

RESOLUTION NO. 24-240

A RESOLUTION OF THE CITY COMMISSION OF THE CITY OF KEY WEST, FLORIDA, AWARDED THE BID OF LPS CONTRACTING, INC. IN RESPONSE TO INVITATION TO BID ("ITB") #24-014 FOR SPENCER'S BOAT YARD SEAWALL IN THE TOTAL AMOUNT OF \$1,986,444.00; AUTHORIZING ANY NECESSARY BUDGET TRANSFERS OR ADJUSTMENTS; AUTHORIZING THE CITY MANAGER TO EXECUTE A CONTRACT IN SUBSTANTIAL CONFORMANCE WITH THE BID DOCUMENTS; PROVIDING FOR AN EFFECTIVE DATE

WHEREAS, five bids were opened on August 28, 2024, in response to ITB #24-014 for City of Key West Spencer's Boat Yard Seawall, and City staff recommends award of bid to the lowest responsive and responsible bidder, LPS Contracting, Inc.; and

NOW, THEREFORE, BE IT RESOLVED BY THE CITY COMMISSION OF THE CITY OF KEY WEST, FLORIDA, AS FOLLOWS:

Section 1: That the bid of LPS Contracting, Inc. in Response to ITB #24-014 for Spencer's Boat Yard Seawall is hereby awarded in the amount of \$1,986,444.00.

Section 2: That funds for this project are budgeted in Infrastructure Account No. 101-1900-519-6300, Project IS19002301. A budget transfer of \$226,097.00 is authorized from Infrastructure Reserve Account No. 101-1900-519-9803 to fully fund the project. Other necessary budget transfers or adjustments are hereby authorized.

Section 3: That the City Manager is authorized to execute a contract in substantial conformance with the bid documents, upon consent of the City Attorney.

Section 4: That this Resolution shall go into effect immediately upon its passage and adoption and authentication by the signature of the Presiding Officer and the Clerk of the Commission.

Passed and adopted by the City Commission at a meeting held this 10th day of October, 2024.

Authenticated by the Presiding Officer and Clerk of the Commission on 10th day of October, 2024.

Filed with the Clerk on October 10, 2024.

Mayor Danise Henriquez	<u>Yes</u>
Vice Mayor Sam Kaufman	<u>Yes</u>
Commissioner Lissette Carey	<u>Yes</u>
Commissioner Monica Haskell	<u>Yes</u>
Commissioner Mary Lou Hoover	<u>Yes</u>
Commissioner Donald "Donie" Lee	<u>Yes</u>
Commissioner Clayton Lopez	<u>Yes</u>


DANISE HENRIQUEZ, MAYOR

ATTEST:


KERI O'BRIEN, CITY CLERK



MEMORANDUM

Date: October 10, 2024

To: Honorable Mayor and Commissioners

Via: Todd Stoughton
Interim City Manager

From: David Allen
Director of Engineering

Subject: **24-6465 Awarding ITB #24-014, Spencer's Boat Yard Seawall**

Introduction

Resolution approving the award of Invitation to Bid (ITB) #24-014, Spencer's Boat Yard Seawall to LPS Contracting, Inc. in the amount of \$1,986,444.00, inclusive of all utility and permitting fees, and authorizing the City Manager to execute the contract, subject to City Attorney review and approval. Authorizing any necessary budget transfers.

Background

In April of 2023 via Resolution 23-079, the City Commission authorized Artibus Design, Inc. to design and prepare construction drawings for the replacement of damaged seawalls located at 701 Palm Ave.

In February 2024, upon completion of the design, ITB 24-004 was advertised seeking bids from qualified individuals to construct the seawall repairs needed, however, after the staff review of the bids, it was determined to decline all bids and readvertise for the project, which was approved by the City Commission via Resolution 24-119.

In July of 2024, ITB 24-014 was advertised seeking bids from qualified individuals to perform the construction of the seawall repairs. Five (5) responses were received and opened on August 28, 2024.

The bids received were from:

Earth Tech Enterprises, Inc.
Kelly Brothers, Inc.
LPS Contracting, Inc.

Marino Construction Group
Shoreline Foundation, Inc.

Following the review of the bids received, LPS Contracting, Inc. was determined to be the low bidder with a total bid of \$1,986,444.00

Procurement

The project has been partially funded in Infrastructure Account 101-1900-519-6300, Project #IS19002301 in the amount of \$1,760,347, leaving a deficit of \$226,097, which will be transferred from Infrastructure Reserve Account number 101-1900-519-9803.

The total contract award of \$1,986,444 compares favorably with the construction estimate of \$2,084,398.40 provided by High Spans Engineering Inc. on June 27, 2024.

Recommendation

Staff recommends the City Commission approves the award of Invitation to Bid (ITB) #24-014, Spencer's Boat Yard Seawall to LPS Contracting, Inc. in the amount of \$1,986,444.00, inclusive of all utility and permitting fees, and authorizes the City Manager to execute the contract, subject to City Attorney review and approval. Authorizing any necessary budget transfers.

INTEROFFICE MEMORANDUM

To: Eric Augst, Senior Construction Manager, David Allen, Engineering Director

CC: Jessica Durocher, Purchasing

From: Keri O'Brien, City Clerk 

Date: August 29th, 2024

Subject: ITB 24-014 Spencer's Boat Yard Seawall

The following were opened on August 28th, 2024, at 3:00PM in reference to that above listed ITB:

- | | |
|--|--------------------------------|
| 1. <u>Earth Tech Enterprises, Inc</u>
6180 Federal Ct
Fort Myers, FL 33905 | Total Lump Sum \$ 2,755,662.50 |
| 2. <u>Kelly Brothers, Inc</u>
15775 Pine Ridge Road
Fort Myers, FL 33908 | Total Lump Sum \$2,695,092.45 |
| 3. <u>LPS Contracting, Inc.</u>
300 Sadowski Causeway Suite 309
Key Colony Beach, FL 33051 | Total Lump Sum \$ 1,986,444.00 |
| 4. <u>Marino Construction Group.</u>
7025 Shrimp Rd. #2E
Key West, FL 33040 | Total Lump Sum \$2,297,315.73 |
| 5. <u>Shoreline Foundation, Inc.</u>
2781 SW 56 th Avenue
Pembroke Park, FL 33023 | Total Lump Sum \$2,261,490.00 |

Spencer's Boat Yard

Owner:	City of Key West	Est. By:	JAH
Project:	Spencer's Boat Yard	Date:	6/27/2024
Description:	Quantity and Cost Estimate	Reviewed By:	RLP
Submittal Phase:	Final	Date:	6/27/2024

HighSpans
ENGINEERING, INC.

PAY ITEM NO.	DESCRIPTION	UNIT	QUANTITY	UNIT PRICE	COST
101-1	MOBILIZATION	LS	1	\$ 595,542.40	\$ 595,542.40
104-10-3	SEDIMENT BARRIER	LF	190	\$ 5.00	\$ 950.00
104-11	FLOATING TURBIDITY BARRIER	LF	218	\$ 18.00	\$ 3,924.00
110-3	REMOVAL OF EXISTING STRUCTURES	SF	546	\$ 90.00	\$ 49,140.00
110-4-10 (SF)	REMOVAL OF EXISTING CONCRETE (WALL CAP, WALL F, & FUEL PAD)	SF	449	\$ 15.00	\$ 6,735.00
110-82	REMOVE & DISPOSE OF STRUCTURAL TIMBER	MB	1.7	\$ 3,000.00	\$ 5,100.00
120-5	CHANNEL EXCAVATION	CY	126.6	\$ 150.00	\$ 18,990.00
120-6	EMBANKMENT	SF	15	\$ 30.00	\$ 450.00
121-70	FLOWABLE FILL	CY	53.6	\$ 437.00	\$ 23,423.20
125-1	EXCAVATION FOR STRUCTURES	CY	340.1	\$ 500.00	\$ 170,050.00
210-2	LIMEROCK-NEW MATERIAL FOR REWORKING BASE	CY	10.5	\$ 60.00	\$ 630.00
400-2-10	CONCRETE CLASS II, APPROACH SLABS	CY	24.8	\$ 2,000.00	\$ 49,600.00
400-4-5	CONCRETE CLASS IV, SUBSTRUCTURE	CY	32.4	\$ 3,510.00	\$ 113,724.00
400-4-11	CONC CLASS IV, RETAINING WALLS	CY	124.4	\$ 2,312.00	\$ 287,612.80
415-3-5	LOW-CARBON CHROMIUM REINFORCING STEEL, SUBSTRUCTURE	LB	7517	\$ 2.00	\$ 15,034.00
455-34-1	PRESTRESSED CONCRETE PILING, 12" SQ.	LF	374	\$ 300.00	\$ 112,200.00
455-143-1	TEST PILES-PRESTRESSED CONCRETE, 12" SQ.	LF	32	\$ 450.00	\$ 14,400.00
470-1	TREATED TIMBER, STRUCTURAL	MB	1.6	\$ 13,193.00	\$ 21,108.80
999-0-1	RETAINING WALL SYSTEM, TRULINE 800 SERIES	LF	189	\$ 728.00	\$ 137,592.00
999-0-2	ROUND TIMBER PILES - 10" DIAMETER PT TIMBER	LF	340	\$ 78.00	\$ 26,520.00
999-0-3	STORAGE AND HANDLING OF FUEL TANK ASSEMBLY	LS	1	\$ 1,000.00	\$ 1,000.00
999-0-4	STAINLESS STEEL CLAD REINFORCING STEEL	LB	15381	\$ 8.00	\$ 123,048.00
999-0-5	DRIVEN STEEL PIN PILE	LF	3990	\$ 69.58	\$ 277,624.20
999-0-6	TEMPORARY COFFERDAM	LS	1	\$ 30,000.00	\$ 30,000.00
BASE DESIGN TOTAL				\$	\$ 2,084,398.40

The opinions of the Engineer of probable costs provided herein are based on the information known to the Consultant at the time of the estimate preparation. Many of the prices above are based on FDOT published unit costs that be found at the following URL: <http://www.fdot.gov/programmanagement/Estimates/HistoricalCostInformation/HistoricalCost.shtm>, plus the Engineer's Estimate for additional delivery expenses. The Engineer's signature and seal represents assurance that this estimate was prepared in substantial conformance with generally accepted project estimating principles and guidelines and is not a guarantee that proposals, bids or actual construction costs will vary from this opinion of probable costs.

June 28, 2024

PREPARED BY: RLP

Spencer's Boat Yard Boat Slip and Seawall Repairs
TECHNICAL SPECIFICATIONS PACKAGE



City of Key West

I hereby certify that this specifications package has been properly prepared by me, or under my responsible charge, in accordance with procedures adopted by the Florida Department of Transportation.

This item has been digitally signed and sealed by Thomas M. Waits, P.E. on the date adjacent to the seal. Printed copies of this document are not considered signed and sealed and the signature must be verified on any electronic copies.

Date: _____
State of Florida,
Professional Engineer, License No.: Thomas M. Waits, P.E., 55460
Firm/Agency Name: HighSpans Engineering, Inc.
Firm/Agency Address: 2121 McGregor Blvd., Suite 200
City, State, Zip Code: Fort Myers, FL 33901
Page(s): 1-10

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PART 1: GENERAL

1. SECTION INCLUDES

- 1.1 The section includes information about all system components used in the construction of Truline hybrid sheet piling system.
- 1.2 This section covers installation recommendations of the system and its components.

2. SUBMITTALS

- 2.1 Installers Qualifications and list of equipment.
- 2.2 Product data sheets and testing results.
- 2.3 Truline polymer U-channel and assembly parts.
- 2.4 Concrete. Submit proposed mix proportions and samples of proposed materials. Product data and safety literature for all admixtures proposed for the mix. Delivery tickets compliant with requirements of ASTM C94 for each delivery batch of ready-mixed concrete. Ticket information shall include: class of concrete, water cement ratio, time of loading, truck ID number, all admixtures used, and quantity.
- 2.5 Reinforcement mill tests, shop drawings and accessories (plastic centralizers, chairs etc.) in accordance with ACI 315 and plan provisions.
- 2.6 Tie-downs and accessories (if any).
- 2.7 Back-fill soils laboratory analysis.

3. QUALITY ASSURANCE

- 3.1 Installers Qualifications. The hybrid sheet piling installer shall have minimum three (3) successful projects that include installation of sheet piling systems of a similar size, installation depth and project conditions (soils, ground waters, exposed height) similar to the current project.
- 3.2 Installation Tolerances.
 - 3.2.1 Deviation from plumb (vertical) - shall not exceed 1/4 inch per foot of exposed sheet pile, but not more than 4 inches total unless otherwise specified on the drawing.
 - 3.2.2 Deviation from location of top of pile (horizontal) - shall not exceed 4 inches unless otherwise specified on the drawing.

PART 2: PRODUCTS

4. GENERAL

- 4.1 All polymer piling shall be new material without any damage to any exposed sides or interlocking system.
- 4.2 Polymer piling system shall be fabricated in such manner that allows continuous interlock between the individual segments throughout the entire length of pile when installed in place.
- 4.3 Polymer piling system shall provide and serve as stay-in-place form for fill material (cast-in-place concrete). No additional forming work shall be required for fill concrete.

5. MATERIALS

- 5.1 Polymer U-channel sheet piles and accessories.
 - 5.1.1 Sheet piles and all system parts shall be manufactured out of durable co-extruded rigid vinyl material formulated for exterior weather-ability and high impact resistance, UV-resistant against fading and discoloration in harsh marine environments, non-chalking, chemically resistant, non-corrosive.
 - 5.1.2 Outer layer shall be UV-resistant virgin vinyl compound.
 - 5.1.3 Inner layer shall be post-industrial recycled vinyl.
 - 5.1.4 Nominal thickness of a single layer of a two layer system shall be 0.27in.
 - 5.1.5 Polymer modulus of Elasticity (E) shall be no less than 380,000 psi.
 - 5.1.6 Tensile Strength shall be no less than 6,300 psi.
 - 5.1.7 Impact Strength shall be no less than 850.2 in*lbs.
 - 5.1.8 Product manufacturer shall provide minimum 50-year limited warranty on the polymer parts.
 - 5.1.9 System manufacturer shall be Truline LLC or Engineer of Record (EOR) approved equal.
- 5.2 Concrete mixes.
 - 5.2.1 Concrete shall be Class IV (5500 psi) FDOT mix in accordance with FDOT Standard Specification 346 and any plan provisions.
 - 5.2.2 Clean, potable water.
 - 5.2.3 Portland cement shall be ASTM C150 / C150M Type II.
 - 5.2.4 Fine and coarse aggregate shall be in accordance to ASTM C33 / C33M.
 - 5.2.5 Air-Entraining Admixtures shall be in accordance with ASTM C260 / C260M.
 - 5.2.6 High range water-reducing admixtures shall be in accordance with C494 / C494M.
 - 5.2.7 Fly Ash use in concrete mix shall be in accordance with ASTM C618-12a.
 - 5.2.8 Silica Fume shall meet the requirements of ASTM C1240.
- 5.3 Reinforcement.

5.3.1 Reinforcement shall be in accordance with the structures plans general notes.

5.3.2 Reinforcement supports shall be either all-plastic or stainless steel construction.

5.4 Backfill Soils.

5.4.1 Soils used for a backfill of the sheet pile system or its components shall be free of muck, clay, rocks larger than 3 inches, large roots, wood debris, and other organic materials.

5.4.2 Only well draining soils shall be used for backfill.

5.4.3 Backfill soil mechanical characteristics shall be equivalent to the existing soils as detailed in the geotechnical report and used for calculations. The backfill soil's laboratory analysis shall be submitted and approved by the EOR prior to placement.

PART 3: EXECUTION

6. GENERAL

- 6.1 Earthwork in the vicinity of sheet pile system installation shall be completed prior to sheet pile installation to the maximum extent practical.
- 6.2 Utilities, buildings, structures, pavements, landscaping and any other features located in the vicinity of the Truline hybrid sheet pile system installation shall be protected from possible damage created by the earthwork operations.
- 6.3 Topsoils, debris, vegetation, pavements and other obstructions shall be removed from the site prior to the installation commencing.
- 6.4 Erosion and sedimentation control features such as silt fences, turbidity barrier, inlet and stream protection devices and BMPs shall be installed prior to installation start and shall be maintained throughout the construction and restoration operations.

7. STORAGE AND HANDLING

- 7.1 Composite sheet pile system components shall be stored on a level, sound ground and supported in such manner that protects individual U-channels and other parts from bending, impact damage, abrasive damage, open fire, excessive heat, paints, solvents etc.
- 7.2 Any damaged U-channels, end caps and other components shall be discarded, and only undamaged components shall be placed into final position.
- 7.3 Care must be taken during loading, unloading and handling of U-channel bundles and individual components. Depending on the total length of the sheets, intermediate supports may be required to prevent permanent damage.
- 7.4 Backfill soil stockpiles shall be stored away from excavation edges, environmentally sensitive areas and water bodies to minimize soil erosion.
- 7.5 Dewatering activities shall comply with plan provisions and local DEP requirements.

8. SUBGRADE CONDITIONS

- 8.1 If during the Truline hybrid sheet pile system installation it is discovered that subgrade conditions substantially vary from those described in construction plans or geotechnical investigation report, all installations shall be stopped, and the Engineer of Record (EOR) shall be notified. No further installation work shall be performed unless the condition is approved by the EOR.

9. INSTALLATION

9.1 Truline Hybrid Sheet Piles Installation.

- 9.1.1 Due to shallow soft limestone, excavation is required to ensure vinyl sheets are not damaged or deformed during installation.
- 9.1.2 Excavate a trench to an elevation of -8.0 NGVD (1929) in the location of the proposed wall utilizing overlapping auger holes. The maximum allowed auger diameter is 1'-8".
- 9.1.3 Install a driving guide to establish the front of the wall and the proper elevation.
- 9.1.4 Prior to driving the first part, pre-attach the Truline male end cap to the Truline U-channel. Slide the parts in place and fasten with coarse thread deck screws at 24" spacing to the Truline U-channel. This will close the open end of the first U-channel and provide a rigid box to drive. To maintain hook spacing, always construct the wall so that the closed end of the u- channel is the leading edge.
- 9.1.5 Set the first Truline U-channel into position, oriented with a closed side of a U-channel in the direction of installation. Drive the Truline U-channel to the required depth within the excavated trench.
- 9.1.6 U-channels shall remain plumb in all directions.
- 9.1.7 Set the next Truline U-channel's dual interlocks into the prior U-channel's dual interlocks and drop the piles into place, continuing to drive with equipment to required depth. If corner/radius parts are needed to navigate any radius or angle, the same procedure applies.
- 9.1.8 When driving the final Truline U-channel, pre-attach the Truline female end cap to the U-channel using the same method as described above for the first U-channel. Set into place and drive to the required depth.
- 9.1.9 Care shall be taken during pile driving to prevent any damage to piles, splitting, breaking, separating of interlocks, etc.
- 9.1.10 Installation Tolerances. Deviation from plumb (vertical) - shall not exceed 1/4 inch per foot of exposed sheet pile, but not more than 4 inches total unless otherwise specified by the plan drawings. Deviation from location of top of pile (horizontal) - shall not exceed 4 inches unless otherwise specified by the plan drawings.

9.2 Reinforcement placement.

- 9.2.1 Reinforcement installation shall be documented and reported to the EOR for approval before depositing concrete.
- 9.2.2 Splice laps shall be as indicated on the approved shop drawings and in compliance with the requirements of ACI 318 and ACI 315.
- 9.2.3 Dowels shall be of the same size and bar type as the rebar to which they lap, unless otherwise is indicated on the plans.

9.3 Fill of Truline cells.

- 9.3.1 Employ the Truline Airlift or EOR approved equal to remove the soil from within the Truline U-channel as detailed in plans.

- 9.3.2 If the concrete is to be placed underwater, it must be placed from the bottom up keeping the end of the pump line submerged under the concrete surface. It is not permitted to allow the concrete to free fall through water.
 - 9.3.3 Concrete class shall be as described in these specifications, unless otherwise specified by the EOR.
 - 9.3.4 Standard concrete pumping equipment shall be used for concrete depositing.
 - 9.3.5 The EOR may deem that other fills such as stone, recycled concrete, sand, etc. are suitable based on the project specifications and material availability.
- 9.4 Top Cap.
 - 9.4.1 Install the top cap as shown on plans prior any backfill placement unless otherwise is approved by the EOR.
- 9.5 Wales.
 - 9.5.1 If shown on the project drawings, wales should be applied to the exterior face of the Truline retaining wall so that the entire bearing surface of the wale is pushing on the wall.
- 9.6 Tie Rods & Deadman/Anchor Systems.
 - 9.6.1 If shown on the project drawings, install tie rods & deadman or anchor systems.
 - 9.6.2 In the case where the top cap is a structural member made from reinforced concrete, the tie rods are embedded into the top cap with hooks as detailed in the structures plans.
 - 9.6.3 Placing the tie rod through the wall: A hole should be drilled through the structural member and both walls of the Truline sheet pile so that the tie rod can be inserted through the assembly.
 - 9.6.4 Deadman shall be buried in the soil beyond its natural failure plane.
 - 9.6.5 Tie rods shall be fastened to the deadman similar to embedding in the concrete top cap.
- 9.7 Flowable Fill
 - 9.7.1 Flowable fill shall be used to fill the void between existing and proposed walls for all wall segments where existing wall is to remain. Flowable fill shall be designed and installed in accordance with FDOT Standard Specification 121.
 - 9.7.2 The mix design shall be for an extremely aggressive environment and utilizing an anti-washout additive. Mix design must be submitted to EOR for approval.
 - 9.7.3 Flowable fill shall be placed utilizing a tremie. Install after curing of concrete for the wall in-fill and before pouring of the top cap.
- 9.8 Backfill.
 - 9.8.1 Backfill soils shall be placed on compacted and stabilized sub-grades free of top soils, vegetation, debris, standing water and mud.
 - 9.8.2 Backfill shall be placed in lifts of 6-8 inches and compacted to 95% of Standard Proctor Test, unless otherwise is specified by the EOR.
 - 9.8.3 Placement and compaction of the backfill soils shall be performed after curing of concrete for the wall in-fill and deadmans is complete (28 days from placement) unless otherwise is approved by the EOR.

9.8.4 Compaction and placement of the backfill shall be performed with small vibratory equipment. The system is not intended to support large construction equipment nor vehicular traffic unless specifically approved by the EOR.

**THIS COMPLETES
THIS
SPECIFICATIONS
PACKAGE**

CITY OF KEY WEST
ENGINEERING DEPARTMENT

SPENCER'S BOAT YARD
BOAT SLIP AND SEAWALL REPAIRS
CITY OF KEY WEST RFQ NO. 22-006

STRUCTURE PLANS

INDEX OF STRUCTURE PLANS

SHEET NO.	SHEET DESCRIPTION
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6	PROJECT OVERVIEW
7	PROJECT LAYOUT
8	TURBIDITY CONTROL PLAN
9	DREDGING PLAN
10	REPORT OF CORE BORINGS
11	FOUNDATION LAYOUT
12	PILE DATA TABLE
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15	BOAT HOIST SUPPORT PLATFORM 3
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17	TIMBER DOCK PLAN AND TYPICAL SECTION
18	TIMBER DOCK DETAILS
19	WALL PLAN
20	WALL ELEVATION
21 - 22	SEAWALL DETAILS
23	FUEL STORAGE SLAB DETAILS
24 - 25	REINFORCING BAR LIST
26	BENT BAR DETAILS

ES-1 BOUNDARY, TIDAL WATER, BATHYMETRIC AND TOPOGRAPHIC SURVEY



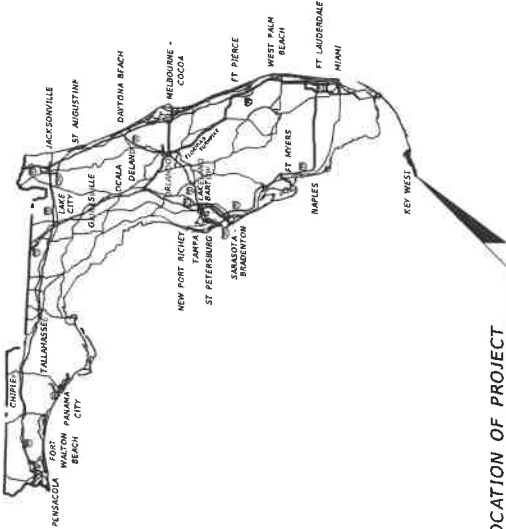
LOCATION OF PROJECT
701 PALM AVE. KEY WEST, FL 33040

GOVERNING STANDARD PLANS:

Florida Department of Transportation, FY 2023-24 Standard Plans for Road and Bridge Construction and applicable Interim Revisions (IRs).
Standard Plans for Road and Bridge Construction and associated IRs are available at the following website: <http://www.flot.gov/design/standardplans>

GOVERNING STANDARD SPECIFICATIONS:

Florida Department of Transportation, 2023 Standard Specifications for Road and Bridge Construction at the following website: <http://www.flot.gov/programmanagement/Implemented/SpecBooks>



LOCATION OF PROJECT

<https://goo.gl/maps/4GipmtrgWMPsdu6c9>

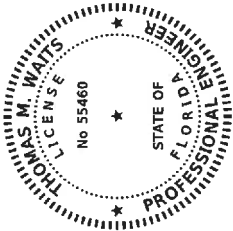
PROJECT MANAGER:

SERGE MASHITAKOV, P.E.
ARTIBUS DESIGN
3710 N. ROOSEVELT BLVD
KEY WEST, FL 33040

CONSTRUCTION CONTRACT NO.	FISCAL YEAR	SHEET NO.
	24	1

FINAL SUBMITTAL
JULY 2024

THIS ITEM HAS BEEN DIGITALLY
SIGNED AND SEALED BY

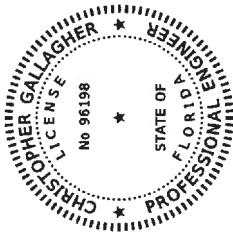


ON THE DATE ADJACENT TO THE SEAL
PRINTED COPIES OF THIS DOCUMENT ARE
NOT CONSIDERED SIGNED AND SEALED
AND THE SIGNATURE MUST BE VERIFIED
ON ANY ELECTRONIC COPIES.

THE ABOVE NAMED PROFESSIONAL ENGINEER SHALL BE RESPONSIBLE FOR THE
FOLLOWING SHEETS IN ACCORDANCE WITH RULE 61G15-23.004, F.A.C.

SHEET NO.	SHEET DESCRIPTION
1	KEY SHEET
2	SIGNATURE SHEET
3	SUMMARY OF STRUCTURE QUANTITIES
4 - 5	GENERAL NOTES
6	PROJECT OVERVIEW
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21 - 22	SEAWALL DETAILS
23	FUEL STORAGE SLAB DETAILS
24 - 25	REINFORCING BAR LIST
26	BENT BAR DETAILS

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SHEET NO.	SHEET DESCRIPTION
2	SIGNATURE SHEET
10	REPORT OF CORE BORINGS

DATE	BY	DESCRIPTION	REVISIONS	DATE	BY	DESCRIPTION

THOMAS M. WAITS, P.E.
P.E. LICENSE NUMBER 55460
HIGHSPIANS ENGINEERING, INC.
2121 MCGREGOR BOULEVARD
SUITE 200
FORT MYERS, FL 33901

DESIGNED BY	CHECKED BY	DATE	DESIGNED BY	CHECKED BY	DATE
JAH 08/23	JAH 08/23		JAH 08/23	JAH 08/23	
TMY 08/23	TMY 08/23		TMY 08/23	TMY 08/23	

CITY OF KEY WEST ENGINEERING DEPARTMENT	COUNTY	COUNTY PROJECT NO.
	MONROE	

SHEET NO.	SHEET TITLE
2	SIGNATURE SHEET

REF. OWN. NO.	SHEET NO.
	2

SPENCERS BOAT SLIP AND SEAWALL REPAIRS

QUANTITIES FOR CONSTRUCTION PROGRESS - NOT TO BE USED FOR BIDDING PURPOSES

PAY ITEM NO.	PAY ITEM DESCRIPTION	LOCATION	UNIT	QUANTITY			TOTAL			DESIGN NOTES	CONSTRUCTION REMARKS
				P	F	P	F	P	F		
104-10-3	SEDIMENT BARRIER	WORK BOUNDARY	LF	190							
104-11	FLOATING TURBIDITY BARRIER	WATER	LF	218							
110-3	REMOVAL OF EXISTING STRUCTURES	PLATFORMS 1, 2, 3	SF	546							
110-4-10 (SF)	REMOVAL OF EXISTING CONCRETE	WALL CAPS, WALL F, FUEL STORAGE PAD	SF	449							
110-82	REMOVE & DISPOSE OF STRUCTURAL TIMBER	TIMBER DOCK	MB	1.7							
120-5	CHANNEL EXCAVATION	WATER	CY	126.6							
120-6	EMBANKMENT	RETAINING WALLS	CY	15							
121-7	FLOWABLE FILL	DEADMAN, WALL F	CY	53.6							
125-1	EXCAVATION FOR STRUCTURES	SLAB SHOULDER	CY	340.7							
210-2	LINEROCK-NEW MATERIAL FOR REWORKING BASE	SLABS	CY	10.5							
400-2-10	CONCRETE CLASS II, APPROACH SLABS	PLATFORMS 1, 2, 3	CY	24.8							
400-4-5	CONCRETE CLASS IV, SUBSTRUCTURE	RETAINING WALLS	CY	32.4							
400-4-11	CONC CLASS IV, RETAINING WALLS	PLATFORMS 1, 2, 3	CY	124.4							
415-3-5	LOW-CARBON CHROMIUM REINFORCING STEEL, SUBSTRUCTURE	PLATFORMS 1, 2, 3	LB	7517							
455-34-1	PRESTRESSED CONCRETE PILING, 12" SQ.	PLATFORMS 1, 2, 3	LF	374							
455-143-1	TEST PILES-PRESTRESSED CONCRETE, 12" SQ.	PLATFORMS 1, 2, 3	LF	32							
470-1	TREATED TIMBER, STRUCTURAL	TIMBER DOCK	MB	1.6							
999-0-1	RETAINING WALL SYSTEM, TRULINE 800 SERIES	RETAINING WALLS	LF	189							
999-0-2	ROUND TIMBER PILES - 10" DIAMETER PT TIMBER	TIMBER DOCK	LS	340							
999-0-3	STORAGE AND HANDLING OF FUEL TANK ASSEMBLY	FUEL STORAGE PAD	LS	7							
999-0-4	STAINLESS STEEL CLAD REINFORCING STEEL	RETAINING WALL, DEADMAN, TIEBACKS, CONCRETE APRON, FUEL STORAGE PAD	LB	15387							
999-0-5	DRIVEN STEEL PIN PILE	RETAINING WALLS	LF	3990							
999-0-6	TEMPORARY COFFERDAM	WALL F	LS	7							

PAY ITEM NOTES:

- PAY ITEM 110-3 INCLUDES ALL LABOR, MATERIALS, EQUIPMENT, AND INCIDENTALS NECESSARY TO REMOVE AND DISPOSE OF THE THREE EXISTING CONCRETE GANTRY PLATFORMS OVER WATER IN ACCORDANCE WITH ALL STATE AND LOCAL REQUIREMENTS.
- REQUIRED TEMPORARY COFFERDAM AND ASSOCIATED DEWATERING. SEE WALL PLAN AND ELEVATION SHEETS FOR DETAILS IN ACCORDANCE WITH ALL STATE AND LOCAL REQUIREMENTS.
- PAY ITEM 110-82 INCLUDES ALL LABOR, MATERIALS, EQUIPMENT, AND INCIDENTALS NECESSARY TO REMOVE AND DISPOSE OF EXISTING TIMBER DOCK ATTACHED TO SEAWALL AS STEEL PILES ARE TO BE EXTRACTED AND DISPOSAL OF ALL DEMOLITION MATERIAL IS TO BE IN ACCORDANCE WITH ALL STATE AND LOCAL REQUIREMENTS.
- SPECIFIED DEPTHS. REMOVAL, STOCKPILING, TRANSPORTATION, AND DISPOSAL OF DREDGED MATERIAL TO COMPLETE ALL DREDGING REQUIRED WITHIN THE SPECIFIED LIMITS TO THE
- PAY ITEM 210-2 INCLUDE ALL LABOR, MATERIALS, EQUIPMENT, AND DISPOSAL OF DREDGED MATERIAL IS INCLUDED IN THIS PAY ITEM.
- PAY ITEM 400-2-10 INCLUDE ALL LABOR, MATERIALS, EQUIPMENT, AND INCIDENTALS NECESSARY TO IMPORT AND GRADE #57 STONE BORDERING CONCRETE SLABS.
- REINFORCING STEEL MACROPOLYMERIC FIBER USED IN FUEL STORAGE SLAB SHALL BE INCIDENTAL TO THIS PAY ITEM.
- PAY ITEM 400-4-11 INCLUDES ALL LABOR, MATERIALS, EQUIPMENT AND INCIDENTALS NECESSARY TO CONSTRUCT ALL CONCRETE PORTIONS OF THE SEAWALL INCLUDING BUT NOT LIMITED TO THE FOLLOWING: PRECAST CONCRETE WALL CELLS, DEWATERING FOR DEADMAN IS INCIDENTAL TO THIS PAY ITEM, POST-INSTALLED MOORING CLEATS INSTALLED IN SEAWALL CAP AND PLATFORMS ARE INCLUDED IN THIS PAY ITEM.
- PAY ITEMS 455-34-1 AND 455-143-1 INCLUDES QUANTITY ADJUSTMENT TO ACCOUNT FOR ALL RELATED PILE DRIVING ACTIVITIES, INCLUDING PREFORMED PILE HOLES, SET-CHECKS, AND CLEAN A-3 BACKFILL FOR THE PREFORM HOLES AFTER PILE DRIVING PER FOOT SPECIFICATION SECTION 455-31.
- PAY ITEM 470-1 INCLUDES ALL LABOR, MATERIALS, EQUIPMENT, AND INCIDENTALS NECESSARY TO CONSTRUCT PROPOSED TIMBER DOCK, INCLUDES ALL LUMBER, FASTENERS, AND HARDWARE, MOORING CLEATS INSTALLED IN TIMBER DOCK ARE INCLUDED IN THIS PAY ITEM. EXCLUDES TIMBER PILING, SEE PAY ITEM 999-0-2.
- PAY ITEM 999-0-1 INCLUDES ALL LABOR, MATERIALS, EQUIPMENT, AND INCIDENTALS NECESSARY TO CONSTRUCT THE PROPOSED SEAWALL, INCLUDES TRENCHING BY OVERLAPPING AUGER HOLES, AND THE TRULINE CHANNEL SYSTEM. INCLUDES PHASED CONSTRUCTION OF WALL SYSTEM.
- PAY ITEM 999-0-2 INCLUDES ALL LABOR, MATERIALS, EQUIPMENT, AND INCIDENTALS NECESSARY TO CONSTRUCT TIMBER PILES. INCLUDES PILES, SHIPPING, PILE DRIVING, AND CUTTING OF PILE TOPS FOR CAP BEAM CONNECTION.
- PAY ITEM 999-0-3 INCLUDES ALL LABOR, MATERIALS, EQUIPMENT, AND INCIDENTALS NECESSARY TO STORE FUEL TANK ASSEMBLY IN ACCORDANCE WITH GENERAL NOTE R.
- PAY ITEM 999-0-4 INCLUDES ALL LABOR, MATERIAL, EQUIPMENT, AND INCIDENTALS NECESSARY FOR THE STAINLESS STEEL CLAD REINFORCEMENT FOR THE RETAINING WALL CAP.
- PAY ITEM 999-0-5 INCLUDES ALL LABOR, MATERIALS, EQUIPMENT, AND INCIDENTALS NECESSARY TO CONSTRUCT THE TEMPORARY COFFERDAM TO ALLOW DEMOLITION OF EXISTING SEAWALL SEGMENT F AND CONSTRUCTION OF PROPOSED IN A DRY CONDITION. DEWATERING WITHIN DAM AND REMOVAL OF DAM ARE INCLUDED IN THIS PAY ITEM.

DATE	BY	DESCRIPTION	PREVISIONS	DATE	BY	DESCRIPTION	THOMAS M. WAITS, P.E. P.E. LICENSE NUMBER 55460 HIGHSUN ENGINEERING, INC. 2121 MCGREGOR BOULEVARD SUITE 200 FORT MYERS, FL 33901	ISSUED BY JAH 04/23 CHECKED BY TMY 05/23	CITY OF KEY WEST ENGINEERING DEPARTMENT	COUNTY PROJECT NO.	COUNTY PROJECT NAME	SHEET NO.	REF. DRAW NO.
												3	
SUMMARY OF STRUCTURE QUANTITIES												SPENCER'S BOAT SLIP AND SEAWALL REPAIRS	

1. LIMIT THE USE OF THE PREMISES TO ACTIVITIES DESIGNATED IN THE PLANS AND ALLOW FOR OWNER OCCUPANCY OF THE EXISTING BUILDINGS AND FACILITIES THROUGHOUT CONSTRUCTION.
2. CONFINE OPERATIONS AT THE SITE TO THE AREAS PERMITTED UNDER THE CONTRACT. PORTIONS OF THE SITE BEYOND AREAS ON WHICH WORK IS INDICATED ARE NOT TO BE DISTURBED. CONFORM TO SITE RULES WHILE ENGAGED IN PROJECT CONSTRUCTION.
3. DO NOT UNREASONABLY ENCUMBER THE SITE WITH MATERIALS OR EQUIPMENT AND CONFINE STOCKPILING OF MATERIALS AND TOOLS TO STORAGE AREAS IN THE IMMEDIATE VICINITY OF THE WORK. IT IS ADDITIONAL STORAGE IS NECESSARY, OBTAIN AN ORDER FOR SUCH STORAGE OFF SITE.
4. WORK HOURS: COORDINATE WITH OWNER.
5. SITE ACCESS WILL BE RESTRICTED AND SUBJECT TO OWNERS SECURITY PROCEDURES.

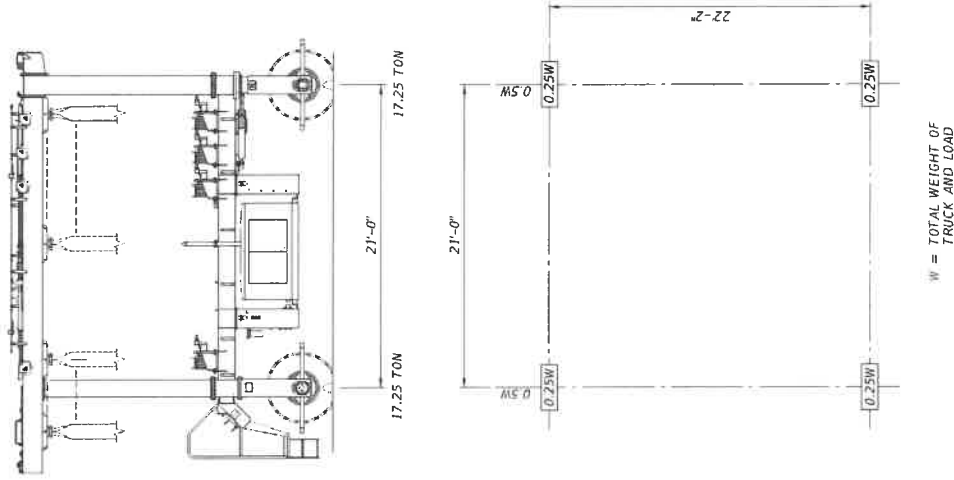
1. CONTRACTOR SHALL COORDINATE ALL CONSTRUCTION ACTIVITIES SUCH AS DELIVERIES, STORAGE, PARKING, AND WORKING WITH THE CITY OF ORD AND ORDINANCE DEPARTMENT.
2. CONTRACTOR SHALL COORDINATE ALL CONSTRUCTION ACTIVITIES WITH MONROE COUNTY OFFICIALS.
3. CONTRACTOR SHALL COORDINATE CONSTRUCTION CLOSURE AND SCHEDULE WITH CITY OF KEY WEST.
4. THE CONTRACTOR SHALL TAKE NOTE OF THE EXISTING OVERHEAD HIGH VOLTAGE POWER LINES AND FOLLOW ALL REGULATIONS AND REQUIREMENTS OF THE FLORIDA POWER AND LIGHT COMPANY. ALL CONSTRUCTION ACTIVITIES WITH KEYS ENERGY SERVICES, KEYS ENERGY SERVICES SHALL BE NOTIFIED AT LEAST 30 DAYS PRIOR TO COMMENCEMENT OF CONSTRUCTION.
5. THE CONTRACTOR SHALL COORDINATE WITH FDP AS NECESSARY TO PERFORM SITE VISITS PRIOR TO TEMPORARY CLOSURE OF THE PROJECT. THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE INSTALLATION OF THE CONCRETE APRON, AND PLACEMENT IN THE UPLANDS PORTION OF THE PROJECT.

PROVIDE AND MAINTAIN FLOATING TURBIDITY BARRIERS AS REQUIRED TO CONTROL TURBIDITY CAUSED BY CONSTRUCTION OPERATIONS AND MONITOR TURBIDITY LEVELS IN ACCORDANCE WITH ENCLOSED PLAN.

THE CONTRACTOR SHALL COMPLY WITH COAST GUARD REGULATIONS REGARDING MAINTENANCE OF BOAT TRAFFIC. A COPY OF THE CONTRACTOR'S PLAN, SCHEDULE, AND SEQUENCE OF OPERATIONS, APPROVED BY THE COUNTY, SHALL BE SUBMITTED TO THE US COAST GUARD 60 DAYS PRIOR TO ANY WORK OVER THE WATERWAY.

THE EXISTING FUEL STORAGE SLAB LOCATED IN THE NORTH-EAST PORTION OF THE SITE SHALL BE REMOVED AND REPLACED TO FACILITATE REMOVAL AND RELIEF OF THE SEAL. THE CONCRETE FUEL STORAGE SLAB IS TO BE REMOVED TO THE EXISTING GRADE OF THE SEAL. THE CONCRETE FUEL STORAGE SLAB SHALL BE REPLACED WITH A 550-GALLON FUEL STORAGE TANK DESIGNATED AS UN103 CLASS 3 FLAMMABLE LIQUID. THE CONTRACTOR SHALL COORDINATE WITH THE PROPERTY OWNER TO HAVE THE TANK EMPTIED, MOVED AND STORED IN A TEMPORARY LOCATION AWAY FROM CONSTRUCTION FOLLOWING ALL OSHA REGULATIONS AND 40 CFR 172.500 REQUIREMENTS. THE CONTRACTOR IS RESPONSIBLE FOR ALL MAINTENANCE DURING STORAGE TO ALLOW FOR RE-INSTALLATION AFTER CONSTRUCTION. THE CONTRACTOR SHALL COORDINATE THE DISCONNECTION OF ELECTRICAL AND UTILITY LINES FROM THE EXISTING CONCRETE SLAB. THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE REMOVAL OF ALL EXISTING CONCRETE SLAB IN A SIMILAR MANNER. IF ANY OTHER ADDITIONAL PERMITTING IS REQUIRED FOR HANDLING AND STORAGE OF THE FUEL TANK, THE CONTRACTOR SHALL BE RESPONSIBLE FOR OBTAINING SUCH PERMITS.

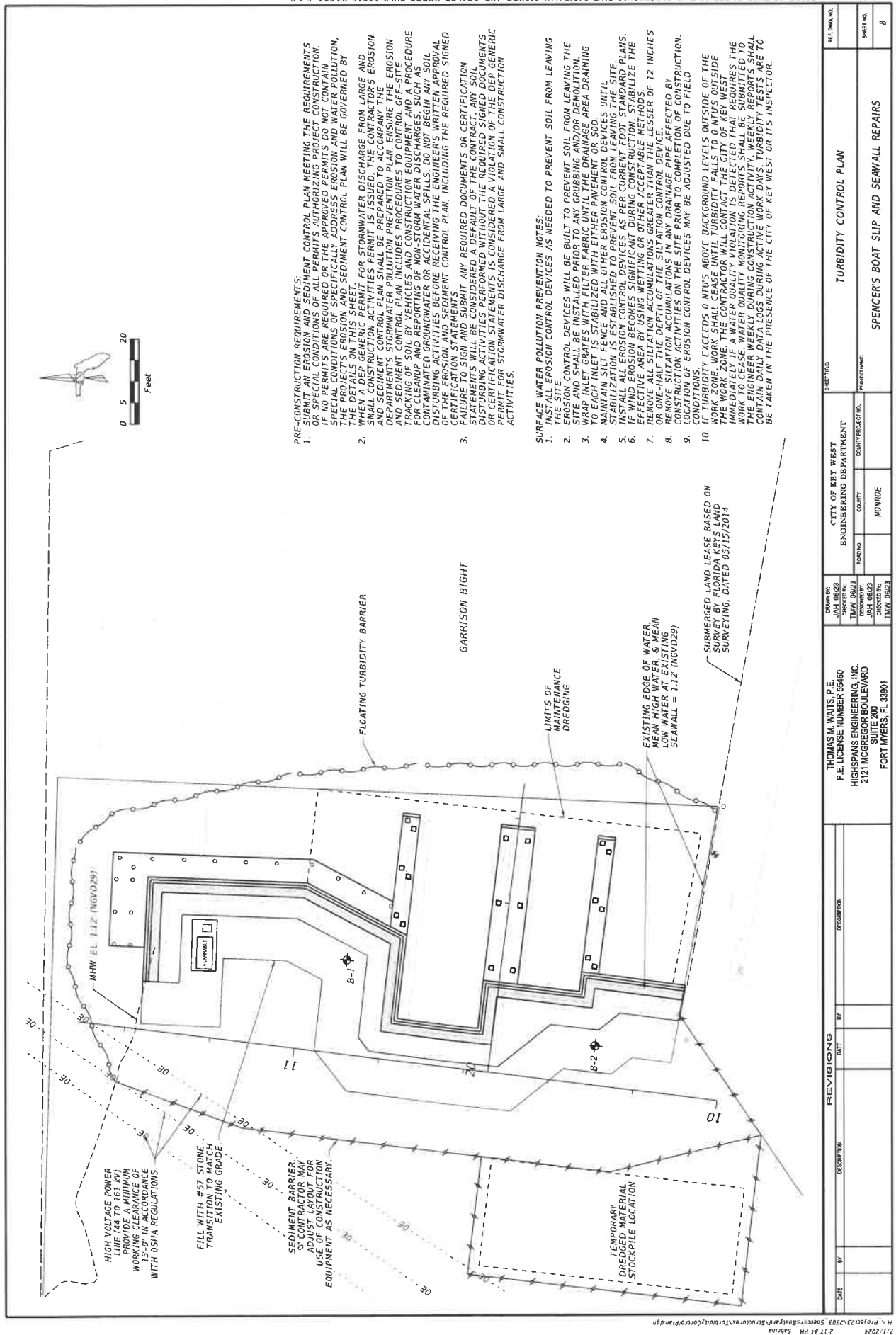
MOORING CLEATS SHALL BE POST-INSTALLED ALONG THE EDGE OF ALL PROPOSED CONCRETE WALL AND PLATFORMS BORDERING OPEN WATER AT A REGULAR SPACING OF APPROXIMATELY 15FT. CLEATS SHALL ALSO BE INSTALLED ALONG THE SEAWARD EDGE OF THE PROPOSED TIMBER DOCK AT A REGULAR SPACING OF APPROXIMATELY 10FT. ALL MOORING CLEATS AND ASSOCIATED ANCHORS OR FASTENERS SHALL BE STAINLESS STEEL AND SHALL BE ATTACHED TO THE CONCRETE OR TIMBER STRUCTURE IN ACCORDANCE WITH ALL MANUFACTURER'S RECOMMENDATIONS. CONTRACTOR SHALL COORDINATE EXACT PLACEMENT OF CLEATS WITH THE CITY OF KEY WEST. MOORING CLEATS MUST NOT OBSTRUCT THE PATH OF A MARINE BOAT HOIST.

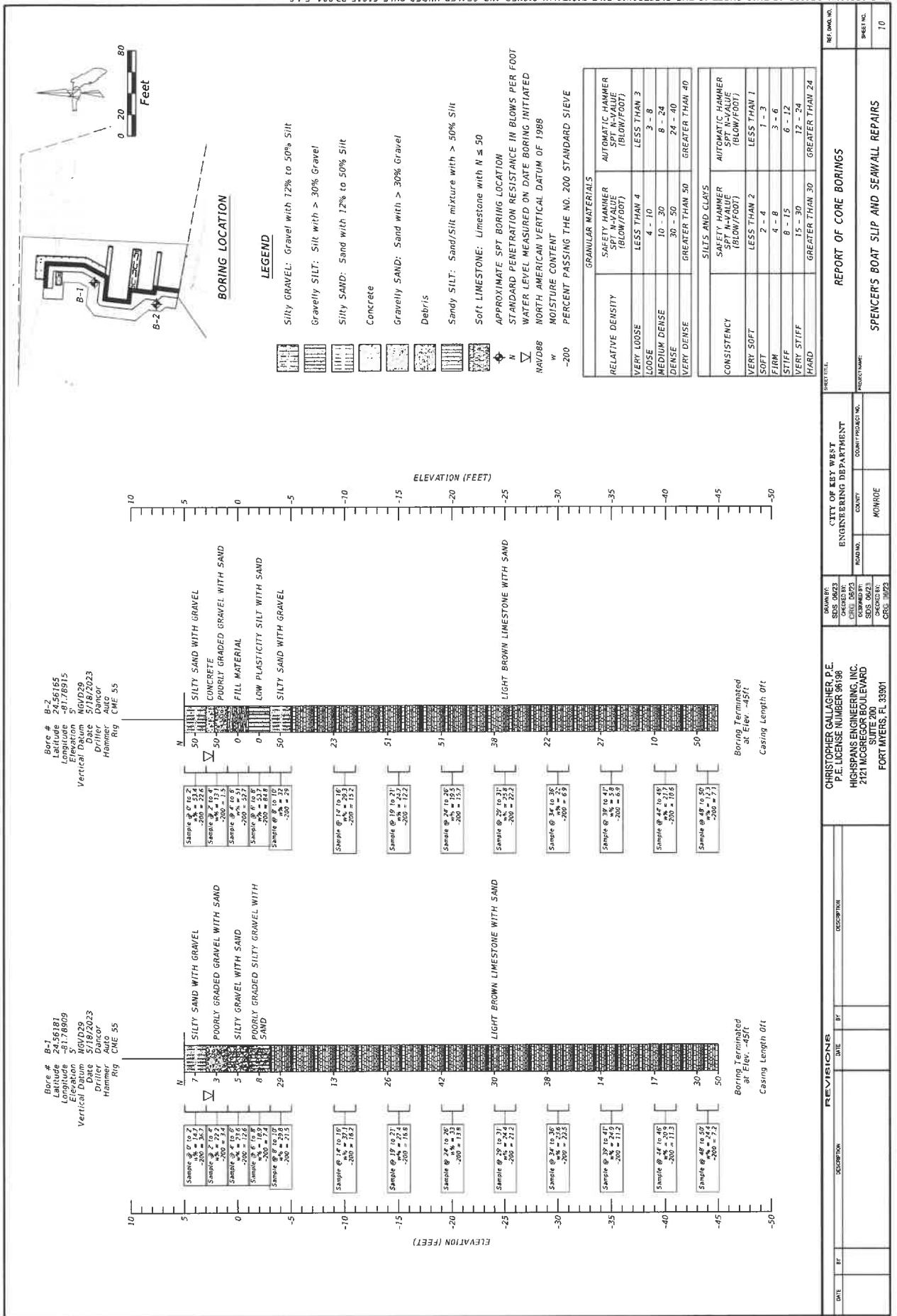


SUPPORT PLATFORM DESIGN VEHICLE
MARINE BOAT HOIST

PREVIEW			
DATE	AT	DATE	BY
		05/08/2020	NOI-08/2020

DRAWING: JAN 0023	CITY OF KEY WEST ENGINEERING DEPARTMENT		SHEET TITLE:	GENERAL NOTES (2 OF 2)	SHEET NO. 5
PROJECT: JAN 0023	COUNTY	COUNTY/PROJECT NO.	PROJECT NAME: SPENCER'S BOAT SLIP AND SEAWALL REPAIRS		
JAN 0023	MONROE				
JAN 0023					
JAN 0023					





PILE DATA TABLE

INSTALLATION CRITERIA										DESIGN CRITERIA						PILE CUT-OFF ELEVATIONS					
PILE LOCATION	PILE SIZE (in.)	NOMINAL BEARING RESISTANCE (tons)	NOMINAL UPLIFT RESISTANCE (tons)	MINIMUM TIP ELEVATION (ft.)	TEST PILE LENGTH (ft.)	REQUIRED JET ELEVATION (ft.)	REQUIRED PREFORM ELEVATION (ft.)	FACTORED DESIGN LOAD (tons)	FACTORED DESIGN UPLIFT LOAD (tons)	DOWN DRAG (tons)	TOTAL SCOUR RESISTANCE (tons)	NET SCOUR RESISTANCE (tons)	100-YEAR SCOUR ELEVATION (ft.)	Ø COMPRESSION	Ø UPLIFT	PILE 1	PILE 2	PILE 3	PILE 4	PILE 5	PILE 6
PLATFORM 1	12 *	43.0	N/A	-15	30	N/A	-9	28.0	N/A	N/A	N/A	N/A	N/A	0.65	N/A	3.5	3.5	3.5	3.5	3.5	3.5
PLATFORM 2	12 *	37.0	N/A	-15	N/A	N/A	-9	24.0	N/A	N/A	N/A	N/A	N/A	0.65	N/A	3.5	3.5	3.5	3.5	3.5	3.5
PLATFORM 3	12 *	43.0	N/A	-15	N/A	N/A	-9	28.0	N/A	N/A	N/A	N/A	N/A	0.65	N/A	3.5	3.5	3.5	3.5	3.5	3.5
TIMBER DOCK	10 **	3.0	N/A	-12	SEE NOTE 4	N/A	-8	1.9	N/A	N/A	N/A	N/A	N/A	0.65	N/A	SEE NOTE 4					

* 12" SQUARE PRESTRESSED CONCRETE PILE
 ** 10" DIA. TIMBER PILES

Factored Design Load + Net Scour Resistance + Down Drag $\leq$ Nominal Bearing Resistance ϕ

UPLIFT RESISTANCE - The ultimate side friction capacity that must be obtained below the 100 year scour elevation to resist pullout of the pile (Specify only when design requires uplift capacity).

TOTAL SCOUR RESISTANCE - An estimate of the ultimate static side friction resistance provided by the scourable soil.

NET SCOUR RESISTANCE - An estimate of the ultimate static side friction resistance provided by the soil from the required preformed or jetting elevation to the scour elevation.

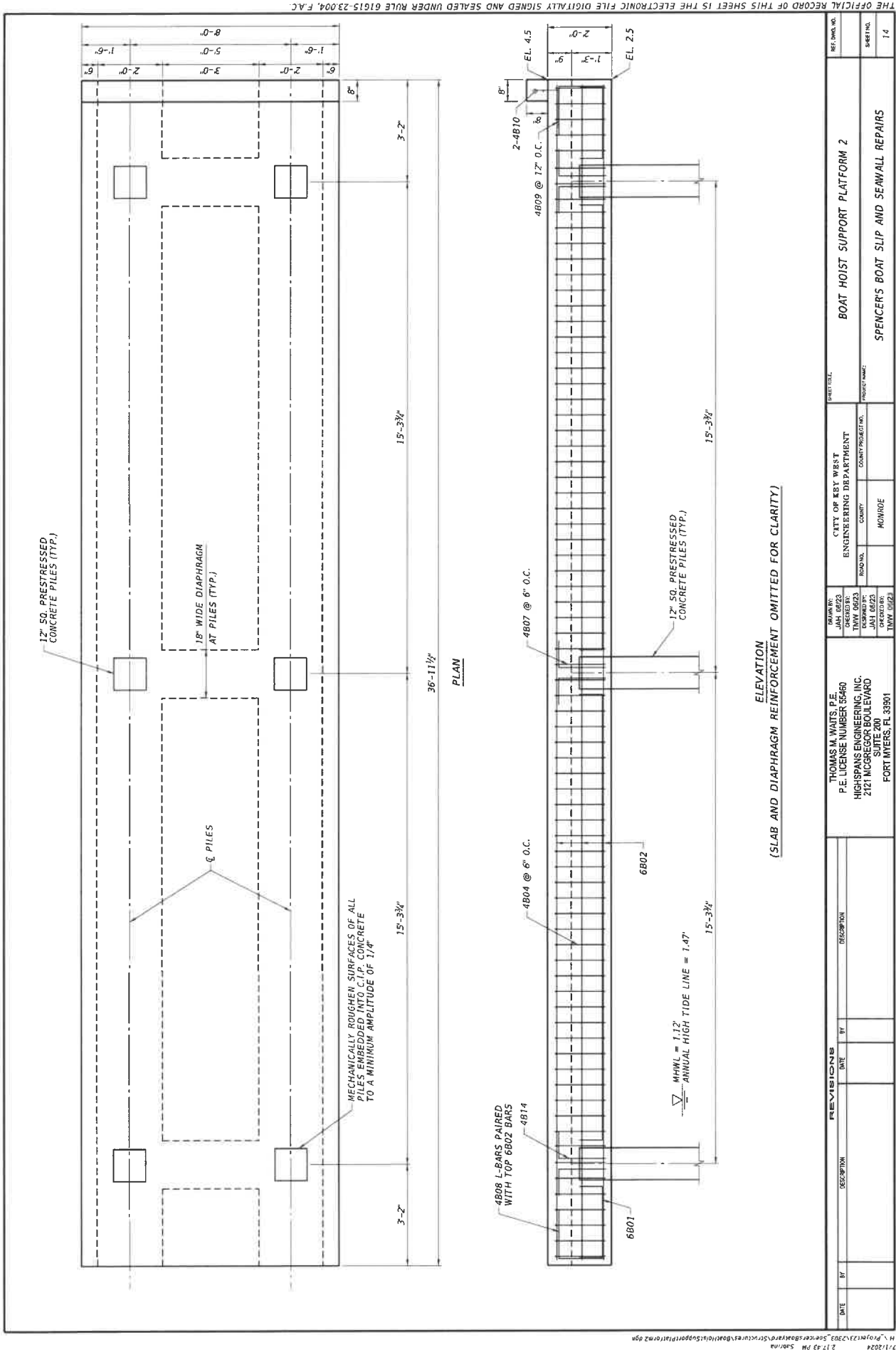
100-YEAR SCOUR ELEVATION - Estimated elevation of scour due to the 100 year storm event.

PILE INSTALLATION NOTES:

- CONTRACTOR TO VERIFY LOCATIONS OF ALL UTILITIES PRIOR TO ANY PILE INSTALLATION ACTIVITIES.
- MINIMUM TIP ELEVATION IS REQUIRED FOR LATERAL STABILITY AT ALL LOCATIONS AND SHALL MEET THE REQUIREMENTS OF FOOT SPECIFICATIONS SECTION 455.
- ADDITIONAL PREFORMING BEYOND THAT SHOWN IN THE PILE DATA TABLE WILL NOT BE ALLOWED WITHOUT APPROVAL OF THE ENGINEER.
- THE ANTICIPATED ORDER PILE LENGTH FOR TIMBER PILES IS 20'-0". THE CONTRACTOR SHALL SUBMIT SHOP DRAWINGS OF TIMBER PILE CUT-OFF ELEVATIONS TO EOR FOR APPROVAL PRIOR TO DRIVING PILES.
- DURING INSTALLATION OF FOUNDATIONS, PROTECT AND MONITOR EXISTING STRUCTURES IN ACCORDANCE WITH FOOT SPECIFICATIONS SECTION 455.
- FOR THE CONCRETE AND TIMBER PILES IN ACCORDANCE WITH FOOT SPECIFICATIONS SECTION 455, THE CONTRACTOR MUST SUBMIT A PILE INSTALLATION PLAN AND FOOT FORM 700-020-01 ALONG WITH THE WAVE EQUATION ANALYSIS (WEAP) TO THE EOR FOR APPROVAL.
- CONTRACTOR SHALL HAVE AN ENGINEER PERFORM THE PDA AND CAPWAP ANALYSIS TO DETERMINE THE PILE LENGTHS AND PILE DRIVING CRITERIA.
- AT EACH PLATFORM, PILE DRIVING IS TO COMMENCE AT THE CENTER OF THE PLATFORM AND PROCEED OUTWARD.
- ALL PILES SHALL BE INSTALLED PLUMB IN THE FINAL POSITION NO MORE THAN 1 1/2" Laterally FROM THE PLAN POSITION AND 1/4" PER FOOT FROM THE VERTICAL. IN ADDITION, THE CUT-OFF ELEVATION MUST BE WITHIN 1 1/2" FROM THE ELEVATION SPECIFIED.
- THE CONTRACTOR SHOULD ANTICIPATE THE USE OF SPECIALIZED EQUIPMENT AND/OR METHODS INCLUDING, BUT NOT LIMITED TO, CORE BARRELS, ROCK AUGERS, PUNCHES, DRILL BITS, ETC. TO COMPLETE PREFORMING. IF DRILLING EQUIPMENT WITH A TAPERED END IS USED TO CONSTRUCT THE PREFORMED PILE HOLES, THE MAXIMUM DIAMETER OF THE DRILLING EQUIPMENT HAS TO REACH THE REQUIRED PREFORMED ELEVATION.
- THE CONTRACTOR SHALL PREFORM PILE HOLES DEEPER THAN THE PREFORMED ELEVATIONS SHOWN IN THE TABLE WITHOUT APPROVAL OF THE ENGINEER. IF ACTUAL PREFORMING ELEVATIONS DIFFER FROM THOSE SHOWN IN THE TABLE, THE ENGINEER SHALL DETERMINE THE REQUIRED DRIVING RESISTANCE, FILL ALL VOIDS BETWEEN PILE AND SOIL REMAINING AFTER DRIVING THROUGH PREFORMED HOLES WITH CLEAN A-3 SAND, AFTER THE PILE HAS ACHIEVED REQUIRED MINIMUM TIP ELEVATION.

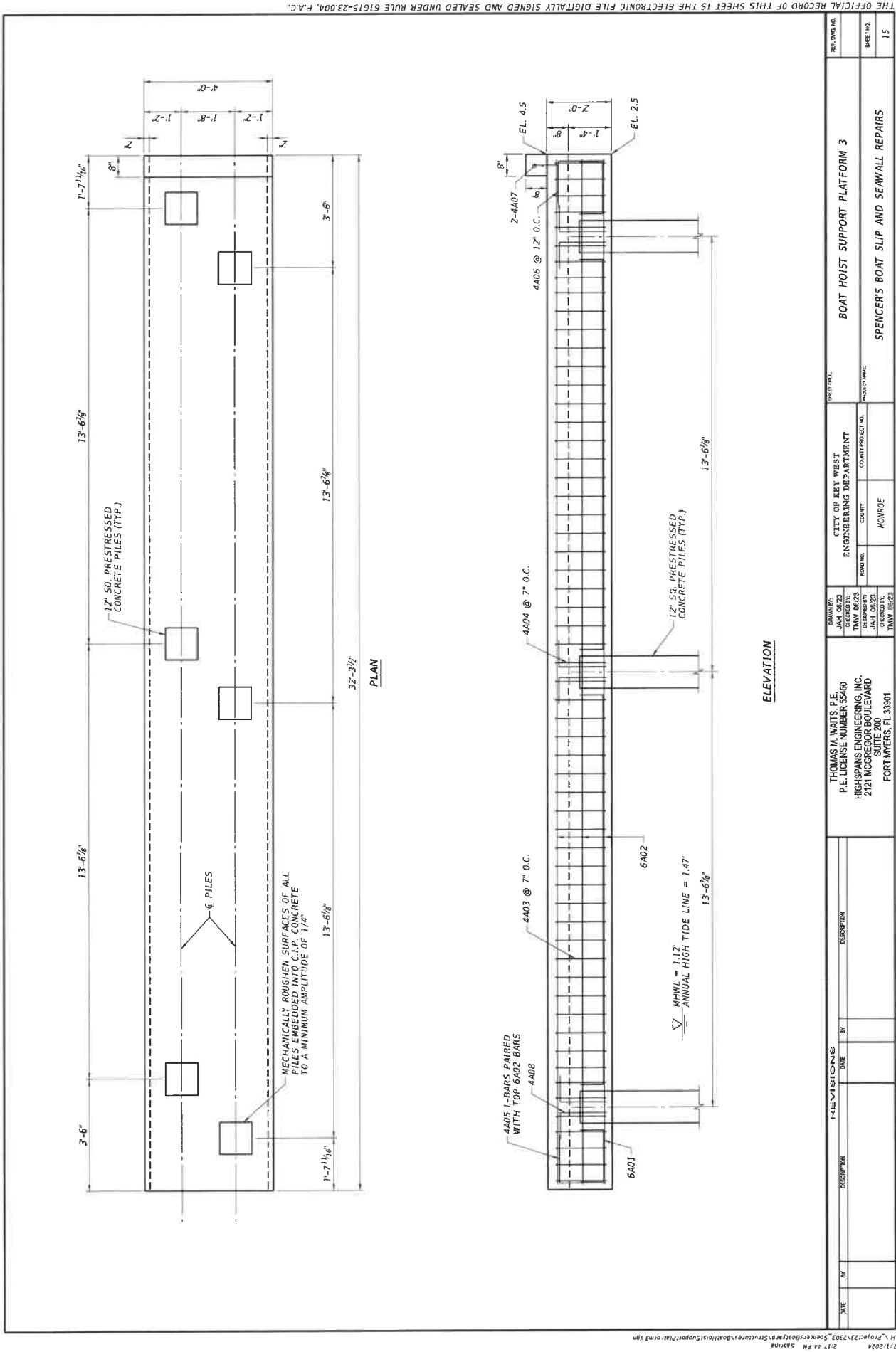
DATE		BY		DESCRIPTION		REVISIONS		THOMAS M. WAITS, P.E. P.E. LICENSE NUMBER 55460 HIGHSPANS ENGINEERING, INC. 2121 MCGREGOR BOULEVARD SUITE 200 FORT MYERS, FL 33901		COUNTY OF KEY WEST ENGINEERING DEPARTMENT ROAD NO. COUNTY MONROE		SHEET TITLE PILE DATA TABLE		REV. DWG. NO. SHEET NO. 17
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SPENCER'S BOAT SLIP AND SEAWALL REPAIRS



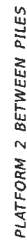
DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION
REVISIONS					
THOMAS M. WAITS, P.E. P.E. LICENSE NUMBER 55460 HIGHSPIANS ENGINEERING, INC. 2121 MCGREGOR BOULEVARD SUITE 200 FORT WORTH, TX 76101 FONTS: PL 33901					
DRAWN BY: JAH 0623		CITY OF KEY WEST ENGINEERING DEPARTMENT		SHEET TITLE: BOAT HOIST SUPPORT PLATFORM 2	
CHECKED BY: TMY 0623		COUNTY: MONROE		PROJECT NAME: SPENCER'S BOAT SLIP AND SEAWALL REPAIRS	
DATE: JAH 0623		ROAD NO.:		SHEET NO.:	
CHECKED BY: JAH 0623		COUNTY PROJECTION:		SHEETING:	
DATE: TMY 0623		COUNTY:		1/4	

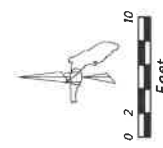
THE OFFICIAL RECORD OF THIS SHEET IS THE ELECTRONIC FILE DIGITALLY SIGNED AND SEALED UNDER RULE 61615-23.004, F.A.C.



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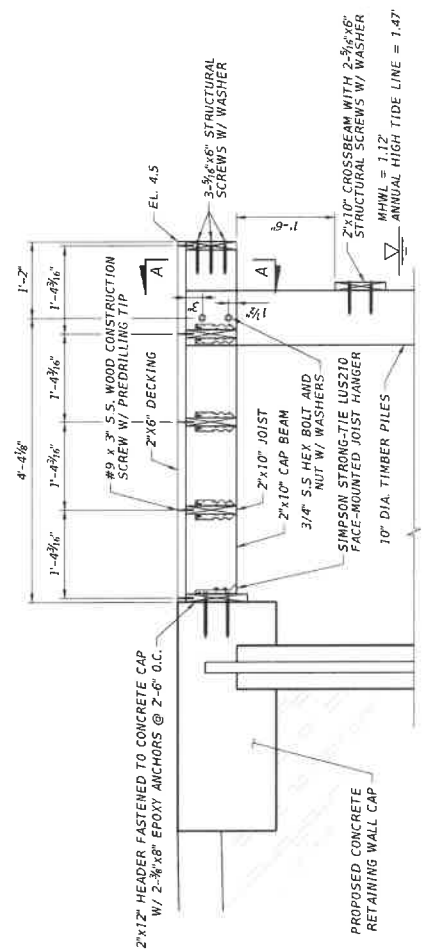
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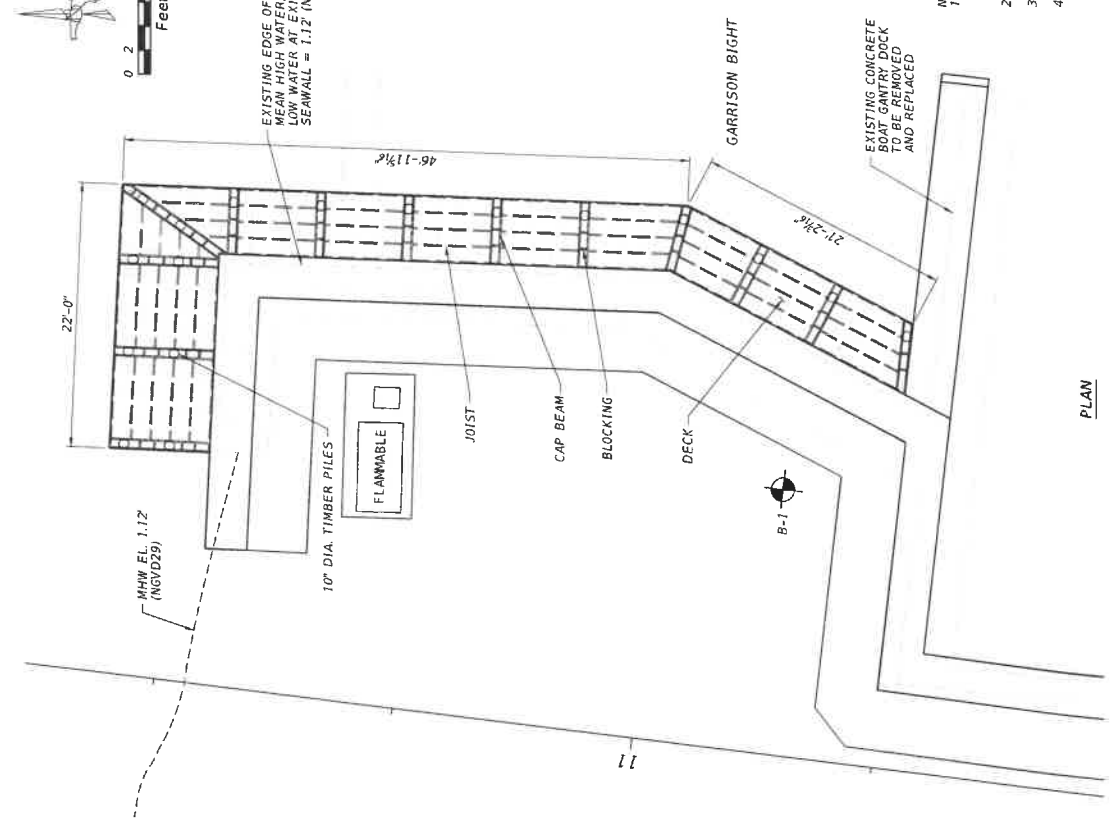


MATERIALS LIST	
PILES	10" DIA SYP ASTM D25, 2.5 CCA
CAP BEAM	2" x 10" x 10" SYP MARINE GRADE NO. 1, S4S 0.31 CA
JOISTS	2" x 10" x 8" SYP MARINE GRADE NO. 1, S4S 0.31 CA
RIM JOISTS	2" x 10" x 8" SYP MARINE GRADE NO. 1, S4S 0.31 CA
DECKING	2" x 6" x 10" SYP MARINE GRADE NO. 1, S4S 0.31 CA
HEADER	2" x 12" SYP MARINE GRADE NO. 1, S4S 0.31 CA
CROSSBEAM	2" x 10" x 8" SYP MARINE GRADE NO. 1, S4S 0.31 CA
BLOCKING	2" x 10" SYP MARINE GRADE NO. 1, S4S 0.31 CA

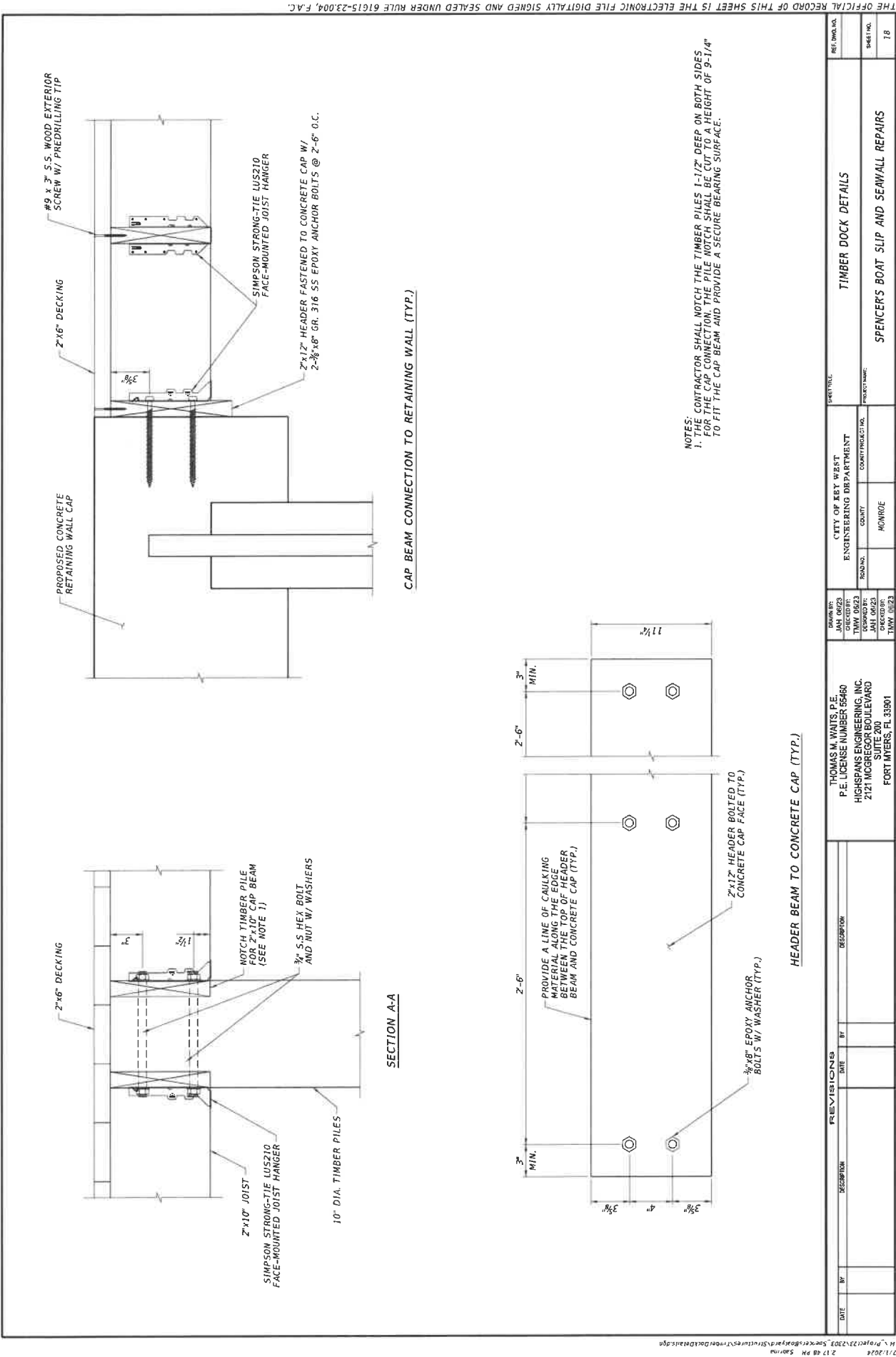
CONNECTOR AND FASTENER SCHEDULE		
CONNECTION LOCATION	TYPE	NUMBER FASTENERS PER CONNECTION
PILE TO CAP BEAM	3/4" DIA 5 S.S. HEX BOLT AND NUT, W/ WASHERS, GRADE 2	2
HEADER TO CONCRETE CAP	3/8" x 8" EPOXY ANCHOR BOLTS W/ WASHER (SEE NOTES)	2
RIM JOIST TO CAP BEAM	GRK RUGGED STRUCTURAL SCREW 5/16" x 6" W/ WASHERS	3
DECKING TO SUBFLOOR	GRIP-RITE 3" x #9 WOOD EXTERIOR SCREW W/ PREDRILLING TIP, PRIMEGUARD PLUS COATING	2
JOIST HANGERS	SIMPSON STRONG-TIE LUS210 GR. 316 SS	SEE NOTE 1
CROSSBEAM TO PILE	GRK RUGGED STRUCTURAL SCREW 5/16" x 6" W/ WASHERS	2
CAP BEAM BLOCKING	GRK RUGGED STRUCTURAL SCREW 5/16" x 4" W/ WASHERS	3



- NOTES:
1. JOIST HANGERS FOR JOIST CONNECTIONS AND CAP BEAM CONNECTIONS SHALL BE SIMPSON STRONG-TIE LUS210 GR. 316 SS, OR APPROVED EQUAL. ADJUST SKEW AND SLOPE OF HANGER IN FIELD TO FOLLOW PROPOSED DOCK LAYOUT. INSTALL HANGERS WITH 8 - #9 x 1 1/2" AND 4 - #9 x 1 1/2" 316 S.S. SD CONNECTOR SCREWS IN THE HEADER AND JOIST CONNECTION, RESPECTIVELY FOLLOW ALL MANUFACTURER'S RECOMMENDATIONS FOR JOIST HANGER AND FASTENER INSTALLATION. SUBMIT PRODUCTS TO ENGINEER FOR APPROVAL.
 2. EPOXY ANCHOR GR. 316 SS 2x4" BOLTS SPACED AND LOCATED ALONG THE CONCRETE CAP FACE. EPOXY ANCHOR LOCATIONS SHOWN ARE APPROVED FOR THE REPAIRS. THE REPAIRS SHALL BE IN ACCORDANCE WITH THE REQUIREMENTS OF SECTION 416. SUBMIT SELECTED ADHESIVE PRODUCT TO ENGINEER FOR APPROVAL.
 3. CONFIRM THE ABSENCE OF REINFORCING IN THE CONCRETE CAP BY DRILLING 1/4" DIAMETER PILOT HOLE FOR EACH ANCHOR. DO NOT CUT REINFORCING WITHOUT APPROVAL OF THE EOR.
 4. ADHESIVE BONDING MATERIAL SYSTEM FOR ANCHORS SHALL COMPLY WITH FOOT SPECIFICATIONS SECTION 937. USE A PRE-APPROVED TYPE HV ADHESIVE MATERIAL LISTED ON THE FOOT APPROVED PRODUCTS LIST (APU) WITH A MINIMUM BOND STRENGTH OF 1,008 KSI. ADHESIVE BONDING SHALL BE APPLIED TO THE FULL SURFACE OF THE ANCHOR. SUBMIT THE ADHESIVE PRODUCT TO ENGINEER FOR APPROVAL.



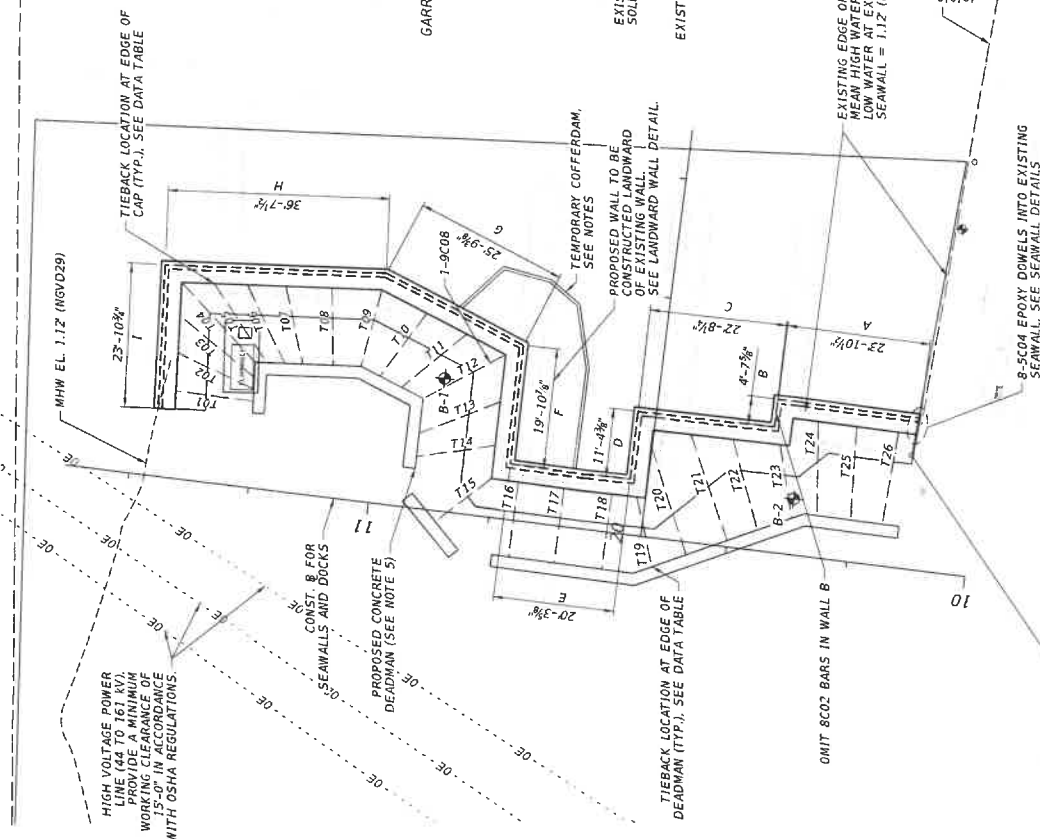
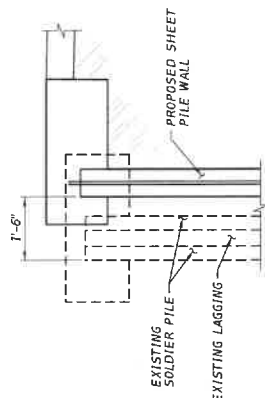
DATE	BY	DESCRIPTION	PREVISIONS	DATE	BY	DESCRIPTION	THOMAS M. WAITS, P.E. P.E. LICENSE NUMBER 55460 HIGHSPIANS ENGINEERING, INC. 2121 MCGREGOR BOULEVARD SUITE 200 FORT MYERS, FL 33901	CITY OF KEY WEST ENGINEERING DEPARTMENT ROAD NO. COUNTY PROJECT NO. MUNICIPALITY	SHEET NO. 17
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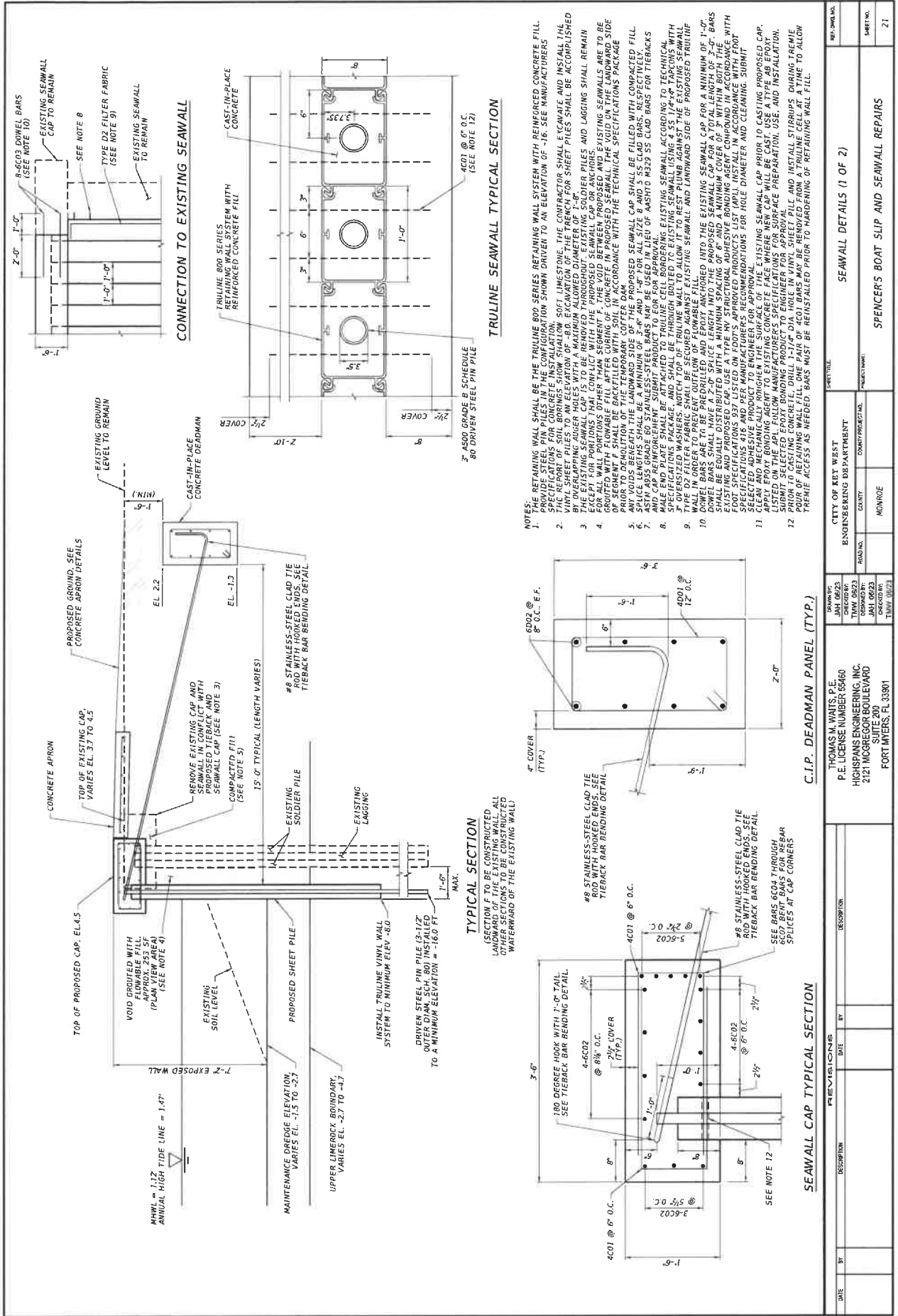
TIEBACK LOCATION DATA TABLE						
TIEBACK	EDGE OF CAP			EDGE OF DEADMAN		
	STATION	OFFSET	STATION	STATION	OFFSET	STATION
T01	11+33.89	14.60' RT	11+21.02	11+21.02	14.41' RT	
T02	11+34.38	20.89' RT	11+21.20	11+21.20	16.40' RT	
T03	11+34.87	27.14' RT	11+21.37	11+21.37	18.89' RT	
T04	11+35.29	32.59' RT	11+21.51	11+21.51	20.89' RT	
T05	11+29.92	33.05' RT	11+19.52	11+19.52	21.04' RT	
T06	11+24.39	33.32' RT	11+16.52	11+16.52	21.28' RT	
T07	11+17.98	34.07' RT	11+13.53	11+13.53	21.51' RT	
T08	11+10.41	34.72' RT	11+08.55	11+08.55	21.89' RT	
T09	11+10.23	35.42' RT	11+04.05	11+04.05	22.39' RT	
T10	10+04.42	32.47' RT	11+00.74	11+00.74	21.14' RT	
T11	10+87.47	29.84' RT	10+97.00	10+97.00	19.72' RT	
T12	10+80.53	27.22' RT	10+93.26	10+93.26	18.31' RT	
T13	10+80.44	19.33' RT	10+93.07	10+93.07	12.57' RT	
T14	10+80.35	12.01' RT	10+93.11	10+93.11	8.57' RT	
T15	10+80.29	6.51' RT	10+88.73	10+88.73	1.79' LT	
T16	10+75.76	6.42' RT	10+75.85	10+75.85	6.13' LT	
T17	10+68.03	6.36' RT	10+68.11	10+68.11	6.18' LT	
T18	10+59.96	6.39' RT	10+60.04	10+60.04	6.23' LT	
T19	10+55.75	6.44' RT	10+51.78	10+51.78	4.78' LT	
T20	10+54.42	15.15' RT	10+46.45	10+46.45	2.13' LT	
T21	10+48.13	17.87' RT	10+39.98	10+39.98	1.10' LT	
T22	10+41.12	17.93' RT	10+35.27	10+35.27	3.44' RT	
T23	10+33.34	18.00' RT	10+29.94	10+29.94	6.10' RT	
T24	10+27.61	22.60' RT	10+25.81	10+25.81	7.05' RT	
T25	10+21.11	22.44' RT	10+20.19	10+20.19	7.00' RT	
T26	10+14.07	22.48' RT	10+14.82	10+14.82	6.96' RT	

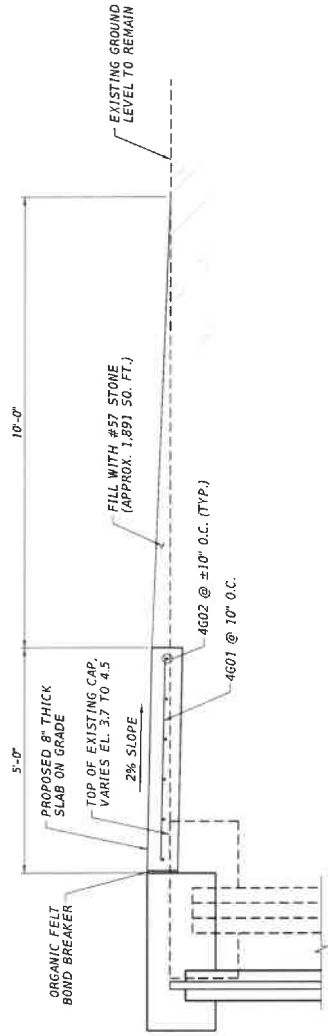
- NOTES:
1. CONSTRUCTION OF THE RETAINING WALL SHALL BE COMPLETED IN PHASES TO ALLOW THE PORTION OF THE PROPOSED WALL TO BE CONSTRUCTED UPWARD OF THE EXISTING PRIOR TO THE REMAINING PORTIONS OF THE WALL. THE CONTRACTOR IS RESPONSIBLE FOR ENSURING STABILITY OF THE EXISTING WALL DURING CONSTRUCTION.
2. CONSTRUCT A TEMPORARY COFFERDAM SURROUNDING THE PORTION OF EXISTING WALL TO BE REMOVED. DEWATER BEHIND THE TEMPORARY COFFERDAM TO REMOVE THE EXISTING WALL SECTION AND CONSTRUCT THE NEW WALL SECTION. BACKFILL BEHIND NEW WALL SECTION TO MAINTAIN COMPATIBILITY WITH TECHNICAL SPECIFICATIONS PACKAGE PRIOR TO REMOVING TEMPORARY COFFERDAM.
3. HEAVY EQUIPMENT IS NOT PERMITTED TO DRIVE ON OR ADJACENT TO THE PROPOSED SEAWALL.
4. CONCRETE DEADMAN AND RETAINING WALL SYSTEM TO BE CONSTRUCTED IN SEGMENTS FOLLOWING THE EXISTING PLAN. CONTRACTOR SHALL ANTICIPATE CONSTRUCTION JOINTS AND CONSTRUCTION JOINTS AND SS CLAD REBAR SPlicing PLAN TO THE EOR FOR APPROVAL.
5. THE CONTRACTOR SHALL PROTECT THE FIRST CONSTRUCTED PHASE OF THE WALL DURING CONSTRUCTION OF THE REMAINING WALL SECTIONS.
6. COMPACT THE SOIL BENEATH THE DEADMAN EXCAVATION WITH SUITABLE EQUIPMENT TO A DENSITY NOT LESS THAN 95% OF THE MAXIMUM DENSITY AS DETERMINED BY FH 1-1780.
7. PROVIDE 12" LIFTS OF COMPACTED CLEAN BACKFILL FORE OF TOP SOILS. VEGETATION BEGINS, PROVIDE 6" LIFTS OF TOP SOILS. VEGETATION BEGINS, STANDING WATER, AND MUD UP TO THE EXISTING GROUND SURFACE.



REVISIONS				SHEET TITLE	
DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION
THOMAS M. WATTS P.E. P.E. LICENSE NUMBER 66460 HIGHSPANS ENGINEERING, INC. 2121 MCGREGOR BOULEVARD SUITE 200 FORT MYERS, FL 33901 CITY OF FRY WEST ENGINEERING DEPARTMENT COUNTY MONROE					
DRAWN BY: JAH 06/23 CHECKED BY: TMW 06/23 DATE: JAH 06/23 DATE: TMW 06/23			ROAD NO.: COUNTY PROJECT NO.: PROJECT NAME:		
REF. INFO. NO.			SHEET NO.		
			79		

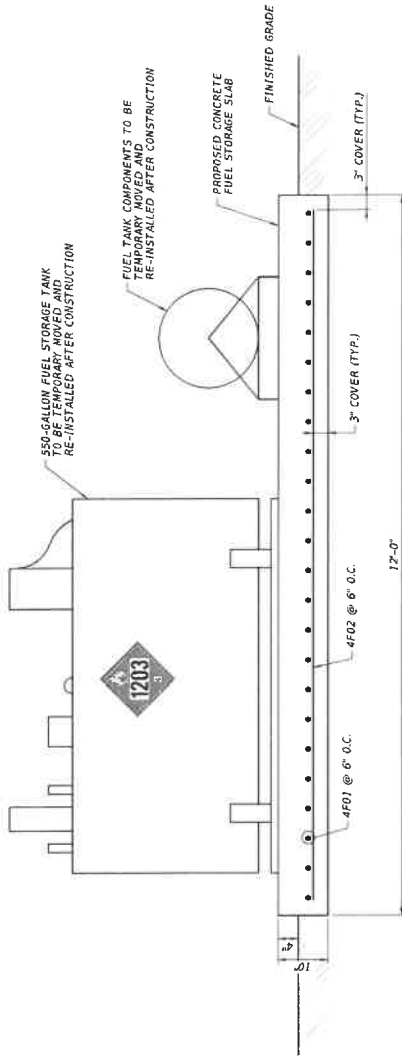
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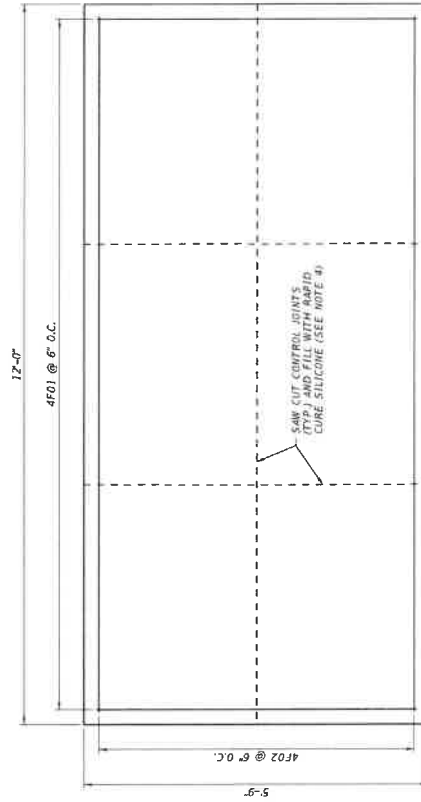


CONCRETE APRON DETAIL
(CAP REINFORCEMENT OMITTED FOR CLARITY)

DATE		BY	REVISIONS		DESCRIPTION	DATE	BY
THOMAS M. WAITS, P.E. P.E. LICENSE NUMBER 55460 HIGSBY ENGINEERING, INC. 2121 MCGREGOR BOULEVARD SUITE 200 FORT MYERS, FL 33901							
DRAWING NO. JAH 06/23		CITY OF KEY WEST ENGINEERING DEPARTMENT		SHEET TITLE SEAWALL DETAILS (2 OF 2)		REV. DWG. NO.	
CHECKED BY: TMM 06/23		COUNTY MONROE		PROJECT NAME: SPENCERS BOAT SLIP AND SEAWALL REPAIRS		SHEET NO. 22	
DESIGNED BY: JAH 06/23		ROAD NO.					
CHECKED BY: TMM 09/23							



ELEVATION VIEW



PLAN VIEW

PLAIN VULV
(FUEL TANK AND COMPONENTS OMITTED FOR CLARITY)

[illegible]

Mark	Size	Des	Material ¹	Type	Length		No	TYP	STY	B		C		D		E		F		H		J	K	N	φ	In	Mo	Ang
					Ft	In		Bars	A	G	Ft	In	Ft	In	Ft	In	Ft	In	Ft	In	Ft	In						
Boat Hoist Support Platform 1																												
No. Required = 1																												
6	A01	2	CHROMX		12'-0"		24	11			9'-11"	1'-0"	1'-0"															
6	A02	2	CHROMX		28'-0"		16	1			28'-0"																	
4	A03		CHROMX		7'-3"		82	4	5		1'-6"	1'-9"																
4	A04		CHROMX		5'-1"		12	5			1'-6"	1'-9"	2"															
4	A05		CHROMX		2'-10"		20	10			1'-5"	1'-5"																
4	A06		CHROMX		2'-0"		4	10			1'-2"	10"																
4	A07		CHROMX		3'-6"		2	1			3'-6"																	
4	A08		CHROMX		2'-4"		24	10			1'-6"	10"																
Boat Hoist Support Platform 2																												
No. Required = 1																												
6	B01	2	CHROMX		16'-1"		32	11			14'-0"	1'-0"	1'-0"															
6	B02		CHROMX		36'-5"		20	1			36'-5"																	
4	B03		CHROMX		36'-5"		10	1			36'-5"																	
4	B04		CHROMX		6'-9"		140	4	5		1'-6"	1'-6"																
4	B05		CHROMX		7'-6"		74	1			7'-6"																	
4	B06		CHROMX		8'-0"		74	11			7'-6"	3"																
4	B07		CHROMX		4'-10"		12	5			1'-6"	1'-6"	2"															
4	B08		CHROMX		2'-10"		24	10			1'-5"	1'-5"																
4	B09		CHROMX		2'-0"		9	10			1'-2"	10"																
6	B10		CHROMX		3'-6"		2	1			3'-6"																	
6	B11		CHROMX		7'-6"		3	1			7'-6"																	
6	B12		CHROMX		5'-8"		6	11			3'-8"	1'-0"	1'-0"															
4	B13		CHROMX		5'-5"		5	4	5		1'-0"	1'-4"																
4	B14		CHROMX		2'-4"		24	10			1'-6"	10"																
Boat Hoist Support Platform 3																												
No. Required = 1																												
6	A01	2	CHROMX		20'-7"		24	11			18'-6"	1'-0"	1'-0"															
6	A02		CHROMX		31'-9"		16	1			31'-9"																	
4	A03		CHROMX		7'-3"		104	4	5		1'-6"	1'-9"																
4	A04		CHROMX		5'-1"		12	5			1'-6"	1'-9"	2"															
4	A05		CHROMX		2'-10"		20	10			1'-5"	1'-5"																
4	A06		CHROMX		2'-0"		4	10			1'-2"	10"																
4	A07		CHROMX		3'-6"		2	1			3'-6"																	
4	A08		CHROMX		2'-4"		24	10			1'-6"	10"																
Seawall Cap																												
No. Required = 1																												
4	C01		SS CLAD		7'-3"		758	11			1'-1"	3'-1"	3'-1"															
6	C02	3	SS CLAD		184'-0"		16	1			184'-0"																	
6	C03		SS CLAD		3'-0"		8	1			3'-0"																	
6	C04		SS CLAD		9'-4"		32	10			4'-8"	4'-8"																
6	C05		SS CLAD		6'-8"		64	10			3'-4"	3'-4"																
6	C06		SS CLAD		6'-8"		16	12			3'-4"	3'-4"																
6	C07		SS CLAD		6'-8"		16	12			3'-4"	3'-4"																
C/P Deadman																												
No. Required = 1																												
4	D01		SS CLAD		9'-1"		126	4	5		2'-10"	1'-4"																
6	D02	3	SS CLAD		125'-0"		8	1			125'-0"																	
6	D03		SS CLAD		6'-8"		8	10			3'-4"	3'-4"																
6	D04		SS CLAD		6'-8"		8	12			3'-4"	3'-4"																
6	D05		SS CLAD		6'-8"		8	12			3'-4"	3'-4"																
6	D06		SS CLAD		6'-8"		16	12			3'-4"	3'-4"																

DATE	BY	DESCRIPTION	REVISIONS	DATE	BY	DESCRIPTION
THOMAS M. WAITS, P.E. P.E. LICENSE NUMBER 55480 HIGHSPIANS ENGINEERING, INC. 2121 MCGREGOR BOULEVARD SUITE 200 FORT MYERS, FL 33901			CITY OF KEY WEST ENGINEERING DEPARTMENT ROAD NO. COUNTY HOWARD			
PROJECT NO. COUNTY PROJECT NO. JAH 0623 JAH 0623			SHEET NO. 24			
REINFORCING BAR LIST (1 OF 2)			SPENCER'S BOAT SLIP AND SEAWALL REPAIRS			

Diagram illustrating the bend directions for a pipe. The pipe is bent at two points, labeled A and B. The bend directions are oriented 90-degrees from each other. The dimensions shown are:

- C : Horizontal distance between the two bends.
- D : Vertical distance between the two bends.
- S : Length of the pipe segment between the two bends.
- θ : Angle of the bend at point A.
- $6" \text{ INSIDE DIA. (TYP.)}$: Typical inside diameter of the pipe.

***TIEBACK BAR BENDING DETAIL**

NOTE:

1. BENDING OF STEEL BARS SHALL BE IN ACCORDANCE TO FOOT INDEX 415-001.
2. STEEL BARS SHALL BE BENT AND CAPPED ACCORDING TO THE MANUFACTURER'S RECOMMENDATIONS WITH EITHER STEELING STEEL CAPS OR PLASTIC CAPS IMMEDIATELY AFTER CUT. CAPS SHALL BE SEALED TO PREVENT THE CORROSION OF STEEL BARS.
3. WHEN PLACING SS CLAD BAR, ALL WIRE SUPPORTS, SPACERS, AND TYING WIRE SHALL BE PLASTIC, PLASTIC COATED, OR TYPE 316 STEELING STEEL.
4. ALL REINFORCING BARS SHALL BE BENT TO THE CORRECT GEOMETRY OF SS CLAD BENT BARS. ALL REINFORCING BARS SHALL BE BENT TO THE CORRECT GEOMETRY OF SS CLAD BENT BARS. ALL REINFORCING BARS SHALL BE BENT TO THE CORRECT GEOMETRY OF SS CLAD BENT BARS.

REVISIONS				CITY OF KEY WEST ENGINEERING DEPARTMENT		COUNTY PROJECT NO.		PROJECT NAME	
DATE	BY	DATE	BY	DESCRIPTION	ROAD NO.	COUNTY	CONTRACT NO.	PROJECT NAME	PROJECT NO.
				THOMAS M. WAITS, P.E. P.E. LICENSE NUMBER 55460 HIGHSPANS ENGINEERING, INC. 2121 MCGREGOR BOULEVARD SUITE 200 FORT MYERS, FL 33901					
				REINFORCING BAR LIST (2 OF 2)					
				SPENCER'S BOAT SLIP AND SEAWALL REPAIRS					
				25					

