



March 20, 2016

Ms. Cindy Mulkey
Sitting Coordination Office
Florida Department of Environmental Protection
3900 Commonwealth Blvd. MS#48
Tallahassee, FL 32399-3000
SCO@dep.state.fl.us

RE: Florida Power & Light Company
Cape Canaveral Energy Center
Power Plant Site Certification No. PA 08-53A
Manatee Heating Area Relocation
Horseshoe Crab Deterrent Wall

Ms. Mulkey

Florida Power and Light Company (FPL) is pleased to submit for review our plans for the manatee heating area relocation and horseshoe crab deterrent wall at the Cape Canaveral Energy Center (CCEC). The development of this project, which involves marine construction, has been closely coordinated with state and federal agencies.

CCEC has been required by the United States Fish and Wildlife Service (USFWS) and Florida Fish and Wildlife Conservation Commission (FWCC) to provide a heated enclosure for manatees when temperatures fall in the Indian River Lagoon. The manatee heating area relocation will move the heated enclosure from the intake canal water ward of the southeast shoreline. This will increase the distance between the enclosure and the plant intake, reduce the risk of the manatee impingement, and improve manatee access between the heating area and the broader Indian River Lagoon. With the removal of the sheet piling in the existing heated manatee refuge area, the intake canal velocity will be lower than what the flows were prior to modernization. Since the new modernized plant only requires 3 out of 4 circulators to be running flow rate will be decreased. The relocated manatee heating area will be dredged and will include a dock and a water supply piping.

As part of the cooling water intake system, CCEC operates modified traveling screens and an aquatic organism return system. These technologies have been identified by United States Environmental Protection Agency (USEPA) in recent rulemaking as best technology available (BTA) options to reduce aquatic organism impingement and entrapment. In the fall of 2014, FPL installed an underwater fence/barrier in the cooling water intake canal with the purpose of reducing/deterring the impingement of horseshoe crabs on the intake bar screens. The deterrent fence was permitted in coordination with state and federal agencies as a demonstration project to help determine potential long-term solutions to this issue. The new proposed horseshoe crab deterrent wall is an enhanced permanent exclusion barrier whose design reflects observations from field studies. This new design includes a new location designed to direct the horseshoe crabs away from the intake so as to not "trap" the horseshoe crabs within the barge unloading area that is bound by the "mole" on the north and the jetty on the south side.

Florida Power & Light Company

700 Universe Boulevard, Juno Beach, FL 33408

FPL has closely evaluated the project for compliance with state and federal regulations, including threatened and endangered species requirements. The project has been developed to comply with the following:

- Project is the least environmentally damaging practicable alternative (LEDPA) under Section 404 of the Clean Water Act (CWA);
- Relocated manatee heating area meets requirements previously established in the CCEC Florida Department of Environmental Protection (FDEP) Site Certification and NPDES permit;
- Minor project construction supports a not likely adversely affect (NLAA) determination for sea turtles and smalltooth sawfish, based on the Florida Statewide Programmatic Opinion (SWPBO);
- Project complies with the standard construction conditions for in-water work for manatees, sea turtles, and smalltooth sawfish.
- FDEP PA 08-53A Conditions of Certification

The project is illustrated in the attached drawings and contains a change to the site certified boundary to include the relocated manatee heating area and horse shoe crab deterrent wall.

FPL specifically seeks programmatic consultation and concurrence with its initial NLAA determination for sea turtles and smalltooth sawfish, in order to complete the National Marine Fisheries Service (NMFS) consultation within 10 days. Supporting documentation is provided in the federal application package.

Application documents are enclosed for your review with this letter. Please do not hesitate to contact Kole Holman at 561-694-3771.

Sincerely,



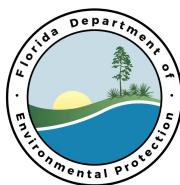
Matthew Raffenberg
Sr. Director, FPL Licensing and Permitting

cc: FDEP SCO
Ann Seiler, SCO
Bobby Bull, SCO
Jonathon Napoli, FPL CCEC Plant Manger
Tim Powell, FPL
Will Rosario, FPL

**JOINT APPLICATION FOR
INDIVIDUAL \$1' & 21 & (378\$ / ENVIRONMENTAL
5(6285 & (3(50,7
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	G- Mitigation Banks	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: Cape Canaveral Energy Center Manatee Heater Relocation and Horseshoe Crab Deterrent Wall

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:
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: Site certification PA 08-53A

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): 600 North U.S. Highway 1
City: Cocoa County(ies): Brevard Zip: 32927

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): 19 Township: 23S Range: 35E Land Grant name, if applicable:
Section(s): Township: Range:
Section(s): Township: Range:

H. Latitude (DMS) 28 ° 26 ' 26.55 " Longitude (DMS) 80 ° 45 ' 43.50 " (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): Google Earth Pro

I. Tax Parcel Identification Number(s): 2316087

[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):

To access the site from Jacksonville, take I-95 South; exit onto SR 528 and head east; turn north onto US highway 1; Turn east into to project site at address mentioned above

K. Project area or phase area: 13.3 acres

- L. Name of waterbody(ies) (if known) in which activities will occur or into which the system will discharge:
Indian River Lagoon

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):
n/a acres or n/a square feet
- O. Volume of water the system is capable of impounding (if applicable): n/a 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
FDEP	12/28/11	PA 08-53A	Cape Canaveral Energy Center

- 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
FDEP	03/1/16	Central District Office	Kim Eisele, Lisa Prather, Ann Seiler, Bobby Bill

- 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: R.
Title: Vice President Environmental Services		Company: Florida Power and Light	
Address: 700 Universe Blvd.			
City: Juno Beach		State: FL	Zip: 33408
Home Telephone:		Work Telephone: 561-691-7003	
Cell Phone:		Fax:	
E-mail Address: Randall.R.LaBauve@fpl.com			
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:	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: ☐		
E. ENGINEERING CONSULTANT ☐ THIS IS A CONTACT PERSON FOR ADDITIONAL INFORMATION		
Name: Last: Schmitz	First: Josh	Middle:
Title: Professional Engineer	Company: Enercon	
Address: 12906 Tampa Oaks Blvd. Suite 131		
City: Temple Terrace	State: Florida	Zip: 33637
Home Telephone:		Work Telephone:
Cell Phone: 772-359-1494	Fax:	
E-mail Address: Jschmitz@enercon.com		
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: Raffenberg	First: Matthew	Middle:
Title: Environmental Services Director	Company: Florida Power and Light	
Address: 700 Universe Blvd		
City: Juno Beach	State: Florida	Zip: 33408
Home Telephone:		Work Telephone:
Cell Phone:	Fax:	
E-mail Address:		
Correspondence will be sent via email. Check here to receive correspondence via US Mail: ☐		

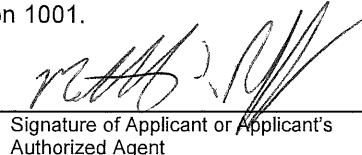
If necessary, please add additional pages for other contacts and property owners related to this project.

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.

Matt Raffenberg



4/22/16

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

Signature of Applicant or Applicant's
Authorized Agent

Date

Sr. Director, Environmental Services

(Corporate Title if applicable)

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

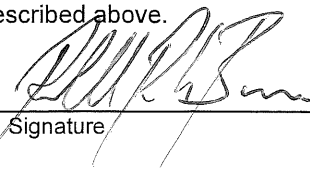
I certify that:

☒ 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 LaBauve



4/22/16

Typed/Printed Name

Signature

Date

Vice President - Environmental Services

(Corporate Title if applicable)

C. DESIGNATION OF AUTHORIZED AGENT (IF APPLICABLE):

I hereby designate and authorize Natalie Vitola 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.

Randall LaBauve

Typed/Printed Name of Applicant

Signature of Applicant

Date

4/22/16

Vice President - Environmental Services

(Corporate Title if applicable)

SECTION C: SUPPLEMENTAL INFORMATION FOR WORKS OR OTHER ACTIVITIES IN, ON, OR OVER WETLANDS AND/OR OTHER SURFACE WATERS

(Note: This section is not required if all the proposed activities are covered in Section B.)

Instructions: This section is for ERP applications that do not involve activities associated with an individual single-family residence, duplex, triplex or quadruplex. For those activities, please use Section B. This form is to be completed if the proposed work or activity will occur in, on, over, or within 25 feet of a wetland or other surface water. The supplemental information required by this section is in addition to the information required by Section A of the ERP application.

PART 1: WETLAND OR OTHER SURFACE WATER IMPACT SUMMARY

1. Describe the basic purpose of the project or activity: See purpose and need located in attachment A
2. Total area of work (dredging, filling, construction, alteration, or removal) in, on, or over wetlands or other surface waters: 579,348 sq. ft.; 13.30 ac.
3. Total volume of material in wetlands or other surface waters:
 - a. to be dredged: 3,838 cubic yards,
 - b. to be filled: 677 cubic yards.
4. Identify the seasonal high water level (SHWL) and wetland normal pool elevations for each wetland or surface water within the project site. For tidal wetlands and/or surface waters provide the elevation of mean high and mean low water. Include an aerial photograph showing the location of each sampling location, dates, datum, and methods used to determine these elevations.
5. Name of waterbody(ies) (if applicable & if known) in which work will occur? Indian River Lagoon
6. Is the activity proposed in an Outstanding Florida Water or Aquatic Preserve?
☐ yes, name: ☒ no ☐ I don't know
7. Has there ever been a formal or informal wetland determination for the project site? If yes, provide the identifying number and/ or a copy of the jurisdictional map.
8. Provide a map(s) of the project area and vicinity delineating USDA/NRCS soil types. See attachment A figure 1
9. Provide recent aerials, legible for photointerpretation (no photocopies) with a scale of 1" = 400 ft, or more detailed, with project boundaries and wetland boundaries delineated on the aerial. Attachment A figure 3
10. Provide existing and proposed maps indicating vegetative community types based on Florida Land Use and Cover Classification System (FLUCCS) (FDOT 1999). For vegetated areas dominated by exotic vegetation, use the FLUCCS code representative of the native community type that was present prior to exotic infestation. See attachment A figure 2



11. Provide existing and proposed maps indicating vegetative community types based on the Florida Natural Areas Inventory Guide to the Natural Communities of Florida. See appendix A Figure 3
12. Impact Summary Tables (located at the end of this section):
 - a. For all projects, complete Table 1, 2 and 3 as applicable. Impact summary tables will be provided under separate cover
 - b. For shoreline stabilization projects, provide the information requested in Table 4. n/a
13. Adjacent property owners. The following information is required only for projects proposed to occur in, on or over wetlands that need a federal dredge and fill permit and/or authorization to use state owned submerged lands and is not necessary when applying solely for an Environmental Resource Permit. If the activity is located on state owned submerged lands and requires a lease or easement, provide a list of names and addresses from the latest county tax assessment roll of all property owners located within a 500 ft. radius of the proposed lease or easement boundary in mailing label format, or you may elect to send notice to those persons by certified mail, with the return-receipt card addressed to the DEP or water management district, as applicable, in accordance with subsection 18-21.005(3), F.A.C., and Section 253.115, F.S. For projects that need a federal dredge and fill permit, please provide the names, addresses and zip codes of property owners whose property directly adjoins the project (excluding applicant). Attach additional sheets if necessary.

1. Please see attachment F	2.
3.	4.
5.	6.

PART 2: ENVIRONMENTAL CONSIDERATIONS

Note: for many questions, a state rule/Applicant's Handbook Volume I (AH I) section is cited to assist the applicant in addressing these questions. However, additional Federal criteria may apply.

1. Elimination or Reduction of Impacts (Avoidance and Minimization). Describe measures taken to eliminate or reduce impacts to wetlands and other surface waters (*Refer to AH I Section 10.2.1*).
Please see attachment A section 4.2
2. Fish, Wildlife, Listed Species and their Habitats. Provide results of any wildlife assessments that have been conducted on the project site and provide any comments pertaining to the project from the Florida Fish and Wildlife Conservation Commission and/or the U.S. Fish and Wildlife Service (*Refer to AH I Section 10.2.2*). Please see attachment A section 4.3, 4.4, & table A-5
3. Water quantity impacts to wetlands and other surface waters (*Refer to AH I Section 10.2.2.4 and AH II*).

- a. Does the activity include a proposed stormwater water management system with a control elevation different than the wetland normal pool elevation(s) of existing or proposed created wetlands or other surface waters? **No**
 - b. If yes to (a), provide documentation (e.g. drawdown assessment or other methods) that shows the proposed surface water management system will not change the hydroperiod of the existing or created wetland or other surface water. **n/a**
4. Public Interest Test. Please describe how the proposed activity will ***not be contrary*** to the public interest, OR if such an activity significantly degrades or is located within an Outstanding Florida Water (OFW), that the regulated activity will be ***clearly in*** the public interest (*Refer to AH I Section 10.2.3*).
- a. Please describe how the project will be designed to avoid adverse affects to public health, safety, or the welfare or the property of others. **See attachment A**
 - b. Please describe how the project will be designed to avoid adverse affects to the conservation of fish and wildlife, including endangered or threatened species, or their habitats.
See attachment A section 6.0
 - c. Please describe how the project will be designed to avoid adverse affects to navigation or the flow of water or cause harmful erosion or shoaling.
See attachment A section 3.0
 - d. Please describe how the project will be designed to avoid adverse affects to the fishing or recreational values or marine productivity in the vicinity of the activity.
See attachment A section 4.4
 - e. Will the project be of a temporary or permanent nature?
Permanent
 - f. Please describe how the project will be designed to avoid adverse impacts to significant historical and archaeological resources, under the provisions of section 267.061, F.S.
n/a
 - g. Please describe how the project will be designed to avoid adverse affects to the current condition and relative value of functions being performed by areas affected by the proposed regulated activity. **See attachment A section 5.0**
5. Water Quality. Provide a description of how water quality will be maintained in wetlands and other surface waters that will be preserved or will remain undisturbed, both on and offsite. Please address both short-term (such as during construction) and long-term water quality considerations (*Refer to AH I Section 10.2.4*). **Please see attachment A section 6.2 Construction Pollution Prevention.**
6. Class II Waters; Waters approved for shellfish harvesting (*Refer to AH I Section 10.2.5*).
- a. Will the project occur in Class II that are NOT approved for shellfish harvesting? If yes, please provide a plan or procedure detailing the measures to be taken to meet the requirements of *AH I Section 10.2.5(a)*. **No**
 - b. Is the project located adjacent to or in close proximity to Class II waters? If yes, please provide a plan or procedure detailing the measures to be taken to meet the requirements of *AH I Section 10.2.5(b)*. **No**

- c. Is the project located in Class II or Class III waters that are classified as “approved”, “restricted”, “conditionally approved”, or “conditionally restricted”? If yes, demonstrate that the project meets the requirements of *AH I Section 10.2.5(c)*. **No**

7. Vertical seawalls. Are vertical seawalls proposed in an estuary or lagoon as part of the project? If yes, please describe how the project meets the requirements of *AH I Section 10.2.6*.

No

8. Secondary Impacts (*AH I Section 10.2.7*).

- a. Will an upland buffer, with a minimum width of 15' and an average width of 25', be provided between the proposed activities and existing wetlands or wetlands to be preserved, enhanced, restored, or created? Provide the location and dimension of all buffers on the plans. n/a If not, demonstrate that secondary impacts will not occur or how they will be offset.

n/a

- b. If listed species are present or may be present then coordination with wildlife agencies is needed. Have you coordinated with the FFWCC and/or USFWS? If so, please provide correspondence from the wildlife agencies indicating concurrence with the species management plan(s).

See attachment A section 6.0

- c. What measures will be taken to avoid impacts to wetland-dependent wildlife and/or listed species that use uplands for nesting or denning?

There are no proposed impacts to wetlands and there are no nests at the CCEC also see attachments C & D

- d. Describe whether there are any other relevant activities that are very closely linked and causally related to any proposed dredging or filling in wetlands or other surface waters that have the potential to cause impacts to significant historical and archaeological resources.

n/a

- e. Are there additional future phases or extensions of the proposed activities that are not shown? If yes, please describe.

n/a

9. Cumulative Impacts. Is the proposed mitigation located within the same drainage basin (*Refer to AH I Figures 10.2.8.1 – 10.2.8.5*) as the proposed wetland impacts? n/a If not, please submit a Cumulative Impact Evaluation in accordance with *AH I Section 10.2.8*.

10. Mitigation Plan (*Refer to AH I Section 10.3*). **Mitigation plan will be submitted under different cover.**

- a. If a mitigation bank is proposed to offset wetland/other surface water impacts, provide:

- i. the name of the bank: n/a . A letter of reservation from the banker will be required once the application has been evaluated.
- ii. If the mitigation bank was assessed using UMAM, provide UMAM worksheets for impact area(s). If the bank was assessed using a method other than UMAM, then prepare the impact assessment using the same method.

n/a

- b. If mitigation is proposed to offset wetland/other surface water impacts, please provide a mitigation plan that includes, at a minimum, the following:

- i. ☐ Proposed mitigation narrative:

- (1) ☐ Describe the current and proposed condition for each type of mitigation component (restoration, enhancement, creation, preservation), including:

- (a) ☐ Describe current and proposed vegetation

- (b) ☐ Describe current and proposed hydrologic conditions for the proposed mitigation.
 - (c) ☐ Describe the soil types from NRCS maps and confirm if actual soil conditions appear to match.
- (2) ☐ Provide details of the proposed construction/mitigation activities including phasing and timing, as appropriate.
- (3) ☐ Identify measures that will be implemented during and after construction to avoid adverse impacts related to the proposed activities.
- (4) ☐ A mitigation implementation and monitoring schedule with dates.
 - ☐ Identify the success criteria.
 - ☐ Describe the anticipated site conditions in and around the mitigation area after the mitigation plan is successfully implemented.
- (7) ☐ Provide a comparison of current fish and wildlife habitat to expected habitat after the mitigation plan is successfully implemented.
- ii. ☐ Provide a Management Plan that includes, as appropriate, aspects of operation and maintenance, including water management practices, vegetation establishment, exotic and nuisance species control, fire management, and control of access.
- iii. ☐ Maps:
 - (1) ☐ Soil map (include soil names/codes, hydrologic soil groups and hydric soil types).
 - (2) ☐ Topographic map of the mitigation area and adjacent contributing and receiving areas.
 - (3) ☐ Hydrologic features map of the mitigation area and adjacent contributing and receiving areas.
 - (4) ☐ Vegetative communities map (using FLUCCS or other appropriate classification system).
 - (5) ☐ For all maps, identify source.
- iv. Provide the necessary supporting information for the application of sections 62-345.400 - .600 (Uniform Mitigation Assessment Method (UMAM)). To meet this requirement, submittal of UMAM worksheets is acceptable for impact and mitigation areas.
- v. If onsite and/or offsite applicant-responsible mitigation is proposed, submit a draft Conservation Easement document or other form of restrictive covenant that provides for protection of the mitigation area in perpetuity. Standard forms, as described in subsection 62-330.301(6), F.A.C., are available from the Agency or on its website.
- vi. If onsite and/or offsite applicant-responsible mitigation is proposed, submit a cost estimate for completing the mitigation, including monitoring and maintenance.
- vii. If onsite and/or offsite applicant-responsible mitigation is proposed and the proposed mitigation exceeds \$25,000, please provide a draft financial assurance document.
- viii. Identify the entity responsible for monitoring, maintenance and long-term stewardship of the mitigation area (i.e. the landowner or homeowner association, not the consultant or contractor that will do the work).

PART 3: PLANS

PLANS: The information listed in the checklist below represent the typical information required on the submitted project plans. The Plans checklists in each application section are cumulative unless otherwise noted. Separate plans for each application section are not required.

1. ☒ Include the following on the construction plans and cross sections:
 - a. ☒ An Existing Conditions sheet showing the entire project and wetland/other surface water boundaries. Include the following: Acreage and type (herbaceous, forested or other surface water) of each wetland/other surface water.
 - b. ☒ A Proposed Conditions sheet showing the entire project and wetland/other surface water boundaries with construction plan overlay.
 - c. ☐ A Proposed Wetland Impact sheet that include the following: **There are no proposed wetland impacts**
 - i. ☐ Acreage and type (herbaceous, forested or other surface water) of each wetland/other surface water to be impacted.
 - ii. ☐ Proposed upland buffers with dimensions.
 - iii. ☐ Identify the seasonal high water and wetland normal pool elevations on the plans.
 - iv. ☐ Separately identify WMD/FDEP and USACE wetland/other surface water impacts if different.
 - d. ☐ Include wetland boundaries on all construction plan sheets.
2. ☐ If onsite and/or offsite applicant-responsible mitigation is proposed, submit mitigation permit plans and cross sections including, at a minimum: **Mitigation plan will be submitted under different cover**
 - a. ☐ existing conditions plan sheet identifying upland and wetland communities and acreage of each, topography, drainage patterns, and location of cross-section detail.
 - b. ☐ proposed conditions plan sheet identifying proposed improvements by type (restoration, enhancement, creation, preservation), acreage of each, topography, drainage patterns, and location of cross-section detail.
 - c. ☐ monitoring plan sheet including proposed improvements, monitoring transects, photostations, and mitigation signage (if applicable).
 - d. ☐ cross-section and/or profile detail(s) sheet(s) including representative section of each type of mitigation component. Include existing and proposed conditions and representative elevations.
 - e. ☐ planting schedule, plant species including common and scientific names divided into three sections (canopy, shrub, herbaceous) by mitigation component, quantity, spacing, size, and elevation range.

TABLE 1 - PROJECT WETLAND (WL) AND OTHER SURFACE WATER (SW) AND IMPACT SUMMARY

WL & SW ID	UMAM ASSESSMENT AREA NAME(S)	WL & SW TYPE	WL & SW SIZE (acres)	WL & SW NOT IMPACTED (acres)	TEMPORARY WL & SW IMPACTS		PERMANENT WL & SW IMPACTS		MITIGATION ID
					IMPACT SIZE (acres)	IMPACT TYPE	IMPACT SIZE (acres)	IMPACT TYPE	
PROJECT TOTALS:									

Comments:

Codes (multiple entries per cell not allowed):

- Wetland & Surface Water ID: Include ID on submitted wetland and surface water impact maps
- Wetland Type: from an established wetland classification system
- Impact Type: D=dredge; F=fill; H=change hydrology; S=shading; C=clearing; O=other

TABLE 2 - PROJECT ON-SITE MITIGATION SUMMARY

MITIGATION ID	UMAM ASSESSMENT AREA NAME(S)	TARGET TYPE	CREATION	RESTORATION	ENHANCEMENT	WETLAND PRESERVE	UPLAND PRESERVE	OTHER
			AREA (acres)	AREA (acres)	AREA (acres)	AREA (acres)	AREA (acres)	AREA (acres)
PROJECT TOTALS								

COMMENTS:

Codes (multiple entries per cell not allowed):

- Target Type or Type=target or existing habitat type from an established wetland classification system or land use classification for non-wetland mitigation

TABLE 3 - PROJECT OFF-SITE MITIGATION SUMMARY

MITIGATION ID	UMAM ASSESSMENT AREA NAME(S)	TARGET TYPE	CREATION	RESTORATION	ENHANCEMENT	WETLAND PRESERVE	UPLAND PRESERVE	OTHER
			AREA (acres)	AREA (acres)	AREA (acres)	AREA (acres)	AREA (acres)	AREA (acres)
PROJECT TOTALS								

COMMENTS:

Codes (multiple entries per cell not allowed):

- Target Type or Type=target or existing habitat type from an established wetland classification system or land use classification for non-wetland mitigation

TABLE 4 - SHORELINE STABILIZATION

Stabilization	Linear Ft. New	Linear Ft. Replaced	Linear Ft. Repaired	Linear Ft. Removed	Slope H: V:	Toe Width (Ft.)
Natural Vegetation (living shoreline)					N/A	N/A
Rip Rap + Vegetation						
Rip Rap						
Seawall + Rip Rap						
Vertical Seawall						
Other Shoreline Stabilization Type						

Size of Rip Rap

Type of Rip Rap

SECTION F: APPLICATION FOR AUTHORIZATION TO USE STATE-OWNED SUBMERGED LANDS

Instructions: If you were referred to this section from Section A, please provide the following additional information. Please note that if your proposed project is on state-owned submerged lands and the below requested information is not provided, your application will be considered incomplete. All items required under this section are in addition to those required under other sections, as applicable.

PART 1: TYPE OF AUTHORIZATION REQUESTED

Please check the most applicable activity that applies to your project(s):

A. Exceptions: The following activities do not require authorization to use state-owned submerged lands. *If you are certain that your project (including all components/phases thereof) qualifies, please indicate accordingly, below, and no further action is required to complete this section.*

- ☐ Construction or maintenance of a county water or sewer system under Section 153.04 F.S.
- ☐ Removal of material from the area adjacent to an intake or discharge structure under 403.813(1)(f), F.S.
- ☐ Removal of organic detrital material under Section 403.813(1)(r) or (u), F.S.
- ☐ Construction of floating vessel platforms under Section 403.813(1)(s), F.S.
- ☐ Trimming or alteration of mangroves under Sections 403.9321 through 403.9334, F.S.

B. Consent by Rule: Except for activities authorized under Section 253.77(4), F.S., no application or written authorization for the use of state-owned submerged lands is required for an activity that complies with the criteria listed in subparagraphs 18-21.005(1)(b)1. through 5., F.A.C., and that is exempt from the requirements of obtaining a permit under the provisions of:

- Section 403.813(1), F.S., paragraphs (a); (b), provided that the structure is the only dock or pier on a parcel and it is not a private residential multi-family dock with three or more slips.
- Section 403.813(1), F.S., paragraphs (c); (d); (e); (f), provided that no severance fee is required under Rule 18-21.011, F.A.C., and the existing activity has a valid Board of Trustees authorization.
- Section 403.813(1), F.S., paragraphs (g); (h); (i), provided that no private residential multi-family dock or pier is constructed.
- Section 403.813(1), F.S., paragraph (k), provided that any channel markers delineate existing and authorized or permitted navigation channels.

Such activities must still comply with the General Conditions for Authorizations under subsection 18-21.004(7), F.A.C. Agency staff will determine whether the proposed project qualifies for Consent by Rule. Be advised that if your project does not qualify for an Exception or Consent by Rule for one of the reasons listed above, then it will require one of the forms of authorization listed below.

C. Letter of Consent: Written authorization is required for each of the following activities:

- ☐ One minimum-size private residential single-family dock (see definition in Rule 18-21.003, F.A.C.).



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- ☐ Private residential single-family or multi-family docks, piers, boat ramps, and similar existing and proposed activities that cumulatively preempt no more than 10 square feet of sovereignty submerged land for each linear foot of the applicant's riparian shoreline, along sovereignty submerged land on the affected waterbody within a single plan of development (see "preempted area" definition in Rule 18-21.003, F.A.C.).
- ☐ Private channels that provide access to an upland single-family or multi-family residential parcel and that measures no more than 10 square feet of sovereignty submerged land for each linear foot of the applicant's riparian shoreline along sovereignty submerged land on the affected waterbody within a single plan of development.
- ☐ Seawalls, bulkheads, or other shoreline stabilization structures no more than three feet waterward of mean or ordinary high water.
- ☐ Placement, replacement, or repair of riprap, groins, breakwaters, or intake and discharge structures no more than ten feet waterward of the line of mean or ordinary high water.
- ☐ Restoration and nourishment of naturally occurring sandy beaches, including borrow areas to be used for five years or less.
- ☐ Artificial reefs or fish attractors that are constructed for public use.
- ☐ Public docks or piers that are exempt from permit requirements under Section 403.813(1), F.S., or that qualify as minimum-size docks or piers or are less than or equal to the 10:1 preempted area to shoreline ratio; public boat ramps; public channels; or public swimming areas, provided that all such structures or activities are owned and operated by governmental entities and any revenues collected are used solely for operation and maintenance of the structure or adjacent public recreational facilities.
- ☐ Ski course buoys and ski jumps not associated with revenue-generating water skiing activities.
- ☐ Removal of wrecked, abandoned or derelict vessels or structures.
- ☐ Habitat restoration.

D. Lease: A state-owned submerged land lease is required for the following activities.

- ☐ Private residential single-family or multi-family docks or piers, other docks or piers, boat ramps, or other similar activities that do not qualify for a letter of consent.
- ☐ Private residential multi-family docks designed or used to moor three or more vessels within aquatic preserves.
- ☐ Docks designed or used to moor ten or more vessels in Monroe County.
- ☐ Commercial/industrial docks, as defined in Rule 18-18.004, F.A.C., in Biscayne Bay Aquatic Preserve, as required by paragraph 18-18.006(3)(c), F.A.C.
- ☐ All revenue-generating activities.
- ☐ Oil and gas exploration and development.
- ☐ Open-water mooring fields.
- ☐ Mining.

E. Easement. A state-owned submerged land easement is required for the following public or private activities.

- ☐ Utility crossings and rights of way.
- ☐ Road and bridge crossings and rights of way, including such structures built prior to the need

- to obtain an easement when proposed for modification or repair.
- ☒ Groins, breakwaters, and shoreline protection structures, except when constructed as part of a docking facility that requires a lease.
 - ☐ Public navigation projects other than public channels.
 - ☐ Private residential channels that do not qualify for a letter of consent, and channels that provide access to revenue-generating facilities in uplands.
 - ☐ Oil, gas and other pipelines.
 - ☐ Intake and discharge structures more than 10 feet waterward of the mean or ordinary high water line.
 - ☐ Spoil disposal sites.
 - ☐ Borrow areas that will be used for longer than five years for beach nourishment.
 - ☐ Public water management projects other than public channels.
 - ☐ Treasure salvage (Cultural Resource Recovery).

PART 2: SUBMITTAL REQUIREMENTS

If state-owned submerged lands will be affected by your project, we will notify you in writing, and the items in this section will also be required. For expediency, if you acknowledge or believe that your project affects state-owned submerged lands you may submit the items in the appropriate section of Part 2 prior to receiving written confirmation of state ownership. This will not jeopardize any future claim of ownership.

Unless your proposed project qualifies for an Exception or Consent by Rule, as described in Part 1 A or B, then your application to use state-owned submerged lands must include the following items, as applicable to your project.

A. All applications for Letter of Consent, Lease or Easement must include the following:

- ☒ Satisfactory evidence of sufficient upland interest to the extent required by paragraph 18-21.004(3)(b), F.A.C.
- ☒ Detailed statement of the proposed activity.
- ☒ If dredging is proposed, an estimate of the number of cubic yards of sovereignty materials to be removed showing how the amount was calculated.

B. Applications for a **Letter of Consent** shall also include the following:

- ☐ Multiple boat slip facilities may require an affidavit certifying that the facility will not be a revenue generating/income producing facility.
- ☐ Two copies of a dimensioned site plan drawing(s) with the following requirements:
 - a. Utilizing an appropriate scale on 8 1/2" x 11" size paper;
 - b. Showing the approximate location of the mean high/ordinary high/or safe upland line;
 - c. Showing the location of the shoreline vegetation, if existing;
 - d. Showing the location of the proposed structures and any existing structures;
 - e. Showing the applicant's upland parcel property lines;
 - f. Showing the riparian lines; and
 - g. Showing the primary navigation channels or direction to the center of the affected waterbody.

C. Applications for **Leases** shall also include the following:

- ☐ Lease processing fee as specified in subparagraph 18-21.008(1)(a)8, F.A.C.
- ☐ Location of the proposed activity including: county; section, township and range; affected waterbody; and a vicinity map, preferably a reproduction of the appropriate portion of United States Geological Survey quadrangle map.
- ☐ Two prints of a survey prepared, signed, and sealed by a person properly licensed by the Board of Professional Surveyors and Mappers.
 - a. Use an appropriate scale on 8 1/2" x 11" size paper;
 - b. Show the location of ordinary or mean high water;
 - c. Show the location of the shoreline vegetation, if existing;
 - d. Show the location of the proposed structures and any existing structures;
 - e. Show the applicant's upland parcel property lines;
 - f. Show the primary navigation channels or direction to the center of the affected waterbody
 - g. Show the riparian lines;
 - h. Include a legal description of the preempted area to be leased; and
 - i. For those lease applications in the Florida Keys, indicate the water depths referenced to mean low water within the lease area and out to the navigation channel.
- ☐ Noticing information as required by subsection 18-21.005(3), F.A.C.
- ☐ Billing Information Form, which provides billing information; sales tax information; and other data required in accordance with Section 24.115(4), F.S.
- ☐ Computation of the total square footage of preempted sovereignty land to be leased.

D. Applications for **Easements** shall also include the following:

Easement sketch signed and sealed hard copy and processing fee will be submitted under a different cover

- ☐ Easement processing fee as specified in either (for public easements) paragraph 18-21.009(1)(g), or (for private easements) paragraph 18-21.010(1)(i), F.A.C.
- ☐ Vicinity map.
- ☐ Detailed statement of proposed use and satisfactory evidence of need for installation of telecommunication lines and associated conduits that are subject to the provisions of paragraph 18-21.004(2)(l), F.A.C. If the applicant is a local governing body, the request shall be by official resolution or minutes.
- ☐ Two prints of a survey prepared by a Licensed Florida Surveyor and Mapper in accordance with Chapter 61G17, F.A.C., (see attachment X for survey checklist) and meeting the following requirements:
 - a. Utilizing an appropriate scale on 8 1/2" x 11" size paper;
 - b. Showing boundaries of the parcel sought;
 - c. Showing ownership lines of the riparian uplands;
 - d. Showing the line of ordinary or mean high water;
 - e. Showing the location of the shoreline vegetation, if existing;
 - f. Showing the location of any proposed or existing structures;
 - g. Showing the riparian lines; and
 - h. Legal description and acreage of the parcel sought.
- ☐ Noticing information as required by subsection 18-21.005(3), F.A.C.



April 15, 2016

Tamy Dabu
Project Manager
United States Army Corps of Engineers
400 High Point Drive, Suite 600
Cocoa, FL 32926
tamy.s.dabu@usace.army.mil

RE: Florida Power & Light Company
Cape Canaveral Energy Center
Manatee Heating Area Relocation
Horseshoe Crab Deterrent Wall

Dear Ms. Dabu:

Florida Power and Light (FPL) is pleased to submit our application for the manatee heating area relocation and horseshoe crab deterrent wall at the Cape Canaveral Energy Center (CCEC). The development of this project, which involves marine construction, has been closely coordinated with the agencies (state and federal).

CCEC has been required by the United States Fish and Wildlife Service (USFWS) and Florida Fish and Wildlife Conservation Commission (FWCC) to provide a heated enclosure for manatees when temperatures fall in the Indian River Lagoon. The manatee heating area relocation will move the heated enclosure from the intake canal to a location waterward of the southeast shoreline. This will increase the distance between the enclosure and the plant intake, reduce the risk of manatee impingement, and improve manatee access between the heating area and the broader Indian River Lagoon. With the removal of the sheet piling in the existing manatee heated refuge area, the intake canal water velocity will be lower than what the velocity was prior to the modernization project. Since the new modernized plant only requires 3 out of the 4 circulating water pumps to be running under normal operating conditions the flow has been reduced by 25% as well. The relocated manatee heating area will be dredged and will include a dock and heated water supply piping.

As part of the CCEC cooling water intake system, CCEC operates modified Ristroph traveling screens and an aquatic organism return system, technologies which have been identified by the United States Environmental Protection Agency (EPA) in recent rulemaking as a best technology available (BTA) to reduce aquatic organism impingement and entrainment. In the fall of 2014, FPL installed an underwater fence/barrier in the cooling water intake canal with the purpose of reducing/detering the impingement of horseshoe crabs on the bar screens in the intakes. The deterrent fence was permitted in coordination with the agencies as a demonstration project to help determine potential long-term solutions to this issue. The new proposed horseshoe crab deterrent barrier is an enhanced, permanent

exclusion barrier whose design reflects observations from the demonstration project, with a new location designed to direct the crabs away from the intake so as not to "trap" the crabs within the barge unloading area that is bound by the "mole" on the north and the jetty on the south side. After the new crab deterrent wall is constructed and operational, the temporary deterrent fence will be removed.

FPL has closely evaluated the project for compliance with state and federal regulations, including threatened and endangered species requirements. The project has been developed to comply with the following:

- Project is the least environmentally damaging practicable alternative (LEDPA) under Section 404 of the Clean Water Act (CWA);
- Relocated manatee heating area meets requirements previously established in the CCEC Florida Department of Environmental Protection (FDEP) Site Certification and NPDES permit;
- Minor project construction supports are not likely to adversely affect (NLAA) determination for sea turtles and smalltooth sawfish, based on the Florida Statewide Programmatic Opinion (SWPBO);
- Project complies with standard construction conditions for in-water work for manatees, sea turtles and smalltooth sawfish.
- FDEP PA 08-53A Conditions of Certification

Since FPL has funded construction for the 2016 warm water season, time is of the essence in the review of this application. If authorizations are delayed, FPL may not be able to confirm at this time that funding will be available in 2017. Technology costs, as delineated in CWA sections 301 and 306, were considered by USEPA in establishing the practicable cooling water intake standards which this project is intended to address.

FPL specifically seeks programmatic consultation and concurrence with its initial NLAA determination for sea turtles and smalltooth sawfish, in order to complete the National Marine Fisheries Service (NMFS) consultation within 10 days. Supporting documentation is provided in the application package.

Application documents are enclosed for your review with this letter. If you have and questions or need additional information, please contact Tim Powell at (561)694-4015 or timothy.powell@fpl.com.

Sincerely,



David Fawcett
PGD Technical Services Manager, Environmental
FPL - Power Generation Division
David.Fawcett@fpl.com

Tamy Dabu
United States Army Corps of Engineers
Page 3

Enclosures:

Individual Permit Application - ENG Form 4345 and Attachments

Electronic copies provided to:

Peter Cocotos, FPL Legal, peter.cocotos@fpl.com

Jonathan Napoli, FPL CCEC Plant Manager, jonathan.napoli@fpl.com

Kim Eisele, FDEP Central District, kim.eisele@dep.state.fl.us

Cindy Mulkey, FDEP Siting Office, SCO@dep.state.fl.us

U.S. ARMY CORPS OF ENGINEERS
APPLICATION FOR DEPARTMENT OF THE ARMY PERMIT
33 CFR 325. The proponent agency is CECW-CO-R.

Form Approved -
OMB No. 0710-0003
Expires: 30-SEPTEMBER-2015

Public reporting for this collection of information is estimated to average 11 hours per response, including the time for reviewing instructions, searching existing data sources, gathering and maintaining the data needed, and completing and reviewing the collection of information. Send comments regarding this burden estimate or any other aspect of the collection of information, including suggestions for reducing this burden, to Department of Defense, Washington Headquarters, Executive Services and Communications Directorate, Information Management Division and to the Office of Management and Budget, Paperwork Reduction Project (0710-0003). Respondents should be aware that notwithstanding any other provision of law, no person shall be subject to any penalty for failing to comply with a collection of information if it does not display a currently valid OMB control number. Please DO NOT RETURN your form to either of those addresses. Completed applications must be submitted to the District Engineer having jurisdiction over the location of the proposed activity.

PRIVACY ACT STATEMENT

Authorities: Rivers and Harbors Act, Section 10, 33 USC 403; Clean Water Act, Section 404, 33 USC 1344; Marine Protection, Research, and Sanctuaries Act, Section 103, 33 USC 1413; Regulatory Programs of the Corps of Engineers; Final Rule 33 CFR 320-332. Principal Purpose: Information provided on this form will be used in evaluating the application for a permit. Routine Uses: This information may be shared with the Department of Justice and other federal, state, and local government agencies, and the public and may be made available as part of a public notice as required by Federal law. Submission of requested information is voluntary, however, if information is not provided the permit application cannot be evaluated nor can a permit be issued. One set of original drawings or good reproducible copies which show the location and character of the proposed activity must be attached to this application (see sample drawings and/or instructions) and be submitted to the District Engineer having jurisdiction over the location of the proposed activity. An application that is not completed in full will be returned.

(ITEMS 1 THRU 4 TO BE FILLED BY THE CORPS)

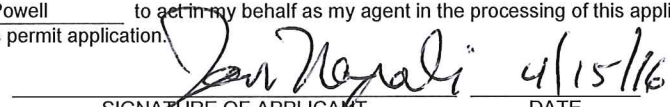
1. APPLICATION NO.	2. FIELD OFFICE CODE	3. DATE RECEIVED	4. DATE APPLICATION COMPLETE
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(ITEMS BELOW TO BE FILLED BY APPLICANT)

5. APPLICANT'S NAME First - Jonathan Middle - Last - Napoli Company - Florida Power and Light E-mail Address - Jonathan.napoli@fpl.com	8. AUTHORIZED AGENT'S NAME AND TITLE (agent is not required) First - Timothy Middle - Last - Powell Company - Florida Power and Light E-mail Address - Timothy.Powell@fpl.com
6. APPLICANT'S ADDRESS: Address- 6000 North U.S. Highway 1 City - Cocoa State - FL Zip - 32927 Country - USA	9. AGENT'S ADDRESS: Address- 700 Universe Blvd City - Juno Beach State - FL Zip - 33408 Country - USA
7. APPLICANT'S PHONE NOS. w/AREA CODE a. Residence b. Business c. Fax 321-639-5510	10. AGENTS PHONE NOS. w/AREA CODE a. Residence b. Business c. Fax (561)694-4015

STATEMENT OF AUTHORIZATION

11. I hereby authorize, Timothy Powell to act in my behalf as my agent in the processing of this application and to furnish, upon request, supplemental information in support of this permit application.


SIGNATURE OF APPLICANT

4/15/16
DATE

NAME, LOCATION, AND DESCRIPTION OF PROJECT OR ACTIVITY

12. PROJECT NAME OR TITLE (see instructions) Horseshoe Crab Deterrent Wall Construction and Manatee Heating Area Relocation		
13. NAME OF WATERBODY, IF KNOWN (if applicable) Indian River Lagoon	14. PROJECT STREET ADDRESS (if applicable) Address 6000 North U.S. Highway 1 City - Cocoa State- FL Zip- 32927	
15. LOCATION OF PROJECT Latitude: °N 28.467712 Longitude: °W -80.797660		
16. OTHER LOCATION DESCRIPTIONS, IF KNOWN (see instructions) State Tax Parcel ID Municipality Section - 19 Township - 23S Range - 35E		

17. DIRECTIONS TO THE SITE

To access the site from Jacksonville, take I-95 South; exit onto SR 528 and head east; turn north onto US Highway 1; turn east into project site at 6000 US Highway 1, in Cocoa, Brevard County, Florida.

18. Nature of Activity (Description of project, include all features)

Please see the Project Description located in Attachment A of this application package.

19. Project Purpose (Describe the reason or purpose of the project, see instructions)

Please see the Purpose and Need located in Attachment A of this application package.

USE BLOCKS 20-23 IF DREDGED AND/OR FILL MATERIAL IS TO BE DISCHARGED

20. Reason(s) for Discharge

Please see the Project Description located in Attachment A of this application package.

21. Type(s) of Material Being Discharged and the Amount of Each Type in Cubic Yards:

Type Amount in Cubic Yards	Type Amount in Cubic Yards	Type Amount in Cubic Yards
Vinyl sheetpile: 606.73 CY	Wood pilings: 11.26 CY	Refer to Project Description for others

22. Surface Area in Acres of Wetlands or Other Waters Filled (see instructions)

Acres 0.06

or

Linear Feet 1045 LF

23. Description of Avoidance, Minimization, and Compensation (see instructions)

Please see the Project Description located in Attachment A of this application package.

24. Is Any Portion of the Work Already Complete? ☐ Yes ☒ No IF YES, DESCRIBE THE COMPLETED WORK

25. Addresses of Adjoining Property Owners, Lessees, Etc., Whose Property Adjoins the Waterbody (if more than can be entered here, please attach a supplemental list).

a. Address- Please see Attachment F for list of adjoining property owners

City - State - Zip -

b. Address-

City - State - Zip -

c. Address-

City - State - Zip -

d. Address-

City - State - Zip -

e. Address-

City - State - Zip -

26. List of Other Certificates or Approvals/Denials received from other Federal, State, or Local Agencies for Work Described in This Application.

AGENCY	TYPE APPROVAL*	IDENTIFICATION NUMBER	DATE APPLIED	DATE APPROVED	DATE DENIED

* Would include but is not restricted to zoning, building, and flood plain permits

27. Application is hereby made for permit or permits to authorize the work described in this application. I certify that this information in this application is complete and accurate. I further certify that I possess the authority to undertake the work described herein or am acting as the duly authorized agent of the applicant.

SIGNATURE OF APPLICANT

DATE

SIGNATURE OF AGENT

DATE

The Application must be signed by the person who desires to undertake the proposed activity (applicant) or it may be signed by a duly authorized agent if the statement in block 11 has been filled out and signed.

18 U.S.C. Section 1001 provides that: Whoever, in any manner within the jurisdiction of any department or agency of the United States knowingly and willfully falsifies, conceals, or covers up any trick, scheme, or disguises a material fact or makes any false, fictitious or fraudulent statements or representations or makes or uses any false writing or document knowing same to contain any false, fictitious or fraudulent statements or entry, shall be fined not more than \$10,000 or imprisoned not more than five years or both.

FLORIDA POWER AND LIGHT (FPL) CAPE CANAVERAL ENERGY CENTER (CCEC)

MANATEE HEATING AREA RELOCATION AND HORSESHOE CRAB DETERRENT WALL

United States Army Corps of Engineers

Individual Permit Application

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Attachment A – Project Description

1.0 Introduction

Florida Power and Light (FPL) is proposing in-water modifications at the Cape Canaveral Energy Center (CCEC). The proposed project would relocate the existing manatee heating area and construct a permanent, submerged horseshoe crab deterrent wall to replace the existing temporary barrier fence. The manatee heating area would be relocated from its existing enclosure in the intake canal to a new enclosure approximately 1,000 feet waterward of the southeast shoreline, east of the current location.

The project site is located at 6000 US Highway 1, in Cocoa, in Section 19, Township 23 South, Range 36 East, in Brevard County, Florida. The project is located within a cooling water intake channel and jetty embayment that is contiguous with the Indian River Lagoon. To access the site from Jacksonville, take I-95 South; exit onto SR 528 and head east; turn north onto US Highway 1; turn east into project site at 6000 US Highway 1, in Cocoa, Brevard County, Florida.

This document is part of an application package which comprises the following:

- Application Form 4345
- Attachment A – Project Description (e.g., this document)
- Attachment B – Seagrass Surveys
- Attachment C – Manatee Forms and Supporting Documents
- Attachment D – NMFS Supporting Documents
- Attachment E – Report of Subsurface Explorations
- Attachment F – Adjacent Property Owners
- Attachment G – Permit Drawings
- Attachment H – Construction Drawings
- Attachment I - Easement Sketch (signed and sealed hard copies will be under a different cover)

2.0 Purpose and Need

2.1 Manatee Heating Area Relocation

FPL is required to provide a heated enclosure for manatees when temperatures fall in the Indian River Lagoon. The existing manatee heating area is located in a divided area of the intake canal directly across from the power plant cooling water intake structures. The manatee heating area relocation will move the heated enclosure from the intake canal to waterward of the southeast shoreline. This will increase the distance between the enclosure and the plant intake, reduce the risk of manatee impingement, and improve manatee access between the heating area and the broader Indian River Lagoon. The relocated manatee heating area will be dredged and will include a maintenance dock and water supply piping.

Maintenance and monitoring access to the new manatee heating area will be provided through the existing jetty, which will be improved with a maintenance dock. New sheetpile walls will be installed in order to enclose the relocated manatee heating area against the jetty. Pipe routing will be provided to discharge warm water into the west end of the heating area from an east end intake structure. Prior to service, the proposed manatee heating area will be dredged to allow manatee movement in the enclosure. The relocated manatee heating area has been designed and modeled to provide equivalent temperature conditions to the existing manatee heating area.

Relocation of the manatee heating area is a refinement to the existing warm water aggregation area (WWAA) at CCEC. Construction of the manatee heating area will be overseen by a biological observer

Attachment A – Project Description

and will follow standard manatee and sea turtle conditions for construction of in-water work. A seagrass survey has been completed for the preparatory dredging area, and a small area of sparse seagrasses will be protected from dredging through use of a buffer and turbidity controls. The piping route for connection to the heaters has been developed to avoid impacts to fringing mangroves.

2.2 Horseshoe Crab Deterrent Wall

As part of CCEC cooling water intake system, CCEC operates modified traveling screens and a fish handling and return system, technologies which have been identified by United States Environmental Protection Agency (USEPA) in recent rulemaking as best technology available options to reduce fish impingement and entrainment.

The horseshoe crab has a natural tendency to move in the direction of water flow, and therefore crabs travel the bottom of the intake channel until they reach the intake structures. To deter this activity, CCEC installed a temporary galvanized fence as a demonstration project intended to reduce horseshoe crab entry to the cooling water intake at the CCEC. Subsequently, the fence was modified, after agency consultation, to include an angled lip at the top to minimize crab movement over the fence. After more than a year of operation of the fence, FPL has evaluated the results and consulted with leading experts on horseshoe crab behavior. Consequently, FPL proposes to install a permanent engineered structure wall (“horseshoe crab deterrent wall”) whose design is based on the observations from the demonstration project. The wall has a diagonal alignment across the intake channel outside the embayment, to direct crab movement according to their natural tendency to follow flow and safely exit the intake channel area.

Implementation of the horseshoe crab deterrent wall is an enhancement to CCEC’s shellfish protection efforts. Construction of the horseshoe crab deterrent wall will be overseen by a biological observer and will follow standard manatee and sea turtle conditions for construction of in-water work. There is a minor, unavoidable impact to sparse seagrasses since the horseshoe crab deterrent wall must extend into shallow water to effectively deter horseshoe crabs.

3.0 Project Description

3.1 Manatee Heating Area

The existing 0.78 acre manatee heating area is located on the south side of the cooling water intake canal. The existing manatee heating area is bounded by a sheetpile divider wall to the north, and the FPL-owned, industrial site uplands to the south. The existing 720.9 foot long sheetpile divider wall that encloses the northern and eastern boundary of the existing manatee heating area will be removed for re-use in the relocated manatee heating area.

The existing jetty will form the southern boundary of the 0.77 acre relocated heating area. A 705-foot long, 12-inch wide vinyl sheetpile wall, totaling approximately 705 square feet, will be installed to the north of the jetty to enclose the heated area. A 10-foot wide by 6-foot deep manatee entrance to the heating area will be located on the northeastern side of the heating area, adjacent to the north-oriented portion of the existing jetty. Wood pilings measuring 8-inches in diameter will be installed on 17.5-foot centers for support along the sheetpile wall. A 4-foot wide by 6-foot deep removable maintenance gate will be constructed to support FPL access into the enclosure for maintenance, and for water circulation during warm weather when the enclosure is not heated.

Attachment A – Project Description

The western boundary of the manatee heating area will include a marginal dock to be installed approximately 138 feet to the east of the FPL-owned uplands. The maintenance dock will measure 4 feet wide by 52.3 feet long (209 square feet), and will be placed on 10 wood pilings on 6-foot centers. Pilings will measure 8 inches in diameter. The wood pilings will be sunk 8.5 feet below the existing grade, with 3.7 foot of their total length between the ordinary high water mark (OHW) and the existing grade.

Two pipes will be lain in the manatee heating area, one for heated water discharge and one for water supply intake. Pipes will be one 16-inch diameter high density polyethylene (HDPE) pipe and one 20-inch diameter HDPE pipe.

Dredging of the proposed and existing manatee heating areas is proposed as part of this project. Maintenance dredging in the existing manatee heating area will remove approximately 6 inches of sediment, in an area of 0.43 acres, totaling 353 cubic yards (CY) removed. Preparatory dredging in the proposed manatee heating area will remove sediment to a depth of -7 feet, in an area measuring 0.65 acres, for a total of 3,485 CY removed. The intake canal and part of the relocated manatee heating area were permitted for dredging under USACE permit number SAJ-1995-4192. This permit authorized 49,450 CY of spoil removal, and was scheduled to expire on September 11, 2006.

Dredged material will be disposed of in a landfill unless agreed by the owner to remain onsite. The applicant will perform any required testing prior to disposal of sediments. A 0.5 acre and a 0.15 acre temporary upland spoil handling areas will be located on the CCEC site. These areas will hold spoil within berms or retaining walls. Utilization of the temporary upland spoil areas will not impact wetlands or waters of the U.S, and dewatering discharges from these areas will meet state water quality standards.

Navigation buoys will be placed east of the horseshoe crab deterrent wall (discussed below) and contain navigation and endangered species signage.

A discussion of steps taken to reduce construction-related impacts is included in the Construction Activities section of this document. Table A-1 summarizes the relocated manatee heating area construction. Table A-2 summarizes the dredging activity.

Attachment A – Project Description

Table A-1. Manatee Heating Area Construction

Sheetpile Wall	Length	705 linear feet
	Width	12 inches
	Draft	None
	Average Height Between OHW and Ex. Grade	4.74 feet
	Sheetpile Depth Below Ex. Grade	12.5 feet
	Wood Pilings	8-inch diameter on 17.5-foot centers
	Wood Piling Depth Below Ex. Grade	14.5 feet
Dock	Length	52 feet
	Width	4 feet
	Wood Pilings	8-inch diameter wood on 8-foot centers
	Height Between OHW and Ex. Grade	3.74 foot
	Wood Piling Depth Below Grade	8.5 foot
Pipe	16"Diameter HDPE Length (In-Water)	167 linear feet
	20" Diameter HDPE Length (In-Water)	720 linear feet

Note: Table A-6 includes fill quantities for the sheetpile wall, dock and piping.

Table A-2. Dredge Dimensions

Proposed Dredging Areas	Average Dredge Depth to be Removed (Ft)	Area (Ac)	Volume (CY)
Relocated Manatee Heating Area	2.5	0.65	3,485
Existing Manatee Heating Area	0.5	0.43	353
Total		1.08	3,838

3.2 Horseshoe Crab Deterrent Wall

The horseshoe crab deterrent wall is a submerged 340-feet by 10-inch wide, 42-inch tall permanent, engineered exclusion barrier. The horseshoe crab deterrent wall will be constructed from corrugated vinyl sheetpile with a smooth outer HDPE/or vinyl panel, angled against the current with a mounted overhang barrier. It will extend 340 feet from the peninsula to the northern end of the existing sheet pile jetty. The smooth HDPE paneling will also be installed on 101 feet of the adjoining the jetty wall to the south. This will create a smooth surface where horseshoe crabs expressing their natural tendency to traverse the flow path, will be guided by the current south along the deterrent, past the existing jetty, and deposited south of the project area, safely away from the plant's intake channel without crab exposure to the corrugations in the sheetpile. The minimal space between the existing jetty wall and the proposed crab deterrent wall will be filled with gravel.

Attachment A – Project Description

The horseshoe crab deterrent wall includes the following design features:

- Compared to the galvanized fence demonstration project, the wall has a new location east (i.e., upstream) of the jetty, to prevent horseshoe crab entrapment in the jetty embayment;
- The wall has a diagonal alignment across the intake channel, to direct crab movement according to their natural tendency to follow flow and safely exit the channel area;
- The wall is comprised of smooth hard surfaces to discourage climbing and prevent entrapment;
- The structurally engineered wall will be set into the substrate at an 10° angle against flow, to require crabs to move against flow (move against their natural tendency) if they attempt to climb;
- The wall has a 16-inch lip angled at 120° against flow at the top, capped with 3-inch diameter PVC pipe to deter piggybacking and floating crabs from passing;
- Sheetpile wall segments requiring external mounting will be attached via rounded carriage bolts, to prevent harm to aquatic life; and,
- Maintenance of 8-foot draft for vessel passage.

Total permanent impacts resulting from the installation of the horseshoe crab deterrent wall will result from approximately 492 square feet (164 CY) of fill from the sheetpile and associated riprap. Riprap will be placed for stabilization at the shoreline at the north end of the horseshoe crab deterrent wall. A discussion of steps taken to reduce construction-related impacts is included in the Construction Activities section of this document. Table A-3 summarizes the horseshoe crab deterrent wall construction.

Table A-3. Horseshoe Crab Deterrent Wall Structure Dimensions

Horseshoe Crab Deterrent Wall	Length	340 linear feet
	Width	10 inches
	Draft	8 feet
	Typical Submerged Height Between OHW and Grade	3.5 feet
	Depth Below Grade	8 feet
	Angle from Substrate Surface	80°

Note: Table A-6 includes fill quantities for the horseshoe crab deterrent wall.

4.0 Site Analysis and General Project Design

4.1 Wetlands and Waters of the U.S.

The approximately 13.3-acre project area is primarily located within the Indian River Lagoon and consists mainly of open water, within a constructed intake channel embayment. Two buried water supply pipes will be routed in an approximately 0.3 acre area of industrial developed uplands at the plant, and 0.5 and 0.15 acre temporary upland spoil areas will be located on the site. The marine area is classified as E1UBL (Cowardin Class Abbreviations: Estuarine (E), Subtidal (1), Unconsolidated Bottom (UB), Subtidal (L)) by the USFWS National Wetland Inventory (NWI). The substrate is considered clayey fine sand, fine sand, and silty shell hash barren to sparsely vegetated.

Attachment A – Project Description

The entire project site would be considered jurisdictional under Section 404 of the Clean Water Act (CWA) and Section 10 of the Rivers and Harbors Act of 1899 (33 USC 403), and therefore under the jurisdiction of the United States Army Corps of Engineers.

Wetlands are located on land, along the peninsula which bounds the project area to the north. No portion of these wetlands will be impacted by the proposed project.

Table A-4 summarizes the total proposed dredge/fill impacts to aquatic resources resulting from the proposed project. A more comprehensive and detailed description of impacts resulting from the proposed project is in the Impacts to Waters of the U.S., Including Wetlands section below.

Table A-4. Summary Dredge/Fill Impacts to Aquatic Sites

Type of Aquatic Resource	Total Area (Ac)	Proposed Impacts (CY)					Area Avoided (Ac)
		Dredge Area (Ac)	Dredge Volume (CY)	Fill Area (Sq. Ft)	Fill Area (Ac)	Fill Volume (CY)	
Section 404/10 Open Water	9.85	1.08	3,838	2,527	0.06	677	8.72
Total Aquatic Resources	9.85	1.08	3,838	2,527	0.06	677	8.72

4.2 Vegetation and Habitat Impacts – Avoidance and Minimization

The proposed project site will be constructed predominantly in open water habitat. No impacts to mangroves are proposed to result from this construction project, because the horseshoe crab deterrent wall will terminate before reaching mangroves. Several sparse, widely-spaced mangroves are located in vicinity of the water supply piping route. These mangroves will be avoided during pipe placement. If impacts to mangroves cannot be avoided, permit modification will be requested. No impacts to mangroves will occur without agency approval.

The bottom of the intake channel embayment is primarily devoid of vegetation. Seagrass surveys were conducted in the location of the relocated manatee heating area and horseshoe crab deterrent wall. The seagrass surveys indicate nearly all of the area lacks vegetation. Total coverage of seagrass throughout this area was determined to be less than 5 percent.

A small area (462 S.F.) of very sparse seagrasses will be impacted by the horseshoe crab deterrent wall. There will be 194 S.F. of “direct” impact and 268 S.F. of “indirect” impacts. The seagrass impact is unavoidable since the horseshoe crab deterrent wall must extend into shallow water to effectively deter horseshoe crabs. The direct seagrass impacts include the footprint of the horseshoe crab deterrent wall and the footprint of the riprap being placed for erosion protection.

The indirect seagrass impacts include a 4-foot width alongside the direct impacts, which addresses unavoidable turbidity impacts to seagrass immediately abutting the installation of the deterrent wall (e.g., sediment is disturbed in such close proximity to seagrass that turbidity controls are not feasible).

Attachment A – Project Description

The term “indirect” is used to describe this type of impact because turbidity is a common consideration in marine habitats, and State of Florida regulations (SWERP subsection 10.2.7) preclude use of the secondary impact definition for impacts related to water quality.

The vast majority of the relocated manatee heating area and horseshoe crab deterrent wall footprints are not vegetated, and do not contain hardbottom habitat. An additional 788 S.F. area of seagrass is located within the proposed manatee heating area. This area will be buffered and surrounded by turbidity curtains during dredging and sheetpile installation. No impacts to seagrass are anticipated in the proposed manatee heating area. No Johnson’s seagrass was identified on the project site. The seagrass surveys are included in Attachment B.

4.3 Threatened and Endangered Species

The Endangered Species Act of 1973 (ESA) prohibits any person from taking (harassing, harming, pursuing, hunting, shooting, wounding, killing, trapping, capturing, relocating, or collecting or attempting to engage in any such conduct) any federally listed threatened or endangered species. Significant habitat modification or degradation that results in death or injury to federally protected species by significantly impairing behavioral patterns such as breeding, feeding or sheltering is also prohibited.

The project is located in a manatee WWAA due to the CCEC warm water discharge. No other critical habitat is located on the project site. Based on the analysis and incidence of known species occurrences, smalltooth sawfish, the West Indian manatee, and sea turtles are likely to be present in the project area. Listed shorebirds are also likely to utilize the project area, but there are no nests at CCEC. The project is designed to benefit manatees and horseshoe crabs and will not result in adverse impacts to threatened and endangered species.

Attachment C contains the manatee key effect determination, manatee biological evaluation form, and temperature modeling and supporting data. Attachment D contains the National Marine Fisheries Service (NMFS) checklist and an initial not likely to adversely affect (NLAA) determination for sea turtles and smalltooth sawfish.

In order to evaluate the project for the potential presence of federal and state protected species, threatened or endangered species listed and Designated Critical Habitat areas were reviewed. These resources were reviewed to determine if the proposed site can be constructed under the established criteria set forth under the ESA. Based upon the habitat descriptions of those species that were indicated to occur in Brevard County, FL, a qualitative comparison to the habitat present within the permitted area was made during the site inspection. The qualitative comparison was based upon regional and local ecological characteristics including terrain, hydrology and vegetation. An Effect Determination was made for each listed species to determine the likelihood of occurrence within the Project Site (see Table A-5). Habitat on the Project Site primarily consists of estuarine tidal open water.

Attachment A – Project Description

Table A-5. Federal and State listed Species in Brevard County, Florida

Scientific Name	Common Name	Federal Status	State Status	Habitat Present	Effect Determination
Plants					
<i>Argusia gnaphalodes</i>	Sea Lavender	N	E	No	No Effect
<i>Calamovilfa curtissii</i>	Curtiss' Sandgrass	N	T	No	No Effect
<i>Centrosema arenicola</i>	Sand Butterfly Pea	N	E	No	No Effect
<i>Chamaesyce cumulicola</i>	Sand-dune Spurge	N	E	No	No Effect
<i>Conradina grandiflora</i>	Large-flowered Rosemary	N	T	No	No Effect
<i>Dennstaedtia bipinnata</i>	Hay Scented Fern	N	E	No	No Effect
<i>Dicerandra thincicola</i>	Titusville Balm	N	E	No	No Effect
<i>Glandularia maritima</i>	Coastal Vervain	N	E	No	No Effect
<i>Glandularia tampensis</i>	Tampa Vervain	N	E	No	No Effect
<i>Halophila johnsonii</i>	Johnson's Seagrass	T	E	No	No Effect
<i>Harrisia simpsonii</i>	Simpson's Prickly Apple	N	E	No	No Effect
<i>Lantana depressa</i> var. <i>floridana</i>	Atlantic Coast Florida Lantana	N	E	No	No Effect
<i>Lechea cernua</i>	Nodding Pinweed	N	T	No	No Effect
<i>Lechea divaricate</i>	Pine Pinweed	N	E	No	No Effect
<i>Nemastylis floridana</i>	Celestial Lily	N	E	No	No Effect
<i>Nolina atopocarpa</i>	Florida Beargrass	N	T	No	No Effect
<i>Ophioglossum palmatum</i>	Hand Fern	N	E	No	No Effect
<i>Peperomia humilis</i>	Terrestrial Peperomia	N	E	No	No Effect
<i>Pteroglossaspis ecristata</i>	Giant Orchid	N	T	No	No Effect
<i>Tephrosia angustissima</i> var. <i>curtissii</i>	Coastal Hoary-pea	N	E	No	No Effect
<i>Zephyranthes simpsonii</i>	Redmargin Zephyrlily	N	T	No	No Effect
Fish					
<i>Acipenser oxyrinchus oxyrinchus</i>	Atlantic Sturgeon	E	N	No	No Effect
<i>Microphis brachyurus</i>	Opossum Pipefish	SC	N	No	No Effect
<i>Rivulus marmoratus</i>	Mangrove Rivulus	SC	SSC	No	No Effect
Amphibians					
<i>Lithobates capito</i>	Gopher Frog	N	SSC	No	No Effect
Reptiles					
<i>Alligator mississippiensis</i>	American Alligator	SAT	N	No	No Effect
<i>Caretta caretta</i>	Loggerhead Sea Turtle	T	N	Yes	No Effect
<i>Chelonia mydas</i>	Green Sea Turtle	E	N	Yes	No Effect
<i>Dermochelys coriacea</i>	Leatherback Sea Turtle	E	N	Yes	No Effect
<i>Drymarchon couperi</i>	Eastern Indigo Snake	T	N	No	No Effect
<i>Gopherus Polyphemus</i>	Gopher Tortoise	C	T	No	No Effect
<i>Lampropeltis calligaster</i>	Mole Kingsnake	N	N	No	No Effect

Attachment A – Project Description

Table A-5. Federal and State listed Species in Brevard County, Florida

Scientific Name	Common Name	Federal Status	State Status	Habitat Present	Effect Determination
<i>Lampropeltis getula</i>	Common Kingsnake	N	N	No	No Effect
<i>Lepidochelys kempii</i>	Kemp's Ridley Sea Turtle	E	N	Yes	No Effect
<i>Pituophis melanoleucus mugitus</i>	Florida Pine Snake	N	SSC	No	No Effect
Birds					
<i>Aphelocoma coerulescens</i>	Florida Scrub-Jay	T	N	No	No Effect
<i>Aramus guarana</i>	Limpkin	N	SSC	No	No Effect
<i>Athene cunicularia floridana</i>	Florida Burrowing Owl	N	SSC	No	No Effect
<i>Caracara cheriway</i>	Crested Caracara	T	N	No	No Effect
<i>Charadrius melodus</i>	Piping Plover	T	N	No	No Effect
<i>Egretta caerulea</i>	Little Blue Heron	N	SSC	Yes	No Effect
<i>Egretta rufescens</i>	Reddish Egret	N	SSC	Yes	No Effect
<i>Egretta thula</i>	Snowy Egret	N	SSC	Yes	No Effect
<i>Egretta tricolor</i>	Tricolored Heron	N	SSC	Yes	No Effect
<i>Eudocimus albus</i>	White Ibis	N	SSC	Yes	No Effect
<i>Falco sparverius Paulus</i>	Southeastern American Kestrel	N	T	No	No Effect
<i>Grus canadensis pratensis</i>	Florida Sandhill Crane	N	T	No	No Effect
<i>Haematopus palliatus</i>	American Oystercatcher	N	SSC	Yes	No Effect
<i>Mycteria Americana</i>	Wood Stork	T	T	No	No Effect
<i>Pandion haliaetus</i>	Osprey	N	SSC*	Yes	No Effect
<i>Picoides borealis</i>	Red-cockaded Woodpecker	E	N	No	No Effect
<i>Platalea ajaja</i>	Roseate Spoonbill	N	SSC	No	No Effect
<i>Rynchops niger</i>	Black Skimmer	N	SSC	Yes	No Effect
<i>Sternula antillarum</i>	Least Tern	N	T	Yes	No Effect
Mammals					
<i>Eubalaena glacialis</i>	North Atlantic Right Whale	LE	N	No	No Effect
<i>Peromyscus polionotus niveiventris</i>	Southeastern Beach Mouse	T	N	No	No Effect
<i>Podomys floridanus</i>	Florida Mouse	N	SSC	No	No Effect
<i>Sciurus niger shermani</i>	Sherman's Fox Squirrel	N	SSC	No	No Effect
<i>Trichechus manatus</i>	West Indian Manatee	E	N	Yes	No Effect

E = Endangered; T = Threatened; SSC = Species of Special Concern; N = No listing status;

SAT = Treated as Threatened due to similarity of appearance

4.4 Essential Fish Habitat

ENERCON conducted an assessment for Essential Fish Habitat (EFH) on the project site and in surrounding areas of the Indian River Lagoon that were likely to be affected by the proposed project

Attachment A – Project Description

based on the 2009 Final South Atlantic Fishery Management Council EFH Amendment (2009 EFH Final Amendment) produced by the National Oceanic and Atmospheric Administration (NOAA). According to the 2009 EFH Final Amendment, potential EFH exists within the proposed project area for the following species:

- Bluefish (*Pomatomus saltatrix*) – All Life Stages
- Snapper Grouper – All Life Stages
- Coastal Migratory Pelagics – All Life Stages
- Spiny lobster (*Panulirus argus*) - All Life stages
- Slippery lobster (*Scyllarides nodife*) – All Life stages

The proposal would permanently impact 0.06 acres of barren to very sparsely vegetated bottom utilized by various life stages of lobster, migratory/pelagic fish, and snapper/grouper complex. The proposal would temporarily impact 1.08 acres for dredging, including maintenance dredging of the intake canal and preparatory dredging for the relocated manatee heating area. The vast majority of the relocated manatee heating area and horseshoe crab deterrent wall footprint are not vegetated, and hardbottom habitat is not present. The project is being constructed in an existing intake channel peninsula and jetty embayment. The existing fish handling and return system for the CCEC cooling water intake system discharges south of the project area, and will not be affected by the project.

Our initial determination is that the proposed action would not have a substantial adverse impact on EFH or federally managed fisheries. No Habitat Areas of Particular Concern (HAPCs) or EFH Areas Protected from Fishing are located on or adjacent to the project site. The project is designed to benefit manatees and horseshoe crabs and will not result in adverse impacts to fisheries. In addition, the relocated manatee heating area will utilize existing jetty infrastructure and would require greater impacts if a different alternative were utilized.

Construction activities will temporarily increase sedimentation and turbidity of waters in the mixing zones due to in-water dredging, maintenance dock and sheetpile installation. A discussion of steps taken to reduce construction-related turbidity impacts is included in the Construction Activities section of this document.

5.0 Alternatives Analysis

A key provision of the 404(b)(1) guidelines is the “practicable alternative test” which requires that “no discharge of fill material shall be permitted if there is a practicable alternative to the proposed fill which would have a less adverse impact on the aquatic ecosystem.” The applicant must demonstrate that there are no less damaging sites available and that all onsite impacts to waters of the US have been avoided to the maximum practicable extent possible.

For an alternative to be considered “practicable”, it must be available and capable of being done after taking into consideration cost, existing technology, and logistics in light of the overall project purpose. FPL considered the following siting criteria to determine the preferred alternative: 1) Reduce exposure of marine life to the plant intake area without impacting plant activities and power service to FPL’s customer base, 2) Manatee heating area meets temperature and design requirements previously established by

Attachment A – Project Description

FFWC and USFWS in the CCEC Florida Department of Environmental Protection (FDEP) Site Certification No. PA 08-53 and NPDES Permit FL0001473, 4) horseshoe crabs are protected from impingement under Section 316(b) of the Clean Water Act (CWA), and 5) is of a reasonable cost to the applicant.

- 1) **Offsite Alternatives.** Constructing the project on an offsite location would not fulfill the project purpose. The manatee heating area must be conducted at its proposed location because it is an existing WWAA due to the plant's warm water discharge. The thermal influence enables manatees to travel around the peninsula between the warm water discharge and the heating area. The horseshoe crab deterrent wall must be located at the site to exclude crab from the intake. Therefore, this alternative was eliminated because it is not practicable. This alternative was determined to not be the least environmentally destructive practicable alternative (LEDPA).
- 2) **Onsite Alternative 1 – No Action Alternative.** Under this scenario, the existing manatee heating area and barrier net for horseshoe crab would continue to be used. The existing manatee heating area is an approximately 0.78 acre area located in the intake canal on the CCEC site. This area may risk manatees for harm due to the close proximity of the plant intake structures to the heating area. The barrier net has had some effectiveness at deterring horseshoe crabs from the intake and its location has resulted in crab being trapped in the embayment. While this alternative would result in no additional impacts resulting from fill to waters of the U.S., this alternative was determined not to be the LEDPA, due to its potential for harm to manatees and horseshoe crab.
- 3) **A. Onsite Alternative 2 – Applicants Preferred Alternative – Relocated Manatee Heating Area.** Under this alternative, a new manatee heating area would be created approximately 1,000 feet waterward of the southeast shoreline, east of the existing heating area. The manatee heating area relocation will move the heated enclosure from the intake canal to waterward of the southeast shoreline. This will increase the distance between the enclosure and the plant intake, reduce the risk of manatee impingement, and improve manatee access between the heating area and the broader Indian River Lagoon. The location adjacent to the existing jetty provides infrastructure and access required for the maintenance and upkeep of the heating area. Siting the heating area at any other location in the Indian River Lagoon would require additional fill and construction activities in order to install the necessary infrastructure that is already provided by the preferred alternative. This alternative was determined to be the LEDPA because it produces a net benefit for manatees.

B. Onsite Alternative 2 – Applicants Preferred Alternative – Horseshoe Crab Deterrent Wall. Under this alternative, a new, permanent horseshoe crab deterrent wall would be installed with improved design features to exclude horseshoe crabs from the plant intake. FPL will install a permanent engineered structure wall ("horseshoe crab deterrent wall") whose design is based on the observations from the field studies. The wall has a diagonal alignment across the intake channel outside the embayment, to direct crab movement according to their natural tendency to follow flow and safely exit the intake channel area. There is a minor impact to seagrasses proposed (194 S.F. direct impact and 268 S.F. indirect impact) associated with the horseshoe crab deterrent wall and associated riprap footprint. The seagrass impact is unavoidable since the

Attachment A – Project Description

horseshoe crab deterrent wall must extend into shallow water to effectively deter horseshoe crabs. This alternative was determined to be the LEDPA because it produces a net benefit for horseshoe crabs. If necessary, FPL is consulting with the Florida Department of Environmental Protection regarding potential seagrass mitigation projects, as described in Attachment G.

6.0 Construction Activities - Avoidance and Minimization

6.1 In-Water Construction Conditions

The installation of sheetpile wall, piping, and dock for the relocated heating area will follow the Standard Manatee Conditions for In-Water Work guidelines provided in the United States Fish and Wildlife Service (USFWS) Biological Opinion (BO) dated March 2011, and Florida Fish and Wildlife Conservation Commission (FFWCC) conditions delineated in the CCEC Florida Department of Environmental Protection (FDEP) Site Certification PA 08-53A, as modified December 28, 2011. The project agrees to adhere to NMFS's *Sea Turtle and Smalltooth Sawfish Construction Conditions*, dated March 23, 2006.

6.2 Construction Pollution Prevention

Project Sequencing

Project construction sequencing has been carefully planned in order to reduce turbidity and noise impacts in the aquatic environment. Dredging will be conducted within walled enclosures, with turbidity curtains across the barge accesses and the intake channel. Turbidity barriers will be properly designed, installed, and monitored so as to prevent entanglement by manatees, sea turtles or smalltooth sawfish. Pilings will be driven with a vibratory hammer. No construction staging or material storage will occur in wetlands or impact wetlands or waters of the U.S. Construction sequencing will be conducted as follows:

1. Review intake operating schedule and potential for turbidity entrainment in the intake. Portions of the work, such as the horseshoe crab deterrent wall and removal of existing sheet pile divider, may need to be conducted during plant outage to avoid turbidity entrainment in the intake.
2. Initiate biological observation and maintain it for the project duration.
3. Install navigational buoys with signage.
4. Install silt fencing and turbidity curtains. Design turbidity curtain installations to be stable in the current.
5. Dredge south side of existing sheet pile divider. Use mixing zone for water discharge as needed.
6. Remove existing sheet pile divider if turbidity curtain will be sufficient. Alternatively, leave existing sheet pile divider in place for mixing zone.
7. Install proposed sheet pile, working from west to east. Leave access opening for dredging vessel at the northeast end.

Attachment A – Project Description

8. Dredge working from west to east, using enclosure to control turbidity. Use mixing zone for water discharge as needed.
9. Install piping and maintenance dock.
10. Install horseshoe crab deterrent wall.

Pollution Prevention Best Management Practices (BMPs)

Pollution prevention BMPs will be used to prevent discharges of pollutants to waters of the US, as summarized below.

1. All fuel storage areas or other hazardous storage areas shall conform to accepted state or federal criteria for such containment areas.
2. Temporary dredge spoil management locations are to be located upland of all stormwater ponds, wetlands and aquatic resources.
3. Temporary dredge spoil management locations must be self-contained, in that sediment control measures such as barges or geotubes must be properly installed, maintained and operated to prevent discharge of mobilized sediment.
4. Where pumps are to be used to remove turbid waters from construction areas, the water shall be treated to reduce turbidity prior to discharge to waterways. Treatment measures may include sediment traps, filter systems, berms, and other features designed to limit turbidity to state water quality standards.
5. Contractor shall inspect turbidity control devices on a daily basis for proper installation and performance.
6. Construction equipment shall be operated and maintained in such a manner as to prevent spills or leaks from reaching water
7. Hydraulic lines used in equipment shall contain vegetable oil only. All fittings shall be wrapped in oil absorbing material and clear visqueen material
8. Contractor shall submit a fuel spill response plan for owner review and approval. The fuel spill response plan shall address fuel storage, handling and loading/unloading, and spill cleanup procedures to the extent necessary to minimize the potential for impact to land or water from a fuel spill.

Sediment and Erosion Control BMPs

Sediment and erosion control BMPs will be used to prevent discharges of pollutants to waters of the US, as summarized below.

1. Sediment shall not be allowed to wash into the channel or storm drains. Contractor is responsible for repair and/or cleanup of any and all damages resulting from sediment mobilization from construction activity.
2. Temporary sediment control devices shall be installed prior to any land disturbance and are to be maintained in place throughout the entire course of construction.

Attachment A – Project Description

3. The type of sediment barrier used shall be governed by the nature of the construction operation and the sediment that will be mobilized. Silty and clayey material may require solid sediment barriers to prevent turbid water movement, while sandy material may need only screens or diversions. It may be necessary to employ a combination of measures if conditions warrant.
4. Contractor shall schedule his operations to minimize the potential for turbid discharge. The duration of disturbance and uncompleted construction exposed to the elements shall be as short as practicable. Exposed soils shall be stabilized as soon as possible, especially slopes. Grading and earthwork operations shall be stabilized within 7 days of completion.
5. Installation of sediment and erosion and turbidity controls shall be coordinated with the construction of permanent features to the extent necessary to assure effective and continuous turbidity control throughout the life of the construction phase.
6. Contractor shall prevent sediment tracking from equipment to adjacent roadways or waterways.
7. Contractor shall install soil tracking device, ensure barges do not leak, etc, as needed. Contractor shall be responsible for removing any sediment tracked from the project site onto adjacent roadways.
8. Stabilization methods include sod, seeding and mulching or hydromulching to provide a temporary or permanent grass cover. Geotextile fabrics can be employed to help support vegetation establishment.
9. Sediment, erosion and turbidity control measures shown on the drawings are considered minimum. Contractor is responsible for providing control as necessary to prevent turbidity. Additional turbidity control measures will be installed if deemed necessary by on-site inspection.
10. Contractor shall inspect turbidity control devices on a daily basis for proper installation and performance.
11. Unless in a mixing zone, turbidity more than 29 NTU's over background exceeds state water quality standards and shall not be allowed.

Temporary Spoil Area BMPs

1. Unless approved by owner to remain onsite, all dredged sediment shall be disposed in an owner approved landfill.
2. Contractor shall design and supply a temporary dredge spoil handling and management system to address sediment removed during dredging operations.
3. The temporary dredge spoil handling and management system shall utilize barges, upland staging areas, and/or mechanical processing systems for temporary dredge spoil handling and management. The temporary dredge spoil handling and management system shall not utilize wetlands or aquatic areas for dredge spoil management.
4. As part of the temporary dredge spoil handling and management system, contractor shall dewater sediment as required for efficient spoil handling and management.

Attachment A – Project Description

5. Contractor may utilize temporary spoil areas for spoil material and equipment staging. Contractor shall be responsible for design of the temporary spoil areas based on the spoil material to be addressed.
6. Contractor shall design the spoil handling and management system to control turbidity during all sediment dewatering operations. Contractor shall utilize FDEP approved polymers/flocculants as required to control turbid discharge from dewatering.
7. Contractor shall provide and maintain a stabilized dewatering discharge that does not cause or contribute to erosion. Use state approved mixing zones for dewatering discharges.
8. Contractor shall control sediment release and turbidity related to loading/unloading and material transfer.
9. Restore all areas disturbed by construction. Contractor acknowledges marine saltwater may damage sod and landscaping. Damaged sod and landscaping shall be restored.
10. Contractor shall dredge evenly to the lines and grades shown on the drawings, taking care to avoid the creation of windrows or uneven bottom conditions. Contractor shall consider spillage and fallback in his dredging operation to ensure the lines and grades shown are met.
11. Operate dredging system in a manner that minimizes sediment resuspension and turbidity production. Contractor shall control the rate of sediment removal, position of dredge equipment, project sequencing, and placement of turbidity controls, in such a manner as to minimize sediment resuspension and turbidity production.
12. The temporary dredge spoil handling and management system shall utilize barges in conjunction with upland staging areas for temporary dredge spoil handling and management. The temporary dredge spoil handling and management system shall not utilize wetlands or aquatic areas for dredge spoil management.
13. Control turbidity during all sediment dewatering operations. Contractor shall utilize FDEP approved polymers/flocculants as required to control turbid discharge from dewatering.

7.0 Project Ownership and Control

Florida Power and Light (FPL) owns the CCEC plant site property adjacent to the Indian River Lagoon. Submerged lands waterward of OHW and adjacent to the CCEC property are owned by the State of Florida. FPL will access the in-water areas of this project through a proprietary authorization and sovereign submerged lands easement issued by the State of Florida.

8.0 Summary of Impacts to Waters of the U.S., Including Wetlands

Impacts to the proposed project site will result from the installation of the vinyl sheetpiling, pilings, water supply piping, riprap and dock installation, and from the removal of dredge material. Impacts resulting from dredging would be temporary. BMPs would be utilized during construction activities to reduce potential temporary impacts. Table A-6 summarizes the impacts to aquatic features.

Attachment A – Project Description

Table A-6. Impacts to Aquatic Features Resulting from Fill on the Project Site

Structure	Material	Fill Area (Sq. Ft)	Fill Area (Ac)	Total Below Grade Fill (CY)	Total Fill Between OHW and Grade (CY)	Total Fill (CY)	Seagrass Impacts (Sq. Ft)
Proposed Manatee Heating Area - Sheetpile Wall	Vinyl Sheetpile	705.3	0.02	326.52	123.81	450.33	0
Proposed Manatee Heating Area - Sheetpile Wall Pilings	Wood Pilings	13.61	0.0003	7.30	2.38	9.68	0
Proposed Manatee Heating Area – Dock Pilings	Wood Pilings	3.49	0.0001	1.10	0.48	1.58	0
Proposed Manatee Heating Area – 16-inch Pipe	HDPE	279.47	0.006	0.00	13.55	13.55	0
Proposed Manatee Heating Area – 20-inch Pipe	HDPE	960.96	0.022	0.00	37.26	37.26	0
Horseshoe Crab Deterrent Wall	Vinyl Sheetpile	367.00	0.008	108.80	47.6	156.4	56 Direct 246 Indirect
Riprap	Rock	125.00	0.003	0.00	7.78	7.78	138 Direct 42 Indirect
Total		2,480.22	0.06	443.72	232.86	676.58	194 Direct 268 Indirect

Table A-7. Dredge Dimensions

Proposed Dredging Areas	Dredge Depth to be Removed (Ft)	Area (Ac)	Volume (CY)
Proposed Manatee Heating Area	2.5	0.65	3,485
Existing Manatee Heating Area	0.5	0.43	353
Total		1.08	3,838

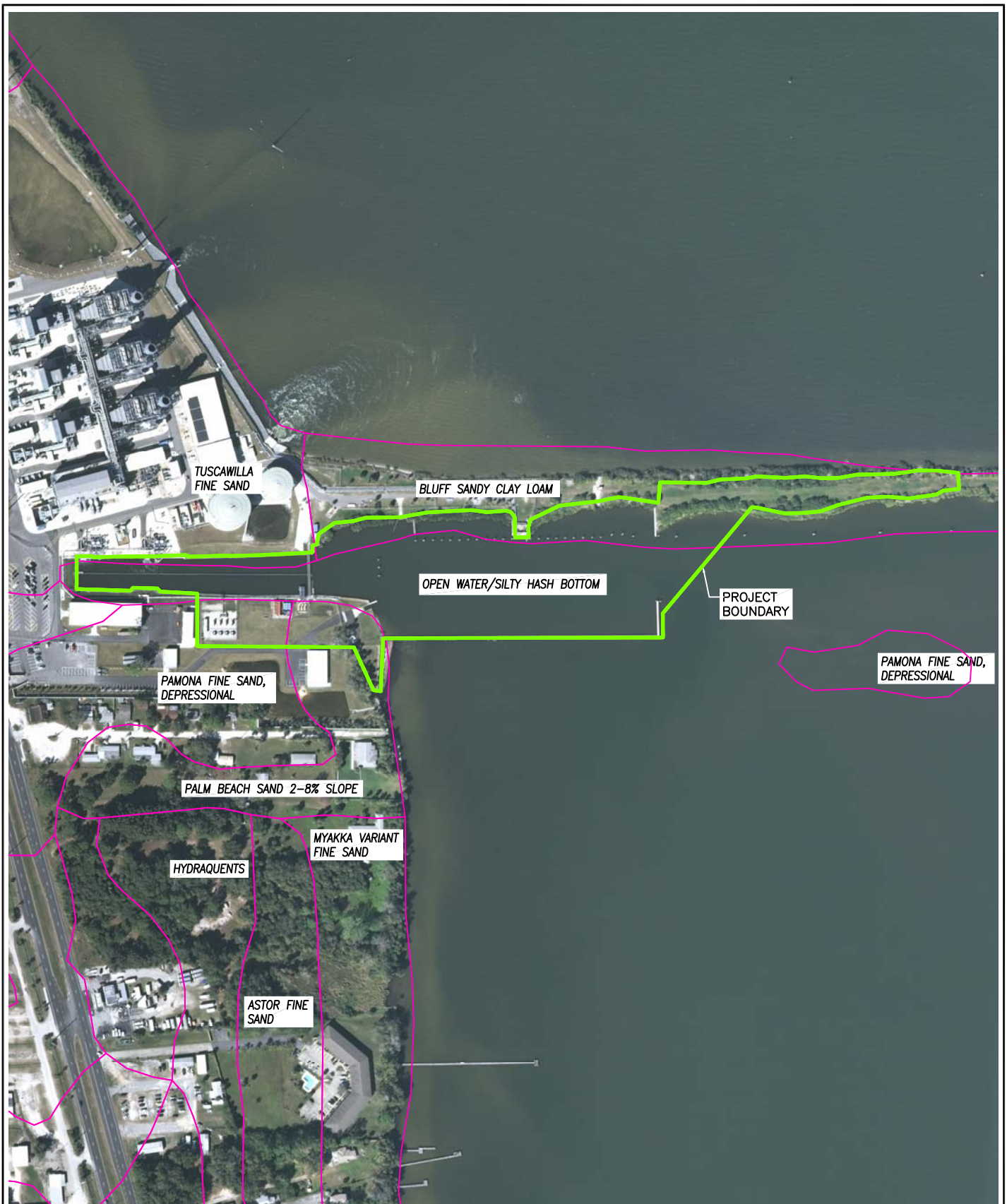
9.0 Related Permits

The following is a list of permits pertaining to the proposed project area:

- SAJ-1995-4192 (LOP-IS), Maintenance Dredging, September 11, 1996
- ACOE SAJ-2003-12744 (LP-TD), Rip-rap, May 27, 2011
- ACOE SAJ-1995-4192 (LOP-IS), Mod 3, Dredging Schedule, November 30, 2004
- ACOE SAJ-2009-01004 (SP-TSD), Sheetpile Divider, May 27, 2011

Attachment A – Project Description

- **USCG, 14-086, Submerged Fence, October 30, 2014 (No Objection)**



Florida Power and Light
FPL Cape Canaveral
 6000 N U.S. 1
 Cocoa, FL 32926

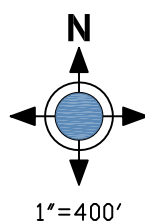
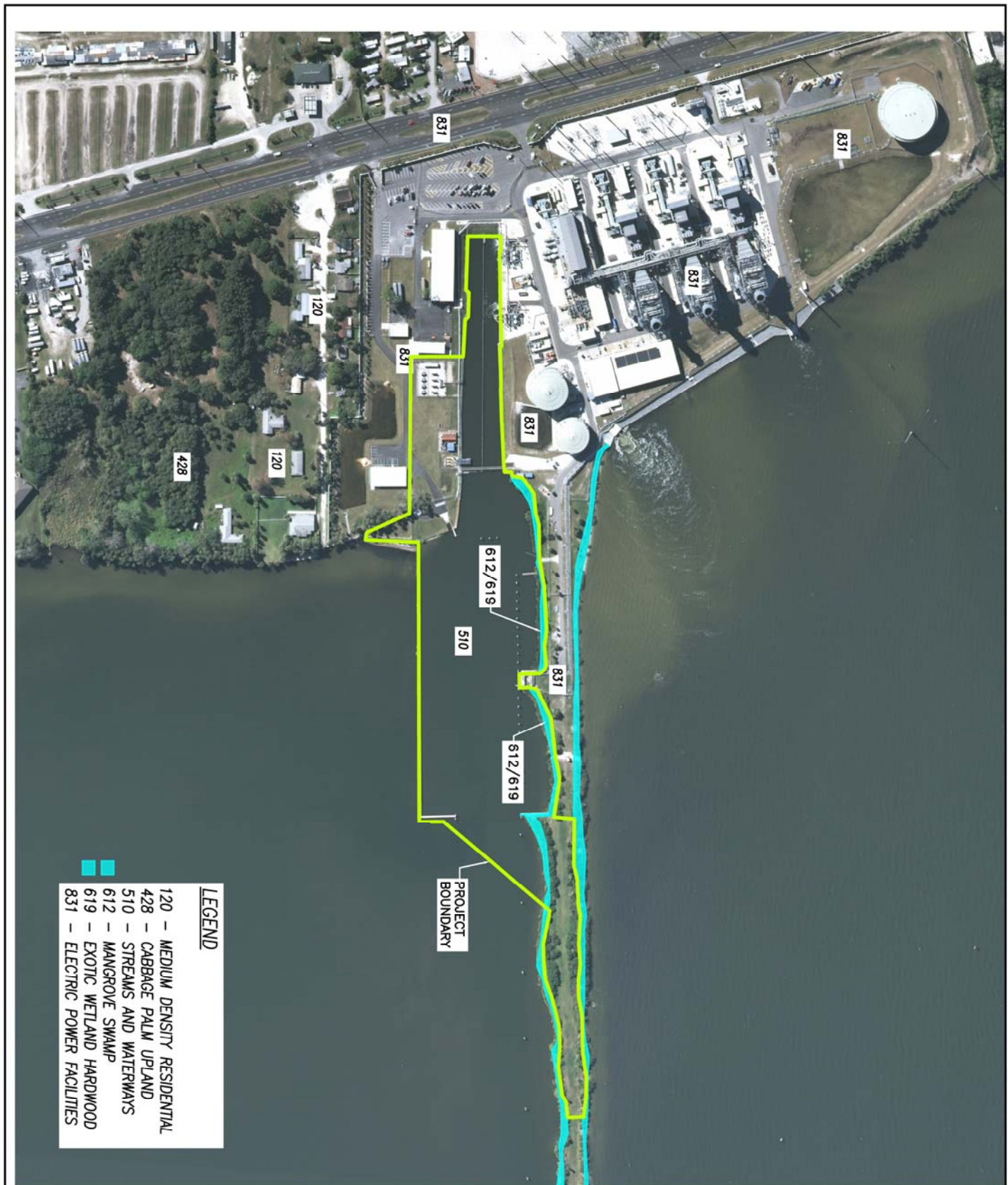


Figure 1
 SOILS MAP

FPL Cape Canaveral Improvements



Florida Power and Light
FPL Cape Canaveral
 6000 N U.S. 1
 Cocoa, FL 32926

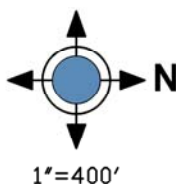
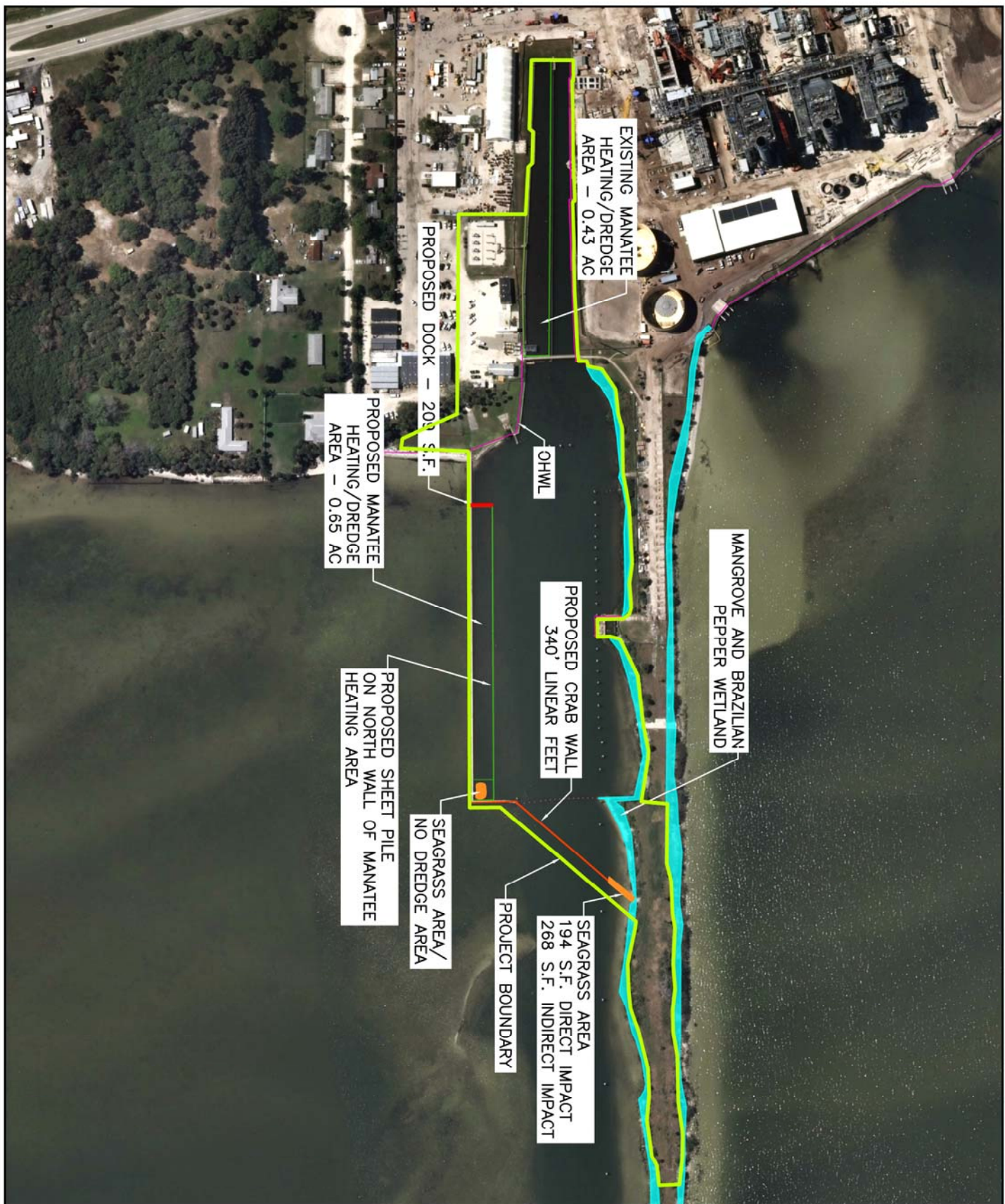


Figure 2
FLUCCS MAP

FPL Cape Canaveral Improvements



Florida Power and Light
FPL Cape Canaveral
 6000 N U.S. 1
 Cocoa, FL 32926

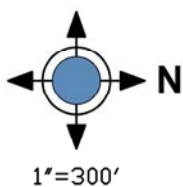


Figure 3
PROPOSED IMPACTS



ATTACHMENT B

Seagrass Survey



Tim Powell
Environmental Services Department
Florida Power & Light Company
700 Universe Blvd (JES/JB)
Juno Beach, FL 33408

August 22, 2014

Re: Submerged Resource Assessment, Cape Canaveral Energy Center, Brevard County, Florida

Dear Mr. Powell:

Ecological Associates, Inc. (EAI) was contracted by Florida Power & Light Company (FPL) to conduct a submerged resource assessment in support of regulatory permitting for the construction of a horseshoe crab barrier across the cooling water intake canal at the Cape Canaveral Energy Center (CCEC) in Brevard County, Florida. The proposed work will involve the installation of a concrete wall approximately 4.5 ft wide and 2.5 ft high. It will extend diagonally across the bottom in a northeast direction from the end of the existing seawall on the south side of the cooling water intake canal to the south side of the mole along the north side of the canal, a distance of approximately 340 feet (Figure 1). The objective of the submerged resource assessment was to document current submerged lands characteristics and general distribution of submerged aquatic vegetation (SAV) within the limits of the proposed construction. This letter serves to document findings of the survey.

The submerged resource survey was conducted on August 18, 2014. Resources within the proposed construction footprint (10 feet wide x 340 feet long) were identified via in-water survey. Due to the small size of the assessment area, divers were able to visually examine the entire bottom in the area closest to shore where seagrasses were most likely to be present. Seagrass bed boundaries were delineated in the field using a sub-meter GPS device and mapped using ArcGIS software. Visual estimates were quantified using a modified Braun-Blanquet classification scheme, as follows:

0.1	=	<5% cover, single shoot (Very Sparse)
0.5	=	<5% cover, few shoots (Very Sparse)
1	=	<5% cover, numerous shoots (Very Sparse)
2	=	≥5% cover and ≤25% cover (Sparse)
3	=	>25% cover and ≤50% cover (Moderate)
4	=	>50% cover and ≤75% cover (Moderate to Dense)
5	=	>75% cover (Dense)

At the time of the survey, water depths within the assessment area ranged from 1 to 12 feet. Visibility was two to three feet.

A single species of seagrass, shoal grass (*Halodule wrightii*), was observed during the survey. Highest densities were found near shore, but coverage was very sparse throughout the entire area where it was present (Table 1; Figure 2). Coverage extended from the shoreline approximately 70 feet along the axis of the proposed construction footprint to water depths of about 6 feet. No grasses were present at greater depths. That portion of the survey area where seagrasses were present encompasses approximately 0.0162 acres of submerged bottom.

This portion of the Indian River Lagoon provides habitat for three federally-endangered species, the green sea turtle (*Chelonia mydas*), Florida manatee (*Trichechus manatus*) and smalltooth sawfish (*Pristis pectinata*) and one federally-threatened species, the loggerhead turtle (*Caretta caretta*). Best management practices, including FWC's Standard Manatee Conditions for In-Water Work and NMFS' Sea Turtle and Smalltooth Sawfish Construction Conditions, should be adhered to during the period of construction to minimize the potential for impacts to these species.

Additionally, best management practices should be used to avoid turbidity from escaping the work area. Skirted turbidity curtains should extend to within one foot of the seafloor around the project area. Turbidity should be monitored every 2 hours at surface, middle and bottom depths. If turbidity exceeds 29 NTU above background levels construction must be halted and additional turbidity controls implemented until turbidity has decreased below the threshold value.

Ecological Associates, Inc. appreciates the opportunity to be of service. Should you have any questions regarding this submerged resource assessment, I can be reached at (772) 334-3729.

Sincerely,



Katherine Grablow
Senior Scientist

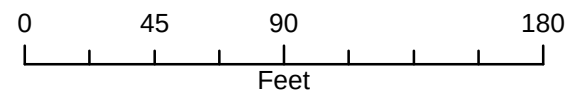
c: Bob Ernest, EAI
Erik Martin, EAI

Table 1
FPL Cape Canaveral Energy Center Horseshoe Crab Barrier Project
Seagrass Survey - August 18, 2014

Waypoint or Area	Water Depth (ft)	Substrate	Species	BB Score	BB Score	BB Score	BB Score	Latitude	Longitude	Survey Type	Shoreline Description
1	2.0 - 3.0	Sandy	HW	1				28.46854068 N	80.75867517 W	Surveyed entire area. BB Score is average.	Mangroves and Brazilian pepper, piles of rock rubble.
								28.46856246 N	80.75865616 W		
								28.46856746 N	80.75871391 W		
								28.46854182 N	80.75872399 W		
2	3.0 - 3.5	Sandy	HW	0.5				28.46850553 N	80.75867676 W	Surveyed entire area. BB Score is average.	
								28.46852753 N	80.75867218 W		
								28.46853710 N	80.75872396 W		
								28.46851422 N	80.75873122 W		
3	3.5	Sandy	HW	0.1	0.5	0	0.5	28.46848777 N	80.75875882 W	Spot Check	
4	3.5	Sandy	HW	0.5	0	0	0	28.46847985 N	80.75874042 W	Spot Check	
5	4.0	Sandy	None	0	0	0	0	28.46846852 N	80.75872958 W	Spot Check	
6	4.0	Sandy	HW	0	0	0	0.1	28.46845355 N	80.75874689 W	Spot Check	
7	4.0	Sandy	HW	0.5	0.5	0	0	28.46845964 N	80.75876836 W	Spot Check	
8	6.0	Sandy	HW	0.5	0.5	0.1	0	28.46847177 N	80.75879663 W	Spot Check	
9	6.0	Sandy	HW	0.5	0.1	0.1	0	28.46844355 N	80.75883021 W	Spot Check	
10	6.0	Sandy	HW	0.1	0.1	0	0	28.46844056 N	80.75884488 W	Spot Check	
11	6.0 - 7.0	Sandy	HW	0.1	0	0	0	28.46843207 N	80.75887540 W	Spot Check	
N/A	7.0	Sandy/ Shell Hash	None	0	0	0	0	28.467876 N	80.759342 W	Spot Check	Seawall
N/A	12.0	Sandy/ Shell Hash	None	0	0	0	0	28.467915 N	80.759295 W	Spot Check	



Figure 1: FPL Cape Canaveral Energy Center (CCEC) - Anticipated location of the horseshoe crab deterrent wall, August 2014.



Map Projection: U.S. State Plane, Florida East



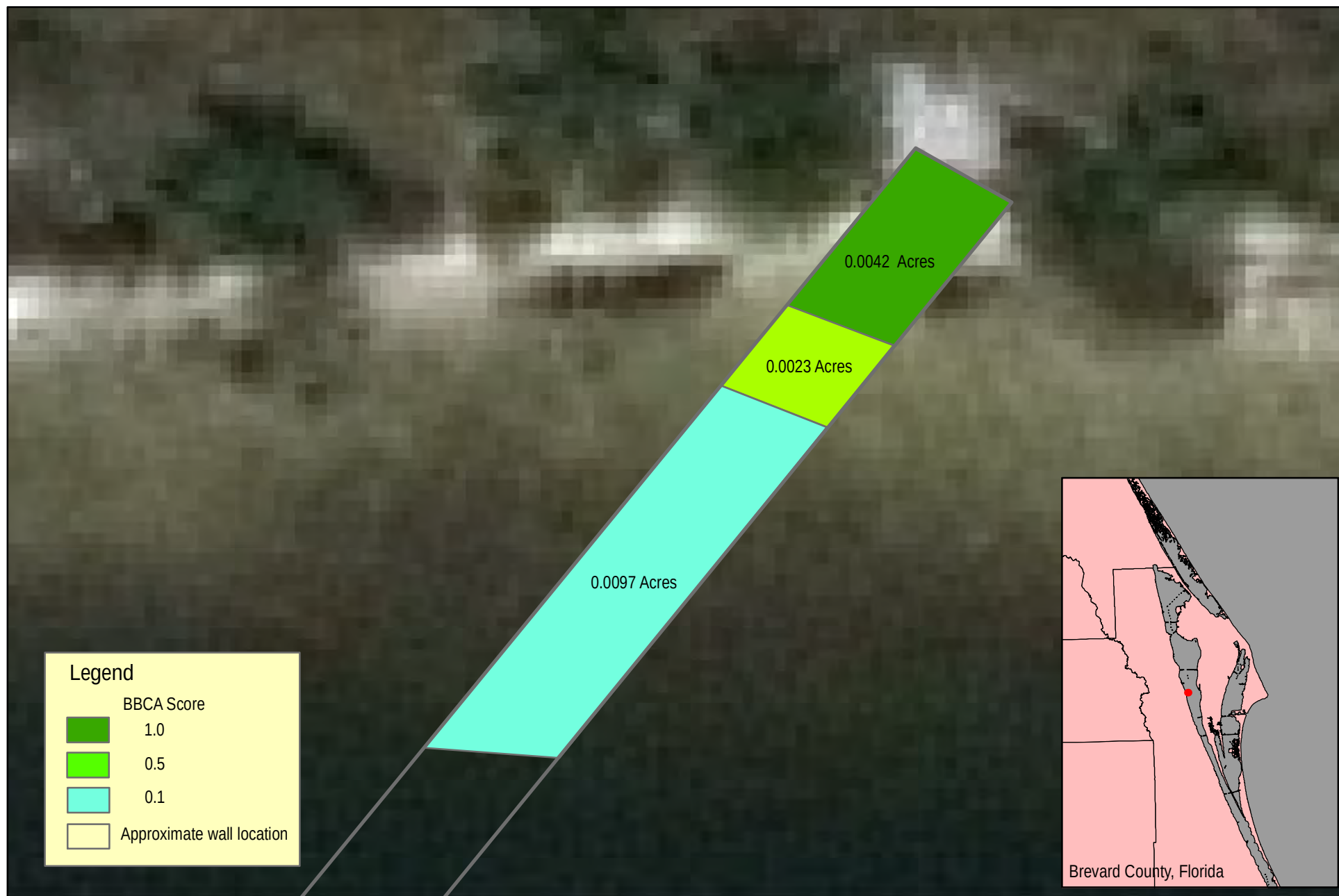


Figure 2: FPL Canaveral Energy Center - Seagrass coverage at the northeastern terminus of the horseshoe crab deterrent wall, expressed as Braun-Blanquet Cover Abundances (BBCA), August 2014.

**SUBMERGED RESOURCE ASSESSMENT FOR MANATEE HEATING AREA
CAPE CANAVERAL ENERGY CENTER
BREVARD COUNTY, FLORIDA**

Applicant Name: Florida Power and Light Company (FPL)

Physical Location: The project area is located within the Indian River Lagoon, east of the Cape Canaveral Energy Center (CCEC), Brevard County, Florida (Figure 1).

Name of Firm Performing Site Survey: Ecological Associates, Inc.

Name of Individuals Performing Site Survey: Matt Scripter (Senior Scientist) and Carrie Goethel (Biologist)

Date of Site Survey: September 18, 2015

Project/Activity Description: The project will involve dredging and other construction activities to accommodate the seaward relocation of an existing manatee heating area (thermal refuge) at the CCEC. The new manatee heating area will be located on the north side of an existing seawall that forms the south boundary of the plant's intake canal (Figure 1)

Description of General Project Area: The project is located between mainland Port St. John and an offshore barrier island (Merritt Island). The surrounding land use is mostly urban and consists almost exclusively of residential and minor commercial development. There are no known conservation lands or parks within the vicinity of the project. The project is not located within any designated Aquatic Preserve.

Description of Site Survey: The area surveyed for seagrasses encompassed approximately 700 ft by 100 ft (1.6 acre) of submerged bottom (Figure 2). The survey was conducted along three parallel transects, one along the centerline of the heating area, one along the northern edge, and one 10 ft north of the seawall along the southern edge (Figure 2). Along each transect, the bottom was visually examined, either by diver or underwater video camera, at 25-ft intervals. At each location, water depth (actual depth at time of survey, unadjusted for tidal variation), substrate type, and presence of any submerged aquatic vegetation (algae and seagrass) were recorded. A 100% survey of the bottom was conducted between the southern transect and the seawall, as this shallow area provided the most suitable habitat for seagrass.

In areas where seagrasses were present, a 0.25 m² quadrat was randomly placed on the bottom four times to document species composition and bottom coverage. Visual estimates of seagrass were quantified using a modified Braun-Blanquet classification scheme, as follows:

- 0.5 = Few individual shoots, <5% cover (Very Sparse)
- 1 = Numerous individual shoots, <5% cover (Sparse)
- 2 = $\geq 5\%$ cover and $\leq 25\%$ cover (Sparse to Moderate)
- 3 = $> 25\%$ cover and $\leq 50\%$ cover (Moderate)
- 4 = $> 50\%$ cover and $\leq 75\%$ cover (Moderate to Dense)
- 5 = $> 75\%$ cover (Dense)

Results of Site Survey: The site survey commenced at 0830. Water visibility was generally fair (2.0 – 3.0 feet). Tables 1-3 provide the results of the visual observations at each of the sampling locations along the three transects.

Recorded water depths at survey points ranged from 3.3 to 8.6 feet. Water depths were generally shallow (less than 4 feet) along the southern edge of the survey area, and gradually increased in a northward direction away from the seawall.

Substrates within the majority of the survey area consisted primarily of silt and shell hash. However, the portion immediately adjacent to the seawall generally contained sand mixed with calcareous shell debris, including broken oyster shells and some debris. Horseshoe crabs (*Limulus polyphemus*) were the only benthic macrofauna observed during the survey.

The vast majority of the survey area was found to have little attached vegetation, although sparse to moderate drift algae was fairly widespread within deeper areas. The green algae, *Caulerpa prolifera*, was the only attached macrophyte observed at any of the transect survey points, and it was sparse where present.

Seagrasses were limited to a very small area, approximately 0.016 acres in size, near the eastern end of the survey area between the southern transect and the seawall (Figure 2). Due to generally poor water clarity within the project area, seagrasses are limited to those shallow water depths where light penetration is sufficient for growth. Shoal grass, *Halodule wrightii*, was the only seagrass species present, and it occurred only as isolated sprigs (0.5 Braun-Blanquet score = very sparse).

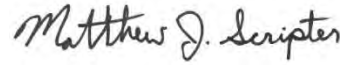
Listed Species: The project is located within federally-designated Critical Habitat for the Florida manatee, *Trichechus manatus*. During the survey, a single manatee was observed swimming east of the project area.

Ecological Associates, Inc. appreciates the opportunity to be of service to FPL. Should you have any questions regarding this assessment, we can be reached at (772) 334-3729.

Signature of persons performing the site survey:



Carrie Goethel
Biologist



Matt Scriptor
Senior Scientist

cc: Bob Ernest/Chief Operating Officer
Stan Deforest/President

Table 1.
Results of Submerged Lands Resource Survey
Southern Transect

Point ID	Type of Sample	Water Depth (ft)	Substrate	Flora/Fauna Observed
1	In-water	5.1	Silty, Shell Hash	None
2	In-water	3.6	Silty, Shell Hash	None
3	In-water	3.9	Silty, Shell Hash	None
4	In-water	3.3	Silty, Shell Hash	Drift Algae
5	In-water	3.8	Silty, Shell Hash	Drift Algae
6	In-water	3.4	Silty, Shell Hash	None
7	In-water	3.5	Silty, Shell Hash	None
8	In-water	4.3	Silty, Shell Hash	None
9	In-water	3.3	Silty, Shell Hash	Drift Algae
10	In-water	3.9	Silty, Shell Hash	Drift Algae, Sparse <i>Caulerpa</i>
11	In-water	3.6	Silty, Shell Hash	Drift Algae
12	In-water	3.5	Silty, Shell Hash	Drift Algae
13	In-water	3.3	Silty, Shell Hash	Drift Algae
14	In-water	3.4	Silty, Shell Hash	Drift Algae, Sparse <i>Caulerpa</i>
15	In-water	3.6	Silty, Shell Hash	Drift Algae, Sparse <i>Caulerpa</i>
16	In-water	3.9	Silty, Shell Hash	Drift Algae, Sparse <i>Caulerpa</i>
17	In-water	3.7	Silty, Shell Hash	Drift Algae
18	In-water	3.8	Silty, Shell Hash	Drift Algae
19	In-water	3.8	Silty, Shell Hash	None
20	In-water	3.8	Silty, Shell Hash	Drift Algae
21	In-water	3.9	Silty, Shell Hash	None
22	In-water	3.3	Silty, Shell Hash	Drift Algae
23	In-water	3.5	Silty, Shell Hash	Drift Algae
24	In-water	3.4	Silty, Shell Hash	None
25	In-water	3.5	Silty, Shell Hash	Sparse <i>Caulerpa</i>
26	In-water	3.3	Silty, Shell Hash	None
27	In-water	3.4	Shell Hash	None
28	In-water	3.4	Silty, Shell Hash	None

Table 2.
Results of Submerged Lands Resource Survey
Middle Transect

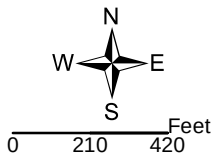
Point ID	Type of Sample	Water Depth (ft)	Substrate	Flora/Fauna Observed
29	Camera	5.1	Silty, Shell Hash	None
30	Camera	3.6	Silty, Shell Hash	None
31	Camera	3.9	Silty, Shell Hash	Drift Algae
32	Camera	3.3	Silty, Shell Hash	Drift Algae
33	Camera	3.8	Silty, Shell Hash	Drift Algae, Sparse <i>Caulerpa</i>
34	Camera	3.4	Silty, Shell Hash	Drift Algae
35	Camera	3.5	Silty, Shell Hash	Drift Algae
36	Camera	4.3	Silty, Shell Hash	Drift Algae
37	Camera	3.3	Silty, Shell Hash	Drift Algae, Sparse <i>Caulerpa</i>
38	Camera	3.9	Silty, Shell Hash	Drift Algae, Sparse <i>Caulerpa</i>
39	Camera	3.6	Silty, Shell Hash	Drift Algae, Sparse <i>Caulerpa</i>
40	Camera	3.5	Silty, Shell Hash	Drift Algae
41	Camera	3.3	Silty, Shell Hash	Drift Algae, Sparse <i>Caulerpa</i>
42	Camera	3.4	Silty, Shell Hash	Drift Algae, Sparse <i>Caulerpa</i>
43	Camera	3.6	Silty, Shell Hash	Drift Algae, Sparse <i>Caulerpa</i>
44	Camera	3.9	Silty, Shell Hash	Drift Algae
45	Camera	3.7	Silty, Shell Hash	Drift Algae
46	Camera	3.8	Silty, Shell Hash	Drift Algae, Sparse <i>Caulerpa</i>
47	Camera	3.8	Silty, Shell Hash	Drift Algae
48	Camera	3.8	Silty, Shell Hash	Drift Algae, <i>Limulus polyphemus</i>
49	Camera	3.9	Silty, Shell Hash	Drift Algae, Sparse <i>Caulerpa</i>
50	Camera	3.3	Silty, Shell Hash	Drift Algae
51	Camera	3.5	Silty, Shell Hash	Drift Algae, Sparse <i>Caulerpa</i>
52	Camera	3.4	Silty, Shell Hash	Drift Algae, Sparse <i>Caulerpa</i>
53	Camera	3.5	Silty, Shell Hash	Drift Algae
54	Camera	3.3	Silty, Shell Hash	None
55	Camera	3.4	Silty, Shell Hash	None
56	Camera	3.4	Silty, Shell Hash	Drift Algae

Table 3.
Results of Submerged Lands Resource Survey
Northern Transect

Point ID	Type of Sample	Water Depth (ft)	Substrate	Flora/Fauna Observed
57	Camera	6.1	Silty, Shell Hash	None
58	Camera	5.9	Silty, Shell Hash	None
59	Camera	6.9	Silty, Shell Hash	Drift Algae
60	Camera	6.3	Silty, Shell Hash	Drift Algae
61	Camera	5.1	Silty, Shell Hash	Drift Algae
62	Camera	4.7	Silty, Shell Hash	None
63	Camera	4.9	Silty, Shell Hash	None
64	Camera	5.0	Silty, Shell Hash	None
65	Camera	4.7	Silty, Shell Hash	None
66	Camera	5.0	Silty, Shell Hash	None
67	Camera	5.6	Silty, Shell Hash	Drift Algae
68	Camera	5.8	Silty, Shell Hash	Drift Algae
69	Camera	6.7	Silty, Shell Hash	None
70	Camera	7.5	Silty, Shell Hash	None
71	Camera	7.2	Silty, Shell Hash	None
72	Camera	7.7	Silty, Shell Hash	None
73	Camera	7.8	Silty, Shell Hash	Drift Algae
74	Camera	7.0	Silty, Shell Hash	Drift Algae
75	Camera	7.8	Silty, Shell Hash	None
76	Camera	7.7	Silty, Shell Hash	Drift Algae
77	Camera	6.8	Silty, Shell Hash	None
78	Camera	8.1	Silty, Shell Hash	None
79	Camera	7.8	Silty, Shell Hash	None
80	Camera	8.2	Silty, Shell Hash	None
81	Camera	7.1	Silty, Shell Hash	Drift Algae
82	Camera	7.0	Silty, Shell Hash	None
83	Camera	8.6	Silty, Shell Hash	None
84	Camera	8.2	Silty, Shell Hash	None



Figure 1

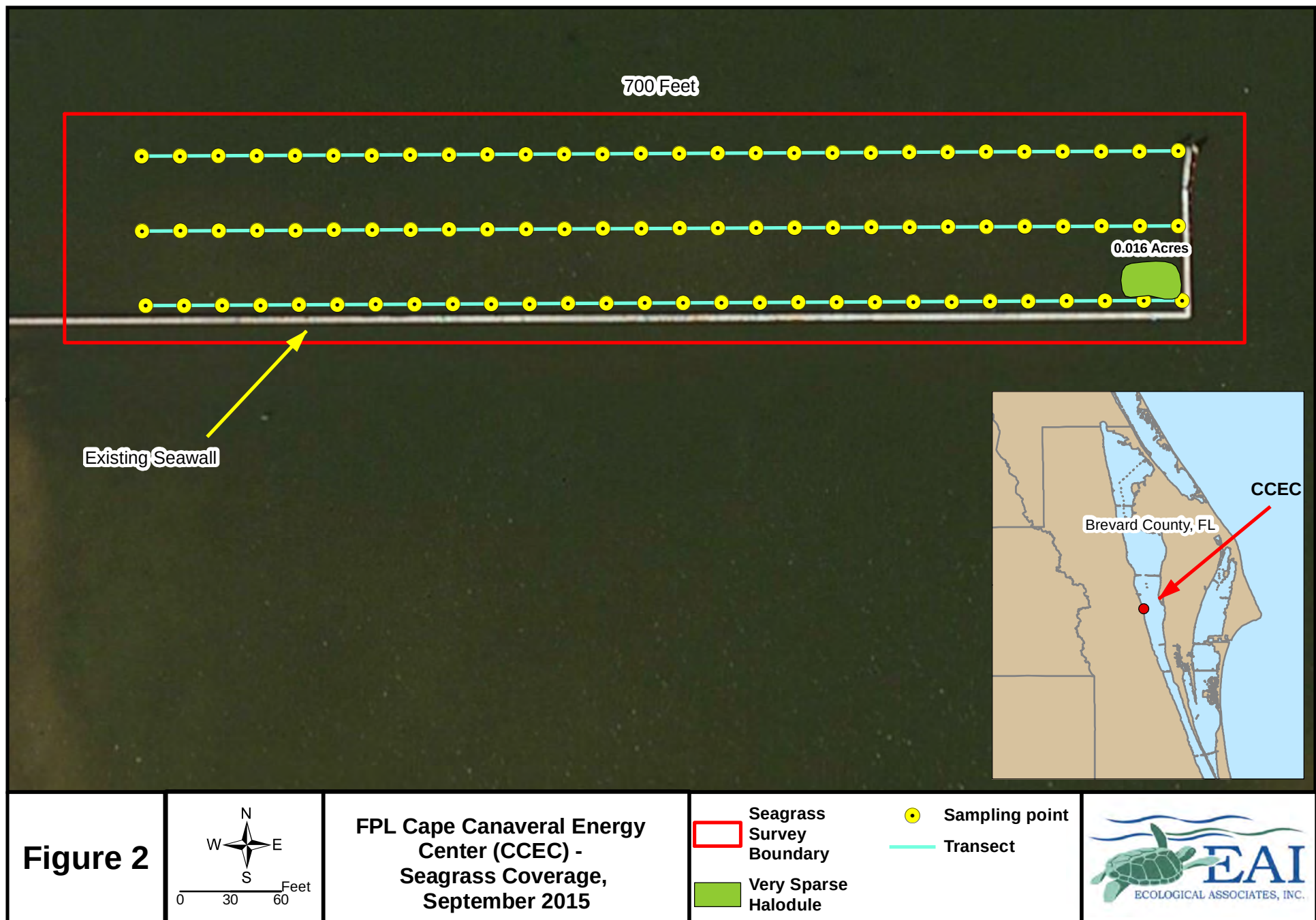


**FPL Cape Canaveral Energy
Center (CCEC) -
Seagrass Survey Area,
September 2015**

Legend

 **Proposed New Manatee
Heating Area**





ATTACHMENT C

Manatee Forms and Supporting Documents

MANATEE KEY
Florida¹
April 2013

The key is not designed to be used by the Corps' Regulatory Division for making their effect determinations for dredging projects greater than 50,000 cubic yards, the Corps' Planning Division in making their effect determinations for civil works projects or by the Corps' Regulatory Division for making their effect determinations for projects of the same relative scope as civil works projects. These types of activities must be evaluated by the Corps independently of the key.

- A. Project is not located in waters accessible to manatees and does not directly or indirectly affect manatees (see Glossary).....*No effect*
- Project is located in waters accessible to manatees **or** directly or indirectly affects manatees**B**
- B. Project consists of one or more of the following activities, all of which are *May affect*:
1. blasting or other detonation activity for channel deepening and/or widening, geotechnical surveys or exploration, bridge removal, movies, military shows, special events, etc.;
 2. installation of structures which could restrict or act as a barrier to manatees;
 3. new or changes to existing warm or fresh water discharges from industrial sites, power plants, or natural springs or artesian wells (but only if the new or proposed change in discharge requires a Corps permit to accomplish the work);
 4. installation of new culverts and/or maintenance or modification of existing culverts (where the culverts are 8 inches to 8 feet in diameter, ungrated and in waters accessible, or potentially accessible, to manatees)²;
 5. mechanical dredging from a floating platform, barge or structure³ that restricts manatee access to less than half the width of the waterway;
 6. creation of new slips or change in use of existing slips, even those located in a county with a State-approved Manatee Protection Plan (MPP) in place and the number of slips is less than the MPP threshold, to accommodate docking for repeat use vessels, (e.g., water taxis, tour boats, gambling boats, etc; or slips or structures that are not civil works projects, but are frequently used to moor large vessels (>100') for shipping and/or freight purposes; does not include slips used for docking at boat sales or repair facilities or loading/unloading at dry stack storage facilities and boat ramps); [Note: For projects within Bay, Dixie, Escambia, Franklin, Gilchrist, Gulf, Hernando, Jefferson, Lafayette, Monroe (south of Craig Key), Nassau, Okaloosa, Okeechobee, Santa Rosa, Suwannee, Taylor, Wakulla or Walton County, the reviewer should proceed to Couplet C.]
 7. any type of in-water activity in a Warm Water Aggregation Area (WWAA) or No Entry Area (see Glossary and accompanying Maps⁴); [Note: For residential docking facilities in a Warm Water Aggregation Area that is not a Federal manatee sanctuary or No Entry Area, the reviewer should proceed to couplet C.]
 8. creation or expansion of canals, basins or other artificial shoreline and/or the connection of such features to navigable waters of the U.S.; [Note: For projects proposing a single residential dock, the reviewer should proceed to couplet C; otherwise, project is a *May Affect*.]

**FLORIDA POWER AND LIGHT (FPL) CAPE CANAVERAL ENERGY CENTER (CCEC)
MANATEE HEATING AREA RELOCATION AND HORSESHOE CRAB DETERRENT WALL**

Response to:

Army Corps of Engineers Manatee Biological Evaluation (March 2011 Questionnaire)

The Corps has determined that your project has the potential to affect the endangered West Indian manatee. Therefore, pursuant to Section 7 of the Endangered Species Act of 1973, as amended, the Corps is required to seek consultation from the U.S. Fish and Wildlife Service for the proposed project. In order to assist us in making our final effect determination, we need you to provide us with information for items 4-7 below:

4. Description of the manner in which the action may affect the manatee or its critical habitat:

- a. Habitat. Check those that would apply to within one mile of the project site and a brief description.

(1) Source of warm water input to the area?

Response: CCEC supports an existing warm water aggregation area due to the plant's warm water discharge located on the discharge (i.e., north) side of the plant peninsula. The discharge's thermal influence extends north and south of the plant. CCEC maintains an enclosed manatee heating area on the intake (i.e., south) side of the plant peninsula, which is operated when ambient water temperatures fall below 65 degrees F. When in use, the manatee heating area is warmed by dedicated heaters and stand alone intake water supply.

(2) Source of fresh water input to the area?

Response: There are no significant fresh water inputs (e.g, canals, springs, rivers) at CCEC. CCEC operates a once through cooling water system which recirculates the vast majority of its water used with the Indian Lagoon.

(3) Does submerged or emergent aquatic vegetation or mangrove or algae occur within the footprint of the project and in the area of ingress-egress to the project site? If mangrove or emergent vegetation is present, provide a description, including type and location. For submerged aquatic vegetation (SAV), a survey during the growing season is highly recommended. For estuarine/marine SAV, excluding Johnson's seagrass, the growing season extends from June 1 to September 30. The growing season for Johnson's seagrass is from April 1 to August 31. For freshwater SAV, such as Vallisneria, the growing season varies by location. Check with the Florida Fish and Wildlife Conservation Commission for the dates applicable to the area of your project.

Response: There are 4 main project components: relocated manatee heating area, horseshoe crab deterrent wall, piping and dock. Seagrass surveys performed within the manatee heating area and the horseshoe crab deterrent wall area identified small areas of minimal (less than 5% coverage) seagrass in shallow portions of both areas. Seagrasses were not identified deeper than 6 feet in the plant intake channel which serves as the manatee ingress/egress.

There is a minor impact to seagrasses proposed (194 S.F. direct impact and 268 S.F. indirect impact) associated with the horseshoe crab deterrent wall and riprap footprint. The seagrass impact is unavoidable since the horseshoe crab deterrent wall must extend into shallow water to effectively deter horseshoe crabs. The vast majority of the relocated manatee heating area and horseshoe crab deterrent wall footprints are unvegetated. The 788 S.F. area of seagrass identified within the manatee heating area (at the far east end) will be preserved and protected from impact.

Fringing mangroves are present along parts of the peninsula and seawalls, but no impacts are proposed. Algae is present in the project area, but has not been surveyed. Seagrass surveys for the relocated manatee heating area and horseshoe crab deterrent wall are included in the application.

- (4) Are existing depths greater than -3 feet mean low water in the footprint of the project and the surrounding area?

Response: The existing depths within the relocated manatee heating area and dock range from approximately 2 to 3 feet below MLLW. The depths across the intake channel where the crab deterrent wall will be located range from OHW to approximately 16 feet below MLLW. The piping runs on existing ground will extend from OHW to an existing depth of approximately 2 feet.

- b. Proposed Facility (if existing facility, show proposed change)

- (1) Length of shoreline associated with the proposed or existing facility

Response: 704 L.F. of sheetpile wall will be used to enclose the relocated manatee heating area against the existing sheetpile jetty.

There will be 340 L.F. of submerged, smooth paneled sheetpiling for the horseshoe crab deterrent wall across the intake channel. 101 L.F. of paneling will be used to smooth part of the existing jetty.

- (2) Number of proposed slips (wet and dry) 0

- (3) Number of existing (previously authorized wet and dry) slips 0

- (4) Launching facilities: ramp 0, travel lift 0, other 0

- (5) Number of parking spaces for launching facility 0

- (6) Number of launches per day 0

- c. Project influence on Vessel Use Patterns. The project's facilities may affect vessel use patterns in the area by attracting transient traffic or causing modification of existing vessel navigation patterns.

- (1) Are there existing studies or reports that describe boating activities, vessel traffic, or compliance with speed zones in the action area? If yes, provide references as appropriate.

- (2) The proposed facility will provide the following services:

- (a) Permanent moorings (leased on an annual or monthly basis) for:

N/A commercial use (including fishing vessels, charter boats, rental boats, etc).

Number of slips 0

 N/A non-commercial use (including privately owned recreational boats).

Number of slips 0

(b) Transient moorings (leased or used on a daily basis) for:

 N/A Temporary births: Number of slips 0

 N/A Type of use: Fuel Pump out Other

(3) What is the estimated number of slips used for the following?

(a) Used primarily for day trips 0 slips

(b) Used primarily for longer trips 0 slips

(c) Used primarily for dockside entertainment 0

(d) Used by charter vessels 0 slips

d. Enforcement Activities. It is important to consider the presence and effectiveness of ongoing enforcement activities within the action area.

(1) Is the project in a state-established manatee speed zone or federal manatee refuge? (if not, how close is the nearest speed zone? miles)

Response: A No Entry zone has been established on the discharge (i.e., north) side of the CCEC peninsula between November 15 and March 31. This is a Slow Speed zone the rest of the year.

The project is located on the intake (i.e., south) side of the CCEC peninsula. This is an Idle Speed zone between November 15 and March 31. It is a Slow Speed zone the rest of the year.

The project involves the relocation of an existing manatee heating area further away from the plant intake, but still within the intake channel embayment formed by the peninsula and jetty. Signage will be posted and the projects are not expected to cause changes to vessel patterns.

(2) Describe existing enforcement activities regulating speed zones within the action area.

N/A

5. Relevant reports, including any environmental impact statement, environmental assessment, or biological assessment prepared. Provide any relevant reports prepared for this project.

Response: The site is required to support various marine biological monitoring due to its cooling water intake and warm water discharge. Seagrass surveys for the relocated manatee heating area and horseshoe crab deterrent wall are included in the application.

6. Any other relevant information available on the action, the manatee and its critical habitat. Provide any other information available that would assist in our review of the effects your proposal may have on the manatee or its critical habitat, including specific actions you may propose to minimize or eliminate potential effects on the manatee and its critical habitat.

Response: The purpose of the project is to improve the manatee heating area that FPL is required to provide, by relocating to further away from the plant intake. This will reduce the risk of manatee impingement at the plant and place the manatee heating area in closer proximity to broader Indian River Lagoon habitat. All state and federal in-water construction conditions will be followed.

7. A Florida Fish and Wildlife Conservation Commission (FWC) Manatee Impact Review.

Provide a copy of the review, if applicable or available.

Response: This project is consistent with the Brevard County Manatee Protection Plan in supporting the warm water aggregation area provided by CCEC during the winter months. FPL will supply a copy of the FWC manatee impact review upon completion by FWC.

FLORIDA POWER AND LIGHT (FPL) CAPE CANAVERAL ENERGY CENTER (CCEC)

MANATEE HEATING AREA RELOCATION AND HORSESHOE CRAB DETERRENT WALL

Manatee Protection – Temperature Modeling and Supporting Data

1.0 Manatee Protection Criteria

The Corps manatee key, dated April 2013, has indicated that this project has the potential to affect the West Indian manatee. The purpose of this evaluation is to document the project's compliance with state and federal manatee protection criteria. There are several types of protection criteria relevant to the project, as follows:

- Temperature Specifications, related to the warm water supplied from CCEC. These conditions are designed to provide adequate thermal habitat for manatees in the heating area during cold weather. The relocated manatee heating area has been sized and thermal modeling has been conducted to show compliance with this conditions; and,
- In-Water Construction Conditions, which are designed to protect manatees from harm during in-water construction.
- Operating Conditions, which address the operations of the manatee heating area.

The project's compliance with these criteria is discussed in the following sections.

2.0 Temperature Specifications

The relocated manatee heating area meets temperature and design requirements previously established in the CCEC Florida Department of Environmental Protection (FDEP) Site Certification No. PA 08-53 and NPDES Permit FL0001473. The relocated manatee heating enclosure is approximate 0.77 acres in size (the existing manatee heating area is approximately 0.78 acres in size). The relocated manatee heating area is approximately 6 feet deep below MLLW. The existing manatee heating area is more than 10 feet deep, since it is located in the intake canal near the plant intakes.

Manatee Heating Area Temperature Modeling

A steady-state heat transfer model was used to determine the temperature in the relocated manatee heating area. This model considers the thermal input from the heaters, ambient water and air temperatures, wind speed, and heat losses due to the 5'x10' manatee ingress/egress (e.g., tidal flushing). The heat transfer model assumes that water is evenly mixed vertically in the enclosure and ambient conditions do not change during the simulation.

Vinyl sheetpile is used to enclose the manatee heating area against the jetty, and provides superior insulation to comparable steel sheet pile. An intake diffuser structure located at the east end of the enclosure provides water supply for the manatee heating area. Water drawn from the intake is circulated through the heater and pump system and discharged through a header at the west end of the manatee heating area. The water velocity at the intake will be less than 1 foot per second to avoid impingement.

The model results indicate the manatee heating area will maintain a minimum 68 degree F temperature during 55 degrees F ambient water temperatures and 35 degrees F ambient air temperatures. Figure 1 summarizes the model inputs and results. The temperature in the vicinity of the manatee ingress/egress is predominantly influenced by tidal flushing (as evidenced by the temperature difference between sensors TS2 and TS1), while much of the heat loss throughout the length of the manatee heating area is through evaporation and radiation. The analysis concludes that the existing 10MW heaters are sufficiently sized to perform their design function. The results shown are for operation of the existing heaters at 75% capacity. The heaters may be operated at higher capacity in extreme conditions.

Post-Construction Temperature Monitoring

After construction, temperature monitoring instrumentation will be installed to confirm temperatures in the manatee heating area. A series of 6 temperature sensors at a spacing of approximately 100 L.F. will be installed along the bottom of the heating area. The marine grade cable will be anchored to the bottom, and elevated approximately 1-foot in the vicinity of the temperature sensors.

3.0 Construction Conditions

The installation of sheetpile wall, piping, and dock for the relocated heating area will follow the Standard Manatee Conditions for In-Water Work guidelines provided in the United States Fish and Wildlife Service (USFWS) Biological Opinion (BO) dated March 2011, and Florida Fish and Wildlife Conservation Commission (FFWCC) conditions delineated in the CCEC Florida Department of Environmental Protection (FDEP) Site Certification PA 08-53A, as modified December 28, 2011.

The construction process will take several months and will be completed in approximately September 2016, depending on regulatory approvals. Dewatering will not be required during construction.

4.0 Operating Conditions

CCEC will adhere to conditions delineated in the CCEC Florida Department of Environmental Protection (FDEP) Site Certification PA 08-53A, as modified December 28, 2011, regarding the operation of the relocated manatee heating area.

The transition to the relocated manatee heating area will specifically address the following:

- The relocated manatee heating area is expected to be installed and operational by September 15, of the year in which the relocated manatee heating area commences operation.
- An updated environmental monitoring plan will be submitted for approval prior to relocated heating area operation. FWC, in consultation with DEP and USFWS, will approve or disprove the submitted plan within 90 days of the submittal. FWC requests for additional information shall be submitted to FPL within 30 days of receipt. An approved plan shall be in place by September 1 of the year when the conversion commences.
- FPL will submit an updated BMP manual to FWC for review and comment by August 15 of the year when the relocated manatee heating area commences operation. FPL will review, consider, and incorporate if practicable comments from FWC that are received by September 15 of that year. A copy of the updated BMP manual will be maintained at the CCEC site.



Cape Canaveral Manatee Heating Area Thermal Model

Heater Rated Power	Pump Flow	Outside Grd Temp	Refuge Grd Temp	Ext. Water Temp	Air Temp	Wind Speed	Refuge Target Temperature	Predicted Temperatures at 100' Intervals					
% Power	GPM	°F	°F	°F	°F	mph	°F	100	200	300	400	500	600
75	4000	55	55	55	35	20	68	79.6	78.1	76.7	75.2	73.8	69.8
								TS6	TS5	TS4	TS3	TS2	TS1

Model is based upon the following:
New suction point, Full Pump Flow, Heater Capacity: 34Mbtu/hr, Average Refuge Temperature: 76 F
Model includes additional 10% losses above those calculated
100' Interval temperature ranges may be adjusted by changing heater thermal power or pump output
Temperature delta between TS2 and TS1 largely due to influence of tidal flush
Tidal flush only included in final segment since pump flow rate exceeds tidal flush
Non-dredged area for protection of sea grasses at east end of Manatee Heating Area is not modeled.

Losses at TS2-TS6:
Losses through heating area walls and bottom : 6%
Evaporative losses: 60%
Convective and radiation losses: 34%

Losses at TS1:
Losses through heating area walls and bottom: 1%
Evaporative losses: 13%
Convective and radiation losses: 7%
Tidal Flushing Losses : 79%

 **ENERCON**
PALM BEACH GARDENS, FL

FLORIDA POWER & LIGHT
CAPE CANAVERAL POWER PLANT

MANATEE HEATING AREA
THERMAL MODEL

SIZE	DWG NO.	REV
B	FIGURE 1	0
SCALE	NONE	SHEET 1 of 1

REV	DESCRIPTION	DRN	CHK	REV	APP	DATE
0	INITIAL ISSUE					

NMFS Endangered Species Act Section 7 Checklist

For common, minor coastal construction projects

Updated 09/15/2015

A) Project Identification

Lead Action Agency:

Agency Contact: (Phone, Email)

Applicant Name/ Contact: (Phone, Email)

Project Name & ID #:

Are any aspects of the proposed project being authorized under a separate consultation? (SAJ general permits, GRBO, SARBO, NWP, Programmatic consultation, etc.)

No

B) Project Location and Site Description

1. Address, including county and state, and description of property (public, residential, commercial, industrial, etc.):

Cape Canaveral Energy Center is a power generation facility located at 6000 US 1 N., Brevard County, Cocoa FL 32627

2. a) Latitude & Longitude:

i. Required to be submitted in Decimal Degrees and Datum (e.g., 27.71622 , -80.25174 [NAD83])

ii. Online conversion: <http://transition.fcc.gov/mb/audio/bickel/DDDMSS-decimal.html>

28.468000 , -80.760846

3. Waterbody:

i. Name of the body of water on which the project is located (St. Johns River, Tampa Bay, Suwannee River, etc.)

ii. If riverine or estuarine, approximate navigable distance from marine environment (e.g., Atlantic, Gulf of Mexico)

Indian River, navigable man made power plant intake channel

C) Project Site Resource Description

1. Existing Structures: (Describe current structures in project area)

i. Marina, riprap, dock, etc.

ii. Number of slips, size (area of overwater structure), linear or square footage, location, orientation, etc.

Existing seawalls, man made power plant intake canal and channel, constructed peninsula and jetty, riprap shoreline, barrier net

2. Existing Conditions: (Describe the project area)

i. Substrate type, water quality, depth, etc.

ii. List any alterations to substrate type, water quality, depth, etc, resulting from the proposed action (qualitative and quantitative)

Substrate type - Silty shelly hash. Relatively poor water quality in N Indian River Lagoon. water depth is -14' to ohw in the channel, shallower by the peninsula and jetty. Proposed manatee heating area will be dredged from ~ -4' to -7'. Existing manatee heating enclosure will be maintenance dredged. Water quality will be managed using enclosures, mixing zones and turbidity barriers. Substrate has been affected by historic channel and jetty construction and surface layer will be removed for new manatee heating area. Submerged crab deterrent wall will maintain fish and navigation passage above the wall. Turbidity will be minimized with turbidity barriers.

3. Seagrasses & Other Marine Vegetation

i. If a benthic survey was conducted provide date of survey and a copy of the report

ii. Species area of coverage estimates and density of species coverage (percentage) estimates

iii. Location relative to proposed structures. Provide detailed sketch of action area and location of marine vegetation

iv. List any impacts to seagrasses or other marine vegetation resulting from proposed action (square feet)

A seagrass survey was performed in September 2015 for the proposed manatee heating area and August 2014 for the proposed crab deterrent wall. Halodule wrightii was the only species within the survey areas (788 S.F. manatee heating area and 723 S.F. crab deterrent wall survey area) and was less than 5% coverage in both areas. There is a proposed 194 S.F. direct seagrass impact and 268 S.F. indirect seagrass impact to sparse seagrasses associated with the crab deterrent wall area and no proposed impact

associated with the manatee heating area.

4. Mangroves

- i. Species (red, black, or white)
- ii. Area (square and linear feet). Provide detailed sketch of the action area and location of mangroves.
- iii. List any impacts to mangroves resulting from the proposed action (square and linear feet)

Avicennia germinans -black mangrove and Rhizophora mangle - red mangrove

0.31 AC/645 linear feet mangrove within project limits

No mangrove impacts proposed

5. Corals

- i. If a benthic survey was conducted provide date of survey and a copy of the report
- ii. Species Present
- iii. Area of coverage and density estimates (percentage, include estimates for each species)
- iv. Location relative to proposed structures. Provide detailed sketch of action area and location of corals.
- v. List any impacts to corals resulting from proposed action (number and size of colonies and/or fragments)

N/A

D) Project Description and Construction Methods

- ☒ Yes, the applicant has agreed to follow the Mangroves and Seagrass Dock Construction Guidelines (Found [here](#))
- ☒ Yes, the applicant has agreed to follow NMFS Johnson's Seagrass Dock Construction Guidelines (Found [here](#))
- ☒ Yes, the applicant has agreed to follow the NMFS Sea Turtle and Smalltooth Sawfish Construction Conditions (Found [here](#))

1. Project: (Please describe)

Florida Power and Light (FPL) is proposing in-water modifications at the Cape Canaveral Energy Center (CCEC). The proposed project would relocate the existing manatee heating area and construct a permanent horseshoe crab deterrent wall to replace the existing, temporary fence. The applicant proposes to construct a 340-foot long by 10-inch wide horseshoe crab deterrent wall, to improve and replace the temporary structure that is currently in place to prevent horseshoe crabs from entering the plant intake. The applicant also proposes to relocate the manatee heating area from its existing enclosure in the intake canal to a new enclosure further away from the intake approximately 1,000 feet to the east of the current location, via construction of new sheetpile and piping.

2. In Water Structures:

- i. Type of structure(s) (e.g. boat basin, riprap, seawall)
- ii. Square and/or linear feet of structure(s)
- iii. Number of new vessels/slips, if any
- iv. Is this structure new, removal, or replacement?

No proposed vessels/slips

In-Water Structures: 209 S.F. dock (3.49 S.F. in water piling area), new manatee heating area sheetpile enclosure (sheetpile length 705') and crab deterrent wall (340' modified sheetpile piling).

3. Overwater Structures:

- i. Will the structure have grated decking?
- ii. Proposed spacing between boards (0.5-inch, 0.75-inch, none, etc.)
- iii. Height above mean high water (MHW) elevation
- iv. Directional orientation of main axis of dock
- v. Overwater area (calculate square footage)
- vi. Is this structure new, removal or replacement?

The dock is not proposed over any known seagrasses. The dock will be constructed at the same elevation as the existing jetty walkway. The seagrass survey limits are immediately adjacent to the proposed dock and did not identify seagrasses for more than 500 feet

4. If the proposed structure is a fishing pier please answer the following:

- i. Is the fishing pier public or private?
- ii. How many people are expected to fish from the pier each day?
- iii. What is the applicant's plan to address hook-and-line captures at the fishing pier?
- iv. Will there be any educational signs posted?

N/A

5. Methods: (For pile installation, please see Pile Installation section below)

- i. Step-by-step construction methodology
- ii. Demolition/ removal of existing structures and debris
- iii. Location of work (barge, upland or both)

Dock piling will be installed from uplands or from a floating barge. 10 wood pilings 8 inches in diameter are associated with the dock (the additional pilings are associated with the manatee heating area). The proposed dock is located immediately west of the seagrass

survey where no seagrasses were identified. Seagrasses are not expected within the dock construction area. Owner will verify absence prior to construction. If seagrasses are identified, dock construction will conform with Construction Guidelines in Florida for Minor Pile Supported Structures Constructed In Or Over Submerged Aquatic Vegetation , Marsh, Or Mangrove Habitat dated 2001. Pilings shall be installed using a vibratory hammer. Impact hammers will not be used. No existing pilings will be removed.

6. Pile Installation (Use additional rows for each combination of pile size and material)

Pile Material	Installation Method	Number of Piles	Pile Size (inches)	Max. number of piles to be driven per day	Average number of strikes per pile
Wood	Vibratory Hammer	52	8 inches	N/A when using a vibratory hammer	

Will piles be driven in a confined space (150' to nearest sound reflecting object)?

Yes ☒

No ☐

Will noise abatement be used?

Yes ☒

No ☐

Noise abatement details:

Vibratory hammer will be used for all pile installation.

Pile Installation details/notes:

See construction plans.

7. Dredging

Dredge Type: (Hopper, clamshell, etc.)

Low resuspension dredging methods will be used due to the proximity to the power plant. Hopper dredging will not be allowed.

Area (sq. ft.) to be dredged:

28,314 S.F. - proposed manatee heating area and 18,730 S.F. - existing manatee heating area

Depth of cut:

~3' - proposed manatee heating area; 6" - existing manatee heating area for maintenance

Volume of material to be dredged: (cubic yards)

3,485 cu yds - proposed manatee heating area; 353 cu yds - existing manatee heating area for maintenance

Sediment testing: (Has the material to be dredged been tested? Is there any contamination?)

Sediment has not been tested. Project is located on the intake side of the plant peninsula, overlaps existing maintenance dredging areas and sediment is not expected to be contaminated

Spoil disposal plans: (location of disposal area, sediment type at disposal area, etc.)

Spoil disposal will be on an owner approved upland landfill.

8. Artificial Reefs

Please refer to the artificial reef program websites for the particular state in which the project will occur:

[Alabama](#); [Florida](#); [additional Florida guidance](#); [Mississippi](#); [Louisiana](#); [South Carolina](#); [North Carolina](#); [Texas](#)

- i. Reef site selection (process details)
- ii. Materials to be used
- iii. Deployment Method
- iv. Deployment schedule

N/A

9. Construction Schedule

- i. Number of days/weeks/months of in-water work
- ii. Daylight construction only?
- iii. Seasonal restrictions?

Daylight construction only

Construction shall not take place between November 15th through March 31st.

10. Conservation/ Protective Measures

How is conservation, or other protective measures, being incorporated into this project, if at all?

Proposed project is biologically beneficial and conforms to NMFS Biological Opinion PDCs. See attached narrative.

ATTACHMENT E

Soils and Sediment Report (Report of Subsurface Exploration)



UNIVERSAL ENGINEERING SCIENCES, INC.

Consultants In: Geotechnical Engineering • Environmental Sciences
Construction Materials Testing • Threshold Inspection

820 Brevard Avenue • Rockledge, Florida 32955
Phone: (321) 638-0808 Fax: (321) 638-0978

April 6, 2010

Florida Power & Light Company
6000 North Cocoa Boulevard
Cocoa, Florida 32927

Attention: Mr. Miles Dentler

Reference: Limited Subsurface Exploration
PCC Manatee Refuge Heating Project
FP&L Cape Canaveral Plant
6000 North Cocoa Boulevard
Cocoa, Brevard County, Florida
Universal Project No. 0330.1000020.0000

Dear Mr. Dentler:

As requested, Universal Engineering Sciences, Inc. (Universal) has completed a limited subsurface exploration at the above referenced site in Brevard County, Florida. This work was authorized by you under Purchase Order #4500567737. Our exploration was performed in accordance with Universal's Proposal No. 0330.0310.00007 and generally accepted soil and foundation engineering practices. No other warranty, expressed or implied, is made. The following report presents the results and methodologies of our limited subsurface exploration.

PROJECT DESCRIPTION

Universal understands from information submitted by the client that proposed project will include the installation of four (4) new heating units for a manatee refuge zone within the southern intake canal area of the FP&L Cape Canaveral plant in Sharpes, Florida.

The subject site is located on the south side of the Units #1 & 2 intake canal within the southeastern sections of the plant complex. The barge peninsula for refueling barges is situated to the northeast of the area and the Indian River borders the east side of the plant complex.

FIELD METHODOLOGIES

The four (4) Standard Penetration Test (SPT) borings, designated B1 through B4 on the attached Figure 1, were performed in general accordance with the procedures of ASTM D 1586 (Standard Method for Penetration Test and Split-Barrel Sampling of Soils). The SPT drilling technique involves driving a standard split-barrel sampler into the soil by a 140 pound hammer, free falling 30 inches. The number of blows required to drive the sampler 1 foot, after an initial seating of 6 inches, is designated the penetration resistance, or N-value, an index to soil strength and consistency. The soil samples recovered from the split-barrel sampler were visually inspected and classified in general accordance with the guidelines of ASTM D 2487 (Standard Classification of Soils for Engineering Purposes [Unified Soil Classification System]).

Two (2) of the requested boring locations were located within a grassed lawn area between the seawall and the FP&L employees pavilion. However, the other two (2) borings were situated within the intake canal, roughly 10 to 20 feet beyond the seawall line. The landside borings were drilled with a conventional truck mounted drilling rig; however, the canal borings were required to be performed with a small barge mounted drilling rig.

The SPT borings were drilled at the locations designated by FP&L's field representative. The borings were located in the field by measuring with a cloth tape and calibrated measuring wheel from landmarks shown on an aerial photograph. No survey control was provided on-site, and our boring locations should be considered approximate. The approximate boring locations are shown on the attached Figure 1.

Boring logs were produced from the information obtained in the field and attached to this letter report for submittal to the client. Please note that no conclusions or recommendations are included in Universal's scope of work on this portion of the project.

During drilling operations within the intake canal, observations & monitoring of manatee activities near the drilling barge were performed by Universal's subcontractor, Tiny's Marine Services, Inc. Copies of their monitoring logs are included within Exhibit #2 of this report.

LABORATORY TESTING

We completed #200 sieve particle size analyses on eight (8) representative soil samples. These samples were tested according to the procedures listed ASTM D 1140 (Standard Test Method for Amount of Material in Soils Finer than the No. 200 Sieve). The percentage of materials passing the #200 sieve is shown on the attached boring logs.

In addition, we also performed one (1) organic content test in accordance with ASTM D 2974 (Standard Test Methods for Moisture, Ash, and Organic Matter of Peat and Other Organic Soils). The sample was obtained from boring location B4 at a depth of approximately 2½ feet bls. The results of this test are also shown on the attached boring logs.

GENERAL QUALIFICATIONS

Please note that this report is based on a limited subsurface exploration program with the scope of services, boring locations and depths as directed by the client. The information submitted in this report is based on data obtained from the soil boring performed at the locations indicated on the attached Exploration Location Plan and from other information as referenced. Since the scope of work for this project only included data transmission of the obtained information, no recommendations are included with this limited report. We cannot be held responsible for the conclusion or interpretations of this data made by others.

This report does not reflect any variations which may occur across the site. The nature and extent of such variations may not become evident until the course of future explorations or actual construction. If variations then become evident, it will be necessary for re-evaluation of the recommendations in this report after performing on-site observations during the construction period and noting the characteristics of any variations. This report does not reflect the full



vertical and horizontal extents of deleterious soils encountered at the boring locations. Therefore, this report should not be used for estimating such items as cut and fill quantities.

Borings for a typical geotechnical report are widely spaced and generally not sufficient for reliably detecting the presence of isolated, anomalous surface or subsurface conditions, or reliably estimating unsuitable or suitable material quantities. Accordingly, UES does not recommend relying on our boring information to negate presence of anomalous materials or for estimation of material quantities unless our contracted services **specifically** include sufficient exploration for such purpose(s) and within the report we so state that the level of exploration provided should be sufficient to detect such anomalous conditions or estimate such quantities. Therefore, UES will not be responsible for any extrapolation or use of our data by others beyond the purpose(s) for which it is applicable or intended.

All users of this report are cautioned that there was no requirement for Universal to attempt to locate any man-made buried objects or identify any other potentially hazardous conditions that may exist at the site during the course of this exploration. Therefore no attempt was made by Universal to locate or identify such concerns. Universal cannot be responsible for any buried man-made objects or environmental hazards which may be subsequently encountered during construction that are not discussed within the text of this report. We can provide this service if requested.

For a further description of the scope and limitations of this report please review the document attached within Exhibit 1 "Important Information About Your Geotechnical Engineering Report" prepared by the ASFE/Professional Firms Practicing in the Geosciences.

GROUNDWATER CONDITIONS

The groundwater levels were measured in the landside boreholes B3 & B4, during drilling operations. The groundwater level depths ranged from 2.9 feet bls at boring location B4 to 3.4 feet bls at boring location B3. The groundwater table depths at each boring location are shown on the attached boring logs. The depth of water within the canal borings ranged from 6 feet at boring location B1 to 8 feet at boring location B2. Fluctuations in water/groundwater levels should be anticipated throughout the year, primarily due to seasonal variations in rainfall, surface runoff, and other factors that may vary from the time the borings were conducted.

SOIL STRATIGRAPHY

The results of our field exploration, together with pertinent information obtained from the SPT borings are shown on the attached boring logs. A Key to Boring Logs, Soil Classification Chart is also included. The soil profiles were prepared from the field logs after the recovered soil samples were examined by a Geotechnical Engineer. The stratification lines shown on the attached boring logs represent the approximate boundaries between soil types, and may not depict exact subsurface soil conditions. The actual soil boundaries may be more transitional than depicted. A generalized profile of the soils encountered at our boring locations is presented in the following table. For more specific subsoil information, please refer to the attached boring logs.



TABLE I
GENERALIZED SOIL PROFILE

Depth Encountered (feet, bls)	Approximate Thickness (feet)	Soil Description
Surface	13 to 15	Highly interlayered strata of fine sands [SP], organic (muck) soils, fine sands with silt [SP-SM], and silty fine sands [SM], very loose to medium dense. At boring locations B1 & B2, these surficial strata are replaced by open water underlain by very loose clayey fine sands [SC]
13 to 15	10 to 17	Fine sands [SP] with broken shell, loose to dense.
25 to 28	20 to 30	Interlayered zone consisting of fine sands with clay [SP-SC], fine sands with silt [SP-SM], broken shell, and clayey fine sands [SC], very loose to dense.
52 to 58	2+ to 8+	Fine sands with silt [SP-SM] and silty fine sands [SM], interlain by cemented rock layers, loose to dense.

NOTE: [] denotes Unified Soil Classification system designation.
+ indicates strata encountered at boring termination, total thickness undetermined.

CLOSURE

We appreciate the opportunity to have worked with you on this phase of the project and look forward to a continued association. Please do not hesitate to contact us if you should have any questions, or if we may further assist you as your plans proceed.

Sincerely yours,
UNIVERSAL ENGINEERING SCIENCES, INC.
Certificate of Authorization No. 549



Brad Faucett, P.E.
Regional Engineer
Florida Registration No. 33123

4-6-2010

2 – Addressee
1 – Mr. Tom Joseph with FP&L (by e-mail)

UESDOCS# 831119



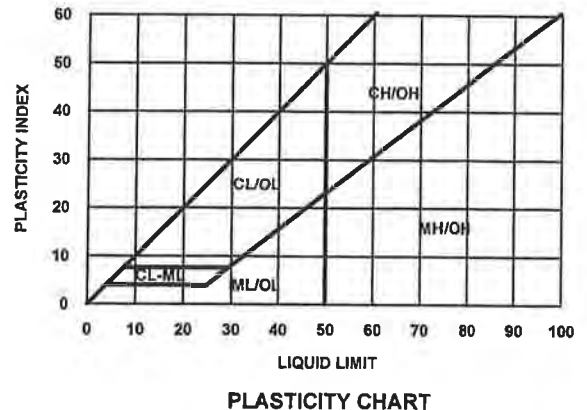
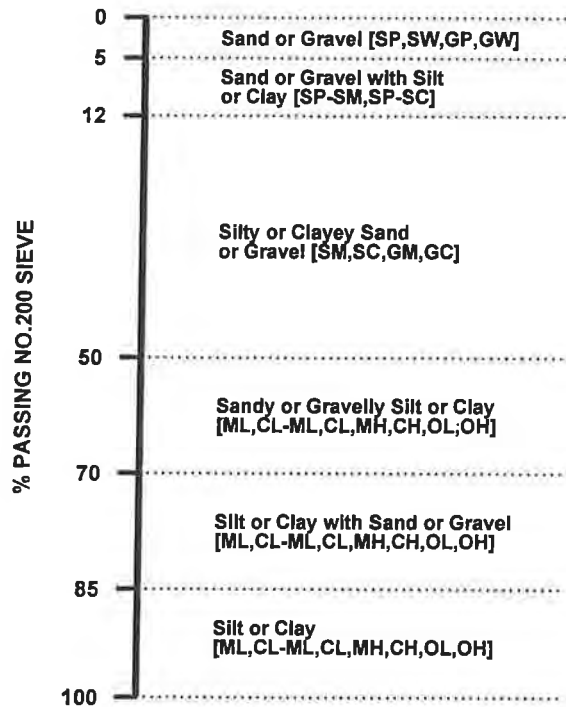
Appendix A

KEY TO BORING LOGS

SOIL CLASSIFICATION CHART*



**UNIVERSAL
ENGINEERING
SCIENCES, INC.**



GROUP NAME AND SYMBOL

COARSE GRAINED SOILS



**WELL-GRADED
SANDS [SW]**



**POORLY-GRADED
SANDS [SP]**



**POORLY-GRADED
SANDS WITH SILT
[SP-SM]**



**POORLY-GRADED
SANDS WITH CLAY
[SP-SC]**



**SILTY SANDS
[SM]**



**CLAYEY SANDS
[SC]**



**SILTY CLAYEY SANDS
[SC-SM]**



**WELL-GRADED
GRAVELS [GW]**



**POORLY-GRADED
GRAVELS [GP]**



**POORLY-GRADED
GRAVELS WITH SILT
[GP-GM]**



**POORLY-GRADED
GRAVELS WITH CLAY
[GP-GC]**



**SILTY GRAVELS
[GM]**



**CLAYEY GRAVELS
[GC]**

FINE GRAINED SOILS



**INORGANIC SILTS
SLIGHT PLASTICITY
[ML]**



**INORGANIC SILTY CLAY
LOW PLASTICITY
[CL-ML]**



**INORGANIC CLAYS
LOW TO MEDIUM
PLASTICITY [CL]**



**INORGANIC SILTS HIGH
PLASTICITY [MH]**



**INORGANIC CLAYS HIGH
PLASTICITY [CH]**

HIGHLY ORGANIC SOILS



**ORGANIC SILTS/CLAYS
LOW PLASTICITY [OL]****



**ORGANIC SILTS/CLAYS
MEDIUM TO HIGH
PLASTICITY [OH]****



**PEAT, HUMUS, SWAMP SOILS
WITH HIGH ORGANIC
CONTENTS [PT]****

RELATIVE DENSITY

(SAND AND GRAVEL)

VERY LOOSE - 0 to 4 Blows/ft.
LOOSE - 5 to 10 Blows/ft.
MEDIUM DENSE - 11 to 30 Blows/ft.
DENSE - 31 to 50 Blows/ft.
VERY DENSE - more than 50 Blows/ft.

CONSISTENCY

(SILT AND CLAY)

VERY SOFT - 0 to 2 Blows/ft.
SOFT - 3 to 4 Blows/ft.
FIRM - 5 to 8 Blows/ft.
STIFF - 9 to 16 Blows/ft.
VERY STIFF - 17 to 30 Blows/ft.
HARD - more than 30 Blows/ft.

NOTES:

8* - DENOTES DYNAMIC CONE PENETROMETER (DCP) VALUE.
R - DENOTES REFUSAL TO PENETRATION.
P - DENOTES PENETRATION WITH ONLY WEIGHT OF DRIVE HAMMER.
N/E - DENOTES GROUNDWATER TABLE NOT ENCOUNTERED.

* IN ACCORDANCE WITH ASTM D 2487 - UNIFIED SOIL CLASSIFICATION SYSTEM.

** LOCALLY MAY BE KNOWN AS MUCK.



UNIVERSAL ENGINEERING SCIENCES BORING LOG

PROJECT NO.: 0330.1000020.0000

REPORT NO.:

APPENDIX: A

PROJECT: PCC Manatee Refuge Heating Project
FP&L Cape Canaveral Plant
Sharpes, FLORIDA

BORING DESIGNATION: **B1**
SECTION: TOWNSHIP: SOUTH

SHEET: **1 of 2**
RANGE: EAST

CLIENT: FLORIDA POWER & LIGHT COMPANY

LOCATION: SEE EXPLORATION LOCATION PLAN

REMARKS:

G.S. ELEVATION (ft):

DATE STARTED: 3/25/10

WATER TABLE (ft): 0.0

DATE FINISHED: 3/25/10

DATE OF READING: 3/25/2010

DRILLED BY:

EST. W.S.W.T. (ft):

TYPE OF SAMPLING: ASTM D 1586

DEPTH (FT.)	SAMPLE	BLOWS PER 6" INCREMENT	N-VALUE	W.T.	SYMBOL	WELL DIAGRAM	DESCRIPTION	-200 (%)	MC (%)	K (IN./ HR.)	ORG. CONT. (%)
0				▼			WATER				
5											
		2-2-1	3				clayey fine SAND grey, [SC]	15.3	25.7		
10											
		1-2-2	4								
15							fine SAND with broken shell, grey, [SP]				
		7-7-7	14								
20											
		7-6-9	15								
25							clayey fine SAND with broken shell, grey, [SC]				
		3-4-5	9								
30											
		8-7-5	15								
35											

STANDLOG



UNIVERSAL ENGINEERING SCIENCES BORING LOG

PROJECT NO.: 0330.1000020.0000

REPORT NO.:

APPENDIX: A

PROJECT: PCC Manatee Refuge Heating Project
FP&L Cape Canaveral Plant
Sharpes, FLORIDA

BORING DESIGNATION: **B1**
SECTION: TOWNSHIP: **SOUTH**

SHEET: **2 of 2**
RANGE: **EAST**

DEPTH (FT.)	SAMPLE	BLOWS PER 6" INCREMENT	N-VALUE	W.T.	SYMBOL	WELL DIAGRAM	DESCRIPTION	-200 (%)	MC (%)	K (IN./ HR.)	ORG. CONT. (%)
35											
		4-2-1	3								
40							fine SAND with silt & broken shell, gray, [SP-SM]				
		12-9-11	20								
45							clayey fine SAND with broken shell, grey, [SC]				
		1-1-5	6								
50											
		1-2-1	3								
55							silty fine SAND with broken shell, gray, [SM]				
		5-3-3	6								
							BORING TERMINATED AT 57.5'				
60											
65											
70											

STANDLOG



UNIVERSAL ENGINEERING SCIENCES BORING LOG

PROJECT NO.: 0330.1000020.0000

REPORT NO.:

APPENDIX: A

PROJECT: PCC Manatee Refuge Heating Project
FP&L Cape Canaveral Plant
Sharpes, FLORIDA

BORING DESIGNATION: **B2**
SECTION: TOWNSHIP: SOUTH

SHEET: **1 of 2**
RANGE: EAST

CLIENT: FLORIDA POWER & LIGHT COMPANY

G.S. ELEVATION (ft):

DATE STARTED: 3/25/10

LOCATION: SEE EXPLORATION LOCATION PLAN

WATER TABLE (ft): 0.0

DATE FINISHED: 3/26/10

REMARKS:

DATE OF READING: 3/25/2010

DRILLED BY:

EST. W.S.W.T. (ft):

TYPE OF SAMPLING: ASTM D 1586

DEPTH (FT.)	SAMPLE	BLOWS PER 6" INCREMENT	N-VALUE	W.T.	SYMBOL	WELL DIAGRAM	DESCRIPTION	-200 (%)	MC (%)	K (IN./HR.)	ORG. CONT. (%)
0							WATER				
5											
10	P-P-1	1					clayey fine SAND with broken shell, grey, [SC]				
15	7-5-3	8					fine SAND with broken shell, grey, [SP]	2.5	28.6		
20	9-10-12	22									
25	5-6-8	14									
30	10-10-8	18					fine SAND with clay & broken shell, gray, [SP-SC]				
35	3-1-1	2					fine SAND with silt & broken shell, gray, [SP-SM]				

STANDLOG



UNIVERSAL ENGINEERING SCIENCES BORING LOG

PROJECT NO.: 0330.1000020.0000

REPORT NO.:

APPENDIX: A

PROJECT: PCC Manatee Refuge Heating Project
FP&L Cape Canaveral Plant
Sharpes, FLORIDA

BORING DESIGNATION: **B2**
SECTION: TOWNSHIP: SOUTH

SHEET: **2 of 2**
RANGE: EAST

DEPTH (FT.)	SAMPLE	BLOWS PER 6" INCREMENT	N-VALUE	W.T.	SYMBOL	WELL DIAGRAM	DESCRIPTION	-200 (%)	MC (%)	K (IN./ HR.)	ORG. CONT. (%)
35											
40		5-11-10	21								
45		2-2-7	9				clayey fine SAND with broken shell, grey, [SC]				
50		1-1-1	2								
55		2-3-4	7				silty fine SAND with broken shell & occasional cemented rock layers, gray, [SM]				
60		2-2-3	5				BORING TERMINATED AT 59.5' P - DENOTES PENETRATION WITH ONLY THE WEIGHT OF THE DRIVE HAMMER.				
65											
70											

STANDLOG



UNIVERSAL ENGINEERING SCIENCES BORING LOG

PROJECT NO.: 0330.1000020.0000

REPORT NO.:

APPENDIX: A

PROJECT: PCC Manatee Refuge Heating Project
FP&L Cape Canaveral Plant
Sharpes, FLORIDA

BORING DESIGNATION: **B3**
SECTION: TOWNSHIP: SOUTH

SHEET: **1 of 2**
RANGE: EAST

CLIENT: FLORIDA POWER & LIGHT COMPANY

G.S. ELEVATION (ft):

DATE STARTED: 3/22/10

LOCATION: SEE EXPLORATION LOCATION PLAN

WATER TABLE (ft): 3.4

DATE FINISHED: 3/22/10

REMARKS:

DATE OF READING: 3/22/2010

DRILLED BY: PM, BS

EST. W.S.W.T. (ft):

TYPE OF SAMPLING: ASTM D 1586

DEPTH (FT.)	SAMPLE	BLOWS PER 6" INCREMENT	N-VALUE	W.T.	SYMBOL	WELL DIAGRAM	DESCRIPTION	-200 (%)	MC (%)	K (IN./ HR.)	ORG. CONT. (%)
0							fine SAND , trace of silt, broken shell, roots & gravel (fill), grey, [SP]				
		3-7-8	7*					1.8	6.8		
		9-10-10	10*								
		5-5-5	5*				fine SAND with silt trace of roots, dark brown, [SP-SM]				
							fine SAND, brown, [SP]				
5		3-3-4	7					0.9	26.1		
		3-3-3	6				fine SAND with silt brown, [SP-SM]				
		2-1-2	3				silty fine SAND gray, [SM]				
10		1-3-1	4								
							fine SAND with broken shell, grey, [SP]				
15		3-5-4	9								
20		6-7-12	19								
25		4-7-5	12					2.6	23.4		
							fine SAND with clay & broken shell, gray, [SP-SC]				
30		2-4-3	7								
35		11-11-12	23								

STANDLOG



UNIVERSAL ENGINEERING SCIENCES BORING LOG

PROJECT NO.: 0330.1000020.0000

REPORT NO.:

APPENDIX: A

PROJECT: PCC Manatee Refuge Heating Project
FP&L Cape Canaveral Plant
Sharpes, FLORIDA

BORING DESIGNATION: **B3**
SECTION: TOWNSHIP: SOUTH

SHEET: **2 of 2**
RANGE: EAST

DEPTH (FT.)	SAMPLE	BLOWS PER 6" INCREMENT	N-VALUE	W.T.	SYMBOL	WELL DIAGRAM	DESCRIPTION	-200 (%)	MC (%)	K (IN./ HR.)	ORG. CONT. (%)
35											
40		1-1-1	2								
45		4-6-9	15				fine SAND with silt & broken shell, gray, [SP-SM]				
50		5-4-9	13				clayey fine SAND with broken shell, grey, [SC]				
55		2-3-3	6								
60		3-6-5	11				silty fine SAND with broken shell & occasional cemented rock layers, gray, [SM]				
							BORING TERMINATED AT 60' * DYNAMIC CONE PENETROMETER (DCP) VALUES				
65											
70											

STANDLOG



UNIVERSAL ENGINEERING SCIENCES BORING LOG

PROJECT NO.: 0330.1000020.0000

REPORT NO.:

APPENDIX: A

PROJECT: PCC Manatee Refuge Heating Project
FP&L Cape Canaveral Plant
Sharpes, FLORIDA

BORING DESIGNATION: **B4**
SECTION: TOWNSHIP: SOUTH

SHEET: **1 of 2**
RANGE: EAST

CLIENT: FLORIDA POWER & LIGHT COMPANY

G.S. ELEVATION (ft):

DATE STARTED: 3/22/10

LOCATION: SEE EXPLORATION LOCATION PLAN

WATER TABLE (ft): 2.9

DATE FINISHED: 3/22/10

REMARKS:

DATE OF READING: 3/22/2010

DRILLED BY: PM, BS

EST. W.S.W.T. (ft):

TYPE OF SAMPLING: ASTM D 1586

DEPTH (FT.)	SAMPLE	BLOWS PER 6" INCREMENT	N-VALUE	W.T.	SYMBOL	WELL DIAGRAM	DESCRIPTION	-200 (%)	MC (%)	K (IN./ HR.)	ORG. CONT. (%)
0		4-6-7	6*				fine SAND trace of silt, broken shell, roots & gravel (fill), grey, [SP]	2.7	15.3		
		3-3-9	3*				organic fine SAND with silt & roots, dark brown, (muck) [OH]		41.0		9.3
		12-12-11	12*				fine SAND with silt brown, [SP-SM]				
5		3-7-7	14								
		3-5-6	11								
		2-1-2	3				silty fine SAND gray, [SM]	13.3	24.4		
10		P-1-3	4								
							fine SAND with broken shell, grey, [SP]				
15		2-5-12	17								
20		11-15-23	38								
25		10-13-15	28								
							fine SAND with clay & broken shell, gray, [SP-SC]				
30		2-12-20	32								
35		14-23-17	40								

STANDLOG



UNIVERSAL ENGINEERING SCIENCES BORING LOG

PROJECT NO.: 0330.1000020.0000

REPORT NO.:

APPENDIX: A

PROJECT: PCC Manatee Refuge Heating Project
FP&L Cape Canaveral Plant
Sharpes, FLORIDA

BORING DESIGNATION: **B4**
SECTION: TOWNSHIP: SOUTH

SHEET: **2 of 2**
RANGE: EAST

DEPTH (FT.)	SAMPLE	BLOWS PER 6" INCREMENT	N-VALUE	W.T.	SYMBOL	WELL DIAGRAM	DESCRIPTION	-200 (%)	MC (%)	K (IN./ HR.)	ORG. CONT. (%)
35											
							fine SAND with silt & broken shell, gray, [SP-SM]				
40		2-2-2	4								
							clayey fine SAND with broken shell, grey, [SC]				
45		17-20-17	37								
							fine SAND with silt & broken shell, gray, [SP-SM]				
50		9-10-30	40				BORING TERMINATED AT 50' * DYNAMIC CONE PENETROMETER (DCP) VALUES P - DENOTES PENETRATION WITH ONLY THE WEIGHT OF THE DRIVE HAMMER.				
55											
60											
65											
70											

STANDLOG

Exhibit 1

Important Information About Your Geotechnical Engineering Report

Subsurface problems are a principal cause of construction delays, cost overruns, claims, and disputes.

The following information is provided to help you manage your risks.

Geotechnical Services Are Performed for Specific Purposes, Persons, and Projects

Geotechnical engineers structure their services to meet the specific needs of their clients. A geotechnical engineering study conducted for a civil engineer may not fulfill the needs of a construction contractor or even another civil engineer. Because each geotechnical engineering study is unique, each geotechnical engineering report is unique, prepared *solely* for the client. No one except you should rely on your geotechnical engineering report without first conferring with the geotechnical engineer who prepared it. *And no one — not even you — should apply the report for any purpose or project except the one originally contemplated.*

Read the Full Report

Serious problems have occurred because those relying on a geotechnical engineering report did not read it all. Do not rely on an executive summary. Do not read selected elements only.

A Geotechnical Engineering Report Is Based on A Unique Set of Project-Specific Factors

Geotechnical engineers consider a number of unique, project-specific factors when establishing the scope of a study. Typical factors include: the client's goals, objectives, and risk management preferences; the general nature of the structure involved, its size, and configuration; the location of the structure on the site; and other planned or existing site improvements, such as access roads, parking lots, and underground utilities. Unless the geotechnical engineer who conducted the study specifically indicates otherwise, do not rely on a geotechnical engineering report that was:

- not prepared for you,
- not prepared for your project,
- not prepared for the specific site explored, or
- completed before important project changes were made.

Typical changes that can erode the reliability of an existing geotechnical engineering report include those that affect:

- the function of the proposed structure, as when it's changed from a parking garage to an office building, or from a light industrial plant to a refrigerated warehouse,

- elevation, configuration, location, orientation, or weight of the proposed structure,
- composition of the design team, or
- project ownership.

As a general rule, *always* inform your geotechnical engineer of project changes—even minor ones—and request an assessment of their impact. *Geotechnical engineers cannot accept responsibility or liability for problems that occur because their reports do not consider developments of which they were not informed.*

Subsurface Conditions Can Change

A geotechnical engineering report is based on conditions that existed at the time the study was performed. *Do not rely on a geotechnical engineering report* whose adequacy may have been affected by: the passage of time; by man-made events, such as construction on or adjacent to the site; or by natural events, such as floods, earthquakes, or groundwater fluctuations. *Always* contact the geotechnical engineer before applying the report to determine if it is still reliable. A minor amount of additional testing or analysis could prevent major problems.

Most Geotechnical Findings Are Professional Opinions

Site exploration identifies subsurface conditions only at those points where subsurface tests are conducted or samples are taken. Geotechnical engineers review field and laboratory data and then apply their professional judgment to render an opinion about subsurface conditions throughout the site. Actual subsurface conditions may differ—sometimes significantly—from those indicated in your report. Retaining the geotechnical engineer who developed your report to provide construction observation is the most effective method of managing the risks associated with unanticipated conditions.

A Report's Recommendations Are *Not* Final

Do not overrely on the construction recommendations included in your report. *Those recommendations are not final*, because geotechnical engineers develop them principally from judgment and opinion. Geotechnical engineers can finalize their recommendations only by observing actual

subsurface conditions revealed during construction. *The geotechnical engineer who developed your report cannot assume responsibility or liability for the report's recommendations if that engineer does not perform construction observation.*

A Geotechnical Engineering Report Is Subject to Misinterpretation

Other design team members' misinterpretation of geotechnical engineering reports has resulted in costly problems. Lower that risk by having your geotechnical engineer confer with appropriate members of the design team after submitting the report. Also retain your geotechnical engineer to review pertinent elements of the design team's plans and specifications. Contractors can also misinterpret a geotechnical engineering report. Reduce that risk by having your geotechnical engineer participate in prebid and preconstruction conferences, and by providing construction observation.

Do Not Redraw the Engineer's Logs

Geotechnical engineers prepare final boring and testing logs based upon their interpretation of field logs and laboratory data. To prevent errors or omissions, the logs included in a geotechnical engineering report should never be redrawn for inclusion in architectural or other design drawings. Only photographic or electronic reproduction is acceptable, *but recognize that separating logs from the report can elevate risk.*

Give Contractors a Complete Report and Guidance

Some owners and design professionals mistakenly believe they can make contractors liable for unanticipated subsurface conditions by limiting what they provide for bid preparation. To help prevent costly problems, give contractors the complete geotechnical engineering report, *but* preface it with a clearly written letter of transmittal. In that letter, advise contractors that the report was not prepared for purposes of bid development and that the report's accuracy is limited; encourage them to confer with the geotechnical engineer who prepared the report (a modest fee may be required) and/or to conduct additional study to obtain the specific types of information they need or prefer. A prebid conference can also be valuable. *Be sure contractors have sufficient time to perform additional study.* Only then might you be in a position to give contractors the best information available to you, while requiring them to at least share some of the financial responsibilities stemming from unanticipated conditions.

Read Responsibility Provisions Closely

Some clients, design professionals, and contractors do not recognize that geotechnical engineering is far less exact than other engineering disciplines. This lack of understanding has created unrealistic expectations that

have led to disappointments, claims, and disputes. To help reduce the risk of such outcomes, geotechnical engineers commonly include a variety of explanatory provisions in their reports. Sometimes labeled "limitations" many of these provisions indicate where geotechnical engineers' responsibilities begin and end, to help others recognize their own responsibilities and risks. *Read these provisions closely.* Ask questions. Your geotechnical engineer should respond fully and frankly.

Geoenvironmental Concerns Are Not Covered

The equipment, techniques, and personnel used to perform a *geoenvironmental* study differ significantly from those used to perform a *geotechnical* study. For that reason, a geotechnical engineering report does not usually relate any geoenvironmental findings, conclusions, or recommendations; e.g., about the likelihood of encountering underground storage tanks or regulated contaminants. *Unanticipated environmental problems have led to numerous project failures.* If you have not yet obtained your own geoenvironmental information, ask your geotechnical consultant for risk management guidance. *Do not rely on an environmental report prepared for someone else.*

Obtain Professional Assistance To Deal with Mold

Diverse strategies can be applied during building design, construction, operation, and maintenance to prevent significant amounts of mold from growing on indoor surfaces. To be effective, all such strategies should be devised for the *express purpose* of mold prevention, integrated into a comprehensive plan, and executed with diligent oversight by a professional mold prevention consultant. Because just a small amount of water or moisture can lead to the development of severe mold infestations, a number of mold prevention strategies focus on keeping building surfaces dry. While groundwater, water infiltration, and similar issues may have been addressed as part of the geotechnical engineering study whose findings are conveyed in this report, the geotechnical engineer in charge of this project is not a mold prevention consultant; *none of the services performed in connection with the geotechnical engineer's study were designed or conducted for the purpose of mold prevention. Proper implementation of the recommendations conveyed in this report will not of itself be sufficient to prevent mold from growing in or on the structure involved.*

Rely on Your ASFE-Member Geotechnical Engineer for Additional Assistance

Membership in ASFE/The Best People on Earth exposes geotechnical engineers to a wide array of risk management techniques that can be of genuine benefit for everyone involved with a construction project. Confer with your ASFE-member geotechnical engineer for more information.



8811 Colesville Road/Suite G106, Silver Spring, MD 20910
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e-mail: info@asfe.org www.asfe.org

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Exhibit 2

Tiny's Marine Environmental Services
7 Rogers Street
Randolph, Ma 02368
cell 1 321 863 6561

Protected Marine Mammal Observers Observation Form

Contractor
Regional Engineering
Universal Engineering Sciences Inc.
Rockledge Florida Office

DEP# OGC Case #PA 08-53
DOAH Case # 09-0039 EPP

USACE Permit N/A

USACE Contract N/A

Date: 3/25/2010 Shift Started 12:15 PM

Shift Ending 16:30 PM

Project: Test Boring Site # 1

Observer Randy Heckman

Observers Location on the Dock small boring barge at the dock.

Weather Conditions

Wind Speed	Wind Dir	Visibility	Tide Stage	High	Low	Dir	Seas
10-15 Kts	South	Clear	N/A	N/A	N/A	N/A	Calm

EXCLUSION ZONES Precautions Zone @ 100 YDS Shutdown Zone @ 50 YDS

Daily Summary

Total	Species	Total Number Spotted	Total Number Spotted Outside Exclusion Zone	Total Number Spotted Inside Exclusion Zone	Behavior inside Exclusion Zone	Observer Action Taken
2	Manatee	2	2	0	N/A	None
	Dolphin					
	Dolphin					
	Turtle					
	Turtle					
	Other					
	Other					

Time 1215 Hrs Started test boring. test site 1 drilling going well. No manatee or mammals in sight.

Time 1400 Hrs two Dolphins sighted at 100 ft. Away from the small barge. Also we were not drilling.
no action needed to be taken Dolphins heading west and in good shape.

Time 1630 Hrs done for the day no mammals were sighted after 1400 HRS.
Note Test Site No. 1 completed.

Tiny's Marine Environmental Services
7 Rogers Street
Randolph, Ma 02368
cell 1 321 863 6561

Protected Marine Mammal Observers Observation Form

Contractor
Regional Engineering
Universal Engineering Sciences Inc.
Rockledge Florida Office

DEP# OGC Case #PA 08-53
DOAH Case # 09-0039 EPP

USACE Permit N/A

USACE Contract N/A

Date: 3/26/2010 Shift Started 0800 Hrs

Shift Ending 1110 Hrs

Project: Test Boring Site # 2

Observer Randy Heckman

Observers Location on the Dock small boring barge at the dock.

Weather Conditions

Wind Speed	Wind Dir	Visibility	Tide Stage	High	Low	Dir	Seas
5 Kts	South	Cloudy	N/A	N/A	N/A	N/A	Calm

EXCLUSION ZONES Precautions Zone @ 100 YDS Shutdown Zone @ 50 YDS

Daily Summary

Total	Species	Total Number Spotted	Total Number Spotted Outside Exclusion Zone	Total Number Spotted Inside Exclusion Zone	Behavior inside Exclusion Zone	Observer Action Taken
1	Manatee	1 Adult	0	1	Traveling west	see notes
	Dolphin					
	Dolphin					
	Turtle					
	Turtle					
	Other					
	Other					

Observers Notes and Sighting Log

Time 0800 Hrs Started test Site 2 drilling going good no mammals at this time. At 1045 Hrs we were on a break that's when we saw

Time The adult manatee slowly swimming west we stayed down till the manatee was about 200 ft out.
Then started back up the manatee was in good shape that was the only mammal spotted this day.

Time 1110 Hrs test site No. 2 completed all shut down job over.

Attachment F
Adjacent Property Owners

Adjacent Property Owners

Parcel ID	Tax ID	Site Address	Owner Name and Address
23-36-19-02-*-2	2316090	5800 N Highway 1 Cocoa, FL 32927	Eileen White and George Donall 4880 Windover Way Titusville, FL 32780
23-36-19-02-*-2.28	2316110	188 Cottrell Ave Cocoa, FL 32927	Patrick Deblasio 551 Ticetown Rd Old Bridge, NJ 08857
23-36-19-02-*-2.10	2316099	180 Cottrell Ave Cocoa, FL 32927	Larry Wren 3435 S Washington Ave Titusville, FL 32780
23-36-19-02-*-2.09	2316098	172 Cottrell Ave Cocoa, FL 32927	David and Dorothy Walter 172 Cottrell Ave Cocoa, FL 32927
23-36-19-02-*-2.08	2316097	158 Cottrell Ave Cocoa, FL 32927	Dawn Schmalenberger 190 Turtle Place Rockledge, FL 32955
23-36-19-02-*-2.07	2316096	140 Cottrell Ave Cocoa, FL 32927	Stanley P. Pommer 5385 Burgess Ave Cocoa, FL 32927
23-36-19-02-*-2.05	2316095	132 Cottrell Ave Cocoa, FL 32927	Mitchell Bromwell 132 Cottrell Ave Cocoa, FL 32927
23-36-19-02-*-2.14	2316100	101 Cottrell Ave Cocoa 32927 Cocoa, FL 32927	E.G. and Sarah Jones 101 Cottrell Ave Cocoa, FL 32927
23-36-19-02-*-2.15	2316101	103 Cottrell Ave Cocoa 32927 Cocoa, FL 32927	Benjamin Kohn 2411 St Johns Ln Melbourne FL 32935
23-36-19-02-*-6.04	2316177	6250 N Highway 1 Cocoa, FL 32927	Port St John Property LLC 1185 Sand Pine Cir Titusville, FL 32780
23-36-19-02-*-2.47	2323222	5803 N Coco Blvd Cocoa, FL 32927	Rp & Lm Enterprises Inc 1241 Olde Bailey Lane W Melbourne, FL 32904
23-36-19-02-*-2.01	2316091	232 Tilkwade Ln Cocoa, FL 32927	Indian River Mobile Home Park LLC 232 Tilkwade Ln Cocoa, FL 32927

Eileen White and George Donall
4880 Windover Way
Titusville, FL 32780

Patrick Deblasio
551 Ticetown Rd
Old Bridge, NJ 08857

Larry Wren
3435 S Washington Ave
Titusville, FL 32780

David and Dorothy Walter
172 Cottrell Ave
Cocoa, FL 32927

Dawn Schmalenberger
190 Turtle Place
Rockledge, FL 32955

Stanley P. Pommer
5385 Burgess Ave
Cocoa, FL 32927

Mitchell Bromwell
132 Cottrell Ave
Cocoa, FL 32927

Port St John Property LLC
1185 Sand Pine Cir
Titusville, FL 32780

Rp & Lm Enterprises Inc
1241 Olde Bailey Lane W
Melbourne, FL 32904

Indian River Mobile Home Park LLC
232 Tilkwade Ln
Cocoa, FL 32927

E.G. and Sarah Jones
101 Cottrell Ave
Cocoa, FL 32927

Benjamin Kohn
2411 St Johns Ln
Melbourne FL 32935

Attachment G

Permit Drawings

SHEET NO. DESCRIPTION

C-0	COVER SHEET
C-1	GENERAL NOTES
C-2	ENVIRONMENTAL PROTECTION NOTES
C-3	LISTED SPECIES STANDARD CONDITIONS
C-4	DREDGING NOTES AND CONSTRUCTION SEQUENCING NOTES
C-5	SPOIL MANAGEMENT NOTES
C-6	POLLUTION PREVENTION NOTES
C-7	SEDIMENT AND EROSION CONTROL NOTES
C-8	POLLUTION PREVENTION DETAILS
C-9	AERIAL SITE PLAN
C-10	POLLUTION PREVENTION PLAN AND PROJECT SEQUENCING PLAN
C-11	WEST PLAN
C-12	EAST PLAN
C-13	PIPE CROSSING
C-14	DREDGE CROSS SECTIONS
C-15	CHANNEL CROSS SECTION
C-16	HORSESHOE CRAB DETERRENT WALL TERMINATION
C-17	RIP RAP DETAILS
C-18	SPOIL MANAGEMENT AREA 1
C-19	SPOIL MANAGEMENT AREA 2
S-1	MANATEE HEATING AREA STRUCTURAL PLAN
S-2	MANATEE HEATING AREA SHEETPILE AND WALLER
S-3	MANATEE HEATING AREA MANATEE ENTRANCE GATE
S-4	MANATEE HEATING AREA SHEETPILE DETAILS
S-5	MANATEE HEATING AREA PIPE PENETRATION
S-6	MANATEE HEATING AREA MAINTENANCE DOCK DETAILS
S-7	MANATEE HEATING AREA MAINTENANCE GATE
S-8	MANATEE HEATING AREA MAINTENANCE GATE AND DOCK DETAILS
S-9	MANATEE HEATING AREA TEMPERATURE SENSOR MOUNTING
S-10	HORSESHOE CRAB DETERRENT WALL
M-1	PIPING EXTENSION INSTALLATION
M-2	PUMP INTAKE CAGE
M-3	TYPICAL PIPE MOORING

ATTACHMENTS

AVIROM INTAKE CANAL TOPOGRAPHIC SURVEY (4 SHEETS)
 AVIROM BOUNDARY AND WETLAND DELINEATION SURVEY (6 SHEETS)
 AVIROM PENINSULA TOPOGRAPHIC SURVEY (1 SHEET)
 BUOY AND SIGNAGE SPECIFICATION (2 PAGES)
 FDOT INDEX 106 SOIL TRACKING PREVENTION DEVICE TYPE A (1 SHEET)

DRAWINGS INTENDED FOR
 VIEWING AT 8.5" X 11" SIZE

FEDERAL PERMIT DRAWINGS

1. THESE DRAWINGS ARE FOR PERMITTING PURPOSES ONLY AND ARE NOT INTENDED FOR CONSTRUCTION USE.
2. THESE DRAWINGS ARE INTENDED ONLY FOR FEDERAL AGENCY REVIEW AND ARE NOT INTENDED FOR STATE OR LOCAL REGULATORY AGENCY USE.
3. INTENDED JURISDICTION AND USE OF THE DRAWINGS IS FEDERAL REVIEW UNDER THE CLEAN WATER ACT, RIVERS AND HARBORS ACT OF 1899, AND ENDANGERED SPECIES ACT OF 1973.

**SITE LOCATION MAP**

SOURCE: USGS NATIONAL MAP VIEWER

FLORIDA POWER & LIGHT
 CAPE CANAVERAL ENERGY CENTER
 6000 US HWY 1
 COCOA, FL 32907

MANATEE HEATING AREA AND
 HORSESHOE CRAB
 DETERRENT WALL

FEDERAL PERMIT DRAWINGS



NOT TO SCALE

C-0

ENERCON

LOCATION MAP AND DRAWING INDEX

Project No: FPLCORP005

DRAWN: H. CARTER

DATE: 4/1/16

CHECK: J. SCHMITZ

DATE: 4/1/16

GENERAL NOTES

1. PRIOR TO THE START OF CONSTRUCTION, THE CONTRACTOR SHALL BE RESPONSIBLE FOR ENSURING THAT ALL REQUIRED PERMITS AND APPROVALS HAVE BEEN OBTAINED. CONSTRUCTION OR FABRICATIONS MUST NOT BEGIN UNTIL THE CONTRACTOR HAS RECEIVED AND THOROUGHLY REVIEWED ALL PLANS AND OTHER DOCUMENTS APPROVED BY APPLICABLE PERMITTING AUTHORITIES.
2. ALL WORK SHALL BE PERFORMED IN ACCORDANCE WITH THESE PLANS AND THE CODES, REGULATIONS, AND STANDARDS OF ALL APPLICABLE GOVERNING AUTHORITIES.
3. UPON COMPLETION OF THE WORK, CONTRACTOR SHALL PROVIDE AN AS-BUILT SURVEY FOR REVIEW AND APPROVAL.
4. CONTRACTOR SHALL CONTACT SUNSHINE STATE ONE CALL (811) AND/OR LOCATER SERVICE A MINIMUM OF 72 HOURS PRIOR TO THE START OF CONSTRUCTION.
5. ALL CONSTRUCTION ACTIVITIES SHALL BE PERFORMED IN ACCORDANCE WITH APPLICABLE OCCUPATIONAL SAFETY AND HEALTH ADMINISTRATION (OSHA), DEPARTMENT OF LABOR AND OWNER RULES AND REGULATIONS. THE CONTRACTOR SHALL BE FULLY RESPONSIBLE FOR THE SAFETY OF THEIR WORKER DURING THE ENTIRE COURSE OF CONSTRUCTION.

PROJECT INFORMATION

1. PROJECT TYPE: DREDGING, SHEETPILE WALL, PIPING AND DOCK
2. LAND USE: UPLAND FILL, CHANNELIZED SANDY WATERWAY
3. VEGETATION: BARREN TO SPARSE
4. THE PROJECT UPON COMPLETION AND APPROPRIATE CERTIFICATION AND AS-BUILT SUBMITTAL WILL BE OPERATED AND MAINTAINED BY: FLORIDA POWER AND LIGHT.

ACRONYM LIST

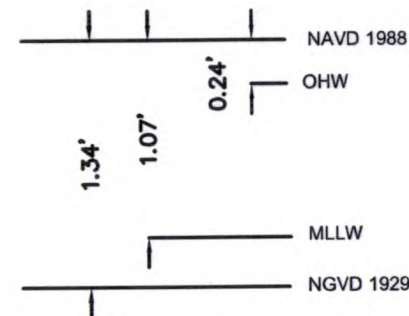
ACOE	ARMY CORPS OF ENGINEERS
CC	CAPE CANAVERAL
CCEC	CAPE CANAVERAL ENERGY CENTER
FAC	FLORIDA ADMINISTRATIVE CODE
FDEP	FLORIDA DEPARTMENT OF ENVIRONMENTAL PROTECTION
FDOT	FLORIDA DEPARTMENT OF TRANSPORTATION
FLU	FUTURE LAND USE
FT	FEET
FWC	FLORIDA FISH AND WILDLIFE CONSERVATION COMMISSION
HCDW	HORSESHOE CRAB DETERRENT WALL
HDPE	HIGH DENSITY POLYETHYLENE
LB	POUND
MLLW	MEAN LOW LOWER WATER
NAVD	NORTH AMERICAN VERTICAL DATUM
NGVD	NATIONAL GEODETIC VERTICAL DATUM
NTU	NEPHELOMETRIC TURBIDITY UNIT
OHW	ORDINARY HIGH WATER
PSI	POUNDS PER SQUARE INCH
PVC	POLYVINYL CHLORIDE
STD	STANDARD
TYP	TYPICAL
USGS	UNITED STATES GEOLOGICAL SURVEY

PRE DEVELOPMENT SITE INFORMATION

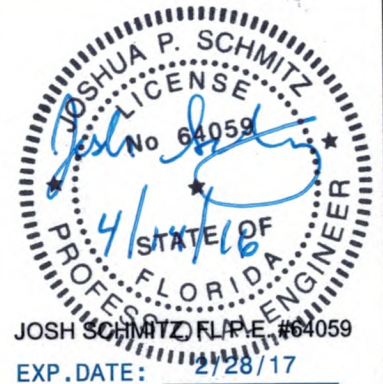
1. TOTAL SITE ACREAGE: 13.26 ACRES
2. LAND USE: UPLAND FILL, CHANNELIZED SANDY WATERWAY
3. VEGETATION: BARREN TO SPARSE
4. SOIL TYPES: CLAYEY FINE SAND, FINE SAND, SILTY SHELL HASH
5. ORDINARY HIGH WATER = (-) 0.24 FT NAVD88 MEAN LOW LOWER WATER = (-) 1.07 FT NAVD88
6. APPROXIMATE MAXIMUM WATER VELOCITY IN CANAL DURING INTAKE OPERATION = 2 FT/S
7. WATER VELOCITY IN CANAL WITHOUT INTAKE OPERATION IS EXPECTED TO BE SIGNIFICANTLY LESS THAN DURING INTAKE OPERATION.

SURVEY NOTES:

1. VERTICAL ELEVATIONS IN DATUM NAVD 1988
2. NAVD 1988 ELEVATIONS = NGVD 29 ELEVATIONS - 1.3 FT
3. OHW ELEVATION = -0.24 FT
4. BEARINGS AND COORDINATES REFERENCED TO GRID NORTH, BASED ON THE FLORIDA STATE PLANE COORDINATE SYSTEM, EAST ZONE (feet)
5. MLLW ELEVATION = -1.07 FT, FDEP TIDAL STATION 872-1994



RELATIONSHIP BETWEEN NAVD 1988, NGVD 1929, ORDINARY HIGH WATER, MEAN LOW LOWER WATER TIDAL DATUM (1983-2001 EPOCH). LABINS TIDE STATION " MICCO, FLORIDA - INDIAN RIVER" NUMBER 872-1994



FLORIDA POWER & LIGHT
CAPE CANAVERAL ENERGY CENTER
6000 US HWY 1
COCOA, FL 32907

MANATEE HEATING AREA AND
HORSESHOE CRAB
DETERRENT WALL

FEDERAL PERMIT DRAWINGS

C-1



GENERAL NOTES

PROJECT NO: FPLCORP005

DRAWN: H. CARTER

DATE: 4/13/16

CHECK: J. SCHMITZ

DATE: 4/13/16

GENERAL ENVIRONMENTAL NOTES

1. MANGROVE IMPACTS ARE NOT APPROVED FOR THIS PROJECT. IF MANGROVES MUST BE IMPACTED, REPORT TO OWNER IMMEDIATELY FOR PERMIT MODIFICATION AND APPROVAL PRIOR TO IMPACTING MANGROVES.

MAINTENANCE DOCK ENVIRONMENTAL NOTES

1. THE PROPOSED MAINTENANCE DOCK IS LOCATED IMMEDIATELY ADJACENT TO THE WEST END OF THE SEA GRASS SURVEY WHICH DID NOT IDENTIFY SEAGRASSES IN THE AREA. SEAGRASSES ARE NOT EXPECTED TO BE PRESENT BENEATH THE DOCK.
2. OWNER SHALL VERIFY EXPECTED ABSENCE OF SEAGRASSES PRIOR TO MAINTENANCE DOCK CONSTRUCTION.
3. IF SEAGRASSES ARE PRESENT BENEATH THE MAINTENANCE DOCK, DOCK CONSTRUCTION SHALL CONFORM TO *CONSTRUCTION GUIDELINES IN FLORIDA FOR MINOR PILING-SUPPORTED STRUCTURES CONSTRUCTED IN OR OVER SUBMERGED AQUATIC VEGETATION, MARSH, OR MANGROVE HABITAT, AUGUST 2001*
4. ALL MAINTENANCE DOCK PILINGS SHALL BE INSTALLED USING A VIBRATORY HAMMER. IMPACT HAMMER SHALL NOT BE USED.
5. MAINTENANCE DOCK CONSTRUCTION SHALL TAKE PLACE FROM UPLANDS OR FLOATING EQUIPMENT (E.G. BARGE).

LISTED WILDLIFE NOTES

1. THE FPL CAPE CANAVERAL POWER PLANT IS IDENTIFIED BY THE ARMY CORPS OF ENGINEERS AS A WARM WATER AGGREGATION AREA (WWAA). BY THIS DESIGNATION, DEDICATED MANATEE OBSERVERS, WHO'S SOLE RESPONSIBILITY IS TO WATCH FOR MANATEES, MUST BE POSITIONED ON EACH VESSEL TO WATCH FOR MANATEES. THE OBSERVER MUST BE EXPERIENCED IN MANATEE OBSERVATION TECHNIQUES AND ASSIST CONSTRUCTION PERSONNEL WITH COMPLYING WITH STANDARD MANATEE CONDITIONS.
2. IF CONDITIONS (WEATHER, HEAVY CURRENTS, ETC.) ARE SUCH THAT MANATEES CANNOT BE SEEN WITHIN 50 TO 100 FEET, IN-WATER ACTIVITY SHALL NOT BE CONDUCTED.
3. IN-WATER ACTIVITIES MAY NOT BE CONDUCTED AT NIGHT.
4. PERMITTEE WILL INSTRUCT ALL PERSONNEL ASSOCIATED WITH THE PROJECT ABOUT MANATEES, SEA TURTLES, AND SMALLTOOTH SAWFISH. THIS INCLUDES THE NEED TO PROTECT, AND PENALTIES ASSOCIATED WITH HARMING MANATEES.
5. SIGNAGE MUST BE POSTED CONCERNING MANATEES WHICH CONFORMS TO STANDARD MANATEE CONDITIONS FOR IN-WATER WORK, 2011.
6. PROPERLY DESIGN, INSTALL, AND MONITOR TURBIDITY BARRIERS SO AS TO PREVENT ENTANGLEMENT BY MANATEES, SEA TURTLES OR SMALLTOOTH SAWFISH.
7. INJURY TO MANATEES, SEA TURTLES OR SMALLTOOTH SAWFISH MUST BE REPORTED TO PERMITTEE AND PROPER AUTHORITIES IMMEDIATELY. AUTHORITY CONTACT INFORMATION LISTED IN STANDARD MANATEE CONDITIONS FOR IN-WATER WORK, 2011 AND SEA TURTLE AND SMALLTOOTH SAWFISH CONSTRUCTION CONDITIONS (2006).
8. APPROPRIATE PRECAUTIONS MUST BE TAKEN IF LISTED SPECIES ARE OBSERVED WITH 100 YARDS OF CONSTRUCTION OPERATION.
9. ALL IN-WATER WORK MUST CEASE IF A LISTED SPECIES IS OBSERVED WITHIN 50 FEET OF CONSTRUCTION OPERATION.
10. ALL WORK SHALL CONFORM TO STANDARD MANATEE CONDITIONS FOR IN WATER WORK, 2011 REVISION.
11. ALL WORK SHALL CONFORM TO STANDARD SEA TURTLE AND SMALLTOOTH SAWFISH CONDITIONS FOR IN WATER WORK, 2006 REVISION.
12. MOVEMENT OF A WORK BARGE, OTHER ASSOCIATED VESSELS, OR ANY IN-WATER WORK SHALL NOT BE PERFORMED AFTER SUNSET, WHEN THE POSSIBILITY OF SPOTTING MANATEES IS NEGLIGIBLE.
13. AT LEAST ONE PERSON SHALL BE DESIGNATED AS A MANATEE OBSERVER WHEN IN-WATER WORK IS BEING PERFORMED. THAT PERSON SHALL HAVE EXPERIENCE IN MANATEE OBSERVATION, BE APPROVED BY THE FWC TWO WEEKS BEFORE THE BEGINNING OF CONSTRUCTION, AND BE EQUIPPED WITH POLARIZED SUNGLASSES TO AID IN OBSERVATION. THE MANATEE OBSERVER MUST BE ON SITE DURING ALL IN-WATER CONSTRUCTION ACTIVITIES AND WILL ADVISE PERSONNEL TO CEASE OPERATION UPON SIGHTING A MANATEE WITHIN 50 FEET OF ANY IN-WATER CONSTRUCTION ACTIVITY.

RESOURCE PROTECTION NOTES:

1. UNLESS IN A MIXING ZONE, TURBIDITY MORE THAN 29 NTU'S OVER BACKGROUND EXCEEDS STATE WATER QUALITY STANDARDS AND SHALL NOT BE ALLOWED.
2. ALL SHEET PILE AND DOCK PILINGS WILL BE INSTALLED USING A VIBRATORY HAMMER.
3. PROPERLY DESIGN, INSTALL, AND MONITOR TURBIDITY BARRIERS SO AS TO PREVENT ENTANGLEMENT BY MANATEES, SEA TURTLES, OR SMALLTOOTH SAWFISH.
4. IN-WATER WORK SHALL NOT BE PERFORMED FROM NOVEMBER 15 - MARCH 31.

BIOLOGICAL OBSERVATION:

NO CONSTRUCTION WORK SHALL BE PERFORMED WITHOUT A BIOLOGICAL OBSERVER PRESENT. CEASE WORK IMMEDIATELY IF A MANATEE, SEA TURTLE, OR SMALLTOOTH SAWFISH ENTERS THE PROJECT AREA. DO NOT RESUME WORK UNTIL THE LISTED SPECIES HAS DEPARTED THE AREA. FOLLOW BIOLOGICAL OBSERVER INSTRUCTIONS AT ALL TIMES. LISTED SPECIES INJURY MUST BE REPORTED TO OWNER IMMEDIATELY.



FLORIDA POWER & LIGHT CAPE CANAVERAL ENERGY CENTER 6000 US HWY 1 COCOA, FL 32907	MANATEE HEATING AREA AND HORSESHOE CRAB DETERRENT WALL	C-2	 ENERCON	
	FEDERAL PERMIT DRAWINGS	ENVIRONMENTAL PROTECTION NOTES		
		PROJECT NO: FPLCORP005	DRAWN: H. CARTER CHECK: J. SCHMITZ	DATE: 4/1/16 DATE: 4/1/16

STANDARD MANATEE CONDITIONS FOR IN-WATER WORK (2011)

The permittee shall comply with the following conditions intended to protect manatees from direct project effects:

- All personnel associated with the project shall be instructed about the presence of manatees and manatee speed zones, and the need to avoid collisions with and injury to manatees. The permittee shall advise all construction personnel that there are civil and criminal penalties for harming, harassing, or killing manatees which are protected under the Marine Mammal Protection Act, the Endangered Species Act, and the Florida Manatee Sanctuary Act.
- All vessels associated with the construction project shall operate at "Idle Speed/No Wake" at all times while in the immediate area and while in water where the draft of the vessel provides less than a four-foot clearance from the bottom. All vessels will follow routes of deep water whenever possible.
- Siltation or turbidity barriers shall be made of material in which manatees cannot become entangled, shall be properly secured, and shall be regularly monitored to avoid manatee entanglement or entrapment. Barriers must not impede manatee movement.
- All on-site project personnel are responsible for observing water-related activities for the presence of manatee(s). All in-water operations, including vessels, must be shutdown if a manatee(s) comes within 50 feet of the operation. Activities will not resume until the manatee(s) has moved beyond the 50-foot radius of the project operation, or until 30 minutes elapses if the manatee(s) has not reappeared within 50 feet of the operation. Animals must not be herded away or harassed into leaving.
- Any collision with or injury to a manatee shall be reported immediately to the Florida Fish and Wildlife Conservation Commission (FWC) Hotline at 1-888-404-3922. Collision and/or injury should also be reported to the U.S. Fish and Wildlife Service in Jacksonville (1-904-731-3336) for north Florida or Vero Beach (1-772-562-3909) for south Florida, and to FWC at ImperiledSpecies@myFWC.com
- Temporary signs concerning manatees shall be posted prior to and during all in-water project activities. All signs are to be removed by the permittee upon completion of the project. Temporary signs that have already been approved for this use by the FWC must be used. One sign which reads *Caution: Boaters* must be posted. A second sign measuring at least 8 1/2" by 11" explaining the requirements for "Idle Speed/No Wake" and the shut down of in-water operations must be posted in a location prominently visible to all personnel engaged in water-related activities. These signs can be viewed at MyFWC.com/manatee. Questions concerning these signs can be sent to the email address listed above.

SEA TURTLE AND SMALLTOOTH SAWFISH CONSTRUCTION CONDITIONS (2006)

The permittee shall comply with the following protected species construction conditions:

- The permittee shall instruct all personnel associated with the project of the potential presence of these species and the need to avoid collisions with sea turtles and smalltooth sawfish. All construction personnel are responsible for observing water-related activities for the presence of these species.
- The permittee shall advise all construction personnel that there are civil and criminal penalties for harming, harassing, or killing sea turtles or smalltooth sawfish, which are protected under the Endangered Species Act of 1973.
- Siltation barriers shall be made of material in which a sea turtle or smalltooth sawfish cannot become entangled, be properly secured, and be regularly monitored to avoid protected species entrapment. Barriers may not block sea turtle or smalltooth sawfish entry to or exit from designated critical habitat without prior agreement from the National Marine Fisheries Service's Protected Resources Division, St. Petersburg, Florida.
- All vessels associated with the construction project shall operate at "no wake/idle" speeds at all times while in the construction area and while in water depths where the draft of the vessel provides less than a four-foot clearance from the bottom. All vessels will preferentially follow deep-water routes (e.g., marked channels) whenever possible.
- If a sea turtle or smalltooth sawfish is seen within 100 yards of the active daily construction/dredging operation or vessel movement, all appropriate precautions shall be implemented to ensure its protection. These precautions shall include cessation of operation of any moving equipment closer than 50 feet of a sea turtle or smalltooth sawfish. Operation of any mechanical construction equipment shall cease immediately if a sea turtle or smalltooth sawfish is seen within a 50-ft radius of the equipment. Activities may not resume until the protected species has departed the project area of its own volition.
- Any collision with and/or injury to a sea turtle or smalltooth sawfish shall be reported immediately to the National Marine Fisheries Service's Protected Resources Division (727-824-5312) and the local authorized sea turtle stranding/rescue organization.
- Any special construction conditions, required of your specific project, outside these general conditions, if applicable, will be addressed in the primary consultation.



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DETERRENT WALL

FEDERAL PERMIT DRAWINGS

C-3



LISTED SPECIES STANDARD CONDITIONS

PROJECT NO: FPLCORP005

DRAWN: H. CARTER

DATE: 4/1/16

CHECK: J. SCHMITZ

DATE: 4/1/16

CONSTRUCTION SEQUENCING NOTES

- ① REVIEW INTAKE OPERATING SCHEDULE AND POTENTIAL FOR TURBIDITY ENTRAINMENT IN THE INTAKE. PORTIONS OF THE WORK, SUCH AS THE HORSESHOE CRAB DETERRENT WALL AND REMOVAL OF EXISTING SHEET PILE DIVIDER, MAY NEED TO BE CONDUCTED DURING OUTAGE TO AVOID TURBIDITY ENTRAINMENT IN THE INTAKE.
- ② INITIATE BIOLOGICAL OBSERVATION AND MAINTAIN IT FOR THE PROJECT DURATION.
- ③ INSTALL BUOYS WITH SIGNAGE.
- ④ INSTALL SILT FENCING AND TURBIDITY CURTAINS. DESIGN TURBIDITY CURTAIN INSTALLATIONS TO BE STABLE IN THE CURRENT.
- ⑤ DREDGE SOUTH SIDE OF EXISTING SHEET PILE DIVIDER. USE MIXING ZONE FOR WATER DISCHARGE AS NEEDED.
- ⑥ REMOVE EXISTING SHEET PILE DIVIDER IF TURBIDITY CURTAIN WILL BE SUFFICIENT. ALTERNATIVELY, LEAVE EXISTING SHEET PILE DIVIDER IN PLACE FOR MIXING ZONE.
- ⑦ INSTALL PROPOSED SHEET PILE, WORKING FROM WEST TO EAST. LEAVE ACCESS OPENING FOR DREDGING VESSEL AT THE NORTHEAST END.
- ⑧ DREDGE WORKING FROM WEST TO EAST, USING ENCLOSURE TO CONTROL TURBIDITY. USE MIXING ZONE FOR WATER DISCHARGE AS NEEDED.
- ⑨ INSTALL PIPING AND DOCK.
- ⑩ INSTALL HORSESHOE CRAB DETERRENT WALL.

GENERAL DREDGING NOTES

1. LIMITED SEDIMENT CHARACTERIZATION DATA FOR THIS PROJECT (BORINGS B-1 AND B-2) INDICATES THE PRESENCE OF CLAYEY FINE SAND, SHELL AND MUCK WITH 15.3% BY WEIGHT PASSING THE 200 SIEVE (BORING B-1). CONTRACTOR SHALL BE RESPONSIBLE FOR DETERMINING SEDIMENT CONDITIONS AS REQUIRED TO COMPLETE HIS WORK.
2. A MARINE DEBRIS SURVEY HAS NOT BEEN CONDUCTED FOR THE DREDGING AREA. CONTRACTOR SHALL NOTIFY OWNER IMMEDIATELY IN THE EVENT MARINE DEBRIS IS ENCOUNTERED DURING DREDGING.
3. CONTRACTOR SHALL DREDGE EVENLY TO THE LINES AND GRADE SHOWN ON THE DRAWINGS TAKING CARE TO AVOID THE CREATION OF WINDROWS OR UNEVEN BOTTOM CONDITIONS. CONTRACTOR SHALL CONSIDER SPILLAGE AND FALLBACK IN HIS DREDGING OPERATION TO ENSURE THE LINES AND GRADES SHOWN ARE MET.
4. CONTRACTOR SHALL TAKE GREAT CARE TO PREVENT TURBIDITY ENTRAINMENT IN THE PLANT INTAKE.
5. HOPPER DREDGING IS NOT PERMITTED.

EXCAVATION/DREDGING NOTES

1. NO EXCAVATION SHALL EXTEND BELOW THE PERMITTED DESIGN/DEPTHS ELEVATIONS SHOWN ON THE DRAWINGS, UNLESS ADDITIONAL TESTING SUPPORTS OTHERWISE; AND NO LOWER SEMI-CONFINING UNIT CLAYS SHALL BE EXCAVATED, REGARDLESS IF THESE MATERIALS ARE ENCOUNTERED ABOVE THE PERMITTED DEPTHS/ELEVATIONS. IF ANY LOWER SEMI-CONFINING UNIT CLAYS ARE ENCOUNTERED ABOVE THE PERMITTED DEPTHS/ELEVATIONS, THEN EXCAVATION OPERATIONS SHALL CEASE IN THE GENERAL AREA AND THE OWNER SHALL BE NOTIFIED IMMEDIATELY.



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FEDERAL PERMIT DRAWINGS

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DREDGING NOTES AND
CONSTRUCTION SEQUENCING NOTES

PROJECT NO: FPLCORP005

DRAWN: H. CARTER

DATE: 4/1/16

CHECK: J. SCHMITZ

DATE: 4/1/16

TEMPORARY SPOIL AREA NOTES

1. UNLESS APPROVED BY OWNER TO REMAIN ONSITE, ALL DREDGED SEDIMENT SHALL BE DISPOSED IN AN OWNER APPROVED LANDFILL.
2. CONTRACTOR SHALL DESIGN AND SUPPLY A TEMPORARY DREDGE SPOIL HANDLING AND MANAGEMENT SYSTEM TO ADDRESS SEDIMENT REMOVED DURING DREDGING OPERATIONS.
3. THE TEMPORARY DREDGE SPOIL HANDLING AND MANAGEMENT SYSTEM SHALL UTILIZE BARGES, UPLAND STAGING AREAS, AND/OR MECHANICAL PROCESSING SYSTEMS FOR TEMPORARY DREDGE SPOIL HANDLING AND MANAGEMENT. THE TEMPORARY DREDGE SPOIL HANDLING AND MANAGEMENT SYSTEM SHALL NOT UTILIZE WETLANDS OR AQUATIC AREAS FOR DREDGE SPOIL MANAGEMENT.
4. AS PART OF THE TEMPORARY DREDGE SPOIL HANDLING AND MANAGEMENT SYSTEM, CONTRACTOR SHALL DEWATER SEDIMENT AS REQUIRED FOR EFFICIENT SEDIMENT HANDLING AND MANAGEMENT.
5. CONTRACTOR MAY UTILIZE TEMPORARY SPOIL AREAS FOR SPOIL MATERIAL AND EQUIPMENT STAGING. CONTRACTOR SHALL BE RESPONSIBLE FOR DESIGN OF TEMPORARY SPOIL AREAS BASED ON THE SPOIL MATERIAL TO BE ADDRESSED.
6. CONTRACTOR SHALL DESIGN THE SPOIL HANDLING AND MANAGEMENT SYSTEM TO CONTROL TURBIDITY DURING ALL SEDIMENT DEWATERING OPERATIONS. CONTRACTOR SHALL UTILIZE FDEP APPROVED POLYMERS/FLOCCULANTS AS REQUIRED TO CONTROL TURBID DISCHARGE FROM DEWATERING.
7. CONTRACTOR SHALL PROVIDE AND MAINTAIN STABILIZED DEWATERING DISCHARGE THAT DOES NOT CAUSE OR CONTRIBUTE TO EROSION. USE MIXING ZONES FOR DEWATERING DISCHARGE.
8. CONTRACTOR SHALL CONTROL SEDIMENT RELEASE AND TURBIDITY RELATED TO LOADING/UNLOADING AND MATERIAL TRANSFER.
9. CONTRACTOR SHALL COORDINATE ONSITE AND/OR OFFSITE HAULING WITH OWNER, INCLUDING IDENTIFICATION OF HAUL ROUTE AND ROADWAY PROTECTION.
10. CONTRACTOR WILL BE RESPONSIBLE FOR IDENTIFYING AND OBTAINING LOCAL GOVERNMENT APPROVALS FOR HAULING, AS MAY BE REQUIRED.
11. SUBSURFACE UTILITIES ARE PRESENT IN THE WORK AREA AND HAVE NOT BEEN LOCATED. CONTRACTOR SHALL BE RESPONSIBLE FOR LOCATING AND PROTECTING ALL SUBSURFACE UTILITIES IN THE WORK AREA, WHETHER IDENTIFIED ON THE DRAWINGS OR NOT.
12. RESTORE ALL AREAS DISTURBED BY CONSTRUCTION. CONTRACTOR ACKNOWLEDGES MARINE SALTWATERS MAY DAMAGE SOD AND LANDSCAPING. DAMAGED SOD AND LANDSCAPING SHALL BE RESTORED.
13. UNLESS IN A MIXING ZONE, TURBIDITY MORE THAN 29 NTU'S OVER BACKGROUND EXCEEDS STATE WATER QUALITY STANDARDS AND SHALL NOT BE ALLOWED.
14. ACCESS THROUGH THE WETLAND IS PROHIBITED.
15. MANGROVE IMPACTS ARE NOT APPROVED FOR THIS PROJECT. IF MANGROVES MUST BE IMPACTED, REPORT TO OWNER IMMEDIATELY FOR PERMIT MODIFICATION AND APPROVAL PRIOR TO IMPACTING MANGROVES.



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FEDERAL PERMIT DRAWINGS

C-5



SPOIL MANAGEMENT NOTES

PROJECT NO: FPLCORP005

DRAWN: H. CARTER

DATE: 4/1/16

CHECK: J. SCHMITZ

DATE: 4/1/16

WATER QUALITY MONITORING NOTES (AS NEEDED):

1. MONITORING FOR TURBIDITY AS MEASURED IN NEPHELOMETRIC TURBIDITY UNITS (NTU) SHALL BE CONDUCTED FOR THE DURATION OF THE PROJECT AS FOLLOWS:

COLLECT DUPLICATE DAILY WATER QUALITY SAMPLES AS INDICATED BELOW, ANALYZE THE FIELD COLLECTED SAMPLES INDIVIDUALLY AND REPORT EACH OF THE DUPLICATE SAMPLES INDIVIDUALLY FOR THE FOLLOWING PARAMETERS. ALL MEASUREMENTS AND ANALYSES FOR EACH PARAMETER SHALL BE MADE USING APPROVED METHODS PROVIDING A PQL (PRACTICAL QUANTIFICATION LIMIT) BELOW THE WATER QUALITY STANDARD FOR THE PARAMETER LISTED IN RULE 62-302, F.A.C.:

<u>PARAMETER</u>	<u>DEPTH</u>	<u>LOCATION</u>
TURBIDITY	MID-DEPTH	MONITORING POINTS LOCATED ON PLAN

SAMPLING SHALL COMMENCE 12 TO 24 HOURS PRIOR TO THE INITIATION OF CONSTRUCTION ACTIVITY.

2. IF MEASURED MIXING ZONE BOUNDARY SAMPLES ARE IN EXCESS OF STATE STANDARDS (AMBIENT LEVELS AT DREDGING SITE/29 NTU'S ABOVE BACKGROUND AT MONITORING LOCATIONS) ALL DREDGING/FILLING/DISCHARGE ACTIVITIES SHALL CEASE IMMEDIATELY AND NOT RESUME UNTIL TURBIDITY LEVELS HAVE DROPPED TO MEET STATE STANDARDS, THE EXCEEDANCE SHALL BE IMMEDIATELY REPORTED TO OWNER. THE EXCEEDANCE REPORT SHALL INCLUDE THE DESCRIPTION OF THE CORRECTIVE ACTIONS BEING TAKEN OR PROPOSED TO BE TAKEN. IF EXCEEDANCES ARE NOTED AFTER NORMAL BUSINESS HOURS, ON HOLIDAYS, OR ON WEEKENDS, THE REPORT SHALL BE MADE TO OWNER AS SOON AS NORMAL BUSINESS HOURS RESUME. A COPY OF ALL MONITORING DATA SHEETS WHICH INDICATE EXCEEDANCES, SHALL BE FORWARDED IMMEDIATELY TO OWNER.

FAILURE TO REPORT EXCEEDANCES OR TO FOLLOW CORRECT PROCEDURES BEFORE RESUMING WORK WILL CONSTITUTE GROUNDS FOR REVOCATION OF THE PERMIT AND MAY ALSO RENDER THE PERMITTEE SUBJECT TO ENFORCEMENT ACTION.

POLLUTION PREVENTION NOTES

1. THE POTENTIAL SOURCES OF POLLUTION FROM THE PROJECT ARE LAND DISTURBANCE AND DREDGING.
2. ALL FUEL STORAGE AREAS OR OTHER HAZARDOUS STORAGE AREAS SHALL CONFORM TO ACCEPTED STATE OR FEDERAL CRITERIA FOR SUCH CONTAINMENT AREAS.
3. TEMPORARY DREDGE SPOIL MANAGEMENT LOCATIONS ARE TO BE LOCATED UPLAND OF ALL STORMWATER PONDS, WETLANDS AND AQUATIC RESOURCES.
4. TEMPORARY DREDGE SPOIL MANAGEMENT LOCATIONS MUST BE SELF CONTAINED, IN THAT SEDIMENT CONTROL MEASURES SUCH AS BARGES OR GEOTUBES MUST BE PROPERLY INSTALLED, MAINTAINED AND OPERATED TO PREVENT DISCHARGE OF MOBILIZED SEDIMENT.
5. CONSTRUCTION EQUIPMENT SHALL BE OPERATED AND MAINTAINED IN SUCH A MANNER AS TO PREVENT SPILLS OR LEAKS FROM REACHING WATER.
6. HYDRAULIC LINES USED IN EQUIPMENT SHALL CONTAIN VEGETABLE OIL ONLY. ALL FITTINGS SHALL BE WRAPPED IN OIL ABSORBING MATERIAL AND CLEAR VISQUEEN MATERIAL.
7. CONTRACTOR SHALL SUBMIT A FUEL SPILL RESPONSE PLAN FOR OWNER REVIEW AND APPROVAL. THE FUEL SPILL RESPONSE PLAN SHALL ADDRESS FUEL STORAGE, HANDLING AND LOADING/UNLOADING, AND SPILL CLEANUP PROCEDURES TO THE EXTENT NECESSARY TO MINIMIZE THE POTENTIAL FOR IMPACT TO LAND OR WATER FROM A FUEL SPILL.

GROUNDWATER DEWATERING NOTES

1. COFFERDAM DEWATERING IS NOT ANTICIPATED FOR THIS PROJECT. IF COFFERDAM DEWATERING IS NEEDED, PERMITS WILL BE NEEDED TO ACCOMMODATE SAID DEWATERING.
2. TO DEWATER PIPE TRENCHES OR ANY TEMPORARY SPOIL EXCAVATION TO EXISTING SURFACE WATER, OBTAIN FDEP PERMIT FOR DISCHARGE OF PRODUCED GROUNDWATER FROM NON-CONTAMINATED SITES.



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FEDERAL PERMIT DRAWINGS

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POLLUTION PREVENTION NOTES

PROJECT NO: FPLCORP005

DRAWN: H. CARTER

DATE: 4/1/16

CHECK: J. SCHMITZ

DATE: 4/1/16

SEDIMENT AND EROSION CONTROL NOTES

1. SEDIMENT SHALL NOT BE ALLOWED TO WASH INTO THE CHANNEL OR STORM DRAINS. CONTRACTOR IS RESPONSIBLE FOR REPAIR AND/OR CLEANUP OF ANY AND ALL DAMAGES RESULTING FROM SEDIMENT MOBILIZATION FROM CONSTRUCTION ACTIVITY.
2. TEMPORARY SEDIMENT CONTROL DEVICES SHALL BE INSTALLED PRIOR TO ANY LAND DISTURBANCE AND ARE TO BE MAINTAINED IN PLACE THROUGHOUT THE ENTIRE COURSE OF CONSTRUCTION.
3. THE TYPE OF SEDIMENT BARRIER USED SHALL BE GOVERNED BY THE NATURE OF THE CONSTRUCTION OPERATION AND THE SEDIMENT THAT WILL BE MOBILIZED. SILTY AND CLAYEY MATERIAL MAY REQUIRE SOLID SEDIMENT BARRIERS TO PREVENT TURBID WATER MOVEMENT, WHILE SANDY MATERIAL MAY NEED ONLY SCREENS OR DIVERSIONS. IT MAY BE NECESSARY TO EMPLOY A COMBINATION OF MEASURES IF CONDITIONS WARRANT.
4. WHERE PUMPS ARE TO BE USED TO REMOVE TURBID WATERS FROM CONSTRUCTION AREAS, THE WATER SHALL BE TREATED TO REDUCE TURBIDITY PRIOR TO DISCHARGE TO WATERWAYS. TREATMENT MEASURES MAY INCLUDE SEDIMENT TRAPS, FILTER SYSTEMS, BERMS, AND OTHER FEATURES DESIGNED TO LIMIT TURBIDITY TO STATE WATER QUALITY STANDARDS.
5. CONTRACTOR SHALL SCHEDULE HIS OPERATIONS TO MINIMIZE THE POTENTIAL FOR TURBID DISCHARGE. THE DURATION OF DISTURBANCE AND UNCOMPLETED CONSTRUCTION EXPOSED TO THE ELEMENTS SHALL BE AS SHORT AS PRACTICABLE. EXPOSED SOILS SHALL BE STABILIZED AS SOON AS POSSIBLE, ESPECIALLY SLOPES. GRADING AND EARTHWORK OPERATIONS SHALL BE STABILIZED WITHIN 7 DAYS OF COMPLETION.
6. STABILIZATION METHODS INCLUDE SOD, SEEDING AND MULCHING OR HYDROMULCHING TO PROVIDE A TEMPORARY OR PERMANENT GRASS COVER. GEOTEXTILE FABRICS CAN BE EMPLOYED TO HELP SUPPORT VEGETATION ESTABLISHMENT.
7. SEDIMENT, EROSION AND TURBIDITY CONTROL MEASURES SHOWN ON THE DRAWINGS ARE CONSIDERED MINIMUM. CONTRACTOR IS RESPONSIBLE FOR PROVIDING CONTROL AS NECESSARY TO PREVENT TURBIDITY. ADDITIONAL TURBIDITY CONTROL MEASURES WILL BE INSTALLED IF DEEMED NECESSARY BY ONSITE INSPECTION.
8. INSTALLATION OF SEDIMENT AND EROSION AND TURBIDITY CONTROLS SHALL BE COORDINATED WITH THE CONSTRUCTION OF PERMANENT FEATURES TO THE EXTENT NECESSARY TO ASSURE EFFECTIVE AND CONTINUOUS TURBIDITY CONTROL THROUGHOUT THE LIFE OF THE CONSTRUCTION PHASE.
9. CONTRACTOR SHALL PREVENT SEDIMENT TRACKING FROM EQUIPMENT TO ADJACENT ROADWAYS OR WATERWAYS. CONTRACTOR SHALL INSTALL SOIL TRACKING DEVICE, ENSURE BARGES DO NOT LEAK, ETC, AS NEEDED. CONTRACTOR SHALL BE RESPONSIBLE FOR REMOVING ANY SEDIMENT TRACKED FROM THE PROJECT SITE ONTO ADJACENT ROADWAYS.
10. CONTRACTOR SHALL INSPECT TURBIDITY CONTROL DEVICES ON A DAILY BASIS FOR PROPER INSTALLATION AND PERFORMANCE



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FEDERAL PERMIT DRAWINGS

C-7

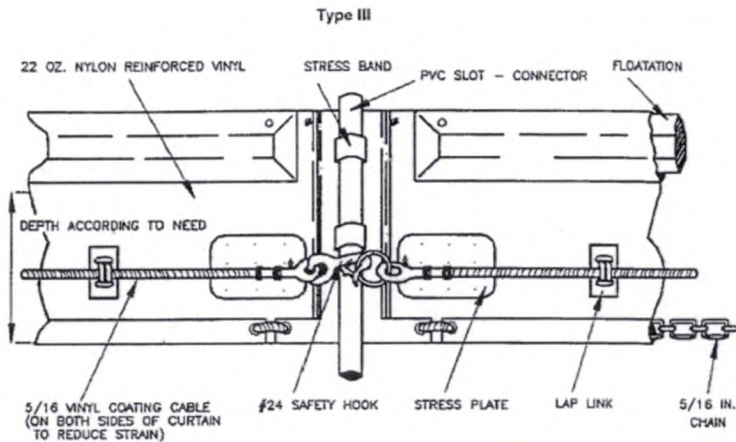


SEDIMENT AND EROSION CONTROL NOTES

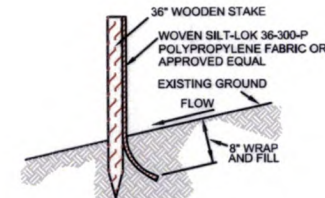
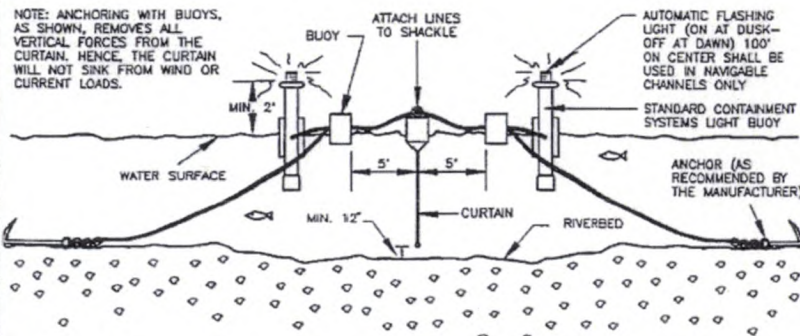
PROJECT NO: FPLCORP005

DRAWN: H. CARTER
CHECK: J. SCHMITZ

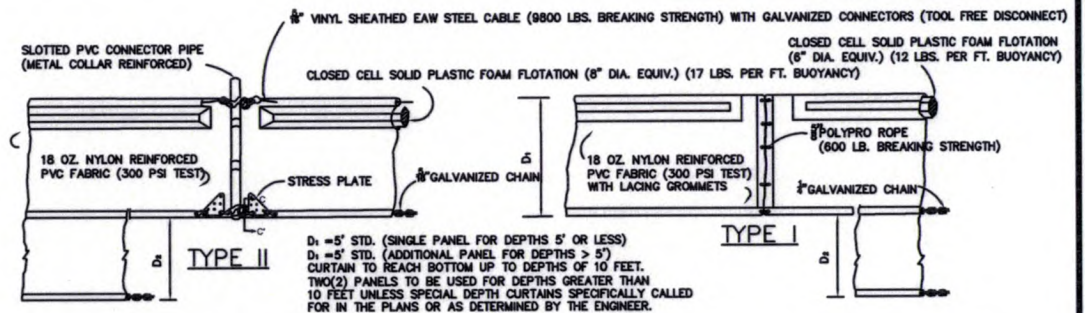
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DATE: 4/1/16



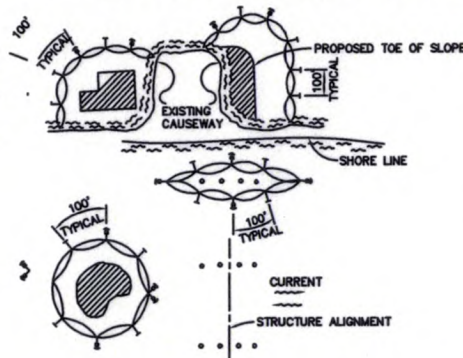
Orientation When Installed
(Tidal Situation - Type III)



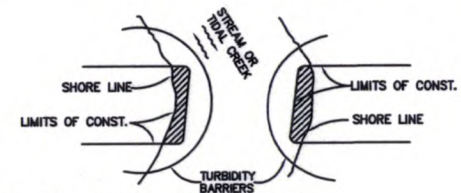
STAKED SILT FENCE



NOTICE: COMPONENTS OF TYPES I AND II MAY BE SIMILAR OR IDENTICAL TO PROPRIETARY DESIGNS. ANY INFRINGEMENT ON THE PROPRIETARY RIGHTS OF THE DESIGNER SHALL BE THE SOLE RESPONSIBILITY OF THE USER. SUBSTITUTIONS FOR TYPES I AND II SHALL BE AS APPROVED BY THE ENGINEER.



- LEGEND
- PILE LOCATIONS
 - ▨ DREDGE OR FILL AREA
 - MOORING BUOY W/ANCHOR
 - ANCHOR
 - BARRIER MOVEMENT DUE TO CURRENT ACTION



NOTE:
TURBIDITY BARRIERS FOR FLOWING STREAMS AND TIDAL CREEKS MAY BE EITHER FLOATING, OR STAKED TYPES OR ANY COMBINATION OF TYPES THAT WILL SUIT SITE CONDITIONS AND MEET EROSION CONTROL AND WATER QUALITY REQUIREMENTS. THE BARRIER TYPE(S) WILL BE AT THE CONTRACTORS OPTION UNLESS OTHERWISE SPECIFIED IN THE PLANS. HOWEVER PAYMENT WILL BE UNDER THE PAY ITEM(S) ESTABLISHED IN THE PLANS FOR FLOATING TURBIDITY BARRIER AND/OR STAKED TURBIDITY BARRIER. POSTS IN STAKED TURBIDITY BARRIERS TO BE INSTALLED IN VERTICAL POSITION UNLESS OTHERWISE DIRECTED BY THE ENGINEER.

TURBIDITY BARRIER DETAIL (FDOT INDEX 103)



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POLLUTION PREVENTION DETAILS

PROJECT NO: FPLCORP005

DRAWN: H. CARTER

DATE: 4/1/16

CHECK: J. SCHMITZ

DATE: 4/1/16

SUMMARY JURISDICTIONAL QUANTITIES (TOTAL PROJECT)			
DREDGE	3,838 CY	FILL	677 CY
	1.08 AC		0.06 AC
SHEETPILE REMOVED	47,045 SF	SHEETPILE INSTALLED	2,614 SF
	720 LF		705 LF (12")
DETERRENT FENCE REMOVED		8" WOOD PILINGS INSTALLED	340 LF (10")
	250 LF		49 EA

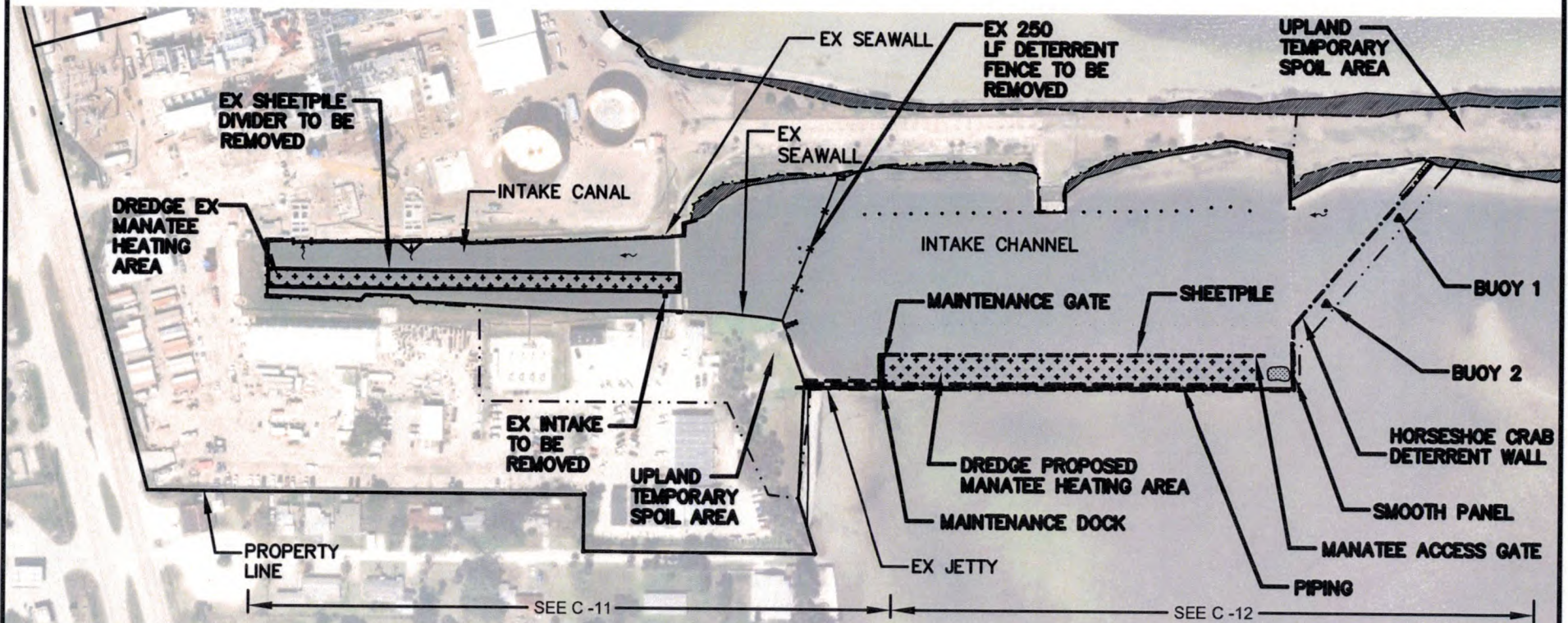
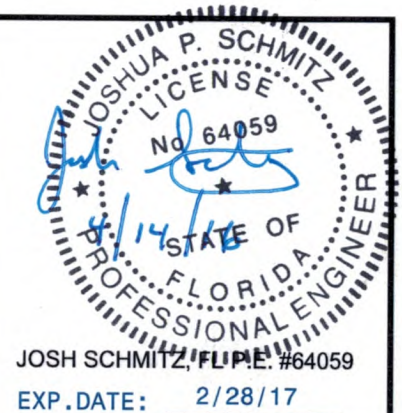
1 AC = 43,560 SF

NOTES

1. THESE DRAWINGS ARE FOR PERMITTING PURPOSES ONLY AND ARE NOT INTENDED FOR CONSTRUCTION USE.
2. THESE DRAWINGS ARE INTENDED ONLY FOR FEDERAL AGENCY REVIEW AND ARE NOT INTENDED FOR STATE OR LOCAL REGULATORY AGENCY USE.

LEGEND:

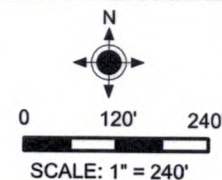
-  SEAGRASS
-  FDEP WETLANDS
-  DREDGE AREA
-  FDEP WETLAND LINE
-  ORDINARY HIGH WATER LINE (OHW)
-  PROPOSED SHEETPILE
-  PROPOSED PIPING
-  PROJECT BOUNDARY
-  BUOY
-  CURRENT DIRECTION



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C-9



AERIAL SITE PLAN

PROJECT NO: FPLCORP005

DRAWN: H. CARTER	DATE: 4/14/16
CHECK: J. SCHMITZ	DATE: 4/14/16

N.A.V.D. 1988
ELEVATIONS

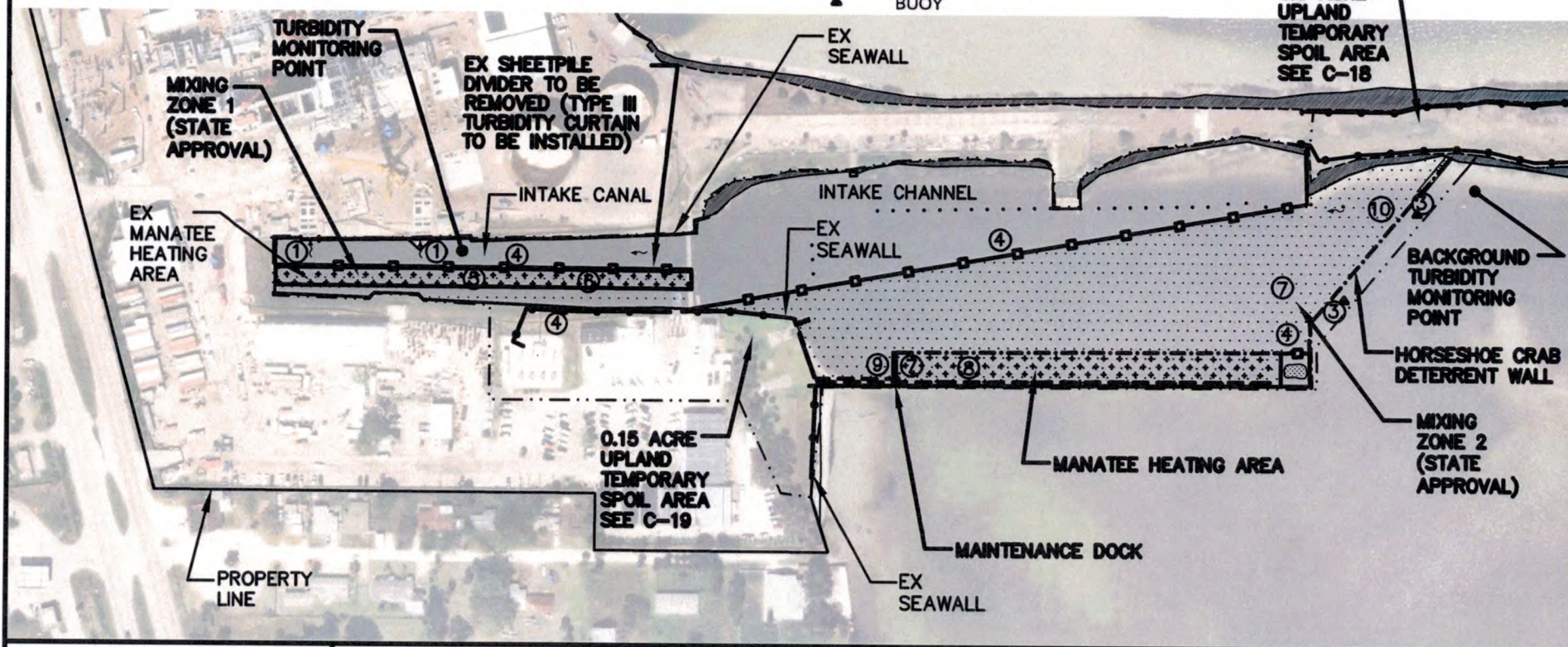
ORDINARY HIGH WATER LINE = -0.24' N.A.V.D. 1988

NOTES

1. THESE DRAWINGS ARE FOR PERMITTING PURPOSES ONLY AND ARE NOT INTENDED FOR CONSTRUCTION USE.
2. THESE DRAWINGS ARE INTENDED ONLY FOR FEDERAL AGENCY REVIEW AND ARE NOT INTENDED FOR STATE OR LOCAL REGULATORY AGENCY USE.
3. REFER TO NOTES C-2 THROUGH C-7.

LEGEND:

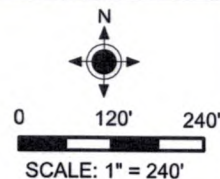
- ~ CURRENT DIRECTION
- [Pattern] SEAGRASS
- [Pattern] FDEP WETLANDS
- [Pattern] MIXING ZONE
- [+] DREDGE AREA
- ④ CONSTRUCTION SEQUENCE (SEE C-4)
- [Symbol] TURBIDITY CURTAIN
- [Symbol] SILT FENCE
- FDEP WETLAND LINE
- ORDINARY HIGH WATER LINE (OHW)
- .-.- PROPOSED SHEETPILE
- - - PROPOSED PIPING
- . - PROJECT BOUNDARY
- ▲ BUOY



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 **ENERCON**

POLLUTION PREVENTION PLAN AND
PROJECT SEQUENCING PLAN

PROJECT NO: FPLCORP005

DRAWN: H. CARTER
CHECK: J. SCHMITZ

DATE: 4/1/16
DATE: 4/1/16

ORDINARY HIGH WATER LINE = -0.24' N.A.V.D. 1988

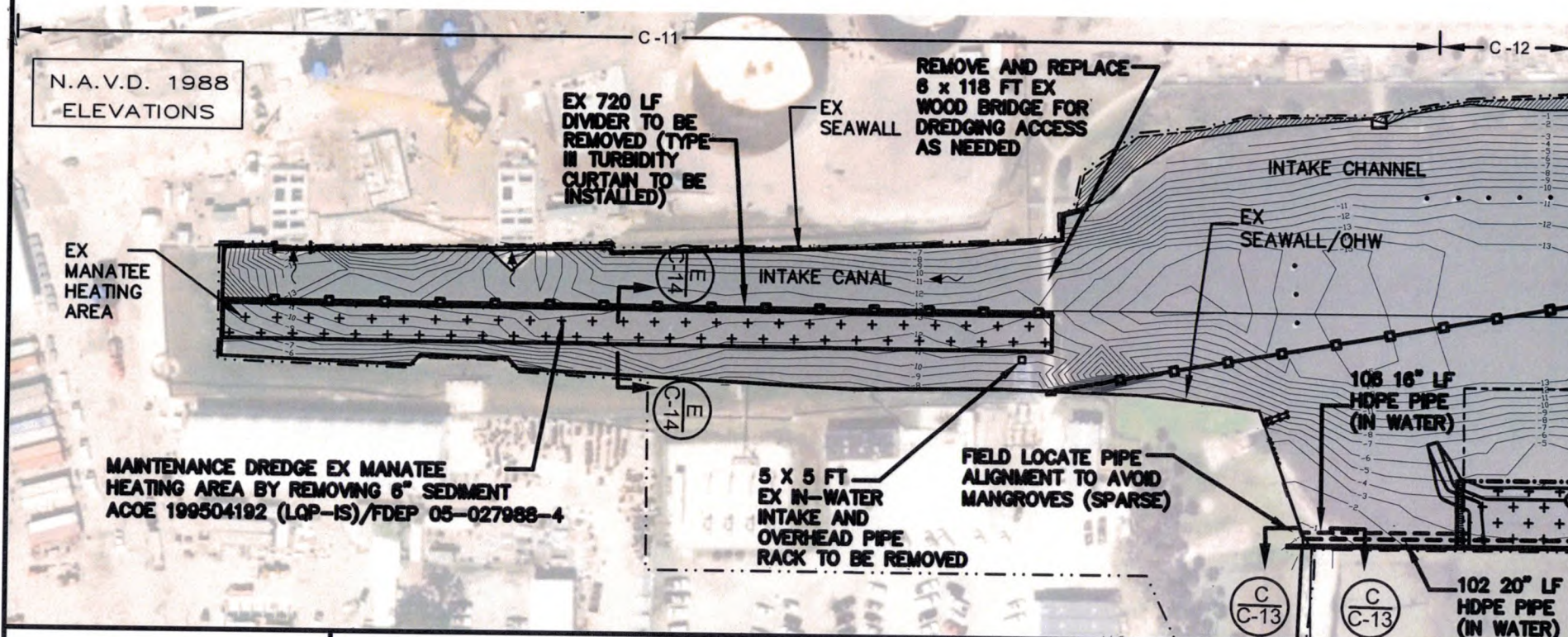
QUANTITIES (THIS SHEET)	
DREDGE AREA	0.43 AC
TOTAL CUT	353 CY
SHEETPILE REMOVED	720 LF
16" PIPE INSTALLED	106 LF
20" PIPE INSTALLED	102 LF
IN-WATER INTAKE REMOVED	25 SF

NOTES

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2. THESE DRAWINGS ARE INTENDED ONLY FOR FEDERAL AGENCY REVIEW AND ARE NOT INTENDED FOR STATE OR LOCAL REGULATORY AGENCY USE.
3. REFER TO MECHANICAL DRAWINGS FOR PIPING.
4. REFER TO STRUCTURAL DRAWINGS FOR SHEETPILE.

LEGEND:

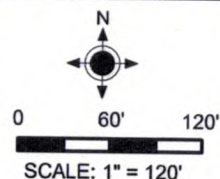
-  SEAGRASS
-  FDEP WETLANDS
-  MIXING ZONE
-  DREDGE AREA
-  TURBIDITY CURTAIN
-  FDEP WETLAND LINE
-  ORDINARY HIGH WATER LINE (OHW)
-  SEAGRASS SURVEY AREA
-  PROPOSED SHEETPILE
-  PROPOSED PIPING
-  PROJECT BOUNDARY BUOY



FLORIDA POWER & LIGHT
CAPE CANAVERAL ENERGY CENTER
6000 US HWY 1
COCOA, FL 32907

MANATEE HEATING AREA AND
HORSESHOE CRAB
DETERRENT WALL

FEDERAL PERMIT DRAWINGS



C-11

 **ENERCON**

WEST PLAN

PROJECT NO: FPLCORP005

DRAWN: H. CARTER
CHECK: J. SCHMITZ

DATE: 4/14/16
DATE: 4/14/16

ORDINARY HIGH WATER LINE = -0.24' N.A.V.D. 1988

QUANTITIES (THIS SHEET)

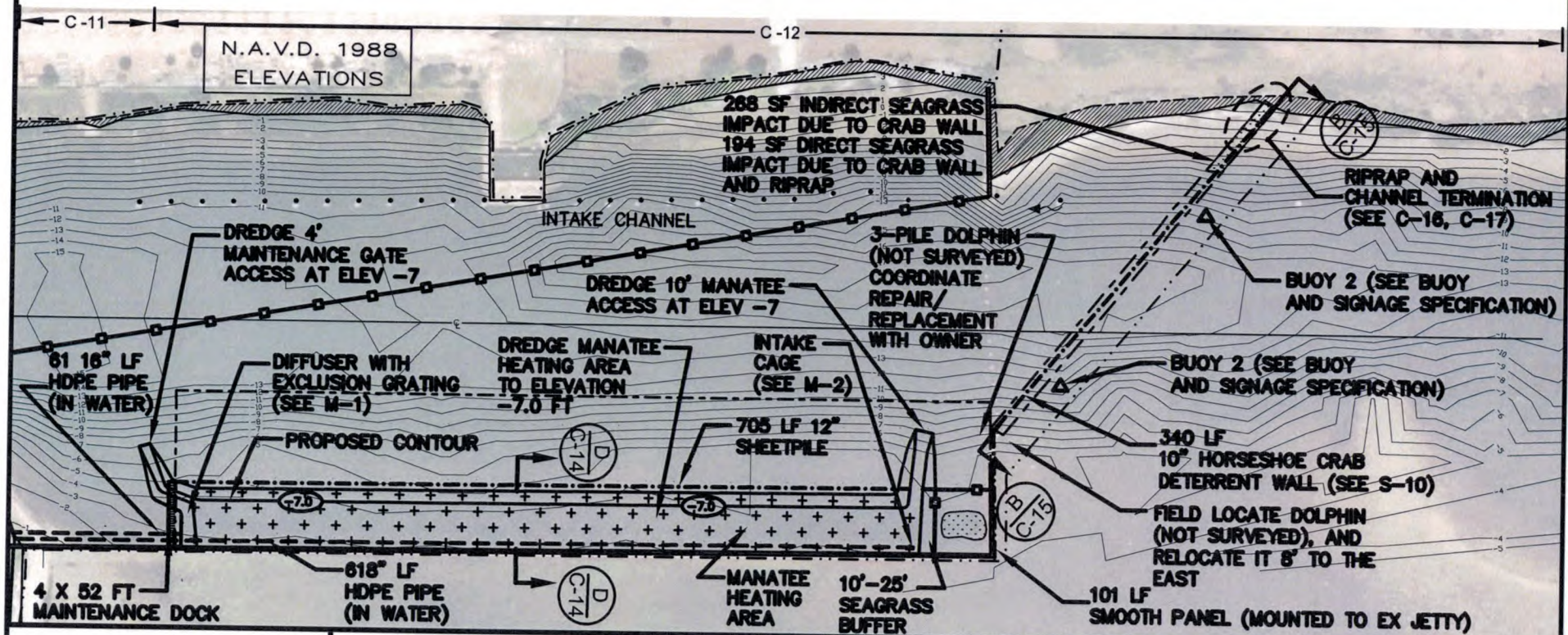
DREDGE AREA	0.65 AC
TOTAL CUT	3,485 CY
10" SHEETPILE INSTALLED	340 LF
12" SHEETPILE INSTALLED	705 LF
8" WOOD PILINGS INSTALLED	49 EA
16" PIPING INSTALLED	61 LF
20" PIPING INSTALLED	618 LF
NAVIGATION BUOYS	2 EA
DOLPHINS REPAIR/REPLACED	2 EA

NOTES

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3. REFER TO MECHANICAL DRAWINGS FOR PIPING.
4. REFER TO STRUCTURAL DRAWINGS FOR SHEETPILE.

LEGEND:

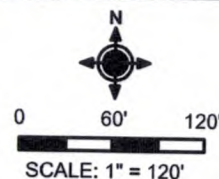
- SEAGRASS
- FDEP WETLANDS
- MIXING ZONE
- DREDGE AREA
- TURBIDITY CURTAIN
- FDEP WETLAND LINE
- ORDINARY HIGH WATER LINE (OHW)
- SEAGRASS SURVEY AREA
- PROPOSED SHEETPILE
- PROPOSED PIPING
- PROJECT BOUNDARY
- BUOY



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COCOA, FL 32907

MANATEE HEATING AREA AND
HORSESHOE CRAB
DETERRENT WALL

FEDERAL PERMIT DRAWINGS



C-12

ENERCON

EAST PLAN

Project No: FPLCORP005

DRAWN: H. CARTER

DATE: 4/14/16

CHECK: J. SCHMITZ

DATE: 4/14/16

N.A.V.D. 1988
ELEVATIONS

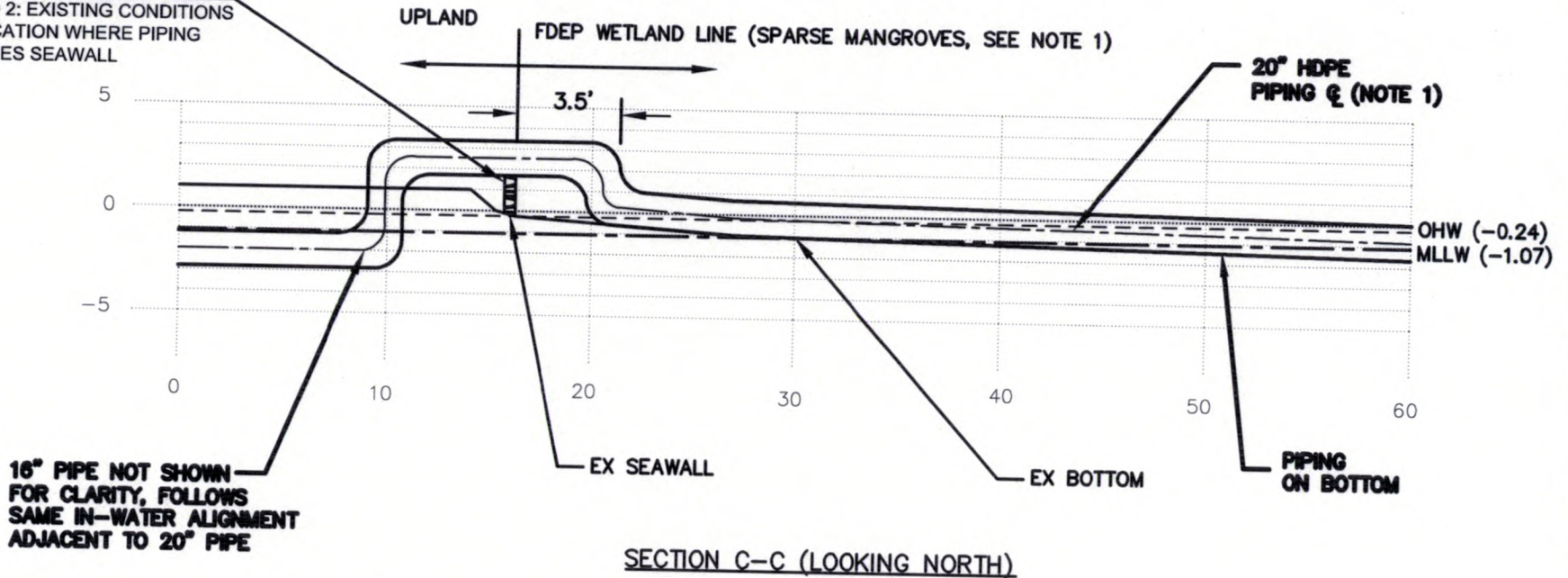
ORDINARY HIGH WATER LINE = -0.24' N.A.V.D. 1988



PHOTO 2: EXISTING CONDITIONS
AT LOCATION WHERE PIPING
CROSSES SEAWALL

NOTES

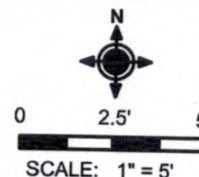
1. MANGROVE IMPACTS ARE NOT APPROVED FOR THIS PROJECT. IF MANGROVES MUST BE IMPACTED, REPORT TO OWNER IMMEDIATELY FOR PERMIT MODIFICATION AND APPROVAL PRIOR TO IMPACT TO MANGROVES.
2. SEE M-3 FOR PIPE ANCHORS. SEE M-1 FOR ISOMETRIC PIPING ALIGNMENT.
3. THESE DRAWINGS ARE FOR PERMITTING PURPOSES ONLY AND ARE NOT INTENDED FOR CONSTRUCTION USE.
4. THESE DRAWINGS ARE INTENDED ONLY FOR FEDERAL AGENCY REVIEW AND ARE NOT INTENDED FOR STATE OR LOCAL REGULATORY AGENCY USE.



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COCOA, FL 32907

MANATEE HEATING AREA AND
HORSESHOE CRAB
DETERRENT WALL

FEDERAL PERMIT DRAWINGS



C-13

ENERCON

PIPE CROSSING

Project No: FPLCORP005

DRAWN: H. CARTER
CHECK: J. SCHMITZ

DATE: 4/14/16
DATE: 4/14/16

N.A.V.D. 1988
ELEVATIONS

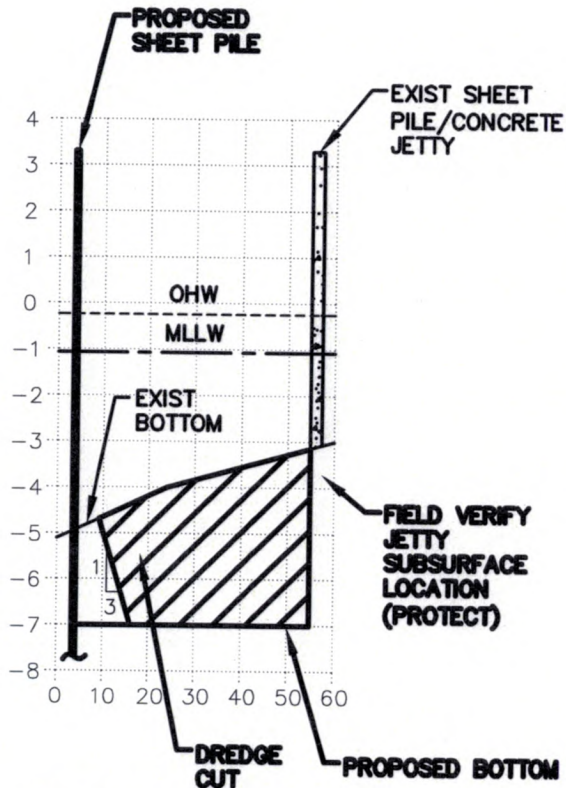
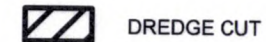
ORDINARY HIGH WATER LINE = -0.24' N.A.V.D. 1988



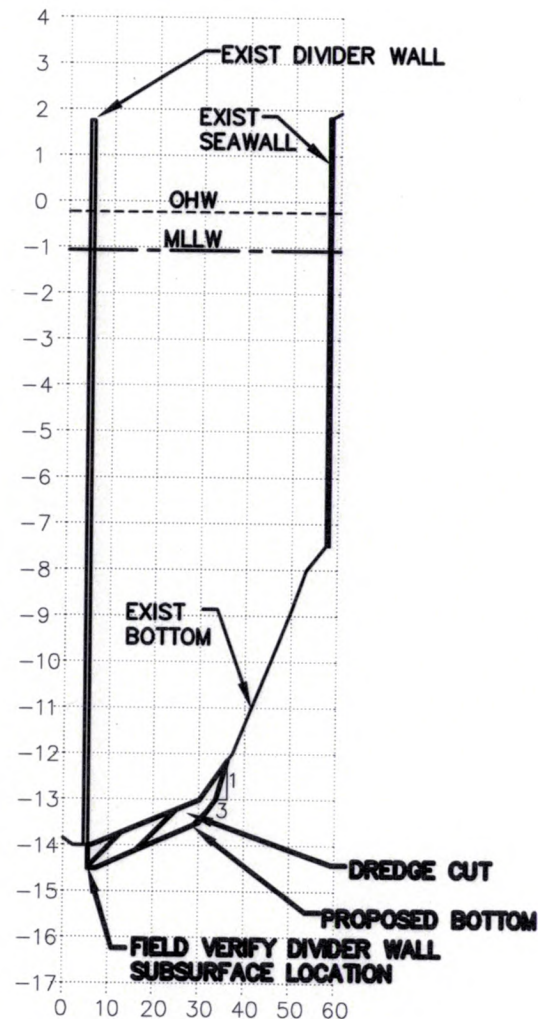
NOTES

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LEGEND:



SECTION D-D (LOOKING EAST)
HORIZONTAL SCALE: 1" = 40'
VERTICAL SCALE: 1" = 4'

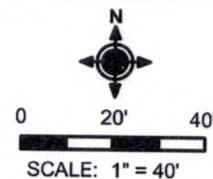


SECTION E-E (LOOKING EAST)
HORIZONTAL SCALE: 1" = 40'
VERTICAL SCALE: 1" = 4'

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CAPE CANAVERAL ENERGY CENTER
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COCOA, FL 32907

MANATEE HEATING AREA AND
HORSESHOE CRAB
DETERRENT WALL

FEDERAL PERMIT DRAWINGS



C-14

 **ENERCON**

DREDGE CROSS SECTIONS

Project No: FPLCORP005

DRAWN: H. CARTER

DATE: 4/14/16

CHECK: J. SCHMITZ

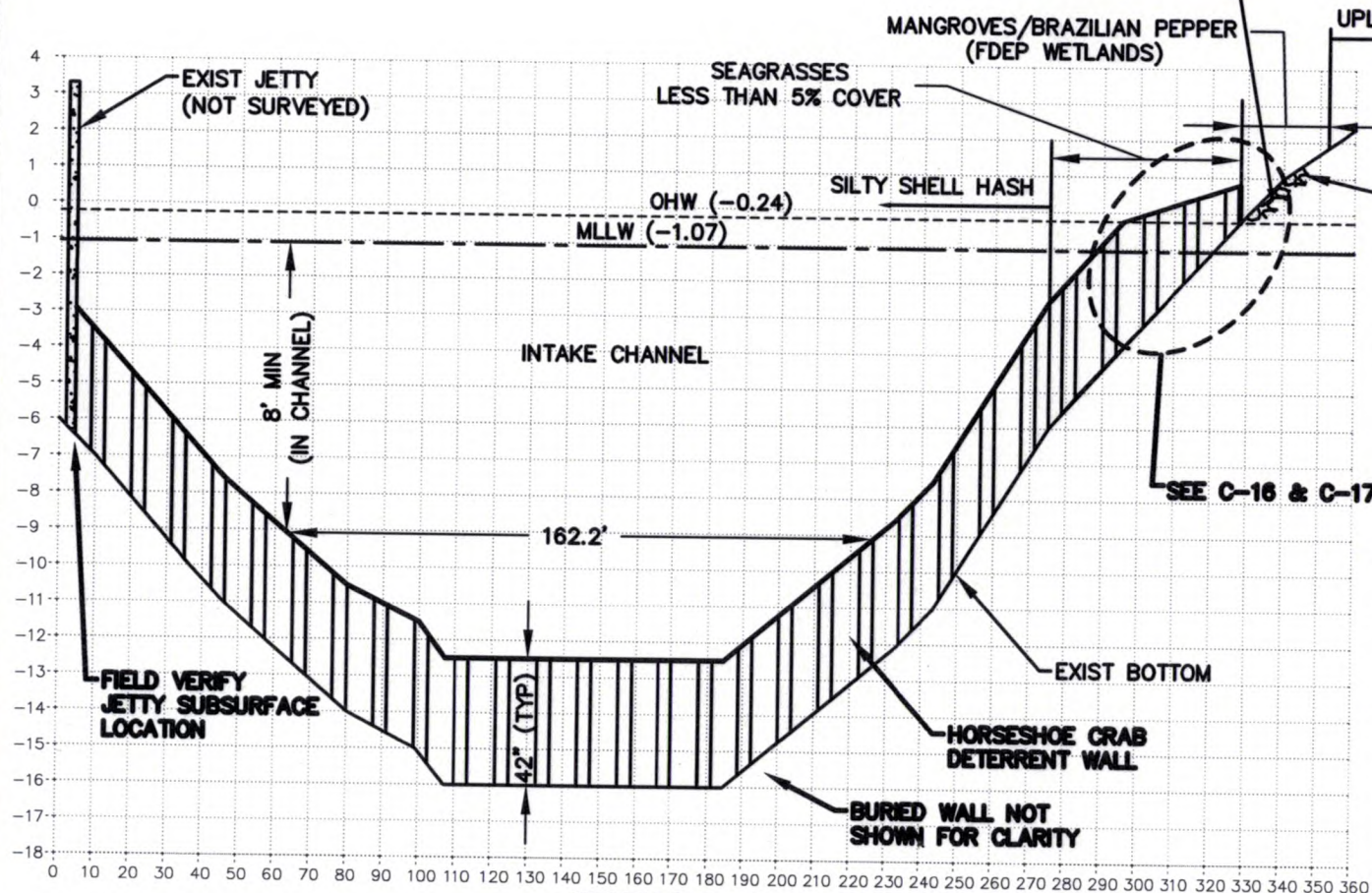
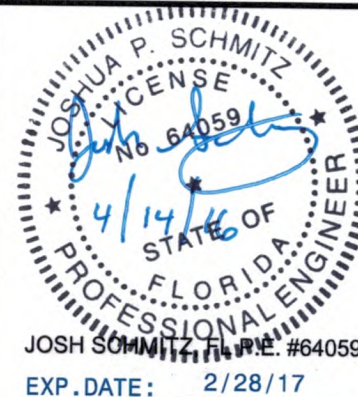
DATE: 4/14/16

N.A.V.D. 1988
ELEVATIONS

ORDINARY HIGH WATER LINE = -0.24' N.A.V.D. 1988



PHOTO 1: EXISTING
CONDITIONS
AT LOCATION
WHERE DETERRENT
WALL ABUTS
SHORELINE



EXIST RIPRAP
(NOT SURVEYED)

NOTES

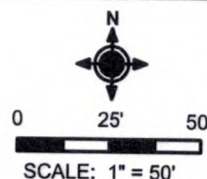
1. MANGROVE IMPACTS ARE NOT APPROVED FOR THIS PROJECT. IF MANGROVES MUST BE IMPACTED, REPORT TO OWNER IMMEDIATELY FOR PERMIT MODIFICATION AND APPROVAL PRIOR TO IMPACT TO MANGROVES.
2. SEE HORSESHOE CRAB DETERRENT WALL DESIGN ON S-10.
3. THESE DRAWINGS ARE FOR PERMITTING PURPOSES ONLY AND ARE NOT INTENDED FOR CONSTRUCTION USE.
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SECTION B-B
HORIZONTAL SCALE: 1" = 50'
VERTICAL SCALE: 1" = 5'

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COCOA, FL 32907

MANATEE HEATING AREA AND
HORSESHOE CRAB
DETERRENT WALL

FEDERAL PERMIT DRAWINGS



C-15

ENERCON

CHANNEL CROSS SECTION

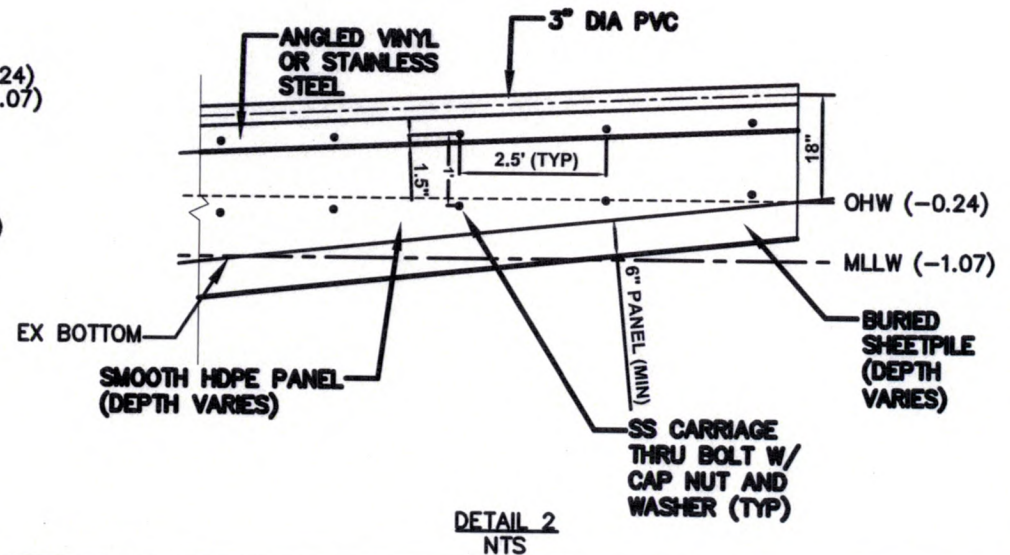
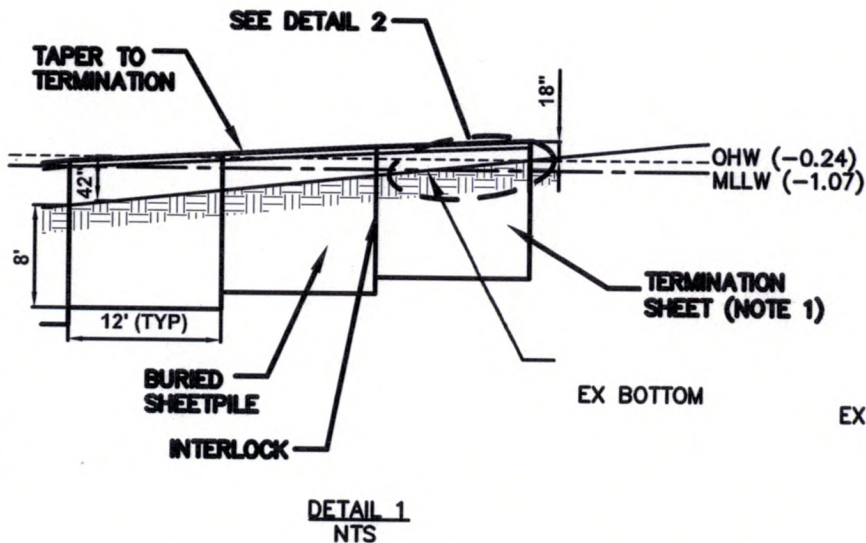
Project No: FPLCORP005
DRAWN: H. CARTER
CHECK: J. SCHMITZ
DATE: 4/14/16
DATE: 4/14/16

N.A.V.D. 1988
ELEVATIONS

ORDINARY HIGH WATER LINE = -0.24' N.A.V.D. 1988

NOTES

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2. SEE HORSESHOE CRAB DETERRENT WALL DESIGN ON S-10.
3. THESE DRAWINGS ARE FOR PERMITTING PURPOSES ONLY AND ARE NOT INTENDED FOR CONSTRUCTION USE.
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CAPE CANAVERAL ENERGY CENTER
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COCOA, FL 32907

MANATEE HEATING AREA AND
HORSESHOE CRAB
DETERRENT WALL

FEDERAL PERMIT DRAWINGS



NOT TO SCALE

C-16

 **ENERCON**

HORSESHOE CRAB DETERRENT WALL
TERMINATION

Project No: FPLCORP005

DRAWN: H. CARTER

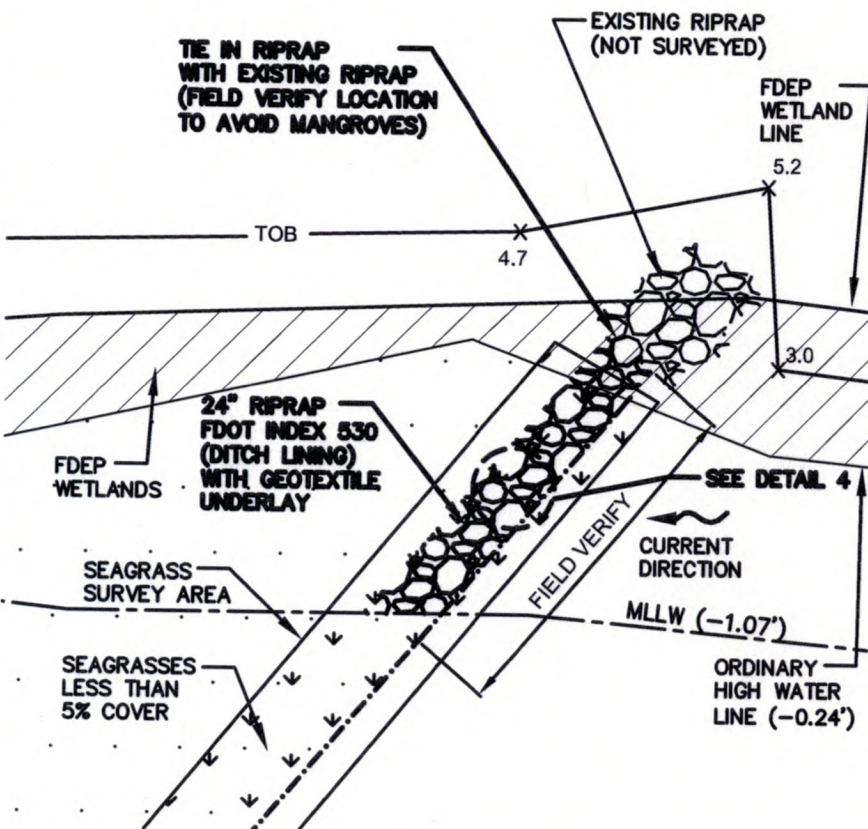
DATE: 4/1/16

CHECK: J. SCHMITZ

DATE: 4/1/16

N.A.V.D. 1988
ELEVATIONS

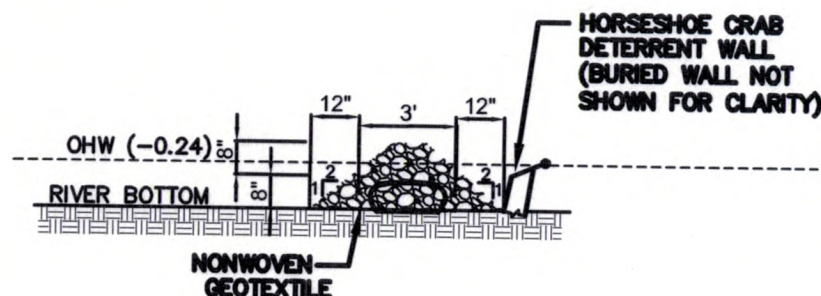
ORDINARY HIGH WATER LINE = -0.24' N.A.V.D. 1988



DETAIL 3
NTS

NOTES

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DETAIL 4
NTS

FLORIDA POWER & LIGHT
CAPE CANAVERAL ENERGY CENTER
6000 US HWY 1
COCOA, FL 32907

MANATEE HEATING AREA AND
HORSESHOE CRAB
DETERRENT WALL

FEDERAL PERMIT DRAWINGS



NOT TO SCALE

C-17

ENERCON

RIP RAP DETAILS

Project No: FPLCORP005

DRAWN: H. CARTER
CHECK: J. SCHMITZ

DATE: 4/14/16
DATE: 4/14/16

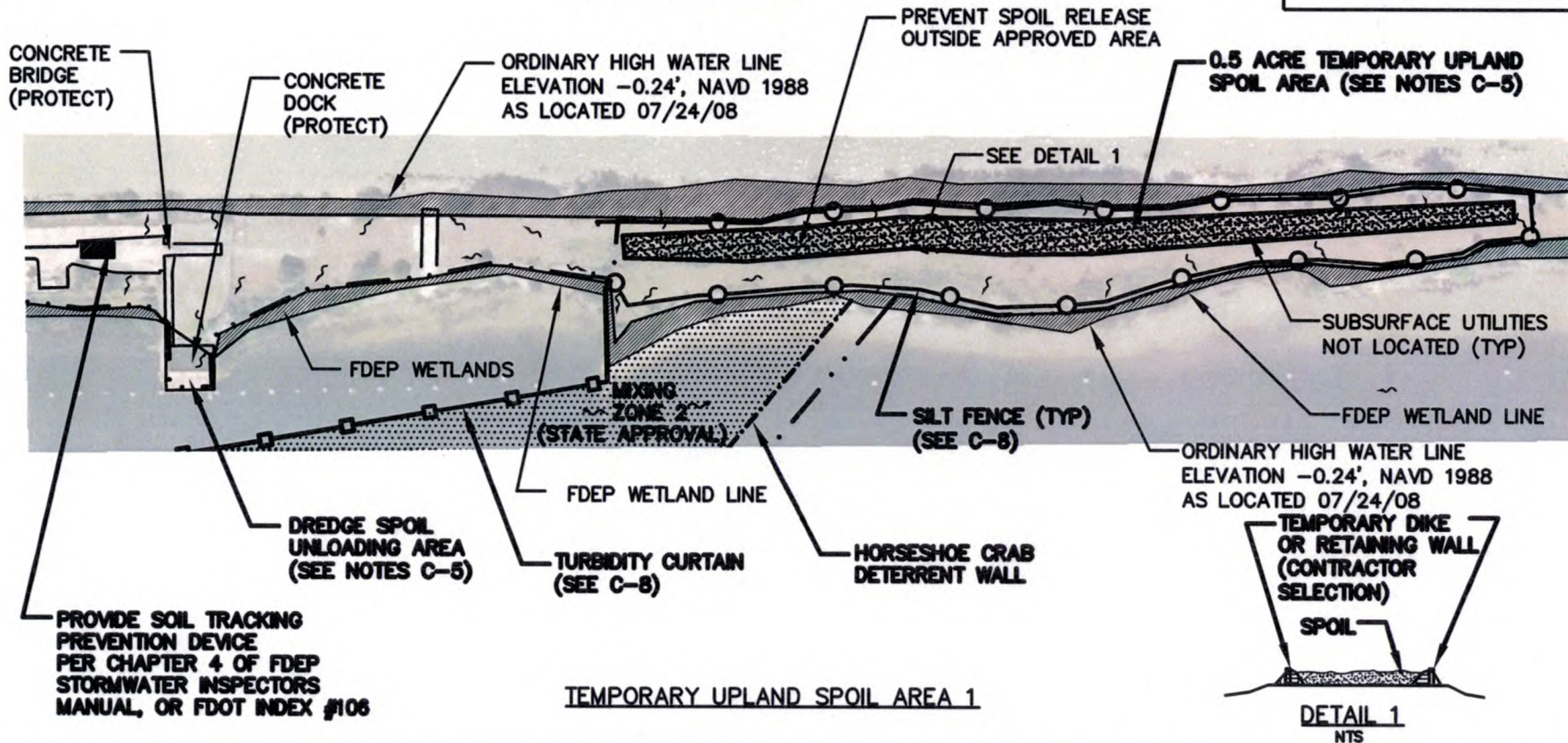
N.A.V.D. 1988
ELEVATIONS

ORDINARY HIGH WATER LINE = -0.24' N.A.V.D. 1988

EX DRAINAGE DIRECTION

NOTES

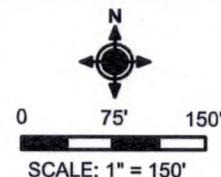
1. MANGROVE IMPACTS ARE NOT APPROVED FOR THIS PROJECT. IF MANGROVES MUST BE IMPACTED, REPORT TO OWNER IMMEDIATELY FOR PERMIT MODIFICATION AND APPROVAL PRIOR TO IMPACT TO MANGROVES.
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4. UNLESS APPROVED BY OWNER TO REMAIN ONSITE, ALL DREDGED SEDIMENT SHALL BE DISPOSED IN AN OWNER APPROVED LANDFILL.
5. HAUL ROUTE BY CONTRACTOR AS REQUIRED (COORDINATE WITH OWNER) FOR LANDFILL DISPOSAL.



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MANATEE HEATING AREA AND
HORSESHOE CRAB
DETERRENT WALL

FEDERAL PERMIT DRAWINGS



C-18

ENERCON

SPOIL MANAGEMENT AREA 1

Project No: FPLCORP005

DRAWN: H. CARTER
CHECK: J. SCHMITZ

DATE: 4/14/16
DATE: 4/14/16

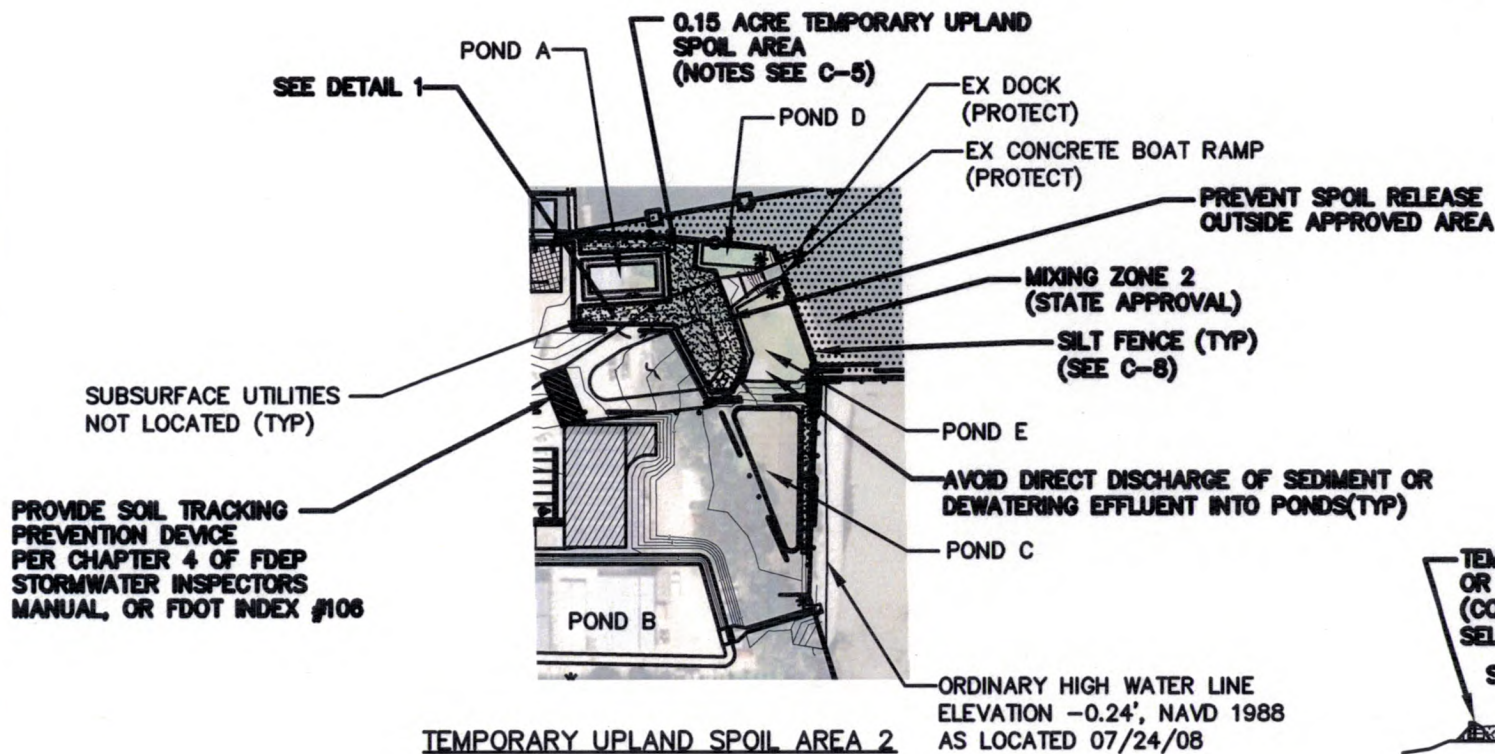
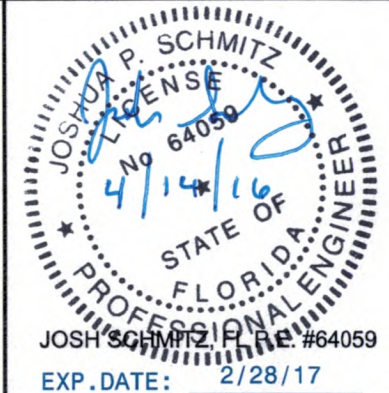
N.A.V.D. 1988
ELEVATIONS

ORDINARY HIGH WATER LINE = -0.24' N.A.V.D. 1988

↙ EX DRAINAGE DIRECTION

NOTES

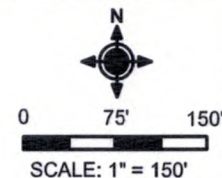
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4. UNLESS APPROVED BY OWNER TO REMAIN ONSITE, ALL DREDGED SEDIMENT SHALL BE DISPOSED IN AN OWNER APPROVED LANDFILL.
5. HAUL ROUTE BY CONTRACTOR AS REQUIRED (COORDINATE WITH OWNER) FOR LANDFILL DISPOSAL.



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CAPE CANAVERAL ENERGY CENTER
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MANATEE HEATING AREA AND
HORSESHOE CRAB
DETERRENT WALL

FEDERAL PERMIT DRAWINGS



C-19

ENERCON

SPOIL MANAGEMENT AREA 2

Project No: FPLCORP005

DRAWN: H. CARTER	DATE: 4/14/16
CHECK: J. SCHMITZ	DATE: 4/14/16

N.A.V.D. 1988
ELEVATIONS

ORDINARY HIGH WATER LINE = -0.24' N.A.V.D. 1988

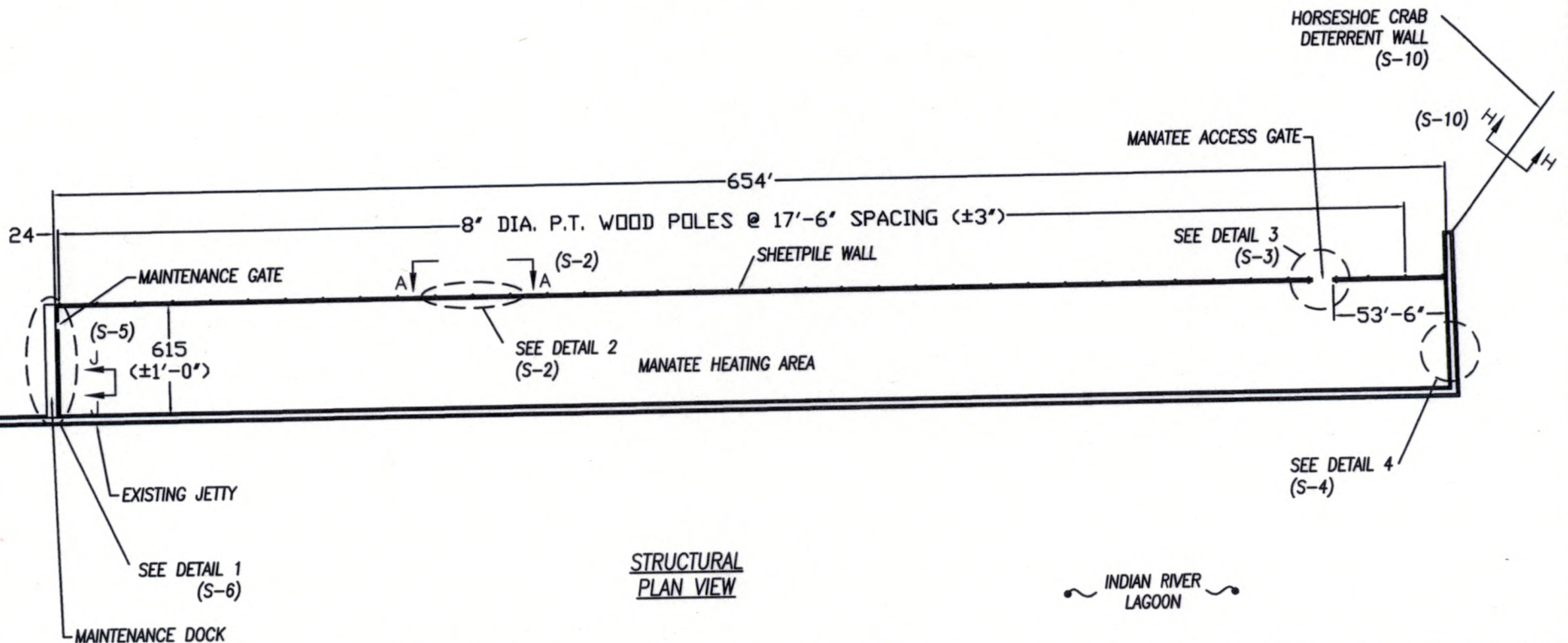
N
↑
NOT TO SCALE

NOTES

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~ INTAKE CHANNEL ~



STRUCTURAL
PLAN VIEW

~ INDIAN RIVER
LAGOON ~

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CAPE CANAVERAL ENERGY CENTER
6000 US HWY 1
COCOA, FL 32907

MANATEE HEATING AREA AND
HORSESHOE CRAB
DETERRENT WALL

FEDERAL PERMIT DRAWINGS



NOT TO SCALE

S-1

ENERCON

MANATEE HEATING AREA
STRUCTURAL PLAN

PROJECT NO: FPLCORP005

DRAWN: H. CARTER
CHECK: J. SCHMITZ

DATE: 4/14/16
DATE: 4/14/16

N.A.V.D. 1988
ELEVATIONS

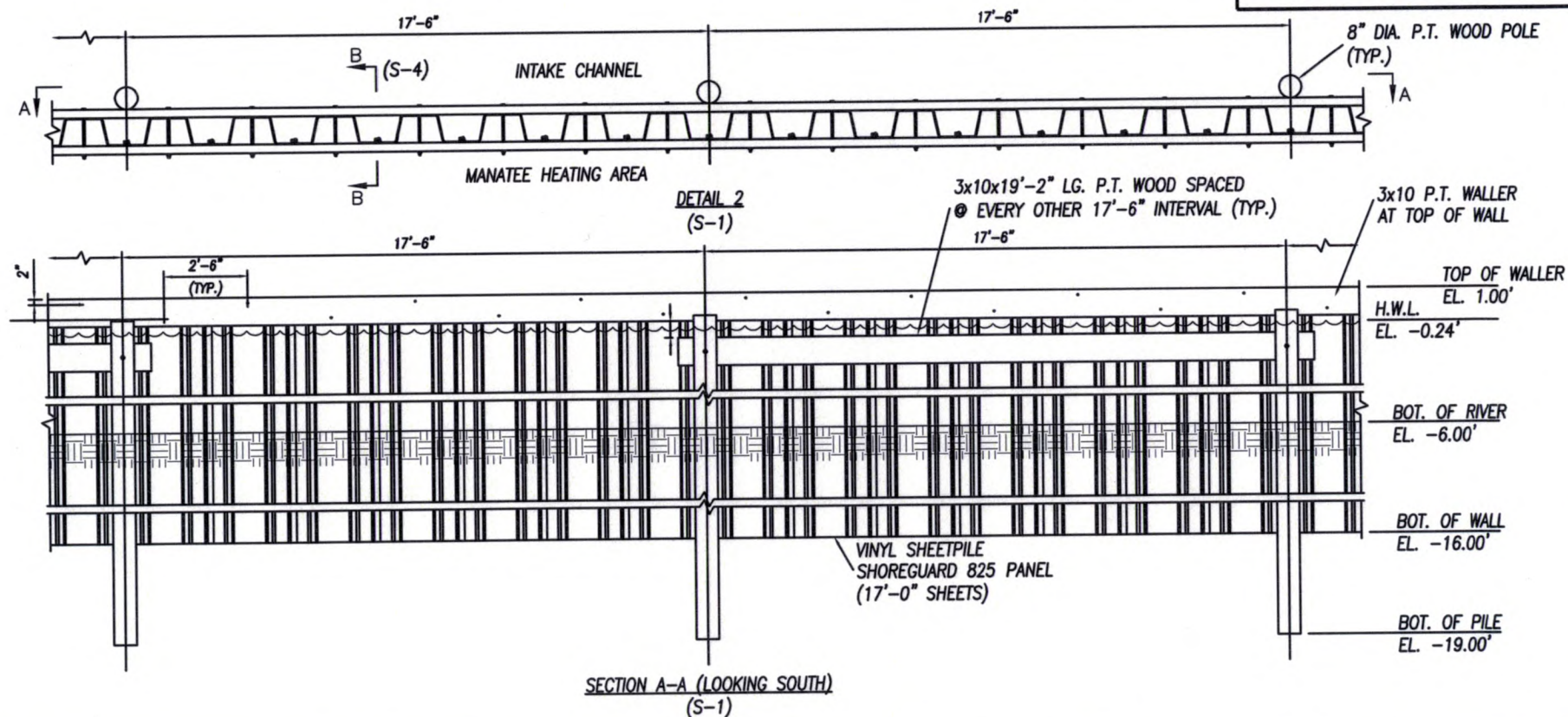
ORDINARY HIGH WATER LINE = -0.24' N.A.V.D. 1988

NOTES

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N
↑
NOT TO SCALE



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CAPE CANAVERAL ENERGY CENTER
6000 US HWY 1
COCOA, FL 32907

MANATEE HEATING AREA AND
HORSESHOE CRAB
DETERRENT WALL

FEDERAL PERMIT DRAWINGS

S-2

 **ENERCON**

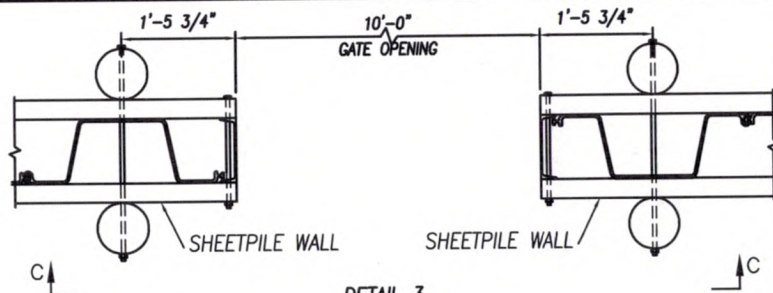
MANATEE HEATING AREA
SHEETPILE AND WALLER

PROJECT NO: FPLCORP005

DRAWN: H. CARTER
CHECK: J. SCHMITZ

DATE: 4/14/16
DATE: 4/14/16

N
↑
NOT TO SCALE



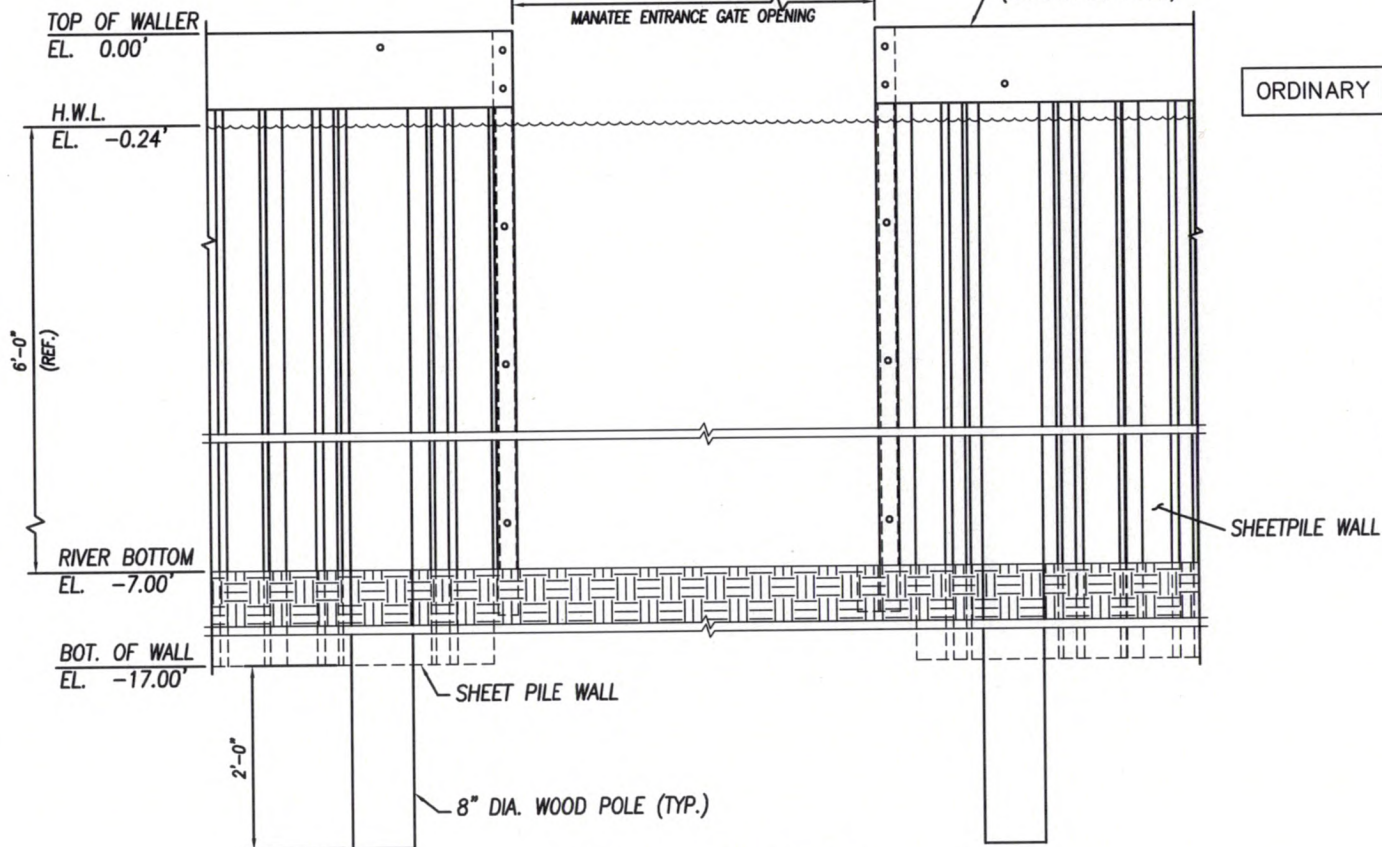
N.A.V.D. 1988
ELEVATIONS



DETAIL 3
(S-1)

10'-0" (+3", -0")

3x10 P.T. WOOD WALLER
(LENGTH BY FIELD)



SECTION C-C (LOOKING NORTH)

ORDINARY HIGH WATER LINE = -0.24' N.A.V.D. 1988

NOTES

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3. ENTRANCE GATE OPERATION WILL BE IN ACCORDANCE WITH THE FPL BMP MANUAL FOR MANATEE HEATING AREA OPERATION.

FLORIDA POWER & LIGHT
CAPE CANAVERAL ENERGY CENTER
6000 US HWY 1
COCOA, FL 32907

MANATEE HEATING AREA AND
HORSESHOE CRAB
DETERRENT WALL

FEDERAL PERMIT DRAWINGS

S-3



MANATEE HEATING AREA
MANATEE ENTRANCE GATE

PROJECT NO: FPLCORP005

DRAWN: H. CARTER
CHECK: J. SCHMITZ

DATE: 4/14/16
DATE: 4/14/16

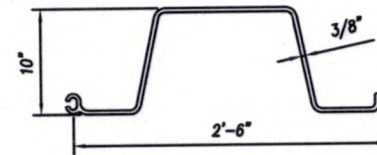
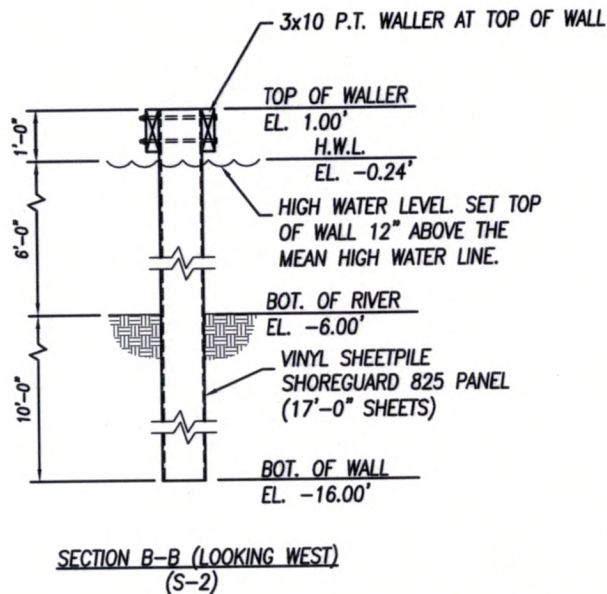
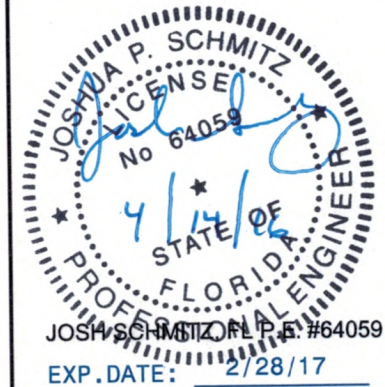
N.A.V.D. 1988
ELEVATIONS

ORDINARY HIGH WATER LINE = -0.24' N.A.V.D. 1988

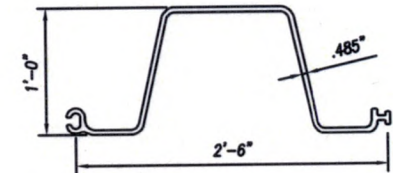
NOT TO SCALE

NOTES

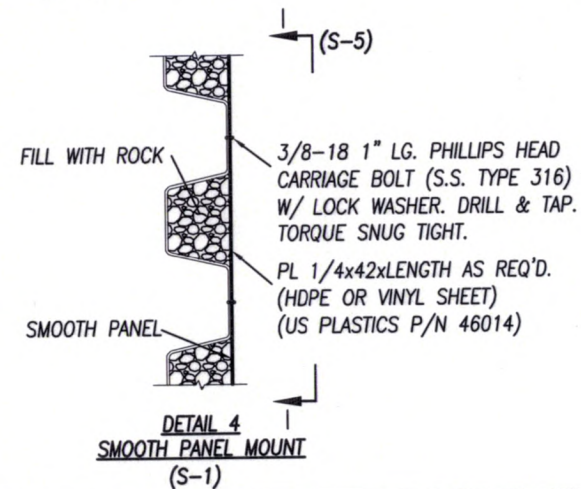
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10" CORRUGATED SHEET SG-625
(S-10)



12" CORRUGATED SHEET SG-825
(S-6)



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6000 US HWY 1
COCOA, FL 32907

MANATEE HEATING AREA AND
HORSESHOE CRAB
DETERRENT WALL

FEDERAL PERMIT DRAWINGS

S-4

ENERCON

MANATEE HEATING AREA
SHEETPILE DETAILS

PROJECT NO: FPLCORP005

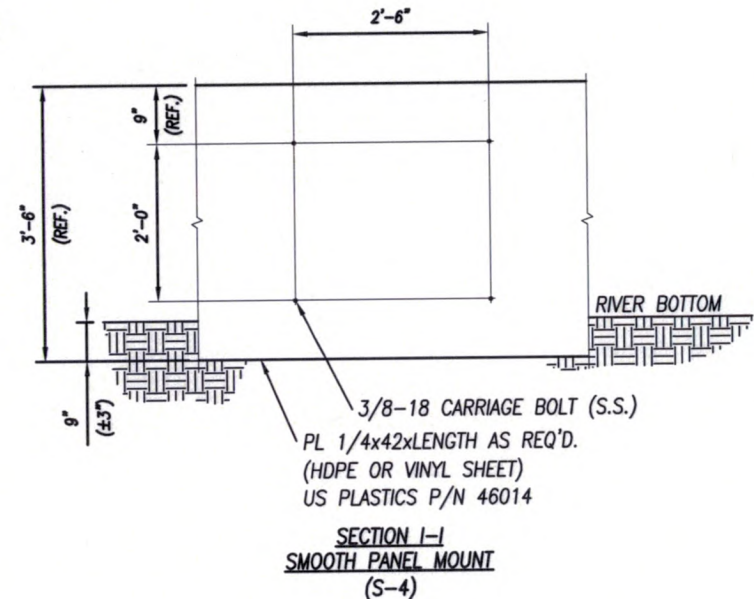
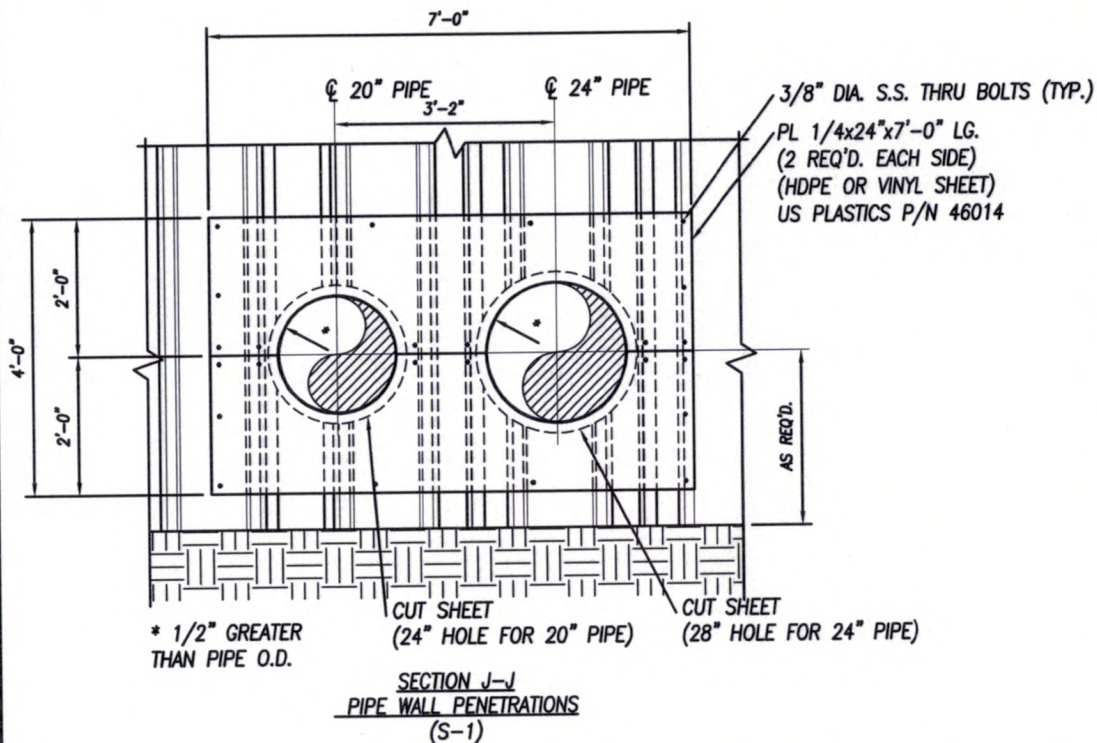
DRAWN: H. CARTER
CHECK: J. SCHMITZ

DATE: 4/14/16
DATE: 4/14/16

ORDINARY HIGH WATER LINE = -0.24' N.A.V.D. 1988

NOTES

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MANATEE HEATING AREA AND HORSESHOE CRAB DETERRENT WALL

FEDERAL PERMIT DRAWINGS

S-5



MANATEE HEATING AREA
PIPE PENETRATION

PROJECT NO: FPLCORP005

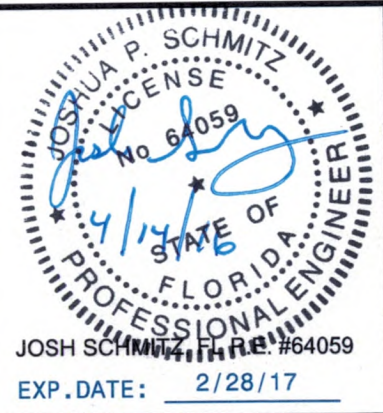
DRAWN: H. CARTER
CHECK: J. SCHMITZ

DATE: 4/14/16
DATE: 4/14/16

N.A.V.D. 1988
ELEVATIONS

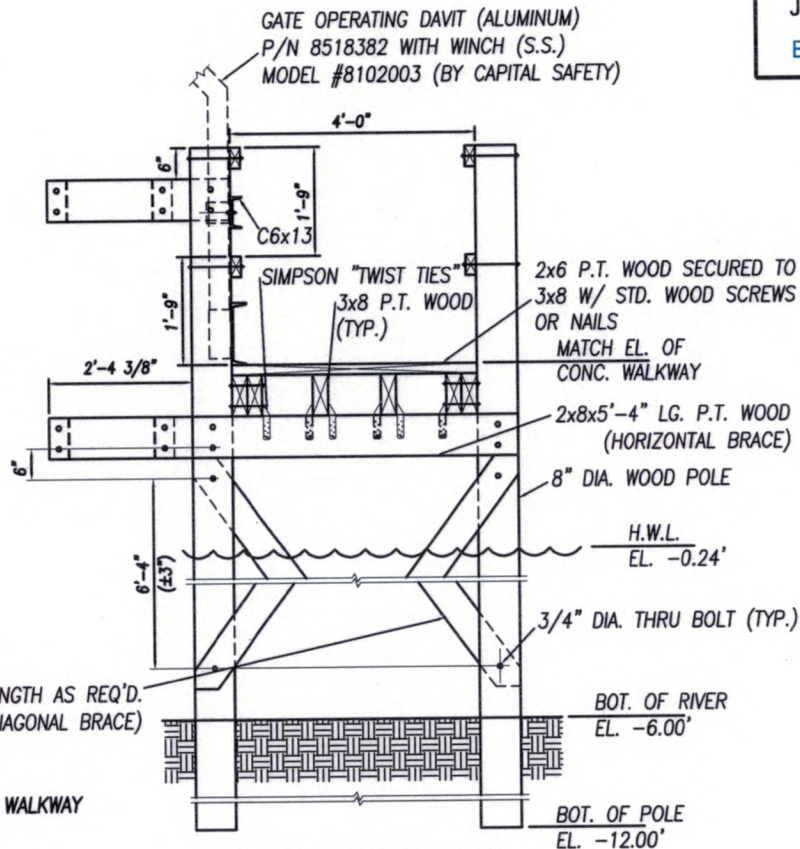
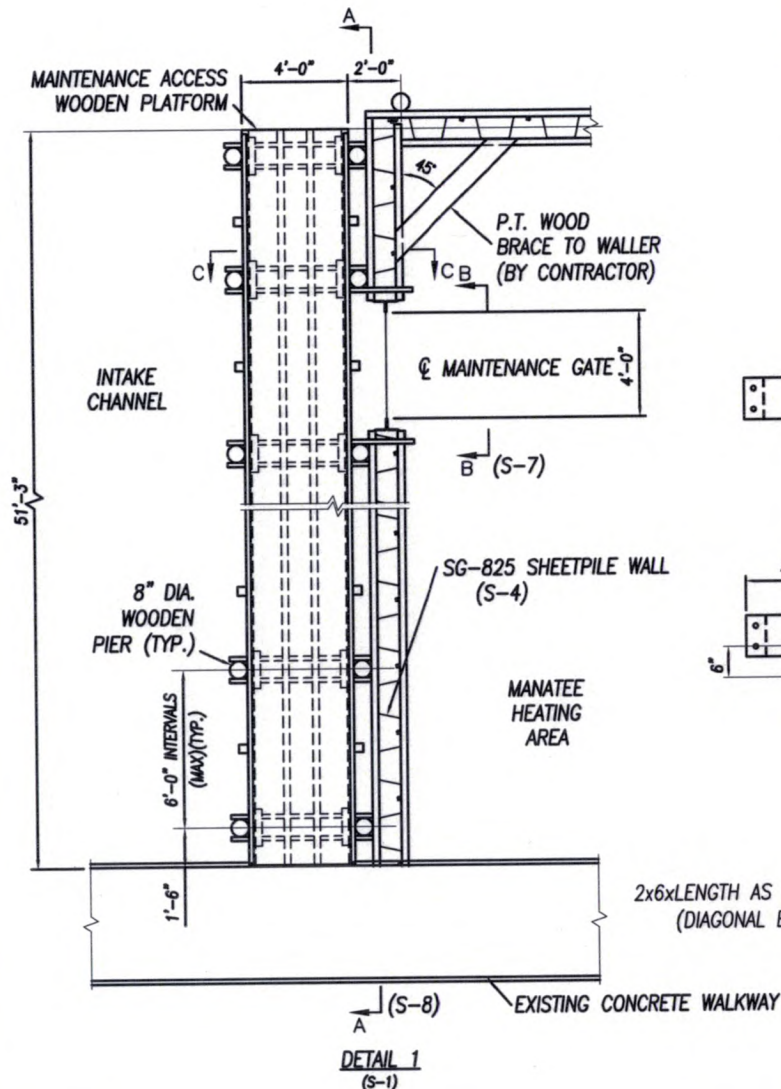
ORDINARY HIGH WATER LINE = -0.24' N.A.V.D. 1988

N
↑
NOT TO SCALE



NOTES

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SECTION C-C (LOOKING SOUTH)
(SHEETPILE WALL NOT SHOWN FOR CLARITY)

FLORIDA POWER & LIGHT
CAPE CANAVERAL ENERGY CENTER
6000 US HWY 1
COCOA, FL 32907

MANATEE HEATING AREA AND
HORSESHOE CRAB
DETERRENT WALL

FEDERAL PERMIT DRAWINGS

S-6

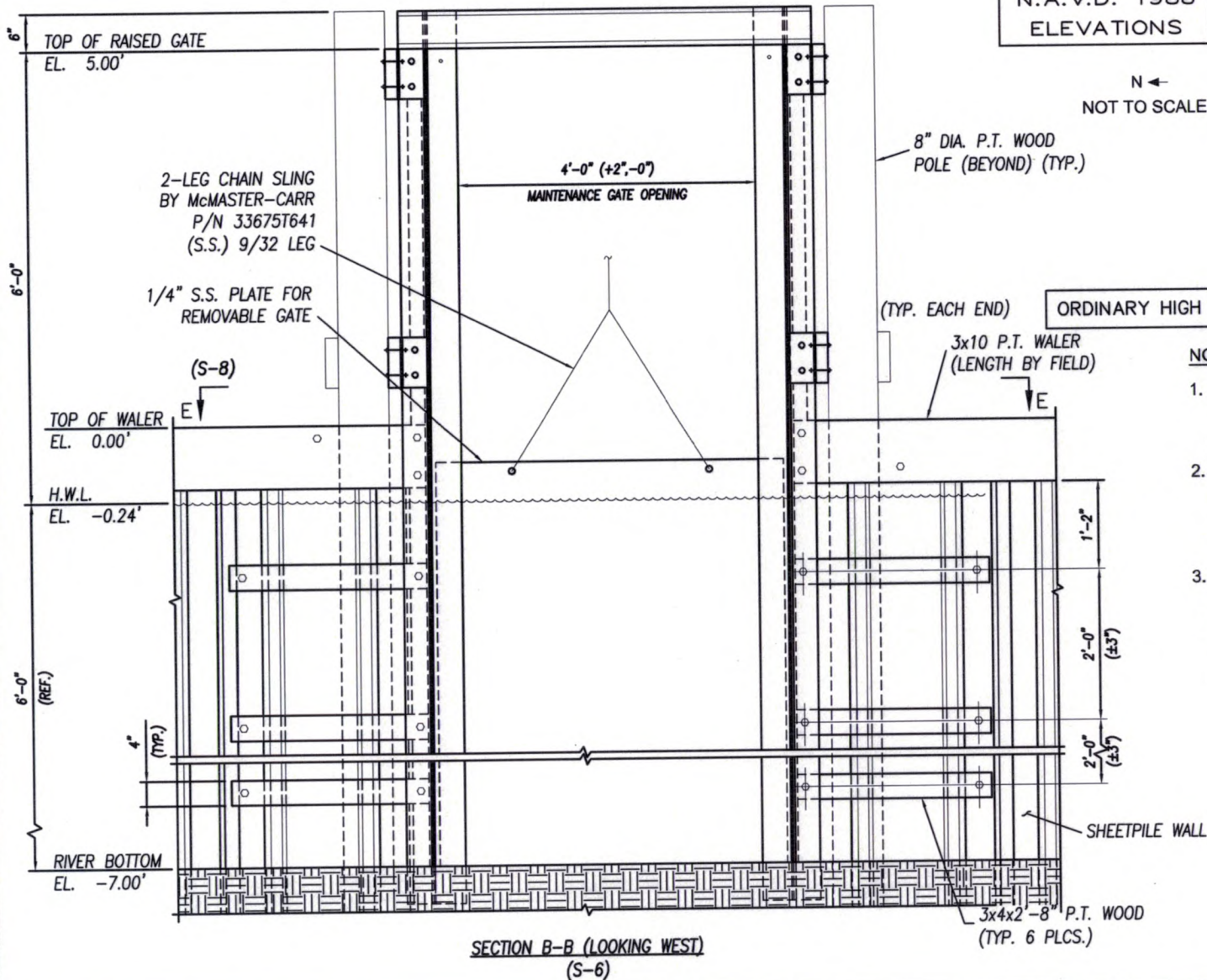


MANATEE HEATING AREA
MAINTENANCE DOCK DETAILS

PROJECT NO: FPLCORP005

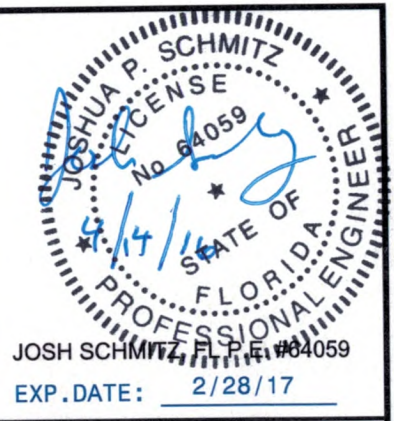
DRAWN: H. CARTER
CHECK: J. SCHMITZ

DATE: 4/14/16
DATE: 4/14/16



N.A.V.D. 1988
ELEVATIONS

N ←
NOT TO SCALE



ORDINARY HIGH WATER LINE = -0.24' N.A.V.D. 1988

NOTES

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2. THESE DRAWINGS ARE INTENDED ONLY FOR FEDERAL AGENCY REVIEW AND ARE NOT INTENDED FOR STATE OR LOCAL REGULATORY AGENCY USE.
3. MAINTENANCE GATE OPERATION WILL BE IN ACCORDANCE WITH THE FPL BMP MANUAL FOR MANATEE HEATING AREA OPERATION.

FLORIDA POWER & LIGHT
CAPE CANAVERAL ENERGY CENTER
6000 US HWY 1
COCOA, FL 32907

MANATEE HEATING AREA AND
HORSESHOE CRAB
DETERRENT WALL

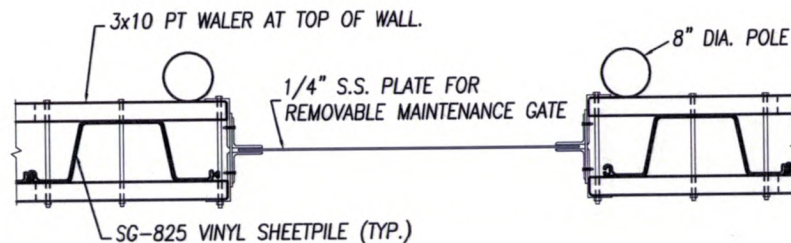
FEDERAL PERMIT DRAWINGS

S-7



MANATEE HEATING AREA
MAINTENANCE GATE

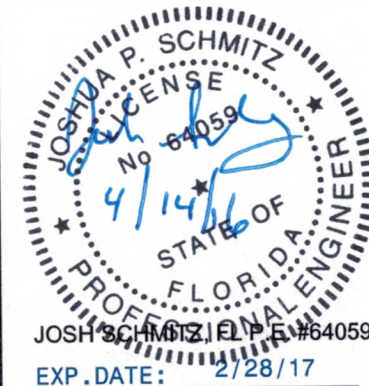
PROJECT NO: FPLCORP005	DRAWN: H. CARTER	DATE: 4/14/16
	CHECK: J. SCHMITZ	DATE: 4/14/16



SECTION E-E
(S-7)

N.A.V.D. 1988
ELEVATIONS

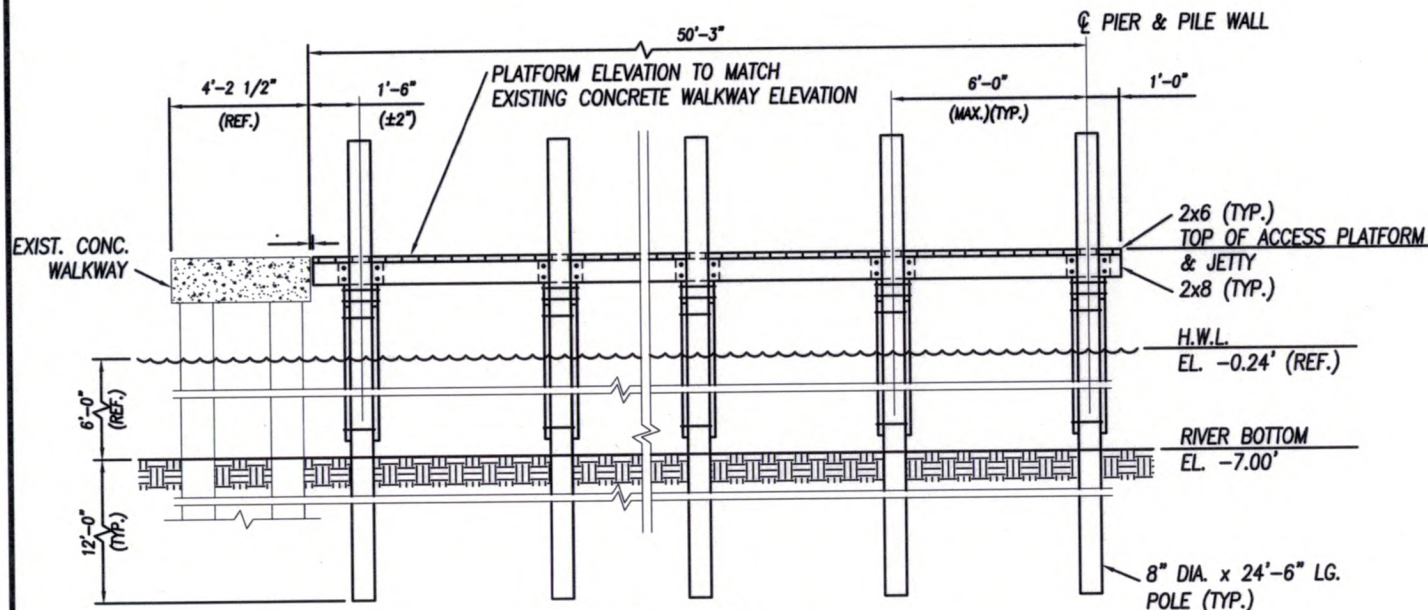
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NOT TO SCALE



ORDINARY HIGH WATER LINE = -0.24' N.A.V.D. 1988

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SECTION A-A (LOOKING WEST)
(S-6)
(SHEETPILE WALL NOT SHOWN FOR CLARITY)

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CAPE CANAVERAL ENERGY CENTER
6000 US HWY 1
COCOA, FL 32907

MANATEE HEATING AREA AND
HORSESHOE CRAB
DETERRENT WALL

FEDERAL PERMIT DRAWINGS

S-8

ENERCON

MANATEE HEATING AREA
MAINTENANCE GATE AND DOCK DETAILS

PROJECT NO: FPLCORP005

DRAWN: H. CARTER
CHECK: J. SCHMITZ

DATE: 4/14/16
DATE: 4/14/16

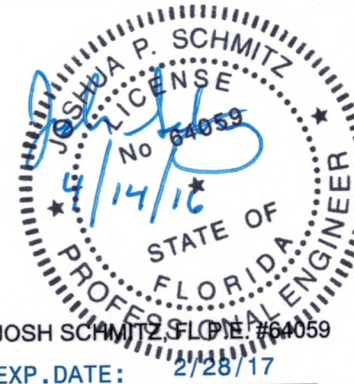
N.A.V.D. 1988
ELEVATIONS

ORDINARY HIGH WATER LINE = -0.24' N.A.V.D. 1988

NOT TO SCALE

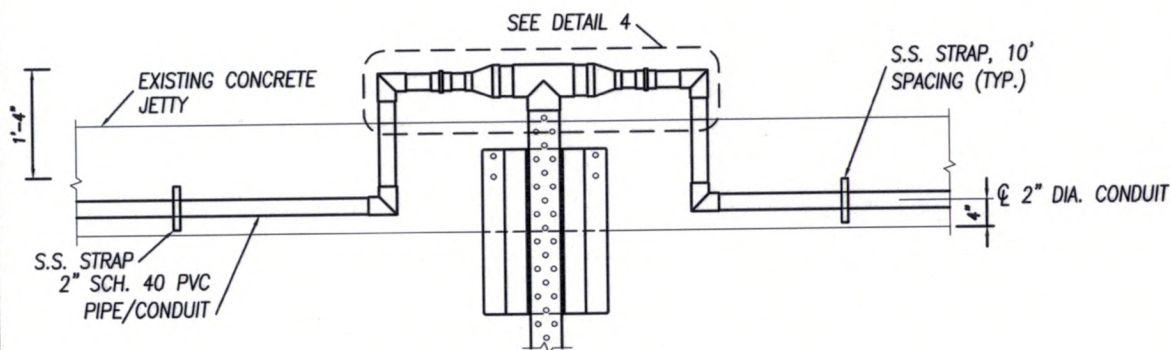
NOTES

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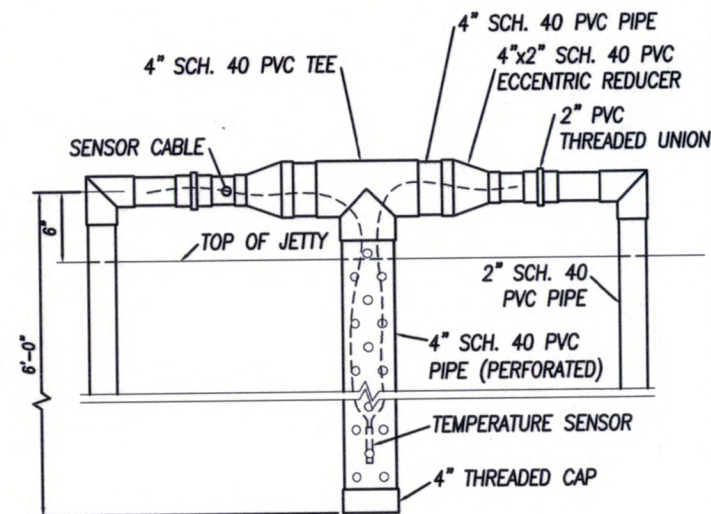


JOSH SCHMITZ, F.L.P.E. #64059

EXP. DATE: 2/28/17



DETAIL
(TEMPERATURE SENSOR MOUNTING)



DETAIL 4
(SPACE EVERY 85 FEET)

FLORIDA POWER & LIGHT
CAPE CANAVERAL ENERGY CENTER
6000 US HWY 1
COCOA, FL 32907

MANATEE HEATING AREA AND
HORSESHOE CRAB
DETERRENT WALL

FEDERAL PERMIT DRAWINGS

S-9

 **ENERCON**

MANATEE HEATING AREA
TEMPERATURE SENSOR MOUNTING

PROJECT NO: FPLCORP005

DRAWN: H. CARTER

DATE: 4/1/16

CHECK: J. SCHMITZ

DATE: 4/1/16

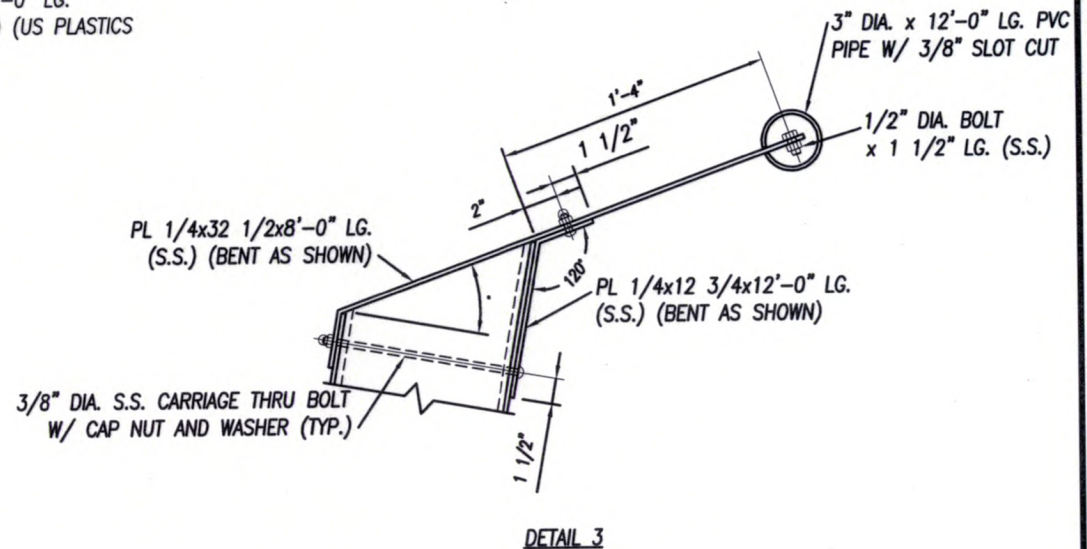
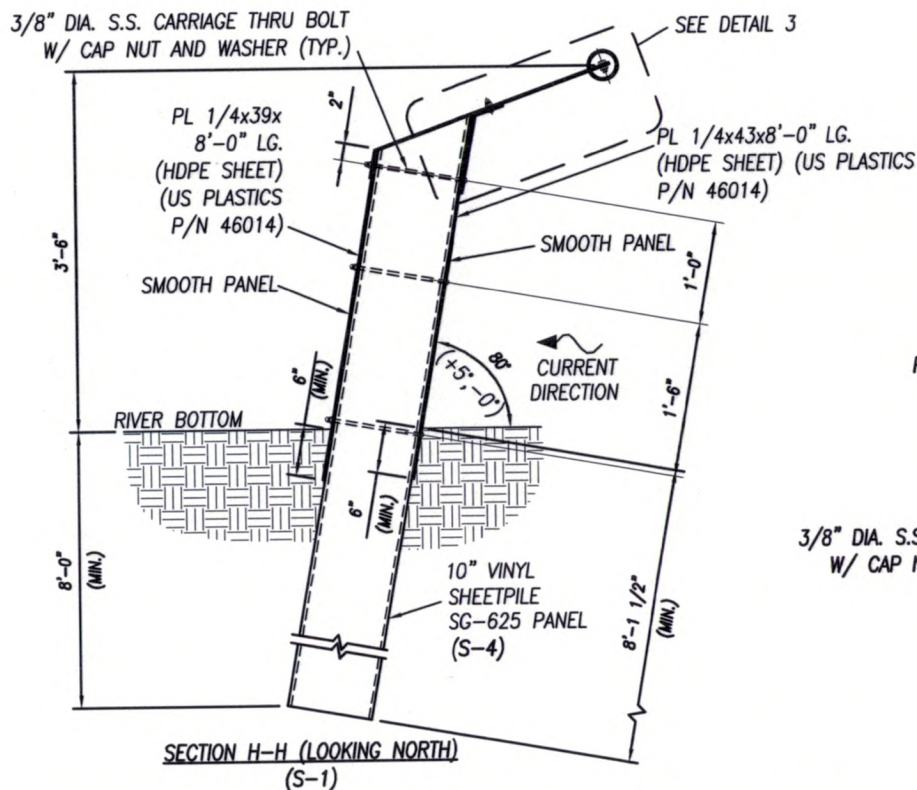
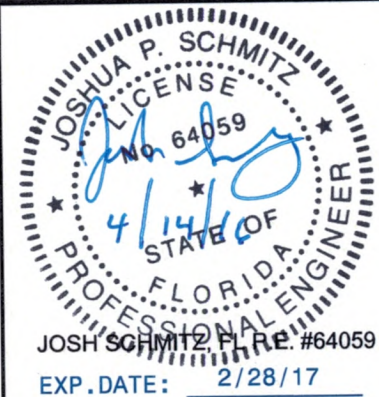
N.A.V.D. 1988
ELEVATIONS

ORDINARY HIGH WATER LINE = -0.24' N.A.V.D. 1988

N
↑
NOT TO SCALE

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FLORIDA POWER & LIGHT
CAPE CANAVERAL ENERGY CENTER
6000 US HWY 1
COCOA, FL 32907

MANATEE HEATING AREA AND
HORSESHOE CRAB
DETERRENT WALL

FEDERAL PERMIT DRAWINGS

S-10

ENERCON

HORSESHOE CRAB DETERRENT WALL

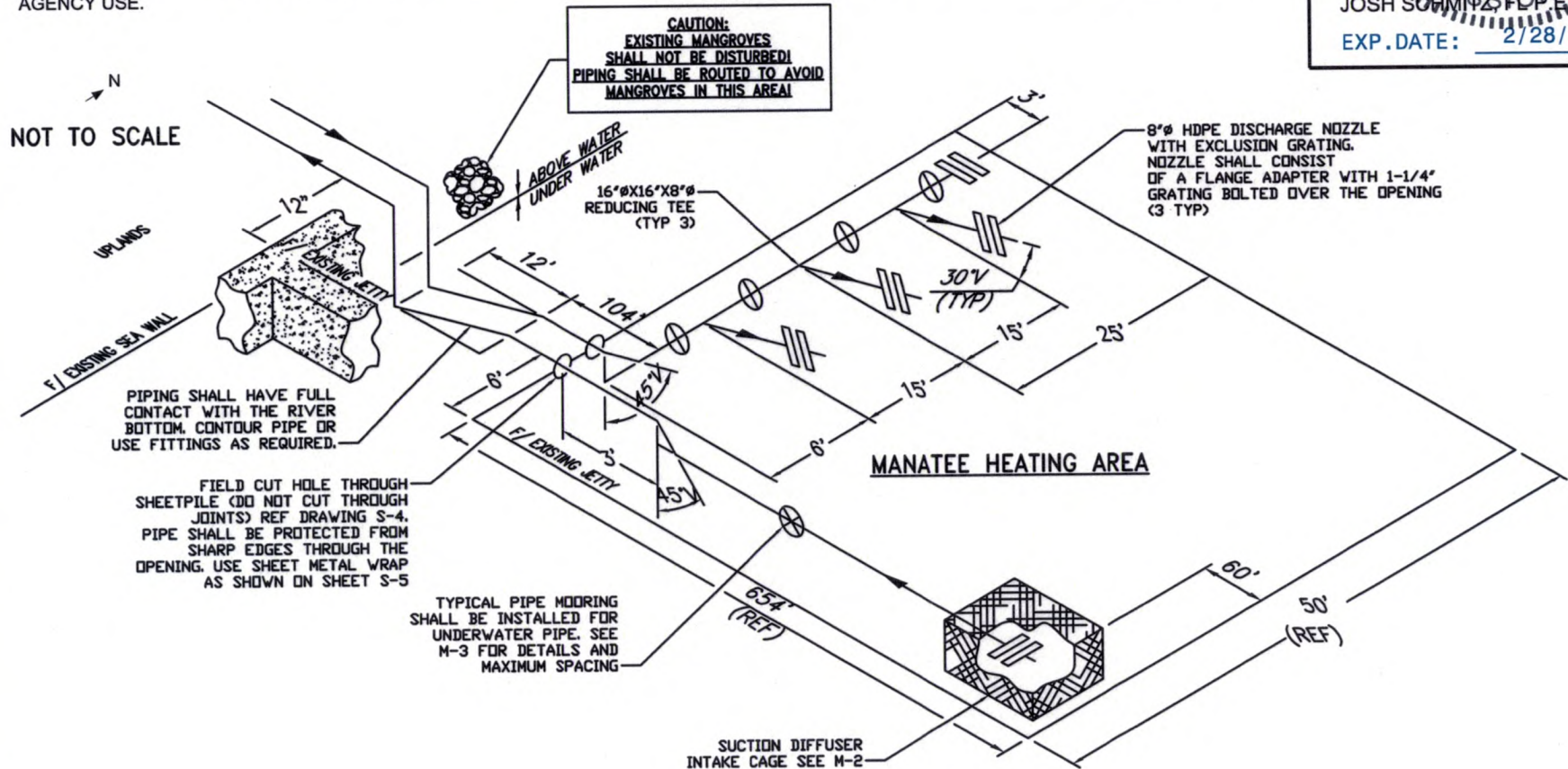
PROJECT NO: FPLCORP005

DRAWN: H. CARTER
CHECK: J. SCHMITZ

DATE: 4/14/16
DATE: 4/14/16

NOTES

1. ALTERNATE PIPING ROUTE MAY BE UTILIZED AT CLIENT/CONSTRUCTOR PREFERENCE. ALTERNATE ROUTE RUNS THROUGH POND E. PIPING MUST BE BURIED BELOW POND E, AND POND E RESTORED TO ORIGINAL GRADE.
2. CONTRACTOR TO ROUTE PIPING TO AVOID DAMAGE TO EXISTING TREES IN THIS AREA.
3. MANGROVE IMPACTS ARE NOT APPROVED FOR THIS PROJECT. IF MANGROVES MUST BE IMPACTED, REPORT TO OWNER IMMEDIATELY FOR PERMIT MODIFICATION AND APPROVAL PRIOR TO IMPACT TO MANGROVES.
4. THESE DRAWINGS ARE FOR PERMITTING PURPOSES ONLY AND ARE NOT INTENDED FOR CONSTRUCTION USE.
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FLORIDA POWER & LIGHT
CAPE CANAVERAL ENERGY CENTER
6000 US HWY 1
COCOA, FL 32907

MANATEE HEATING AREA AND HORSESHOE CRAB DETERRENT WALL

FEDERAL PERMIT DRAWINGS

M-1



PIPING EXTENSION INSTALLATION

PROJECT NO: FPLCORP005

DRAWN: H. CARTER

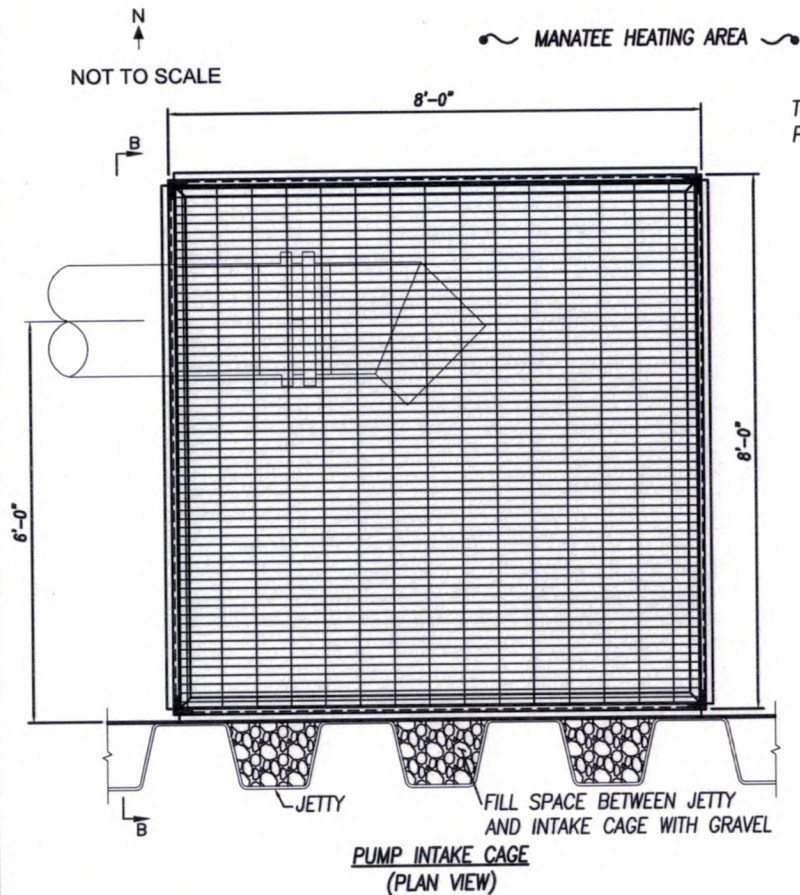
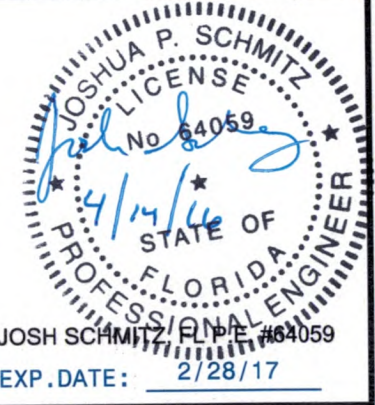
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CHECK: J. SCHMITZ

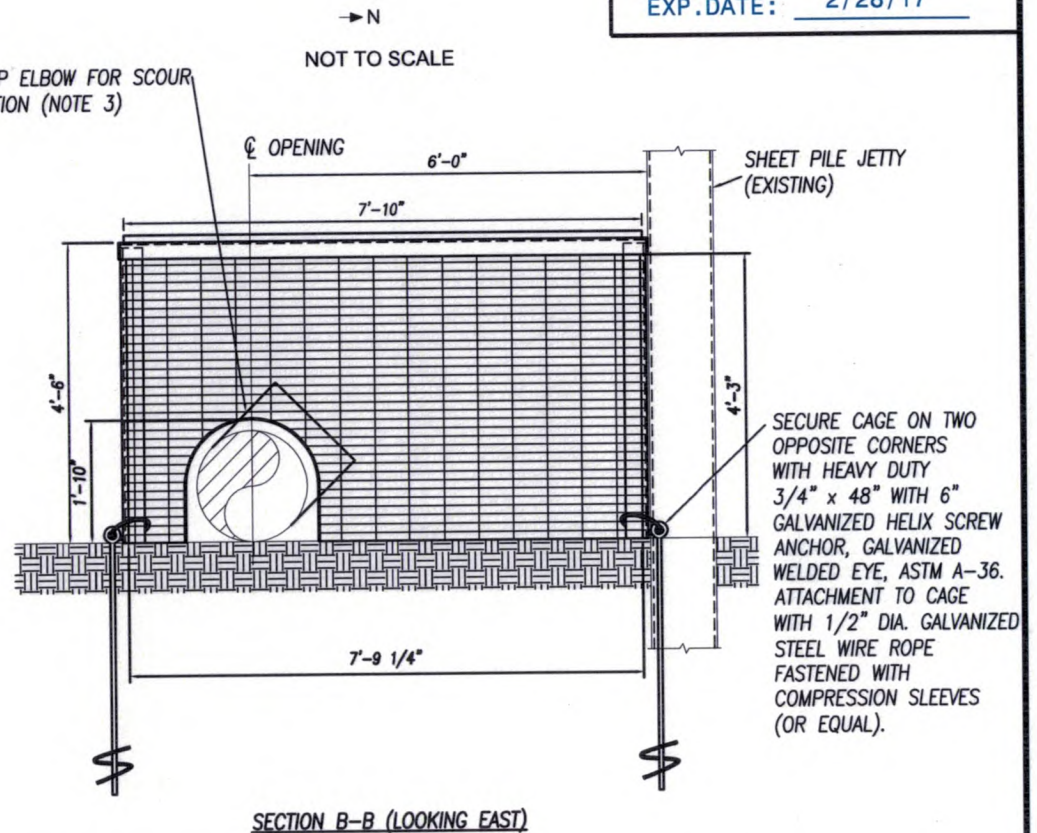
DATE: 4/14/16

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3. INTAKE VELOCITY AT CAGE LESS THAN 0.2 FT/S



TURN-UP ELBOW FOR SCOUR PREVENTION (NOTE 3)



FLORIDA POWER & LIGHT
CAPE CANAVERAL ENERGY CENTER
6000 US HWY 1
COCOA, FL 32907

MANATEE HEATING AREA AND
HORSESHOE CRAB
DETERRENT WALL

FEDERAL PERMIT DRAWINGS

M-2

ENERCON

PUMP INTAKE CAGE

PROJECT NO: FPLCORP005

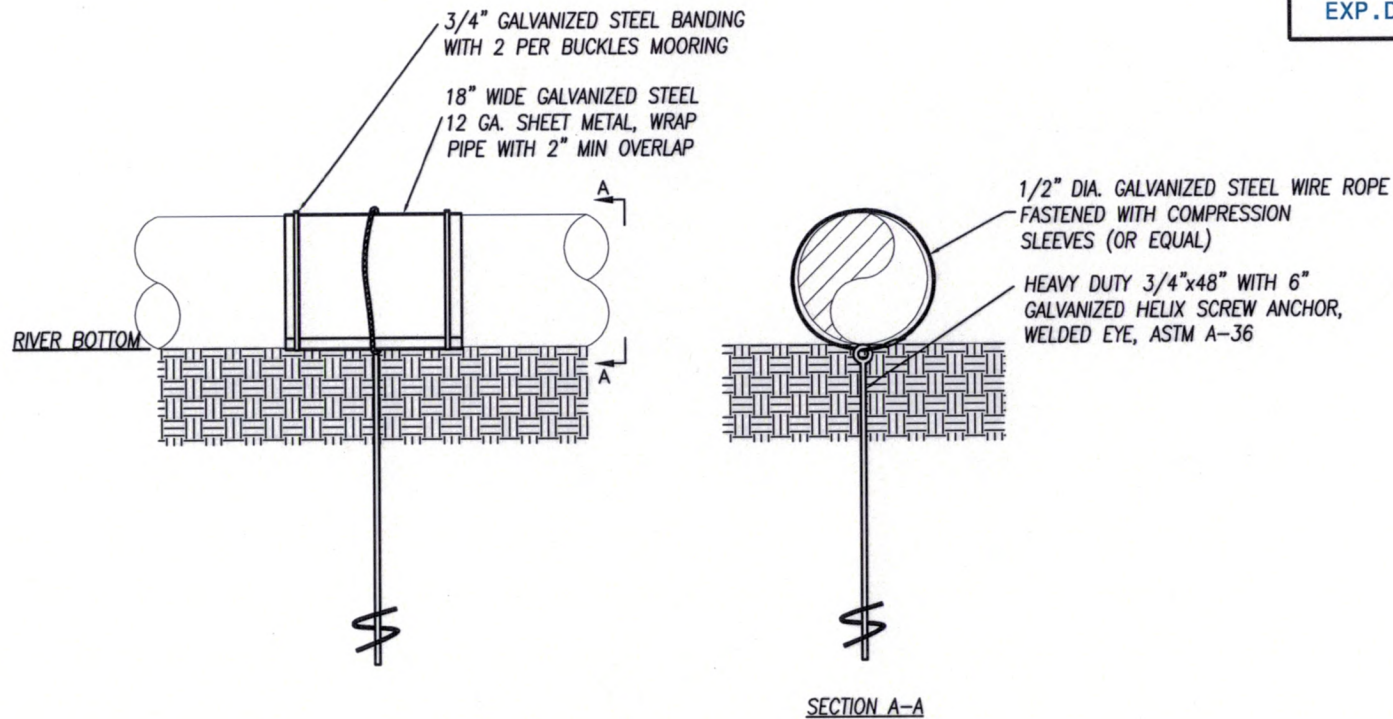
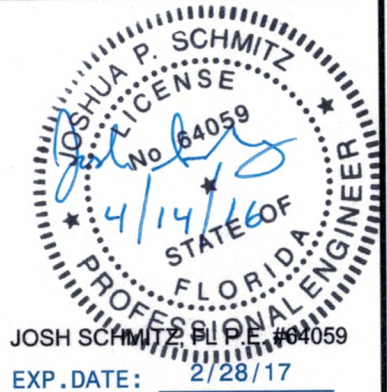
DRAWN: H. CARTER
CHECK: J. SCHMITZ

DATE: 4/14/16
DATE: 4/14/16

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NOT TO SCALE



TYPICAL PIPE MOORING
(15' MAX SPACING)

FLORIDA POWER & LIGHT
CAPE CANAVERAL ENERGY CENTER
6000 US HWY 1
COCOA, FL 32907

MANATEE HEATING AREA AND
HORSESHOE CRAB
DETERRENT WALL

FEDERAL PERMIT DRAWINGS

M-3



TYPICAL PIPE MOORING

PROJECT NO: FPLCORP005

DRAWN: H. CARTER
CHECK: J. SCHMITZ

DATE: 4/14/16
DATE: 4/14/16

Attachment H

Construction Drawings



March 25, 2016
GMA16-005

Mr. Wilfredo Rosario
Florida Power & Light Company
700 Universe Boulevard
Juno Beach, FL 33408

Response Required: No

Subject: Cape Canaveral Energy Center (CCEC)
**Submittal of Manatee Heating Area Relocation and Horseshoe Crab Deterrent Wall,
Final Package**

Dear Mr. Rosario:

Attached are the final drawings and engineering and permitting information for the Cape Canaveral Relocation of the Manatee Heating Area and Design of the Horseshoe Crab Deterrent Wall. This design has been prepared in accordance with all applicable FP&L and ENERCON procedures, and resolves the comments provided by FP&L on the 100% package and discussed on May 8, 2016. This submittal represents the final package submittal.

ENERCON greatly appreciates the assistance provided by the FP&L project team over the course of this project, and looks forward to working together on future projects. Should you have any questions, please feel free to give me a call at (423) 634-2238 x234, or email me at gadkins@enercon.com

Regards,

Gary Adkins, P.E.
Sr. Project Manager
Enercon Services, Inc.

cc:

J. Bendel, D. Sehi, A. Smith, G. Jacobsen, R. Clubb, T. Christopher, D. Brunson, Letter file, Project file

Attachments:

- Drawing FPLCORP005 Sheet C-0, Rev. 0
- Drawing FPLCORP005 Sheet C-1, Rev. 0
- Drawing FPLCORP005 Sheet C-2, Rev. 0
- Drawing FPLCORP005 Sheet C-3, Rev. 0
- Drawing FPLCORP005 Sheet C-4, Rev. 0
- Drawing FPLCORP005 Sheet C-5, Rev. 0
- Drawing FPLCORP005 Sheet C-6, Rev. 0
- Drawing FPLCORP005 Sheet C-7, Rev. 0

- Drawing FPLCORP005 Sheet C-8, Rev. 0
- Drawing FPLCORP005 Sheet C-9, Rev. 0
- Drawing FPLCORP005 Sheet C-10, Rev. 0
- Drawing FPLCORP005 Sheet E-1, Rev. 0
- Drawing FPLCORP005 Sheet M-1, Rev. 0
- Drawing FPLCORP005 Sheet M-2, Rev. 0
- Drawing FPLCORP005 Sheet M-3, Rev. 0
- Drawing FPLCORP005 Sheet S-1, Rev. 0
- Drawing FPLCORP005 Sheet S-2, Rev. 0
- Drawing FPLCORP005 Sheet S-3, Rev. 0
- Drawing FPLCORP005 Sheet S-4, Rev. 0
- Drawing FPLCORP005 Sheet S-5 Rev. 0
- Buoy and Signage Specification, Rev. 0
- Permitting Figure 1, Sheet 1 of 1, Rev. 0 (Thermal Model Permitting Summary)
- Cape Canaveral Manatee Heating Area Thermal Model Final, Rev. 0 (Thermal Model Native Excel File and PDF)
- Cape Canaveral Manatee Heating Area Hydraulic Analysis New Suction Line, Rev. 0 (Native Excel File)
- Florida Power & Light Final Comments and Responses, Rev. 0



FPL

CAPE CANAVERAL ENERGY CENTER

6000 US HIGHWAY 1

COCOA, BREVARD COUNTY, FL 32927

MANATEE HEATING AREA AND HORSESHOE CRAB DETERRENT WALL CONSTRUCTION DRAWINGS



12906 TAMPA OAKS BOULEVARD
SUITE 131
TEMPLE TERRACE, FLORIDA 33637
(813) 962-1800 PHONE
(813) 962-1881 FAX

DESIGN ENGINEERS



**AVIROM
& ASSOCIATES**
SURVEYING & MAPPING

50 SW 2nd AVE
BOCA RATON, FLORIDA 33432
(561) 392-2594 PHONE
(561) 394-7125 FAX

SURVEYOR



SITE LOCATION MAP

SOURCE: USGS NATIONAL MAP VIEWER

NO SCALE

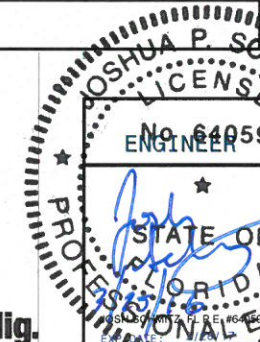
SHEET NO.	DESCRIPTION
C-0	COVER SHEET
C-1	GENERAL NOTES
C-2	ENVIRONMENTAL PROTECTION NOTES AND POLLUTION PREVENTION DETAILS
C-3	SITE PLAN
C-4	POLLUTION PREVENTION PLAN AND PROJECT SEQUENCING
C-5	HARDSCAPE, DREDGING, AND UTILITY PLAN KEY
C-6	HARDSCAPE, DREDGING AND UTILITY PLAN 1
C-7	HARDSCAPE, DREDGING AND UTILITY PLAN 2
C-8	HORSESHOE CRAB DETERRENT WALL CHANNEL DETAILS
C-9	SPOIL MANAGEMENT
C-10	MISC DETAILS
S-1	MANATEE HEATING AREA AND HORSESHOE CRAB WALL TOPOGRAPHIC SURVEY
S-2	MANATEE HEATING AREA
S-3	MANATEE HEATING AREA AND HORSESHOE CRAB DETERRENT FENCE DETAILS
S-4	MANATEE ENCLOSURE, ACCESS DOCK DETAILS, AND PIPE SUPPORT DETAILS
S-5	CHAIN LINK FENCE DETAILS
M-1	MANATEE HEATING AREA EXISTING PIPING REMOVAL DRAWING
M-2	MANATEE HEATING AREA PIPING EXTENSION INSTALLATION DRAWING
M-3	MANATEE HEATING AREA PIPING EXTENSION MISC DETAILS
E-1	WATER TEMPERATURE MONITORING SYSTEM FOR MANATEE HEATING AREA

ATTACHMENTS
AVIROM INTAKE CANAL BATHYMETRIC SURVEY (4 SHEETS)
AVIROM BOUNDARY AND WETLAND DELINEATION SURVEY (6 SHEETS)
AVIROM PENINSULA TOPOGRAPHIC SURVEY (1 SHEET)
BUOY AND SIGNAGE SPECIFICATION (2 PAGES)

SHEET INDEX



Know what's below.
Call before you dig.



PROPERTY OWNER
FLORIDA POWER AND LIGHT
SITE DESCRIPTION

SITE COORDINATES
LATITUDE: 28°28'04.13" N
LONGITUDE: 80°45'42.80" W

PROJECT INFORMATION

OWNER'S REPRESENTATIVE
MR. WILFREDO ROSARIO
PHONE: 321.639.5507

CONTRACT MANAGER

INITIAL	ISSUE	HC	HC	HC	JS	3/21/16
ENERCON TEMPLE TERRACE, FLORIDA FLORIDA POWER AND LIGHT CAPE CANAVERAL ENERGY CENTER MANATEE HEATING AREA AND HORSESHOE CRAB DETERRENT WALL						
DWG NO. FPLCORP005						REV 0
SCALE NONE						SHEET C-0

GENERAL NOTES

1. PRIOR TO THE START OF CONSTRUCTION, THE CONTRACTOR SHALL BE RESPONSIBLE FOR ENSURING THAT ALL REQUIRED PERMITS AND APPROVALS HAVE BEEN OBTAINED. CONSTRUCTION OR FABRICATIONS MUST NOT BEGIN UNTIL THE CONTRACTOR HAS RECEIVED AND THOROUGHLY REVIEWED ALL PLANS AND OTHER DOCUMENTS APPROVED BY APPLICABLE PERMITTING AUTHORITIES.
2. ALL WORK SHALL BE PERFORMED IN ACCORDANCE WITH THESE PLANS AND THE CODES, REGULATIONS, AND STANDARDS OF ALL APPLICABLE GOVERNING AUTHORITIES.
3. THE CONTRACTOR SHALL BE RESPONSIBLE FOR LOCATING AND PROTECTING ALL EXISTING FACILITIES IN THE WORK AREA, WHETHER IDENTIFIED ON THE DRAWNGS OR NOT. NO ADDITIONAL COMPENSATION SHALL BE PAID TO CONTRACTOR FOR DAMAGE OR REPAIR TO THE FACILITIES CAUSED BY CONTRACTOR. IMMEDIATELY NOTIFY THE OWNER OF ANY DISCREPANCIES OR INTERFERENCE WHICH AFFECT THE WORK OF THIS CONTRACT.
4. ANY PROPERTY DAMAGE CAUSED BY THE CONTRACTOR OR HIS OPERATION SHALL BE CORRECTED AND RESTORED TO THE SATISFACTION OF THE OWNER.
5. NOTIFY THE OWNER AT LEAST 72 HOURS PRIOR TO THE START OF CONSTRUCTION.
6. THE CONTRACTOR SHALL PERFORM ALL REQUIRED WORK INCLUDING ALL NECESSARY IMPROVEMENTS FOR A COMPLETE INSTALLATION AND RESTORATION OF ALL AREAS DISTURBED BY CONSTRUCTION.
7. THE CONTRACTOR SHALL BE RESPONSIBLE FOR CONSTRUCTION STAKING AND SURVEY TO ACHIEVE THE DIMENSIONS, AND LINES AND GRADES SHOWN ON THE DRAWINGS.
8. IF THE CONSTRUCTION OPERATION DESTROYS ANY EXISTING SURVEY MONUMENTATION, IT WILL BE THE CONTRACTOR'S RESPONSIBILITY TO RE-ESTABLISH IT.
9. THE CONTRACTOR SHALL TAKE REASONABLE MEASURES TO PROTECT HIS WORK DURING CONSTRUCTION FROM THE EFFECTS OF WIND, TIDE, RAIN AND WEATHER TYPICAL FOR FLORIDA. NO ADDITIONAL COMPENSATION SHALL BE PAID TO THE CONTRACTOR FOR DAMAGE OR REPAIR TO HIS WORK DURING CONSTRUCTION DUE TO WEATHER.
- 10.CONTRACTOR SHALL PROVIDE DAILY PROGRESS REPORTS DURING CONSTRUCTION. THE REPORTS WILL INCLUDE A DESCRIPTION OF WORK PERFORMED, EQUIPMENT UTILITIZED, QUANTITY OF MATERIAL PROVIDED OR MOVED, AND PHOTO DOCUMENTATION.
- 11.CONTRACTOR MAY NOT SUBCONTRACT OR ASSIGN WORK UNDER THIS CONTRACT WITHOUT THE PERMISSION OF THE OWNER.
- 12.THE CONTRACTOR SHALL ATTEND A PRE-CONSTRUCTION MEETING WITH THE OWNER.
- 13.THE CONTRACTOR SHALL MAINTAIN AT THE PROJECT SITE A FULL SET OF CONSTRUCTION DOCUMENTS UPDATED WITH THE LATEST REVISIONS AND ADDENDA OR CLARIFICATIONS FOR USE BY ALL PERSONNEL INVOLVED WITH THE PROJECT. THIS SET IS A VALID CONTRACT DOCUMENT ONLY IF THE TITLE SHEET IS STAMPED "FOR CONSTRUCTION" AND EACH SUCCESSIVE SHEET BEARS THE ENGINEER'S SIGNED STAMP.
- 14.THE CONTRACTOR SHALL DOCUMENT EXISTING FACILITIES AND ALL WORK PERFORMED WITH PHOTOGRAPHS.
- 15.THE CONTRACTOR'S WORKMANSHIP AND INSTALLATION SHALL BE WARRANTEED FOR A PERIOD OF 24 MONTHS FROM PROJECT COMPLETION. MATERIALS PROVIDED BY THE CONTRACTOR SHALL BE WARRANTEED TO THE EXTENT OF THE MANUFACTURER WARRANTY.
- 16.UPON COMPLETION OF THE WORK, CONTRACTOR SHALL PROVIDE AN AS-BUILT SURVEY FOR REVIEW AND APPROVAL.

GROUNDWATER DEWATERING NOTES

1. COFFERDAM DEWATERING IS NOT ANTICIPATED FOR THIS PROJECT. IF COFFERDAM DEWATERING IS NEEDED, PERMITS WILL BE NEEDED TO ACCOMMODATE SAID DEWATERING.
2. TO DEWATER PIPE TRENCHES OR ANY TEMPORARY SPOIL EXCAVATION TO EXISTING SURFACE WATER, OBTAIN FDEP PERMIT FOR DISCHARGE OF PRODUCED GROUNDWATER FROM NON-CONTAMINATED SITES.

UTILITY NOTES

1. SUBSURFACE UTILITIES HAVE NOT BEEN LOCATED FOR THIS PROJECT.
2. CONTRACTOR SHALL CONTACT SUNSHINE STATE ONE CALL (811) AND/OR LOCATER SERVICE A MINIMUM OF 72 HOURS PRIOR TO THE START OF CONSTRUCTION.
3. ALL TRENCHING IN AREAS OF EXISTING UTILITIES SHALL BE PERFORMED BY HAND, UNLESS MECHANICAL WORK IS APPROVED BY THE OWNER.
4. UTILITIES RELOCATION ARE NOT SPECIFIED IN THE DRAWNGS. IMMEDIATELY NOTIFY THE CONTRACT MANAGER OF ANY SUBSURFACE OR SURFACE UTILITIES WHICH AFFECT THE WORK OF THIS CONTRACT. CONTRACTOR SHALL BE RESPONSIBLE FOR LOCATING AND PROTECTING ALL SURFACE OR SUBSURFACE UTILITIES IN THE WORK AREA, WHETHER IDENTIFIED ON THE DRAWINGS OR NOT. COORDINATE ANY UTILITY INTERRUPTIONS WITH THE OWNER.
5. CONTRACTOR SHALL BE RESPONSIBLE FOR SHORING, SHEETING AND LAYBACK, AS NEEDED, FOR ALL BELOW GROUND CONSTRUCTION, TO ENSURE THAT UTILITIES AND EXISTING FACILITIES ARE NOT UNDERMINED.

CONSTRUCTION SAFETY

1. ALL CONSTRUCTION ACTIVITIES SHALL BE PERFORMED IN ACCORDANCE WITH APPLICABLE OCCUPATIONAL SAFETY AND HEALTH ADMINISTRATION (OSHA), DEPARTMENT OF LABOR AND OWNER RULES AND REGULATIONS. THE CONTRACTOR SHALL BE FULLY RESPONSIBLE FOR THE SAFETY OF THEIR WORKER DURING THE ENTIRE COURSE OF CONSTRUCTION
2. CONTRACTOR SHALL ATTEND DAILY SAFETY BRIEFING WITH THE OWNER DURING CONSTRUCTION.
3. CONTRACTOR SHALL ATTEND OWNER'S SAFETY TRAINING PRIOR TO CONSTRUCTION.

SITE UTILITY PREPARATION AND BACKFILL NOTES

1. UNSATISFACTORY SOILS AND SOILS CONTAINING CLODS, ROOTS, SOD, BRUSH OR ORGANIC MATERIALS SHALL BE REMOVED, BACKFILLED WITH APPROPRIATE MATERIAL AND COMPACTED.
2. THE SUBGRADE SURFACE SHALL BE SHAPED AND GRADED TO FACILITATE THE DEVELOPMENT OF INTIMATE CONTACT WITH THE INSTALLATION. SHOULD THE SUBGRADE SURFACE FOR ANY REASON BECOME ROUGH OR UNEVEN FILL, SUCH PORTION SHALL BE WORKED TO OBTAIN AN EVEN SURFACE.
3. SELECT FILL SHOULD BE USED FOR ANY AREAS THAT REQUIRE BACKFILL. THE USE OF HIGH QUALITY, CLEAN SANDY FILL (LARGELY FREE OF DUST, DEBRIS OR CONTAMINANTS) AND WELL-GRADED CRUSHED LIMEROCK FILL IS RECOMMENDED FILL IS RECOMMENDED FOR THIS PURPOSE. THE FILL SHOULD BE PLACED IN LOOSE LIFTS NOT EXCEEDING SIX INCHES AND COMPACTED TO AT LEAST 90 PERCENT OF ITS STANDARD PROCTOR MAXIMUM DRY DENSITY (ASTM STANDARD D698), A MOISTURE CONTENT WITHIN TWO PERCENTAGE POINTS OF THE OPTIMUM INDICATED BY THE MODIFIED PROCTOR TEXT IS REQUIRED FOR COMPACTION.
4. WHERE FILL PLACEMENT IS REQUIRED BELOW ORDINARY HIGH WATER, THEN #4 OR #5 STONE MAY BE USED INSTEAD OF WELL-GRADED LIMEROCK FILL. #4 OR #5 STONE IS A COARSE MATERIAL THAT MAY BE PROCESSED FROM GRAVELS, GRANITES, LIMESTONE, DOLOMITE, SANDSTONES, OR OTHER NATURALLY OCCURRING HARD, SOUND, DURABLE MATERIALS. #4 STONE AVERAGES FROM ¾ TO 2 INCHES IN SIZE, WHILE #5 STONE AVERAGES FROM ½ TO 1-1/2 INCHES IN SIZE.
5. FIELD DENSITY TESTS SHOULD BE PERFORMED TO VERIFY AND DOCUMENT THAT THE SPECIFIED LEVEL OF COMPACTION HAS BEEN ACHIEVED. DENSITY TESTING WILL NOT BE REQUIRED FOR FILL PLACED BELOW ORDINARY HIGH WATER

GENERAL DREDGING NOTES

1. LIMITED SEDIMENT CHARACTERIZATION DATA FOR THIS PROJECT (BORINGS B-1 AND B-2) INDICATES THE PRESENCE OF CLAYEY FINE SAND, SHELL AND MUCK WITH 15.3% BY WEIGHT PASSING THE 200 SIEVE. CONTRACTOR SHALL BE RESPONSIBLE FOR DETERMINING SEDIMENT CONDITIONS AS REQUIRED TO COMPLETE HIS WORK.
2. A MARINE DEBRIS SURVEY HAS NOT BEEN CONDUCTED FOR THE DREDGING AREA. CONTRACTOR SHALL NOTIFY OWNER IMMEDIATELY IN THE EVENT MARINE DEBRIS IS ENCOUNTERED DURING DREDGING.
3. CONTRACTOR SHALL DREDGE EVENLY TO THE LINES AND GRADES SHOWN ON THE DRAWNGS, TAKING CARE TO AVOID THE CREATION OF WNDROWS OR UNEVEN BOTTOM CONDITIONS. CONTRACTOR SHALL CONSIDER SPILLAGE AND FALLBACK IN HIS DREDGING OPERATION TO ENSURE THE LINES AND GRADES SHOWN ARE MET.
4. CONTRACTOR SHALL TAKE GREAT CARE TO PREVENT TURBIDITY ENTRAINMENT IN THE PLANT INTAKE.
5. HOPPER DREDGING IS NOT PERMITTED.

LISTED WILDLIFE NOTES

1. THE FPL CAPE CANAVERAL POWER PLANT IS IDENTIFIED BY THE ARMY CORPS OF ENGINEERS AS A WARM WATER AGGREGATION AREA (WWAA). BY THIS DESIGNATION, DEDICATED MANATEE OBSERVERS, WHO'S SOLE RESPONSIBILITY IS TO WATCH FOR MANATEES, MUST BE POSITIONED ON EACH VESSEL TO WATCH FOR MANATEES. THE OBSERVER MUST BE EXPERIENCED IN MANATEE OBSERVATION TECHNIQUES AND ASSIST CONSTRUCTION PERSONNEL WITH COMPLYING WITH STANDARD MANATEE CONDITIONS.
2. IF CONDITIONS (WEATHER, HEAVY CURRENTS, ETC.) ARE SUCH THAT MANATEES CANNOT BE SEEN WITHIN 50 TO 100 FEET, IN-WATER ACTIVITY SHALL NOT BE CONDUCTED.
3. IN-WATER ACTIVITIES MAY NOT BE CONDUCTED AT NIGHT.
4. PERMITTEE WILL INSTRUCT ALL PERSONNEL ASSOCIATED WITH THE PROJECT ABOUT MANATEES, SEA TURTLES, AND SMALLTOOTH SAWFISH. THIS INCLUDES THE NEED TO PROTECT, AND PENALTIES ASSOCIATED WITH HARMING MANATEES.
5. SIGNAGE MUST BE POSTED CONCERNING MANATEES WHICH CONFORMS TO STANDARD MANATEE CONDITIONS FOR IN-WATER WORK, 2011.
6. PROPERLY DESIGN, INSTALL, AND MONITOR TURBIDITY BARRIERS SO AS TO PREVENT ENTANGLEMENT BY MANATEES, SEA TURTLES OR SMALLTOOTH SAWFISH.
7. INJURY TO MANATEES, SEA TURTLES OR SMALLTOOTH SAWFISH MUST BE REPORTED TO PERMITTEE AND PROPER AUTHORITIES IMMEDIATELY. AUTHORITY CONTACT INFORMATION LISTED IN STANDARD MANATEE CONDITIONS FOR IN-WATER WORK, 2011 AND SEA TURTLE AND SMALLTOOTH SAWFISH CONSTRUCTION CONDITIONS (2006).
8. APPROPRIATE PRECAUTIONS MUST BE TAKEN IF LISTED SPECIES ARE OBSERVED WITH 100 YARDS OF CONSTRUCTION OPERATION.
9. ALL IN-WATER WORK MUST CEASE IF A LISTED SPECIES IS OBSERVED WITHIN 50 FEET OF CONSTRUCTION OPERATION.
- 10.ALL WORK SHALL CONFORM TO STANDARD MANATEE CONDITIONS FOR IN WATER WORK, 2011 REVISION.
- 11.ALL WORK SHALL CONFORM TO STANDARD SEA TURTLE AND SMALLTOOTH SAWFISH CONDITIONS FOR IN WATER WORK, 2006 REVISION.
- 12.MOVEMENT OF A WORK BARGE, OTHER ASSOCIATED VESSELS, OR ANY IN-WATER WORK SHALL NOT BE PERFORMED AFTER SUNSET, WHEN THE POSSIBILITY OF SPOTTING MANATEES IS NEGLIGIBLE.
- 13.AT LEAST ONE PERSON SHALL BE DESIGNATED AS A MANATEE OBSERVER WHEN IN-WATER WORK IS BEING PERFORMED. THAT PERSON SHALL HAVE EXPERIENCE IN MANATEE OBSERVATION, BE APPROVED BY THE FWC TWO WEEKS BEFORE THE BEGINNING OF CONSTRUCTION, AND BE EQUIPPED WITH POLARIZED SUNGLASSES TO AID IN OBSERVATION. THE MANATEE OBSERVER MUST BE ON SITE DURING ALL IN-WATER CONSTRUCTION ACTIVITIES AND WILL ADVISE PERSONNEL TO CEASE OPERATION UPON SIGHTING A MANATEE WITHIN 50 FEET OF ANY IN-WATER CONSTRUCTION ACTIVITY.

DOCK ENVIRONMENTAL NOTES

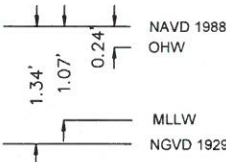
1. THE PROPOSED DOCK IS LOCATED IMMEDIATELY ADJACENT TO THE WEST END OF THE SEA GRASS SURVEY WHICH DID NOT IDENTIFY SEAGRASSES IN THE AREA. SEAGRASSES ARE NOT EXPECTED TO BE PRESENT BENEATH THE DOCK.
2. OWNER SHALL VERIFY EXPECTED ABSENCE OF SEAGRASSES PRIOR TO DOCK CONSTRUCTION.
3. IF SEAGRASSES ARE PRESENT BENEATH THE DOCK, DOCK CONSTRUCTION SHALL CONFORM TO CONSTRUCTION GUIDELINES IN FLORIDA FOR MINOR PILING-SUPPORTED STRUCTURES CONSTRUCTED IN OR OVER SUBMERGED AQUATIC VEGETATION, MARSH, OR MANGROVE HABITAT, AUGUST 2001
4. ALL DOCK PILINGS SHALL BE INSTALLED USING A VIBRATORY HAMMER. IMPACT HAMMER SHALL NOT BE USED.
5. DOCK CONSTRUCTION SHALL TAKE PLACE FROM UPLANDS OR FLOATING EQUIPMENT (E.G. BARGE).

GENERAL ENVIRONMENTAL NOTES

1. MANGROVE IMPACTS ARE NOT APPROVED FOR THIS PROJECT. IF MANGROVES MUST BE IMPACTED, REPORT TO OWNER IMMEDIATELY FOR PERMIT MODIFICATION AND APPROVAL PRIOR TO IMPACTING MANGROVES.

SURVEY NOTES:

1. VERTICAL ELEVATIONS IN DATUM NAVD 1988
2. NAVD 1988 ELEVATIONS = NGVD 29 ELEVATIONS - 1.3 FT
3. OHW ELEVATION = -0.24 FT
4. BEARINGS AND COORDINATES REFERENCED TO GRID NORTH, BASED ON THE FLORIDA STATE PLANE COORDINATE SYSTEM, EAST ZONE (feet)
5. MLLW ELEVATION = -1.07 FT, TIDAL STATION 872-1994



RELATIONSHIP BETWEEN NAVD 1988, NGVD 1929, ORDINARY HIGH WATER, MEAN LOW LOWER WATER TIDAL DATUM (1983-2001 EPOCH), LABINS TIDE STATION " MICCO, FLORIDA - INDIAN RIVER" NUMBER 872-1994

ACRONYM LIST

ACOE	ARMY CORPS OF ENGINEERS
CC	CAPE CANAVERAL
CCEC	CAPE CANAVERAL ENERGY CENTER
FAC	FLORIDA ADMINISTRATIVE CODE
FDEP	FLORIDA DEPARTMENT OF ENVIRONMENTAL PROTECTION
FDOT	FLORIDA DEPARTMENT OF TRANSPORTATION
FLU	FUTURE LAND USE
FT	FEET
FWC	FLORIDA FISH AND WILDLIFE CONSERVATION COMMISSION
HCDW	HORSESHOE CRAB DETERRENT WALL
HDPE	HIGH DENSITY POLYETHYLENE
LB	POUND
MLLW	MEAN LOW LOWER WATER
NAVD	NORTH AMERICAN VERTICAL DATUM
NGVD	NATIONAL GEODETIC VERTICAL DATUM
NTU	NEPHELOMETRIC TURBIDITY UNIT
OHW	ORDINARY HIGH WATER
PSI	POUNDS PER SQUARE INCH
PVC	POLYVINYL CHLORIDE
STD	STANDARD
TYP	TYPICAL
USGS	UNITED STATES GEOLOGICAL SURVEY

JOSHUA P. SCHMITZ PROFESSIONAL ENGINEER No. 64059 STATE OF FLORIDA EXPIRATION DATE 12/31/18		INITIAL ISSUE HC HC HC JS 3/21/18	
ENERCON TEMPLE TERRACE, FLORIDA FLORIDA POWER & LIGHT CAPE CANAVERAL POWER PLANT		GENERAL NOTES	
FPLCORP005		REV 0	SHEET C-1

PRE DEVELOPMENT SITE INFORMATION

1. TOTAL SITE ACREAGE: 11.54 ACRES
2. LAND USE: UPLAND FILL, CHANNELIZED SANDY WATERWAY
3. VEGETATION: BARREN TO SPARSE
4. SOIL TYPES: CLAYEY FINE SAND, FINE SAND, SILTY SHELL HASH
5. ORDINARY HIGH WATER = (-) 0.24 FT NAVD88 MEAN LOW LOWER WATER = (-) 1.07 FT NAVD88
6. APPROXIMATE MAXIMUM WATER VELOCITY IN CANAL DURING INTAKE OPERATION = 2 FT/S
7. WATER VELOCITY IN CANAL WITHOUT INTAKE OPERATION IS EXPECTED TO BE SIGNIFICANTLY LESS THAN DURING INTAKE OPERATION.

PROJECT INFORMATION

1. PROJECT TYPE: DREDGING, SHEETPILE WALL, PIPING AND DOCK
2. LAND USE: UPLAND FILL, CHANNELIZED SANDY WATERWAY
3. VEGETATION: BARREN TO SPARSE
4. THE PROJECT UPON COMPLETION AND APPROPRIATE CERTIFICATION AND AS-BUILT SUBMITTAL WILL BE OPERATED AND MAINTAINED BY: FLORIDA POWER AND LIGHT.

POLLUTION PREVENTION NOTES

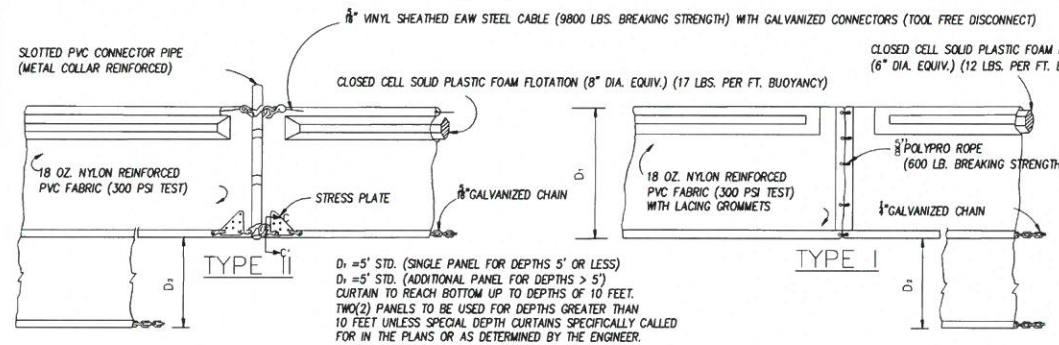
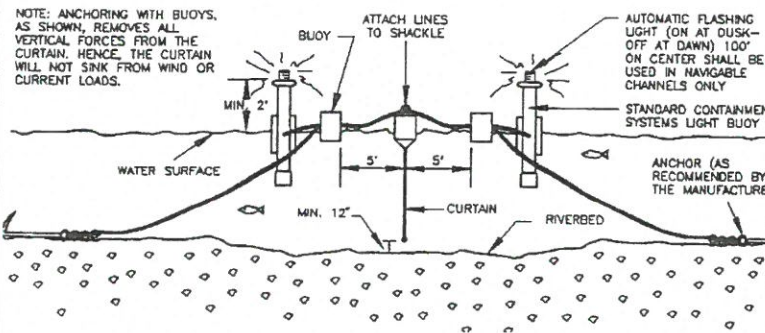
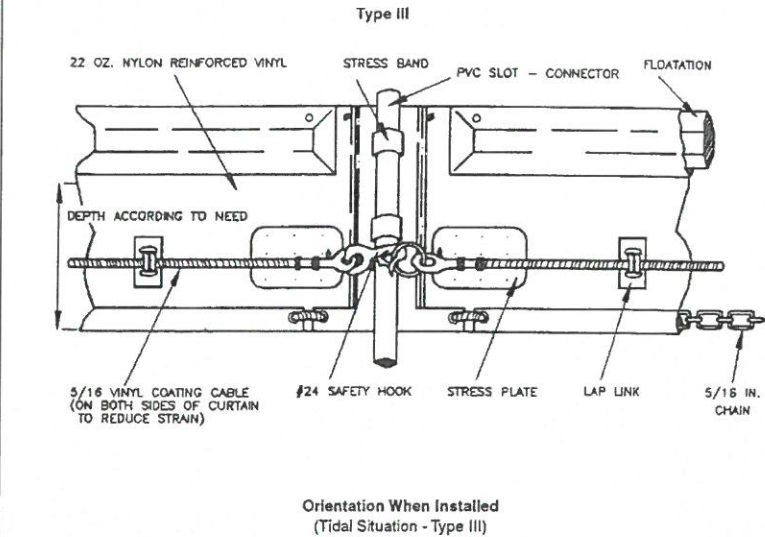
1. THE POTENTIAL SOURCES OF POLLUTION FROM THE PROJECT ARE LAND DISTURBANCE AND DREDGING.
2. ALL FUEL STORAGE AREAS OR OTHER HAZARDOUS STORAGE AREAS SHALL CONFORM TO ACCEPTED STATE OR FEDERAL CRITERIA FOR SUCH CONTAINMENT AREAS.
3. TEMPORARY DREDGE SPOIL MANAGEMENT LOCATIONS ARE TO BE LOCATED UPLAND OF ALL STORMWATER PONDS, WETLANDS AND AQUATIC RESOURCES.
4. TEMPORARY DREDGE SPOIL MANAGEMENT LOCATIONS MUST BE SELF CONTAINED, IN THAT SEDIMENT CONTROL MEASURES SUCH AS BARGES OR GEOTUBES MUST BE PROPERLY INSTALLED, MAINTAINED AND OPERATED TO PREVENT DISCHARGE OF MOBILIZED SEDIMENT.
5. CONTRACTOR SHALL PREVENT SEDIMENT TRACKING FROM EQUIPMENT TO ADJACENT ROADWAYS OR WATERWAYS. CONTRACTOR SHALL INSTALL SOIL TRACKING DEVICE, ENSURE BARGES DO NOT LEAK, ETC, AS NEEDED. CONTRACTOR SHALL BE RESPONSIBLE FOR REMOVING ANY SEDIMENT TRACKED FROM THE PROJECT SITE ONTO ADJACENT ROADWAYS.
6. SEDIMENT, EROSION AND TURBIDITY CONTROL MEASURES SHOWN ON THE DRAWINGS ARE CONSIDERED MINIMUM. CONTRACTOR IS RESPONSIBLE FOR PROVIDING CONTROL AS NECESSARY TO PREVENT TURBIDITY. ADDITIONAL TURBIDITY CONTROL MEASURES WILL BE INSTALLED IF DEEMED NECESSARY BY ON-SITE INSPECTION.
7. CONTRACTOR SHALL INSPECT TURBIDITY CONTROL DEVICES ON A DAILY BASIS FOR PROPER INSTALLATION AND PERFORMANCE.
8. IF FINES OR PENALTIES ARE LEVIED BY GOVERNING AUTHORITIES AGAINST THE PROPERTY OR PROPERTY OWNER BECAUSE OF A LACK OF TURBIDITY CONTROL OR PETROLEUM PRODUCT SPILLAGE, CONTRACTOR SHALL BE RESPONSIBLE FOR PAYMENT OF SUCH FINES OR PENALTIES OR THE COSTS OF ANY FINES OR PENALTIES SHALL BE DEDUCTED FROM THE CONTRACT AMOUNT.
9. INSTALLATION OF SEDIMENT AND EROSION AND TURBIDITY CONTROLS SHALL BE COORDINATED WITH THE CONSTRUCTION OF PERMANENT FEATURES TO THE EXTENT NECESSARY TO ASSURE EFFECTIVE AND CONTINUOUS TURBIDITY CONTROL THROUGHOUT THE LIFE OF THE CONSTRUCTION PHASE.
10. CONSTRUCTION EQUIPMENT SHALL BE OPERATED AND MAINTAINED IN SUCH A MANNER AS TO PREVENT SPILLS OR LEAKS FROM REACHING WATER.
11. HYDRAULIC LINES USED IN EQUIPMENT SHALL CONTAIN VEGETABLE OIL ONLY. ALL FITTINGS SHALL BE WRAPPED IN OIL ABSORBING MATERIAL AND CLEAR VISQUEEN MATERIAL.
12. CONTRACTOR SHALL SUBMIT A FUEL SPILL RESPONSE PLAN FOR OWNER REVIEW AND APPROVAL. THE FUEL SPILL RESPONSE PLAN SHALL ADDRESS FUEL STORAGE, HANDLING AND LOADING/UNLOADING, AND SPILL CLEANUP PROCEDURES TO THE EXTENT NECESSARY TO MINIMIZE THE POTENTIAL FOR IMPACT TO LAND OR WATER FROM A FUEL SPILL.

SEDIMENT AND EROSION CONTROL NOTES

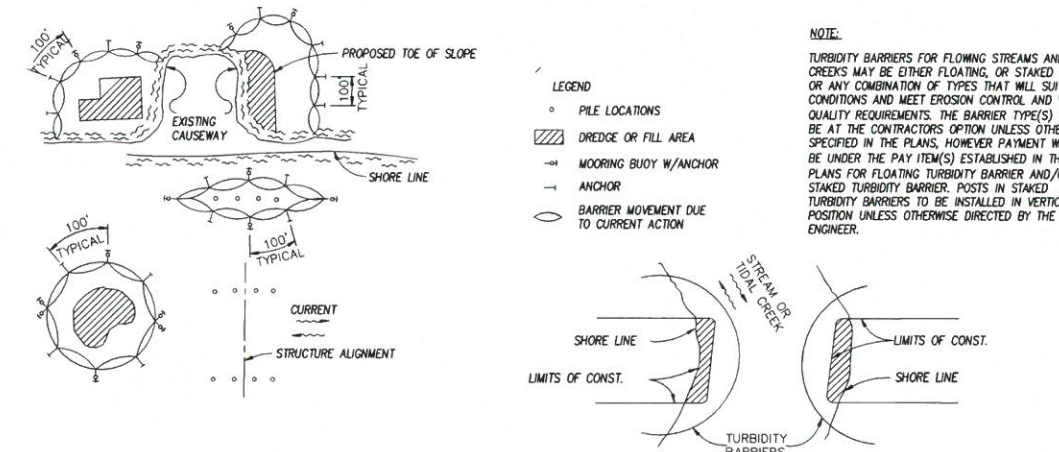
1. SEDIMENT SHALL NOT BE ALLOWED TO WASH INTO THE CHANNEL OR STORM DRAINS. CONTRACTOR IS RESPONSIBLE FOR REPAIR AND/OR CLEANUP OF ANY AND ALL DAMAGES RESULTING FROM SEDIMENT MOBILIZATION FROM CONSTRUCTION ACTIVITY.
2. TEMPORARY SEDIMENT CONTROL DEVICES SHALL BE INSTALLED PRIOR TO ANY LAND DISTURBANCE AND ARE TO BE MAINTAINED IN PLACE THROUGHOUT THE ENTIRE COURSE OF CONSTRUCTION.
3. THE TYPE OF SEDIMENT BARRIER USED SHALL BE GOVERNED BY THE NATURE OF THE CONSTRUCTION OPERATION AND THE SEDIMENT THAT WILL BE MOBILIZED. SILTY AND CLAYEY MATERIAL MAY REQUIRE SOLID SEDIMENT BARRIERS TO PREVENT TURBID WATER MOVEMENT, WHILE SANDY MATERIAL MAY NEED ONLY SCREENS OR DIVERSIONS. IT MAY BE NECESSARY TO EMPLOY A COMBINATION OF MEASURES IF CONDITIONS WARRANT.
4. WHERE PUMPS ARE TO BE USED TO REMOVE TURBID WATERS FROM CONSTRUCTION AREAS, THE WATER SHALL BE TREATED TO REDUCE TURBIDITY PRIOR TO DISCHARGE TO WATERWAYS. TREATMENT MEASURES MAY INCLUDE SEDIMENT TRAPS, FILTER SYSTEMS, BERMS, AND OTHER FEATURES DESIGNED TO LIMIT TURBIDITY TO STATE WATER QUALITY STANDARDS.
5. CONTRACTOR SHALL SCHEDULE HIS OPERATIONS TO MINIMIZE THE POTENTIAL FOR TURBID DISCHARGE. THE DURATION OF DISTURBANCE AND UNCOMPLETED CONSTRUCTION EXPOSED TO THE ELEMENTS SHALL BE AS SHORT AS PRACTICABLE. EXPOSED SOILS SHALL BE STABILIZED AS SOON AS POSSIBLE, ESPECIALLY SLOPES. GRADING AND EARTHWORK OPERATIONS SHALL BE STABILIZED WITHIN 7 DAYS OF COMPLETION.
6. STABILIZATION METHODS INCLUDE SOD, SEEDING AND MULCHING OR HYDROMULCHING TO PROVIDE A TEMPORARY OR PERMANENT GRASS COVER. GEOTEXTILE FABRICS CAN BE EMPLOYED TO HELP SUPPORT VEGETATION ESTABLISHMENT.
6. SEDIMENT, EROSION AND TURBIDITY CONTROL MEASURES SHOWN ON THE DRAWINGS ARE CONSIDERED MINIMUM. CONTRACTOR IS RESPONSIBLE FOR PROVIDING CONTROL AS NECESSARY TO PREVENT TURBIDITY. ADDITIONAL TURBIDITY CONTROL MEASURES WILL BE INSTALLED IF DEEMED NECESSARY BY ON-SITE INSPECTION.
7. CONTRACTOR SHALL INSPECT TURBIDITY CONTROL DEVICES ON A DAILY BASIS FOR PROPER INSTALLATION AND PERFORMANCE

EXCAVATION/DREDGING NOTES

1. NO EXCAVATION SHALL EXTEND BELOW THE PERMITTED DESIGN/DEPTHS ELEVATIONS SHOWN ON THE DRAWINGS, UNLESS ADDITIONAL TESTING SUPPORTS OTHERWISE; AND NO LOWER SEMI-CONFINING UNIT CLAYS SHALL BE EXCAVATED, REGARDLESS IF THESE MATERIALS ARE ENCOUNTERED ABOVE THE PERMITTED DEPTHS/ELEVATIONS. IF ANY LOWER SEMI-CONFINING UNIT CLAYS ARE ENCOUNTERED ABOVE THE PERMITTED DEPTHS/ELEVATIONS, THEN EXCAVATION OPERATIONS SHALL CEASE IN THE GENERAL AREA AND THE OWNER SHALL BE NOTIFIED IMMEDIATELY.



NOTICE: COMPONENTS OF TYPES I AND II MAY BE SIMILAR OR IDENTICAL TO PROPRIETARY DESIGNS. ANY INFRINGEMENT ON THE PROPRIETARY RIGHTS OF THE DESIGNER SHALL BE THE SOLE RESPONSIBILITY OF THE USER. SUBSTITUTIONS FOR TYPES I AND II SHALL BE AS APPROVED BY THE ENGINEER.



TURBIDITY BARRIER DETAIL (FOOT INDEX 103)

WATER QUALITY MONITORING NOTES (AS NEEDED):

1. MONITORING FOR TURBIDITY AS MEASURED IN NEPHELOMETRIC TURBIDITY UNITS (NTU) SHALL BE CONDUCTED FOR THE DURATION OF THE PROJECT AS FOLLOWS:

COLLECT DUPLICATE DAILY WATER QUALITY SAMPLES AS INDICATED BELOW, ANALYZE THE FIELD COLLECTED SAMPLES INDIVIDUALLY AND REPORT EACH OF THE DUPLICATE SAMPLES INDIVIDUALLY FOR THE FOLLOWING PARAMETERS. ALL MEASUREMENTS AND ANALYSES FOR EACH PARAMETER SHALL BE MADE USING APPROVED METHODS PROVIDING A PQL (PRACTICAL QUANTIFICATION LIMIT) BELOW THE WATER QUALITY STANDARD FOR THE PARAMETER LISTED IN RULE 62-302, F.A.C.:

PARAMETER	DEPTH	LOCATION
TURBIDITY	MID-DEPTH	MONITORING POINTS LOCATED ON PLAN

SAMPLING SHALL COMMENCE 12 TO 24 HOURS PRIOR TO THE INITIATION OF CONSTRUCTION ACTIVITY.

2. IF MEASURED MIXING ZONE BOUNDARY SAMPLES ARE IN EXCESS OF STATE STANDARDS (AMBIENT LEVELS AT DREDGING SITE/29 NTU'S ABOVE BACKGROUND AT MONITORING LOCATIONS) ALL DREDGING/FILLING/DISCHARGE ACTIVITIES SHALL CEASE IMMEDIATELY AND NOT RESUME UNTIL TURBIDITY LEVELS HAVE DROPPED TO MEET STATE STANDARDS, THE EXCEEDANCE SHALL BE IMMEDIATELY REPORTED TO OWNER. THE EXCEEDANCE REPORT SHALL INCLUDE THE DESCRIPTION OF THE CORRECTIVE ACTIONS BEING TAKEN OR PROPOSED TO BE TAKEN. IF EXCEEDANCES ARE NOTED AFTER NORMAL BUSINESS HOURS, ON HOLIDAYS, OR ON WEEKENDS, THE REPORT SHALL BE MADE TO OWNER AS SOON AS NORMAL BUSINESS HOURS RESUME. A COPY OF ALL MONITORING DATA SHEETS WHICH INDICATE EXCEEDANCES, SHALL BE FORWARDED IMMEDIATELY TO OWNER.

FAILURE TO REPORT EXCEEDANCES OR TO FOLLOW CORRECT PROCEDURES BEFORE RESUMING WORK WILL CONSTITUTE GROUNDS FOR REVOCATION OF THE PERMIT AND MAY ALSO RENDER THE PERMITTEE SUBJECT TO ENFORCEMENT ACTION.

SEA TURTLE AND SMALLTOOTH SAWFISH CONSTRUCTION CONDITIONS (2006)

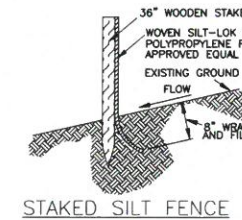
The permittee shall comply with the following protected species construction conditions:

- a. The permittee shall instruct all personnel associated with the project of the potential presence of these species and the need to avoid collisions with sea turtles and smalltooth sawfish. All construction personnel are responsible for observing water-related activities for the presence of these species.
- b. The permittee shall advise all construction personnel that there are civil and criminal penalties for harming, harassing, or killing sea turtles or smalltooth sawfish, which are protected under the Endangered Species Act of 1973.
- c. Siltation barriers shall be made of material in which a sea turtle or smalltooth sawfish cannot become entangled, be properly secured, and be regularly monitored to avoid protected species entrapment. Barriers may not block sea turtle or smalltooth sawfish entry to or exit from designated critical habitat without prior agreement from the National Marine Fisheries Service's Protected Resources Division, St. Petersburg, Florida.
- d. All vessels associated with the construction project shall operate at "no wake/idle" speeds at all times while in the construction area and while in water depths where the draft of the vessel provides less than a four-foot clearance from the bottom. All vessels will preferentially follow deep-water routes (e.g., marked channels) whenever possible.
- e. If a sea turtle or smalltooth sawfish is seen within 100 yards of the active daily construction/dredging operation or vessel movement, all appropriate precautions shall be implemented to ensure its protection. These precautions shall include cessation of operation of any moving equipment closer than 50 feet of a sea turtle or smalltooth sawfish. Operation of any mechanical construction equipment shall cease immediately if a sea turtle or smalltooth sawfish is seen within a 50-ft radius of the equipment. Activities may not resume until the protected species has departed the project area of its own volition.
- f. Any collision with and/or injury to a sea turtle or smalltooth sawfish shall be reported immediately to the National Marine Fisheries Service's Protected Resources Division (727-824-5312) and the local authorized sea turtle stranding/rescue organization.
- g. Any special construction conditions, required of your specific project, outside these general conditions, if applicable, will be addressed in the primary consultation.

STANDARD MANATEE CONDITIONS FOR IN-WATER WORK (2011)

The permittee shall comply with the following conditions intended to protect manatees from direct project effects:

- a. All personnel associated with the project shall be instructed about the presence of manatees and manatee speed zones, and the need to avoid collisions with and injury to manatees. The permittee shall advise all construction personnel that there are civil and criminal penalties for harming, harassing, or killing manatees which are protected under the Marine Mammal Protection Act, the Endangered Species Act, and the Florida Manatee Sanctuary Act.
- b. All vessels associated with the construction project shall operate at "Idle Speed/No Wake" at all times while in the immediate area and while in water where the draft of the vessel provides less than a four-foot clearance from the bottom. All vessels will follow routes of deep water whenever possible.
- c. Siltation or turbidity barriers shall be made of material in which manatees cannot become entangled, shall be properly secured, and shall be regularly monitored to avoid manatee entanglement or entrapment. Barriers must not impede manatee movement.
- d. All on-site project personnel are responsible for observing water-related activities for the presence of manatee(s). All in-water operations, including vessels, must be shutdown if a manatee(s) comes within 50 feet of the operation. Activities will not resume until the manatee(s) has moved beyond the 50-foot radius of the project operation, or until 30 minutes elapses if the manatee(s) has not reappeared within 50 feet of the operation. Animals must not be herded away or harassed into leaving.
- e. Any collision with or injury to a manatee shall be reported immediately to the Florida Fish and Wildlife Conservation Commission (FWC) Hotline at 1-888-404-3922. Collision and/or injury should also be reported to the U.S. Fish and Wildlife Service in Jacksonville (1-904-731-3336) for north Florida or Vero Beach (1-772-562-3909) for south Florida, and to FWC at ImperiledSpecies@myFWC.com
- f. Temporary signs concerning manatees shall be posted prior to and during all in-water project activities. All signs are to be removed by the permittee upon completion of the project. Temporary signs that have already been approved for this use by the FWC must be used. One sign which reads *Caution: Boaters* must be posted. A second sign measuring at least 8 1/2" by 11" explaining the requirements for "Idle Speed/No Wake" and the shut down of in-water operations must be posted in a location prominently visible to all personnel engaged in water-related activities. These signs can be viewed at MyFWC.com/manatee. Questions concerning these signs can be sent to the email address listed above.



STAKED SILT FENCE

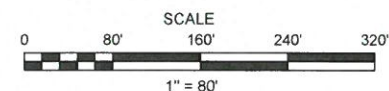
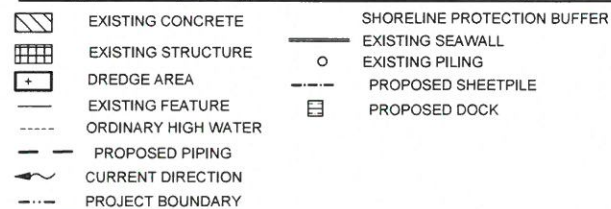
JOSHUA P. SCHMITZ LICENSED PROFESSIONAL ENGINEER NO. 14059 STATE OF FLORIDA EXPIRATION DATE 12/31/16		FPLCORP005 REV 0	
FLORIDA POWER & LIGHT SAPE CANAVERAL POWER PLANT		ENVIRONMENTAL PROTECTION NOTES POLLUTION PREVENTION DETAILS	
NONE		SHEET C-2	

PROJECT AREA: 13.26 ACRES
ZONING: ELECTRIC, NATURAL GAS, WATER AND WASTEWATER UTILITIES - GML(U)
FLU CLASSES: PUBLIC FACILITY - PUB, NEIGHBORHOOD COMMERCIAL - NC, RESIDENTIAL 12 UP TO 12 DWELLINGS PER ACRE - RES12_DIR
UPLANDS: 3.41 ACRES = 25.72% OF SITE
WETLANDS/AQUATIC AREAS: 9.85 ACRES = 74.31% OF SITE
PROPOSED MANATEE HEATING AREA: 0.77 ACRES = 5.81 % OF SITE
PROPOSED DOCK: 209 SF = 0.04 % OF SITE
NEW IMPERVIOUS SURFACE: N/A
PROPOSED BUILDINGS: N/A
PARKING REQUIREMENT: N/A
F.A.R.: N/A
FLOOD ZONE: AE (EL 1.7)

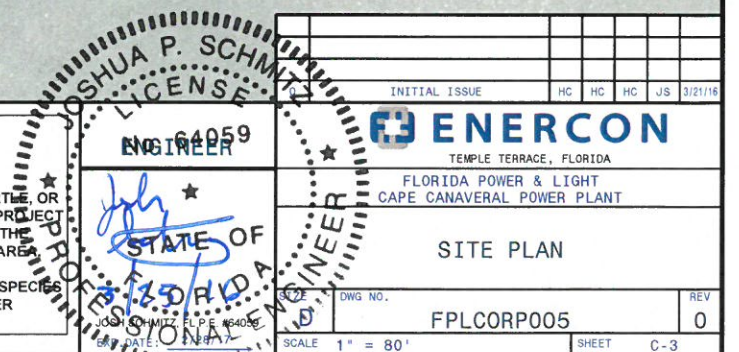
ORDINARY HIGH WATER LINE = -0.24' N.A.V.D. 1988

1. VERTICAL ELEVATIONS IN DATUM NAVD 1988
2. NAVD 1988 ELEVATIONS = NGVD 29 ELEVATIONS - 1.3 F T
3. OHW ELEVATION = -0.24 FT
4. BEARINGS AND COORDINATES REFERENCED TO GRID NORTH, BASED ON THE FLORIDA STATE PLANE COORDINATE SYSTEM, EAST ZONE
5. MLLW ELEVATION = -1.07 FT, TIDAL STATION 872-1994

- R1. AVIRON & ASSOCIATES, INC SURVEYING AND MAPPING BATHYMETRIC SURVEY, MAY 30, 2012.
- R2. AVIRON & ASSOCIATES, INC SURVEYING AND MAPPING BOUNDARY SURVEY, MARCH 9, 2015.
- R3. ZACHRY ENGINEERING CORPORATION GRADING AND DRAINAGE PLANT EAST PROPERTY IMPROVEMENT FINISHED GRADES - PLAN, SHEET 1, JULY 23, 2014.
- R4. ZACHRY ENGINEERING CORPORATION, GRADING AND DRAINAGE PLANT EAST PROPERTY IMPROVEMENT FINISHED GRADES - PLAN, SHEET 2, FEBRUARY 12, 2014.
- R5. ECOLOGICAL ASSOCIATES, INC SUBMERGED RESOURCE ASSESSMENT, AUGUST 22, 2014.
- R6. ECOLOGICAL ASSOCIATES, INC SUBMERGED ASSESSMENT FOR MANATEE HEATING AREA, SEPTEMBER 18, 2015
- R7. USGS AERIAL ORTHOIMAGERY FY 2012
- R8. UNIVERSAL ENGINEERING SCIENCES, LIMITED SUBSURFACE EXPLORATION, APRIL 6, 2010
- R9. CCHCDW SCOPE OF WORK AND REQUEST FOR PROPOSAL, FPL, OCTOBER 2015
- R10.ACOE PERMIT 199504192 (LQP-IS)
- R11.FDEP PERMIT 05-275958-4



BIOLOGICAL OBSERVATION:
NO CONSTRUCTION WORK SHALL BE PERFORMED WITHOUT A BIOLOGICAL OBSERVER PRESENT. CEASE WORK IMMEDIATELY IF A MANATEE, SEA TURTLE, SMALL TOOTH SAWFISH ENTERS THE PROJECT AREA. DO NOT RESUME WORK UNTIL THE LISTED SPECIES HAS DEPARTED THE AREA. FOLLOW BIOLOGICAL OBSERVER INSTRUCTIONS AT ALL TIMES. LISTED SPECIES INJURY MUST BE REPORTED TO OWNER IMMEDIATELY. SEE NOTES C-2.



CONSTRUCTION SEQUENCING NOTES

1. REVIEW INTAKE OPERATING SCHEDULE AND POTENTIAL FOR TURBIDITY ENTRAINMENT IN THE INTAKE. PORTIONS OF THE WORK, SUCH AS THE HORSESHOE CRAB DETERRENT WALL AND REMOVAL OF EXISTING SHEET PILE DIVIDER, MAY NEED TO BE CONDUCTED DURING OUTAGE TO AVOID TURBIDITY ENTRAINMENT IN THE INTAKE.
2. INITIATE BIOLOGICAL OBSERVATION AND MAINTAIN IT FOR THE PROJECT DURATION.
3. INSTALL BUOYS WITH SIGNAGE.
4. INSTALL SILT FENCING AND TURBIDITY CURTAINS. DESIGN TURBIDITY CURTAIN INSTALLATIONS TO BE STABLE IN THE CURRENT.
5. DREDGE SOUTH SIDE OF EXISTING SHEET PILE DIVIDER. USE MIXING ZONE FOR WATER DISCHARGE AS NEEDED.
6. REMOVE EXISTING SHEET PILE DIVIDER IF TURBIDITY CURTAIN WILL BE SUFFICIENT. ALTERNATIVELY, LEAVE EXISTING SHEET PILE DIVIDER IN PLACE FOR MIXING ZONE.
7. INSTALL PROPOSED SHEET PILE, WORKING FROM WEST TO EAST. LEAVE ACCESS OPENING FOR DREDGING VESSEL AT THE NORTHEAST END.
8. DREDGE WORKING FROM WEST TO EAST, USING ENCLOSURE TO CONTROL TURBIDITY. USE MIXING ZONE FOR WATER DISCHARGE AS NEEDED.
9. INSTALL PIPING AND DOCK.
10. INSTALL HORSESHOE CRAB DETERRENT WALL.

CURRENT VELOCITY NOTES:

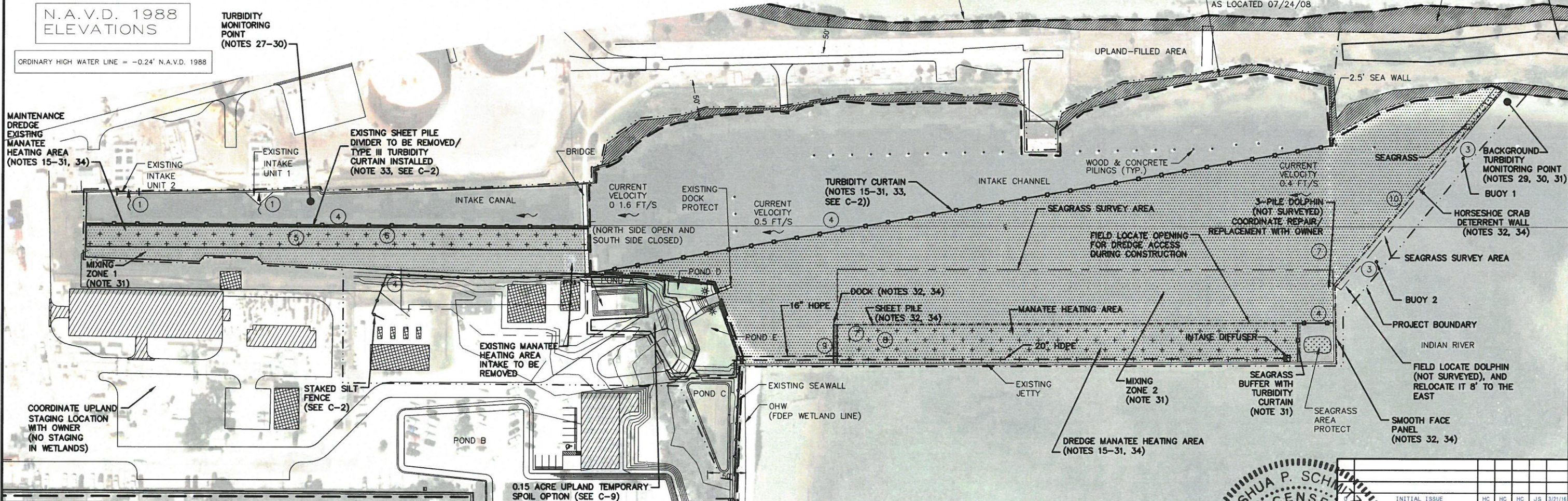
11. CURRENT VELOCITIES ARE APPROXIMATE AND ARE BASED ON DESIGN INTAKE CAPACITY OF 617 MGD.
12. CURRENT VELOCITIES MAY VARY BASED ON WIND, TIDES, AND PLANT OPERATIONS. CONTRACTOR SHALL ADDRESS THESE CONDITIONS AS ROUTINE DURING THE PERFORMANCE OF THE WORK.
13. CONTRACTOR SHALL VERIFY CURRENT VELOCITIES WITH OWNER PRIOR TO CONSTRUCTION.
14. WATER VELOCITY WITHOUT INTAKE OPERATION EXPECTED TO BE SIGNIFICANTLY LESS THAN DURING INTAKE OPERATION.

DREDGING NOTES

15. LIMITED SEDIMENT CHARACTERIZATION DATA FOR THIS PROJECT (BORINGS B-1 AND B-2), AND SEAGRASS SURVEY INDICATES THE PRESENCE OF CLAYEY FINE SAND, AND SILTY SHELL HASH WITH 15.3% BY WEIGHT PASSING THE 200 SIEVE (BORING B-1). THESE SEDIMENT MATERIALS, WHEN MOBILIZED, HAVE THE POTENTIAL TO CAUSE OR CONTRIBUTE TO WATER QUALITY DEGRADATION. CONTRACTOR SHALL BE RESPONSIBLE FOR DETERMINING SEDIMENT CONDITIONS AS REQUIRED TO COMPLETE HIS WORK WITHOUT CAUSING OR CONTRIBUTING TO WATER QUALITY DEGRADATION.
16. CONTRACTOR SHALL TAKE GREAT CARE TO PREVENT TURBIDITY ENTRAINMENT IN THE PLANT INTAKE.
17. CONTRACTOR SHALL DESIGN AND SUPPLY A DREDGING AND TURBIDITY CONTROL SYSTEM THAT MINIMIZES SEDIMENT RESUSPENSION AND TURBIDITY PRODUCTION. CONTRACTOR SHALL UTILIZE A LOW RESUSPENSION DREDGING SYSTEM. ANY DREDGING WITHIN 5 FEET OF A STRUCTURE SHALL BE HYDRAULIC.
18. CONTRACTOR SHALL OPERATE THE DREDGING SYSTEM IN A MANNER THAT MINIMIZES SEDIMENT RESUSPENSION AND TURBIDITY PRODUCTION. CONTRACTOR SHALL CONTROL THE RATE OF SEDIMENT REMOVAL, THICKNESS OF LIFTS, POSITION OF DREDGE EQUIPMENT, PROJECT SEQUENCING, AND PLACEMENT OF TURBIDITY CONTROLS, IN SUCH A MANNER AS TO MINIMIZE SEDIMENT RESUSPENSION AND TURBIDITY PRODUCTION.
19. UNLESS APPROVED BY OWNER TO REMAIN ONSITE, ALL DREDGED SEDIMENT SHALL BE DISPOSED IN AN OWNER APPROVED LANDFILL.
20. CONTRACTOR SHALL DESIGN AND SUPPLY A TEMPORARY DREDGE SPOIL HANDLING AND MANAGEMENT SYSTEM TO ADDRESS SEDIMENT REMOVED DURING DREDGING OPERATIONS. CONTRACTOR SHALL BE RESPONSIBLE FOR DETERMINING THE WEIGHT, VOLUME AND CHARACTERISTICS OF SPOIL MATERIAL TO BE ADDRESSED.
21. THE TEMPORARY DREDGE SPOIL HANDLING AND MANAGEMENT SYSTEM SHALL UTILIZE BARGES, UPLAND STAGING AREAS, AND/OR MECHANICAL PROCESSING SYSTEMS FOR TEMPORARY DREDGE SPOIL HANDLING AND MANAGEMENT. THE TEMPORARY DREDGE SPOIL HANDLING AND MANAGEMENT SYSTEM SHALL NOT UTILIZE WETLANDS OR AQUATIC AREAS FOR DREDGE SPOIL MANAGEMENT.
22. AS PART OF THE TEMPORARY DREDGE SPOIL HANDLING AND MANAGEMENT SYSTEM, CONTRACTOR SHALL DEWATER SEDIMENT AS REQUIRED FOR EFFICIENT DREDGE SPOIL HANDLING AND MANAGEMENT.
23. CONTRACTOR MAY UTILIZE TEMPORARY SPOIL AREAS FOR SPOIL MATERIAL AND EQUIPMENT STAGING, CONTRACTOR SHALL BE RESPONSIBLE FOR DESIGN OF TEMPORARY SPOIL AREAS BASED ON THE SPOIL MATERIAL TO BE ADDRESSED.
24. CONTRACTOR SHALL DESIGN THE SPOIL HANDLING AND MANAGEMENT SYSTEM TO CONTROL TURBIDITY DURING ALL SEDIMENT DEWATERING OPERATIONS. CONTRACTOR SHALL UTILIZE FDEP APPROVED POLYMERS/FLOCCULANTS AS REQUIRED TO CONTROL TURBID DISCHARGE FROM DEWATERING.
25. CONTRACTOR SHALL PROVIDE AND MAINTAIN A STABILIZED DEWATERING DISCHARGE THAT DOES NOT CAUSE OR CONTRIBUTE TO EROSION. CONTRACTOR SHALL AVOID USE OF EXISTING STORMWATER PONDS FOR DEWATERING. USE MIXING ZONES FOR DEWATERING DISCHARGE.
26. CONTRACTOR SHALL CONTROL SEDIMENT RELEASE AND TURBIDITY RELATED TO LOADING/UNLOADING AND MATERIAL TRANSFER.

INTAKE PROTECTION NOTES

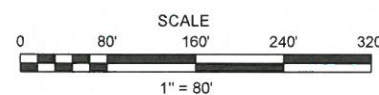
27. ASSUMPTION: INTAKE TURBIDITY MUST BE LESS THAN 29 NTU'S ABOVE BACKGROUND.
28. PREVENT CONSTRUCTION MATERIALS AND DEBRIS FROM REACHING INTAKE.
29. IF INTAKE WILL BE OPERATIONAL DURING CONSTRUCTION, ESTABLISH GUNDERBOOM PCS OR APPROVED EQUAL FOR INTAKE TURBIDITY PROTECTION.
30. SEE WATER QUALITY MONITORING NOTES C-2.



LEGEND	
	SEAGRASS
	FDEP WETLANDS
	EXISTING CONCRETE
	EXISTING STRUCTURE
	PROPOSED IMPROVEMENTS
	EXISTING FEATURE
	ORDINARY HIGH WATER
	CURRENT DIRECTION
	MIXING ZONE
	DREDGE AREA
	PROJECT BOUNDARY
	SHORELINE PROTECTION BUFFER

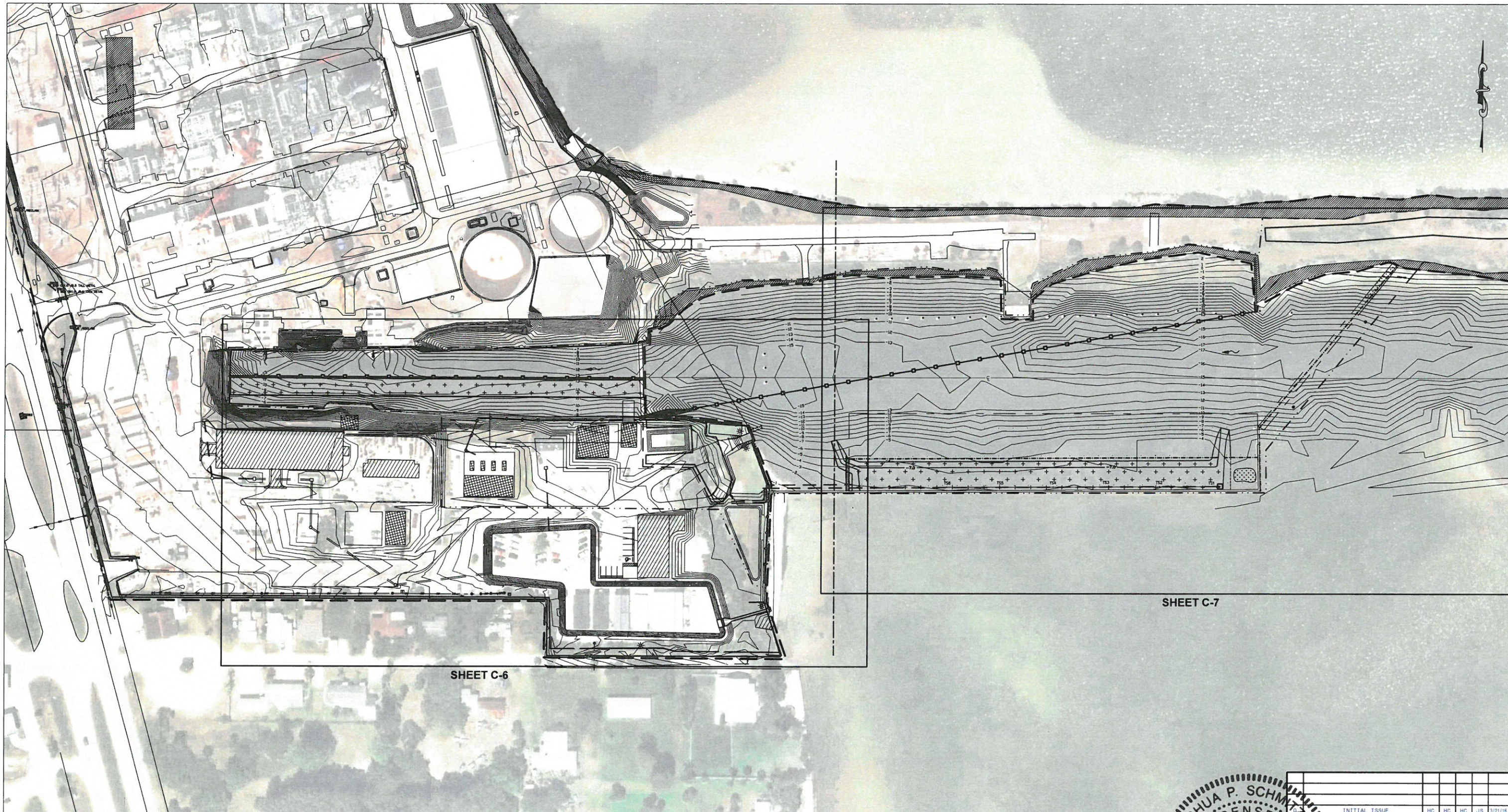
RESOURCE PROTECTION NOTES:

31. UNLESS IN A MIXING ZONE, TURBIDITY MORE THAN 29 NTU'S OVER BACKGROUND EXCEEDS STATE WATER QUALITY STANDARDS AND SHALL NOT BE ALLOWED.
32. ALL SHEET PILE AND DOCK PILINGS WILL BE INSTALLED USING A VIBRATORY HAMMER.
33. PROPERLY DESIGN, INSTALL, AND MONITOR TURBIDITY BARRIERS SO AS TO PREVENT ENTANGLEMENT BY MANATEES, SEA TURTLES, OR SMALLTOOTH SAWFISH.
34. IN-WATER WORK SHALL NOT BE PERFORMED FROM NOVEMBER 15 - MARCH 31.



BIOLOGICAL OBSERVATION:
NO CONSTRUCTION WORK SHALL BE PERFORMED WITHOUT A BIOLOGICAL OBSERVER PRESENT. CEASE WORK IMMEDIATELY IF A MANATEE, SEA TURTLE OR SMALLTOOTH SAWFISH ENTERS THE PROJECT AREA. DO NOT RESUME WORK UNTIL THE LISTED SPECIES HAS DEPARTED THE AREA. FOLLOW BIOLOGICAL OBSERVER INSTRUCTIONS AT ALL TIMES. LISTED SPECIES INJURY MUST BE REPORTED TO OWNER IMMEDIATELY. SEE NOTES C-2.

	TEMPLE TERRACE, FLORIDA FLORIDA POWER & LIGHT CAPE CANAVERAL POWER PLANT	
	POLLUTION PREVENTION PLAN AND PROJECT SEQUENCING	
	SCALE 1" = 80' SHEET C-4	REV 0

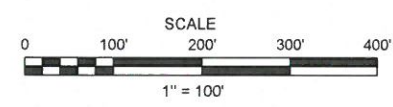


SHEET C-6

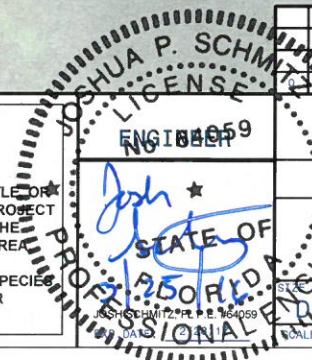
SHEET C-7

LEGEND

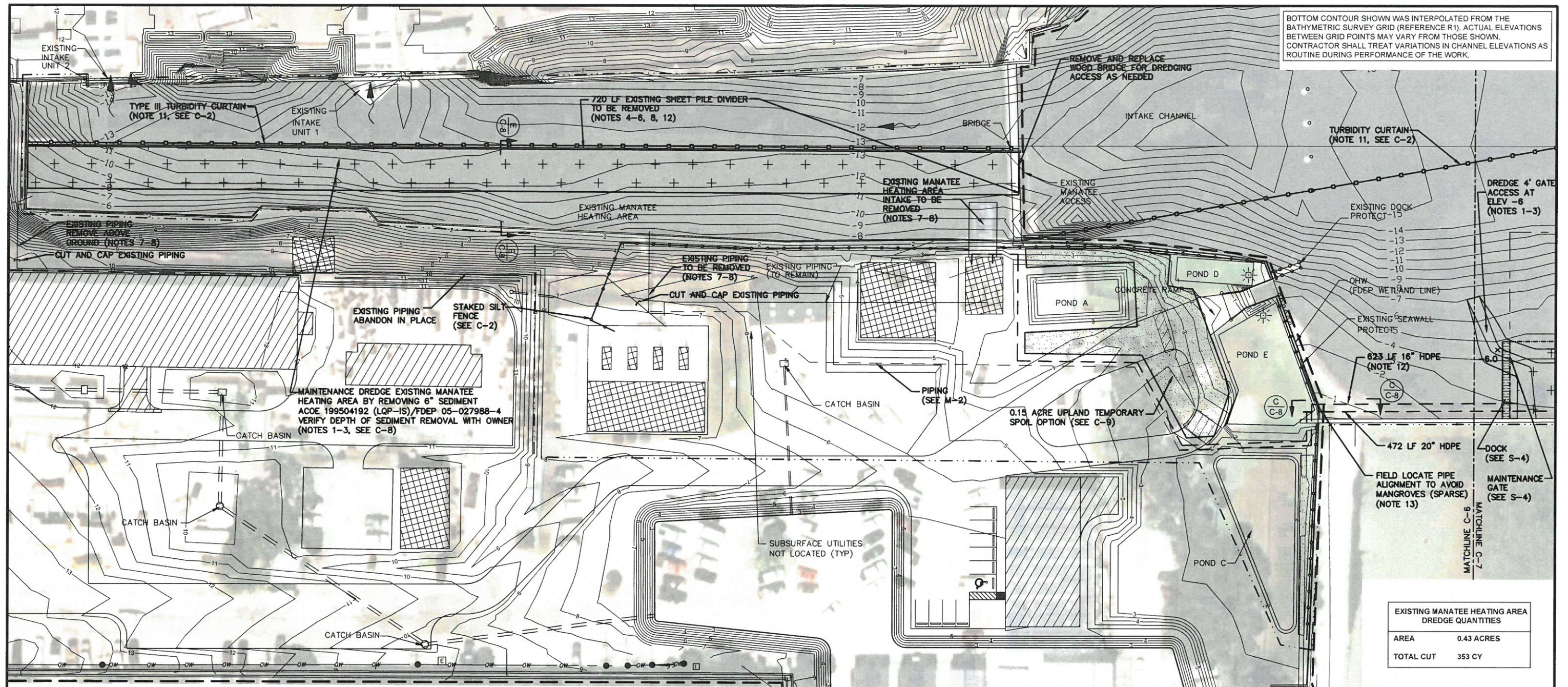
- | | |
|---|---|
|  FDEP WETLANDS |  EXISTING STORM PIPING |
|  EXISTING CONCRETE |  EXISTING SEAWALL |
|  EXISTING STRUCTURE |  EXISTING PILING |
|  SEAGRASS |  PROPOSED IMPROVEMENTS |
|  EXISTING FEATURE |  CURRENT DIRECTION |
|  WATER UTILITY |  PROPOSED ELEVATION |
|  ELECTRIC UTILITY |  PROJECT BOUNDARY |
|  ORDINARY HIGH WATER (OHW) | |
|  MEAN LOW LOWER WATER (MLLW) | |
|  EXISTING GRADE CONTOUR | |



BIOLOGICAL OBSERVATION:
NO CONSTRUCTION WORK SHALL BE PERFORMED WITHOUT A BIOLOGICAL OBSERVER PRESENT. CEASE WORK IMMEDIATELY IF A MANATEE, SEA TURTLE OR SMALLTOOTH SAWFISH ENTERS THE PROJECT AREA. DO NOT RESUME WORK UNTIL THE LISTED SPECIES HAS DEPARTED THE AREA. FOLLOW BIOLOGICAL OBSERVER INSTRUCTIONS AT ALL TIMES. LISTED SPECIES INJURY MUST BE REPORTED TO OWNER IMMEDIATELY. SEE NOTES C-2.



INITIAL ISSUE				HC	HC	HC	JS	3/21/18	
ENERCON TEMPLE TERRACE, FLORIDA FLORIDA POWER & LIGHT CAPE CANAVERAL POWER PLANT									
MANATEE HEATING AREA LANDSCAPE, DREDGING, AND UTILITY PLAN KEY									
DRAWING NO. FPLCORP005								REV	0
SCALE 1" = 100'								SHEET C-5	



REFERENCES:

- R1. AVIRON & ASSOCIATES, INC SURVEYING AND MAPPING BATHYMETRIC SURVEY, MAY 30, 2012.
R2. AVIRON & ASSOCIATES, INC SURVEYING AND MAPPING BOUNDARY SURVEY, MARCH 9, 2015.
R3. ZACHRY ENGINEERING CORPORATION GRADING AND DRAINAGE PLANT EAST PROPERTY IMPROVEMENT FINISHED GRADES - PLAN, SHEET 1, JULY 23, 2014.
R4. ZACHRY ENGINEERING CORPORATION, GRADING AND DRAINAGE PLANT EAST PROPERTY IMPROVEMENT FINISHED GRADES - PLAN, SHEET 2, FEBRUARY 12, 2014.
R5. ECOLOGICAL ASSOCIATES, INC SUBMERGED RESOURCE ASSESSMENT, AUGUST 22, 2014.
R6. ECOLOGICAL ASSOCIATES, INC SUBMERGED ASSESSMENT FOR MANATEE HEATING AREA, SEPTEMBER 18, 2015.
R7. USGS AERIAL ORTHOIMAGERY FY 2012
R8. UNIVERSAL ENGINEERING SCIENCES, LIMITED SUBSURFACE EXPLORATION, APRIL 6, 2010
R9. CCHCDW SCOPE OF WORK AND REQUEST FOR PROPOSAL, FPL, OCTOBER 2015
R10.ACOE PERMIT 199504192 (LQP-IS)
R11.FDEP PERMIT 05-275958-4

DREDGING NOTES

1. SEE DREDGING NOTES C-4.
2. A MARINE DEBRIS SURVEY HAS NOT BEEN CONDUCTED FOR THE DREDGING AREA. CONTRACTOR SHALL NOTIFY OWNER IMMEDIATELY IN THE EVENT MARINE DEBRIS IS ENCOUNTERED DURING DREDGING.
3. CONTRACTOR SHALL DREDGE EVENLY TO THE LINES AND GRADES SHOWN ON THE DRAWINGS, TAKING CARE TO AVOID THE CREATION OF WINDROWS OR UNEVEN BOTTOM CONDITIONS. CONTRACTOR SHALL CONSIDER SPILLAGE AND FALLBACK IN HIS DREDGING OPERATION TO ENSURE THE LINES AND GRADES SHOWN ARE MET.

SHEET PILE, INTAKE AREA, AND PIPING DISPOSAL NOTES

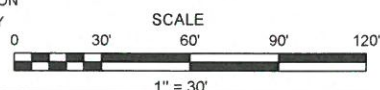
4. CONTRACTOR SHALL EVALUATE POTENTIAL FOR RE-USE OF SHEET PILE DIVIDER IN THE PROPOSED MANATEE HEATING AREA.
5. IF SHEET PILE DIVIDER CAN NOT BE RE-USED, CONTRACTOR SHALL BE RESPONSIBLE FOR DISPOSAL OF THE SHEET PILE DIVIDER.
6. IF SHEET PILE DIVIDER WILL BE DISPOSED, CONTRACTOR SHALL DISPOSE IT IN AN OWNER APPROVED LANDFILL.
7. IF OWNER DOES NOT INTEND TO REUSE REMOVED PIPING OR INTAKE STRUCTURE CONTRACTOR SHALL DISPOSE IT IN AN OWNER APPROVED LANDFILL.
8. COORDINATE TEMPORARY STOCKPILING OF REMOVED MATERIAL WITH THE OWNER AS NEEDED.

MISC NOTES

14. SUBSURFACE UTILITIES ARE PRESENT IN THE WORK AREA AND HAVE NOT BEEN LOCATED. CONTRACTOR SHALL BE RESPONSIBLE FOR LOCATING AND PROTECTING ALL SUBSURFACE UTILITIES IN THE WORK AREA, WHETHER IDENTIFIED ON THE DRAWINGS OR NOT.
15. SEE GENERAL NOTES C-1.
16. SEE ENVIRONMENTAL PROTECTION C-2.
17. SEE POLLUTION PREVENTION C-4
18. RESTORE ALL AREAS DISTURBED BY CONSTRUCTION.
19. REFER TO MECHANICAL DRAWINGS FOR PIPING.
20. REFER TO STRUCTURAL DRAWINGS FOR SHEET PILE

LEGEND

- | | | | |
|--|-----------------------------|--|-----------------------|
| | FDEP WETLANDS | | EXISTING STORM PIPING |
| | EXISTING CONCRETE | | EXISTING SEAWALL |
| | EXISTING STRUCTURE | | EXISTING PILING |
| | SEAGRASS | | PROPOSED PIPING |
| | DREDGE AREA | | CURRENT DIRECTION |
| | ELECTRIC UTILITY | | PROPOSED ELEVATION |
| | ORDINARY HIGH WATER (OHW) | | PROJECT BOUNDARY |
| | MEAN LOW LOWER WATER (MLLW) | | EXISTING FEATURE |
| | EXISTING GRADE CONTOUR | | WATER UTILITY |
| | SHORELINE PROTECTION BUFFER | | PROPOSED DOCK |



RESOURCE PROTECTION NOTES:

9. UNLESS IN A MIXING ZONE, TURBIDITY MORE THAN 29 NTU'S OVER BACKGROUND EXCEEDS STATE WATER QUALITY STANDARDS AND SHALL NOT BE ALLOWED.
- 10.ALL SHEET PILE AND DOCK PILINGS WILL BE INSTALLED USING A VIBRATORY HAMMER.
- 11.PROPERLY DESIGN, INSTALL, AND MONITOR TURBIDITY BARRIERS SO AS TO PREVENT ENTANGLEMENT BY MANATEES, SEA TURTLES, OR SMALLTOOTH SAWFISH.
- 12.IN-WATER WORK SHALL NOT BE PERFORMED FROM NOVEMBER 15 - MARCH 31.
13. MANGROVE IMPACTS ARE NOT APPROVED FOR THIS PROJECT. IF MANGROVES MUST BE IMPACTED, REPORT TO OWNER IMMEDIATELY FOR PERMIT MODIFICATION AND APPROVAL PRIOR TO IMPACTING MANGROVES.

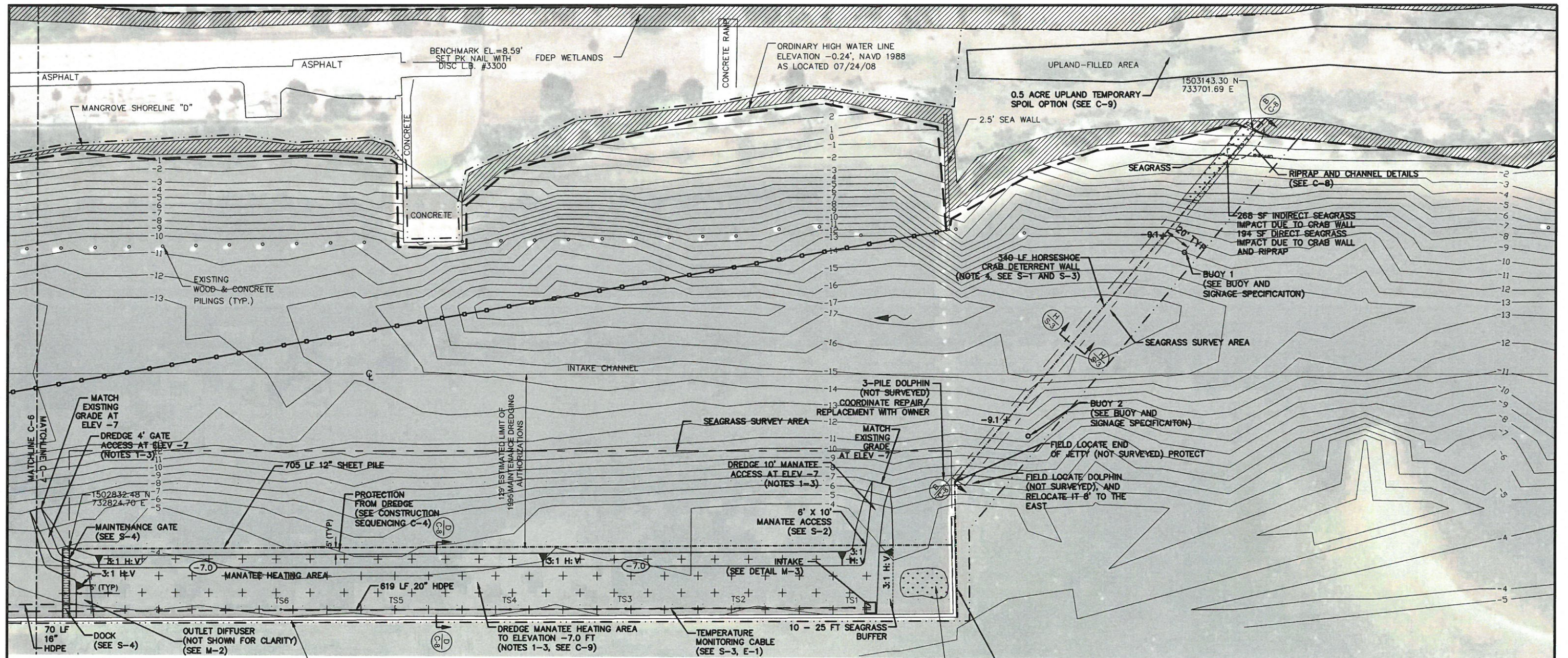
BIOLOGICAL OBSERVATION:
NO CONSTRUCTION WORK SHALL BE PERFORMED WITHOUT A BIOLOGICAL OBSERVER PRESENT. CEASE WORK IMMEDIATELY IF A MANATEE, SEA TURTLE, OR SMALLTOOTH SAWFISH ENTERS THE PROJECT AREA. DO NOT RESUME WORK UNTIL THE LISTED SPECIES HAS DEPARTED THE AREA. FOLLOW BIOLOGICAL OBSERVER INSTRUCTIONS AT ALL TIMES. LISTED SPECIES INJURY MUST BE REPORTED TO OWNER IMMEDIATELY. SEE NOTES C-2.

N.A.V.D. 1988
ELEVATIONS

ORDINARY HIGH WATER LINE = -0.24' N.A.V.D. 1988

OSHUA P. SCHMIDT
ENGINEER
LICENSE NO. 64059
STATE OF FLORIDA
PROFESSIONAL ENGINEER

ENERCON
TEMPLE TERRACE, FLORIDA
FLORIDA POWER & LIGHT
CAPE CANAVERAL POWER PLANT
SCAPE, DREDGING, AND
UTILITY PLAN 1
FPLCORP005
REV 0
SHEET C-6



DREDGING NOTES

1. SEE DREDGING NOTES C-4.
2. A MARINE DEBRIS SURVEY HAS NOT BEEN CONDUCTED FOR THE DREDGING AREA. CONTRACTOR SHALL NOTIFY OWNER IMMEDIATELY IN THE EVENT MARINE DEBRIS IS ENCOUNTERED DURING DREDGING.
3. CONTRACTOR SHALL DREDGE EVENLY TO THE LINES AND GRADES SHOWN ON THE DRAWINGS, TAKING CARE TO AVOID THE CREATION OF WINDROWS OR UNEVEN BOTTOM CONDITIONS. CONTRACTOR SHALL CONSIDER SPILLAGE AND FALLBACK IN HIS DREDGING OPERATION TO ENSURE THE LINES AND GRADES SHOWN ARE MET.
4. CONTRACTOR TO DETERMINE JETTY SUBSURFACE LOCATION TO ENSURE CONSTRUCTION DOES NOT CONFLICT WITH JETTY.

REFERENCES

- R1. AVIRON & ASSOCIATES, INC SURVEYING AND MAPPING BATHYMETRIC SURVEY, MAY 30, 2012.
- R2. AVIRON & ASSOCIATES, INC SURVEYING AND MAPPING BOUNDARY SURVEY, MARCH 9, 2015.
- R3. ZACHRY ENGINEERING CORPORATION GRADING AND DRAINAGE PLANT EAST PROPERTY IMPROVEMENT FINISHED GRADES - PLAN, SHEET 1, JULY 23, 2014.
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- R9. CCHCDW SCOPE OF WORK AND REQUEST FOR PROPOSAL, FPL, OCTOBER 2015
- R10. ACOE PERMIT 199504192 (LOP-IS)
- R11. FDEP PERMIT 05-275958-4

MISC NOTES

10. SEE GENERAL NOTES C-1
11. SEE ENVIRONMENTAL PROTECTION C-2
12. SEE POLLUTION PREVENTION C-4
13. REFER TO MECHANICAL DRAWINGS FOR PIPING
14. REFER TO STRUCTURAL DRAWINGS FOR SHEETPILE

BOTTOM CONTOUR SHOWN WAS INTERPOLATED FROM THE BATHYMETRIC SURVEY GRID (REFERENCE R1). ACTUAL ELEVATIONS BETWEEN GRID POINTS MAY VARY FROM THOSE SHOWN. CONTRACTOR SHALL TREAT VARIATIONS IN CHANNEL ELEVATIONS AS ROUTINE DURING PERFORMANCE OF THE WORK.

RESOURCE PROTECTION NOTES:

5. UNLESS IN A MIXING ZONE, TURBIDITY MORE THAN 29 NTU'S OVER BACKGROUND EXCEEDS STATE WATER QUALITY STANDARDS AND SHALL NOT BE ALLOWED.
6. ALL SHEET PILE AND DOCK PILING WILL BE INSTALLED USING A VIBRATORY HAMMER.
7. PROPERLY DESIGN, INSTALL, AND MONITOR TURBIDITY BARRIERS SO AS TO PREVENT ENTANGLEMENT BY MANATEES, SEA TURTLES, OR SMALLTOOTH SAWFISH
8. IN-WATER WORK SHALL NOT BE PERFORMED FROM NOVEMBER 15 - MARCH 31.
9. MANGROVE IMPACTS ARE NOT APPROVED FOR THIS PROJECT. IF MANGROVES MUST BE IMPACTED, REPORT TO OWNER IMMEDIATELY FOR PERMIT MODIFICATION AND APPROVAL PRIOR TO IMPACTING MANGROVES.

BIOLOGICAL OBSERVATION:
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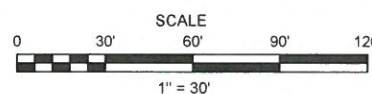
PROPOSED MANATEE HEATING AREA DREDGE QUANTITIES	
AREA	0.63 ACRES
TOTAL CUT	3485 CY

N.A.V.D. 1988
ELEVATIONS

ORDINARY HIGH WATER LINE = N.A.P.D. SCHMITZ

LEGEND

- | | | | |
|--|------------------------|--|-----------------------------|
| | FDEP WETLANDS | | EXISTING STORM PIPING |
| | PROPOSED DOCK | | EXISTING SEAWALL |
| | SEAGRASS | | EXISTING PILING |
| | DREDGE AREA | | PROPOSED PIPING |
| | EXISTING FEATURE | | CURRENT DIRECTION |
| | WATER UTILITY | | PROPOSED ELEVATION |
| | ELECTRIC UTILITY | | PROJECT BOUNDARY |
| | EXISTING GRADE CONTOUR | | TEMPERATURE SENSOR |
| | PROPOSED SHEETPILE | | SHORELINE PROTECTION BUFFER |



ENERCON
TEMPLE TERRACE, FLORIDA
FLORIDA POWER & LIGHT
CAPE CANAVERAL POWER PLANT
LANDSCAPE, DREDGING, AND
UTILITY PLAN 2

PROFESSIONAL ENGINEER
JOSHUA P. SCHMITZ
LICENSE NO. 1059
STATE OF FLORIDA

DATE: 11/25/14
SCALE: 1" = 30'
SHEET: C-7

REV	0
DATE	11/25/14
BY	JPS
CHKD	JPS
APPD	JPS

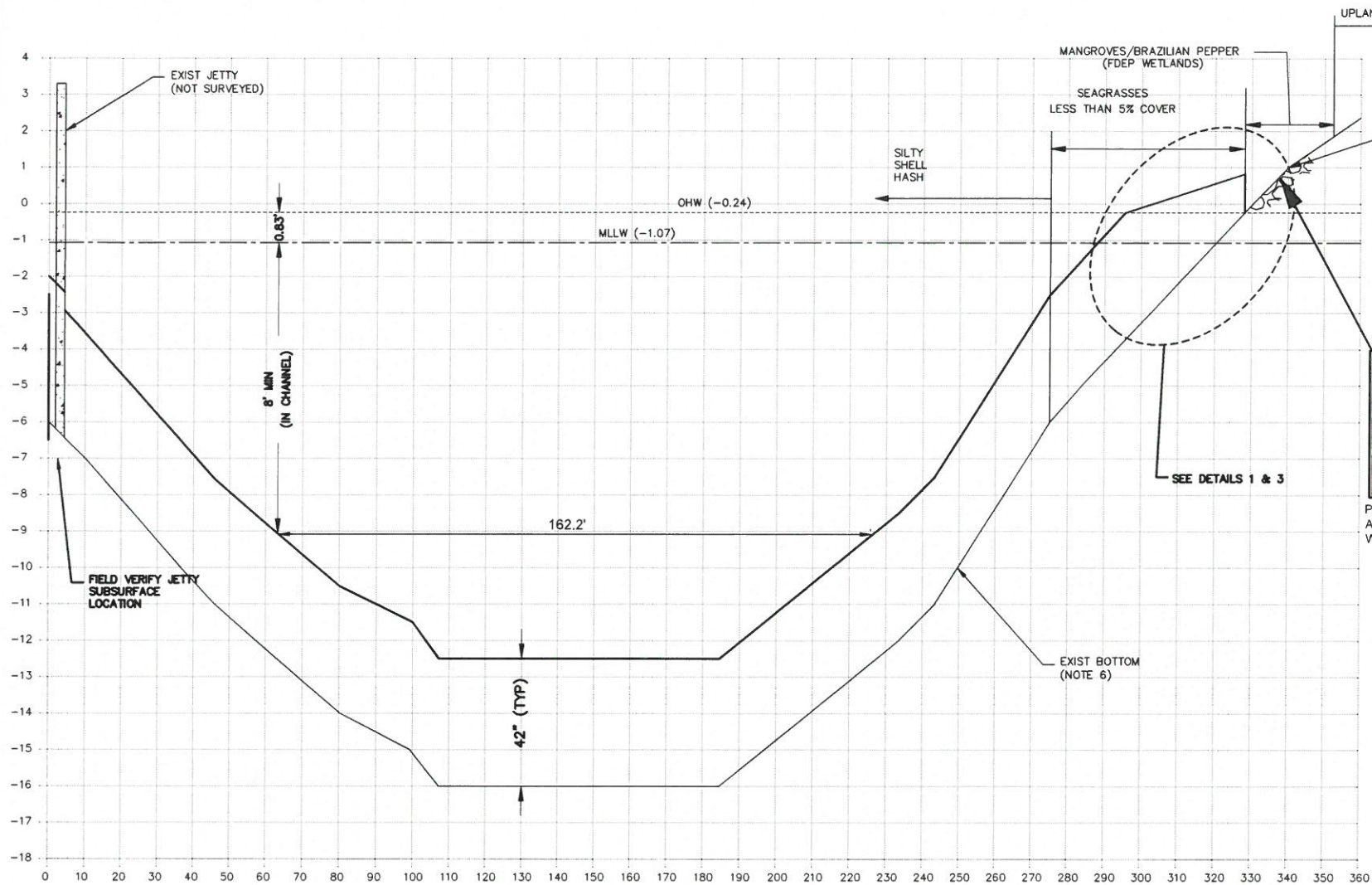


PHOTO 1: EXISTING CONDITIONS AT LOCATION WHERE DETERRENT WALL ABUTS SHORELINE

RIPRAP INSTALLATION NOTES

1 SUBGRADE PREPARATION

- 1.1 CARE SHALL BE EXERCISED SO AS NOT TO EXCAVATE BELOW THE GRADES SHOWN ON THE CONTRACT DRAWINGS, UNLESS DIRECTED BY THE ENGINEER TO REMOVE UNSATISFACTORY MATERIALS. ANY EXCESSIVE EXCAVATION SHALL BE FILLED WITH APPROVED BACKFILL MATERIAL.
- 1.2 UNSATISFACTORY SOILS AND SOILS CONTAINING CLODS, ROOTS, SOD, BRUSH OR OTHER ORGANIC MATERIALS SHALL BE REMOVED, BACKFILLED WITH APPROVED MATERIAL. SHOULD THE SUBGRADE SURFACE FOR ANY REASON BECOME ROUGH, CORRUGATED, OR UNEVEN, PRIOR TO RIPRAP INSTALLATION, SUCH UNSATISFACTORY PORTION SHALL BE SCARIFIED, REWORKED OR REPLACED AS DIRECTED BY THE ENGINEER. WHERE SUCH AREAS ARE BELOW THE ALLOWABLE GRADES, THEY SHALL BE BROUGHT TO GRADES BY REMOVING MATERIAL OR REWORKING EXISTING MATERIAL. THE SUBGRADE SHALL BE RAKED, SCREEDDED, OR ROLLED BY HAND OR MACHINE TO ACHIEVE A SMOOTH SURFACE THAT IS FREE OF LOOSE MATERIAL.

2 GEOTEXTILE PLACEMENT

- 2.1 IMMEDIATELY PRIOR TO PLACING THE GEOTEXTILE, THE PREPARED SUBGRADE SHALL BE INSPECTED BY THE OWNER. THE GEOTEXTILE SHALL BE PLACED DIRECTLY ON THE PREPARED AREA, IN INTIMATE CONTACT WITH THE SUBGRADE AND FREE OF FOLDS OR WRINKLES. THE GEOTEXTILE SHALL BE PLACED IN SUCH A MANNER THAT PLACEMENT OF THE RIPRAP WILL NOT EXCESSIVELY STRETCH OR TEAR THE GEOTEXTILE. AFTER GEOTEXTILE PLACEMENT, THE WORK AREA SHALL NOT BE DISTURBED SO AS TO RESULT IN A LOSS OF INTIMATE CONTACT WITH THE SUBGRADE. THE GEOTEXTILE SHALL NOT BE EXPOSED LONGER THAN THE MANUFACTURER'S RECOMMENDATION TO MINIMIZE POTENTIAL DAMAGE DUE TO ULTRAVIOLET RADIATION.

- 2.2 THE GEOTEXTILE SHALL BE PLACED SO THAT UPSTREAM STRIPS OVERLAP DOWNSTREAM STRIPS AND SO THAT UPSLOPE STRIPS OVERLAP DOWNSLOPE STRIPS. OVERLAPS SHALL BE IN THE DIRECTION OF FLOW WHEREVER POSSIBLE. THE LONGITUDINAL AND TRANSVERSE JOINTS SHALL BE OVERLAPPED AT LEAST 3 FT (91 CM) FOR BELOW WATER INSTALLATIONS AND AT LEAST 1.5 FT (46 CM) FOR DRY INSTALLATIONS. IF A SEWN SEAM IS TO BE USED FOR THE SEAMING OF THE GEOTEXTILE, THE THREAD TO BE USED SHALL CONSIST OF HIGH STRENGTH POLYPROPYLENE AND SHALL BE RESISTANT TO ULTRAVIOLET RADIATION. THE GEOTEXTILE SHALL EXTEND INTO THE TOP, TOE AND SIDE TERMINATION POINTS OF THE REVETMENT.

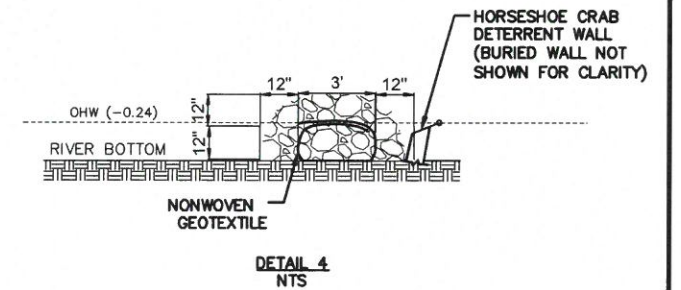
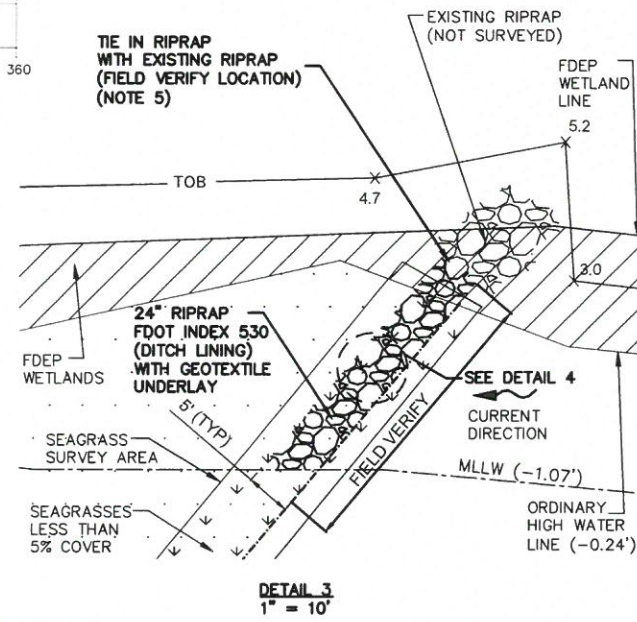
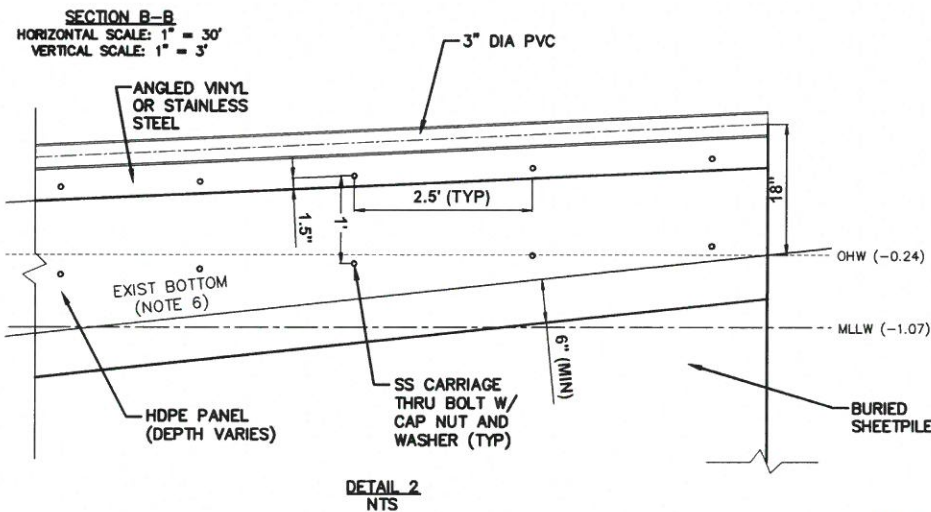
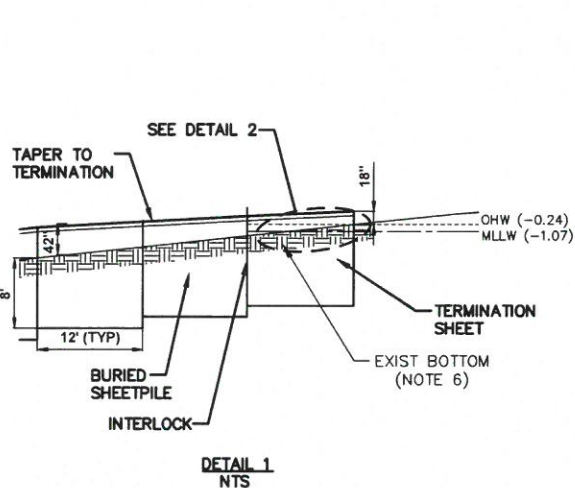
- 2.3 ANCHORING PINS WITH WASHERS ARE RECOMMENDED AT 3 FT INTERVALS ALONG THE MIDPOINT OF THE OVERLAPS.

3 RIPRAP PLACEMENT

- 3.1 THE STONE GRADATION SHOULD BE PREPARED BEFORE PLACEMENT. PREPARING THE GRADATION AS IT IS PLACED IS NOT ACCEPTABLE.
- 3.2 PLACE RIPRAP TO MINIMIZE SEGREGATION OF RIPRAP BY SIZE DURING PLACEMENT AND AVOID DISPLACING THE UNDERLYING MATERIALS. THE LARGER STONE SHOULD BE WELL DISTRIBUTED AND THE FINISHED STONE PROTECTION SHOULD BE FREE FROM POCKETS OF SMALL STONES AND CLUSTERS OF LARGE STONES.
- 3.3 DROPPING STONE FROM HEIGHTS GREATER THAN 3 FEET CAN RUPTURE GEOTEXTILE FABRIC. GREATER DROP HEIGHTS ARE ALLOWABLE UNDERWATER.
- 3.4 PROPER PLACEMENT REQUIRES BEGINNING AT THE TOE AND PROCEEDING UP THE SLOPE.
- 3.5 IN FLOWING WATER, WORK FROM DOWNSTREAM TO UPSTREAM. PREPARE SLOPE A SHORT DISTANCE AHEAD OF THE ROCK.
- 3.6 FILL VOIDS IN RIPRAP LAYER BY CAREFUL TAMPING OF PLACED RIPRAP TO ACHIEVE AN INTERLOCKED RIPRAP LAYER. TAKE CARE TO MINIMIZE RIPRAP BREAKAGE DURING TAMPING.
- 3.7 PROTECT HORSESHOE CRAB DETERRENT WALL DURING RIPRAP INSTALLATION.
- 3.8 COFFERDAMMING AND DEWATERING OF THE CANAL SHORELINES IS NOT ANTICIPATED, UNLESS OTHERWISE NOTED.

RIPRAP GEOTEXTILE UNDERLAYMENT SPECIFICATION

4. THE GEOTEXTILE UNDERLAYMENT SHALL BE A NEEDLE-PUNCHED NONWOVEN GEOTEXTILE MADE OF 100% POLYPROPYLENE STAPLE FILAMENTS, STABLE TO RESIST ULTRAVIOLET AND BIOLOGICAL DETERIORATION, ROTTING, NATURALLY ENCOUNTERED BASICS AND ACIDS. THEY SHALL BE FORMED INTO A NETWORK SUCH THAT THE FILAMENTS OR YARNS RETAIN DIMENSIONAL STABILITY RELATIVE TO EACH OTHER, INCLUDING SELVAGES. THESE MATERIALS SHALL CONFORM TO THE PHYSICAL REQUIREMENTS SHOWN IN THE TABLE BELOW. THE FILTER FABRIC SHALL BE FREE OF DEFECTS OF FLAWS WHICH WOULD SIGNIFICANTLY AFFECT ITS MECHANICAL OR HYDRAULIC PROPERTIES. THE GEOTEXTILE WILL SATISFY AASHTO M-288-08 FOR CLASS 1 APPLICATIONS.



- LEGEND
- MLLW - MEAN LOW LOWER WATER
 - OHW - ORDINARY HIGH WATER
 - PROPOSED RIPRAP
 - EXISTING GRADE

NOTES:

5. MANGROVE IMPACTS ARE NOT APPROVED FOR THIS PROJECT. IF MANGROVES MUST BE IMPACTED, REPORT TO OWNER IMMEDIATELY FOR PERMIT MODIFICATION AND APPROVAL PRIOR TO IMPACTING MANGROVES.
6. BOTTOM CONTOURS SHOWN AS INTERPOLATED FROM INTAKE CANAL BATHYMETRIC SURVEY GRID. ACTUAL ELEVATIONS BETWEEN GRID POINTS MAY VARY FROM THESE SHOWN. CONTRACTOR SHALL TREAT VARIATIONS IN CHANNEL ELEVATIONS AS ROUTINE DURING THE PERFORMANCE OF THIS WORK.

N.A.V.D. 1988
ELEVATIONS

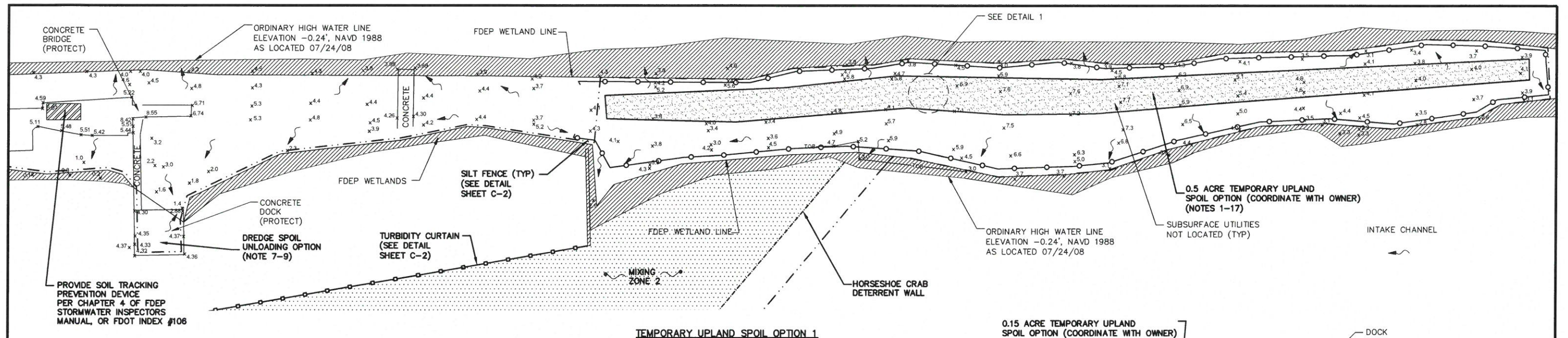
ORDINARY HIGH WATER LINE = -0.24' N.A.V.D. 1988

OSHUA P. SCHMIDT
LICENSE
ENGINEER
64059
FLORIDA
STATE OF FLORIDA
PROFESSIONAL ENGINEER

ENERCON
TEMPLE TERRACE, FLORIDA
FLORIDA POWER & LIGHT
CAPE CANAVERAL POWER PLANT

HORSESHOE CRAB DETERRENT WALL
CHANNEL DETAILS

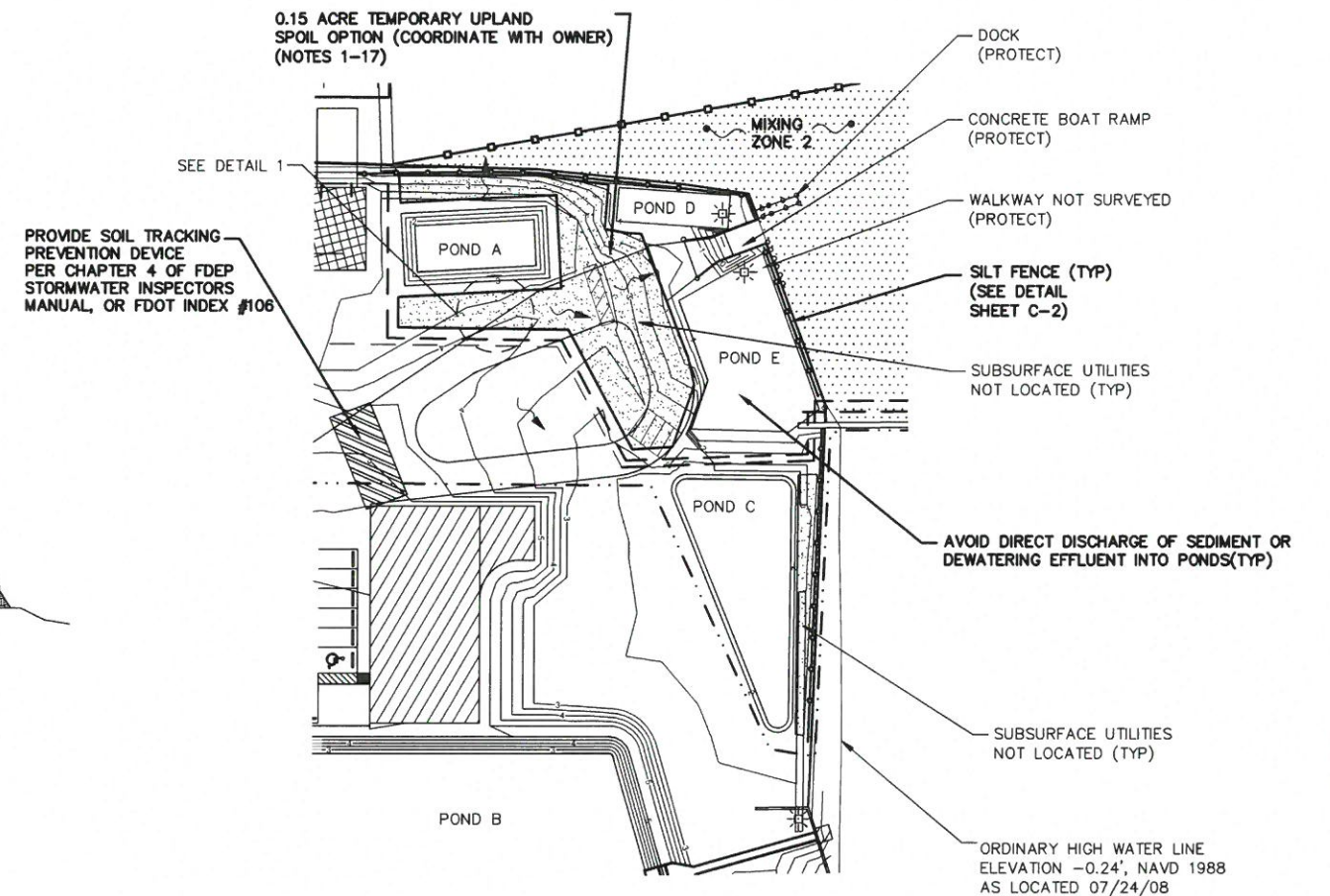
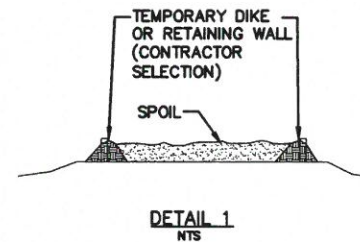
REV
0
FPLCORP005
SHEET C-8



TEMPORARY UPLAND SPOIL OPTION 1

TEMPORARY SPOIL AREA NOTES

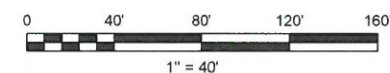
1. UNLESS APPROVED BY OWNER TO REMAIN ONSITE, ALL DREDGED SEDIMENT SHALL BE DISPOSED IN AN OWNER APPROVED LANDFILL.
2. CONTRACTOR SHALL DESIGN AND SUPPLY A TEMPORARY DREDGE SPOIL HANDLING AND MANAGEMENT SYSTEM TO ADDRESS SEDIMENT REMOVED DURING DREDGING OPERATIONS. CONTRACTOR SHALL BE RESPONSIBLE FOR DETERMINING THE WEIGHT, VOLUME AND CHARACTERISTICS OF SPOIL MATERIAL TO BE ADDRESSED.
3. THE TEMPORARY DREDGE SPOIL HANDLING AND MANAGEMENT SYSTEM SHALL UTILIZE BARGES, UPLAND STAGING AREAS, AND/OR MECHANICAL PROCESSING SYSTEMS FOR TEMPORARY DREDGE SPOIL HANDLING AND MANAGEMENT. THE TEMPORARY DREDGE SPOIL HANDLING AND MANAGEMENT SYSTEM SHALL NOT UTILIZE WETLANDS OR AQUATIC AREAS FOR DREDGE SPOIL MANAGEMENT.
4. AS PART OF THE TEMPORARY DREDGE SPOIL HANDLING AND MANAGEMENT SYSTEM, CONTRACTOR SHALL DEWATER SEDIMENT AS REQUIRED FOR EFFICIENT DREDGE HANDLING AND MANAGEMENT.
5. CONTRACTOR MAY UTILIZE TEMPORARY SPOIL AREAS FOR SPOIL MATERIAL AND EQUIPMENT STAGING. CONTRACTOR SHALL BE RESPONSIBLE FOR DESIGN OF TEMPORARY SPOIL AREAS BASED ON THE SPOIL MATERIAL TO BE ADDRESSED.
6. CONTRACTOR SHALL DESIGN THE SPOIL HANDLING AND MANAGEMENT SYSTEM TO CONTROL TURBIDITY DURING ALL SEDIMENT DEWATERING OPERATIONS. CONTRACTOR SHALL UTILIZE FDEP APPROVED POLYMERS/FLOCCULANTS AS REQUIRED TO CONTROL TURBID DISCHARGE FROM DEWATERING.
7. CONTRACTOR SHALL PROVIDE AND MAINTAIN STABILIZED DEWATERING DISCHARGE THAT DOES NOT CAUSE OR CONTRIBUTE TO EROSION. CONTRACTOR SHALL AVOID USE OF EXISTING STORMWATER PONDS FOR DEWATERING. KEEP PONDS FREE FROM SEDIMENT. USE MIXING ZONES FOR DEWATERING DISCHARGE.
8. CONTRACTOR SHALL CONTROL SEDIMENT RELEASE AND TURBIDITY RELATED TO LOADING/UNLOADING AND MATERIAL TRANSFER.
9. CONTRACTOR SHALL COORDINATE ONSITE AND/OR OFFSITE HAULING WITH OWNER, INCLUDING IDENTIFICATION OF HAUL ROUTE AND ROADWAY PROTECTION.
10. CONTRACTOR WILL BE RESPONSIBLE FOR IDENTIFYING AND OBTAINING LOCAL GOVERNMENT APPROVALS FOR HAULING, AS MAY BE REQUIRED.
11. SUBSURFACE UTILITIES ARE PRESENT IN THE WORK AREA AND HAVE NOT BEEN LOCATED. CONTRACTOR SHALL BE RESPONSIBLE FOR LOCATING AND PROTECTING ALL SUBSURFACE UTILITIES IN THE WORK AREA, WHETHER IDENTIFIED ON THE DRAWINGS OR NOT.
12. SEE GENERAL NOTES SHEET C-1.
13. SEE ENVIRONMENTAL PROTECTION NOTES SHEET C-2.
14. RESTORE ALL AREAS DISTURBED BY CONSTRUCTION. CONTRACTOR ACKNOWLEDGES MARINE SALTWATERS MAY DAMAGE SOD AND LANDSCAPING. DAMAGED SOD AND LANDSCAPING SHALL BE RESTORED.
15. UNLESS IN A MIXING ZONE, TURBIDITY MORE THAN 29 NTU'S OVER BACKGROUND EXCEEDS STATE WATER QUALITY STANDARDS AND SHALL NOT BE ALLOWED.
16. ACCESS THROUGH THE WETLAND IS PROHIBITED.
17. MANGROVE IMPACTS ARE NOT APPROVED FOR THIS PROJECT. IF MANGROVES MUST BE IMPACTED, REPORT TO OWNER IMMEDIATELY FOR PERMIT MODIFICATION AND APPROVAL PRIOR TO IMPACTING MANGROVES.



TEMPORARY UPLAND SPOIL OPTION 2

LEGEND

- | | |
|---------------------------------|---------------------------------|
| --- MLLW - MEAN LOW LOWER WATER | [Hatched Box] EXISTING CONCRETE |
| --- OHW - ORDINARY HIGH WATER | [Grid Box] EXISTING STRUCTURE |
| [Stippled Box] DREDGE SPOIL | --- PROPOSED PIPING |
| [Arrow] DRAINAGE DIRECTION | |
| --- PROJECT BOUNDARY | |



	ENERCON TEMPLE TERRACE, FLORIDA FLORIDA POWER & LIGHT CAPE CANAVERAL POWER PLANT SPOIL MANAGEMENT	
	PROJECT NO. FPLCORP005	REV 0
	SHEET C-9	
	SCALE 1" = 40'	

NOTES

1. MANGROVE IMPACTS ARE NOT APPROVED FOR THIS PROJECT. IF MANGROVES MUST BE IMPACTED, REPORT TO OWNER IMMEDIATELY FOR PERMIT MODIFICATION AND APPROVAL PRIOR TO IMPACT TO MANGROVES.
2. BOTTOM CONTOURS SHOWN AS INTERPOLATED FROM INTAKE CANAL BATHYMETRIC SURVEY GRID. ACTUAL ELEVATIONS BETWEEN GRID POINTS MAY VARY FROM THESE SHOWN. CONTRACTOR SHALL TREAT VARIATIONS IN CHANNEL ELEVATIONS AS ROUTINE DURING THE PERFORMANCE OF THIS WORK.

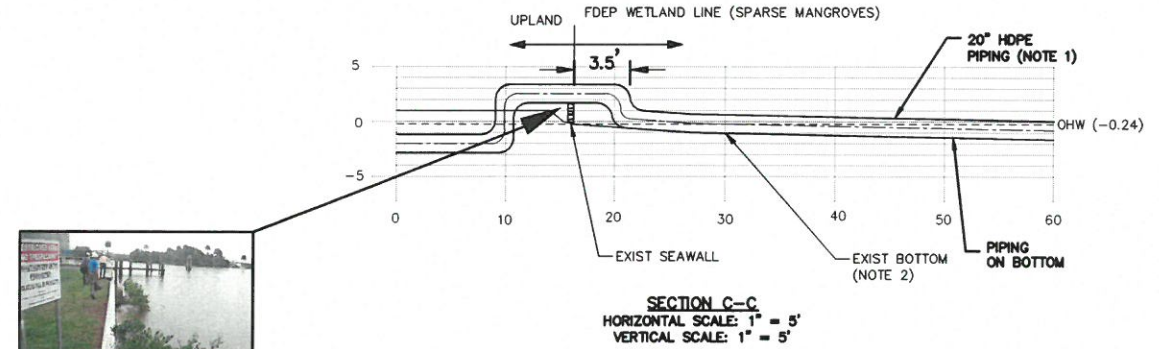
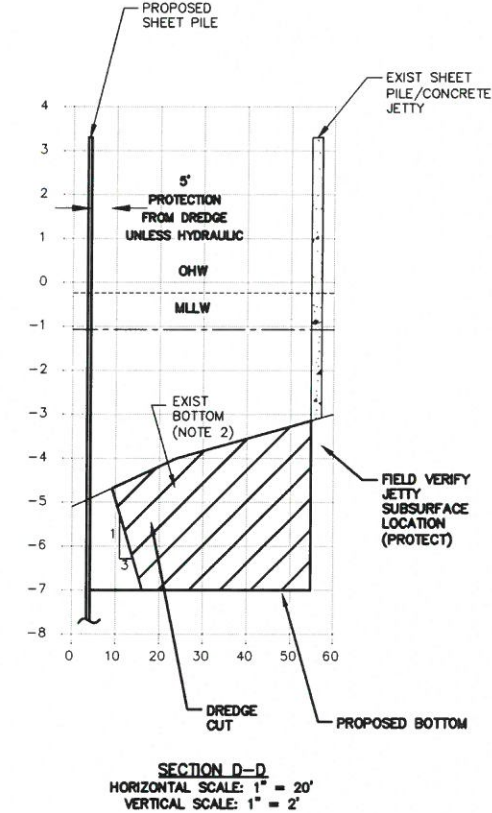
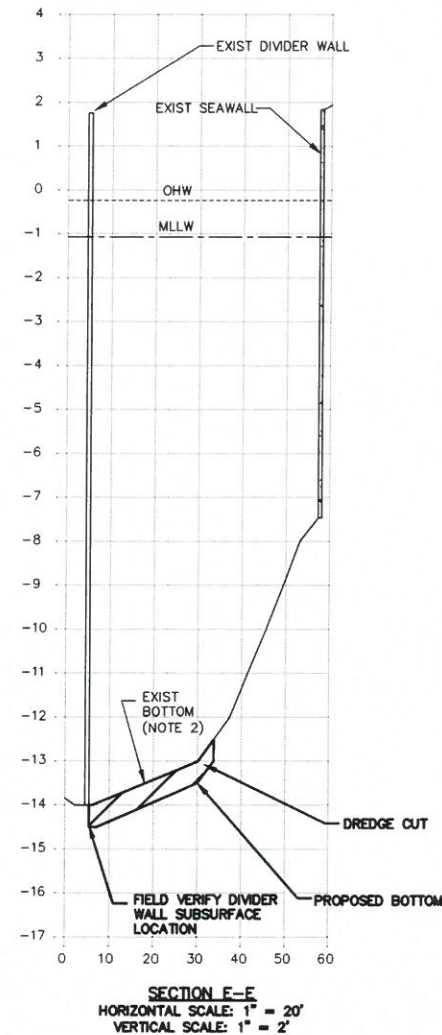
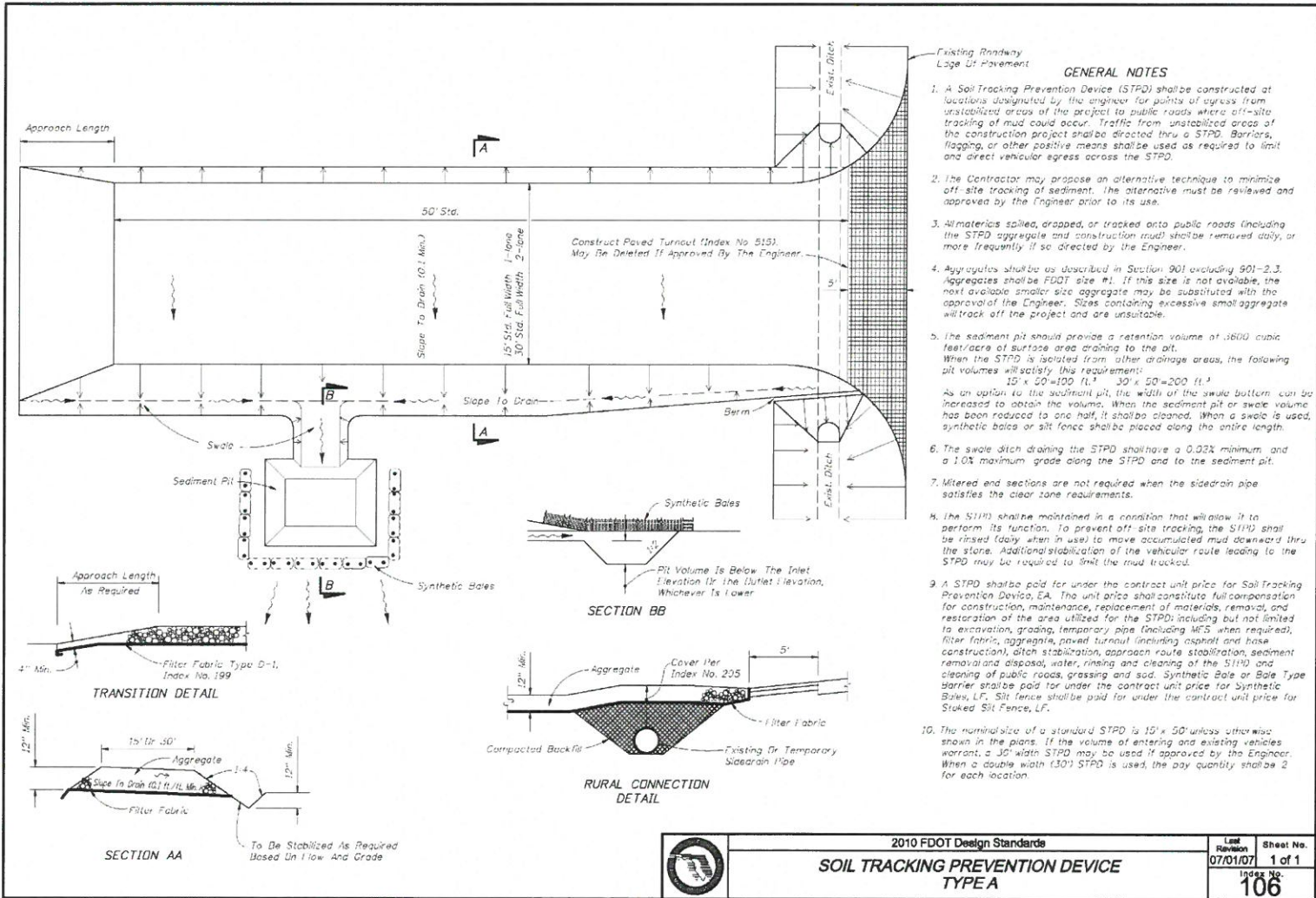
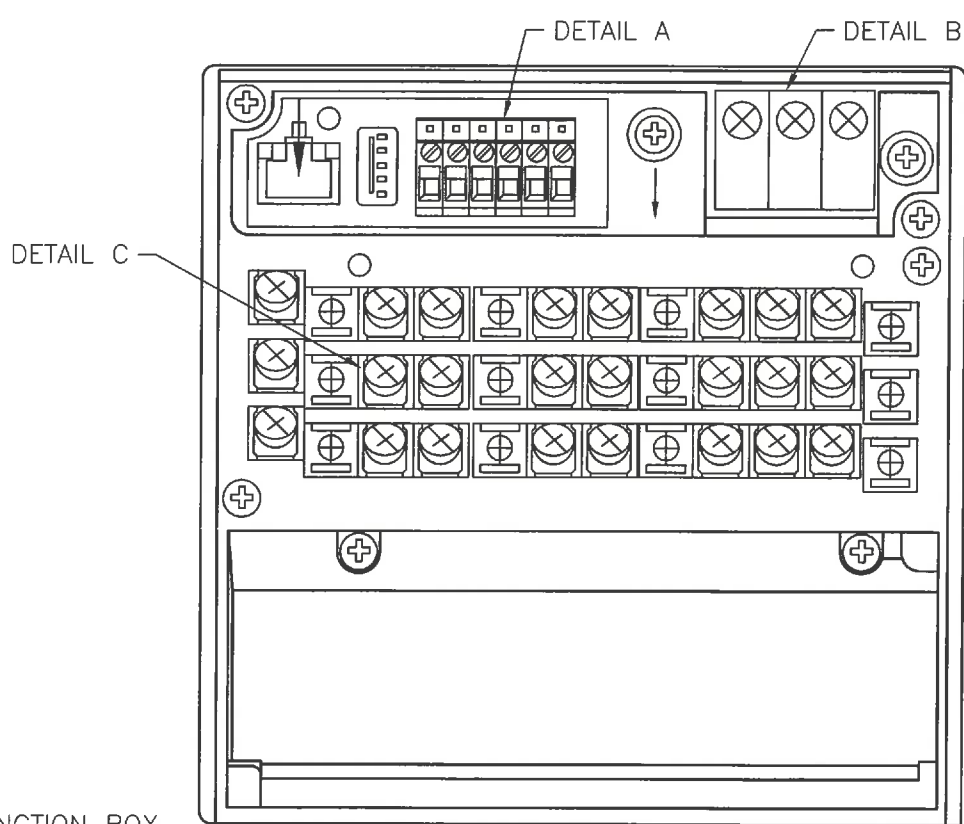


PHOTO 2: EXISTING CONDITIONS AT LOCATION WHERE PIPING CROSSES SEAWALL

PROFESSIONAL ENGINEER
JOSHUA P. SCHMITZ
LICENSE NO. 64059
STATE OF FLORIDA
EXPIRATION DATE 12/31/16

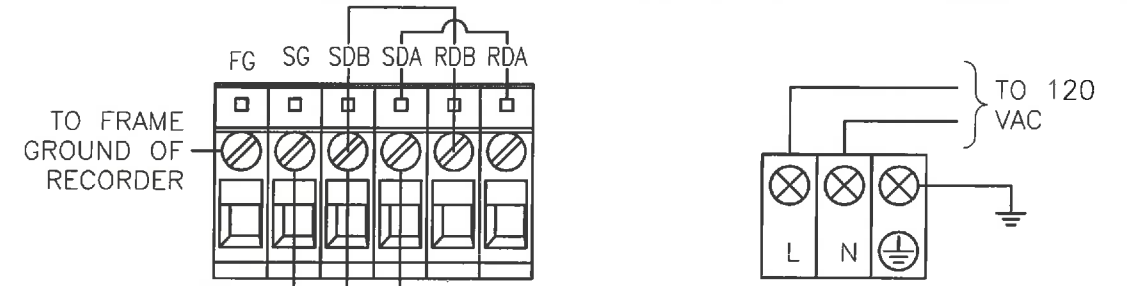
ENERCON
TEMPLE TERRACE, FLORIDA
FLORIDA POWER & LIGHT
CAPE CANAVERAL POWER PLANT
MISC DETAILS

STATIONING NO. 1+00.00
FPLCORP005
REV 0
SHEET C-10



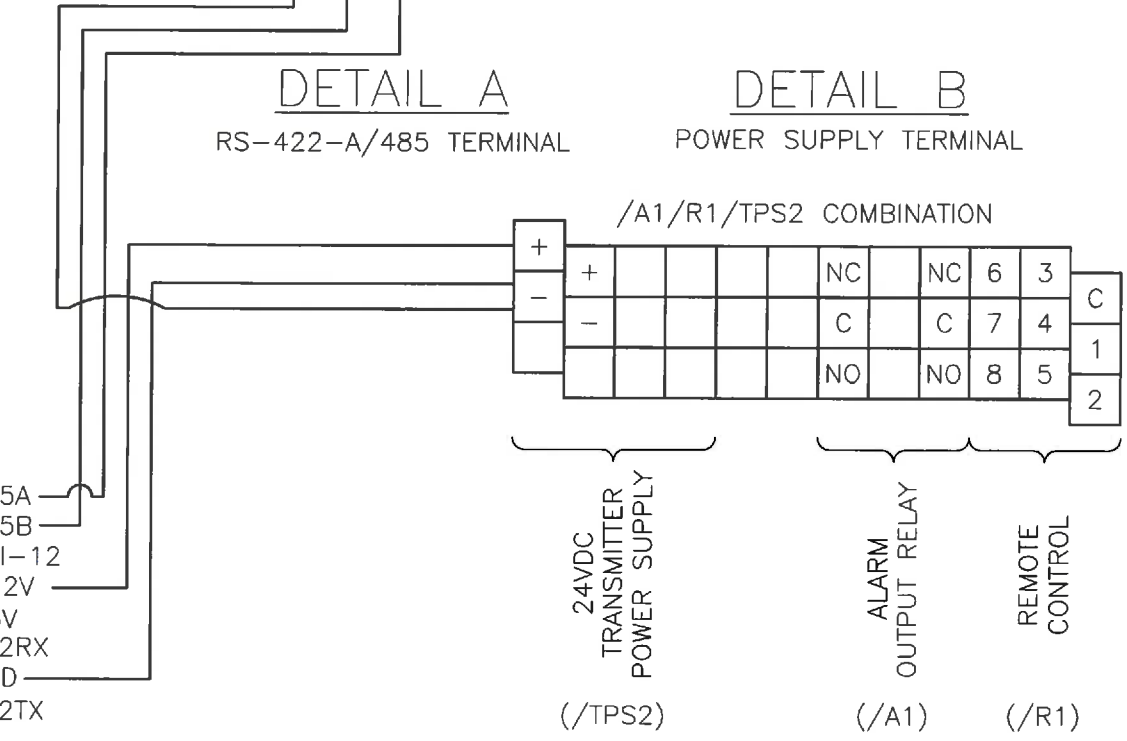
RECORDER WIRING

PART #	MANUFACTURER	DESCRIPTION	QTY.
T-NODE FR	NEXSENS	T-NODE FR THERMISTOR STRING SENSOR, UW CONNECTOR	6
UW-30	NEXSENS	UNDERWATER CABLE ASSEMBLY, 30m	6
UW-FL183R	NEXSENS	UW RECEPTACLE TO FLYING LEAD CABLE, 183m	1
DX1006 - 2-2-A3/C3/TPS2/USB1	YOKOGAWA	6-CHANNEL PAPERLESS RECORDER	1
N/A	N/A	1" GALVANIZED CONDUIT	AS-NEEDED
N/A	N/A	1" CONDUIT FITTINGS/JUNCTIONS/ELBOWS	AS-NEEDED

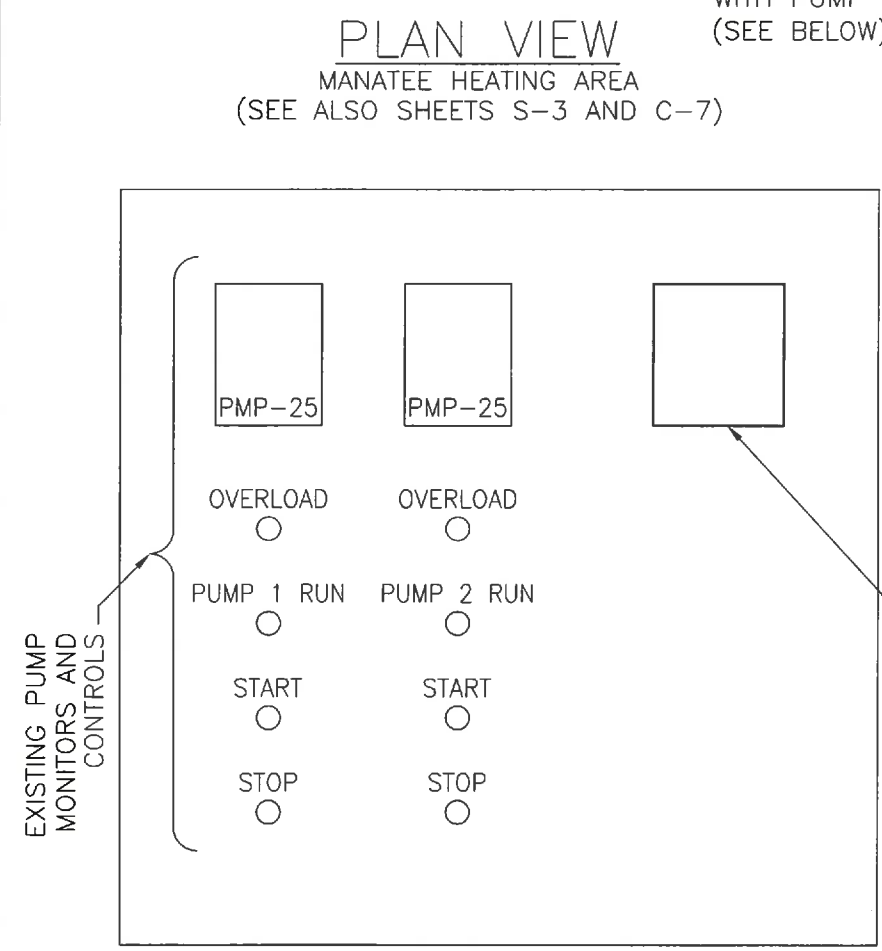


DETAIL A
RS-422-A/485 TERMINAL

DETAIL B
POWER SUPPLY TERMINAL



DETAIL C
A1/R1/TPS2 COMBINATION



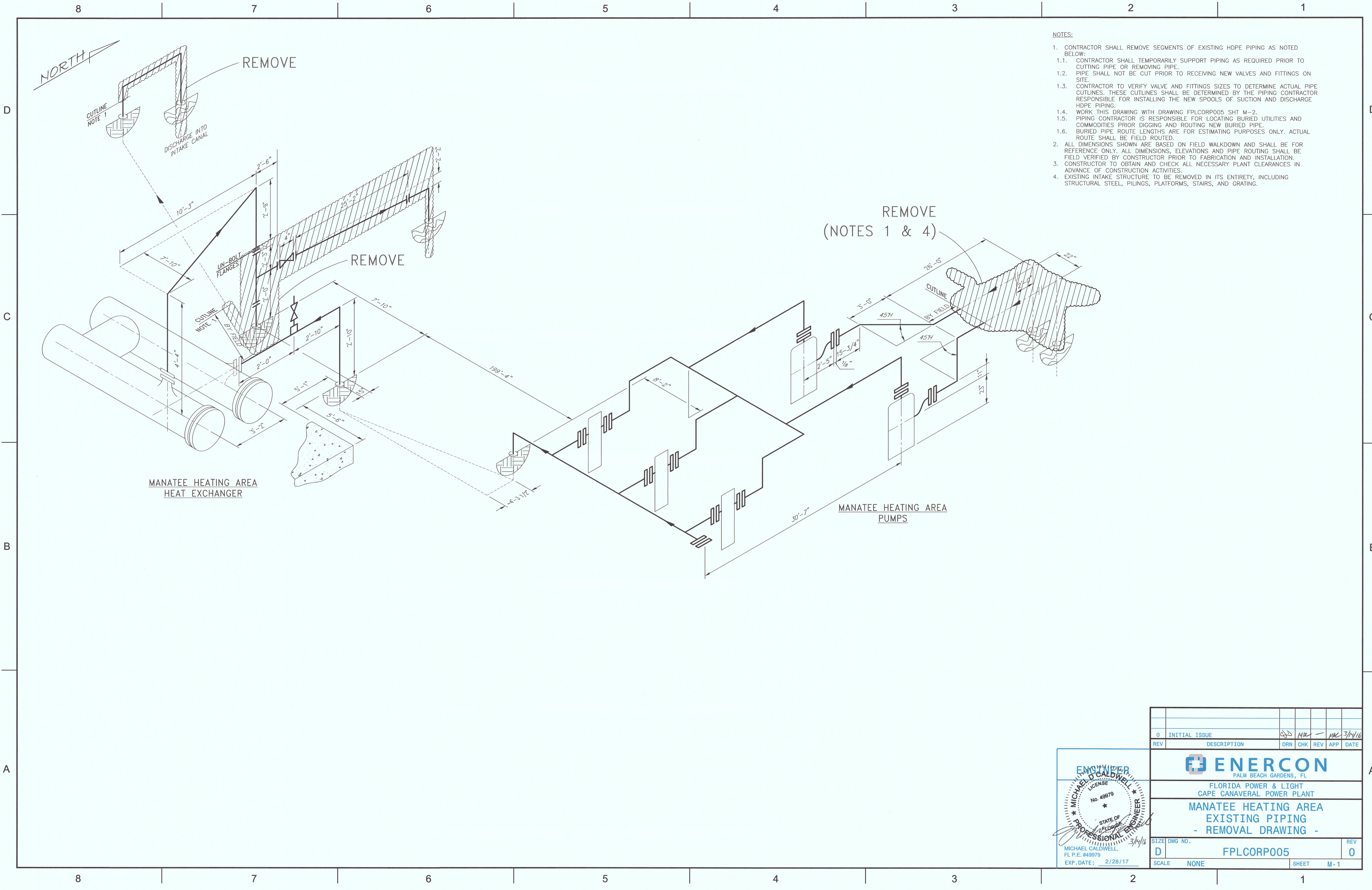
PUMP CONTROL JUNCTION BOX

COLOR	SIGNAL
ORANGE	232TX (PASS THROUGH)
BLACK	GND
YELLOW	232RX (PASS THROUGH)
WHITE	+5V (PASS THROUGH)
RED	+12V
BROWN	SDI-12 (PASS THROUGH)
BLUE	485B
GREEN	485A

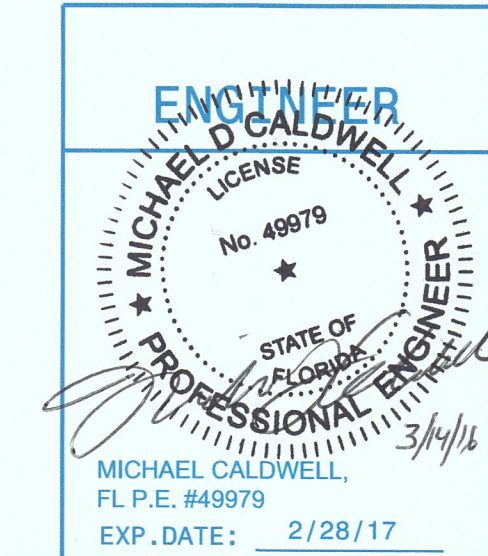
NOTES:

1. REPLACE EXISTING METAL SHIELD GUARDING THE PMP-25 PUMP MONITORS WITH A LONGER SHIELD THAT GUARDS THE NEW YOKOGAWA RECORDER.
2. ALL UNUSED CONDUCTORS TO BE DISCONNECTED AND TAPED BACK WITH ELECTRICAL TAPE.
3. FIELD ROUTE 1" CONDUIT FROM WEST WALL OF MANATEE HEATING AREA ABOVE WATER LINE TO EXISTING TERMINAL BOX. MOUNT ALONG EXISTING JETTY, THEN BURY WITH SUCTION PIPING TO EXISTING PUMP CONTROL JUNCTION BOX.
4. ROUTE CABLE IN 2" PVC PIPING ALONG MANATEE HEATING AREA AS SHOWN ON SHEET S-3. FIELD TO TRANSITION FROM CONDUIT TO PIPE W/ FITTINGS AS NECESSARY.

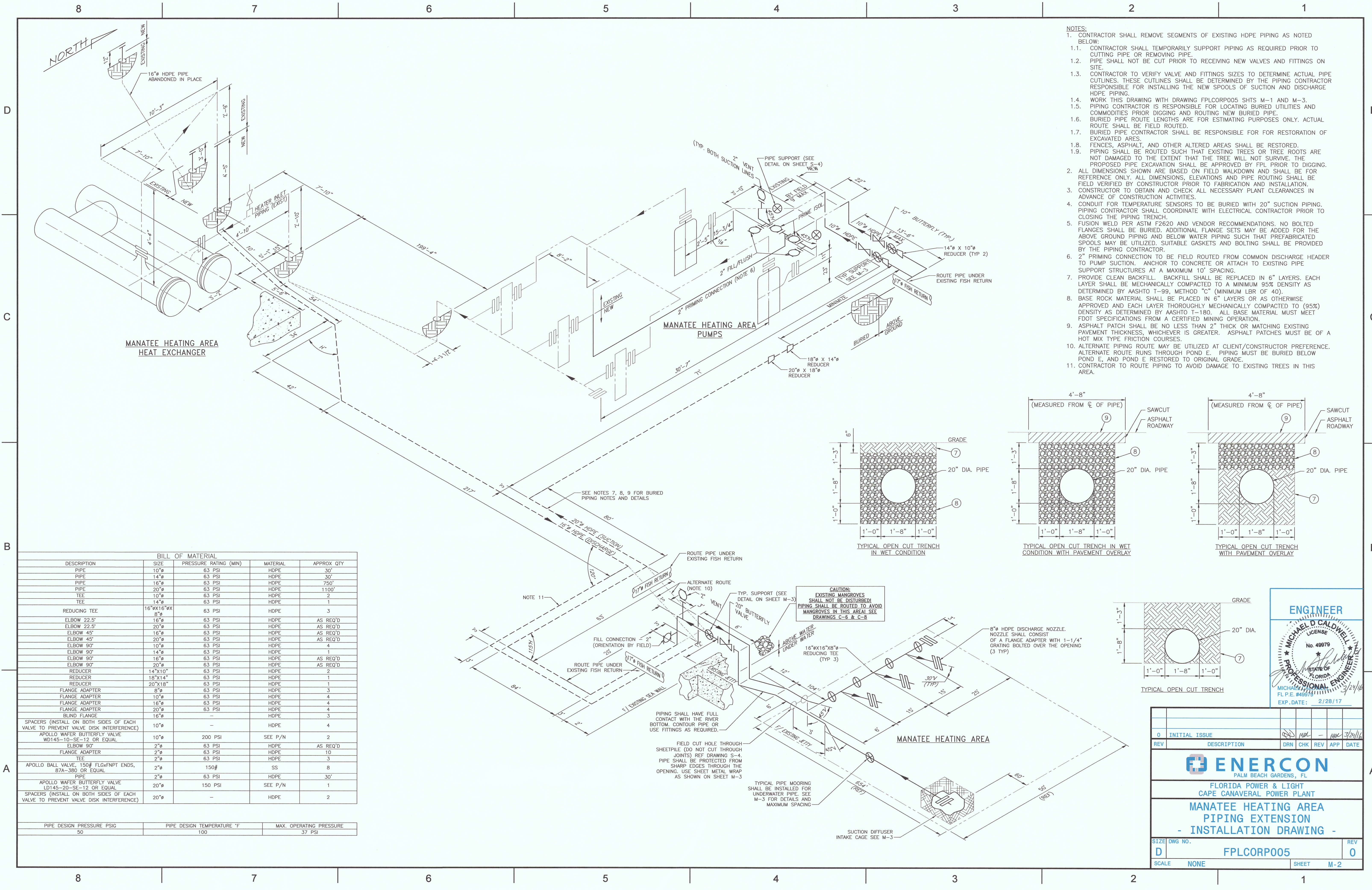
The image shows the top portion of a technical drawing. On the left is the Enercon logo, which consists of a stylized 'E' inside a square frame. To the right of the logo, the word 'ENERCON' is written in large, bold, blue capital letters. Below 'ENERCON', the text 'Kennesaw, GA' is written in a smaller font. Below this, the text 'FLORIDA POWER AND LIGHT' and 'CAPE CANAVERAL ENERGY CENTER UNIT 1' are written in blue capital letters. Below that, the text 'WATER TEMPERATURE MONITORING SYSTEM FOR MANATEE HEATING AREA' is written in large, bold, blue capital letters. At the bottom, there is a title block with a table structure. The table has three rows. The first row has three columns: 'SIZE', 'DWG NO.', and 'REV'. The second row has three columns: 'B', 'FPLCORP005', and '0'. The third row has three columns: 'SCALE', 'NONE', and 'SHEET E - 1'.



- NOTES:
- CONTRACTOR SHALL REMOVE SEGMENTS OF EXISTING HDPE PIPING AS NOTED BELOW:
 - CONTRACTOR SHALL TEMPORARILY SUPPORT PIPING AS REQUIRED PRIOR TO CUTTING PIPE OR REMOVING PIPE.
 - PIPE SHALL NOT BE CUT PRIOR TO RECEIVING NEW VALVES AND FITTINGS ON SITE.
 - CONTRACTOR TO VERIFY VALVE AND FITTINGS SIZES TO DETERMINE ACTUAL PIPE CUTLINES. THESE CUTLINES SHALL BE DETERMINED BY THE PIPING CONTRACTOR RESPONSIBLE FOR INSTALLING THE NEW SPOOLS OF SUCTION AND DISCHARGE HDPE PIPING.
 - WORK THIS DRAWING WITH DRAWING FPLCORP005 SHT M-2.
 - PIPING CONTRACTOR IS RESPONSIBLE FOR LOCATING BURIED UTILITIES AND COMMODITIES PRIOR DIGGING AND ROUTING NEW BURIED PIPE.
 - BURIED PIPE ROUTE LENGTHS ARE FOR ESTIMATING PURPOSES ONLY. ACTUAL ROUTE SHALL BE FIELD ROUTED.
 - ALL DIMENSIONS SHOWN ARE BASED ON FIELD WALKDOWN AND SHALL BE FOR REFERENCE ONLY. ALL DIMENSIONS, ELEVATIONS AND PIPE ROUTING SHALL BE FIELD VERIFIED BY CONSTRUCTOR PRIOR TO FABRICATION AND INSTALLATION.
 - CONSTRUCTOR TO OBTAIN AND CHECK ALL NECESSARY PLANT CLEARANCES IN ADVANCE OF CONSTRUCTION ACTIVITIES.
 - EXISTING INTAKE STRUCTURE TO BE REMOVED IN ITS ENTIRETY, INCLUDING STRUCTURAL STEEL, PILINGS, PLATFORMS, STAIRS, AND GRATING.

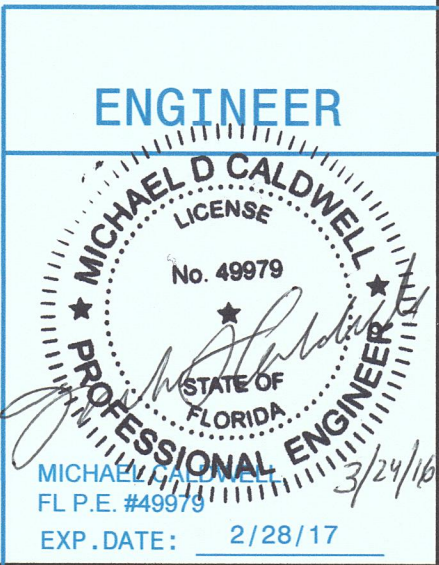


0	INITIAL ISSUE	DRN	CHK	REV	APP	DATE
0	INITIAL ISSUE	DRN	CHK	REV	APP	DATE
ENERCON PALM BEACH GARDENS, FL						
FLORIDA POWER & LIGHT CAPE CANAVERAL POWER PLANT						
MANATEE HEATING AREA EXISTING PIPING - REMOVAL DRAWING -						
SIZE	DWG NO.	REV				
D	FPLCORP005	0				
SCALE	NONE	SHEET M-1				

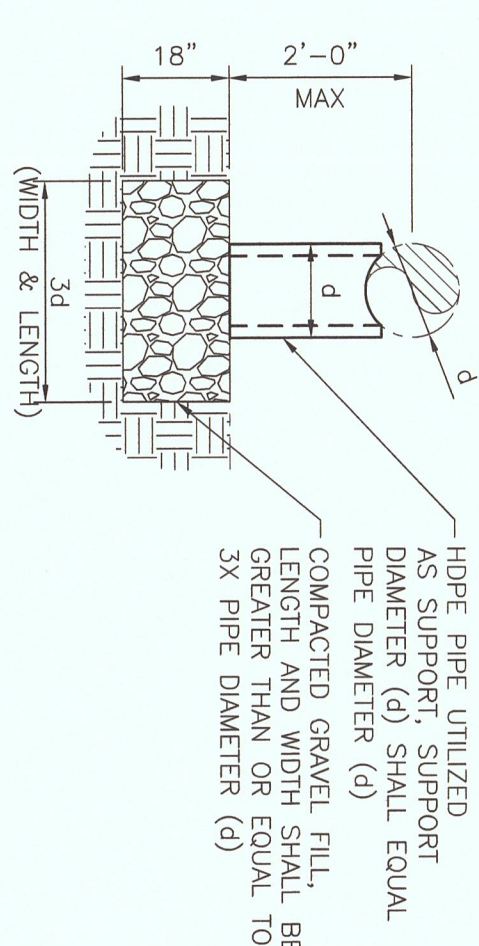
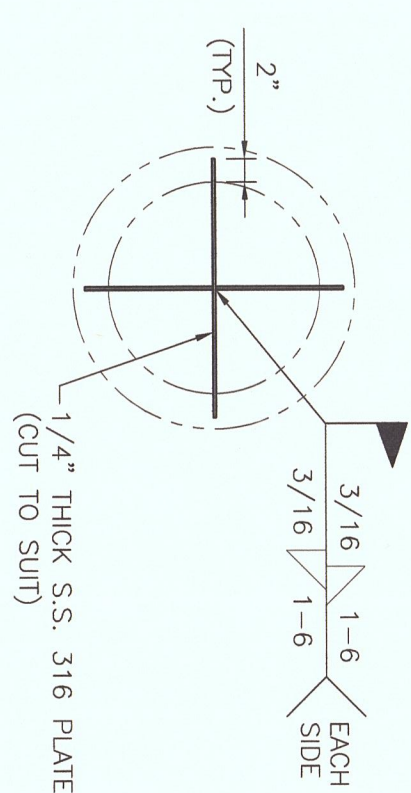
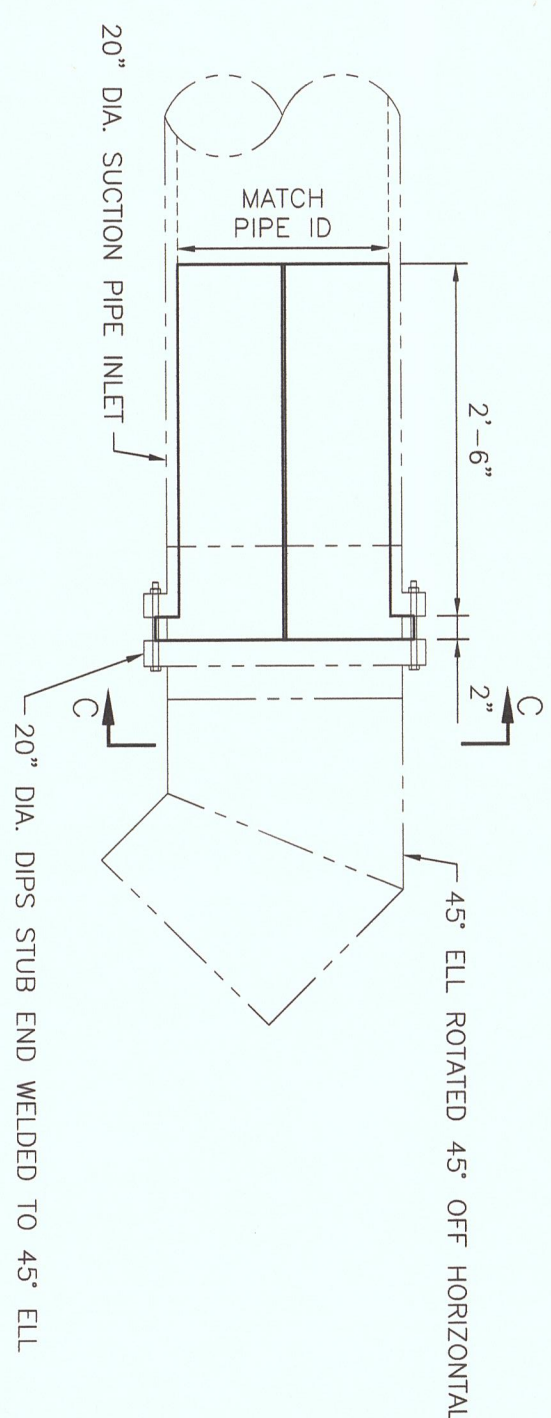
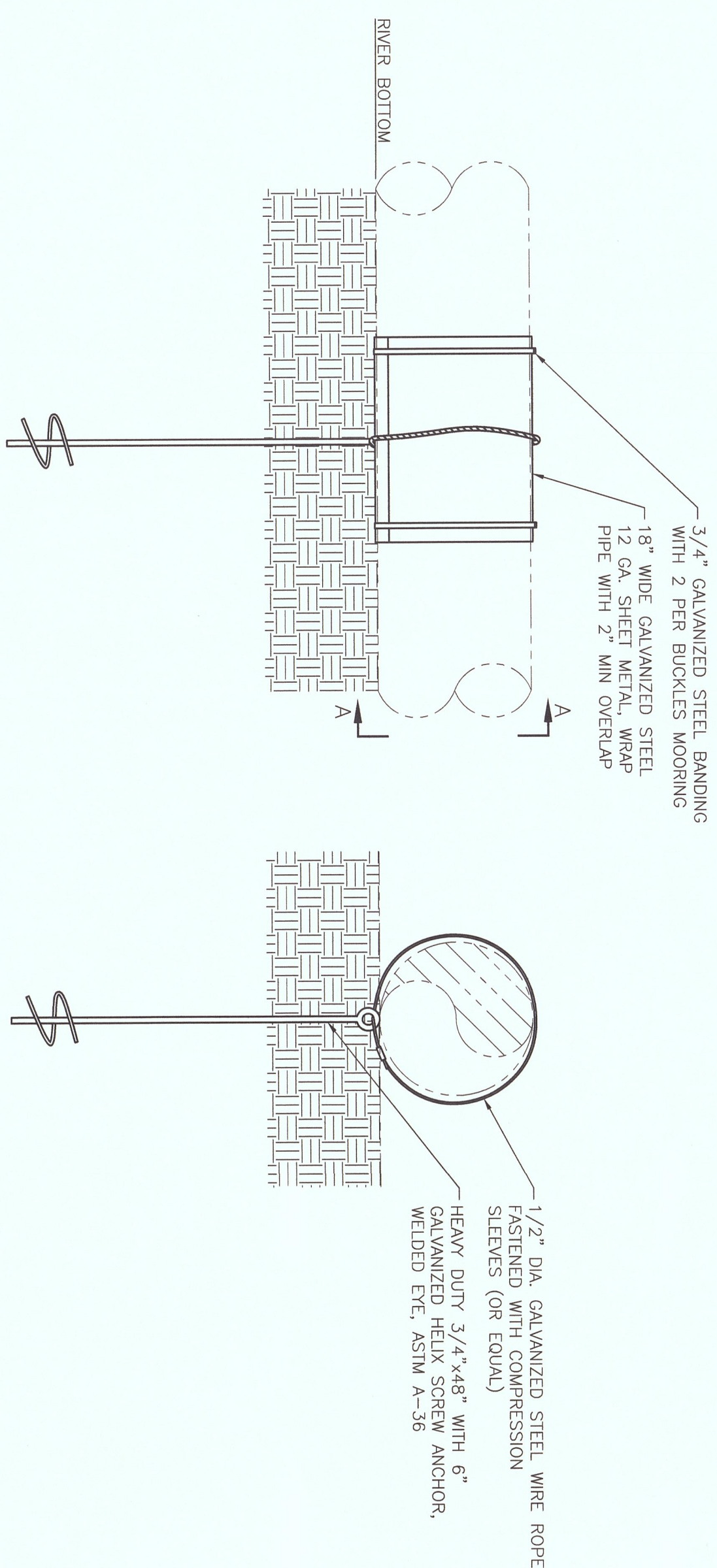


BILL OF MATERIAL				
DESCRIPTION	SIZE	PRESSURE RATING (MIN)	MATERIAL	APPROX QTY
PIPE	10"	63 PSI	HDPE	30'
PIPE	14"	63 PSI	HDPE	30'
PIPE	16"	63 PSI	HDPE	750'
PIPE	20"	63 PSI	HDPE	1100'
TEE	10"	63 PSI	HDPE	2
TEE	14"	63 PSI	HDPE	1
REDUCING TEE	16"X16"X8"	63 PSI	HDPE	3
ELBOW 22.5°	16"	63 PSI	HDPE	AS REQ'D
ELBOW 22.5°	20"	63 PSI	HDPE	AS REQ'D
ELBOW 45°	16"	63 PSI	HDPE	AS REQ'D
ELBOW 45°	20"	63 PSI	HDPE	AS REQ'D
ELBOW 90°	10"	63 PSI	HDPE	4
ELBOW 90°	14"	63 PSI	HDPE	1
ELBOW 90°	16"	63 PSI	HDPE	AS REQ'D
ELBOW 90°	20"	63 PSI	HDPE	AS REQ'D
REDUCER	14"X10"	63 PSI	HDPE	2
REDUCER	18"X14"	63 PSI	HDPE	1
REDUCER	20"X18"	63 PSI	HDPE	1
FLANGE ADAPTER	8"	63 PSI	HDPE	3
FLANGE ADAPTER	10"	63 PSI	HDPE	4
FLANGE ADAPTER	16"	63 PSI	HDPE	4
FLANGE ADAPTER	20"	63 PSI	HDPE	4
BLIND FLANGE	16"	-	HDPE	3
SPACERS (INSTALL ON BOTH SIDES OF EACH VALVE TO PREVENT VALVE DISK INTERFERENCE)	10"	-	HDPE	4
APOLLO WAFER BUTTERFLY VALVE WD145-10-SE-12 OR EQUAL	10"	200 PSI	SEE P/N	2
ELBOW 90°	2"	63 PSI	HDPE	AS REQ'D
FLANGE ADAPTER	2"	63 PSI	HDPE	10
TEE	2"	63 PSI	HDPE	3
APOLLO BALL VALVE, 150# FLGXFNPT ENDS, 87A-380 OR EQUAL	2"	150#	SS	8
PIPE	2"	63 PSI	HDPE	30'
APOLLO WAFER BUTTERFLY VALVE LD145-20-SE-12 OR EQUAL	20"	150 PSI	SEE P/N	1
SPACERS (INSTALL ON BOTH SIDES OF EACH VALVE TO PREVENT VALVE DISK INTERFERENCE)	20"	-	HDPE	2

PIPE DESIGN PRESSURE PSIG	PIPE DESIGN TEMPERATURE °F	MAX. OPERATING PRESSURE
50	100	37 PSI



0	INITIAL ISSUE	DRN	CHK	REV	APP	DATE
REV	DESCRIPTION	DRN	CHK	REV	APP	DATE
ENERCON PALM BEACH GARDENS, FL						
FLORIDA POWER & LIGHT CAPE CANAVERAL POWER PLANT						
MANATEE HEATING AREA PIPING EXTENSION - INSTALLATION DRAWING -						
SIZE	DWG NO.	FPLCORP005				REV
D						0
SCALE	NONE	SHEET				M-2



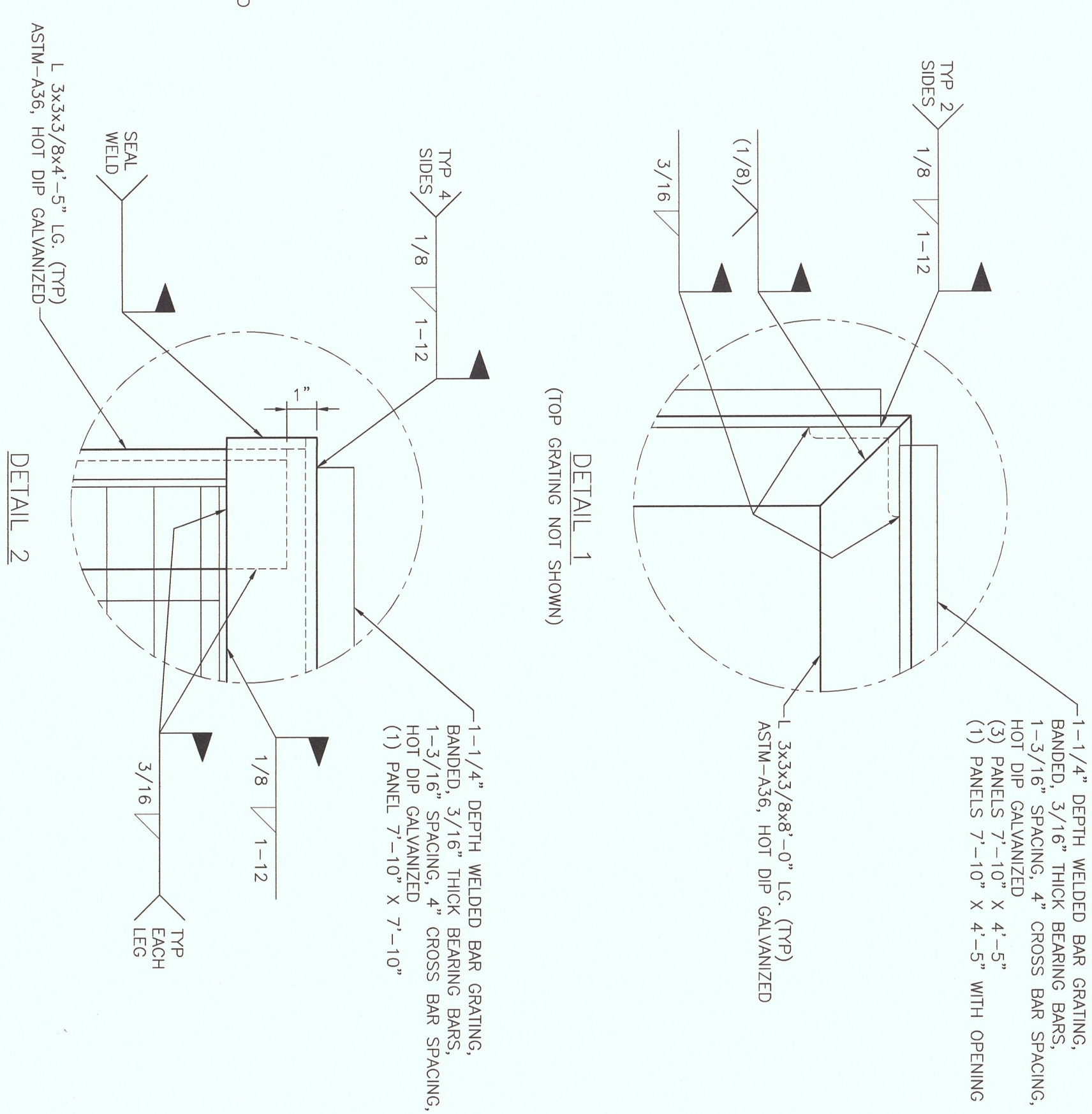
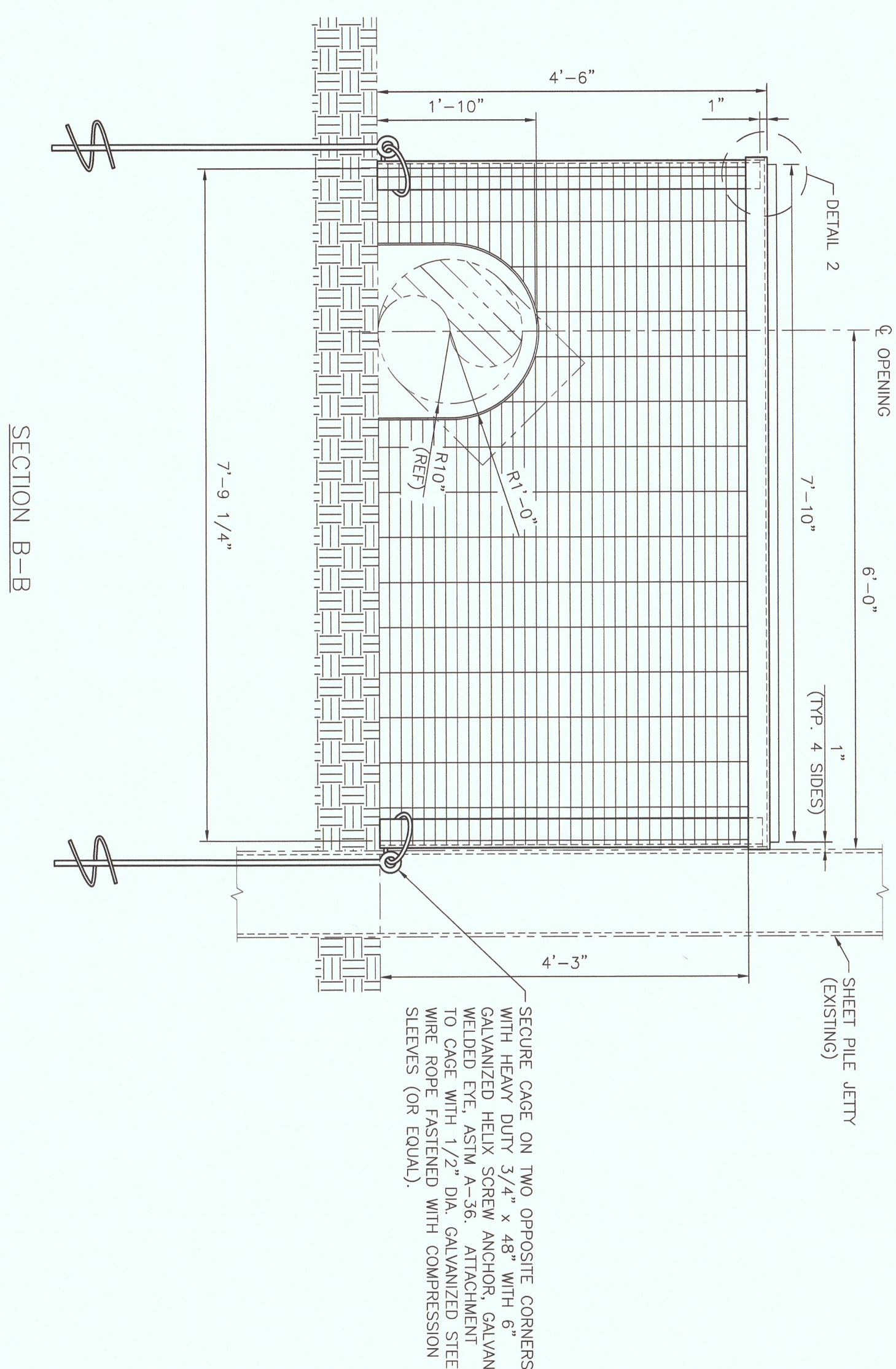
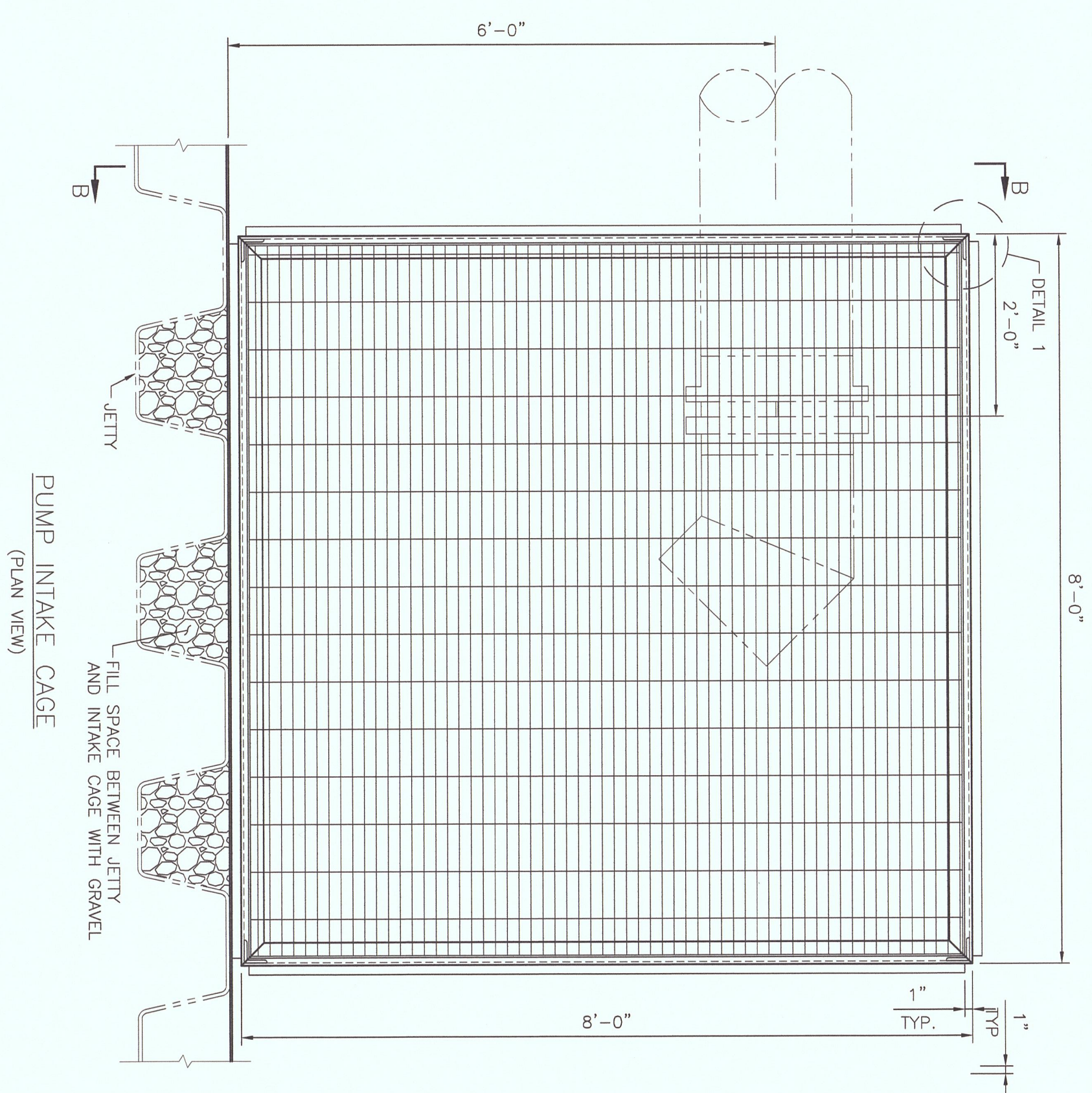
PUMP SUCTION VORTEX BREAKER

SECTION C-C

TYPICAL PIPE SUPPORT
USE AS REQUIRED
(12' MAX SPACING, NO MORE
THAN 2 CONSECUTIVE SUPPORTS
WITH OUT A LATERAL RESTRAINT OR
CHANGE IN PIPE DIRECTION)



TYPICAL PIPE MOORING
(15' MAX SPACING)



REV	DESCRIPTION	DNR	CHK	REV	APP	DATE
0	INITIAL ISSUE	5/2	182	-	182	3/11/11

 MICHAEL CALDWELL FL P.E. #68979 EXP. DATE: 2/28/17		ENGINEER MICHAEL CALDWELL LICENSE No. 68979	
MANATEE HEATING AREA PIPING EXTENSION MISC. DETAILS		 ENERCON PALM BEACH GARDENS, FL	
Client Name Plant Name		Client Name Plant Name	
SIZE: 10" DIA. NO. 1		SIZE: 10" DIA. NO. 1	
D FPLCORP005		D FPLCORP005	
SCALE NONE		SCALE NONE	
SHEET M-3		SHEET M-3	
REV 0		REV 0	

D
C
B
A

D
C
B
A

CAPE CANAVERAL
PLANT

ORDINARY HIGH WATER LINE
ELEVATION -0.24', NAVD 1988
AS LOCATED 06/24/08

ORDINARY HIGH WATER LINE
ELEVATION -0.24', NAVD 1988
AS LOCATED 07/24/08

BENCHMARK EL.=8.59'
SET PK NAIL WITH
DISC LB. #3300

CONCRETE RAMP

2.5' SEA WALL

HORSESHOE CRAB DETERRENT FENCE
(FPLCORP005-S-003)

PROFILE BASELINE
N90°00'00"E
-12.1

EXISTING SEA WALL TO BE REMOVED.
SALVAGEABLE SECTIONS OF SEA WALL
MAY BE REUSED FOR THE HORSESHOE
CRAB DETERRENT FENCE (SEE SHEET S-3).

NEW ACCESS PLATFORM
(SEE FPLCORP005-S-003)

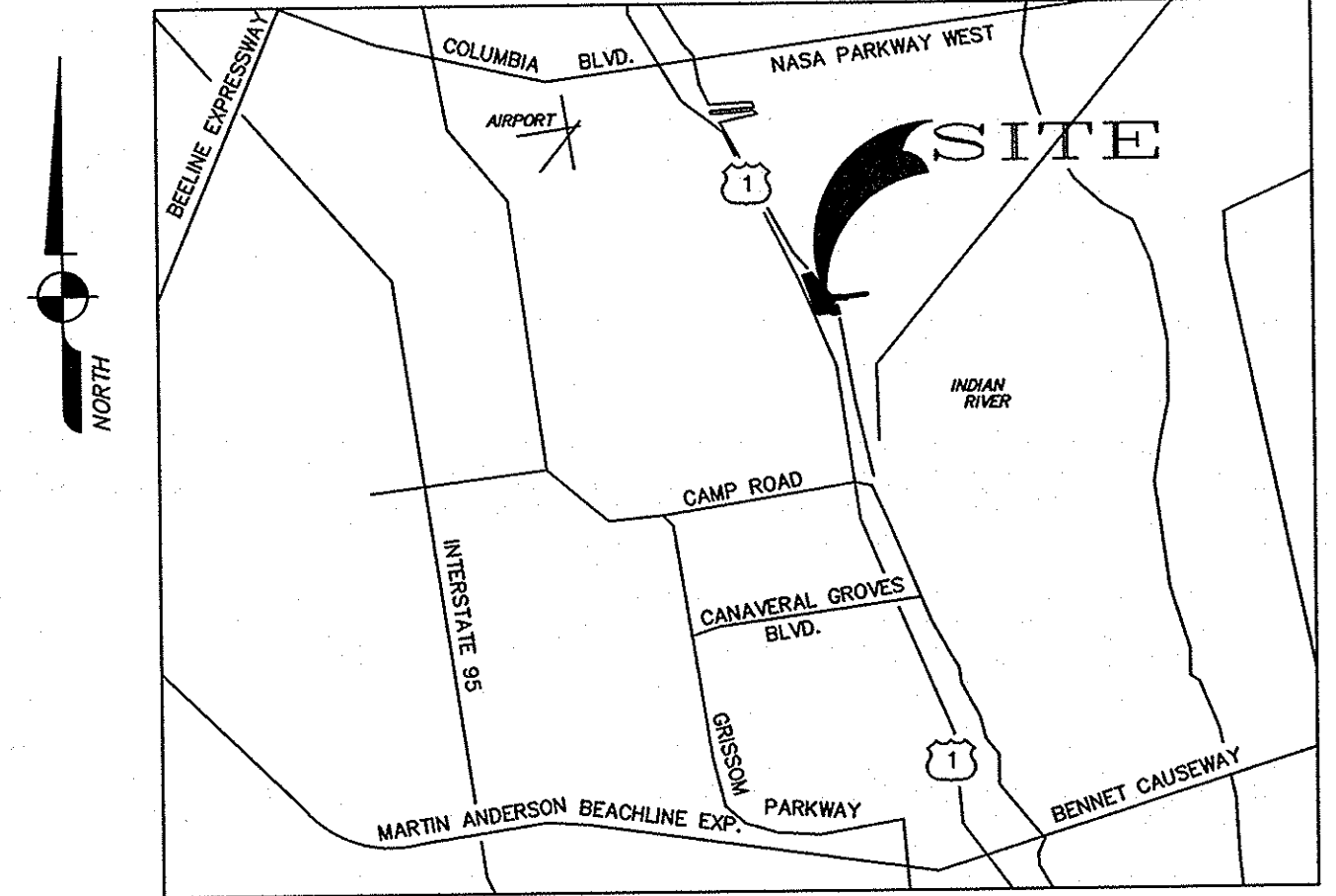
MAINTENANCE GATE

MANATEE ACCESS

INTAKE DIFFUSER

ORDINARY HIGH WATER LINE
ELEVATION -0.24', NAVD 1988
AS LOCATED 06/24/08

INDIAN RIVER



LOCATION SKETCH
NOT TO SCALE

NOTES:

1. CODES: FLORIDA BUILDING CODE 2010 W/ 2005 SUPPLEMENT, ASCE 7-10 "MINIMUM DESIGN LOADS FOR BUILDING AND OTHER STRUCTURES".
2. DESIGN DEAD LOADS: CONCRETE - 150 PCF.
3. DESIGN WIND SPEED: 150 MPH (3 SECOND GUST)
4. IMPORTANCE FACTOR: 1.0
5. WIND EXPOSURE CATEGORY: C
6. ENCLOSED BUILDING INTERNAL PRESSURE COEFFICIENT: GCPI=±0.00
7. ASSUMPTIONS:
 - A. BUILDING IS ASSUMED TO BE OPEN AS DEFINED BY SECTION 1609.2 FBC.
 - B. OWNER OR CONTRACTOR SHALL OBTAIN NECESSARY INSTALLATION SPECIFICATIONS AND INSPECTIONS REQUIRED TO COMPLY WITH MANUFACTURERS RECOMMENDATIONS FOR INSTALLATION OF COMPONENTS AND CLADDING FOR HURRICANE PRONE REGIONS.
8. SEISMIC: ZONE 0
9. GEOTECHNICAL REPORT:
 - A. ASSUMED BEARING PRESSURE OF 2000 PSF.
10. REVIEW ALL PROJECT DOCUMENTS PRIOR TO FABRICATION AND START OF CONSTRUCTION. REPORT ANY DISCREPANCIES TO ARCHITECT OR STRUCTURAL ENGINEER PRIOR TO PROCEEDING WITH WORK.
11. IT IS THE CONTRACTOR'S RESPONSIBILITY TO PROTECT EXISTING FACILITIES, STRUCTURES, AND UTILITY LINES FROM ALL DAMAGE DURING CONSTRUCTION.
12. NO STRUCTURAL MEMBERS SHALL BE CUT, NOTCHED, OR OTHERWISE REDUCED IN SIZE OR STRENGTH WITHOUT PRIOR APPROVAL IN WRITING FROM THE STRUCTURAL ENGINEER.
13. ALL DETAILS AND SECTIONS ON THE DRAWINGS ARE INTENDED TO BE TYPICAL AND SHALL BE CONSTRUED TO APPLY TO ANY SIMILAR SITUATION ELSEWHERE ON THE PROJECT EXCEPT WHERE A SEPARATE DETAIL IS SHOWN.
14. THE INTENTION OF THE PLANS AND SPECIFICATIONS IS TO PROVIDE ALL NECESSARY DETAILS TO CONSTRUCT A COMPLETE STRUCTURE. WHEN SPECIFICATION INFORMATION IS MISSING OR IS IN CONFLICT, THE CONFLICTS SHALL BE BROUGHT TO THE ATTENTION OF THE ARCHITECT/ENGINEER.
15. THE ENGINEER SHALL NOT BE RESPONSIBLE FOR LAYOUT, DIMENSIONAL ERRORS OR DISCREPANCIES RESULTING FROM THE REPRODUCTION AND USE OF CONTRACT DRAWINGS FOR ERECTION AND SHOP DRAWINGS. USE OF CONTRACT DRAWINGS REPRODUCED IN WHOLE OR ANY PART IN SHOP DRAWINGS SHALL NOT RELIEVE THE CONTRACTOR NOR SUBCONTRACTORS FROM THEIR RESPONSIBILITY TO ACCURATELY LAYOUT, COORDINATE, DETAIL, FABRICATE AND INSTALL A COMPLETE STRUCTURE.

16. REVIEW ALL SHOP DRAWINGS FOR CONFORMANCE WITH THE CONTRACT DOCUMENTS AND FOR COMPLETENESS AND ANSWER ALL CONTRACTOR RELATED QUESTIONS. STAMP AND INITIAL ALL SHEETS PRIOR TO SUBMITTING SHOP DRAWINGS TO ARCHITECT/ENGINEER FOR REVIEW. NON-COMPLIANCE WITH THIS REQUIREMENT WILL RESULT IN REJECTION OF SUBMITTAL.
17. VINYL SHEET PILING SHALL BE MANUFACTURED ENTIRELY FROM RIGID, IMPACT MODIFIED, UV-INHIBITED, WEATHERABLE VINYL THAT MEETS THE CHARACTERISTICS OF SHOREGUARD 625/825 VINYL SHEET PILING.
18. ALL VINYL SHEET PILING SHALL BE SHOREGUARD 625 FOR HORSESHOE CRAB WALL AND SHOREGUARD 825 FOR THE MANATEE HEATING AREA, OR APPROVED EQUAL. THE TERM EQUAL SHALL BE DEFINED AS MEETING OR EXCEEDING WHOLY AND COMPLETELY ALL PROPERTIES DEFINING SHEET PILING PERFORMANCE.
19. ALL SHEET PILING SURFACES THAT MAY IN ANY WAY BE EXPOSED TO OUTDOOR ELEMENTS SUCH AS ULTRAVIOLET LIGHT AND/OR RAIN, OR EXPOSED TO CHEMICAL ATTACK MUST BE COMPLETELY COMPOSED OF VIRGIN MATERIAL.
20. THE SHEET PILING MATERIAL MUST MEET A CELL CLASSIFICATION OF 1-41444-33-0101 AS DEFINED BY ASTM D4216.
21. THE CONTRACTOR SHALL BE RESPONSIBLE FOR SELECTION OF METHODS AND PROCEDURES FOR INSTALLATION OF SHEET PILING, AND FOR THE DESIGN OF TEMPLATES AND BRACING, THAT WILL ADVANCE THE PILING WITHIN THE TOLERANCES REQUIRED BY THOSE SPECIFICATIONS. THE METHODS, PROCEDURES, AND BRACING SHALL BE SUBJECT TO REVIEW AND APPROVAL BY THE ENGINEER AND SHALL BE CONSISTENT WITH THE REQUIREMENTS SET OUT IN THESE SPECIFICATIONS. ALL PILING SHALL BE KEPT UNDER CLOSE OBSERVATION DURING INSTALLATION IN ORDER THAT DRIFT OR OTHER TENDENCY TOWARD MISALIGNMENT MAY BE DETECTED AND CORRECTIONS MADE BEFORE MISALIGNMENT BECOMES SERIOUS. WHEN MISALIGNMENTS OCCUR, THE ENGINEER MAY ORDER THE CONTRACTOR TO MODIFY HIS METHODS AND RIGGING.
22. TEMPLATES AND GUIDES SHALL BE USED DURING INSTALLATION ON ALL VINYL SHEET PILING. THE DESIGN, ARRANGEMENT, AND ANCHORING OF TEMPLATES AND GUIDES SHALL BE ADEQUATE TO INSURE THAT THE PILING WILL BE DRIVEN TO THE PROPER LOCATION, AND AS OTHERWISE REQUIRED BY THESE SPECIFICATIONS.
23. ALL FASTENERS AND HINGES AND STEEL SHALL BE STAINLESS STEEL GRADE A316 OR EQUIVALENT (U.N.O.).
24. NO ATTEMPT HAS BEEN MADE TO LOCATE ANY MAN MADE BURIED OBJECTS DURING THE FIELD SURVEY OF AREA. FIELD TO IDENTIFY ANY POTENTIALLY HAZARDOUS CONDITIONS THAT MAY EXIST DURING THE COURSE OF THIS WORK. BURIED MAN MADE OBJECTS OR ENVIRONMENTAL HAZARDS SHALL BE REPORTED TO THE ENGINEER OF RECORD UPON DISCOVERY AND PRIOR TO COMMENCEMENT OF WORK.

25. THE STRUCTURAL INTEGRITY OF THE COMPLETED STRUCTURE DEPENDS UPON THE INTERACTION OF VARIOUS CONNECTED COMPONENTS. PROVIDE ADEQUATE BRACING, SHORING, AND OTHER TEMPORARY SUPPORTS AS REQUIRED TO SAFELY COMPLETE THE PROJECT.
26. ALL STRUCTURAL WOODEN MATERIAL SHALL BE SOUTHERN PINE OR DOUGLAS FIR.
27. ALL STRUCTURAL WOODEN MATERIAL SHALL BE CCA-H6 PRETREATED (OR EQUAL) AND CONFORM TO THE APPLICABLE CODES, SPECIFICATIONS, AND STANDARDS LISTED BELOW.
 - AMERICAN SOCIETY FOR TESTING AND MATERIALS (ASTM)
 - ASTM D25 - SPECIFICATION FOR ROUND TIMBER PILES
 - ASTM D1143 - METHOD OF TESTING PILES UNDER STATIC AXIAL COMPRESSIVE LOAD
 - ASTM D3689 - METHOD OF TESTING INDIVIDUAL PILES UNDER STATIC AXIAL TENSION LOAD
 - ASTM D3200 - STANDARD SPECIFICATIONS FOR WOOD POLES
 - AMERICAN WOOD PRESERVERS' ASSOCIATION (AWPA)
 - AWPA C3 - PILES - PRESERVATIVE TREATMENT BY PRESSURE PROCESSES
 - AWPA C18 - STANDARD FOR PRESSURE TREATED MATERIAL IN MARINE CONSTRUCTION
 - AWPA M4 - STANDARD FOR THE CARE OF PRESERVATIVE TREATED WOOD PRODUCTS
28. ALL HILTI KWIK BOLT 3 SHALL BE STAINLESS STEEL AND INSTALLED IN ACCORDANCE WITH THE MANUFACTURERS INSTALLATION INSTRUCTIONS.
29. ALL STRUCTURAL BOLTS SHALL BE 316 STAINLESS STEEL (U.N.O.)

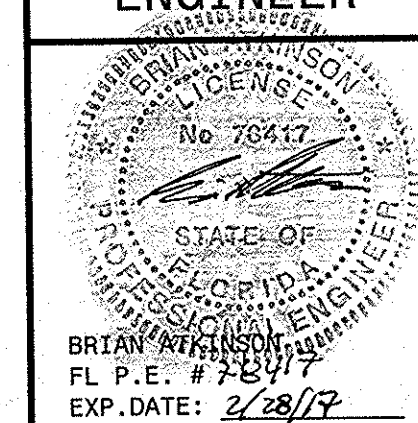
N.A.V.D. 1988
ELEVATIONS

ORDINARY HIGH WATER LINE = -0.24' N.A.V.D. 1988

STATE PLANE COORDINATES

NO.	NORTHING	EASTING	DESCRIPTION
A	1502962.600	731835.294	BEGIN BASELINE STATION 0+00
B	1502962.600	735959.457	END BASELINE STATION 41+24.16

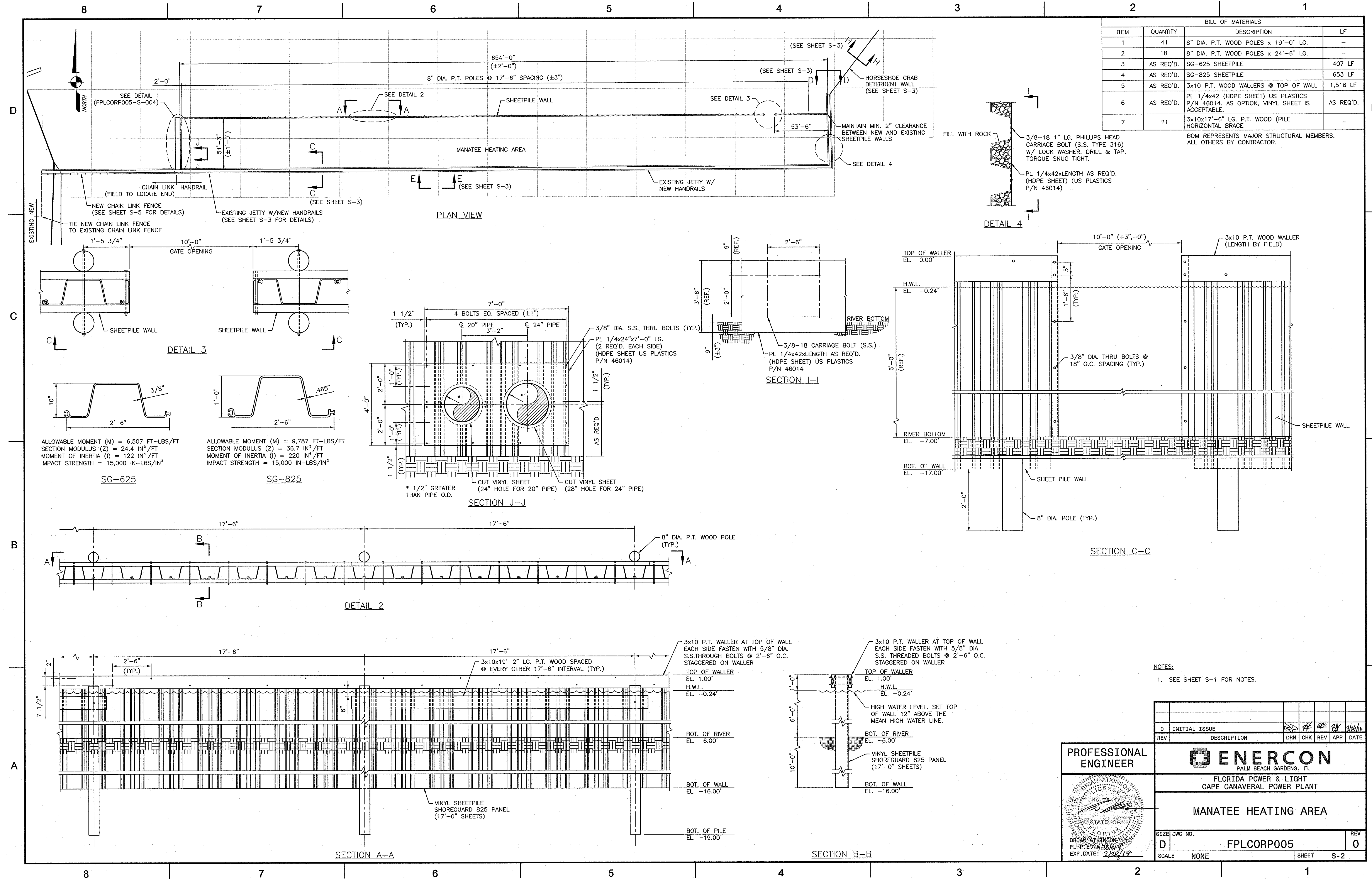
PROFESSIONAL
ENGINEER



ENERCON
PALM BEACH GARDENS, FL

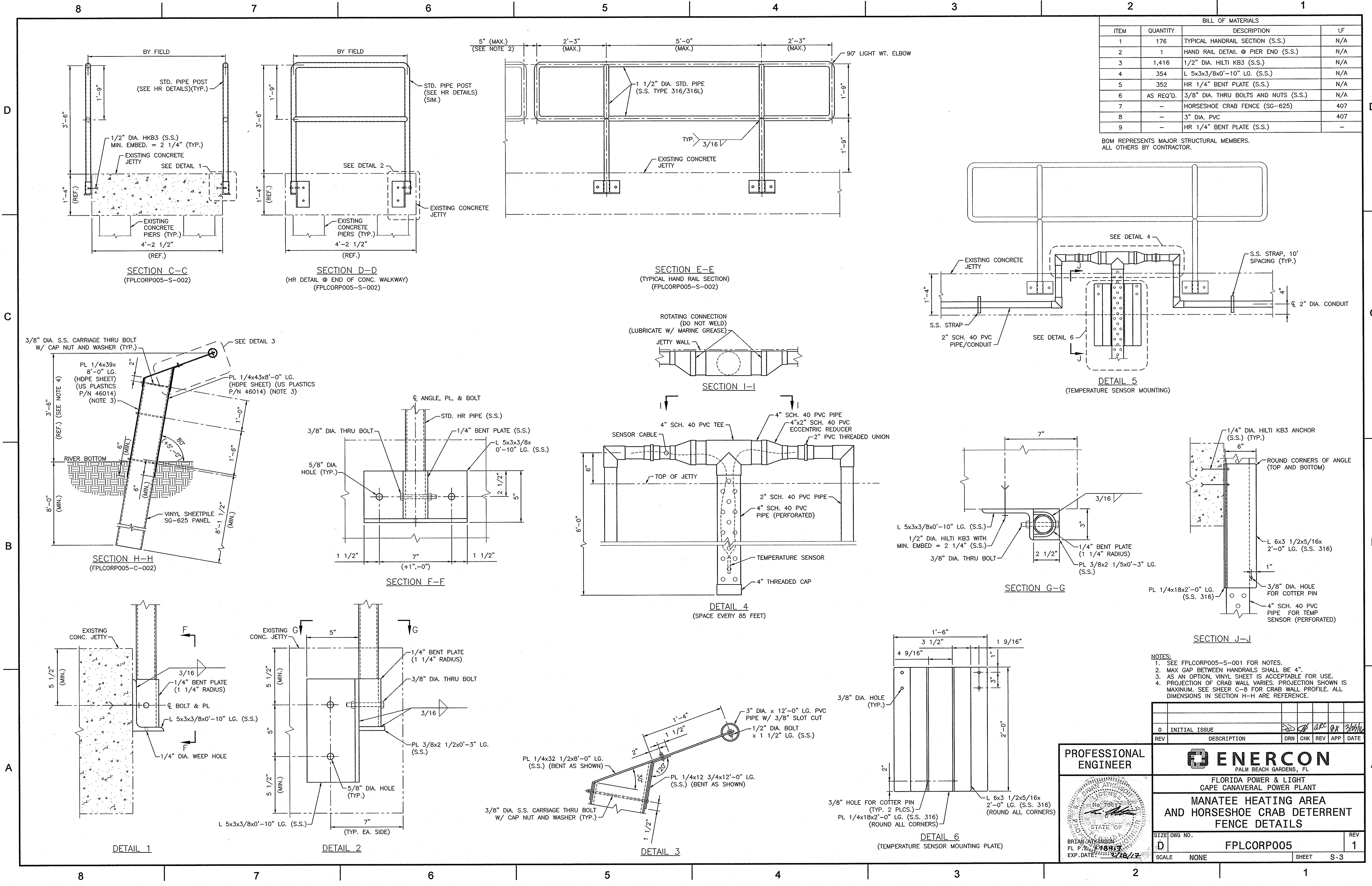
FLORIDA POWER & LIGHT
CAPE CANAVERAL POWER PLANT
**MANATEE HEATING AREA AND
HORSESHOE CRAB WALL
TOPOGRAPHIC SURVEY**

SIZE: DWG NO.	REV
D	0
SCALE: NONE	SHEET: S-1



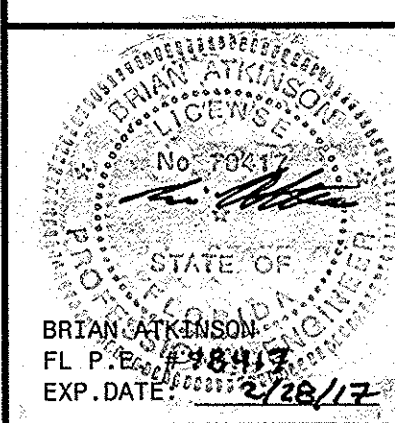
BILL OF MATERIALS			
ITEM	QUANTITY	DESCRIPTION	LF
1	176	TYPICAL HANDRAIL SECTION (S.S.)	N/A
2	1	HAND RAIL DETAIL @ PIER END (S.S.)	N/A
3	1,416	1/2" DIA. HILTI KB3 (S.S.)	N/A
4	354	L 5x3x3/8x0'-10" LG. (S.S.)	N/A
5	352	HR 1/4" BENT PLATE (S.S.)	N/A
6	AS REQ'D.	3/8" DIA. THRU BOLTS AND NUTS (S.S.)	N/A
7	-	HORSESHOE CRAB FENCE (SG-625)	407
8	-	3" DIA. PVC	407
9	-	HR 1/4" BENT PLATE (S.S.)	-

BOM REPRESENTS MAJOR STRUCTURAL MEMBERS.
ALL OTHERS BY CONTRACTOR.



- NOTES:
- SEE FPLCORP005-S-001 FOR NOTES.
 - MAX GAP BETWEEN HANDRAILS SHALL BE 4".
 - AS AN OPTION, VINYL SHEET IS ACCEPTABLE FOR USE.
 - PROJECTION OF CRAB WALL VARIES. PROJECTION SHOWN IS MAXIMUM. SEE SHEER C-8 FOR CRAB WALL PROFILE. ALL DIMENSIONS IN SECTION H-H ARE REFERENCE.

PROFESSIONAL
ENGINEER

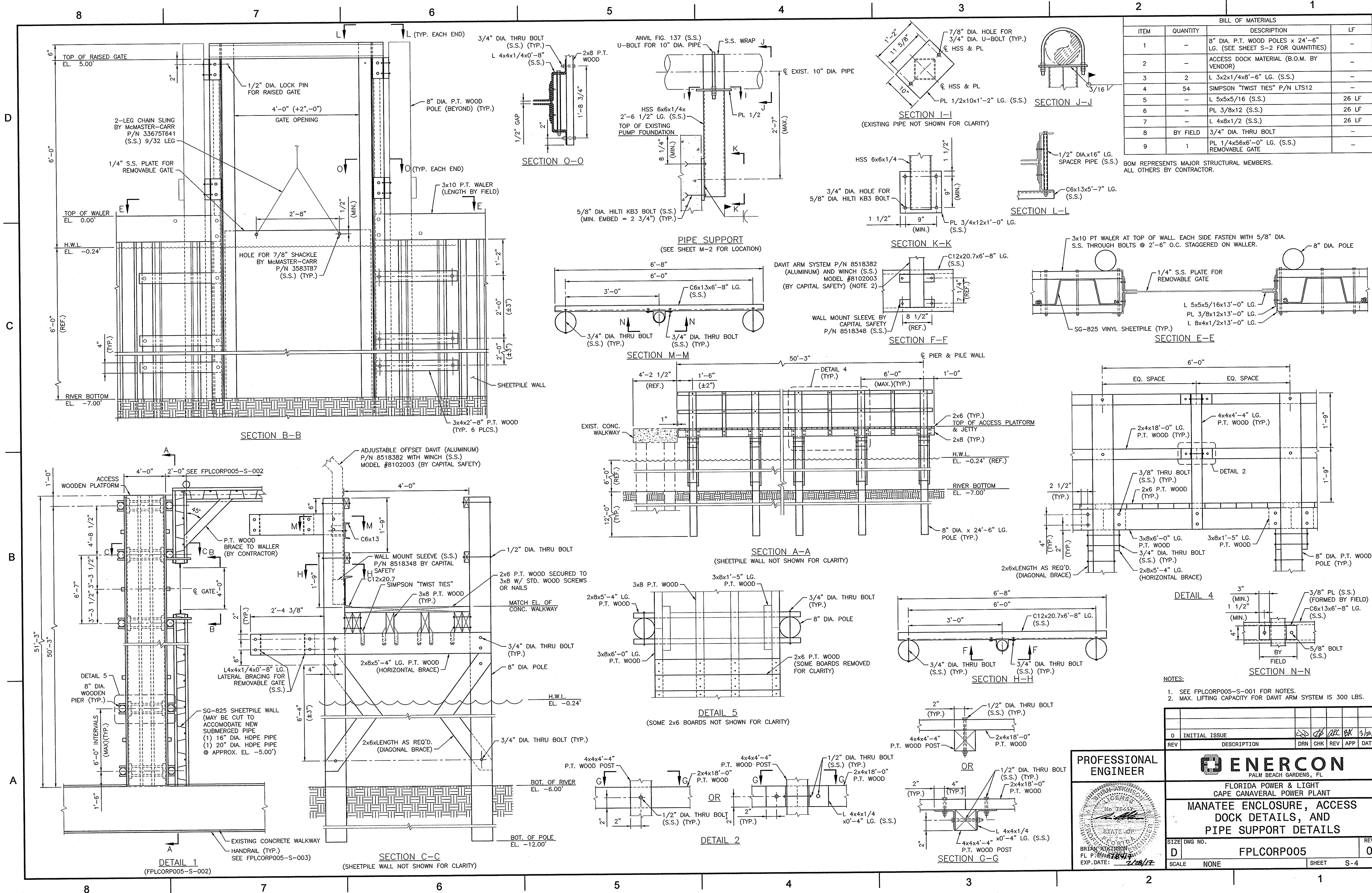


ENERCON
PALM BEACH GARDENS, FL

FLORIDA POWER & LIGHT
CAPE CANAVERAL POWER PLANT

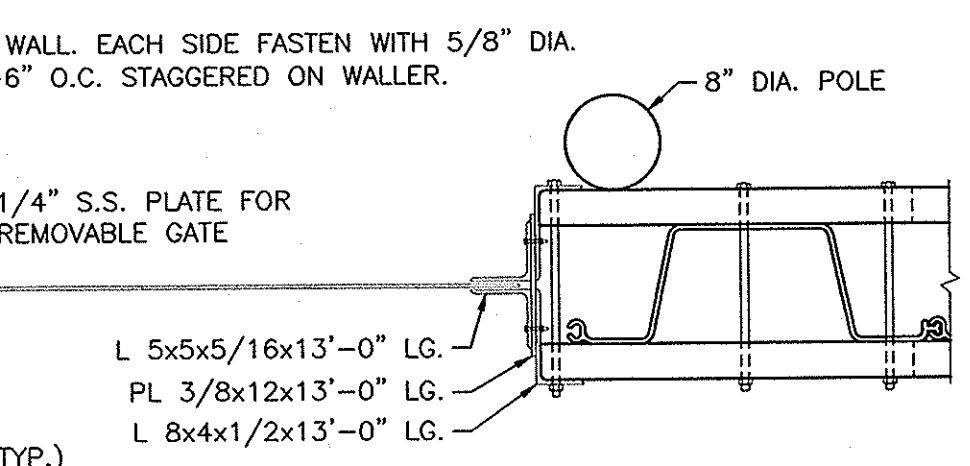
**MANATEE HEATING AREA
AND HORSESHOE CRAB DETERRENT
FENCE DETAILS**

SIZE	DWG NO.	REV
D	FPLCORP005	1
SCALE	NONE	SHEET S-3

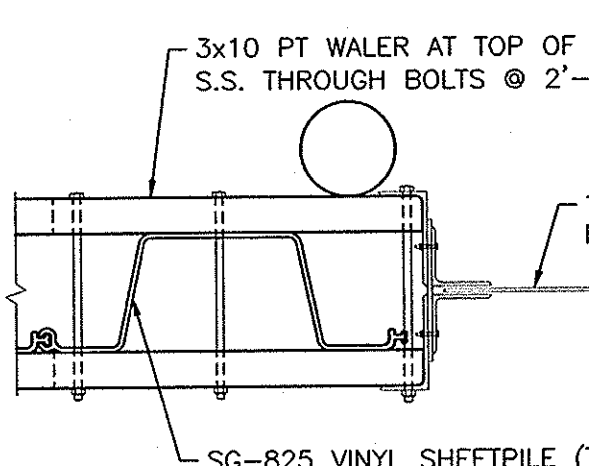


BILL OF MATERIALS				
ITEM	QUANTITY	DESCRIPTION	LF	
1	-	8" DIA. P.T. WOOD POLES x 24'-6" LG. (SEE SHEET S-2 FOR QUANTITIES)	-	
2	-	ACCESS DOCK MATERIAL (B.O.M. BY VENDOR)	-	
3	2	L 3x2x1/4x8'-6" LG. (S.S.)	-	
4	54	SIMPSON "TWIST TIES" P/N LTS12	-	
5	-	L 5x5x5/16 (S.S.)	26 LF	
6	-	PL 3/8x12 (S.S.)	26 LF	
7	-	L 4x8x1/2 (S.S.)	26 LF	
8	BY FIELD	3/4" DIA. THRU BOLT	-	
9	1	PL 1/4x56x6'-0" LG. (S.S.) REMOVABLE GATE	-	

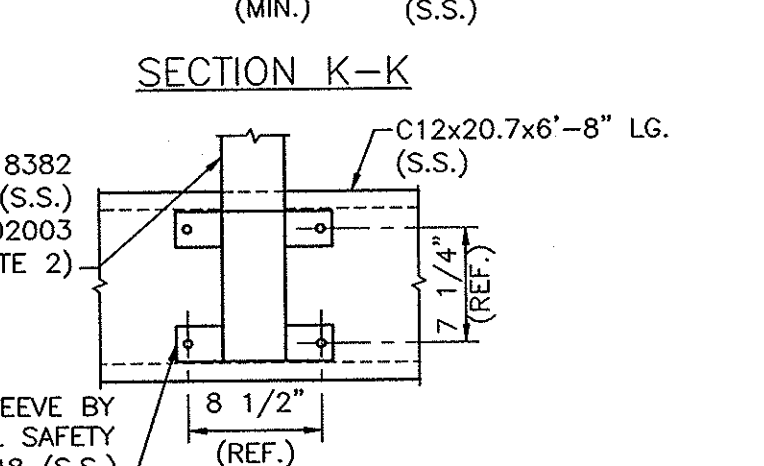
BOM REPRESENTS MAJOR STRUCTURAL MEMBERS. ALL OTHERS BY CONTRACTOR.



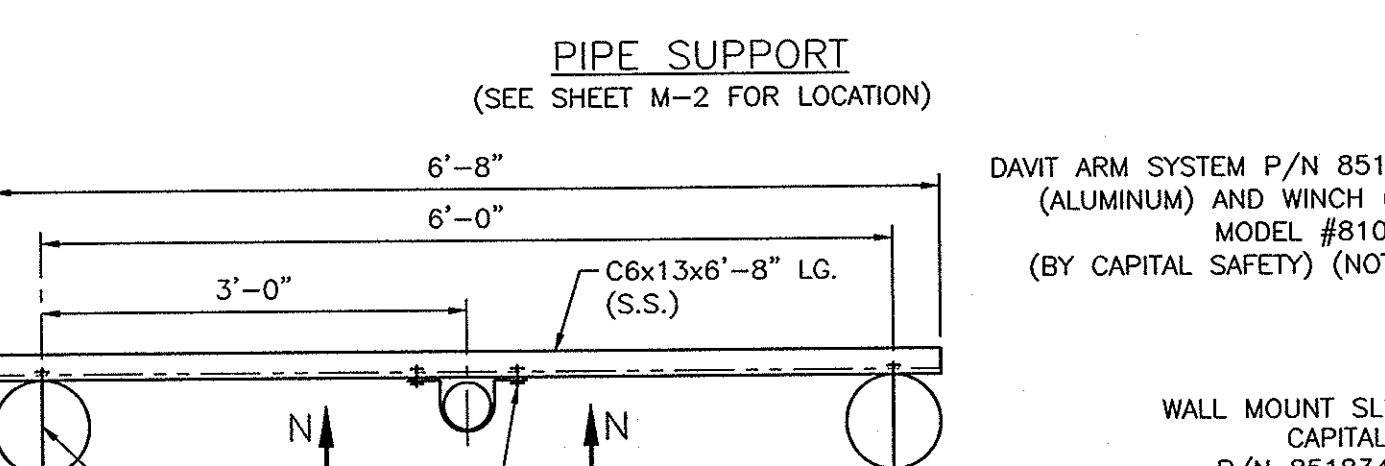
SECTION E-E



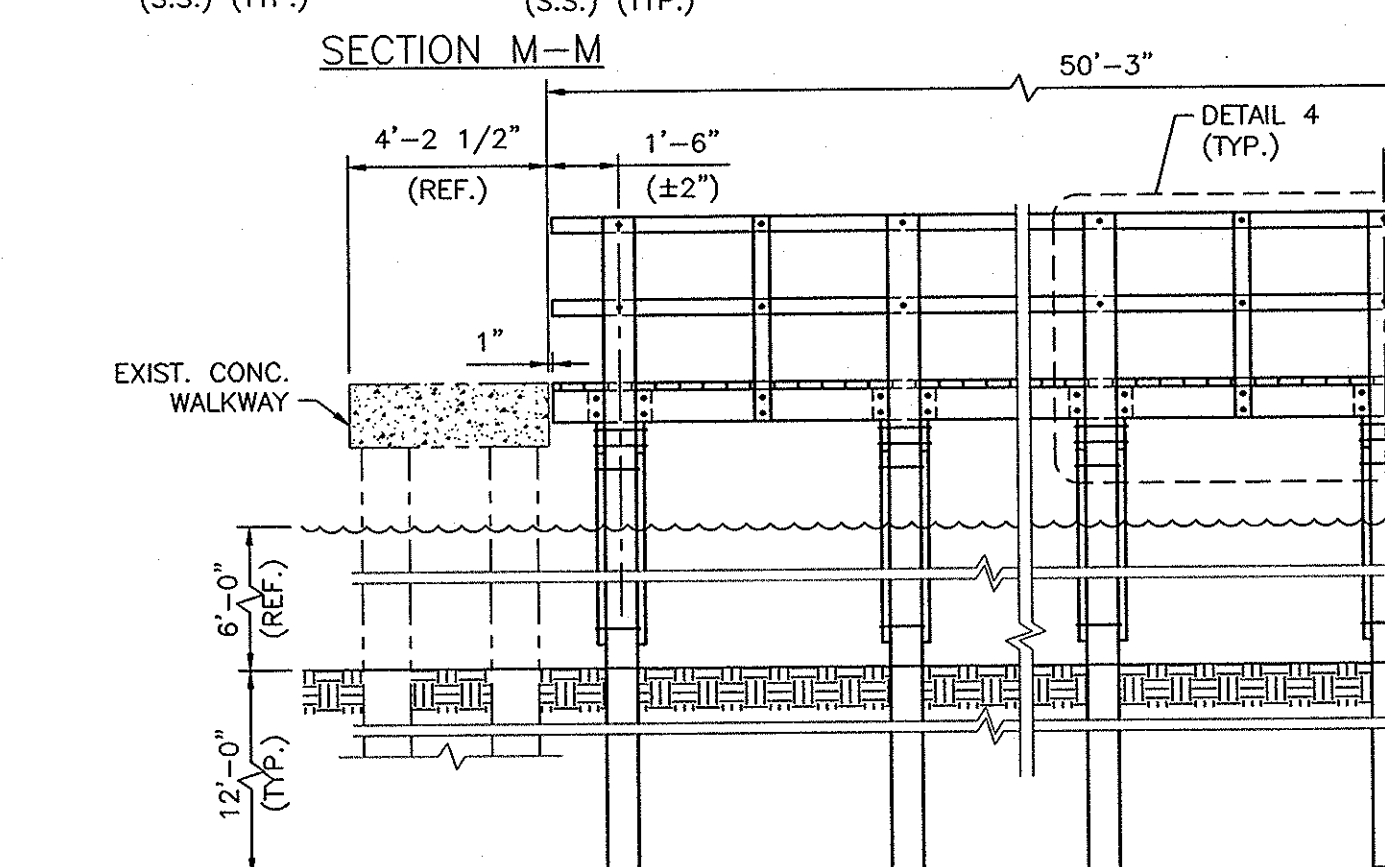
SECTION J-J



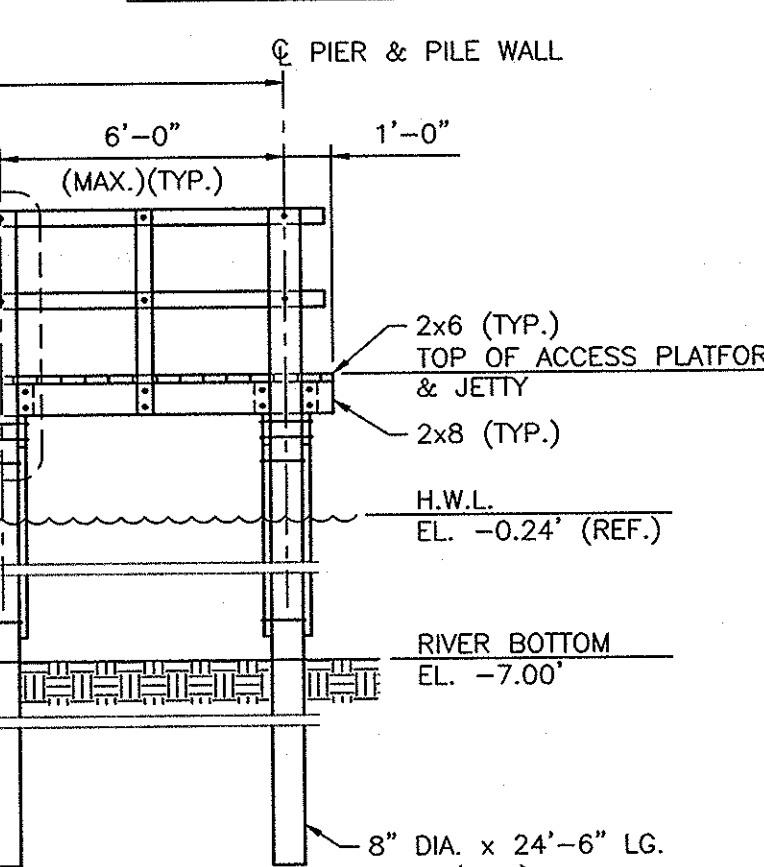
SECTION K-K



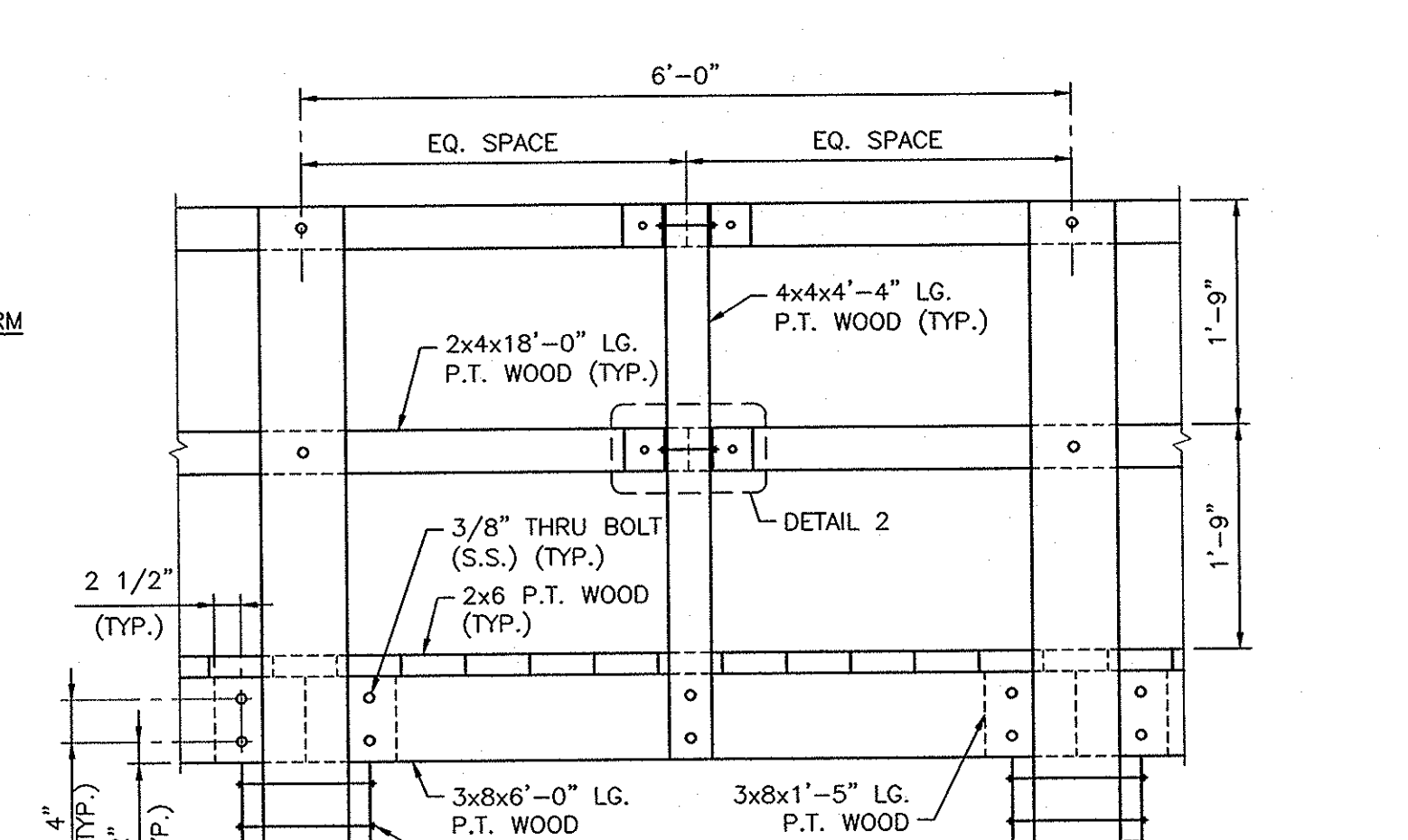
SECTION M-M



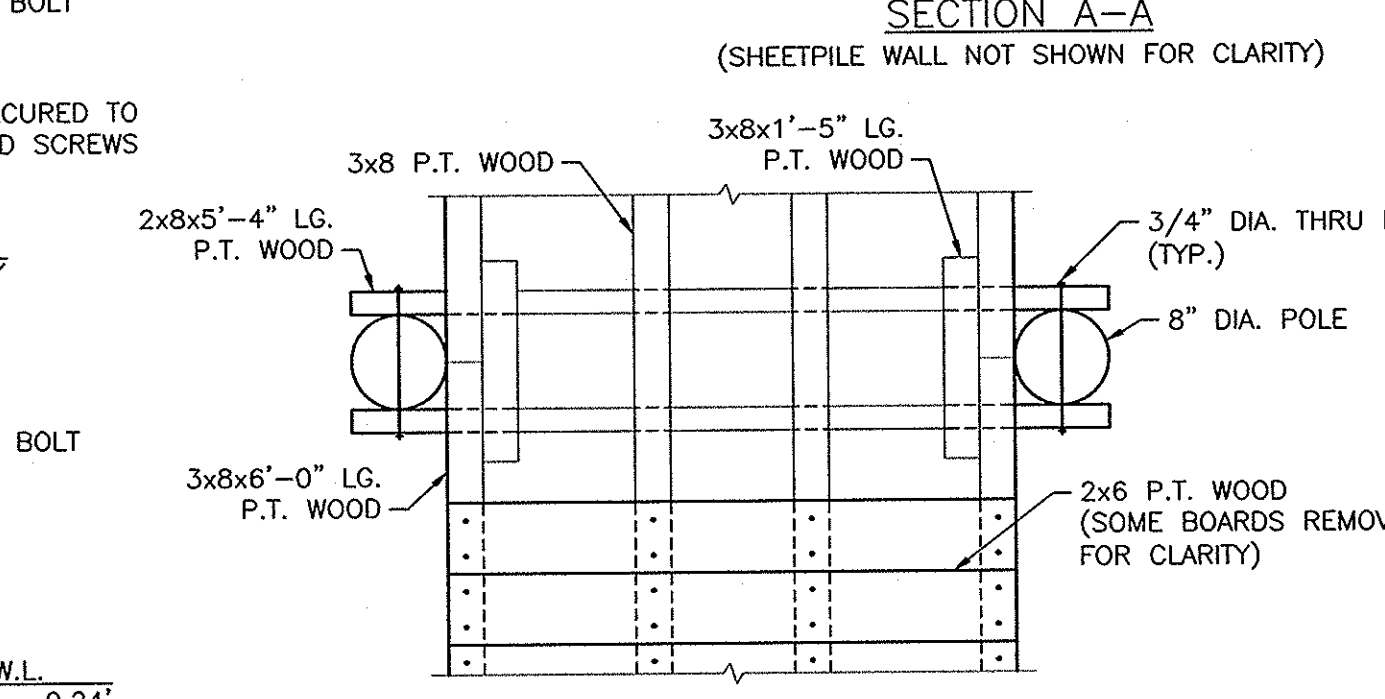
SECTION A-A (SHEETPILE WALL NOT SHOWN FOR CLARITY)



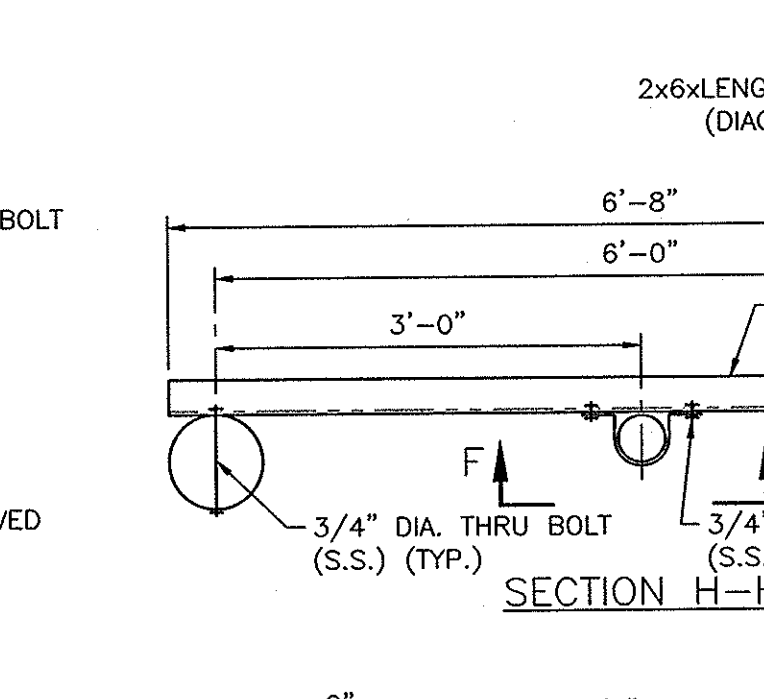
SECTION F-F



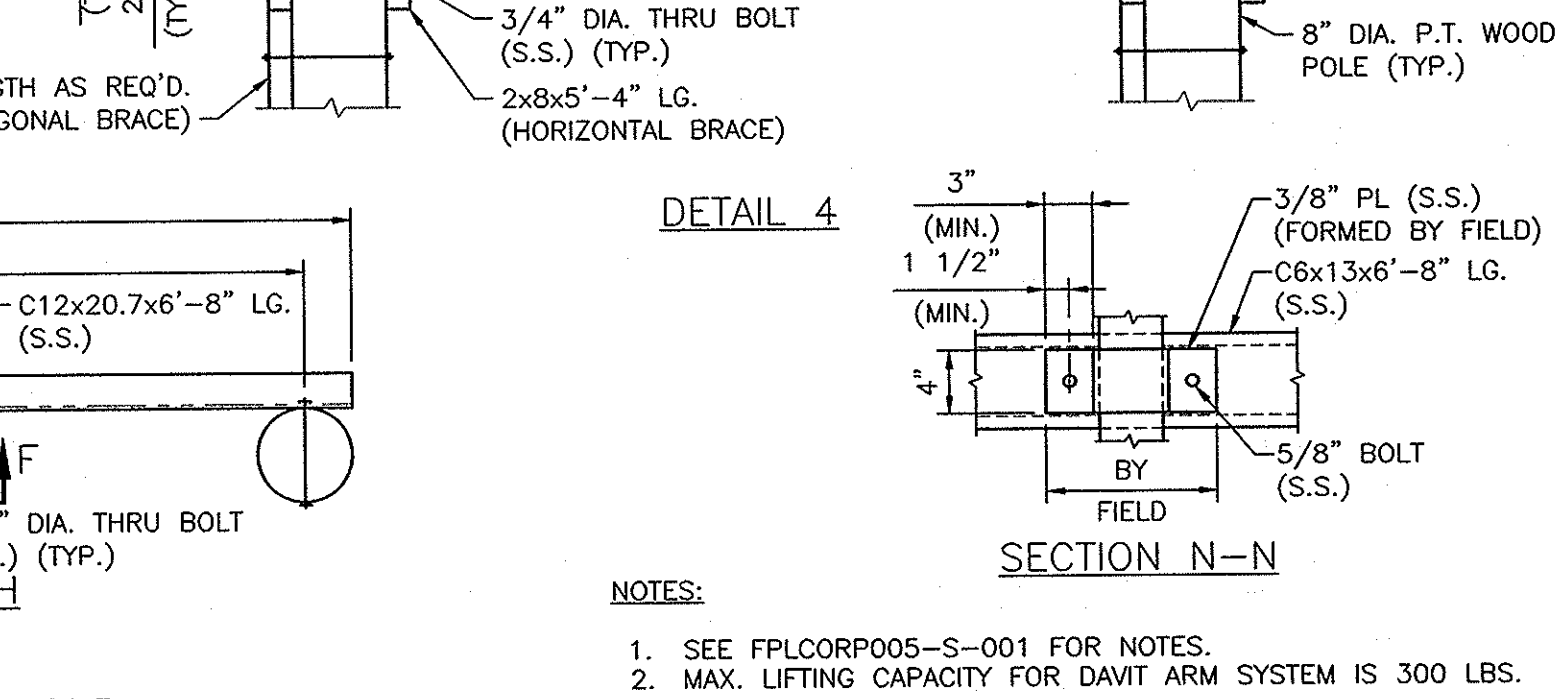
SECTION B-B



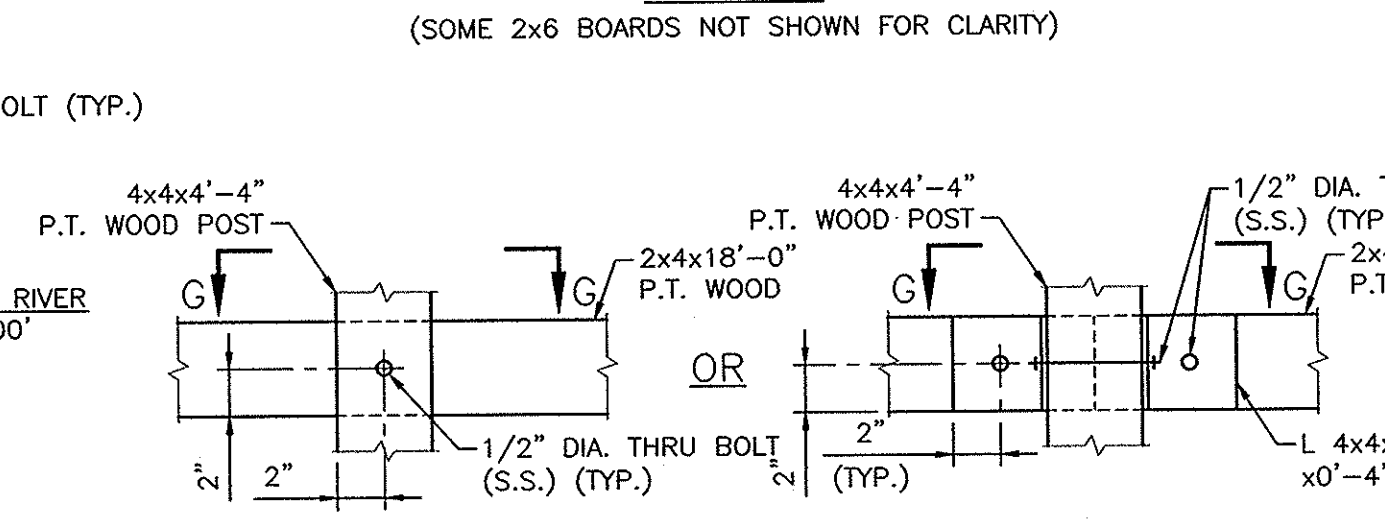
SECTION C-C (SHEETPILE WALL NOT SHOWN FOR CLARITY)



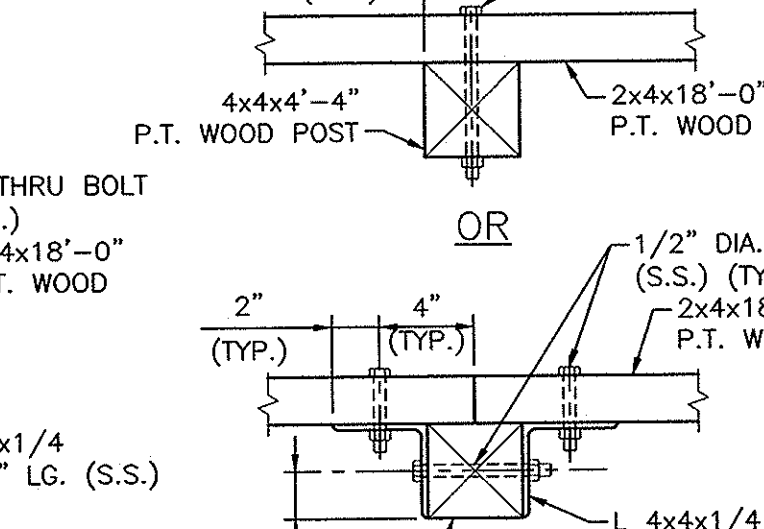
SECTION H-H



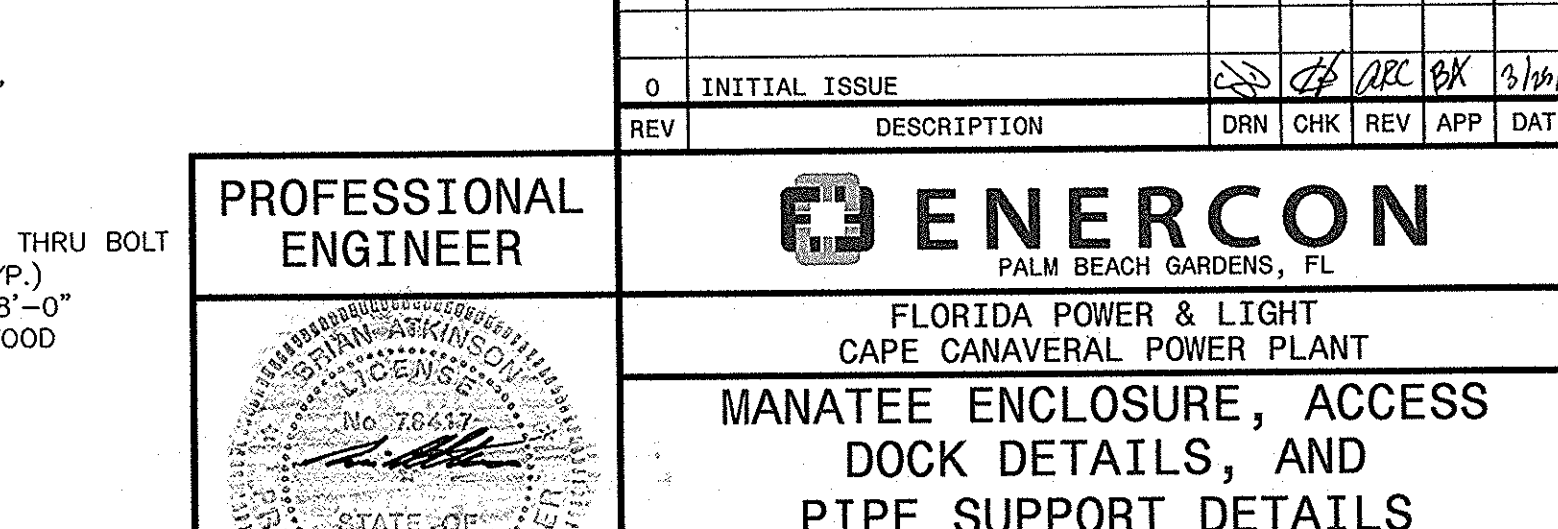
SECTION N-N



DETAIL 5 (SOME 2x6 BOARDS NOT SHOWN FOR CLARITY)

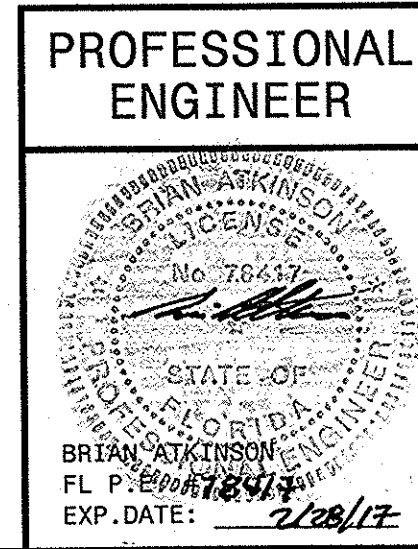


SECTION G-G

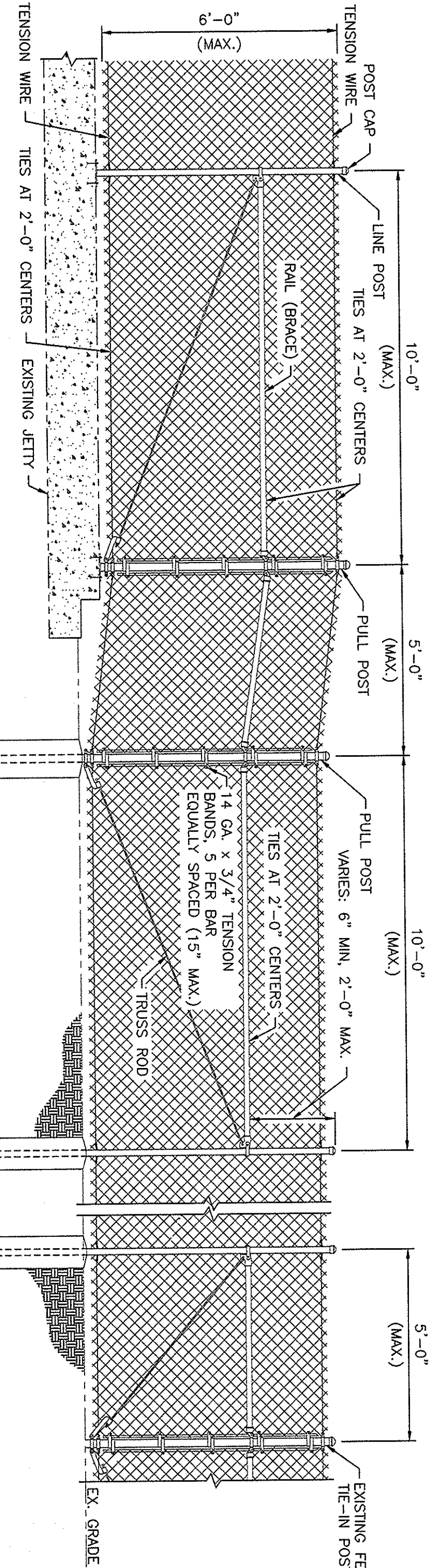
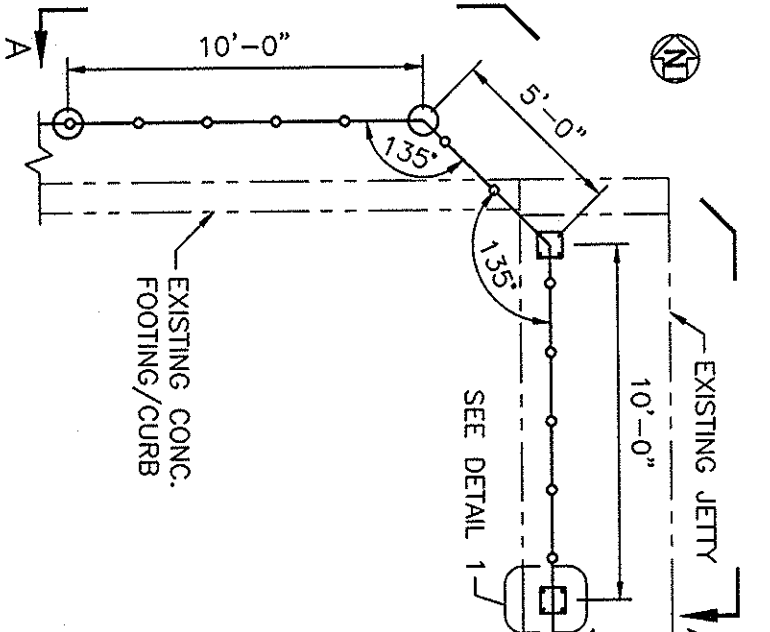
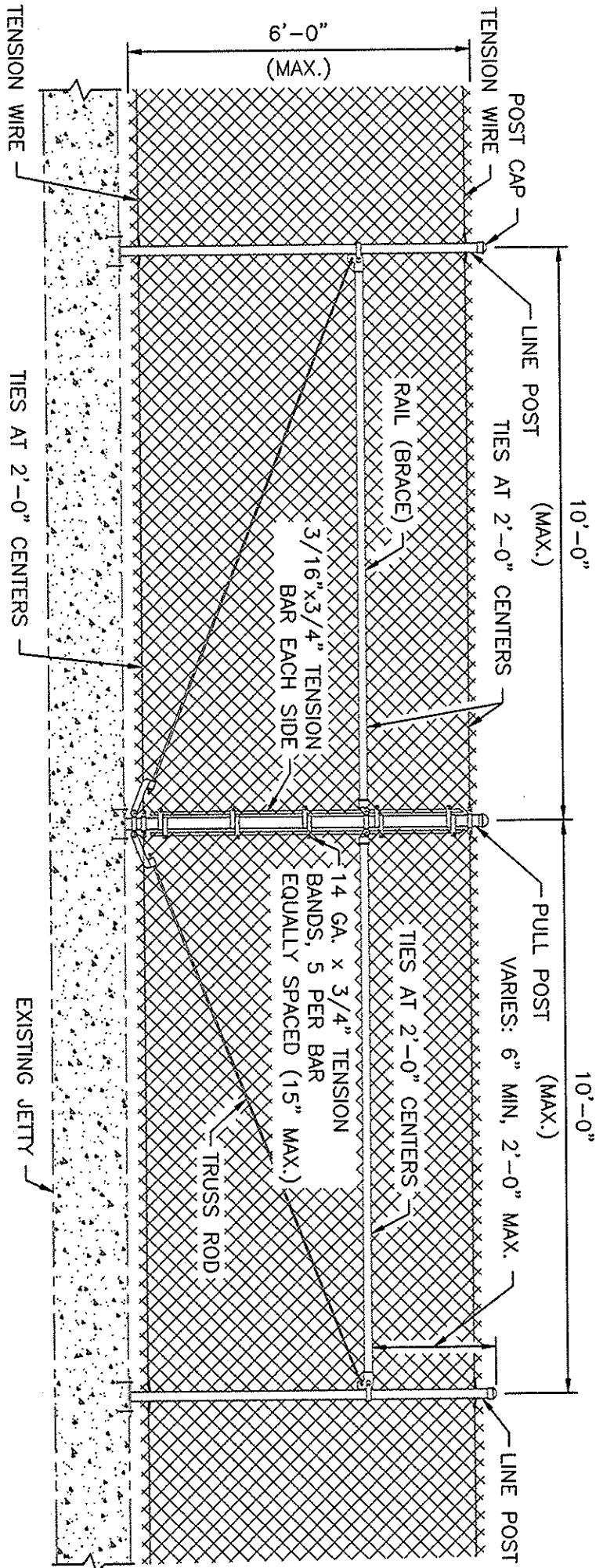


DETAIL 4

- NOTES:
- SEE FPLCORP005-S-001 FOR NOTES.
 - MAX. LIFTING CAPACITY FOR DAVIT ARM SYSTEM IS 300 LBS.



0	INITIAL ISSUE								
REV	DESCRIPTION		DRN	CHK	REV	APP	DATE		
 ENERCON PALM BEACH GARDENS, FL FLORIDA POWER & LIGHT CAPE CANAVERAL POWER PLANT MANATEE ENCLOSURE, ACCESS DOCK DETAILS, AND PIPE SUPPORT DETAILS									
SIZE	DWG NO.		FPLCORP005				REV	0	
SCALE	NONE		SHEET				S-4		

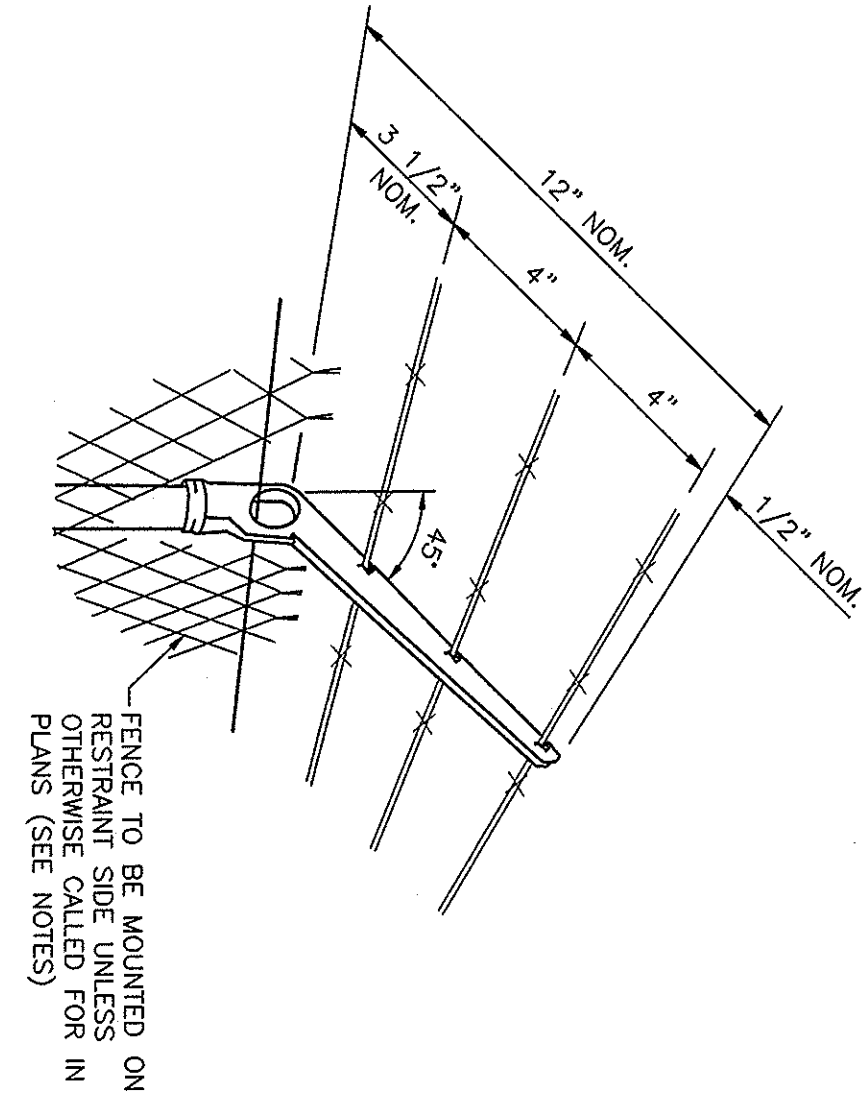
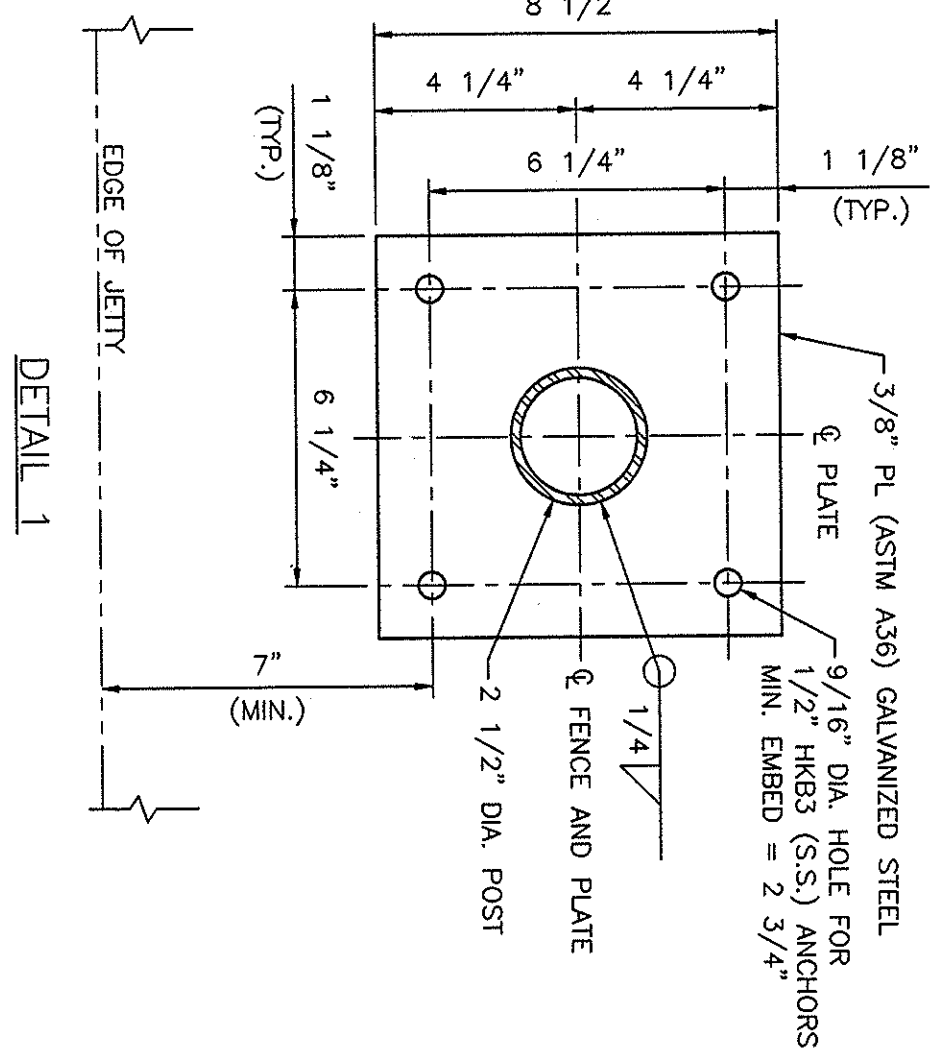
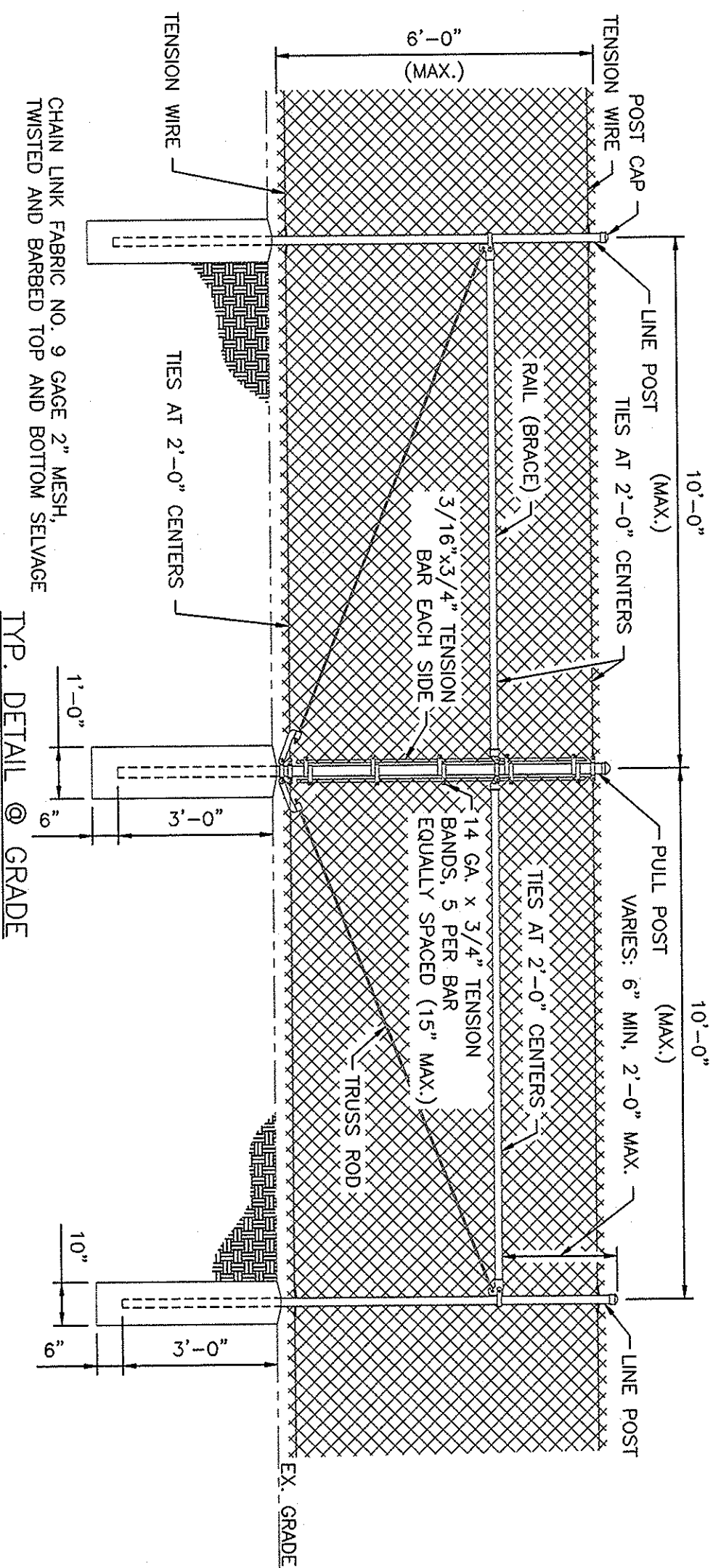


CHAIN LINK FABRIC NO. 9 GAGE 2" MESH,
TWISTED AND BARBED TOP AND BOTTOM SELVAGE

CHAIN LINK FABRIC NO. 9 GAGE 2" MESH,
TWISTED AND BARBED TOP AND BOTTOM SELVAGE

TYP. DETAIL @ JETTY

SECTION A-A



FENCE TO BE MOUNTED ON
RESTRAINT SIDE UNLESS
OTHERWISE CALLED FOR IN
PLANS (SEE NOTES)

GENERAL NOTES:

- CHAIN LINK FABRIC, POST, TRUSS RODS, TENSION WIRES, TIE WIRES, STRETCHER BARS, FITTINGS AND ALL MISCELLANEOUS HARDWARE SHALL MEET THE REQUIREMENTS OF ASTM AND ASTM SIGNIFY.
- FENCE COMPONENT OPTIONS:

B. FENCE COMPONENT OPTIONS:

- LINE POST OPTIONS:
 - GALVANIZED STEEL PIPE, SCHEDULE 40-2 1/2" NOMINAL DIA. ZINC OR B, ASTM F1008, AND ASHTO M111.
 - RESISTANCE WELDED STEEL PIPE, 50,000 PSI MIN. YIELD STRENGTH ASTM A569/A569M, A563/A563M OR UNDELETED STOCK OF DISCONTINUED A446/A446M BASE MATERIALS; ASTM F669 GROUP IV (ALTERNATIVE DESIGN); FENCE INDUSTRY 2 7/8" OD, 1 1/2" NPS, 1,900 DEC. EQUIV. 0.120 MIN. WALL THICK. AND MIN. WT. 2.28 LB./FT.; WITH ASTM F1043 METRIC EQUIVALENT INTERNAL COATING TYPES A, B, C OR D AND EXTERNAL COATING TYPES A, B, OR C; THE CHROMATE CONVERSION COATING OF EXTERNAL TYPE B SHALL HAVE A THICKNESS OF 0.0003" MIN. AND THE POLYMER FILM TOPCOAT SHALL HAVE A THICKNESS OF 0.0003" MIN. INTERNAL AND EXTERNAL COATINGS ARE NOT RESTRICTED TO THE COMBINATIONS OF TABLE 2, ASTM F1043.
- CORNER, END, AND PULL POST OPTIONS:
 - GALVANIZED STEEL PIPE, SCHEDULE 40-2 1/2" NOMINAL DIA. ZINC OR B, ASTM F1008, AND ASHTO M111.
 - RESISTANCE WELDED STEEL PIPE, 50,000 PSI MIN. YIELD STRENGTH ASTM A569/A569M, A563/A563M OR UNDELETED STOCK OF DISCONTINUED A446/A446M BASE MATERIALS; ASTM F669 GROUP IV (ALTERNATIVE DESIGN); FENCE INDUSTRY 2 7/8" OD, 1 1/2" NPS, 1,900 DEC. EQUIV. 0.120 MIN. WALL THICK. AND MIN. WT. 2.28 LB./FT.; WITH ASTM F1043 METRIC EQUIVALENT INTERNAL COATING TYPES A, B, C OR D AND EXTERNAL COATING TYPES A, B, OR C; THE CHROMATE CONVERSION COATING OF EXTERNAL TYPE B SHALL HAVE A THICKNESS OF 0.0003" MIN. AND THE POLYMER FILM TOPCOAT SHALL HAVE A THICKNESS OF 0.0003" MIN. INTERNAL AND EXTERNAL COATINGS ARE NOT RESTRICTED TO THE COMBINATIONS OF TABLE 2, ASTM F1043.

GENERAL NOTES (CONTINUED):

- CHAIN LINK FABRIC OPTIONS (2" MESH WITH TWISTED AND BARBED SELVAGE TOP AND BOTTOM FOR ALL OPTIONS EXCEPT AS DESCRIBED IN NOTE 11):
 - ASHTO M181 TYPE 1 - ZINC COATED STEEL, NO. 9 GAGE (COATED WIRE DIAMETER), COATED AT THE RATE OF 1.8 OZ./FT². (M181 CLASS D 2.0 OZ./FT², MODIFIED TO 1.8 OZ./FT² CHLORIDE (PVC) COATED STEEL, NO. 9 GAGE (MODIFIED CORE WIRE DIAMETER) CORE WIRE-ZINC COATED STEEL. GALVANIZED M181 CLASS A (EITHER EXTRUDED OR EXTRUDED AND BONDED) OR CLASS B (BONDED). SEE TABLE RIGHT. UNLESS THE PLANS CALL FOR M181 STANDARD COLORS (MEDIUM GREEN, DARK GREEN OR BLACK) THE COATING COLOR SHALL BE SOFT GRAY MATCHING THAT OF NO. 36622 OF FEDERAL STANDARD 595A.
 - TENSION WIRE OPTIONS:
 - STEEL WIRE NO. 7 GAGE ZINC GALVANIZED AT THE RATE OF 1.2 OZ./FT². (ASTM A108).
 - ASTM A108.
- WIRE AND POST RING OPTIONS:
 - SPECIFIC MATERIAL IS CALLED FOR IN THE PLANS THE CONTRACTOR MAY ELECT TO USE EITHER A SINGLE TYPE OF MATERIAL OR A COMBINATION OF MATERIAL TYPES FROM THE COMPONENT OPTIONS LISTED IN NOTE 4, COMBINATIONS OF OPTIONAL MATERIALS ARE RESTRICTED AS FOLLOWS:
 - ONLY ONE FABRIC OPTIONAL MATERIAL WILL BE PERMITTED BETWEEN CORNER AND/OR END POST ASSEMBLIES.
 - ONLY ONE LINE POST OPTIONAL MATERIAL WILL BE PERMITTED BETWEEN CORNER AND/OR END POST ASSEMBLIES.
 - PULL POST ASSEMBLIES SHALL BE OPTIONAL MATERIALS IDENTICAL TO EITHER THE CORNER AND/OR END POST ASSEMBLY OR THE LINE POST ASSEMBLY. BUT PULL POST ASSEMBLIES SHALL BE THE SAME OPTIONAL MATERIAL BETWEEN ANY SET OF CORNER AND/OR END POST ASSEMBLIES.
- CONCRETE FOR BASES SHALL BE CLASS NS CONCRETE AS SPECIFIED IN SECTION 347 OF THE STANDARD SPECIFICATIONS OR A PACKAGED DRY MATERIAL MEETING THE REQUIREMENTS OF A CONCRETE UNDER ASTM C-387. MATERIALS FOR CLASS NS CONCRETE MAY BE PROPORTIONED BY VOLUME AND/OR BY WEIGHT.
- LINE POST SHALL BE 9'-6" LONG (STANDARD). LINE POST ARE TO BE SET IN CONCRETE AS DESCRIBED ABOVE.
- CORNER POST ARE TO BE INSTALLED AT ALL HORIZONTAL BREAKS IN FENCE AT 15' OR MORE AND AS REQUIRED AT VERTICAL BREAKS OVER 15' AS DETERMINED BY THE ENGINEER.
- WHEN FENCE HAS AN INSTALLED TOP OF FABRIC HEIGHT LESS THAN 6' ROUNDED TOP AND BOTTOM SELVAGES SHALL BE USED UNLESS THE PLANS SPECIFICALLY IDENTIFY LOCATIONS FOR TWISTED SELVAGE FABRIC.
- UNLESS STANDING GATES OR SLIDING GATES MEETING THE MATERIAL REQUIREMENTS DESCRIBED AND AS APPROVED BY THE ENGINEER. PAYMENT SHALL INCLUDE THE GATES, SINGLE OR DOUBLE, ALL NECESSARY HARDWARE FOR INSTALLATION AND ANY ADDITIONAL LENGTH AND/OR SIZE FOR POSTS AT THE OPENING.
- FOR CONSTRUCTION PURPOSES CORNER POST ASSEMBLIES SHALL CONSIST OF ONE CORNER POST, TWO BRACES, TWO TRUSS RODS, AND ALL NECESSARY FITTINGS AND HARDWARE AS DETAILED. END POST ASSEMBLIES SHALL CONSIST OF ONE POST, ONE BRACE, ONE TRUSS ROD AND ALL NECESSARY FITTINGS AND HARDWARE AS DETAILED.

TYPE IV VINYL COATED FABRIC									
ASHTO M181 TABLE 4 REDEFINED AS FOLLOWS									
SPECIFIED DIAMETER OF METALLIC COATED OR ZINC COATING OF CORE WIRE					PVC THICKNESS RANGE				
					M181 CLASS A (EXTRUDED OR EXTRUDED AND BONDED COATING)		M181 CLASS B (BONDED COATING)		
IN.	MM	GAGE	OZ./FT ²	G/M ²	IN.	MM	IN.	MM	MM
0.148	3.77	9	0.30	92	0.015 TO 0.025	0.38 TO 0.64	0.006 TO 0.010	0.15 TO 0.25	

NOTE:
INSTALL HULTI KWIK BOLT III IN ACCORDANCE WITH MANUFACTURER'S INSTRUCTIONS.

PROFESSIONAL ENGINEER

ENERCON

FLORIDA POWER & LIGHT
CAPE CANAVERAL POWER PLANT

CHAIN LINK FENCE DETAILS

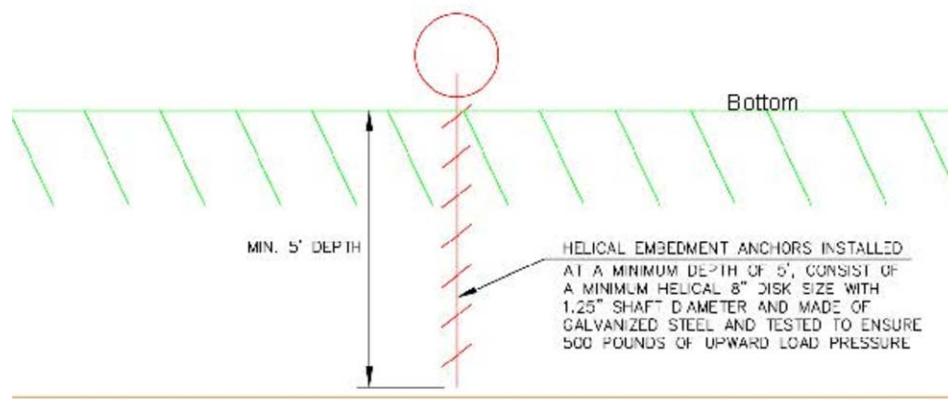
SCALE NONE

SHEET S-5

REV 0

BUOY AND SIGNAGE SPECIFICATION

1. TWO BUOYS SHALL BE PLACED EAST OF THE HORSESHOE CRAB DETERRENT WALL, AS SHOWN ON THE CONSTRUCTION DRAWINGS.
2. CONTRACTOR SHALL EVALUATE POTENTIAL FOR RE-USE OF TWO EXISTING BUOYS LOCATED EAST THE BARRIER NET.
3. BUOYS AND SIGNAGE SHALL CONFORM TO GUIDELINES FOR POSTING UNIFORM WATERWAY MARKERS IN FLORIDA'S WATERWAYS, FLORIDA FISH AND WILDLIFE CONSERVATION COMMISSION, NOVEMBER 2008, AVAILABLE AT http://myfwc.com/media/107062/Boat_WaterwayMarkerGuidelines.pdf
4. TEMPORARY SIGNS CONCERNING MANATEES SHALL BE POSTED PRIOR TO AND DURING ALL IN-WATER PROJECT ACTIVITIES. ALL TEMPORARY SIGNS ARE TO BE REMOVED UPON COMPLETION OF THE PROJECT. TEMPORARY SIGNS THAT HAVE ALREADY BEEN APPROVED FOR THIS USE BY THE FWC MUST BE USED. ONE SIGN WHICH READS *CAUTION: BOATERS* MUST BE POSTED. A SECOND SIGN MEASURING AT LEAST 8.5" BY 11" EXPLAINING THE REQUIREMENTS FOR "IDLE SPEED/NO WAKE" AND THE SHUT DOWN OF IN-WATER OPERATIONS MUST BY POSTED IN A LOCATION PROMINENTLY VISIBLE TO ALL PERSONNEL ENGAGED IN WATER-RELATED ACTIVITIES. THESE SIGNS CAN BE VIEWED AT http://www.myfwc.com/media/1332593/Manatee_SignVendors.pdf.



HELICAL EMBEDMENT ANCHOR SYSTEM

(INSTALLATION WITHIN SAND OR MUD SUBSTRATE GREATER THAN 4 FEET)



MARKER BUOY WITH EXCLUSION SIGNAGE

REFERENCE:

GUIDELINES FOR POSTING UNIFORM WATERWAY MARKERS IN FLORIDA'S WATERWAYS, FLORIDA FISH AND WILDLIFE CONSERVATION COMMISSION, NOVEMBER, 2008.

CAUTION: MANATEE HABITAT

All project vessels

IDLE SPEED / NO WAKE

When a manatee is within 50 feet of work
all in-water activities must

SHUT DOWN

Report any collision with or injury to a manatee:

Wildlife Alert:

1-888-404-FWCC(3922)

cell *FWC or #FWC





Cape Canaveral Manatee Heating Area Thermal Model Summary

Heater Rated Power	Pump Flow	Outside Grd Temp	Refuge Grd Temp	Ext. Water Temp	Air Temp	Wind Speed	Refuge Target Temperature	Predicted Temperatures at 100' Intervals					
% Power	GPM	°F	°F	°F	°F	mph	°F	100	200	300	400	500	600
75	3400	55	55	55	35	20	68	81.6	79.9	78.1	76.4	74.7	70.0
								TS6	TS5	TS4	TS3	TS2	TS1

Model is based upon the following:
New suction point, 2 Pump Flow, Heater Max Capacity 34 Mbtu/hr, 10% added margin for heat losses.
Average Refuge Temperature: 76 F
100' Interval temperature ranges may be adjusted by changing heater thermal power or pump output
Temperature delta between TS2 and TS1 largely due to influence of tidal flush
Tidal flush only included in final segment since pump flow rate exceeds tidal flush
Non-dredged area for protection of sea grasses at east end of Manatee Heating Area is not modeled.

Losses at TS2-TS6:
Losses through heating area walls and bottom : 6%
Evaporative losses: 60%
Convective and radiation losses: 34%

Losses at TS1:
Losses through heating area walls and bottom: 1%
Evaporative losses: 13%
Convective and radiation losses: 7%
Tidal Flushing Losses : 79%



FLORIDA POWER & LIGHT
CAPE CANAVERAL POWER PLANT

MANATEE HEATING AREA
THERMAL MODEL

REV	DESCRIPTION	DRN	CHK	REV	APP	DATE	SIZE	DWG NO.	SCALE	SHEET	1 of 1
0	INITIAL ISSUE					3/24/16	B	FIGURE 1	NONE		

Attachment I

Easement Sketch

PROPOSED DREDGING AREA EASEMENT

A portion of Section 19, Township 23 South, Range 36 East, the affected waterway Indian River described as follows:

Commence at the concrete monument at the southwest corner of Parcel 14 as recorded in Official Record Book 886, Page 678, also on the easterly right of way line of U.S. Highway #1, also known as State Road #5; thence along the easterly right of way line of U.S. Highway #1 N 14°53'20" W a distance of 365.43' to a point;

thence leaving said right of way line and along the northerly extension line of the Proposed Dredging Area Easement S 89°41'15" E, 281.74' to the POINT OF BEGINNING having Florida State Plane Coordinates of N(Y)=1,502,961.83', E(X)=731,835.29' (FL East Zone, NAD 83) 1990, US Survey Feet);

thence S 89°41'15" E a distance of 660.42' to a point;

thence S 02°01'17" E a distance of 59.01' to a point;

thence N 88°19'22" W a distance of 50.09' to a point;

thence S 89°11'39" W a distance of 107.81' to a point;

thence N 87°16'05" W a distance of 271.15' to a point;

thence N 41°32'32" W a distance of 11.43' to a point;

thence N 88°39'41" W a distance of 70.63' to a point;

thence S 42°27'45" W a distance of 10.24' to a point;

thence N 87°55'03" W a distance of 149.52' to a point;

thence along the actual ordinary high water line N 01°02'38" E a distance of 41.63' to a point which is the point of beginning,

Containing an area of 33,821 square feet or 0.776 acres

PROPOSED HORSESHOE CRAB DETERRENT WALL EASEMENT

A portion of Section 19, Township 23 South, Range 36 East, the affected waterway Indian River described as follows:

Commence at the concrete monument at the southwest corner of Parcel 14 as recorded in Official Record Book 886, Page 678, also on the easterly right of way line of U.S. Highway #1, also known as State Road #5; thence along the southerly line of Parcel 14 S 89°48'03" E a distance of 695.55' to a concrete monument;

thence continuing along said line S 89°48'03" E, 350.10' to the point;

thence N 00°00'00" E, 193.87' to the point;

thence along the northerly line of the Proposed Manatee Heating Area Easement the following three courses and distances:

thence N 89°40'31" E a distance of 121.75' to a point;

thence N 00°16'21" W a distance of 36.29' to a point;

thence N 89°43'39" E a distance of 663.81' to a point;

thence leaving said easement N 01°41'52" W a distance of 45.88' to the POINT OF BEGINNING having Florida State Plane Coordinates of N(Y)=1,502,886.45', E(X)=733,477.12' (FL East Zone, NAD 83) 1990, US Survey Feet);

thence N 40°19'08" E a distance of 339.05' to a point;

thence along the actual ordinary high water line S 69°24'18" E a distance of 11.51' to a point;

thence S 40°19'08" W a distance of 342.93' to a point;

thence N 49°40'52" W a distance of 10.83' to a point which is the point of beginning,

Containing an area of 3,694 square feet or 0.085 acres

PROPOSED MANATEE HEATING AREA EASEMENT

A portion of Section 19, Township 23 South, Range 36 East, the affected waterway Indian River described as follows:

Commence at the concrete monument at the southwest corner of Parcel 14 as recorded in Official Record Book 886, Page 678, also on the easterly right of way line of U.S. Highway #1, also known as State Road #5; thence along the southerly line of Parcel 14 S 89°48'03" E a distance of 695.55' to a concrete monument;

thence continuing along said line S 89°48'03" E, 350.10' to the point;

thence N 00°00'00" E, 193.87' to the POINT OF BEGINNING having Florida State Plane Coordinates of N(Y)=1,502,800.44', E(X)=732,693.10' (FL East Zone, NAD 83) 1990, US Survey Feet);

thence N 89°40'31" E a distance of 121.75' to a point;

thence N 00°16'21" W a distance of 36.29' to a point;

thence N 89°43'39" E a distance of 663.81' to a point;

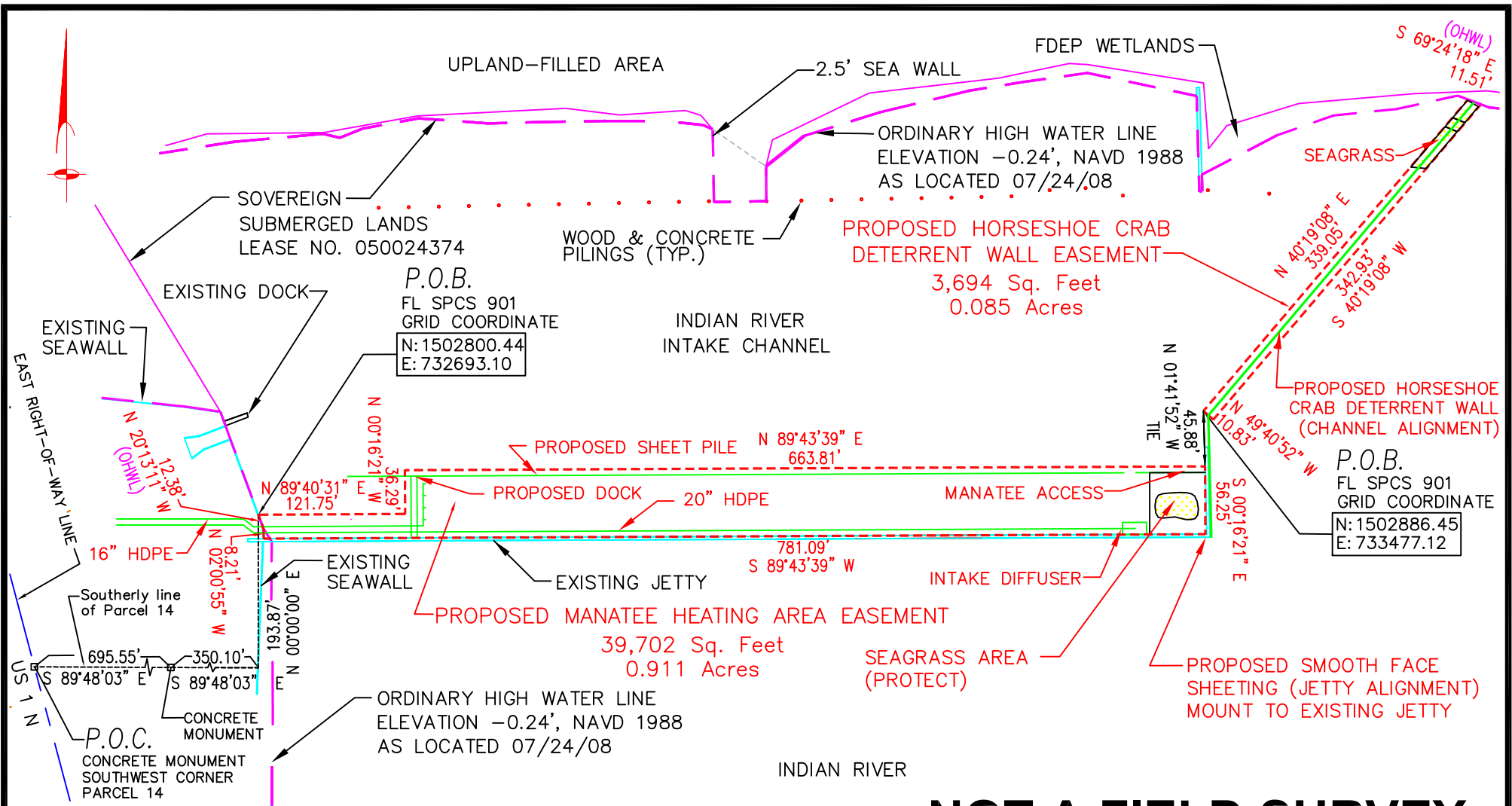
thence S 00°16'21" E a distance of 56.25' to a point;

thence S 89°43'39" W a distance of 781.09' to a point;

thence N 02°00'55" W a distance of 8.21' to a point;

thence along the actual ordinary high water line N 20°13'11" W a distance of 12.38' to a point which is the point of beginning,

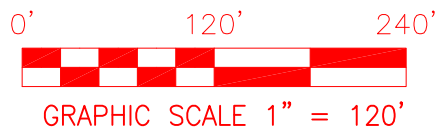
Containing an area of 39,702 square feet or 0.911 acres



NOT A FIELD SURVEY

I HEREBY CERTIFY THAT THIS SKETCH OF DESCRIPTION (SKETCH OF THE EASEMENT/LEASE AREA) IS IN COMPLIANCE WITH THE MINIMUM TECHNICAL STANDARDS PURSUANT TO CHAPTER 61G17-6, FLORIDA ADMINISTRATIVE CODE.

SIGNATURE _____ DATE _____
 STEVEN E. SEMPLE, PLS #5489
 FLORIDA PROFESSIONAL SURVEYOR AND MAPPER

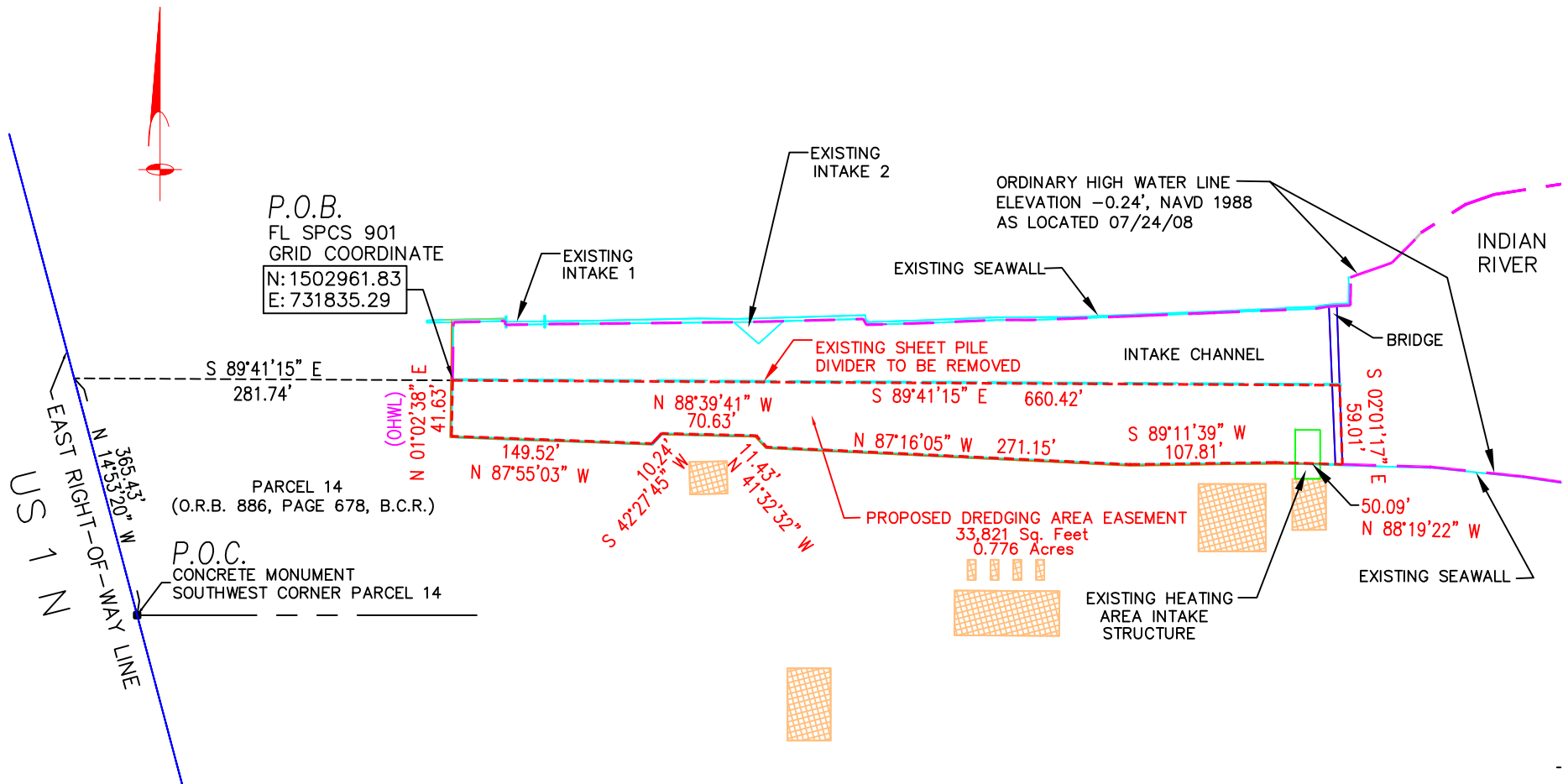


ENERCON SURVEY AND MAPPING, LLC

An **ENERCON** Company
 1540 International Parkway, Suite 2000
 Lake Mary, FL 32746
 Voice: (403) 536-5367 www.ssemples@enercon.com Fax: (724) 635-0676



EASEMENT DETAIL	
FLORIDA POWER & LIGHT CAPE CANAVERAL POWER PLANT	
DRAWN BY: MES	SECTION 19, TOWNSHIP 23 S, RANGE 36E. BREVARD COUNTY, FLORIDA
DATE: 3-09-16	SHEET: 1 OF 3
SCALE: 1"=120'	FILE NO. FPLCORP008



LEGEND



EXISTING STRUCTURE

I HEREBY CERTIFY THAT THIS SKETCH OF DESCRIPTION (SKETCH OF THE EASEMENT/LEASE AREA) IS IN COMPLIANCE WITH THE MINIMUM TECHNICAL STANDARDS PURSUANT TO CHAPTER 61G17-6, FLORIDA ADMINISTRATIVE CODE.

SIGNATURE

DATE

STEVEN E. SEMPLE, PLS #5489
FLORIDA PROFESSIONAL SURVEYOR AND MAPPER

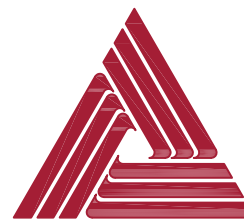
NOT A FIELD SURVEY

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EASEMENT DETAIL

FLORIDA POWER & LIGHT
CAPE CANAVERAL POWER PLANT

DRAWN BY:
MES

SECTION 19, TOWNSHIP 23 S, RANGE 36E.
BREVARD COUNTY, FLORIDA

DATE:
3-09-16

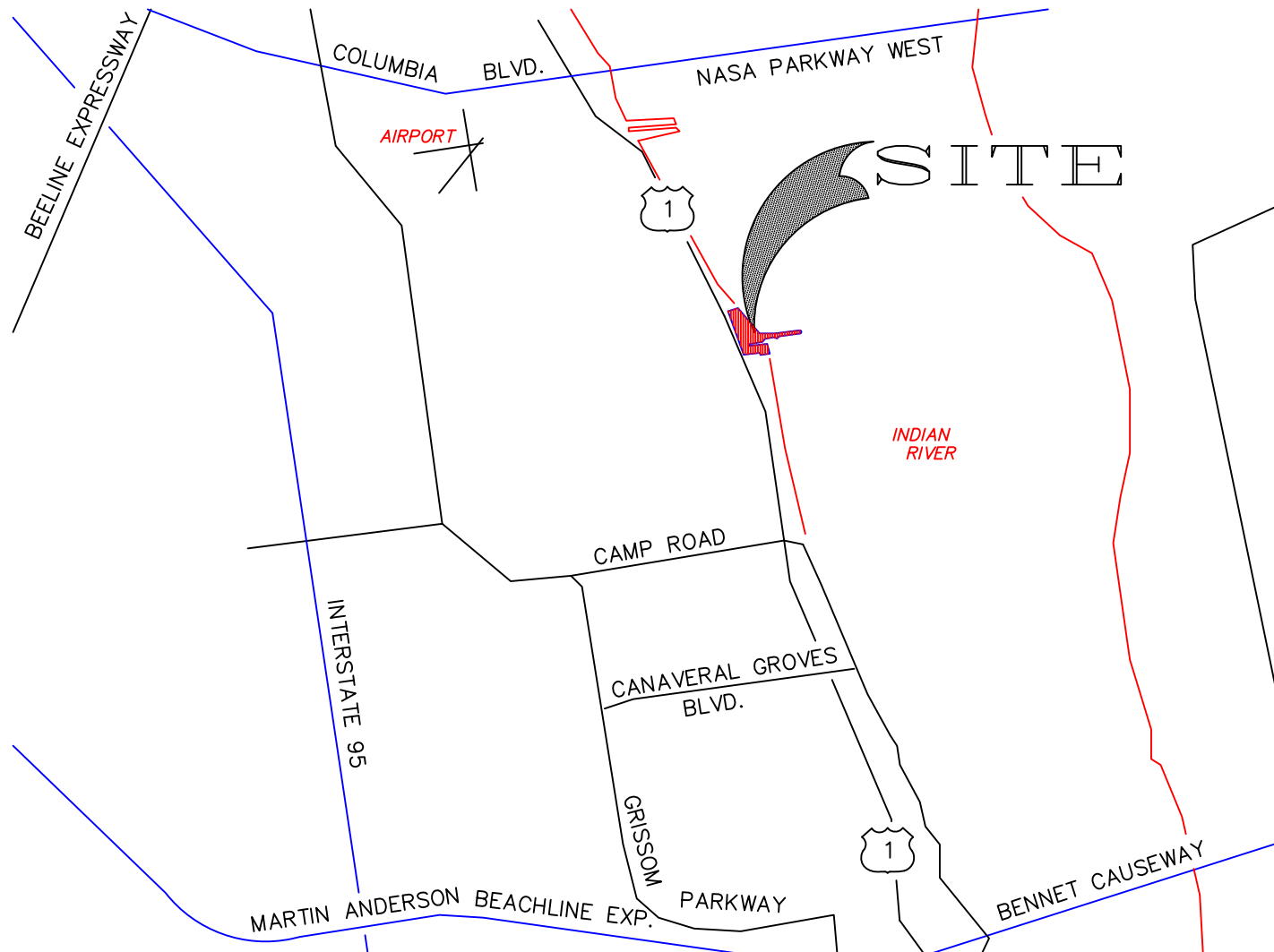
SHEET:

FILE NO.

SCALE:
1"=120'

2 OF 3

FPLCORP008



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VICINITY MAP

FLORIDA POWER & LIGHT CAPE CANAVERAL POWER PLANT

DRAWN BY:
MES

DATE:
3-09-16

SCALE:
NTS

**SECTION 19, TOWNSHIP 23 S, RANGE 36E.
 BREVARD COUNTY, FLORIDA**

SHEET: **3 OF 3** FILE NO. **FPLCORP008**