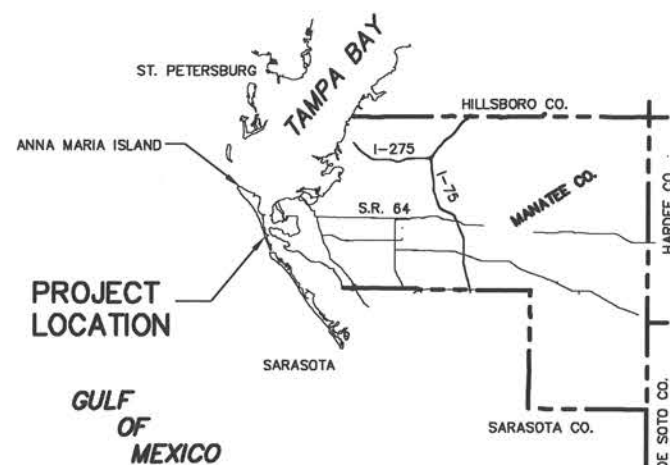
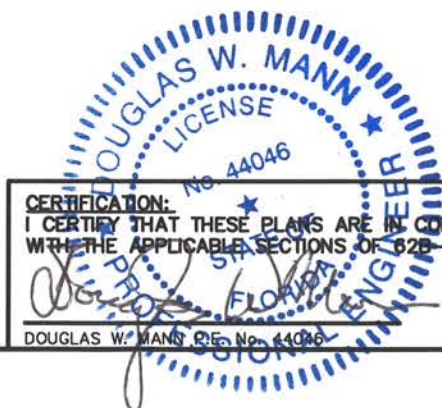


CORTEZ GROINS REMOVAL AND REPLACEMENT PROJECT MANATEE COUNTY, FLORIDA



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LARRY BUSTLE	
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SHEET INDEX	
NO.	TITLE
1	COVER SHEET
2	STRUCTURES REMOVAL PLAN VIEW
3-4	CONSTRUCTION PLAN VIEW
5-10	CONSTRUCTION DETAILS
11-13	TYPICAL LONGITUDINAL CROSS SECTION
14-16	GEOTECHNICAL DATA
17	CONSTRUCTION ACCESS AND STAGING AREAS PLAN VIEW



CERTIFICATION:
I CERTIFY THAT THESE PLANS ARE IN COMPLIANCE
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DOUGLAS W. MANN, P.E., No. 44046
DATE 9/5/14

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No.	Description

Designed by: DM	Checked by: AMB	Reviewed by: DM	Submitted by: DM	Comm. No.: 148236
Dates: 2/25/14	Pilot Scale: AS NOTED			

CORTEZ GROINS
REMOVAL AND REPLACEMENT PROJECT
MANATEE COUNTY, FLORIDA
COVER SHEET

DRAWING NO.
CS-1
SHEET 1 OF 17



NOTES:

1. COORDINATES ARE IN FEET BASED ON FLORIDA STATE PLANE COORDINATE SYSTEM, WEST ZONE, NORTH AMERICAN DATUM OF 1983 (NAD83).
2. DATE OF AERIAL PHOTOGRAPH: 8/10/12.

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Submitted by:	DM
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CORTEZ GROINS
REMOVAL AND REPLACEMENT PROJECT
MANATEE COUNTY, FLORIDA
STRUCTURES REMOVAL
PLAN VIEW

DRAWING NO.
PV-1
SHEET 2 OF 17

CERTIFICATION
I CERTIFY THAT THESE PLANS ARE IN COMPLIANCE
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DOUGLAS W. MANN P.E. No. 44046
9/5/14
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	DM	GK	
	Submitted by:	Date:	
	DM	2/25/14	
	Comm. No.:	Plot Scale:	
	148236	AS NOTED	

CORTEZ GROINS
REMOVAL AND REPLACEMENT PROJECT
MANATEE COUNTY, FLORIDA

CONSTRUCTION
PLAN VIEW

DRAWING NO.
PV-2

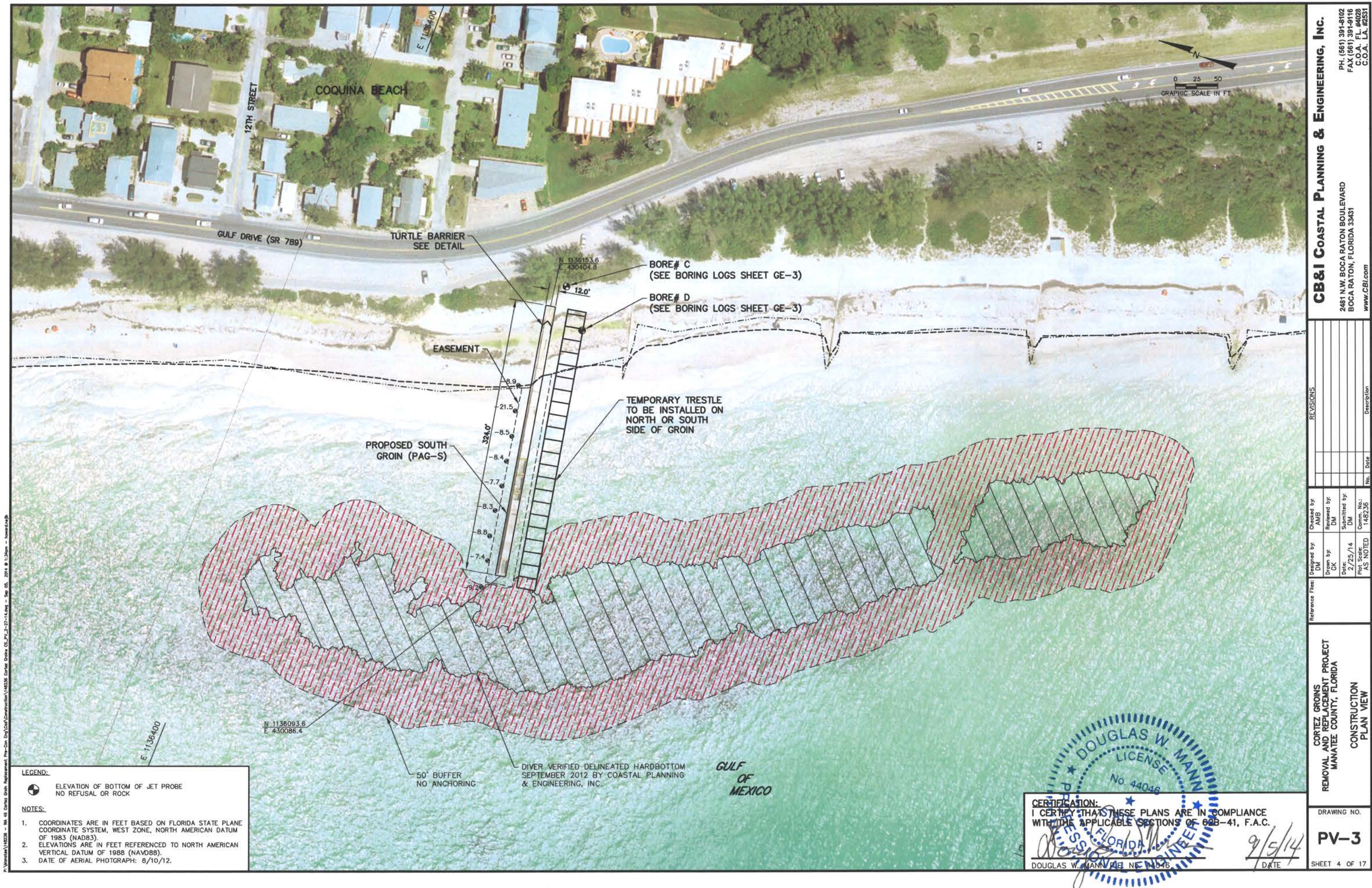
SHEET 3 OF 17

DOUGLAS W. MANN
LICENSE
No. 44046

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I CERTIFY THAT THESE PLANS ARE IN COMPLIANCE
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[Signature]
DOUGLAS W. MANN, P.E. No. 44046

9/5/14
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LEGEND:
ELEVATION OF BOTTOM OF JET PROBE
NO REFUSAL OR ROCK

- NOTES:
1. COORDINATES ARE IN FEET BASED ON FLORIDA STATE PLANE COORDINATE SYSTEM, WEST ZONE, NORTH AMERICAN DATUM OF 1983 (NAD83).
 2. ELEVATIONS ARE IN FEET REFERENCED TO NORTH AMERICAN VERTICAL DATUM OF 1988 (NAVD88).
 3. DATE OF AERIAL PHOTOGRAPH: 8/10/12.

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FLORIDA
LICENSE
No. 44046

9/5/14
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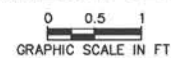
REVISIONS	No.	Date	Description

CORTEZ GROINS
REMOVAL AND REPLACEMENT PROJECT
MANATEE COUNTY, FLORIDA

CONSTRUCTION
PLAN VIEW

DRAWING NO.
PV-3

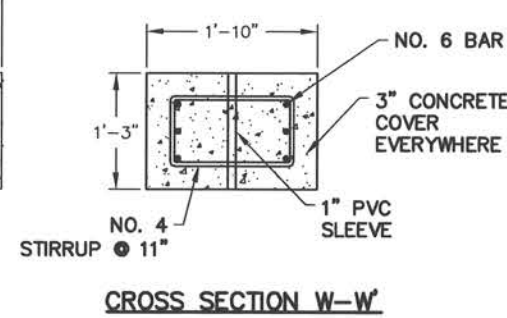
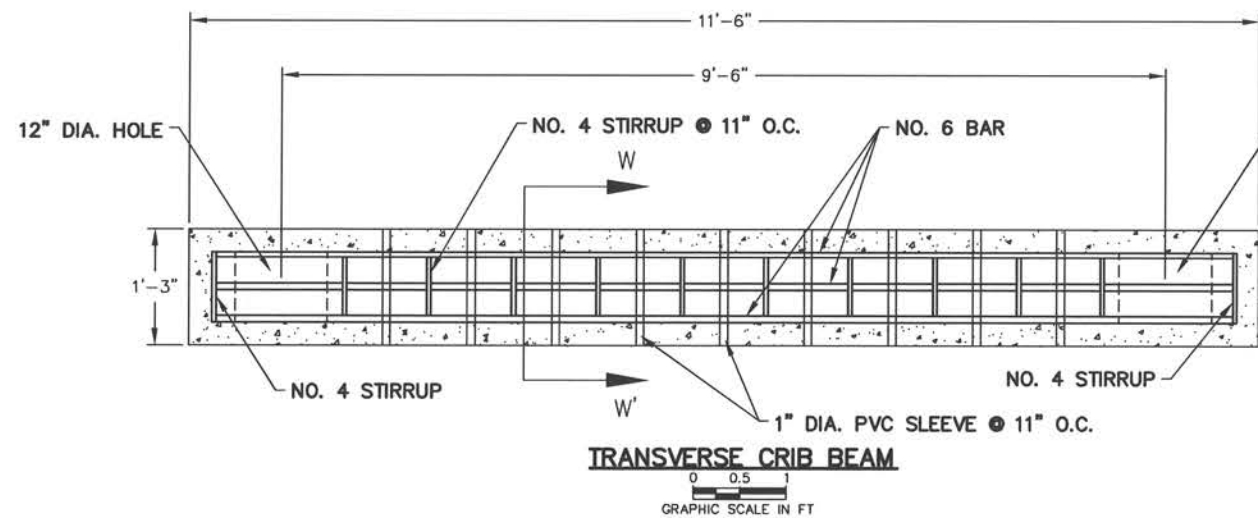
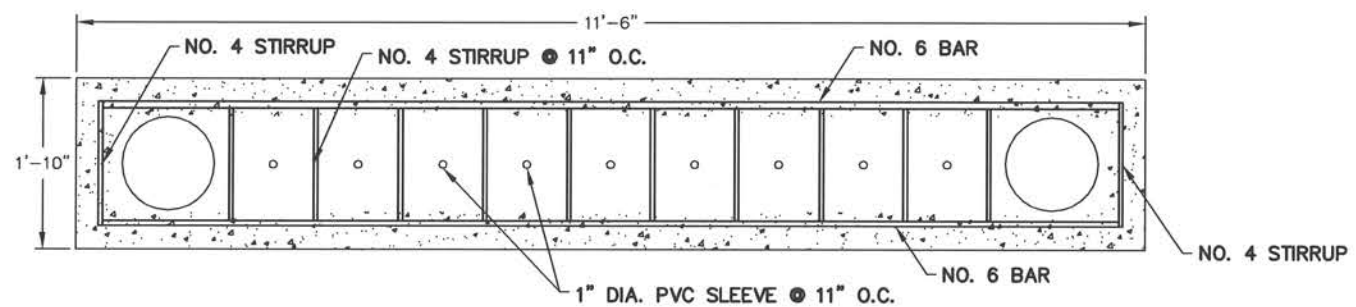
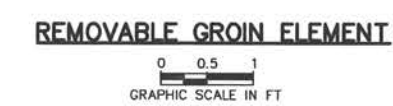
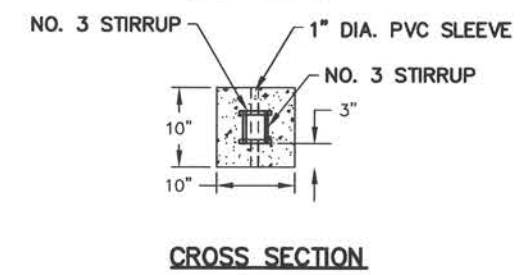
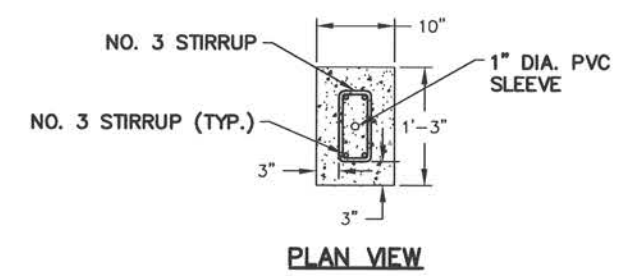
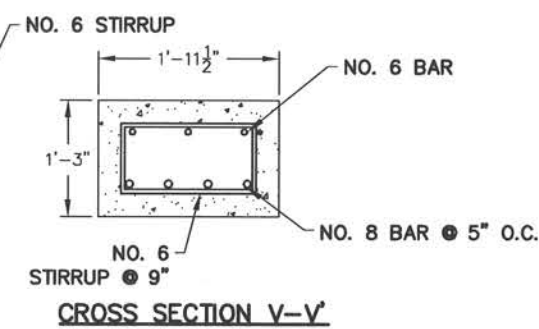
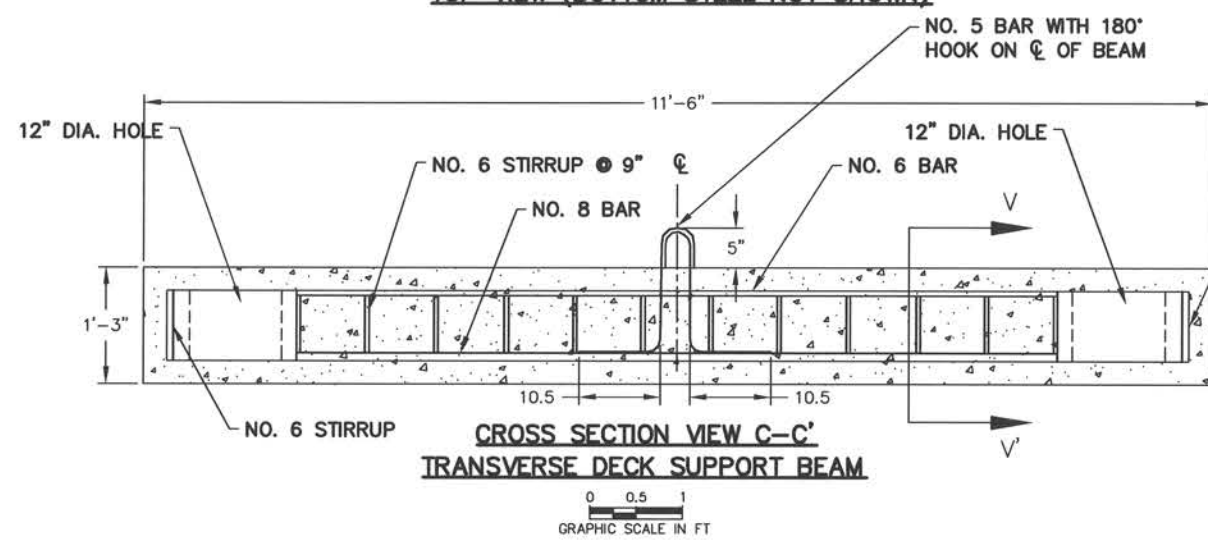
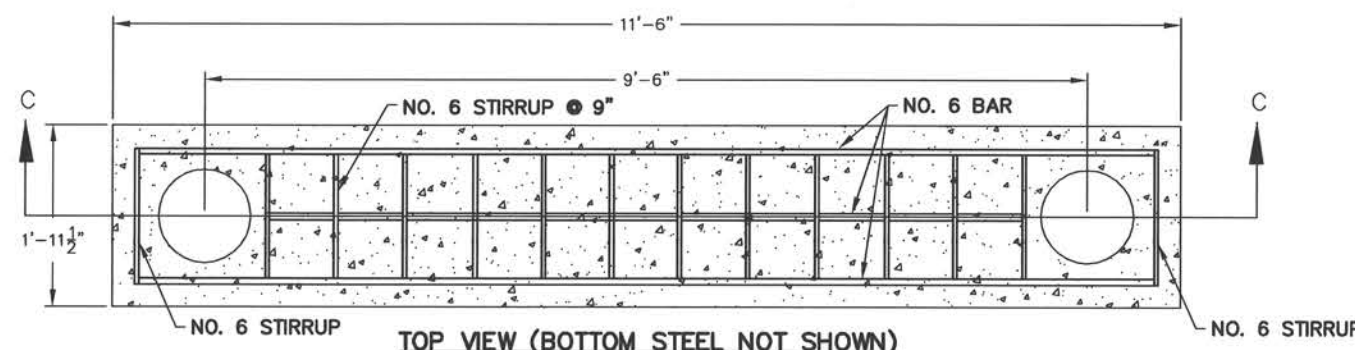
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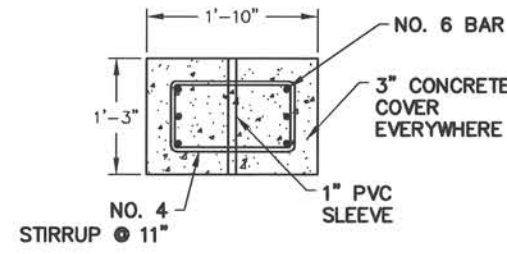
DOUGLAS W. MANN P. ENG. 44046

9/5/14
DATE

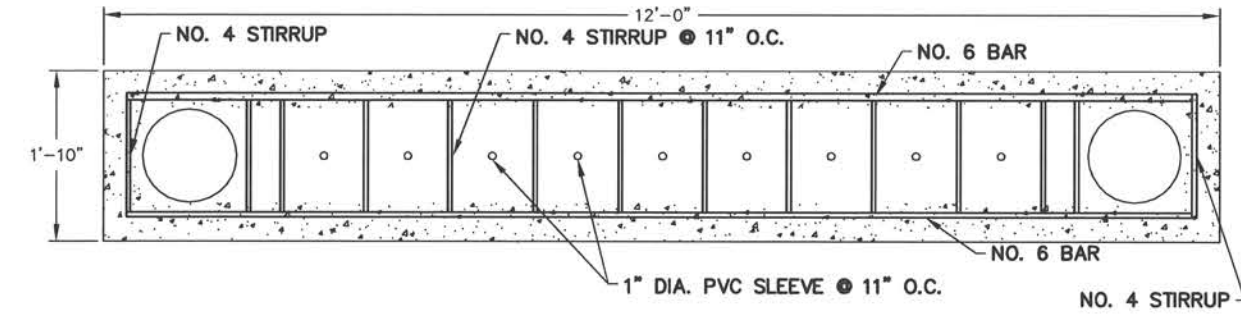
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DE-1
HEET 5 OF 17



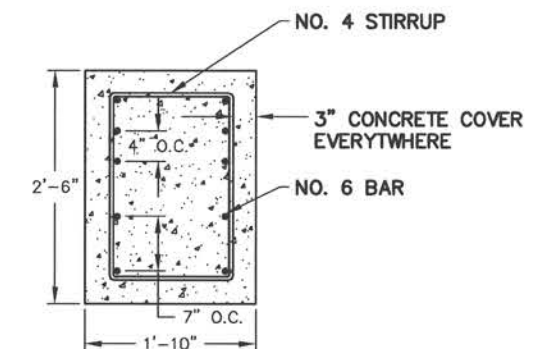
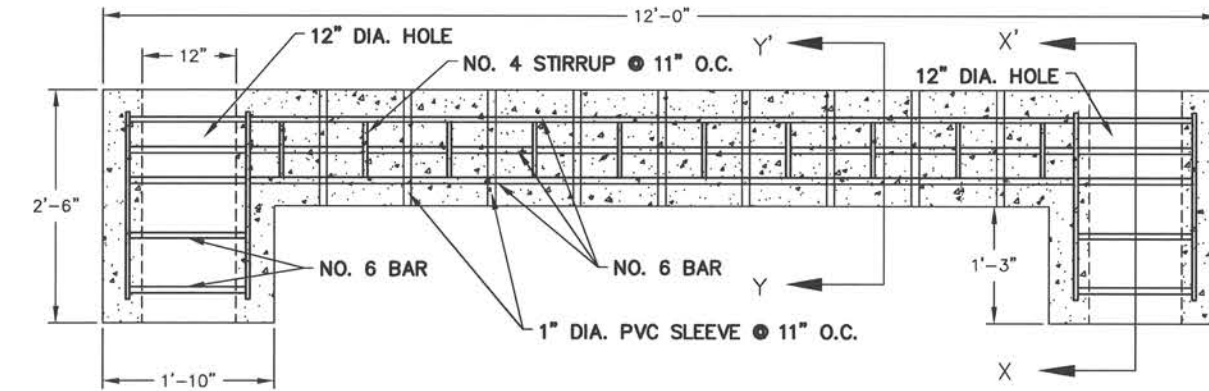
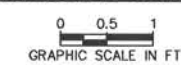
DOUGLAS W. MANN
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No. 44046
FLORIDA
REGISTERED PROFESSIONAL ENGINEER
I CERTIFY THAT THESE PLANS ARE IN COMPLIANCE WITH THE APPLICABLE SECTIONS OF 62B-41, F.A.C.
DATE 9/5/14



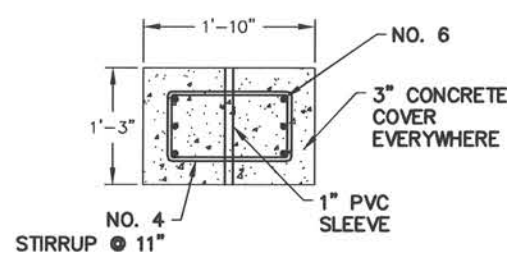
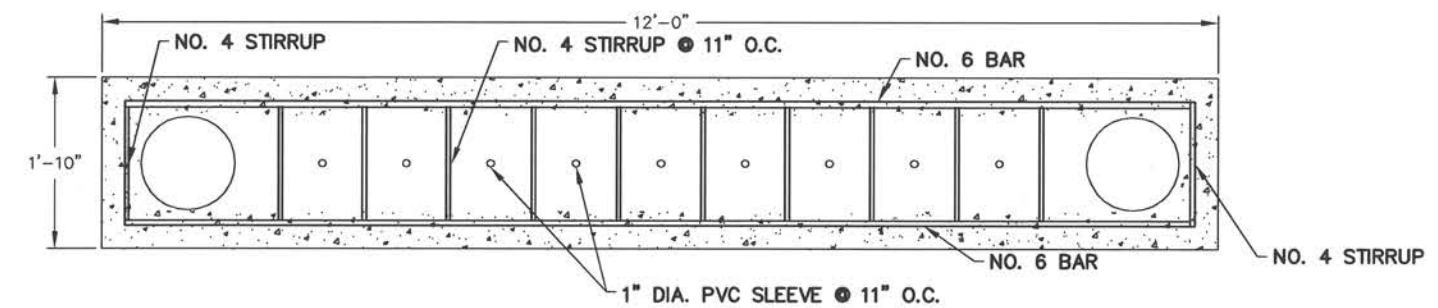
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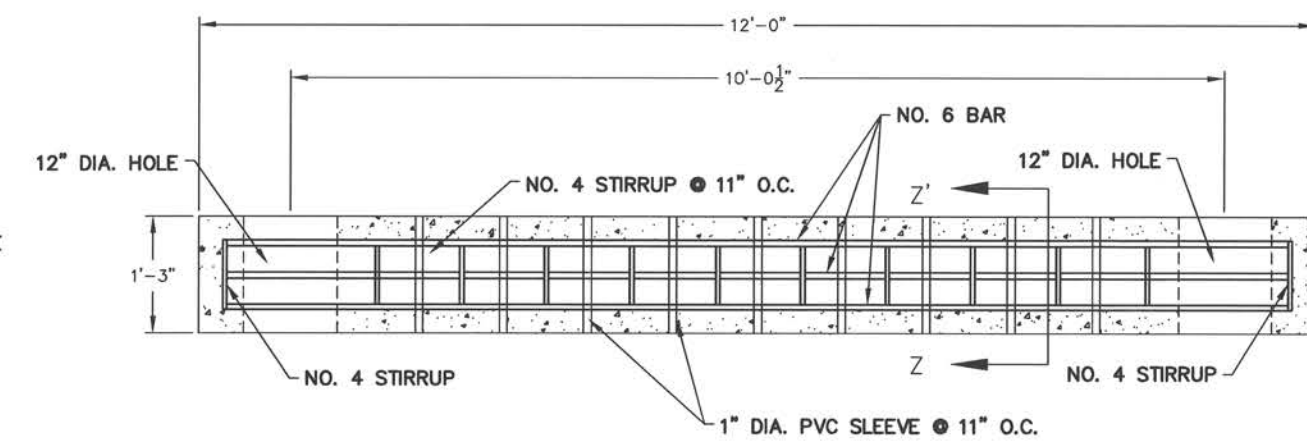
LONGITUDINAL CRIB BEAM



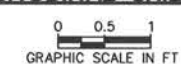
CROSS SECTION X-X'



CROSS SECTION Z-Z'



LONGITUDINAL CRIB BEAM



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DATE 9/5/14

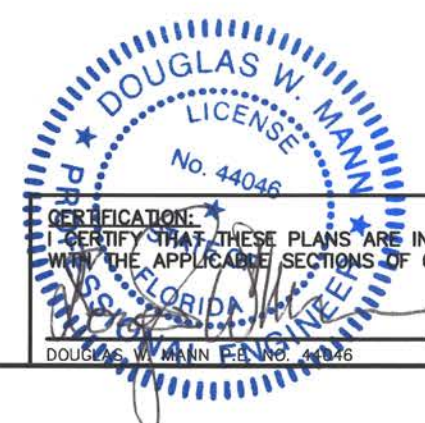
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		Reviewed by:	Drawn by:	
		SD	CK	
		Submitted by:	Date:	
		SD	2/25/14	
		Comm. No.:	Plot Scale:	
		147236	AS NOTED	

CORTEZ GROINS
 REMOVAL AND REPLACEMENT PROJECT
 MANATEE COUNTY, FLORIDA
 CONSTRUCTION DETAILS

DRAWING NO.
DE-3
 SHEET 7 OF 17

P:\Projects\144236 - No. 45 Cortez Groin Replacement (Pre-Construction)\144236 Cortez Groin Replacement\144236 DE-3.dwg - Sep 05, 2014 @ 1:30pm - User:dwj



1. GROUT HOLES WITH 5000 PSI GROUT WITH PEA GRAVEL.
2. STEEL REINFORCING AND CONNECTION DETAILS NOT SHOWN.

LONGITUDINAL CROSS SECTION

0 0.5 1
GRAPHIC SCALE IN FT

DECK ADJUSTMENT PLATE DETAIL

0 0.5 1
GRAPHIC SCALE IN FT

[illegible]

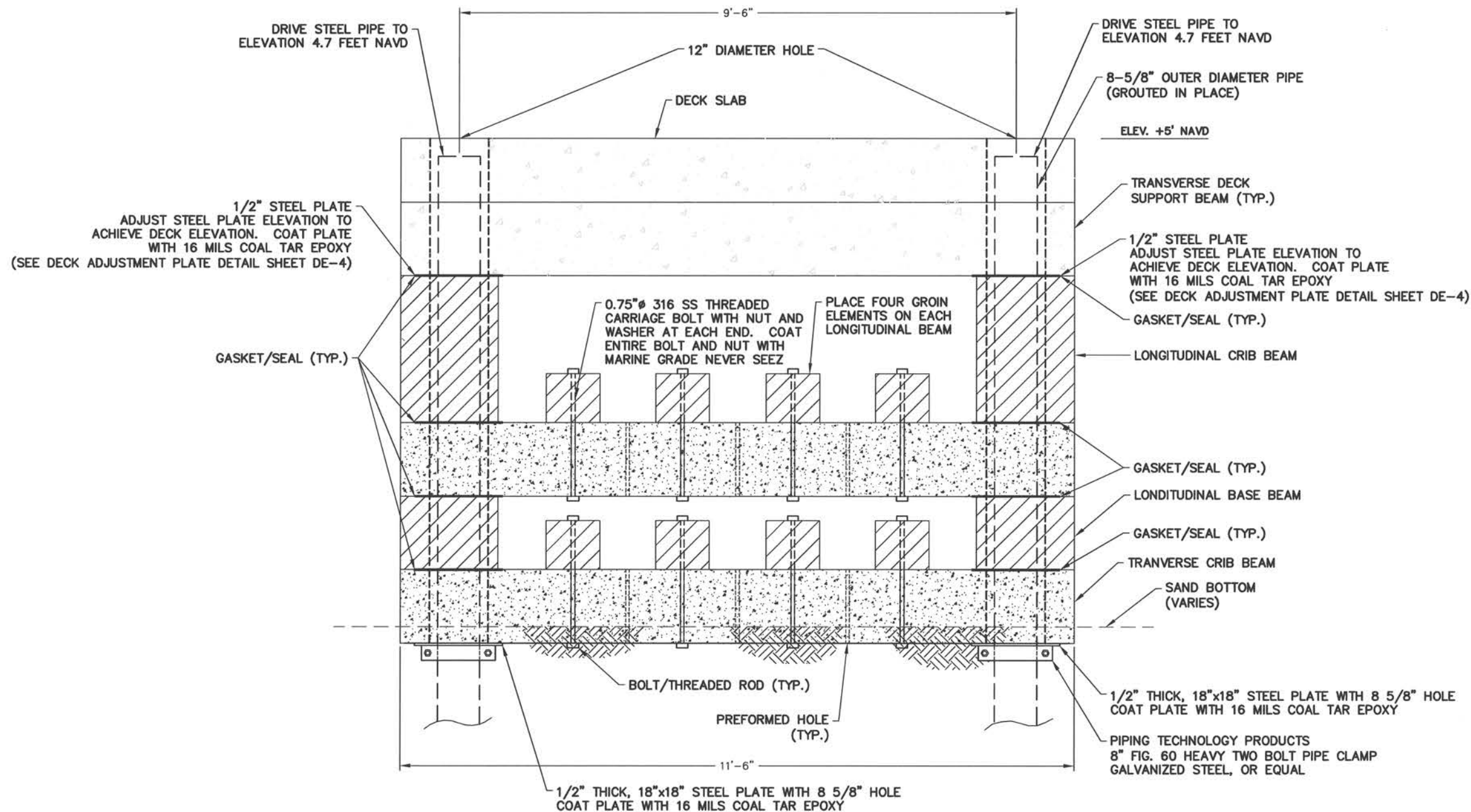
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	Drawn by: GK	Reviewed by: SD
	Date: 2/25/14	Submitted by: SD
	Plot Scale: AS NOTED	Comm. No.: 147236

**CORTEZ GROINS
REMOVAL AND REPLACEMENT PROJECT
MANATEE COUNTY, FLORIDA
CONSTRUCTION DETAILS**

DRAWING NO.

DE-4

SHEET 8 OF 17

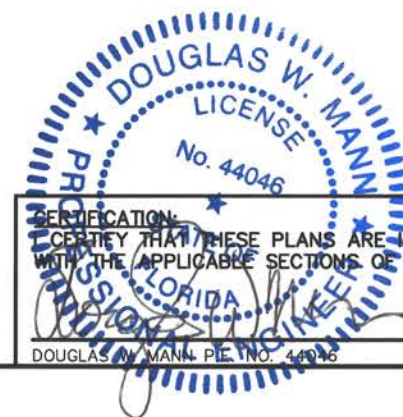


TRANSVERSE CROSS SECTION



NOTE:

1. GROUT HOLES WITH 5000 PSI GROUT WITH PEA GRAVEL.
2. STEEL REINFORCING AND CONNECTION DETAILS NOT SHOWN.



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WITH THE APPLICABLE SECTIONS OF 62B-41, F.A.C.

DOUGLAS W. MANN, P.E. NO. 44046

9/5/14
DATE

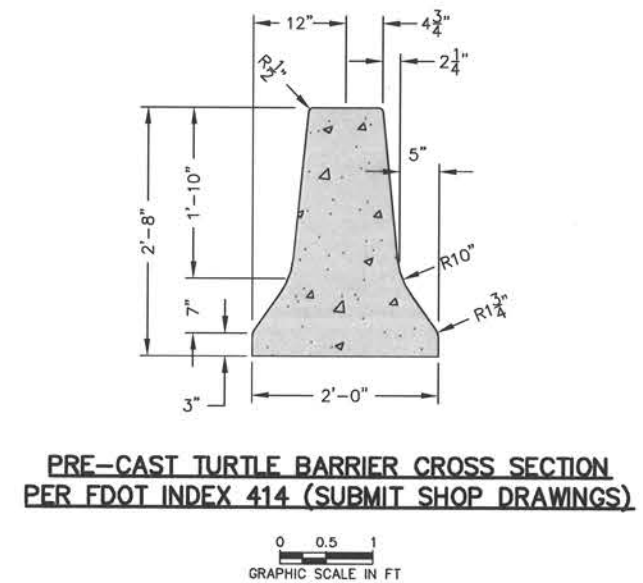
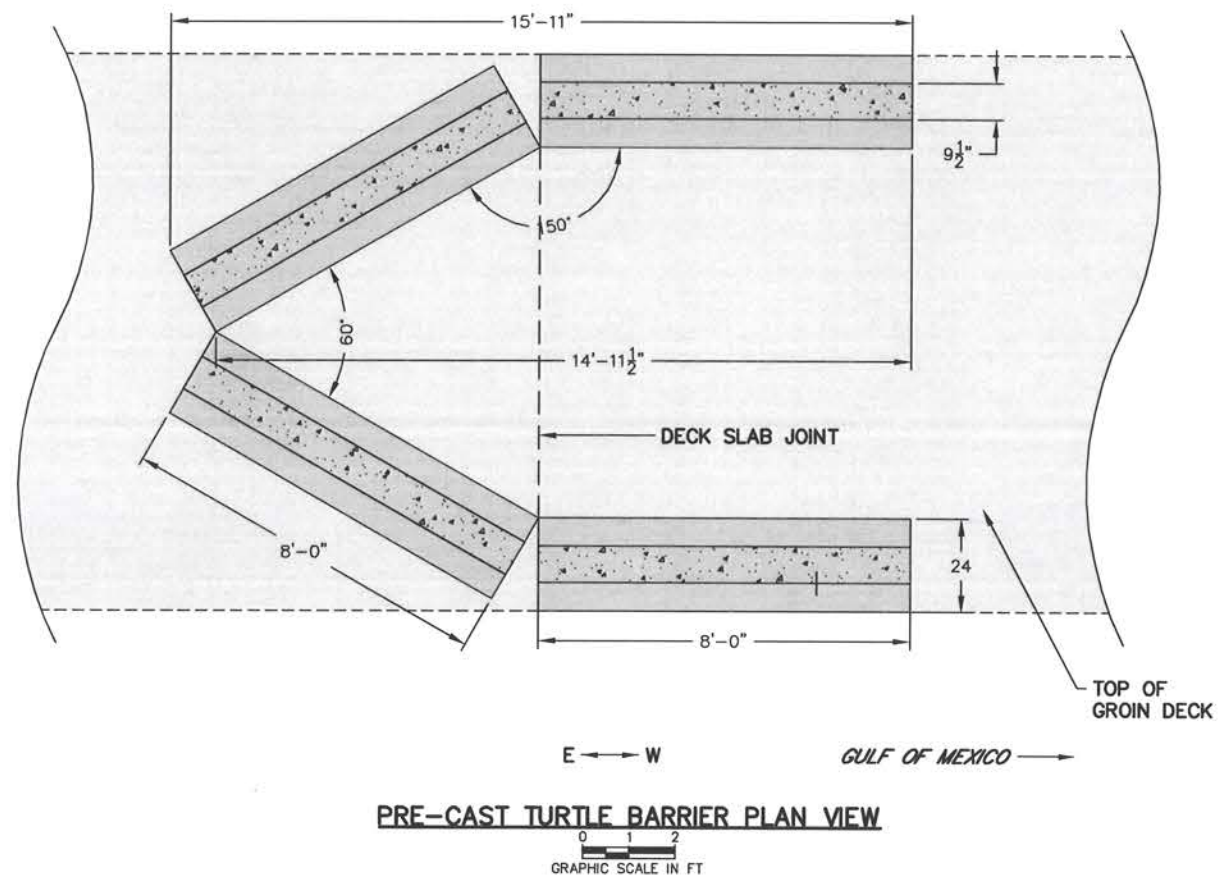
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REVISIONS	Checked by:	Designed by:	Reference Files:
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	Reviewed by:	Drawn by:	
	SD	JRC	
	Submitted by:	Date:	
	SD	2/25/14	
	Comm. No.:	Plot Scale:	
	147236	AS NOTED	

**CORTEZ GROINS
REMOVAL AND REPLACEMENT PROJECT
MANATEE COUNTY, FLORIDA
CONSTRUCTION DETAILS**

DRAWING NO.
DE-5
SHEET 9 OF 17

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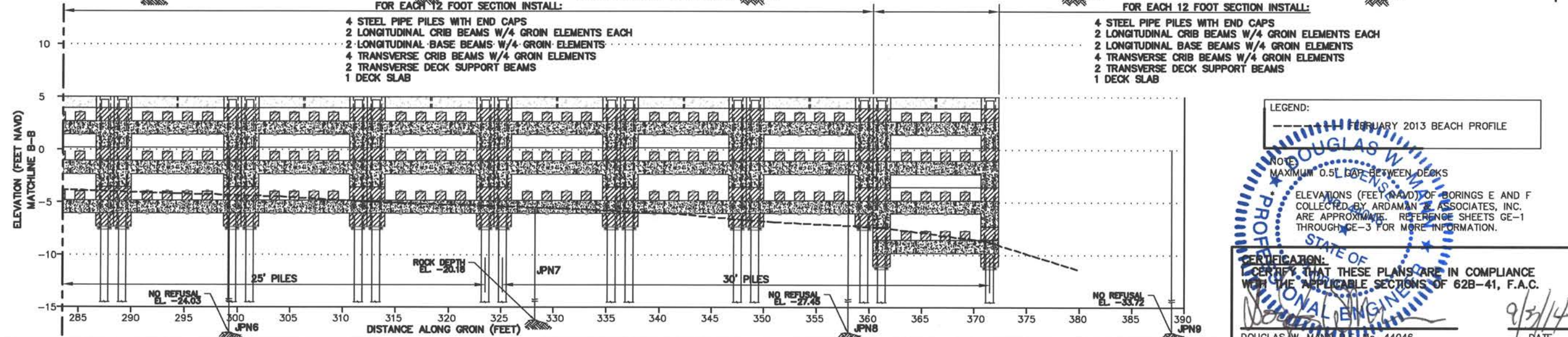
PRE-CAST TURTLE BARRIER CROSS SECTION
PER FDOT INDEX 414 (SUBMIT SHOP DRAWINGS)

CERTIFICATION:
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WITH THE APPLICABLE SECTIONS OF 62B-41, F.A.C.

DOUGLAS W. MANN
LICENSE
No. 44048
FLORIDA
REGISTERED PROFESSIONAL ENGINEER

DATE: 9/5/14

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Submitted by: SD	Date: 2/25/14
Comm. No.: 147236	Plot Scale: AS NOTED
No.	Date
Description	
CORTIZ GROINS REMOVAL AND REPLACEMENT PROJECT MANATEE COUNTY, FLORIDA PRE-CAST TURTLE BARRIER DETAILS	
DRAWING NO. DE-6	
SHEET 10 OF 17	



STATE OF
 I HEREBY CERTIFY THAT THESE PLANS ARE IN COMPLIANCE
 WITH THE APPLICABLE SECTIONS OF 62B-41, F.A.C.

Douglas W. Mann
 DOUGLAS W. MANN P.E. No. 44046

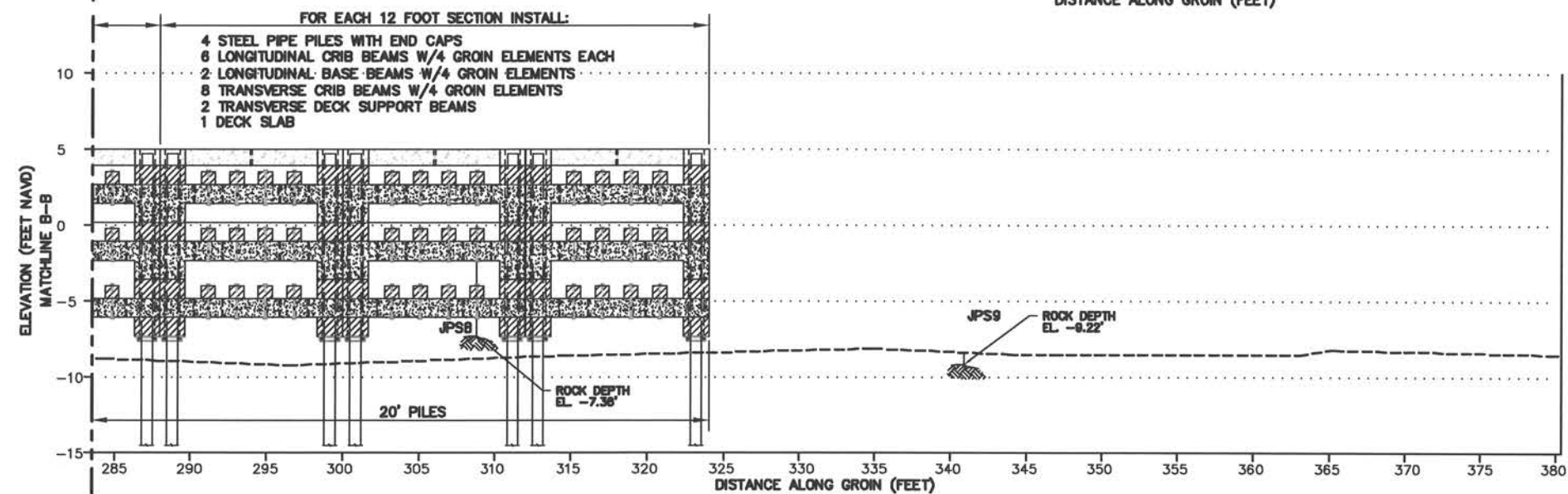
9/3/11
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**CORTIZ GROINS
REMOVAL AND REPLACEMENT PROJECT
MANATEE COUNTY, FLORIDA
SOUTH GROIN PAG-N
LONGITUDINAL
CROSS SECTION**

DRAWING NO.

XS-1

SHEET 11 OF 17



FOR EACH 12 FOOT SECTION INSTALL:

- 4 STEEL PIPE PILES WITH END CAPS
- 4 LONGITUDINAL CRIB BEAMS W/4 GROIN ELEMENTS EACH
- 2 LONGITUDINAL BASE BEAMS W/4 GROIN ELEMENTS
- 6 TRANSVERSE CRIB BEAMS W/4 GROIN ELEMENTS
- 2 TRANSVERSE DECK SUPPORT BEAMS
- 1 DECK SLAB

FOR EACH 12 FOOT SECTION INSTALL:

- 4 STEEL PIPE PILES WITH END CAPS
- 6 LONGITUDINAL CRIB BEAMS W/4 GROIN ELEMENTS EACH
- 2 LONGITUDINAL BASE BEAMS W/4 GROIN ELEMENTS
- 8 TRANSVERSE CRIB BEAMS W/4 GROIN ELEMENTS
- 2 TRANSVERSE DECK SUPPORT BEAMS
- 1 DECK SLAB

NOTE:
MAXIMUM 0.5" GAP BETWEEN DECKS

* ELEVATIONS (FEET NAVD) OF BORINGS C (NOT SHOWN) AND D COLLECTED BY ARDMAN & ASSOCIATES, INC. ARE APPROXIMATE. REFERENCE SHEETS GE-1 THROUGH GE-3 FOR MORE INFORMATION.

CERTIFICATION:
I CERTIFY THAT THESE PLANS ARE IN COMPLIANCE
WITH THE APPLICABLE SECTIONS OF 62B-41, F.A.C.

DOUGLAS M. MANN, P.E. No. 44046

9/5/14
DATE

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C.O.A. #A02000000

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Pilot Scale AS NOTED	Comm. No.: 147238					
	No.	Date	Description			

**CORTEZ GROINS
REMOVAL AND REPLACEMENT PROJECT
MANATEE COUNTY, FLORIDA
SOUTH GROIN PAG--S
LONGITUDINAL
CROSS SECTION**

DRAWING NO.

XS-3

SHEET 13 OF 17

P:\Misc\142228 - 14.46 Cortez Grns Replacement, Pre-Op, Day\Drawings\142228 Cortez Grns Replacement - Day 14.46 - 2/14/14.dwg - Day 14.46 - 2/14/14.dwg - 2/14/14.dwg - 2/14/14.dwg - 2/14/14.dwg

Coastal Planning & Engineering, Inc.
File No. 13-7053
April 11, 2013

4

The values listed in the table are for the soils in their in situ condition. If backfill is to be placed next to structures, these values may not be relevant. For a clean well compacted granular (sand) backfill, we recommend an internal friction angle of 32° and a saturated unit weight of 125 pcf.

Lateral earth pressures include lateral loading due to soil and water. The lateral earth pressure will be a function of both the submerged soil unit weight and the depth below the ground surface. For clean well compacted granular backfill, the coefficient of earth pressure at rest (K_0) is 0.5. The active and passive earth pressure coefficients (K_a and K_p) are a function of the internal friction angle of the soil and are summarized in the following table.

Internal Friction Angle (degrees)	Active Earth Pressure Coef.	Passive Earth Pressure Coef.
28	0.361	2.77
29	0.347	2.88
30	0.333	3.00
31	0.320	3.12
32	0.307	3.25
33	0.295	3.39
34	0.283	3.54
35	0.271	3.69
36	0.260	3.85
37	0.248	4.02
38	0.236	4.20
39	0.226	4.40
40	0.217	4.60
41	0.208	4.81

In selecting earth pressure coefficients suitable for design, the methods of construction should also be considered. As stated above, a clean well compacted granular backfill will have an internal friction angle of 32°. The active and passive earth pressure coefficients corresponding to this friction angle should, therefore, also be used for this backfill. Methods of construction, such as augering or other methods which disturb the subsurface soils may reduce the internal friction angle of the soils immediately surrounding the structure. In general, we recommend that:



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File No. 13-7053
April 11, 2013

5

Internal friction angles greater than 34° (and their corresponding lateral earth pressures coefficients) only be used where there would be no significant disturbance of the soils during construction.

GENERAL COMMENTS

The analysis and recommendations submitted in this report are based upon the data obtained from six (6) Standard Penetration Test borings performed at the locations indicated on the attached Figure 1. While this boring is representative of the subsurface conditions at the vertical reach, local variations characteristic of the subsurface materials of the region are anticipated and may be encountered. The boring log and related information are based upon the driller's log and visual examination of selected samples in the laboratory. The delineation between soil types shown on the log is approximate, and the description represents our interpretation of the subsurface conditions at the designated boring location on the particular date drilled.

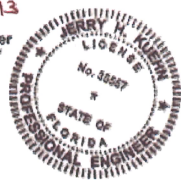
The water table level shown on the boring log represents the water table surface encountered on the date shown. Fluctuations in the water table levels should be anticipated throughout the year. The absence of a water table listing on a boring log does not imply that the water table does not occur within the boring depth, unless expressly so stated.

It has been a pleasure to be of assistance to you with this project. Please contact us when we may be of further service to you, or should you have any questions concerning this report.

Very truly yours,

ARDAMAN & ASSOCIATES, INC.
Certificate of Authorization No. 3950

Jerry H. Klehn, P.E.
Senior Project Engineer
Fl. License No. 35557



JHK/GMS:ly



Dary H. Schmidt, P.E.
Vice President
Fl. License No. 12305

APPENDIX I

SOIL BORING, SAMPLING & TEST METHODS

SOIL BORING, SAMPLING AND TESTING METHODS

Standard Penetration Test

The Standard Penetration Test (SPT) is a widely accepted method of in situ testing of foundation soils (ASTM D-1586). A 2-foot long, 2-inch O.D. split-barrel sampler attached to the end of a string of drilling rods is driven 16 inches into the ground by successive blows of a 140-pound hammer freely dropping 30 inches. The number of blows needed for each 6 inches of penetration is recorded. The sum of the blows required for penetration of the second and third 6-inch increments of penetration constitutes the test result or N-value. After the test, the sampler is extracted from the ground and opened to allow visual examination and classification of the retained soil sample. The N-value has been empirically correlated with various soil properties allowing a conservative estimate of the behavior of soils under load. The following tables relate N-values to a qualitative description of soil density and, for cohesive soils, an approximate unconfined compressive strength (C_u):

Cohesionless Soils:	N-Value	Description	Cu (lb/sq ft)
	0 to 4	Very loose	Below 0.25
	4 to 10	Loose	0.25 to 0.50
	10 to 30	Medium dense	0.50 to 1.0
	30 to 50	Dense	1.0 to 2.0
	Above 50	Very dense	2.0 to 4.0

Cohesive Soils:	N-Value	Description	Cu (lb/sq ft)
	0 to 2	Very soft	Below 0.25
	2 to 4	Soft	0.25 to 0.50
	4 to 6	Medium stiff	0.50 to 1.0
	6 to 15	Stiff	1.0 to 2.0
	15 to 30	Very stiff	2.0 to 4.0
	Above 30	Hard	Above 4.0

The tests are usually performed at 8-foot intervals. However, more frequent or continuous testing is done by our firm through depths where a more accurate definition of the soils is required. The test holes are advanced to the test elevations by rotary drilling with a cutting bit, using circulating fluid to remove the cuttings and hold the fine grains in suspension. The circulating fluid, which is a bentonitic drilling mud, is also used to keep the hole open below the water table by maintaining an excess hydrostatic pressure inside the hole. In some soil deposits, particularly highly pervious ones, NX-size flush-coupled casing must be driven to just above the testing depth to keep the hole open and/or prevent the loss of circulating fluid.

Representative split-spoon samples from each sampling interval and from every different stratum are brought to our laboratory in air-tight jars for further evaluation and testing. If necessary. After thorough examination and testing of the samples, the samples are discarded unless prior arrangements have been made. After completion of a test boring, the hole is kept open until a steady state groundwater level is recorded. The hole is then sealed, if necessary, and backfilled.

CORTEZ GRNS
REMOVAL AND REPLACEMENT PROJECT
MANATEE COUNTY, FLORIDA

GEOTECHNICAL DATA

DRAWING NO.

GE-2

SHEET 15 OF 17

CB&I COASTAL PLANNING & ENGINEERING, INC.

2481 N.W. BOCA RATON BOULEVARD
BOCA RATON, FLORIDA 33431

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C.O.A. #0028
C.O.A. #2531

www.CBI.com

REVISIONS

Checked by:

Drawn by:

Reference File:

Reviewed by:

Date:

Plot Scale:

Submitted by:

2/25/14

AS NOTED

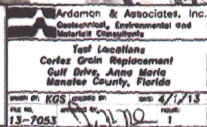
Comm. No.:

147236

No.

Description

Date



2D	- Fines Content (percent passing the No. 200 sieve); ASTM D1140
DD	- Dry Density of Undisturbed Sample; ASTM D2937
Gs	- Specific Gravity of Soil; ASTM D854
k	- Hydraulic Conductivity (Coefficient of Permeability)
LL	- Liquid Limit; ASTM D433
OC	- Organic Content; ASTM D2974
pH	- pH of Soil; ASTM D2976
PI	- Plasticity Index (LL-PL); ASTM D424
PL	- Plastic Limit; ASTM D424
Qp	- Unconfined Compressive Strength by Pocket Penetrometer;
Qu	- Unconfined Compressive Strength; ASTM D2166 (soil), D7012 (rock)
SL	- Shrinkage Limit; ASTM D227
ST	- Splitting Tensile Strength; ASTM D3967 (rock)
USCS	- Unified Soil Classification System; ASTM D2487, D2486
w	- Water (Moisture) Content; ASTM D2216



Other soil classification standards may be used, depending on the project requirements. The AASHTO classification system is commonly used for highway design purposes and the USDA soil textural classifications are commonly used for septic (on-site sewage disposal) system design purposes.

DRAWING NO.

GE-3

SHEET 16 OF 17



\\Nortia\142538 - W. 48 Cortez Groins Replacement - Proj - Civil - Eng\Doc\Construction\142538 Cortez Groins CB_Plan_27-14.dwg - Sep 05, 2014 @ 1:36pm - hmcad\p

- LEGEND:**
- CONSTRUCTION ACCESS
 - STAGING AREA
- NOTES:**
- COORDINATES ARE IN FEET BASED ON FLORIDA STATE PLANE COORDINATE SYSTEM, WEST ZONE, NORTH AMERICAN DATUM OF 1983 (NAD83).
 - USE OF PARKING AREAS AND RIGHT OF WAY SUBJECT TO COUNTY AND FDOT APPROVED MAINTENANCE OF TRAFFIC PLAN.
 - THE CONTRACTOR SHALL COORDINATE THE USE OF THE CONSTRUCTION ACCESS AREAS THROUGH THE COUNTY.
 - DATE OF AERIAL PHOTOGRAPH: 8/10/12.

CB&I COASTAL PLANNING & ENGINEERING, INC.

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C.O.A. LA. #2531

REVISIONS	No.	Date	Description

Reference Files:	Designed by:	Checked by:	Drawn by:	Reviewed by:	Submitted by:	Comm. No.:
	DM	AMB	DM	DM	DM	148236

**CORTEZ GROINS
REMOVAL AND REPLACEMENT PROJECT
MANATEE COUNTY, FLORIDA
CONSTRUCTION ACCESS
AND STAGING AREAS
PLAN VIEW**

DRAWING NO. **PV-4**

SHEET 17 OF 17

CERTIFICATION:
I CERTIFY THAT THESE PLANS ARE IN COMPLIANCE
WITH THE APPLICABLE SECTIONS OF 62B-41, F.A.C.

DOUGLAS W. MANN, P.E. No. 44048

9/5/14
DATE