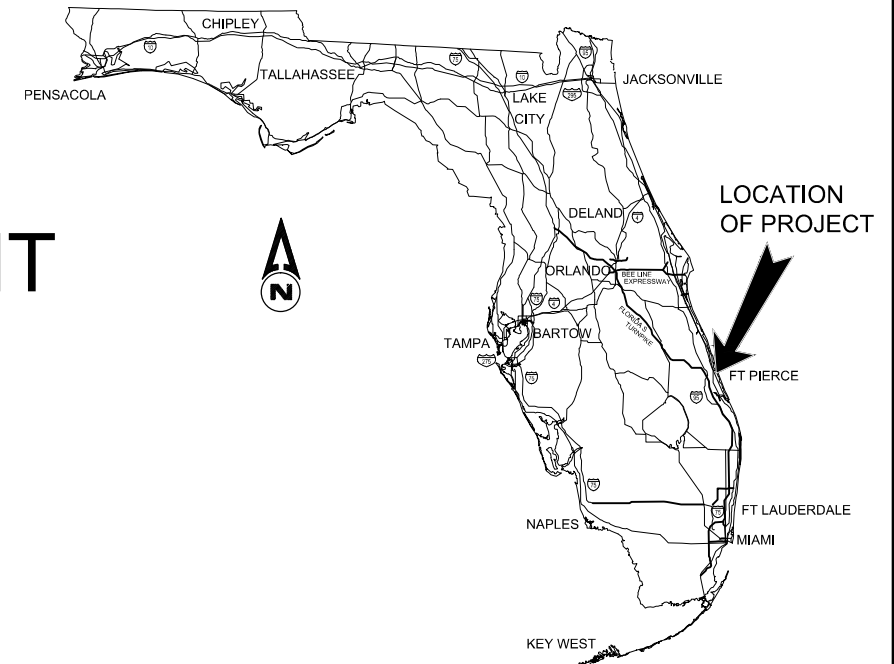
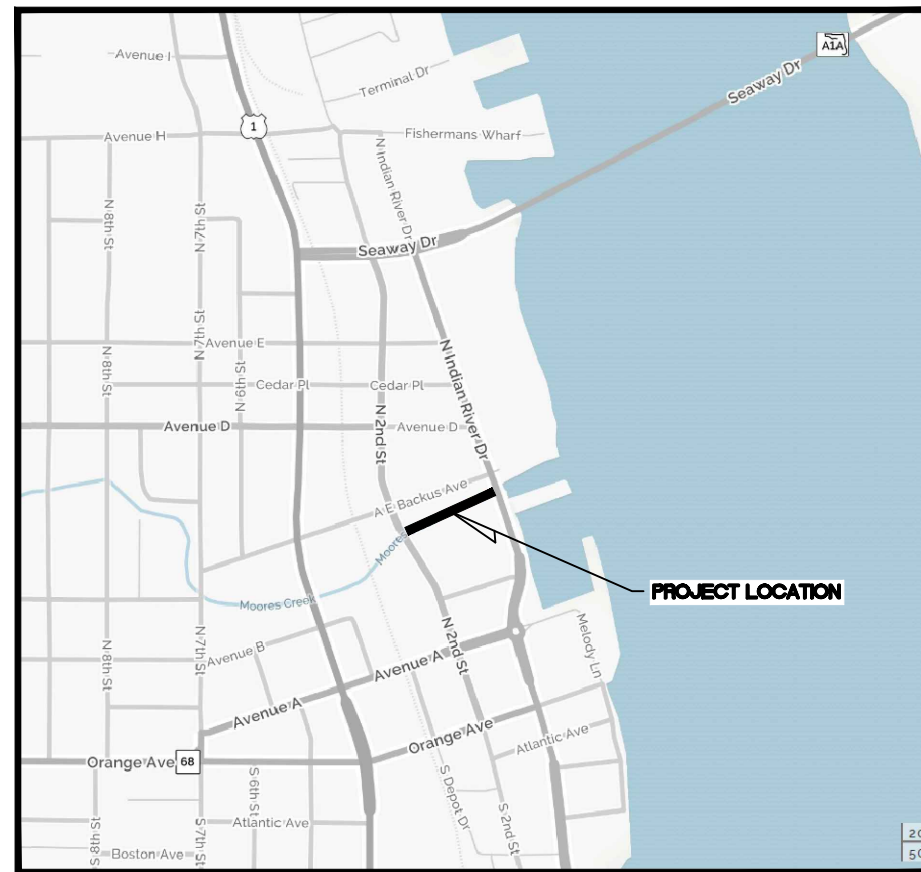


# CITY OF FT. PIERCE H.D. KING SEAWALL REPLACEMENT



VICINITY MAP

## CITY OF FT. PIERCE, FLORIDA



LOCATION MAP

### INDEX OF BRIDGE PLANS

SHEET NO	SHEET DESCRIPTION
1	COVER SHEET
2	GENERAL NOTES
3	SURVEY
4	REPORT OF CORE BORING SHEETS
5	PLAN
6-9	ELEVATION
10	TYPICAL SECTION
11	MISCELLANEOUS DETAILS

### GOVERNING STANDARDS AND SPECIFICATIONS

#### DESCRIPTION

A. FLORIDA DEPARTMENT OF TRANSPORTATION 2016 DESIGN STANDARDS AND REVISED INDEX DRAWINGS, AS APPENDED HEREIN, AND DIVISIONS II AND III OF THE JULY 2016 STANDARD SPECIFICATIONS FOR ROAD AND BRIDGE CONSTRUCTION, AS AMENDED BY CONTRACT DOCUMENTS.

FOR DESIGN STANDARDS CLICK ON THE "DESIGN STANDARDS" LINK AT THE FOLLOWING WEB SITE: <http://www.dot.state.fl.us/rddesign/>.

FOR THE STANDARD SPECIFICATIONS FOR ROAD AND BRIDGE CONSTRUCTION CLICK ON THE "SPECIFICATIONS" LINK AT THE FOLLOWING WEB SITE: <http://www.dot.state.fl.us/programmanagement/>

B. SOUTH FLORIDA WATER MANAGEMENT DISTRICT ENVIRONMENTAL RESOURCE PERMITTING (ERP) INFORMATION MANUAL, LATEST EDITION

### PLANS PREPARED BY:

**Cardno**

380 Park Place Blvd, Suite 300, Clearwater, Florida, 33759  
www.cardno.com - 727.531.3505  
Certificate of Authorization No. 29915

ATTENTION IS DIRECTED TO THE FACT THAT THESE PLANS MAY HAVE BEEN REDUCED IN SIZE BY REPRODUCTION. THIS MUST BE CONSIDERED WHEN OBTAINING SCALED DATA.

# 60% Plans

MAY 2016

### UTILITY WARNING NOTE

ABOVE GROUND AND / OR UNDERGROUND UTILITIES MAY BE IN THE AREA OF THIS PROJECT - PROCEED WITH CAUTION - THE CONTRACTOR SHALL CALL SUNSHINE STATE "ONE CALL" AT 1-800-432-4770 AND THE UTILITY OWNERS IN ADVANCE OF BEGINNING WORK, IN ACCORDANCE WITH CHAPTER 556, FLORIDA STATUTES.



REVISIONS		
DATE	BY	

PROJECT MANAGER: JACK ANDREWS, P.E.  
CITY ENGINEER

BRIDGE & BOARDWALK PLANS  
ENGINEER OF RECORD: MIGUEL A. VILLEGAS, P.E. NO. 68768  
CARDNO  
DATE: \_\_\_\_\_

FISCAL YEAR	SHEET NO.
16	1

**GENERAL NOTES:**

**GENERAL SPECIFICATIONS:**

FLORIDA DEPARTMENT OF TRANSPORTATION (FDOT) STANDARD SPECIFICATIONS FOR ROAD AND BRIDGE CONSTRUCTION (2016 EDITION) WITH SUPPLEMENTS THERETO.

**DESIGN SPECIFICATIONS:**

1. AMERICAN ASSOCIATION OF STATE HIGHWAY AND TRANSPORTATION OFFICIALS (AASHTO), LRFD BRIDGE DESIGN SPECIFICATIONS (7TH EDITION, 2014) WITH APPROVED INTERIMS THERETO.
2. FDOT STRUCTURES MANUAL (JANUARY 2016 EDITION).

**DESIGN METHOD:**

LOAD AND RESISTANCE FACTOR DESIGN METHOD (LRFD) FOR ALL ELEMENTS UNLESS OTHERWISE NOTED.

**DESIGN LOADING:**

1. DEAD LOADS:
  - UNIT WEIGHT OF REINFORCED CONCRETE 150 PCF
  - UNIT WEIGHT OF STEEL 490 PCF
2. SURCHARGE: 240 LBF/SF
3. WIND LOADS ARE IN ACCORDANCE WITH AASHTO, SECTION 3.8.
4. EARTHQUAKE LOADS:
  - THE MINIMUM BEARING SUPPORT LENGTH IS DETERMINED IN ACCORDANCE WITH AASHTO, SECTION 4.7.4.4. NO SEISMIC FORCES ARE APPLIED IN ACCORDANCE WITH THE "STRUCTURES DESIGN GUIDELINES", SECTION 2.3.1.

**TEMPERATURE EFFECTS:**

STRUCTURE MATERIAL	MEAN	RISE FROM MEAN	FALL FROM MEAN	RANGE
CONCRETE	70	+35	-35	70

COEFFICIENT OF THERMAL EXPANSION: 0.000006 PER °F. (CONCRETE)

**ENVIRONMENT:**

EXTREMELY AGGRESSIVE

**CONCRETE:**

CONCRETE SHALL BE IN ACCORDANCE WITH SECTION 346 OF THE FDOT SPECIFICATIONS.

CLASS	MINIMUM 28-DAY COMPRESSIVE STRENGTH (psi)	LOCATION OF CONCRETE IN STRUCTURE
IV	f <sub>c</sub> = 5,500	CAPS, PANELS AND DEADMEN
IV	f <sub>c</sub> = 5,500	14" SQUARE PRESTRESSED CONCRETE PILES

**CONCRETE COVER:**

CONCRETE COVER SHOWN IN PLANS DOES NOT INCLUDE PLACEMENT AND FABRICATION TOLERANCES UNLESS SHOWN AS "MINIMUM COVER". SEE FDOT STANDARD SPECIFICATIONS FOR ALLOWABLE TOLERANCES.

**GEOMETRY:**

CONTRACTOR SHALL VERIFY ALL DIMENSIONS.

**CHAMFERS:**

PROVIDE 3/4" CHAMFER ON ALL EXPOSED EDGES, EXCEPT AS OTHERWISE NOTED.

**CONSTRUCTION JOINTS:**

CONSTRUCTION JOINTS WILL ONLY BE ALLOWED AT LOCATIONS INDICATED ON THE PLANS. ADDITIONAL CONSTRUCTION JOINTS OR ALTERATIONS OF THOSE SHOWN ON THE PLANS REQUIRE THE APPROVAL OF THE ENGINEER.

**SURFACE FINISH:**

A CLASS 4 FINISH SHALL BE USED ON ALL EXPOSED CONCRETE SURFACES.

**REINFORCING STEEL:**

ALL REINFORCING STEEL SHALL BE ASTM A615, GRADE 60. ALL DIMENSIONS PERTAINING TO LOCATIONS OF REINFORCING ARE TO CENTERLINE OF BARS EXCEPT WHERE THE CLEAR DIMENSION IS SHOWN TO FACE OF CONCRETE.

**STRUCTURAL FASTENERS:**

THE CONTRACTOR SHALL USE GALVANIZED BOLTS, WASHERS AND NUTS IN ALL ANCHORING CONNECTIONS.

**TURBIDITY CONTROL**

PROVIDE AND MAINTAIN FLOATING TURBIDITY BARRIERS AS REQUIRED TO CONTROL TURBIDITY CAUSED BY CONSTRUCTION OPERATIONS IN ACCORDANCE WITH PERMIT REQUIREMENTS.

**MATERIAL PRODUCTS:**


EXCEPT FOR THOSE MATERIAL PRODUCTS SPECIFICALLY CALLED FOR IN THE PLANS AND SPECIFICATIONS, ALL MATERIAL PRODUCTS SPECIFIED FOR THIS PROJECT SHALL BE ON THE FDOT APPROVED PRODUCT LIST.

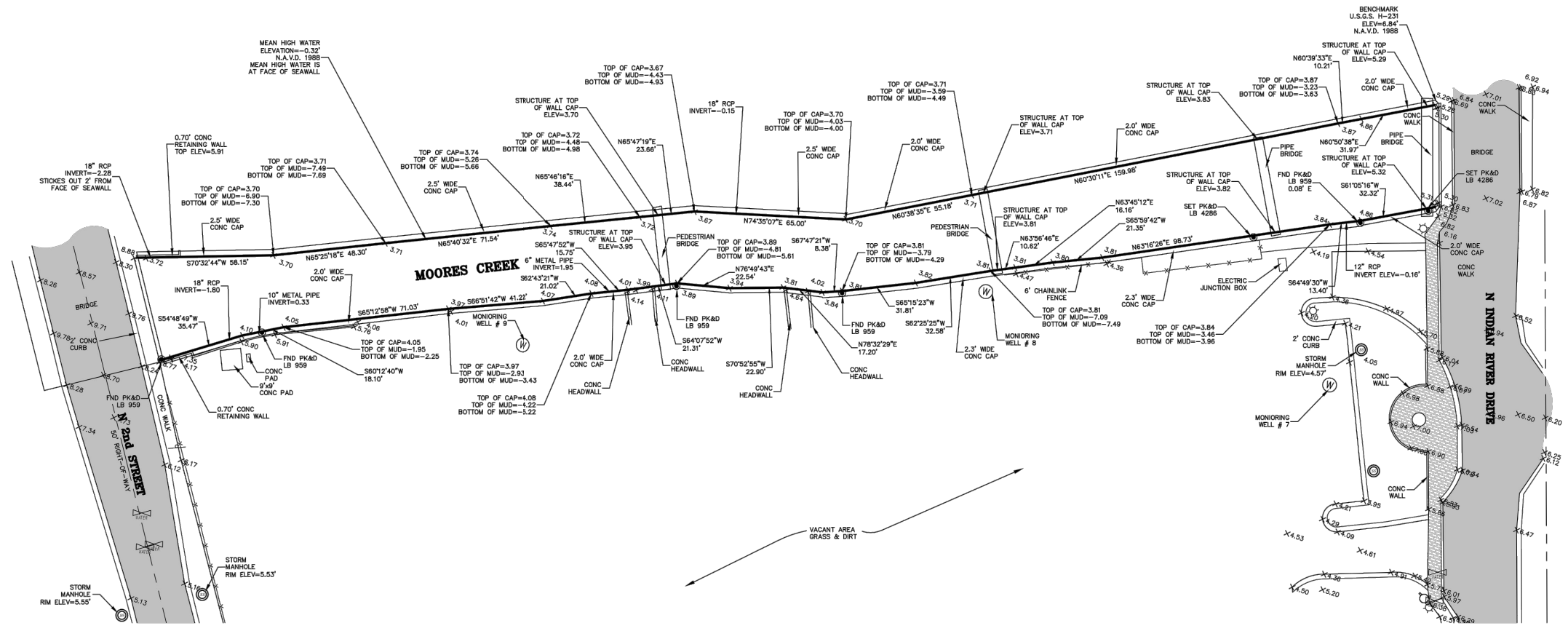
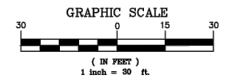
**EXISTING UTILITIES:**

IT IS THE RESPONSIBILITY OF THE CONTRACTOR TO UNCOVER AND VERIFY THE LOCATION OF THE EXISTING UTILITIES IN THE VICINITY OF PILE DRIVING OPERATION. UNLESS DIRECTED OTHERWISE BY THE ENGINEER, EXISTING UTILITIES MUST BE PROTECTED DURING CONSTRUCTION BY THE CONTRACTOR.

**CHANGES:**

ALL PROPOSED CHANGES MUST BE APPROVED BY THE ENGINEER OF RECORD.

				<b>CITY OF FT. PIERCE</b>	<b>H.D. KING SEAWALL REPLACEMENT</b>	 CLEARWATER 380 PARK PLACE BLVD, STE 300, CLEARWATER, FL 33759 TEL: (727) 531-3505 (800) 861-8314 www.cardno.com Certificate of Authorization No. 29915	<b>60% PLANS</b>	DESIGNED: MAV DRAWN: RFN Q.C. APPROVED:	<b>GENERAL NOTES</b>	PROJECT NO: 00022926.13 DATE: 5/5/2016 SHEET NO: <b>2</b>
NO.	DESCRIPTION	BY	DATE							



**NOTES:**

- 1) Not valid without the signature and the original raised seal of a Florida Licensed Surveyor and Mapper.
- 2) Description shown hereon provided by the client and/or their agent.
- 3) The last date of field work was December 29, 2015.
- 4) Lands shown hereon were not abstracted by this office for right-of-ways, Reservations, Agreements, and/or Easements of Record. Such information should be obtained and confirmed by others through appropriate title verification.
- 5) Elevations shown hereon are based on the U.S.G.S. benchmark H 231 having a published elevation of 6.84 feet based on the N.A.V.D. of 1988.
- 6) Bearings shown hereon are relative to the West property line of N Indian River Drive having a bearing of S18°24'56\"/>

**LEGEND**

⊙	DENOTES CENTERLINE	ORB	DENOTES OFFICIAL RECORDS BOOK
(M)	DENOTES FIELD MEASUREMENTS	No.	DENOTES NUMBER
(D)	DENOTES DEED DATA	⊙	DENOTES STORM MANHOLE
FND	DENOTES FOUND	PK&D	DENOTES P.K. NAIL AND DISK
LB	DENOTES LICENSED BUSINESS	No ID	DENOTES NO IDENTIFICATION NUMBER
⊙	DENOTES FIRE HYDRANT	⊙	DENOTES SANITARY MANHOLE
⊙	DENOTES STREET LIGHT	⊙	DENOTES WATER VALVE
PLS	DENOTES PROFESSIONAL LAND SURVEYOR	⊙	DENOTES ELEVATION (TYPICAL)
IP	DENOTES IRON PIPE	⊙	DENOTES WATER METER
IR	DENOTES IRON ROD	⊙	DENOTES POINT OF COMMENCEMENT
CONC	DENOTES CONCRETE	POB	DENOTES POINT OF BEGINNING
IR&C	DENOTES 5/8\"/>		

NO.	DESCRIPTION	BY	DATE

**CITY OF FT. PIERCE**

**H.D. KING SEAWALL REPLACEMENT**

SURVEY PROVIDED BY:

**CULPEPPER & TERPENING, INC**  
 CONSULTING ENGINEERS | LAND SURVEYORS  
 2080 SOUTH 25th STREET • FORT PIERCE, FLORIDA 34981  
 PHONE 772-464-3537 • FAX 772-464-9497 • www.ct-eng.com  
 151 SW FLAGLER AVENUE • STUART, FLORIDA 34994  
 PHONE 772-220-3376 • FAX 772-464-9497 • www.ct-eng.com  
STATE OF FLORIDA CERTIFICATION NO. LB 436

DESIGNED: MAV  
 DRAWN: RFN  
 Q.C.:  
 APPROVED:

**SURVEY**

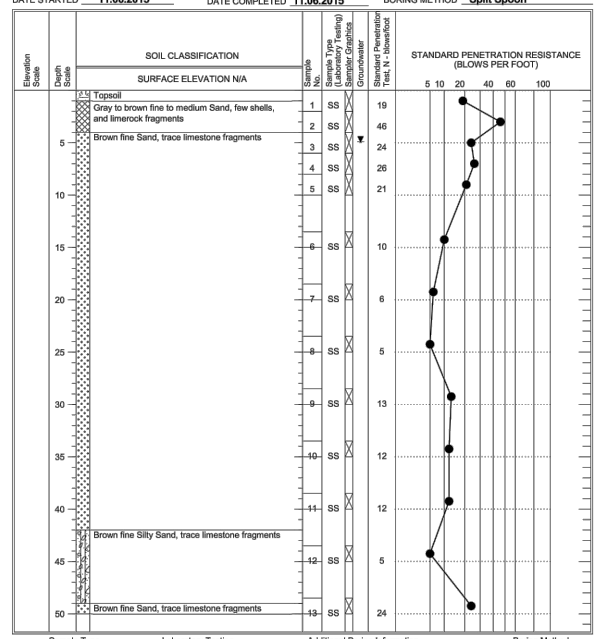
PROJECT NO: 00022926.13  
 DATE: 5/5/2016  
 SHEET NO: 3



9955 NW 116 Way, Suite 1  
Medley, FL 33178  
Tel. 305-882-8200  
Fax. 305-882-1200

**TEST BORING RECORD**

CLIENT: **Cardno TBE** PROJECT NUMBER: **Z101430277**  
PROJECT NAME: **Moore's Creek Seawall** BORING #: **B-1**  
LOCATION: **Fort Pierce, Florida** DRILL FOREMAN: **Lazaro**  
DATE STARTED: **11.06.2015** DATE COMPLETED: **11.06.2015** BORING METHOD: **Split Spoon**



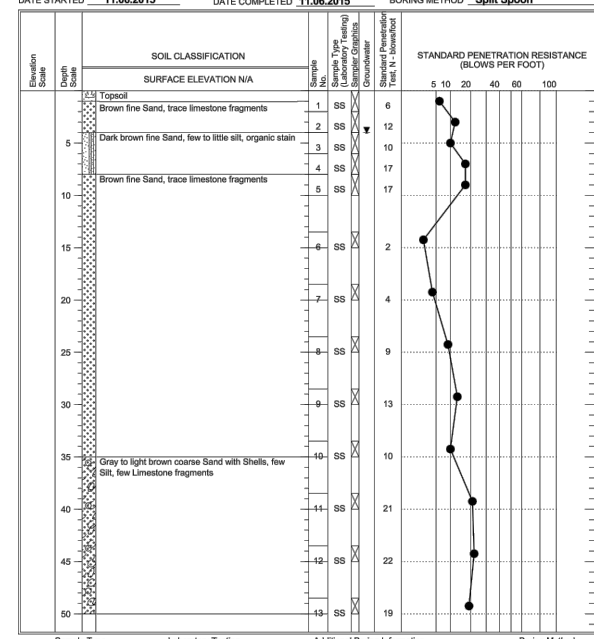
Sample Type: SS - Driven Split Spoon, ST - Pressed Shelby Tube, RC - Rock Core, CU - Cuttings  
Laboratory Testing: MC - Moisture Content, GS - Grain Size, C - Consolidation, A - Atterberg Limits, T - Triaxial  
Additional Boring Information: Groundwater Depth: 4.9 ft, Cave Depth: ft, Boring Terminated At: 50.0 ft  
Boring Method: HSA - Hollow Stem Augers, MD - Mud Drilling



9955 NW 116 Way, Suite 1  
Medley, FL 33178  
Tel. 305-882-8200  
Fax. 305-882-1200

**TEST BORING RECORD**

CLIENT: **Cardno TBE** PROJECT NUMBER: **Z101430277**  
PROJECT NAME: **Moore's Creek Seawall** BORING #: **B-2**  
LOCATION: **Fort Pierce, Florida** DRILL FOREMAN: **Lazaro**  
DATE STARTED: **11.06.2015** DATE COMPLETED: **11.06.2015** BORING METHOD: **Split Spoon**



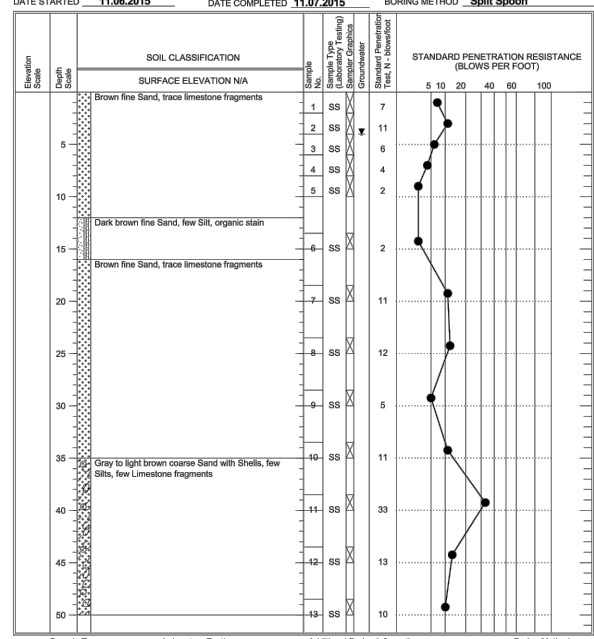
Sample Type: SS - Driven Split Spoon, ST - Pressed Shelby Tube, RC - Rock Core, CU - Cuttings  
Laboratory Testing: MC - Moisture Content, GS - Grain Size, C - Consolidation, A - Atterberg Limits, T - Triaxial  
Additional Boring Information: Groundwater Depth: 4.0 ft, Cave Depth: ft, Boring Terminated At: 50.0 ft  
Boring Method: HSA - Hollow Stem Augers, MD - Mud Drilling



9955 NW 116 Way, Suite 1  
Medley, FL 33178  
Tel. 305-882-8200  
Fax. 305-882-1200

**TEST BORING RECORD**

CLIENT: **Cardno TBE** PROJECT NUMBER: **Z101430277**  
PROJECT NAME: **Moore's Creek Seawall** BORING #: **B-3**  
LOCATION: **Fort Pierce, Florida** DRILL FOREMAN: **Lazaro**  
DATE STARTED: **11.06.2015** DATE COMPLETED: **11.07.2015** BORING METHOD: **Split Spoon**



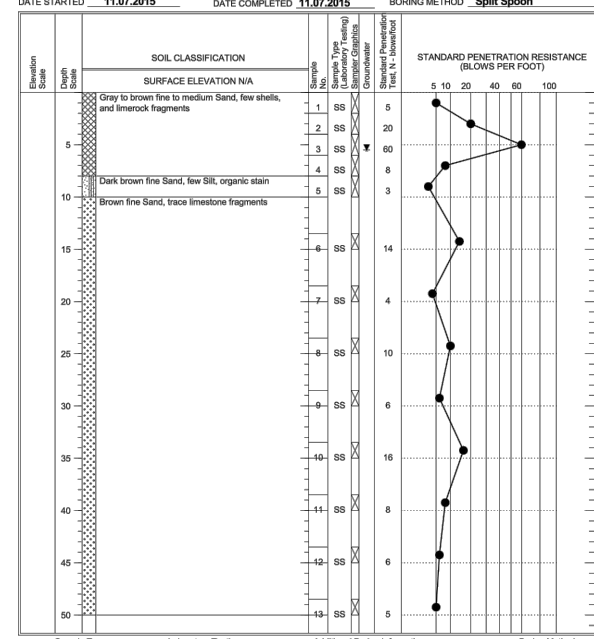
Sample Type: SS - Driven Split Spoon, ST - Pressed Shelby Tube, RC - Rock Core, CU - Cuttings  
Laboratory Testing: MC - Moisture Content, GS - Grain Size, C - Consolidation, A - Atterberg Limits, T - Triaxial  
Additional Boring Information: Groundwater Depth: 4.0 ft, Cave Depth: ft, Boring Terminated At: 50.0 ft  
Boring Method: HSA - Hollow Stem Augers, MD - Mud Drilling



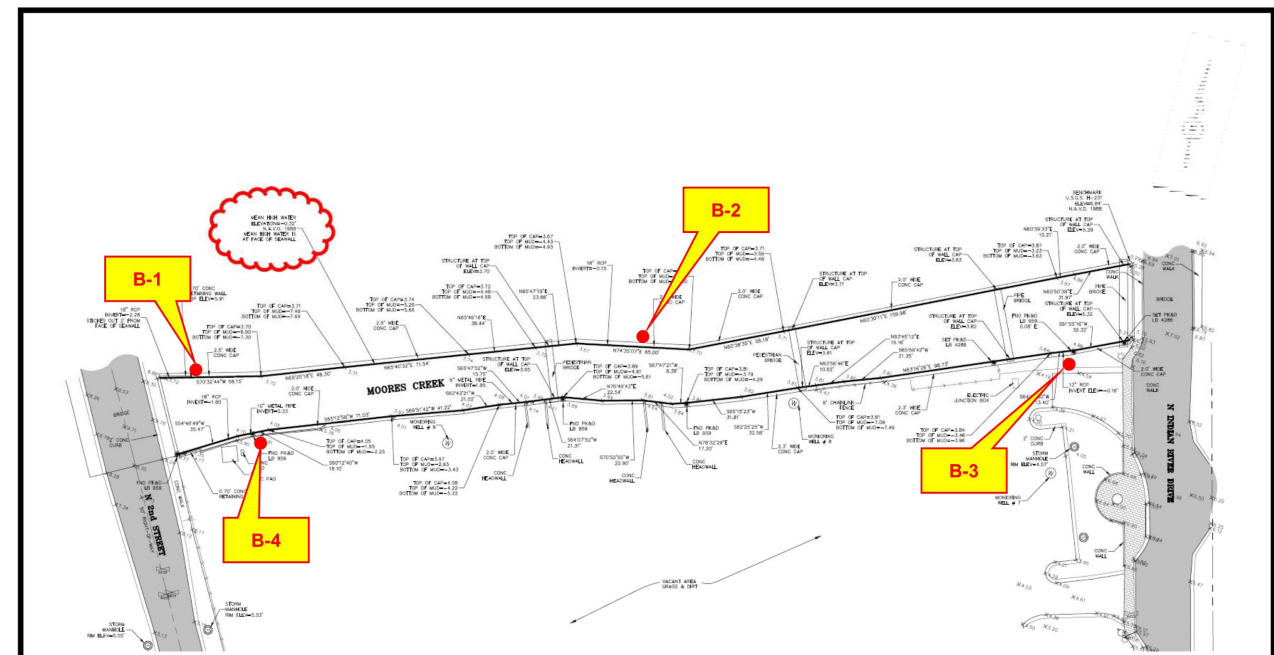
9955 NW 116 Way, Suite 1  
Medley, FL 33178  
Tel. 305-882-8200  
Fax. 305-882-1200

**TEST BORING RECORD**

CLIENT: **Cardno TBE** PROJECT NUMBER: **Z101430277**  
PROJECT NAME: **Moore's Creek Seawall** BORING #: **B-4**  
LOCATION: **Fort Pierce, Florida** DRILL FOREMAN: **Lazaro**  
DATE STARTED: **11.07.2015** DATE COMPLETED: **11.07.2015** BORING METHOD: **Split Spoon**



Sample Type: SS - Driven Split Spoon, ST - Pressed Shelby Tube, RC - Rock Core, CU - Cuttings  
Laboratory Testing: MC - Moisture Content, GS - Grain Size, C - Consolidation, A - Atterberg Limits, T - Triaxial  
Additional Boring Information: Groundwater Depth: 5.5 ft, Cave Depth: ft, Boring Terminated At: 50.0 ft  
Boring Method: HSA - Hollow Stem Augers, MD - Mud Drilling



Reference: Survey Plan - Prepared by Culpepper & Terpening Inc. for City of Ft. Pierce.

Soil boring locations as shown on this plan as approximate. Location might have been adjusted in the field based on site accessibility.

**ATC** ENVIRONMENTAL - GEOTECHNICAL BUILDING SCIENCES - MATERIALS TESTING  
9955 NW 116 Way  
Medley, FL 33178

Project Number: Z101430277  
DESIGNED By: ATC SCALE: NTS REVIEWED By: AP  
DRAWN By: RZ DATE: 2/15/16 **FIGURE 2**

**Boring Location Plan**  
**Moore's Creek Seawall**  
**City of Fort Pierce, FL**

NO.	DESCRIPTION	BY	DATE

**CITY OF FT. PIERCE**

**H.D. KING SEAWALL REPLACEMENT**

**Cardno** Shaping the Future  
CLEARWATER  
380 PARK PLACE BLVD, STE 300, CLEARWATER, FL 33759  
TEL: (727) 531-3505 (800) 861-8314  
www.cardno.com Certificate of Authorization No. 29915

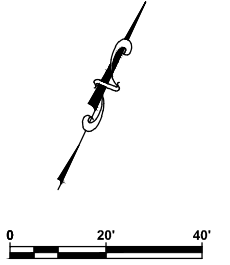
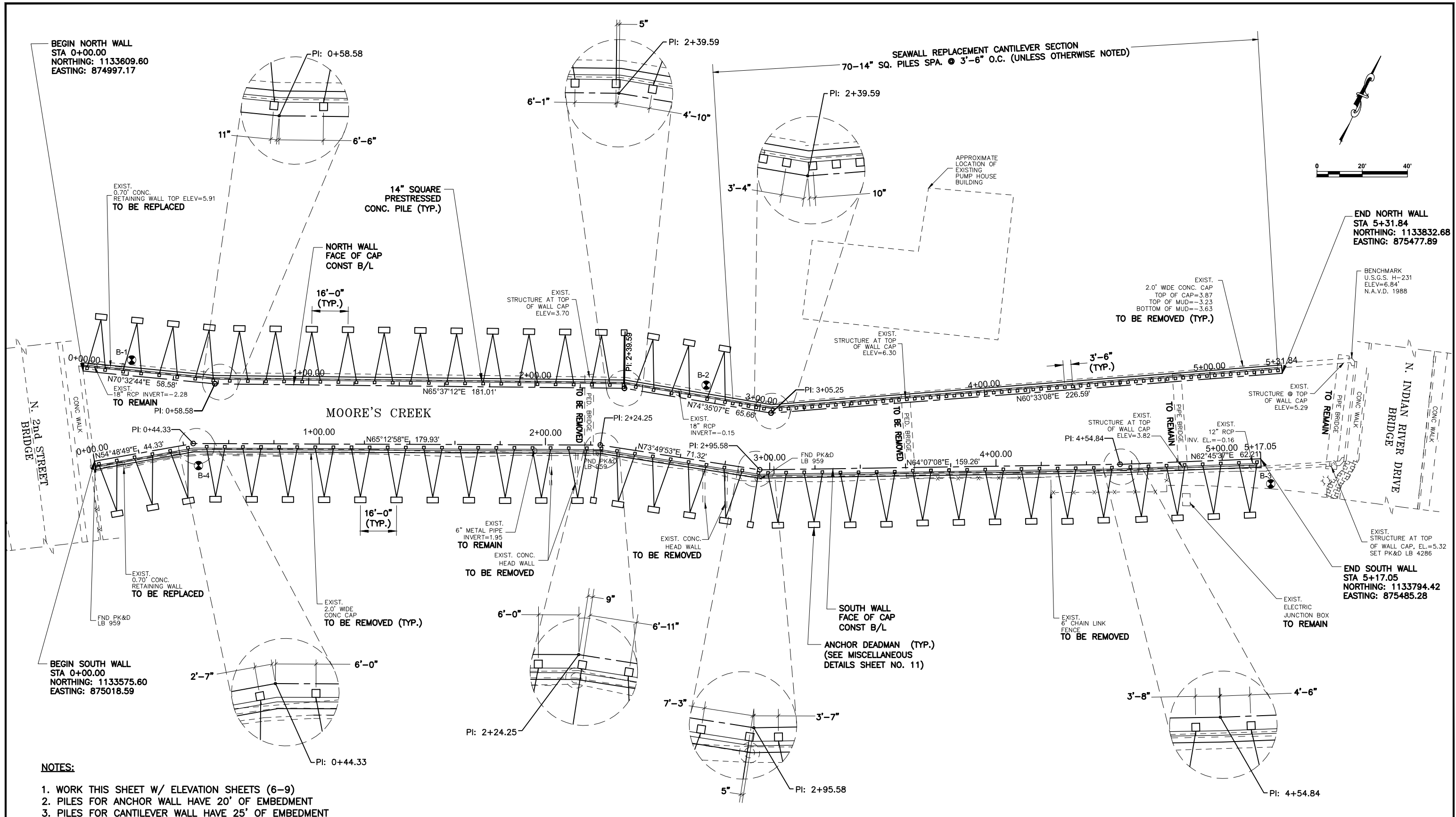
**60% PLANS**

MIGUEL A. VILLEGAS, P.E. DATE  
LIC. NO.: 68768

DESIGNED: MAV  
DRAWN: RFN  
Q.C.  
APPROVED:

**REPORT OF CORE BORING SHEETS**

PROJECT NO: 00022926.13  
DATE: 5/5/2016  
SHEET NO: 4



BEGIN NORTH WALL  
STA 0+00.00  
NORTHING: 1133609.60  
EASTING: 874997.17

END NORTH WALL  
STA 5+31.84  
NORTHING: 1133832.68  
EASTING: 875477.89

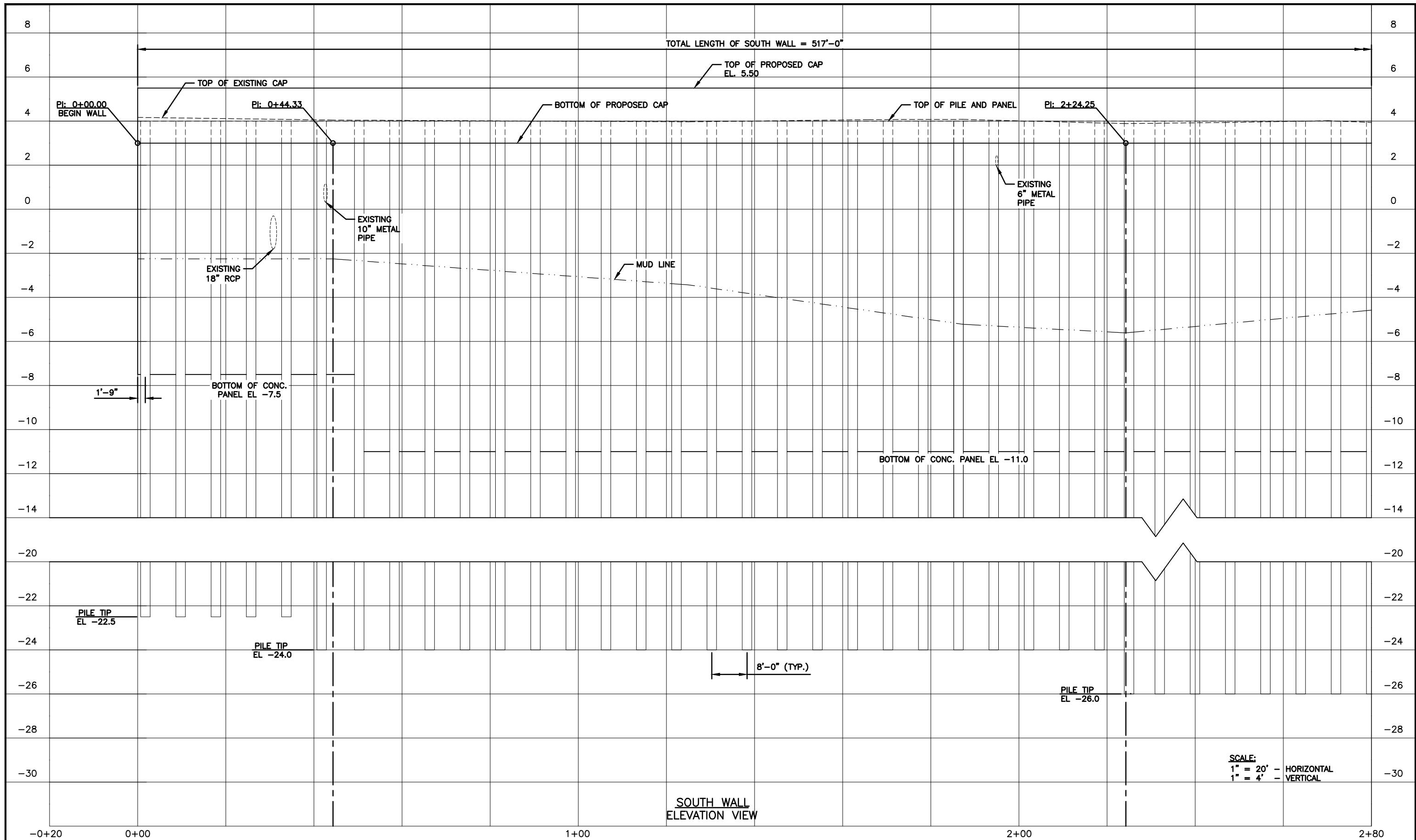
BEGIN SOUTH WALL  
STA 0+00.00  
NORTHING: 1133575.60  
EASTING: 875018.59

END SOUTH WALL  
STA 5+17.05  
NORTHING: 1133794.42  
EASTING: 875485.28

- NOTES:**
1. WORK THIS SHEET W/ ELEVATION SHEETS (6-9)
  2. PILES FOR ANCHOR WALL HAVE 20' OF EMBEDMENT
  3. PILES FOR CANTILEVER WALL HAVE 25' OF EMBEDMENT

PLAN VIEW

				<b>CITY OF FT. PIERCE</b>		<b>H.D. KING SEAWALL REPLACEMENT</b>		 <b>Cardno</b> Shaping the Future CLEARWATER 380 PARK PLACE BLVD, STE 300, CLEARWATER, FL 33759 TEL: (727) 531-3505 (800) 861-8314 www.cardno.com Certificate of Authorization No. 29915		DESIGNED: MAV DRAWN: RFN Q.C.: APPROVED:		<b>PLAN</b>		PROJECT NO: 00022926.13 DATE: 5/5/2016 SHEET NO: <b>5</b>	
NO.	DESCRIPTION	BY	DATE												



NO.	DESCRIPTION	BY	DATE

**CITY OF FT. PIERCE**

**H.D. KING SEAWALL REPLACEMENT**

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**60% PLANS**

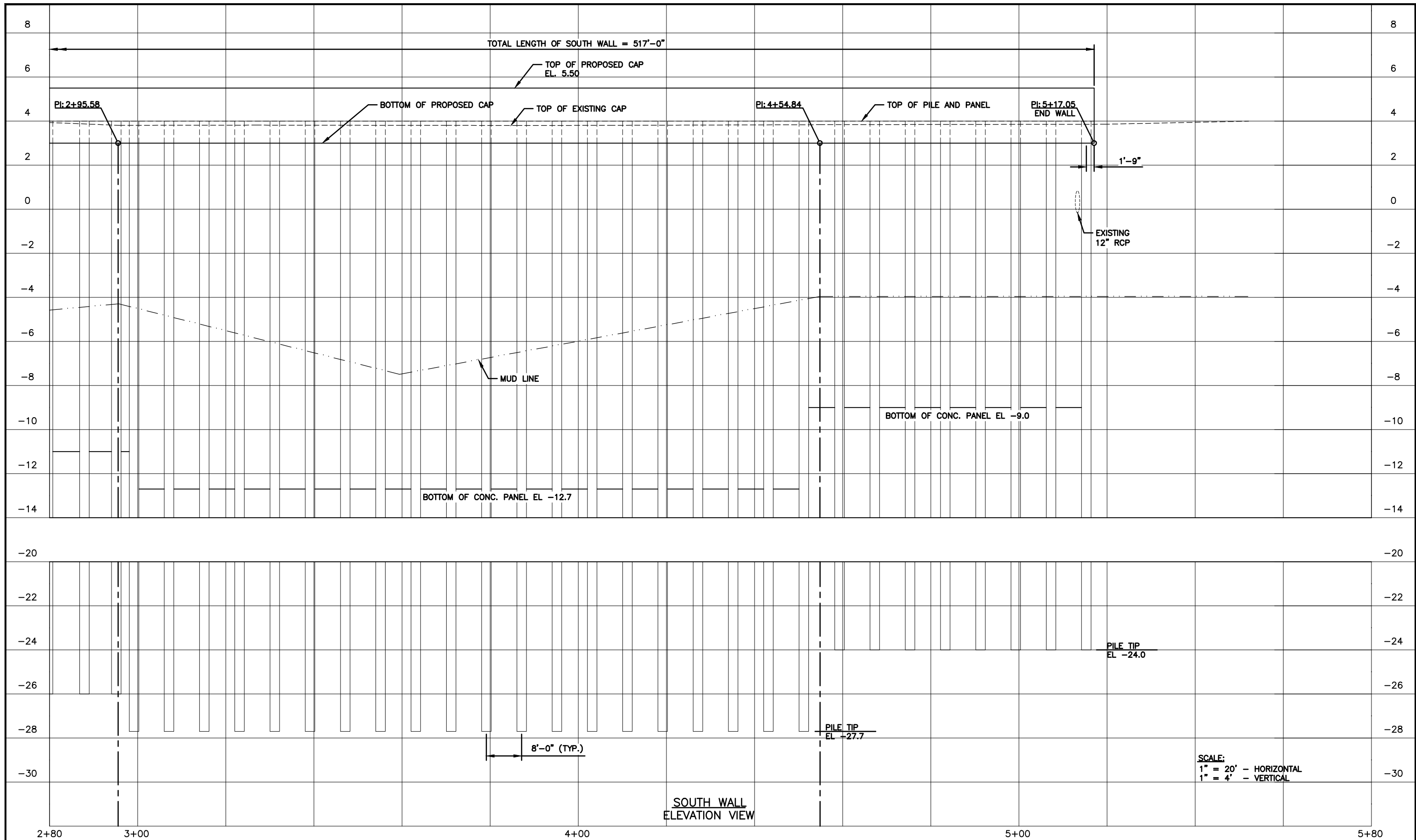
MIGUEL A. VILLEGAS, P.E. DATE  
LIC. NO.: 68768

DESIGNED: MAV  
DRAWN: RFN  
Q.C.  
APPROVED:

**ELEVATION (SOUTH WALL)  
1 OF 2**

PROJECT NO: 00022926.13  
DATE: 5/5/2016  
SHEET NO: 6

FILE: \\dfs1.cardno.com\projects\00022926.13\acad\dwg\PlanSet.dwg LAST SAVED: Wed, 05/04/16 3:57p PLOTTED: Wed, 05/04/16 3:59p BY: Frank Nolte



SOUTH WALL  
ELEVATION VIEW

SCALE:  
 1" = 20' - HORIZONTAL  
 1" = 4' - VERTICAL

NO.	DESCRIPTION	BY	DATE

**CITY OF FT. PIERCE**

**H.D. KING SEAWALL  
REPLACEMENT**

  
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 TEL: (727) 531-3505 (800) 861-8314  
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**60% PLANS**

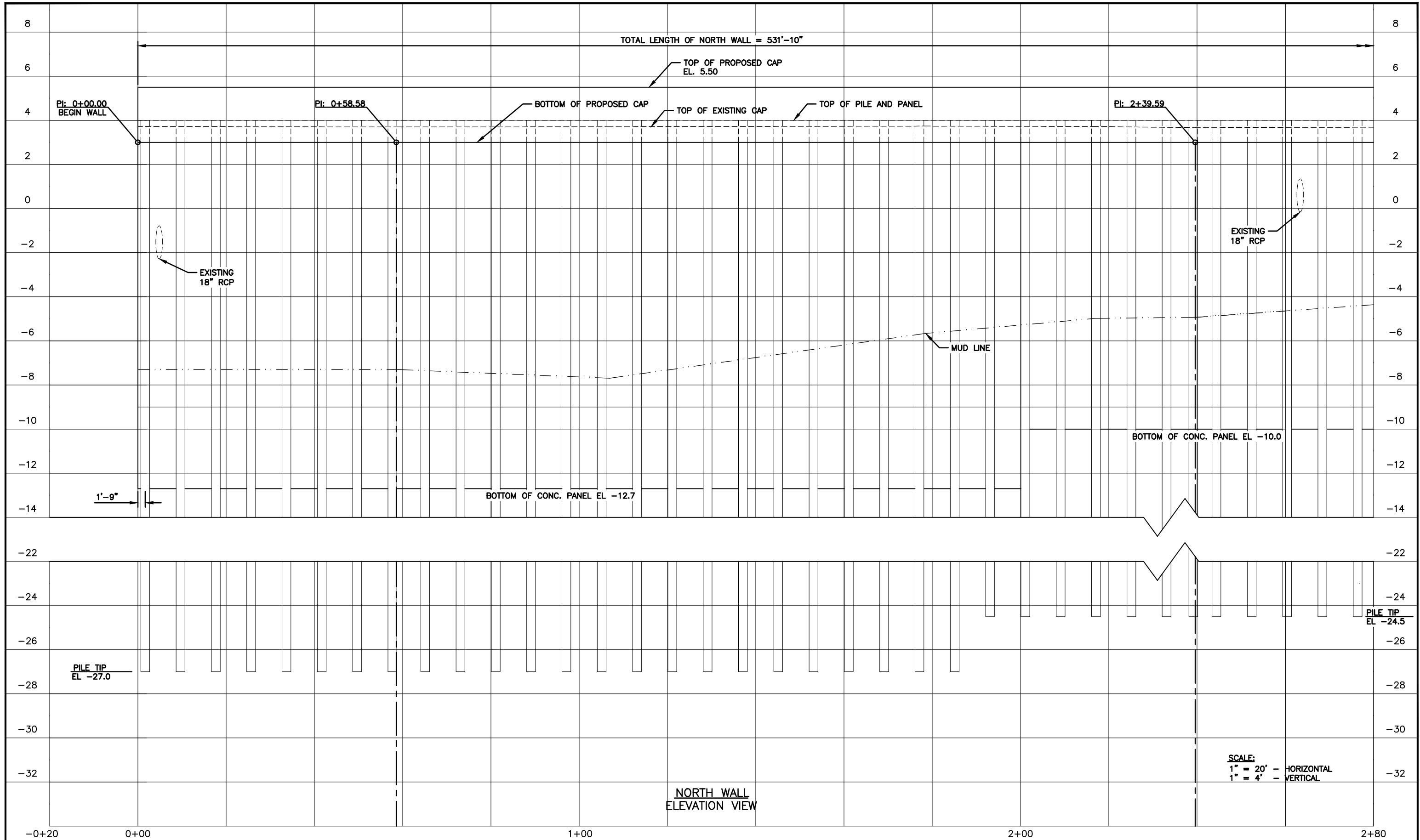
MIGUEL A. VILLEGAS, P.E. DATE  
 LIC. NO.: 68768

DESIGNED: MAV  
 DRAWN: RFN  
 Q.C.  
 APPROVED:

**ELEVATION (SOUTH WALL)  
2 OF 2**

PROJECT NO: 00022926.13  
 DATE: 5/5/2016  
 SHEET NO: 7

FILE: \\dfs1.cardno.com\projects\00022926.13\acad\dwg\PlanSet.dwg LAST SAVED: Wed, 05/04/16 3:57p PLOTTED: Wed, 05/04/16 3:59p BY: Frank Nolte



NORTH WALL  
ELEVATION VIEW

NO.	DESCRIPTION	BY	DATE

**CITY OF FT. PIERCE**

**H.D. KING SEAWALL  
REPLACEMENT**

  
**Cardno**  
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 TEL: (727) 531-3505 (800) 861-8314  
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**60% PLANS**

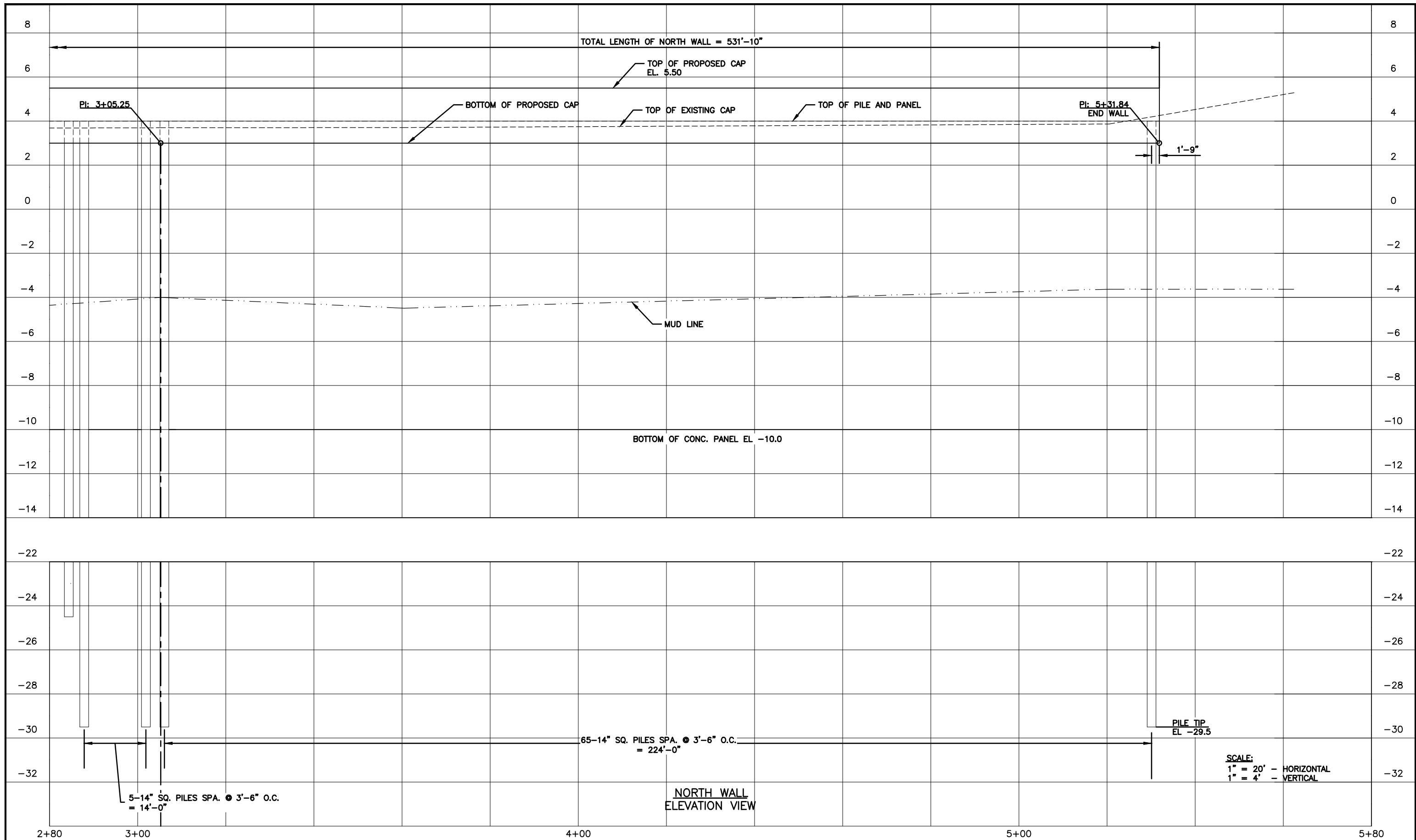
MIGUEL A. VILLEGAS, P.E. DATE  
LIC. NO.: 68768

DESIGNED: MAV  
DRAWN: RFN  
Q.C.  
APPROVED:

**ELEVATION (NORTH WALL)  
1 OF 2**

PROJECT NO: 00022926.13  
DATE: 5/5/2016  
SHEET NO: **8**

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NO.	DESCRIPTION	BY	DATE

**CITY OF FT. PIERCE**

**H.D. KING SEAWALL  
REPLACEMENT**

  
**Cardno**  
 Shaping the Future  
CLEARWATER  
 380 PARK PLACE BLVD. STE 300, CLEARWATER, FL 33759  
 TEL: (727) 531-3505 (800) 861-8314  
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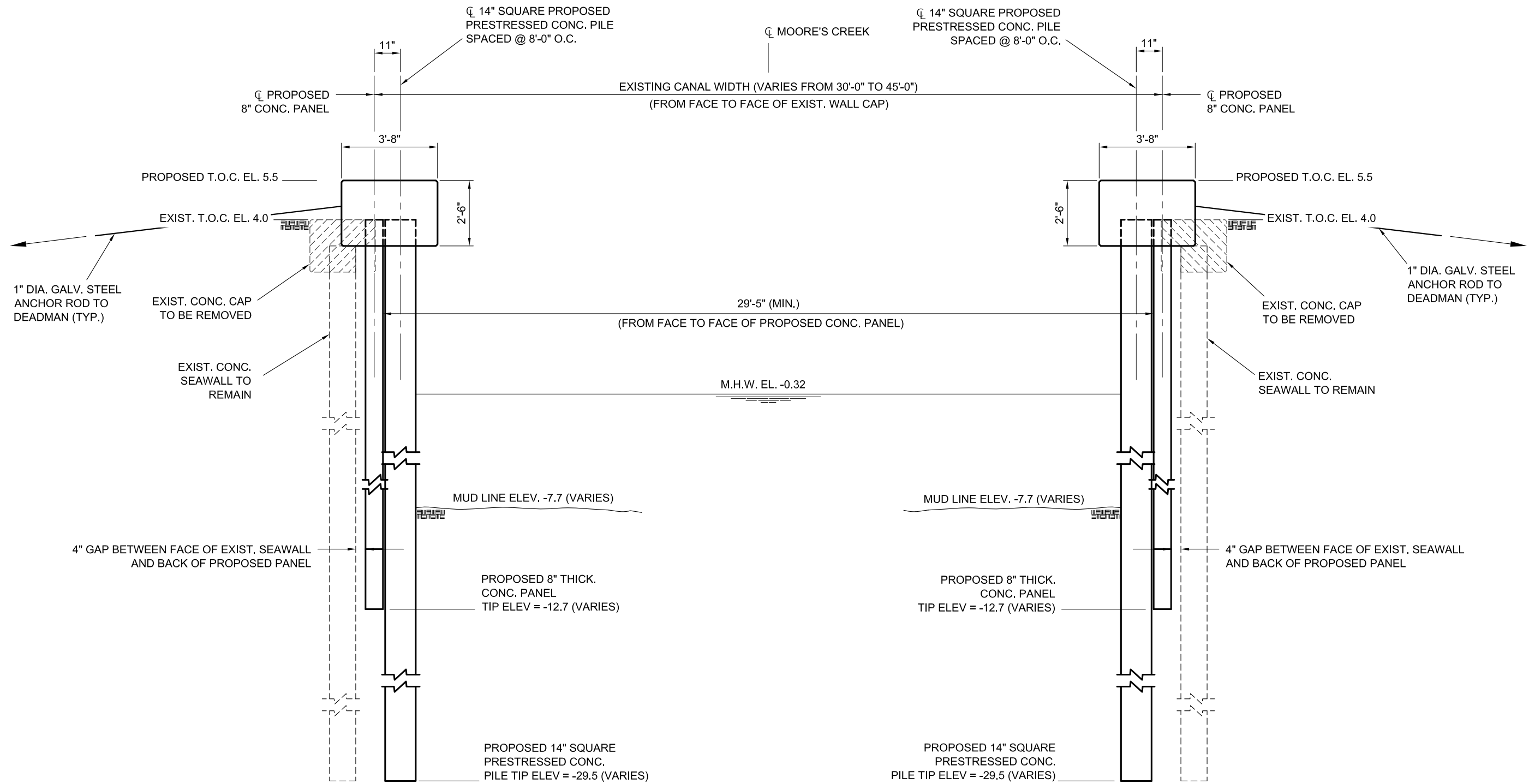
**60% PLANS**

MIGUEL A. VILLEGAS, P.E. DATE  
 LIC. NO.: 68768

DESIGNED: MAV  
 DRAWN: RFN  
 Q.C.  
 APPROVED:

**ELEVATION (NORTH WALL)  
2 OF 2**

PROJECT NO:  
00022926.13  
 DATE:  
5/5/2016  
 SHEET NO:  
**9**



**TYPICAL SECTION - ANCHORED WALL**

NOTE: CANTILEVER WALL SECTION SIMILAR WITHOUT ANCHORING SYSTEM; AND WITH PILES SPACED AT 3'-6" ON CENTER AND EMBEDDED 25 FEET BELOW THE MUDLINE.

NO.	DESCRIPTION	BY	DATE

**CITY OF FT. PIERCE**

**H.D. KING SEAWALL REPLACEMENT**

CLEARWATER  
380 PARK PLACE BLVD, STE 300, CLEARWATER, FL 33759  
TEL: (727) 531-3505 (800) 861-8314  
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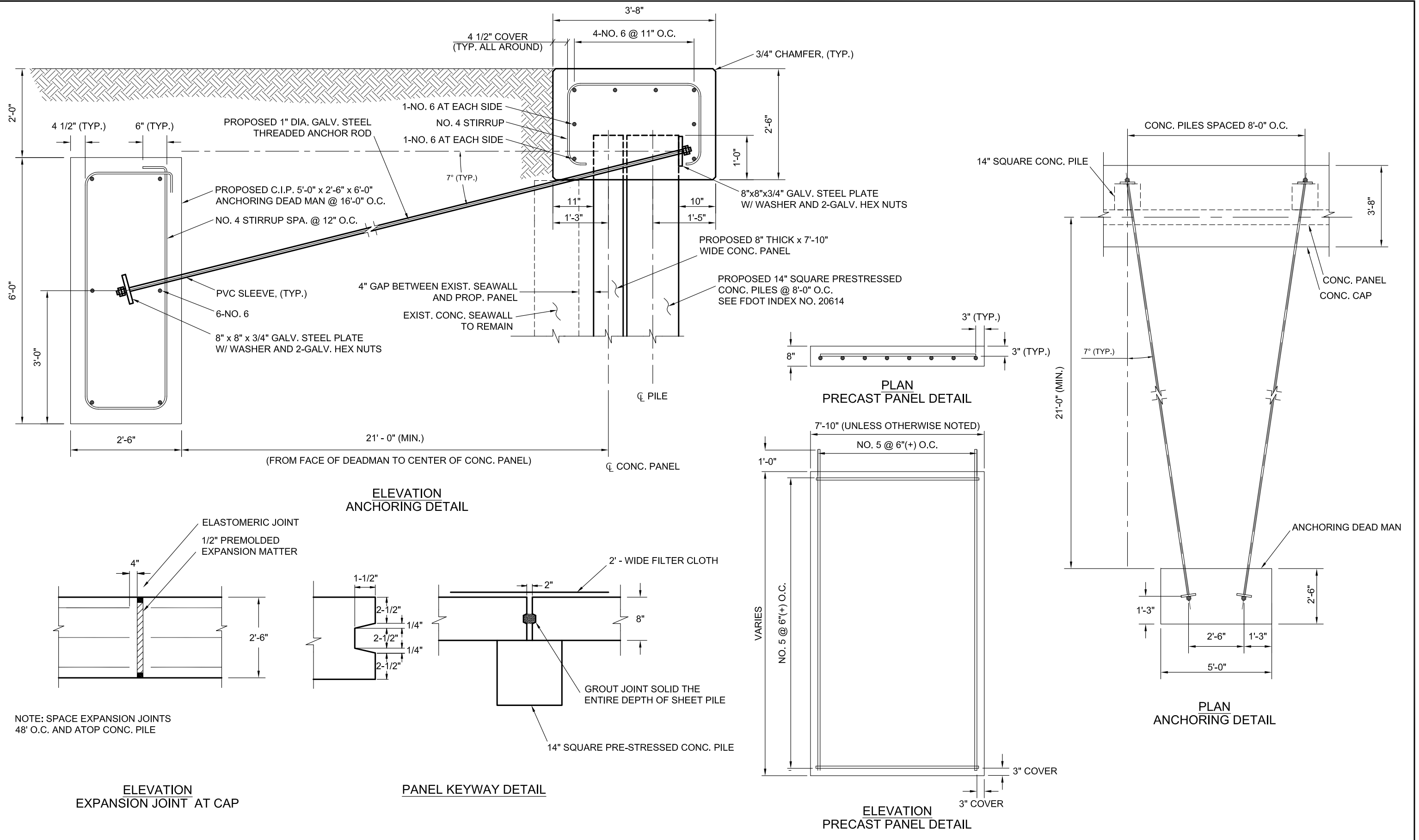
**60% PLANS**

MIGUEL A. VILLEGAS, P.E. DATE  
LIC. NO.: 68768

DESIGNED	MAV
DRAWN	RFN
Q.C.	
APPROVED	

**TYPICAL SECTION**

PROJECT NO:	00022926.13
DATE:	5/5/2016
SHEET NO:	<b>10</b>



NOTE: SPACE EXPANSION JOINTS  
48' O.C. AND ATOP CONC. PILE

CITY OF FT. PIERCE

H.D. KING SEAWALL  
REPLACEMENT



60% PLANS

MIGUEL A. VILLEGAS, P.E. DATE  
LIC. NO.: 68768

DESIGNED MAV  
DRAWN RFN  
O.C.  
APPROVED

MISCELLANEOUS DETAILS

PROJECT NO:  
00022926.13  
DATE:  
5/5/2016  
SHEET NO:  
11