section 2.0 of Applicant's Handbook Volume I) that are regulated by the DEP: **Provide the information requested in Section H.**
- ☒ Other, describe: Amendment to Site Certification Number PA12-57
Please contact the Agency to determine which additional sections of the application are need.
See Attachment 1 for Agency contacts.

D. Describe in general terms the proposed project, system, works, or other activities. For permit modifications, please briefly describe the changes requested to the permit: Storm Surge Mitigation - Shoreline Stabilization see attached for additional information.

E. For activities in, on, or over wetlands or other surface waters, check the type of federal dredge and fill permit requested (if known): ☐ Individual ☐ Programmatic General permit #: ☐ General ☐ Nationwide permit #: ☒ Not Applicable ☐ Not sure

F. Project/Activity Street/Road Address or other location (if applicable): 8100 Eisenhower Blvd
City: Hollywood County(ies): Broward Zip: 33316

Note: For utility, road, or ditch/canal activities, provide a starting and ending point using street names and nearest house numbers or provide length of project in miles along named streets or highways.

G. Project location map and Section, Township, and Range information (use additional sheets if needed):
Please attach a location map showing the location and boundaries of the proposed activity in relation to major intersections or other landmarks. The map should also contain a north arrow and a graphic scale; show Section(s), Township(s), and Range(s); and must be of sufficient detail to allow a person unfamiliar with the site to find it.

Section(s): 23 Township: 50S Range: 42E Land Grant name, if applicable:
Section(s): Township: Range:
Section(s): Township: Range:

H. Latitude (DMS) 26 ° 5 ' 8.00 " Longitude (DMS) 80 ° 7 ' 31.00 " (Taken from central location of the activity). Explain source for obtaining latitude and longitude (i.e. U.S.G.S. Quadrangle Map, GPS, online resource):

I. Tax Parcel Identification Number(s):

[Number may be obtained from property tax bill or from the county property appraiser's office; if on multiple parcels, provide multiple Tax Parcel Identification Numbers]

J. Directions to Site (from major roads; include distances and landmarks as applicable):

K. Project area or phase area: 92.5 acres

- L. Name of waterbody(ies) (if known) in which activities will occur or into which the system will discharge:
Port Everglades Energy Center Intake and Discharge Canal

The following questions (M-O) are not applicable to activities related to a single-family residence, including private single-family residential docks, piers, seawalls or boat ramps.

- M. Is it part of a larger plan of development or sale? ☐ yes ☒ no
- N. Impervious or semi-impervious area excluding wetlands and other surface waters (if applicable):
acres or square feet
- O. Volume of water the system is capable of impounding (if applicable): acre-feet.

PART 2: SUPPLEMENTAL INFORMATION, AND PERMIT HISTORY

- A. Is this an application to modify an existing Environmental Resource Permit, or to construct or implement part of a multi-phase project, such as a project with a Conceptual Approval permit? ☐ Yes ☐ No *If you answered "yes", please provide permit numbers below:*

AGENCY	DATE	PERMIT/APPLICATION NO.	PROJECT NAME

- B. Indicate if there have been any **pre-application meeting(s)** or other discussions about the proposed project, system or activity. If so, please provide the date(s), location(s) of the meeting, and the name(s) of Agency staff that attended the meeting(s):

AGENCY	DATE	LOCATION	MEETING ATTENDEES

- C. **Attach a depiction (plan and section views), which clearly shows the works or other activities proposed to be constructed.** Use multiple sheets, if necessary, a scale sufficient to show the location and type of works, and include a north arrow and a key to any symbols used. **Specific information to be included in the plans is based on the activities proposed and is further described in Sections B-H.** However, supplemental information may be required based on the specific circumstances or location of the proposed works or other activities.
- D. Processing Fee: **Please submit the application processing fee along with this application form and supplemental information.** Processing fees vary based on the size of the activity, the type of permit applied for, and the reviewing Agency. Please reference Attachment 3 to determine the appropriate fee.

PART 3: APPLICANT AND ASSOCIATED PARTIES INFORMATION

Instructions: Permits are only issued to entities having sufficient real property interest as described in Section 4.2.3 (d) of Applicant's Handbook Volume I. Please attach evidence of sufficient real property interest over the land upon which the activities subject to the application will be conducted, including mitigation (if applicable). Refer to Section 4.2.3 (d) for acceptable ownership or real property interest documentation. For corporations, list a person who is a registered agent or officer of the corporation who has the legal authority to bind the corporation.

A. APPLICANT (ENTITY MUST HAVE SUFFICIENT REAL PROPERTY INTEREST)			
☐ THIS IS A CONTACT PERSON FOR ADDITIONAL INFORMATION			
Name: Last: LaBauve		First: Randall	Middle:
Title: Vice President of Environmental Services		Company: Florida Power & Light Company	
Address: 700 Universe Blvd.			
City: Juno Beach		State: FL	Zip: 33408
Home Telephone:		Work Telephone: 561-691-7001	
Cell Phone:		Fax:	
E-mail Address:			
Correspondence will be sent via email. Check here to receive correspondence via US Mail: ☐			
B. LAND OWNER(S) (IF DIFFERENT OR IN ADDITION TO APPLICANT)			
☐ CHECK HERE IF LAND OWNER IS ALSO A CO-APPLICANT			
Name: Last:		First:	Middle:
Title:		Company:	
Address:			
City:		State:	Zip:
Home Telephone:		Work Telephone:	
Cell Phone:		Fax:	
E-mail Address:			
Correspondence will be sent via email. Check here to receive correspondence via US Mail: ☐			
C. OPERATION AND MAINTENANCE ENTITY (see Applicant's Handbook I, Section 12.3)			
Entity Name:		Contact: Last:	First: Middle:
Title:		Company:	
Address:			
City:		State:	Zip:
Home Telephone:		Work Telephone:	
Cell Phone:		Fax:	
E-mail Address:			
Correspondence will be sent via email. Check here to receive correspondence via US Mail: ☐			

D. CO-APPLICANT (IF DIFFERENT OR IN ADDITION TO APPLICANT AND OWNER)		
Name: Last: Moretz	First: Daniel	Middle: Earl
Title: Env Specialist	Company: Florida Power & Light	
Address: 700 Universe Blvd		
City: Juno Beach	State: FL	Zip: 33408
Home Telephone:	Work Telephone: 561-691-2914	
Cell Phone: 561-339-8955	Fax:	
E-mail Address: daniel.moretz@fpl.com		
Correspondence will be sent via email. Check here to receive correspondence via US Mail: ☐		
E. ENGINEERING CONSULTANT ☐ THIS IS A CONTACT PERSON FOR ADDITIONAL INFORMATION		
Name: Last:	First:	Middle:
Title:	Company:	
Address:		
City:	State:	Zip:
Home Telephone:	Work Telephone:	
Cell Phone:	Fax:	
E-mail Address:		
Correspondence will be sent via email. Check here to receive correspondence via US Mail: ☐		
F. ENVIRONMENTAL CONSULTANT ☐ THIS IS A CONTACT PERSON FOR ADDITIONAL INFORMATION		
Name: Last:	First:	Middle:
Title:	Company:	
Address:		
City:	State:	Zip:
Home Telephone:	Work Telephone:	
Cell Phone:	Fax:	
E-mail Address:		
Correspondence will be sent via email. Check here to receive correspondence via US Mail: ☐		
G. AGENT AUTHORIZED TO SECURE PERMIT (IF DIFFERENT FROM CONSULTANT) ☐ THIS IS A CONTACT PERSON FOR ADDITIONAL INFORMATION		
Name: Last:	First:	Middle:
Title:	Company:	
Address:		
City:	State:	Zip:
Home Telephone:	Work Telephone:	
Cell Phone:	Fax:	
E-mail Address:		
Correspondence will be sent via email. Check here to receive correspondence via US Mail: ☐		

If necessary, please add additional pages for other contacts and property owners related to this project.

PART 4: SIGNATURES AND AUTHORIZATION TO ACCESS PROPERTY

Instructions: For multiple applicants please provide a separate Part 4 for each applicant. For corporations, the application must be signed by a person authorized to bind the corporation. A person who has sufficient real property interest (see Section 4.2.3 (d) of Applicant's Handbook Volume I) is required in (B) to authorize access to the property, except when the applicant has the power of eminent domain.

A. By signing this application form, I am applying for the permit and any proprietary authorizations identified above, according to the supporting data and other incidental information filed with this application. I am familiar with the information contained in this application and represent that such information is true, complete and accurate. I understand this is an application and not a permit, and that work prior to approval is a violation. I understand that this application and any permit issued or proprietary authorization issued pursuant thereto, does not relieve of any obligation for obtaining any other required federal, state, water management district or local permit prior to commencement of construction. I agree to operate and maintain the permitted system unless the permitting agency authorizes transfer of the permit to a different responsible operation and maintenance entity. I understand that knowingly making any false statement or representation in this application is a violation of Section 373.430, F.S. and 18 U.S.C. Section 1001.

Randall R. LaBauve

Typed/Printed Name of Applicant or
Applicant's Authorized Agent


Signature of Applicant or Applicant's
Authorized Agent

11-4-14

Date

Vice President, Environmental Services

(Corporate Title if applicable)

B. CERTIFICATION OF SUFFICIENT REAL PROPERTY INTEREST AND AUTHORIZATION FOR STAFF TO ACCESS THE PROPERTY:

I certify that:

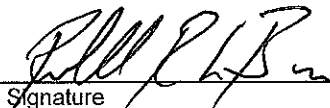
☒ I possess sufficient real property interest in or control, as defined in Section 4.2.3 (d) of Applicant's Handbook Volume I, over the land upon which the activities described in this application are proposed and I have legal authority to grant permission to access those lands. I hereby grant permission, evidenced by my signature below, for staff of the Agency and the U.S. Army Corps of Engineers to access, inspect, and sample the lands and waters of the property as necessary for the review of the proposed works and other activities specified in this application. I authorize these agents or personnel to enter the property as many times as may be necessary to make such review, inspection, and/ or sampling. Further, I agree to provide entry to the project site for such agents or personnel to monitor and inspect permitted work if a permit is granted.

OR

☐ I represent an entity having the power of eminent domain and condemnation authority, and I/we shall make appropriate arrangements to enable staff of the Agency and the U.S. Army Corps of Engineers to access, inspect, and sample the property as described above.

Randall R. LaBauve

Typed/Printed Name


Signature

11-4-14

Date

Vice President, Environmental Services

(Corporate Title if applicable)

C. DESIGNATION OF AUTHORIZED AGENT (IF APPLICABLE):

I hereby designate and authorize _____ to act on my behalf, or on behalf of my corporation, as the agent in the processing of this application for the permit and / or proprietary authorization indicated above; and to furnish, on request, supplemental information in support of the application. In addition, I authorize the above-listed agent to bind me, or my corporation, to perform any requirements which may be necessary to procure the permit or authorization indicated above. I understand that knowingly making any false statement or representation in this application is a violation of Section 373.430, F.S. and 18 U.S.C. Section 1001.

Typed/Printed Name of Applicant

Signature of Applicant

Date

(Corporate Title if applicable)

ERP - Part A Continued

Project Description

The proposed project is to fortify the banks of the intake and discharge canals (Canals) at the Port Everglades Energy Center (PEEC). Stabilization of the shoreline will be accomplished by repairing/modernizing the intake culvert system under Eisenhower Blvd. by installing sheet piling and riprap, removing the vegetation along the banks of the Canals, re-grading the banks of the Canals, and installing approximately 2,100 linear feet of anchored articulating concrete matting along the shoreline. The shoreline is dominated by exotic vegetation; however the proposed activities will require the removal of mangroves along approximately 1,477-sq. ft. of the intake canal and approximately 2,075-sq. ft. along the discharge canal (3,540 sq.ft./0.08 acres total). Mitigation for the loss of mangrove along the shorelines will be accomplished by removing the exotic vegetation along a large portion of the canal banks and purchasing 0.1 mitigation credits from the Everglades Mitigation Bank located approximately 5 miles south of Florida City Florida. Please refer to the attached appendices for permit sketches, vegetation surveys, W.A.T.E.R analysis, and the installation guide for the anchored articulating concrete matting.

Project Justification

Due to the unexpected storm surge damages resulting from Hurricane Sandy along the north eastern coast line, Florida Power & Light Company (FPL) re-evaluated the design of its Florida facilities located near bodies of water. A storm surge analysis has been conducted by URS, at the request of FPL, and they have determined that storm hardening is needed along the Canals to prevent catastrophic shoreline erosion during storm events. Depending on the severity of the storm, erosion of the canal banks could result in a shutdown of the PEEC.

Avoidance and Minimization of Environmental Impacts

The overall impacts to mangroves have been reduced to under 0.1 acres. The initial design included impacts to all of the mangroves along both Canals. The initial design has been modified to include placement of anchored articulating concrete matting in only the locations identified in the Storm Surge Analysis. Additional environmental impacts are not proposed.

Construction Methods

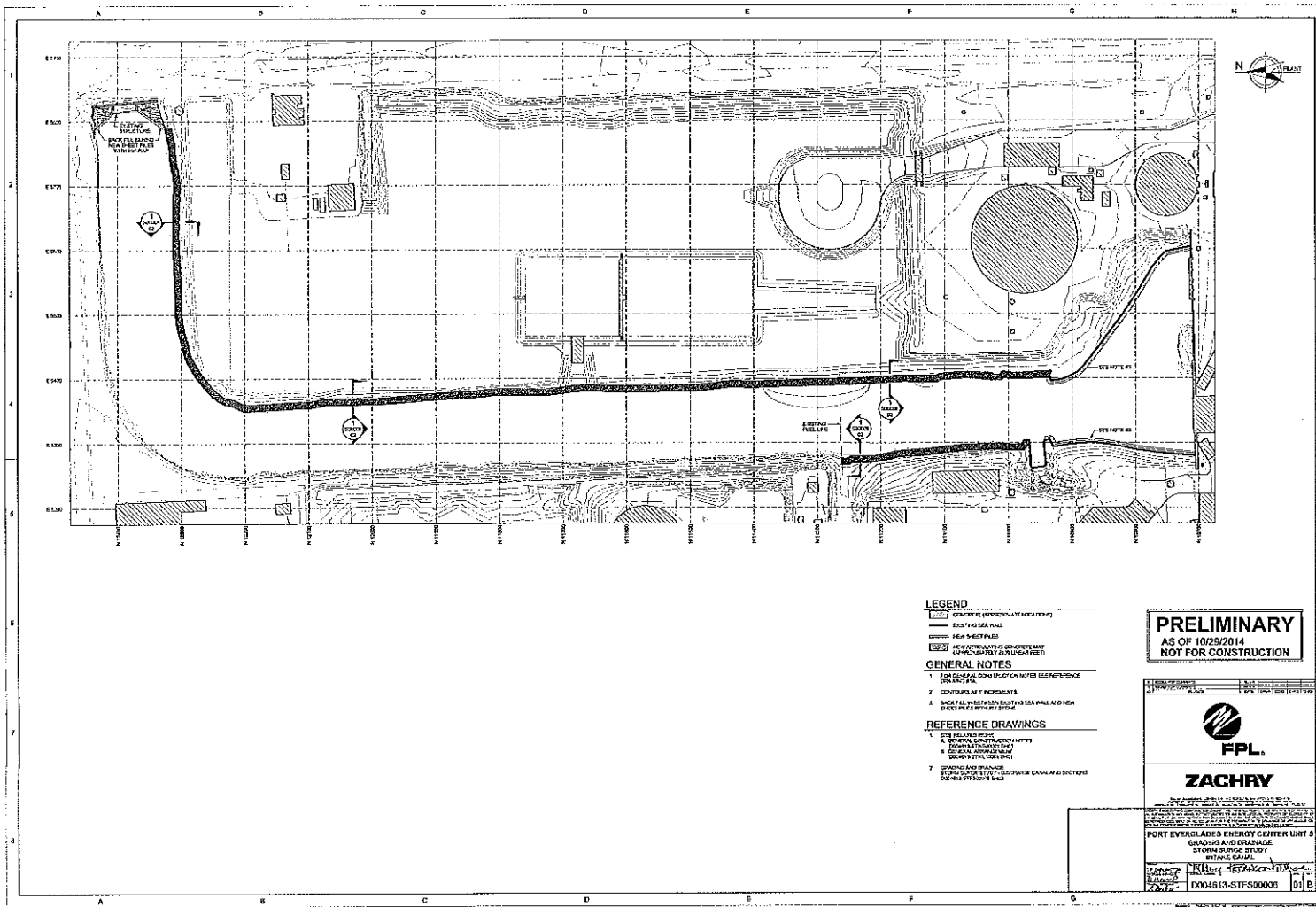
There are three major tasks involved in completing the scope of work required. These tasks will be coordinated to prevent any environmental impact on the canal:

1. The first task is to install sheet piling at three locations:
 - The west side of the intake canal from the existing intake structure to the boat ramp.
 - The east side of the intake canal from the existing intake structure to the end of the existing vinyl sheet pile.

- The east end of the intake canal at Eisenhower Blvd. At the east end there are two angled sheet pile locations from the intake culvert structure to the shore line.
2. The next task is to remove all the vegetation on the east side of the canal. In addition, vegetation on the west side will be removed from the existing boat ramp north to the pipe bridge crossing over the canal. All vegetation will be mulched and disposed of offsite.
 3. After the vegetation is removed, the canal bank will be re-graded to allow for the installation of the articulating mats. Any excess fill material will be used to backfill behind the new sheet pile that is being installed.
 4. The fourth task will be to install the articulating mats on the canal bank from the mean lower low water level to elevation 8.45'

To minimize the amount of bare shoreline that will be exposed and control turbidity in the canal, the work will be performed in a manner that only exposes shoreline where articulating mat that can be installed within a 1-3 day period. It is anticipated that all work will be performed from the land side of the intake canal. Additional construction details are enclosed in Appendix B.

Appendix A - Permit Sketches

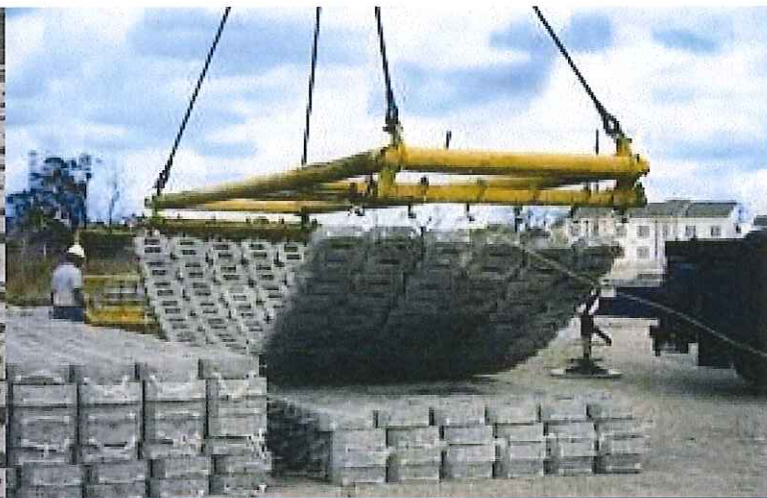




Appendix B – Construction Methods



Installation Guide



PROTECTING OUR NATURAL RESOURCES

SHOREBLOCK BD®
SHOREBLOCK SD®
SHORELOC®

Concrete Revetment Block

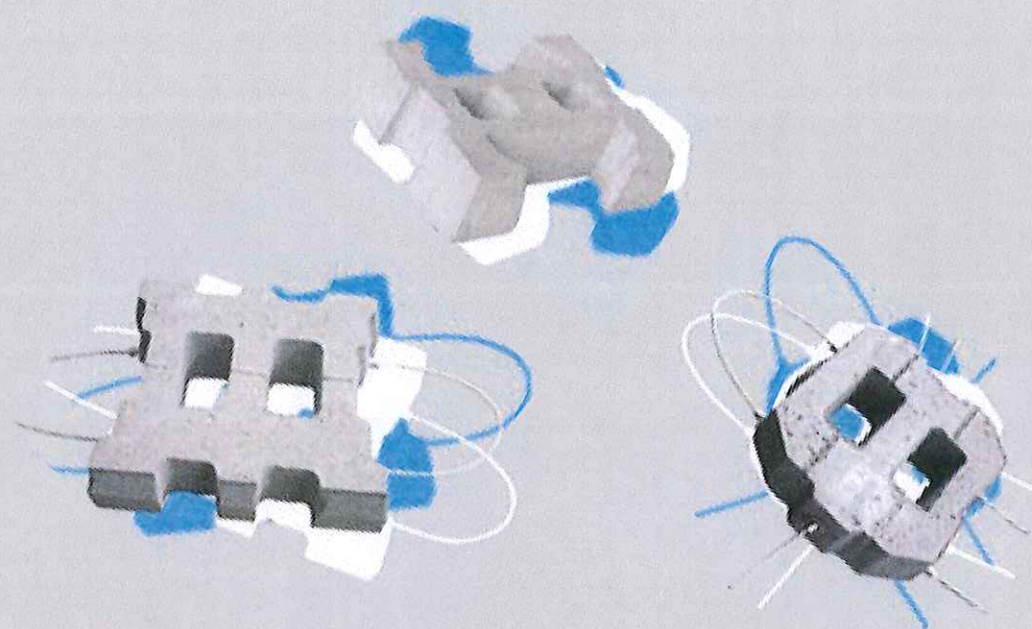


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Overview

This document is provided only as a guideline for installation of articulating concrete block systems. Final preparation and placement of the block is the responsibility of the end user.

The proper installation of an ACB revetment system is essential to achieve suitable hydraulic performance and maintain stability against the erosive force of flowing water during the design hydrologic event. These guidelines are intended to maximize the conformity between the design intent and the actual field-finished conditions of the project. Quality workmanship is important to the ultimate performance of the system. The following sections address the subgrade preparation, geotextile placement, block system placement, backfilling and finishing, and inspection. These guidelines apply to the installation of ACB revetment systems, whether hand-placed or placed as a mattress and comply with ASTM D6884, "Standard of Practice for the Installation of Articulating Concrete Block (ACB) Revetment Systems".

These guidelines do not purport to address the safety issues associated with installation of ACB revetment systems, including use of hazardous materials, mechanical equipment and operations. It is the responsibility of the contractor to establish and adopt appropriate safety and health practices. Also, the contractor shall comply with prevalent regulatory codes, such as OSHA (Occupational Health and Safety Administration) regulations, while using these guidelines.

Spreader Bar

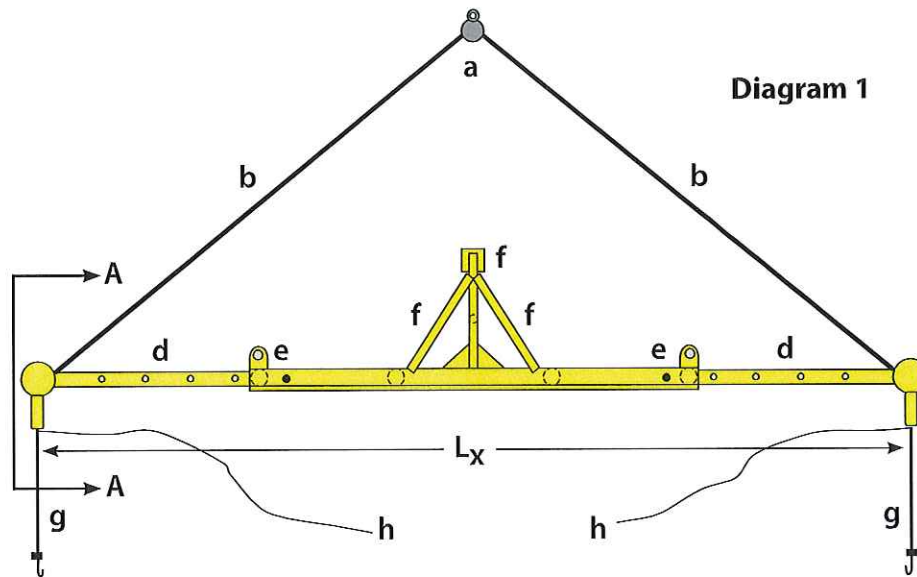
Inspection and Offloading

The spreader bar is used for lifting and placing ACB mats. ACB mats can weigh 29,000 pounds on the high end and 4,200 pounds on the low end. Because of the wide spectrum in mat weight, the appropriate bar must be specified for each project. In some cases multiple spreader bars may be required to unload and place, simultaneously.

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2

Inspection

It is very important to inspect the spreader bar prior to lifting any loads. Diagram 1 below indicates what areas should be checked.



- a. Lifting Block
- b. Bridle Quality (8 on each end)
- c. Swivel and Release Mechanism
- d. Extension Bars
- e. Extension Pins
- f. Structural Frame Supports
- g. Lifting Hooks**
- h. Guide Ropes

L_x = Mat Length Capability of the Bar:

Bar Capacity (ft)	Weight of Bar (lbs)
24-40	4,200
9-24	3,000
12-20	2,400
10	800

** A "Jumper" may also be required when lifting shorter mats. This device simply attaches to the existing lift hook and extends the length for shorter mats.

Offloading

Mats can only be lifted one (1) at a time. The reasons for this are:

- › Lifting more than one mat with the bar places stresses on the concrete and causes cracking and breaking of the block.
- › The hardware used to assemble the mats become overstressed when trying to lift more than one mat.
- › The spreader bar itself is designed for handling single mats.

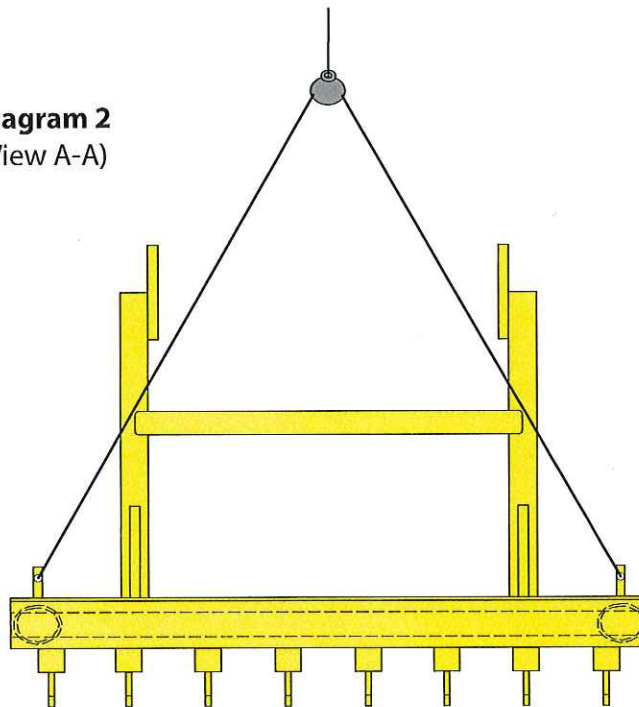
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3

Revetment mats should be lifted in a manor that will minimize the bowing of the mat. A properly adjusted spreader bar, and/or properly sized jumpers (if required) are necessary to maintain as flat a profile as possible when lifting the mats. Minimizing the bowing of the mats during lifting reduces the stress on the blocks that may cause cracking, breaking, and ultimate failure.

When lifting mats, all personnel should be well clear of the underside of the mat. Only those personnel holding the guide ropes at the four corners should be in the area.

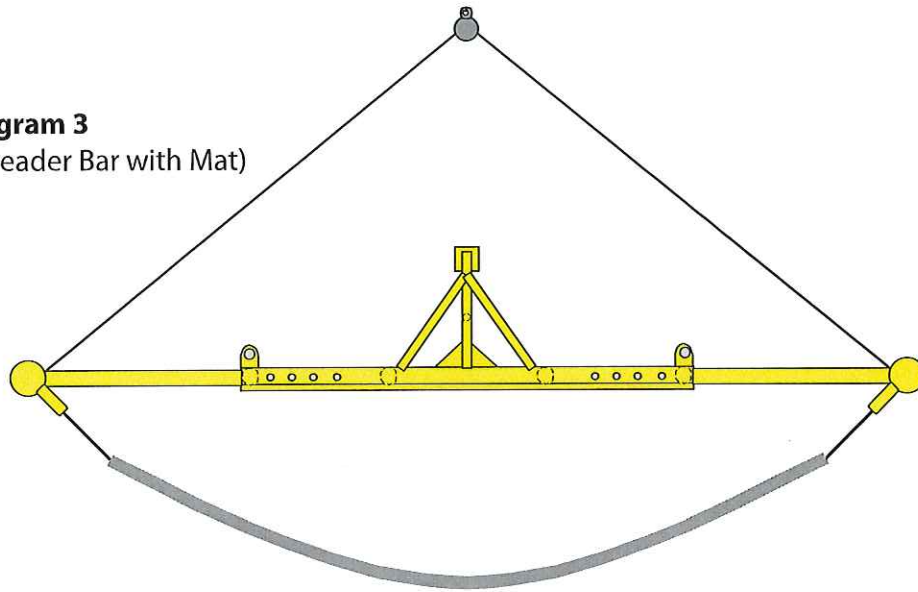
When using a "friction band" type crane, the operator must take caution not to "snap" the load with the brake when lowering it into position. The high inertia forces generated by "snapping" the load can be detrimental to the wire ropes, concrete masonry units, spreader bar, and the crane itself.

Diagram 2
(View A-A)



THE INFORMATION CONTAINED HEREIN HAS BEEN COMPILED BY SHORETEC® LLC, AND TO THE BEST OF OUR KNOWLEDGE, ACCURATELY REPRESENTS THE SHORETEC® PRODUCT USE IN THE APPLICATIONS WHICH ARE ILLUSTRATED. FINAL DETERMINATION OF THE SUITABILITY FOR USE CONTEMPLATED AND ITS MANNER OF USE ARE THE SOLE RESPONSIBILITY OF THE END USER. DESIGN AND ANALYSIS SHALL BE PERFORMED BY A QUALIFIED ENGINEER.

Diagram 3
(Spreader Bar with Mat)



Subgrade Preparation

Compacted and stable subgrade soil should be prepared to all specifications, lines, grades, and cross sections shown on the final drawings. Termination trenches, embankment crests, and toes should all be compacted and graded to ensure that water cannot migrate under the block and geotextile material at these points.

Final subgrade should be graded smooth to ensure complete contact with the geotextile and ACB's. Unacceptable soils, soils too wet to achieve compaction, and soils with debris in them should be removed and replaced with approved material and compacted to specifications.

- › Remove all surface vegetation and debris. This removed material should not be used as backfill or placed back on the surface. Prepare the surface for installation of the ACB system.
- › When installing ACB systems the subgrade must be stable prior to installation. ACB systems maintain slope stability and prevent erosion, but are not slope stabilization systems. For this reason the subgrade must be as clean and level as possible.

- › The block systems are designed to allow for block protrusions of one-half inch on random blocks. However, the goal is to minimize non-conformities in the subgrade. Geotextile products are strong and durable, but the area to be covered should be free of debris or any materials that may tear or puncture the geotextile.
- › Compaction of the subgrade should be to 90% - 95% of standard proctor. This insures that the soils are stable and will not erode when water is flowing over and through the installation.
- › After preparation of the subgrade installation of the geotextile can begin.

Soil Testing

At the completion of rough grading, soil samples representative of subgrade conditions shall be obtained according to current best practices, and tested for the following:

1. Grain size distribution (ASTM D 422)
2. Atterberg Limits (ASTM D 4318)
3. Standard Proctor Density (ASTM D 698)

Results of laboratory tests shall be submitted to the engineer to ensure conformance with design parameters prior to placement of the geotextile and ACB revetment system. When a granular filter is used, it shall be tested for grain size distribution at the same frequency as the subgrade soil testing.

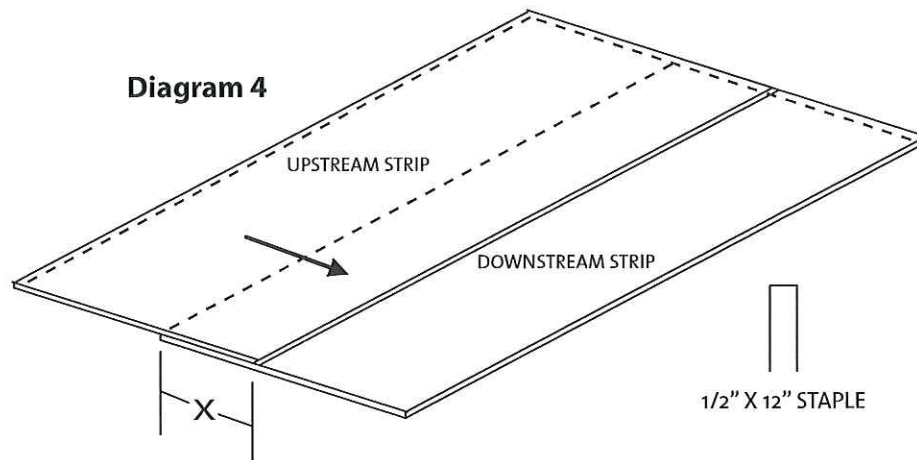
Geotextile Installation

The geotextile should be placed on the prepared slope or other surface to be protected. All folds and wrinkles should be removed from the geotextile before the block is placed on top of it.

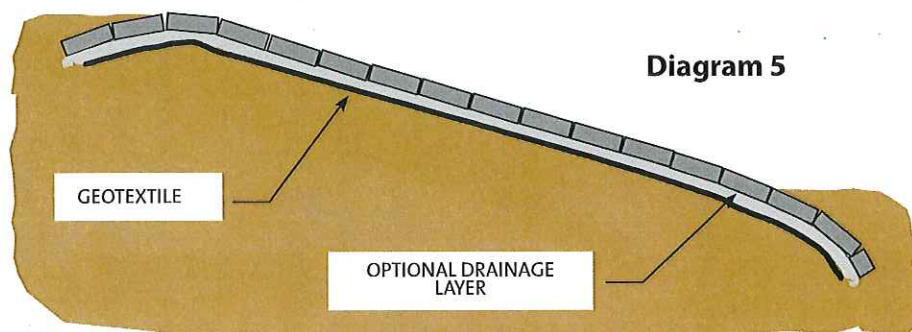
Place the geotextile so that there is sufficient overlap to seal the seams for intrusion of water and ensure minimal stretch of the geotextile material. Upstream strips of material must overlap the downstream strips and upslope strips overlap down-slope strips. The amount of overlap (X) is usually specified by the engineering firm and may be a

minimum of 3 feet for wet installations and a minimum of 1.5 feet for dry installations.

The upstream strips of material must overlap the downstream strips and upslope strips overlap down-slope strips. (See Diagram 4)



There should be no voids or airspace between the subgrade and the geotextile so intimate contact can be maintained with the two surfaces. Once the geotextile is placed, the work area should not be disturbed. This is necessary to avoid any contact loss between the ACB's and the geotextile and the geotextile and the subgrade. (See Diagram 5)



Loading and Unloading Cabled Mattresses

When handling cabled mats you would need a piece of equipment that can lift the total weight of spreader bar and mattress. This requires a track excavator for smaller and lighter mats and a crane for the larger heavier mats. Refer to the chart in the Appendix of this manual for mat sizes and weights. The length of reach required to place the mat is a major determining factor when choosing the right equipment.

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Each mat is loaded onto the truck by a spreader bar attached by six connections on each end.



A rope is attached to each end of the spreader so when it is lifted, personnel can guide the mat onto the truck. This insures an evenly distributed load for transportation to the job site.



Mats are kept to a maximum of eight feet wide for transportation purposes. Any width beyond eight feet requires the transporter to acquire costly permits for oversized loads. The eight-foot mats work very well on the flatbed trailers.

Placement and Installation of ACB's

The articulating concrete blocks must be placed on the geotextile in such a manner as to produce a smooth plane surface in intimate contact with the geotextile. Joint spacing between adjacent blocks is to be maintained so that binding of blocks does not occur and block-to-block interlock is achieved. In curvature and grade change areas, alignment of the individual block and the orientation of the neighboring adjacent block must provide intimate block to fabric contact and block-to-block interlock. Care shall be taken to avoid damage to the geotextile or subgrade during the block installation process. When a geotextile is used, the ACB system placement should begin at the upstream end and proceed downstream. If an ACB system is to be installed from downstream up, a contractor option is to place a temporary toe on the front edge of the ACB system to protect against undermining when flows are anticipated. On sloped sections, where practical, placement shall begin at the toe of the slope and proceed up the slope. Block placement shall not bring block-to-block interconnections into tension. Individual blocks within the plane of the finished system shall not exceed the protrusion tolerance beyond that used in the stability design of the system. The maximum protrusion tolerance for any given block is 0.5 inches (13 mm) (See Diagram 6).

When terminating the installation at a structure such as a roadway, sheet-pile wall, concrete wall, or other structure, all openings must be sealed with grout or some other impermeable material.

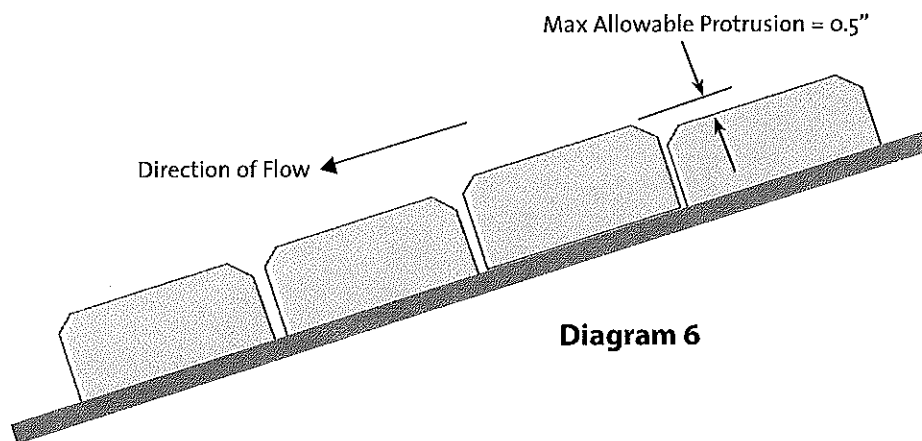


Diagram 6

The ACB revetment system can be used as a road for heavy rubber-tired construction traffic when designed as a flexible pavement that can handle the expected wheel loads. Mowing equipment, tractors, and utility vehicles are all able to use the ACB system as a roadway.

Assembled Mattresses

If assembled and placed as large mattresses, the articulating mats can be attached to a spreader bar to aid in the lifting and placing of the mats in their proper position with a crane. Refer to the Spreader Bar Section of this manual for details on mat lifting. The mats should be placed side-by-side and/or end-to-end so the mats abut each other.

Mat seams or openings between mats greater than 2 inches (51 mm) separation distance between blocks in the matrix should be filled with grout. Whether placed by hand or in large mattresses, distinct grade changes should be accommodated with a well-rounded transition (i.e., minimum radius determined by individual system characteristics). Refer to the Appendix for typical installation details of ACB systems.

Installing in a Wet Application

There will be projects, which require installation of the block under water. There are several methods for approaching this type installation. The depth of water and the type of water will dictate the best approach. The type of water refers to a tidal body of water or a fixed body of water, such as a fresh water lake or retention basin.

Tidal Water Applications

These applications are normally along a coastal area, industrial channel, and inland water lakes, among others. Depending on the application there will be several things to consider:

1. Prop-Wash
2. Boat-Generated Waves
3. Under-Currents

In most tidal applications the soils beneath the water are soft and silty, allowing the block system to toe itself in over a short period of time. If the specification requires special protection beyond the natural toe, these are the methods.

Method 1: Use a much heavier block on the last four to five rows of the mat. This provides sufficient weight to keep the toe in place.

Method 2: Cover the base of the mats with riprap. If this is done then affects on a future dredging operations must be considered.

Method 3: Actually dig a trench under water, toe in the bottom and anchor.

Method 4: Anchor the bottom of the mats without a toe trench.

Method 5: Construct a dam along the slope between the slope and the water, and de-water the area to be covered.

If either Method 3 or Method 4 is used, divers and barge-mounted cranes will be required.

Non-Tidal Water Applications

These bodies of water typically are not set very deep into the water. At most the depth will be a (-5). This system can be anchored with mechanical anchors without the aid of divers. Constructing a dam to allow dry installation is also a viable method of installing these systems.

Installing in a Dry Applications

Cabling Mats in the Field

Single-Directional Series Mats (SD Series)

These mats have to be laid out on a flat surface, strung, and placed with a crane or large excavator. Because of the offset between blocks they cannot be placed and then strung.

Bi-Directional Series Mats (BD Series)

Bi-Directional mats be laid out on a flat surface, strung, and placed, or they can be placed a strung where they will lay. These blocks are not offset in either direction and allow for place-and-string. This also allows for easy repair of an isolated failure of the system.

Anchoring and Crimping

Anchoring

Standard applications have several points requiring the mats be secured to other structures and to one another. These are listed below.

1. Adjoining Mats
2. Angled Mats
3. Turning of Corners
4. Anchoring to Other Structures
5. Termination Trenches

Anchoring is always required at the crest of an installation such as a levee, channel slope, or shoreline slope. The anchoring method is normally determined by the steepness of the slope to be protected. The following rule of thumb is recommended:

1. If the slope is less than or equal to 3H:1V, no mechanical anchors are required in the crest termination trench, but can be used if specified or if the user simply wants the additional anchoring.
2. If the slope is greater than or equal to 2H:1V, mechanical anchors are required in the termination trench at the crest.
3. All of the leading edges must be terminated in a trench. The same rule of thumb applies to these areas as in items 1 and 2.
4. Two types of mechanical anchors are available; duckbill anchors and helical anchors.

When installing a duckbill anchor there is only one way to properly install these. This is addressed in the installation details of the appendix.

(Refer to the appendix in this document for typical installation details using all of these anchoring methods.)

Crimping

Once all of the mats are laid the loose ends of the side cables must be crimped together to make one system of all the mats. This is accomplished with the crimps and crimpers furnished with the first shipment of mats. This is demonstrated in the typical installation details of the appendix section.

Grouting

Mat Joints (SD and BD Series)

Project specifications will normally dictate what has to be done as far as grout joints on an installation. When the specifications are not clear or do not specify what should be done, the general rule is as follows.

- › When two mats are laid side-by-side and have a joint width equal to or greater than two inches, the joint must be grouted with a 4000 psi concrete grout.
- › Joints created by laying mats in an internal or external radius must be grouted.
- › The block systems are designed to allow for block protrusions of one-half inch on random blocks. However, the goal is to minimize non-conformities in the subgrade. Geotextile products are strong and durable, but the area to be covered should be free of debris or any materials that may tear or puncture the geotextile.
- › Where mats are joined in the bottom of a channel up the slope must be grouted.

(See Appendix For Details On These Procedures)

Shoreloc® Hand-Placed Series

When placing the Shoreloc® product on a slope the block should start at the bottom of slope and work up the slope. Alignment of the block is critical to maintain a straight line up the slope and along the slope. Anchoring and termination of these systems requires a termination trench for the top of slope and the toe. All other leading edges should also be trenched in if they do not terminate with another structure.

The hand-placed block can be cabled after it is put in place. Because this is a positive interlocking block it is not necessary to use cables. However some engineers will specify cabling with this block.

Appendix

Single-Directional Cable SD Series Block Mat Sizes and Weights*

OC = Open Cell

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16**

Mat Width	Mat Length (Feet)	SD 400 OC	SD 475 OC	SD 600 OC	SD 800 OC
		Mat Wt.	Mat Wt.	Mat Wt.	Mat Wt.
8.00	8.00	2,048	2,432	3,200	4,288
8.00	9.33	2,389	2,837	3,733	5,003
8.00	10.67	2,731	3,243	4,267	5,717
8.00	12.00	3,072	3,648	4,800	6,432
8.00	13.33	3,413	4,053	5,333	7,147
8.00	14.67	3,755	4,459	5,867	7,861
8.00	16.00	4,096	4,864	6,400	8,576
8.00	17.33	4,437	5,269	6,933	9,291
8.00	18.67	4,779	5,675	7,467	10,005
8.00	20.00	5,120	6,080	8,000	10,720
8.00	21.33	5,461	6,485	8,533	11,435
8.00	22.67	5,803	6,891	9,067	12,149
8.00	24.00	6,144	7,296	9,600	12,864
8.00	25.33	6,485	7,701	10,133	13,579
8.00	26.67	6,827	8,107	10,667	14,293
8.00	28.00	7,168	8,512	11,200	15,008
8.00	29.33	7,509	8,917	11,733	15,723
8.00	30.67	7,851	9,323	12,267	16,437
8.00	32.00	8,192	9,728	12,800	17,152
8.00	33.33	8,533	10,133	13,333	17,867
8.00	34.67	8,875	10,539	13,867	18,581
8.00	36.00	9,216	10,944	14,400	19,296
8.00	37.33	9,557	11,349	14,933	20,011
8.00	38.67	9,899	11,755	15,467	20,725
8.00	40.00	10,240	12,160	16,000	21,440
8.00	41.33	10,581	12,565	16,533	22,155
8.00	42.67	10,923	12,971	17,067	22,869
8.00	44.00	11,264	13,376	17,600	23,584

*Unit weight may vary by geographic region due to variations in local materials. Contact you local producer for actual block/mat weights.

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Single-Directional Cable SD Series Block Mat Sizes and Weights*

CC = Closed Cell

Mat Width	Mat Length (Feet)	SD 400 CC	SD 475 CC	SD 600 CC	SD 800 CC
		Mat Wt.	Mat Wt.	Mat Wt.	Mat Wt.
8.00	8.00	2,624	3,072	3,648	4,864
8.00	9.33	3,061	3,584	4,256	5,675
8.00	10.67	3,499	4,096	4,864	6,485
8.00	12.00	3,936	4,608	5,472	7,296
8.00	13.33	4,373	5,120	6,080	8,107
8.00	14.67	4,811	5,632	6,688	8,917
8.00	16.00	5,248	6,144	7,296	9,728
8.00	17.33	5,685	6,656	7,904	10,539
8.00	18.67	6,123	7,168	8,512	11,349
8.00	20.00	6,560	7,680	9,120	12,160
8.00	21.33	6,997	8,192	9,728	12,971
8.00	22.67	7,435	8,704	10,336	13,781
8.00	24.00	7,872	9,216	10,944	14,592
8.00	25.33	8,309	9,728	11,552	15,403
8.00	26.67	8,747	10,240	12,160	16,213
8.00	28.00	9,184	10,752	12,768	17,024
8.00	29.33	9,621	11,264	13,376	17,835
8.00	30.67	10,059	11,776	13,984	18,645
8.00	32.00	10,496	12,288	14,592	19,456
8.00	33.33	10,933	12,800	15,200	20,267
8.00	34.67	11,371	13,312	15,808	21,077
8.00	36.00	11,808	13,824	16,416	21,888
8.00	37.33	12,245	14,336	17,024	22,699
8.00	38.67	12,683	14,848	17,632	23,509
8.00	40.00	13,120	15,360	18,240	24,320
8.00	41.33	13,557	15,872	18,848	25,131
8.00	42.67	13,995	16,384	19,456	25,941
8.00	44.00	14,432	16,896	20,064	26,752

*Unit weight may vary by geographic region due to variations in local materials. Contact you local producer for actual block/mat weights.

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Bi-Directional Cable BD Series Block Mat Sizes and Weights*

OC = Open Cell

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Mat Width	Mat Length (Feet)		Ft ² Per Mat	BD 400 OC	BD 500 OC	BD 600 OC	BD 800 OC
				Mat Wt.	Mat Wt.	Mat Wt.	Mat Wt.
8.00	8.00	6	64	2,240	2,816	3,456	4,608
8.00	9.33	7	75	2,613	3,285	4,032	5,376
8.00	10.67	8	85	2,987	3,755	4,608	6,144
8.00	12.00	9	96	3,360	4,224	5,184	6,912
8.00	13.33	10	107	3,733	4,693	5,760	7,680
8.00	14.67	11	117	4,107	5,163	6,336	8,448
8.00	16.00	12	128	4,480	5,632	6,912	9,216
8.00	17.33	13	139	4,853	6,101	7,488	9,984
8.00	18.67	14	149	5,227	6,571	8,064	10,752
8.00	20.00	15	160	5,600	7,040	8,640	11,520
8.00	21.33	16	171	5,973	7,509	9,216	12,288
8.00	22.67	17	181	6,347	7,979	9,792	13,056
8.00	24.00	18	192	6,720	8,448	10,368	13,824
8.00	25.33	19	203	7,093	8,917	10,944	14,592
8.00	26.67	20	213	7,467	9,387	11,520	15,360
8.00	28.00	21	224	7,840	9,856	12,096	16,128
8.00	29.33	22	235	8,213	10,325	12,672	16,896
8.00	30.67	23	245	8,587	10,795	13,248	17,664
8.00	32.00	24	256	8,960	11,264	13,824	18,432
8.00	33.33	25	267	9,333	11,733	14,400	19,200
8.00	34.67	26	277	9,707	12,203	14,976	19,968
8.00	36.00	27	288	10,080	12,672	15,552	20,736
8.00	37.33	28	299	10,453	13,141	16,128	21,504
8.00	38.67	29	309	10,827	13,611	16,704	22,272
8.00	40.00	30	320	11,200	14,080	17,280	23,040
8.00	41.33	31	331	11,573	14,549	17,856	23,808
8.00	42.67	32	341	11,947	15,019	18,432	24,576
8.00	44.00	33	352	12,320	15,488	19,008	25,344

*Unit weight may vary by geographic region due to variations in local materials. Contact you local producer for actual block/mat weights.

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Bi-Directional Cable BD Series Block Mat Sizes and Weights*

CC = Closed Cell

Mat Width	Mat Length (Feet)		Ft ² Per Mat	BD 400 CC	BD 500 CC	BD 600 CC	BD 800 CC
				Mat Wt.	Mat Wt.	Mat Wt.	Mat Wt.
8.00	8.00	6	64	2,560	3,264	3,968	5,312
8.00	9.33	7	75	2,987	3,808	4,629	6,197
8.00	10.67	8	85	3,413	4,352	5,291	7,083
8.00	12.00	9	96	3,840	4,896	5,952	7,968
8.00	13.33	10	107	4,267	5,440	6,613	8,853
8.00	14.67	11	117	4,693	5,984	7,275	9,739
8.00	16.00	12	128	5,120	6,528	7,936	10,624
8.00	17.33	13	139	5,547	7,072	8,597	11,509
8.00	18.67	14	149	5,973	7,616	9,259	12,395
8.00	20.00	15	160	6,400	8,160	9,920	13,280
8.00	21.33	16	171	6,827	8,704	10,581	14,165
8.00	22.67	17	181	7,253	9,248	11,243	15,051
8.00	24.00	18	192	7,680	9,792	11,904	15,936
8.00	25.33	19	203	8,107	10,336	12,565	16,821
8.00	26.67	20	213	8,533	10,880	13,227	17,707
8.00	28.00	21	224	8,960	11,424	13,888	18,592
8.00	29.33	22	235	9,387	11,968	14,549	19,477
8.00	30.67	23	245	9,813	12,512	15,211	20,363
8.00	32.00	24	256	10,240	13,056	15,872	21,248
8.00	33.33	25	267	10,667	13,600	16,533	22,133
8.00	34.67	26	277	11,093	14,144	17,195	23,019
8.00	36.00	27	288	11,520	14,688	17,856	23,904
8.00	37.33	28	299	11,947	15,232	18,517	24,789
8.00	38.67	29	309	12,373	15,776	19,179	25,675
8.00	40.00	30	320	12,800	16,320	19,840	26,560
8.00	41.33	31	331	13,227	16,864	20,501	27,445
8.00	42.67	32	341	13,653	17,408	21,163	28,331
8.00	44.00	33	352	14,080	17,952	21,824	29,216

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*Unit weight may vary by geographic region due to variations in local materials. Contact you local producer for actual block/mat weights.

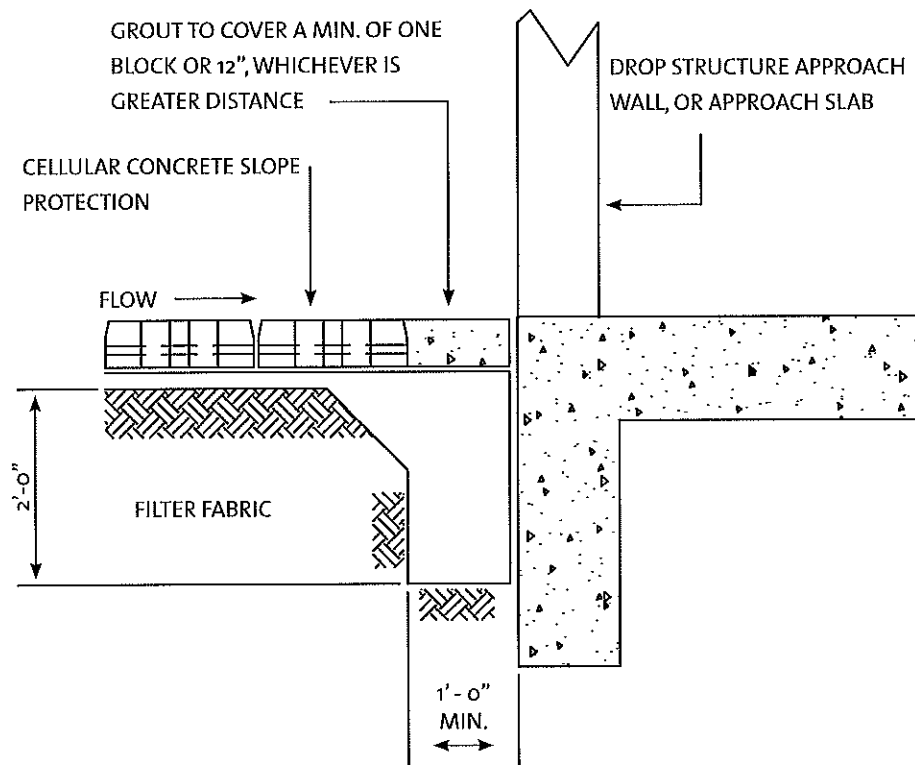
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Typical Installation Details

Slope Protection at Drop Structure

The grout cover is continuous along the approach invert, approach walls, and 1V:2H concrete slope paving.

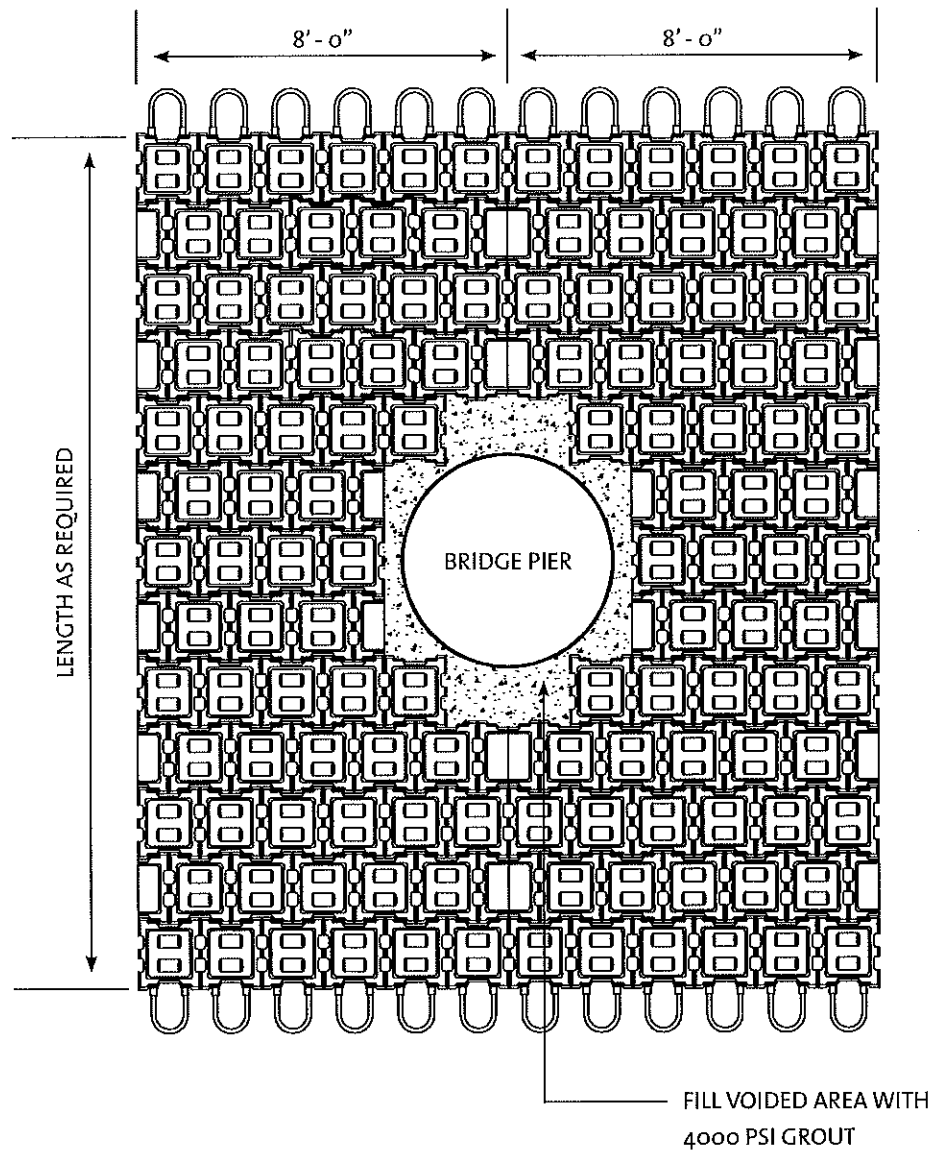
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Typical Installation Details

Mat Layout Around Bridge Piers



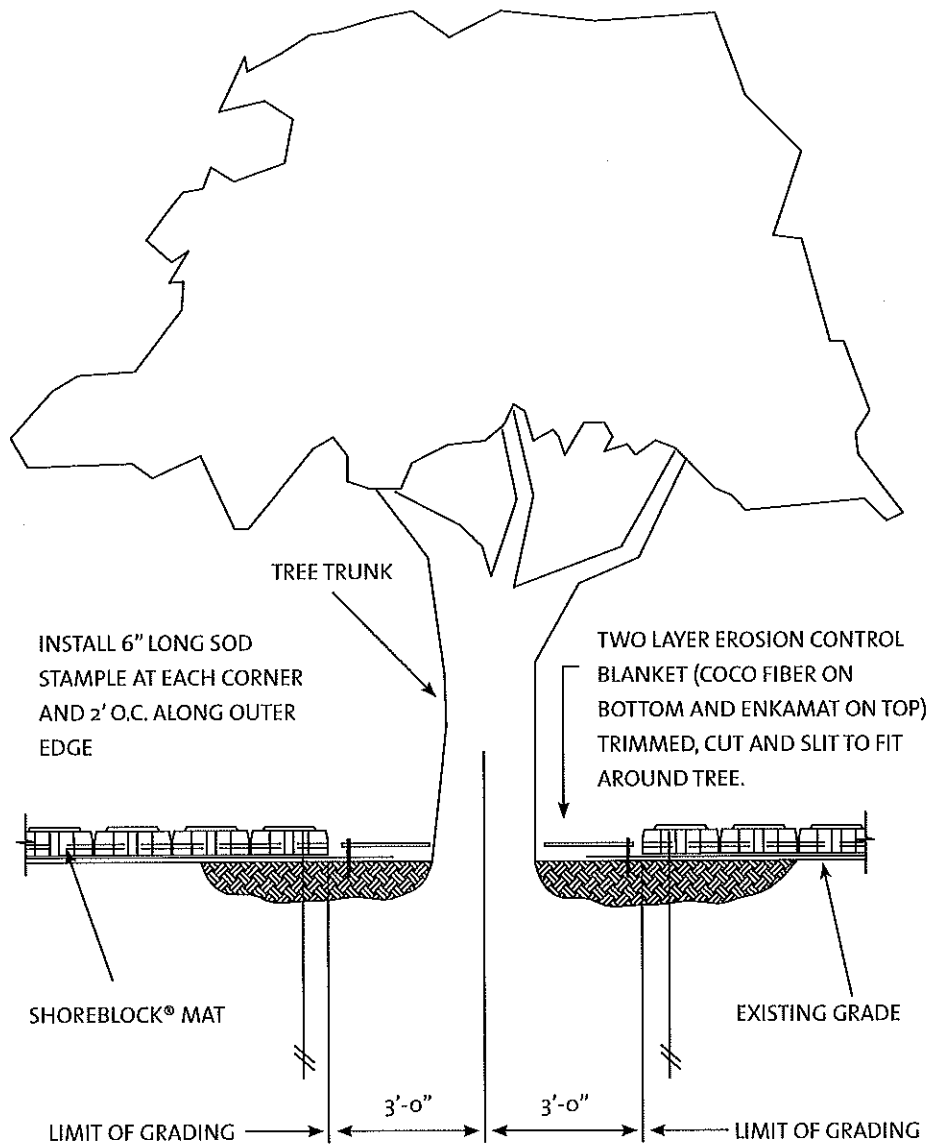
Typical Installation Details

Scour Protection at Trees

Clearing and grubbing within the tripline of trees to be preserved shall be limited to surface clearing and grubbing to a maximum depth of 2" using hand tools.

Erosion Control Blankets may be placed on undisturbed soil with maximum of 1 ½" mowed plant stubble.

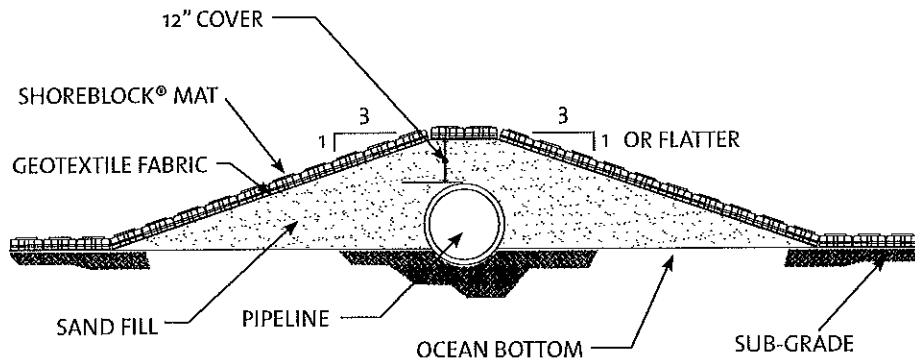
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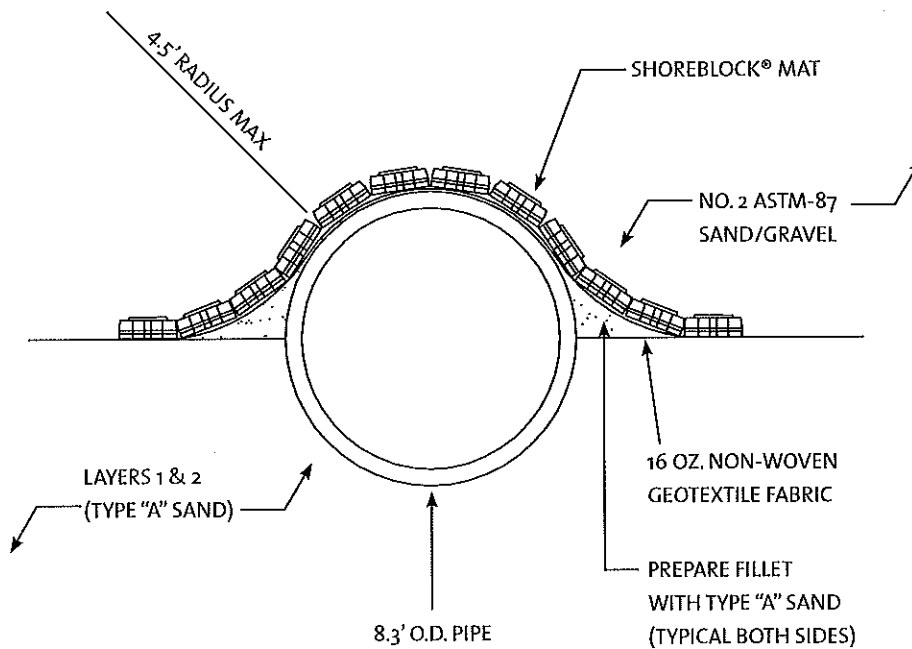
Typical Installation Details

Pipeline Cover



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Pipeline Cover Section

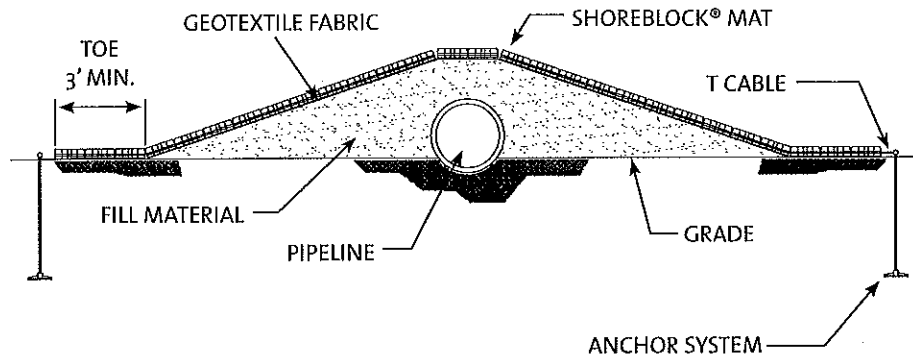


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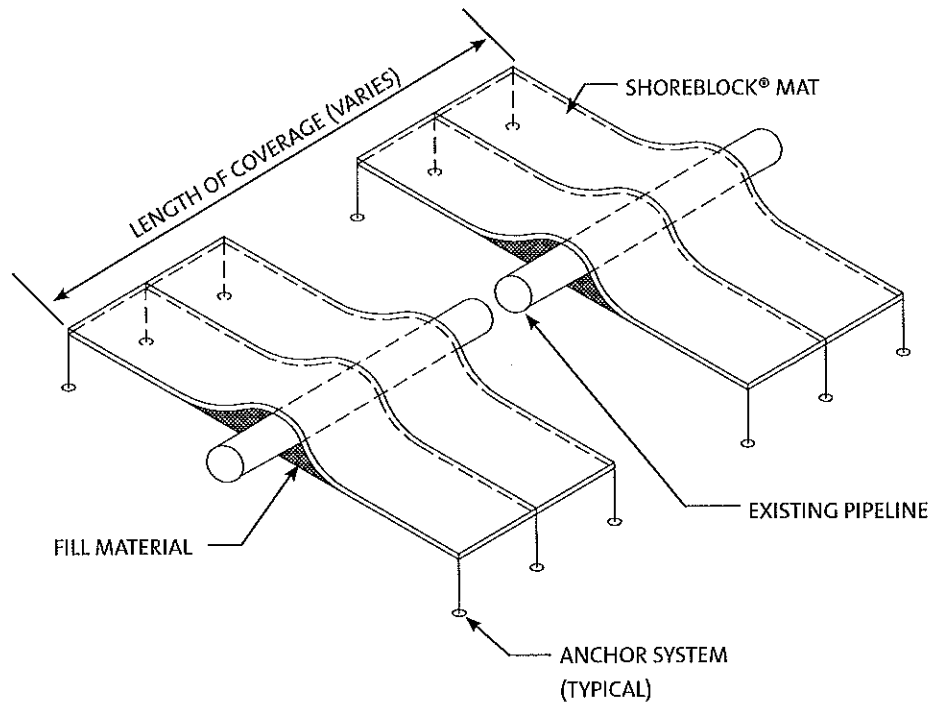
Typical Installation Details

Pipeline Cover

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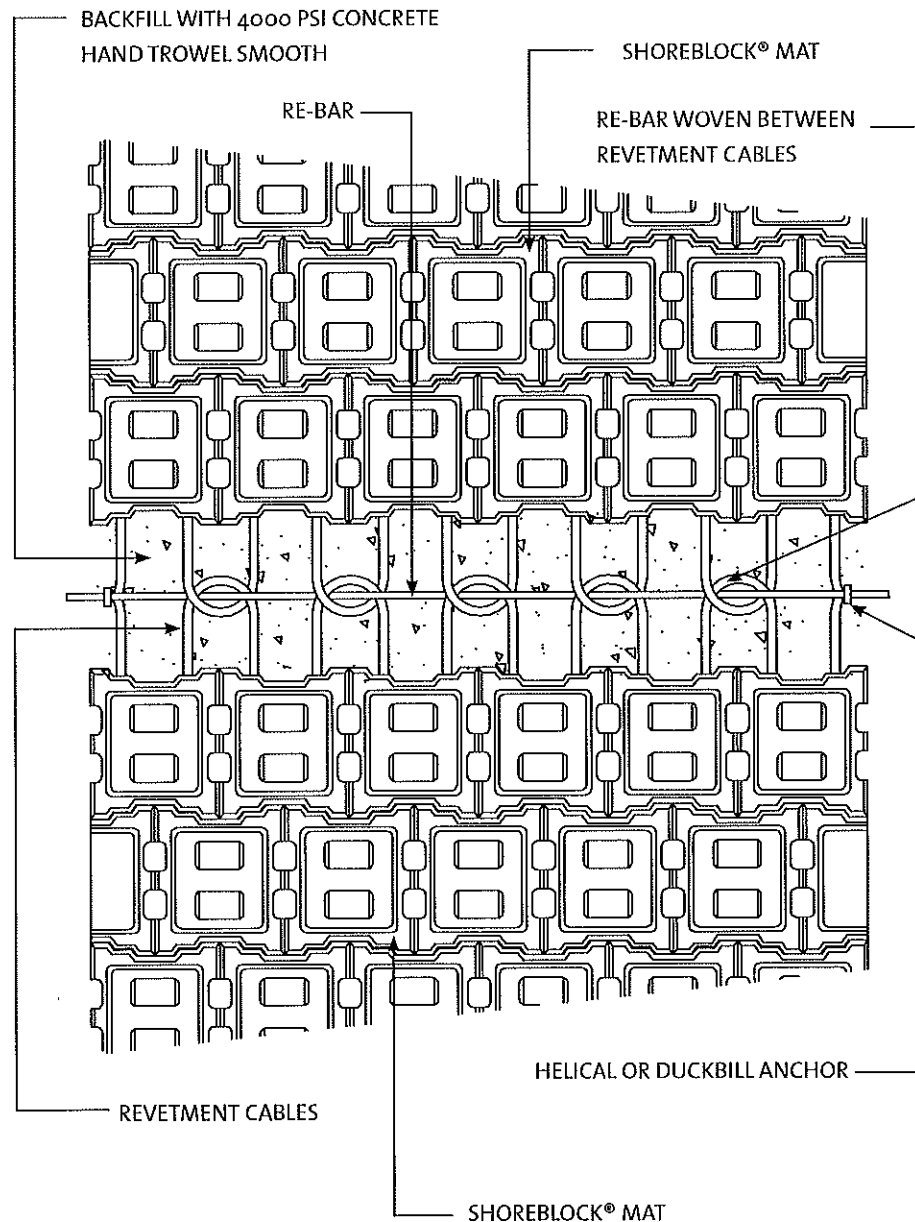
Location Detail



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Typical Installation Details

Connection Between Mats (Grout Joint)

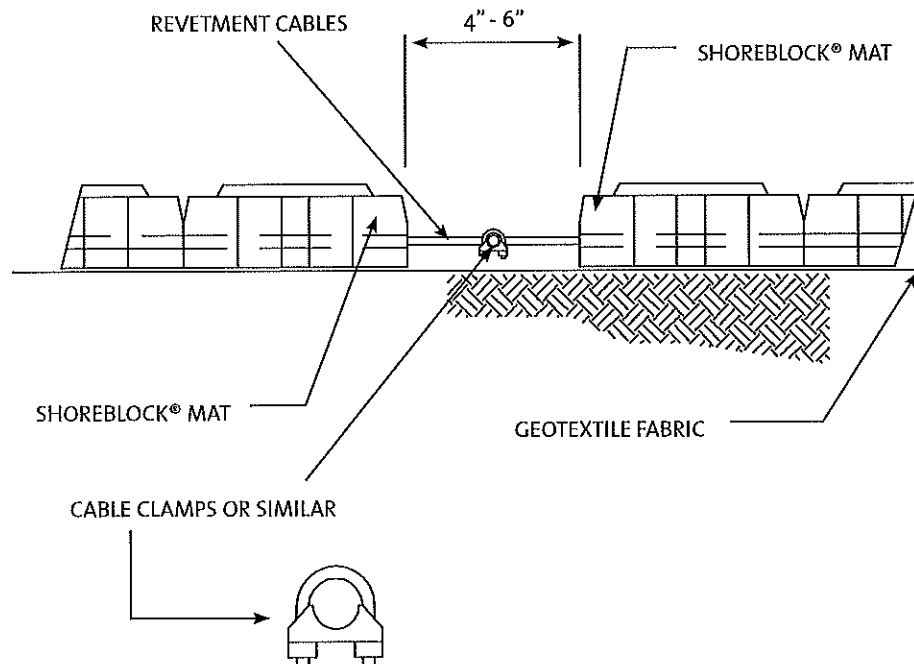


Typical Installation Details

Connection Between Mats Using Cable Clamps

Spacing between mats shown larger than actual for clarity. Mats should be placed between 4" and 6" maximum.

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26

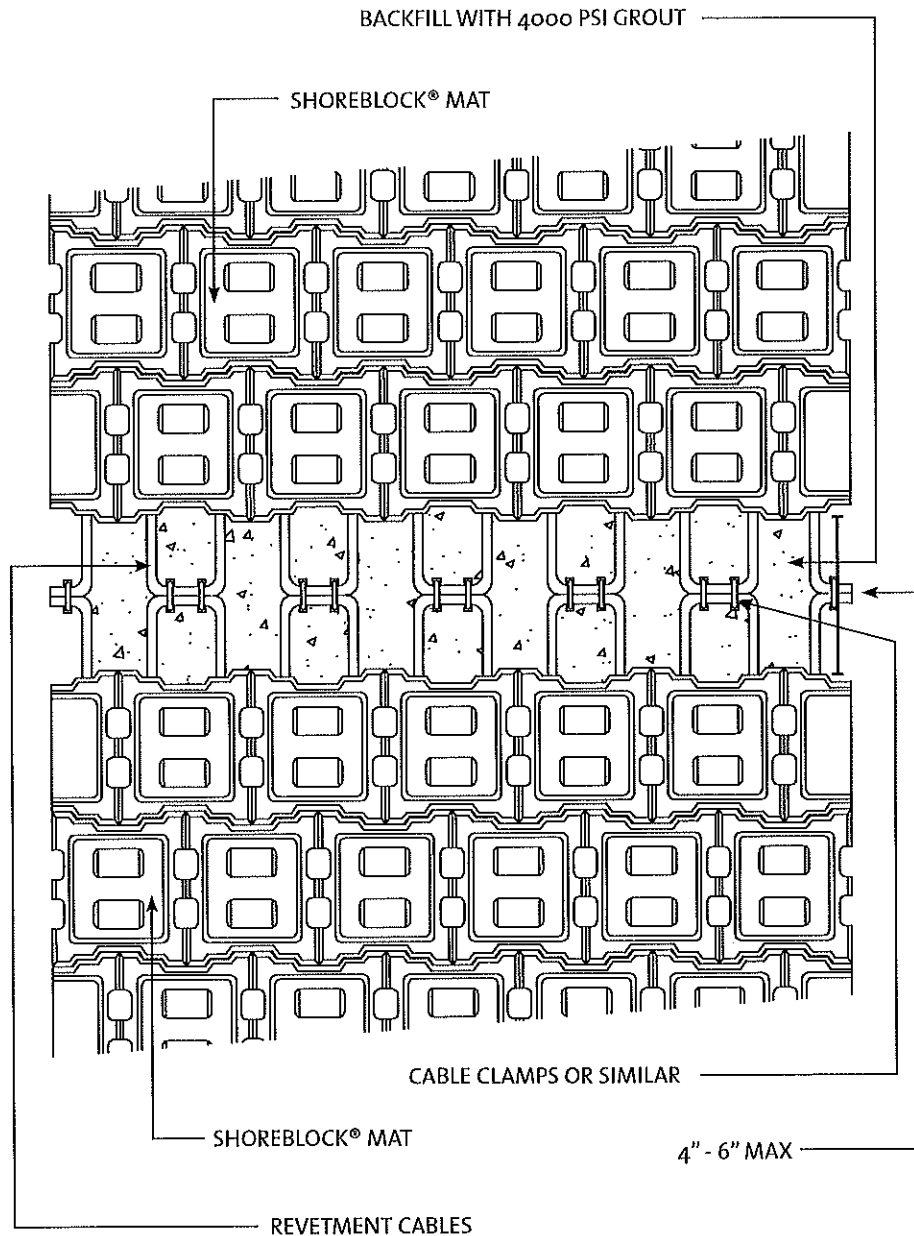


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Typical Installation Details

Connection Between Mats Using Cable Clamps

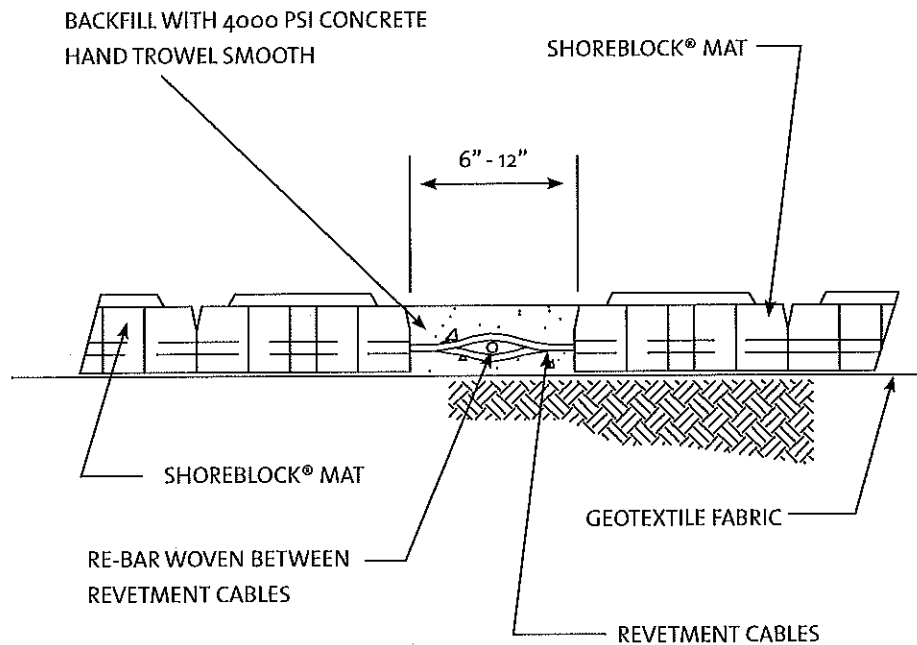
Spacing between mats shown larger than actual for clarity. Mats should be placed between 4" and 6" maximum.



Typical Installation Details

Connection Between Mats (Grout Joint)

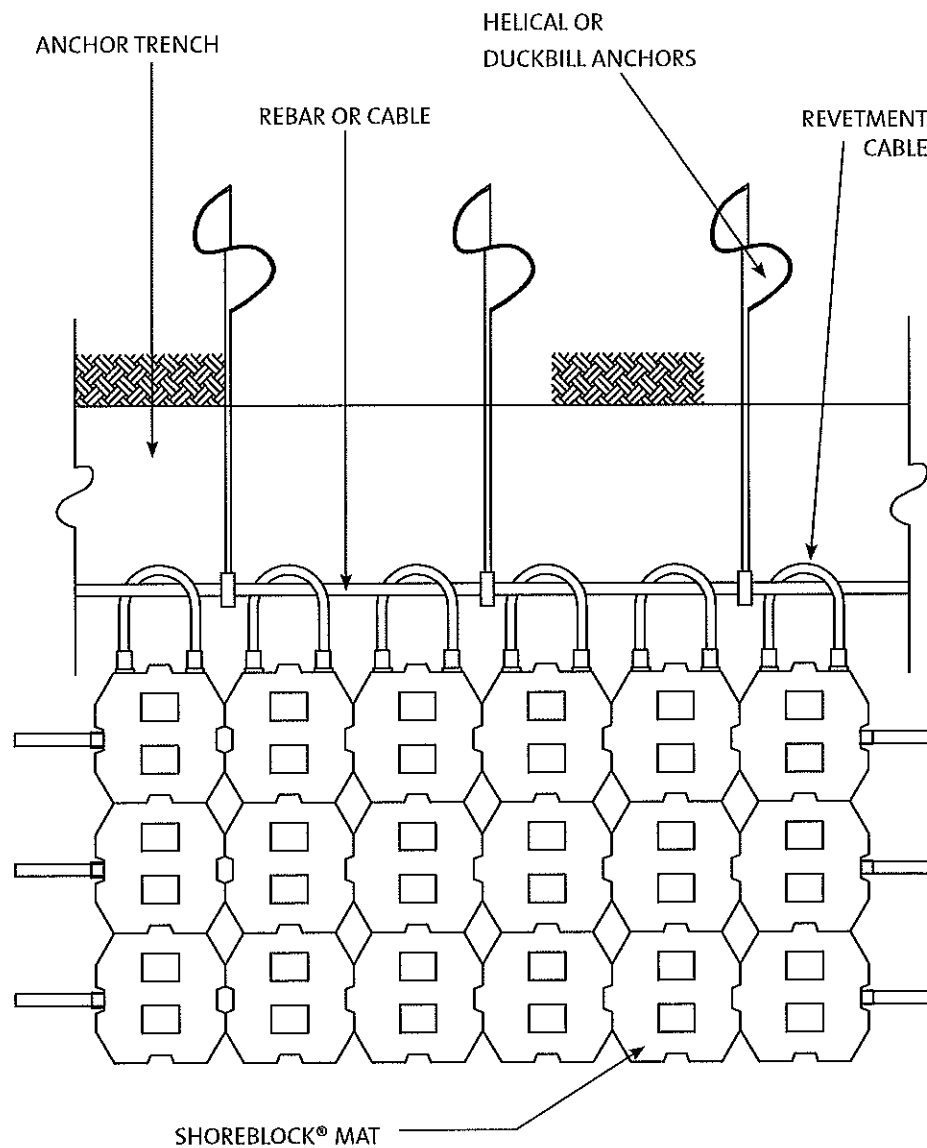
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Typical Installation Details

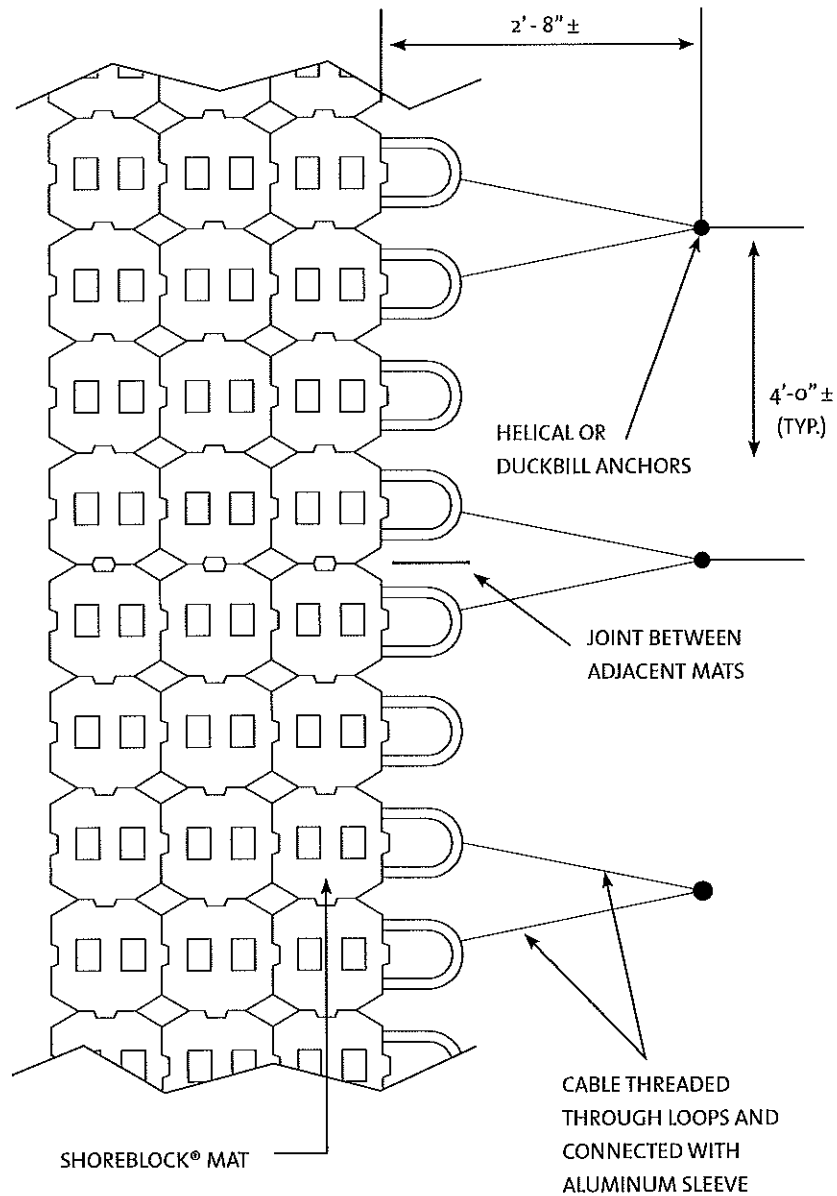
Helical or Duckbill Anchoring in Termination Trench



Typical Installation Details

Top of Slope Anchor Connection

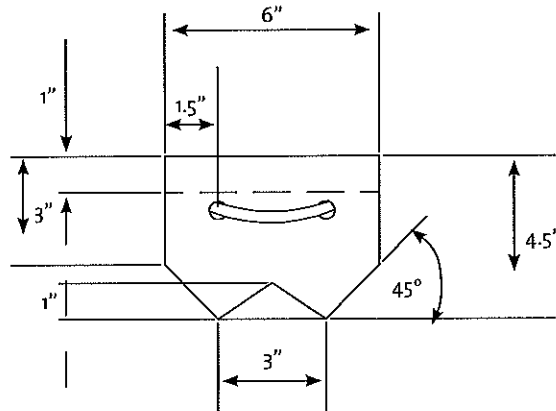
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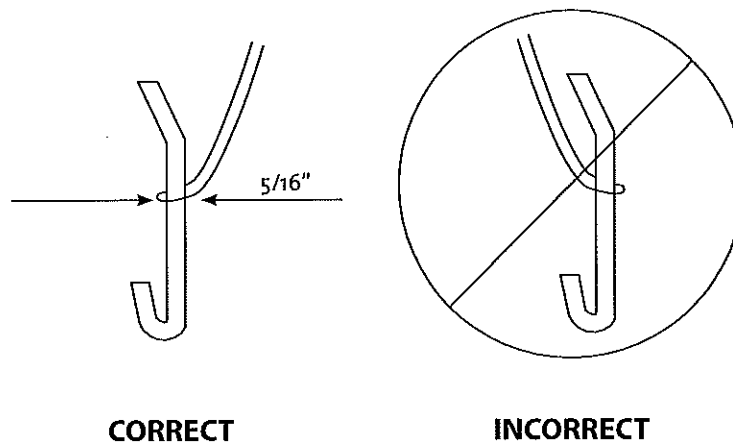
Typical Installation Details

Flex Anchor

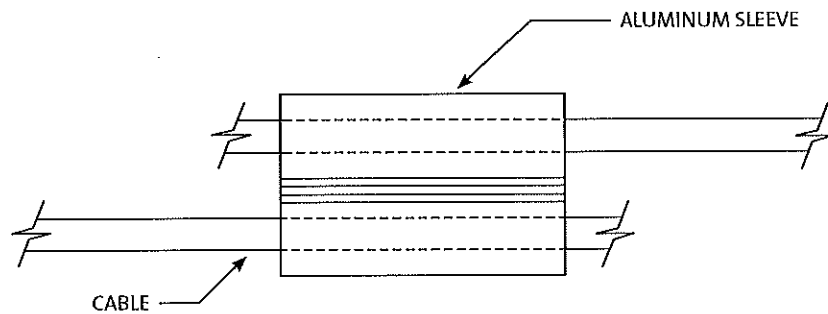


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Side View



Cable Connections

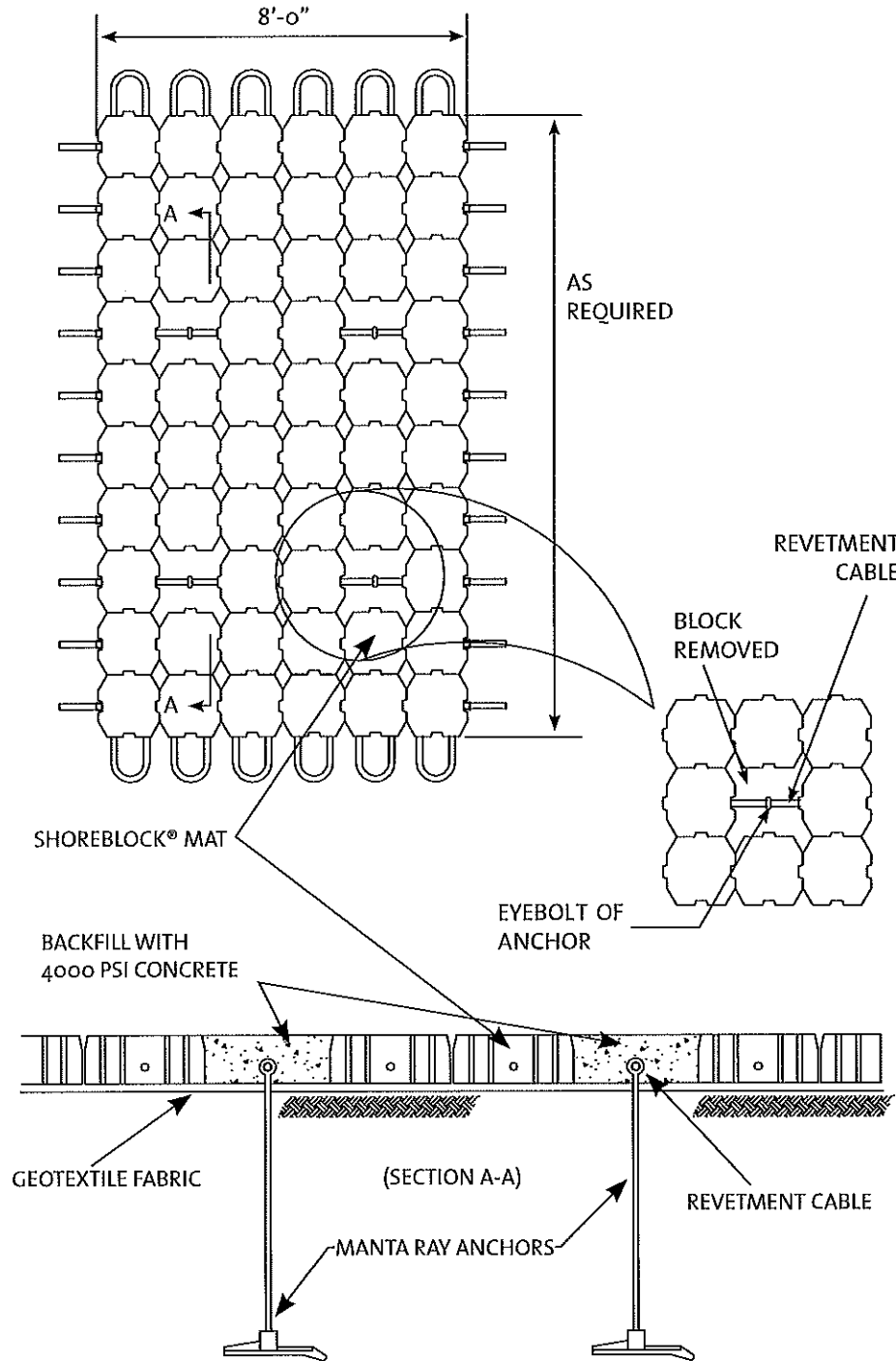


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Typical Installation Details

Internal Mat Anchoring

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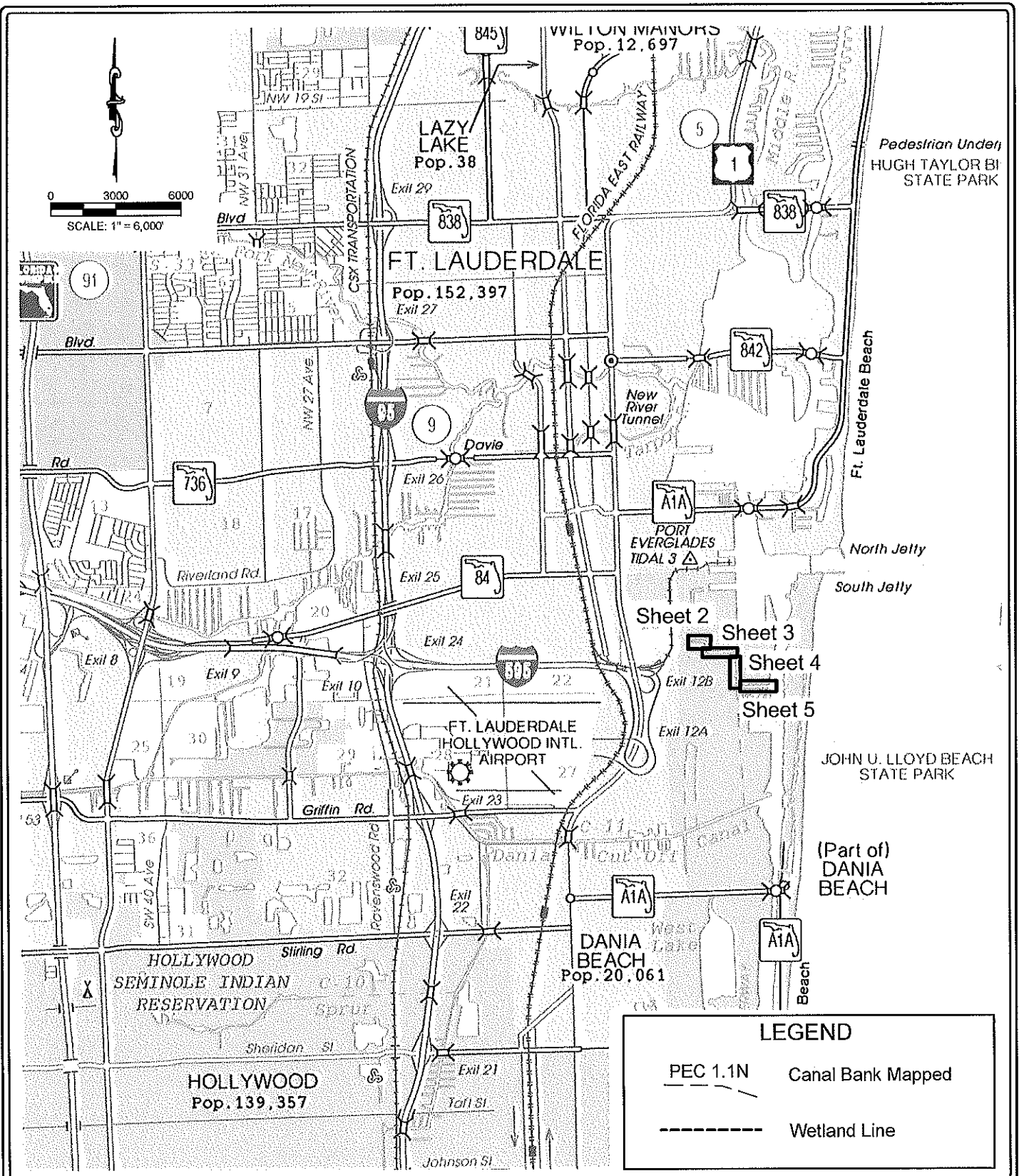
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0907-06/b

Appendix C – Vegetation Surveys



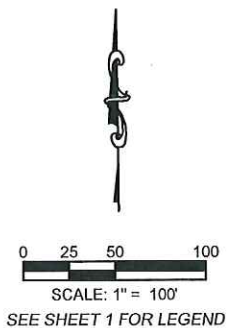
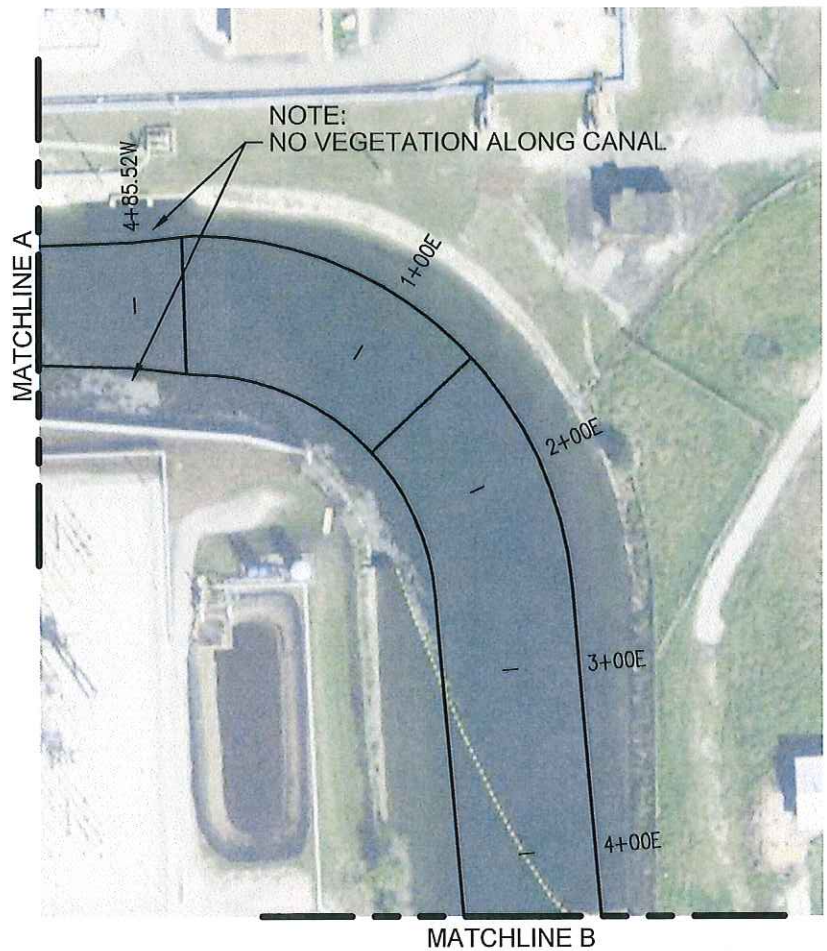
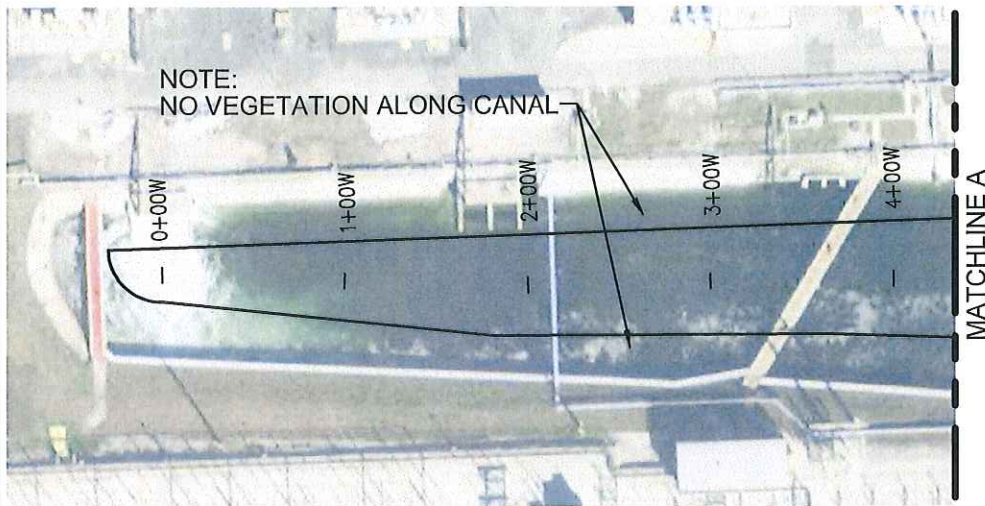
PORT EVERGLADES CANAL
230kV TRANSMISSION LINE

Figure 3
Index Sheet - Aerial Overview Showing
Discharge Canal Bank Mapped, Wetland Lines
and Mapped Trees

Source: FDOT General Highway Map; WPE Consulting, Inc., 2014.

Sheet 1 of 5





PORT EVERGLADES CANAL
230kV TRANSMISSION LINE

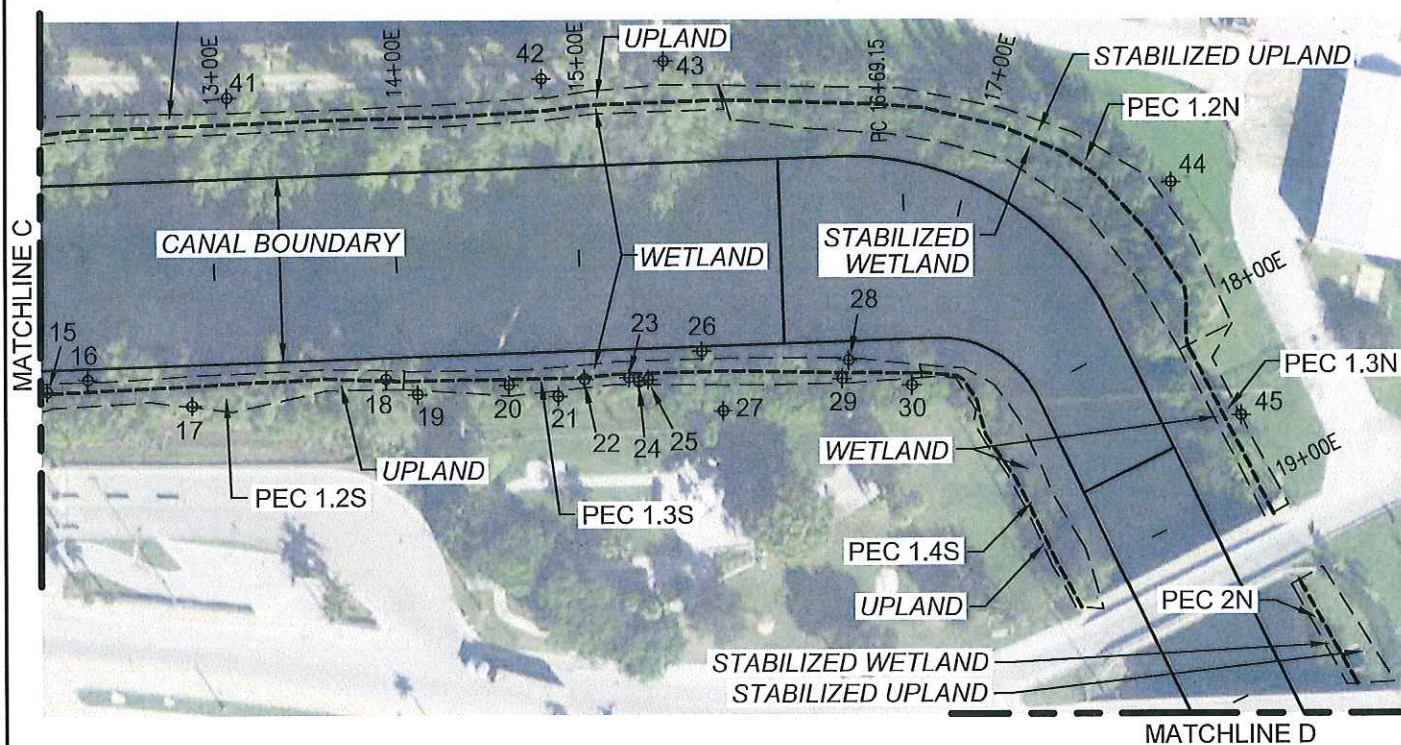
Figure 3

Aerial Overview Showing Discharge Canal Bank
Mapped, Wetland Lines and Mapped Trees

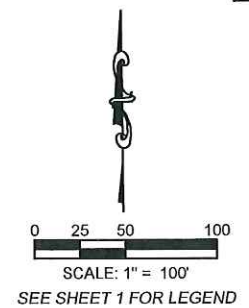
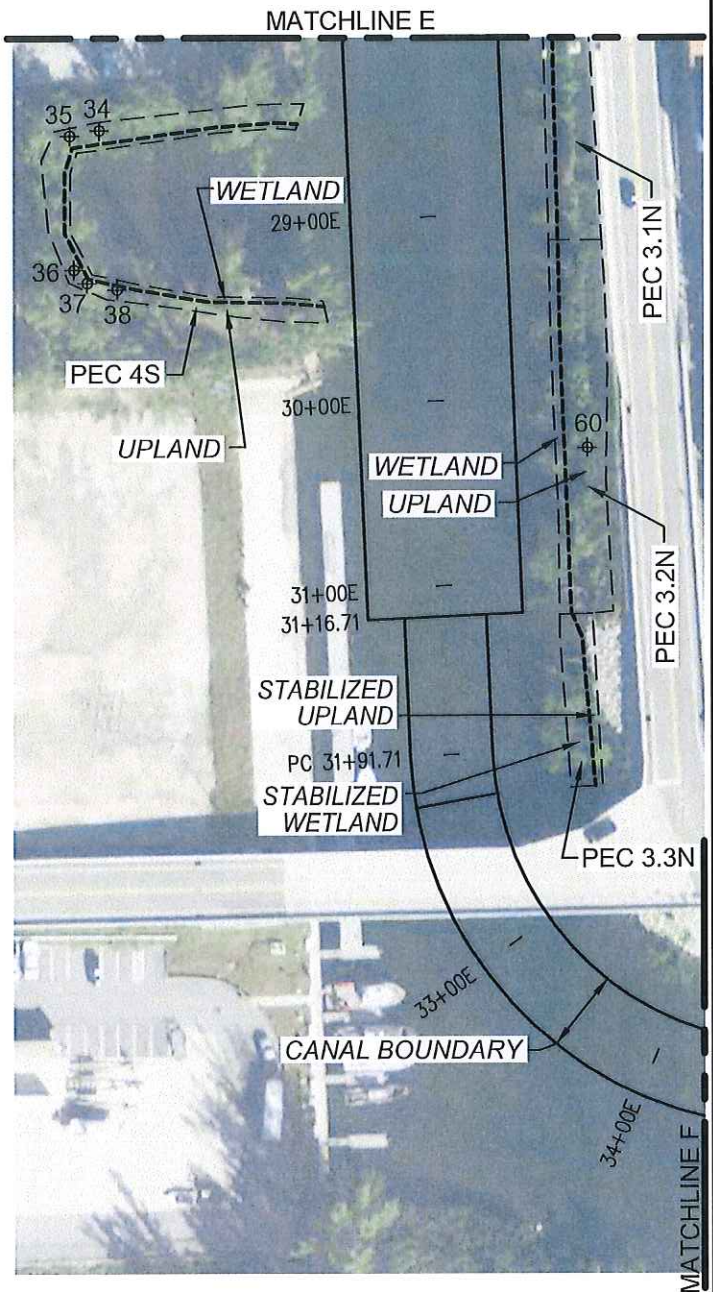
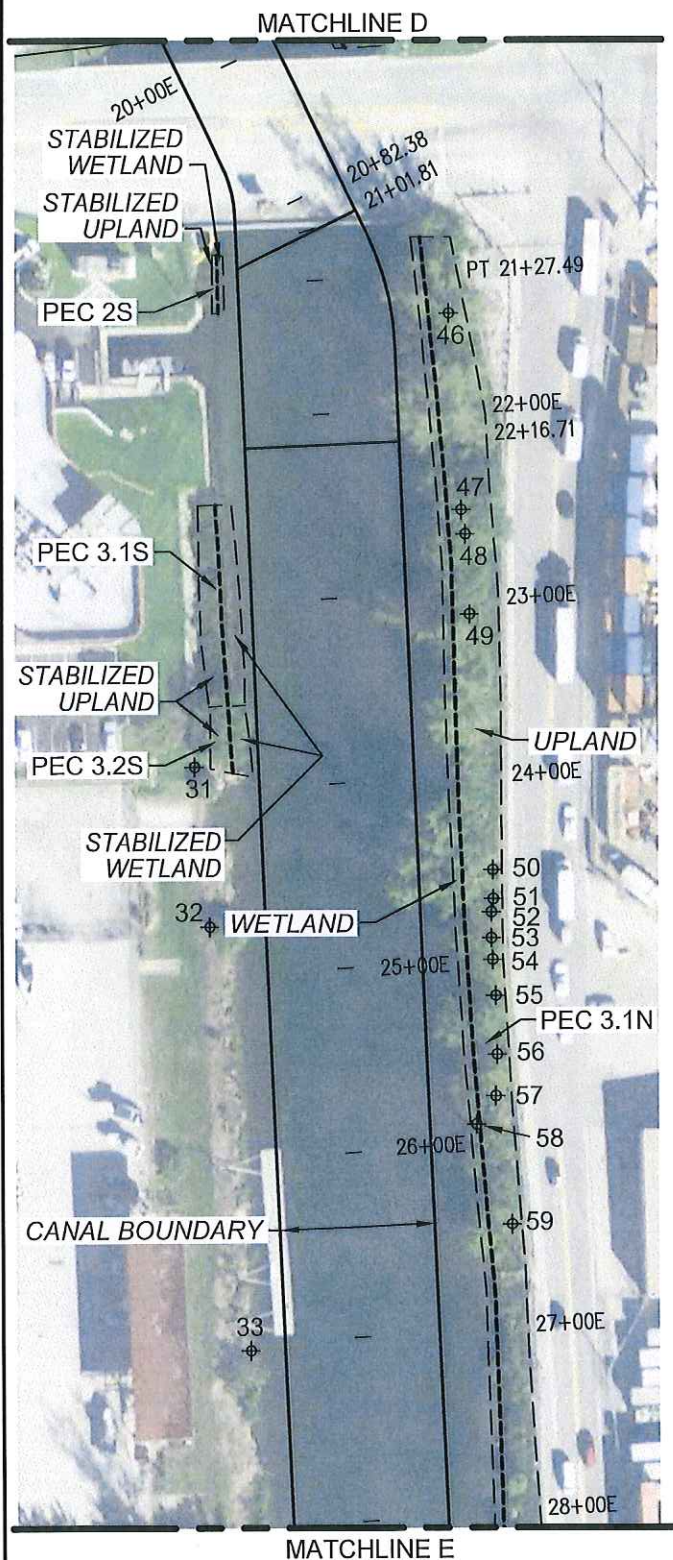
Source: Aerial photos, FDOT, 2011; WPE Consulting, Inc., 2014.

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Drawing file: PEC_Discharge_Figure 3_5-18-14.dwg May 18, 2014 - 7:53pm



PORT EVERGLADES CANAL
230kV TRANSMISSION LINE

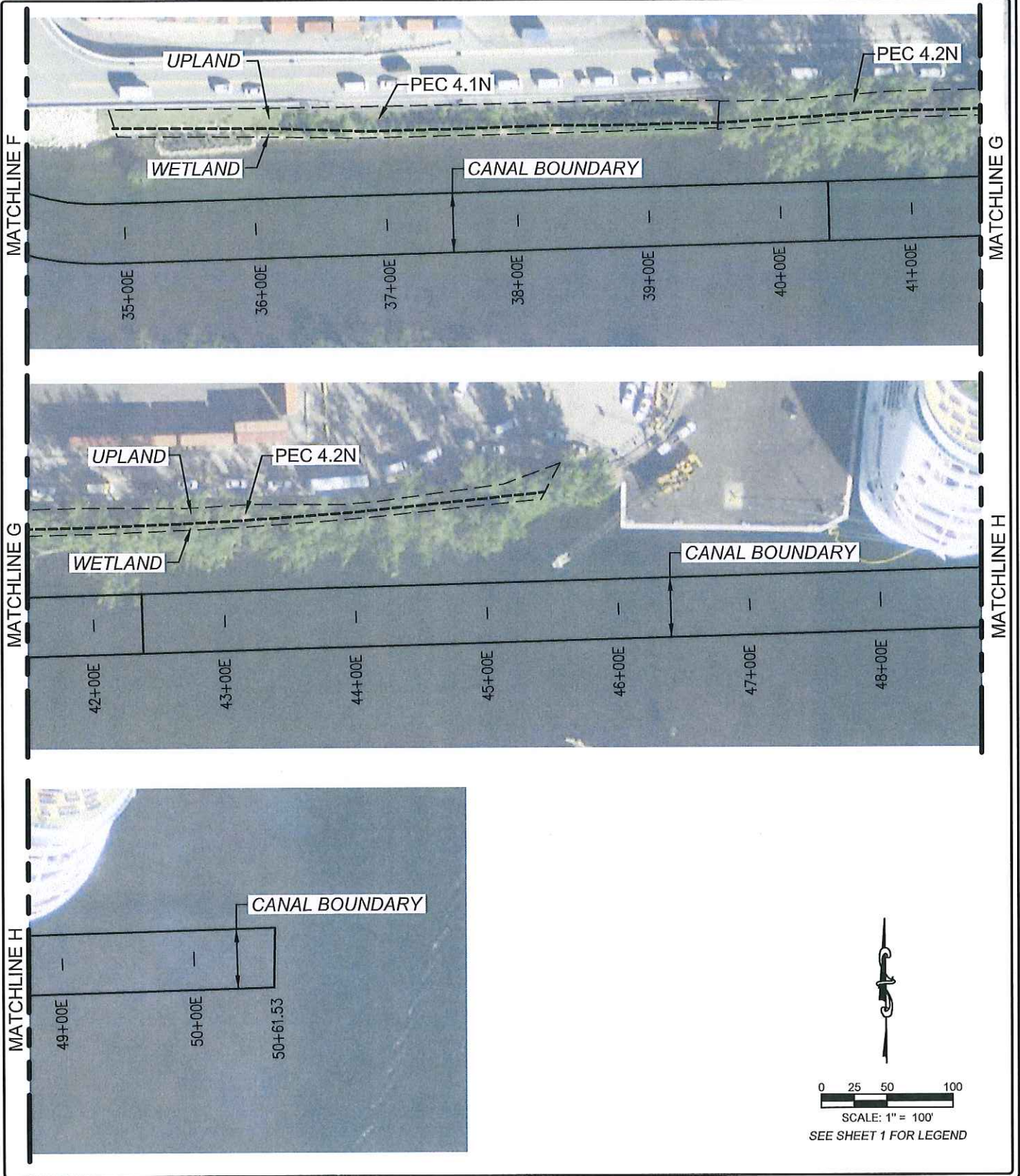
Figure 3

Aerial Overview Showing Discharge Canal Bank
Mapped, Wetland Lines and Mapped Trees

Source: Aerial photos, FDOT, 2011; WPE Consulting, Inc., 2014.

Sheet 4 of 5





PORT EVERGLADES CANAL
230KV TRANSMISSION LINE

Figure 3

Aerial Overview Showing Discharge Canal Bank
Mapped, Wetland Lines and Mapped Trees

Source: Aerial photos, FDOT, 2011; WPE Consulting, Inc., 2014.

Sheet 5 of 5



Table 1 (Rev1). FPL Port Everglades Canal Bank - Summary of Vegetation (includes areas of uplands)

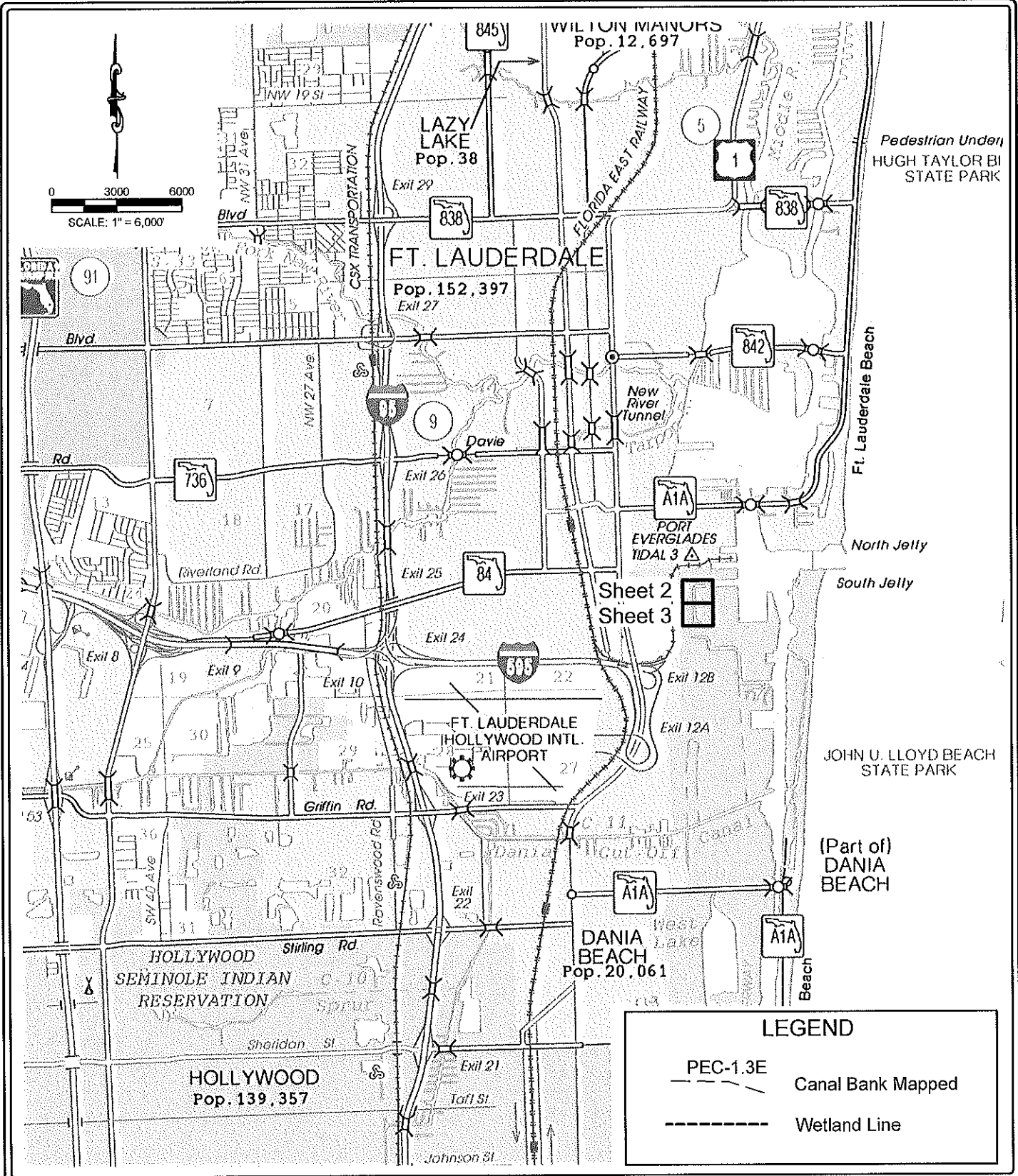
Figure 3 ID	DESCRIPTION OF UPLAND ¹	UPLAND AREA (sq ft)	DOMINANT VEGETATION IN WETLAND ¹	STABILIZATION COMPLETED
NORTH SIDE OF CANAL				
PEC-1.1N	Eroded Bank: Australian Pine 80%, Brazilian Pepper 10%, Herbaceous 10%	8,478	Eroded Bank: White Mangrove - 10%, Black Mangrove - < 5%	No
PEC-1.2N	Stabilized Bank: Australian Pine 10%, Herbaceous 90%	4,116	Stabilized Bank and Planted: Red Mangrove 45%, White Mangrove 45%, Rip Rap 10%	Yes
PEC-1.3N	Eroded Bank: Brazilian Pepper 50%, Herbaceous 50%	975	Eroded Bank: White Mangrove 50%	No
PEC-2N	Stabilized Bank: Herbaceous 100%	1,121	Stabilized Bank: White Mangrove 20%	Yes
PEC-3.1N	Eroded Bank: Australian Pine 30%, Brazilian Pepper 40%, Herbaceous 30%	17,130	Eroded Bank: White Mangrove - 20%	No
PEC-3.2N	Eroded Bank: Australian Pine 30%, Brazilian Pepper 40%, Herbaceous 30%	4,816	Eroded Bank: White Mangrove 20%, Red Mangrove 10%	No
PEC-3.3N	Stabilized Bank: Brazilian Pepper 5%, Australian Pine 10%, Rip Rap 85%	526	Stabilized Bank: White Mangrove 20%, Red Mangrove 30%, Rip Rap	No
PEC-4.1N	Stabilized Bank: Grasses, Australian Pine 30%, Herbaceous 70%	7,818	Stabilized Bank: Planted Red Mangrove 70%	Yes
PEC-4.2N	Eroded Bank: Brazilian Pepper 10%, Australian Pine 90%	7,185	Steep Eroded Bank: Black Mangrove 5%	No
SOUTH SIDE OF CANAL				
PEC-1.1S	Eroded Bank: Brazilian Pepper 90%	4,689	Eroded Bank: White Mangrove 5%	No
PEC-1.2S	Eroded Bank: Australian Pine 40%, Brazilian Pepper 40%, Herbaceous 20%	9,896	Eroded Bank: White Mangrove 5%	No
PEC-1.3S	Eroded Bank: Herbaceous 100%	1,777	Eroded Bank: White Mangrove 30%,	No
PEC-1.4S	Eroded Bank: Australian Pine 50%, Herbaceous 50%	422	Eroded Bank: White Mangrove 50%	No
PEC-2S	Stabilized Bank and Planted: Herbaceous 100%	94	Stabilized Bank: Planted White Mangrove 100%	Yes
PEC-3.1S	Stabilized Bank: Australian Pine 10%, Herbaceous 90%	1,246	Stabilized Bank: Planted Red Mangrove 90%	Yes
PEC-3.2S	Stabilized Bank: Brazilian Pepper 30%	388	Stabilized Bank: Planted Red Mangrove 70%	No
PEC-4S	Eroded Bank: Australian Pine 80%, Brazilian Pepper 20%	3,310	Eroded Bank: White Mangrove < 1%	No

Table 2. FPL Port Everglades Plant Discharge Canal-Potential Trees Requiring a Permit from City of Hollywood

WPE no.	TREE-NAME	Caliper (in)	Height (ft)	Canopy (ft)
1	Banyan	18,18	50	50
2	Cabbage Palm	7	10	8
3	Tung	10	25	30
4	Tung	10	40	20
5	Cabbage Palm	16	12	10
6	Tung	2,4	12	8
7	Tung	6	25	15
8	Sea Grape	3,3	15	15
9	Mahogany	8	30	20
10	Tung	12,12,7	40	40
11	Tung	2,2,7	30	20
12	Tung	4,8,10	30	30
13	Cabbage Palm	10	8	8
14	Tung	6 (3 stems),12	35	40
15	Tung	5	35	30
16	Sea Grape	2	14	10
17	Cabbage Palm	20	18	10
18	Banyan	8	7	10
19	Tung	20	25	20
20	Tung	12	30	25
21	Banyan	36	35	40
22	Tung	8	25	15
23	Tung	8	25	15
24	Tung	5	25	10
25	Tung	5	25	10
26	Tung	20	35	45
27	Indian Laurel	18	20	20
28	Tung	5	20	20
29	Tung	4	15	15
30	Tung	18	20	30
31	Cabbage Palm	24	15	10
32	Sea Grape	4 (8 stems), 8	15	25
33	Sea Grape	4 (3 stems),12	12	30
34	Sea Grape	3	8	8
35	Sea Grape	6,6	22	20
36	Cabbage Palm	18	16	10
37	Cabbage Palm	18	16	10
38	Sea Grape	3	14	10
39	Tung	7	25	12
40	Papaya	4,6,8	15	10
41	Sea Grape	4	14	10
42	Cabbage Palm	20	18	10
43	Cabbage Palm	10	8	8
44	Banyan	10	18	15
45	Banyan	20	25	40
46	Cabbage Palm	18	12	10
47	Cabbage Palm	14	14	10
48	Cabbage Palm	10	10	8
49	Cabbage Palm	14	12	10
50	Womans Tongue	10	15	15

Table 2. FPL Port Everglades Plant Discharge Canal-Potential Trees Requiring a Permit from City of Hollywood

WPE no.	TREE-NAME	Caliper (in)	Height (ft)	Canopy (ft)
51	Womans Tongue	6	14	14
52	Womans Tongue	4	10	8
53	Womans Tongue	5,12	20	20
54	Womans Tongue	18	25	25
55	Womans Tongue	10	18	25
56	Womans Tongue	6 (3 stems)	20	25
57	Womans Tongue	4	12	10
58	Womans Tongue	4	8	12
59	Womans Tongue	2,5,8	20	36
60	Portia	4 (3 stems)	18	20



PORT EVERGLADES CANAL
230kV TRANSMISSION LINE

Figure 3

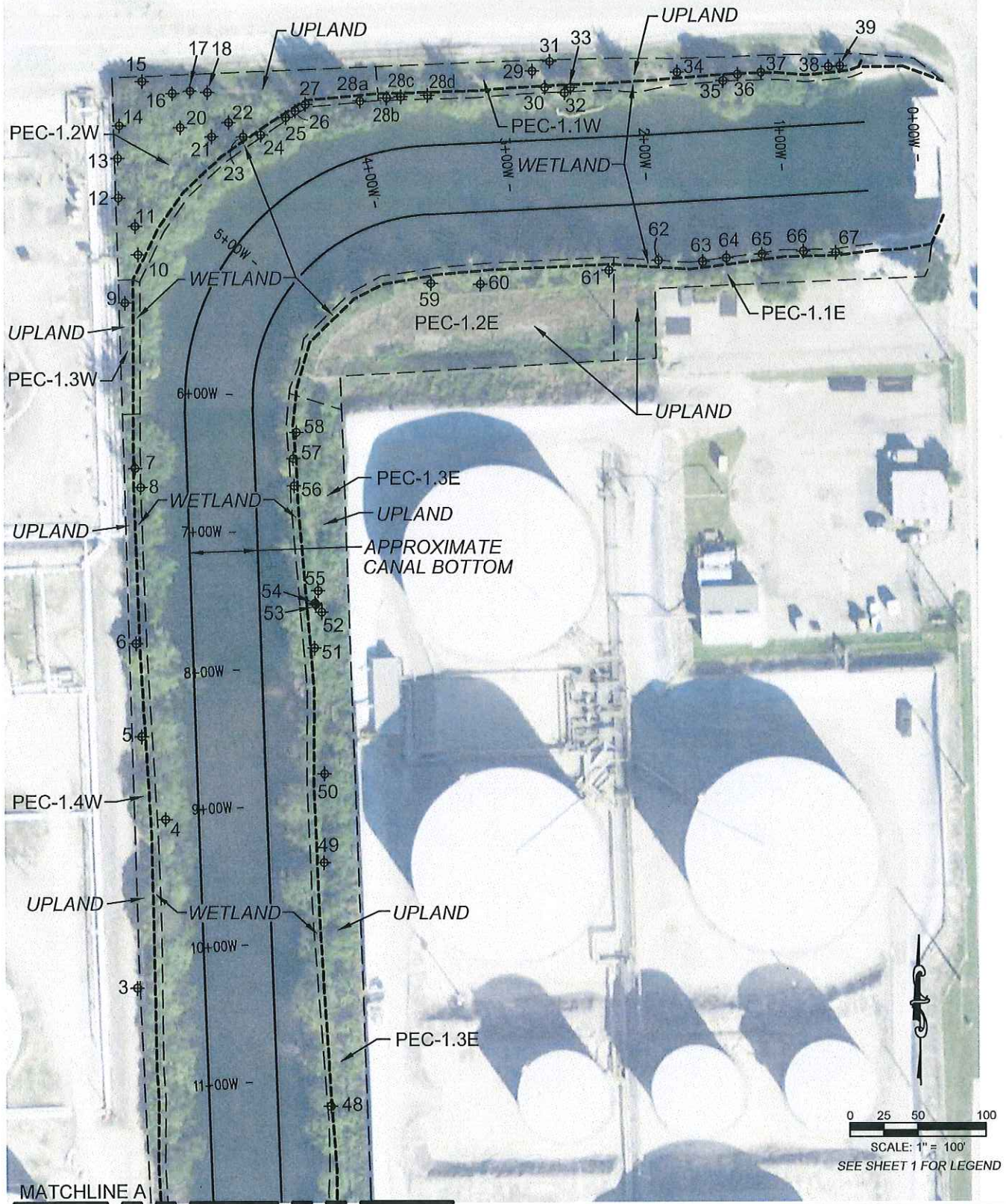
Index Sheet - Aerial Overview Showing Intake Canal
Bank Mapped, Wetland Lines and Mapped Trees

Source: FDOT General Highway Map; WPE Consulting, Inc., 2014.

Sheet 1 of 3



Drawing file: PEC_IC Figure 3_5-4-14.dwg May 05, 2014 - 1:57pm



PORT EVERGLADES CANAL
230kV TRANSMISSION LINE

Figure 3

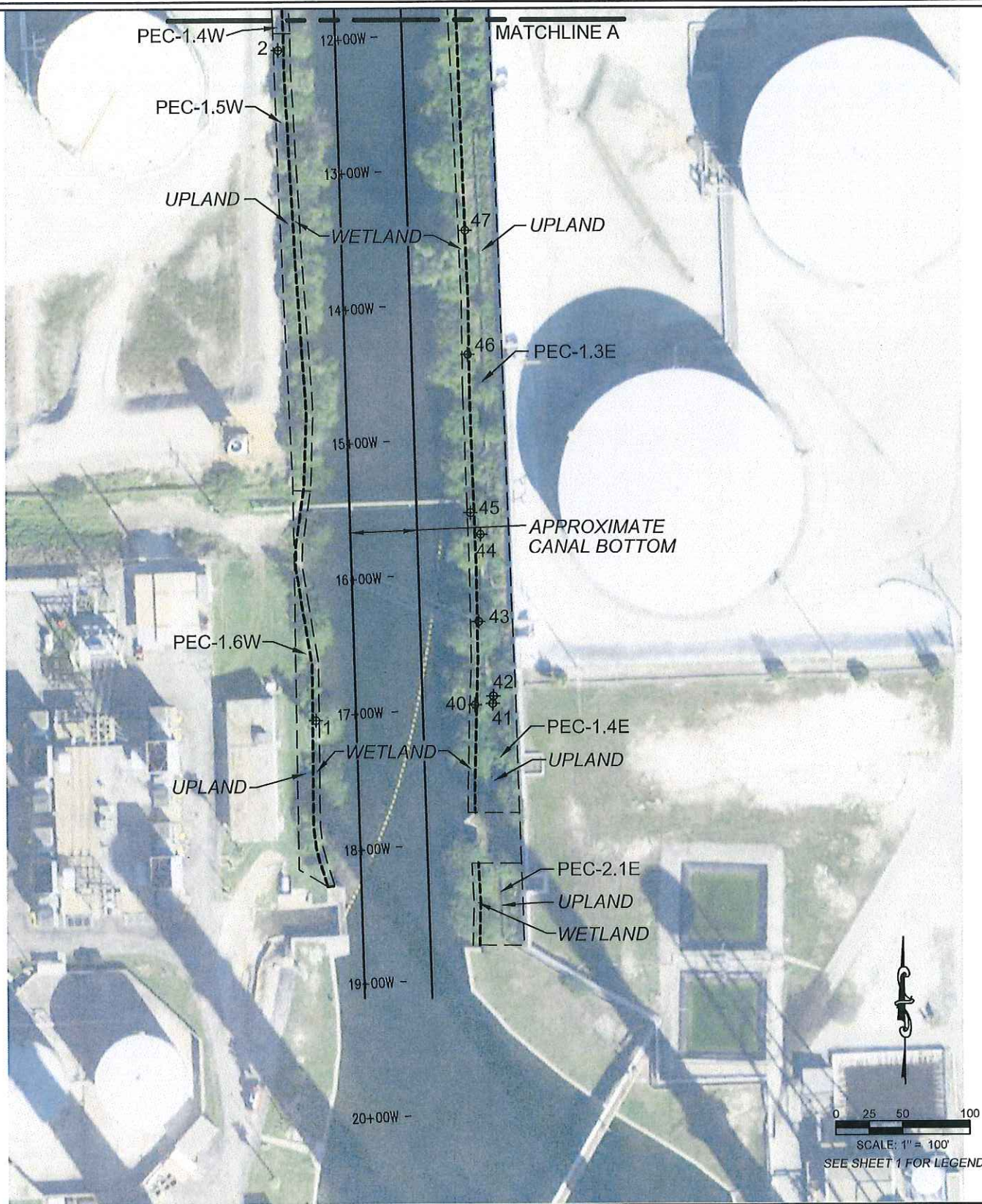
Aerial Overview Showing Intake Canal Bank
Mapped, Wetland Lines and Mapped Trees

Source: Aerial photos, FDOT, 2011; WPE Consulting, Inc., 2014.

Sheet 2 of 3



Drawing file: PEC_IC Figure 3_5-4-14.dwg May 05, 2014 - 1:58pm



PORT EVERGLADES CANAL
230kV TRANSMISSION LINE

Figure 3

Aerial Overview Showing Intake Canal Bank
Mapped, Wetland Lines and Mapped Trees

Source: Aerial photos, FDOT, 2011; WPE Consulting, Inc., 2014.

Sheet 3 of 3



Table 1. FPL Port Everglades Intake Canal Bank - Summary of Vegetation

ID	DESCRIPTION OF UPLAND	DESCRIPTION OF WETLAND (APPROX-FIVE FEET LANDWARD OF CANAL BANK/WATER LINE)	MITIGATION HAS ALREADY OCCURRED
EAST SIDE			
	Stablized Bank: Hardscape	Stablized Bank: Hardscape	Yes
PEC-1.1E	Eroded Bank: Brazillian Pepper 100%	Eroded Bank: Red Mangrove 5%	No
PEC-1.2E	Eroded Bank: Austrailian Pine 85%, Brazillian Pepper 10%	Eroded Bank: Red Mangrove 20%	No
PEC-1.3E	Eroded Bank: Brazillian Pepper 95%	Eroded Bank: Red Mangrove 5% (seedlings)	No
PEC-1.4E	Eroded Bank: Brazillian Pepper 100%	Eroded Bank: No wetland plants	No
	Stablized Bank: Hardscape	Stablized Bank: Hardscape	Yes
PEC-2.1E	Eroded Bank: Brazillian Pepper 100%	Eroded Bank: No wetland plants	No
WEST SIDE			
	Stablized Bank: Hardscape	Stablized Bank: Hardscape	Yes
PEC-1.1W	Eroded Bank: Brazillian Pepper 85%, Austrailian Pine 10%	Eroded Bank: Red Mangrove 30%, Sea Grape 5%	No
PEC-1.2W	Eroded Bank: Brazillian Pepper 75%, Austrailian Pine 20%	Eroded Bank: Red Mangrove 10%, White mangrove <5%	No
PEC-1.3W	Eroded Bank: Brazillian Pepper 95%	Eroded Bank: No wetland plants	No
PEC-1.4W	Eroded Bank: Brazillian Pepper 90%, Herbacious <5%	Eroded Bank: Red Mangrove 60%, White mangrove <5%	No
PEC-1.5W	Eroded Bank: Brazillian Pepper 95%	Eroded Bank: No wetland plants	No
PEC-1.6W	Eroded Bank: Brazillian Pepper 90%, Austrailian Pine <5%	Eroded Bank: Red Mangrove 60%, White mangrove 10%	No

Table 2. FPL Port Everglades Plant Intake Canal-Potential Trees Requiring a Permit from City of Hollywood

WPE no.	TREE-NAME	Caliper (in)	Height (ft)	Canopy (ft)
1	Cabbage Palm	15	40	10
2	Cabbage Palm	18	12	10
3	Sea Grape	2	6	3
4	Cabbage Palm	16	15	10
5	Cabbage Palm	12	15	10
6	Sea Grape	6	25	33
7	Sea Grape	6	20	13
8	Sea Grape	10	20	15
9	Cabbage Palm	12	16	10
10	Cabbage Palm	12	15	10
11	Guava	3	10	10
12	Guava	4	10	10
13	Cabbage Palm	10	9	7
14	Cabbage Palm	18	16	10
15	Sea Grape	3	10	4
16	Sea Grape	5	10	6
17	Sea Grape	3	10	4
18	Sea Grape	4	10	6
19	Sea Grape	3	8	10
20	Cabbage Palm	12	12	10
21	Cabbage Palm	12	10	10
22	Guava	2.4	10	8
23	Guava	4-5 (4 stems)	15	10
24	Sea Grape	6 (4 stems)	15	15
25	Sea Grape	4-5 (2 stems)	12	12
26	Sea Grape	12, 5 (2 stems)	20	15
27	Cabbage Palm	12	9	7
28	Sea Grape	2-10 (40 stems)	12	10 x 60
29	Sea Grape	4	12	14
30	Cabbage Palm	24	15	12
31	Cabbage Palm	10	10	8
32	Gumbo Limbo	7	15	10
33	Sea Grape	5	15	15
34	Cabbage Palm	8	8	5
35	Sea Grape	14	25	25
36	Sea Grape	24	30	30
37	Sea Grape	2	8	3
38	Cabbage Palm	7	9	4
39	Cabbage Palm	15	25	10
40	Sea Grape	4 (2 stems), 5	9 (2 stems), 15	10 (3 stems)
41	Guava	1	8	6
42	Guava	8	12	14
43	Sea Grape	18 (3 stems), 6 (2)	25	50
44	Sea Grape	36	25	40
45	Sea Grape	3	6	6
46	Sea Grape	3	8	6
47	Sea Grape	2	7	6
48	Sea Grape	18	12	25
49	Cabbage Palm	8	7	8
50	Cabbage Palm	12	14	8

Table 2. FPL Port Everglades Plant Intake Canal-Potential Trees Requiring a Permit from City of Hollywood

WPE no.	TREE-NAME	Caliper (in)	Height (ft)	Canopy (ft)
51	Cabbage Palm	17	12	10
52	Cabbage Palm	8	8	4
53	Sea Grape	2	12	8
54	Cabbage Palm	14	12	10
55	Sea Grape	4	10	6
56	Sea Grape	4	14	12
57	Cabbage Palm	16	20	10
58	Sea Grape	4	14	10
59	Cabbage Palm	15	12	10
60	Black Olive	2	7	4
61	Black Olive	2	8	4
62	Cabbage Palm	12	10	8
63	Sea Grape	3,3,4,2	10,10,10,8	8,4,8,4
64	Cabbage Palm	12	10	8
65	Cabbage Palm	10	9	8
66	Cabbage Palm	10	10	8
67	Cabbage Palm	10	9	8

Appendix D – W.A.T.E.R Assessment

FPL Everglades Mitigation Bank

Mitigation Bank Site Suitability Evaluation (MBSE) Matrix

Page 1 of 1

Parameters			
Parameter	Scoring Criteria	Ratings	Score
1. Adjacent to lands or waters of regional importance and results in identifiable ecological benefits to adjacent lands or waters.	State Park, OFW, AP, and including but not limited to Special Waters on at least 1 boundary Adjacent lands contain no special designation or undesignated special value	1 0	0
2. Property is within boundary of an acknowledged state, local or regional acquisition program	Property is within boundary of an acquisition program Property is not within boundary of an acquisition program	1 0	0
3. Property contains ecological or geological features consistently considered by regional Scientist, or federal and state agencies to be unusual, unique or rare in the region and is of sufficient size	Property qualifies Property does not qualify	1 0	0
4. Property designated as being of critical state or federal concern and/or contains special designations,	Property contains at least 1 special designation. Property contains no special designations.	1 0	0
5. Property important to acknowledged restoration efforts	Property is important. Property is not important.	1 0	1
6. Ownership and control of the property.	Property is privately owned. Property is publicly owned.	1 0	1
7. Threatened, Endangered & Species of Special Concern Presence of animal species (fauna) found on site	Documented Presence of Species on site No documented Presence of species on site.	1 0	1
8. Threatened, Endangered & Listed Species Presence of plant species (flora) found on site	Documented Presence of Species on site No documented Presence of species on site.	1 0	0
9. Threat of loss or destruction from development activities. (Development Pressure)	High probability of development. Low probability of development.	1 0	0
10. Extent to which lands are subject to Local, State, and Federal dredge and fill/ ERP Regulations	Property is not regulated. Property is regulated.	1 0	0
Value Cumulative Score (CS)			

The Mitigation Bank Site Suitability Evaluation Matrix is designed to provide a quantifiable means of determining the number of mitigation credits that should be assigned to a bank for "value" related parameters. Value related parameters are human values determined to be important to society; and therefore are not measurable in a purely functional analysis. Functional analysis will only measure the degree of functional ecological improvement (degree of ecological improvement) resulting from mitigation activities. The SS Evaluation measures and provides credit for societal values that separate one mitigation bank from another as required by Ch. 62-342.470 (a) (b) (c) (d) (e) (f) (g) (h) (i) F.A.C.. The SS evaluation is not to be utilized in conjunction with a functional analysis methodology which also utilizes value related parameters in its analysis.

Evaluation Scale	
Site Suitability	Suitability Multiplier
1.0	1.10
.9	1.09
.8	1.08
.7	1.07
.6	1.06
.5	1.05
.4	1.04
.3	1.03
.2	1.02
.1	1.01
0	0

Site Suitability Matrix	
Maximum Possible Score (MPS)	10
Cumulative Score (CS)	3

EPA, USACOE, USF & W, FDEP, NMFS, SFWMD, Dade DERM, FPL, CH

3-Apr-96

After Calculating the Site Suitability Score determine the Site Suitability Multiplier by utilizing the Evaluation Scale to the left. The Site Suitability Multiplier is to be multiplied times the number of the Functional Mitigation Credits, resulting from the (W.A.T.E.R.) Functional Assessment of the Mitigation Bank, to determine the number of Site Suitability Credits to be assigned to the Mitigation Bank.

Prepared By:
WPE Consulting, Inc.
10/24/2014

FPL Port
Everglades Plant
Canals

Mitigation Bank Wetland Function Evaluation Matrix			Project:	
W.A.T.E.R. - Wetland Assessment Technique for Environmental Reviews Based on WBI, WQI, WRAP, HGM and 4th Priority Project List (PPL) with technical advise from EPA, FDEP, ACOE, NMFS, USF & W, SFWMD & Dade County			Reviewer: Kirk Stage Date: 10/18/2014	
Parameter/ Function	Scoring Criteria	Ratings	Polygon	Polygon
			612 Intake Canal	612 Discharge Canal
1. Fish & Wildlife Functions Apply to freshwater, saltwater, brackish and mitigation systems				
a. Waterfowl, wading birds, wetland dependent, or aquatic birds of prey. (Mit. Bank - High specie count w/ low pop. #'s score 1)	7 or more species commonly observed	3	3	3
	3-6 species commonly observed	2		
	1-2 species commonly observed	1		
	0 species commonly observed	0		
b. Fish (Mit. Bank - High specie count w/ low pop. #'s score 1 Restoration that causes 12% pop. Increases-higher score)	7 or more species commonly observed	3	2	2
	3-6 species commonly observed	2		
	1-2 species commonly observed	1		
	0 species commonly observed	0		
c. Mammals (Mit. Bank - High specie count w/ low pop. #'s score 1 Restoration that causes 12% pop. Increases-higher score)	Top predator (carnivore) &/or large mammals	3	1	1
	Medium sized mammals , (adult weight > 6 lbs.)	2		
	Small animals (rodents, etc.) , (adult weight < 6 lbs.)	1		
	0 species present	0		
d. Aquatic macroinvertebrates, amphibians (Mit. Bank - High specie count w/ low pop. #'s score 1 Restoration that causes 12% pop. Increases-higher score)	7 or more species commonly observed	3	2	1.5
	3-6 species commonly observed	2		
	1-2 species commonly observed	1		
	0 species commonly observed	0		
e. Aquatic reptiles (Mit. Bank - High specie count w/ low pop. #'s score 1 Restoration that causes 12% pop. Increases-higher score)	Large species observed	3	1	1
	Aquatic turtles	2		
	Snakes & lizards	1		
	No evidence of species present	0		

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Parameter/ Function	Scoring Criteria	Ratings	Polygon	Polygon	
			612 Intake Canal	612 Discharge Canal	
2. Vegetative Functions Apply to freshwater, saltwater, brackish and mitigation systems					
a. Overstory/shrub canopy	Desirable trees/shrub healthy & providing appropriate habitat (seedlings present) & no inappropriate species	3			
	Desirable trees/shrubs exhibit signs of stress (no seedlings) few inappropriate species present	2			
	Inappropriate trees/shrubs shading or overcoming desirable tree/shrubs	1			
	Very little or no desirable tree/shrubs present (evidence suggests there should be)	0	2	2	
b. Vegetative ground cover	Assessment area exhibits <2% inappropriate herbaceous ground cover for specific wetland systems and groundcover is present	3			
	Assessment area contains >2% but <30% inappropriate herbaceous groundcover, or lack of groundcover >2% but < 30%	2			
	Assessment area contains >30% to <70% inappropriate herbaceous groundcover, or lack of ground cover >30% to <70%	1			
	Assessment area >70% inappropriate herbaceous groundcover or lack of groundcover >70%	0	1	1	
c. Periphyton mat coverage	Periphyton (Blue-green algae) present with average mat thickness >1 1/4 in. (measure active & dead layer)	3			
	Periphyton (Blue-green algae) present with average mat thickness between 3/4 in. to 1 1/4 in. (active & dead layer)	2			
	Periphyton (Blue-green algae) present with average mat thickness between 1/4 in. to 3/4 in. (active & dead layer)	1			
	Periphyton (Blue-green algae) not present or if present with average thickness of 0.0 to 1/4 in. (active & dead layer)	0	0	0	
d. Category 1 and Category 2 exotic plants or (non-native) species	< (or = to) 1 % exotic plant cover	3			
	>1 % to 10 % exotic plant cover	2			
	>10 % to 65 % exotic plant cover	1			
	> 65 % exotic plant cover	0	2	2	
e. Habitat diversity (vegetative) (within assessment area)	>3 native species communities on site within assessment area	3			
	2 or 3 native species communities on site within assessment area	2			
	1 native species community with 75 % to 90 % coverage within assessment area	1			
	1 native species community has > 90 % coverage within assessment area	0	1	1	
f. Biological diversity within 3000 feet (approximately 1/2 mile from edge of assessment area)	> 3 alternative habitats available (including upland)	3			
	2 to 3 alternative habitats	2			
	1 alternative habitat	1			
	Same habitat type, or inappropriate / impacted	0	1	1	

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Parameter/ Function	Scoring Criteria	Ratings	Polygon	Polygon
			612 Intake Canal	612 Discharge Canal
3. Hydrologic Functions				
a. Surface water hydrology / sheet flow Apply to freshwater, saltwater, brackish and mitigation systems	Major connection (Flowing water/ river or floodplain/ uniform flow through natural systems)	3		
	Moderate connection (Natural restriction of flow or Flowing water due to hydrologic engineering)	2		
	Minor connection (Runoff collection point, or uneven flow due to berms, ditches, roadways etc.)	1		
	Hydrologically isolated, no net lateral movement	0	2	2
b. Hydroperiod (normal year) fresh systems	> 8 months inundated with no reversals & every year drydown	3		
	>5 months < 8 months or >5 years continuous inundation (look for strong water stains on persistent vegetation)	2		
	>1 month < 5 months, with possible reversals (look for soft or less distinct water stains on persistent vegetation)	1		
	< 4 weeks cumulative annual inundation or < 2 weeks continuous inundation	0		
b-1 Alternate to b. for Short Hydroperiod (normal year) fresh systems:	>10 weeks of continuous inundation including soil saturation	3		
	> 6 weeks but <10 weeks of continuous inundation including soil saturation	2		
	>2 weeks but <6 weeks of inundation, including soil saturation	1		
	<2 weeks of continuous inundation	0		
b-2 Alternate to b. for Saltwater, brackish (tidal) systems	Inundated by >90% high tides			
	Inundated by "spring" high tides (bi-monthly)	2		
	Inundated by "extreme high" tides only (biannually)	1		
	Inundated by storm surges only	0	3	3
b-3 Alternate to b. for High Marsh (Juncus-Distichlis)	Inundated by high "spring" tides (monthly) and flushed by fresh water sheetflow every 10 days average	3		
	Inundated by high "spring" tides (monthly) and flushed by fresh water sheetflow every 30 days on the average	2		
	Inundated by high "spring" tides (monthly) and exposed to rain only	1		
	Inundated by >50% high tides and exposed to rain only	0		
b-4 Alternate to b. for Riverine systems	Inundated by high tides (daily) and/or recieves and maintains fresh water at least into first half of dry season	3		
	Inundated by high tides (daily) and/or recieves and maintains fresh water during rainy season only	2		
	Inundated by high tides (daily) and/or recieves fresh water but does not maintain (reversal) during rainy season	1		
	Inundated by spring tides (bi-monthly) and/or experiences frequent reversals of fresh water (flashy)	0		

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Parameter/ Function	Scoring Criteria	Ratings	Polygon	Polygon	
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3. Hydrologic Functions continued					
c. Hydropattern (fresh system)	>1 ft. water depth for at least 2.5 months and <6 in. for >1 month (measure water mark/ lichen line), or water depth ideal for specific wetland system.	3			
	>6 in to 1 ft. for at least 2.5 months (measure water mark/ lichen line) or water depth borderline over or under for specific wetland system	2			
	<6 in. for at least 2.5 months (measure water mark/ lichen line) or water depth incorrect for specific wetland system	1			
	<6 in. in association with either canals, ditches, swales, culverts, pumps, and/or wetlands, or these factors cause water depth to be too deep for specific system.	0			
c-1 Alternate to c. for Saltwater, brackish (tidal) systems	>1 ft. water depth <2 ft. on 90% high tides	3			
	> 6 in. water depth <1 ft. on >50% high tides	2			
	< 6 in. water depth, but > than saturated	1			
	Saturated by saline water table only	0	3	3	
c-2 Alternate to c. for High Marsh (Juncus-Distichlis)	>10 in. water depth <2 ft. on regular basis during growing season	3			
	>5 in. to 10in. water depth on regular basis during growing season	2			
	>1 in. to 5 in. water depth on regular basis during growing season	1			
	>0.0 in. to 1 in. water depth sporadically during growing season	0			
c-3 Alternate to c. for Riverine systems	>2 ft. water depth (main channel) <6 ft. for 8 months	3			
	>2 ft. water depth (main channel) <4 ft. for 6 months	2			
	>1 ft. water depth (main channel) <2.5 ft. for 4 months	1			
	<1 ft. water depth, but dry for >4 weeks (dry season)	0			

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3. Hydrologic Functions continued					
d. Water Quality	No indication of poor water quality (lab testing required, all values within acceptable range)	3	3	2.5	
	No visual indicators of poor water quality observed (1 value just over or under acceptable range)	2			
	Visual indicators of poor water quality questionable (2 values over or under acceptable range)	1			
	Visual indicators of poor water quality observed or lab verified (values are out of acceptable range)	0			
e. Intactness of historic topography (soil disturbance)	Unaltered	3	1	1	
	Slightly altered soil disturbance, < 10% of assessment area	2			
	Moderately altered soil disturbance, < 25% of assessment area	1			
	Extremely altered soil disturbance, may exceed 50% of assessment area	0			
f. Soils, organic (fresh systems)	Organic soil classified hydric soil >12 in. or any thickness over bedrock/caprock with perched water table and either condition covering >90% of surface area	3			
	Organic soil classified hydric soil >6 in. but <12 in. and covering >90% of surface area	2			
	Organic soil classified hydric soil >1 in. but <6 in. and covering >50% but <90% of surface area	1			
	Organic soil classified non-hydric soil <1 in. for >50% of surface area	0			
f-1 Alternate to f. for Freshwater, saltwater systems	Sandy soil classified hydric soil with distinct mottling and concretions present in greater than 40% of horizon.	3	1	1	
	Sandy soil classified hydric soil with mottling and concretions present in > 20% but < 40% of horizon.	2			
	Sandy soil classified hydric soil with light or sparse mottling and concretions < 2 mm diameter or < 20% of horizon.	1			
	Sandy soil exhibits strong evidence of disturbance or mechanical manipulations or is fill material.	0			
f-2 Alternate to f. for Freshwater, saltwater, brackish (tidal) systems	Calcareous loam >12 in. and >90 % of surface area	3			
	Calcareous loam >6 in. to <12 in. and >90% of surface area	2			
	Calcareous loam >1 in. to <6 in. and covering >50% but <90% of surface area	1			
	Calcareous loam <1 in. for >50% of surface area	0			

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			612 Intake Canal	612 Discharge Canal
4. Salinity Parameters Apply to freshwater, saltwater, brackish, hypersaline and mitigation systems - Choose 1				
a. Optimum salinity for fresh systems during growing season based on mean high salinity for a normal year. Apply to freshwater systems within 5 miles of the coast	<2 parts per thousand (ppt)	3		
	2 to 3 parts per thousand (ppt)	2		
	4 to 5 parts per thousand (ppt)	1		
	>5 parts per thousand (ppt)	0		
a-1. Alternate to a. Optimum salinity for brackish systems during growing season based on mean high salinity for a normal year. Apply to brackish (tidal) systems only	6 to 8 parts per thousand (ppt)	3		
	9 to 13 parts per thousand (ppt)	2		
	14 to 16 parts per thousand (ppt)	1		
	>16 parts per thousand (ppt)	0		
a-2. Alternate to a. Optimum salinity for saline systems during growing season based on mean high salinity for a normal year. Apply to saline marsh (tidal) systems only	17 to 19 parts per thousand (ppt)	3		
	20 to 22 parts per thousand (ppt)	2		
	23 to 25 parts per thousand (ppt)	1		
	>25 parts per thousand (ppt)	0	1.5	1.5
a-3. Alternate to a. Optimum salinity for hypersaline systems during growing season based on mean high salinity for a normal year. Apply to hypersaline (tidal) systems only	26 to 41 parts per thousand (ppt)	3		
	42 to 46 parts per thousand (ppt)	2		
	47 to 51 parts per thousand (ppt)	1		
	>51 parts per thousand (ppt)	0		
a-4 Alternate to a. Optimum salinity for riverine/tidal creek system during growing season based on mean high salinity for a normal year. Apply to riverine systems only	bottom (lower) third between 12 to 25 ppt	3		
	middle third between 5 to 11 ppt.			
	upper (top) third between 0 to 4 ppt.			
	bottom (lower) third between 25 to 32 ppt	2		
	middle third between 6 to 24 ppt.			
	upper (top) third between 0 to 5 ppt.			
	bottom (lower) third between 30 to 40 ppt	1		
	middle third between 8 to 29 ppt.			
	upper (top) third between 0 to 7 ppt.			
	bottom (lower) third between 35 to 50 ppt	0		
	middle third between 10 to 34 ppt.			
	upper (top) third between 0 to 9 ppt.			
Cumulative Score (SC)			30.5	29.5
Maximum Possible Score (MPS)			54.0	54.0
W.A.T.E.R. = Cumulative Score/Maximum Possible Score			0.565	0.546
Site Suitability Score			1.03	1.03
W.A.T.E.R. Credits per Acre of Impact			0.582	0.563