

REQUEST FOR BIDS (RFB 2020-03)
FOR
ISLE OF PALMS MARINA REHABILITATION

ISLE OF PALMS, SOUTH CAROLINA

Prepared by:

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for:

CITY OF ISLE OF PALMS
1207 PALM BOULEVARD
ISLE OF PALMS, SC 29451

JULY 10, 2020

ISLE OF PALMS MARINA REHABILITATION

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A – REQUEST FOR BIDS

City of Isle of Palms, South Carolina
Request for Bids (RFB) 2020-03
Isle of Palms Marina Rehabilitation

In compliance with the City's Procurement Ordinance, the City of Isle of Palms, South Carolina is seeking bids for the rehabilitation of the marina facility at the Isle of Palms Marina per the plans and specifications included in this RFB. The request will be bid and awarded pursuant to the City's procurement ordinance. The City reserves the right to reject any and all bids and to waive irregularities.

- I. Defined Terms
- II. Description of Project
- III. Bid Process
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I. Defined Terms

The terms used in the RFB and Bid Documents shall have the meanings assigned to them herein which are applicable to both the singular and plural form thereof.

OWNER: City of Isle of Palms, 1207 Palm Boulevard Isle of Palms, SC 29451

DESIGN CRITERIA PROFESSIONAL: Applied Technology & Management, Inc. (ATM) is serving as the Design Criteria Professional for the floating dock, anchorage, and gangway systems. ATM is located at 941 Houston Northcutt Blvd, Ste 201. Mount Pleasant, SC, 29464. (843) 414-1040.

ENGINEER: ATM's sub consultant, EPIC Engineering, Inc., P.O. Box 2132, Mount Pleasant, SC 29465, shall be the Engineer of Record for marine utilities.

The CONTRACTOR shall provide an Engineer of Record for the floating dock design, floating dock anchorage design, gangway design, fuel hut, fixed pier, etc. as described in the Bid Documents.

ARCHITECT: ATM shall act as the "Architect" pursuant to the terms in the form of contract presented herein

BIDDER: One who evaluates and submits a bid for the project.

CONTRACTOR: The contractor is the qualified bidder who submits the preferred bid as determined by the Owner and Design Criteria Professional and is contracted to perform the work.

BID DOCUMENTS: Includes the Request for Bids, Form of Contract, Form of Application and Certification for Payment, Performance Specifications (including appendices), the Bid Drawings, technical reports, and any issued addenda.

II. Description of the Project

Existing Site Conditions

The existing marina facility is located at the confluence of Morgan Creek and the Atlantic Intracoastal

Waterway. The floating docks at the marina are approximately 30-year old timber framed docks with polytub flotation. The docks are anchored in place with a combination of timber and concrete piling. The marina slips are served with both electrical (shore power) and potable water. A fuel dock at the facility offers three dispensers with both gas and diesel fuel available. A marine pumpout is located on the fuel dock. Additionally, a small floating fuel “hut” is located on the fuel dock to facilitate marina operations. Several gangways provide access to the marina from the upland. A three-lane concrete boat ramp is also located at the subject site.

The upland portion of the site supports a marina store, restaurant building, an upland fueling station, parking and related improvements.

Bidders shall visit the site to observe and satisfy themselves with existing project conditions in preparation of their bids.

General Scope

The successful Bidder shall provide all equipment, labor, materials, supervision, warranties, bonding, insurances, and other items necessary for the work as detailed in this RFB and the attached plans and specifications.

The project involves the demolition of all docks and water-side appurtenances on the Morgan Creek Portion of the site including all pilings, gangways, fixed piers, floating docks, and marine utility infrastructure associated with the dock system. The project also involves the new construction of a floating marina facility that includes marine utilities such as shore power, fire suppression system, potable water, marine pumpout, and fuel dispensing utility services. Bulkhead re-coating is included as a bid alternate. Portions of this project shall be design-build.

In general, the contractor shall include the following in their scope of work:

1. Demolition of all docks and water-side appurtenances on the Morgan Creek portion of the site (piling, gangways, floating docks, fixed piers, and utilities). Include removal of all piling below the mudline.
2. Design, furnish and install new floating dock system and associated anchorage
3. Design, furnish and install gangways as well as associated connections, platform, etc.
4. Furnish and install all marine electrical system components to and including upland panels and equipment
5. Furnish and install marine fuel system from the bulkhead adjacent connection out (as indicated on the plans)
6. Furnish and install potable water and sewer system on docks and up gangways to the upland connection points
7. Furnish and install fire protection system to serve the new dock system
8. Design/build services for on-dock fuel hut.

9. Related work as indicated in the plans and specifications to provide fully functioning dock and marine utility systems.
10. The work may also include, at the discretion of the City, selected alternates such as the re-coating of the steel sheet pile bulkhead (or portions thereof), additional utility work, alternate floating dock decking, etc.

III. Bid Process

Bids should be submitted to the following:

Desirée Fragoso
City Administrator
City of Isle of Palms
1207 Palm Boulevard Post Office Box 508
Isle of Palms, South Carolina 29451

Pre-Bid Meeting: An optional pre-bid meeting will be held at the project location on **Tuesday July 28, 2020 at 10:00am.**

Deadline for Questions: The deadline for questions is **Friday, August 21, 2020 at 5:00pm** Bidders should send questions regarding this Request for Bids to Desirée Fragoso, City Administrator, in writing or email to desireef@iop.net . Questions received before this deadline will be answered via addendum posted on the City's website at <http://www.iop.net/requests-for-bids-proposals> . Questions received after this deadline may not be answered.

If an addendum is issued, bidders must acknowledge receipt of the addendum with their bids.

Deadline for Submissions: The deadline for submission of bids is **September 4, 2020 at 2:00pm** Bids must be received at 1207 Palm Boulevard, Isle of Palms, South Carolina 29451 in a sealed envelope, where they will be opened and read aloud. Sealed envelopes must be clearly marked **RFB 2020-03 Isle of Palms Marina Rehabilitation** and include one (1) hard copy and one (1) electronic copy saved to USB Flash Drive. The City accepts no responsibility for electronic submissions, and it will be the responsibility of the bidders to verify receipt by the City.

Bids may be delivered by hand or by mail, but no bid shall be considered which is not actually received by the City at the place, date and time appointed by the City and the City shall not be responsible for any failure, misdirection, delay or error resulting from the selection by any bidder of any particular means of delivery of bids.

Bidders acknowledge and agree that the City will not be liable for any costs, expenses, losses, damages (including damages for loss of anticipated profit) or liabilities incurred by the respondent or any member of the respondent's organization as a result of, or arising out of, submitting a bid, negotiating changes to such bid, or due to the City's acceptance or non- acceptance of the bid or the rejection of any and all bids. Respondents are responsible for submission of accurate, adequate and clear descriptions of the information requests. Neither issuance of the RFB, preparation and submission of a response, nor the subsequent receipt and evaluation of any response by the City of Isle of Palms will commit the City to award a contract to any respondent even if all the requirements in the RFB have been met.

Respondents must have or be able to procure an Isle of Palms Business License and possess a valid

South Carolina Marine Contractor's license.

If the Bidder is a corporation, state the correct corporate name and State of incorporation. If Bidder is a partnership, state names and addresses of partners. If Bidder is a trust or other legal entity, state correct names and addresses of trustees or names and address of those legally authorized to bid and enter into contracts.

By signing its bid, Bidder certifies that it will comply with the applicable requirements of Title 8, Chapter 14 of the South Carolina Code of Laws and agrees to provide to the City upon request any documentation required to establish either: (a) the applicability of Title 8, Chapter 14 to Contractor and any subcontractors or sub-subcontractors; or (b) the compliance with Title 8, Chapter 14 by Contractor and any subcontractors or sub-subcontractors. Pursuant to Section 8- 14-60, 'A person who knowingly makes or files any false, fictitious, or fraudulent document, statement, or report pursuant to this chapter is guilty of a felony, and, upon conviction, must be fined within the discretion of the court or imprisoned for not more than five years, or both.' Contractor agrees to include in any contracts with its subcontractors language requiring its subcontractors to (a) comply with the applicable requirements of Title 8, Chapter 14, and (b) include in their contracts with the sub-subcontractors language requiring the sub-subcontractors to comply with the applicable requirements of Title 8, Chapter 14.

Firms considering submission under this RFB will be expected to have read and be prepared to enter into the attached contract, which is a part of this RFB.

- Received bids shall remain valid for a period of 60 days.
- 10% retainage will be included as part of the contract for construction.
- The form of contract is presented for informational purposes only.

Examination of the Site

It is the responsibility of each Bidder before submitting a Bid to take the minimum following measures:

To satisfy themselves by personal examination of the general, local, and site conditions of the proposed Work.

To examine thoroughly the Form of Contract Agreement and other related data identified in the Bid Documents including "technical" data referred to in subsequent sections.

To examine thoroughly the requirements of the Work and the accuracy of the estimate of the quantities of the Work to be done.

To consider governmental and local laws and regulations that may affect cost, progress, performance or furnishing of the Work.

To study and carefully correlate Bidder's knowledge and observations with the Bid Documents and such other related data.

To promptly notify the Design Criteria Professional of all conflicts, errors, ambiguities or discrepancies which Bidder has discovered in or between the Bid Documents and such other related documents.

Reference is made to the Specifications for identification of:

Reports of exploration and tests of subsurface conditions have been identified by the Design Criteria Professional in preparation of the Bid Documents. Bidder may rely upon the accuracy of the technical data contained in such reports but not upon non-technical data, interpretations or opinions contained therein or for the completeness thereof for the purposes of bidding or construction.

Copies of such reports and drawings are part of the Bid Documents where applicable.

Information and data shown or indicated in the Bid Documents with respect to existing Underground Utilities at or contiguous to the site is based upon information and data furnished to the Owner and Design Criteria Professional by owners of such Underground Utilities or others, and the Owner and Design Criteria Professional do not assume responsibility for the accuracy or completeness thereof. The Contractor shall make every effort to locate other possible unknown utility lines by use of an electric pipe finder, or other means he may prefer, and shall excavate all existing underground lines in advance of any trenching, digging, or pile driving operations. The Contractor will be held responsible for the workmanlike repair of any damage done to any utilities during work under this contract. The Contractor shall familiarize himself with the existing conditions and be prepared to adequately care for and safeguard himself and the Owner from damage.

Before submitting a Bid, each Bidder shall be responsible for obtaining such additional or supplementary examinations, investigations, explorations, tests, studies and data concerning conditions (surface, subsurface and underground utilities) at or contiguous to the site or otherwise, which may affect cost, progress, performance or furnishing of the Work or which relate to any aspect of the means, methods, techniques, sequences or procedures of construction to be employed by Bidder and safety precautions and programs incident thereto or which Bidder deems necessary to determine its Bid for performing and furnishing the Work in accordance with the time, price and other terms and conditions of the Bid Documents.

On request, the Owner shall provide each Bidder access to the site to conduct such examinations, investigations, explorations, tests and studies, as each Bidder deems necessary for submission of a Bid. Bidder must fill all holes and clean up and restore the site to its equal or better condition upon completion of such explorations, investigations, tests, and studies.

The submission of a Bid shall constitute an incontrovertible representation by Bidder that Bidder has complied with all requirements listed in this section, that without exception the Bid is premised upon performing and furnishing all Work required by the Bid Documents and applying the specific means, methods, techniques, sequences or procedures of construction that may be shown or indicated or expressly required by the Bid Documents, that Bidder has given the Design Criteria Professional written notice of all conflicts, errors, ambiguities and discrepancies that Bidder has discovered in the Bid Documents and the written resolutions thereof by the Design Criteria Professional is acceptable to Bidder, and that the Bid Documents are generally sufficient to indicate and convey understanding of all terms and conditions for performing and furnishing the Work.

Insurance Requirements

Contractor shall procure, and maintain in effect during the term of this Agreement, insurance coverage in amounts and on terms not less than set forth below:

General Liability: Comprehensive general liability insurance coverage on the services under the

Project in an amount not less than \$1,000,000.00 per person, \$2,000,000.00 per claim, and \$250,000.00 per claim for property damage;

Automobile Liability: Automobile liability insurance for bodily injury, including death, and property damage in the amount of \$1,000,000.00 each occurrence;

Professional Liability: Professional liability insurance for damages incurred by reason of any negligent act, error or omission committed or alleged to have been committed by Contractor in the amount of \$1,000,000.00 per claim and in the aggregate; and

Workers' Compensation: Contractor agrees to maintain workers' compensation coverage on its employees as required by the State of South Carolina workers' compensation laws.

All insurance coverage required hereunder shall be with companies approved in advance by City, who shall be named as an additional insured on all such policies. Proof of such insurance shall be provided to City prior to commencement of any work by Contractor. Each policy shall contain a requirement that, in the event of change or cancellation, 30 days' prior written notice must be given to City.

Project Timeline

Bids Due.....	September 4, 2020
Anticipated Notice to Proceed By.....	September 30, 2020
Substantial Completion By.....	March 30, 2021
Final Project Completion By.....	April 6, 2021

Permits

Regulatory permits for the project have been obtained from the South Carolina Department of Health and Environmental Control – Office of Ocean and Coastal Resource Management (OCRM) and the United States Army Corps of Engineers (USACE). The selected contractor will have to comply with all conditions of these and any other required permits and should consider in their bid.

The City is also pursuing SCDHEC approvals for the water and wastewater systems associated with the floating dock replacement. These will be provided to the contractor and no deviations from the bid plans/specifications are anticipated.

The selected contractor shall also be responsible for procuring any other federal/state/local permits or approvals for the works and shall include in their bid (such work may include state/local utility approvals).

Site Laydown and Access

Contractor to coordinate with the City and Marina Operator with regard to on-site laydown, access, parking, safety, and operations. It is anticipated that the marina store, upland fueling facilities, boat ramp, and marina activities on the AIWW side of the property will continue throughout the construction process.

Working hours shall be generally governed by City ordinances.

IV. Bid Form

BASE BID					
Item	Description	Number	Unit	Unit Cost	Total Cost
1	Performance Bond	1	LS		
2	Mobilization/Demobilization	1	LS		
3	Demolition of all existing docks and water-side appurtenances	1	LS		
4	Design, Furnish and Install (2) 6'x80' aluminum gangways	2	EA		
5	Design, Furnish, and Install 6'x40' aluminum gangway	1	EA		
6	Design, Furnish, and Install 3'x30' aluminum gangway	1	EA		
7	Design, Furnish, and Install 3'x25' aluminum gangway	1	EA		
8	Design/Build 8'x8' fixed timber gangway pier	1	LS		
9	Design/Build fuel hut	1	LS		
10	Furnish and Install electrical system	1	LS		
11	Furnish and Install potable water system	1	LS		
12	Furnish and Install marine pumpout system	1	LS		
13	Furnish and Install marine fuel dispenser modifications	1	LS		
14	Design/Furnish/Install floating dock system and anchorage (Meeco Sullivan)		SF		
15	Furnish/Install fire protection system (standpipe system)	1	LS		
16	Furnish/Install fire pedestals		EA		
Total Base Bid					
Item	Description	Number	Unit	Unit Cost	Total Cost
ALT1	Design/Furnish/Install floating dock system and anchorage (Bellingham timber floating docks)		SF		
Item	Description	Number	Unit	Unit Cost	Total Cost
ALT2	Design/Furnish/Install floating dock system and anchorage (Structurmarine aluminum frame floating docks)		SF		
Item	Description	Number	Unit	Unit Cost	Total Cost
ALT3	Design/Furnish/Install floating dock system and anchorage (Meeco Sullivan aluminum frame floating docks)		SF		
Item	Description	Number	Unit	Unit Cost	Total Cost
ALT4	IPE decking for floating docks	1	LS		
Item	Description	Number	Unit	Unit Cost	Total Cost
ALT5	Furnish and Install additional finger-end utility pedestals in Dock Area B	2	EA		
	Include all electrical and potable water service				

Bid Form (continued)

Item	Description	Number	Unit	Unit Cost	Total Cost
ALT6	Bulkhead Re-coating UPPER WORK ZONE - SSPC-SP12: WJ2				
	1 Surface Preparation	1	LS		
	2 Coating	1	LS		
	3 Environmental Control	1	LS		
	4 Testing and Inspection	1	LS		
Item	Description	Number	Unit	Unit Cost	Total Cost
ALT7	Bulkhead Re-coating LOWER WORK ZONE - SSPC-SP12: WJ2				
	1 Surface Preparation	1	LS		
	2 Coating	1	LS		
	3 Environmental Control	1	LS		
	4 Testing and Inspection	1	LS		
Item	Description	Number	Unit	Unit Cost	Total Cost
ALT8	Bulkhead Re-coating UPPER WORK ZONE - SSPC-SP12: WJ4				
	1 Surface Preparation	1	LS		
	2 Coating	1	LS		
	3 Environmental Control	1	LS		
	4 Testing and Inspection	1	LS		
Item	Description	Number	Unit	Unit Cost	Total Cost
ALT9	Bulkhead Re-coating LOWER WORK ZONE - SSPC-SP12: WJ4				
	1 Surface Preparation	1	LS		
	2 Coating	1	LS		
	3 Environmental Control	1	LS		
	4 Testing and Inspection	1	LS		
Item	Description	Number	Unit	Unit Cost	Total Cost
ALT10	Furnish Builders Risk Policy for Base Bid Only	1	LS		

All Bidders should include prices for the Base Bid and Bid Alternates 1-10 in their Bids.

V. Submission Requirements

Each proposal shall include the following information as applicable to be considered complete:

1. Bidder's qualifications and any certifications.
2. Project experience and previous client reference contact information for similar completed projects.
3. Subcontractor information. (sub contractors for each major trade [electrical, plumbing fuel, etc.], dock supplier, gangway supplier, supporting engineers)
4. Bidder's proposed work plan and schedule.
5. Bidder's cost proposal which will be in the form of the Tables in this RFB.
6. Other information indicated in the plans and specifications as required for bid submission.
7. Bid bond.

B – FORM OF CONSTRUCTION CONTRACT



AIA[®] Document A101[™] – 2017

Standard Form of Agreement Between Owner and Contractor where the basis of payment is a Stipulated Sum

AGREEMENT made as of the _____ day of _____ in the year _____
(In words, indicate day, month and year.)

BETWEEN the Owner:
(Name, legal status, address and other information)

and the Contractor:
(Name, legal status, address and other information)

for the following Project:
(Name, location and detailed description)

The Architect:
(Name, legal status, address and other information)

This document has important legal consequences. Consultation with an attorney is encouraged with respect to its completion or modification.

The parties should complete A101[™]-2017, Exhibit A, Insurance and Bonds, contemporaneously with this Agreement.

AIA Document A201[™]-2017, General Conditions of the Contract for Construction, is adopted in this document by reference. Do not use with other general conditions unless this document is modified.

Sample

The Owner and Contractor agree as follows.

Init.

TABLE OF ARTICLES

- 1 THE CONTRACT DOCUMENTS
- 2 THE WORK OF THIS CONTRACT
- 3 DATE OF COMMENCEMENT AND SUBSTANTIAL COMPLETION
- 4 CONTRACT SUM
- 5 PAYMENTS
- 6 DISPUTE RESOLUTION
- 7 TERMINATION OR SUSPENSION
- 8 MISCELLANEOUS PROVISIONS
- 9 ENUMERATION OF CONTRACT DOCUMENTS

EXHIBIT A INSURANCE AND BONDS

ARTICLE 1 THE CONTRACT DOCUMENTS

The Contract Documents consist of this Agreement, Conditions of the Contract (General, Supplementary, and other Conditions), Drawings, Specifications, Addenda issued prior to execution of this Agreement, other documents listed in this Agreement, and Modifications issued after execution of this Agreement, all of which form the Contract, and are as fully a part of the Contract as if attached to this Agreement or repeated herein. The Contract represents the entire and integrated agreement between the parties hereto and supersedes prior negotiations, representations, or agreements, either written or oral. An enumeration of the Contract Documents, other than a Modification, appears in Article 9.

ARTICLE 2 THE WORK OF THIS CONTRACT

The Contractor shall fully execute the Work described in the Contract Documents, except as specifically indicated in the Contract Documents to be the responsibility of others.

ARTICLE 3 DATE OF COMMENCEMENT AND SUBSTANTIAL COMPLETION

§ 3.1 The date of commencement of the Work shall be:

(Check one of the following boxes.)

- The date of this Agreement.
- A date set forth in a notice to proceed issued by the Owner.
- Established as follows:
(Insert a date or a means to determine the date of commencement of the Work.)

If a date of commencement of the Work is not selected, then the date of commencement shall be the date of this Agreement.

§ 3.2 The Contract Time shall be measured from the date of commencement of the Work.

§ 3.3 Substantial Completion

§ 3.3.1 Subject to adjustments of the Contract Time as provided in the Contract Documents, the Contractor shall achieve Substantial Completion of the entire Work:

(Check one of the following boxes and complete the necessary information.)

- Not later than () calendar days from the date of commencement of the Work.

By the following date:

§ 3.3.2 Subject to adjustments of the Contract Time as provided in the Contract Documents, if portions of the Work are to be completed prior to Substantial Completion of the entire Work, the Contractor shall achieve Substantial Completion of such portions by the following dates:

Portion of Work	Substantial Completion Date
-----------------	-----------------------------

§ 3.3.3 If the Contractor fails to achieve Substantial Completion as provided in this Section 3.3, liquidated damages, if any, shall be assessed as set forth in Section 4.5.

ARTICLE 4 CONTRACT SUM

§ 4.1 The Owner shall pay the Contractor the Contract Sum in current funds for the Contractor's performance of the Contract. The Contract Sum shall be (\$), subject to additions and deductions as provided in the Contract Documents.

§ 4.2 Alternates

§ 4.2.1 Alternates, if any, included in the Contract Sum:

Item	Price
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§ 4.2.2 Subject to the conditions noted below, the following alternates may be accepted by the Owner following execution of this Agreement. Upon acceptance, the Owner shall issue a Modification to this Agreement.
(Insert below each alternate and the conditions that must be met for the Owner to accept the alternate.)

Item	Price	Conditions for Acceptance
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§ 4.3 Allowances, if any, included in the Contract Sum:
(Identify each allowance.)

Item	Price
------	-------

§ 4.4 Unit prices, if any:
(Identify the item and state the unit price and quantity limitations, if any, to which the unit price will be applicable.)

Item	Units and Limitations	Price per Unit (\$0.00)
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§ 4.5 Liquidated damages, if any:
(Insert terms and conditions for liquidated damages, if any.)

§ 4.6 Other:
(Insert provisions for bonus or other incentives, if any, that might result in a change to the Contract Sum.)

ARTICLE 5 PAYMENTS

§ 5.1 Progress Payments

§ 5.1.1 Based upon Applications for Payment submitted to the Architect by the Contractor and Certificates for Payment issued by the Architect, the Owner shall make progress payments on account of the Contract Sum to the Contractor as provided below and elsewhere in the Contract Documents.

§ 5.1.2 The period covered by each Application for Payment shall be one calendar month ending on the last day of the month, or as follows:

§ 5.1.3 Provided that an Application for Payment is received by the Architect not later than the day of a month, the Owner shall make payment of the amount certified to the Contractor not later than the day of the month. If an Application for Payment is received by the Architect after the application date fixed above, payment of the amount certified shall be made by the Owner not later than () days after the Architect receives the Application for Payment.

(Federal, state or local laws may require payment within a certain period of time.)

§ 5.1.4 Each Application for Payment shall be based on the most recent schedule of values submitted by the Contractor in accordance with the Contract Documents. The schedule of values shall allocate the entire Contract Sum among the various portions of the Work. The schedule of values shall be prepared in such form, and supported by such data to substantiate its accuracy, as the Architect may require. This schedule of values shall be used as a basis for reviewing the Contractor's Applications for Payment.

§ 5.1.5 Applications for Payment shall show the percentage of completion of each portion of the Work as of the end of the period covered by the Application for Payment.

§ 5.1.6 In accordance with AIA Document A201™–2017, General Conditions of the Contract for Construction, and subject to other provisions of the Contract Documents, the amount of each progress payment shall be computed as follows:

§ 5.1.6.1 The amount of each progress payment shall first include:

- .1 That portion of the Contract Sum properly allocable to completed Work;
- .2 That portion of the Contract Sum properly allocable to materials and equipment delivered and suitably stored at the site for subsequent incorporation in the completed construction, or, if approved in advance by the Owner, suitably stored off the site at a location agreed upon in writing; and
- .3 That portion of Construction Change Directives that the Architect determines, in the Architect's professional judgment, to be reasonably justified.

§ 5.1.6.2 The amount of each progress payment shall then be reduced by:

- .1 The aggregate of any amounts previously paid by the Owner;
- .2 The amount, if any, for Work that remains uncorrected and for which the Architect has previously withheld a Certificate for Payment as provided in Article 9 of AIA Document A201–2017;
- .3 Any amount for which the Contractor does not intend to pay a Subcontractor or material supplier, unless the Work has been performed by others the Contractor intends to pay;
- .4 For Work performed or defects discovered since the last payment application, any amount for which the Architect may withhold payment, or nullify a Certificate of Payment in whole or in part, as provided in Article 9 of AIA Document A201–2017; and
- .5 Retainage withheld pursuant to Section 5.1.7.

§ 5.1.7 Retainage

§ 5.1.7.1 For each progress payment made prior to Substantial Completion of the Work, the Owner may withhold the following amount, as retainage, from the payment otherwise due:

(Insert a percentage or amount to be withheld as retainage from each Application for Payment. The amount of retainage may be limited by governing law.)

§ 5.1.7.1.1 The following items are not subject to retainage:
(Insert any items not subject to the withholding of retainage, such as general conditions, insurance, etc.)

§ 5.1.7.2 Reduction or limitation of retainage, if any, shall be as follows:
(If the retainage established in Section 5.1.7.1 is to be modified prior to Substantial Completion of the entire Work, including modifications for Substantial Completion of portions of the Work as provided in Section 3.3.2, insert provisions for such modifications.)

§ 5.1.7.3 Except as set forth in this Section 5.1.7.3, upon Substantial Completion of the Work, the Contractor may submit an Application for Payment that includes the retainage withheld from prior Applications for Payment pursuant to this Section 5.1.7. The Application for Payment submitted at Substantial Completion shall not include retainage as follows:
(Insert any other conditions for release of retainage upon Substantial Completion.)

§ 5.1.8 If final completion of the Work is materially delayed through no fault of the Contractor, the Owner shall pay the Contractor any additional amounts in accordance with Article 9 of AIA Document A201–2017.

§ 5.1.9 Except with the Owner’s prior approval, the Contractor shall not make advance payments to suppliers for materials or equipment which have not been delivered and stored at the site.

§ 5.2 Final Payment

§ 5.2.1 Final payment, constituting the entire unpaid balance of the Contract Sum, shall be made by the Owner to the Contractor when

- .1 the Contractor has fully performed the Contract except for the Contractor’s responsibility to correct Work as provided in Article 12 of AIA Document A201–2017, and to satisfy other requirements, if any, which extend beyond final payment; and
- .2 a final Certificate for Payment has been issued by the Architect.

§ 5.2.2 The Owner’s final payment to the Contractor shall be made no later than 30 days after the issuance of the Architect’s final Certificate for Payment, or as follows:

§ 5.3 Interest

Payments due and unpaid under the Contract shall bear interest from the date payment is due at the rate stated below, or in the absence thereof, at the legal rate prevailing from time to time at the place where the Project is located.

(Insert rate of interest agreed upon, if any.)

_____ % _____

ARTICLE 6 DISPUTE RESOLUTION

§ 6.1 Initial Decision Maker

The Architect will serve as the Initial Decision Maker pursuant to Article 15 of AIA Document A201–2017, unless the parties appoint below another individual, not a party to this Agreement, to serve as the Initial Decision Maker.

(If the parties mutually agree, insert the name, address and other contact information of the Initial Decision Maker, if other than the Architect.)

§ 6.2 Binding Dispute Resolution

For any Claim subject to, but not resolved by, mediation pursuant to Article 15 of AIA Document A201–2017, the method of binding dispute resolution shall be as follows:

(Check the appropriate box.)

- Arbitration pursuant to Section 15.4 of AIA Document A201–2017
- Litigation in a court of competent jurisdiction
- Other *(Specify)*

If the Owner and Contractor do not select a method of binding dispute resolution, or do not subsequently agree in writing to a binding dispute resolution method other than litigation, Claims will be resolved by litigation in a court of competent jurisdiction.

ARTICLE 7 TERMINATION OR SUSPENSION

§ 7.1 The Contract may be terminated by the Owner or the Contractor as provided in Article 14 of AIA Document A201–2017.

§ 7.1.1 If the Contract is terminated for the Owner’s convenience in accordance with Article 14 of AIA Document A201–2017, then the Owner shall pay the Contractor a termination fee as follows:

(Insert the amount of, or method for determining, the fee, if any, payable to the Contractor following a termination for the Owner’s convenience.)

§ 7.2 The Work may be suspended by the Owner as provided in Article 14 of AIA Document A201–2017.

ARTICLE 8 MISCELLANEOUS PROVISIONS

§ 8.1 Where reference is made in this Agreement to a provision of AIA Document A201–2017 or another Contract Document, the reference refers to that provision as amended or supplemented by other provisions of the Contract Documents.

§ 8.2 The Owner’s representative:

(Name, address, email address, and other information)

§ 8.3 The Contractor’s representative:

(Name, address, email address, and other information)

§ 8.4 Neither the Owner’s nor the Contractor’s representative shall be changed without ten days’ prior notice to the other party.

§ 8.5 Insurance and Bonds

§ 8.5.1 The Owner and the Contractor shall purchase and maintain insurance as set forth in AIA Document A101™–2017, Standard Form of Agreement Between Owner and Contractor where the basis of payment is a Stipulated Sum, Exhibit A, Insurance and Bonds, and elsewhere in the Contract Documents.

§ 8.5.2 The Contractor shall provide bonds as set forth in AIA Document A101™–2017 Exhibit A, and elsewhere in the Contract Documents.

§ 8.6 Notice in electronic format, pursuant to Article 1 of AIA Document A201–2017, may be given in accordance with AIA Document E203™–2013, Building Information Modeling and Digital Data Exhibit, if completed, or as otherwise set forth below:

(If other than in accordance with AIA Document E203–2013, insert requirements for delivering notice in electronic format such as name, title, and email address of the recipient and whether and how the system will be required to generate a read receipt for the transmission.)

§ 8.7 Other provisions:

ARTICLE 9 ENUMERATION OF CONTRACT DOCUMENTS

§ 9.1 This Agreement is comprised of the following documents:

- .1 AIA Document A101™–2017, Standard Form of Agreement Between Owner and Contractor
- .2 AIA Document A101™–2017, Exhibit A, Insurance and Bonds
- .3 AIA Document A201™–2017, General Conditions of the Contract for Construction
- .4 AIA Document E203™–2013, Building Information Modeling and Digital Data Exhibit, dated as indicated below:
(Insert the date of the E203-2013 incorporated into this Agreement.)

.5 Drawings

Number	Title	Date
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.6 Specifications

Section	Title	Date	Pages
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.7 Addenda, if any:

Number	Date	Pages
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Portions of Addenda relating to bidding or proposal requirements are not part of the Contract Documents unless the bidding or proposal requirements are also enumerated in this Article 9.

.8 Other Exhibits:

(Check all boxes that apply and include appropriate information identifying the exhibit where required.)

- AIA Document E204™–2017, Sustainable Projects Exhibit, dated as indicated below:
(Insert the date of the E204-2017 incorporated into this Agreement.)

The Sustainability Plan:

Title	Date	Pages
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Supplementary and other Conditions of the Contract:

Document	Title	Date	Pages
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.9 Other documents, if any, listed below:

(List here any additional documents that are intended to form part of the Contract Documents. AIA Document A201™-2017 provides that the advertisement or invitation to bid, Instructions to Bidders, sample forms, the Contractor's bid or proposal, portions of Addenda relating to bidding or proposal requirements, and other information furnished by the Owner in anticipation of receiving bids or proposals, are not part of the Contract Documents unless enumerated in this Agreement. Any such documents should be listed here only if intended to be part of the Contract Documents.)

This Agreement entered into as of the day and year first written above.

OWNER (Signature)

CONTRACTOR (Signature)

(Printed name and title)

(Printed name and title)



AIA[®] Document A201[®] – 2017

General Conditions of the Contract for Construction

for the following PROJECT:

(Name and location or address)

THE OWNER:

(Name, legal status and address)

THE ARCHITECT:

(Name, legal status and address)

This document has important legal consequences. Consultation with an attorney is encouraged with respect to its completion or modification.

For guidance in modifying this document to include supplementary conditions, see AIA Document A503[™], Guide for Supplementary Conditions.

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ARTICLE 1 GENERAL PROVISIONS

§ 1.1 Basic Definitions

§ 1.1.1 The Contract Documents

The Contract Documents are enumerated in the Agreement between the Owner and Contractor (hereinafter the Agreement) and consist of the Agreement, Conditions of the Contract (General, Supplementary and other Conditions), Drawings, Specifications, Addenda issued prior to execution of the Contract, other documents listed in the Agreement, and Modifications issued after execution of the Contract. A Modification is (1) a written amendment to the Contract signed by both parties, (2) a Change Order, (3) a Construction Change Directive, or (4) a written order for a minor change in the Work issued by the Architect. Unless specifically enumerated in the Agreement, the Contract Documents do not include the advertisement or invitation to bid, Instructions to Bidders, sample forms, other information furnished by the Owner in anticipation of receiving bids or proposals, the Contractor's bid or proposal, or portions of Addenda relating to bidding or proposal requirements.

§ 1.1.2 The Contract

The Contract Documents form the Contract for Construction. The Contract represents the entire and integrated agreement between the parties hereto and supersedes prior negotiations, representations, or agreements, either written or oral. The Contract may be amended or modified only by a Modification. The Contract Documents shall not be construed to create a contractual relationship of any kind (1) between the Contractor and the Architect or the Architect's consultants, (2) between the Owner and a Subcontractor or a Sub-subcontractor, (3) between the Owner and the Architect or the Architect's consultants, or (4) between any persons or entities other than the Owner and the Contractor. The Architect shall, however, be entitled to performance and enforcement of obligations under the Contract intended to facilitate performance of the Architect's duties.

§ 1.1.3 The Work

The term "Work" means the construction and services required by the Contract Documents, whether completed or partially completed, and includes all other labor, materials, equipment, and services provided or to be provided by the Contractor to fulfill the Contractor's obligations. The Work may constitute the whole or a part of the Project.

§ 1.1.4 The Project

The Project is the total construction of which the Work performed under the Contract Documents may be the whole or a part and which may include construction by the Owner and by Separate Contractors.

§ 1.1.5 The Drawings

The Drawings are the graphic and pictorial portions of the Contract Documents showing the design, location and dimensions of the Work, generally including plans, elevations, sections, details, schedules, and diagrams.

§ 1.1.6 The Specifications

The Specifications are that portion of the Contract Documents consisting of the written requirements for materials, equipment, systems, standards and workmanship for the Work, and performance of related services.

§ 1.1.7 Instruments of Service

Instruments of Service are representations, in any medium of expression now known or later developed, of the tangible and intangible creative work performed by the Architect and the Architect's consultants under their respective professional services agreements. Instruments of Service may include, without limitation, studies, surveys, models, sketches, drawings, specifications, and other similar materials.

§ 1.1.8 Initial Decision Maker

The Initial Decision Maker is the person identified in the Agreement to render initial decisions on Claims in accordance with Section 15.2. The Initial Decision Maker shall not show partiality to the Owner or Contractor and shall not be liable for results of interpretations or decisions rendered in good faith.

§ 1.2 Correlation and Intent of the Contract Documents

§ 1.2.1 The intent of the Contract Documents is to include all items necessary for the proper execution and completion of the Work by the Contractor. The Contract Documents are complementary, and what is required by one shall be as binding as if required by all; performance by the Contractor shall be required only to the extent consistent with the Contract Documents and reasonably inferable from them as being necessary to produce the indicated results.

§ 1.2.1.1 The invalidity of any provision of the Contract Documents shall not invalidate the Contract or its remaining

provisions. If it is determined that any provision of the Contract Documents violates any law, or is otherwise invalid or unenforceable, then that provision shall be revised to the extent necessary to make that provision legal and enforceable. In such case the Contract Documents shall be construed, to the fullest extent permitted by law, to give effect to the parties' intentions and purposes in executing the Contract.

§ 1.2.2 Organization of the Specifications into divisions, sections and articles, and arrangement of Drawings shall not control the Contractor in dividing the Work among Subcontractors or in establishing the extent of Work to be performed by any trade.

§ 1.2.3 Unless otherwise stated in the Contract Documents, words that have well-known technical or construction industry meanings are used in the Contract Documents in accordance with such recognized meanings.

§ 1.3 Capitalization

Terms capitalized in these General Conditions include those that are (1) specifically defined, (2) the titles of numbered articles, or (3) the titles of other documents published by the American Institute of Architects.

§ 1.4 Interpretation

In the interest of brevity the Contract Documents frequently omit modifying words such as "all" and "any" and articles such as "the" and "an," but the fact that a modifier or an article is absent from one statement and appears in another is not intended to affect the interpretation of either statement.

§ 1.5 Ownership and Use of Drawings, Specifications, and Other Instruments of Service

§ 1.5.1 The Architect and the Architect's consultants shall be deemed the authors and owners of their respective Instruments of Service, including the Drawings and Specifications, and retain all common law, statutory, and other reserved rights in their Instruments of Service, including copyrights. The Contractor, Subcontractors, Sub-subcontractors, and suppliers shall not own or claim a copyright in the Instruments of Service. Submittal or distribution to meet official regulatory requirements or for other purposes in connection with the Project is not to be construed as publication in derogation of the Architect's or Architect's consultants' reserved rights.

§ 1.5.2 The Contractor, Subcontractors, Sub-subcontractors, and suppliers are authorized to use and reproduce the Instruments of Service provided to them, subject to any protocols established pursuant to Sections 1.7 and 1.8, solely and exclusively for execution of the Work. All copies made under this authorization shall bear the copyright notice, if any, shown on the Instruments of Service. The Contractor, Subcontractors, Sub-subcontractors, and suppliers may not use the Instruments of Service on other projects or for additions to the Project outside the scope of the Work without the specific written consent of the Owner, Architect, and the Architect's consultants.

§ 1.6 Notice

§ 1.6.1 Except as otherwise provided in Section 1.6.2, where the Contract Documents require one party to notify or give notice to the other party, such notice shall be provided in writing to the designated representative of the party to whom the notice is addressed and shall be deemed to have been duly served if delivered in person, by mail, by courier, or by electronic transmission if a method for electronic transmission is set forth in the Agreement.

§ 1.6.2 Notice of Claims as provided in Section 15.1.3 shall be provided in writing and shall be deemed to have been duly served only if delivered to the designated representative of the party to whom the notice is addressed by certified or registered mail, or by courier providing proof of delivery.

§ 1.7 Digital Data Use and Transmission

The parties shall agree upon protocols governing the transmission and use of Instruments of Service or any other information or documentation in digital form. The parties will use AIA Document E203™–2013, Building Information Modeling and Digital Data Exhibit, to establish the protocols for the development, use, transmission, and exchange of digital data.

§ 1.8 Building Information Models Use and Reliance

Any use of, or reliance on, all or a portion of a building information model without agreement to protocols governing the use of, and reliance on, the information contained in the model and without having those protocols set forth in AIA Document E203™–2013, Building Information Modeling and Digital Data Exhibit, and the requisite AIA Document G202™–2013, Project Building Information Modeling Protocol Form, shall be at the using or relying party's sole risk and without liability to the other party and its contractors or consultants, the authors of, or contributors to, the building

information model, and each of their agents and employees.

ARTICLE 2 OWNER

§ 2.1 General

§ 2.1.1 The Owner is the person or entity identified as such in the Agreement and is referred to throughout the Contract Documents as if singular in number. The Owner shall designate in writing a representative who shall have express authority to bind the Owner with respect to all matters requiring the Owner's approval or authorization. Except as otherwise provided in Section 4.2.1, the Architect does not have such authority. The term "Owner" means the Owner or the Owner's authorized representative.

§ 2.1.2 The Owner shall furnish to the Contractor, within fifteen days after receipt of a written request, information necessary and relevant for the Contractor to evaluate, give notice of, or enforce mechanic's lien rights. Such information shall include a correct statement of the record legal title to the property on which the Project is located, usually referred to as the site, and the Owner's interest therein.

§ 2.2 Evidence of the Owner's Financial Arrangements

§ 2.2.1 Prior to commencement of the Work and upon written request by the Contractor, the Owner shall furnish to the Contractor reasonable evidence that the Owner has made financial arrangements to fulfill the Owner's obligations under the Contract. The Contractor shall have no obligation to commence the Work until the Owner provides such evidence. If commencement of the Work is delayed under this Section 2.2.1, the Contract Time shall be extended appropriately.

§ 2.2.2 Following commencement of the Work and upon written request by the Contractor, the Owner shall furnish to the Contractor reasonable evidence that the Owner has made financial arrangements to fulfill the Owner's obligations under the Contract only if (1) the Owner fails to make payments to the Contractor as the Contract Documents require; (2) the Contractor identifies in writing a reasonable concern regarding the Owner's ability to make payment when due; or (3) a change in the Work materially changes the Contract Sum. If the Owner fails to provide such evidence, as required, within fourteen days of the Contractor's request, the Contractor may immediately stop the Work and, in that event, shall notify the Owner that the Work has stopped. However, if the request is made because a change in the Work materially changes the Contract Sum under (3) above, the Contractor may immediately stop only that portion of the Work affected by the change until reasonable evidence is provided. If the Work is stopped under this Section 2.2.2, the Contract Time shall be extended appropriately and the Contract Sum shall be increased by the amount of the Contractor's reasonable costs of shutdown, delay and start-up, plus interest as provided in the Contract Documents.

§ 2.2.3 After the Owner furnishes evidence of financial arrangements under this Section 2.2, the Owner shall not materially vary such financial arrangements without prior notice to the Contractor.

§ 2.2.4 Where the Owner has designated information furnished under this Section 2.2 as "confidential," the Contractor shall keep the information confidential and shall not disclose it to any other person. However, the Contractor may disclose "confidential" information, after seven (7) days' notice to the Owner, where disclosure is required by law, including a subpoena or other form of compulsory legal process issued by a court or governmental entity, or by court or arbitrator(s) order. The Contractor may also disclose "confidential" information to its employees, consultants, sureties, Subcontractors and their employees, Sub-subcontractors, and others who need to know the content of such information solely and exclusively for the Project and who agree to maintain the confidentiality of such information.

§ 2.3 Information and Services Required of the Owner

§ 2.3.1 Except for permits and fees that are the responsibility of the Contractor under the Contract Documents, including those required under Section 3.7.1, the Owner shall secure and pay for necessary approvals, easements, assessments and charges required for construction, use or occupancy of permanent structures or for permanent changes in existing facilities.

§ 2.3.2 The Owner shall retain an architect lawfully licensed to practice architecture, or an entity lawfully practicing architecture, in the jurisdiction where the Project is located. That person or entity is identified as the Architect in the Agreement and is referred to throughout the Contract Documents as if singular in number.

§ 2.3.3 If the employment of the Architect terminates, the Owner shall employ a successor to whom the Contractor has no reasonable objection and whose status under the Contract Documents shall be that of the Architect.

§ 2.3.4 The Owner shall furnish surveys describing physical characteristics, legal limitations and utility locations for the

site of the Project, and a legal description of the site. The Contractor shall be entitled to rely on the accuracy of information furnished by the Owner but shall exercise proper precautions relating to the safe performance of the Work.

§ 2.3.5 The Owner shall furnish information or services required of the Owner by the Contract Documents with reasonable promptness. The Owner shall also furnish any other information or services under the Owner's control and relevant to the Contractor's performance of the Work with reasonable promptness after receiving the Contractor's written request for such information or services.

§ 2.3.6 Unless otherwise provided in the Contract Documents, the Owner shall furnish to the Contractor one copy of the Contract Documents for purposes of making reproductions pursuant to Section 1.5.2.

§ 2.4 Owner's Right to Stop the Work

If the Contractor fails to correct Work that is not in accordance with the requirements of the Contract Documents as required by Section 12.2 or repeatedly fails to carry out Work in accordance with the Contract Documents, the Owner may issue a written order to the Contractor to stop the Work, or any portion thereof, until the cause for such order has been eliminated; however, the right of the Owner to stop the Work shall not give rise to a duty on the part of the Owner to exercise this right for the benefit of the Contractor or any other person or entity, except to the extent required by Section 6.1.3.

§ 2.5 Owner's Right to Carry Out the Work

If the Contractor defaults or neglects to carry out the Work in accordance with the Contract Documents and fails within a ten-day period after receipt of notice from the Owner to commence and continue correction of such default or neglect with diligence and promptness, the Owner may, without prejudice to other remedies the Owner may have, correct such default or neglect. Such action by the Owner and amounts charged to the Contractor are both subject to prior approval of the Architect and the Architect may, pursuant to Section 9.5.1, withhold or nullify a Certificate for Payment in whole or in part, to the extent reasonably necessary to reimburse the Owner for the reasonable cost of correcting such deficiencies, including Owner's expenses and compensation for the Architect's additional services made necessary by such default, neglect, or failure. If current and future payments are not sufficient to cover such amounts, the Contractor shall pay the difference to the Owner. If the Contractor disagrees with the actions of the Owner or the Architect, or the amounts claimed as costs to the Owner, the Contractor may file a Claim pursuant to Article 15.

ARTICLE 3 CONTRACTOR

§ 3.1 General

§ 3.1.1 The Contractor is the person or entity identified as such in the Agreement and is referred to throughout the Contract Documents as if singular in number. The Contractor shall be lawfully licensed, if required in the jurisdiction where the Project is located. The Contractor shall designate in writing a representative who shall have express authority to bind the Contractor with respect to all matters under this Contract. The term "Contractor" means the Contractor or the Contractor's authorized representative.

§ 3.1.2 The Contractor shall perform the Work in accordance with the Contract Documents.

§ 3.1.3 The Contractor shall not be relieved of its obligations to perform the Work in accordance with the Contract Documents either by activities or duties of the Architect in the Architect's administration of the Contract, or by tests, inspections or approvals required or performed by persons or entities other than the Contractor.

§ 3.2 Review of Contract Documents and Field Conditions by Contractor

§ 3.2.1 Execution of the Contract by the Contractor is a representation that the Contractor has visited the site, become generally familiar with local conditions under which the Work is to be performed, and correlated personal observations with requirements of the Contract Documents.

§ 3.2.2 Because the Contract Documents are complementary, the Contractor shall, before starting each portion of the Work, carefully study and compare the various Contract Documents relative to that portion of the Work, as well as the information furnished by the Owner pursuant to Section 2.3.4, shall take field measurements of any existing conditions related to that portion of the Work, and shall observe any conditions at the site affecting it. These obligations are for the purpose of facilitating coordination and construction by the Contractor and are not for the purpose of discovering errors, omissions, or inconsistencies in the Contract Documents; however, the Contractor shall promptly report to the Architect any errors, inconsistencies or omissions discovered by or made known to the Contractor as a request for information in such form as the Architect may require. It is recognized that the Contractor's review is made in the Contractor's

capacity as a contractor and not as a licensed design professional, unless otherwise specifically provided in the Contract Documents.

§ 3.2.3 The Contractor is not required to ascertain that the Contract Documents are in accordance with applicable laws, statutes, ordinances, codes, rules and regulations, or lawful orders of public authorities, but the Contractor shall promptly report to the Architect any nonconformity discovered by or made known to the Contractor as a request for information in such form as the Architect may require.

§ 3.2.4 If the Contractor believes that additional cost or time is involved because of clarifications or instructions the Architect issues in response to the Contractor's notices or requests for information pursuant to Sections 3.2.2 or 3.2.3, the Contractor shall submit Claims as provided in Article 15. If the Contractor fails to perform the obligations of Sections 3.2.2 or 3.2.3, the Contractor shall pay such costs and damages to the Owner, subject to Section 15.1.7, as would have been avoided if the Contractor had performed such obligations. If the Contractor performs those obligations, the Contractor shall not be liable to the Owner or Architect for damages resulting from errors, inconsistencies or omissions in the Contract Documents, for differences between field measurements or conditions and the Contract Documents, or for nonconformities of the Contract Documents to applicable laws, statutes, ordinances, codes, rules and regulations, and lawful orders of public authorities.

§ 3.3 Supervision and Construction Procedures

§ 3.3.1 The Contractor shall supervise and direct the Work, using the Contractor's best skill and attention. The Contractor shall be solely responsible for, and have control over, construction means, methods, techniques, sequences, and procedures, and for coordinating all portions of the Work under the Contract. If the Contract Documents give specific instructions concerning construction means, methods, techniques, sequences, or procedures, the Contractor shall evaluate the jobsite safety thereof and shall be solely responsible for the jobsite safety of such means, methods, techniques, sequences, or procedures. If the Contractor determines that such means, methods, techniques, sequences or procedures may not be safe, the Contractor shall give timely notice to the Owner and Architect, and shall propose alternative means, methods, techniques, sequences, or procedures. The Architect shall evaluate the proposed alternative solely for conformance with the design intent for the completed construction. Unless the Architect objects to the Contractor's proposed alternative, the Contractor shall perform the Work using its alternative means, methods, techniques, sequences, or procedures.

§ 3.3.2 The Contractor shall be responsible to the Owner for acts and omissions of the Contractor's employees, Subcontractors and their agents and employees, and other persons or entities performing portions of the Work for, or on behalf of, the Contractor or any of its Subcontractors.

§ 3.3.3 The Contractor shall be responsible for inspection of portions of Work already performed to determine that such portions are in proper condition to receive subsequent Work.

§ 3.4 Labor and Materials

§ 3.4.1 Unless otherwise provided in the Contract Documents, the Contractor shall provide and pay for labor, materials, equipment, tools, construction equipment and machinery, water, heat, utilities, transportation, and other facilities and services necessary for proper execution and completion of the Work, whether temporary or permanent and whether or not incorporated or to be incorporated in the Work.

§ 3.4.2 Except in the case of minor changes in the Work approved by the Architect in accordance with Section 3.12.8 or ordered by the Architect in accordance with Section 7.4, the Contractor may make substitutions only with the consent of the Owner, after evaluation by the Architect and in accordance with a Change Order or Construction Change Directive.

§ 3.4.3 The Contractor shall enforce strict discipline and good order among the Contractor's employees and other persons carrying out the Work. The Contractor shall not permit employment of unfit persons or persons not properly skilled in tasks assigned to them.

§ 3.5 Warranty

§ 3.5.1 The Contractor warrants to the Owner and Architect that materials and equipment furnished under the Contract will be of good quality and new unless the Contract Documents require or permit otherwise. The Contractor further warrants that the Work will conform to the requirements of the Contract Documents and will be free from defects, except for those inherent in the quality of the Work the Contract Documents require or permit. Work, materials, or equipment not conforming to these requirements may be considered defective. The Contractor's warranty excludes

remedy for damage or defect caused by abuse, alterations to the Work not executed by the Contractor, improper or insufficient maintenance, improper operation, or normal wear and tear and normal usage. If required by the Architect, the Contractor shall furnish satisfactory evidence as to the kind and quality of materials and equipment.

§ 3.5.2 All material, equipment, or other special warranties required by the Contract Documents shall be issued in the name of the Owner, or shall be transferable to the Owner, and shall commence in accordance with Section 9.8.4.

§ 3.6 Taxes

The Contractor shall pay sales, consumer, use and similar taxes for the Work provided by the Contractor that are legally enacted when bids are received or negotiations concluded, whether or not yet effective or merely scheduled to go into effect.

§ 3.7 Permits, Fees, Notices and Compliance with Laws

§ 3.7.1 Unless otherwise provided in the Contract Documents, the Contractor shall secure and pay for the building permit as well as for other permits, fees, licenses, and inspections by government agencies necessary for proper execution and completion of the Work that are customarily secured after execution of the Contract and legally required at the time bids are received or negotiations concluded.

§ 3.7.2 The Contractor shall comply with and give notices required by applicable laws, statutes, ordinances, codes, rules and regulations, and lawful orders of public authorities applicable to performance of the Work.

§ 3.7.3 If the Contractor performs Work knowing it to be contrary to applicable laws, statutes, ordinances, codes, rules and regulations, or lawful orders of public authorities, the Contractor shall assume appropriate responsibility for such Work and shall bear the costs attributable to correction.

§ 3.7.4 Concealed or Unknown Conditions

If the Contractor encounters conditions at the site that are (1) subsurface or otherwise concealed physical conditions that differ materially from those indicated in the Contract Documents or (2) unknown physical conditions of an unusual nature that differ materially from those ordinarily found to exist and generally recognized as inherent in construction activities of the character provided for in the Contract Documents, the Contractor shall promptly provide notice to the Owner and the Architect before conditions are disturbed and in no event later than 14 days after first observance of the conditions. The Architect will promptly investigate such conditions and, if the Architect determines that they differ materially and cause an increase or decrease in the Contractor's cost of, or time required for, performance of any part of the Work, will recommend that an equitable adjustment be made in the Contract Sum or Contract Time, or both. If the Architect determines that the conditions at the site are not materially different from those indicated in the Contract Documents and that no change in the terms of the Contract is justified, the Architect shall promptly notify the Owner and Contractor, stating the reasons. If either party disputes the Architect's determination or recommendation, that party may submit a Claim as provided in Article 15.

§ 3.7.5 If, in the course of the Work, the Contractor encounters human remains or recognizes the existence of burial markers, archaeological sites or wetlands not indicated in the Contract Documents, the Contractor shall immediately suspend any operations that would affect them and shall notify the Owner and Architect. Upon receipt of such notice, the Owner shall promptly take any action necessary to obtain governmental authorization required to resume the operations. The Contractor shall continue to suspend such operations until otherwise instructed by the Owner but shall continue with all other operations that do not affect those remains or features. Requests for adjustments in the Contract Sum and Contract Time arising from the existence of such remains or features may be made as provided in Article 15.

§ 3.8 Allowances

§ 3.8.1 The Contractor shall include in the Contract Sum all allowances stated in the Contract Documents. Items covered by allowances shall be supplied for such amounts and by such persons or entities as the Owner may direct, but the Contractor shall not be required to employ persons or entities to whom the Contractor has reasonable objection.

§ 3.8.2 Unless otherwise provided in the Contract Documents,

- .1 allowances shall cover the cost to the Contractor of materials and equipment delivered at the site and all required taxes, less applicable trade discounts;
- .2 Contractor's costs for unloading and handling at the site, labor, installation costs, overhead, profit, and other expenses contemplated for stated allowance amounts shall be included in the Contract Sum but not in the allowances; and

- .3 whenever costs are more than or less than allowances, the Contract Sum shall be adjusted accordingly by Change Order. The amount of the Change Order shall reflect (1) the difference between actual costs and the allowances under Section 3.8.2.1 and (2) changes in Contractor's costs under Section 3.8.2.2.

§ 3.8.3 Materials and equipment under an allowance shall be selected by the Owner with reasonable promptness.

§ 3.9 Superintendent

§ 3.9.1 The Contractor shall employ a competent superintendent and necessary assistants who shall be in attendance at the Project site during performance of the Work. The superintendent shall represent the Contractor, and communications given to the superintendent shall be as binding as if given to the Contractor.

§ 3.9.2 The Contractor, as soon as practicable after award of the Contract, shall notify the Owner and Architect of the name and qualifications of a proposed superintendent. Within 14 days of receipt of the information, the Architect may notify the Contractor, stating whether the Owner or the Architect (1) has reasonable objection to the proposed superintendent or (2) requires additional time for review. Failure of the Architect to provide notice within the 14-day period shall constitute notice of no reasonable objection.

§ 3.9.3 The Contractor shall not employ a proposed superintendent to whom the Owner or Architect has made reasonable and timely objection. The Contractor shall not change the superintendent without the Owner's consent, which shall not unreasonably be withheld or delayed.

§ 3.10 Contractor's Construction and Submittal Schedules

§ 3.10.1 The Contractor, promptly after being awarded the Contract, shall submit for the Owner's and Architect's information a Contractor's construction schedule for the Work. The schedule shall contain detail appropriate for the Project, including (1) the date of commencement of the Work, interim schedule milestone dates, and the date of Substantial Completion; (2) an apportionment of the Work by construction activity; and (3) the time required for completion of each portion of the Work. The schedule shall provide for the orderly progression of the Work to completion and shall not exceed time limits current under the Contract Documents. The schedule shall be revised at appropriate intervals as required by the conditions of the Work and Project.

§ 3.10.2 The Contractor, promptly after being awarded the Contract and thereafter as necessary to maintain a current submittal schedule, shall submit a submittal schedule for the Architect's approval. The Architect's approval shall not be unreasonably delayed or withheld. The submittal schedule shall (1) be coordinated with the Contractor's construction schedule, and (2) allow the Architect reasonable time to review submittals. If the Contractor fails to submit a submittal schedule, or fails to provide submittals in accordance with the approved submittal schedule, the Contractor shall not be entitled to any increase in Contract Sum or extension of Contract Time based on the time required for review of submittals.

§ 3.10.3 The Contractor shall perform the Work in general accordance with the most recent schedules submitted to the Owner and Architect.

§ 3.11 Documents and Samples at the Site

The Contractor shall make available, at the Project site, the Contract Documents, including Change Orders, Construction Change Directives, and other Modifications, in good order and marked currently to indicate field changes and selections made during construction, and the approved Shop Drawings, Product Data, Samples, and similar required submittals. These shall be in electronic form or paper copy, available to the Architect and Owner, and delivered to the Architect for submittal to the Owner upon completion of the Work as a record of the Work as constructed.

§ 3.12 Shop Drawings, Product Data and Samples

§ 3.12.1 Shop Drawings are drawings, diagrams, schedules, and other data specially prepared for the Work by the Contractor or a Subcontractor, Sub-subcontractor, manufacturer, supplier, or distributor to illustrate some portion of the Work.

§ 3.12.2 Product Data are illustrations, standard schedules, performance charts, instructions, brochures, diagrams, and other information furnished by the Contractor to illustrate materials or equipment for some portion of the Work.

§ 3.12.3 Samples are physical examples that illustrate materials, equipment, or workmanship, and establish standards by which the Work will be judged.

§ 3.12.4 Shop Drawings, Product Data, Samples, and similar submittals are not Contract Documents. Their purpose is to demonstrate how the Contractor proposes to conform to the information given and the design concept expressed in the Contract Documents for those portions of the Work for which the Contract Documents require submittals. Review by the Architect is subject to the limitations of Section 4.2.7. Informational submittals upon which the Architect is not expected to take responsive action may be so identified in the Contract Documents. Submittals that are not required by the Contract Documents may be returned by the Architect without action.

§ 3.12.5 The Contractor shall review for compliance with the Contract Documents, approve, and submit to the Architect, Shop Drawings, Product Data, Samples, and similar submittals required by the Contract Documents, in accordance with the submittal schedule approved by the Architect or, in the absence of an approved submittal schedule, with reasonable promptness and in such sequence as to cause no delay in the Work or in the activities of the Owner or of Separate Contractors.

§ 3.12.6 By submitting Shop Drawings, Product Data, Samples, and similar submittals, the Contractor represents to the Owner and Architect that the Contractor has (1) reviewed and approved them, (2) determined and verified materials, field measurements and field construction criteria related thereto, or will do so, and (3) checked and coordinated the information contained within such submittals with the requirements of the Work and of the Contract Documents.

§ 3.12.7 The Contractor shall perform no portion of the Work for which the Contract Documents require submittal and review of Shop Drawings, Product Data, Samples, or similar submittals, until the respective submittal has been approved by the Architect.

§ 3.12.8 The Work shall be in accordance with approved submittals except that the Contractor shall not be relieved of responsibility for deviations from the requirements of the Contract Documents by the Architect's approval of Shop Drawings, Product Data, Samples, or similar submittals, unless the Contractor has specifically notified the Architect of such deviation at the time of submittal and (1) the Architect has given written approval to the specific deviation as a minor change in the Work, or (2) a Change Order or Construction Change Directive has been issued authorizing the deviation. The Contractor shall not be relieved of responsibility for errors or omissions in Shop Drawings, Product Data, Samples, or similar submittals, by the Architect's approval thereof.

§ 3.12.9 The Contractor shall direct specific attention, in writing or on resubmitted Shop Drawings, Product Data, Samples, or similar submittals, to revisions other than those requested by the Architect on previous submittals. In the absence of such notice, the Architect's approval of a resubmission shall not apply to such revisions.

§ 3.12.10 The Contractor shall not be required to provide professional services that constitute the practice of architecture or engineering unless such services are specifically required by the Contract Documents for a portion of the Work or unless the Contractor needs to provide such services in order to carry out the Contractor's responsibilities for construction means, methods, techniques, sequences, and procedures. The Contractor shall not be required to provide professional services in violation of applicable law.

§ 3.12.10.1 If professional design services or certifications by a design professional related to systems, materials, or equipment are specifically required of the Contractor by the Contract Documents, the Owner and the Architect will specify all performance and design criteria that such services must satisfy. The Contractor shall be entitled to rely upon the adequacy and accuracy of the performance and design criteria provided in the Contract Documents. The Contractor shall cause such services or certifications to be provided by an appropriately licensed design professional, whose signature and seal shall appear on all drawings, calculations, specifications, certifications, Shop Drawings, and other submittals prepared by such professional. Shop Drawings, and other submittals related to the Work, designed or certified by such professional, if prepared by others, shall bear such professional's written approval when submitted to the Architect. The Owner and the Architect shall be entitled to rely upon the adequacy and accuracy of the services, certifications, and approvals performed or provided by such design professionals, provided the Owner and Architect have specified to the Contractor the performance and design criteria that such services must satisfy. Pursuant to this Section 3.12.10, the Architect will review and approve or take other appropriate action on submittals only for the limited purpose of checking for conformance with information given and the design concept expressed in the Contract Documents.

§ 3.12.10.2 If the Contract Documents require the Contractor's design professional to certify that the Work has been performed in accordance with the design criteria, the Contractor shall furnish such certifications to the Architect at the

time and in the form specified by the Architect.

§ 3.13 Use of Site

The Contractor shall confine operations at the site to areas permitted by applicable laws, statutes, ordinances, codes, rules and regulations, lawful orders of public authorities, and the Contract Documents and shall not unreasonably encumber the site with materials or equipment.

§ 3.14 Cutting and Patching

§ 3.14.1 The Contractor shall be responsible for cutting, fitting, or patching required to complete the Work or to make its parts fit together properly. All areas requiring cutting, fitting, or patching shall be restored to the condition existing prior to the cutting, fitting, or patching, unless otherwise required by the Contract Documents.

§ 3.14.2 The Contractor shall not damage or endanger a portion of the Work or fully or partially completed construction of the Owner or Separate Contractors by cutting, patching, or otherwise altering such construction, or by excavation. The Contractor shall not cut or otherwise alter construction by the Owner or a Separate Contractor except with written consent of the Owner and of the Separate Contractor. Consent shall not be unreasonably withheld. The Contractor shall not unreasonably withhold, from the Owner or a Separate Contractor, its consent to cutting or otherwise altering the Work.

§ 3.15 Cleaning Up

§ 3.15.1 The Contractor shall keep the premises and surrounding area free from accumulation of waste materials and rubbish caused by operations under the Contract. At completion of the Work, the Contractor shall remove waste materials, rubbish, the Contractor's tools, construction equipment, machinery, and surplus materials from and about the Project.

§ 3.15.2 If the Contractor fails to clean up as provided in the Contract Documents, the Owner may do so and the Owner shall be entitled to reimbursement from the Contractor.

§ 3.16 Access to Work

The Contractor shall provide the Owner and Architect with access to the Work in preparation and progress wherever located.

§ 3.17 Royalties, Patents and Copyrights

The Contractor shall pay all royalties and license fees. The Contractor shall defend suits or claims for infringement of copyrights and patent rights and shall hold the Owner and Architect harmless from loss on account thereof, but shall not be responsible for defense or loss when a particular design, process, or product of a particular manufacturer or manufacturers is required by the Contract Documents, or where the copyright violations are contained in Drawings, Specifications, or other documents prepared by the Owner or Architect. However, if an infringement of a copyright or patent is discovered by, or made known to, the Contractor, the Contractor shall be responsible for the loss unless the information is promptly furnished to the Architect.

§ 3.18 Indemnification

§ 3.18.1 To the fullest extent permitted by law, the Contractor shall indemnify and hold harmless the Owner, Architect, Architect's consultants, and agents and employees of any of them from and against claims, damages, losses, and expenses, including but not limited to attorneys' fees, arising out of or resulting from performance of the Work, provided that such claim, damage, loss, or expense is attributable to bodily injury, sickness, disease or death, or to injury to or destruction of tangible property (other than the Work itself), but only to the extent caused by the negligent acts or omissions of the Contractor, a Subcontractor, anyone directly or indirectly employed by them, or anyone for whose acts they may be liable, regardless of whether or not such claim, damage, loss, or expense is caused in part by a party indemnified hereunder. Such obligation shall not be construed to negate, abridge, or reduce other rights or obligations of indemnity that would otherwise exist as to a party or person described in this Section 3.18.

§ 3.18.2 In claims against any person or entity indemnified under this Section 3.18 by an employee of the Contractor, a Subcontractor, anyone directly or indirectly employed by them, or anyone for whose acts they may be liable, the indemnification obligation under Section 3.18.1 shall not be limited by a limitation on amount or type of damages, compensation, or benefits payable by or for the Contractor or a Subcontractor under workers' compensation acts, disability benefit acts, or other employee benefit acts.

ARTICLE 4 ARCHITECT

§ 4.1 General

§ 4.1.1 The Architect is the person or entity retained by the Owner pursuant to Section 2.3.2 and identified as such in the Agreement.

§ 4.1.2 Duties, responsibilities, and limitations of authority of the Architect as set forth in the Contract Documents shall not be restricted, modified, or extended without written consent of the Owner, Contractor, and Architect. Consent shall not be unreasonably withheld.

§ 4.2 Administration of the Contract

§ 4.2.1 The Architect will provide administration of the Contract as described in the Contract Documents and will be an Owner's representative during construction until the date the Architect issues the final Certificate for Payment. The Architect will have authority to act on behalf of the Owner only to the extent provided in the Contract Documents.

§ 4.2.2 The Architect will visit the site at intervals appropriate to the stage of construction, or as otherwise agreed with the Owner, to become generally familiar with the progress and quality of the portion of the Work completed, and to determine in general if the Work observed is being performed in a manner indicating that the Work, when fully completed, will be in accordance with the Contract Documents. However, the Architect will not be required to make exhaustive or continuous on-site inspections to check the quality or quantity of the Work. The Architect will not have control over, charge of, or responsibility for the construction means, methods, techniques, sequences or procedures, or for the safety precautions and programs in connection with the Work, since these are solely the Contractor's rights and responsibilities under the Contract Documents.

§ 4.2.3 On the basis of the site visits, the Architect will keep the Owner reasonably informed about the progress and quality of the portion of the Work completed, and promptly report to the Owner (1) known deviations from the Contract Documents, (2) known deviations from the most recent construction schedule submitted by the Contractor, and (3) defects and deficiencies observed in the Work. The Architect will not be responsible for the Contractor's failure to perform the Work in accordance with the requirements of the Contract Documents. The Architect will not have control over or charge of, and will not be responsible for acts or omissions of, the Contractor, Subcontractors, or their agents or employees, or any other persons or entities performing portions of the Work.

§ 4.2.4 Communications

The Owner and Contractor shall include the Architect in all communications that relate to or affect the Architect's services or professional responsibilities. The Owner shall promptly notify the Architect of the substance of any direct communications between the Owner and the Contractor otherwise relating to the Project. Communications by and with the Architect's consultants shall be through the Architect. Communications by and with Subcontractors and suppliers shall be through the Contractor. Communications by and with Separate Contractors shall be through the Owner. The Contract Documents may specify other communication protocols.

§ 4.2.5 Based on the Architect's evaluations of the Contractor's Applications for Payment, the Architect will review and certify the amounts due the Contractor and will issue Certificates for Payment in such amounts.

§ 4.2.6 The Architect has authority to reject Work that does not conform to the Contract Documents. Whenever the Architect considers it necessary or advisable, the Architect will have authority to require inspection or testing of the Work in accordance with Sections 13.4.2 and 13.4.3, whether or not the Work is fabricated, installed or completed. However, neither this authority of the Architect nor a decision made in good faith either to exercise or not to exercise such authority shall give rise to a duty or responsibility of the Architect to the Contractor, Subcontractors, suppliers, their agents or employees, or other persons or entities performing portions of the Work.

§ 4.2.7 The Architect will review and approve, or take other appropriate action upon, the Contractor's submittals such as Shop Drawings, Product Data, and Samples, but only for the limited purpose of checking for conformance with information given and the design concept expressed in the Contract Documents. The Architect's action will be taken in accordance with the submittal schedule approved by the Architect or, in the absence of an approved submittal schedule, with reasonable promptness while allowing sufficient time in the Architect's professional judgment to permit adequate review. Review of such submittals is not conducted for the purpose of determining the accuracy and completeness of other details such as dimensions and quantities, or for substantiating instructions for installation or performance of equipment or systems, all of which remain the responsibility of the Contractor as required by the Contract Documents. The Architect's review of the Contractor's submittals shall not relieve the Contractor of the obligations under

Sections 3.3, 3.5, and 3.12. The Architect's review shall not constitute approval of safety precautions or of any construction means, methods, techniques, sequences, or procedures. The Architect's approval of a specific item shall not indicate approval of an assembly of which the item is a component.

§ 4.2.8 The Architect will prepare Change Orders and Construction Change Directives, and may order minor changes in the Work as provided in Section 7.4. The Architect will investigate and make determinations and recommendations regarding concealed and unknown conditions as provided in Section 3.7.4.

§ 4.2.9 The Architect will conduct inspections to determine the date or dates of Substantial Completion and the date of final completion; issue Certificates of Substantial Completion pursuant to Section 9.8; receive and forward to the Owner, for the Owner's review and records, written warranties and related documents required by the Contract and assembled by the Contractor pursuant to Section 9.10; and issue a final Certificate for Payment pursuant to Section 9.10.

§ 4.2.10 If the Owner and Architect agree, the Architect will provide one or more Project representatives to assist in carrying out the Architect's responsibilities at the site. The Owner shall notify the Contractor of any change in the duties, responsibilities and limitations of authority of the Project representatives.

§ 4.2.11 The Architect will interpret and decide matters concerning performance under, and requirements of, the Contract Documents on written request of either the Owner or Contractor. The Architect's response to such requests will be made in writing within any time limits agreed upon or otherwise with reasonable promptness.

§ 4.2.12 Interpretations and decisions of the Architect will be consistent with the intent of, and reasonably inferable from, the Contract Documents and will be in writing or in the form of drawings. When making such interpretations and decisions, the Architect will endeavor to secure faithful performance by both Owner and Contractor, will not show partiality to either, and will not be liable for results of interpretations or decisions rendered in good faith.

§ 4.2.13 The Architect's decisions on matters relating to aesthetic effect will be final if consistent with the intent expressed in the Contract Documents.

§ 4.2.14 The Architect will review and respond to requests for information about the Contract Documents. The Architect's response to such requests will be made in writing within any time limits agreed upon or otherwise with reasonable promptness. If appropriate, the Architect will prepare and issue supplemental Drawings and Specifications in response to the requests for information.

ARTICLE 5 SUBCONTRACTORS

§ 5.1 Definitions

§ 5.1.1 A Subcontractor is a person or entity who has a direct contract with the Contractor to perform a portion of the Work at the site. The term "Subcontractor" is referred to throughout the Contract Documents as if singular in number and means a Subcontractor or an authorized representative of the Subcontractor. The term "Subcontractor" does not include a Separate Contractor or the subcontractors of a Separate Contractor.

§ 5.1.2 A Sub-subcontractor is a person or entity who has a direct or indirect contract with a Subcontractor to perform a portion of the Work at the site. The term "Sub-subcontractor" is referred to throughout the Contract Documents as if singular in number and means a Sub-subcontractor or an authorized representative of the Sub-subcontractor.

§ 5.2 Award of Subcontracts and Other Contracts for Portions of the Work

§ 5.2.1 Unless otherwise stated in the Contract Documents, the Contractor, as soon as practicable after award of the Contract, shall notify the Owner and Architect of the persons or entities proposed for each principal portion of the Work, including those who are to furnish materials or equipment fabricated to a special design. Within 14 days of receipt of the information, the Architect may notify the Contractor whether the Owner or the Architect (1) has reasonable objection to any such proposed person or entity or (2) requires additional time for review. Failure of the Architect to provide notice within the 14-day period shall constitute notice of no reasonable objection.

§ 5.2.2 The Contractor shall not contract with a proposed person or entity to whom the Owner or Architect has made reasonable and timely objection. The Contractor shall not be required to contract with anyone to whom the Contractor has made reasonable objection.

§ 5.2.3 If the Owner or Architect has reasonable objection to a person or entity proposed by the Contractor, the

Contractor shall propose another to whom the Owner or Architect has no reasonable objection. If the proposed but rejected Subcontractor was reasonably capable of performing the Work, the Contract Sum and Contract Time shall be increased or decreased by the difference, if any, occasioned by such change, and an appropriate Change Order shall be issued before commencement of the substitute Subcontractor's Work. However, no increase in the Contract Sum or Contract Time shall be allowed for such change unless the Contractor has acted promptly and responsively in submitting names as required.

§ 5.2.4 The Contractor shall not substitute a Subcontractor, person, or entity for one previously selected if the Owner or Architect makes reasonable objection to such substitution.

§ 5.3 Subcontractual Relations

By appropriate written agreement, the Contractor shall require each Subcontractor, to the extent of the Work to be performed by the Subcontractor, to be bound to the Contractor by terms of the Contract Documents, and to assume toward the Contractor all the obligations and responsibilities, including the responsibility for safety of the Subcontractor's Work that the Contractor, by these Contract Documents, assumes toward the Owner and Architect. Each subcontract agreement shall preserve and protect the rights of the Owner and Architect under the Contract Documents with respect to the Work to be performed by the Subcontractor so that subcontracting thereof will not prejudice such rights, and shall allow to the Subcontractor, unless specifically provided otherwise in the subcontract agreement, the benefit of all rights, remedies, and redress against the Contractor that the Contractor, by the Contract Documents, has against the Owner. Where appropriate, the Contractor shall require each Subcontractor to enter into similar agreements with Sub-subcontractors. The Contractor shall make available to each proposed Subcontractor, prior to the execution of the subcontract agreement, copies of the Contract Documents to which the Subcontractor will be bound, and, upon written request of the Subcontractor, identify to the Subcontractor terms and conditions of the proposed subcontract agreement that may be at variance with the Contract Documents. Subcontractors will similarly make copies of applicable portions of such documents available to their respective proposed Sub-subcontractors.

§ 5.4 Contingent Assignment of Subcontracts

§ 5.4.1 Each subcontract agreement for a portion of the Work is assigned by the Contractor to the Owner, provided that

- .1 assignment is effective only after termination of the Contract by the Owner for cause pursuant to Section 14.2 and only for those subcontract agreements that the Owner accepts by notifying the Subcontractor and Contractor; and
- .2 assignment is subject to the prior rights of the surety, if any, obligated under bond relating to the Contract.

When the Owner accepts the assignment of a subcontract agreement, the Owner assumes the Contractor's rights and obligations under the subcontract.

§ 5.4.2 Upon such assignment, if the Work has been suspended for more than 30 days, the Subcontractor's compensation shall be equitably adjusted for increases in cost resulting from the suspension.

§ 5.4.3 Upon assignment to the Owner under this Section 5.4, the Owner may further assign the subcontract to a successor contractor or other entity. If the Owner assigns the subcontract to a successor contractor or other entity, the Owner shall nevertheless remain legally responsible for all of the successor contractor's obligations under the subcontract.

ARTICLE 6 CONSTRUCTION BY OWNER OR BY SEPARATE CONTRACTORS

§ 6.1 Owner's Right to Perform Construction and to Award Separate Contracts

§ 6.1.1 The term "Separate Contractor(s)" shall mean other contractors retained by the Owner under separate agreements. The Owner reserves the right to perform construction or operations related to the Project with the Owner's own forces, and with Separate Contractors retained under Conditions of the Contract substantially similar to those of this Contract, including those provisions of the Conditions of the Contract related to insurance and waiver of subrogation.

§ 6.1.2 When separate contracts are awarded for different portions of the Project or other construction or operations on the site, the term "Contractor" in the Contract Documents in each case shall mean the Contractor who executes each separate Owner-Contractor Agreement.

§ 6.1.3 The Owner shall provide for coordination of the activities of the Owner's own forces and of each Separate

Contractor with the Work of the Contractor, who shall cooperate with them. The Contractor shall participate with any Separate Contractors and the Owner in reviewing their construction schedules. The Contractor shall make any revisions to its construction schedule deemed necessary after a joint review and mutual agreement. The construction schedules shall then constitute the schedules to be used by the Contractor, Separate Contractors, and the Owner until subsequently revised.

§ 6.1.4 Unless otherwise provided in the Contract Documents, when the Owner performs construction or operations related to the Project with the Owner's own forces or with Separate Contractors, the Owner or its Separate Contractors shall have the same obligations and rights that the Contractor has under the Conditions of the Contract, including, without excluding others, those stated in Article 3, this Article 6, and Articles 10, 11, and 12.

§ 6.2 Mutual Responsibility

§ 6.2.1 The Contractor shall afford the Owner and Separate Contractors reasonable opportunity for introduction and storage of their materials and equipment and performance of their activities, and shall connect and coordinate the Contractor's construction and operations with theirs as required by the Contract Documents.

§ 6.2.2 If part of the Contractor's Work depends for proper execution or results upon construction or operations by the Owner or a Separate Contractor, the Contractor shall, prior to proceeding with that portion of the Work, promptly notify the Architect of apparent discrepancies or defects in the construction or operations by the Owner or Separate Contractor that would render it unsuitable for proper execution and results of the Contractor's Work. Failure of the Contractor to notify the Architect of apparent discrepancies or defects prior to proceeding with the Work shall constitute an acknowledgment that the Owner's or Separate Contractor's completed or partially completed construction is fit and proper to receive the Contractor's Work. The Contractor shall not be responsible for discrepancies or defects in the construction or operations by the Owner or Separate Contractor that are not apparent.

§ 6.2.3 The Contractor shall reimburse the Owner for costs the Owner incurs that are payable to a Separate Contractor because of the Contractor's delays, improperly timed activities or defective construction. The Owner shall be responsible to the Contractor for costs the Contractor incurs because of a Separate Contractor's delays, improperly timed activities, damage to the Work or defective construction.

§ 6.2.4 The Contractor shall promptly remedy damage that the Contractor wrongfully causes to completed or partially completed construction or to property of the Owner or Separate Contractor as provided in Section 10.2.5.

§ 6.2.5 The Owner and each Separate Contractor shall have the same responsibilities for cutting and patching as are described for the Contractor in Section 3.14.

§ 6.3 Owner's Right to Clean Up

If a dispute arises among the Contractor, Separate Contractors, and the Owner as to the responsibility under their respective contracts for maintaining the premises and surrounding area free from waste materials and rubbish, the Owner may clean up and the Architect will allocate the cost among those responsible.

ARTICLE 7 CHANGES IN THE WORK

§ 7.1 General

§ 7.1.1 Changes in the Work may be accomplished after execution of the Contract, and without invalidating the Contract, by Change Order, Construction Change Directive or order for a minor change in the Work, subject to the limitations stated in this Article 7 and elsewhere in the Contract Documents.

§ 7.1.2 A Change Order shall be based upon agreement among the Owner, Contractor, and Architect. A Construction Change Directive requires agreement by the Owner and Architect and may or may not be agreed to by the Contractor. An order for a minor change in the Work may be issued by the Architect alone.

§ 7.1.3 Changes in the Work shall be performed under applicable provisions of the Contract Documents. The Contractor shall proceed promptly with changes in the Work, unless otherwise provided in the Change Order, Construction Change Directive, or order for a minor change in the Work.

§ 7.2 Change Orders

§ 7.2.1 A Change Order is a written instrument prepared by the Architect and signed by the Owner, Contractor, and Architect stating their agreement upon all of the following:

- .1 The change in the Work;
- .2 The amount of the adjustment, if any, in the Contract Sum; and
- .3 The extent of the adjustment, if any, in the Contract Time.

§ 7.3 Construction Change Directives

§ 7.3.1 A Construction Change Directive is a written order prepared by the Architect and signed by the Owner and Architect, directing a change in the Work prior to agreement on adjustment, if any, in the Contract Sum or Contract Time, or both. The Owner may by Construction Change Directive, without invalidating the Contract, order changes in the Work within the general scope of the Contract consisting of additions, deletions, or other revisions, the Contract Sum and Contract Time being adjusted accordingly.

§ 7.3.2 A Construction Change Directive shall be used in the absence of total agreement on the terms of a Change Order.

§ 7.3.3 If the Construction Change Directive provides for an adjustment to the Contract Sum, the adjustment shall be based on one of the following methods:

- .1 Mutual acceptance of a lump sum properly itemized and supported by sufficient substantiating data to permit evaluation;
- .2 Unit prices stated in the Contract Documents or subsequently agreed upon;
- .3 Cost to be determined in a manner agreed upon by the parties and a mutually acceptable fixed or percentage fee; or
- .4 As provided in Section 7.3.4.

§ 7.3.4 If the Contractor does not respond promptly or disagrees with the method for adjustment in the Contract Sum, the Architect shall determine the adjustment on the basis of reasonable expenditures and savings of those performing the Work attributable to the change, including, in case of an increase in the Contract Sum, an amount for overhead and profit as set forth in the Agreement, or if no such amount is set forth in the Agreement, a reasonable amount. In such case, and also under Section 7.3.3.3, the Contractor shall keep and present, in such form as the Architect may prescribe, an itemized accounting together with appropriate supporting data. Unless otherwise provided in the Contract Documents, costs for the purposes of this Section 7.3.4 shall be limited to the following:

- .1 Costs of labor, including applicable payroll taxes, fringe benefits required by agreement or custom, workers' compensation insurance, and other employee costs approved by the Architect;
- .2 Costs of materials, supplies, and equipment, including cost of transportation, whether incorporated or consumed;
- .3 Rental costs of machinery and equipment, exclusive of hand tools, whether rented from the Contractor or others;
- .4 Costs of premiums for all bonds and insurance, permit fees, and sales, use, or similar taxes, directly related to the change; and
- .5 Costs of supervision and field office personnel directly attributable to the change.

§ 7.3.5 If the Contractor disagrees with the adjustment in the Contract Time, the Contractor may make a Claim in accordance with applicable provisions of Article 15.

§ 7.3.6 Upon receipt of a Construction Change Directive, the Contractor shall promptly proceed with the change in the Work involved and advise the Architect of the Contractor's agreement or disagreement with the method, if any, provided in the Construction Change Directive for determining the proposed adjustment in the Contract Sum or Contract Time.

§ 7.3.7 A Construction Change Directive signed by the Contractor indicates the Contractor's agreement therewith, including adjustment in Contract Sum and Contract Time or the method for determining them. Such agreement shall be effective immediately and shall be recorded as a Change Order.

§ 7.3.8 The amount of credit to be allowed by the Contractor to the Owner for a deletion or change that results in a net decrease in the Contract Sum shall be actual net cost as confirmed by the Architect. When both additions and credits covering related Work or substitutions are involved in a change, the allowance for overhead and profit shall be figured on the basis of net increase, if any, with respect to that change.

§ 7.3.9 Pending final determination of the total cost of a Construction Change Directive to the Owner, the Contractor may request payment for Work completed under the Construction Change Directive in Applications for Payment. The

Architect will make an interim determination for purposes of monthly certification for payment for those costs and certify for payment the amount that the Architect determines, in the Architect's professional judgment, to be reasonably justified. The Architect's interim determination of cost shall adjust the Contract Sum on the same basis as a Change Order, subject to the right of either party to disagree and assert a Claim in accordance with Article 15.

§ 7.3.10 When the Owner and Contractor agree with a determination made by the Architect concerning the adjustments in the Contract Sum and Contract Time, or otherwise reach agreement upon the adjustments, such agreement shall be effective immediately and the Architect will prepare a Change Order. Change Orders may be issued for all or any part of a Construction Change Directive.

§ 7.4 Minor Changes in the Work

The Architect may order minor changes in the Work that are consistent with the intent of the Contract Documents and do not involve an adjustment in the Contract Sum or an extension of the Contract Time. The Architect's order for minor changes shall be in writing. If the Contractor believes that the proposed minor change in the Work will affect the Contract Sum or Contract Time, the Contractor shall notify the Architect and shall not proceed to implement the change in the Work. If the Contractor performs the Work set forth in the Architect's order for a minor change without prior notice to the Architect that such change will affect the Contract Sum or Contract Time, the Contractor waives any adjustment to the Contract Sum or extension of the Contract Time.

ARTICLE 8 TIME

§ 8.1 Definitions

§ 8.1.1 Unless otherwise provided, Contract Time is the period of time, including authorized adjustments, allotted in the Contract Documents for Substantial Completion of the Work.

§ 8.1.2 The date of commencement of the Work is the date established in the Agreement.

§ 8.1.3 The date of Substantial Completion is the date certified by the Architect in accordance with Section 9.8.

§ 8.1.4 The term "day" as used in the Contract Documents shall mean calendar day unless otherwise specifically defined.

§ 8.2 Progress and Completion

§ 8.2.1 Time limits stated in the Contract Documents are of the essence of the Contract. By executing the Agreement, the Contractor confirms that the Contract Time is a reasonable period for performing the Work.

§ 8.2.2 The Contractor shall not knowingly, except by agreement or instruction of the Owner in writing, commence the Work prior to the effective date of insurance required to be furnished by the Contractor and Owner.

§ 8.2.3 The Contractor shall proceed expeditiously with adequate forces and shall achieve Substantial Completion within the Contract Time.

§ 8.3 Delays and Extensions of Time

§ 8.3.1 If the Contractor is delayed at any time in the commencement or progress of the Work by (1) an act or neglect of the Owner or Architect, of an employee of either, or of a Separate Contractor; (2) by changes ordered in the Work; (3) by labor disputes, fire, unusual delay in deliveries, unavoidable casualties, adverse weather conditions documented in accordance with Section 15.1.6.2, or other causes beyond the Contractor's control; (4) by delay authorized by the Owner pending mediation and binding dispute resolution; or (5) by other causes that the Contractor asserts, and the Architect determines, justify delay, then the Contract Time shall be extended for such reasonable time as the Architect may determine.

§ 8.3.2 Claims relating to time shall be made in accordance with applicable provisions of Article 15.

§ 8.3.3 This Section 8.3 does not preclude recovery of damages for delay by either party under other provisions of the Contract Documents.

ARTICLE 9 PAYMENTS AND COMPLETION

§ 9.1 Contract Sum

§ 9.1.1 The Contract Sum is stated in the Agreement and, including authorized adjustments, is the total amount payable

by the Owner to the Contractor for performance of the Work under the Contract Documents.

§ 9.1.2 If unit prices are stated in the Contract Documents or subsequently agreed upon, and if quantities originally contemplated are materially changed so that application of such unit prices to the actual quantities causes substantial inequity to the Owner or Contractor, the applicable unit prices shall be equitably adjusted.

§ 9.2 Schedule of Values

Where the Contract is based on a stipulated sum or Guaranteed Maximum Price, the Contractor shall submit a schedule of values to the Architect before the first Application for Payment, allocating the entire Contract Sum to the various portions of the Work. The schedule of values shall be prepared in the form, and supported by the data to substantiate its accuracy, required by the Architect. This schedule, unless objected to by the Architect, shall be used as a basis for reviewing the Contractor's Applications for Payment. Any changes to the schedule of values shall be submitted to the Architect and supported by such data to substantiate its accuracy as the Architect may require, and unless objected to by the Architect, shall be used as a basis for reviewing the Contractor's subsequent Applications for Payment.

§ 9.3 Applications for Payment

§ 9.3.1 At least ten days before the date established for each progress payment, the Contractor shall submit to the Architect an itemized Application for Payment prepared in accordance with the schedule of values, if required under Section 9.2, for completed portions of the Work. The application shall be notarized, if required, and supported by all data substantiating the Contractor's right to payment that the Owner or Architect require, such as copies of requisitions, and releases and waivers of liens from Subcontractors and suppliers, and shall reflect retainage if provided for in the Contract Documents.

§ 9.3.1.1 As provided in Section 7.3.9, such applications may include requests for payment on account of changes in the Work that have been properly authorized by Construction Change Directives, or by interim determinations of the Architect, but not yet included in Change Orders.

§ 9.3.1.2 Applications for Payment shall not include requests for payment for portions of the Work for which the Contractor does not intend to pay a Subcontractor or supplier, unless such Work has been performed by others whom the Contractor intends to pay.

§ 9.3.2 Unless otherwise provided in the Contract Documents, payments shall be made on account of materials and equipment delivered and suitably stored at the site for subsequent incorporation in the Work. If approved in advance by the Owner, payment may similarly be made for materials and equipment suitably stored off the site at a location agreed upon in writing. Payment for materials and equipment stored on or off the site shall be conditioned upon compliance by the Contractor with procedures satisfactory to the Owner to establish the Owner's title to such materials and equipment or otherwise protect the Owner's interest, and shall include the costs of applicable insurance, storage, and transportation to the site, for such materials and equipment stored off the site.

§ 9.3.3 The Contractor warrants that title to all Work covered by an Application for Payment will pass to the Owner no later than the time of payment. The Contractor further warrants that upon submittal of an Application for Payment all Work for which Certificates for Payment have been previously issued and payments received from the Owner shall, to the best of the Contractor's knowledge, information, and belief, be free and clear of liens, claims, security interests, or encumbrances, in favor of the Contractor, Subcontractors, suppliers, or other persons or entities that provided labor, materials, and equipment relating to the Work.

§ 9.4 Certificates for Payment

§ 9.4.1 The Architect will, within seven days after receipt of the Contractor's Application for Payment, either (1) issue to the Owner a Certificate for Payment in the full amount of the Application for Payment, with a copy to the Contractor; or (2) issue to the Owner a Certificate for Payment for such amount as the Architect determines is properly due, and notify the Contractor and Owner of the Architect's reasons for withholding certification in part as provided in Section 9.5.1; or (3) withhold certification of the entire Application for Payment, and notify the Contractor and Owner of the Architect's reason for withholding certification in whole as provided in Section 9.5.1.

§ 9.4.2 The issuance of a Certificate for Payment will constitute a representation by the Architect to the Owner, based on the Architect's evaluation of the Work and the data in the Application for Payment, that, to the best of the Architect's knowledge, information, and belief, the Work has progressed to the point indicated, the quality of the Work is in accordance with the Contract Documents, and that the Contractor is entitled to payment in the amount certified. The

foregoing representations are subject to an evaluation of the Work for conformance with the Contract Documents upon Substantial Completion, to results of subsequent tests and inspections, to correction of minor deviations from the Contract Documents prior to completion, and to specific qualifications expressed by the Architect. However, the issuance of a Certificate for Payment will not be a representation that the Architect has (1) made exhaustive or continuous on-site inspections to check the quality or quantity of the Work; (2) reviewed construction means, methods, techniques, sequences, or procedures; (3) reviewed copies of requisitions received from Subcontractors and suppliers and other data requested by the Owner to substantiate the Contractor's right to payment; or (4) made examination to ascertain how or for what purpose the Contractor has used money previously paid on account of the Contract Sum.

§ 9.5 Decisions to Withhold Certification

§ 9.5.1 The Architect may withhold a Certificate for Payment in whole or in part, to the extent reasonably necessary to protect the Owner, if in the Architect's opinion the representations to the Owner required by Section 9.4.2 cannot be made. If the Architect is unable to certify payment in the amount of the Application, the Architect will notify the Contractor and Owner as provided in Section 9.4.1. If the Contractor and Architect cannot agree on a revised amount, the Architect will promptly issue a Certificate for Payment for the amount for which the Architect is able to make such representations to the Owner. The Architect may also withhold a Certificate for Payment or, because of subsequently discovered evidence, may nullify the whole or a part of a Certificate for Payment previously issued, to such extent as may be necessary in the Architect's opinion to protect the Owner from loss for which the Contractor is responsible, including loss resulting from acts and omissions described in Section 3.3.2, because of

- .1 defective Work not remedied;
- .2 third party claims filed or reasonable evidence indicating probable filing of such claims, unless security acceptable to the Owner is provided by the Contractor;
- .3 failure of the Contractor to make payments properly to Subcontractors or suppliers for labor, materials or equipment;
- .4 reasonable evidence that the Work cannot be completed for the unpaid balance of the Contract Sum;
- .5 damage to the Owner or a Separate Contractor;
- .6 reasonable evidence that the Work will not be completed within the Contract Time, and that the unpaid balance would not be adequate to cover actual or liquidated damages for the anticipated delay; or
- .7 repeated failure to carry out the Work in accordance with the Contract Documents.

§ 9.5.2 When either party disputes the Architect's decision regarding a Certificate for Payment under Section 9.5.1, in whole or in part, that party may submit a Claim in accordance with Article 15.

§ 9.5.3 When the reasons for withholding certification are removed, certification will be made for amounts previously withheld.

§ 9.5.4 If the Architect withholds certification for payment under Section 9.5.1.3, the Owner may, at its sole option, issue joint checks to the Contractor and to any Subcontractor or supplier to whom the Contractor failed to make payment for Work properly performed or material or equipment suitably delivered. If the Owner makes payments by joint check, the Owner shall notify the Architect and the Contractor shall reflect such payment on its next Application for Payment.

§ 9.6 Progress Payments

§ 9.6.1 After the Architect has issued a Certificate for Payment, the Owner shall make payment in the manner and within the time provided in the Contract Documents, and shall so notify the Architect.

§ 9.6.2 The Contractor shall pay each Subcontractor, no later than seven days after receipt of payment from the Owner, the amount to which the Subcontractor is entitled, reflecting percentages actually retained from payments to the Contractor on account of the Subcontractor's portion of the Work. The Contractor shall, by appropriate agreement with each Subcontractor, require each Subcontractor to make payments to Sub-subcontractors in a similar manner.

§ 9.6.3 The Architect will, on request, furnish to a Subcontractor, if practicable, information regarding percentages of completion or amounts applied for by the Contractor and action taken thereon by the Architect and Owner on account of portions of the Work done by such Subcontractor.

§ 9.6.4 The Owner has the right to request written evidence from the Contractor that the Contractor has properly paid Subcontractors and suppliers amounts paid by the Owner to the Contractor for subcontracted Work. If the Contractor fails to furnish such evidence within seven days, the Owner shall have the right to contact Subcontractors and suppliers

to ascertain whether they have been properly paid. Neither the Owner nor Architect shall have an obligation to pay, or to see to the payment of money to, a Subcontractor or supplier, except as may otherwise be required by law.

§ 9.6.5 The Contractor's payments to suppliers shall be treated in a manner similar to that provided in Sections 9.6.2, 9.6.3 and 9.6.4.

§ 9.6.6 A Certificate for Payment, a progress payment, or partial or entire use or occupancy of the Project by the Owner shall not constitute acceptance of Work not in accordance with the Contract Documents.

§ 9.6.7 Unless the Contractor provides the Owner with a payment bond in the full penal sum of the Contract Sum, payments received by the Contractor for Work properly performed by Subcontractors or provided by suppliers shall be held by the Contractor for those Subcontractors or suppliers who performed Work or furnished materials, or both, under contract with the Contractor for which payment was made by the Owner. Nothing contained herein shall require money to be placed in a separate account and not commingled with money of the Contractor, create any fiduciary liability or tort liability on the part of the Contractor for breach of trust, or entitle any person or entity to an award of punitive damages against the Contractor for breach of the requirements of this provision.

§ 9.6.8 Provided the Owner has fulfilled its payment obligations under the Contract Documents, the Contractor shall defend and indemnify the Owner from all loss, liability, damage or expense, including reasonable attorney's fees and litigation expenses, arising out of any lien claim or other claim for payment by any Subcontractor or supplier of any tier. Upon receipt of notice of a lien claim or other claim for payment, the Owner shall notify the Contractor. If approved by the applicable court, when required, the Contractor may substitute a surety bond for the property against which the lien or other claim for payment has been asserted.

§ 9.7 Failure of Payment

If the Architect does not issue a Certificate for Payment, through no fault of the Contractor, within seven days after receipt of the Contractor's Application for Payment, or if the Owner does not pay the Contractor within seven days after the date established in the Contract Documents, the amount certified by the Architect or awarded by binding dispute resolution, then the Contractor may, upon seven additional days' notice to the Owner and Architect, stop the Work until payment of the amount owing has been received. The Contract Time shall be extended appropriately and the Contract Sum shall be increased by the amount of the Contractor's reasonable costs of shutdown, delay and start-up, plus interest as provided for in the Contract Documents.

§ 9.8 Substantial Completion

§ 9.8.1 Substantial Completion is the stage in the progress of the Work when the Work or designated portion thereof is sufficiently complete in accordance with the Contract Documents so that the Owner can occupy or utilize the Work for its intended use.

§ 9.8.2 When the Contractor considers that the Work, or a portion thereof which the Owner agrees to accept separately, is substantially complete, the Contractor shall prepare and submit to the Architect a comprehensive list of items to be completed or corrected prior to final payment. Failure to include an item on such list does not alter the responsibility of the Contractor to complete all Work in accordance with the Contract Documents.

§ 9.8.3 Upon receipt of the Contractor's list, the Architect will make an inspection to determine whether the Work or designated portion thereof is substantially complete. If the Architect's inspection discloses any item, whether or not included on the Contractor's list, which is not sufficiently complete in accordance with the Contract Documents so that the Owner can occupy or utilize the Work or designated portion thereof for its intended use, the Contractor shall, before issuance of the Certificate of Substantial Completion, complete or correct such item upon notification by the Architect. In such case, the Contractor shall then submit a request for another inspection by the Architect to determine Substantial Completion.

§ 9.8.4 When the Work or designated portion thereof is substantially complete, the Architect will prepare a Certificate of Substantial Completion that shall establish the date of Substantial Completion; establish responsibilities of the Owner and Contractor for security, maintenance, heat, utilities, damage to the Work and insurance; and fix the time within which the Contractor shall finish all items on the list accompanying the Certificate. Warranties required by the Contract Documents shall commence on the date of Substantial Completion of the Work or designated portion thereof unless otherwise provided in the Certificate of Substantial Completion.

§ 9.8.5 The Certificate of Substantial Completion shall be submitted to the Owner and Contractor for their written acceptance of responsibilities assigned to them in the Certificate. Upon such acceptance, and consent of surety if any, the Owner shall make payment of retainage applying to the Work or designated portion thereof. Such payment shall be adjusted for Work that is incomplete or not in accordance with the requirements of the Contract Documents.

§ 9.9 Partial Occupancy or Use

§ 9.9.1 The Owner may occupy or use any completed or partially completed portion of the Work at any stage when such portion is designated by separate agreement with the Contractor, provided such occupancy or use is consented to by the insurer and authorized by public authorities having jurisdiction over the Project. Such partial occupancy or use may commence whether or not the portion is substantially complete, provided the Owner and Contractor have accepted in writing the responsibilities assigned to each of them for payments, retainage, if any, security, maintenance, heat, utilities, damage to the Work and insurance, and have agreed in writing concerning the period for correction of the Work and commencement of warranties required by the Contract Documents. When the Contractor considers a portion substantially complete, the Contractor shall prepare and submit a list to the Architect as provided under Section 9.8.2. Consent of the Contractor to partial occupancy or use shall not be unreasonably withheld. The stage of the progress of the Work shall be determined by written agreement between the Owner and Contractor or, if no agreement is reached, by decision of the Architect.

§ 9.9.2 Immediately prior to such partial occupancy or use, the Owner, Contractor, and Architect shall jointly inspect the area to be occupied or portion of the Work to be used in order to determine and record the condition of the Work.

§ 9.9.3 Unless otherwise agreed upon, partial occupancy or use of a portion or portions of the Work shall not constitute acceptance of Work not complying with the requirements of the Contract Documents.

§ 9.10 Final Completion and Final Payment

§ 9.10.1 Upon receipt of the Contractor's notice that the Work is ready for final inspection and acceptance and upon receipt of a final Application for Payment, the Architect will promptly make such inspection. When the Architect finds the Work acceptable under the Contract Documents and the Contract fully performed, the Architect will promptly issue a final Certificate for Payment stating that to the best of the Architect's knowledge, information and belief, and on the basis of the Architect's on-site visits and inspections, the Work has been completed in accordance with the Contract Documents and that the entire balance found to be due the Contractor and noted in the final Certificate is due and payable. The Architect's final Certificate for Payment will constitute a further representation that conditions listed in Section 9.10.2 as precedent to the Contractor's being entitled to final payment have been fulfilled.

§ 9.10.2 Neither final payment nor any remaining retained percentage shall become due until the Contractor submits to the Architect (1) an affidavit that payrolls, bills for materials and equipment, and other indebtedness connected with the Work for which the Owner or the Owner's property might be responsible or encumbered (less amounts withheld by Owner) have been paid or otherwise satisfied, (2) a certificate evidencing that insurance required by the Contract Documents to remain in force after final payment is currently in effect, (3) a written statement that the Contractor knows of no reason that the insurance will not be renewable to cover the period required by the Contract Documents, (4) consent of surety, if any, to final payment, (5) documentation of any special warranties, such as manufacturers' warranties or specific Subcontractor warranties, and (6) if required by the Owner, other data establishing payment or satisfaction of obligations, such as receipts and releases and waivers of liens, claims, security interests, or encumbrances arising out of the Contract, to the extent and in such form as may be designated by the Owner. If a Subcontractor refuses to furnish a release or waiver required by the Owner, the Contractor may furnish a bond satisfactory to the Owner to indemnify the Owner against such lien, claim, security interest, or encumbrance. If a lien, claim, security interest, or encumbrance remains unsatisfied after payments are made, the Contractor shall refund to the Owner all money that the Owner may be compelled to pay in discharging the lien, claim, security interest, or encumbrance, including all costs and reasonable attorneys' fees.

§ 9.10.3 If, after Substantial Completion of the Work, final completion thereof is materially delayed through no fault of the Contractor or by issuance of Change Orders affecting final completion, and the Architect so confirms, the Owner shall, upon application by the Contractor and certification by the Architect, and without terminating the Contract, make payment of the balance due for that portion of the Work fully completed, corrected, and accepted. If the remaining balance for Work not fully completed or corrected is less than retainage stipulated in the Contract Documents, and if bonds have been furnished, the written consent of the surety to payment of the balance due for that portion of the Work fully completed and accepted shall be submitted by the Contractor to the Architect prior to certification of such payment. Such payment shall be made under terms and conditions governing final payment, except that it shall not

constitute a waiver of Claims.

§ 9.10.4 The making of final payment shall constitute a waiver of Claims by the Owner except those arising from

- .1 liens, Claims, security interests, or encumbrances arising out of the Contract and unsettled;
- .2 failure of the Work to comply with the requirements of the Contract Documents;
- .3 terms of special warranties required by the Contract Documents; or
- .4 audits performed by the Owner, if permitted by the Contract Documents, after final payment.

§ 9.10.5 Acceptance of final payment by the Contractor, a Subcontractor, or a supplier, shall constitute a waiver of claims by that payee except those previously made in writing and identified by that payee as unsettled at the time of final Application for Payment.

ARTICLE 10 PROTECTION OF PERSONS AND PROPERTY

§ 10.1 Safety Precautions and Programs

The Contractor shall be responsible for initiating, maintaining, and supervising all safety precautions and programs in connection with the performance of the Contract.

§ 10.2 Safety of Persons and Property

§ 10.2.1 The Contractor shall take reasonable precautions for safety of, and shall provide reasonable protection to prevent damage, injury, or loss to

- .1 employees on the Work and other persons who may be affected thereby;
- .2 the Work and materials and equipment to be incorporated therein, whether in storage on or off the site, under care, custody, or control of the Contractor, a Subcontractor, or a Sub-subcontractor; and
- .3 other property at the site or adjacent thereto, such as trees, shrubs, lawns, walks, pavements, roadways, structures, and utilities not designated for removal, relocation, or replacement in the course of construction.

§ 10.2.2 The Contractor shall comply with, and give notices required by applicable laws, statutes, ordinances, codes, rules and regulations, and lawful orders of public authorities, bearing on safety of persons or property or their protection from damage, injury, or loss.

§ 10.2.3 The Contractor shall implement, erect, and maintain, as required by existing conditions and performance of the Contract, reasonable safeguards for safety and protection, including posting danger signs and other warnings against hazards; promulgating safety regulations; and notifying the owners and users of adjacent sites and utilities of the safeguards.

§ 10.2.4 When use or storage of explosives or other hazardous materials or equipment, or unusual methods are necessary for execution of the Work, the Contractor shall exercise utmost care and carry on such activities under supervision of properly qualified personnel.

§ 10.2.5 The Contractor shall promptly remedy damage and loss (other than damage or loss insured under property insurance required by the Contract Documents) to property referred to in Sections 10.2.1.2 and 10.2.1.3 caused in whole or in part by the Contractor, a Subcontractor, a Sub-subcontractor, or anyone directly or indirectly employed by any of them, or by anyone for whose acts they may be liable and for which the Contractor is responsible under Sections 10.2.1.2 and 10.2.1.3. The Contractor may make a Claim for the cost to remedy the damage or loss to the extent such damage or loss is attributable to acts or omissions of the Owner or Architect or anyone directly or indirectly employed by either of them, or by anyone for whose acts either of them may be liable, and not attributable to the fault or negligence of the Contractor. The foregoing obligations of the Contractor are in addition to the Contractor's obligations under Section 3.18.

§ 10.2.6 The Contractor shall designate a responsible member of the Contractor's organization at the site whose duty shall be the prevention of accidents. This person shall be the Contractor's superintendent unless otherwise designated by the Contractor in writing to the Owner and Architect.

§ 10.2.7 The Contractor shall not permit any part of the construction or site to be loaded so as to cause damage or create an unsafe condition.

§ 10.2.8 Injury or Damage to Person or Property

If either party suffers injury or damage to person or property because of an act or omission of the other party, or of others for whose acts such party is legally responsible, notice of the injury or damage, whether or not insured, shall be given to the other party within a reasonable time not exceeding 21 days after discovery. The notice shall provide sufficient detail to enable the other party to investigate the matter.

§ 10.3 Hazardous Materials and Substances

§ 10.3.1 The Contractor is responsible for compliance with any requirements included in the Contract Documents regarding hazardous materials or substances. If the Contractor encounters a hazardous material or substance not addressed in the Contract Documents and if reasonable precautions will be inadequate to prevent foreseeable bodily injury or death to persons resulting from a material or substance, including but not limited to asbestos or polychlorinated biphenyl (PCB), encountered on the site by the Contractor, the Contractor shall, upon recognizing the condition, immediately stop Work in the affected area and notify the Owner and Architect of the condition.

§ 10.3.2 Upon receipt of the Contractor's notice, the Owner shall obtain the services of a licensed laboratory to verify the presence or absence of the material or substance reported by the Contractor and, in the event such material or substance is found to be present, to cause it to be rendered harmless. Unless otherwise required by the Contract Documents, the Owner shall furnish in writing to the Contractor and Architect the names and qualifications of persons or entities who are to perform tests verifying the presence or absence of the material or substance or who are to perform the task of removal or safe containment of the material or substance. The Contractor and the Architect will promptly reply to the Owner in writing stating whether or not either has reasonable objection to the persons or entities proposed by the Owner. If either the Contractor or Architect has an objection to a person or entity proposed by the Owner, the Owner shall propose another to whom the Contractor and the Architect have no reasonable objection. When the material or substance has been rendered harmless, Work in the affected area shall resume upon written agreement of the Owner and Contractor. By Change Order, the Contract Time shall be extended appropriately and the Contract Sum shall be increased by the amount of the Contractor's reasonable additional costs of shutdown, delay, and start-up.

§ 10.3.3 To the fullest extent permitted by law, the Owner shall indemnify and hold harmless the Contractor, Subcontractors, Architect, Architect's consultants, and agents and employees of any of them from and against claims, damages, losses, and expenses, including but not limited to attorneys' fees, arising out of or resulting from performance of the Work in the affected area if in fact the material or substance presents the risk of bodily injury or death as described in Section 10.3.1 and has not been rendered harmless, provided that such claim, damage, loss, or expense is attributable to bodily injury, sickness, disease or death, or to injury to or destruction of tangible property (other than the Work itself), except to the extent that such damage, loss, or expense is due to the fault or negligence of the party seeking indemnity.

§ 10.3.4 The Owner shall not be responsible under this Section 10.3 for hazardous materials or substances the Contractor brings to the site unless such materials or substances are required by the Contract Documents. The Owner shall be responsible for hazardous materials or substances required by the Contract Documents, except to the extent of the Contractor's fault or negligence in the use and handling of such materials or substances.

§ 10.3.5 The Contractor shall reimburse the Owner for the cost and expense the Owner incurs (1) for remediation of hazardous materials or substances the Contractor brings to the site and negligently handles, or (2) where the Contractor fails to perform its obligations under Section 10.3.1, except to the extent that the cost and expense are due to the Owner's fault or negligence.

§ 10.3.6 If, without negligence on the part of the Contractor, the Contractor is held liable by a government agency for the cost of remediation of a hazardous material or substance solely by reason of performing Work as required by the Contract Documents, the Owner shall reimburse the Contractor for all cost and expense thereby incurred.

§ 10.4 Emergencies

In an emergency affecting safety of persons or property, the Contractor shall act, at the Contractor's discretion, to prevent threatened damage, injury, or loss. Additional compensation or extension of time claimed by the Contractor on account of an emergency shall be determined as provided in Article 15 and Article 7.

ARTICLE 11 INSURANCE AND BONDS

§ 11.1 Contractor's Insurance and Bonds

§ 11.1.1 The Contractor shall purchase and maintain insurance of the types and limits of liability, containing the

endorsements, and subject to the terms and conditions, as described in the Agreement or elsewhere in the Contract Documents. The Contractor shall purchase and maintain the required insurance from an insurance company or insurance companies lawfully authorized to issue insurance in the jurisdiction where the Project is located. The Owner, Architect, and Architect's consultants shall be named as additional insureds under the Contractor's commercial general liability policy or as otherwise described in the Contract Documents.

§ 11.1.2 The Contractor shall provide surety bonds of the types, for such penal sums, and subject to such terms and conditions as required by the Contract Documents. The Contractor shall purchase and maintain the required bonds from a company or companies lawfully authorized to issue surety bonds in the jurisdiction where the Project is located.

§ 11.1.3 Upon the request of any person or entity appearing to be a potential beneficiary of bonds covering payment of obligations arising under the Contract, the Contractor shall promptly furnish a copy of the bonds or shall authorize a copy to be furnished.

§ 11.1.4 Notice of Cancellation or Expiration of Contractor's Required Insurance. Within three (3) business days of the date the Contractor becomes aware of an impending or actual cancellation or expiration of any insurance required by the Contract Documents, the Contractor shall provide notice to the Owner of such impending or actual cancellation or expiration. Upon receipt of notice from the Contractor, the Owner shall, unless the lapse in coverage arises from an act or omission of the Owner, have the right to stop the Work until the lapse in coverage has been cured by the procurement of replacement coverage by the Contractor. The furnishing of notice by the Contractor shall not relieve the Contractor of any contractual obligation to provide any required coverage.

§ 11.2 Owner's Insurance

§ 11.2.1 The Owner shall purchase and maintain insurance of the types and limits of liability, containing the endorsements, and subject to the terms and conditions, as described in the Agreement or elsewhere in the Contract Documents. The Owner shall purchase and maintain the required insurance from an insurance company or insurance companies lawfully authorized to issue insurance in the jurisdiction where the Project is located.

§ 11.2.2 Failure to Purchase Required Property Insurance. If the Owner fails to purchase and maintain the required property insurance, with all of the coverages and in the amounts described in the Agreement or elsewhere in the Contract Documents, the Owner shall inform the Contractor in writing prior to commencement of the Work. Upon receipt of notice from the Owner, the Contractor may delay commencement of the Work and may obtain insurance that will protect the interests of the Contractor, Subcontractors, and Sub-Subcontractors in the Work. When the failure to provide coverage has been cured or resolved, the Contract Sum and Contract Time shall be equitably adjusted. In the event the Owner fails to procure coverage, the Owner waives all rights against the Contractor, Subcontractors, and Sub-subcontractors to the extent the loss to the Owner would have been covered by the insurance to have been procured by the Owner. The cost of the insurance shall be charged to the Owner by a Change Order. If the Owner does not provide written notice, and the Contractor is damaged by the failure or neglect of the Owner to purchase or maintain the required insurance, the Owner shall reimburse the Contractor for all reasonable costs and damages attributable thereto.

§ 11.2.3 Notice of Cancellation or Expiration of Owner's Required Property Insurance. Within three (3) business days of the date the Owner becomes aware of an impending or actual cancellation or expiration of any property insurance required by the Contract Documents, the Owner shall provide notice to the Contractor of such impending or actual cancellation or expiration. Unless the lapse in coverage arises from an act or omission of the Contractor: (1) the Contractor, upon receipt of notice from the Owner, shall have the right to stop the Work until the lapse in coverage has been cured by the procurement of replacement coverage by either the Owner or the Contractor; (2) the Contract Time and Contract Sum shall be equitably adjusted; and (3) the Owner waives all rights against the Contractor, Subcontractors, and Sub-subcontractors to the extent any loss to the Owner would have been covered by the insurance had it not expired or been cancelled. If the Contractor purchases replacement coverage, the cost of the insurance shall be charged to the Owner by an appropriate Change Order. The furnishing of notice by the Owner shall not relieve the Owner of any contractual obligation to provide required insurance.

§ 11.3 Waivers of Subrogation

§ 11.3.1 The Owner and Contractor waive all rights against (1) each other and any of their subcontractors, sub-subcontractors, agents, and employees, each of the other; (2) the Architect and Architect's consultants; and (3) Separate Contractors, if any, and any of their subcontractors, sub-subcontractors, agents, and employees, for damages caused by fire, or other causes of loss, to the extent those losses are covered by property insurance required by the Agreement or other property insurance applicable to the Project, except such rights as they have to proceeds of such insurance. The

Owner or Contractor, as appropriate, shall require similar written waivers in favor of the individuals and entities identified above from the Architect, Architect's consultants, Separate Contractors, subcontractors, and sub-subcontractors. The policies of insurance purchased and maintained by each person or entity agreeing to waive claims pursuant to this section 11.3.1 shall not prohibit this waiver of subrogation. This waiver of subrogation shall be effective as to a person or entity (1) even though that person or entity would otherwise have a duty of indemnification, contractual or otherwise, (2) even though that person or entity did not pay the insurance premium directly or indirectly, or (3) whether or not the person or entity had an insurable interest in the damaged property.

§ 11.3.2 If during the Project construction period the Owner insures properties, real or personal or both, at or adjacent to the site by property insurance under policies separate from those insuring the Project, or if after final payment property insurance is to be provided on the completed Project through a policy or policies other than those insuring the Project during the construction period, to the extent permissible by such policies, the Owner waives all rights in accordance with the terms of Section 11.3.1 for damages caused by fire or other causes of loss covered by this separate property insurance.

§ 11.4 Loss of Use, Business Interruption, and Delay in Completion Insurance

The Owner, at the Owner's option, may purchase and maintain insurance that will protect the Owner against loss of use of the Owner's property, or the inability to conduct normal operations, due to fire or other causes of loss. The Owner waives all rights of action against the Contractor and Architect for loss of use of the Owner's property, due to fire or other hazards however caused.

§ 11.5 Adjustment and Settlement of Insured Loss

§ 11.5.1 A loss insured under the property insurance required by the Agreement shall be adjusted by the Owner as fiduciary and made payable to the Owner as fiduciary for the insureds, as their interests may appear, subject to requirements of any applicable mortgagee clause and of Section 11.5.2. The Owner shall pay the Architect and Contractor their just shares of insurance proceeds received by the Owner, and by appropriate agreements the Architect and Contractor shall make payments to their consultants and Subcontractors in similar manner.

§ 11.5.2 Prior to settlement of an insured loss, the Owner shall notify the Contractor of the terms of the proposed settlement as well as the proposed allocation of the insurance proceeds. The Contractor shall have 14 days from receipt of notice to object to the proposed settlement or allocation of the proceeds. If the Contractor does not object, the Owner shall settle the loss and the Contractor shall be bound by the settlement and allocation. Upon receipt, the Owner shall deposit the insurance proceeds in a separate account and make the appropriate distributions. Thereafter, if no other agreement is made or the Owner does not terminate the Contract for convenience, the Owner and Contractor shall execute a Change Order for reconstruction of the damaged or destroyed Work in the amount allocated for that purpose. If the Contractor timely objects to either the terms of the proposed settlement or the allocation of the proceeds, the Owner may proceed to settle the insured loss, and any dispute between the Owner and Contractor arising out of the settlement or allocation of the proceeds shall be resolved pursuant to Article 15. Pending resolution of any dispute, the Owner may issue a Construction Change Directive for the reconstruction of the damaged or destroyed Work.

ARTICLE 12 UNCOVERING AND CORRECTION OF WORK

§ 12.1 Uncovering of Work

§ 12.1.1 If a portion of the Work is covered contrary to the Architect's request or to requirements specifically expressed in the Contract Documents, it must, if requested in writing by the Architect, be uncovered for the Architect's examination and be replaced at the Contractor's expense without change in the Contract Time.

§ 12.1.2 If a portion of the Work has been covered that the Architect has not specifically requested to examine prior to its being covered, the Architect may request to see such Work and it shall be uncovered by the Contractor. If such Work is in accordance with the Contract Documents, the Contractor shall be entitled to an equitable adjustment to the Contract Sum and Contract Time as may be appropriate. If such Work is not in accordance with the Contract Documents, the costs of uncovering the Work, and the cost of correction, shall be at the Contractor's expense.

§ 12.2 Correction of Work

§ 12.2.1 Before Substantial Completion

The Contractor shall promptly correct Work rejected by the Architect or failing to conform to the requirements of the Contract Documents, discovered before Substantial Completion and whether or not fabricated, installed or completed. Costs of correcting such rejected Work, including additional testing and inspections, the cost of uncovering and replacement, and compensation for the Architect's services and expenses made necessary thereby, shall be at the

Contractor's expense.

§ 12.2.2 After Substantial Completion

§ 12.2.2.1 In addition to the Contractor's obligations under Section 3.5, if, within one year after the date of Substantial Completion of the Work or designated portion thereof or after the date for commencement of warranties established under Section 9.9.1, or by terms of any applicable special warranty required by the Contract Documents, any of the Work is found to be not in accordance with the requirements of the Contract Documents, the Contractor shall correct it promptly after receipt of notice from the Owner to do so, unless the Owner has previously given the Contractor a written acceptance of such condition. The Owner shall give such notice promptly after discovery of the condition. During the one-year period for correction of Work, if the Owner fails to notify the Contractor and give the Contractor an opportunity to make the correction, the Owner waives the rights to require correction by the Contractor and to make a claim for breach of warranty. If the Contractor fails to correct nonconforming Work within a reasonable time during that period after receipt of notice from the Owner or Architect, the Owner may correct it in accordance with Section 2.5.

§ 12.2.2.2 The one-year period for correction of Work shall be extended with respect to portions of Work first performed after Substantial Completion by the period of time between Substantial Completion and the actual completion of that portion of the Work.

§ 12.2.2.3 The one-year period for correction of Work shall not be extended by corrective Work performed by the Contractor pursuant to this Section 12.2.

§ 12.2.3 The Contractor shall remove from the site portions of the Work that are not in accordance with the requirements of the Contract Documents and are neither corrected by the Contractor nor accepted by the Owner.

§ 12.2.4 The Contractor shall bear the cost of correcting destroyed or damaged construction of the Owner or Separate Contractors, whether completed or partially completed, caused by the Contractor's correction or removal of Work that is not in accordance with the requirements of the Contract Documents.

§ 12.2.5 Nothing contained in this Section 12.2 shall be construed to establish a period of limitation with respect to other obligations the Contractor has under the Contract Documents. Establishment of the one-year period for correction of Work as described in Section 12.2.2 relates only to the specific obligation of the Contractor to correct the Work, and has no relationship to the time within which the obligation to comply with the Contract Documents may be sought to be enforced, nor to the time within which proceedings may be commenced to establish the Contractor's liability with respect to the Contractor's obligations other than specifically to correct the Work.

§ 12.3 Acceptance of Nonconforming Work

If the Owner prefers to accept Work that is not in accordance with the requirements of the Contract Documents, the Owner may do so instead of requiring its removal and correction, in which case the Contract Sum will be reduced as appropriate and equitable. Such adjustment shall be effected whether or not final payment has been made.

ARTICLE 13 MISCELLANEOUS PROVISIONS

§ 13.1 Governing Law

The Contract shall be governed by the law of the place where the Project is located, excluding that jurisdiction's choice of law rules. If the parties have selected arbitration as the method of binding dispute resolution, the Federal Arbitration Act shall govern Section 15.4.

§ 13.2 Successors and Assigns

§ 13.2.1 The Owner and Contractor respectively bind themselves, their partners, successors, assigns, and legal representatives to covenants, agreements, and obligations contained in the Contract Documents. Except as provided in Section 13.2.2, neither party to the Contract shall assign the Contract as a whole without written consent of the other. If either party attempts to make an assignment without such consent, that party shall nevertheless remain legally responsible for all obligations under the Contract.

§ 13.2.2 The Owner may, without consent of the Contractor, assign the Contract to a lender providing construction financing for the Project, if the lender assumes the Owner's rights and obligations under the Contract Documents. The Contractor shall execute all consents reasonably required to facilitate the assignment.

§ 13.3 Rights and Remedies

§ 13.3.1 Duties and obligations imposed by the Contract Documents and rights and remedies available thereunder shall be in addition to and not a limitation of duties, obligations, rights, and remedies otherwise imposed or available by law.

§ 13.3.2 No action or failure to act by the Owner, Architect, or Contractor shall constitute a waiver of a right or duty afforded them under the Contract, nor shall such action or failure to act constitute approval of or acquiescence in a breach thereunder, except as may be specifically agreed upon in writing.

§ 13.4 Tests and Inspections

§ 13.4.1 Tests, inspections, and approvals of portions of the Work shall be made as required by the Contract Documents and by applicable laws, statutes, ordinances, codes, rules, and regulations or lawful orders of public authorities. Unless otherwise provided, the Contractor shall make arrangements for such tests, inspections, and approvals with an independent testing laboratory or entity acceptable to the Owner, or with the appropriate public authority, and shall bear all related costs of tests, inspections, and approvals. The Contractor shall give the Architect timely notice of when and where tests and inspections are to be made so that the Architect may be present for such procedures. The Owner shall bear costs of tests, inspections, or approvals that do not become requirements until after bids are received or negotiations concluded. The Owner shall directly arrange and pay for tests, inspections, or approvals where building codes or applicable laws or regulations so require.

§ 13.4.2 If the Architect, Owner, or public authorities having jurisdiction determine that portions of the Work require additional testing, inspection, or approval not included under Section 13.4.1, the Architect will, upon written authorization from the Owner, instruct the Contractor to make arrangements for such additional testing, inspection, or approval, by an entity acceptable to the Owner, and the Contractor shall give timely notice to the Architect of when and where tests and inspections are to be made so that the Architect may be present for such procedures. Such costs, except as provided in Section 13.4.3, shall be at the Owner's expense.

§ 13.4.3 If procedures for testing, inspection, or approval under Sections 13.4.1 and 13.4.2 reveal failure of the portions of the Work to comply with requirements established by the Contract Documents, all costs made necessary by such failure, including those of repeated procedures and compensation for the Architect's services and expenses, shall be at the Contractor's expense.

§ 13.4.4 Required certificates of testing, inspection, or approval shall, unless otherwise required by the Contract Documents, be secured by the Contractor and promptly delivered to the Architect.

§ 13.4.5 If the Architect is to observe tests, inspections, or approvals required by the Contract Documents, the Architect will do so promptly and, where practicable, at the normal place of testing.

§ 13.4.6 Tests or inspections conducted pursuant to the Contract Documents shall be made promptly to avoid unreasonable delay in the Work.

§ 13.5 Interest

Payments due and unpaid under the Contract Documents shall bear interest from the date payment is due at the rate the parties agree upon in writing or, in the absence thereof, at the legal rate prevailing from time to time at the place where the Project is located.

ARTICLE 14 TERMINATION OR SUSPENSION OF THE CONTRACT

§ 14.1 Termination by the Contractor

§ 14.1.1 The Contractor may terminate the Contract if the Work is stopped for a period of 30 consecutive days through no act or fault of the Contractor, a Subcontractor, a Sub-subcontractor, their agents or employees, or any other persons or entities performing portions of the Work, for any of the following reasons:

- .1 Issuance of an order of a court or other public authority having jurisdiction that requires all Work to be stopped;
- .2 An act of government, such as a declaration of national emergency, that requires all Work to be stopped;
- .3 Because the Architect has not issued a Certificate for Payment and has not notified the Contractor of the reason for withholding certification as provided in Section 9.4.1, or because the Owner has not made payment on a Certificate for Payment within the time stated in the Contract Documents; or
- .4 The Owner has failed to furnish to the Contractor reasonable evidence as required by Section 2.2.

§ 14.1.2 The Contractor may terminate the Contract if, through no act or fault of the Contractor, a Subcontractor, a Sub-subcontractor, their agents or employees, or any other persons or entities performing portions of the Work, repeated suspensions, delays, or interruptions of the entire Work by the Owner as described in Section 14.3, constitute in the aggregate more than 100 percent of the total number of days scheduled for completion, or 120 days in any 365-day period, whichever is less.

§ 14.1.3 If one of the reasons described in Section 14.1.1 or 14.1.2 exists, the Contractor may, upon seven days' notice to the Owner and Architect, terminate the Contract and recover from the Owner payment for Work executed, as well as reasonable overhead and profit on Work not executed, and costs incurred by reason of such termination.

§ 14.1.4 If the Work is stopped for a period of 60 consecutive days through no act or fault of the Contractor, a Subcontractor, a Sub-subcontractor, or their agents or employees or any other persons or entities performing portions of the Work because the Owner has repeatedly failed to fulfill the Owner's obligations under the Contract Documents with respect to matters important to the progress of the Work, the Contractor may, upon seven additional days' notice to the Owner and the Architect, terminate the Contract and recover from the Owner as provided in Section 14.1.3.

§ 14.2 Termination by the Owner for Cause

§ 14.2.1 The Owner may terminate the Contract if the Contractor

- .1 repeatedly refuses or fails to supply enough properly skilled workers or proper materials;
- .2 fails to make payment to Subcontractors or suppliers in accordance with the respective agreements between the Contractor and the Subcontractors or suppliers;
- .3 repeatedly disregards applicable laws, statutes, ordinances, codes, rules and regulations, or lawful orders of a public authority; or
- .4 otherwise is guilty of substantial breach of a provision of the Contract Documents.

§ 14.2.2 When any of the reasons described in Section 14.2.1 exist, and upon certification by the Architect that sufficient cause exists to justify such action, the Owner may, without prejudice to any other rights or remedies of the Owner and after giving the Contractor and the Contractor's surety, if any, seven days' notice, terminate employment of the Contractor and may, subject to any prior rights of the surety:

- .1 Exclude the Contractor from the site and take possession of all materials, equipment, tools, and construction equipment and machinery thereon owned by the Contractor;
- .2 Accept assignment of subcontracts pursuant to Section 5.4; and
- .3 Finish the Work by whatever reasonable method the Owner may deem expedient. Upon written request of the Contractor, the Owner shall furnish to the Contractor a detailed accounting of the costs incurred by the Owner in finishing the Work.

§ 14.2.3 When the Owner terminates the Contract for one of the reasons stated in Section 14.2.1, the Contractor shall not be entitled to receive further payment until the Work is finished.

§ 14.2.4 If the unpaid balance of the Contract Sum exceeds costs of finishing the Work, including compensation for the Architect's services and expenses made necessary thereby, and other damages incurred by the Owner and not expressly waived, such excess shall be paid to the Contractor. If such costs and damages exceed the unpaid balance, the Contractor shall pay the difference to the Owner. The amount to be paid to the Contractor or Owner, as the case may be, shall be certified by the Initial Decision Maker, upon application, and this obligation for payment shall survive termination of the Contract.

§ 14.3 Suspension by the Owner for Convenience

§ 14.3.1 The Owner may, without cause, order the Contractor in writing to suspend, delay or interrupt the Work, in whole or in part for such period of time as the Owner may determine.

§ 14.3.2 The Contract Sum and Contract Time shall be adjusted for increases in the cost and time caused by suspension, delay, or interruption under Section 14.3.1. Adjustment of the Contract Sum shall include profit. No adjustment shall be made to the extent

- .1 that performance is, was, or would have been, so suspended, delayed, or interrupted, by another cause for which the Contractor is responsible; or
- .2 that an equitable adjustment is made or denied under another provision of the Contract.

§ 14.4 Termination by the Owner for Convenience

§ 14.4.1 The Owner may, at any time, terminate the Contract for the Owner's convenience and without cause.

§ 14.4.2 Upon receipt of notice from the Owner of such termination for the Owner's convenience, the Contractor shall

- .1 cease operations as directed by the Owner in the notice;
- .2 take actions necessary, or that the Owner may direct, for the protection and preservation of the Work; and
- .3 except for Work directed to be performed prior to the effective date of termination stated in the notice, terminate all existing subcontracts and purchase orders and enter into no further subcontracts and purchase orders.

§ 14.4.3 In case of such termination for the Owner's convenience, the Owner shall pay the Contractor for Work properly executed; costs incurred by reason of the termination, including costs attributable to termination of Subcontracts; and the termination fee, if any, set forth in the Agreement.

ARTICLE 15 CLAIMS AND DISPUTES

§ 15.1 Claims

§ 15.1.1 Definition

A Claim is a demand or assertion by one of the parties seeking, as a matter of right, payment of money, a change in the Contract Time, or other relief with respect to the terms of the Contract. The term "Claim" also includes other disputes and matters in question between the Owner and Contractor arising out of or relating to the Contract. The responsibility to substantiate Claims shall rest with the party making the Claim. This Section 15.1.1 does not require the Owner to file a Claim in order to impose liquidated damages in accordance with the Contract Documents.

§ 15.1.2 Time Limits on Claims

The Owner and Contractor shall commence all Claims and causes of action against the other and arising out of or related to the Contract, whether in contract, tort, breach of warranty or otherwise, in accordance with the requirements of the binding dispute resolution method selected in the Agreement and within the period specified by applicable law, but in any case not more than 10 years after the date of Substantial Completion of the Work. The Owner and Contractor waive all Claims and causes of action not commenced in accordance with this Section 15.1.2.

§ 15.1.3 Notice of Claims

§ 15.1.3.1 Claims by either the Owner or Contractor, where the condition giving rise to the Claim is first discovered prior to expiration of the period for correction of the Work set forth in Section 12.2.2, shall be initiated by notice to the other party and to the Initial Decision Maker with a copy sent to the Architect, if the Architect is not serving as the Initial Decision Maker. Claims by either party under this Section 15.1.3.1 shall be initiated within 21 days after occurrence of the event giving rise to such Claim or within 21 days after the claimant first recognizes the condition giving rise to the Claim, whichever is later.

§ 15.1.3.2 Claims by either the Owner or Contractor, where the condition giving rise to the Claim is first discovered after expiration of the period for correction of the Work set forth in Section 12.2.2, shall be initiated by notice to the other party. In such event, no decision by the Initial Decision Maker is required.

§ 15.1.4 Continuing Contract Performance

§ 15.1.4.1 Pending final resolution of a Claim, except as otherwise agreed in writing or as provided in Section 9.7 and Article 14, the Contractor shall proceed diligently with performance of the Contract and the Owner shall continue to make payments in accordance with the Contract Documents.

§ 15.1.4.2 The Contract Sum and Contract Time shall be adjusted in accordance with the Initial Decision Maker's decision, subject to the right of either party to proceed in accordance with this Article 15. The Architect will issue Certificates for Payment in accordance with the decision of the Initial Decision Maker.

§ 15.1.5 Claims for Additional Cost

If the Contractor wishes to make a Claim for an increase in the Contract Sum, notice as provided in Section 15.1.3 shall be given before proceeding to execute the portion of the Work that is the subject of the Claim. Prior notice is not required for Claims relating to an emergency endangering life or property arising under Section 10.4.

§ 15.1.6 Claims for Additional Time

§ 15.1.6.1 If the Contractor wishes to make a Claim for an increase in the Contract Time, notice as provided in Section

15.1.3 shall be given. The Contractor's Claim shall include an estimate of cost and of probable effect of delay on progress of the Work. In the case of a continuing delay, only one Claim is necessary.

§ 15.1.6.2 If adverse weather conditions are the basis for a Claim for additional time, such Claim shall be documented by data substantiating that weather conditions were abnormal for the period of time, could not have been reasonably anticipated, and had an adverse effect on the scheduled construction.

§ 15.1.7 Waiver of Claims for Consequential Damages

The Contractor and Owner waive Claims against each other for consequential damages arising out of or relating to this Contract. This mutual waiver includes

- .1 damages incurred by the Owner for rental expenses, for losses of use, income, profit, financing, business and reputation, and for loss of management or employee productivity or of the services of such persons; and
- .2 damages incurred by the Contractor for principal office expenses including the compensation of personnel stationed there, for losses of financing, business and reputation, and for loss of profit, except anticipated profit arising directly from the Work.

This mutual waiver is applicable, without limitation, to all consequential damages due to either party's termination in accordance with Article 14. Nothing contained in this Section 15.1.7 shall be deemed to preclude assessment of liquidated damages, when applicable, in accordance with the requirements of the Contract Documents.

§ 15.2 Initial Decision

§ 15.2.1 Claims, excluding those where the condition giving rise to the Claim is first discovered after expiration of the period for correction of the Work set forth in Section 12.2.2 or arising under Sections 10.3, 10.4, and 11.5, shall be referred to the Initial Decision Maker for initial decision. The Architect will serve as the Initial Decision Maker, unless otherwise indicated in the Agreement. Except for those Claims excluded by this Section 15.2.1, an initial decision shall be required as a condition precedent to mediation of any Claim. If an initial decision has not been rendered within 30 days after the Claim has been referred to the Initial Decision Maker, the party asserting the Claim may demand mediation and binding dispute resolution without a decision having been rendered. Unless the Initial Decision Maker and all affected parties agree, the Initial Decision Maker will not decide disputes between the Contractor and persons or entities other than the Owner.

§ 15.2.2 The Initial Decision Maker will review Claims and within ten days of the receipt of a Claim take one or more of the following actions: (1) request additional supporting data from the claimant or a response with supporting data from the other party, (2) reject the Claim in whole or in part, (3) approve the Claim, (4) suggest a compromise, or (5) advise the parties that the Initial Decision Maker is unable to resolve the Claim if the Initial Decision Maker lacks sufficient information to evaluate the merits of the Claim or if the Initial Decision Maker concludes that, in the Initial Decision Maker's sole discretion, it would be inappropriate for the Initial Decision Maker to resolve the Claim.

§ 15.2.3 In evaluating Claims, the Initial Decision Maker may, but shall not be obligated to, consult with or seek information from either party or from persons with special knowledge or expertise who may assist the Initial Decision Maker in rendering a decision. The Initial Decision Maker may request the Owner to authorize retention of such persons at the Owner's expense.

§ 15.2.4 If the Initial Decision Maker requests a party to provide a response to a Claim or to furnish additional supporting data, such party shall respond, within ten days after receipt of the request, and shall either (1) provide a response on the requested supporting data, (2) advise the Initial Decision Maker when the response or supporting data will be furnished, or (3) advise the Initial Decision Maker that no supporting data will be furnished. Upon receipt of the response or supporting data, if any, the Initial Decision Maker will either reject or approve the Claim in whole or in part.

§ 15.2.5 The Initial Decision Maker will render an initial decision approving or rejecting the Claim, or indicating that the Initial Decision Maker is unable to resolve the Claim. This initial decision shall (1) be in writing; (2) state the reasons therefor; and (3) notify the parties and the Architect, if the Architect is not serving as the Initial Decision Maker, of any change in the Contract Sum or Contract Time or both. The initial decision shall be final and binding on the parties but subject to mediation and, if the parties fail to resolve their dispute through mediation, to binding dispute resolution.

§ 15.2.6 Either party may file for mediation of an initial decision at any time, subject to the terms of Section 15.2.6.1.

§ 15.2.6.1 Either party may, within 30 days from the date of receipt of an initial decision, demand in writing that the other party file for mediation. If such a demand is made and the party receiving the demand fails to file for mediation within 30 days after receipt thereof, then both parties waive their rights to mediate or pursue binding dispute resolution proceedings with respect to the initial decision.

§ 15.2.7 In the event of a Claim against the Contractor, the Owner may, but is not obligated to, notify the surety, if any, of the nature and amount of the Claim. If the Claim relates to a possibility of a Contractor's default, the Owner may, but is not obligated to, notify the surety and request the surety's assistance in resolving the controversy.

§ 15.2.8 If a Claim relates to or is the subject of a mechanic's lien, the party asserting such Claim may proceed in accordance with applicable law to comply with the lien notice or filing deadlines.

§ 15.3 Mediation

§ 15.3.1 Claims, disputes, or other matters in controversy arising out of or related to the Contract, except those waived as provided for in Sections 9.10.4, 9.10.5, and 15.1.7, shall be subject to mediation as a condition precedent to binding dispute resolution.

§ 15.3.2 The parties shall endeavor to resolve their Claims by mediation which, unless the parties mutually agree otherwise, shall be administered by the American Arbitration Association in accordance with its Construction Industry Mediation Procedures in effect on the date of the Agreement. A request for mediation shall be made in writing, delivered to the other party to the Contract, and filed with the person or entity administering the mediation. The request may be made concurrently with the filing of binding dispute resolution proceedings but, in such event, mediation shall proceed in advance of binding dispute resolution proceedings, which shall be stayed pending mediation for a period of 60 days from the date of filing, unless stayed for a longer period by agreement of the parties or court order. If an arbitration is stayed pursuant to this Section 15.3.2, the parties may nonetheless proceed to the selection of the arbitrator(s) and agree upon a schedule for later proceedings.

§ 15.3.3 Either party may, within 30 days from the date that mediation has been concluded without resolution of the dispute or 60 days after mediation has been demanded without resolution of the dispute, demand in writing that the other party file for binding dispute resolution. If such a demand is made and the party receiving the demand fails to file for binding dispute resolution within 60 days after receipt thereof, then both parties waive their rights to binding dispute resolution proceedings with respect to the initial decision.

§ 15.3.4 The parties shall share the mediator's fee and any filing fees equally. The mediation shall be held in the place where the Project is located, unless another location is mutually agreed upon. Agreements reached in mediation shall be enforceable as settlement agreements in any court having jurisdiction thereof.

§ 15.4 Arbitration

§ 15.4.1 If the parties have selected arbitration as the method for binding dispute resolution in the Agreement, any Claim subject to, but not resolved by, mediation shall be subject to arbitration which, unless the parties mutually agree otherwise, shall be administered by the American Arbitration Association in accordance with its Construction Industry Arbitration Rules in effect on the date of the Agreement. The Arbitration shall be conducted in the place where the Project is located, unless another location is mutually agreed upon. A demand for arbitration shall be made in writing, delivered to the other party to the Contract, and filed with the person or entity administering the arbitration. The party filing a notice of demand for arbitration must assert in the demand all Claims then known to that party on which arbitration is permitted to be demanded.

§ 15.4.1.1 A demand for arbitration shall be made no earlier than concurrently with the filing of a request for mediation, but in no event shall it be made after the date when the institution of legal or equitable proceedings based on the Claim would be barred by the applicable statute of limitations. For statute of limitations purposes, receipt of a written demand for arbitration by the person or entity administering the arbitration shall constitute the institution of legal or equitable proceedings based on the Claim.

§ 15.4.2 The award rendered by the arbitrator or arbitrators shall be final, and judgment may be entered upon it in accordance with applicable law in any court having jurisdiction thereof.

§ 15.4.3 The foregoing agreement to arbitrate and other agreements to arbitrate with an additional person or entity duly

consented to by parties to the Agreement, shall be specifically enforceable under applicable law in any court having jurisdiction thereof.

§ 15.4.4 Consolidation or Joinder

§ 15.4.4.1 Subject to the rules of the American Arbitration Association or other applicable arbitration rules, either party may consolidate an arbitration conducted under this Agreement with any other arbitration to which it is a party provided that (1) the arbitration agreement governing the other arbitration permits consolidation, (2) the arbitrations to be consolidated substantially involve common questions of law or fact, and (3) the arbitrations employ materially similar procedural rules and methods for selecting arbitrator(s).

§ 15.4.4.2 Subject to the rules of the American Arbitration Association or other applicable arbitration rules, either party may include by joinder persons or entities substantially involved in a common question of law or fact whose presence is required if complete relief is to be accorded in arbitration, provided that the party sought to be joined consents in writing to such joinder. Consent to arbitration involving an additional person or entity shall not constitute consent to arbitration of any claim, dispute or other matter in question not described in the written consent.

§ 15.4.4.3 The Owner and Contractor grant to any person or entity made a party to an arbitration conducted under this Section 15.4, whether by joinder or consolidation, the same rights of joinder and consolidation as those of the Owner and Contractor under this Agreement.

Sample

C – FORM OF BID BOND



AIA[®]

Document A310™ – 2010

Bid Bond

CONTRACTOR:

(Name, legal status and address)

SURETY:

(Name, legal status and principal place of business)

OWNER:

(Name, legal status and address)

BOND AMOUNT:

PROJECT:

(Name, location or address, and Project number, if any)

This document has important legal consequences. Consultation with an attorney is encouraged with respect to its completion or modification.

Any singular reference to Contractor, Surety, Owner or other party shall be considered plural where applicable.

The Contractor and Surety are bound to the Owner in the amount set forth above, for the payment of which the Contractor and Surety bind themselves, their heirs, executors, administrators, successors and assigns, jointly and severally, as provided herein. The conditions of this Bond are such that if the Owner accepts the bid of the Contractor within the time specified in the bid documents, or within such time period as may be agreed to by the Owner and Contractor, and the Contractor either (1) enters into a contract with the Owner in accordance with the terms of such bid, and gives such bond or bonds as may be specified in the bidding or Contract Documents, with a surety admitted in the jurisdiction of the Project and otherwise acceptable to the Owner, for the faithful performance of such Contract and for the prompt payment of labor and material furnished in the prosecution thereof; or (2) pays to the Owner the difference, not to exceed the amount of this Bond, between the amount specified in said bid and such larger amount for which the Owner may in good faith contract with another party to perform the work covered by said bid, then this obligation shall be null and void, otherwise to remain in full force and effect. The Surety hereby waives any notice of an agreement between the Owner and Contractor to extend the time in which the Owner may accept the bid. Waiver of notice by the Surety shall not apply to any extension exceeding sixty (60) days in the aggregate beyond the time for acceptance of bids specified in the bid documents, and the Owner and Contractor shall obtain the Surety's consent for an extension beyond sixty (60) days.

If this Bond is issued in connection with a subcontractor's bid to a Contractor, the term Contractor in this Bond shall be deemed to be Subcontractor and the term Owner shall be deemed to be Contractor.

When this Bond has been furnished to comply with a statutory or other legal requirement in the location of the Project, any provision in this Bond conflicting with said statutory or legal requirement shall be deemed deleted herefrom and provisions conforming to such statutory or other legal requirement shall be deemed incorporated herein. When so furnished, the intent is that this Bond shall be construed as a statutory bond and not as a common law bond.

Signed and sealed this _____ day of _____

_____	<i>(Contractor as Principal)</i>	<i>(Seal)</i>
<i>(Witness)</i>	_____	<i>(Title)</i>
_____	<i>(Surety)</i>	<i>(Seal)</i>
<i>(Witness)</i>	_____	<i>(Title)</i>

CAUTION: You should sign an original AIA Contract Document, on which this text appears in RED. An original assures that changes will not be obscured.

**D – FORM OF PERFORMANCE AND PAYMENT
BONDS**



AIA[®]

Document A312™ – 2010

Performance Bond

CONTRACTOR:

(Name, legal status and address)

SURETY:

(Name, legal status and principal place of business)

OWNER:

(Name, legal status and address)

This document has important legal consequences. Consultation with an attorney is encouraged with respect to its completion or modification.

Any singular reference to Contractor, Surety, Owner or other party shall be considered plural where applicable.

CONSTRUCTION CONTRACT

Date:

Amount:

Description:

(Name and location)

BOND

Date:

(Not earlier than Construction Contract Date)

Amount:

Modifications to this Bond: None See Section 16

CONTRACTOR AS PRINCIPAL

Company: *(Corporate Seal)*

SURETY

Company: *(Corporate Seal)*

Signature: _____

Name
and Title:

(Any additional signatures appear on the last page of this Performance Bond.)

Signature: _____

Name
and Title:

(FOR INFORMATION ONLY — Name, address and telephone)

AGENT or BROKER:

OWNER'S REPRESENTATIVE:

(Architect, Engineer or other party:)

§ 1 The Contractor and Surety, jointly and severally, bind themselves, their heirs, executors, administrators, successors and assigns to the Owner for the performance of the Construction Contract, which is incorporated herein by reference.

§ 2 If the Contractor performs the Construction Contract, the Surety and the Contractor shall have no obligation under this Bond, except when applicable to participate in a conference as provided in Section 3.

§ 3 If there is no Owner Default under the Construction Contract, the Surety's obligation under this Bond shall arise after

- .1 the Owner first provides notice to the Contractor and the Surety that the Owner is considering declaring a Contractor Default. Such notice shall indicate whether the Owner is requesting a conference among the Owner, Contractor and Surety to discuss the Contractor's performance. If the Owner does not request a conference, the Surety may, within five (5) business days after receipt of the Owner's notice, request such a conference. If the Surety timely requests a conference, the Owner shall attend. Unless the Owner agrees otherwise, any conference requested under this Section 3.1 shall be held within ten (10) business days of the Surety's receipt of the Owner's notice. If the Owner, the Contractor and the Surety agree, the Contractor shall be allowed a reasonable time to perform the Construction Contract, but such an agreement shall not waive the Owner's right, if any, subsequently to declare a Contractor Default;
- .2 the Owner declares a Contractor Default, terminates the Construction Contract and notifies the Surety; and
- .3 the Owner has agreed to pay the Balance of the Contract Price in accordance with the terms of the Construction Contract to the Surety or to a contractor selected to perform the Construction Contract.

§ 4 Failure on the part of the Owner to comply with the notice requirement in Section 3.1 shall not constitute a failure to comply with a condition precedent to the Surety's obligations, or release the Surety from its obligations, except to the extent the Surety demonstrates actual prejudice.

§ 5 When the Owner has satisfied the conditions of Section 3, the Surety shall promptly and at the Surety's expense take one of the following actions:

§ 5.1 Arrange for the Contractor, with the consent of the Owner, to perform and complete the Construction Contract;

§ 5.2 Undertake to perform and complete the Construction Contract itself, through its agents or independent contractors;

§ 5.3 Obtain bids or negotiated proposals from qualified contractors acceptable to the Owner for a contract for performance and completion of the Construction Contract, arrange for a contract to be prepared for execution by the Owner and a contractor selected with the Owner's concurrence, to be secured with performance and payment bonds executed by a qualified surety equivalent to the bonds issued on the Construction Contract, and pay to the Owner the amount of damages as described in Section 7 in excess of the Balance of the Contract Price incurred by the Owner as a result of the Contractor Default; or

§ 5.4 Waive its right to perform and complete, arrange for completion, or obtain a new contractor and with reasonable promptness under the circumstances:

- .1 After investigation, determine the amount for which it may be liable to the Owner and, as soon as practicable after the amount is determined, make payment to the Owner; or
- .2 Deny liability in whole or in part and notify the Owner, citing the reasons for denial.

§ 6 If the Surety does not proceed as provided in Section 5 with reasonable promptness, the Surety shall be deemed to be in default on this Bond seven days after receipt of an additional written notice from the Owner to the Surety demanding that the Surety perform its obligations under this Bond, and the Owner shall be entitled to enforce any remedy available to the Owner. If the Surety proceeds as provided in Section 5.4, and the Owner refuses the payment or the Surety has denied liability, in whole or in part, without further notice the Owner shall be entitled to enforce any remedy available to the Owner.

§ 7 If the Surety elects to act under Section 5.1, 5.2 or 5.3, then the responsibilities of the Surety to the Owner shall not be greater than those of the Contractor under the Construction Contract, and the responsibilities of the Owner to the Surety shall not be greater than those of the Owner under the Construction Contract. Subject to the commitment by the Owner to pay the Balance of the Contract Price, the Surety is obligated, without duplication, for

- .1 the responsibilities of the Contractor for correction of defective work and completion of the Construction Contract;
- .2 additional legal, design professional and delay costs resulting from the Contractor's Default, and resulting from the actions or failure to act of the Surety under Section 5; and
- .3 liquidated damages, or if no liquidated damages are specified in the Construction Contract, actual damages caused by delayed performance or non-performance of the Contractor.

§ 8 If the Surety elects to act under Section 5.1, 5.3 or 5.4, the Surety's liability is limited to the amount of this Bond.

§ 9 The Surety shall not be liable to the Owner or others for obligations of the Contractor that are unrelated to the Construction Contract, and the Balance of the Contract Price shall not be reduced or set off on account of any such unrelated obligations. No right of action shall accrue on this Bond to any person or entity other than the Owner or its heirs, executors, administrators, successors and assigns.

§ 10 The Surety hereby waives notice of any change, including changes of time, to the Construction Contract or to related subcontracts, purchase orders and other obligations.

§ 11 Any proceeding, legal or equitable, under this Bond may be instituted in any court of competent jurisdiction in the location in which the work or part of the work is located and shall be instituted within two years after a declaration of Contractor Default or within two years after the Contractor ceased working or within two years after the Surety refuses or fails to perform its obligations under this Bond, whichever occurs first. If the provisions of this Paragraph are void or prohibited by law, the minimum period of limitation available to sureties as a defense in the jurisdiction of the suit shall be applicable.

§ 12 Notice to the Surety, the Owner or the Contractor shall be mailed or delivered to the address shown on the page on which their signature appears.

§ 13 When this Bond has been furnished to comply with a statutory or other legal requirement in the location where the construction was to be performed, any provision in this Bond conflicting with said statutory or legal requirement shall be deemed deleted herefrom and provisions conforming to such statutory or other legal requirement shall be deemed incorporated herein. When so furnished, the intent is that this Bond shall be construed as a statutory bond and not as a common law bond.

§ 14 Definitions

§ 14.1 **Balance of the Contract Price.** The total amount payable by the Owner to the Contractor under the Construction Contract after all proper adjustments have been made, including allowance to the Contractor of any amounts received or to be received by the Owner in settlement of insurance or other claims for damages to which the Contractor is entitled, reduced by all valid and proper payments made to or on behalf of the Contractor under the Construction Contract.

§ 14.2 **Construction Contract.** The agreement between the Owner and Contractor identified on the cover page, including all Contract Documents and changes made to the agreement and the Contract Documents.

§ 14.3 **Contractor Default.** Failure of the Contractor, which has not been remedied or waived, to perform or otherwise to comply with a material term of the Construction Contract.

§ 14.4 **Owner Default.** Failure of the Owner, which has not been remedied or waived, to pay the Contractor as required under the Construction Contract or to perform and complete or comply with the other material terms of the Construction Contract.

§ 14.5 **Contract Documents.** All the documents that comprise the agreement between the Owner and Contractor.

§ 15 If this Bond is issued for an agreement between a Contractor and subcontractor, the term Contractor in this Bond shall be deemed to be Subcontractor and the term Owner shall be deemed to be Contractor.

§ 16 Modifications to this bond are as follows:

Sample

(Space is provided below for additional signatures of added parties, other than those appearing on the cover page.)

CONTRACTOR AS PRINCIPAL

SURETY

Company: _____
(Corporate Seal)

Company: _____
(Corporate Seal)

Signature: _____
Name and Title: _____
Address _____

Signature: _____
Name and Title: _____
Address _____



AIA[®]

Document A312™ – 2010

Payment Bond

CONTRACTOR:

(Name, legal status and address)

SURETY:

(Name, legal status and principal place of business)

OWNER:

(Name, legal status and address)

This document has important legal consequences. Consultation with an attorney is encouraged with respect to its completion or modification.

Any singular reference to Contractor, Surety, Owner or other party shall be considered plural where applicable.

CONSTRUCTION CONTRACT

Date:

Amount:

Description:

(Name and location)

BOND

Date:

(Not earlier than Construction Contract Date)

Amount:

Modifications to this Bond: None See Section 18

CONTRACTOR AS PRINCIPAL

Company: *(Corporate Seal)*

SURETY

Company: *(Corporate Seal)*

Signature: _____

Name
and Title:

(Any additional signatures appear on the last page of this Payment Bond.)

Signature: _____

Name
and Title:

(FOR INFORMATION ONLY — Name, address and telephone)

AGENT or BROKER:

OWNER'S REPRESENTATIVE:

(Architect, Engineer or other party:)

§ 1 The Contractor and Surety, jointly and severally, bind themselves, their heirs, executors, administrators, successors and assigns to the Owner to pay for labor, materials and equipment furnished for use in the performance of the Construction Contract, which is incorporated herein by reference, subject to the following terms.

§ 2 If the Contractor promptly makes payment of all sums due to Claimants, and defends, indemnifies and holds harmless the Owner from claims, demands, liens or suits by any person or entity seeking payment for labor, materials or equipment furnished for use in the performance of the Construction Contract, then the Surety and the Contractor shall have no obligation under this Bond.

§ 3 If there is no Owner Default under the Construction Contract, the Surety's obligation to the Owner under this Bond shall arise after the Owner has promptly notified the Contractor and the Surety (at the address described in Section 13) of claims, demands, liens or suits against the Owner or the Owner's property by any person or entity seeking payment for labor, materials or equipment furnished for use in the performance of the Construction Contract and tendered defense of such claims, demands, liens or suits to the Contractor and the Surety.

§ 4 When the Owner has satisfied the conditions in Section 3, the Surety shall promptly and at the Surety's expense defend, indemnify and hold harmless the Owner against a duly tendered claim, demand, lien or suit.

§ 5 The Surety's obligations to a Claimant under this Bond shall arise after the following:

§ 5.1 Claimants, who do not have a direct contract with the Contractor,

- .1** have furnished a written notice of non-payment to the Contractor, stating with substantial accuracy the amount claimed and the name of the party to whom the materials were, or equipment was, furnished or supplied or for whom the labor was done or performed, within ninety (90) days after having last performed labor or last furnished materials or equipment included in the Claim; and
- .2** have sent a Claim to the Surety (at the address described in Section 13).

§ 5.2 Claimants, who are employed by or have a direct contract with the Contractor, have sent a Claim to the Surety (at the address described in Section 13).

§ 6 If a notice of non-payment required by Section 5.1.1 is given by the Owner to the Contractor, that is sufficient to satisfy a Claimant's obligation to furnish a written notice of non-payment under Section 5.1.1.

§ 7 When a Claimant has satisfied the conditions of Sections 5.1 or 5.2, whichever is applicable, the Surety shall promptly and at the Surety's expense take the following actions:

§ 7.1 Send an answer to the Claimant, with a copy to the Owner, within sixty (60) days after receipt of the Claim, stating the amounts that are undisputed and the basis for challenging any amounts that are disputed; and

§ 7.2 Pay or arrange for payment of any undisputed amounts.

§ 7.3 The Surety's failure to discharge its obligations under Section 7.1 or Section 7.2 shall not be deemed to constitute a waiver of defenses the Surety or Contractor may have or acquire as to a Claim, except as to undisputed amounts for which the Surety and Claimant have reached agreement. If, however, the Surety fails to discharge its obligations under Section 7.1 or Section 7.2, the Surety shall indemnify the Claimant for the reasonable attorney's fees the Claimant incurs thereafter to recover any sums found to be due and owing to the Claimant.

§ 8 The Surety's total obligation shall not exceed the amount of this Bond, plus the amount of reasonable attorney's fees provided under Section 7.3, and the amount of this Bond shall be credited for any payments made in good faith by the Surety.

§ 9 Amounts owed by the Owner to the Contractor under the Construction Contract shall be used for the performance of the Construction Contract and to satisfy claims, if any, under any construction performance bond. By the Contractor furnishing and the Owner accepting this Bond, they agree that all funds earned by the Contractor in the performance of the Construction Contract are dedicated to satisfy obligations of the Contractor and Surety under this Bond, subject to the Owner's priority to use the funds for the completion of the work.

§ 10 The Surety shall not be liable to the Owner, Claimants or others for obligations of the Contractor that are unrelated to the Construction Contract. The Owner shall not be liable for the payment of any costs or expenses of any Claimant under this Bond, and shall have under this Bond no obligation to make payments to, or give notice on behalf of, Claimants or otherwise have any obligations to Claimants under this Bond.

§ 11 The Surety hereby waives notice of any change, including changes of time, to the Construction Contract or to related subcontracts, purchase orders and other obligations.

§ 12 No suit or action shall be commenced by a Claimant under this Bond other than in a court of competent jurisdiction in the state in which the project that is the subject of the Construction Contract is located or after the expiration of one year from the date (1) on which the Claimant sent a Claim to the Surety pursuant to Section 5.1.2 or 5.2, or (2) on which the last labor or service was performed by anyone or the last materials or equipment were furnished by anyone under the Construction Contract, whichever of (1) or (2) first occurs. If the provisions of this Paragraph are void or prohibited by law, the minimum period of limitation available to sureties as a defense in the jurisdiction of the suit shall be applicable.

§ 13 Notice and Claims to the Surety, the Owner or the Contractor shall be mailed or delivered to the address shown on the page on which their signature appears. Actual receipt of notice or Claims, however accomplished, shall be sufficient compliance as of the date received.

§ 14 When this Bond has been furnished to comply with a statutory or other legal requirement in the location where the construction was to be performed, any provision in this Bond conflicting with said statutory or legal requirement shall be deemed deleted herefrom and provisions conforming to such statutory or other legal requirement shall be deemed incorporated herein. When so furnished, the intent is that this Bond shall be construed as a statutory bond and not as a common law bond.

§ 15 Upon request by any person or entity appearing to be a potential beneficiary of this Bond, the Contractor and Owner shall promptly furnish a copy of this Bond or shall permit a copy to be made.

§ 16 Definitions

§ 16.1 Claim. A written statement by the Claimant including at a minimum:

- .1 the name of the Claimant;
- .2 the name of the person for whom the labor was done, or materials or equipment furnished;
- .3 a copy of the agreement or purchase order pursuant to which labor, materials or equipment was furnished for use in the performance of the Construction Contract;
- .4 a brief description of the labor, materials or equipment furnished;
- .5 the date on which the Claimant last performed labor or last furnished materials or equipment for use in the performance of the Construction Contract;
- .6 the total amount earned by the Claimant for labor, materials or equipment furnished as of the date of the Claim;
- .7 the total amount of previous payments received by the Claimant; and
- .8 the total amount due and unpaid to the Claimant for labor, materials or equipment furnished as of the date of the Claim.

§ 16.2 Claimant. An individual or entity having a direct contract with the Contractor or with a subcontractor of the Contractor to furnish labor, materials or equipment for use in the performance of the Construction Contract. The term Claimant also includes any individual or entity that has rightfully asserted a claim under an applicable mechanic's lien or similar statute against the real property upon which the Project is located. The intent of this Bond shall be to include without limitation in the terms "labor, materials or equipment" that part of water, gas, power, light, heat, oil, gasoline, telephone service or rental equipment used in the Construction Contract, architectural and engineering services required for performance of the work of the Contractor and the Contractor's subcontractors, and all other items for which a mechanic's lien may be asserted in the jurisdiction where the labor, materials or equipment were furnished.

§ 16.3 Construction Contract. The agreement between the Owner and Contractor identified on the cover page, including all Contract Documents and all changes made to the agreement and the Contract Documents.

§ 16.4 Owner Default. Failure of the Owner, which has not been remedied or waived, to pay the Contractor as required under the Construction Contract or to perform and complete or comply with the other material terms of the Construction Contract.

§ 16.5 Contract Documents. All the documents that comprise the agreement between the Owner and Contractor.

§ 17 If this Bond is issued for an agreement between a Contractor and subcontractor, the term Contractor in this Bond shall be deemed to be Subcontractor and the term Owner shall be deemed to be Contractor.

§ 18 Modifications to this bond are as follows:

Sample

(Space is provided below for additional signatures of added parties, other than those appearing on the cover page.)

CONTRACTOR AS PRINCIPAL

SURETY

Company:

(Corporate Seal)

Company:

(Corporate Seal)

Signature: _____

Name and Title:

Address

Signature: _____

Name and Title:

Address

E – FORM OF PAYMENT APPLICATION

Application and Certificate for Payment

TO OWNER: PROJECT: _____ APPLICATION NO: _____ **Distribution to:**
 PERIOD TO: _____ OWNER
 CONTRACT FOR: _____ ARCHITECT
 CONTRACT DATE: _____ CONTRACTOR
 PROJECT NOS: _____ FIELD
 OTHER

FROM CONTRACTOR: VIA ARCHITECT: _____

CONTRACTOR'S APPLICATION FOR PAYMENT

Application is made for payment, as shown below, in connection with the Contract. AIA Document G703[™], Continuation Sheet, is attached.

1. ORIGINAL CONTRACT SUM \$ _____
 2. NET CHANGE BY CHANGE ORDERS \$ _____
 3. CONTRACT SUM TO DATE (Line 1 ± 2) \$ _____
 4. TOTAL COMPLETED & STORED TO DATE (Column G on G703) \$ _____
 5. RETAINAGE:
 - a. _____ % of Completed Work
(Columns D + E on G703) \$ _____
 - b. _____ % of Stored Material
(Column F on G703) \$ _____
- Total Retainage (Lines 5a + 5b, or Total in Column I of G703) \$ _____

6. TOTAL EARNED LESS RETAINAGE

(Line 4 minus Line 5 Total) \$ _____

7. LESS PREVIOUS CERTIFICATES FOR PAYMENT

(Line 6, from prior Certificate) \$ _____

8. CURRENT PAYMENT DUE

..... \$ _____

9. BALANCE TO FINISH, INCLUDING RETAINAGE

(Line 3 minus Line 6) \$ _____

CHANGE ORDER SUMMARY	ADDITIONS	DEDUCTIONS
Total changes approved in previous months by Owner	\$ _____	\$ _____
Total approved this month	\$ _____	\$ _____
TOTAL	\$ _____	\$ _____
NET CHANGES by Change Order	\$ _____	\$ _____

The undersigned Contractor certifies that to the best of the Contractor's knowledge, information and belief the Work covered by this Application for Payment has been completed in accordance with the Contract Documents, that all amounts have been paid by the Contractor for Work for which previous Certificates for Payment were issued and payments received from the Owner, and that current payment shown herein is now due.

CONTRACTOR:

By: _____ Date: _____
 State of: _____
 County of: _____
 Subscribed and sworn to before me this _____ day of _____
 Notary Public: _____
 My commission expires: _____

ARCHITECT'S CERTIFICATE FOR PAYMENT

In accordance with the Contract Documents, based on on-site observations and the data comprising this application, the Architect certifies to the Owner that to the best of the Architect's knowledge, information and belief the Work has progressed as indicated, the quality of the Work is in accordance with the Contract Documents, and the Contractor is entitled to payment of the AMOUNT CERTIFIED.

AMOUNT CERTIFIED \$ _____

(Attach explanation if amount certified differs from the amount applied. Initial all figures on this Application and on the Continuation Sheet that are changed to conform with the amount certified.)

ARCHITECT:

By: _____ Date: _____
 This Certificate is not negotiable. The AMOUNT CERTIFIED is payable only to the Contractor named herein. Issuance, payment and acceptance of payment are without prejudice to any rights of the Owner or Contractor under this Contract.

CAUTION: You should sign an original AIA Contract Document, on which this text appears in RED. An original assures that changes will not be obscured.



AIA[®] Document G703[™] – 1992

Continuation Sheet

AIA Document G702[™]–1992, Application and Certificate for Payment, or G732[™]–2009, Application and Certificate for Payment, Construction Manager as Adviser Edition, containing Contractor's signed certification is attached.
 In tabulations below, amounts are in US dollars.
 Use Column I on Contracts where variable retainage for line items may apply.

APPLICATION NO:
APPLICATION DATE:
PERIOD TO:
ARCHITECT'S PROJECT NO:

A ITEM NO.	B DESCRIPTION OF WORK	C SCHEDULED VALUE	D WORK COMPLETED		E THIS PERIOD	F MATERIALS PRESENTLY STORED <i>(Not in D or E)</i>	G TOTAL COMPLETED AND STORED TO DATE <i>(D+E+F)</i>	H BALANCE TO FINISH <i>(G - G)</i>	I RETAINAGE <i>(If variable rate)</i>
			FROM PREVIOUS APPLICATION <i>(D + E)</i>	THIS PERIOD					
GRAND TOTAL									

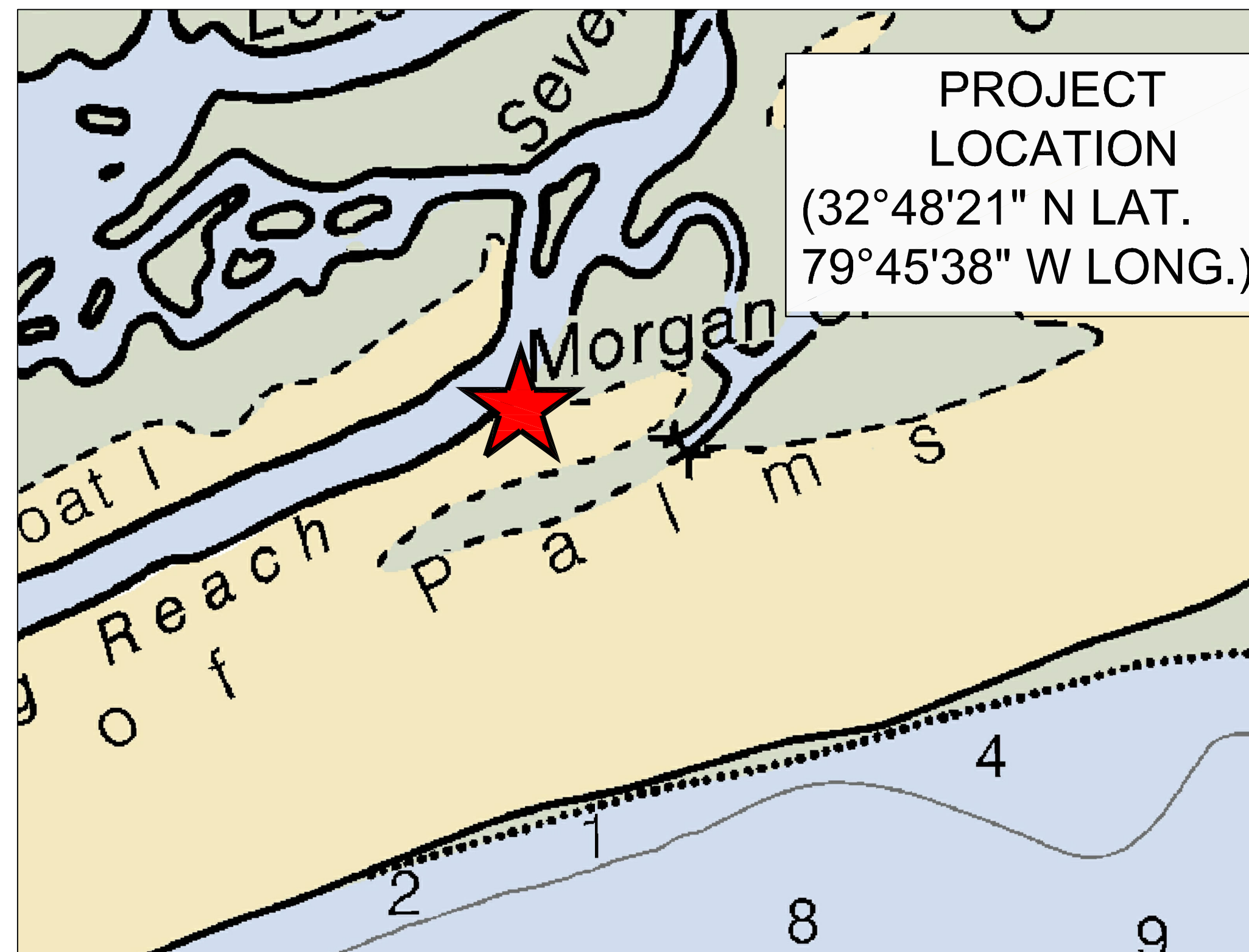
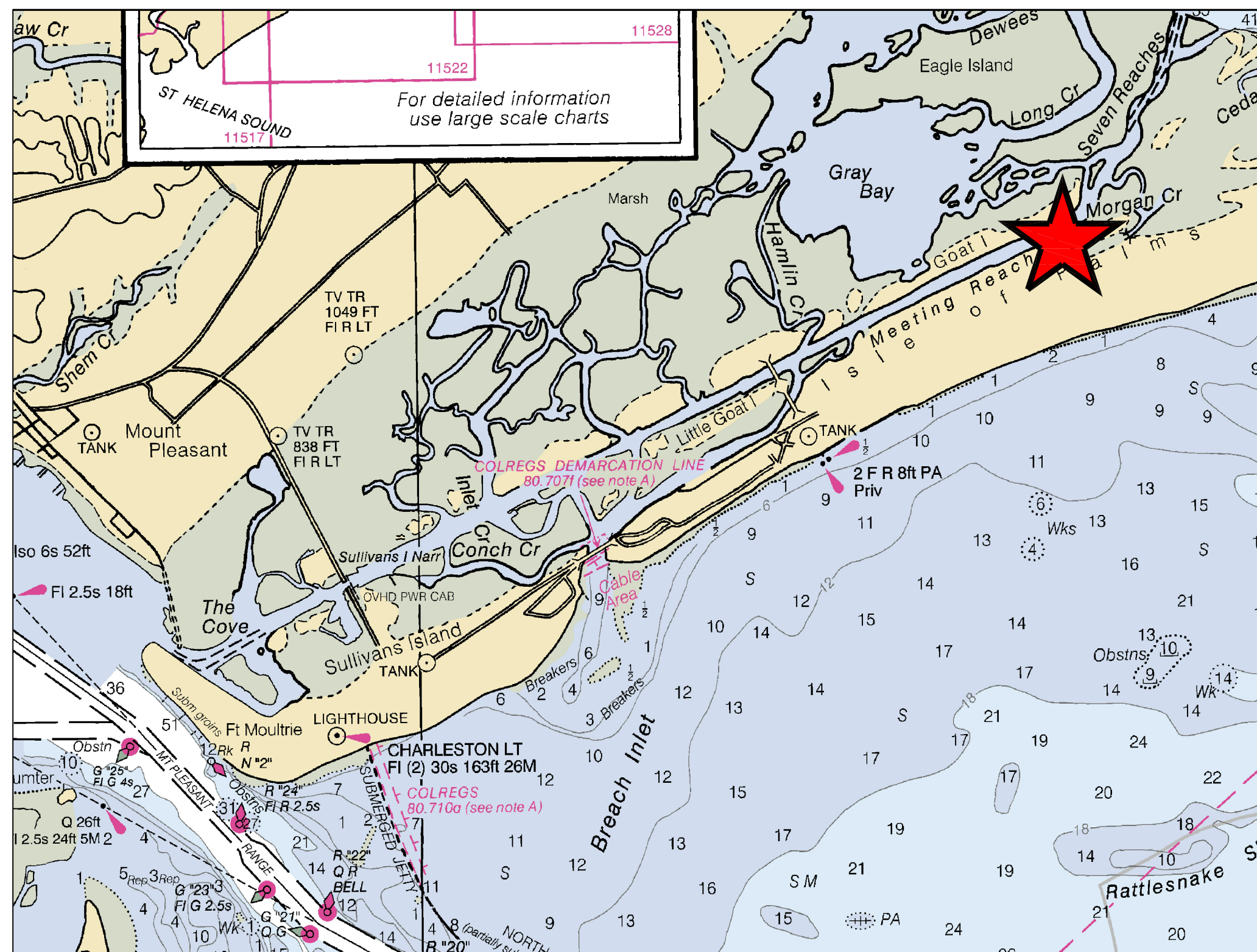
CAUTION: You should sign an original AIA Contract Document, on which this text appears in RED. An original assures that changes will not be obscured.

F – DRAWINGS

FOR BIDDING PURPOSES ONLY
NOT FOR CONSTRUCTION

BID DRAWINGS FOR ISLE OF PALMS MARINA

July 10, 2020



DRAWING INDEX

	COVER SHEET
G1	EXISTING CONDITIONS
M1	DEMOLITION PLAN
M2	PROPOSED OVERALL MARINA PLAN
M3	MARINA BASIN - DIMENSIONAL LAYOUT
M4	DOCK AREA A AND B - DIMENSIONAL LAYOUT
M5	DOCK AREA C - DIMENSIONAL LAYOUT
M6	FUEL DOCK - DIMENSIONAL LAYOUT
M7	GANGWAY ARTICULATION LAYOUT
M8	MARINA BASIN SETTING OUT PLAN
M9	TYPICAL DETAILS
M10	TYPICAL GANGWAY DETAILS
M11	FIXED TIMBER DOCK DETAILS
M12	DESIGN WAVE CONDITIONS
M13	FLOATING DOCK VESSEL OCCUPANCY
M14	PREFERRED PILE PLACEMENT DIAGRAM
E1	NOTES AND LEGEND
E2	ELECTRICAL SITE PLAN
E3	POWER PLAN
E4	ENLARGED POWER PLAN
E5	GROUNDING PLAN
E6	PANEL SCHEDULES
E7	POWER RISER DIAGRAMS
E8	DETAILS
FD1	NOTES, LEGENDS, SCHEDULE AND DETAILS
FD2	FUEL DISPENSING PLAN
FD3	FUEL DISPENSING DETAILS
FP1	NOTES AND LEGEND
FP2	FIRE PROTECTION PLAN
FP3	FIRE PROTECTION PLAN STANDPIPE COVERAGE ZONES
FP4	FIRE PROTECTION PLAN FIRE EXTINGUISHER COVERAGE ZONES
FP5	FIRE PROTECTION DETAILS
FP6	FIRE PROTECTION DETAILS
P1	NOTES, LEGEND, SCHEDULES, DETAILS
P2	PLUMBING PLAN
P3	ENLARGED PLUMBING PLAN
P4	PUMPOUT PLAN
P5	PLUMBING - DETAILS
B1	SITE PLAN BULKHEAD RE-COAT
B2	TYPICAL DETAILS
B3	TYPICAL SITE PHOTOGRAPHS

PREPARED FOR:

CITY OF ISLE OF PALMS
1207 PALM BOULEVARD
ISLE OF PALMS, SC 29451

PROJECT LOCATION:

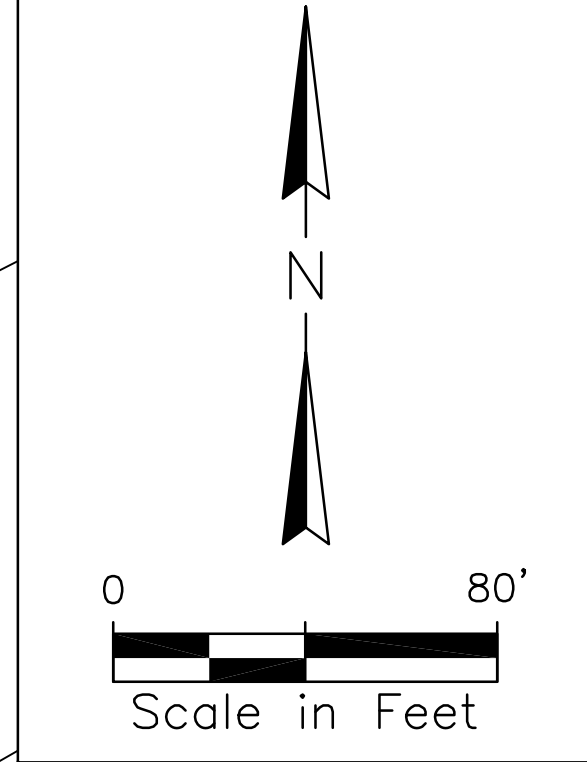
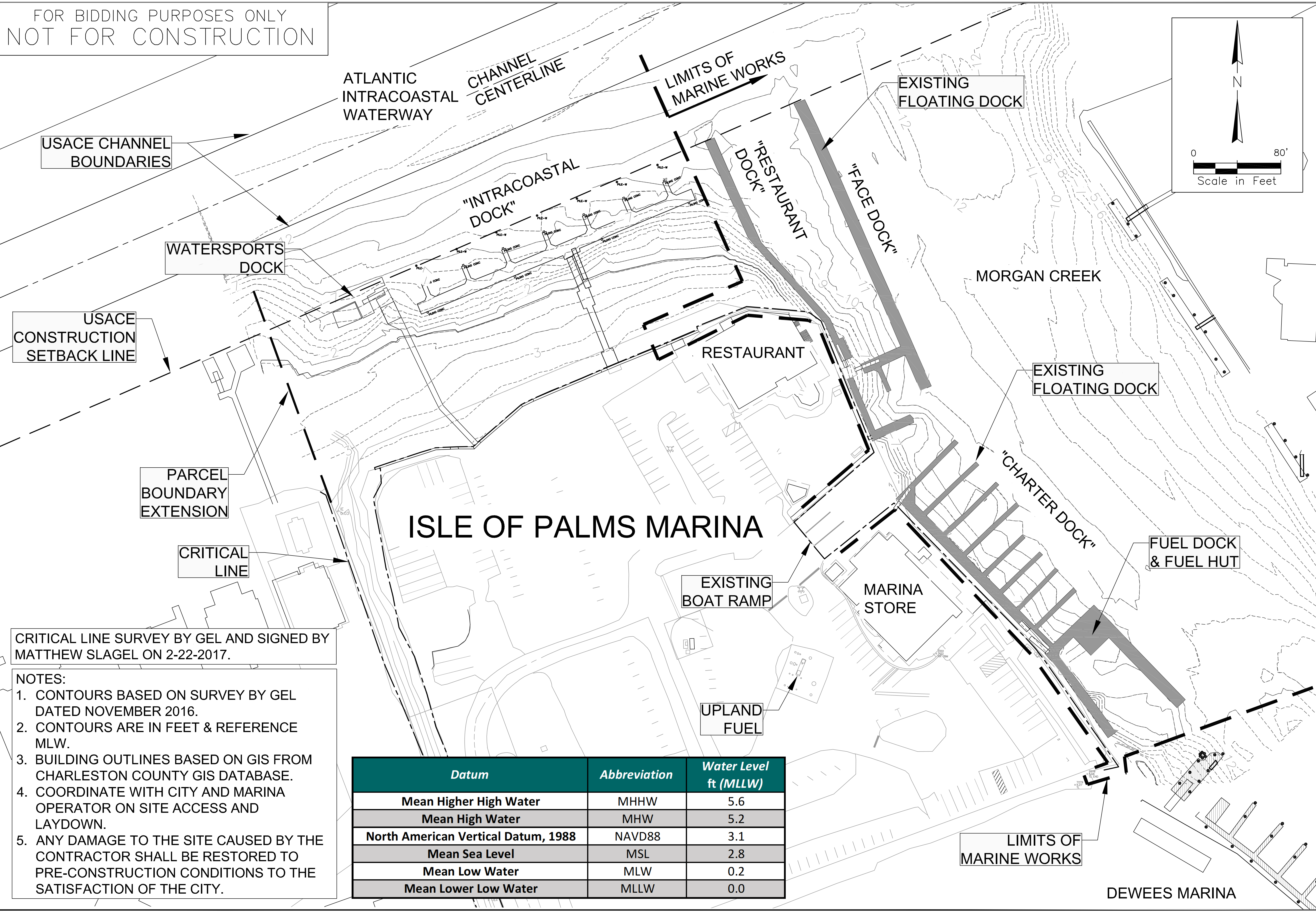
50 41ST AVENUE
ISLE OF PALMS, SC 29451

NOTE: THIS PROJECT IS FUNDED, IN PART, BY THE USFWS
BOATING INFRASTRUCTURE GRANT PROGRAM, ADMINISTERED
BY THE SOUTH CAROLINA DEPARTMENT OF NATURAL
RESOURCES.



PREPARED BY:
ATM
APPLIED TECHNOLOGY & MANAGEMENT, INC.
941 Houston Northcutt Blvd., SUITE 201
Mt. Pleasant, SC. 29464
(843) 414-1040

FOR BIDDING PURPOSES ONLY
NOT FOR CONSTRUCTION



USACE CHANNEL BOUNDARIES

WATERSPORTS DOCK

USACE CONSTRUCTION SETBACK LINE

PARCEL BOUNDARY EXTENSION

CRITICAL LINE

CRITICAL LINE SURVEY BY GEL AND SIGNED BY MATTHEW SLAGEL ON 2-22-2017.

- NOTES:
1. CONTOURS BASED ON SURVEY BY GEL DATED NOVEMBER 2016.
 2. CONTOURS ARE IN FEET & REFERENCE MLW.
 3. BUILDING OUTLINES BASED ON GIS FROM CHARLESTON COUNTY GIS DATABASE.
 4. COORDINATE WITH CITY AND MARINA OPERATOR ON SITE ACCESS AND LAYDOWN.
 5. ANY DAMAGE TO THE SITE CAUSED BY THE CONTRACTOR SHALL BE RESTORED TO PRE-CONSTRUCTION CONDITIONS TO THE SATISFACTION OF THE CITY.

Datum	Abbreviation	Water Level ft (MLLW)
Mean Higher High Water	MHHW	5.6
Mean High Water	MHW	5.2
North American Vertical Datum, 1988	NAVD88	3.1
Mean Sea Level	MSL	2.8
Mean Low Water	MLW	0.2
Mean Lower Low Water	MLLW	0.0

Signature _____
Date _____

REV. No.	DATE	DRAWN CHD BY	BY
4			
3			
2			
1			

DESIGNED: KM
DRAWN: KM
CHECKED: KM
DATE: 07/10/2020
JOB NO. 18-287
SCALE: 1"=40'

ISLE OF PALMS MARINA
ISLE OF PALMS, SC
EXISTING CONDITIONS
CITY OF ISLE OF PALMS, SC

Applied Technology & Management, Inc.
941 Houston Northcut Blvd.
Mt Pleasant SC, SC 29464
(843) 414-1040
ATM

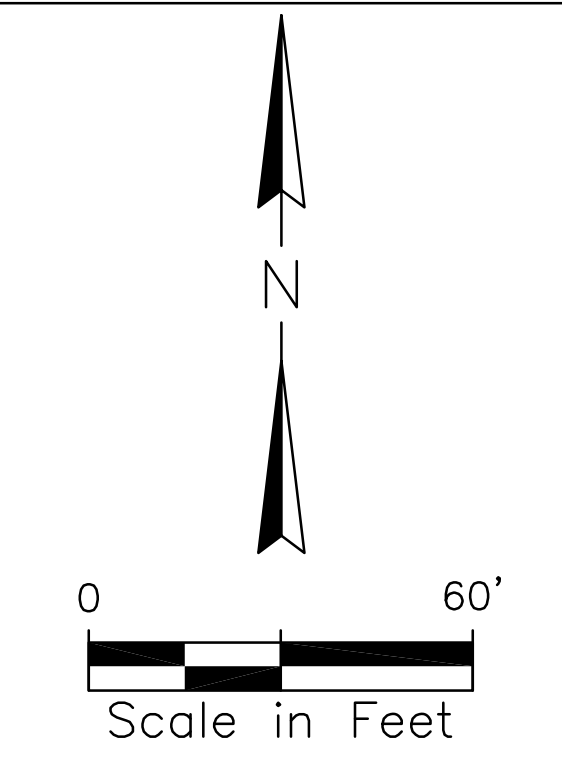
DRAWING NUMBER
G1

FOR BIDDING PURPOSES ONLY
NOT FOR CONSTRUCTION

ATLANTIC
INTRACOASTAL
WATERWAY

LIMITS OF
MARINE WORKS

EXISTING
FLOATING DOCK



Scale: 1/8" = 10'-0" (1/4" = 30'-0")
 Note: THESE DRAWINGS AND DESIGNS ARE STRICTLY CONFIDENTIAL AND PROTECTED BY INTERNATIONAL COPYRIGHT LAW. DETAILS MUST NOT BE DISCLOSED, REPRODUCED OR COMMUNICATED TO A 3rd PARTY IN ANY FORM OR MANNER WITHOUT THE PRIOR WRITTEN APPROVAL OF APPLIED TECHNOLOGY & MANAGEMENT.

USACE
CONSTRUCTION
SETBACK LINE

"RESTAURANT
DOCK"

"FACE DOCK"

REV. No.	DATE	DRAWN BY	CHECKED BY	REMARKS
4				
3				
2				
1				

RESTAURANT

EXISTING BULKHEAD
TO REMAIN

DEMOLISH FIXED
PIER & GANGWAYS.
CAP UTILITIES AS
NECESSARY.

EXISTING
FLOATING DOCK

MORGAN CREEK

ALUMINUM GANGWAYS TO
REMAIN ON SITE AS PROPERTY
OF MARINA OPERATOR

EXISTING BOAT
RAMP TO REMAIN

"CHARTER DOCK"

MARINA
STORE

"FUEL DOCK"



LIMITS OF
MARINE WORKS

DEMOLISH FIXED
PIER & GANGWAYS.
CAP UTILITIES AS
NECESSARY.

DEWEES MARINA

NOTE:
1. ALL PILINGS MUST BE REMOVED BELOW THE MUDLINE.

KEY

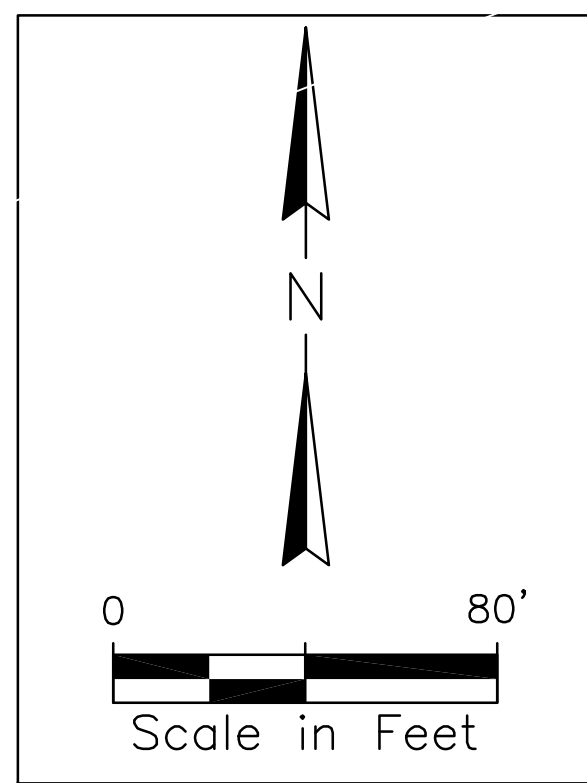
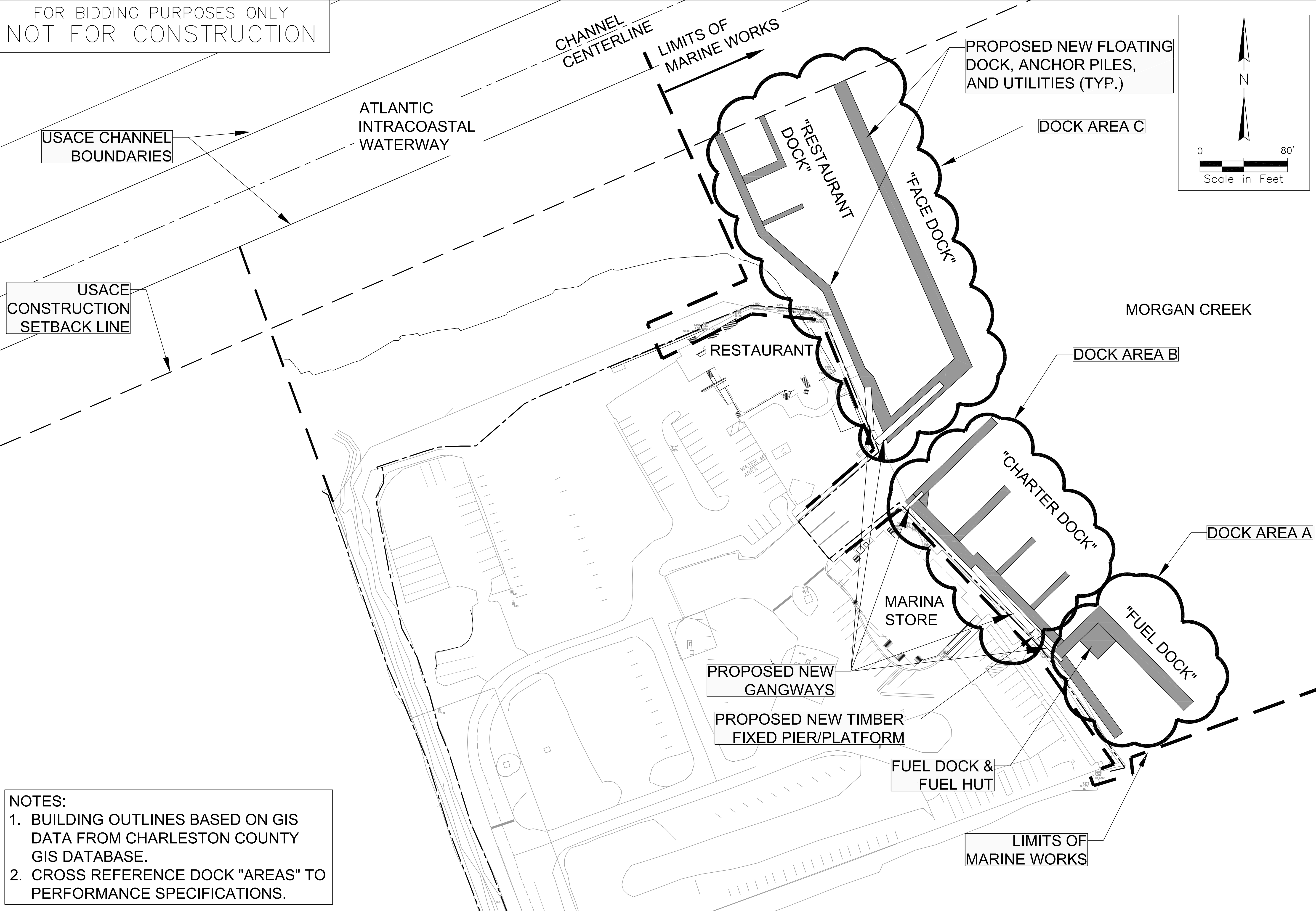
-  FLOATING DOCKS, PILINGS, AND UTILITIES TO BE DEMOLISHED AND DISPOSED OF OFF SITE.
-  FIXED PIER, ALUMINUM GANGWAYS, AND ASSOCIATED UTILITIES TO BE DEMOLISHED. CAP UTILITIES AS NECESSARY. ALUMINUM GANGWAYS TO REMAIN ON SITE.

ISLE OF PALMS MARINA
ISLE OF PALMS, SC
DEMOLITION PLAN
CITY OF ISLE OF PALMS, SC

Applied Technology & Management, Inc.
941 Houston Northwest Blvd.
Mt Pleasant SC, SC 29464
(843) 414-1040
ATM

DRAWING NUMBER
M1

FOR BIDDING PURPOSES ONLY
NOT FOR CONSTRUCTION



- NOTES:**
- 1. BUILDING OUTLINES BASED ON GIS DATA FROM CHARLESTON COUNTY GIS DATABASE.
 - 2. CROSS REFERENCE DOCK "AREAS" TO PERFORMANCE SPECIFICATIONS.

Signature _____
Date _____

REV. No.	DATE	DRAWN BY	CHECKED BY
4			
3			
2			
1			

DESIGNED: KM
DRAWN: JJ
CHECKED: KM
DATE: 07/10/2020
JOB NO. 18-2387
SCALE: 1"=40'

ISLE OF PALMS MARINA
ISLE OF PALMS, SC
**PROPOSED OVERALL
MARINA PLAN**
CITY OF ISLE OF PALMS, SC

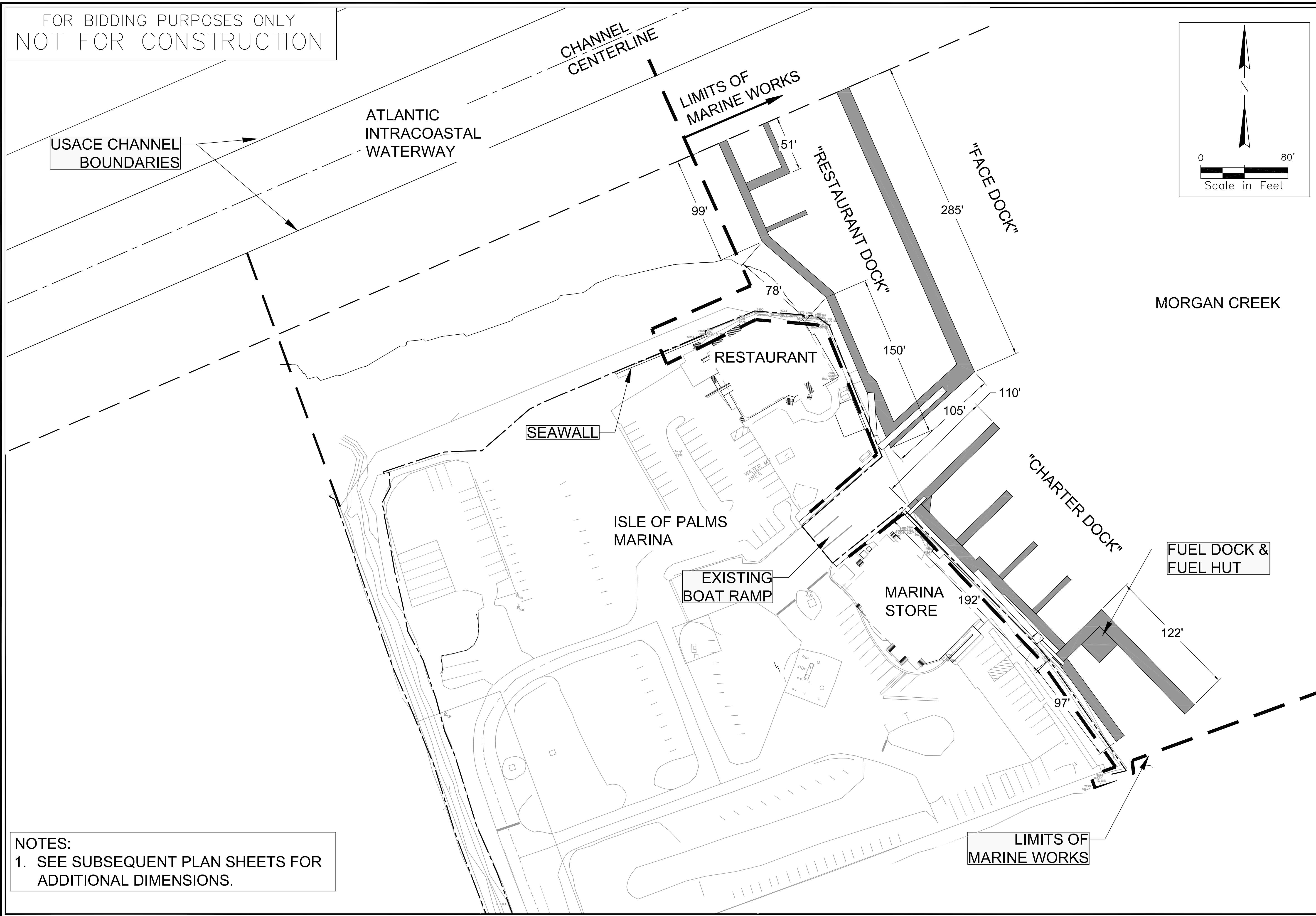
Applied Technology & Management, Inc.
941 Houston Northcut Blvd.
Mt Pleasant SC, SC 29464
(843) 414-1040



DRAWING NUMBER
M2

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NOT FOR CONSTRUCTION



NOTES:
1. SEE SUBSEQUENT PLAN SHEETS FOR ADDITIONAL DIMENSIONS.

Signature _____
Date _____

REV. No.	DATE	DRAWN BY	CHECKED BY	REMARKS
4				
3				
2				
1				

DESIGNED	DRAWN	CHECKED	DATE	JOB NO.	SCALE
KM	JJ	KM	07/10/2020	18-3287	1"=40'

ISLE OF PALMS MARINA
ISLE OF PALMS, SC
MARINA BASIN
DIMENSIONAL LAYOUT
CITY OF ISLE OF PALMS, SC

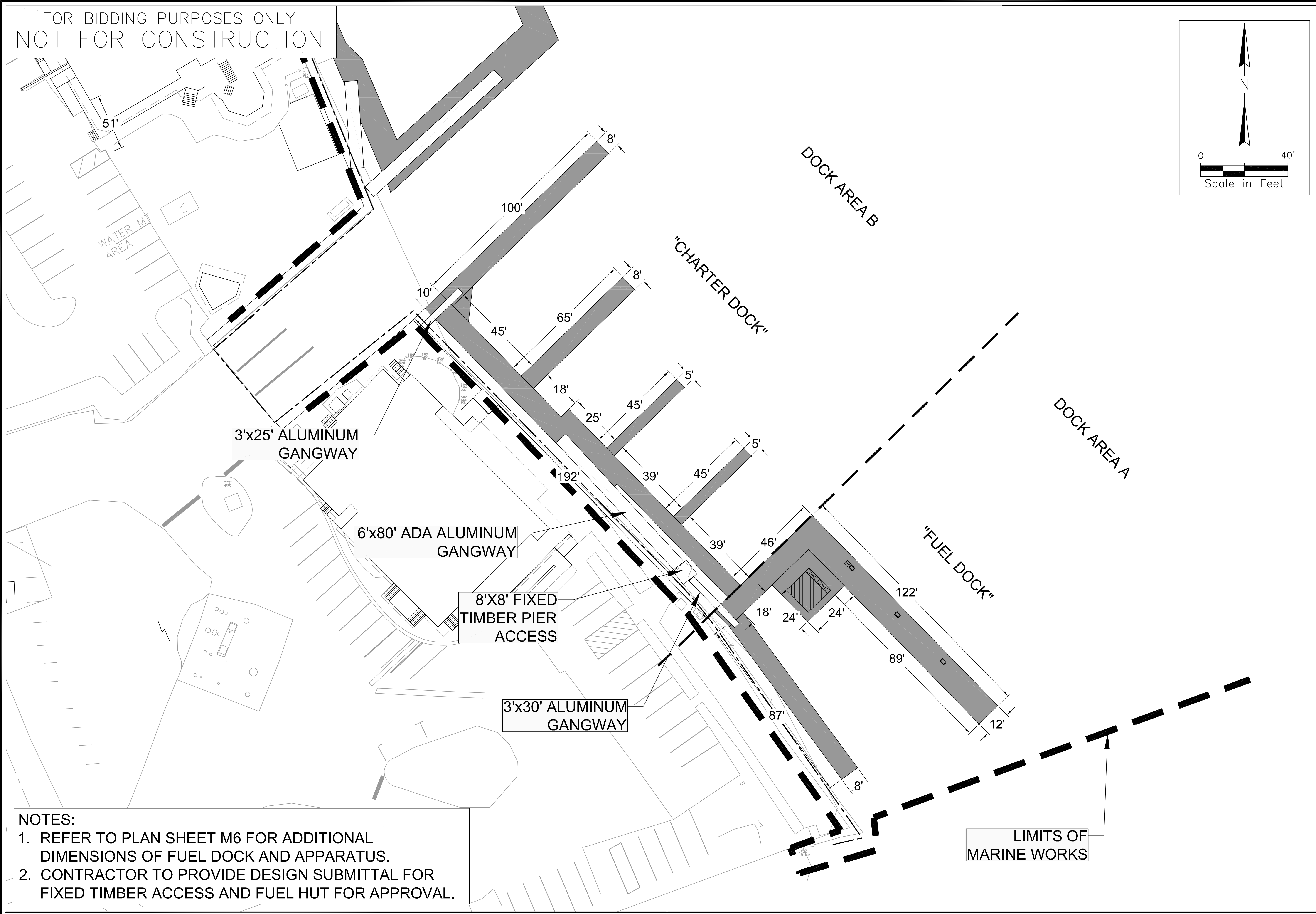
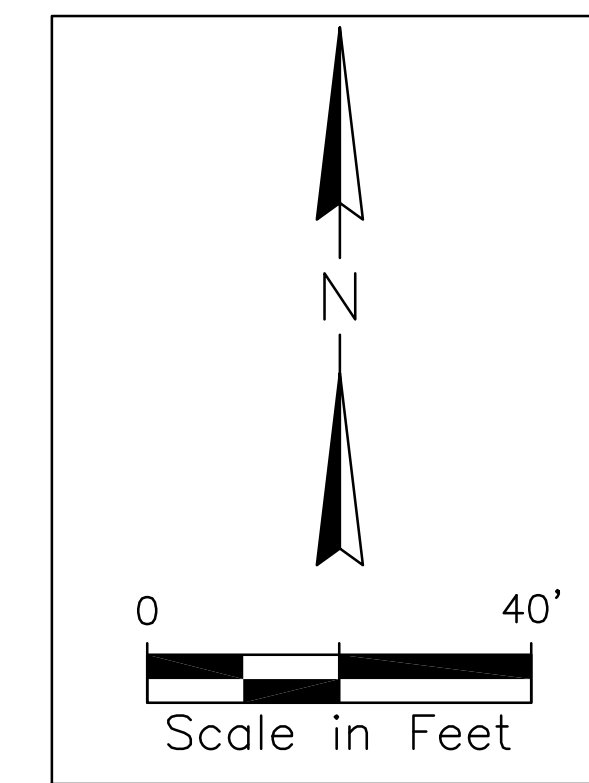
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Mt Pleasant SC, SC 29464
(843) 414-1040



DRAWING NUMBER
M3

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NOTES:
 1. REFER TO PLAN SHEET M6 FOR ADDITIONAL DIMENSIONS OF FUEL DOCK AND APPARATUS.
 2. CONTRACTOR TO PROVIDE DESIGN SUBMITTAL FOR FIXED TIMBER ACCESS AND FUEL HUT FOR APPROVAL.

Signature _____
Date _____

REV. No.	DATE	DRAWN BY	CHECKED BY	REMARKS
4				
3				
2				
1				

DESIGNED	DATE:	07/10/2020
DRAWN	DATE:	18-3237
CHECKED	DATE:	18-3237
SCALE:	1"=20'	

ISLE OF PALMS MARINA
 ISLE OF PALMS, SC
DOCK AREA A AND B
DIMENSIONAL LAYOUT
 CITY OF ISLE OF PALMS, SC

Applied Technology & Management, Inc.
 941 Houston Northcut Blvd.
 Mt Pleasant SC, SC 29464
 (843) 414-1040



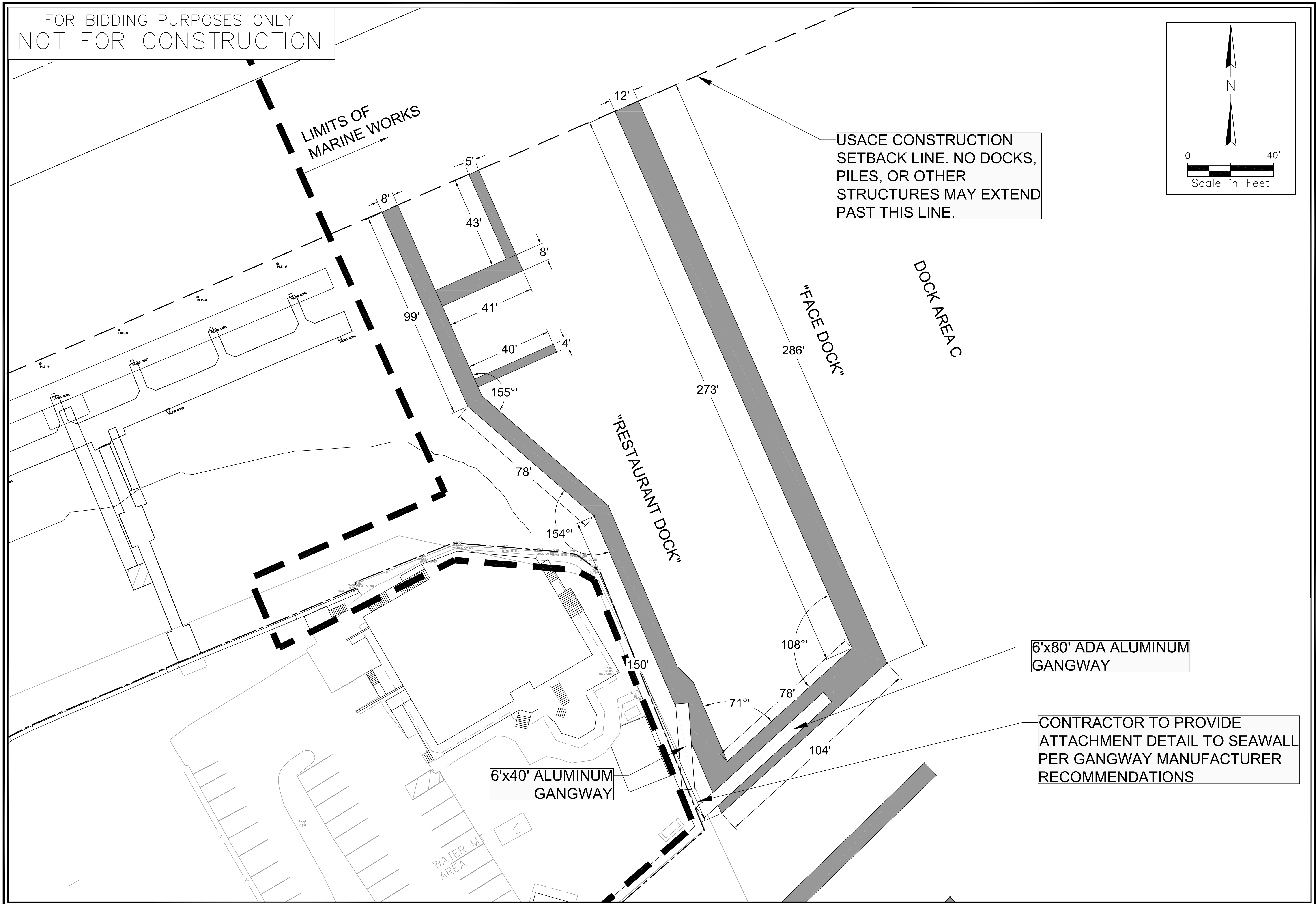
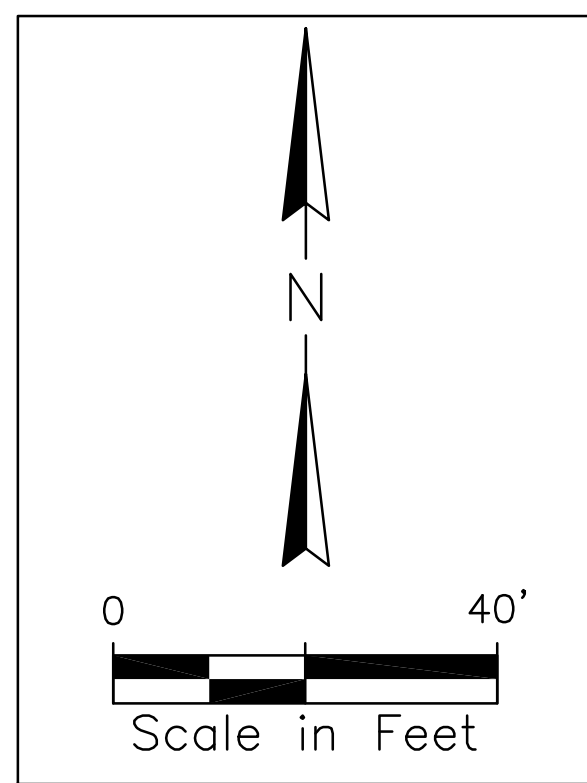
DRAWING NUMBER
M4

Scale: 1"=20' (1/8"=1'-0")
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 7/8/20

FOR BIDDING PURPOSES ONLY
NOT FOR CONSTRUCTION

LIMITS OF
MARINE WORKS

USACE CONSTRUCTION
SETBACK LINE. NO DOCKS,
PILES, OR OTHER
STRUCTURES MAY EXTEND
PAST THIS LINE.



Signature _____
Date _____

REV. No.	DATE	DRAWN BY	CHECKED BY	REMARKS
4				
3				
2				
1				

DESIGNED	DRAWN	CHECKED	DATE	JOB NO.	SCALE
KM	JJ	KM	07/10/2020	18-237	1"=20'

ISLE OF PALMS MARINA
ISLE OF PALMS, SC
DOCK AREA C
DIMENSIONAL LAYOUT
CITY OF ISLE OF PALMS, SC

Applied Technology & Management, Inc.
941 Houston Northcut Blvd.
Mt Pleasant SC, SC 29464
(843) 414-1040



DRAWING NUMBER
M5

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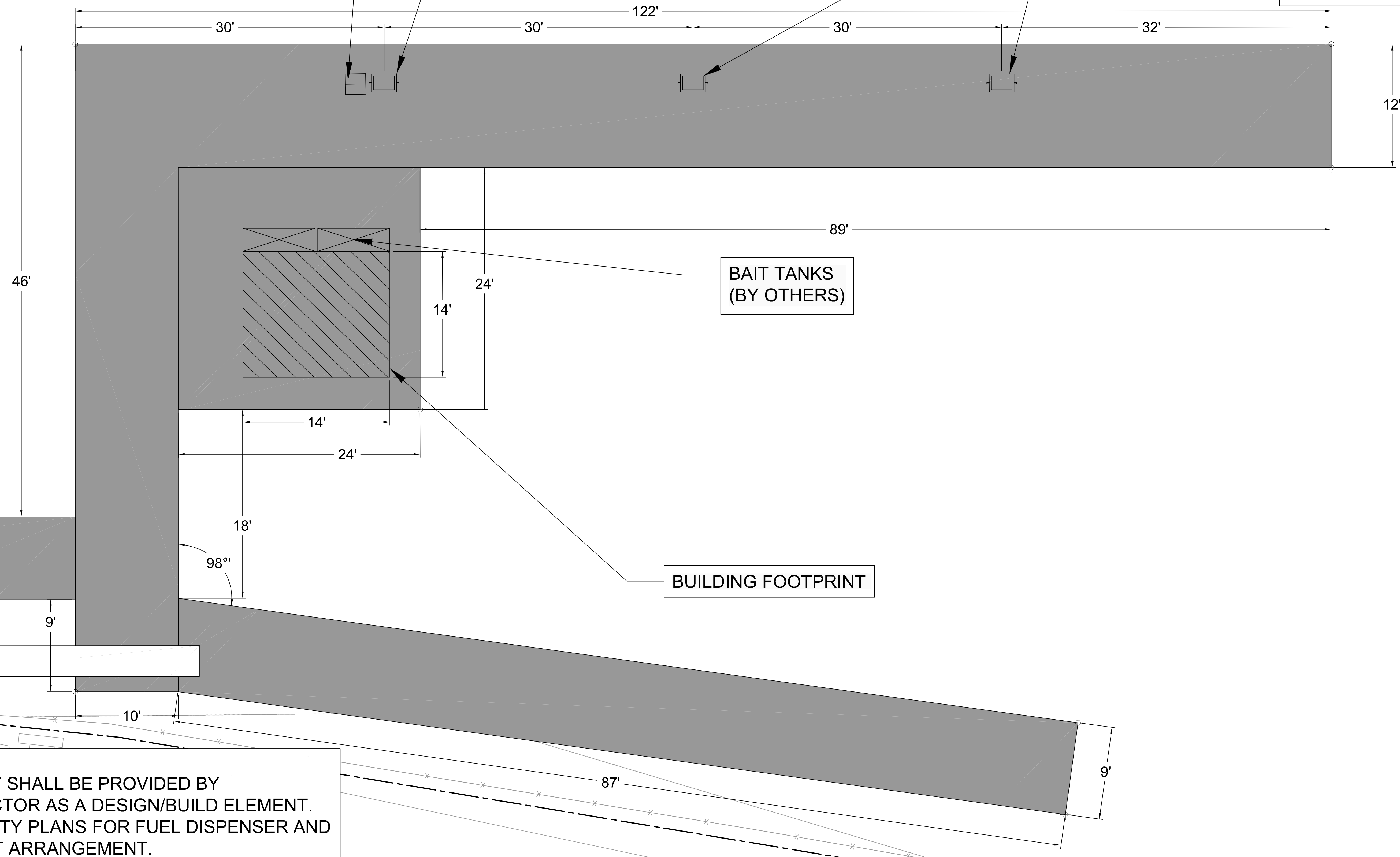
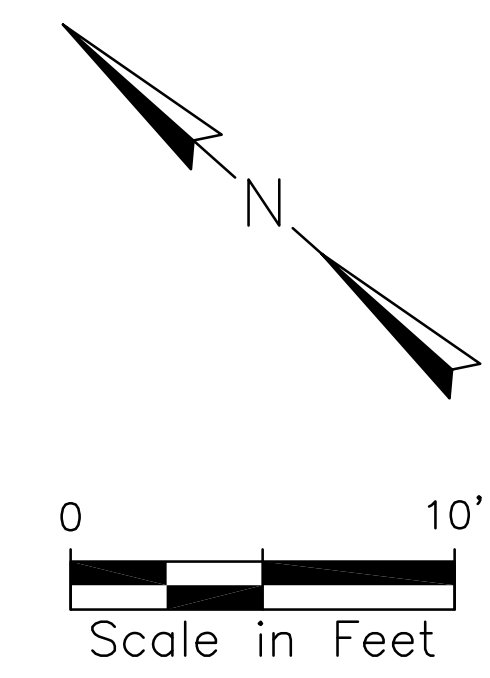
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NOT FOR CONSTRUCTION

DIESEL FUEL
DISPENSER (TYP.)

GASOLINE
DISPENSER
(TYP.)

MARINE PUMPOUT
STATION

FUEL DOCK



BAIT TANKS
(BY OTHERS)

BUILDING FOOTPRINT

NOTES:
1. FUEL HUT SHALL BE PROVIDED BY CONTRACTOR AS A DESIGN/BUILD ELEMENT.
2. SEE UTILITY PLANS FOR FUEL DISPENSER AND PUMPOUT ARRANGEMENT.

Scale: 1/8" = 1'-0" (1/4" = 1'-0")
 Note: THESE DRAWINGS AND DESIGNS ARE STRICTLY CONFIDENTIAL AND PROTECTED BY INTERNATIONAL COPYRIGHT LAW. DETAILS MUST NOT BE DISCLOSED, REPRODUCED OR COMMUNICATED TO A 3rd PARTY IN ANY FORM OR MANNER WITHOUT THE PRIOR WRITTEN APPROVAL OF APPLIED TECHNOLOGY & MANAGEMENT.

Signature _____
Date _____

REV. No.	DATE	DRAWN	CHECKED	BY	REMARKS
4					
3					
2					
1					

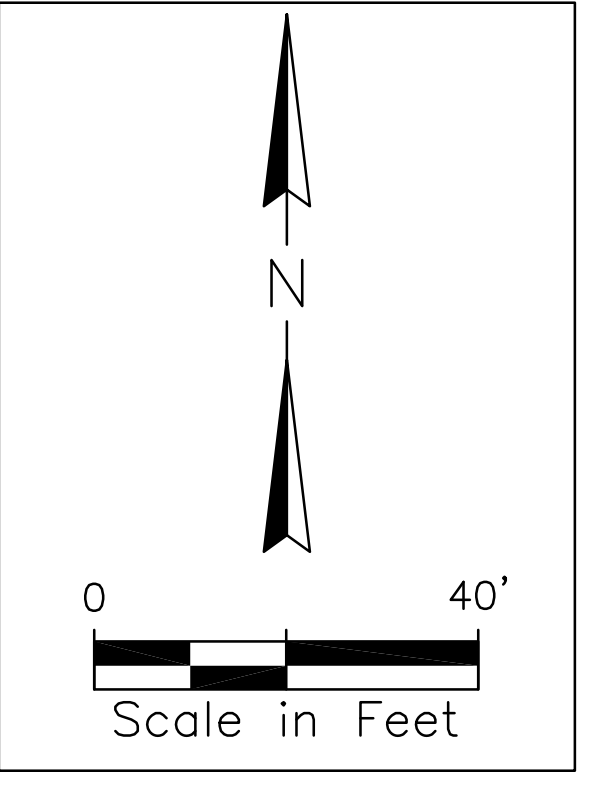
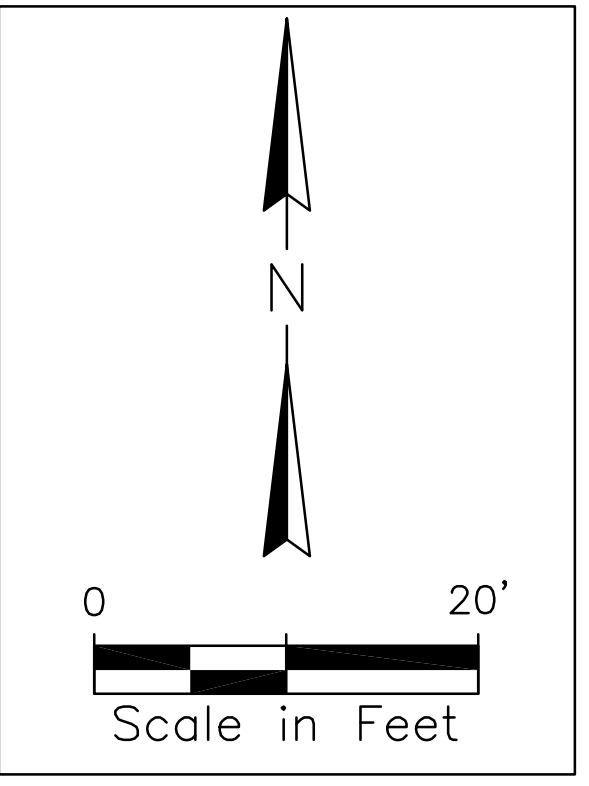
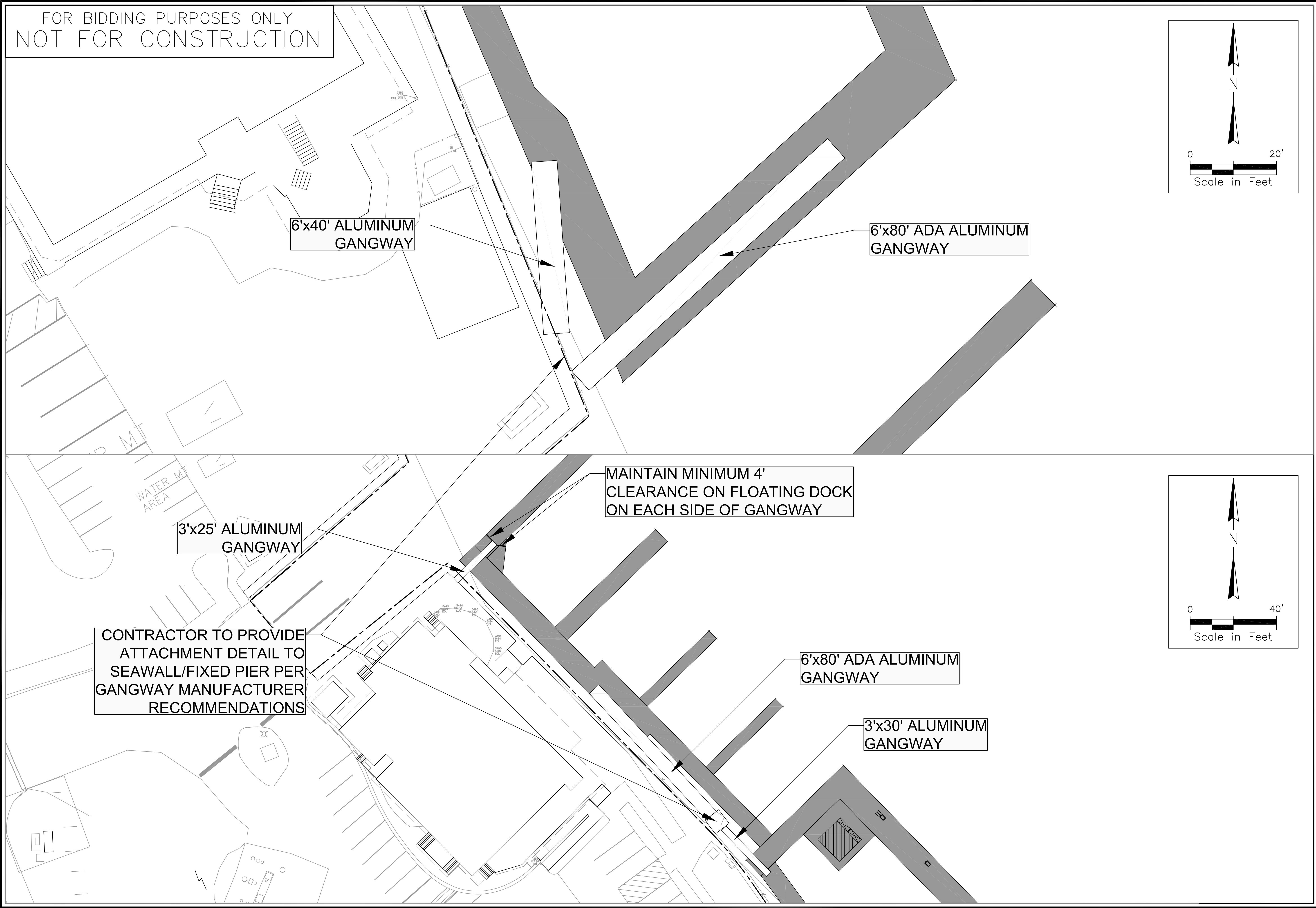
DESIGNED	DATE:	07/10/2020
DRAWN	JOB NO.:	18-2327
CHECKED	SCALE:	1"=5'

ISLE OF PALMS MARINA
ISLE OF PALMS, SC
FUEL DOCK
DIMENSIONAL LAYOUT
CITY OF ISLE OF PALMS, SC

Applied Technology & Management, Inc.
941 Houston Northcut Blvd.
Mt Pleasant SC, SC 29464
(843) 414-1040

DRAWING NUMBER
M6

FOR BIDDING PURPOSES ONLY
NOT FOR CONSTRUCTION



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Signature _____
Date _____

REV. No.	DATE	DRAWN BY	CHECKED BY	REMARKS
4				
3				
2				
1				

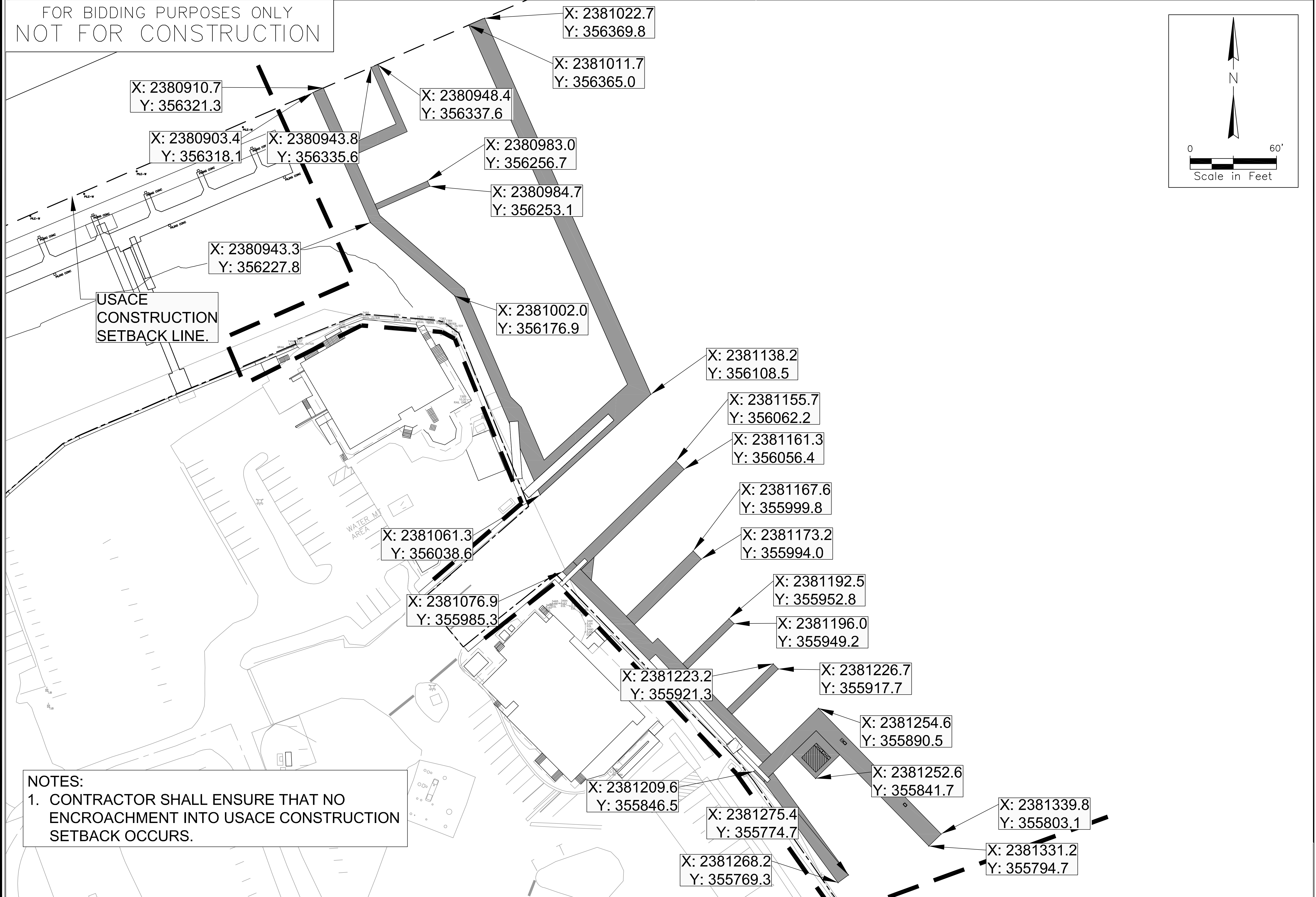
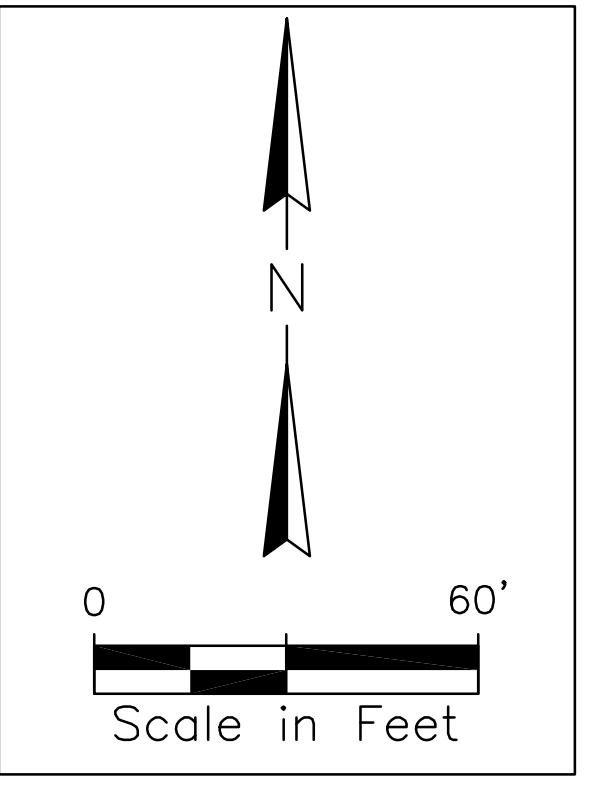
DESIGNED	DRAWN	CHECKED	DATE	JOB NO.	SCALE
KM	JJ	KM	07/10/2020	18-2327	

ISLE OF PALMS MARINA
ISLE OF PALMS, SC
GANGWAY ARTICULATION LAYOUT
CITY OF ISLE OF PALMS, SC

Applied Technology & Management, Inc.
941 Houston Northcut Blvd.
Mt Pleasant SC, SC 29464
(843) 414-1040
ATM

DRAWING NUMBER
M7

FOR BIDDING PURPOSES ONLY
NOT FOR CONSTRUCTION



X: 2380910.7
Y: 356321.3

X: 2380903.4
Y: 356318.1

X: 2380943.8
Y: 356335.6

X: 2380943.3
Y: 356227.8

X: 2380948.4
Y: 356337.6

X: 2380983.0
Y: 356256.7

X: 2380984.7
Y: 356253.1

X: 2381022.7
Y: 356369.8

X: 2381011.7
Y: 356365.0

X: 2381002.0
Y: 356176.9

X: 2381138.2
Y: 356108.5

X: 2381155.7
Y: 356062.2

X: 2381161.3
Y: 356056.4

X: 2381167.6
Y: 355999.8

X: 2381173.2
Y: 355994.0

X: 2381061.3
Y: 356038.6

X: 2381192.5
Y: 355952.8

X: 2381196.0
Y: 355949.2

X: 2381076.9
Y: 355985.3

X: 2381223.2
Y: 355921.3

X: 2381226.7
Y: 355917.7

X: 2381254.6
Y: 355890.5

X: 2381252.6
Y: 355841.7

X: 2381209.6
Y: 355846.5

X: 2381275.4
Y: 355774.7

X: 2381339.8
Y: 355803.1

X: 2381268.2
Y: 355769.3

X: 2381331.2
Y: 355794.7

USACE
CONSTRUCTION
SETBACK LINE.

WATER M.
AREA

NOTES:
1. CONTRACTOR SHALL ENSURE THAT NO ENCROACHMENT INTO USACE CONSTRUCTION SETBACK OCCURS.

Signature _____
Date _____

REV. No.	DATE	DRAWN BY	CHECKED BY	REMARKS
4				
3				
2				
1				

DESIGNED	DRAWN	CHECKED	DATE	JOB NO.	SCALE
KM	JJ	KM	07/10/2020	18-3287	1"=30'

ISLE OF PALMS MARINA
ISLE OF PALMS, SC
MARINA BASIN
SETTING OUT PLAN
CITY OF ISLE OF PALMS, SC

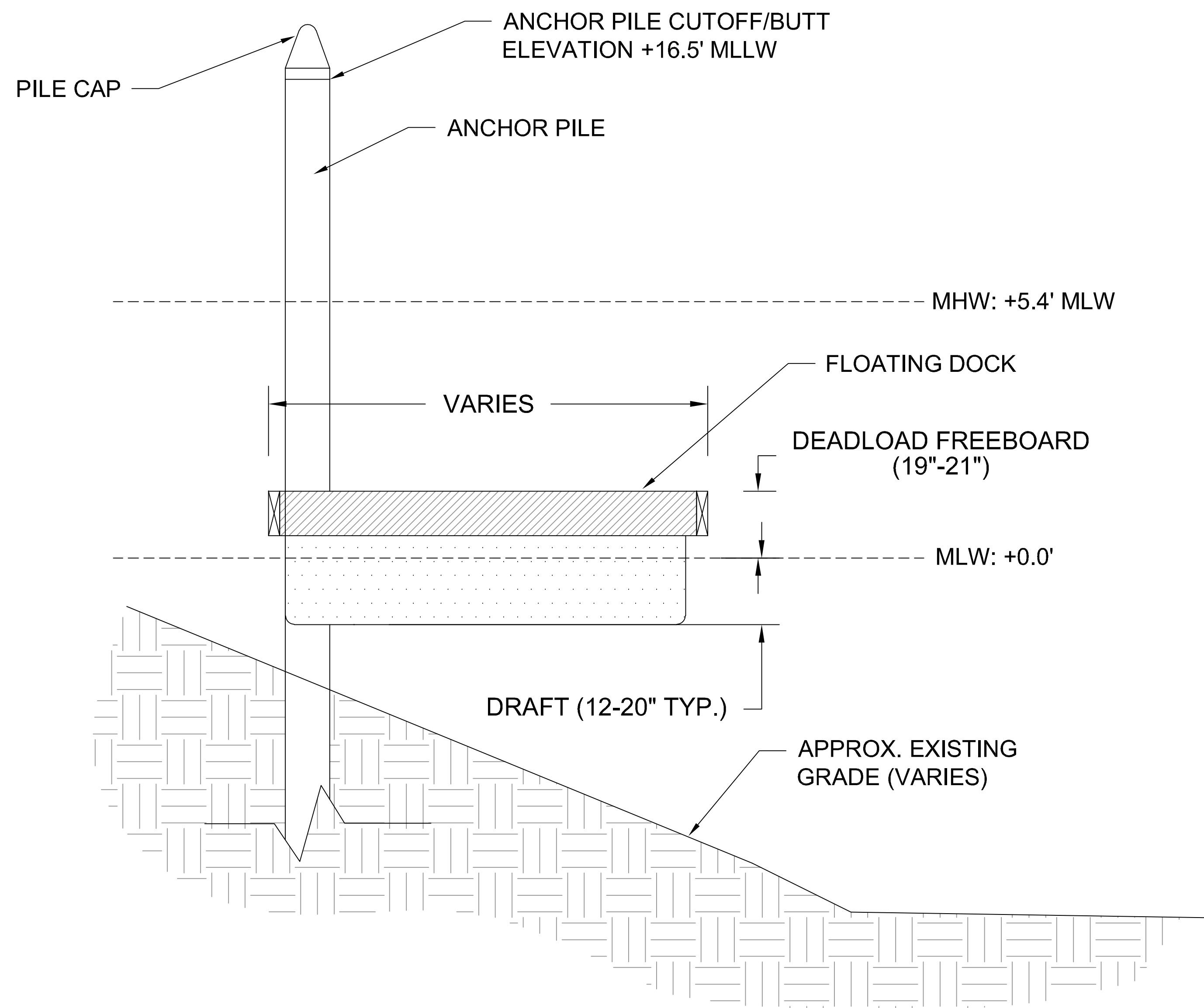
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Mt Pleasant SC, SC 29464
(843) 414-1040



DRAWING NUMBER
M8

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TYPICAL FLOATING DOCK SECTION

NOT TO SCALE

FOR BIDDING PURPOSES ONLY
NOT FOR CONSTRUCTION



BIG SIGN NOTES:

- A. FURNISH AND INSTALL BOATING INFRASTRUCTURE GRANT (BIG) SIGN.
- B. PROVIDE SHOP DRAWINGS FOR REVIEW AND APPROVAL PRIOR TO INSTALLATION.
- C. COORDINATE PLACEMENT WITH DESIGN CRITERIA PROFESSIONAL.

Signature _____
Date _____

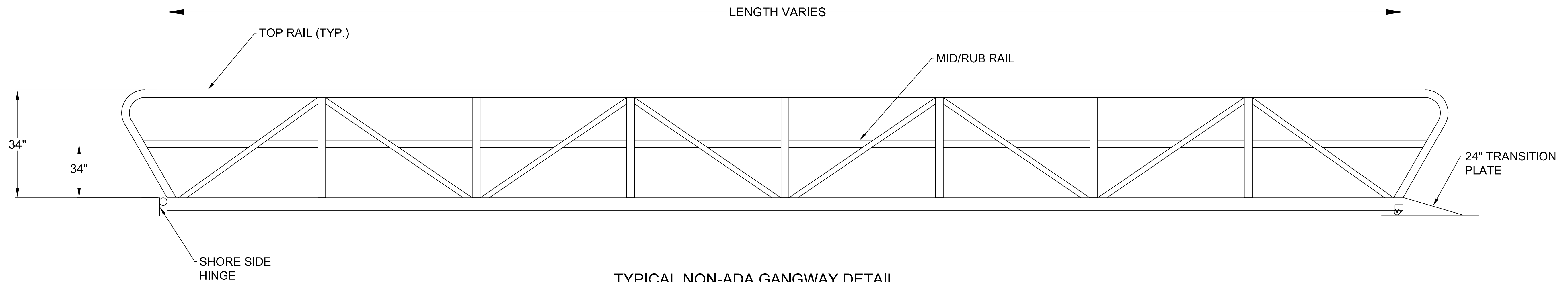
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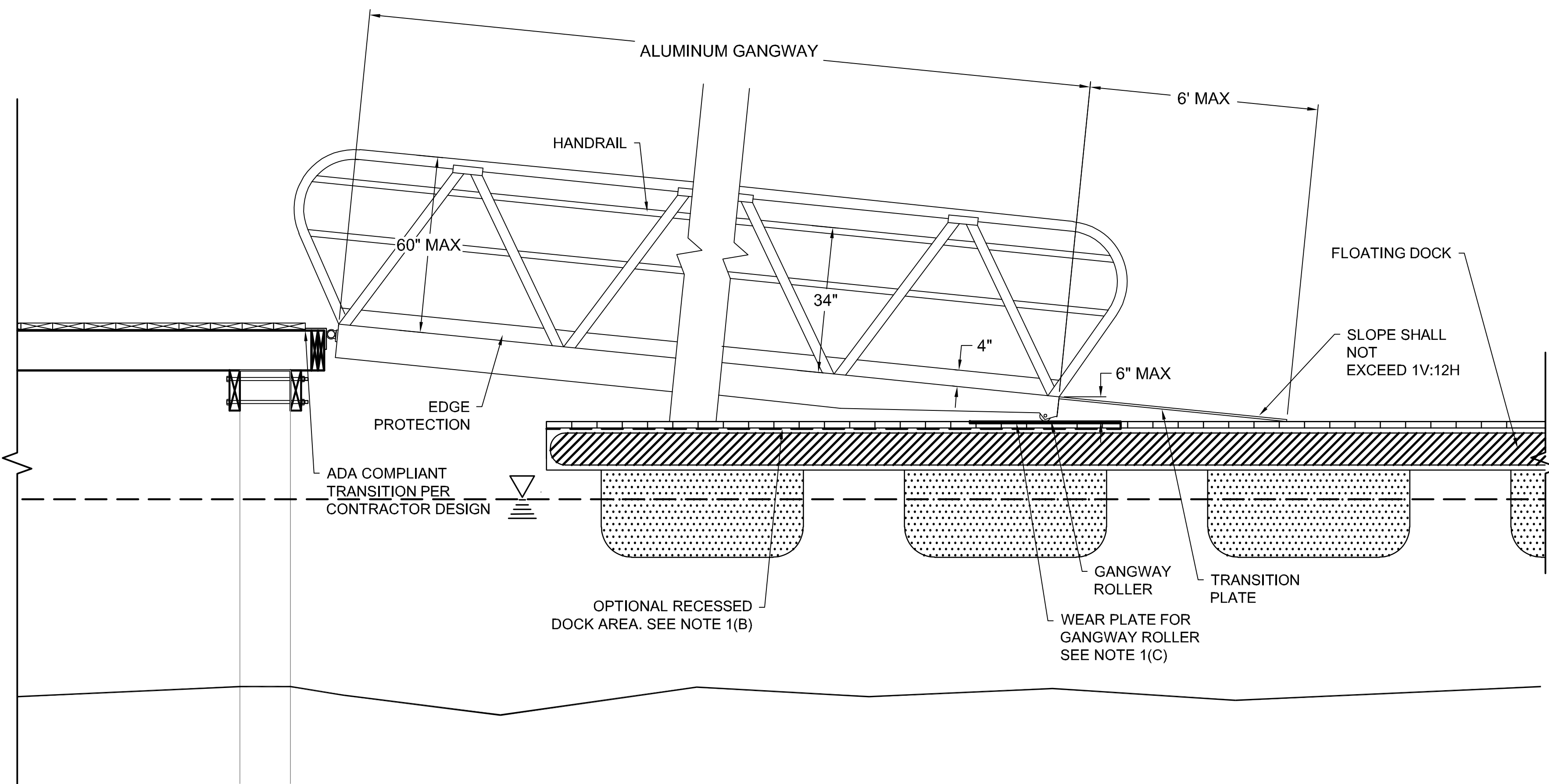
ISLE OF PALMS MARINA
ISLE OF PALMS, SC
TYPICAL DETAILS
CITY OF ISLE OF PALMS, SC

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TYPICAL NON-ADA GANGWAY DETAIL
NOT TO SCALE



TYPICAL ADA GANGWAY DETAIL
NOT TO SCALE

DETAIL NOTES:

1. THE CONTRACTOR SHALL DEVELOP GANGWAY DESIGN TO MEET THE FOLLOWING MINIMUM CRITERIA:
 - A. MAX. LENGTH OF TRANSITION PLATE SHALL BE 6 FT.
 - B. TRANSITION PLATE/GANGWAY HINGE SHALL HAVE A MAX. HEIGHT ABOVE FLOATING DOCK DECK SURFACE OF 6 INCHES. FLOATING DOCK DECK SECTION MAY BE MODIFIED (RECESSED) IN THIS AREA TO ACCOMMODATE MAXIMUM TRANSITION PLATE HEIGHT.
 - C. WEAR PLATE ON DOCK TO EXTEND MIN 2'-0" EACH SIDE WHEN ROLLERS CONTACT AT MID TIDE.
 - D. ADD ALUMINUM HANDRAIL TO COMPLY WITH ADAAG SPECIFICATIONS. WELD HANDRAIL TO EXISTING ALUMINUM STRUCTURE. TOP OF GRIPPING SURFACE HANDRAIL SHALL BE 34" ABOVE WALKING SURFACE. DIAMETER OF GRIPPING SURFACE SHALL BE 1 1/4" - 1 1/2". HANDRAIL MUST WITHSTAND 250 POUND LOAD, ANY DIRECTION.
 - E. ADD ALUMINUM EDGE PROTECTION, MIN. 4" HIGH AND SHALL BE WELDED TO GANGWAY.
 - F. DESIGNATED ADA GANGWAYS MUST BE FULLY ADA COMPLIANT, INCLUDING TRANSITIONS.
 - G. CONSIDER HORIZONTAL MOVEMENT OF DOCK SYSTEMS IN GANGWAY DESIGN AND GANGWAY ATTACHMENT DESIGN.
 - H. TOP CHORD/STRUCTURAL ELEMENT OF GANGWAY SHALL NOT EXCEED 60" ABOVE WALKING SURFACE.
 - I. NON-ADA GANGWAYS SHALL BE SIMILAR IN CONSTRUCTION, BUT MAY OMIT THE EDGE PROTECTION, MAY HAVE SHORTER TRANSITION PLATES, AND MAY EXCEED THE 1:12 MAXIMUM SLOPE

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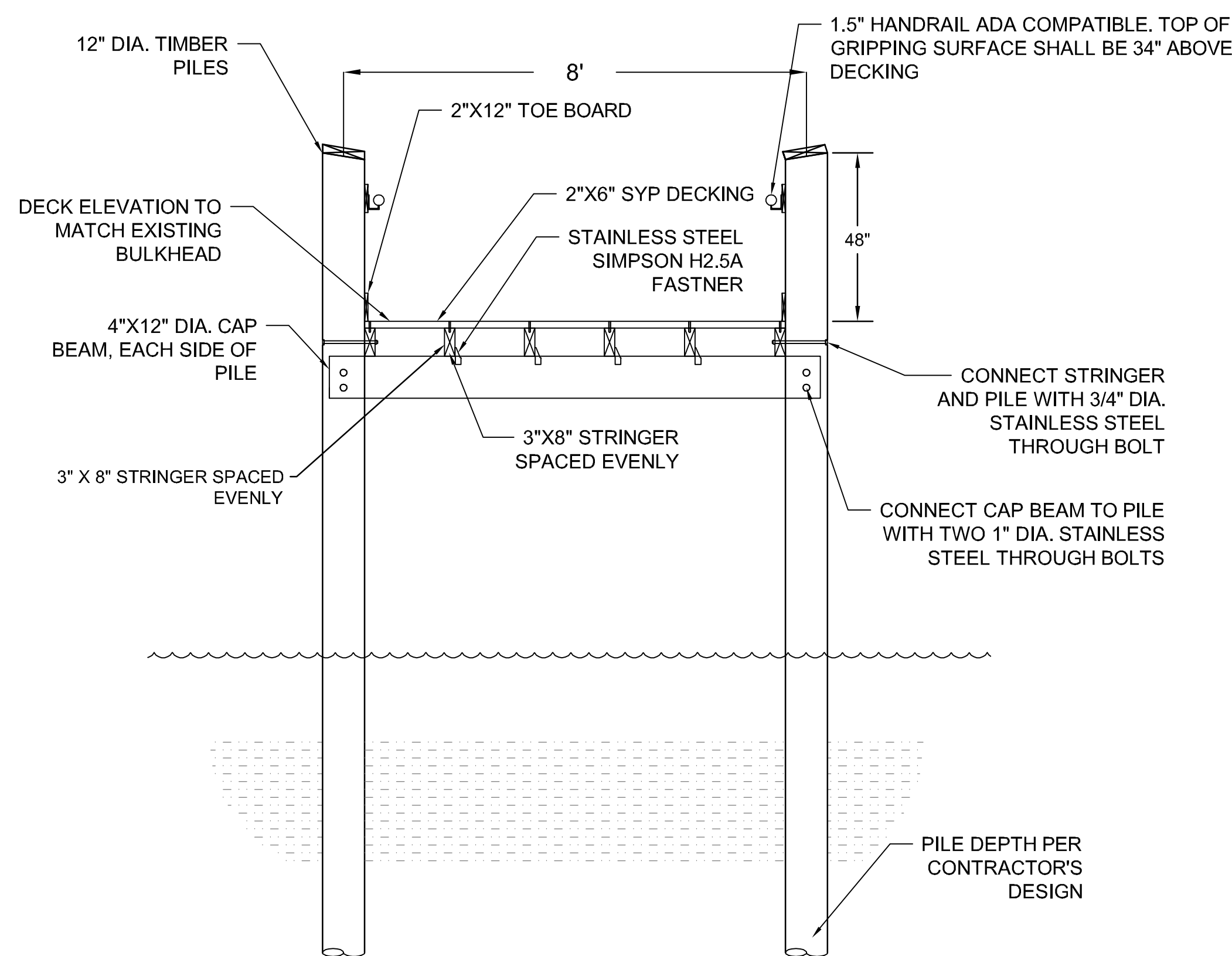
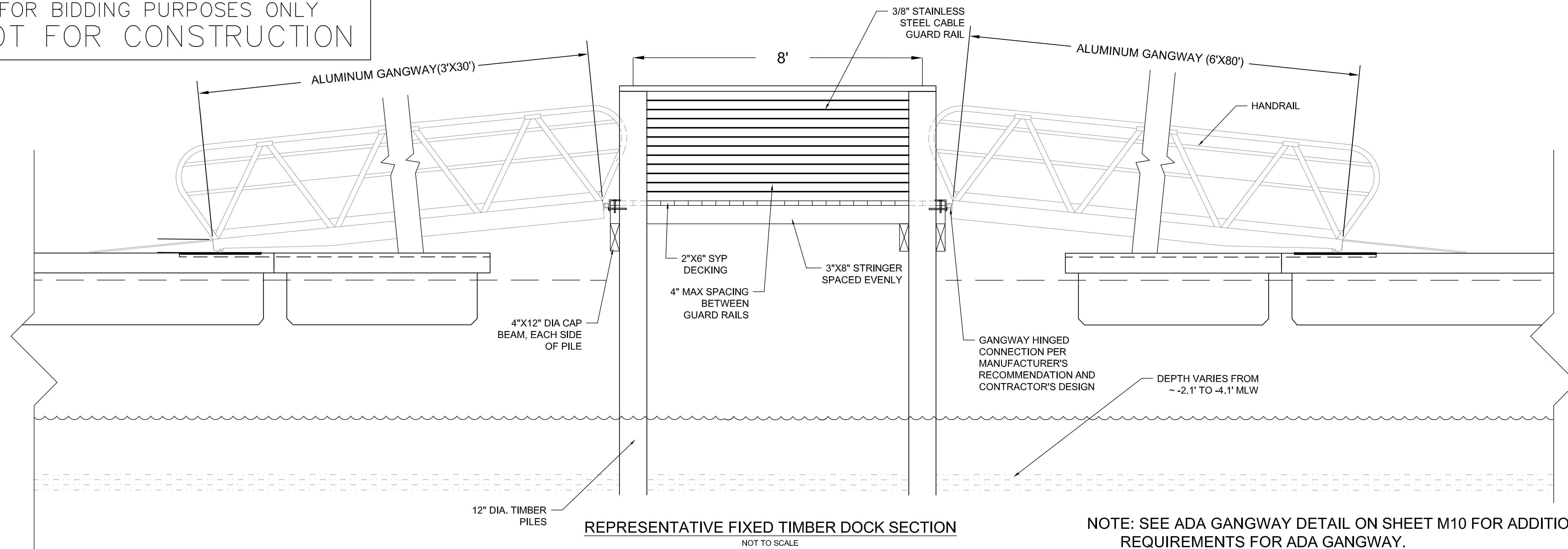
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KM	JJ	KM
DATE: 07/10/2020	DATE: 18/3/2021	DATE: 18/3/2021
JOB NO. 183287	SCALE:	

ISLE OF PALMS MARINA
ISLE OF PALMS, SC
TYPICAL GANGWAY DETAILS
CITY OF ISLE OF PALMS, SC

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FIXED TIMBER PIERS - CONTRACTOR TO PROVIDE DESIGN SUBMITTAL FOR FIXED TIMBER ACCESS FOR APPROVAL AND PROJECT RECORD.

1.0 MATERIALS

1.1 WOOD PILE

- 1.1.1 SOUTHERN YELLOW PINE, ASTM D25
- 1.1.2 2.5 CCA PRESSURE PRESERVATIVE TREATED OR AS SPECIFIED BY AWPA.
- 1.1.3 PILES SHALL BE VISUALLY STRAIGHT WITHOUT SPLITS OR VOIDS. PILES SHALL HAVE A CONSISTENT TAPER NOT EXCEEDING 3 INCHES FROM THE BUTT TO THE TIP.
- 1.1.4 WOOD PILES SHALL BE DRIVEN AS REQUIRED BY THE GEOTECHNICAL, AND/OR CONTRACTOR'S ENGINEER. PILE SPLICES SHALL NOT BE PERMITTED.

1.2 PIER CAP, BEAMS, STRINGERS, LEDGERS, AND BRACING

- 1.2.1 SOUTHERN YELLOW PINE, NO. 1 MARINE GRADE
- 1.2.2 S4S - SURFACED FOUR SIDES
- 1.2.3 0.6 CCA PRESSURE PRESERVATIVE TREATED FOR BEAMS, STRINGERS, AND LEDGERS OR AS SPECIFIED BY AWPA.
- 1.2.4 2.5 CCA PRESSURE PRESERVATIVE TREATED FOR BRACING LOCATED BELOW MEAN HIGH WATER ELEVATION

1.3 WOOD PIER DECKING

- 1.3.1 SOUTHERN YELLOW PINE, NO. 1, DENSE
- 1.3.2 S4S - SURFACED FOUR SIDES
- 1.3.3 COPPER AZOLE (CA) PRESSURE PRESERVATIVE TREATED FOR GROUND CONTACT OR AS SPECIFIED BY AWPA. MICRONIZED COPPER AZOLE (MCA) IS NOT PERMITTED.
- 1.3.4 DECK FASTENERS SHALL BE TYPE 316 STAINLESS STEEL #10 BUGLE HEAD SQUARE DRIVE SCREWS WITH A MINIMUM 2 INCH PENETRATION INTO STRINGERS.
- 1.3.5 DECK BOARD SPACING SHALL BE IN ACCORDANCE WITH THE SOUTHERN PINE COUNCIL'S RECOMMENDATIONS FOR INSTALLATION OF TREATED DECKING BASED ON THE DECK BOARD WIDTH DURING INSTALLATION.
 - 1.3.5.1 5 5/8" WIDTH OR LESS (WET OR DRY): 1/16" MINIMUM TO 1/8" MAXIMUM
 - 1.3.5.2 5 3/4" WIDTH (WET): BUTT BOARDS TOGETHER
 - 1.3.5.3 OVER 5 3/4" WIDTH (WET): ALLOW DRYING PRIOR TO INSTALL
- 1.3.6 DECKING OVERHANG SHOULD NOT EXCEED 4 INCHES.
- 1.3.7 RASP OR SAND ENDS AND EDGES OF DECKING AROUND PERIMETER OF EACH PIER TO REMOVE ALL BURRS, SPLINTERS, AND SHARP EDGES.
- 1.3.8 FINISHED DECK SURFACE AT ACCEPTANCE AND PRIOR TO 1 YEAR FOLLOWING ACCEPTANCE SHALL NOT HAVE HORIZONTAL GAPS LARGER THAN 1/2". VERTICAL ELEVATION DIFFERENCE SHALL NOT EXCEED 1/4".

1.4 FASTENERS AND CONNECTORS

- 1.4.1 ALL BOLTS, SCREWS, THREADED RODS, NAIL, WASHERS, HEX NUTS, CONNECTORS, AND OTHER HARDWARE SHALL BE TYPE 316 STAINLESS STEEL.
- 1.4.2 BOLTED CONNECTIONS SHALL CONSIST OF A HEX NUT (OR BOLT HEAD) AND ROUND WASHER AT EACH END. AFTER INSTALLATION, BOLTED CONNECTIONS SHALL BE CHECKED FOR TIGHTNESS AND PROTRUDING BOLT ENDS SHALL BE CUT OFF 1 INCH BEYOND THE NUT.
- 1.4.3 DECK SCREWS SHALL BE ALIGNED, UNIFORMLY SPACED, AND SET FLUSH TO ALLOW FOR A SMOOTH SURFACE.

Scale: 1/8" = 1'-0" (1/4" = 1'-0")
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 DATE: 07/10/2020
 JOB NO. 18A3287
 SCALE:

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Date _____

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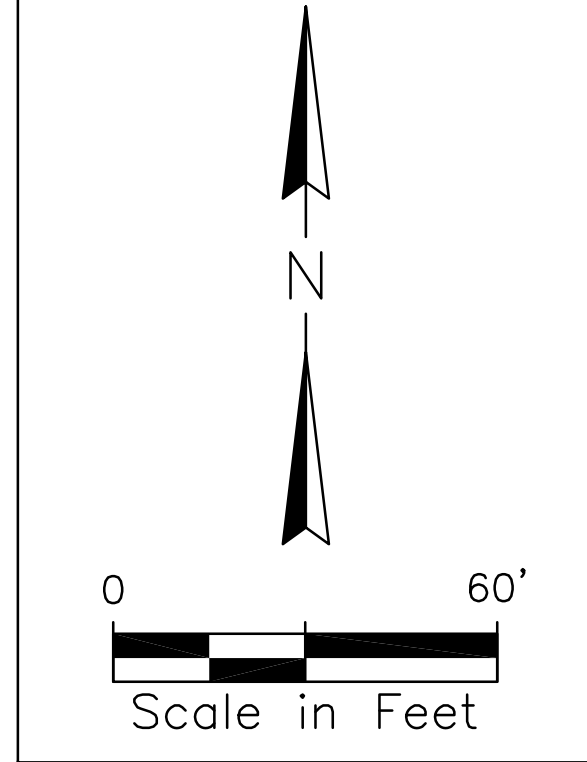
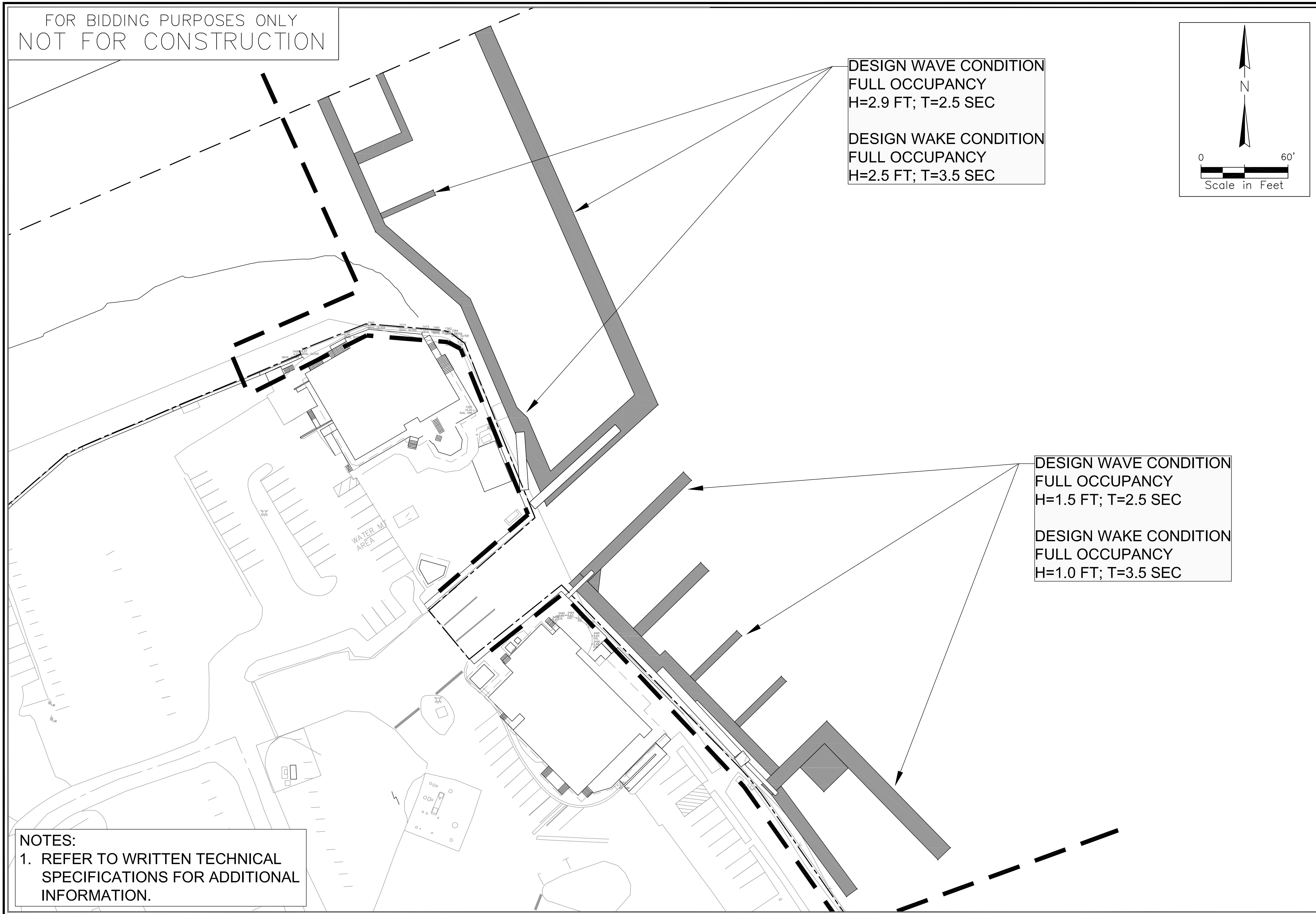
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JOB NO. 18A3287
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ISLE OF PALMS MARINA
ISLE OF PALMS, SC
FIXED TIMBER DOCK DETAILS
CITY OF ISLE OF PALMS, SC

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NOTES:
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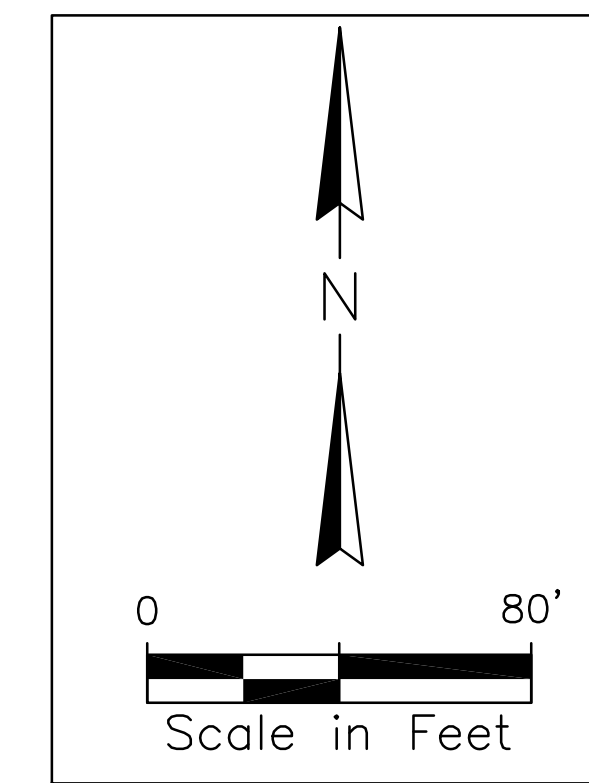
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SCALE: 1"=30'	

ISLE OF PALMS MARINA
ISLE OF PALMS, SC
DESIGN WAVE CONDITIONS
CITY OF ISLE OF PALMS, SC

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M12

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ATLANTIC
INTRACOASTAL
WATERWAY

LIMITS OF
MARINE WORKS

"RESTAURANT DOCK"

"FACE DOCK"

MORGAN CREEK

ISLE OF PALMS
MARINA

"CHARTER DOCK"

FUEL DOCK &
FUEL HUT

LIMITS OF
MARINE WORKS

NOTES:
1. SEE SUBSEQUENT PLAN SHEETS FOR
ADDITIONAL DIMENSIONS.
2. THIS SHEET INDICATES THE FULL
OCCUPANCY DESIGN CONDITION.

LEGEND:
120 120 VESSEL LOA (FT)
 VACANT DURING 50 YEAR RETURN PERIOD DESIGN EVENT
 ALWAYS OCCUPIED

Signature _____
Date _____

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 SCALE: 1"=40'

ISLE OF PALMS MARINA
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FLOATING DOCK VESSEL OCCUPANCY
 CITY OF ISLE OF PALMS, SC

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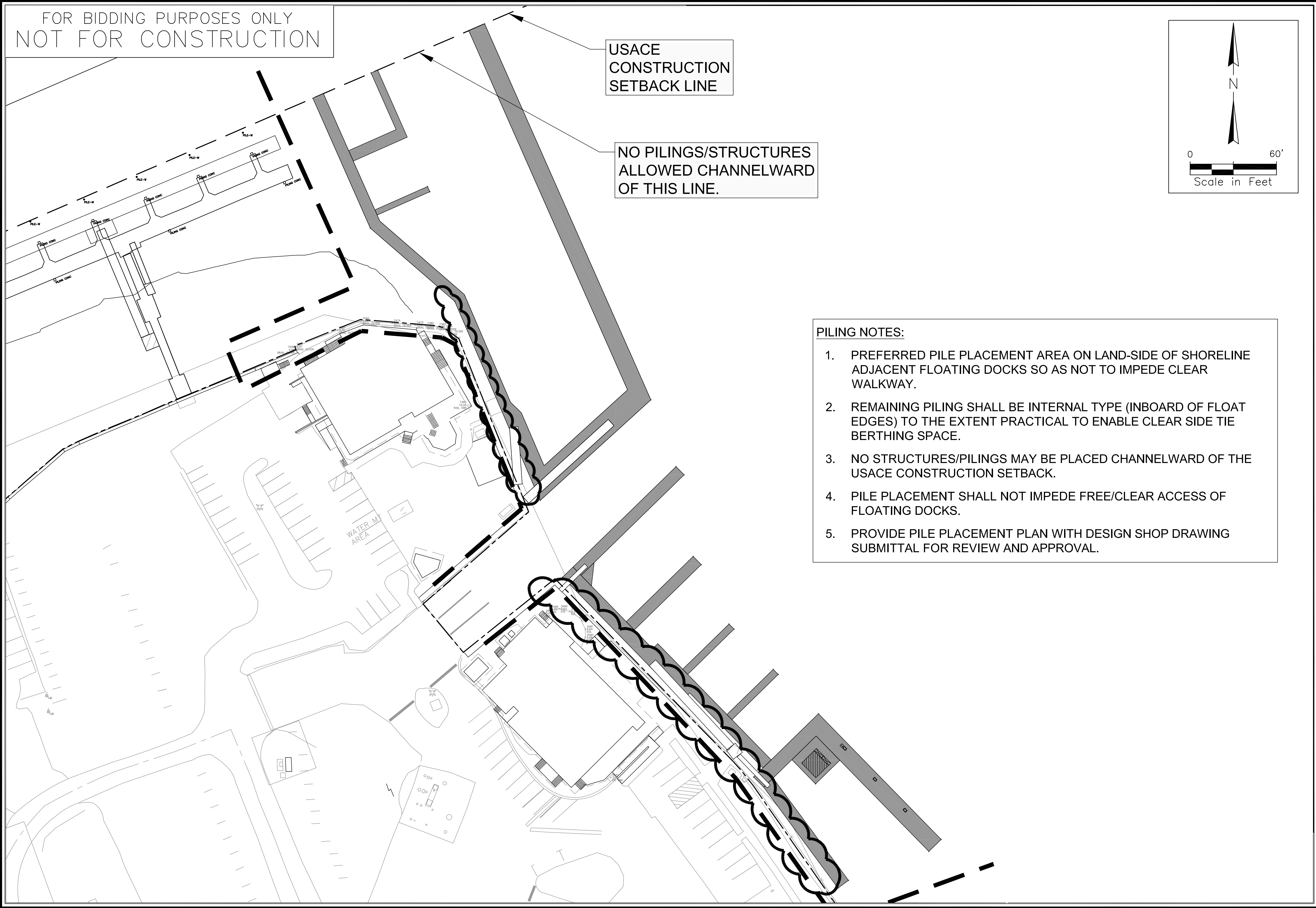
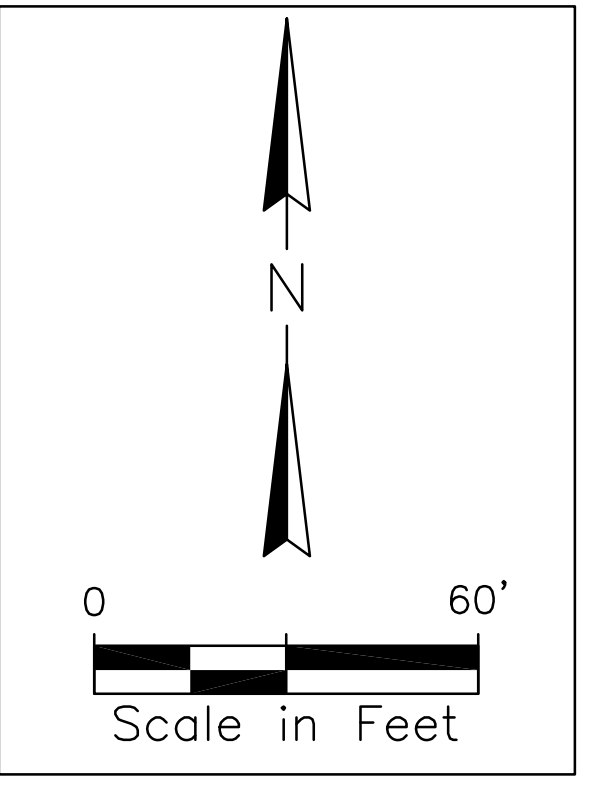
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USACE
CONSTRUCTION
SETBACK LINE

NO PILINGS/STRUCTURES
ALLOWED CHANNELWARD
OF THIS LINE.



PILING NOTES:

1. PREFERRED PILE PLACEMENT AREA ON LAND-SIDE OF SHORELINE ADJACENT FLOATING DOCKS SO AS NOT TO IMPEDE CLEAR WALKWAY.
2. REMAINING PILING SHALL BE INTERNAL TYPE (INBOARD OF FLOAT EDGES) TO THE EXTENT PRACTICAL TO ENABLE CLEAR SIDE TIE BERTHING SPACE.
3. NO STRUCTURES/PILINGS MAY BE PLACED CHANNELWARD OF THE USACE CONSTRUCTION SETBACK.
4. PILE PLACEMENT SHALL NOT IMPEDE FREE/CLEAR ACCESS OF FLOATING DOCKS.
5. PROVIDE PILE PLACEMENT PLAN WITH DESIGN SHOP DRAWING SUBMITTAL FOR REVIEW AND APPROVAL.

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ISLE OF PALMS MARINA
ISLE OF PALMS, SC

PREFERRED PILE PLACEMENT DIAGRAM

CITY OF ISLE OF PALMS, SC

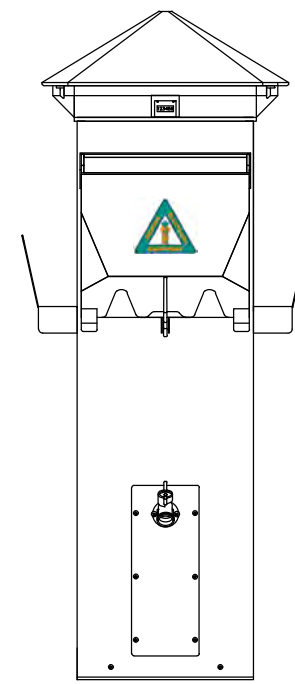
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M14

GENERAL ELECTRICAL NOTES

- FURNISH ALL MATERIALS AND LABOR NECESSARY TO PROVIDE COMPLETE AND PROPERLY OPERATING ELECTRICAL SYSTEMS. FURNISH ALL MATERIALS AND LABOR NECESSARY TO DEMONSTRATE TO THE OWNER AND TO THE ENGINEER THAT ALL SYSTEMS ARE OPERATING PROPERLY AND AS SPECIFIED. WARRANTY ALL WORK AND ALL MATERIALS, EQUIPMENT AND DEVICES FOR A PERIOD OF ONE YEAR AFTER OWNER'S ACCEPTANCE.
- WORK SHALL CONFORM TO THE LATEST EDITION OF:
 - ANSI/NFPA 70 (NATIONAL ELECTRICAL CODE)
 - NECA STANDARD OF INSTALLATION
 - INTERNATIONAL BUILDING CODE
 - NFPA 303 MARINAS AND BOATYARDS
 - NFPA 307 STANDARD FOR CONSTRUCTION AND FIRE PROTECTION OF MARINE TERMINALS, PIERS, AND WHARVES.
 - ALL FEDERAL, STATE AND LOCAL CODES AND ORDINANCES
 - LOCAL UTILITY COMPANY REGULATIONS
- ALL MATERIALS, EQUIPMENT AND DEVICES SHALL, AS A MINIMUM, MEET THE REQUIREMENTS OF U.L. WHERE U.L. STANDARDS ARE ESTABLISHED FOR THOSE ITEMS, AND THE REQUIREMENTS OF NFPA 70. ALL ITEMS SHALL BE CLASSIFIED BY U.L. AS SUITABLE FOR THE PURPOSE USED. ALL ITEMS SHALL BE NEW AND ALL MATERIALS/EQUIPMENT/DEVICES SHALL BE CURRENT PRODUCTS BY MANUFACTURERS REGULARLY ENGAGED IN THE PRODUCTION OF SUCH PRODUCTS.
- COORDINATE WITH AND OBTAIN PERMITS AND INSPECTIONS FROM THE AUTHORITY HAVING JURISDICTION, AND INCLUDE ALL FEES IN BID.
- PROVIDE A LAMINATED PLASTIC NAMEPLATE FOR EACH MAJOR ITEM OF ELECTRICAL EQUIPMENT (E.G. PANELBOARDS, DISCONNECT SWITCHES, TRANSFORMERS, ETC.). ATTACH WITH SCREWS, BOLTS OR RIVETS. NAME PLATES FOR DISCONNECTS SHALL INDICATE LOADS SERVED.
- PROVIDE ALL PANELS WITH TYPED DIRECTORIES SHOWING AS-BUILT CONDITIONS AND LABEL ALL CIRCUITS.
- THE NEUTRAL AND GROUND BUS SHALL BE BONDED TOGETHER AT THE SERVICE EQUIPMENT ONLY. THE GROUNDING CONDUCTOR SHALL BE BONDED TO THE GROUNDING ELECTRODE SYSTEM, WHICH SHALL BE COMPRISED OF A 3/4" X 10' DRIVEN GROUND ROD, METALLIC PIPING, BUILDING STEEL, ETC. ALL SUBPANELS SHALL HAVE INSULATED ISOLATED NEUTRALS PER N.E.C. ARTICLE 250.
- 240/120V POWER CIRCUITS TO PEDESTALS HAVE BEEN DESIGNED UTILIZING INDUSTRIAL GRADE G-GC (75°C MINIMUM) AS MANUFACTURED BY AMERICAN INSULATED WIRE CORPORATION ROUTED IN UTILITY TRENCH WITHIN THE DOCK SYSTEM. SIMILAR CABLES WITH EQUAL CHARACTERISTICS AND AMPACITIES MAY BE SUBMITTED FOR APPROVAL. PROVIDE PROPER COMPRESSION TYPE TERMINAL LUGS FOR THIS TYPE CABLE. INSULATION SHALL ALLOW FOR MOVEMENT IN JOINTS TO PREVENT CABLE FROM SHEAR AND STRETCHING.
- CIRCUITS FROM TRANSFORMERS TO PANELS SHALL BE TYPE THHN/THWN TYPE WIRE ROUTED IN CONDUIT. SEE SINGLE LINE DIAGRAMS.
- SUBMIT SHOP DRAWINGS ON ALL MATERIALS FOR APPROVAL.
- SUBMIT INSTALLATION DETAILS ON EXACT EQUIPMENT PROVIDED FOR APPROVAL.
- FINAL LOCATIONS OF DOCK AND LANDSIDE EQUIPMENT SUBJECT TO OWNER APPROVAL. SUBMIT SHOP DRAWINGS OF ALL EQUIPMENT LOCATIONS PRIOR TO INSTALLATION.
- CONTRACTOR SHALL COORDINATE UTILITIES WITH ENGINEER DRAWINGS AND OTHER TRADES FOR SPECIFIED UPLAND EQUIPMENT LOCATIONS AND SERVICE TO MARINA EQUIPMENT. CONTRACTOR SHALL ALSO COORDINATE FINAL LOCATION OF UPLAND EQUIPMENT WITH OWNER AND ENGINEER PRIOR TO INSTALLATION.

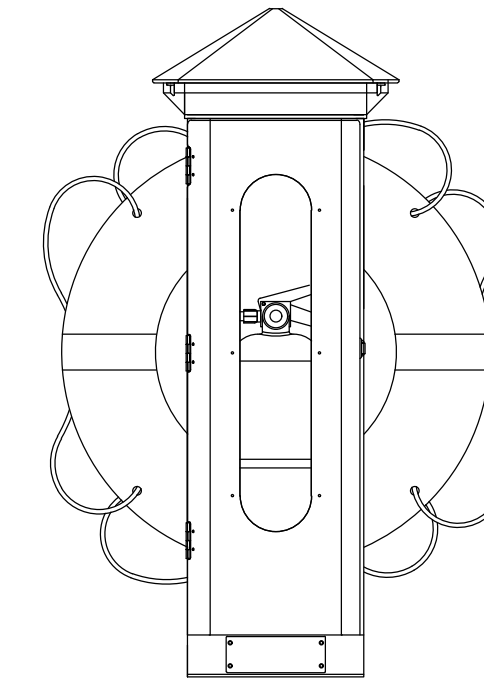
- UTILIZE DIELECTRIC INSULATING MATERIALS TO SEPARATE ANY DISSIMILAR METALS. ALL FASTENERS SHALL BE STAINLESS STEEL ASTM A-316 (MINIMUM).
- THIS DESIGN UTILIZED THE HARBOR LIGHT SERIES POWER PEDESTALS AS MANUFACTURED BY (MARINA ELECTRICAL EQUIPMENT, WILLIAMSBURG, VIRGINIA, USA. TEL. 1-865-258-3939) ALL POWER PEDESTALS TO BE TO BE PROVIDED WITH APPROPRIATELY SIZED CIRCUIT BREAKERS FOR THE RECEPTACLES INDICATED. SUBMIT SHOP DRAWINGS. POWER PEDESTALS TO BE PROVIDED WITH 2 EACH 19mm (3/4") HOSE BIBBS (COORDINATE WITH PLUMBING DRAWINGS). PROVIDE PHOTO-CELL CONTROLLED LED LIGHTS WITH WHITE LENSES AND GFI MAINTENANCE RECEPTACLE ON A SEPARATE 120V, 1P, 20A CIRCUIT BREAKER. REVIEW DRAWINGS FOR CABLE SIZES. PROVIDE OVERSIZED LUGS ON PEDESTALS AS NECESSARY. ALTERNATE PEDESTALS MAY BE APPROVED PRIOR TO BID. ALL PEDESTALS SHALL BE PROVIDED WITH DIGITAL KWH METERS TO MONITOR POWER USAGE FOR EACH BOAT SLIP.
- CONTRACTOR TO PROVIDE WIRING PULL PLAN SUBMITTAL. COORDINATE WITH ALL OTHER TRADES AND INCLUDE WATER, WASTE, FUEL, ETC. IN PULL PLAN SUBMITTAL.
- MAKE ARRANGEMENTS WITH THE POWER COMPANY TO OBTAIN PERMANENT ELECTRICAL SERVICE TO THE PROJECT. PROVIDE SERVICE ENTRANCE AND PROVISIONS FOR METERING IN ACCORDANCE WITH THE POWER COMPANY'S REQUIREMENTS. INCLUDE ALL FEES IN BID.
- MAKE ARRANGEMENTS WITH THE POWER COMPANY AND PROVIDE TEMPORARY ELECTRICAL SERVICE TO THE PROJECT FOR CONSTRUCTION POWER. INCLUDE ALL FEES IN BID.
- ALL STAINLESS STEEL FITTINGS, CLAMPS, HANGERS AND MISCELLANEOUS APPURTENANCES SHALL BE ASTM A-316 OR BETTER.
- PROVIDE PIPE SLEEVES AND BULKHEAD PENETRATIONS AS NECESSARY TO FACILITATE INSTALLATION. SUBMIT PENETRATION DETAIL FOR APPROVAL. UTILIZE EXISTING PENETRATIONS TO THE GREATEST EXTENT POSSIBLE.



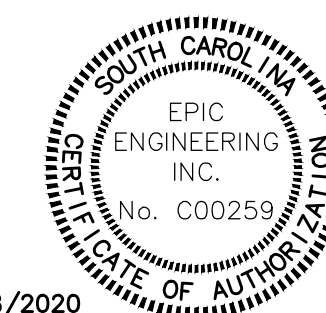
MEE HARBOR LIGHT SERIES PEDESTAL HC30100

SYMBOL LEGEND

- FIRE EXTINGUISHER PEDESTAL – 120V POWER NEEDED FOR LIGHT OBTAIN POWER FROM NEAREST PEDESTAL.
- POWER PEDESTAL WITH ONE 120V, 1P, 30A TWIST-LOCK TYPE RECEPTACLE, ONE 120V, 1P, 30A, 30mA GFCI CIRCUIT BREAKER AND A 120V, 1P, 20A, 30mA GFCI CIRCUIT BREAKER WITH ONE GFI TYPE RECEPTACLE ON EACH SIDE.
- POWER PEDESTAL WITH TWO 125/250V, 50A TWIST LOCK RECEPTACLES AND TWO 240V, 2P, 50A, 30mA GFCI CIRCUIT BREAKERS AND ONE 120V, 30A, TWIST LOCK RECEPTACLE AND ONE 120V, 1P, 30A, 30mA GFCI CIRCUIT BREAKER ON EACH SIDE. ALSO PROVIDE ONE 120V, 1P, 20A, 30mA GFCI CIRCUIT BREAKER AND GFI TYPE RECEPTACLE ON EACH SIDE.
- POWER PEDESTAL WITH ONE 125/250V, 50A TWIST LOCK RECEPTACLE AND A 240V, 2P, 50A, 30mA GFCI CIRCUIT BREAKER AND ONE 120V, 30A, TWIST LOCK RECEPTACLE AND A 120V, 1P, 30A, 30mA GFCI CIRCUIT BREAKER ON EACH SIDE. ALSO PROVIDE ONE 120V, 1P, 20A CIRCUIT BREAKER AND GFI TYPE RECEPTACLE ON EACH SIDE.
- POWER PEDESTAL WITH ONE 125/250V, 50A TWIST LOCK RECEPTACLE AND A 240V, 2P, 50A, 30mA GFCI CIRCUIT BREAKER AND ONE 120V, 30A, TWIST LOCK RECEPTACLE AND A 120V, 1P, 30A, 30mA GFCI CIRCUIT BREAKER ON ONE SIDE. ALSO PROVIDE ONE 120V, 1P, 20A CIRCUIT BREAKER AND GFI TYPE RECEPTACLE ON ONE SIDE.
- 2/0 TYPE THHW GREEN GROUND CABLE
- 5" PRIMARY POWER CONDUIT FOR POWER COMPANY USE.
- SECONDARY WIRING AND CONDUIT FROM TRANSFORMER TO PANEL.
- BRANCH CIRCUIT, ARROW INDICATES HOMERUN, CROSS LINES INDICATE NUMBER OF CONDUCTORS, GROUNDING CONDUCTOR IS NOT SHOWN BUT SHALL BE PROVIDED IN ALL CIRCUITS (2#12, 1#12G, 1/2"C UNLESS NOTED OTHERWISE).
- 480V TO 240/120V, 1Ø SUBSTATION. SEE SINGLE LINE DIAGRAM AND SCHEDULES FOR TRANSFORMERS RATINGS AND PANEL CIRCUIT BREAKER REQUIREMENTS.
- 480V, 3Ø, 200A MEGAYACHT SUBSTATION. SEE DETAIL. PROVIDE WITH GROUNDING RECEPTACLE (POINT OF CONNECTION)
- MEE HARBOR LIGHT SS SERIES PEDESTAL. PROVIDE WITH EMERGENCY PUSH BUTTON SHUT OFF FOR FUEL DISPENSING SYSTEM. COORDINATE WITH FUEL DISPENSING CONTRACTOR.
- GAS DISPENSER LOCATION; SEE FUEL DISPENSING DRAWINGS
- DIESEL DISPENSER LOCATION; SEE FUEL DISPENSING DRAWINGS



MEE FIRE STATION PEDESTAL FS1020



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Signature
 Aaron C. Tempel, P.E.
 ME Professional Eng. PE15177
 07/08/2020
 Date

REV.	DATE	BY	CHKD	BY	REMARKS

DESIGNED	DRAWN	CHECKED	ACT

DATE: 10/08/2019
 JOB NO. 19120
 SCALE: NONE

ISLE OF PALMS MARINA
 ISLE OF PALMS, SC
NOTES AND LEGEND
 CITY OF ISLE OF PALMS, SC

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 Mt Pleasant, SC 29464
 (843) 414-1040
 Certificate of Authorization #00395

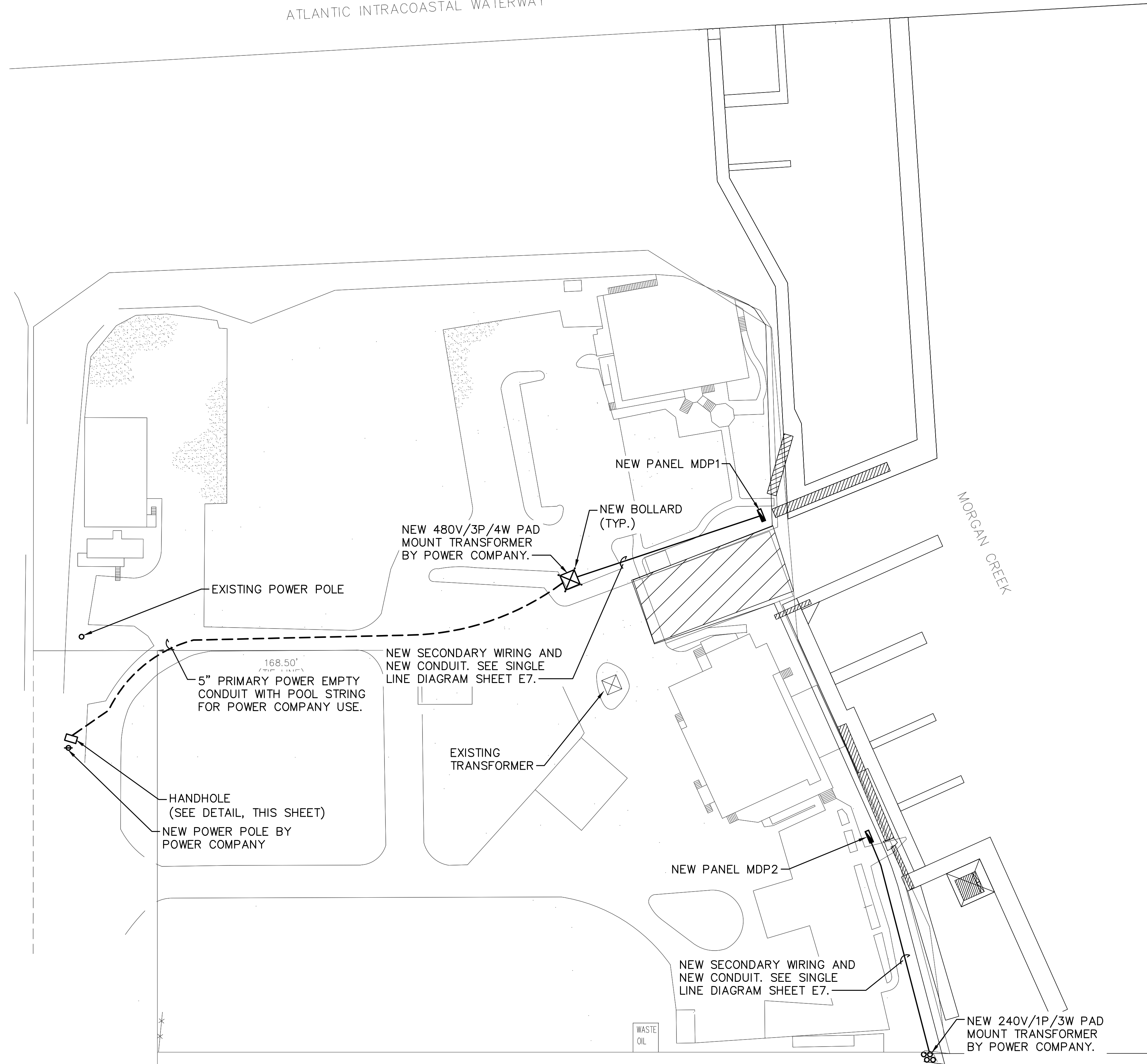
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 SHEET: 1 OF 8

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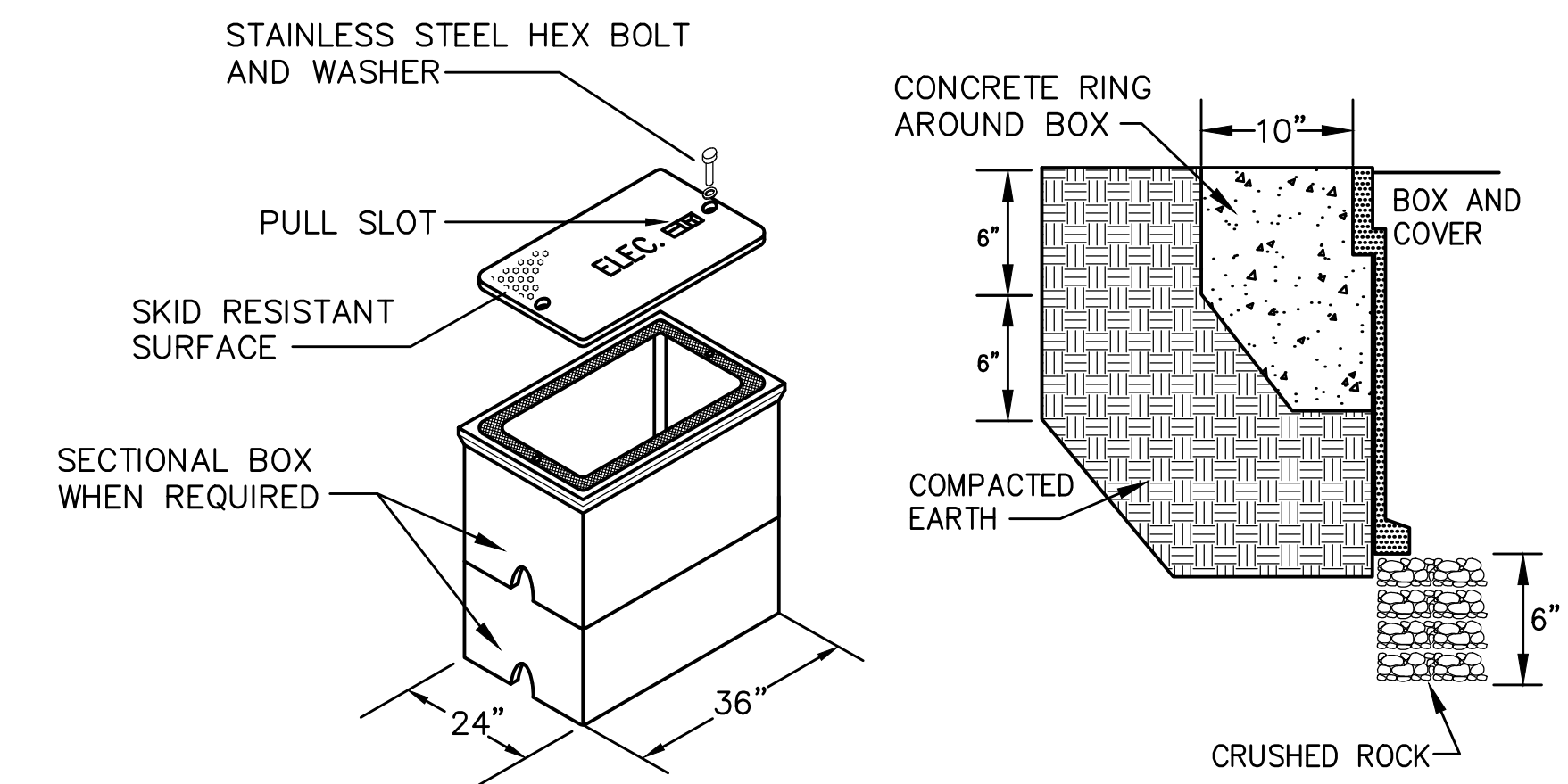
ATLANTIC INTRACOASTAL WATERWAY



ELECTRICAL SITE PLAN
SCALE: 1"=40'-0"

SCOPE OF SITE WORK:

1. THE CONTRACTOR IS RESPONSIBLE FOR PROVIDING THE NEW TRANSFORMER PADS, UNDERGROUND CONDUITS, PULL STRINGS, HANDHOLES, AND ALL NECESSARY COMPONENTS REQUIRED BY THE POWER COMPANY FOR A COMPLETE AND FUNCTIONAL SYSTEM.
2. ALL ELECTRICAL DISTRIBUTION SHALL BE CONSTRUCTED IN ACCORDANCE WITH DOMINION ENERGY UNDERGROUND COMMERCIAL ELECTRIC SERVICE STANDARDS REVISED FEBRUARY 2020.
3. THE POWER COMPANY WILL BE RESPONSIBLE FOR THE DIP CONDUITS PRIMARY POWER CABLING AND PROVIDING NEW TRANSFORMERS. CONTRACTOR TO PROVIDE ALL CUTTING AND PATCHING AS NECESSARY.
4. CONTRACTOR TO PROVIDE ALL CUTTING AND PATCHING AS NECESSARY.
5. PROVIDE HANDHOLES IN RUNS EXCEEDING 350' IN LENGTH OR MORE THAN 360° IN BENDS.
6. THE CONDUITS ON LOCATIONS ARE SHOWN ON THIS PLAN FOR BIDDING PURPOSES. EXACT ROUTING TO BE VERIFIED WITH ACTUAL FIELD CONDITIONS AND ENGINEER. CONTRACTOR TO HIRE UTILITY LOCATION SERVICE TO MAP EXISTING CONDITIONS. UTILITY LOCATER TO COORDINATE EXACT LOCATIONS. PROVIDE AUTOCAD AS-BUILT DRAWING.
7. COORDINATE FINAL LOCATION OF EQUIPMENT AND APPURTENANCES WITH ENGINEER PRIOR TO CONSTRUCTION.



HANDHOLE REQUIREMENTS:

1. HOUSING SHALL BE A POLYMER CONCRETE REINFORCED WITH A HEAVY WEAVE FIBERGLASS REINFORCING WITH COMPRESSIVE STRENGTH OF NO LESS THAN 10,000 PSI.
2. COVER SHALL WITHSTAND A SERVICE LOAD OF NO LESS THAN 15,000 LBS OVER A 10" x 10" AREA FOR HEAVY DUTY, H2O LOADING.
3. PROVIDE STAINLESS STEEL BOLTS AND INSERTS.
4. PROVIDE WITH (2) 2 1/2" MOUSEHOLES.
5. PROVIDE LABEL "ELECTRICAL" FOR POWER HANDHOLES.

HANDHOLE DETAIL

SCALE: NONE

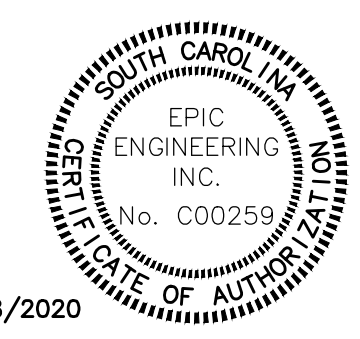
Atton Tempel
Signature
Atton C. Tempel, P.E.
ME Professional Eng. PE15477
07/08/2020
Date

REV. NO.	DATE	REVISIONS

DESIGNED	DRAWN	CHECKED	DATE	JOB NO.	SCALE
			12/08/2019	19120	AS NOTED

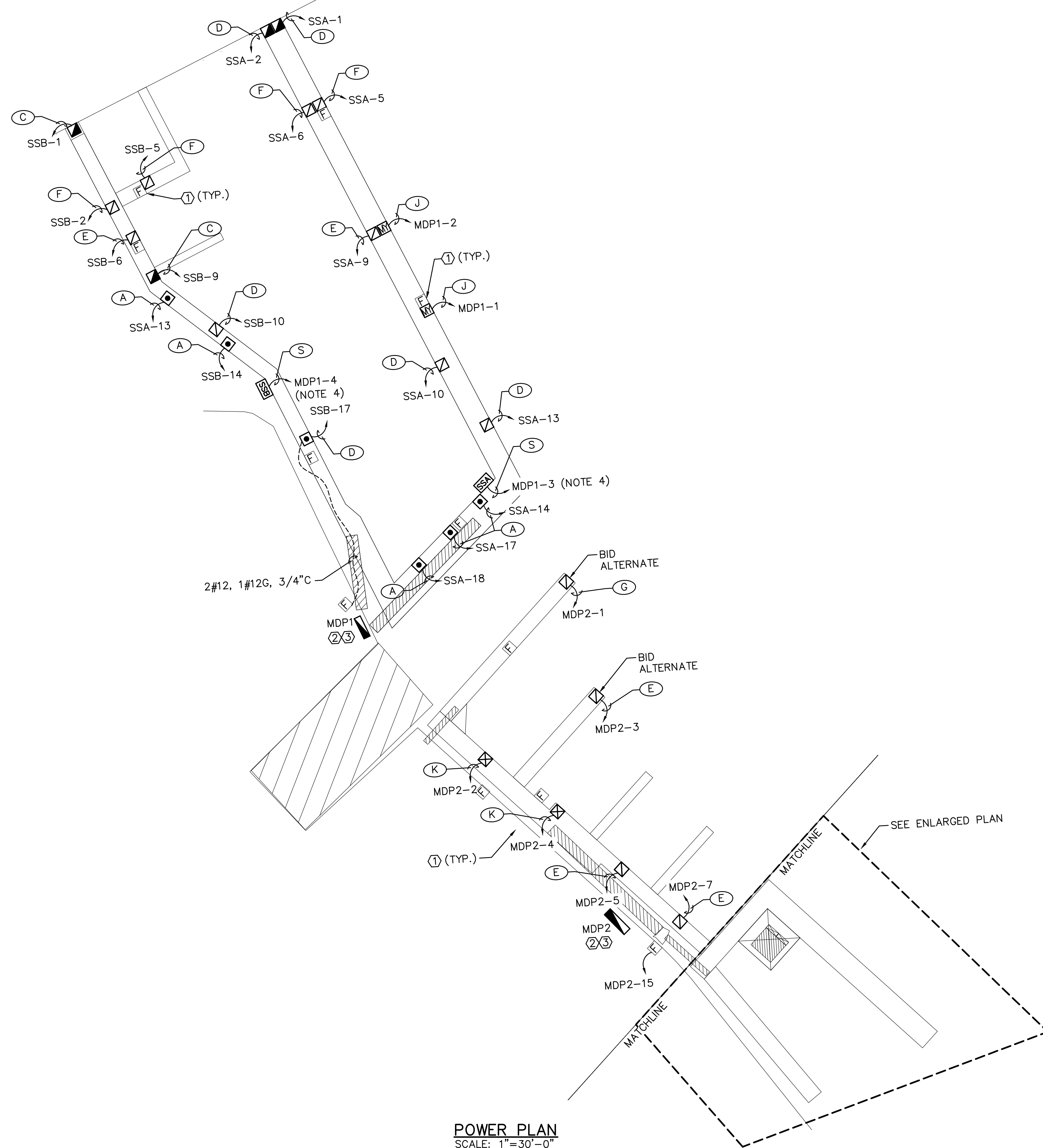
ISLE OF PALMS MARINA
ISLE OF PALMS, SC
ELECTRICAL SITE PLAN
CITY OF ISLE OF PALMS, SC

Applied Technology & Management, Inc.
941 Houston Northcott Blvd., Suite 201
Mt Pleasant, SC 29464
(843) 414-1040
Certificate of Authorization #00395



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POWER PLAN
SCALE: 1"=30'-0"

GENERAL NOTES (THIS SHEET ONLY)

- SEE WIRE AND CONDUIT SCHEDULE ON SHEET E8 FOR CIRCUITS WITH LETTER DESIGNATIONS.
- COORDINATE EXACT LOCATION OF EQUIPMENT WITH DOCK SUPPLIER.
- COORDINATE EXACT ROUTING OF CONDUIT WITH ACTUAL FIELD CONDITIONS. DO NOT OBSTRUCT FIRE PROTECTION STAND PIPE.
- PROVIDE PONY FLOAT FOR SSA & SSB. COORDINATE WITH DOCK SUPPLIER AND INCLUDE ALL COSTS IN A BID.

KEYED NOTES (THIS SHEET ONLY)

- ① PROVIDE POWER FOR FIREHOUSE PEDESTAL FROM 120V RECEPTACLE CIRCUIT IN NEAREST PEDESTAL INDICATED.
- ② SEE POWER RISER DIAGRAMS FOR FEED CIRCUITS FROM TRANSFORMERS TO PANELS AND FROM PANELS TO SUBSTATIONS.
- ③ COORDINATE EXACT LOCATIONS WITH OWNER AND ENGINEER PRIOR TO INSTALLATION.

Atton Tempel
Signature
Atton C. Tempel, P.E.
ME Professional Eng. PE15177
07/08/2020
Date

REV.	DATE	BY	CHKD	BY	REMARKS

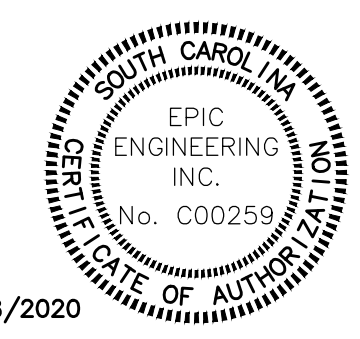
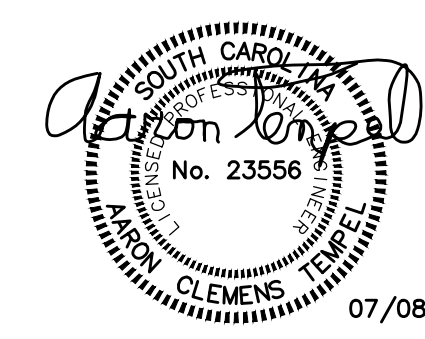
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ACT		ACT	10/08/2019	1"=30'-0"
			JOB NO. 19120	

ISLE OF PALMS MARINA
ISLE OF PALMS, SC
POWER PLAN
CITY OF ISLE OF PALMS, SC

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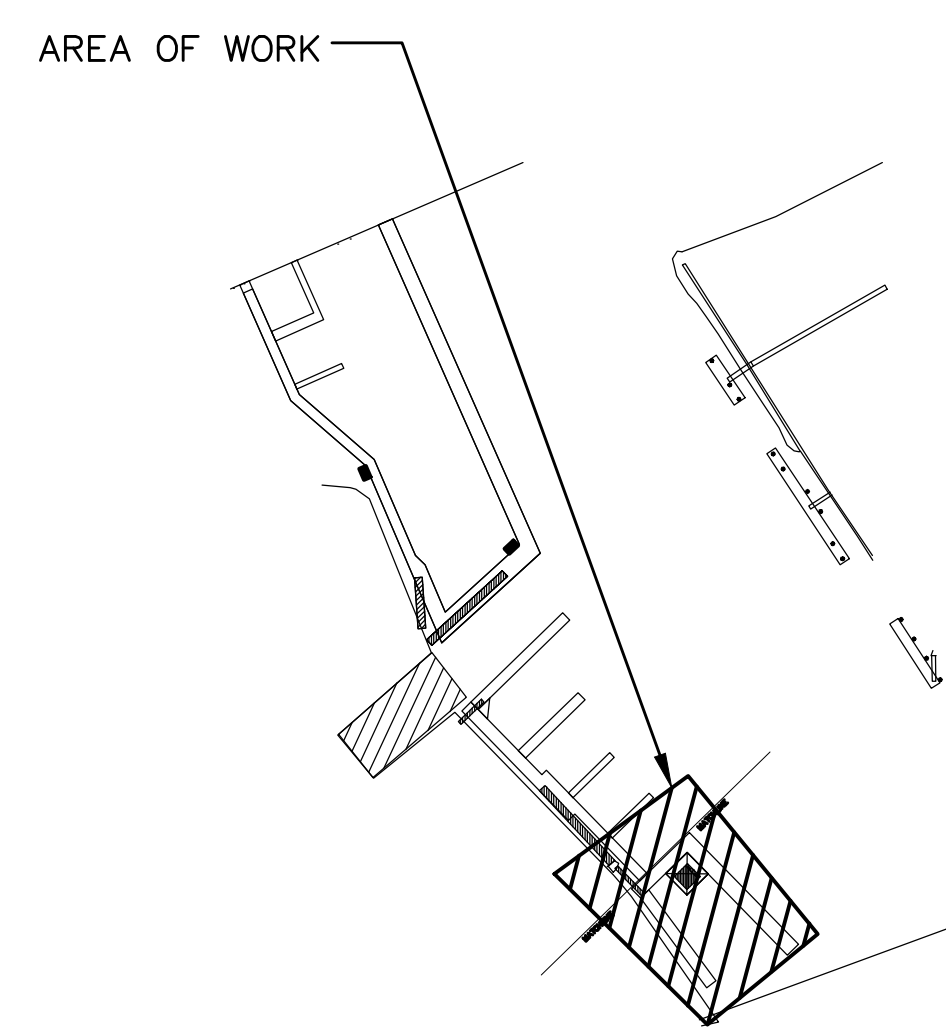
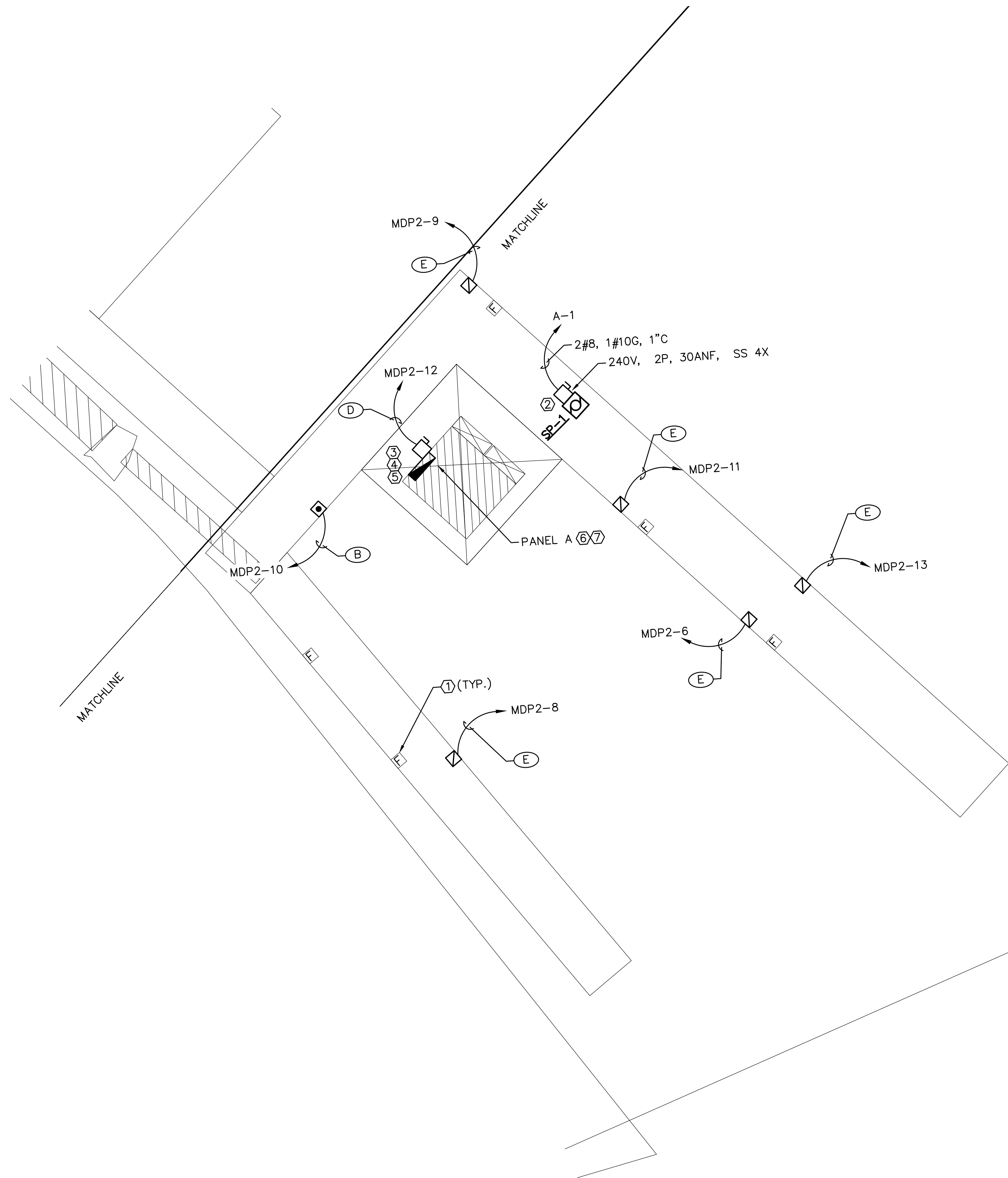
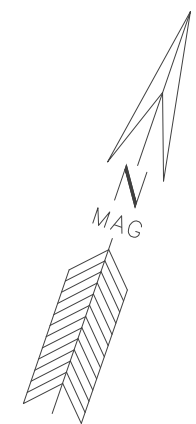
DRAWING NUMBER
E3
SHEET: 3 OF 8



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07/08/2020

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KEYPLAN
SCALE: NONE

ENLARGED POWER PLAN
SCALE: 1"=10'-0"

GENERAL NOTES (THIS SHEET ONLY)

1. SEE WIRE AND CONDUIT SCHEDULE ON SHEET E8 FOR CIRCUITS WITH LETTER DESIGNATIONS.
2. COORDINATE EXACT LOCATION OF EQUIPMENT WITH DOCK SUPPLIER AND ENGINEER.
3. COORDINATE EXACT ROUTING OF CONDUIT WITH ACTUAL FIELD CONDITIONS. DO NOT OBSTRUCT FIRE PROTECTION STAND PIPE.
4. ALL SWITCHES, DISCONNECTS, DEVICES, ETC. ASSOCIATED TO THE FUEL SYSTEM SHALL BE EXPLOSION PROOF AND IN FULL COMPLIANCE WITH NEC 2017 ART. 514.

KEYED NOTES (THIS SHEET ONLY)

- ① PROVIDE POWER FOR FIREHOUSE PEDESTAL FROM 120V RECEPTACLE CIRCUIT IN NEAREST PEDESTAL INDICATED.
- ② MOUNT BOTTOM OF DISCONNECT SWITCH AT 24"(MIN.) ABOVE THE DOCK DECK. ALL STANDS, UNISTRUT, HARDWARE, ETC. SHALL BE STAINLESS STEEL ASTM A-304 (MIN.)
- ③ COORDINATE EXACT LOCATIONS WITH OWNER AND ENGINEER PRIOR TO INSTALLATION.
- ④ COORDINATE PANEL LOCATION AND DISCONNECT MOUNTING TO FUEL HUT WITH FINAL FUEL HUT CONFIGURATION.
- ⑤ COORDINATE POWER REQUIREMENTS WITH FINAL FUEL HUT DESIGN PRIOR TO CONSTRUCTION.

Atton Tempel
Signature
Atton C. Tempel, P.E.
ME Professional Eng. PE15177
07/08/2020
Date

REV.	DATE	BY	CHKD	BY	REMARKS

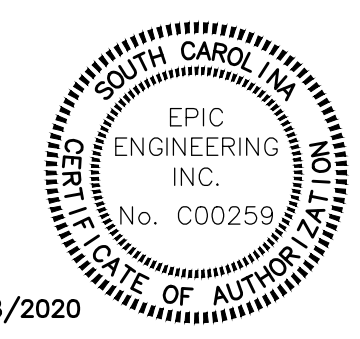
DESIGNED	DRAWN	CHECKED	ACT

DATE: 10/08/2019
JOB NO. 19120
SCALE: 1"=10'-0"

ISLE OF PALMS MARINA
ISLE OF PALMS, SC
ENLARGED POWER PLAN
CITY OF ISLE OF PALMS, SC

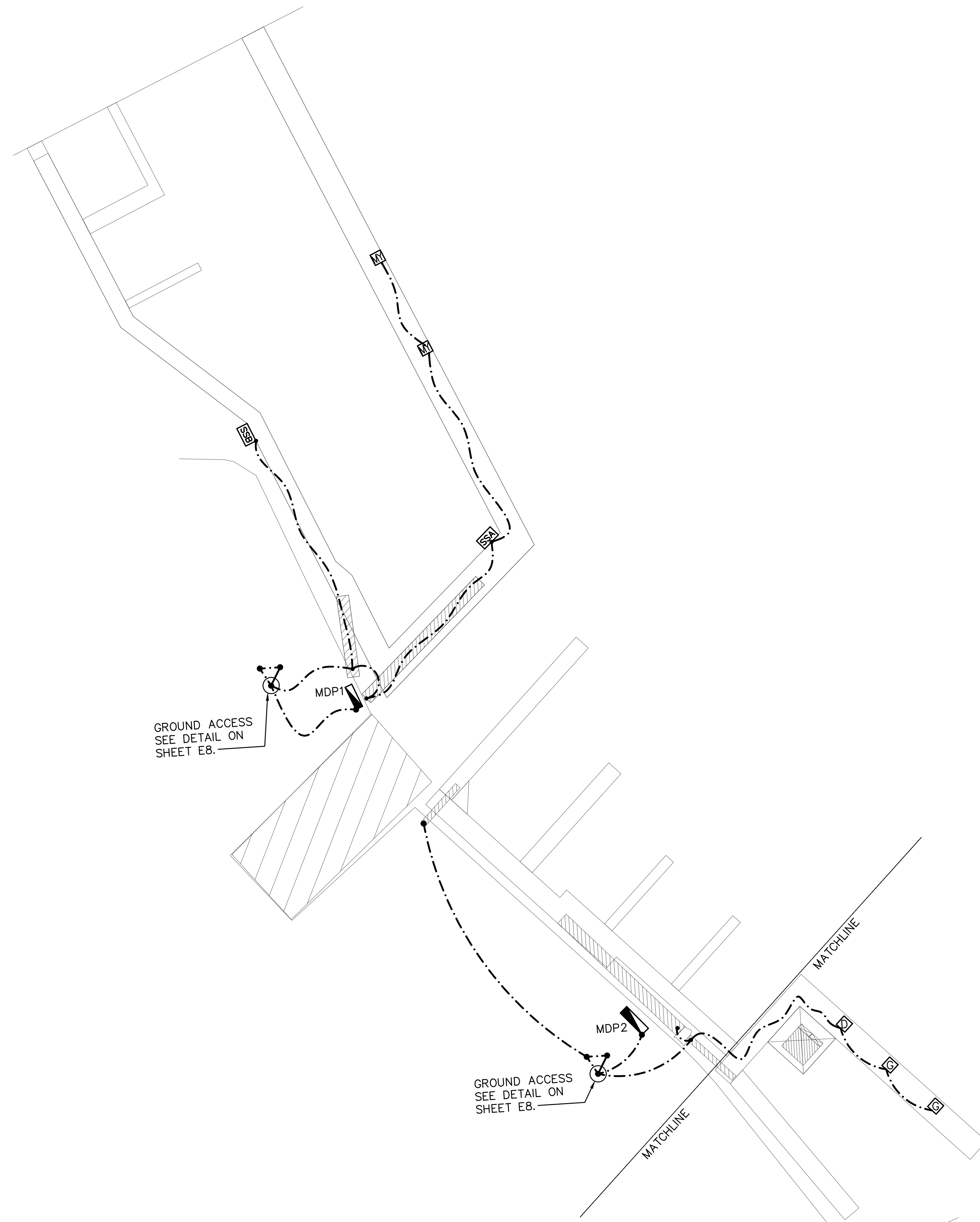
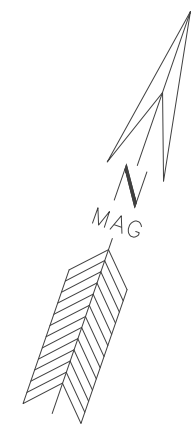
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941 Houston Northcott Blvd, Suite 201
Mt Pleasant, SC 29464
(843) 414-1040
Certificate of Authorization #00395

ATM

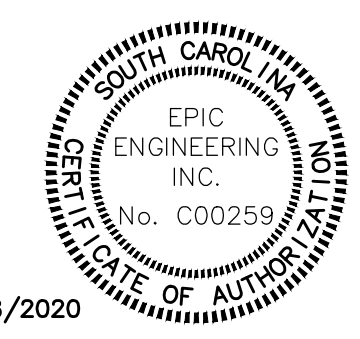
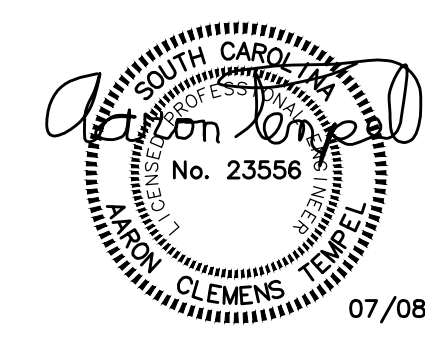


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GROUNDING PLAN
 SCALE: 1"=30'-0"



07/08/2020

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GENERAL NOTES (THIS SHEET ONLY)

- EACH DOCK SHALL BE PROVIDED WITH GROUND SYSTEM. ALL SUBSTATIONS, STEEL STRUCTURES, DISCONNECT SWITCHES, GANGWAYS, ETC. SHALL BE BONDED WITH 2/0 COPPER TYPE THHW GREEN CABLE TO THIS GROUND SYSTEM. PROVIDE THREE COPPER CLAD 3/4"X10' COPPER CLAD GROUND RODS SPACED IN 10' DELTA CONFIGURATION WITH ONE TEST WELL (SEE SHEET E8 FOR DETAIL).
- COORDINATE EXACT LOCATIONS WITH OWNER, AND ENGINEER PRIOR TO INSTALLATION.

Aaron Tempel
 Signature
 Aaron C. Tempel, P.E.
 ME Professional Eng. PE15177
 07/08/2020
 Date

REV. NO.	DATE	BY	CHKD BY	REMARKS

DESIGNED ACT	DRAWN	CHECKED	DATE	JOB NO.	SCALE
			12/08/2019	19120	1"=30'-0"

ISLE OF PALMS MARINA
 ISLE OF PALMS, SC
GROUNDING PLAN
 CITY OF ISLE OF PALMS, SC

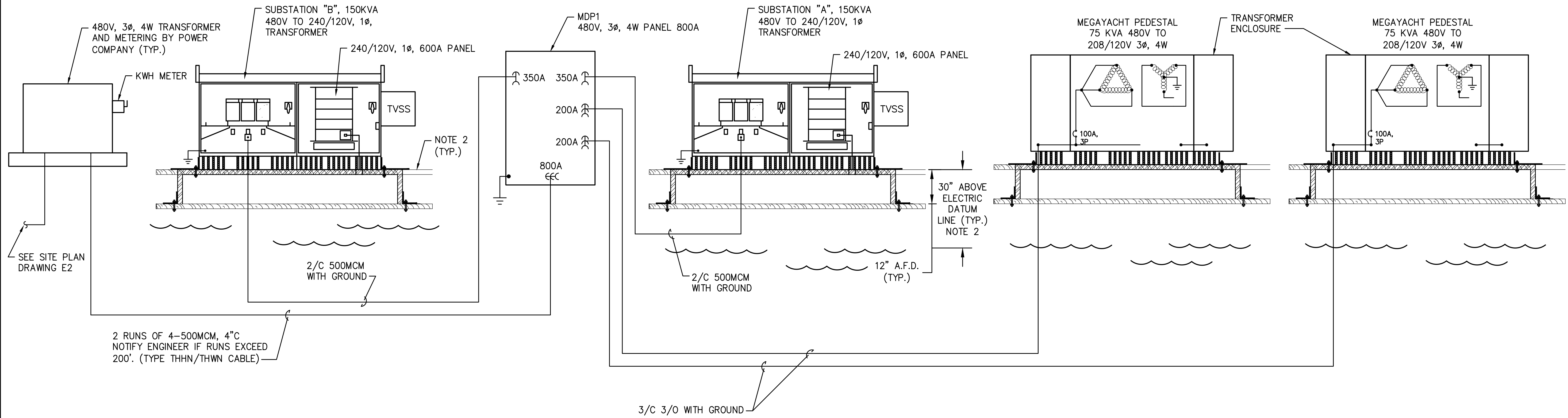
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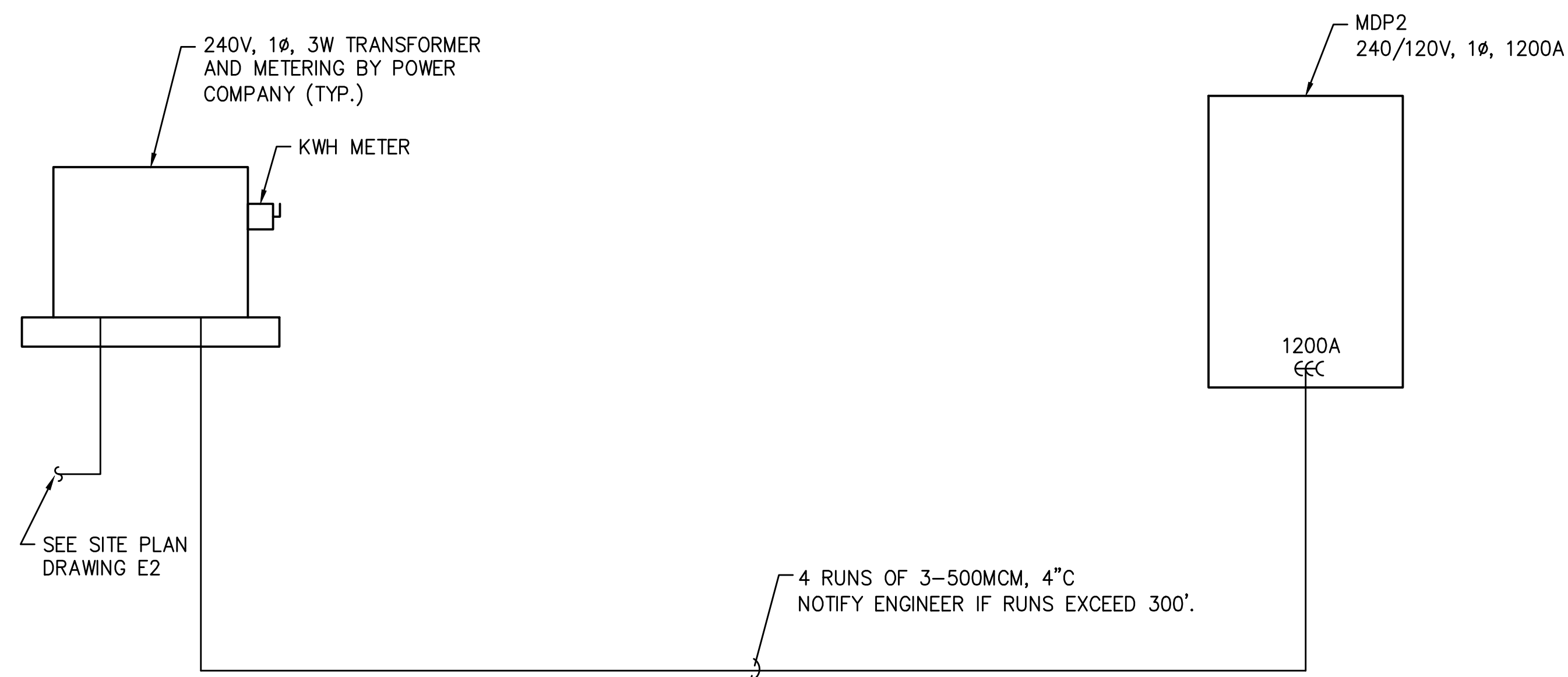
DRAWING NUMBER
E5
 SHEET: 5 OF 8

GENERAL NOTES (THIS SHEET ONLY)

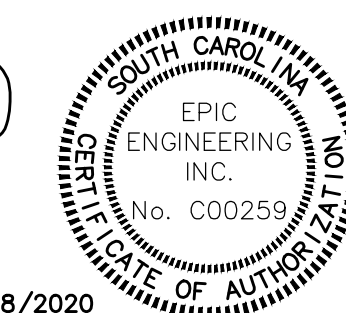
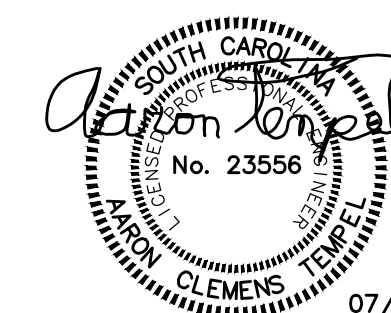
1. ALL SUBSTATIONS SHALL BE PROVIDED WITH PRIMARY CIRCUIT BREAKERS AS WELL AS SECONDARY BREAKERS AS INDICATED IN THE SCHEDULES. SUBSTATIONS SHALL BE CONSTRUCTED OF STAINLESS STEEL POWDER COATED WHITE IN NEMA 4X ENCLOSURES.
2. PLATFORMS MAY BE REMOVED IF SUBSTATION PROVIDED MEETS REQUIREMENTS OF DISTANCE ABOVE DATUM LINE. COORDINATE WITH SUBSTATION PROVIDER AND SUBMIT INFORMATION TO ENGINEER FOR REVIEW.



MDP1 480V SINGLE LINE DIAGRAM
SCALE: NONE



MDP2 240/120V SINGLE LINE DIAGRAM
SCALE: NONE



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Aaron Tempel
Signature
Aaron C. Tempel, P.E.
ME Professional Eng. PE15477
07/08/2020
Date

REV. NO.	DATE	REVISION

DESIGNED	DRAWN	CHECKED	DATE

ISLE OF PALMS MARINA
ISLE OF PALMS, SC
POWER RISER DIAGRAMS
CITY OF ISLE OF PALMS, SC

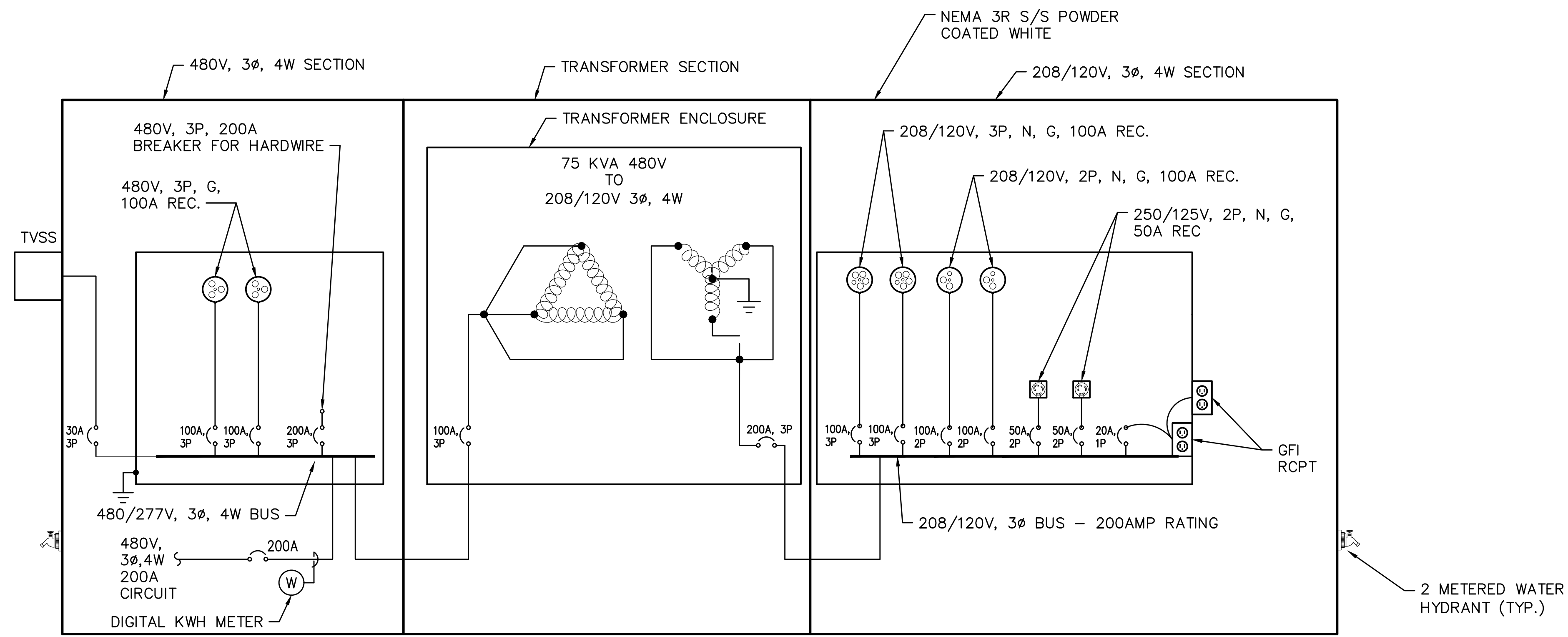
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DRAWING NUMBER
E7
SHEET: 7 OF 8

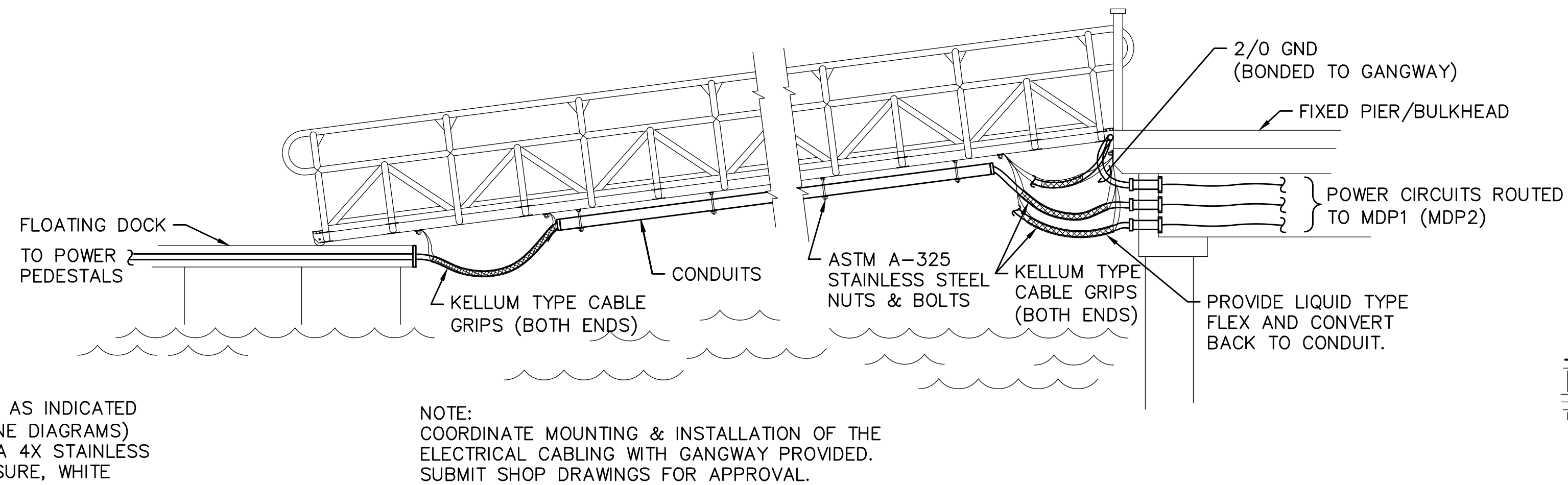
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WIRE & CONDUIT SCHEDULE (THIS SHEET ONLY)	
SYMBOL	DESCRIPTION
(A)	3/C, #10 W/GND
(B)	3/C, #6 W/GND
(C)	3/C, #4 W/GND
(D)	3/C, #3 W/GND
(E)	3/C, #2 W/GND
(F)	3/C, #1 W/GND
(G)	3/C, 1/0 W/GND
(H)	3/C, 2/0 W/GND
(J)	3/C, 3/0 W/GND
(K)	3/C, 4/0 W/GND
(L)	3/C 250MCM W/GND
(M)	3/C, 300MCM W/GND
(N)	4/C, 3/0 W/GND
(P)	4/C, 4/0 W/GND
(R)	4/C, 250MCM W/GND
(S)	2/C, 500MCM W/GND

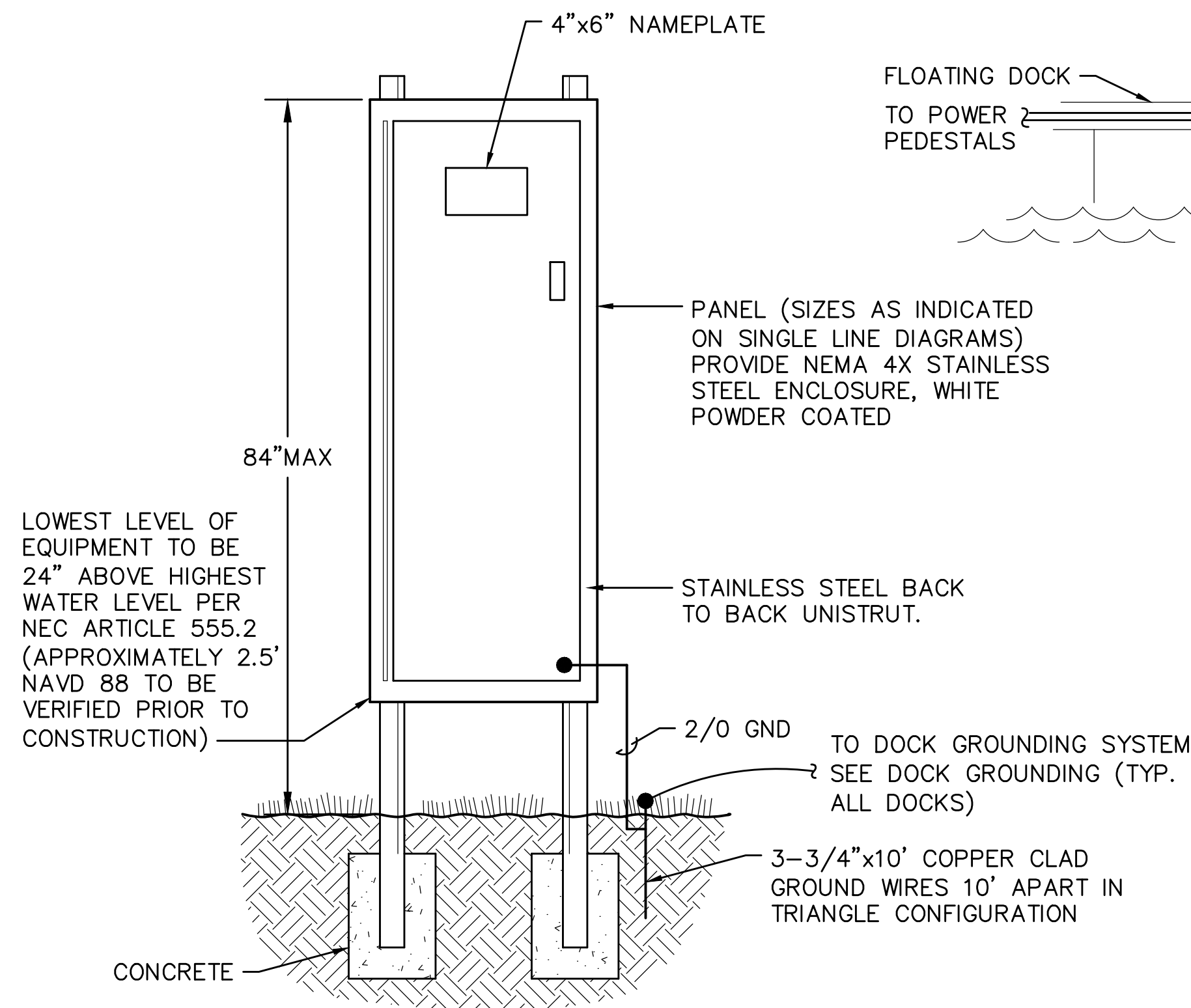
* ALL CIRCUITS TO BE ROUTED WITHIN CONDUITS PROVIDED IN DOCK SYSTEM. SIZES SHOWN IN SCHEDULE SHALL BE USED FOR ROUTING OF CIRCUITS TO PANELS ON LAND.



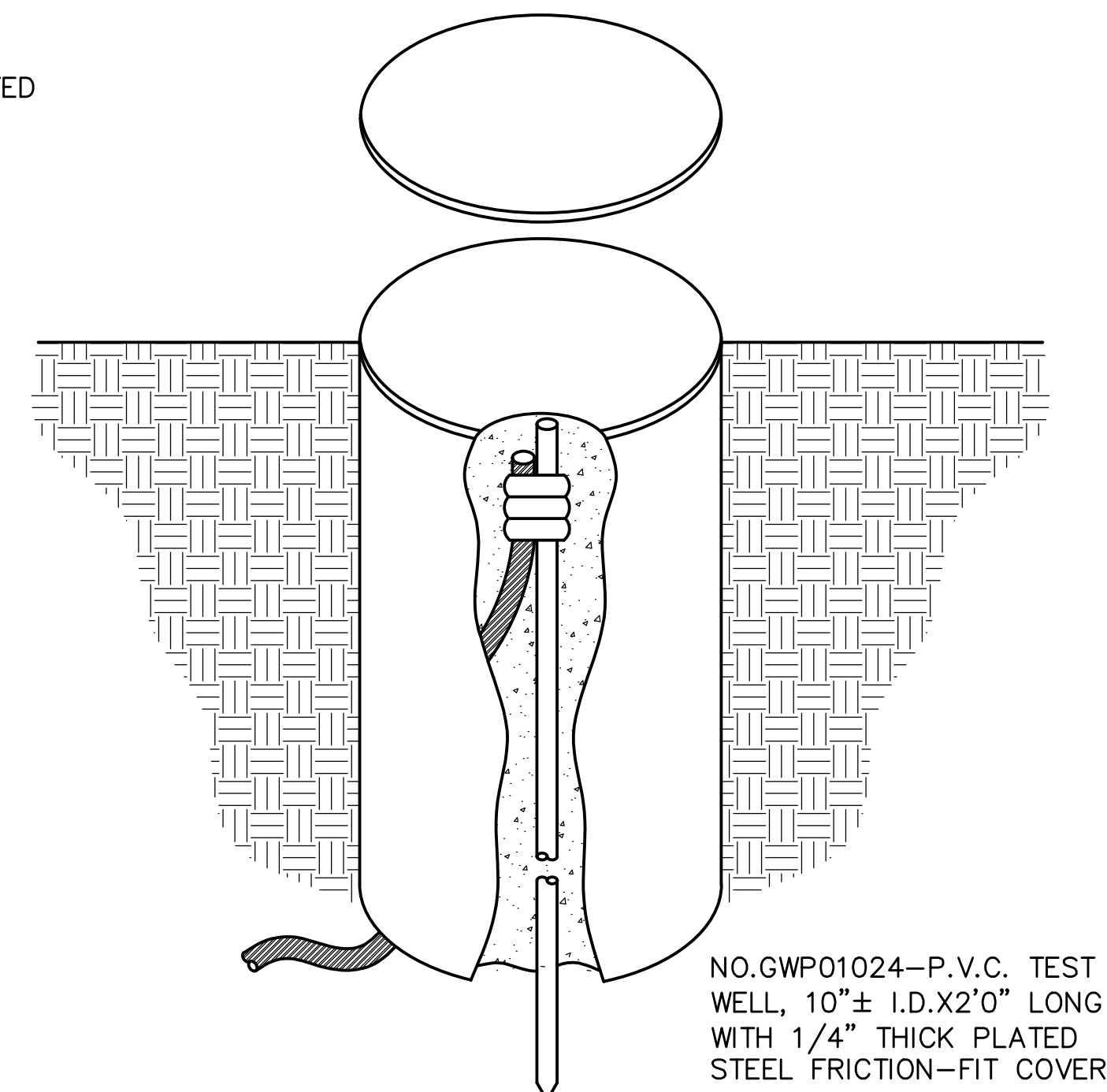
TYPICAL 480V, 200A MEGAYACHT PEDESTAL (MY)
SCALE: NONE



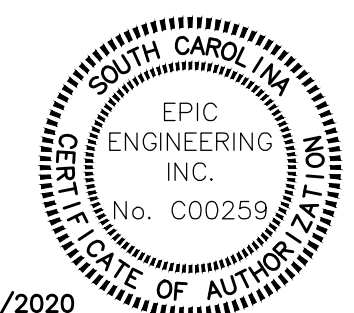
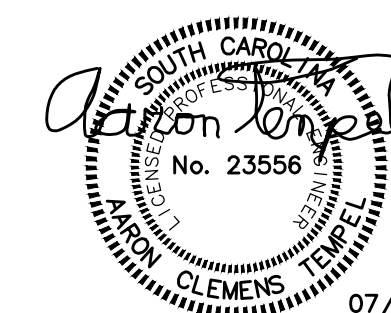
GANGWAY DETAIL
SCALE: NONE



PANEL MOUNTING DETAIL (MDP1 & MDP2)
SCALE: NONE



GROUND ACCESS WELL DETAIL
SCALE: NONE



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Signature
Aaron C. Tempel, P.E.
ME Professional Eng. PE15177
07/08/2020
Date

REV. NO.	DATE	BY	CHKD BY	REMARKS

DESIGNED	DRAWN	CHECKED	ACT

DATE: 12/08/2019
JOB NO. 19120
SCALE: NONE

ISLE OF PALMS MARINA
ISLE OF PALMS, SC
DETAILS
CITY OF ISLE OF PALMS, SC

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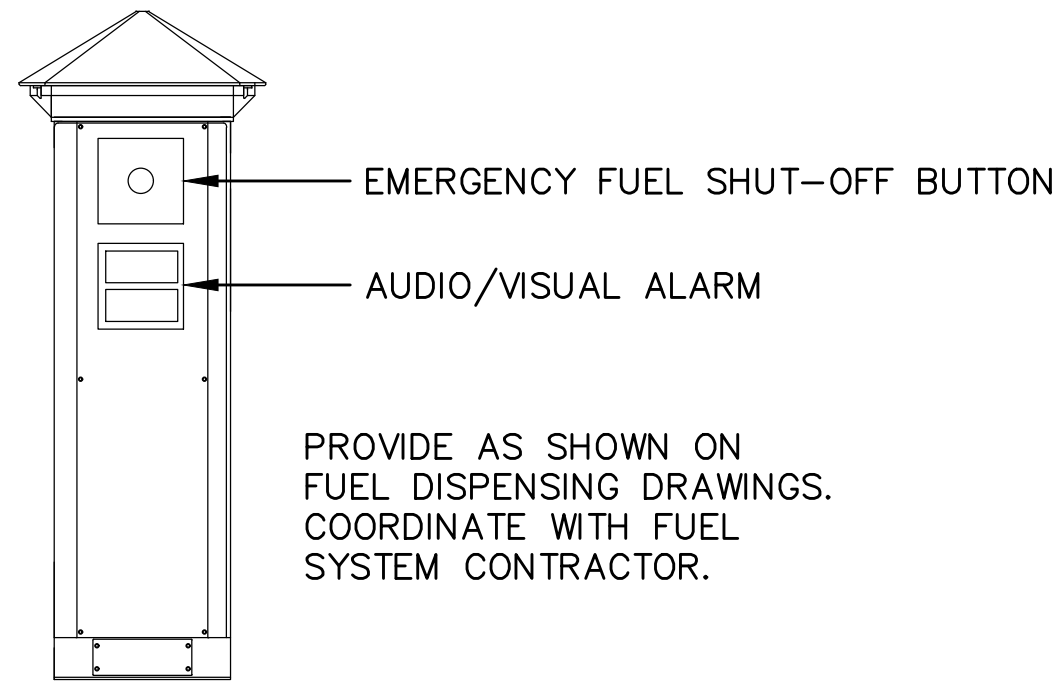


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SHEET: 8 OF 8

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GENERAL FUEL DISPENSING NOTES:

- PROVIDE ALL MATERIALS AND LABOR NECESSARY FOR COMPLETE AND PROPERLY FUNCTIONING PETROLEUM STORAGE AND DISPENSING SYSTEMS. THIS WORK INCLUDES BUT NOT LIMITED TO ALL PIPING, DISPENSERS, ELECTRICAL WIRING, CONTROL WIRING, ELECTRICAL CONTROL CONDUIT, SEAL-OFF FITTINGS, EMERGENCY SHUTOFF DEVICES, AUDIO/VISUAL ALARMS, ETC. WARRANTY ALL WORK, ALL MATERIALS, EQUIPMENT, AND DEVICES FOR A PERIOD OF ONE YEAR AFTER OWNER'S ACCEPTANCE.
- WORK SHALL CONFORM TO OR MEET THE REQUIREMENTS OF THE MOST CURRENT EDITION OF:
 - A: INTERNATIONAL FIRE CODE - 2018
 - B: NFPA 30 & 30A
 - C: PETROLEUM INSTITUTE RP100/200
 - D: STATE AND FEDERAL DEPARTMENT OF ENVIRONMENTAL PROTECTION
 - E: NEC ARTICLE 555 AND 514
- COORDINATE WITH AND OBTAIN CONSTRUCTION PERMITS AND INSPECTIONS FROM AUTHORITY HAVING JURISDICTION. PROVIDE OWNER WITH CERTIFICATES OF FINAL INSPECTION AND ACCEPTANCE FROM AUTHORITY HAVING JURISDICTION.
- PROVIDE THE OWNER WITH OPERATING AND MAINTENANCE MANUALS FOR ALL NEW SYSTEM COMPONENTS; RECOMMENDED MAINTENANCE SCHEDULES; AS-BUILT DRAWINGS; AND INSTRUCTIONS FOR THE COMPONENTS OF THE FUEL SYSTEM.
- ALL MATERIAL SHALL BE NEW AND BY U.S. MANUFACTURER OF PROFESSIONAL QUALITY.
- ALL MATERIALS, EQUIPMENT, AND DEVICES SHALL, AT MINIMUM, MEET THE REQUIREMENTS OF UL WHERE UL STANDARDS ARE ESTABLISHED FOR THOSE ITEMS. ALL ITEMS SHALL BE CLASSIFIED BY UL AS SUITABLE FOR THE PURPOSE USED.
- ALL MATERIALS, EQUIPMENT, AND DEVICES SHALL BE CURRENT PRODUCTS BY MANUFACTURERS REGULARLY ENGAGED IN THE PRODUCTION OF SUCH PRODUCTS.
- ALL ITEMS SHALL BE NEW UNLESS NOTED OTHERWISE.
- INSTALL ALL EQUIPMENT AND MATERIAL IN ACCORDANCE WITH MANUFACTURER'S INSTRUCTIONS AND RECOMMENDATIONS.
- THE CONTRACTOR AND HIS SUBCONTRACTORS SHALL VISIT THE JOB SITE AND SHALL FAMILIARIZE THEMSELVES WITH ALL CONDITIONS UNDER WHICH WORK IS TO BE PERFORMED AND SHALL INCLUDE ALL LABOR, MATERIAL, AND OPERATIONS REQUIRED FOR A COMPLETE JOB.
- VERIFY ALL EXISTING PUMPS, STORAGE TANKS, PIPING, CONTROLS, ETC. AND ASSOCIATED APPURTENANCES PRIOR TO CONSTRUCTION. NOTIFY ENGINEER AS NECESSARY.
- COORDINATE LOCATION OF PETROLEUM WORK WITH OTHER TRADES TO AVOID CONFLICTS AND INTERFERENCES.
- ALL PETROLEUM EQUIPMENT SHALL HAVE A FACTORY APPLIED PAINTING.
- PROVIDE EXPANSION-DEFLECTION JOINTS WHERE PIPE CROSSES DOCK SYSTEM EXPANSION, SEISMIC JOINTS, AND HINGE POINTS.
- ALL PETROLEUM PIPING SHALL BE DOUBLE WALL COAXIAL FLEX PIPE AS MANUFACTURED BY DOUBLETAC. THE PETROLEUM CONTRACTOR SHALL BE FACTORY CERTIFIED FOR INSTALLATION OF THIS PRODUCT. ALL PIPE TO SLOPE TOWARD A CONTAINMENT SUMP. PROVIDE WITH BULKHEAD TO FLOATING DOCK TRANSITION AS DESIGNED BY THE MANUFACTURER FOR LOCAL TIDAL CONDITIONS.
- ELECTRICAL POWER AND COMMUNICATION TO BE PROVIDED FROM MARINA MARKET/DOCKMASTER'S OFFICE. COORDINATE WITH EXISTING FIELD CONDITIONS.
- COORDINATE PAY METHODS, MONITORING SYSTEM, ETC. WITH OWNER. THE NEW SYSTEM NEEDS TO BE COMPATIBLE WITH THE EXISTING SCRIBBLE SYSTEM.
- DRAWINGS ARE DIAGRAMMATIC IN NATURE AND ARE NOT INTENDED TO BE SCALED FOR DIMENSIONS. COORDINATE EXACT INSTALLATION WITH SITE PLAN AND ACTUAL DOCK SYSTEM PROVIDED. PROVIDE PIPING TRANSITIONS AS REQUIRED. INSTALL HOSE REELS, FUEL DISPENSERS AND DISPENSER SUMPS APPROXIMATELY AS SHOWN. THE CONTRACTOR SHALL COORDINATE FINAL LOCATION AS REQUIRED. PROVIDE OPENINGS IN THE DOCK AS REQUIRED TO ACCOMMODATE THE DISPENSER SUMPS. IT IS NOT THE INTENT TO DEPICT EVERY DETAIL OF CONSTRUCTION. THE CONTRACTOR IS RESPONSIBLE FOR PROVIDING ALL NECESSARY ITEMS FOR A COMPLETE AND FUNCTIONING SYSTEM. CONTRACTOR SHALL PROVIDE COMPLETE SHOP DRAWINGS INCLUDING EQUIPMENT, RISER DIAGRAMS, CONTROL SCHEMATICS, OPERATING MANUALS TO DEPICT COMPLETE AND OPERATING SYSTEM PRIOR TO CONSTRUCTION.
- ALL COMPONENTS WITHIN THE CLASSIFIED AREAS SHALL BE CONSTRAINED IN ACCORDANCE WITH NFPA 30 AND 30A.
- ALL STAINLESS STEEL FITTINGS, CLAPS, HANGERS AND MISCELLANEOUS APPURTENANCES SHALL BE ASTM A-316 OR BETTER.
- THE FUEL DISPENSING CONTRACTOR IS RESPONSIBLE FOR ALL NECESSARY FUEL ELECTRICAL POWER WIRING, CONDUIT, BREAKERS, ETC.
- COORDINATE TO ENSURE THE FUEL HUT IS PROVIDED WITH ALL REQUIRED COMMUNICATIONS PER NFPA 303 SECTION 6.8.

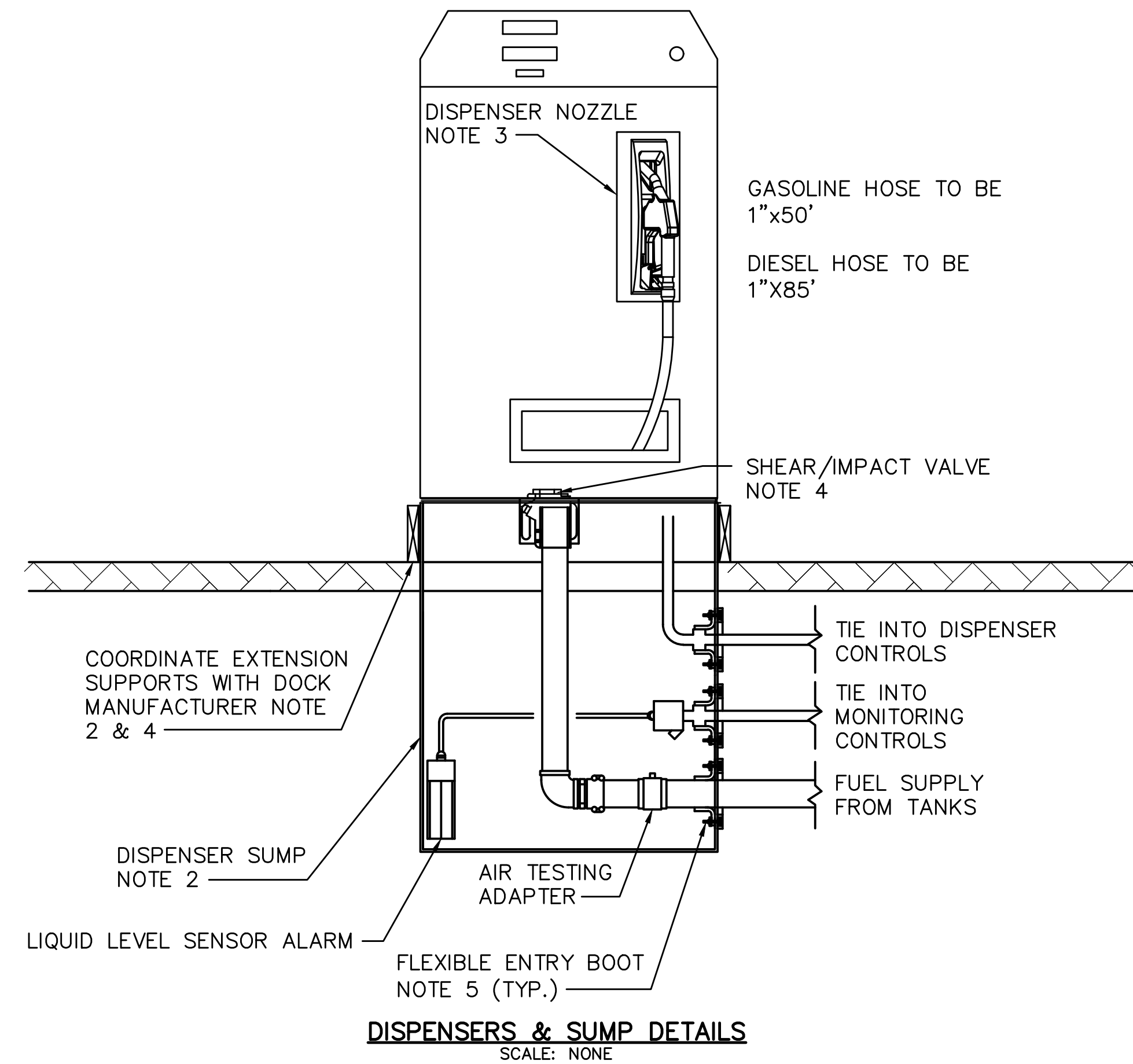


**ESTOP-AUDIO/VISUAL ALARM
MEE HARBOR LIGHT SERIES PEDESTAL**

NOTE:
THIS DESIGN UTILIZES MEE CUSTOM PEDESTALS AS MANUFACTURED BY MARINA ELECTRICAL EQUIPMENT (WILLIAMSBURG, VIRGINIA, USA. TEL. 1-865-258-3939). PROVIDE PHOTO-CELL CONTROLLED LED LIGHTS WITH WHITE LENSES.

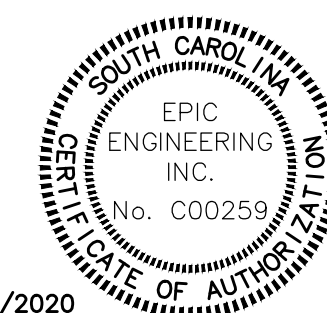
LEGEND

- GAS PIPING (G)
- DIESEL PIPING (D)
- ISOLATION VALVE
- CHECK VALVE
- UNION
- AUDIO/VISUAL ALARM
- S.S. STAINLESS STEEL
- GASOLINE DISPENSER
- DIESEL DISPENSER
- ESTOP** MEE HARBOR LIGHT SS SERIES PEDESTAL. PROVIDE WITH EMERGENCY PUSH BUTTON SHUT OFF FOR FUEL DISPENSING SYSTEM. COORDINATE WITH FUEL DISPENSING CONTRACTOR.



NOTES:

- PROVIDE PMC GASOLINE FUEL DISPENSER(S), MODEL FH-510-MA-2M, WITH POWER REWIND. PROVIDE PMC DIESEL FUEL DISPENSER, MODEL FH-510-MA-2M, WITH POWER REWIND.
- PROVIDE THE FUEL DISPENSER WITH STAINLESS STEEL DISPENSER CONTAINMENT SUMP. EMCO DISPENSER SUMP PMC FUELHOUSE MOUNTING FLANGE. VERIFY EXACT SIZE WITH DISPENSER AND DOCK SYSTEMS. THE DOCK SYSTEM SHALL BE MODIFIED BY THE DOCK MANUFACTURER TO ALLOW INSTALLATION. SPILL CONTAINMENT SUMPS TO BE LOCATED SO AS TO BE ACCESSIBLE FROM THE TOP
- DISPENSER NOZZLES SHALL BE USED ONLY FOR FUELING VESSELS TO AVOID STAGE II VAPOR RECOVERY REQUIREMENT. AUTOMATIC SELF-CLOSING-TYPE DISPENSER NOZZLES SHALL BE INSTALLED WITHOUT LATCH-OPEN DEVICES.
- INSTALL AN EMERGENCY SAFETY SHEER VALVE UNDER ALL DISPENSER SUMPS AS MANUFACTURED BY EMCO. CONNECT PIPING TO SAFETY VALVES WITH MARINA GRADE FLEX HOSE.
- PROVIDE FLEXIBLE ENTRY BOOTS FOR EACH SUMP PENETRATION.



07/08/2020

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 ME Professional Eng. PE15477
 07/08/2020
 Date

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			12/08/2019	19120	NONE

**ISLE OF PALMS MARINA
ISLE OF PALMS, SC**

NOTES, LEGEND AND DETAILS

CITY OF ISLE OF PALMS, SC

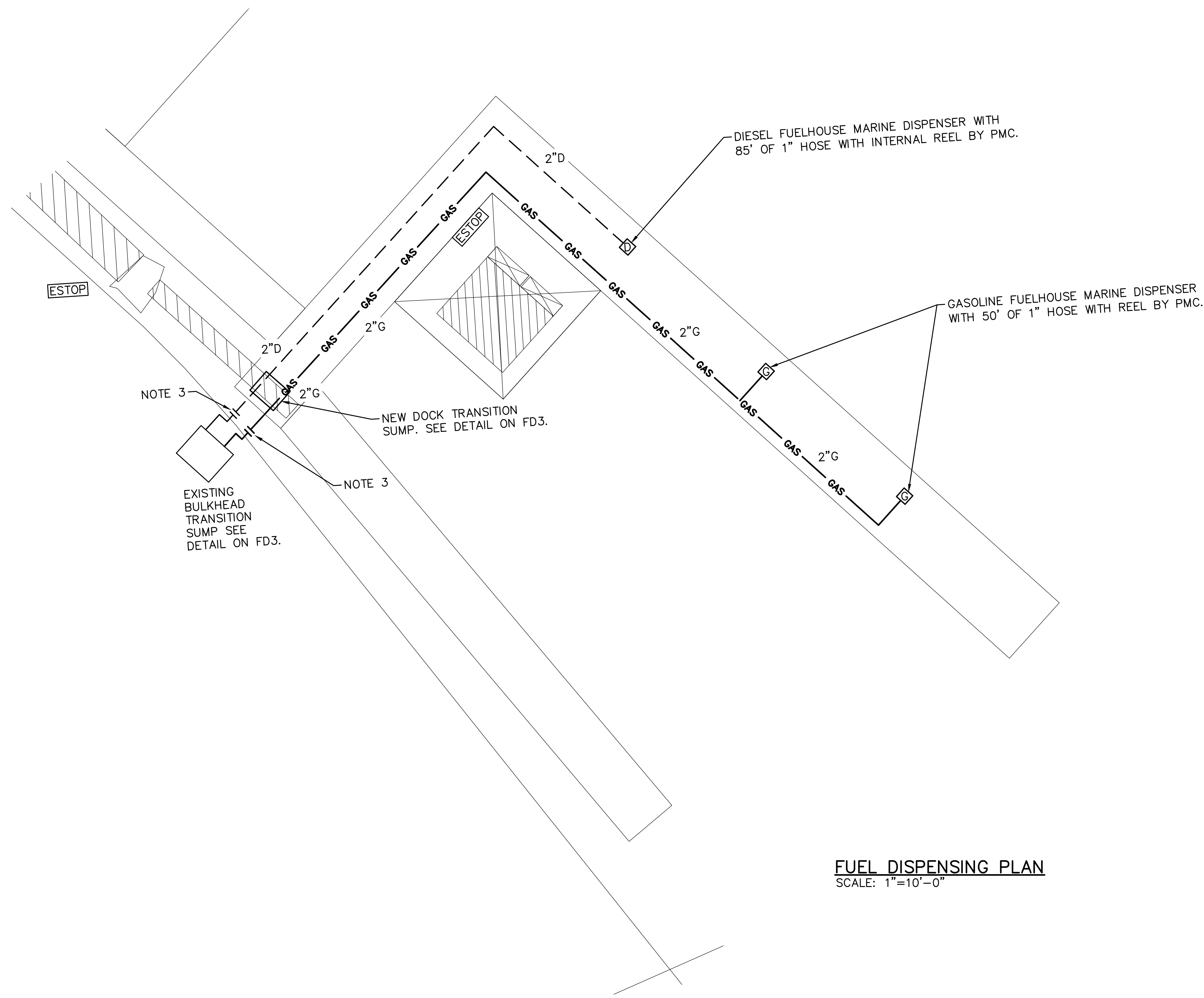
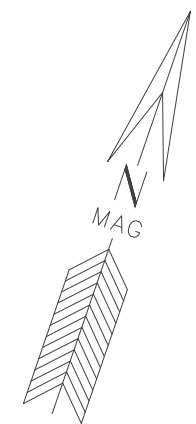
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NOTES:

1. THE EXISTING TANKS, UPLAND FUEL DISPENSERS, TRANSITION SUMP AND UPLAND FUEL PIPING TO REMAIN.
2. COORDINATE LOCATIONS OF ESTOPS, INVENTORY & LEAK PANELS AND PUMP CONTROL PANELS WITH OWNER.
3. TIE NEW PIPING INTO EXISTING. PROVIDE NEW DOUBLE WALL FLEXIBLE TRANSITION LOOP FROM BULKHEAD TO FLOATING DOCK AS MANUFACTURED BY DOUBLETRAC. COORDINATE LOCAL TIDE RISE AND FALL WITH MANUFACTURER.

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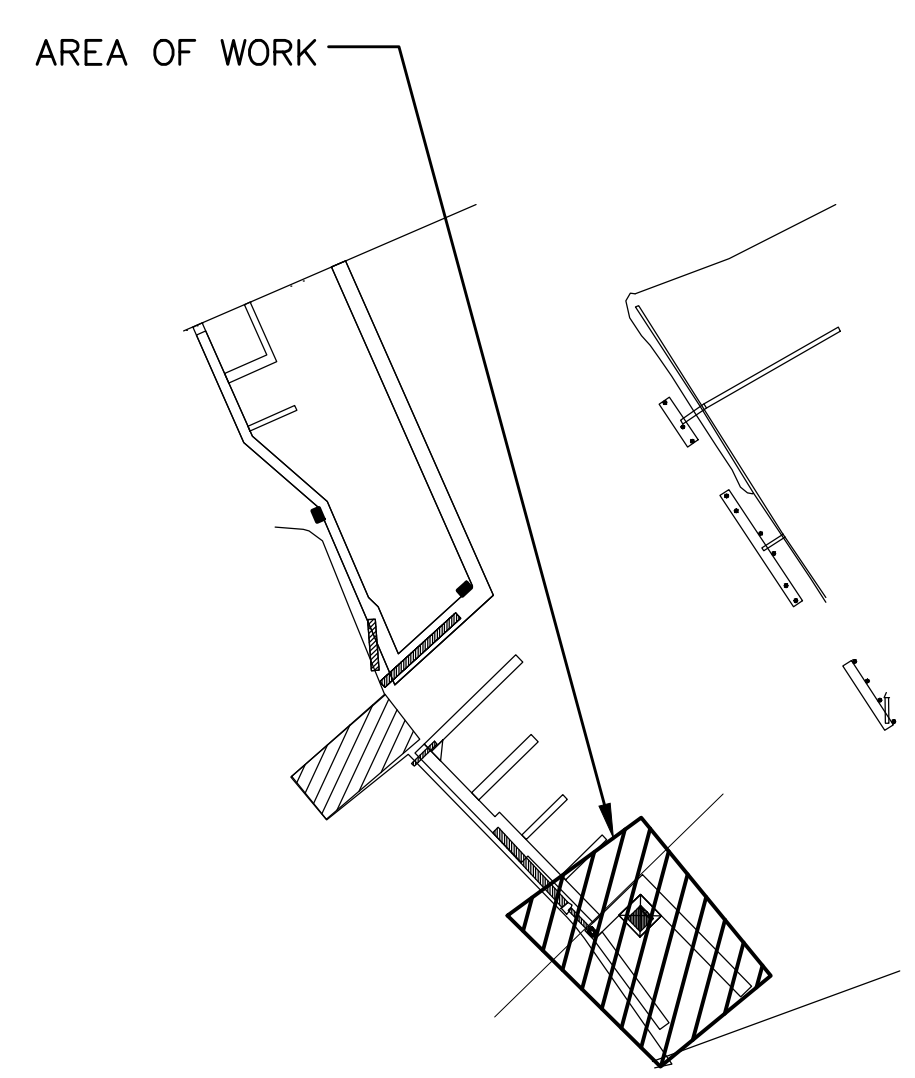
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ISLE OF PALMS MARINA
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FUEL DISPENSING PLAN
 CITY OF ISLE OF PALMS, SC

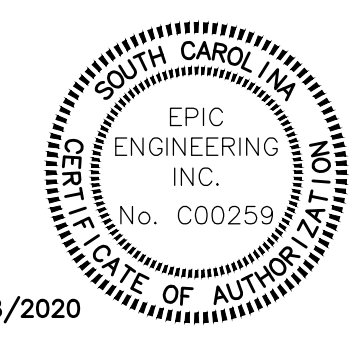
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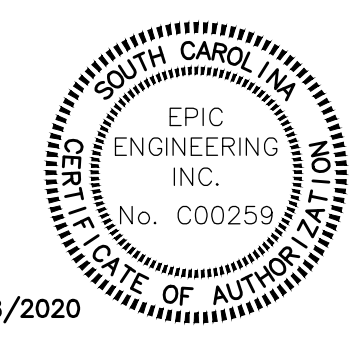
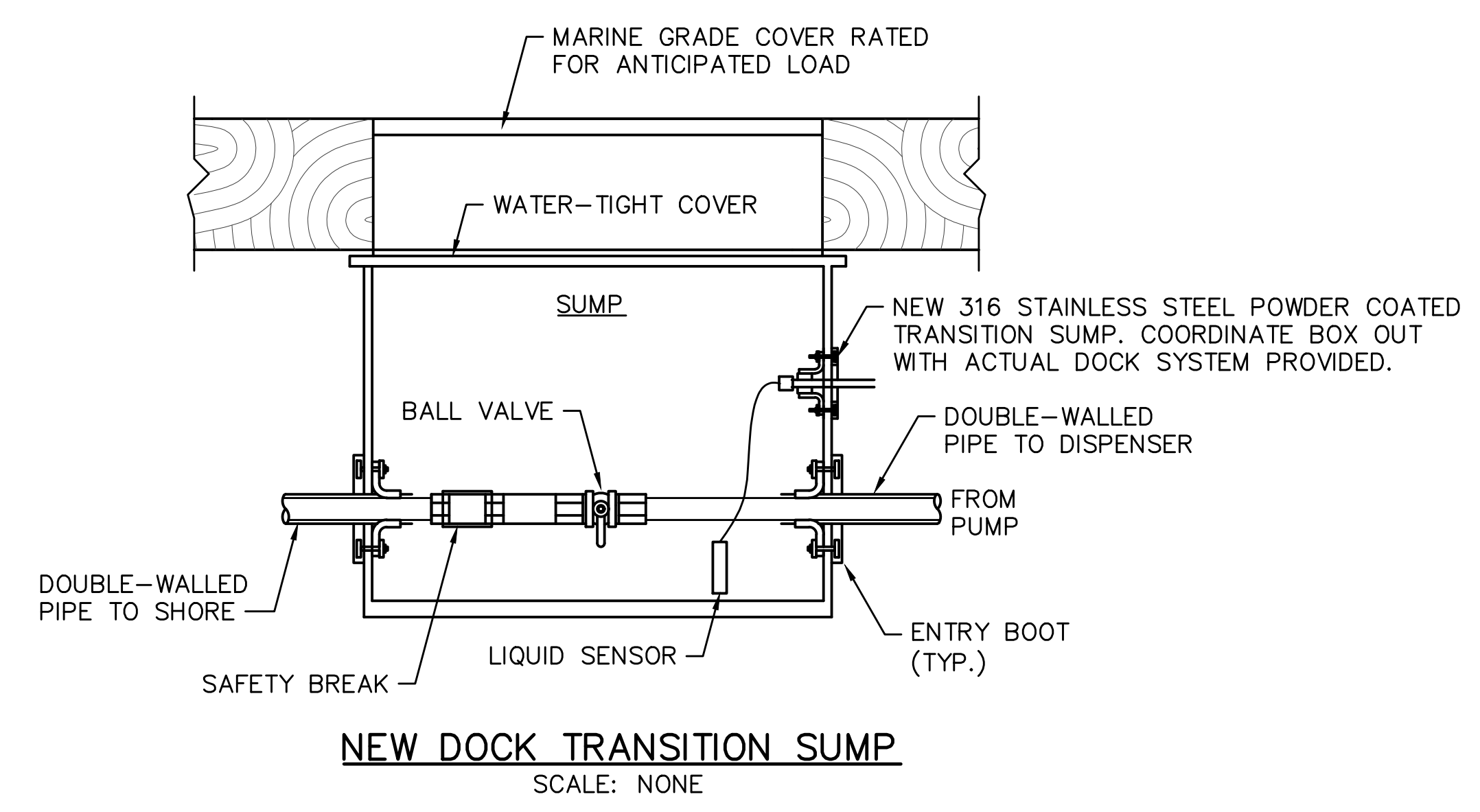
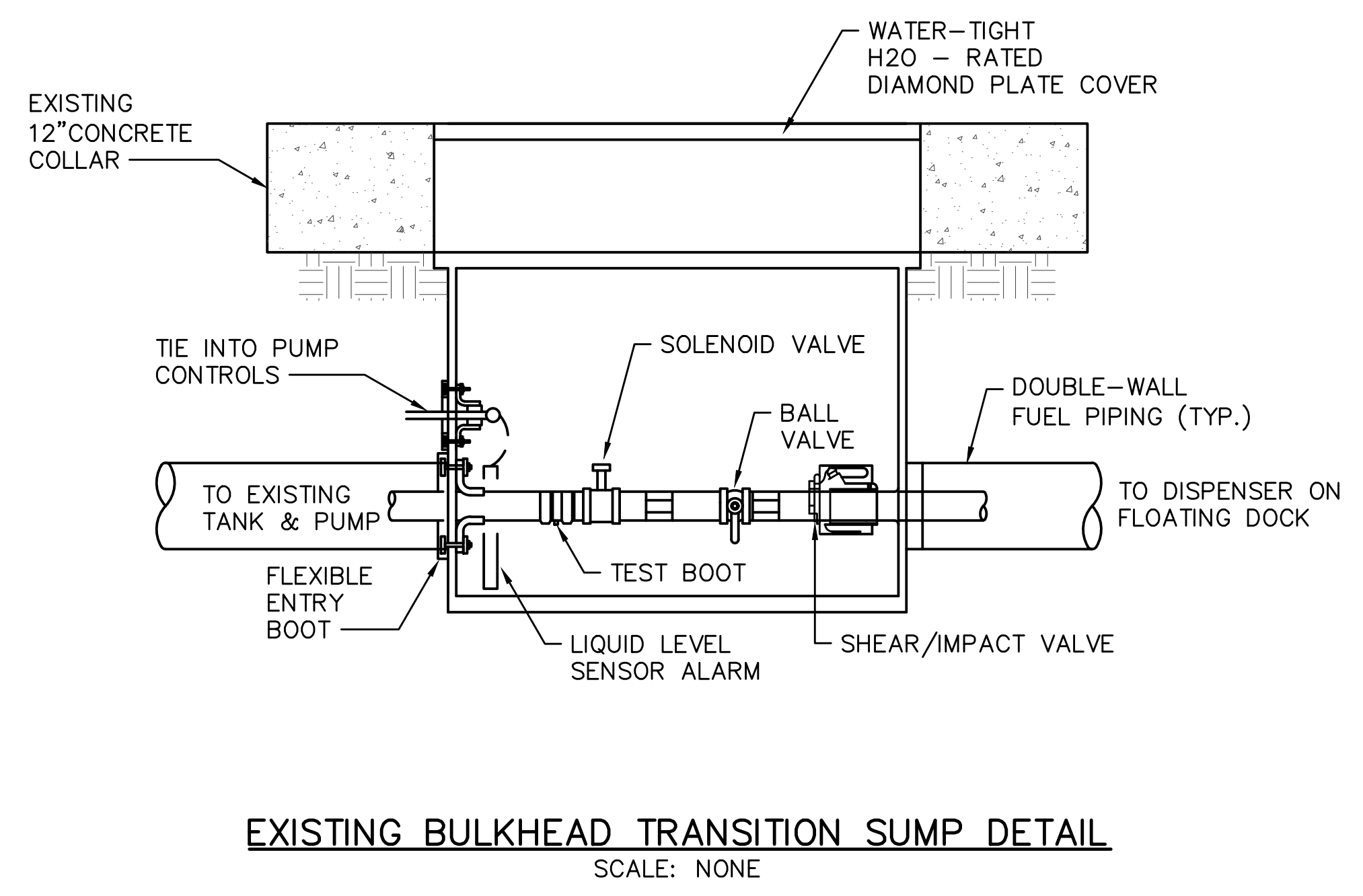
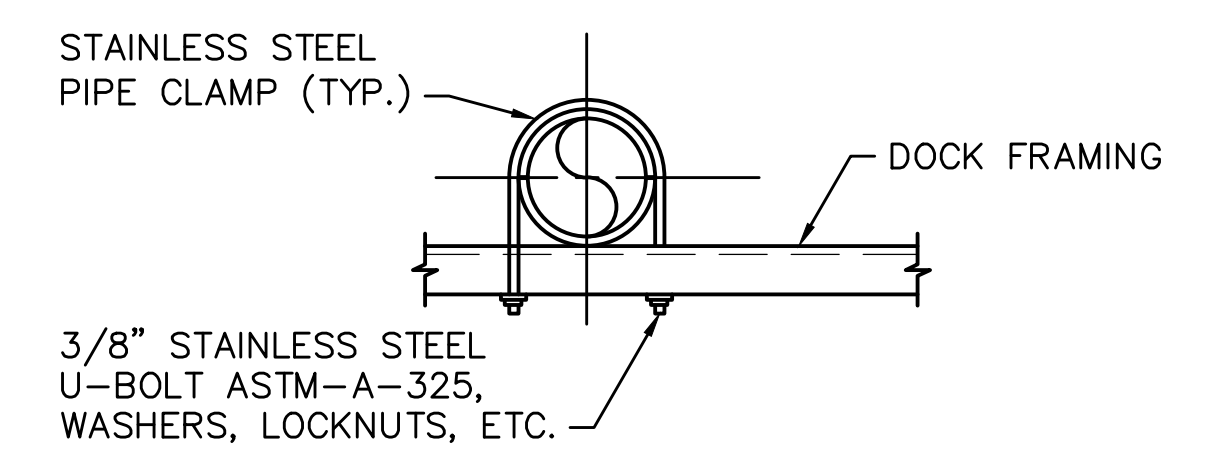
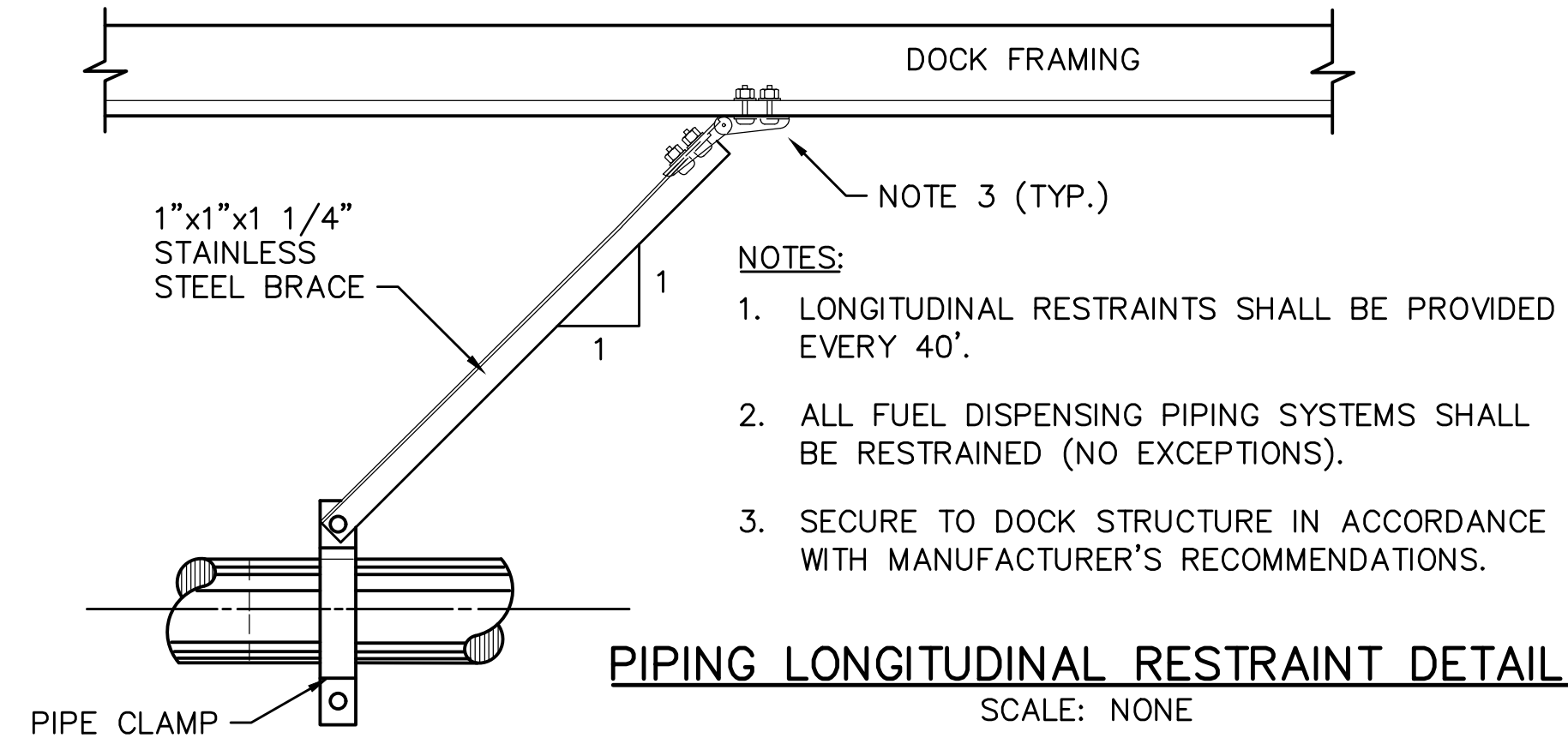
KEYPLAN
 SCALE: NONE

FUEL DISPENSING PLAN
 SCALE: 1"=10'-0"



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ISLE OF PALMS MARINA
ISLE OF PALMS, SC

FUEL DISPENSING DETAILS

CITY OF ISLE OF PALMS, SC

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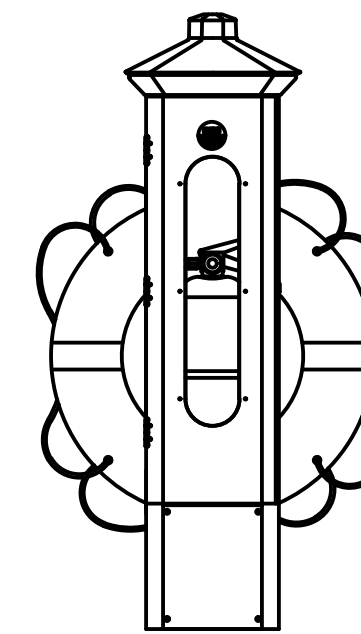
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GENERAL FIRE PROTECTION NOTES:

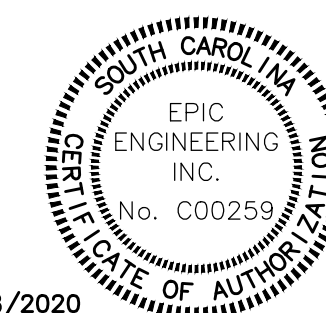
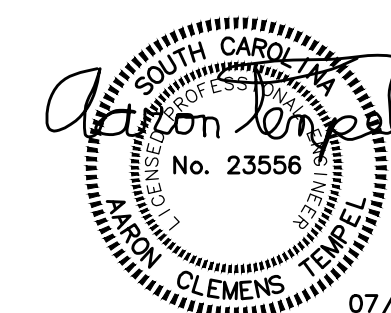
1. PROVIDE ALL MATERIALS AND LABOR NECESSARY FOR COMPLETE AND PROPERLY FUNCTIONING FIRE PROTECTION SYSTEMS.
2. WORK SHALL CONFORM TO OR MEET THE REQUIREMENTS OF THE MOST CURRENT EDITION OF:
 - A. INTERNATIONAL FIRE CODE – 2018
 - B. NFPA 303 – 2016
 - C. NFPA 14 – 2016
 - D. ALL FEDERAL, STATE AND LOCAL CODES AND ORDINANCES WHICH APPLY TO THIS WORK.
3. DRAWINGS ARE DIAGRAMMATIC IN NATURE AND ARE NOT INTENDED TO BE SCALED FOR DIMENSIONS.
4. ALL MATERIALS SHALL MEET THE REQUIREMENTS OF UL WHERE UL STANDARDS ARE ESTABLISHED FOR THOSE ITEMS. ALL ITEMS SHALL BE CLASSIFIED BY UL AS SUITABLE FOR THE PURPOSE USED.
5. ALL ITEMS SHALL BE NEW AND ALL MATERIALS/EQUIPMENT/DEVICES SHALL BE CURRENT PRODUCTS BY MANUFACTURERS REGULARLY ENGAGED IN THE PRODUCTION OF SUCH PRODUCTS.
6. COORDINATE LOCATION AND INSTALLATION OF FIRE PROTECTION WORK WITH DOCK SYSTEM AND OTHER TRADES TO AVOID CONFLICTS, INTERFERENCES, MODIFICATIONS AND ADJUSTMENTS MAY BE REQUIRED. PROVIDE WITH PIPING CHAFE PROTECTION AS REQUIRED. SUBMIT SHOP DRAWINGS DEPICTING LOCATIONS OF CHAFE PROTECTION, HANGERS AND RESTRAINTS.
7. IT IS NOT THE INTENT TO DEPICT EVERY DETAIL OF CONSTRUCTION. THE CONTRACTOR IS RESPONSIBLE FOR PROVIDING ALL NECESSARY ITEMS FOR A COMPLETE AND FUNCTIONING SYSTEM.
8. INSTALL ALL EQUIPMENT AND MATERIALS IN ACCORDANCE WITH MANUFACTURERS INSTRUCTIONS AND RECOMMENDATIONS.
9. COORDINATE AND OBTAIN PERMITS AND INSPECTIONS FROM AUTHORITY HAVING JURISDICTION.
10. PROVIDE OWNER WITH CERTIFICATE OF FINAL INSPECTION AND ACCEPTANCE FROM AUTHORITY HAVING JURISDICTION.
11. VALVES SHALL BE LINE SIZE UNLESS NOTED OTHERWISE.
12. FIRE PROTECTION (FM RATED) PIPING LOCATED WITHIN THE DOCK SHALL BE SDR 11 HIGH DENSITY POLYETHYLENE PIPING (HDPE) WITH UV PROTECTION. ALL JOINTS SHALL BE SOCKET FUSION FITTINGS. COORDINATE INSTALLATION WITH MANUFACTURER'S RECOMMENDATIONS TO ALLOW FOR THERMAL EXPANSION AND CONTRACTION. FIRE PROTECTION PIPING BELOW GRADE AWWA C151/ANSI A 21.5, STANDARD WEIGHT, TAR COATED, MECHANICAL JOINTS, DUCTILE IRON, WITH AWWA C104/ANSI A 21.5 CEMENT LINING C900 PVC PC150 (DR 18), OR FM HDPE.
13. SUBMIT SHOP DRAWINGS ON ALL MATERIALS FOR APPROVAL.
14. EACH JOINT SHALL BE LEFT EXPOSED FOR INSPECTION DURING HYDROSTATIC TESTING. THE PRESSURE SHALL BE AT LEAST 1.5 TIMES THE MAXIMUM WORKING PRESSURE AND THE TIME DURATION MUST BE AT LEAST 2 HOURS.
15. ALL STAINLESS STEEL FITTINGS, CLAMPS, HANGERS, AND MISCELLANEOUS APPURTENANCES SHALL BE ASTM A-316 OR BETTER.
16. THIS DESIGN UTILIZES MEE FIRE STATION SAFETY PEDESTALS MODEL FS1020 WITH 10 POUND TYPE ABC EXTINGUISHERS AS MANUFACTURED BY MARINA ELECTRICAL EQUIPMENT (WILLIAMSBURG, VIRGINIA, USA. TEL. 1-865-258-3939). PROVIDE PHOTO-CELL CONTROLLED LED LIGHTS WITH WHITE LENSES.
17. FUEL DOCK FIRE STATION SAFETY PEDESTALS TO BE PROVIDED WITH EXTRA (HIGH) HAZARD TYPE EXTINGUISHERS.
18. ALL STAINLESS STEEL FITTINGS, CLAPS, HANGERS AND MISCELLANEOUS APPURTENANCES SHALL BE ASTM A-316 OR BETTER.
19. PROVIDE PIPE SLEEVES AND BULKHEAD PENETRATIONS AS NECESSARY TO FACILITATE INSTALLATION. SUBMIT PENETRATION DETAIL FOR APPROVAL. UTILIZE EXISTING PENETRATIONS TO THE GREATEST EXTENT POSSIBLE.

LEGEND

- FIRE PROTECTION (FP)
- ⊗ GATE VALVE
- TYP. TYPICAL
- HDPE HIGH DENSITY POLYETHYLENE PIPING
- TBD TO BE DETERMINED
- Ⓢ FIRE PROTECTION HOSE CONNECTION
- Ⓛ FIRE EXTINGUISHER PEDESTAL



MEE FIRE STATION SAFETY PEDESTAL



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			12/08/2019	19120	NONE

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NOTES AND LEGEND

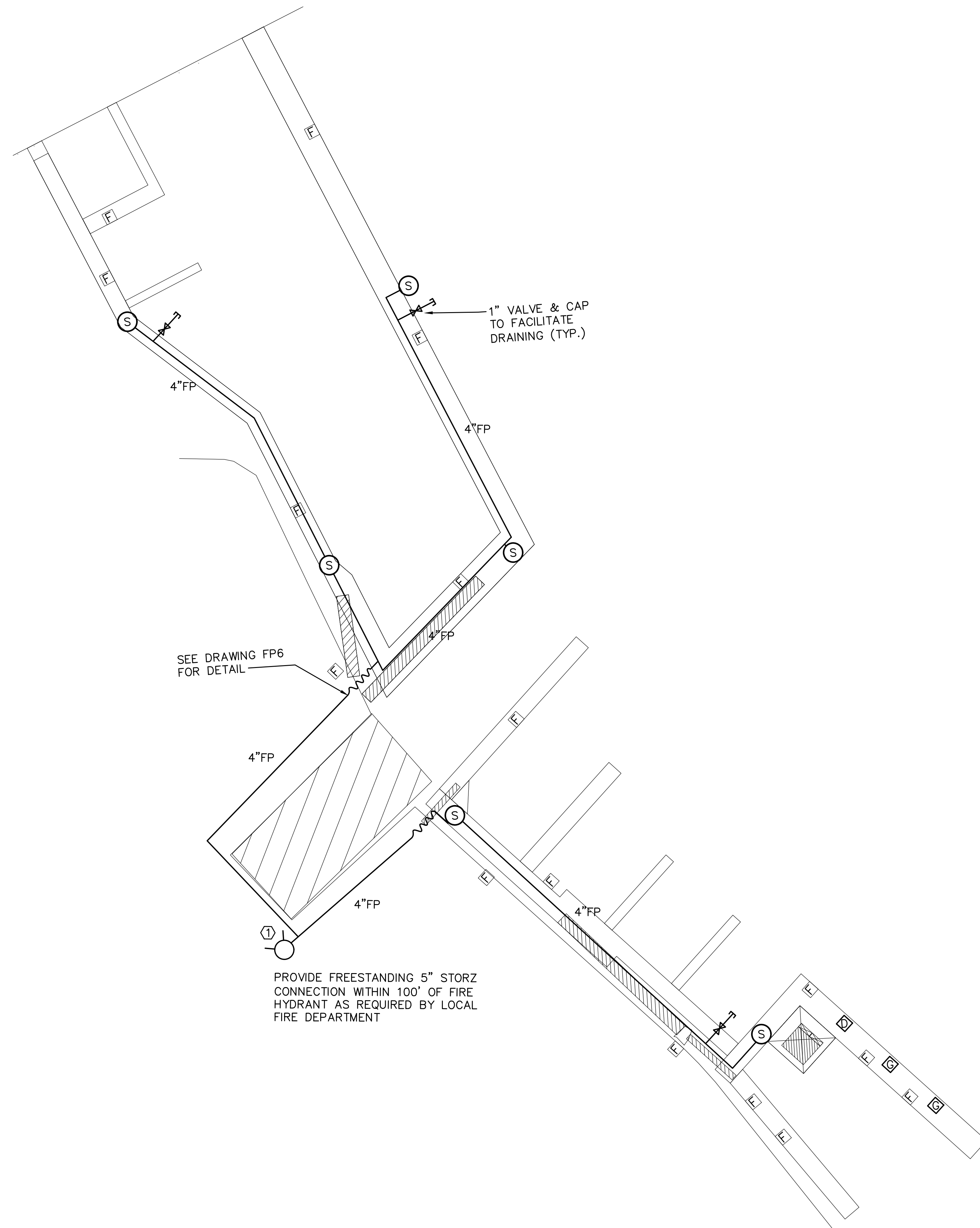
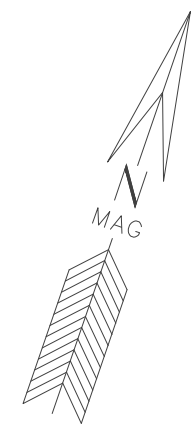
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KEYED NOTES (THIS SHEET ONLY)

① COORDINATE EXACT LOCATIONS WITH ENGINEER PRIOR TO INSTALLATION.

LEGEND

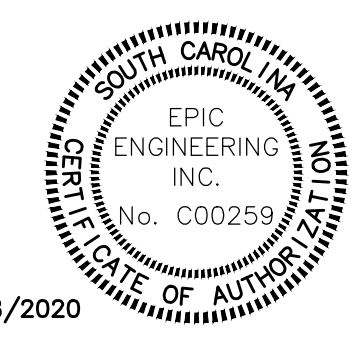
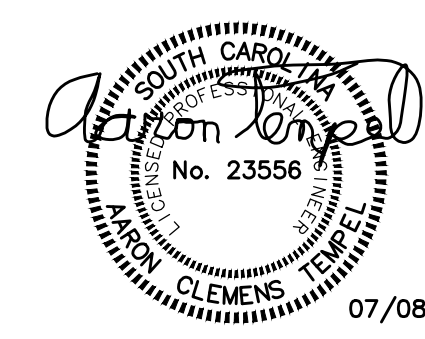
- FIRE PROTECTION (FP)
- ⊗ GATE VALVE
- Ⓢ FIRE PROTECTION HOSE CONNECTION
- Ⓛ FIRE EXTINGUISHER PEDESTAL

1" VALVE & CAP TO FACILITATE DRAINING (TYP.)

SEE DRAWING FP6 FOR DETAIL

PROVIDE FREESTANDING 5" STORZ CONNECTION WITHIN 100' OF FIRE HYDRANT AS REQUIRED BY LOCAL FIRE DEPARTMENT

FIRE PROTECTION PLAN
SCALE: 1"=30'-0"



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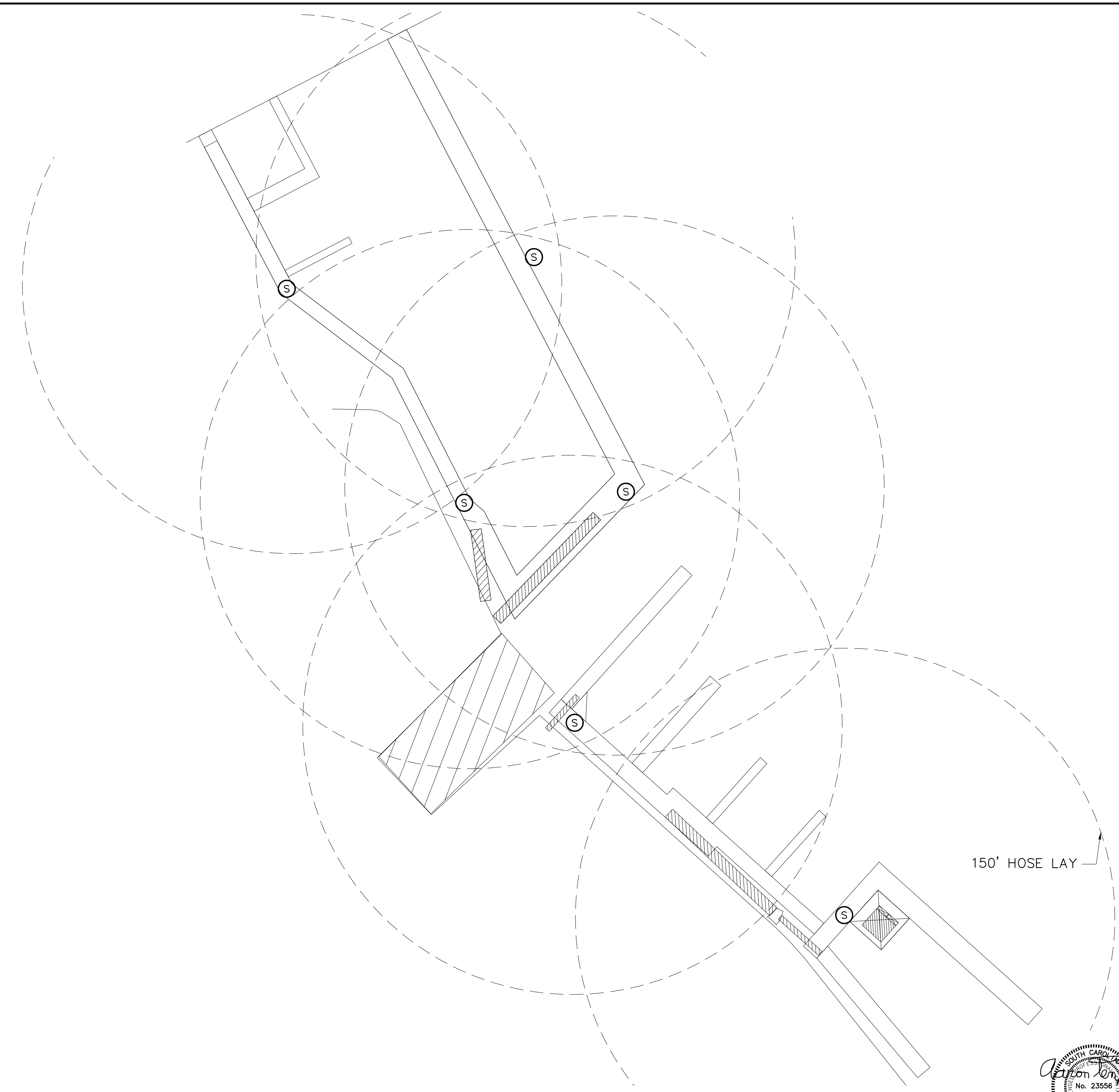
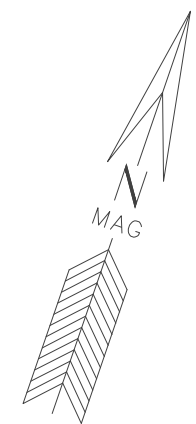
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FIRE PROTECTION PLAN
CITY OF ISLE OF PALMS, SC

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SHEET: 2 OF 6

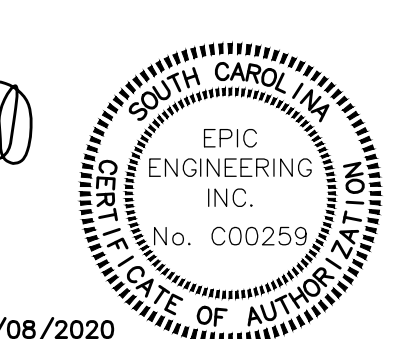
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150' HOSE LAY

STANDPIPE COVERAGE ZONES
SCALE: 1"=30'-0"

LEGEND
S FIRE PROTECTION HOSE CONNECTION



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FIRE PROTECTION PLAN
STANDPIPE COVERAGE ZONES
 CITY OF ISLE OF PALMS, SC

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JOB NO. 19120		
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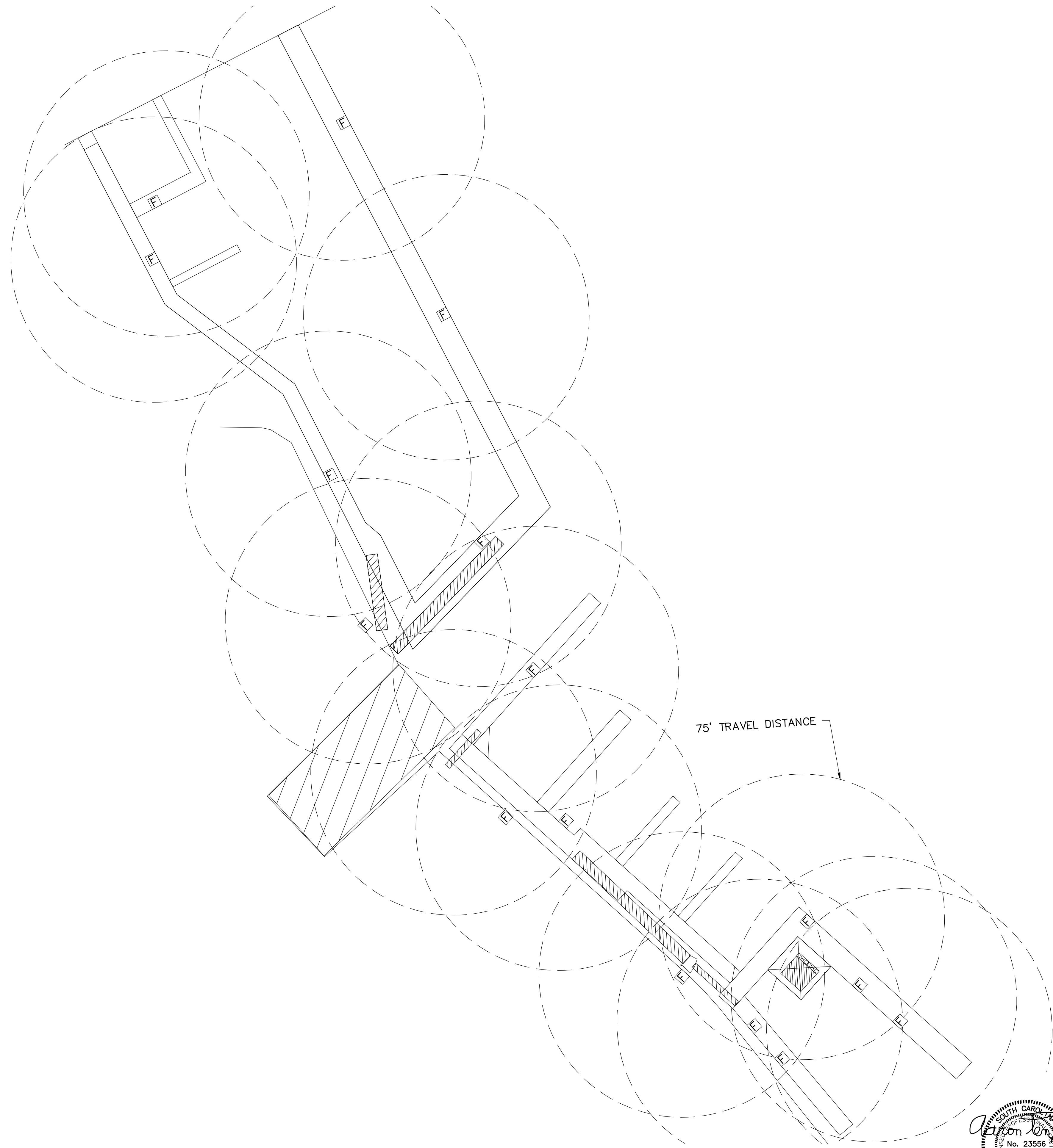
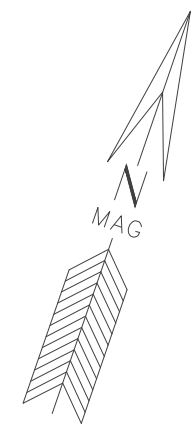
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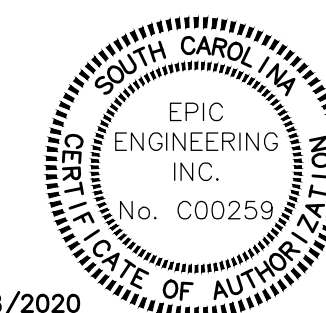
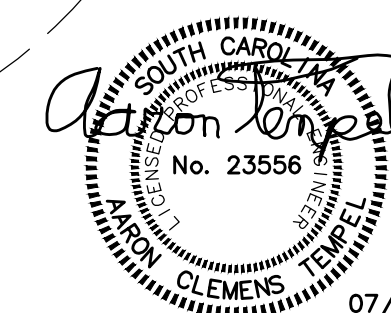
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FIRE EXTINGUISHER COVERAGE ZONES
SCALE: 1"=30'-0"



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LEGEND
[F] FIRE EXTINGUISHER PEDESTAL

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ME Professional Eng. PE151577
07/08/2020
Date

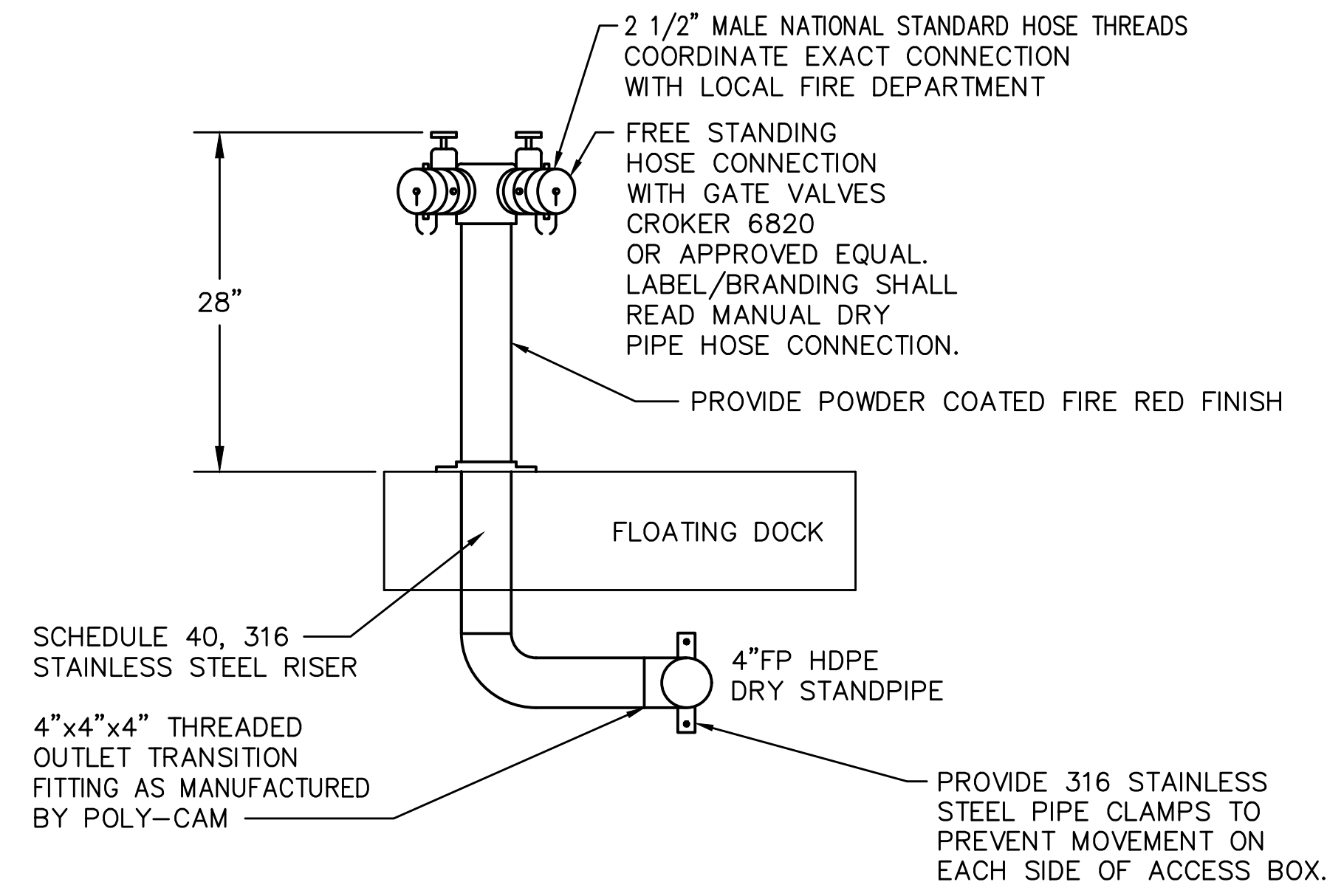
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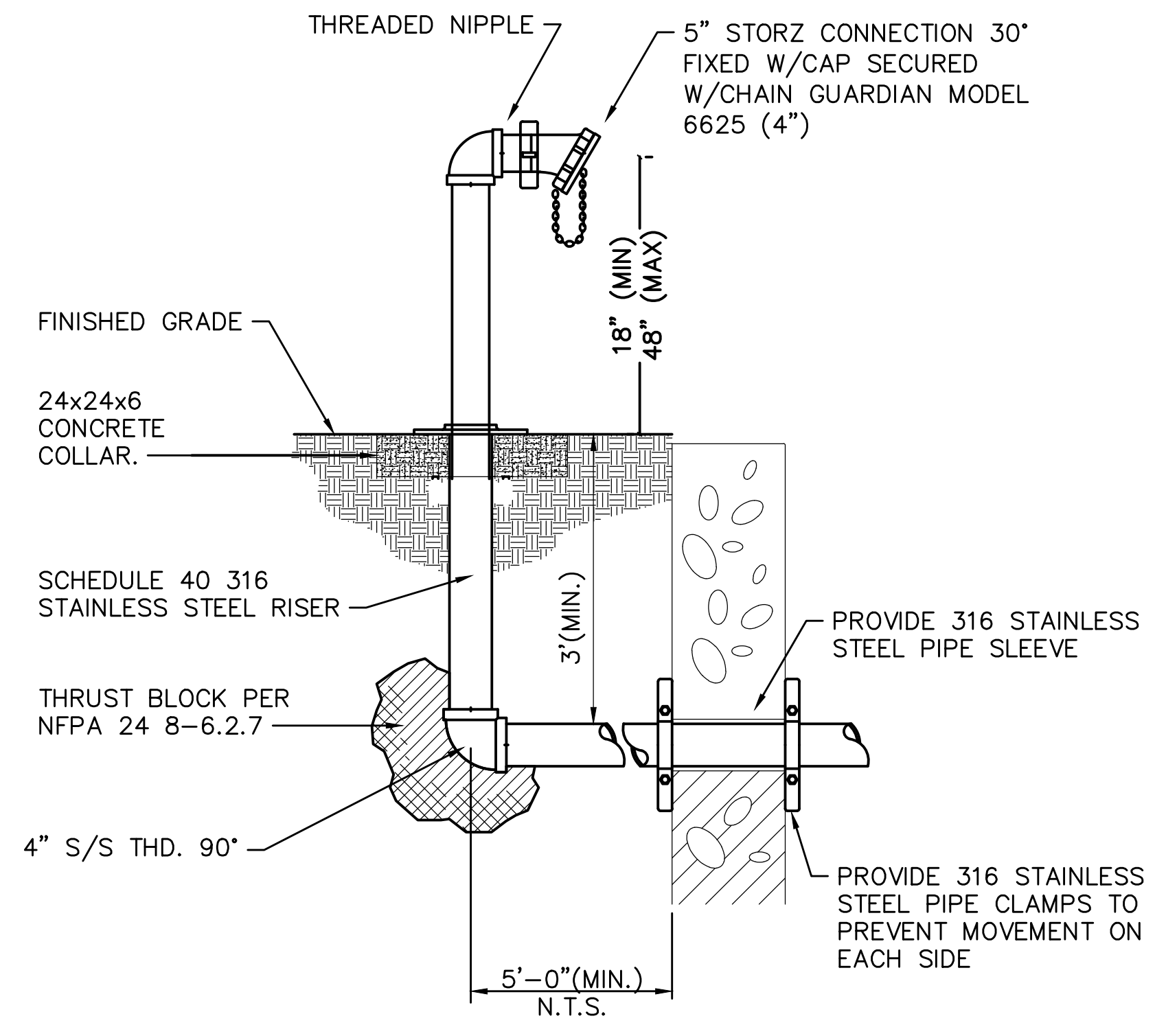
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FIRE EXTINGUISHER COVERAGE ZONES
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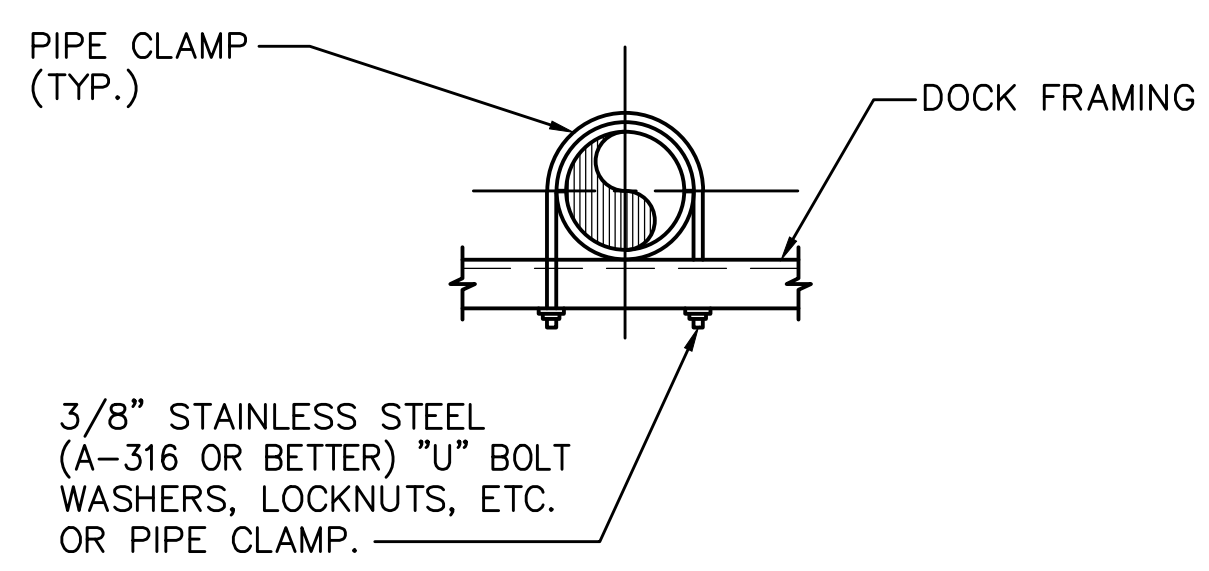
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MANUAL DRY STANDPIPE SYSTEM HOSE CONNECTION DETAIL
SCALE: NONE

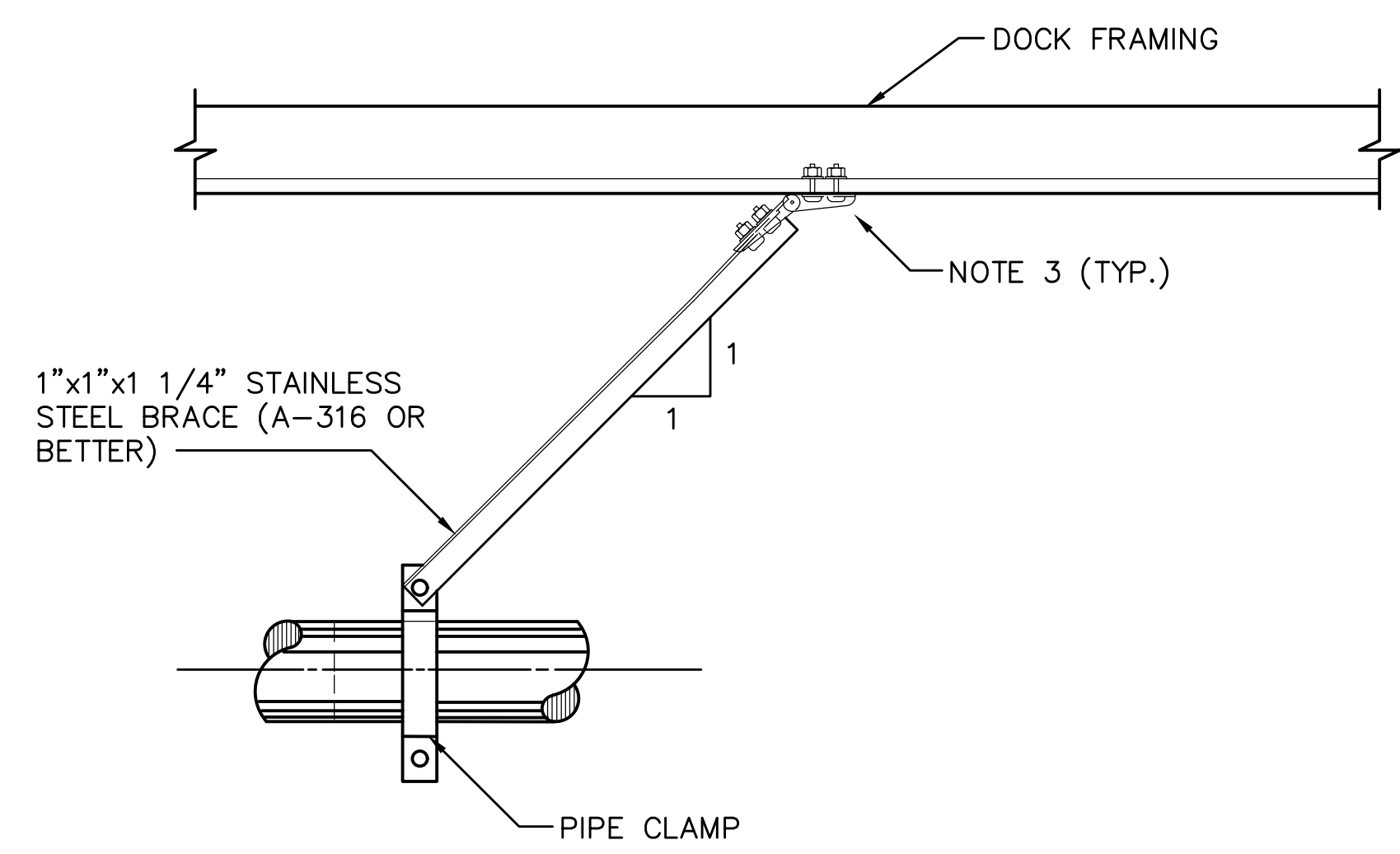


UPLAND FIRE DEPARTMENT CONNECTION DETAIL
SCALE: NONE



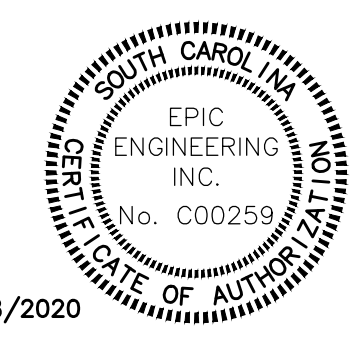
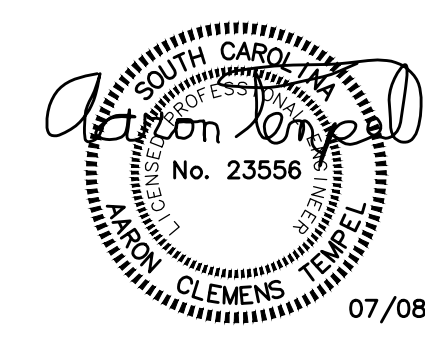
PIPE HANGER DETAIL
SCALE: NONE

NOTE:
1. PIPE HANGERS SHALL BE PROVIDED EVERY 4' TO 8'.
2. COORDINATE EXACT LOCATION WITH OTHER PIPING AND ELECTRICAL SYSTEMS
3. SECURE TO DOCK STRUCTURE IN ACCORDANCE WITH MANUFACTURER'S RECOMMENDATIONS.



PIPING LONGITUDINAL RESTRAINT DETAIL
SCALE: NONE

NOTES:
1. LONGITUDINAL RESTRAINTS SHALL BE PROVIDED EVERY 40'.
2. ALL FIRE PROTECTION PIPING SYSTEMS SHALL BE RESTRAINED (NO EXCEPTIONS).
3. SECURE TO DOCK STRUCTURE IN ACCORDANCE WITH MANUFACTURER'S RECOMMENDATIONS.



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FIRE PROTECTION DETAILS
CITY OF ISLE OF PALMS, SC

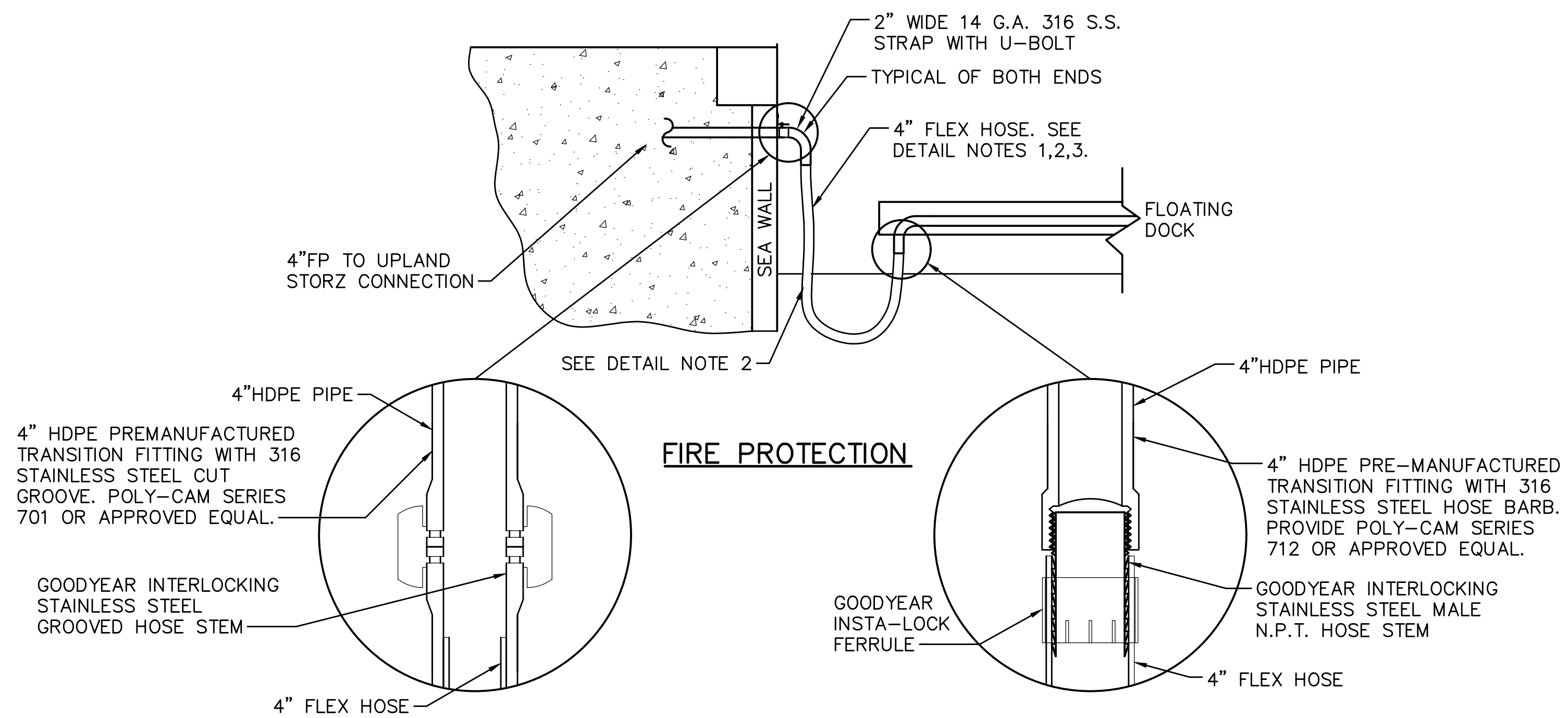
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Mt. Pleasant, SC 29464
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FP5
SHEET: 5 OF 6

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FIXED PIER TO FLOATING DOCK FIRE PROTECTION BULKHEAD CONNECTION DETAIL
SCALE: NONE

DETAIL NOTES (BOTH DETAILS THIS SHEET):

1. PROVIDE FLEXIBLE HOSE WITH REMOVABLE SACRIFICIAL CORRUGATED PLASTIC PIPING JACKET. COORDINATE EXACT SIZE WITH FLEXIBLE HOSE PROVIDED.
2. COORDINATE MOUNTING AND INSTALLATION OF THE FIRE PROTECTION PIPING WITH DOCK SYSTEM PROVIDED AND LOCAL TIDAL RISE & FALL. PROVIDE STAINLESS STEEL HANGERS AS REQUIRED. SUBMIT SHOP DRAWINGS FOR APPROVAL.
3. PROVIDE 4" FLEXIBLE HOSE WITH INTEGRAL STAINLESS STEEL TRANSITION FITTINGS AS SHOWN. PROVIDE PARKER BLUE THUNDER UHMW FLEXIBLE HOSE RATED FOR 200 PSI, OR APPROVED EQUAL. COORDINATE EXACT LENGTH WITH FIELD CONDITIONS AND ALLOW FOR RISE AND FALL OF TIDES.

Aaron Tempel
Signature
Aaron C. Tempel, P.E.
ME Professional Eng. PE15177
07/08/2020
Date

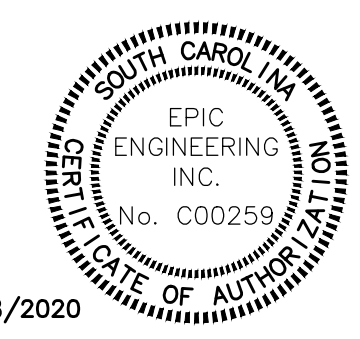
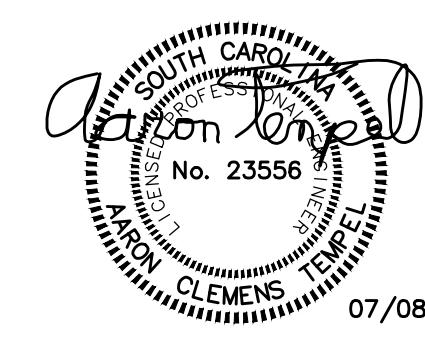
REV.	DATE	BY	CHKD	BY	REMARKS

DESIGNED	DRAWN	CHECKED	DATE	JOB NO.	SCALE
ACT	ACT	ACT	12/08/2019	19120	NONE

ISLE OF PALMS MARINA
ISLE OF PALMS, SC
FIRE PROTECTION DETAILS
CITY OF ISLE OF PALMS, SC

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DRAWING NUMBER
FP6
SHEET: 6 OF 6

GENERAL PLUMBING NOTES:

- PROVIDE ALL MATERIALS AND LABOR NECESSARY FOR COMPLETE AND PROPERLY FUNCTIONING PLUMBING SYSTEMS.
- WORK SHALL CONFORM TO OR MEET THE REQUIREMENTS OF THE MOST CURRENT EDITION OF:
 - INTERNATIONAL PLUMBING CODE – 2018
 - ALL FEDERAL, STATE AND LOCAL CODES AND ORDINANCES WHICH APPLY TO THIS WORK.
- DRAWINGS ARE DIAGRAMMATIC IN NATURE AND IS NOT INTENDED TO BE SCALED FOR DIMENSIONS.
- ALL MATERIALS SHALL MEET THE REQUIREMENTS OF UL WHERE UL STANDARDS ARE ESTABLISHED FOR THOSE ITEMS. ALL ITEMS SHALL BE CLASSIFIED BY UL AS SUITABLE FOR THE PURPOSE USED.
- ALL ITEMS SHALL BE NEW AND ALL MATERIALS/EQUIPMENT/DEVICES SHALL BE CURRENT PRODUCTS BY MANUFACTURERS REGULARLY ENGAGED IN THE PRODUCTION OF SUCH PRODUCTS.
- COORDINATE LOCATION AND INSTALLATION OF PLUMBING WORK WITH DOCK SYSTEM AND POWER PEDESTALS PROVIDED, AND OTHER TRADES TO AVOID CONFLICTS, INTERFERENCES. MODIFICATIONS AND ADJUSTMENTS MAY BE REQUIRED. PROVIDE WITH CHAFE PROTECTION AS REQUIRED. SUBMIT SHOP DRAWINGS FOR APPROVAL.
- IT IS NOT THE INTENT TO DEPICT EVERY DETAIL OF CONSTRUCTION. THE CONTRACTOR IS RESPONSIBLE FOR PROVIDING ALL NECESSARY ITEMS FOR A COMPLETE AND FUNCTIONING SYSTEM.
- INSTALL ALL EQUIPMENT AND MATERIALS IN ACCORDANCE WITH MANUFACTURERS INSTRUCTIONS AND RECOMMENDATIONS.
- COORDINATE AND OBTAIN PERMITS AND INSPECTIONS FROM AUTHORITY HAVING JURISDICTION.
- PROVIDE OWNER WITH CERTIFICATE OF FINAL INSPECTION AND ACCEPTANCE FROM AUTHORITY HAVING JURISDICTION.
- VALVES SHALL BE LINE SIZE UNLESS NOTED OTHERWISE.
- WATER AND WASTE PIPING LOCATED WITHIN THE DOCK SHALL BE SDR 11 HIGH DENSITY POLYETHYLENE PIPING (HDPE) WITH UV PROTECTION. ALL JOINTS SHALL BE SOCKET FUSION FITTINGS. COORDINATE INSTALLATION WITH MANUFACTURER'S RECOMMENDATIONS TO ALLOW FOR THERMAL EXPANSION AND CONTRACTION. WATER & WASTE PIPING BELOW GRADE SHALL BE STANDARD WEIGHT, TYPE 1, PVC.
- 19mm (3/4") FLEXIBLE WATER HOSE TO PEDESTALS SHALL BE GOODYEAR MODEL PLICORD. WINELINE WITH INTEGRAL UV INHIBITORS FOR USE WITH POTABLE WATER. PEX PIPING WITHIN THE PEDESTALS SHALL BE AS MANUFACTURED BY DURA-PEX WITH UV INHIBITOR OR APPROVED EQUAL.
- POTABLE WATER PIPING SHALL BE DISINFECTED IN ACCORDANCE WITH THE INTERNATIONAL PLUMBING CODE 2018.
- SUBMIT SHOP DRAWINGS ON ALL MATERIALS FOR APPROVAL.
- THE PLUMBING CONTRACTOR SHALL HAVE 5 YEARS OF MARINA EXPERIENCE UTILIZING MATERIALS SPECIFIED PARTICULARLY USE OF HDPE PIPING.
- EACH JOINT SHALL BE LEFT EXPOSED FOR INSPECTION DURING HYDROSTATIC TESTING. THE PRESSURE SHALL BE AT LEAST 1.5 TIMES THE MAXIMUM WORKING PRESSURE AND THE TIME DURATION MUST BE AT LEAST 2 HOURS.
- ALL MATERIAL OR PRODUCTS, WHICH COME INTO CONTACT WITH DRINKING WATER, SHALL BE THIRD PARTY CERTIFIED AS MEETING THE SPECIFICATIONS OF THE AMERICAN NATIONAL INSTITUTE/NATIONAL SANITATION FOUNDATION STANDARD 61, DRINKING WATER SYSTEM COMPONENTS – HEALTH EFFECTS. THE CERTIFYING PARTY SHALL BE ACCREDITED BY THE AMERICAN NATIONAL STANDARDS INSTITUTE.
- NATURAL RUBBER OR OTHER MATERIAL WHICH WILL SUPPORT MICROBIAL GROWTH MAY NOT BE USED FOR ANY GASKET, O-RING, AND OTHER PRODUCTS USED FOR JOINTING PIPING, SETTING METERS OR VALVES, OF OTHER APPURTENANCES WHICH WILL EXPOSE THE MATERIAL TO THE WATER.
- INSTALLATION OF WATER MAINS AND APPURTENANCES SHALL BE CONDUCTED IN ACCORDANCE WITH SECTION C OF THE AWWA STANDARD'S AND/OR MANUFACTURER'S RECOMMENDED INSTALLATION PROCEDURES.
- SEPARATION OF UNDERGROUND WATER MAINS AND SEWERS:
 - PARALLEL INSTALLATION: WATER MAINS SHALL BE LAID AT LEAST 10 FEET HORIZONTALLY FROM ANY EXISTING OR PROPOSED SEWER. THE DISTANCE SHALL BE MEASURED EDGE TO EDGE.
 - CROSSINGS: WATER MAINS CROSSING SEWERS SHALL BE LAID TO PROVIDE A MINIMUM VERTICAL SEPARATION OF 18 INCHES BETWEEN THE OUTSIDE OF THE WATER MAIN AND THE OUTSIDE OF THE SEWER.
 - PROVIDE PIPE SLEEVES AS NECESSARY TO ALLOW CLEARANCE REDUCTION.
- ALL STAINLESS STEEL FITTINGS, CLAMPS, HANGERS AND MISCELLANEOUS APPURTENANCES SHALL BE ASTM A-316 OR BETTER.
- PROVIDE PIPE SLEEVES AND BULKHEAD PENETRATIONS AS NECESSARY TO FACILITATE INSTALLATION. SUBMIT PENETRATION DETAIL FOR APPROVAL. UTILIZE EXISTING PENETRATIONS TO THE GREATEST EXTENT POSSIBLE.

LEGEND

- WASTE (W)
- - - - COLD WATER (CW)
- ⊗ STAINLESS STEEL BALL VALVE
- ⊥ AUTO DRIP VALVE
- ⊥⊗ 1" CW VALVE AND CAP
- DN. DOWN
- TYP. TYPICAL
- SP-1 SEWAGE PUMP
- HDPE HIGH DENSITY POLYETHYLENE PIPING

SEWAGE PUMP SCHEDULE

MARK	SP-1
SERVICE	DOCKSIDE PUMPOUT SYSTEM
SEWAGE FLOW – GPM	20–45
TOTAL DYNAMIC SUCTION HEAD – FT. W.G.	10
TOTAL DYNAMIC DISCHARGE HEAD – FT. W.G.	500
MOTOR – HP	3
ELECTRICAL – V/φ/Hz	240/1/60
MANUFACTURER	KECO
MODEL NO.	900_M40_3HP
NOTES	1,2,3

1. PROVIDE WITH LOW VOLTAGE PUSH BUTTON START/STOP SWITCH WITH TIMER, HOSE ADAPTERS AND FIBERGLASS HOUSING WITH HOSE RACK.

2. PLUMBING CONTRACTOR IS RESPONSIBLE FOR ALL CONTROL WIRING.

3. PROVIDE WITH EXPLOSION PROOF CONSTRUCTION AND CONTROLS.

Jason Tempel
 Signature
 Aaron C. Tempel, P.E.
 ME Professional Eng. PE15477
 07/08/2020
 Date

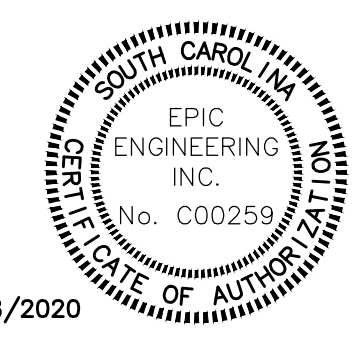
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DESIGNED ACT	DRAWN	CHECKED
DATE: 12/02/2019		
JOB NO. 19120		
SCALE: NONE		

ISLE OF PALMS MARINA
 ISLE OF PALMS, SC
NOTES, LEGEND AND SCHEDULE
 CITY OF ISLE OF PALMS, SC

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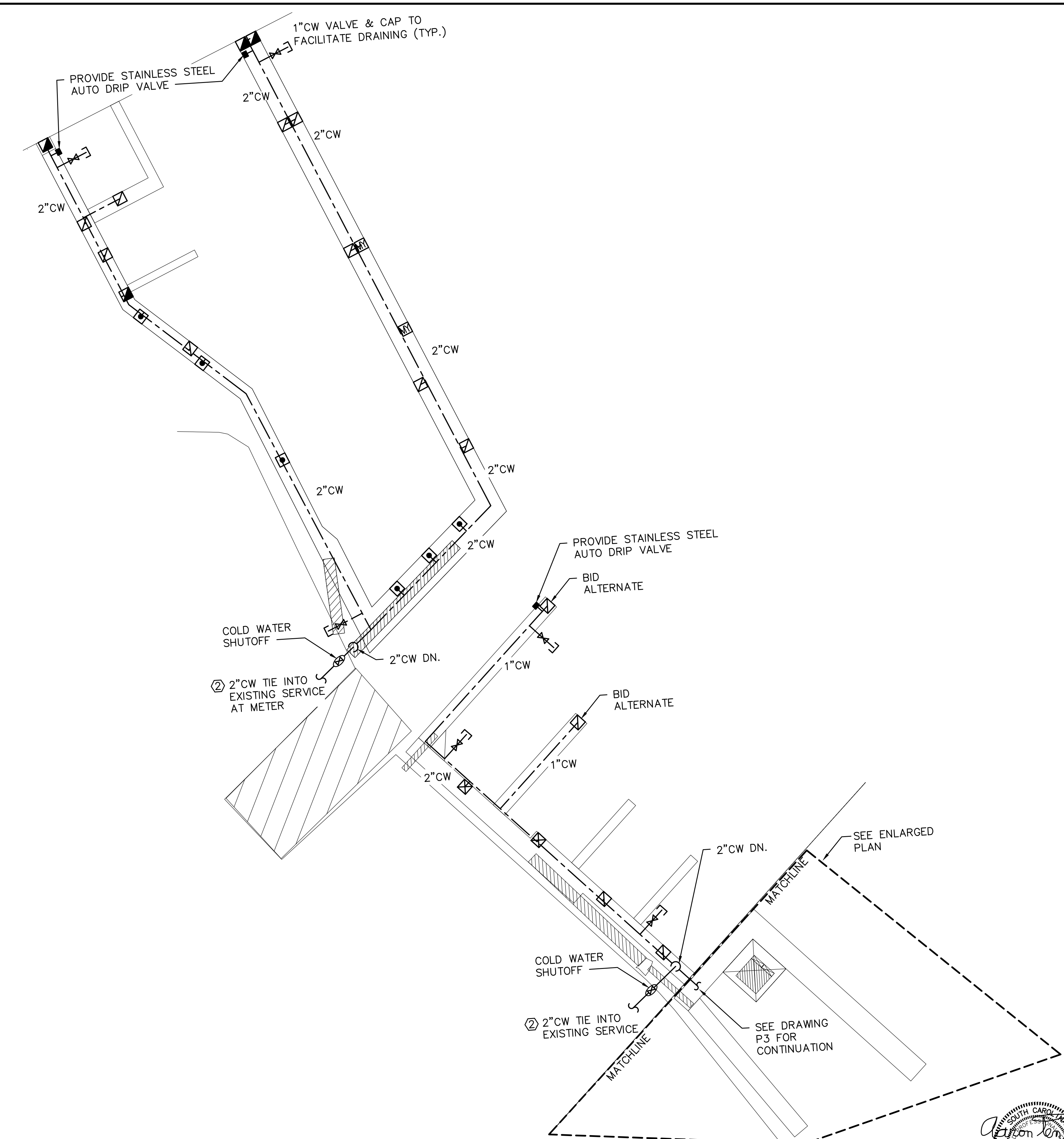
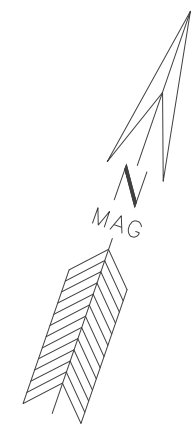


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PLUMBING PLAN
SCALE: 1"=30'-0"

- KEYED NOTES (THIS SHEET ONLY)**
- ① COORDINATE EXACT LOCATIONS WITH OWNER AND ENGINEER PRIOR TO INSTALLATION.
 - ② PROVIDE REDUCED PRESSURE BACKFLOW PREVENTER WITH AUTO DRIP VALVE.

Atton Tempel
Signature
Atton C. Tempel, P.E.
ME Professional Eng. PE15477
07/08/2020
Date

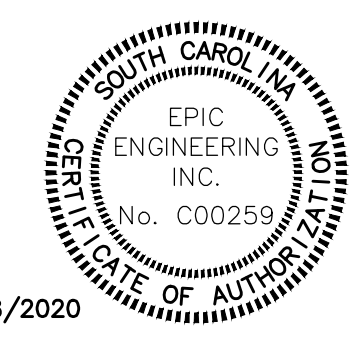
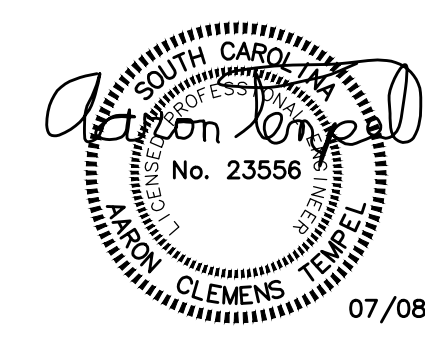
REV.	DATE	BY	CHKD.	BY	REMARKS

DESIGNED	DRAWN	CHECKED
ACT	ACT	ACT
DATE: 10/08/2019	JOB NO. 19120	SCALE: 1"=30'-0"

ISLE OF PALMS MARINA
ISLE OF PALMS, SC
PLUMBING PLAN
CITY OF ISLE OF PALMS, SC

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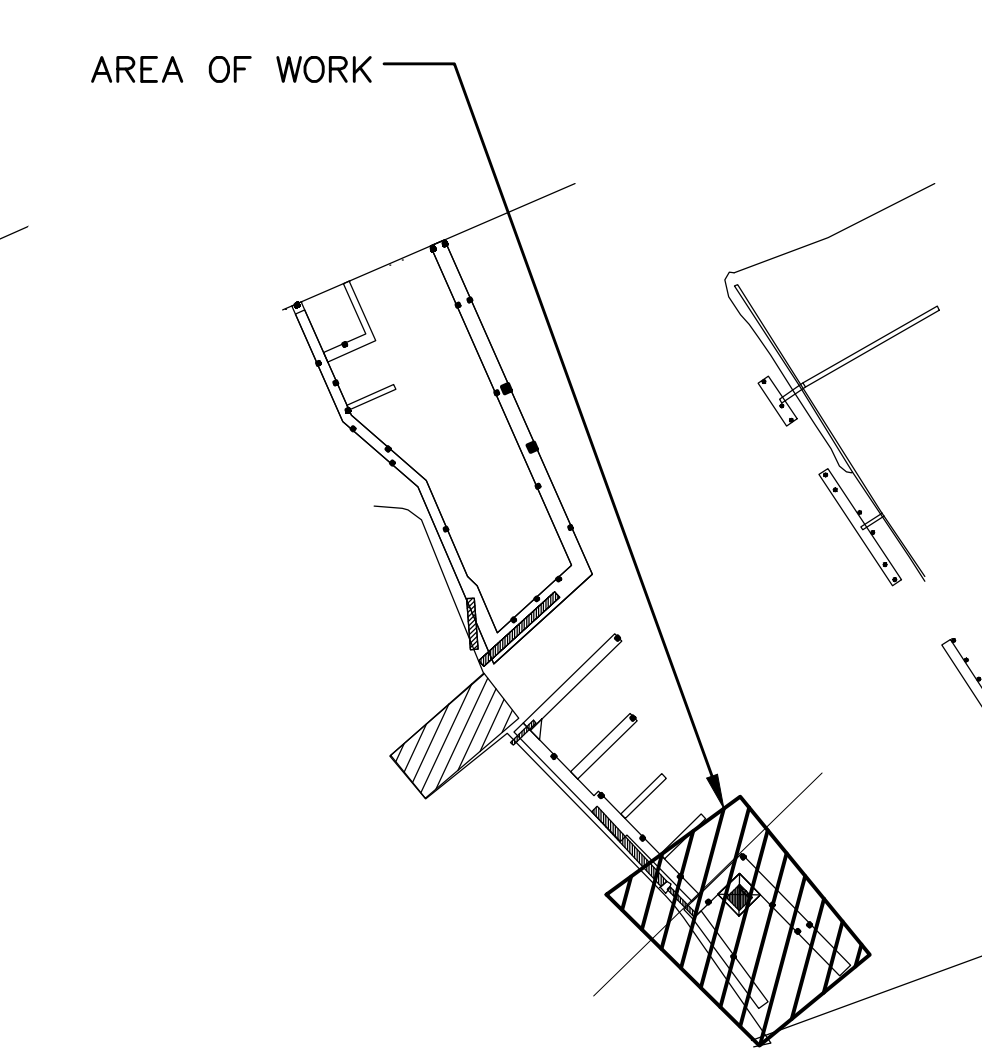
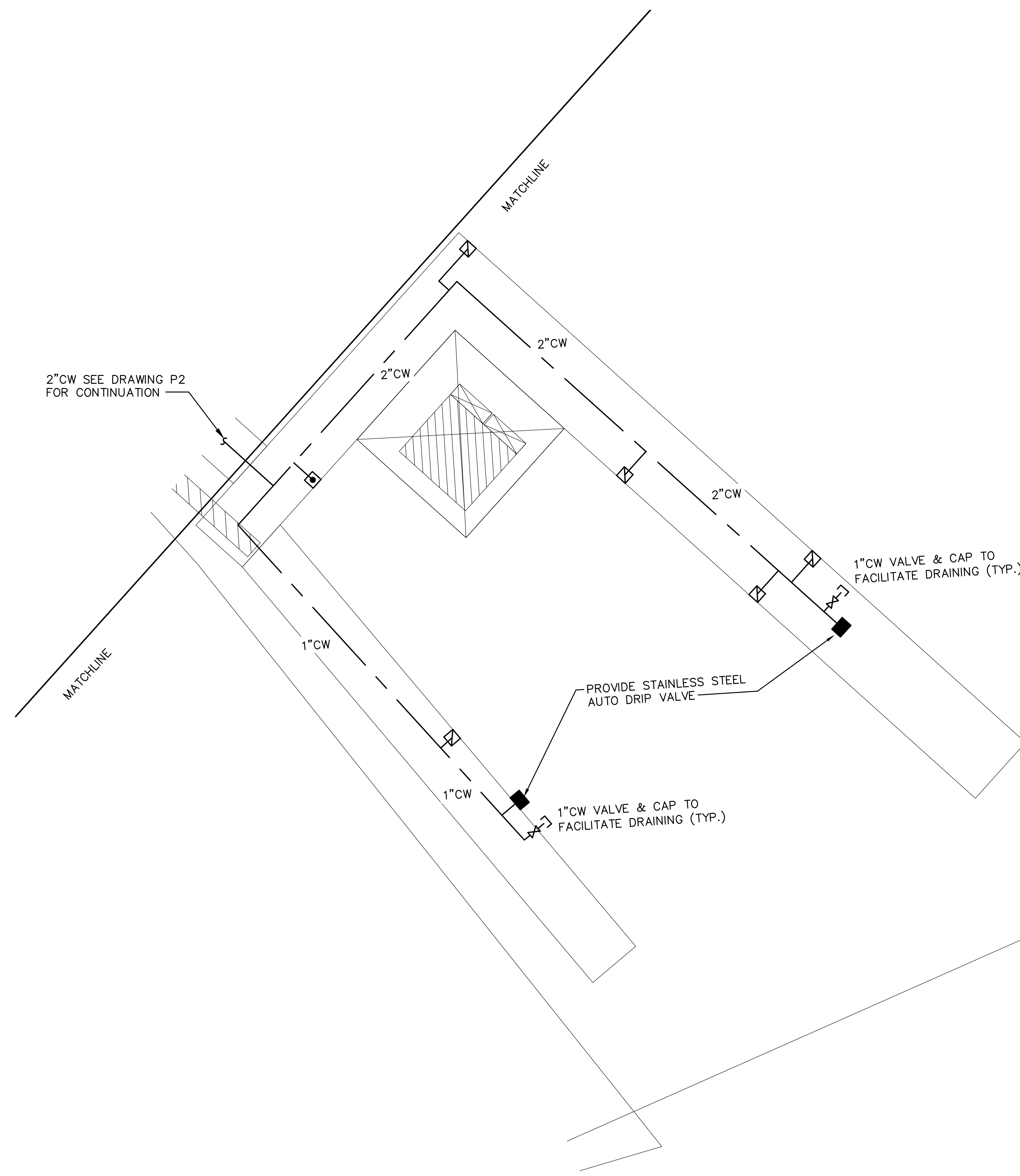
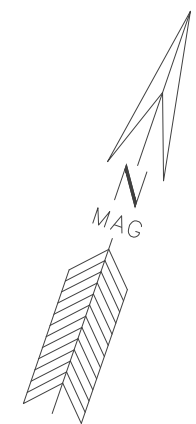
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P2
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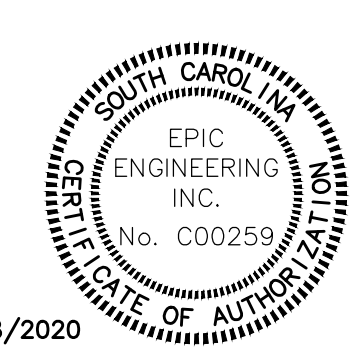
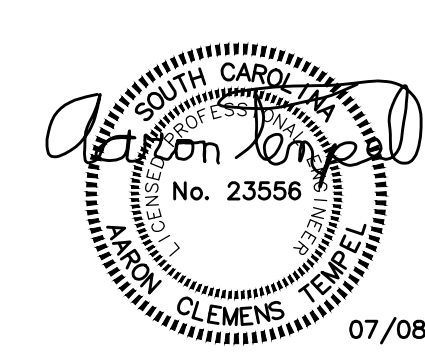
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KEYPLAN
 SCALE: NONE

ENLARGED PLUMBING PLAN
 SCALE: 1"=10'-0"



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Aaron Tempel
 Signature
 Aaron C. Tempel, P.E.
 ME Professional Eng. PE15177
 07/08/2020
 Date

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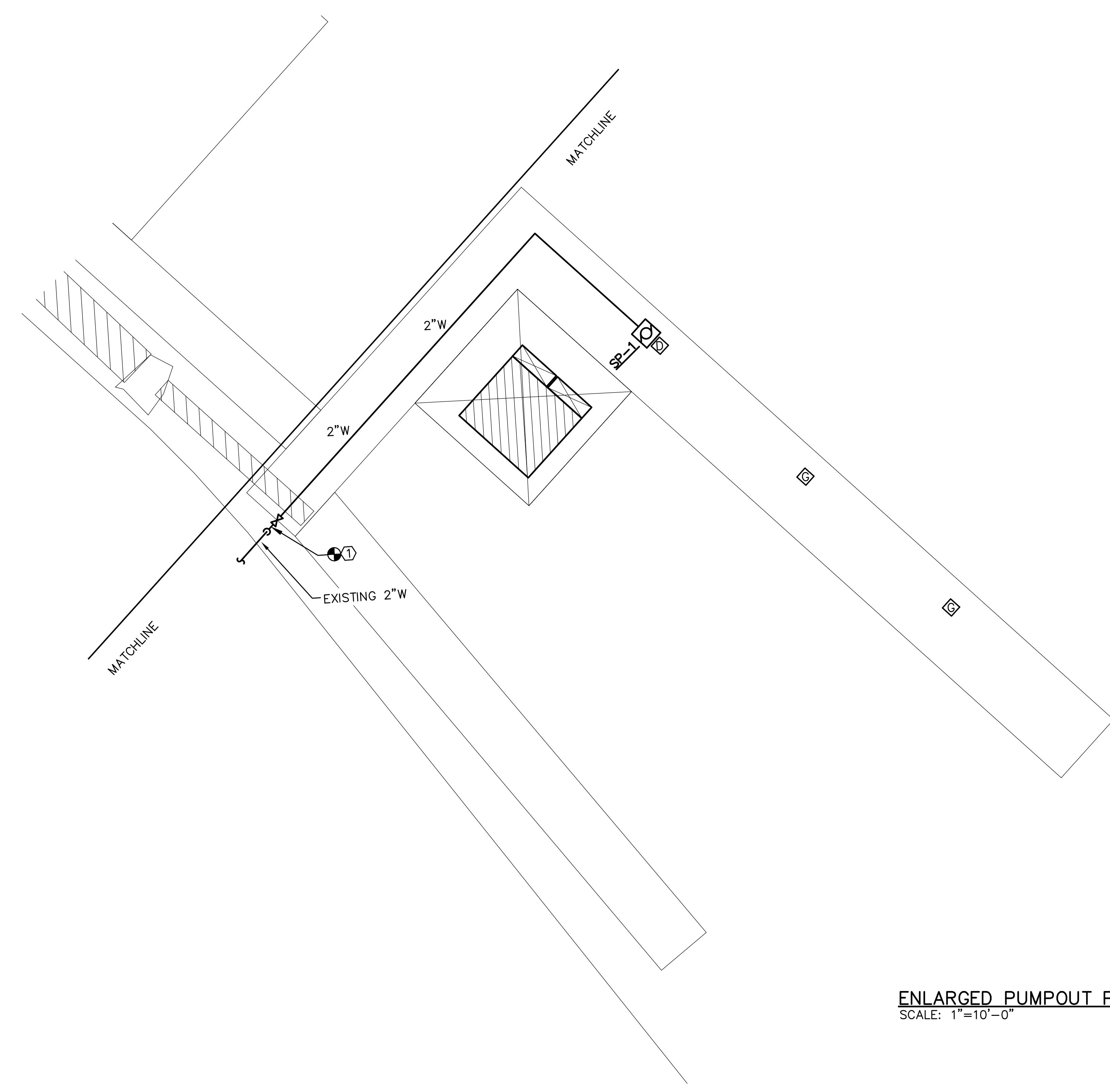
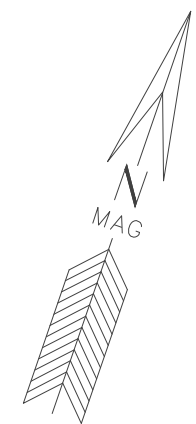
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 ISLE OF PALMS, SC
ENLARGED PLUMBING PLAN
 CITY OF ISLE OF PALMS, SC

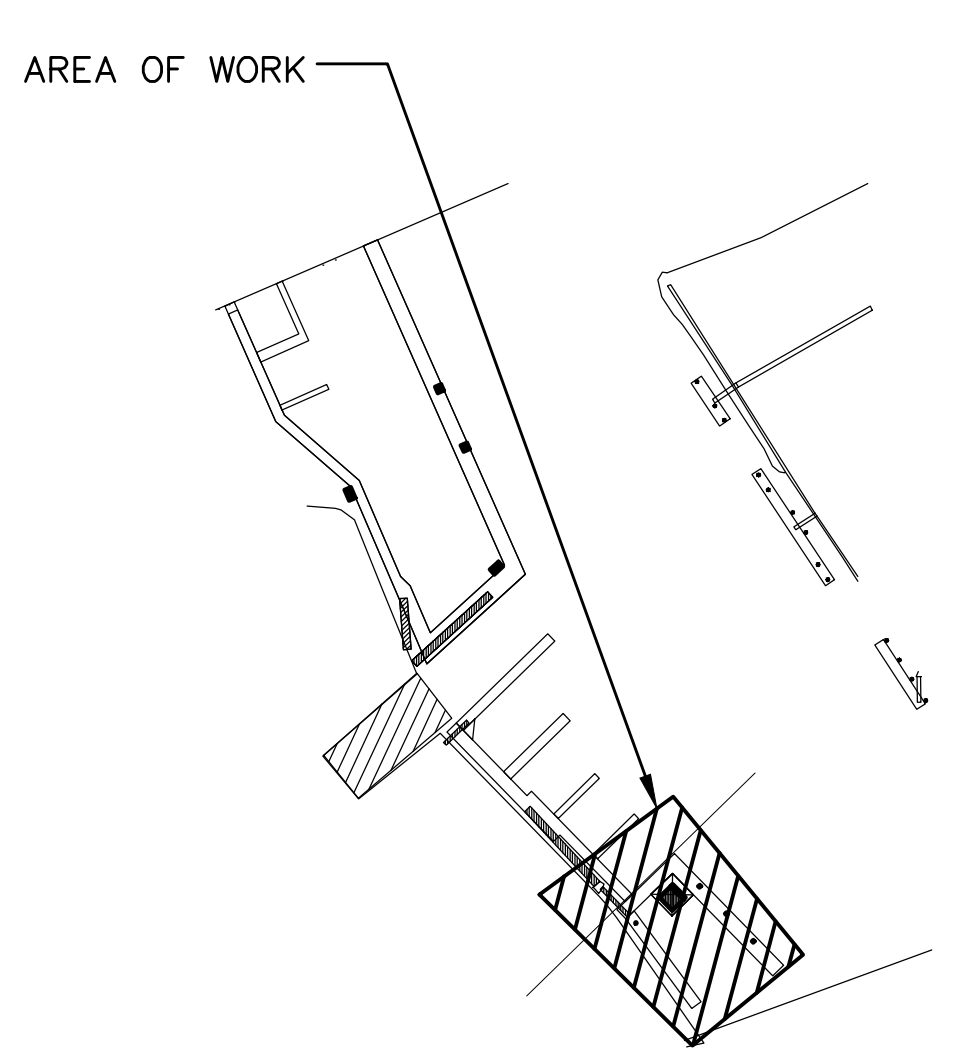
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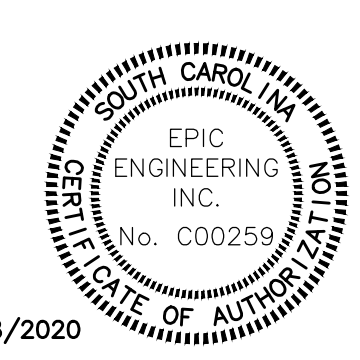
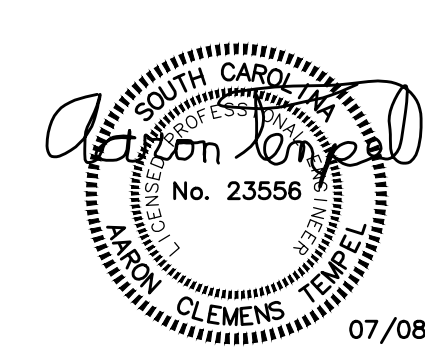


ENLARGED PUMPOUT PLAN
 SCALE: 1"=10'-0"



KEYPLAN
 SCALE: NONE

KEYED NOTES (THIS SHEET ONLY)
 ① TIE INTO EXISTING 2"W SERVICE COORDINATE EXACT LOCATION WITH FIELD CONDITIONS.



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 ME Professional Eng. PE15177
 07/08/2020
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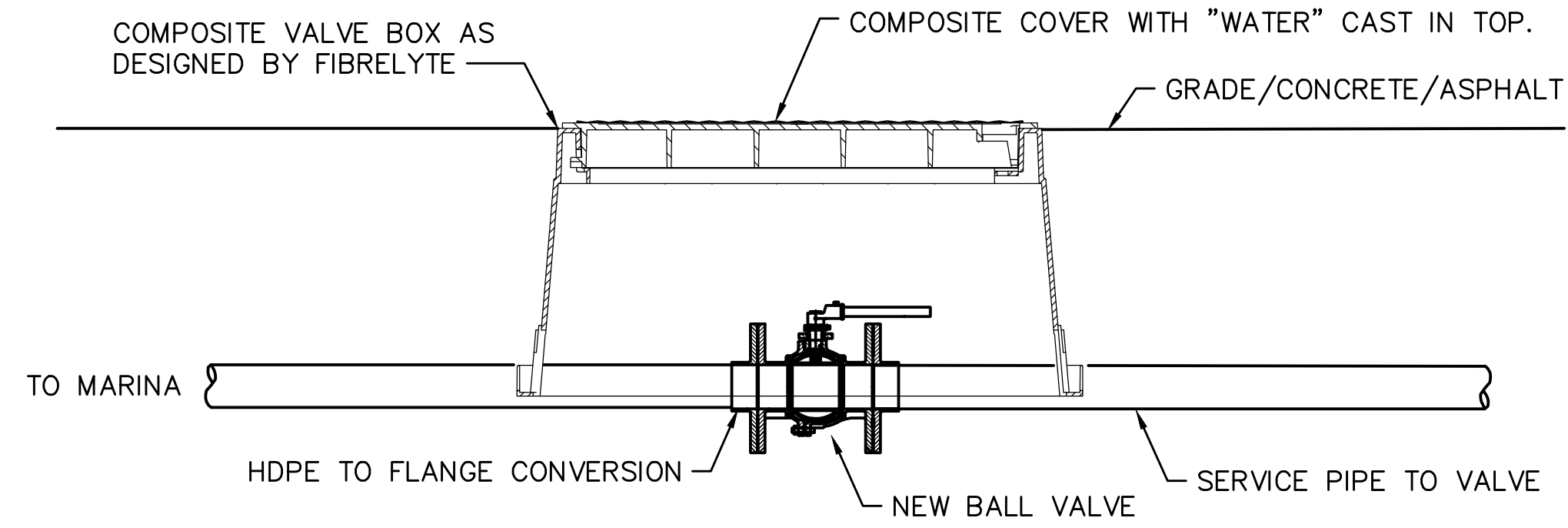
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ISLE OF PALMS MARINA
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PUMPOUT PLAN
 CITY OF ISLE OF PALMS, SC

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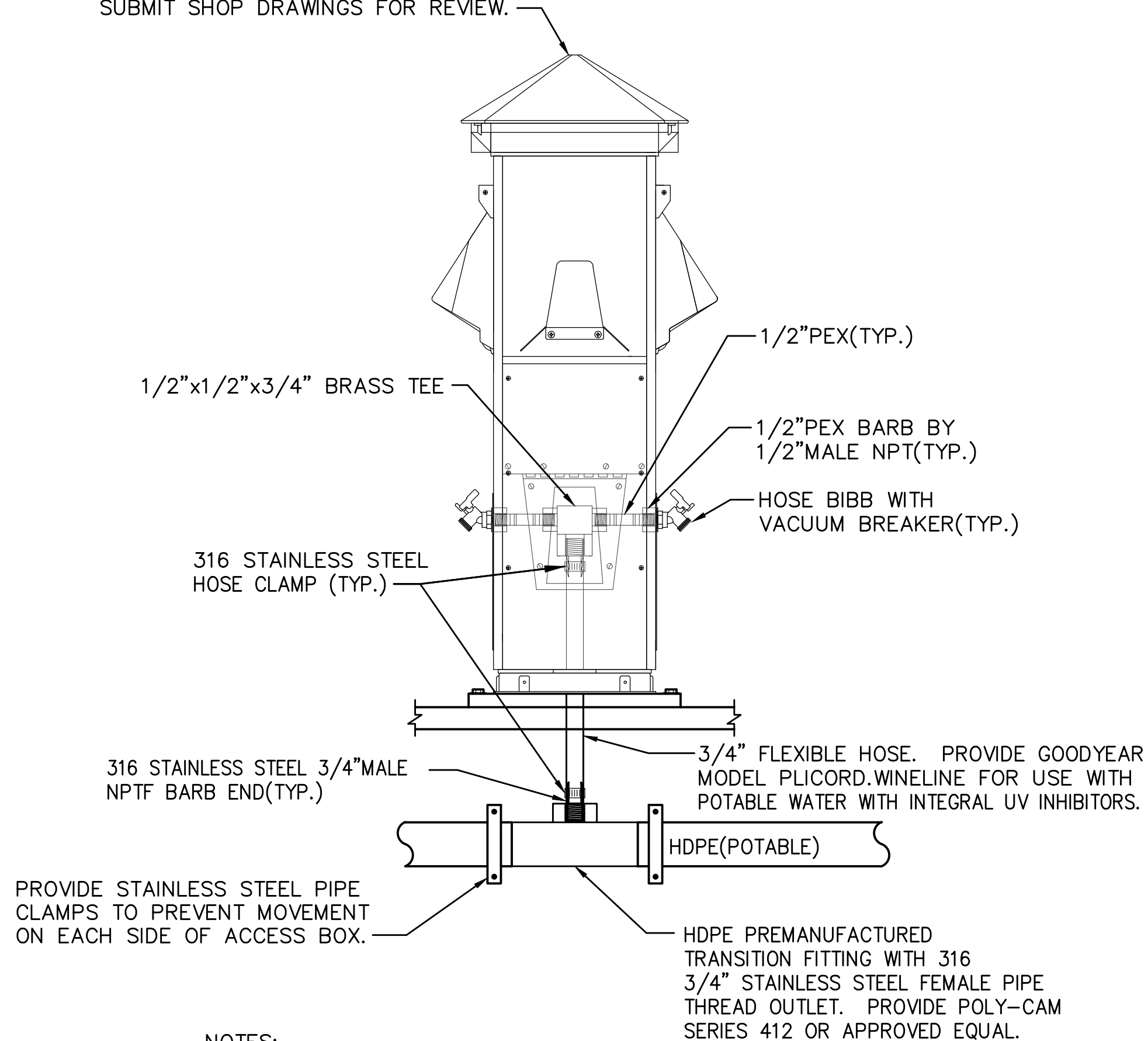


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P4
 SHEET: 4 OF 5



WATER VALVE DETAIL
SCALE: NONE

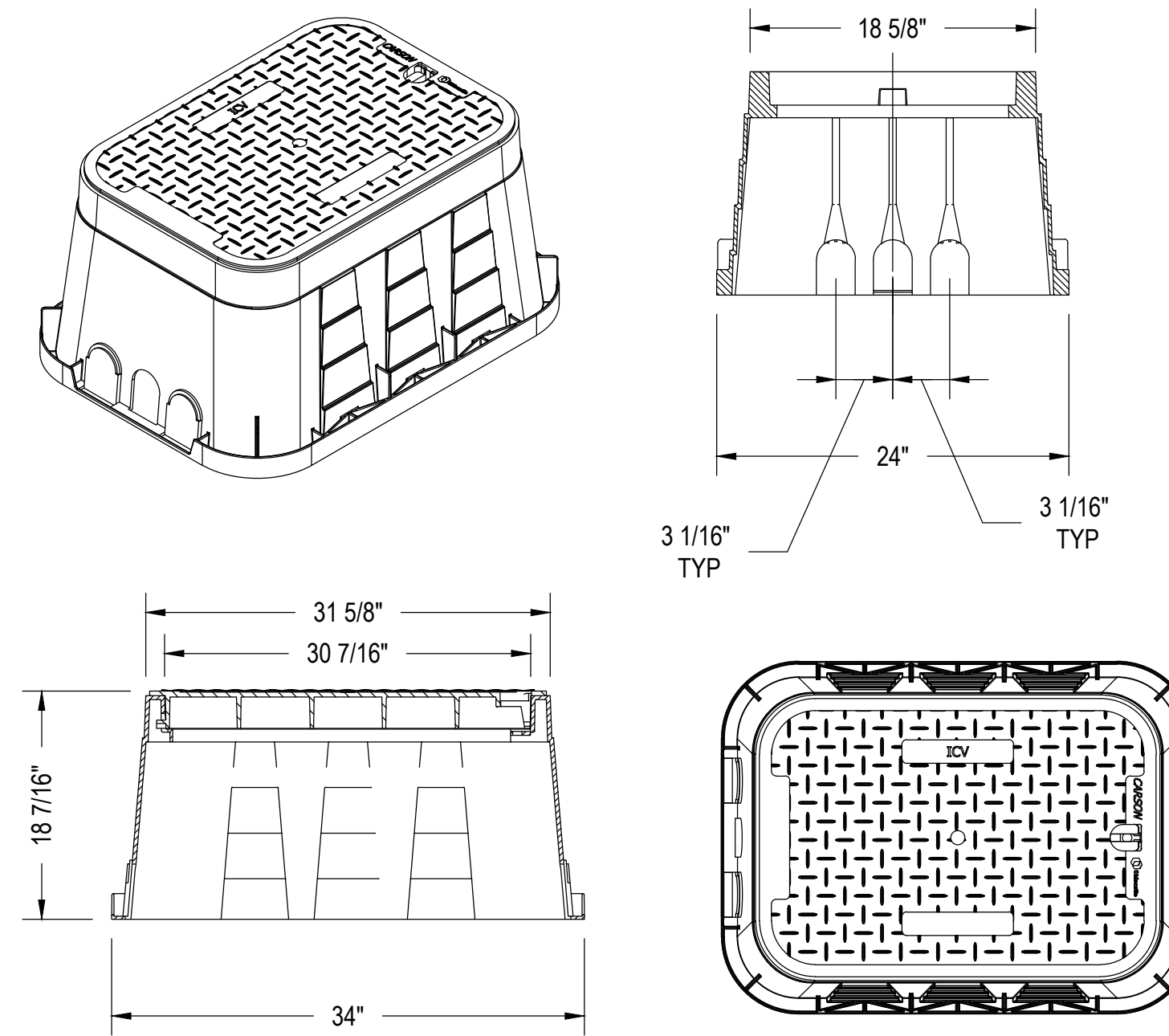
POWER PEDESTAL PROVIDED BY OTHERS.
COORDINATE PLUMBING CONNECTIONS
WITH ACTUAL PEDESTAL PROVIDED.
SUBMIT SHOP DRAWINGS FOR REVIEW.



NOTES:

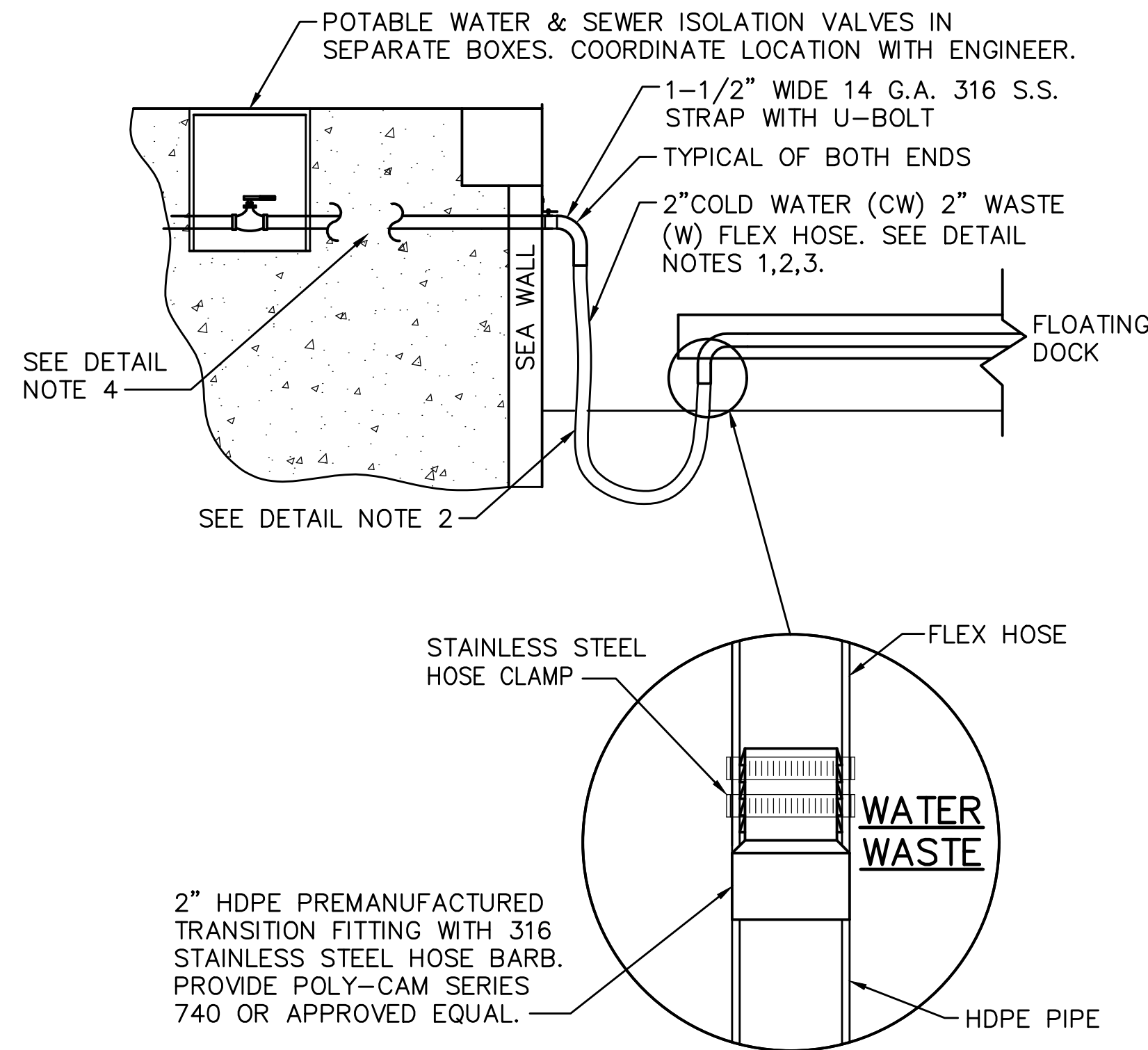
1. VERIFY THREADS WITH ACTUAL PEDESTAL PROVIDED.
2. PROVIDE ALL NECESSARY FITTINGS NECESSARY TO CONNECT PEDESTAL. SEE NOTE 22.

PEDESTAL POTABLE WATER PIPING -GENERIC DETAIL
SCALE: NONE



NOTE: EXACT SIZE TO BE DETERMINED BY CONTRACTOR.

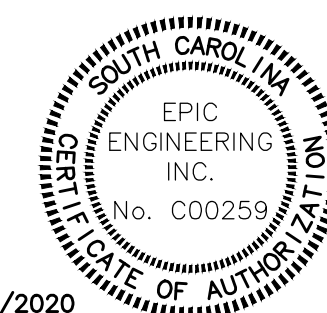
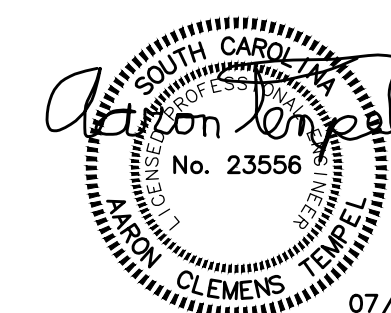
WATER VALVE BOX DETAIL(FIBRELYTE MODEL FL36)
SCALE: NONE



DETAIL NOTES:

1. PROVIDE 2" FLEXIBLE HOSE WITH INTEGRAL STAINLESS STEEL MALE PIPE THREAD ENDS. PROVIDE GOODYEAR WHITE FLEXWING HOSE MODEL 549-151-064-01000, OR APPROVED EQUAL. COORDINATE EXACT LENGTH WITH FIELD CONDITIONS AND ALLOW FOR RISE AND FALL OF TIDES.
2. PROVIDE FLEXIBLE HOSE WITH REMOVABLE SACRIFICIAL CORRUGATED PLASTIC PIPING JACKET. COORDINATE EXACT SIZE WITH FLEXIBLE HOSE PROVIDED.
3. COORDINATE MOUNTING AND INSTALLATION OF THE WATER PIPING WITH GANGWAY PROVIDED AND LOCAL TIDAL RISE & FALL. PROVIDE STAINLESS STEEL HANGERS AS REQUIRED. SUBMIT SHOP DRAWINGS FOR APPROVAL.
4. PROVIDE TRANSITIONS TO UPLAND PIPE MATERIAL AS REQUIRED.

FIXED PIER TO FLOATING DOCK WATER LINE BULKHEAD CONNECTION DETAIL
SCALE: NONE



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Aaron C. Tempel, P.E.
ME Professional Eng. PE15177
07/08/2020
Date

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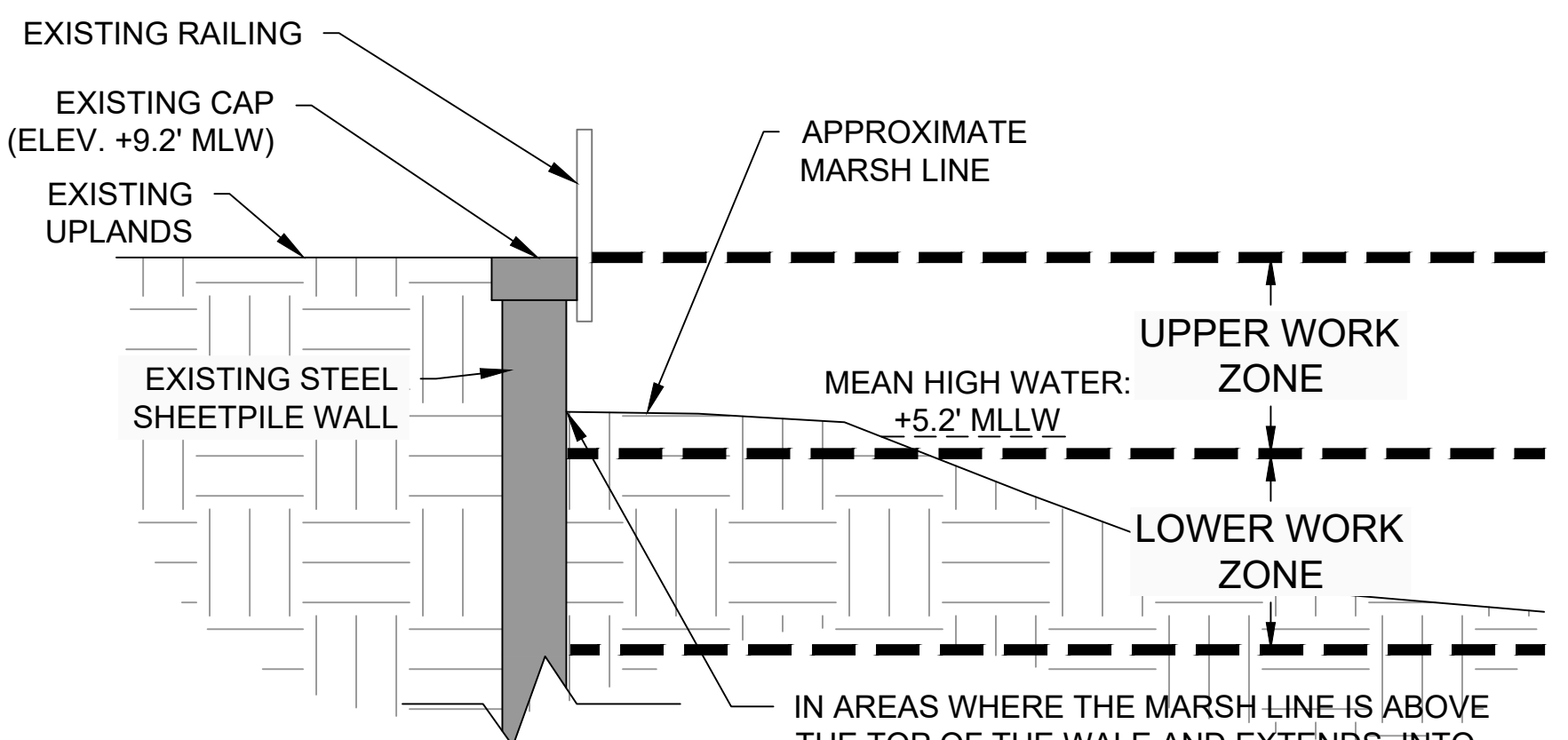
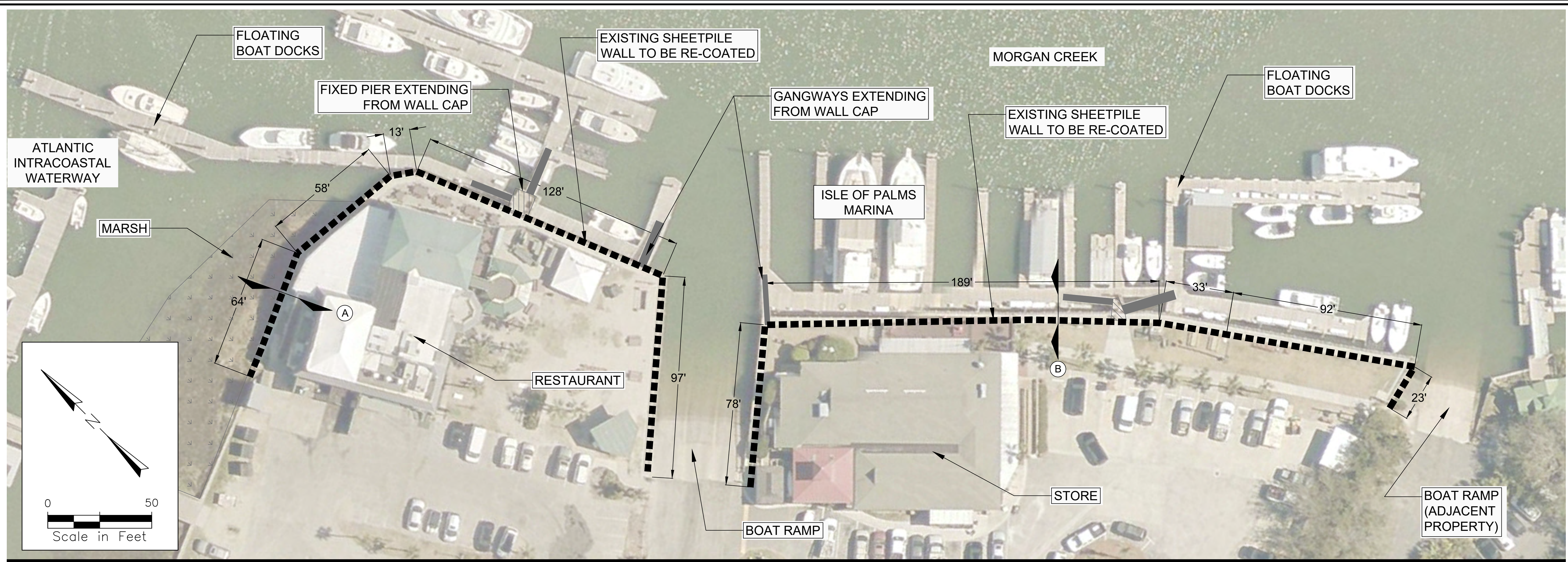
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PLUMBING - DETAILS
CITY OF ISLE OF PALMS, SC

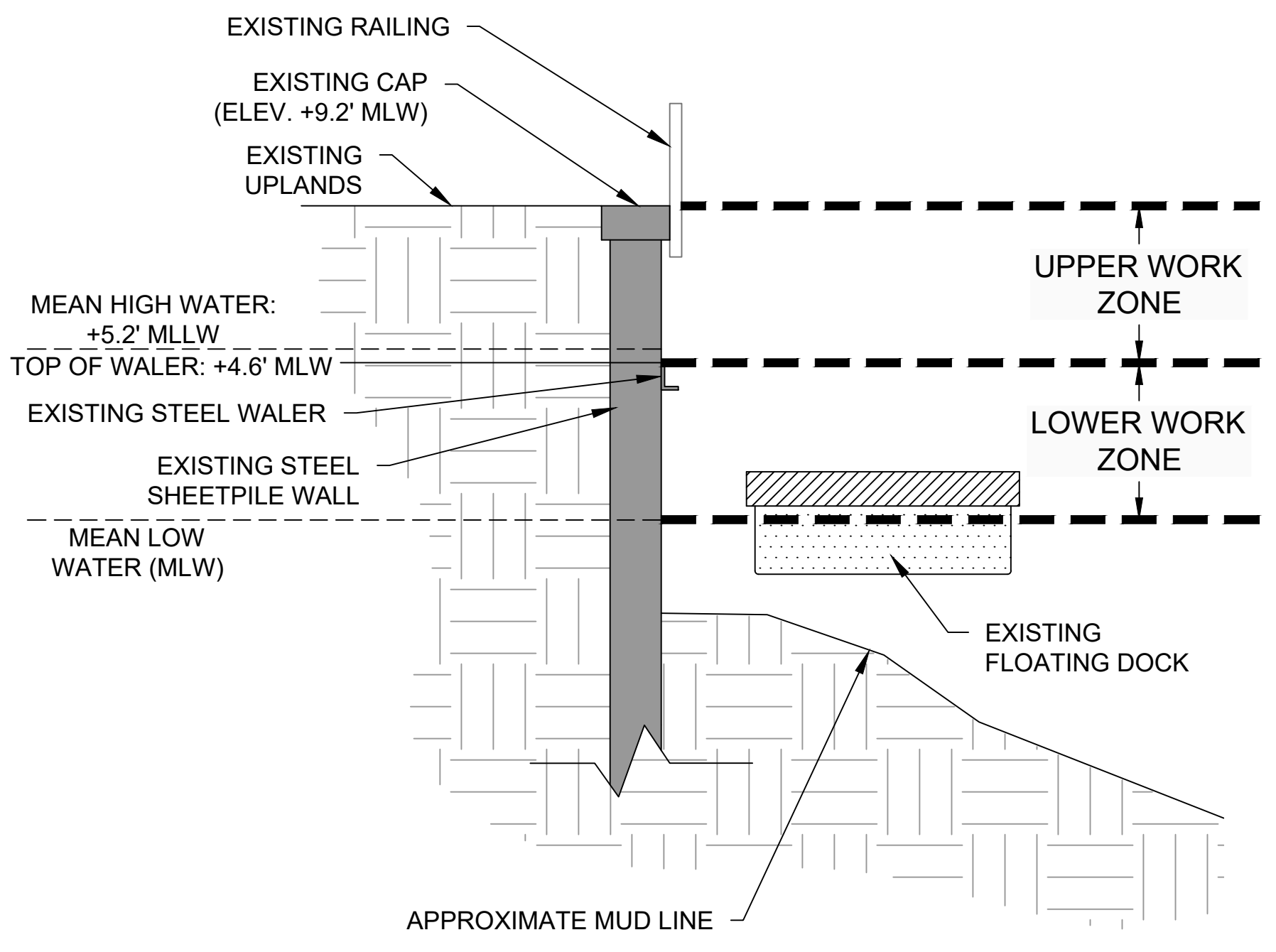
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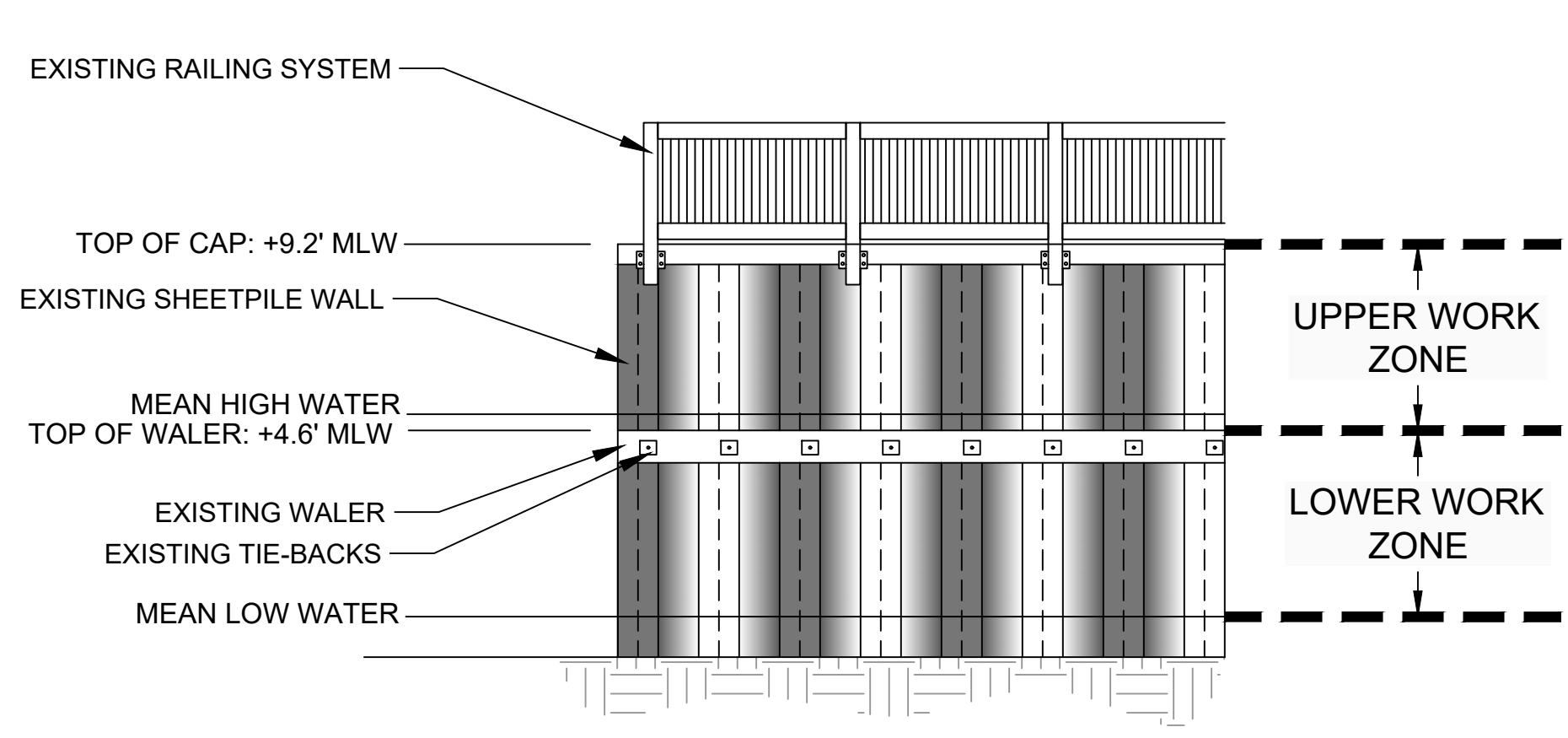
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TYPICAL BULKHEAD SECTION (A)
(ALONG MARSH)



TYPICAL BULKHEAD SECTION (B)
(ALONG WATERFRONT)



TYPICAL BULKHEAD ELEVATION VIEW (C)

- NOTES:**
1. TYPICAL SECTIONS ARE FOR REPRESENTATIVE PURPOSES ONLY.
 2. CONTRACTOR SHOULD REVIEW SITE CONDITIONS THOROUGHLY BEFORE BIDDING.
 3. AERIAL DATED 2017 AND WAS SOURCED FROM CHARLESTON COUNTY.

Note: All work shall be in accordance with the applicable codes and regulations. The contractor shall be responsible for obtaining all necessary permits. The drawings are for informational purposes only and do not constitute a contract. The contractor shall verify all dimensions and conditions on site before bidding.

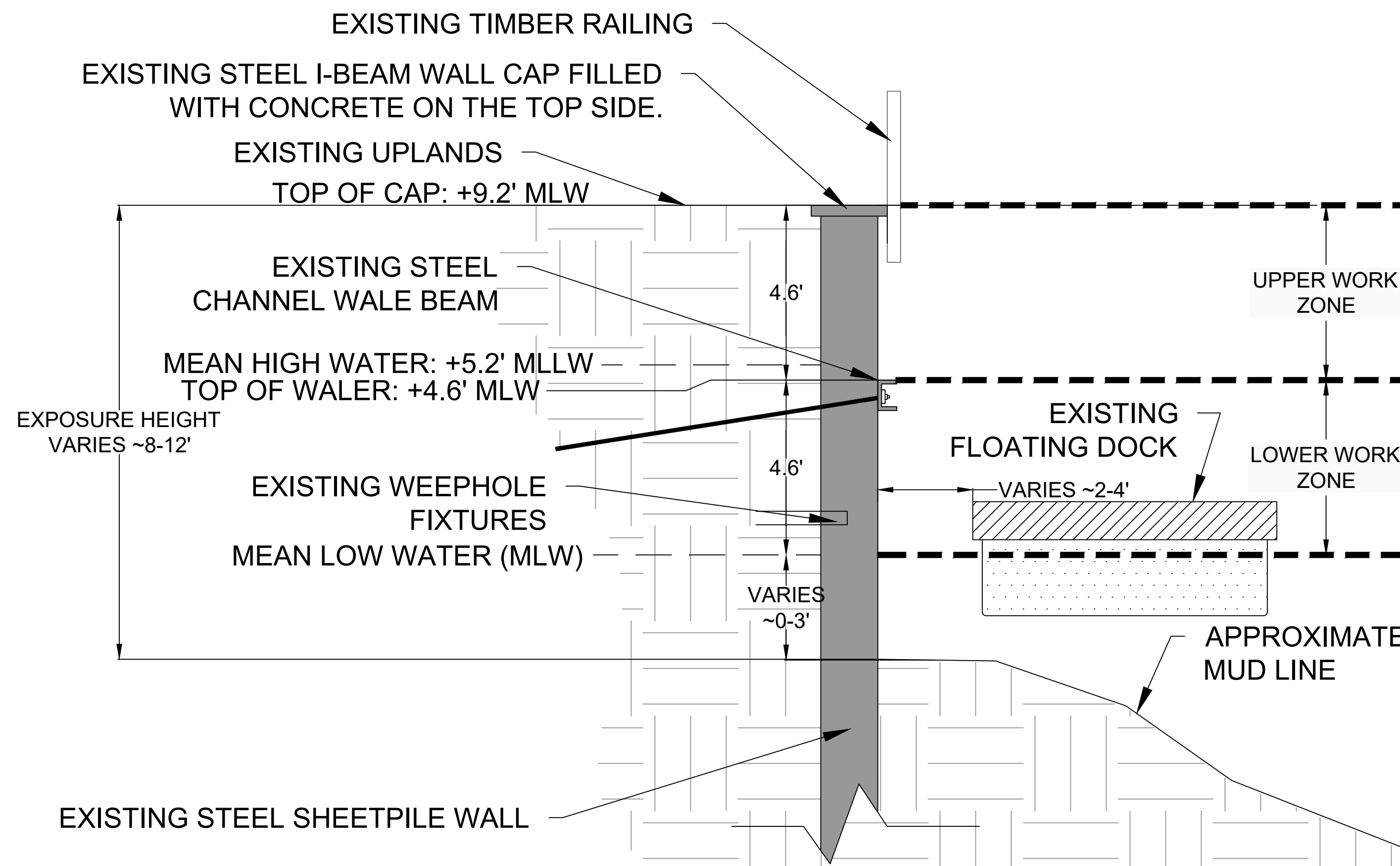
Signature	Date
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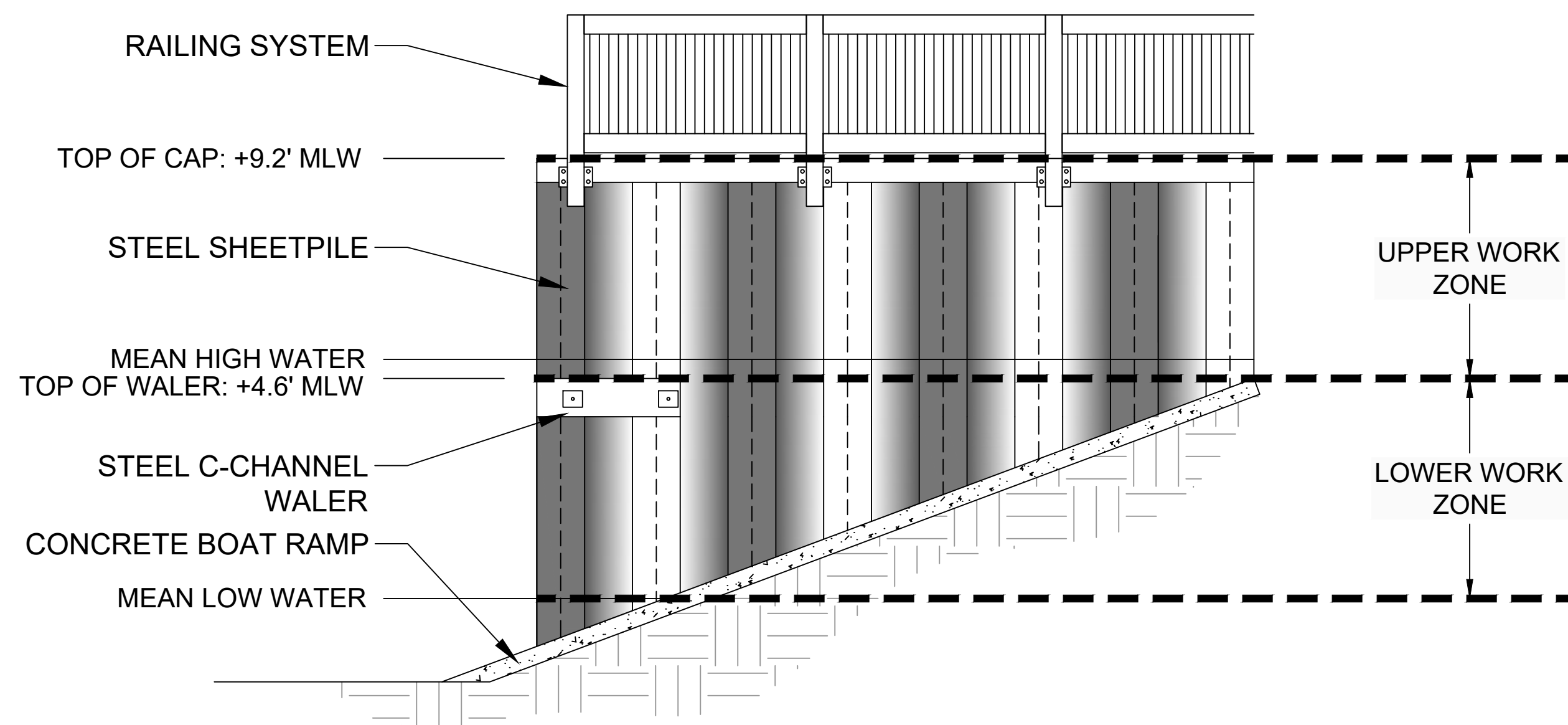
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ISLE OF PALMS MARINA
 ISLE OF PALMS, SC
SITE PLAN
BULKHEAD RE-COAT
 CITY OF ISLE OF PALMS, SC

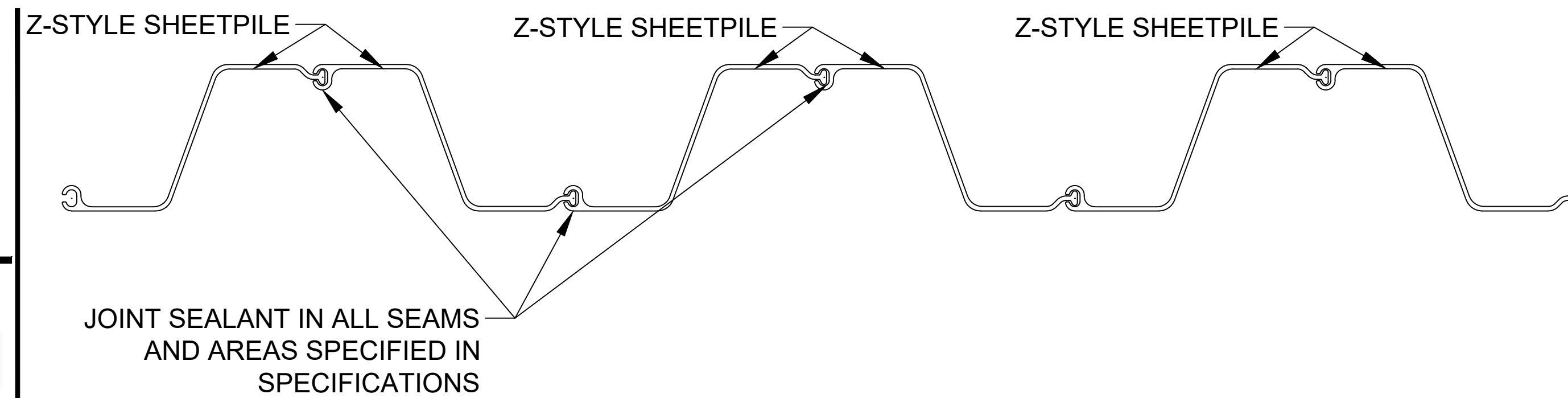
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 Mt Pleasant SC, SC 29464
 (843) 414-1040

TYPICAL ORIGINAL DESIGN SHEETPILE SECTION (D)



TYPICAL PROFILE AT BOAT RAMP (E)



TYPICAL PLAN VIEW OF SHEETPILES (F)

PART 1 GENERAL

1. SCOPE OF WORK

- A. WORK INCLUDES CLEANING, SURFACE PREPARATION, AND APPLICATION OF THE COATING SYSTEM TO THE EXISTING STEEL BULKHEAD STRUCTURE WHICH INCLUDES ALL STEEL FIXTURES AND ASSOCIATED ELEMENTS.
 - B. WORK SHALL BE COMPLETED IN THE CONTRACTED WORK ZONE(S).
 - C. THE WORK INCLUDES ALL ENVIRONMENTAL CONTROL DETAILED IN THE APPROVED ENVIRONMENTAL CONTROL PLAN.
 - D. THE WORK INCLUDES ALL TESTING AND INSPECTION DETAILED IN THE APPROVED TESTING AND INSPECTION - QUALITY CONTROL AND ASSURANCE PLAN.
 - E. THE "UPPER" WORK ZONE INCLUDES ALL STEEL BULKHEAD ELEMENTS FROM THE TOP OF THE STEEL STRUCTURE (ELEVATION +9.2' MLW) TO THE ELEVATION ABOVE THE EXISTING STEEL C-CHANNEL WALER (~ELEVATION +4.6' MLW), INCLUDING THE STEEL CAP AND RAILING SUPPORTS.
 - F. THE "LOWER" WORK ZONE INCLUDES ALL BULKHEAD ELEMENTS BELOW THE UPPER WORK ZONE DOWN TO THE MLW LINE (0.0' MLW) ELEVATION.
- 2. MISCELLANEOUS**
- A. TIMING OF WORK AROUND TIDES WILL BE REQUIRED.
 - B. PROJECT MUST MINIMIZE THE EXTENT AND DURATION OF INTERRUPTION TO NORMAL OPERATIONS OF ADJACENT FACILITIES.
 - C. REFER TO TECHNICAL SPECIFICATIONS FOR PROJECT DETAILS.

PART 2 MATERIALS

1. JOINT SEALANT MATERIALS

- A. ASTM C920, TYPE M, GRADE NS, CLASS 25, USE NT, I, M, G, A, O. MUST BE MANUFACTURED OR SUPPORTED BY THE COATING SYSTEM MANUFACTURER, OR APPROVED EQUIVALENT.

2. FILLER AND PATCH MATERIALS

- A. FILLER MATERIAL FOR SMALL VOIDS BEHIND THE BULKHEAD SHALL BE EXPANDING HYDROPHOBIC POLYURETHANE FOAM IN AEROSOL CAN. CONTRACTOR SHALL SUBMIT PROPOSED MATERIAL FOR APPROVAL BEFORE USE.
- B. PATCH MATERIAL FOR SMALL REPAIR AREAS IN THE STEEL BULKHEAD SHALL BE AN EPOXY PUTTY OR FAIRING COMPOUND APPROPRIATE FOR PROJECT USE IN THE MARINE ENVIRONMENT AND COMPATIBLE WITH ALL EXISTING AND PROPOSED MATERIALS. FLEXIBLE GRID OR MESH MATERIAL MAY BE UTILIZED TO ASSIST IN PATCH REPAIR AREAS. CONTRACTOR SHALL SUBMIT PROPOSED MATERIALS FOR APPROVAL BEFORE USE.

3. COATING MATERIALS

- A. INTERZONE 954, MANUFACTURED BY INTERNATIONAL (AN AKZONOBEL BRAND). INTERZONE 954 IS A TWO-COMPONENT, LOW VOC, HIGH SOLIDS, MODIFIED EPOXY BARRIER COATING DESIGNED FOR MAINTENANCE APPLICATIONS IN THE MARINE SPLASH ZONE ENVIRONMENT. OR APPROVED EQUIVALENT.

PART 3 EXECUTION

1. CLEANING AND SURFACE PREPARATION

- A. SURFACE PREPARATIONS SHALL BE UNDERTAKEN IN THE ORDER MOST APPROPRIATE FOR THE PROPER CLEANING AND PREPARATION OF THE SURFACE PRIOR TO COATING APPLICATION.
- B. CLEANING AND SURFACE PREPARATION MUST ACCOUNT FOR TIDAL FLUCTUATIONS, WEATHER, AND OTHER ENVIRONMENTAL AND SURFACE CONDITIONS (E.G. CHLORIDES) THAT MAY IMPACT THE COATING APPLICATION.
- C. SOLVENT CLEANING: SSPC SP 1. REMOVAL OF OIL, GREASE, DIRT, SOIL, SALTS, AND CONTAMINANTS BY CLEANING WITH SOLVENT, VAPOR, ALKALI, EMULSION OR STEAM.
- D. WATERJET CLEANING: SSPC SP/NACE WJ-#. CLEAN BULKHEAD ELEMENTS IN ACCORDANCE WITH CONTRACTED WATERJET CLEANING METHOD SPECIFICATION.
- E. HAND AND POWER TOOL CLEANING: SSPC SP 2 AND 3. CLEAN BULKHEAD ELEMENTS IN ACCORDANCE WITH SSPC SPECIFICATIONS TO ENSURE ALL AREAS OF CORROSION, COATING DAMAGE, OR ANY OTHER DETERIORATION IS PROPERLY PREPARED TO RECEIVE COATING SYSTEM APPLICATION.
- F. IF CONTINUOUS AREAS OF CORROSION AND COATING DAMAGE EXTEND FROM THE CONTRACTED WORK ZONE TO ADJACENT AREAS OUTSIDE THE WORK ZONE, THE AREAS OF CONTINUOUS CORROSION OUTSIDE THE WORK ZONE SHALL BE CLEANED, PREPARED, AND COATED IN ACCORDANCE WITH THESE SPECIFICATIONS AND THE DRAWINGS.
- G. IF, DURING THE COURSE OF THE WORK, THE INTEGRITY OF THE EXISTING COATING IN AREAS OUTSIDE THE CONTRACTED WORK ZONE IS COMPROMISED BY THE WORK IN ANY WAY, THAT AREA SHALL BE CLEANED, PREPARED, AND COATED IN ACCORDANCE WITH THESE SPECIFICATIONS AND THE DRAWINGS.
- H. ENSURE ALL CORNERS, EDGES, SEAMS, WELDS, BRACKETS, AND OTHER UNIQUE SURFACES AND HARD TO REACH AREAS ARE PROPERLY PREPARED AND CLEANED.

- I. ENSURE THE SEAM BETWEEN THE CONCRETE TOPPING CAP AND STEEL BULKHEAD CAP IS CLEANED AND PREPARED FOR APPROPRIATE JOINT FILLER.

- J. FEATHERING OF SURFACE PREPARATION AND CLEANING MAY BE REQUIRED ALONG THE INTERFACE OF THE WORK ZONE SURFACE AND ADJACENT AREAS OUTSIDE OF THE WORK ZONE TO PROVIDE AN APPROPRIATE TRANSITION FOR COATING APPLICATION.
- K. CLEANING AND SURFACE PREPARATION MUST ACCOUNT FOR TIDAL FLUCTUATIONS, WEATHER, AND OTHER ENVIRONMENTAL AND SURFACE CONDITIONS (E.G. CHLORIDES) THAT MAY IMPACT THE COATING APPLICATION.

- L. SAMPLE AREAS - CLEANING OF MARINE GROWTH BELOW THE UPPER WORK ZONE ELEVATIONS (IN THE EVENT ONLY THE UPPER WORK ZONE IS CONTRACTED)
- 1.1.1. THREE (3) LOCATIONS OF MARINE GROWTH ALONG THE WALL SHALL BE RANDOMLY SELECTED BY THE COATING SPECIALIST(S)/INSPECTOR(S) AND 1FT X 1FT SQUARE AREAS OF SHEETPILE SHALL BE SCRAPED FREE OF THICK MARINE GROWTH TO REVEAL THE EXISTING COATING.
- 1.1.2. COATING SPECIALIST(S)/INSPECTOR(S) WILL OBSERVE, DOCUMENT, AND INSPECT THE CONDITION OF THE EXISTING COATING AND PROVIDE OWNER WITH ASSESSMENT OF CONDITION AND ANY RECOMMENDATIONS REGARDING COATING OUTSIDE OF WORK ZONE ELEVATIONS.

- 2. APPLICATION OF COATING SYSTEM
- A. FILLER AND PATCH REPAIRS
- 2.1.1. FILLER AND/OR PATCH REPAIRS ARE REQUIRED IN ANY AREA OF CORROSION OR DETERIORATION EXCEEDING THE MAXIMUM GAP LIMIT OF THE SPECIFIED JOINT SEALANT.
- 2.1.2. FILLER AND PATCH REPAIRS ARE ANTICIPATED AT UTILITY CONDUIT AND SIMILAR CUTOUTS AND VOID AREAS IN THE BULKHEAD STRUCTURE WITHIN THE WORK ZONE.
- 2.1.3. FILLER AND PATCH REPAIR PROCEDURE
 - a. FOAM FILLER SHALL BE APPLIED ACCORDING TO MANUFACTURER'S RECOMMENDATIONS TO FILL ANY LARGE VOIDS BEHIND THE BULKHEAD EXPOSED SURFACE.
 - b. FOAM FILLER SHALL BE ALLOWED TO CURE, THEN CUT FLUSH WITH THE BULKHEAD SURFACE ACCORDING TO MANUFACTURER'S RECOMMENDATIONS
 - c. EPOXY PATCH MATERIAL SHALL BE APPLIED OVER THE FOAM FILLER AND ADJACENT SOUND STEEL ACCORDING TO MANUFACTURER'S RECOMMENDATIONS TO PROVIDE A CONTINUOUS, SOUND, AND IMPERMEABLE REPAIR IN THE BULKHEAD STRUCTURE SUFFICIENT FOR RECEIVING THE COATING APPLICATION AND PROVIDING CORROSION PROTECTION. FLEXIBLE GRIDS OR MESH PATCHES OF APPROPRIATE MATERIAL MAY BE USED TO ASSIST IN THE EPOXY PATCH REPAIR.

B. JOINT SEALANT

- 1.1.1. JOINT SEALANT SHALL BE APPLIED IN ACCORDANCE WITH MANUFACTURER RECOMMENDATIONS TO ALL EXTERIOR JOINTS, SEAMS, AND INTERFACES IN THE WORK ZONE, INCLUDING BUT NOT LIMITED TO:
 - a. CONCRETE TOPPING CAP AND STEEL BULKHEAD CAP INTERFACE
 - b. PERIMETER OF FAYING AND BEARING SURFACES
 - c. SEAMS/JOINTS BETWEEN STEEL SHEETPILE Z-SECTIONS, KING PILES, AND ALL OTHER SEAMS IN THE WORK ZONE
 - d. JOINTS IN MEMBERS BETWEEN INTERMITTENT WELDS
 - e. JOINTS BETWEEN LIFTING HOLE CUTOUTS AND WELDED BACKER-PLATES
 - f. ALL OPENINGS SMALLER THAN THE MAXIMUM GAP WIDTH RECOMMENDED BY JOINT SEALER MANUFACTURER
 - g. JOINTS ALONG BRACKETRY AND OTHER DEVICES
 - h. PERIMETERS OF PATCH REPAIR AREAS AS NEEDED

C. COATING

- 1.1.1. COATING MATERIAL SHALL BE PROPORTIONED, MIXED, APPLIED (IN COATS, AS APPLICABLE), AND CURED IN ACCORDANCE WITH ALL MANUFACTURERS RECOMMENDATIONS UNLESS OTHERWISE INDICATED IN THESE SPECIFICATIONS OR APPROVED BY THE OWNER IN WRITING.
- 1.1.2. APPLY STRIP COATING OVER JOINT SEALANT, PATCH REPAIRS, AND OTHER AREAS IN ACCORDANCE WITH COATING MATERIAL MANUFACTURER'S RECOMMENDATIONS.
- 1.1.3. REPAIR OF DEFECTS: REPAIR DETECTED COATING HOLIDAYS, THIN AREAS, AND EXPOSED AREAS DAMAGED SURFACE TREATMENT AND APPLICATION OF ADDITIONAL COATING OR BY MANUFACTURER'S RECOMMENDATIONS.

3. SURFACES TO BE COATED

- A. ALL STEEL SHEET PILES, H-PILES, BULKHEAD CAPS, BRACKETS, AND MISCELLANEOUS STEEL AND FIXTURES SHALL BE CLEANED, PREPARED, AND COATED.

4. FINAL CLEANUP

- A. FOLLOWING COMPLETION OF THE WORK, REMOVE DEBRIS, EQUIPMENT, AND MATERIALS FROM THE SITE. DISPOSE OF ALL DEBRIS IN ACCORDANCE WITH FEDERAL, STATE, AND LOCAL LAWS AND REGULATIONS. REMOVE TEMPORARY CONNECTIONS TO WATER AND ELECTRICAL SERVICES. RESTORE EXISTING FACILITIES IN AND AROUND THE WORK AREAS TO THEIR ORIGINAL CONDITION.

Signature _____
Date _____

REV. NO.	DATE	DRAWN	CHECKED	BY	REMARKS
4					
3					
2					
1					

DESIGNED: _____
DATE: 07/10/2020
JOB NO.: 19-3354
SCALE: 1"=50'

ISLE OF PALMS MARINA
ISLE OF PALMS, SC
TYPICAL DETAILS
CITY OF ISLE OF PALMS, SC

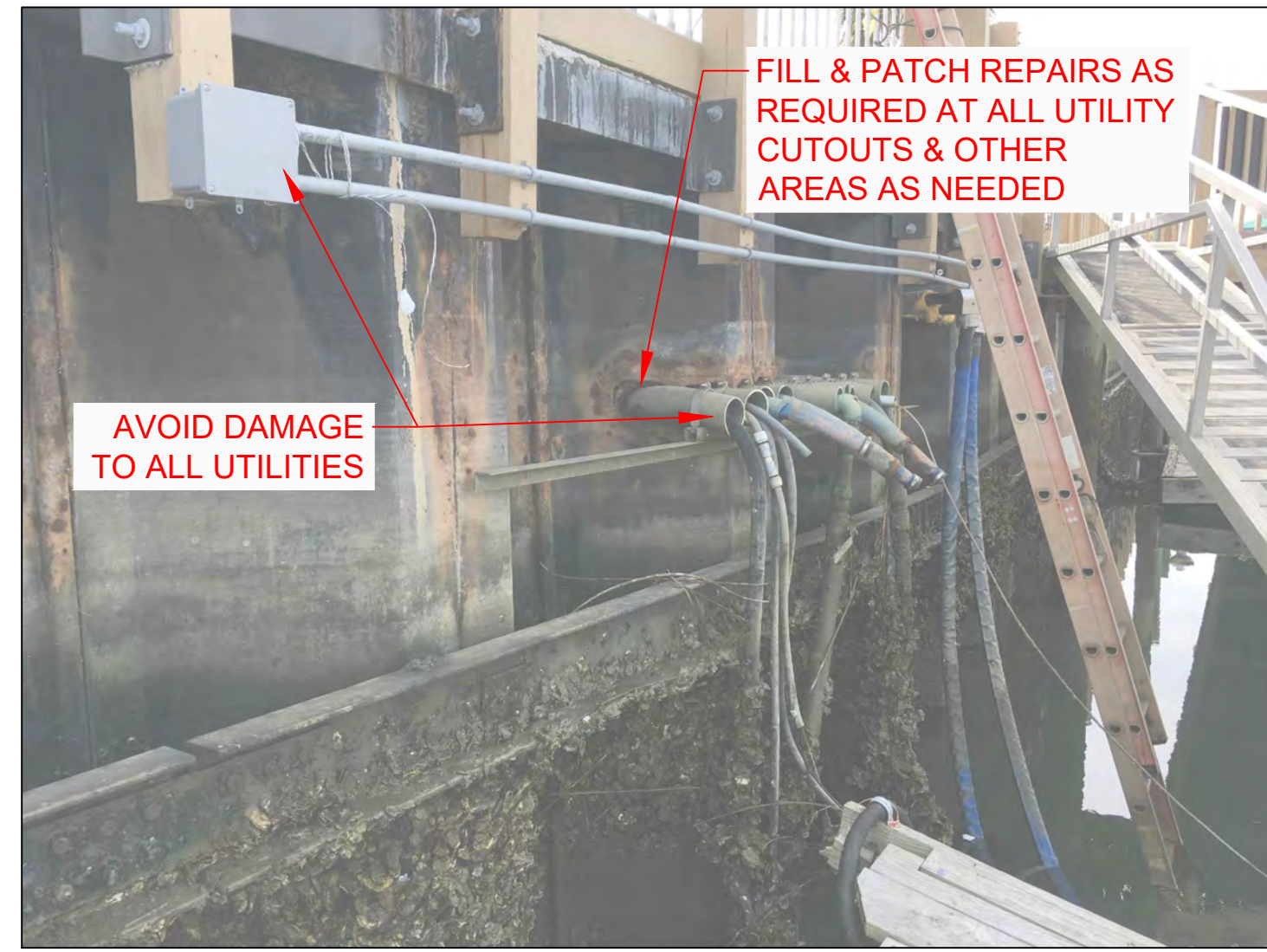
Applied Technology & Management, Inc.
941 Houston Northcut Blvd.
Mt Pleasant SC, SC 29464
(843) 414-1040
ATM

DRAWING NUMBER
B2

Scale: As Shown
 Date: 07/10/2020
 Note: THESE DRAWINGS AND DESIGNS ARE STRICTLY CONFIDENTIAL AND PROTECTED BY INTERNATIONAL COPYRIGHT LAW. DETAILS MUST NOT BE DISCLOSED, REPRODUCED OR COMMUNICATED TO A 3rd PARTY IN ANY FORM OR MANNER WITHOUT THE PRIOR WRITTEN APPROVAL OF APPLIED TECHNOLOGY & MANAGEMENT.



PHOTOGRAPH 1



PHOTOGRAPH 4



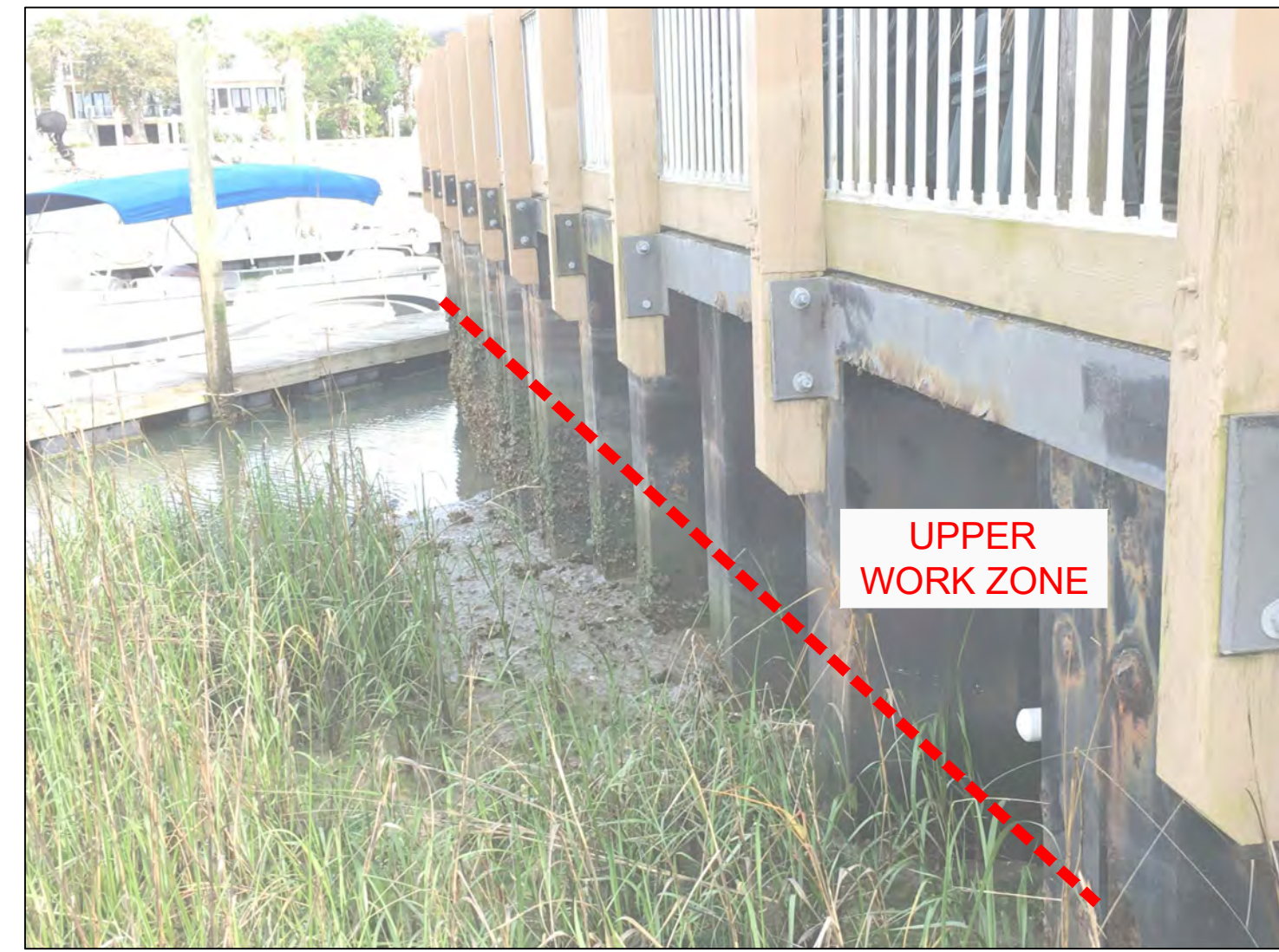
PHOTOGRAPH 7



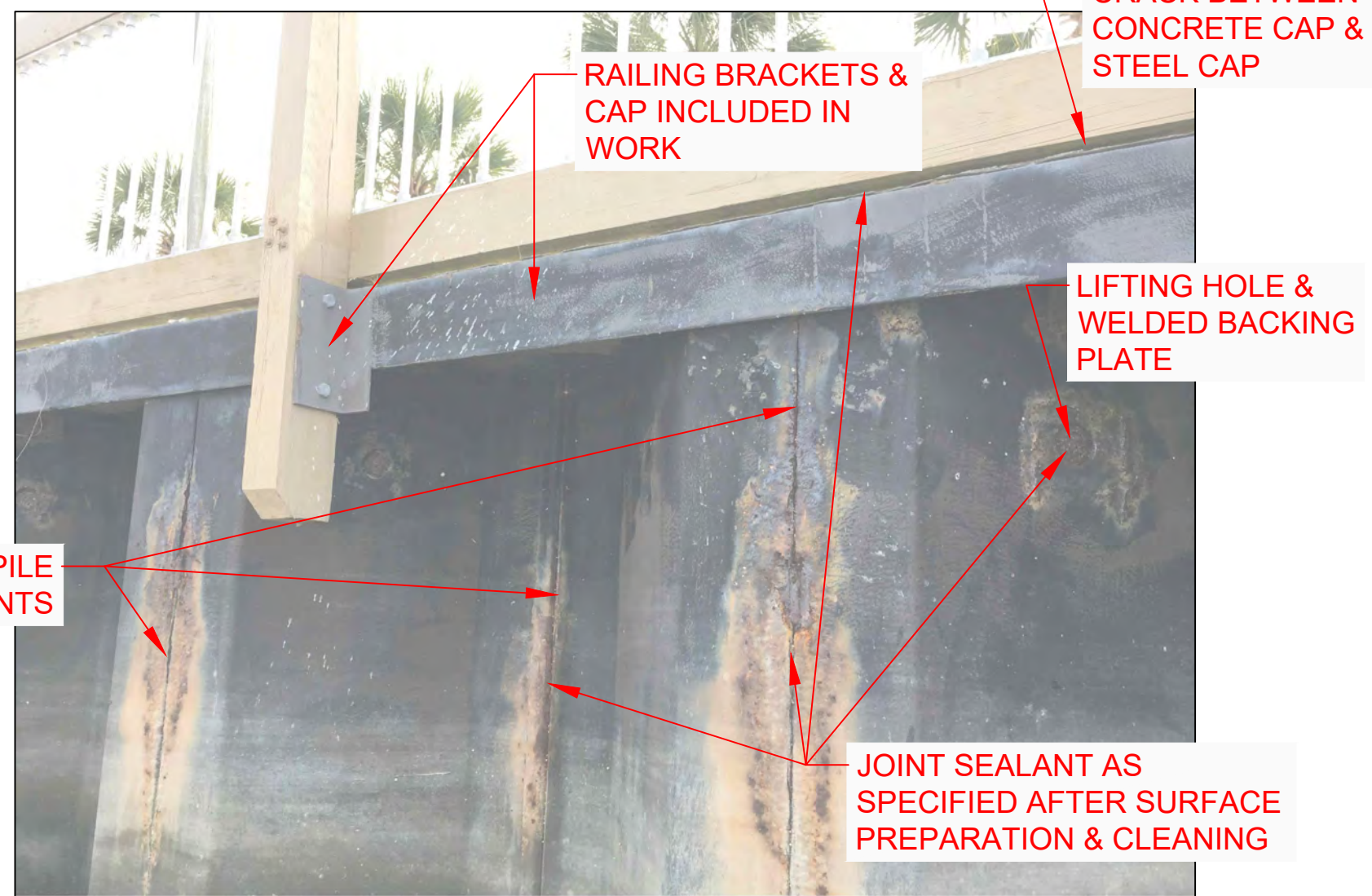
PHOTOGRAPH 2



PHOTOGRAPH 5



PHOTOGRAPH 8



PHOTOGRAPH 3



PHOTOGRAPH 6



PHOTOGRAPH 9

Scale: 1"=50' (1/8"=1'-0")
 Date: 07/10/2020
 Job No.: 19-3354
 Scale: 1"=50'
 Note: THESE DRAWINGS AND DESIGNS ARE STRICTLY CONFIDENTIAL AND PROTECTED BY INTERNATIONAL COPYRIGHT LAW. DETAILS MUST NOT BE DISCLOSED, REPRODUCED OR COMMUNICATED TO A 3rd PARTY IN ANY FORM OR MANNER WITHOUT THE PRIOR WRITTEN APPROVAL OF APPLIED TECHNOLOGY & MANAGEMENT.

Signature	Date

REV. No.	DATE	DRAWN	CHECKED	CHG. BY	REMARKS
4					
3					
2					
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DESIGNED	MM	HH	MM	HH
DATE:	07/10/2020			
JOB NO.:	19-3354			
SCALE:	1"=50'			

ISLE OF PALMS MARINA
 ISLE OF PALMS, SC
TYPICAL SITE PHOTOGRAPHS
 CITY OF ISLE OF PALMS, SC

Applied Technology & Management, Inc.
 941 Houston Northwest Blvd.
 Mt Pleasant SC, SC 29464
 (843) 414-1040

G – TECHNICAL SPECIFICATIONS

ISLE OF PALMS MARINA REHABILITATION

SECTION 01000 GENERAL PROJECT REQUIREMENTS

PART 1 – GENERAL

1.1 GENERAL

- A. All work shall be conducted under the observation of the Design Criteria Professional. The Design Criteria Professional shall have free access to any and all parts of the Work at any time. Contractor shall furnish Design Criteria Professional with such information as may be necessary to keep him fully informed regarding progress and manner of work and character of materials. Inspection of work shall not relieve Contractor from any obligation to fulfill this Contract.
- B. The Contractor is hereby notified that the Owner may have other operations activities ongoing within the project area and marina site. This may include both water based operations and upland work. The Contractor shall show marina operator and local waterway users on-site courtesy. In the event of any conflicts the Contractor shall coordinate with the Design Criteria Professional.
- C. The Contractor shall be required to conduct the Work in such manner as to obstruct navigation as little as possible. In any case, if the Contractor's plant or support vessels obstructs the navigable waters making it difficult for the passage of any vessels, Contractor's vessels shall be promptly moved on the approach of any vessel to such an extent as may be necessary to afford a practicable passage. Upon completion of the Work the Contractor shall promptly remove from navigable waters or on shore his plant, including ranges, buoys, piles, and other marks placed by him under his contract. Any equipment moored in navigable waters shall be properly marked with lighted buoys. No unmarked items shall be allowed to float within the water column (i.e., all items must be surface floating or on the sea bed). Contractor shall coordinate his work plan, on-water staging, and any potential navigation obstructions with the local Port Captain.

1.2 OBSERVATION AND COMMUNICATION

- A. The Contractor shall have available, at the request of the Design Criteria Professional, the use of equipment and personnel as may be necessary in checking and inspecting the work (may include a survey boat to survey entrance channel). When requested by the Design Criteria Professional, the Contractor shall furnish transportation to and from water-based Construction equipment.
- B. Should the Contractor refuse, neglect, or delay compliance with these requirements, the specific facilities may be furnished and maintained by the Design Criteria Professional and the cost thereof will be deducted from any amounts due or to become due the Contractor.
- C. Communication among the Contractor's field foremen and superintendents shall be continuous through the use of hand held two-way radios, cellular phones, etc. In the

ISLE OF PALMS MARINA REHABILITATION

event of any significant problems, the Contractor shall notify the Design Criteria Professional and develop recommended actions.

- D. The Contractor shall maintain a construction office within the general vicinity of the project work area for the duration of the project. This office shall be open and attended at least during normal daytime working hours. Temporary power and water shall be the responsibility of the Contractor.
- E. If during construction, the Contractor observes items that may have historical or archaeological value, such observations shall be reported immediately to the Design Criteria Professional so that the appropriate authorities may be notified. A determination will be made as to their significance and what, if any, special disposition of the finds. The Contractor shall cease all activities that may result in the destruction of these resources and shall prevent employees from trespassing on, removing, or otherwise damaging such resources. Refer to regulatory permits.

1.3 CONTRACTOR'S SURVEY AND LAYOUT OF WORK

- A. The Contractor shall complete the layout of the work from available state or federal control monuments, data, and elevations. Proposed control points shall be identified by the Contractor and approved by the Owner.
- B. The reference monuments used for setting out the Work shall include horizontal and vertical coordinates relative to the datum utilized locally and shown on the Bid Drawings, SC State Plane Coordinates, NAD1983 Datum and Mean Lower Low Water (MLLW), respectively.
- C. The Contractor shall furnish, at his own expense, such stakes, templates, platforms, equipment, tools and material, and all labor as may be required in laying out any part of the work from the benchmarks, control data, and elevations identified by the Owner. It shall be the responsibility of the Contractor to protect and maintain all permanent and temporary benchmarks, stakes and other markers established by the Owner and Contractor throughout the construction of the project unless authorized to remove them by the Design Criteria Professional. If the benchmarks or temporary markers are destroyed or damaged by the Contractor prior to their authorized removal, at the discretion of the Design Criteria Professional's the benchmarks or temporary markers shall be replaced and the cost deducted from any amounts due or to become due to the Contractor.
- D. The Contractor shall be responsible for all measurements that may be required for the execution of the work, subject to modifications that the Design Criteria Professional may require to meet changes in conditions at the work site. All temporary markers and stakes placed by the Contractor must be removed upon completion of the project.
- E. The Design Criteria Professional may observe the establishment of horizontal control work (baseline layout, ranges, station flags, shore-based control for GPS, etc.) and vertical control work (tide staff gauges, benchmarks, etc.), locations of project work points, maximum/minimum elevations of cut and fill, etc. The presence of the Design

ISLE OF PALMS MARINA REHABILITATION

Criteria Professional shall not relieve the Contractor of his responsibility for proper execution of work in accordance with the Specifications.

1.4 DRAWINGS AND DOCUMENTS

- A. A minimum of one (1) complete set of Drawings and Documents (with permits) shall be kept in the Contractor's field office at all times during project construction.
- B. The Contractor shall maintain a separate set of full-size Drawings, marked up in red, to indicate current, as-built conditions. These drawings shall be maintained at or near the site in a current condition at all times until completion of the work. These drawings shall be available for review by the Design Criteria Professional at all times. All variations from the Drawings, for whatever reason, including those occasioned by modifications, optional materials, and the required coordination between trades, shall be indicated. These variations shall be shown in the same general detail utilized in the Drawings. The marked-up drawings may be utilized for preparation of the as-built drawings, but may not be substituted for the as-built drawings.

1.5 AS-BUILT DRAWINGS

- A. At the completion of the Work, the Contractor shall submit to the Design Criteria Professional, a set of as-built drawings and all supporting survey data used to compile the as-built drawings. The Contractor will also provide any CAD files created in preparation of the as-built drawings. This information must be submitted to the Design Criteria Professional within fourteen (14) calendar days of the completion of the Work.
- B. The Contractor shall sign the as-built drawings in the following manner: "I CERTIFY THAT THESE DRAWINGS INDICATE CONSTRUCTION AS ACTUALLY PERFORMED AND ARE AN ACCURATE REPRESENTATION OF THE SPECIFIED WORK." The Owner reserves the right to withhold final payment until acceptable as-built drawings have been submitted.

1.6 CONTRACTOR QUALITY CONTROL PLAN

- A. The Contractor must submit a Contractor Quality Control (CQC) Plan within 15 days of NTP. The CQC Plan is the means of assuring that all items of work are in conformance with the drawings and specifications, and describes the Contractor's inspection and test procedures.
- B. Contractor shall prepare and maintain a weekly report of operations and furnish copies thereof to the Design Criteria Professional. The form shall at minimum include: equipment report, personnel working, work performed, report weather and significant occurrences. Construction delays, communications, environmental site conditions, testing performed, and change directives shall be summarized on the weekly report.
- C. Take progress surveys, as necessary, to assure required lines and grades are being met, construction is located in proper positions and elevations, etc.

ISLE OF PALMS MARINA REHABILITATION

- D. Contractor shall be responsible to ensure that any stockpiled or excavated material and staged construction materials are not allowed to flow or extend outside the designated disposal/work areas.
- E. Personnel shall be assigned, or designated, by each subcontractor to perform inspections and control the quality of the work as required. These personnel shall be other than those performing the work being inspected. Qualifications of all quality control personnel must be included in the CQC Plan. Quality control representation must be continually available to oversee field operations.

1.7 CONSTRUCTION SCHEDULE

A construction schedule shall be submitted by the Contractor per the following:

- A. The Contractor is required to prepare in advance and submit at the time of the project preconstruction meeting a detailed critical path method (CPM) project schedule in Owner approved software. This schedule is subject to the review and acceptance of the Design Criteria Professional.
- B. The schedule shall show a complete sequence of construction activities, including submittals, reviews, procurement of materials, inspections and surveys, identifying work for the complete project in addition to work requiring separate stages, as well as any other logically grouped activities. The schedule shall indicate the early and late start, early and late finish, major construction milestones, materials and equipment manufacture and delivery, logic ties, float dates, and duration. Critical path for each identified project milestone, as well as the overall project, shall be included.
- C. The Contractor shall revise and resubmit for approval the schedule as required by the Design Criteria Professional when progress is not in compliance with the original schedule. The prime contractor shall submit revised project schedules with each and every application for monthly progress payment identifying changes since the previous version of the schedule.

1.8 CONTINUATION OF WORK

- A. All work shall continue until: (1) progress has reached substantial completion for the project; or (2) the Owner has issued an order to the Contractor to cease operations.

1.9 SUBMITTALS

- A. Submittals must be included in the CPM activity analysis. Contractor should be sure to allow ample time for the review process of a submittal (a minimum of 15 days) and lead time to procure materials for incorporation into the work. A Submittal Register must be completed by the Contractor to indicate scheduled submittal date and anticipated acceptance date by the Design Criteria Professional 15 days after Notice to Proceed. The Contractor shall carefully control his procurement operations to ensure that each individual submittal is made on or before the scheduled submittal date shown on the approved Submittal Register.

ISLE OF PALMS MARINA REHABILITATION

- C. The Contractor shall submit all items listed on the Submittal Register and as required by the Bid Documents. The Design Criteria Professional may request submittals in addition to those listed on the Submittal Register.
- D. The Contractor shall complete "Contractor Schedule Date" column and return two (2) completed copies of the Submittal Register to the Design Criteria Professional for acceptance within 15 calendar days after Notice to Proceed for acceptance. The accepted Submittal Register will become the scheduling document and will be used to control submittals throughout the life of the contract. The submittal register and the progress schedules shall be coordinated.

1.10 CLIMATIC CONDITIONS

- A. Water levels in the project area are primarily affected by tidal fluctuations of the Atlantic Ocean. The project area is also subject to storm surges due to hurricanes, tropical storms, and extratropical storms. Local estimated tidal ranges and datums for the project site are shown on the Drawings.
- B. The project area is subject to tropical storms and hurricanes from June through November, and to windy and rainy weather, including severe electrical storms and other sudden and locally severe meteorological occurrences that approach hurricane conditions, during any time of the year. The Contractor shall maintain full-time monitoring of the marine weather broadcasts and other local commercial weather forecasting services that may be available. It shall be the Contractor's responsibility to obtain information concerning rain, wind and wave conditions that could influence his construction operations.

1.11 HURRICANE PLAN

- A. The Contractor shall maintain full-time monitoring of the local and regional weather broadcasts, and avail themselves of such other local commercial weather forecasting services as may be available. These information broadcasts shall be the Contractor's primary source in the decision process to implement action under the approved storm plan.

1.12 NON-CONFORMING WORK

- A. The Contractor shall remove and replace any work not conforming to the Drawings or Specifications upon written order by the Design Criteria Professional. Any cost caused by reason of this non-conforming work shall be borne by the Contractor.

1.13 ACCIDENT PREVENTION AND FIRST AID PLAN

- A. The Contractor shall submit an Accident Prevention and First Aid Plan to the Design Criteria Professional 15 days prior to commencement of construction.

ISLE OF PALMS MARINA REHABILITATION

1.14 EMERGENCY RESPONSE PLAN

A. The Contractor shall submit an Emergency Response Plan to the Design Criteria Professional 15 days prior to commencement of construction. The plan must include at a minimum:

1. A site description and evaluation
2. Assessment and risk analysis
3. Emergency equipment available
4. Medical equipment and personnel available
5. Clean up procedures

END OF SECTION

ISLE OF PALMS MARINA REHABILITATION

SECTION 02410 DEMOLITION

PART 1 – GENERAL

1.1 REFERENCES

The publications listed below form a part of this specification to the extent referenced. The publications are referred to in the text by the basic designation only. Unless otherwise indicated, the most recent edition of the publication, including any revisions, shall be used.

AMERICAN SOCIETY OF SAFETY ENGINEERS (ASSE/SAFE)

ASSE/SAFE A10.6 (2006) Safety Requirements for Demolition Operations

U.S. ARMY CORPS OF ENGINEERS (USACE)

EM 385-1-1 (2008; Change 1-2010; Change 3-2010; Errata 1-2010) Safety and Health Requirements Manual

U.S. NATIONAL ARCHIVES AND RECORDS ADMINISTRATION (NARA)

40 CFR 61 National Emission Standards for Hazardous Air Pollutants

1.2 SUBMITTALS

The Contractor shall submit the following. Note that approval of the submittals by the Design Criteria Professional shall not be construed as relieving the Contractor from responsibility for compliance with the specifications nor from responsibility of errors of any sort in the submittals.

A. Preconstruction Submittals

1. Demolition Plan

B. Certificates

1. Disposal Certificates or Statements (as applicable)

1.3 PROJECT DESCRIPTION

A. Demolition Plan

Prepare a Demolition Plan and submit proposed salvage, demolition, and removal procedures for approval before work is started. Include in the plan procedures for careful removal and disposition of materials specified to be salvaged, coordination with other work in progress, a disconnection schedule of utility services, and a detailed description of methods and equipment to be used for each operation and of the sequence of operations. Identify components and materials to be salvaged for

ISLE OF PALMS MARINA REHABILITATION

reuse with reference to Paragraph "EXISTING FACILITIES TO BE REMOVED". Provide procedures for safe conduct of the work in accordance with EM 385-1-1. Plan shall be approved by Design Criteria Professional prior to work beginning.

B. General Requirements

Do not begin demolition until authorization is received from the Design Criteria Professional. The work of this Section is to be performed in a manner that maximizes salvage of materials, where directed by the Design Criteria Professional. The work includes demolition, salvage of identified items and materials, and removal of resulting rubbish and debris. Remove rubbish and debris from the marina property daily, unless otherwise directed. Store materials that cannot be removed daily in areas specified by the Design Criteria Professional. In the interest of occupational safety and health, perform the work in accordance with EM 385-1-1, Section 23, Demolition, and other applicable Sections.

1.4 ITEMS TO REMAIN IN PLACE

- A. Take necessary precautions to avoid damage to existing items to remain in place, to be reused, or to remain the property of the Owner. Repair or replace damaged items as approved by the Design Criteria Professional. Coordinate the work of this Section with all other work indicated. Construct and maintain shoring, bracing, and supports as required. Ensure that structural elements are not overloaded. Increase structural supports or add new supports as may be required as a result of any cutting, removal, or demolition work performed under this contract. Do not overload structural elements or pavements to remain. Provide new supports and reinforcement for existing construction weakened by demolition or removal work. Repairs, reinforcement, or structural replacement require approval by the Design Criteria Professional prior to performing such work.
- B. Existing Construction Limits and Protection: Do not disturb existing construction beyond the extent indicated or necessary for installation of new construction. Provide protective measures to control accumulation and migration of dust and dirt in all work areas. Remove snow, dust, dirt, and debris from work areas daily.
- C. Utility Service: Maintain existing utilities indicated to stay in service and protect against damage during demolition operations.
- D. Facilities: Protect electrical and mechanical services and utilities. Where removal of existing utilities and pavement is specified or indicated, provide approved barricades, temporary covering of exposed areas, and temporary services or connections for electrical and mechanical utilities. Ensure that no elements determined to be unstable are left unsupported and place and secure bracing, shoring, or lateral supports as may be required as a result of any cutting, removal, or demolition work performed under this contract.

1.5 BURNING

- A. The use of burning at the project site for the disposal of refuse and debris will not be permitted.

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1.6 QUALITY ASSURANCE

- A. Submit timely notification of demolition projects to Federal, State, regional, and local authorities in accordance with 40 CFR 61, Subpart M. Notify the Design Criteria Professional in writing 10 working days prior to the commencement of work in accordance with 40 CFR 61, Subpart M. Comply with Government (federal, state, and local) hauling and disposal regulations. In addition to the requirements of the "Contract Clauses," conform to the safety requirements contained in ASSE/SAFE A10.6. Comply with requirements of the Government approvals. Use of explosives will not be permitted.
- B. Dust and Debris Control: Prevent the spread of dust and debris and avoid the creation of a nuisance or hazard in the surrounding area. Do not use water if it results in hazardous or objectionable conditions such as, but not limited to, ice, flooding, or pollution.

1.7 PROTECTION

- A. Traffic Control Signs: Where pedestrian and driver safety is endangered in the area of removal work, use traffic barricades with flashing lights. Anchor barricades in a manner to prevent displacement by wind. Notify the Design Criteria Professional and Marina Management prior to beginning such work.
- B. Protection of Personnel: Before, during and after the demolition work take immediate action to protect all personnel working in and around the project site. No area, section, or component of any structural element will be allowed to be left standing without sufficient bracing, shoring, or lateral support to prevent collapse or failure while workmen remove debris or perform other work in the immediate area.

1.8 RELOCATIONS

- A. Perform the removal and reinstallation of relocated items as indicated with workmen skilled in the trades involved. Repair or replace items to be relocated which are damaged by the Contractor with new undamaged items as approved by the Design Criteria Professional. Provide temporary staging and securing of any items indicated for reuse or reinstallation in areas approved by the Design Criteria Professional.

1.9 EXISTING CONDITIONS

- A. Before beginning any demolition work, survey the site and examine the drawings and specifications to determine the extent of the work. Record existing conditions in the presence of the Design Criteria Professional showing the condition of structures and other facilities adjacent to areas of alteration or removal. Photographs sized 4 inch will be acceptable as a record of existing conditions. Include in the record the elevation of the top of foundation walls, finish floor elevations, possible conflicting electrical conduits, plumbing lines, the location and extent of existing cracks and other damage and description of surface conditions that exist prior to before starting work. It is the Contractor's responsibility to verify and document all required outages

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which will be required during the course of work, and to note these outages on the record document. Submit survey results.

PART 2 - PRODUCTS (NOT USED)

PART 3 - EXECUTION

3.1 EXISTING FACILITIES TO BE REMOVED

Inspect and evaluate existing structures onsite for reuse. Existing construction scheduled to be removed for reuse shall be disassembled. Dismantled and removed materials are to be separated, set aside, and prepared as specified, and stored or delivered to a collection point for reuse as specified.

A. Structures

Remove existing structures as indicated on the Drawings. This shall include, in general: existing floating docks, piles, and dock utilities extending landward to their connection on shore; derelict piles, pile caps, and other debris lying on or embedded in the seabed within the footprint of the work; aluminum gangways. Items to remain in current position and not to be removed are indicated on the Drawings. Limits of all items to remain in current locations, items to be salvaged for Owner's use, and items to be removed and reused in the new work shall be coordinated with the Design Criteria Professional prior to demolition of any portion of the work.

B. Utilities and Related Equipment

1. General Requirements: Do not interrupt existing utilities serving occupied or used facilities, except when authorized in writing by the Design Criteria Professional. Do not interrupt existing utilities serving facilities occupied and used by the Owner except when approved in writing and then only after temporary utility services have been approved and provided. Do not begin demolition work until all utility disconnections have been made. Shut off and cap utilities for future use, as indicated.

2. Disconnecting Existing Utilities: Remove existing utilities as indicated, or uncovered by work, and terminate in a manner conforming to the nationally recognized code covering the specific utility and approved by the Design Criteria Professional. When utility lines are encountered but are not indicated on the Drawings, notify the Design Criteria Professional prior to further work in that area.

C. Paving and Slabs

Sawcut and remove concrete and asphaltic concrete paving and slabs, including aggregate base, where indicated to a depth of 3 inches below existing adjacent grade. Provide neat sawcuts at limits of pavement removal as indicated. Pavement and slabs not to be used in this project shall be removed from the installation at Contractor's expense.

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D. Concrete

Saw concrete along straight lines to a minimum depth of 2 inches. Make each cut in walls perpendicular to the face and in alignment with the cut in the opposite face. Break out the remainder of the concrete provided that the broken area is concealed in the finished work, and the remaining concrete is sound. At locations where the broken face cannot be concealed, grind smooth or saw cut entirely through the concrete.

E. Patching

Where removals leave holes and damaged surfaces exposed in the finished work, patch and repair these holes and damaged surfaces to match adjacent finished surfaces. Where new work is to be applied to existing surfaces, perform removals and patching in a manner to produce surfaces suitable for receiving new work. Finished surfaces of patched area shall be flush with the adjacent existing surface and shall match the existing adjacent surface as closely as possible as to texture and finish.

3.2 DISPOSITION OF MATERIAL

A. Title to Materials

Except for salvaged items specified by the Design Criteria Professional, all materials and equipment removed and not reused, shall become the property of the Contractor and shall be removed from the Marina property. Title to materials resulting from demolition, and materials and equipment to be removed, is vested in the Contractor upon approval by the Design Criteria Professional of the Contractor's demolition and removal procedures, and authorization by the Design Criteria Professional to begin demolition. The Owner will not be responsible for the condition or loss of, or damage to, such property after contract award. Showing for sale or selling materials and equipment on site is prohibited.

B. Reuse of Materials and Equipment

Remove and store materials and equipment indicated to be reused or relocated to prevent damage, and reinstall as the work progresses. Recondition materials and equipment designated for reuse before reinstallation. Replace items damaged during removal and salvage operations, or restore them as necessary to usable condition.

3.3 CLEANUP

Remove debris and rubbish from excavations. Remove and transport the debris in a manner that prevents spillage on streets or adjacent areas. Apply local regulations regarding hauling and disposal.

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3.4 DISPOSAL OF REMOVED MATERIALS

A. Regulation of Removed Materials

Dispose of debris, rubbish, scrap, and other non-salvageable materials resulting from removal operations with all applicable federal, state and local regulations.

B. Removal from the Site

Transport waste materials from the project work site for legal disposal.

END OF SECTION

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SECTION 02454 MARINE PILING

PART 1 – GENERAL

1.1 WORK INCLUDED

- A. The Contractor shall provide all equipment, materials, appurtenances, tools, labor and supervision necessary to design, fabricate, furnish, and install new anchor piles for the floating dock and attenuator system. All anchor pile systems shall consider the effects of a seawater environment on design life and be designed according to the most recent standards for materials fabrication and protective treatments. Design of fixed pier piles is not included in this work.
 - 1. Requirements: The Contractor is responsible to design, fabricate, furnish, and install all anchor piles for the floating dock and attenuator system. Pile design for the floating dock and attenuator system submitted for approval to the Design Criteria Professional shall be of sufficient size, quantity, and length to safely support the proposed floating dock systems under the extreme loading described in Section 02853 - FLOATING DOCKS. Pile size, type, number, locations, tip elevations, etc., shall be determined by a qualified professional engineer, as further described in Section 02853 – FLOATING DOCKS.
 - 2. Design Calculations: The Contractor must complete design calculations that address the requirements of this specification and Section 02853 - FLOATING DOCKS. The lateral capacity of the piles shall be determined using a commercially available analysis program (“LPILE by Lyman Reese et. al.; “ALLPILE” by Civiltech Software or alternative method subject to approval of the Design Criteria Professional). Input parameters for the soil types shall be derived based on the Owner-provided geotechnical data and any other supplemental information collected by or otherwise available to the Contractor.

1.2 RELATED WORK

- A. Section 02463 – PRESTRESSED CONCRETE PILES
- B. Section 02464 – TIMBER PILES
- C. Section 02465 – STEEL PIPE PILES
- D. Section 02853 – FLOATING DOCKS
- E. Drawings and general provisions of Contract.

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1.3 REFERENCES

See Related Work references.

1.4 SUBMITTALS

- A. Bid Submittal – Contractor shall submit the proposed pile type, treatment, and general arrangement of anchorage piles for the floating dock system.
- B. Shop Drawings and Design Submittal – Following the award of the contract and prior to fabrication, the Dock Manufacturer shall submit a thorough complete submittal package legible in English (see 02853 – FLOATING DOCKS paragraph 1.4.C), including drawings, calculations, and product data. No work shall commence until the Shop Drawings have been reviewed and acknowledged to be in general conformance with the design intent of the project.
- C. Pile Driving Equipment and Method: Submit to the Design Criteria Professional, for approval prior to driving piles:
 - 1. Type of pile driving equipment to be used and pile driving plan
 - 2. Driving helmets, cap blocks, templates, and pile cushions to be used.
 - 3. Details of the lifting and support points to be used.
 - 4. Pre-drilling means and methods, where pre-drilling is required.
 - 5. WEAO analysis prepared for the Contractor by a professional engineer to demonstrate sufficiency of Contractor's proposed pile driving hammer for the project.
- D. Pile caps: submit manufacturer's materials specifications, anticipated life expectancy, and colors to Design Criteria Professional for approval.
- E. Test Piles: Where load tests or piles are required as noted in Section 02853 - FLOATING DOCKS, (paragraph 1.4.F), submit:
 - 1. Method statement and schedule prior to execution
 - 2. Results/report of tests.
- F. Pile Driving Records: Submit copies of complete pile driving record in accordance with paragraph 3.9, this Section.

1.5 PLANT INSPECTION

The Design Criteria Professional reserves the right to perform plant inspections of pile fabrication and treating process at his discretion. Notify the Design Criteria Professional at least two weeks prior to beginning the fabrication and treatment, stating where fabrication and preservative treatment will be done. The Design Criteria Professional shall have access to all parts of the plant and shall be allowed to inspect all facets of the treating process.

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PART 2 - PRODUCTS

2.1 MATERIALS AND REQUIREMENTS

- A. Steel Piles: Provide round steel pipe piles conforming to Section 02465 – STEEL PIPE PILES. Piles shall be black cold tar epoxy coated for corrosion protection in the marine environment to a minimum depth of 5-ft. below the mudline. Alternate steel pipe corrosion treatment, including HDPE sleeving, shall be subject to Design Criteria Professional's approval.
- B. Timber Piles: Provide round Southern Pine clean-peeled piles conforming to Section 02464 – TIMBER PILES. Greenheart or composite piles may only be used if approved by Design Criteria Professional. Provide Design Criteria Professional pile specifications for review at time of bid and with shop drawing submittal.
- C. Concrete Piles: Provide square pre-stressed, reinforced concrete piles conforming to Section 02463 – PRESTRESSED CONCRETE PILES.
- D. Preservative/Protective Treatment: Provide as per related specifications.
- E. Pile caps: Shall be manufactured from injection molded low density polyethylene or molded fiberglass reinforced plastic material. Material shall be UV stabilized and a minimum of 1/8 inch thickness. Pile caps shall be peaked to deter seabird roosting. Pile caps shall be fabricated to the size, shape of piles used with a color as approved by the Design Criteria Professional. Pile caps shall be attached to each pile according to manufacturer's recommendations for each pile type and extend beyond any pile type irregularities (e.g. cuts, grooves, bumps, etc.).

PART 3 - EXECUTION

3.1 DELIVERY AND STORAGE

Store and handle piles according to the applicable requirements of Related Work specifications sections and the following. Keep ground underneath and within five (5) feet of all stored piles free of weeds, rubbish and combustible material. Protect all materials from weather using suitable coverings. Protect hardware from corrosion. Piles shall be unloaded with slings or other equipment. Piles shall not be dumped or dropped. Acceptance of materials for delivery does not validate acceptance of material for use. All damaged items determined by the Design Criteria Professional as being unsuitable shall be replaced by the Contractor at his expense.

3.2 INSTALLATION

- A. Markings: Mark the piles with lines of high visibility paint or ink at one-foot intervals from bottom to top. Number every five (5) feet. Markings shall be clearly visible and legible to the naked eye.
- B. Handling: Inspect piles in the leads, and where the protective shell or treated wood is impaired, between cutoff and point not less than 10 feet below the ground. Repair the piles in accordance with AWPA M4 (for timber) and according to applicable ASTM and

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PCI codes for steel and concrete, unless the pile is damaged to such extent that it is rejected. Laterally support pile during driving, but do not unduly restrain from rotation in the leads. Where pile orientation is essential, take special care to maintain the orientation during driving. Take special care in supporting battered piles to prevent excess bending stresses in the pile. When necessary, place collars around timber pile heads to prevent brooming. Do not use cant hooks.

C. Driving Piles: Drive without interruption to the calculated tip elevation to reach a driving resistance in accordance with the schedule that the Contractor will prepare and is approved by the Design Criteria Professional.

D. Driving Equipment

1. Pile Hammers: air-, steam-, or diesel-powered of a type approved by the Design Criteria Professional. The hammer furnished shall have a capacity at least equal to the hammer manufacturer's recommendation for the total weight of pile and character of subsurface material to be encountered. The minimum hammer energy for driving piles shall be by manufacturer's recommendations and accepted industry practice. Operate diesel-powered hammers throughout the entire driving period at the rate recommended by the manufacturers. Maintain sufficient pressure at the hammers so that;

- (a) For double-acting hammer, the number of blows per minute during and at the completion of the driving of a pile is equal approximately to that at which the hammer is rated.
- (b) For single-acting hammer, there is a full upward stroke of the ram.
- (c) For differential-type hammer, there is a slight rise of the hammer base during each upward stroke.

2. Driving Helmets and Cushion Blocks: Use a driving helmet or cap and a cushion block or cap block approved by the Design Criteria Professional to prevent impact damage to the pile. The helmet or cap and cushion-block combination shall protect the head of the pile, minimize energy absorption, and transmit hammer energy uniformly and consistently during the entire driving period. The driving helmet or cap shall fit snugly on top of the pile so that energy transmitted to the pile is uniformly distributed over the entire surface of the pile head. The cushion block may be solid or laminated softwood block, with grain parallel to the pile axis, and enclosed in a close-fitting steel housing. Use blocks of suitable thickness for the length of pile to be driven and the character of subsurface material. Replace cushion block if it has been damaged, split, highly compressed, charred or burned, or has become spongy or deteriorated. Do not use small wood blocks, wood chips, rope, or other material as substitutes.

2. Protection of Piles: Square the heads and points of piles to the driving axis. Use driving caps or rings and followers to protect the heads of the piles, to provide uniform distribution of hammer energy, and to reduce absorption of the energy of the blow to a minimum. Pile shall be laterally supported during driving, but shall not be unduly restrained from rotation in the leads. Where pile orientation is essential, special care shall be taken to maintain orientation during driving.

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3.3 TOLERANCES IN DRIVING

Unless otherwise indicated, drive piles with a variation of not more than 1/4 inch per foot of pile length from the vertical for plumb piles or more than four percent from the required angle for batter piles. Butts shall be within four (4) inches of the location indicated. Piles shall not be forced into position. Re-drive piles that have heaved to the required tip elevations. Piles shall be checked for heaving by use of a level line stretched between piles. Piles shall be marked at the end of the workday with a painted mark along the level line, and checked subsequently for heaving.

3.4 JETTING OF PILES

Jetting of piles shall not be permitted.

3.5 PRE-DRILLING OF PILES

Contractor shall make every effort to drive piles to the penetrations indicated by the design. Review per geotechnical report for reference to subsurface conditions.

3.6 LONG PILES

Handle and drive piles of a high slenderness ratio carefully to prevent overstress. Provide pile driving rig with rigid supports so that leads remain accurately aligned. Where a high degree of accuracy is required, erect templates or guide frames at or close to the ground or water surface.

3.7 SURFACE TREATMENT REPAIR

After piles have been driven and cut off, all cut, bored and dapped surfaces shall be treated in accordance with AWPA M4 for timber and cold galvanized or otherwise coated according to applicable ASTM standards for steel pile and any exposed reinforcing steel (for concrete piles).

3.8 FIELD INSPECTION

Perform continuous inspection during pile driving. Inspect piles for compliance with tolerance requirements. Bring all unusual behavior that may occur to the attention of the Design Criteria Professional.

3.9 RECORDS

A. Keep a complete and accurate record of each pile driven. The record shall include the following data:

- pile location
- diameter
- original length
- ground elevation
- final tip elevation

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- final butt (cutoff) elevation
- number of blows per foot for each foot of penetration for the entire pile length
- hammer data including make, type, and size
- any unusual pile behavior or circumstances experienced during driving such as re-driving, heaving, weaving, obstructions, spudding, stops and others which may occur.

B. Forms for recording pile driving data shall be submitted by the Contractor to the Design Criteria Professional for approval of form outline prior to pile installation. Within 15 days of completion, records on approved forms shall be turned over to the Design Criteria Professional.

3.10 PILE CUT OFF, BUILDUP, AND SPLICES

A. Cut off piles with a smooth level cut using pneumatic tools, sawing, or other suitable methods approved by the Design Criteria Professional. The use of explosives for cutting is not permitted. Piles cut offs shall be disposed of legally off-site, at no additional cost to Owner.

B. Pile buildups or splices shall only be made with approval of the Design Criteria Professional.

3.11 PILES DRIVEN TO REFUSAL

Do not cut off tops of driven piles without authorization of the Design Criteria Professional. Notify Design Criteria Professional of any pile that does not reach required penetration.

3.12 DEFECTIVE PILES

Any pile which is cracked or broken because of internal defects or by improper handling or driving, or which is otherwise injured such that their structural capacity to withstand or transfer the design load to the foundation is impaired, or any pile driven out of proper location or driven below the design cutoff shall be removed and replaced. All work of removal and cost of replacement shall be borne by the Contractor at no additional expense to the Owner.

3.13 PILE LOCATION

Layout of piles, to include location and cutoff elevations, shall be performed by a Licensed Land Surveyor. Survey information shall be incorporated into as-built survey for new marina docks and submitted to the Design Criteria Professional prior to final acceptance.

END OF SECTION

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SECTION 02463 PRESTRESSED CONCRETE PILES

PART 1 - GENERAL

1.1 WORK INCLUDED

- A. This specification provides the minimum technical requirements for the design, procurement, fabrication, installation, and incidental construction of new prestressed pre-cast concrete piles as indicated in the Drawings and specified herein.
- B. This specification is in addition to the general piling requirements specified in Section 02454 – MARINE PILING.

1.2 RELATED WORK

- A. Section 02454 – MARINE PILING
- B. Section 02853 – FLOATING DOCKS
- C. Drawings and general provisions of the Contract

1.3 REFERENCES

The publications listed below form a part of this specification to the extent referenced. The publications are referred to in the text by the basic designation only and refer to the latest editions of each.

AMERICAN SOCIETY FOR TESTING AND MATERIALS (ASTM)

ASTM A 36	Structural Steel
ASTM A 82	Steel Wire, Plain, for Concrete Reinforcement
ASTM A 416	Uncoated Seven-Wire Stress-Relieved Steel Strand for Prestressed Concrete
ASTM A 615	Deformed and Plain Billet-Steel Bars for Concrete Reinforcement
ASTM A 706	Low-Alloy Steel Deformed Bars for Concrete Reinforcement
ASTM C 33	Concrete Aggregates
ASTM C 150	Portland Cement
ASTM C 260	Air-Entraining Admixtures for Concrete
ASTM C 494	Chemical Admixtures for Concrete
ASTM C 595	Blended Hydraulic Cement
ASTM C 618	Coal Fly Ash and Raw or Calcined Natural Pozzolan for Use as a Mineral Admixture in Portland Cement

AMERICAN CONCRETE INSTITUTE (ACI)

SP-66	ACI Detailing Manual
ACI 301	Specifications for Structural Concrete for Buildings
ACI 318	Building Code Requirements for Structural Concrete

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AMERICAN WELDING SOCIETY (AWS)

AWS D1.4 Structural Welding Code - Reinforcing Steel

PRESTRESSED CONCRETE INSTITUTE (PCI)

PCI MNL-116 Manual for Quality Control for Plants and Production of Precast Prestressed Concrete Products

STD 112 Standard Prestressed Concrete Piles Square, Octagonal and Cylinder

1.4 QUALITY ASSURANCE

- A. Concrete work shall conform to all requirements of ACI 301.
- B. Manufacture and transportation of prestressed concrete piles shall be by a company having not less than five (5) years experience in the manufacture of prestressed concrete structural components of equivalent type, size and complexity to those included herein.
- C. The precast concrete manufacturing plant shall be certified by the Prestressed Concrete Institute, Plant Certification Program, or the manufacturer shall establish a quality control program based on PCI MNL-116, prior to the start of production.
- D. Plant Inspection:
 - 1. Plants shall be subject to inspection by the Design Criteria Professional to confirm compliance with the specifications.
 - 2. The Design Criteria Professional shall be given ample notice before the beginning of work so that all of the plant facilities that are involved in the production can be inspected. No member shall be manufactured until all facilities are approved.
 - 3. The Design Criteria Professional shall be allowed free access to all parts of the premises that are a part of the production process.
 - 4. The Design Criteria Professional will have the authority to reject materials or workmanship which does not meet the specifications.
 - 5. The acceptance of any materials or finished members by the Inspector shall not prevent them from being rejected later if they are found to be defective. Rejected material and workmanship shall be replaced promptly or made good at the expense of the Contractor.

1.5 QUALITY CONTROL

- A. General: The Contractor shall establish and maintain quality control for pile manufacturing and driving operations, assure compliance with contract specifications and maintain quality control records for all construction operations

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including, but not limited to, the following:

1. Testing and gradation of aggregates and compressive strength of concrete as required, including batched proportions.
2. Setting and bracing of forms and checkout just prior to concrete placement, including accurate placement of reinforcing steel.
3. Casting, handling and storage of precast, prestressed piling; records of prestressing tension strands.
4. Curing method and duration.
5. Driving of all piles and maintaining records of such.

1.6 SUBMITTALS

- A. Plant Qualifications: Qualifications of the manufacturer and evidence of successful completion of similar and comparable work.
- B. Concrete Mix: Concrete mix design and proportions shall be submitted for approval prior to casting piles.
- C. Curing of Piles: Methods and details for curing piles shall be submitted for approval prior to casting piles.
- D. Certificates of Compliance: Certificates of compliance for admixtures, aggregates, cement, pozzolan, reinforcing steel, and prestressing steel shall be submitted prior to commencing fabrication of piles. Certificates for admixtures, aggregates, cement, and pozzolan shall be submitted along with concrete mix proportions. Aggregate source and gradation information shall be submitted for aggregates.
- E. Shop Drawings: Submit complete shop drawings indicating fabrication details, reinforcement, dimensions, and pick-up points. No piles shall be delivered to the site prior to approval of the shop drawings by the Design Criteria Professional.

1.7 DELIVERY, STORAGE, AND HANDLING

- A. Prestressed concrete piles shall be handled in a manner consistent with their shape and design which will eliminate the danger of cracks or fracture by impact or by excessive bending stresses, either in storage, during transportation, or when being transferred to the leads.
- B. Piles shall be held at the plant until the specified ultimate compressive strength is obtained or 14 days, whichever is greater
- C. Piles shall be handled by embedded pick-up points designed by the manufacturer and placed during manufacture. Piles shall be handled by a suitable bridle or slings. Dragging of piles across the ground will not be permitted.

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- D. Piles shall be stored on firm blocking of uniform thickness placed immediately adjacent to the embedded pick-up points and in line vertically. Stacks shall be limited to 5 feet in height unless otherwise approved.
- E. Piles shall be protected from staining and chipping of concrete at all times during storage and handling. The Contractor shall inspect each pile for sweep and structural damage such as cracking and spalling before transporting them from the storage site to the driving area. Sweep shall be checked by placing the pile on a firm level surface and rotating the pile. Sweep shall be limited to 2 inches over the length of the pile.
- F. Piles that show shrinkage cracks or that have been damaged during storage or handling shall be replaced by the Contractor at his own expense unless the damage is of such a minor nature that the Design Criteria Professional approves its use.

1.8 MEASUREMENT AND PAYMENT

- A. Payment for all piles shall constitute full compensation for all costs of furnishing materials (including caps and chocks where indicated), driving, pre-drilling, spudding, and cutting off of piles, disposing of cut-offs, furnishing, placing, and removing all temporary bracing required to hold the piles in alignment, and all other work necessary to complete the work as specified herein.
- A. Bids shall be based on the number, size, and spacing of piles required to anchor the floating dock system as determined by the Contractor's design and proposed anchorage plan. Allowance for potential revision of pile requirements, including number, size, and spacing, during shop drawing review by Design Criteria Professional shall be included.

PART 2 - PRODUCTS

2.1 ACCEPTABLE PRESTRESSED CONCRETE MANUFACTURERS

- A. As approved by the Design Criteria Professional.

2.2 MATERIALS

- A. Concrete: Minimum 5,000 psi 28-day compressive strength; Portland cement shall conform to ASTM C 150, Type II.
- B. Admixtures: Chemical admixtures shall conform to ASTM C 494. Air-entraining admixture shall conform to ASTM C 260. Calcium chloride or admixtures containing chlorides or nitrates shall not be used.
- C. Aggregates: Aggregates shall conform to ASTM C 33.
- D. Pozzolan: Pozzolan shall conform to ASTM C 618, Class C or F.
- E. Reinforcing Steel:

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1. Prestressing Steel shall be epoxy-coated, high tensile strength seven-wire strand, conforming to ASTM A 416, Grade 270. Steel shall be free from grease, oil, wax, paint, soil, dirt, loose rust, kinks, bends, and other defects.
 2. Non-prestressing reinforcing steel shall conform to ASTM A 615, Grade 60 or ASTM A 706.
 3. Steel for ties and spirals shall conform to ASTM A 82.
- F. Water: Water for mixing concrete shall be fresh, clean, drinkable, and free from injurious amounts of oils, acids, alkalis, salts, organic materials, or other substances that may be deleterious to concrete or steel.

2.3 FABRICATION

- A. Prestressed Concrete Piles: Prestressed concrete piles shall be square, solid concrete piles of the type indicated. Piles shall be cast as monolithic units of homogeneous concrete and pretensioned with prestressing steel. Manufacturing requirements for piles shall conform to PCI MNL-116 except as modified herein. The Contractor shall notify the Design Criteria Professional at least one week prior to the date casting of piles is to begin.
- B. Reinforcement and Embedments: Reinforcing steel, prestressing steel, and embedded items shall be accurately positioned in the forms and secured to prevent movement during concrete placement. Steel shall have a minimum concrete cover of three (3) inches. Reinforcing steel details shall conform to ACI SP- 66. Welding of reinforcing steel shall be in accordance with AWS D1.4.
- C. Concrete Mix: The concrete mix shall be designed by the Contractor to have a minimum ultimate compressive strength of 5,000 psi or required minimum value based on pile anchorage calculations, whichever is greater, at 28 days, and suitable for an extremely aggressive environment (seawater splash and immersion). Proportioning of the mix shall be in accordance with ACI 211.1 or ACI 318. Once production begins, changes to the mix will not be permitted without written submittal and approval of the proposed changes.
- D. Splices: Splices shall not be permitted.
- E. Build-Ups: Build-ups, when approved by the Design Criteria Professional, shall be in accordance with the procedures for build-up without driving as detailed in PCI STD-112 and shall be constructed subsequent to final seating of the pile. The joint between the pile and the build-up shall be protected by an approved mortar or epoxy. Concrete in the build-up shall have a minimum ultimate strength of 5,000 psi.

2.4 TESTS, INSPECTIONS, AND VERIFICATIONS

- A. Testing during manufacture shall be performed by an approved commercial testing laboratory or by an approved laboratory maintained by the manufacturer of the material. Minimum requirements for testing during manufacture shall be as

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required in PCI MNL-116.

PART 3 - EXECUTION

3.1 PREPARATION

- A. The Contractor shall submit complete manufacturer's data on the hammer he proposes for review by the Design Criteria Professional prior to driving piles.
- B. It shall be the responsibility of the Contractor to verify that the site conditions will support the driving equipment he proposes to use.
- C. The Contractor shall use a driving method at all times which will not cause damage to nearby structures. No piles shall be driven within 100 feet of concrete less than seven days old nor within 30 feet of concrete less than 28 days old unless otherwise authorized. Driving shall not result in cracking, crushing, or spalling of concrete.

3.2 PILE DRIVING EQUIPMENT

- A. The Contractor shall select the proposed pile driving equipment based on the pile design and geotechnical conditions and submit descriptions of the proposed equipment for approval. Changes in the selected pile driving equipment will not be allowed after the equipment has been approved. No additional contract time will be allowed for Contractor proposed changes in the equipment.
- B. Pile Driving Hammers: Pile driving hammers shall be of the impact type. The size or capacity of hammers shall be as recommended by the manufacturer for the pile type, weight, and soil formation to be penetrated. The rated energy of hammers shall be limited to a minimum of 15,000 foot-pounds.
- C. Pre-drilling. If required, the auger of pre-drilling equipment shall be sufficiently rigid to drill the pilot hole within the tolerances for pile driving specified. The auger diameter shall not exceed two-thirds the width of the pile.

3.3 PILE DRIVING

- A. Practical Refusal: The blow count corresponding to practical refusal shall be determined by the Contractor after the hammer to be used is reviewed. When the point of refusal is reached during pile driving before attainment of the required penetration, care shall be taken to avoid damaging the pile by overdriving.
- B. Back-Driving: In the event that uplift of a previously driven pile occurs due to driving of adjacent piles or soil uplift, the pile shall be back-driven to its original penetration.

3.4 LOAD CAPACITY

- A. The approximate load capacity of all piles shall be determined by evaluation of driving resistance, regardless of the penetration requirements. The driving resistance will be determined by the Contractor's engineer.

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3.5 VOID BACKFILL

- A. Voids occurring around piles as a result of pile driving, pre-drilling, and abandoned holes for piles that have been pulled shall be filled to within 3 feet of the adjacent ground surface with a thick tremie-placed slurry (from bottom to top of hole). The slurry shall consist of one part Portland cement, two parts bentonite, and six parts sand mixed with enough water to produce a slurry viscous enough to thoroughly fill the voids. The upper 3 feet of the void shall be earth filled and compacted to the same density as the surrounding soil.

3.6 CUTOFFS AND BUILD-UPS

- A. All piling shall be cut off at the required elevation. Piling driven below this elevation may be built up if approved by the Design Criteria Professional.
- B. Field treatment of exposed reinforcing steel: All exposed reinforcing from pile cut-offs, lift points, or other exposed areas shall be bored or cut down to no less than 2 inches below the pile surface and the void filled with epoxy sealer or similar material. Alternative methods and materials may be submitted by the Contractor to the Design Criteria Professional for approval. All methods and materials shall be submitted to Design Criteria Professional for approval before commencement of field treatment.
- C. Concrete at the end of the pile to be extended shall be cut back the required amount leaving the pre-stressed strand exposed. The final cut shall be at right angle to the axis of the pile. The cutting shall be performed in a manner to avoid spalling or damaging the pile below cut-off elevation. In case of such damage, the pile shall be replaced or the damage remedied by further cut back to the extent determined by the Design Criteria Professional at the Contractor's expense. The cutting may be performed with pneumatic tools, saws, or other approved methods. In no case shall explosives be used.
- D. The form work necessary for the extension shall be built, placed, and braced with special care to obtain true alignment and to prevent leakage at the construction joint.
- E. Just prior to placing the new concrete, the cut area shall be thoroughly wetted and then covered with a thin coating of cement paste.
- F. When the extension is to be driven, the top shall be chamfered one inch at right angle to the extension axis. When the extension is to be driven, the extension shall have reached its 28-day compressive strength and have been water cured for 5 days before driving is resumed.

3.7 NON-CONFORMING PILES

- A. Cracks which develop in a pile which do not warrant classifying the pile as defective shall be sealed with an approved epoxy crack sealer placed as directed, at no cost to the Owner. The Design Criteria Professional will be solely responsible for determining if a pile shall be classified as defective.

END OF SECTION

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SECTION 02464 TIMBER PILING

PART 1 - GENERAL

1.1 WORK INCLUDED

- A. This specification provides the minimum technical requirements for the procurement, fabrication, installation, and incidental construction of new timber piles as indicated in the Drawings and specified herein.
- B. This specification is in addition to the general piling requirements specified in Section 02454-MARINE PILING.

1.2 RELATED WORK

- A. Section 02454 – MARINE PILING
- B. Section 02853 – FLOATING DOCKS
- C. Drawings and general provisions of the Contract

1.3 REFERENCES

The publications listed below form a part of this specification to the extent referenced. The publications are referred to in the text by the basic designation only and refer to the latest edition of each.

AMERICAN SOCIETY FOR TESTING AND MATERIALS (ASTM)

ASTM D25 Round Timber Piles

AMERICAN WOOD COUNCIL

NDS National Design Specification for Wood Construction and Supplemental Design Values

AMERICAN WOOD PRESERVERS ASSOCIATION (AWPA)

AWPA U1 User Specification for Treated Wood
AWPA T1 Processing and Treatment Standard
AWPA M4 Standard for the Care of Pressure Treated Wood Products
AWPA M6 Brands Used on Forest Products
AWPA Timber Piling Council – Timber Pile Design and Construction Manual

1.4 SUBMITTALS

- A. Shop Drawings: Submit complete shop drawings and such other descriptive data as the Design Criteria Professional may require demonstrating compliance of the driving equipment and methods with the contract documents. Include details of collars, shoes,

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and cushion blocks. Include material details for timber pile chocks where required.

- B. Preservative/Protective Treatment Certificate- Prior to commencement of Work, submit to the Design Criteria Professional from an approved testing organization certifying that piles to be used in the Work have been treated as required by this section.
- C. MSDS/CIS – Submit Materials Safety Data Sheets (MSDS) and Consumer Information Sheets (CIS) associated with timber preservative treatment. Contractor shall comply with all safety precautions indicated on MSDS and CIS.
- D. Pile Driving Records - in accordance with Section 02454 – MARINE PILING.

1.5 DELIVERY, STORAGE, AND HANDLING

- A. Store piles in Contractor's staging area. Maintain storage area and store piles in accordance with AWPA M4.
- B. Handle piles in accordance with AWPA M4, and in such a manner as to prevent sudden dropping, breaking of outer fibers, bruising, or penetration of the surface. Handle piles using non-metallic slings only. The use of cant hooks, peavies, pikes, or lifting hooks is not permitted.
- C. Repair damage to piles in accordance with AWPA M4.

1.6 MEASUREMENT AND PAYMENT

- A. Payment for all piles shall constitute full compensation for all costs of furnishing materials (including caps and chocks where indicated), driving, pre-drilling, spudding, and cutting off of piles, disposing of cut-offs, furnishing, placing, and removing all temporary bracing required to hold the piles in alignment, and all other work necessary to complete the work as specified herein.
- B. Bids shall be based on the number, size, and spacing of piles required to anchor the floating dock system as determined by the Contractor's design and proposed anchorage plan. Allowance for potential revision of pile requirements, including number, size, and spacing, during shop drawing review by Design Criteria Professional shall be included.

PART 2 - PRODUCTS

2.1 MATERIALS

- A. Piles: Provide new, clean-peeled Southern Pine conforming to ASTM D25, with a minimum allowable compressive stress of 1,200 psi parallel to grain. Pile sizes shall be as determined by the Contractor's design. Splices will not be permitted.
- B. Preservative Treatment: All timber piles shall be pressure treated with CCA (Chromated Copper Arsenate) to a minimum retention of 2.5 pounds per cubic foot in

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accordance with AWPA U1 and T1.

- C. Pile Caps: Provide pile caps shall be per requirements of Section 02454- MARINE PILING.

PART 3 - EXECUTION

3.1 PREPARATION

- A. It shall be the responsibility of the Contractor to verify that the site conditions will support the driving equipment he proposes to use.
- B. The Contractor shall use a driving method at all times which will not cause damage to nearby structures. No piles shall be driven within 20 feet of concrete less than seven days old unless directed by the Design Criteria Professional.

3.2 PROTECTION OF PILES DURING DRIVING

- A. Collars of an approved design shall be used where required for the protection of butts against splitting, brooming, and other damage, when the piles are being driven.

3.3 DRIVING EQUIPMENT

- A. Hammers: Timber piles shall be driven with power hammers of approved make and model, with a maximum energy rating of 15,000 foot-pounds. Hammers shall be furnished with boiler or air compressor capacity and hose sizes at least equal to that specified by the manufacturer of the hammer to be used. The boiler or compressor shall be equipped with an accurate pressure gauge at all times. Power hammers shall be maintained in good operating condition such that the length of stroke and number of blows per minute for which the hammer is designed will be obtained.
- B. Leads: Pile driving rigs shall be equipped with leads constructed in a manner to afford freedom of movement of the hammer and to provide adequate support to the pile during driving. The vertical axis of the leads and hammer shall coincide with the sufficient length and rigidity that the pile will be held in accurate alignment while being driven. However, the driving rig shall have the capability of making minor adjustments in the position of the leads to compensate for minor changes in direction while driving.
- C. Followers: Inserts of similar type piling placed between the hammer and a pile in order to keep the hammer above a certain level will not be allowed. Within the scope of these specifications, a follower is a device which is a normal part of the driving mechanism.

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3.4 PILE DRIVING

- A. Practical Refusal: The blow count corresponding to practical refusal shall be determined by the Contractor's Engineer after the hammer to be used is approved. When the point of refusal is reached during pile driving before attainment of the tip penetration, care shall be taken to avoid damaging the pile by overdriving.
- B. Pre-drilling: Pre-drilling is not anticipated to be necessary on the project. However, should the Contractor satisfactorily demonstrate to the Design Criteria Professional that piling cannot be driven in the normal manner, holes drilled shall have a diameter not more than 1-inch larger than the tip diameter of the pile and the drilling will continue only through the strata of hard material obstructing the driving.
- C. Delay: When driving is interrupted before final penetration is reached, Contractor shall drive an additional 12-inches before resuming recording of performance data.
- D. Back-Driving: In the event that uplift of a previously driven pile occurs due to driving of adjacent piles or soil uplift, the pile shall be back-driven to its original penetration.

3.5 CUT-OFF

- A. After driving, all piles shall be cut off perpendicular to the pile axis at the indicated cut-off elevation, leaving the pile head in a sound condition, without damage or brooming.

3.6 FIELD TREATMENT

- A. General Field Treatment: Field treatment of timber piles shall be in accordance with AWPA M4, except as modified herein.
- B. Cuts and Abrasions: All field cuts and abrasions in treated piles, including the heads of piles after cut-off, shall be brushed with three (3) coats of the preservative, each coat being allowed to soak in before application of succeeding coats.

END OF SECTION

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SECTION 02465 STEEL PIPE PILING

PART 1 - GENERAL

1.1 WORK INCLUDED

- A. This specification provides the minimum technical requirements for the design, procurement, fabrication, installation, and incidental construction of new steel pipe piles for floating dock anchorage.
- B. This specification is in addition to the general piling requirements specified in Section 02454-MARINE PILING.

1.2 RELATED WORK

- A. Section 02454 – MARINE PILING
- B. Section 02853 – FLOATING DOCKS
- C. Drawings and general provisions of the Contract

1.2 REFERENCES

The publications listed below form a part of this specification to the extent referenced. The publications are referred to in the text by the basic designation only and refer to the latest editions of each.

AMERICAN INSTITUTE OF STEEL CONSTRUCTION (AISC)

Specification for the Design, Fabrication, and Erection of Structural Steel for Buildings

AMERICAN SOCIETY FOR TESTING AND MATERIALS (ASTM)

- ASTM A 36 Standard Specification for Carbon Structural Steel
- ASTM A 139 Standard Specification for Electric-Fusion(ARC)-Welded Steel Pipe (NPS4 and over)
- ASTM A 252 Standard Specifications for Welded and Seamless Steel Pipe Piles
- ASTM A 381 Metal-Arc-Welded Steel Pipe for Use With High-Pressure Transmission Systems

AMERICAN WELDING SOCIETY (AWS)

- AWS D1.1 Structural Welding Code
- AWS QC1 AWS Certification of Welding Inspectors

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1.4 SUBMITTALS

- A. Plant Qualifications: Qualifications of the manufacturer and evidence of successful completion of similar and comparable work.
- B. Shop Drawings: Contractor shall submit drawings of the piles required.
 - 1. Steel Pipe: Show all locations, markings, materials, sizes and shapes and indicate all methods of connection including shop-welding procedures.
 - 2. Field Splices: Show rollers, blocks, shims, etc. required to align pile sections when working flat. Show field weld preparation and alignment.
- C. Welder Qualifications: Submit copy of welder qualification certificates to the Design Criteria Professional for any welders performing welds in the shop or field.

1.5 DELIVERY, STORAGE AND HANDLING

Deliver, handle, and store items so as to protect them from deformation, cracks, slips, nicks, gouges, and other types of damage. All damaged items determined by the Design Criteria Professional as being unsuitable shall be replaced by the Contractor at his expense.

1.6 MEASUREMENT AND PAYMENT

- A. Payment for all piles shall constitute full compensation for all costs of furnishing materials (including caps and chocks where indicated), driving, pre-drilling, spudding, and cutting off of piles, disposing of cut-offs, furnishing, placing, and removing all temporary bracing required to hold the piles in alignment, and all other work necessary to complete the work as specified herein.
- B. Bids shall be based on the number, size, and spacing of piles required to anchor the floating dock system as determined by the Contractor's design and proposed anchorage plan. Allowance for potential revision of pile requirements, including number, size, and spacing, during shop drawing review by Design Criteria Professional shall be included.

PART 2 - PRODUCTS

2.1 STEEL PIPE PILES

- A. Provide steel pipe piles conforming to ASTM A 252, Grade 2 at a minimum. Roll and weld the pipe under the ASTM A 252 Grade 2 specification allowing, seamless, straight seams, or spiral seams. Contractor shall specify intended type of pile and grade/yield strength in the Bid.
- B. Piles shall be coated with black coal tar epoxy, resulting in treatment on the exterior of the pile from cutoff to minimum five (5) feet below the mudline.

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- C. For marina anchor piles designed by the Contractor, steel pipe pile wall thickness shall include loss to marine corrosion over the design life of the pipe pile.
- D. Alternated pile corrosion schemes may be considered by the Design Criteria Professional, including HDPE sleeving. Contractor shall provide details of any proposed alternate pile protection details (materials, installation methods, prices) with the Bid for consideration.

PART 3 - EXECUTION

3.1 INSTALLATION OF PIPE PILES

Inspect piles when delivered and when in the leads immediately before driving. Pipe piles shall be installed to reach the required embedment. Pile driving and drilling shall be as indicated. Equipment shall be of a size and function to suit pipe pile sizes and geotechnical condition expected.

3.3 CUTTING AND SPLICING

- A. Piles driven to the required tip elevation and extending above the required top elevation in excess of the specified tolerance shall be cutoff to the required elevation.
- B. Piles driven below the required top elevation and piles damaged by driving and cutoff to permit further driving shall be extended as required to reach the top elevation by splicing when approved by the Design Criteria Professional. Piles adjoining spliced piles shall be full length unless otherwise approved.
- C. Welding of splices, when required, shall conform to the following minimum specifications. Ends of piles to be spliced shall be squared before splicing to eliminate dips or camber. No more than one splice per pile will be permitted. Steel pipe pile sections shall be spliced using a continuous butt-joint with a 45 degree bevel or vee. The weld must provide a complete penetration arc weld around the entire circumference and should produce a ductile, water-tight joint providing 100 percent of the pile strength. Welds shall be ground down to be smooth and flush with the pile exterior surface. If splices are necessary, Contractor shall submit splice plans and calculations to Design Criteria Professional for approval prior to commencing work.
- D. Trim the tops of piles excessively battered during driving, when directed, at no additional cost to the Design Criteria Representative. Use a straight edge in cutting by burning to avoid abrupt nicks.
- E. Bolt holes, where required, shall be drilled or may be burned and reamed by approved methods which will not damage the surrounding metal. Holes other than bolt holes shall be reasonably smooth and the proper size for rods or other items to be inserted.
- F. Do not use explosives for cutting.

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3.4 WELDING

All welding shall be in accordance with AWS D1.1 and all welding shall be by operators qualified in accordance with AWS D1.1. All welding inspections shall be in accordance with AWS QC1.

END OF SECTION

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SECTION 02853 FLOATING DOCKS

PART 1 – GENERAL

1.1 WORK INCLUDED

A. Work covered under this Section

1. Designing, manufacturing, furnishing, and installing the floating docks, anchor pile system for the floating docks, pile guides, cleats, fenders, and other marine hardware and accessories as may be shown or enumerated on the Drawings.
2. All materials shall be approved by the DESIGN CRITERIA PROFESSIONAL who has prepared these performance specifications to which all floating dock and anchor pile systems must comply.

B. The floating dock system is schematically represented on the Drawings as typical forms. The CONTRACTOR shall design, manufacture, furnish and install a complete system that meets or exceeds the performance criteria of these Specifications and is fully compliant with the 2010 ADA standards for Accessible Design.

C. The CONTRACTOR is solely responsible for his own interpretation of the site conditions, including the gathering of additional data as CONTRACTOR deems necessary to fully identify and evaluate the site conditions. The CONTRACTOR is solely responsible for the design, quality, and performance of the interior floating dock product and anchoring system.

D. The information provided herein represents minimum requirements which all proposed systems must meet.

E. The CONTRACTOR shall submit with his Bid the proposed anchor system layout plan and description, the proposed dock system description and specifications, catalog cut sheets for any commercially available components included, and any proposed exceptions or changes from the Drawings and these Specifications.

1.2 RELATED WORK

- A. Section 02454 – MARINE PILING
- B. Section 02463 – PRESTRESSED CONCRETE PILES
- C. Section 02464 – TIMBER PILES
- D. Section 02465 – STEEL PIPE PILES
- E. Section 02885 – ALUMINUM GANGWAYS
- F. Drawings and general provisions of the Contract

1.3 REFERENCES

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The publications listed below form a part of this specification to the extent referenced. The publications are referred to in the text by the basic designation only and refer to the latest editions of each.

THE ALUMINUM ASSOCIATION, INC. (AA)

AA Specification for Aluminum Structures
AMERICAN NATIONAL STANDARDS INSTITUTE (ANSI)

ANSI B 27.2 Plain Washers

AMERICAN SOFTWOOD LUMBER STANDARD (ASLS)

ASLS P 20 Voluntary Product Standard, American Softwood Lumber Standard

AMERICAN SOCIETY FOR TESTING AND MATERIALS (ASTM)

ASTM A 36 Carbon Structural Steel
ASTM A 123 Zinc (Hot-Dip Galvanized) Coatings on Iron and Steel Products
ASTM A 153 Standard Specification for Zinc Coating (Hot-Dip) on Iron and Steel Hardware
ASTM A 307 Standard Specification for Carbon Steel Bolts and Studs, 60000 PSI Tensile Strength
ASTM A325 Standard Specification for Structural Bolts, Steel, Heat Treated, 120/105 ksi Minimum Tensile Strength
ASTM B 209 Aluminum and Aluminum-Alloy Sheet and Plate
ASTM B 211 Aluminum and Aluminum-Alloy Bar, Rod, and Wire
ASTM B 221 Aluminum and Aluminum-Alloy Extruded Bars, Rods, Wire, Profiles, and Tubes
ASTM B 308 Aluminum-Alloy 6061-T6 Standard Structural Profiles
ASTM B 429 Aluminum-Alloy Extruded Structural Pipe and Tube
ASTM B 547 Aluminum-Alloy Formed and Arc-Welded Round Tube
ASTM C 272 Standard Test Method for Water Absorption of Core Materials for Sandwich constructions
ASTM D 638 Standard Test Method for Tensile Properties of Plastics
ASTM D 790 Standard Test Methods for Flexural Properties of Unreinforced and Reinforced Plastics and Electrical Insulating Materials
ASTM D 1248 Standard Specification for Polyethylene Plastics Extrusion Materials for Wire and Cable
ASTM D 1505 Standard Test Method for Density of Plastics by the Density-Gradient Technique
ASTM F 593 Stainless Steel Bolts, Hex Cap Screws, and Studs
ASTM F 594 Stainless Steel Nuts

AMERICAN WOOD PROTECTION ASSOCIATION (AWPA)

AWPA U1 User Specification for Treated Wood
AWPA T1 Processing and Treatment Standard
AWPA M4 Standard for the Care of Preservative-Treated Wood Products
AWPA P5 Standards for Waterborne Preservatives

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AMERICAN WELDING SOCIETY, INC. (AWS)

AWS D1.1 Structural Welding Code-Structural Steel
AWS D1.2 Structural Welding Code- Aluminum

AMERICAN WOOD COUNCIL (AWC)

NDS National Design Specification for Wood Construction and Supplement
Design Values for Wood Construction

SOUTHERN PINE INSPECTION BUREAU (SPIB)

SPIB Grading Rules

UNITED STATES ACCESS BOARD, 2010 AMERICANS WITH DISABILITIES ACT (ADA) STANDARDS

ADA Standards Chapter 10 Recreation Facilities, Section 1003, Recreational Boating Facilities

OTHER DESIGN GUIDANCE

NFPA National Fire Protection Agency (NFPA) Standards

ASCE Planning and Design Guidelines for Small Craft Harbors, ASCE Manuals and
Reports on Engineering Practice No. 50, 2012

Tobiasson & Kollymeyer Marinas and Small Craft Harbors, 2nd edition, Westviking
Press, 2000.

ATM Coastal Conditions Assessment, November 2019

S&ME Geotechnical Investigation Report, March 2020

PIANC "Review of Selected Standards for Floating Dock Designs." Special Report
of the SPN Commission, Supplement to Bulletin No. 93 Brussels, January
1997.

1.4 SUBMITTALS

- A. Qualifications - The installing CONTRACTOR shall be a qualified Marine Contractor licensed to perform work in the project area. The DOCK MANUFACTURER shall be as noted herein. Any proposed alternates shall be approved by the DESIGN CRITERIA PROFESSIONAL and shall have a minimum of 10 years continuous experience in floating dock design and fabrication and shall be required to submit a list of previous experience to the DESIGN CRITERIA PROFESSIONAL prior to bid submittal. The DOCK MANUFACTURER shall have in place a Quality Control Program for the installation of the floating dock system.
- B. Bid Submittal - To ensure that the DOCK MANUFACTURER is capable of designing and manufacturing a dock system that will meet the intent of the Project, DOCK

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MANUFACTURER is required to submit, with the Bid, example floating dock and anchorage calculations from a previous project or combination of previous projects. Example calculations should include enough information to show that the system design accounts for wind, wave and current loadings as well as site specific geotechnical conditions.

The CONTRACTOR shall provide, with the bid, the names and South Carolina license information for each DESIGN ENGINEER (i.e. CONTRACTOR'S Engineer of Record) who will sign and seal any portion of the submittal package. The CONTRACTOR shall identify the industry accepted calculation method and/or commercial software proposed to be used for anchorage design. The DOCK MANUFACTURER's proposed DESIGN ENGINEER's qualifications and experience in floating dock design and proof of professional liability insurance, to OWNER's requirements, shall be submitted for DESIGN CRITERIA PROFESSIONAL approval.

Flotation specifications and detailed warranty information shall be provided with bid submittal.

C. Floating Dock, and Anchor Pile Design Submittal -

1. Following the award of contract and prior to fabrication, the CONTRACTOR shall complete a thorough submittal package which includes all design calculations (including methods and references thereto, assumptions and safety factors), shop drawings and other details of the floating dock system and anchorage design. **The submittal shall be a single, comprehensive document, logically organized, legible in English, and provide clear calculation procedures used to arrive at stated values for each of the items listed in this Specification.** It will be the DESIGN CRITERIA PROFESSIONAL's role to, on behalf of the OWNER, review the methods and calculations used by the DESIGN ENGINEER to ensure general conformance of the design with the intent of the project. If the DESIGN CRITERIA PROFESSIONAL requires additional clarification of the methods or calculations, in order to satisfy himself of general conformance, the CONTRACTOR's DESIGN ENGINEER shall promptly provide the requested information. Delays in the project schedule due to inadequate or non-conforming floating dock and anchorage design submittal packages will not be grounds for project extension.
2. All design values must be supported by calculations which follow industry standard or industry accepted methods and all assumed values must be supported by reference. The floating dock and anchorage design submittal package must include the following items at a minimum:
 - a. Dimensional layout of floating dock system to be furnished under this Contract. Include distances from navigation channels and adjacent shorelines (mean high water line as indicated on Drawings). Include general layout/locations of all fixed appurtenances located on the docks (power pedestals, fire cabinets, standpipe stanchions, etc).
 - b. Engineering calculations showing compliance with the performance criteria specified herein. Allowable stresses for the materials used shall be defined by current, professionally recognized construction and design standards.

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(1) Compliance with dead, live, and combined load requirements considering both bending and deflection.

(2) Compliance with freeboard requirements under specified load conditions.

(3) Design for the anchor pile system, including anchor pile number, type/material, size, and lateral capacity analysis. Anchor pile design must account for a design worst case loading condition which includes wind, wave, and current loads applied at the appropriate elevation to account for extreme water levels (refer to paragraph 1.5 and DRAWINGS). Maximum shear and bending moment shall be checked against that allowable of the piling material properties as well as the lateral capacity of the soils. Deflection at the load application level shall be specified by the DESIGN ENGINEER. Adequate embedment must be identified by the DESIGN ENGINEER and supported with an acceptable design program or calculation method.

(4) Transfer of loads to pile guides. Includes pile guide design and transfer of loads to piles to ensure adequacy of bracing and attachment.

(5) Determination of extreme fiber stresses in major members when loading conditions are applied to the dock. Calculations must, at a minimum, account for shear, moment and torsion at floating dock section connections, junctions, splice locations and internally within the framing of the system at representative cross-sections. Provide details referenced to locations for each section checked.

(6) Effects of combined loading on members and connections due to vertical and lateral forces.

(7) Transfer of vessel loads to cleats and dock. Calculations must demonstrate that cleat attachments are sufficient for each dock section based on anticipated vessel under design wind condition.

(8) Detail design of knee braces to resist indicated loading conditions.

(9) Transfer of forces by use of adequate bracing, struts, bolting, etc.

(10) Flotation calculations for typical system components and adjacent to large concentrated loads, including all utilities, gangways, etc.

(11) Splice locations and detailing so as to transfer loads from member to member.

(12) Lateral and torsional stability of the dock.

(13) Fatigue of system and components based on the anticipated wind and wave climate.

c. Typical sections or details, and catalog cut sheets of the following-

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- (1) Floating docks including flotation, framing, decking, and connections
- (2) Anchorage system, including piles and pile guides
- (3) Cleats and bollards
- (4) Fendering/bumper strip
- (5) Pile caps
- (6) Gussets, where needed
- (7) Gangway articulation and related hardware
- (8) Utility raceways
- (9) Dock accessories (fire suppression, pedestals, etc.)
- (10) Individual details and cross sections shall be clearly referenced to applicable plan view/layout drawings.

d. All sections of the Floating Dock and Anchorage Design submittal package must be signed and sealed by a DESIGN ENGINEER licensed in South Carolina who will be considered the "ENGINEER OF RECORD" for the floating dock and anchorage system. It may be permissible to have more than one DESIGN ENGINEER for the system; however, it must be clear who the ENGINEER OF RECORD is for each portion of the floating dock and anchorage design submittal package. Once the final floating dock and anchorage system design submittal is reviewed for general conformance by the DESIGN CRITERIA PROFESSIONAL, it shall not be modified in any significant way without DESIGN CRITERIA PROFESSIONAL's written consent. Fabrication shall not commence prior to DESIGN CRITERIA PROFESSIONAL's review and acknowledgment of general conformance.

- D. Warranty – Provide a minimum 5-year written warranty for the installed floating dock product (10 years for flotation), including materials and workmanship for all structural components and accessories under the design conditions described herein. CONTRACTOR shall ensure that DOCK MANUFACTURER's representative provides annual inspections of the facility for the duration of the warranty period. Annual inspections shall include a summary report of recommendations to the OWNER. A detailed operations and maintenance manual shall be provided in digital and hard copy format to the OWNER at the time of acceptance. Warranties shall commence on the date of final project acceptance.
- E. Operations & Maintenance Manual - Submit two (2) copies of the DOCK MANUFACTURER's operations and maintenance manual for all floating dock system components. The manual shall include instructions, recommended frequency of maintenance procedures, and materials by brand name and specification. The manual shall include requirements and recommendations for snow and ice maintenance. The manual shall be provided in a digital .PDF and in a bound document on 8.5" x 11" format. The cover shall be identified as "Floating Dock System O&M Manual".

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- F. Anchor Pile Tests – Refer to Sections 02454, 02463, 02464, and 02465 for testing requirements.
- G. DOCK MANUFACTURER's Final Certification
- H. CONTRACTOR's dock measurements and load tests (if required)

1.5 FLOATING DOCK SYSTEM PERFORMANCE CRITERIA

- A. Information presented is based upon the DESIGN CRITERIA PROFESSIONAL's best estimate of those environmental and physical factors that reasonably can be expected to affect the design, performance, and durability of the proposed floating dock systems. All floating dock system designs shall be subject to thorough engineering analysis using all relevant criteria, whether stated herein or not, that could affect the structural integrity of the installed docking system. Final design calculations shall be prepared by the ENGINEER(S) OF RECORD and submitted by DOCK MANUFACTURER to the DESIGN CRITERIA PROFESSIONAL for review and acknowledgement of general conformance prior to starting fabrication.
- B. Final design calculations shall furnish proof that the floating dock system is designed to withstand the loading, singularly or in combinations given hereinafter, without damage throughout the design life of the system. The floating dock system shall be designed for a minimum 25-year life expectancy in the marine environment.
- C. Basic Design Conditions for Floating Docks:

Basin Design Depth:	-1.9 to -11.9 ft MLLW (refer to DRAWINGS)
Typical Tidal Range:	5.0 ft mean, 5.6 ft spring
Mean Low Water:	-2.9 ft NAVD 88
Mean High Water:	2.1 ft NAVD 88
Extreme Water Level:	11 ft NAVD 88 (<i>FEMA 100-yr SWEL</i>)
Tidal Datum relationship:	0.0 ft MLLW = -3.1 ft NAVD 88
Sea Level Rise:	Assume 1.5 ft. over the design life of the project
Minimum Pile Cutoff Elevation:	13.4 ft NAVD88 (16.5 ft MLLW)

Submittal shall include calculations for each of the following design scenarios:

Design Scenario 1 (Dock Area C)

Water Level:	+3.4 ft NAVD88 (MHHW+1')
Vessel Occupancy:	Full Occupancy
Wind Speed:	27 mph (3-sec gust, 0.5-yr windspeed)
Wave Condition:	None
Vessel Wake:	H=2.5 ft.; T=3.5 sec
Current Speed:	1.7 knots (2.87 fps)

Design Scenario 2 (Dock Area C)

Water Level:	+8.1 ft NAVD88 (FEMA 10-yr SWEL)
Vessel Occupancy:	Full Occupancy
Wind Speed:	78 mph (3-sec gust, 10-yr windspeed)
Wave Condition:	$H_s=2.0$ ft.; $T_p=2.2$ sec (10-yr waves)
Vessel Wake:	None
Current Speed:	1.7 knots (2.87 fps)

Design Scenario 3 (Dock Area C)

Water Level:	+10.5 ft NAVD88 (FEMA 50-yr SWEL)
Vessel Occupancy:	Unoccupied
Wind Speed:	104 mph (3-sec gust, 50-yr windspeed)
Wave Condition:	$H_s=2.9$ ft.; $T_p=2.5$ sec (50-yr waves)
Vessel Wake:	None
Current Speed:	1.7 knots (2.87 fps)

Design Scenario 4 (Dock Areas A and B)

Water Level:	+10.5 ft NAVD88 (FEMA 50-yr SWEL)
Vessel Occupancy:	Full Occupancy
Wind Speed:	104 mph (3-sec gust, 50-yr windspeed)
Wave Condition:	$H_s=1.5$ ft.; $T_p=2.5$ sec (50-yr waves)
Vessel Wake:	None
Current Speed:	1.7 knots (2.87 fps)

**Wind speeds on berthed vessels and floating docks may be adjusted to 30-second duration for determination of wind pressure loads. Currents assumed to act in an along-channel direction.*

1. The scenarios listed above shall each be checked with loadings acting in combination to determine the worst case for floating dock and anchor pile design. Refer to DRAWINGS for Vessel Occupancy details. Assume wind, current, and waves occur from rational directions acting on docks and vessels at the specified vessel occupancy level.
2. Horizontal loadings for each occupancy case listed above shall be applied at the total water level plus prescribed freeboard, sea level rise allowance, and 50 percent of the wave height.
3. DOCK MANUFACTURER shall indicate assumptions and factors of safety used in design to allow for the possibility of site conditions that exceed the conditions indicated herein.

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PART 2 - PRODUCTS

2.1 GENERAL

The following requirements are a minimum and must be met by the CONTRACTOR in accordance with the requirements of Part 1 of this specification section. Approval for any alternates must be obtained in writing from the DESIGN CRITERIA PROFESSIONAL.

2.2 FLOATING DOCK SYSTEM MATERIALS

The following general material combinations for the floating dock system (except accessories) are acceptable:

- A. Timber frame structure with pine deck and polystyrene foam filled polyethylene encased pontoons. Shall be Meeco Sullivan of Warwick, NY or Bellingham Marine of Wilmington, NC.
- B. Aluminum frame structure with timber deck and polystyrene foam filled polyethylene encased pontoons. Shall be Structurmarine of Montreal, Canada or Meeco Sullivan of Warwick, NY.

2.3 ALUMINUM

- A. All aluminum construction shall be in accordance to AA "Specification for Aluminum Structures." Extrusions shall be aluminum alloy 6061-T6. The material shall be temper suitable for saltwater service in accordance with applicable ASTM Standards B209, B 211, B221, B308, B429, and B547 for various materials used. All welds shall be in accordance with AA "Specifications for Aluminum Structures" and ASTM D1.2. All fasteners shall be Aluminum or 316 Series Stainless Steel in accordance with ASTM F593 and F594.

2.4 STEEL

- A. All fabrication and miscellaneous steel shall conform to ASTM A36 and shall be hot-dip galvanized after fabrication in accordance with ASTM A123. Bolts, nuts, and washers used with galvanized structural members shall be per ASTM A 325 or ASTM A 307 as applicable and hot-dip galvanized per ASTM A 123 or A 153 as applicable. All screws, bolts, nuts, and lock washers, except where used with other hot-dip galvanized steel components, shall be 316 Series Stainless Steel in accordance with ASTM F 593 and ASTM F 594. Flat washers shall be type ANSI B and be Type 316 stainless steel.

2.5 TIMBER

- A. All exterior (visible) structural wood and wood fendering in the splash zone shall be Pine No. 1 (or approved equivalent) hand selected - no downgrades allowed - with a minimum CCA (Chromated Copper Arsenate) content equal to 0.6 pounds per cubic foot (pcf) - moisture content not to exceed 19% after treatment, KDAT or S-Dry. All submerged wood members shall be treated to 2.5 pcf CCA. Interior (non-visible)

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structural wood shall be minimum Pine No. 2 (or approved equivalent) and shall comply with the treatment and moisture requirements mentioned herein.

- C. All wood shall comply with American Softwood Lumber Standards Committee, PS-20 Washington, DC, to grade the species. All lumber specified for treatment shall be treated to the requirements of American Wood Protection Association (AWPA) U1 and T1. All field cuts and holes shall be treated in accordance with AWPA M4.
- A. Timber for decking shall be No. 1 Prime Pine (or approved equivalent) hand selected - no downgrades allowed - with a minimum CA (Copper Azole) content equal to 0.31 pounds per cubic foot (pcf), (or approved equivalent), - moisture content not to exceed 19% after treatment, KDAT or S-Dry.
- B. Any proposed use of exotic timber shall be accompanied by product specifications, harvest certification, and is subject to OWNER and DESIGN CRITERIA PROFESSIONAL's approval.

2.6 PONTOONS

A. Pontoon shells shall be manufactured as described below:

1. Plastic Pontoons: Shells shall be manufactured from rotationally molded high-density polyethylene or cross-linked polyethylene material conforming to ASTM D1248. The polyethylene shall be black in color and have a **MINIMUM wall thickness of 0.15 inch**. Suppliers of pontoons shall present evidence that the pontoon being supplied is free of cracks and thinning of material below 0.15 inch at the corners and upper flanges of the pontoon. Pontoons shall be attached to the dock system structure with mounting flanges so that all the edges of the flanges are bolted to structural members to minimize flexing and deformation of the pontoon. Each pontoon shall be completely filled with "foamed-in-place" closed cell, 1.0 pcf minimum density polystyrene foam. Shells must fully encase foam.

Pontoon shells may also be linear low-density (or DESIGN CRITERIA PROFESSIONAL approved equal) polyethylene and blow molded, so long as the resultant shell is seamless. The base material for all polyethylene shells shall conform to the following minimum requirements: minimum density 0.937 g/cc per ASTM D1505; minimum ultimate tensile strength of 2,560 psi per ASTM D638; and minimum flexural modulus of 96,000 psi per ASTM D790. All other thickness, color, and attachment requirements of the polyethylene shells remain unchanged.

2. Foam: The resultant expanded polystyrene foam block shall have a minimum density of 1.0 pcf. The block shall be solid with no loose beads or void areas and have a maximum water absorbency of 3 percent by volume per ASTM C-272.
3. All materials used in the fabrication of the pontoons shall be made from new material specially manufactured for the intended use. No regrind of foam materials shall be allowed and the supplier of the material shall certify that no regrind material is used in the foam for this project.

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4. A description of DOCK MANUFACTURER's warranty for flotation units shall be submitted to OWNER in accordance with these specifications.
5. Upon commencement of manufacturing the flotation units, one unit (of typical size) shall be sent to the DESIGN CRITERIA PROFESSIONAL for review and possible destructive testing to verify compliance with specifications upon request. Cost and shipping shall be paid by the CONTRACTOR.

2.7 FIRE SUPPRESSION AND SAFETY ITEMS

- A. CONTRACTOR shall furnish and install portable fire extinguishers (and mounting boxes) in accordance with NFPA 303, Fire Protection Standard for Marinas and Boatyards, latest Edition, in general locations shown on Drawings. CONTRACTOR shall provide USCG approved life rings and throw line at each fire extinguisher location. CONTRACTOR shall provide final locations of and mounting detail (including product information) for fire extinguisher and life ring stanchions with Shop Drawing submittal. Fire extinguisher cabinets shall be of the type shown or approved equal and installed where indicated on the Drawings.
- B. CONTRACTOR shall also furnish and install a fixed standpipe system as indicated on the Drawings.

2.8 CLEATS AND BOLLARDS

- A. Cleats and bollards shall be made of galvanized steel or non-corroding alloys and appropriately sized for each berth. Almag "S" cleats are prohibited. Minimum six cleats per berth. Side tie dockage shall include cleats spaced at typically 10 feet on center on the "T-heads" of dock trees unless otherwise shown on the Drawings. Cleats and bollards shall be securely bolted to the dock framework with through bolts rather than lag bolts. CONTRACTOR shall provide a cleat and bollard arrangement pattern, selected cleat and bollard specifications, and design calculations with design submittals.

2.9 BUMPER STRIP

- A. Bumper strip shall be extruded, non-marring, marine grade vinyl, gray in color. Each strip shall have a minimum height of four inches, minimum thickness of 1/8 inch, and a minimum weight of 1.6 pounds per linear foot. Outside corners shall be protected with corner bumpers molded of marine grade vinyl, of same color as the bumper strip, and have minimum weight of 1 3/4 pounds each. The bumper strip and corner bumper shall be installed with stainless steel screws or aluminum ring shank nails on 4-inch centers along both flanges. CONTRACTOR's selected bumper strip and corners shall be submitted for approval with Design Submittals.

PART 3 - EXECUTION

3.1 DESIGN REQUIREMENTS – FLOATING DOCK STRUCTURES

- A. Dead Load

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Shall consist of the entire weight of the floating structure including projected marine growth, utilities, and all other accessories and support appurtenances. Special floats must be designed to support the additional concentrated loads imposed by gangways, transformers, on-dock structures, fuel system, and other equipment/utilities. Floats with special loading shall have the same freeboard as floats with no such loading, so that there will be no residual stresses to tilting when such floats are interconnected.

B. Vertical Live Loads

1. Minimum uniform vertical live load of 30 pounds per square foot, or 300 pounds concentrated load on any area 2 ft square, both for flotation and on dock frame and deck structures.
2. Vertical Wave Load: Vertical wave force based on design wave height (paragraph 1.5.C) applied to the main walks, assuming ends of the dock are fixed, and at finger-to-main connections.

C. Flotation

1. The flotation shall be sized and located to satisfy the following base conditions:
 - a. Freeboard under dead load only at acceptance:
 - i. 20 inches (+/- 1 inch) – all interior docks
 - b. Minimum freeboard under combined dead load and full live load:
 - i. 12 inches (+/- 1 inch) – all interior docks
2. Floating docks shall meet the following requirements:
 - a. Dead load plus a concentrated live load of 400 pounds applied vertically at any location on the main dock surface shall not tilt the dock more than six degrees from horizontal or overstress the framing members.
 - b. Dead load plus uniform live loading on one-half of the dock width or under dead load plus concentrated load of 400 pounds applied vertically within 12 inches of any side shall not have more than 5 degrees of tilt from the horizontal.
3. Maximum dead load deflection for main walk docks (applies to length and width): one inch in 10 feet at acceptance; 1.5 inches in 10 feet at the end of warranty period.
4. Finger pier outer end elevation shall be level with or no more than two inches higher than main walkways where they attach. Outer corners of finger piers shall be level; difference shall not be more than 0.5 inch for each 3 feet of width under dead load at acceptance or 0.75 inch for each 3 feet of width at the end of the warranty period.
4. Dead load freeboard shall be maintained within two inches of that identified in these

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specifications for a period of five years following installation.

D. Horizontal loads

1. A uniform horizontal wind loading from any direction shall be calculated based on the design wind pressure on all surfaces, for each of the vessel occupancy scenarios described above and illustrated in the bid plans. For wind pressure loading, average vessel profile heights shall be based on upper curves, Figure 3-15, p. 219, "Planning and Design Guidelines for Small Craft Harbors", ASCE Manuals and Reports on Engineering Practice No. 50 (2012) and the slip length indicated on the Drawings. Each shielded vessel shall be assumed to receive 20% of the unshielded wind loading. Compute wind load from all directions including outer diagonal opposite corners of docks and fingers. Do not deduct for walkways, fingers, or open areas between boats. CONTRACTOR shall also identify, determine, and state the maximum wind pressure load that the unoccupied docking system can withstand, based on the other design parameters provided within this specification. See Drawings for vessel sizes to be used in this calculation.
2. A horizontal load due to impact on a dock or finger pier shall be the result of the largest berthed craft normally using the adjacent slip striking the end of the dock 10 degrees off center line. Use 45 degrees for side-tie berths. The craft shall be considered moving at a speed of 2 fps. Vessel displacement in pounds shall be computed as $[18 * (\text{vessel length})^2]$, where vessel length is length overall in feet.
3. Loading due to waves shall be calculated on the basis of waves as described in Paragraph 1.5.
4. Floating debris load allowances shall be included in the design of the system.
5. Anchorage layout and design shall be in accordance with the requirements of this Section and related marine piling Sections. Anchorage system shall restrain the floating docks under the extreme loading described herein.

E. Additional Load Combinations

1. Dead Load + Vertical Wave Load: Loading to be applied to analyze and determine the adequacy of a large portion of the system to sustain the loading for fatigue, based on more than two (2) million cycles.
2. Dead Load + Vertical Wave Load + Wind Load: Loading case to determine the stresses in the dock system structural elements.
3. Dead Load + Horizontal Wind Load + Horizontal Wave Load: Loading case to determine anchor pile requirements.
5. Overstress factors are allowed for above loading combinations when either wind, wave, or berthing forces are analyzed.

- F. Berthing layout shall be designed and installed as schematically shown on the Drawings. Any significant deviations required based on the DOCK

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MANUFACTURER's proprietary product(s) shall be submitted to DESIGN CRITERIA PROFESSIONAL for approval.

- G. Natural period of vertical motion of the floating dock system shall be documented by the DOCK MANUFACTURER.

3.2 FABRICATION REQUIREMENTS – FLOATING DOCK STRUCTURES

- A. Finished metal members shall be free from twists, bends, distortions, open joints, sharp edges, and burrs. Ends of exposed metal members shall be rounded or beveled. All coping and mitering shall be done with care.
- B. Adjacent floating dock modules shall be separated by neoprene pads (or alternate approved material) or otherwise connected so that maximum gap on the walking surface is 1/2 inch.
- C. Drilling and cutting of steel after galvanizing shall be minimized. Where necessary, such holes and edges shall be painted with two coats of high zinc dust content paint per MIL-P-21035B. All welds over galvanized material shall be thoroughly cleaned and coated with two coats of cold galvanizing compound.
- D. All welding shall conform to the requirements of the American Welding Society (AWS D1.1 for steel and AWS D1.2 for aluminum as applicable). Welds shall be a solid and homogenous part of the metals joined and shall be free from pits or scale, and shall be of full area and length required to develop the required strength for the intended use.
- E. All bolts, nuts, and washers shall be set square with connecting structural members and the nuts shall be drawn tight. Lock washers or other devices or techniques shall be used to prevent nuts from loosening after being properly tightened. High strength bolts shall be used where required in accordance with the American Institute of Steel Construction specifications "Structural Joints Using ASTM A325 or A490 Bolts." Deck fasteners shall be corrosion resistant stainless steel screws.
- F. Lumber shall be counter-bored wherever projecting bolt heads or nuts may damage boats or provide a hazard to pier users. Counter-boring shall be sufficiently deep to permit installation of the bolts and nuts with washers well below the surface of the wood. The heads of dome head bolts may project above the surface.
- G. Connections between floating pier modules or other elements such as lifting rings shall not protrude above the level of the deck. Gaps between deck boards shall be no less than 1/16 inch and no more than 1/4 inch. There shall not be any gap in the walking surface of the floating piers that exceeds 1/2 inch.
- H. Connections shall be designed to permit removal and replacement of connectors without the necessity of removing other components for access. Connectors shall be of materials that are easily available and shall be positively contained so as to prevent their working free under normal conditions. All connections must be capable of transmitting all loads and forces imposed upon the structure.

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- I. All deck surfaces shall be level and properly drained so that water will not puddle on the deck surface. Adjacent dock modules shall have less than 1/8-inch difference in elevation. No point on the walking surface shall have any abrupt vertical change exceeding 1/4".
- J. Any potential corrosive installation of dissimilar materials shall be properly insulated to minimize or eliminate corrosion in the marine environment.

3.3 DESIGN REQUIREMENTS – DOCK ACCESSORIES

- A. Pile guides for floating docks shall allow free vertical movement of the dock, while minimizing damage due to normal dock movement caused by water level fluctuations, boat wakes, and seasonal winds. Piles and pile guides shall be of sufficient strength and number to secure the dock system under the extreme loading conditions given herein, per the Contractor's design. Pile guides shall be internal in all areas where berthing may occur. Exposed pile guide shall be framed with bumper and rub rail to protect vessels from impact damage. Pile guides shall not restrict the clear width of the walking surface on the floating dock to less than 36 inches. Refer to preferred pile placement plan as presented in the Bid Plans (Note: Final design and placement of piles shall be the responsibility of the CONTRACTOR).
- B. Dock utilities shall be supplied and installed as described in the Drawings. Appropriate conduit and/or raceways, stub-up locations, access panels, and junction boxes shall be provided to accommodate all required utility services to and on the docks. CONTRACTOR shall coordinate requirements of dock utilities with DOCK MANUFACTURER during design and fabrication process, including access/routing and dead loads. Utility access panels shall allow for easy access at regular intervals along the deck surface and provide direct access at all indicated valves, expansion joints, flexible piping connections, etc. as indicated on the utilities plans.
- C. All work shall conform to reviewed and approved Shop Drawings. Construction details and colors of the completed dock system shall be consistent throughout.
- D. All floating dock design and construction, including appurtenances and accessories shall comply with the provisions of the 2010 ADA Standards for Accessible Design Section 1003.

3.4 FABRICATION REQUIREMENTS – DOCK ACCESSORIES

- A. Pile guides shall be of a multiple roller or rub block type and allow full vertical movement of the pier system without inducing binding or torsion into the system. Pile guides must be of sufficient strength to secure the system under the extreme loading conditions given in this specification. Guide pile rollers shall include a roller made of ultra high molecular weight (UHMW) plastic mounted on a stainless steel axle. The mounting bracket shall be galvanized after fabrication. Rollers shall be configured for simple replacement and be adjustable.
- C. Any potential corrosive installation of dissimilar materials shall be properly insulated to minimize or eliminate corrosion in the marine environment.

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- D. The floating dock section at the gangway landing shall include appropriate contact surfaces for accepting the gangway landing wheels and transition plate, so that movement of the gangway and transition plate will not wear on the dock surface over time or create unnecessary noise.

3.5 MATERIALS, TRANSPORT, HANDLING AND STORAGE

- A. The CONTRACTOR shall take care in establishing handling methods to avoid damage to floating docks and other materials during removal, storage, assembly, and installation.
- B. Do not stack items where damage may occur. Materials delivered and stored at either the manufacturing facility, staging area, or jobsite shall be properly stored on dunnage or by other appropriate means to prevent direct contact with the ground and unnecessary damage.
- C. The CONTRACTOR is responsible for coordination of the storage, handling, and transport requirements for all materials with DOCK MANUFACTURER and all SUB CONTRACTORS. The DESIGN CRITERIA PROFESSIONAL may reject floating docks or other materials damaged during execution of the Work and the CONTRACTOR shall replace such items at no additional cost to the OWNER.
- D. Excessive cracks, splits, stress marks, or other damage or manufacture defect in any flotation unit shall be cause for rejection of the unit. Any frequently recurring crack, split, stress mark, or other damage or manufacture defect pattern shall be considered indicative of inadequate design, fabrication or improper handling. CONTRACTOR shall correct such occurrences by replacement and appropriate changes in design, fabrication, handling or other procedures.

3.6 INSTALLATION, CERTIFICATION AND TESTING

- A. The CONTRACTOR shall secure supervision and/or inspection services from the Floating DOCK MANUFACTURER during the installation of their product.
- B. Anchorage installation shall be per requirements of Section 02454 Marine Piling and related Sections/information.
- C. After final installation of the floating docks, the Manufacturer shall furnish to the CONTRACTOR and OWNER written certification that the floating docks have been installed according to DOCK MANUFACTURER's recommendations and engineering submittals described in this Specification.
- D. Certification must be submitted before the final application for payment is processed.
- E. Prior to final acceptance, DESIGN CRITERIA PROFESSIONAL reserves the right to direct the CONTRACTOR to perform load tests and freeboard measurements to ensure that the floating dock system meets the requirements of the Specification. Test may include:
 - 1. Measurement of dead load and live load freeboards.

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2. Measurement of list of all floats.
- F. Contactor shall submit results of the above tests to DESIGN CRITERIA PROFESSIONAL with final "as built" drawings (including all floating docks, accessories, and utilities), detailed fabrication drawings for floating docks, warranty, operations and maintenance manual(s), and listing of typical replacement parts, part numbers, and manufacturer contact information where applicable.

END OF SECTION

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SECTION 02885 ALUMINUM GANGWAY

PART 1 - GENERAL

1.1 WORK INCLUDED

The work covered under this section shall include design, manufacturing, furnishing, and installation of the prefabricated aluminum gangways as shown on the Drawings. All pre-fabricated gangway materials shall be approved by the Design Criteria Professional. The installing contractor shall be a qualified Marine Contractor.

1.2 RELATED WORK

A. Section 02853 – Floating Docks

1.3 REFERENCES

The publications listed below form a part of this specification to the extent referenced. The publications are referred to in the text by the basic designation only and refer to the latest editions of each.

THE ALUMINUM ASSOCIATION, INC. (AA)

AA Aluminum Design Manual ADM-1
AA Specification for Aluminum Structures

AMERICAN SOCIETY FOR TESTING AND MATERIALS (ASTM)

ASTM B 209 Aluminum and Aluminum-Alloy Sheet and Plate
ASTM B 211 Aluminum and Aluminum-Alloy Bar, Rod, and Wire
ASTM B 221 Aluminum and Aluminum-Alloy Extruded Bars, Rods, Wire, Profiles, and Tubes
ASTM B 308 Aluminum-Alloy 6061-T6 Standard Structural Profiles
ASTM B 429 Aluminum-Alloy Extruded Structural Pipe and Tube
ASTM B 547 Aluminum-Alloy Formed and Arc-Welded Round Tube
ASTM F 593 Stainless Steel Bolts, Hex Cap Screws, and Studs
ASTM F 594 Stainless Steel Nuts

AMERICAN WELDING SOCIETY, INC. (AWS)

AWS D1.2 Structural Welding Code- Aluminum

UNITED STATES ACCESS BOARD, 2010 AMERICANS WITH DISABILITIES ACT (ADA) STANDARDS

ADA Standards Chapter 10 Recreation Facilities, Section 1003, Recreational Boating Facilities

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1.4 SUBMITTALS

To insure that all specified criteria have been met, the Contractor shall be required to submit the following for acceptance prior to fabrication, during Shop Drawing Phase:

- A. Dimensional layout of gangway components to be furnished under this Contract.
- B. Engineering calculations showing compliance with the design criteria specified herein. All calculations shall be stamped with the seal of a qualified, licensed South Carolina Professional Engineer. Calculations shall include, at a minimum, compliance with combined live and dead load requirements considering bending and deflection, as well as the effects of gangway-induced loads on floating docks. Submit calculations of maximum loads and strength at connections (hinges, rollers, tread plates, etc.) and handrails. Minimum load requirements shall be in accordance with Technical Specifications Section 02853 - FLOATING DOCKS, and Part 3, Paragraph 3.1 of this Specification.
- C. Typical sections or details of the following:
 - 1. Hinge details
 - 2. Handrail and edge protection details
 - 3. Roller/dock interface detail, including transition plates
 - 4. Gangway structural details
 - 5. Utility support details
 - 6. Gangway and dock interface and conflicts at high water levels
- D. Materials data sheets for aluminum, fasteners, and UHMW items.

1.5 WARRANTY

The gangway system shall carry a warranty against defects in design, materials, and workmanship for a minimum of five (5) years from the date of project acceptance.

PART 2 - PRODUCTS

The following requirements are a minimum and must be met by Contractor in accordance with the requirements of Part 1 of this specification. Alternate approval must be in writing from the Design Criteria Professional. Approval of shop drawings will be required prior to fabrication.

2.1 MATERIALS

- A. Metal for gangway structures and rails shall be 6061-T6 or 6063-T5 or -T6 aluminum alloy, respectively, and extruded in accordance with the requirements of applicable sections of Federal Specification QQ-A-200. The material shall be temper suitable for saltwater service in accordance with applicable ASTM Standards B209, B211, B221, B308, B429, and B547 for various materials used.
- B. All welds shall be in accordance with AA "Specifications for Aluminum Structures" and ASTM D1.2.

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- C. All fasteners shall be Aluminum or 316 Series Stainless Steel in accordance with ASTM F593 and F594, and be compatible with aluminum in a marine environment.
- D. Rollers for gangways shall be UHMW polyethylene with ultra-violet light inhibitor added. Rollers shall have sealed bearings which do not require lubrication. Axles shall be Type 316 stainless steel.

PART 3 - EXECUTION

3.1 DESIGN REQUIREMENTS

- A. Framing and structural components of the gangways shall be designed with minimum safety factors on working stress which conform to those set forth in the latest issue of the Aluminum Association "SPECIFICATION FOR ALUMINUM STRUCTURES" using allowable stresses for bridges. For non-aluminum components, similar safety factors shall apply.
- B. The gangway structure, decking, and transition plates shall be designed to withstand a minimum uniform vertical live load of 50 pounds per square foot of deck surface area, in combination with the structure dead load. Allowable deflection shall be $L/240$ where "L" is the free span between contact points in inches.
- C. Design loads shall also consider stresses resulting from handling and installation, and provide notations on how to lift to unload and set in place.
- D. The horizontal design load shall be the wind load for the site location, as specified in Section 02852 – Floating Docks, using the wind speed specified for the unoccupied floating docks. The horizontal design load shall be in combination with the dead weight.
- E. Minimum loads for gangway guardrails, handrails, and toe rails shall include the following independent load cases: (1) 20 lb/ft continuous load applied to the entire length and at the centerline of the element in any direction, and (2) 250 lb point load at any location and direction.
- F. Gangway lengths and overall widths shall be as shown on the Drawings and shall comply with ADA requirements, where applicable. Gangway lengths shown on the Drawings do not include transition plates. In no case shall the clear walkway width of any gangway be less than 36 inches.
- G. Gangways shall be designed to incorporate the dead load weight and any determined utilities or lighting requirements that traverse the gangway. Additional dead load weight of gangway shall be coordinated with the dock manufacturer to ensure adequate flotation under the gangway landing so that landing area maintains the same freeboard as the rest of the floating docks.
- H. Contractor shall provide design, materials, and installation for securely fastening the gangway to the fixed shore structure (fixed pier or bulkhead cap). Shoreside

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connection shall be designed to withstand the design dead and live loads imparted on the gangway and hinged to allow free vertical movement of the gangway with the site's normal and extreme water levels.

- I. All connection and utility routes shall be incorporated into the gangway design. Cable, hose, and pipe hangars shall be of similar material to the gangway or stainless steel and designed to support the maximum loaded condition of the utilities to minimize chafing, etc.
- J. Decking shall be of aluminum plank flooring with integral non-skid surface and have no gaps exceeding $\frac{1}{2}$ inch in the walking surface. Cross-cleats or other mechanical devices shall not be used to achieve non-skid capacity.
- K. All gangways denoted as "ADA Compliant" on the Drawings shall be fully compliant with ADA Standards Section 1003. These include the two 80-ft. gangways on this project.
- L. Transition plates at ADA Compliant gangways shall not exceed 1V:12H or length of 6 ft, which may require recessing of the waterward end of the gangway into the floating dock. In no case shall any transition plate exceed a slope of 1V:3H or include gaps larger than $\frac{1}{2}$ inch. Transition plates shall be the full width of the gangway and be attached to the gangway with a continuous pipe hinge. Transition plates shall include edge protection and handrails, where required by ADA Standards. Transition plates shall include a continuous UHMW polyethylene wear block, beveled as necessary to comply with accessibility requirements.
- M. The upper chord/member on gangways shall not extend more than 60 inches vertically above the gangway deck surface.

3.2 FABRICATION REQUIREMENTS

- A. Handrails shall be fabricated and installed to conform to ADA Standards. Handrails shall be aluminum alloy tube or pipe, with a 1.5 inch outer diameter and smooth gripping surface, with the top of the gripping surface located 36 inches above the deck surface.
- C. The dockside end of the gangway (rollers and transition plate) shall ride on aluminum, UHMW polyethylene, or alternate approved deck plates installed to provide protection to the dock surface and silent operation during normal and extreme water level movements.
- D. Appropriate dielectric materials (non-conducting insulators, bushings, or bituminous paint) shall be used to separate dissimilar metals or where metal comes in contact with concrete or treated timber. Indicate materials and locations on Shop Drawings.
- E. All welding shall be performed in accordance with AWS D1.2.

END OF SECTION

**SECTION 09901
MAINTENANCE COATING OF STEEL WATERFRONT STRUCTURES**

PART 1 - GENERAL

1.1 WORK INCLUDED

- A. This section specifies cleaning, surface preparation, and application of the coating system to the existing steel bulkhead structure as shown on the Drawings and described herein. The work includes all environmental control, testing, and inspection associated with the work. Contractor shall provide all labor, personnel, materials, apparatus, equipment, instrumentation and all associated work to complete the project as specified.
- B. Existing steel bulkhead elements within the contracted work zone(s) as indicated on the Drawings are included in the work.

1.2 REFERENCES

The publications listed below form a part of this specification to the extent referenced. The publications are referred to in the text by the basic designation only and refer to the latest editions of each.

AMERICAN INSTITUTE OF STEEL CONSTRUCTION (AISC)

Specification for the Design, Fabrication, and Erection of Structural Steel for Buildings

AMERICAN SOCIETY OF TESTING AND MATERIALS (ASTM)

ASTM A36/A36M	Standard Specification for Carbon Structural Steel
ASTM B117	Standard Practice for Operating Salt Spray (Fog) Apparatus
ASTM C920	Standard Specification for Elastomeric Joint Sealants
ASTM D1475	Standard Test Method for Density of Liquid Coatings, Inks, and Related Products
ASTM D1640	Drying, Curing, or Film Formation of Organic Coatings at Room Temperature
ASTM D1654	Standard Test Method for Evaluation of Painted or Coated Specimens Subjected to Corrosive Environments
ASTM D2240	Standard Test Method for Rubber Property - Durometer Hardness
ASTM D2369	Volatile Content of Coatings
ASTM D2370	Tensile Properties of Organic Coatings
ASTM D2698	Standard Test Method for Determination of the Pigment Content of Solvent-Reducible Paints by High-Speed Centrifuging
ASTM D2794	Resistance of Organic Coatings to the Effects of Rapid Deformation (Impact)
ASTM D2805	Standard Test Method for Hiding Power of Paints by Reflectometry
ASTM D3276	Standard Guide for Painting Inspectors (Metal Substrates)
ASTM D3278	Flash Point of Liquids by Small Scale Closed-Cup Apparatus

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ASTM D3335	Low Concentrations of Lead, Cadmium, and Cobalt in Paint by Atomic Absorption Spectroscopy
ASTM D3718	Low Concentrations of Chromium in Paint by Atomic Absorption Spectroscopy
ASTM D3925	Sampling Liquid Paints and Related Pigmented Coatings
ASTM D3960	Determining Volatile Organic Compound (VOC) Content of Paints and Related Coatings
ASTM D4060	Abrasion Resistance of Organic Coatings by the Taber Abraser
ASTM D4285	Indicating Oil or Water in Compressed Air
ASTM D4400	Sag Resistance of Paints Using a Multinotch Applicator
ASTM D4541	Standard Test Method for Pull-Off Strength of Coatings Using Portable Adhesion Testers
ASTM D4940	Standard Test Method for Conductimetric Analysis of Water-Soluble Ionic Contamination of Blast Cleaning Abrasives
ASTM D512	Chloride Ion in Water
ASTM D522	Mandrel Bend Test of Attached Organic Coatings
ASTM D523	Standard Test Method for Specular Gloss
ASTM D56	Standard Test Method for Flash Point by Tag Closed Cup Tester
ASTM D575	Rubber Properties in Compression
ASTM D610	Evaluating Degree of Rusting on Painted Steel Surfaces
ASTM D6944	Standard Practice for Determining the Resistance of Cured Coatings to Thermal Cycling
ASTM D7091	Standard Practice for Nondestructive Measurement of Dry Film Thickness of Nonmagnetic Coatings Applied to Ferrous Metals and Nonmagnetic, Nondestructive Coatings Applied to Non-Ferrous Metals
ASTM D714	Standard Test Method for Evaluating Degree of Blistering of Paints
ASTM D7588	Standard Guide for FT-IR Fingerprinting of a Non-Aqueous Liquid Paint as Supplied in the Manufacturer's Container
ASTM D93	Standard Test Methods for Flash-Point by Pensky-Martens Closed Cup Tester

AMERICAN WELDING SOCIETY (AWS)

AWS D1.1	Structural Welding Code
AWS QC1	AWS Certification of Welding Inspectors

INTERNATIONAL ORGANIZATION FOR STANDARDIZATION (ISO)

ISO 9001	Quality Management Systems- Requirements
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SOCIETY FOR PROTECTIVE COATINGS (SSPC) / NATIONAL ASSOCIATION OF CORROSION ENGINEERS (NACE)

SSPC Guide 6	Guide for Containing Surface Preparation Debris Generated during Paint Removal Operations
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SSPC Guide 10	Guide to Specifying Coatings Conforming to Volatile Organic Compound (VOC) Content Requirements
SSPC Guide 12	Guide for Illumination of Industrial Painting Projects
SSPC Guide 15	Field Methods for Extraction and Analysis of Soluble Salts on Steel and Other Nonporous Substrates
SSPC QP 1	Standard Procedure for Evaluating Painting Contractors (Field Application to Complex Industrial Structures)
SSPC QP 2	Standard for Evaluating Painting Contractors (Removal of Hazardous Coatings from Industrial/Marine Structures)
SSPC QP 5	Standard Procedure for Evaluating the Qualifications of Coating and Lining Inspection Companies
SSPC QS 1	Standard Procedure for Evaluating a Contractor's Advanced Quality Management System
SSPC SP 1	Solvent Cleaning
SSPC SP 2	Hand Tool Cleaning
SSPC SP 3	Power Tool Cleaning
SSPC SP 5/NACE No. 1	White Metal Blast Cleaning
SSPC SP 6/NACE No.3	Commercial Blast Cleaning
SSPC SP 7/NACE No.4	Brush-Off Blast Cleaning
SSPC SP 10/NACE No. 2	Near-White Blast Cleaning
SSPC-SP/NACE WJ-1	Waterjet Cleaning of Metals -- Clean to Bare Substrate
SSPC-SP/NACE WJ-2	Waterjet Cleaning of Metals -- Very Thorough Cleaning
SSPC-SP/NACE WJ-3	Waterjet Cleaning of Metals -- Thorough Cleaning
SSPC-SP/NACE WJ-4	Waterjet Cleaning of Metals -- Light Cleaning
SSPC SP COM	Surface Preparation Commentary for Steel and Concrete Substrates
SSPC PA 1	Shop, Field, and Maintenance Coating of Metals
SSPC PA 2	Procedure for Determining Conformance to Dry Coating Thickness Requirements
SSPC VIS 4/NACE VIS 7	Guide and Reference Photographs for Steel Surfaces Prepared By Water Jetting

RELATED SPECIFICATIONS

Specifications from product manufacturers.

1.3 SUBMITTALS

A. Testing and Inspection - Quality Control and Assurance Plan

1. Contractor shall submit for approval before commencement of work a Quality Control and Assurance Plan that describes appropriate inspections, tests, protocols, and similar efforts to be conducted to control and assure quality of the work. Tests and inspections should utilize, to the extent applicable and practical,

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appropriate SSPC and ASTM specifications as guidance for testing and inspection protocols. The quality control and assurance plan should include, at a minimum:

- a. Name and qualifications/certifications of Coating Specialist(s)/Inspector(s)
- b. Test and inspection methods and procedures for quality control and assurance of surface preparation and coating application
- c. Corrective action requirements and procedures for rejected work.
- d. Certified test records and inspection documents, including instrument readings and measurements recorded during coating thickness and holiday testing.

B. Work Plan

1. Contractor shall submit for approval, a Work Plan that describes the proposed work, including:
 - a. Equipment, instruments, and apparatus used to perform the work.
 - b. Access and staging requirements
 - c. Order and methods of the work, including discussion on tidal elevation changes
 - d. Work area locations/zones, moving work areas
 - e. Impacts to normal operations of adjacent facilities
 - f. Detailed work schedule
 - g. Safety measures to be taken to guard the health and safety of Contractor's laborers and equipment operators and for pedestrians and general public that will be in the vicinity of the work.

C. Environmental Control Plan

1. Contractor shall submit for approval, an Environmental Control Plan that describes the proposed environmental control efforts, including:
 - a. Proposed measures, equipment, and apparatus used to properly capture, control, and dispose of harmful waste substances and debris produced and used during the cleaning and surface preparation.
 - b. Proposed measures, equipment, and apparatus used to ensure coating system materials are applied only to appropriate surfaces and excess material is captured, controlled, and disposed of properly.

D. Manufacturer's Product Data Sheets, Materials Safety Data Sheets, and Certification

1. Contractor shall submit coating system materials manufacturer's printed technical data sheets for products intended for use. Data sheets shall fully describe material as to its intended use, make-up, compatibility, recommended surface preparation and application conditions, primers, material mixing and application (including recommended dry mil thickness), precautions, safety and maintenance cleaning directions.

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E. Warranty Information

1. A one (1) year warranty which commences on the date of acceptance against failure of all coatings shall be provided. Failure of any coating during the warranty period shall be repaired by the Contractor who shall absorb all costs related to the repair of the coating.

1.4 PROTECTION OF WORK

The Contractor shall be responsible for any and all damage to his Work or the work of others during the time his Work is in progress.

1.5 RIGHT OF REJECTION

The Owner shall have the right to reject all material or Work that is unsatisfactory, and require the replacement of either or both at the expense of the Contractor.

1.6 JOB CONFERENCE

Prior to commencing Work, a pre-job conference shall be held for the purpose of reviewing and clarifying the requirements of the project.

1.7 MEASUREMENT AND PAYMENT

- A. Cleaning and Surface Preparation will be measured on a lump sum basis, paid for at the Contract Lump Sum Price, and shall include all direct and incidental labor, materials, operations and other items required to complete the accepted work.
- B. Coating will be measured on a lump sum basis, paid for at the Contract Lump Sum Price, and shall include all direct and incidental labor, materials, operations and other items required to complete the accepted work.
- C. Environmental Control will be measured on a lump sum basis, paid for at the Contract Lump Sum Price, and shall include all direct and incidental labor, materials, operations and other items required to complete the accepted work.
- D. Testing and Inspection will be measured on a lump sum basis, paid for at the Contract Lump Sum Price, and shall include all direct and incidental labor, materials, operations and other items required to complete the accepted work.

PART 2 - PRODUCTS

2.1 GENERAL

- A. Surfaces to receive coating materials as shall be coated in conformance with the applicable coating systems specified herein. All materials specified by name and/or manufacturer or selected for use under these Specifications, shall be delivered unopened at the job site in their original containers. Coating materials shall be as specified herein or approved equivalent. So far as possible, all joint sealant and coating materials shall be provided by a single source supplier.

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- B. Materials shall be sealed in containers that plainly show the designated name, formula or specification number, batch number, color, date of manufacture and/or expiration, manufacturer's directions, and name of manufacturer, all of which shall be plainly legible at the time of use. Pigmented coatings shall be furnished in containers not larger than five (5) gallons.
- C. Only compatible materials shall be used in the work.
- D. Coating material color shall be black or other color approved by the Owner.

2.3 COATING SYSTEM MATERIALS

A. JOINT SEALANT MATERIALS

- 1. ASTM C920, Type M, Grade NS, Class 25, Use NT, I, M, G, A, O. Must be manufactured or supported by the coating system manufacturer. Or approved equivalent.

B. PATCH MATERIALS

- 1. Patch material for small repair areas in the steel bulkhead shall be an epoxy putty or fairing compound appropriate for project use in the marine environment and compatible with all existing and proposed materials. Flexible grid or mesh material may be utilized to assist in patch repair areas. Contractor shall submit proposed materials for approval before use.

C. COATING MATERIALS

- 1. Interzone 954, manufactured by International (an AkzoNobel brand). Interzone 954 is a two-component, low VOC, high solids, modified epoxy barrier coating designed for maintenance applications in the marine splash zone environment. Or approved Design Criteria Professional equivalent.

2.4 DELIVERY, STORAGE AND HANDLING

Deliver, handle, and store items according to manufacturer's recommendations and all Federal, State, and Local laws. All damaged items determined by the Design Criteria Professional as being unsuitable shall be replaced by the Contractor at his expense.

2.5 SAFETY AND HEALTH PRECAUTIONS

Materials listed in this section and encountered during the project may be toxic and require special health and safety precautions. Follow all safety procedures as recommended by manufacturers and applicable specifications and laws.

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PART 3 - EXECUTION

3.1 GENERAL

3.2 ENVIRONMENTAL CONTROL

- A. Contractor shall implement environmental control measures as detailed in the approved Environmental Control Plan, manufacturer's recommendations, and in accordance with all Federal, State, and Local laws.

3.3 CLEANING AND SURFACE PREPARATION

- A. Solvent Cleaning: SSPC SP 1. Removal of oil, grease, dirt, soil, salts, and contaminants by cleaning with solvent, vapor, alkali, emulsion or steam.
- B. Waterjet Cleaning: SSPC SP/NACE WJ-#. Clean bulkhead elements in accordance with contracted waterjet cleaning method specification.
- C. Hand and Power Tool Cleaning: SSPC SP 2 and 3. Clean bulkhead elements in accordance with SSPC specifications to ensure all areas of corrosion, coating damage, or any other deterioration is properly prepared to receive coating system application.
- D. If continuous areas of corrosion and coating damage extend from the contracted work zone to adjacent areas outside the work zone, the Contractor shall notify the Design Criteria Professional. If approved, these areas of continuous corrosion outside the work zone shall be cleaned, prepared, and coated in accordance with these specifications and the drawings.
- E. If, during the course of the work, the integrity of the existing coating in areas outside the contracted work zone is compromised by the work in any way, the Contractor shall notify the Design Criteria Professional and that area shall be cleaned, prepared, and coated in accordance with these specifications and the drawings.
- F. Ensure all corners, edges, seams, welds, brackets, and other unique surfaces and hard to reach areas are properly prepared and cleaned.
- G. Ensure the seam between the concrete topping cap and steel bulkhead cap is cleaned and prepared for appropriate joint filler.
- H. Feathering of surface preparation and cleaning may be required along the interface of the work zone surface and adjacent areas outside of the work zone to provide an appropriate transition for coating application.
- I. Surface preparations shall be undertaken in the order most appropriate for the proper cleaning and preparation of the surface prior to coating application.

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- J. Cleaning and surface preparation must account for tidal fluctuations, weather, and other environmental and surface conditions (e.g. chlorides) that may impact the coating application.
- K. Sample Areas - Cleaning of Marine Growth Below the Upper Work Zone Elevations (in the event only the upper work zone is contracted)
 - 1. Three (3) locations of marine growth along the wall shall be randomly selected by the coating specialist(s)/inspector(s) and 1ft x 1ft square areas of sheetpile shall be scraped free of thick marine growth to reveal the existing coating.
 - 2. Coating specialist(s)/inspector(s) will observe, document, and inspect the condition of the existing coating and provide Owner with assessment of condition and any recommendations regarding coating outside of work zone elevations.

3.4 APPLICATION OF COATING SYSTEM

A. Filler and Patch Repairs

- 1. Filler and/or patch repairs are required in any area of corrosion or deterioration exceeding the maximum gap limit of the specified joint sealant.
- 2. Filler and patch repairs are anticipated at utility conduit and similar cutouts and void areas in the bulkhead structure within the work zone.
- 3. Filler and Patch Repair Procedure
 - a. Foam filler shall be applied according to manufacturer's recommendations to fill any large voids behind the bulkhead exposed surface.
 - b. Foam filler shall be allowed to cure, then cut flush with the bulkhead surface according to manufacturer's recommendations.
 - c. Epoxy patch material shall be applied over the foam filler and adjacent sound steel according to manufacturer's recommendations to provide a continuous, sound, and impermeable repair in the bulkhead structure sufficient for receiving the coating application and providing corrosion protection. Flexible grids or mesh patches of appropriate material may be used to assist in the epoxy patch repair.

B. Joint Sealant

- 1. Joint sealant shall be applied in accordance with manufacturer recommendations to all exterior joints, seams, and interfaces in the work zone, including but not limited to:
 - a. Concrete topping cap and steel bulkhead cap interface
 - b. Perimeter of faying and bearing surfaces

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- c. Seams/joints between steel sheetpile Z-sections, tie back connections, and all other seams in the work zone
- d. Joints in members between intermittent welds
- e. Joints between lifting hole cutouts and welded backer-plates
- f. All openings smaller than the maximum gap width recommended by joint sealer manufacturer
- g. Joints along bracketry and other devices
- h. Perimeters of patch repair areas as needed

C. Coating

- 1. Coating material shall be proportioned, mixed, applied (in coats, as applicable), and cured in accordance with all manufacturers recommendations unless otherwise indicated in these specifications or approved by the Owner in writing.
- 2. Repair of Defects: Repair detected coating holidays, thin areas, and exposed areas damaged surface treatment and application of additional coating or by manufacturer's recommendations.

3.6 SURFACES TO BE COATED

- A. Steel sheet piles, , bulkhead caps, railing and utility brackets, and miscellaneous steel and fixtures as indicated in Drawings and in these specifications.

3.6 TESTING AND INSPECTION

- A. Testing and inspections shall be performed by the qualified coating specialist(s)/inspector(s) in accordance with the approved Testing and Inspection – Quality Control and Assurance Plan.
- B. Holiday Testing: Test for holidays in coating system. If in the opinion of the qualified coating specialist/inspector, the initial test results are satisfactory then amount of test may be reduced. Use a holiday detector in accordance with manufacturer's instructions. After repair of holidays by surface treatment and application of additional coating or by manufacturer's recommendation, retest with holiday detector.
- C. Dry Film Thickness: After repair of holidays, measure dry film thickness using a magnetic dry film thickness gage in accordance with ASTM D 1186 and ASTM E 376. Re-measure after an additional coat is applied, if required to meet minimum thickness requirements.

3.7 FINAL CLEANUP

- A. Following completion of the work, remove debris, equipment, and materials from the site. Dispose of all debris in accordance with Federal, State, and Local laws and

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regulations. Remove temporary connections to water and electrical services. Restore existing facilities in and around the work areas to their original condition.

END OF SECTION

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SECTION 09970 COATING OF STEEL

PART 1 - GENERAL

1.1 WORK INCLUDED

- A. This section specifies coating for steel pipe piles and miscellaneous steel elements as indicated on the Drawings.

1.2 RELATED WORK

- A. Section 02465 – Steel Pipe Piles

1.3 REFERENCES

The publications listed below form a part of this specification to the extent referenced. The publications are referred to in the text by the basic designation only and refer to the latest edition of each.

AMERICAN SOCIETY FOR TESTING AND MATERIALS (ASTM)

ASTM D 1186	Nondestructive Measurement of Dry Film Thickness of Nonmagnetic Coatings Applied to a Ferrous Base
ASTM E 376	Measuring Coating Thickness by Magnetic-Field or Eddy- Current (Electromagnetic) Test Methods

STEEL STRUCTURES PAINTING COUNCIL (SSPC)

SSPC PS 11.01	Black (or Dark Red) Coal Tar Epoxy-Polyamide Painting System
SSPC Paint 16	Coal Tar Epoxy-Polyamide Black (or Dark Red) Paint
SSPC SP 1	Solvent Cleaning
SSPC SP 10	Near-White Blast Cleaning

1.4 SUBMITTALS

- A. Submit the following:

1. Manufacturer's Catalog Data
Coal Tar Epoxy-Polyamide, or approved alternative
Equipment used for coating application
2. Certificates of Corrosion Tester's Qualification
Method and procedure for testing corrosion control system
Equipment and instruments to be used
3. Certified Test Records and Inspections
Coating application
Test method and instruments used

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Instrument readings and measurements recorded during coating thickness and holiday testing

1.5 ENVIRONMENTAL CONDITIONS

- A. Start work only when ambient and curing temperatures are within limits of coating manufacturer's recommendations and at least 5 degrees F above dew point temperature.

1.6 SAFETY AND HEALTH PRECAUTIONS

- A. Materials listed in this section contain coal tar pitch volatiles, which are toxic. Follow safety procedures as recommended by manufacturer. Work in a well-ventilated area. Provide, and require workers to use, impervious clothing, gloves, face shields eight inch minimum, appropriate protective clothing necessary to prevent eye and skin contact with coating materials.

1.7 DELIVERY, STORAGE AND HANDLING

- A. Deliver, handle, and store items so as to protect them from heat, spark, and flames. Store items in separate areas so that accidental or inadvertent mixing does not cause hazardous fumes or adverse chemical reactions. The storage area shall be well ventilated.

PART 2 - MATERIALS

2.1 COATING SYSTEM

- A. Coating: coating system design for full immersion in salt water, salt water splash, and shall be in accordance with the following:

Coal Tar Epoxy-Polyamide Coating System: SSPC PS 11.01

Paints: SSPC Paint 16 Black or Grey – color subject to approval of the Design Criteria Professional

PART 3 - EXECUTION

3.1 CLEANING AND PREPARATION OF SURFACES

- A. Solvent Cleaning: SSPC SP 1. Remove visible oil, grease, and drawing and cutting compounds by solvent cleaning.
- B. Blast Cleaning: SSPC SP 10. After solvent cleaning, complete surface preparation by near-white blast cleaning. Remove residual dust from blasted surface by blowing with dry, oil-free air, vacuuming, or sweeping. Provide surface profile of at least 0.064 mm (2.5 mil) thickness.

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3.2 PROPORTIONING AND MIXING OF COATING SYSTEM

- A. Proportioning of coal tar epoxy-polyamide system: Coal tar epoxy-polyamide consists of a two component system. Component A contains a refined coal tar pitch, polyamide resin, and a polyamine promoter to accelerate curing rate. Component B is an epoxy resin. Mix both components in a ratio of four parts of Component A to one part of Component B by volume. Do not thin coatings when doing so will result in total volatile organic compounds exceeding limits enacted by local air pollution control districts. When thinning is allowed and is necessary for proper application, use xylene or the coating manufacturer's recommended thinner, to the lesser of that which is specified by the manufacturer or 1.9 L (0.5 gallon) to a 19 L (5 gallon) batch.
- B. Mixing of coal tar epoxy-polyamide system: Power stir components to a smooth, uniform consistency. Stir coating periodically during induction period. Follow coating manufacturer's requirements for induction time and pot life of mixed batches.

3.3 COATING APPLICATION

- A. General: Apply primer coating to dry surfaces not more than four (4) hours after near-white blast cleaning. Apply coats of each system so that finished surfaces are free from runs, sags, brush marks and variations in color.
- B. Application method for coal tar epoxy-polyamide system: Unless otherwise specified by manufacturer's recommendations, do not allow drying time between coats to exceed 72 hours. Under conditions of direct sunlight or elevated ambient temperatures of 86 degrees F (30 degrees C) or greater, limit the overcoat-drying period to a maximum of 24 hours. The equipment for applying the coal tar epoxy-polyamide shall be per manufacture's recommendation and/or approved by the Design Engineer.
- C. Repair of Defects: Repair detected coating holidays, thin areas, and exposed areas damaged prior to or during installation by surface treatment and application of additional coating or by manufacturer's recommendations. Allow a period of at least 72 hours to pass following final coat before placing in immersion service.
- D. Two-Coat Coal Tar Epoxy-Polyamide System: Apply each coat at a dry film thickness of not less than 10 mils.
- E. Dry Film Thickness: Provide total system minimum dry film thickness of 20 mils. Measure using a magnetic gage.
- F. Immediately remove all grout wash or concrete drippings from coated surfaces exposed to the environment.

3.4 SURFACES TO BE COATED

- A. Steel pipe piles and miscellaneous steel as indicated in contract Drawings and Specifications, subject to burial at or below the salt water table, splash, or immersion in sea water.

3.5 FIELD TESTS

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- A. Holiday Testing: Prior to installation, test for holidays in total coating system. If in the opinion of the Design Engineer the initial test results are satisfactory then amount of test may be reduced. Use a low-voltage holiday detector of less than 90 volts in accordance with manufacturer's instructions. After repair of holidays by surface treatment and application of additional coating or by manufacturer's recommendation, retest with a low-voltage holiday detector.
- B. Dry Film Thickness: After repair of holidays, measure dry film thickness using a magnetic dry film thickness gage in accordance with ASTM D 1186 and ASTM E 376. Re-measure after an additional coat is applied, if required to meet minimum thickness requirements.

END OF SECTION

APPENDIX A
FEDERAL (USACE) AND STATE (OCRM)
PERMITS

DEPARTMENT OF THE ARMY PERMIT

Permittee: **DESIREE FRAGOSO**

**CITY OF ISLE OF PALMS
1207 PALM BOULEVARD
P.O. BOX 508
ISLE OF PALMS, SC 29451
DESIREEF@IOP.NET**

Permit No: **SAC-2019-01124**

Issuing Office: **CHARLESTON DISTRICT**

NOTE: The term "you" and its derivatives, as used in this permit, means the permittee or any future transferee. The term "this office" refers to the appropriate district or division office of the Corps of Engineers having jurisdiction over the permitted activity or the appropriate official of that office acting under the authority of the commanding officer.

You are authorized to perform work in accordance with the terms and conditions specified below.

Project Description:

The authorized work consists of the demolition and modification/replacement of the floating dock system, associated marina utilities, and boat ramp at the Isle of Palms Marina. The authorized project is divided into four (4) activities: The Intracoastal Dock, Morgan Creek Dock 1 (Restaurant Dock and Face Dock), Morgan Creek Dock 2 (the Charter and Fuel Docks), and the Boat Ramp. In detail, the authorized work consists of the following:

1) Intracoastal Dock: The existing fixed pier will remain. The authorized work consists of the construction of a 10' X 10' access pier with a 6' X 80' ADA Compliant gangway leading to a 10' X 272' T-head floating dock and nineteen (19) floating jet docks.

2) Morgan Creek Dock 1: Morgan Creek Dock 1 includes the Restaurant Dock and the Face Dock. The Restaurant Dock will be parallel with the shoreline and the authorized work includes the construction of a 6' X 40' ADA Compliant gangway from land leading to a 298' long pier with a 40' long section that will be 12' wide and the remaining 258' will be 8' wide. The floating pier will include one (1) 4' X 40' finger pier, one (1) 8' X 36' and 5' X 51' U-shaped finger pier, and six (6) floating jet docks. The authorized work also includes the construction of a 6' X 80' ADA Compliant gangway from land leading to a 16' X 104' access floating dock, six (6) floating jet docks that will be adjacent to the boat ramp and will lead to the 273' X 12' floating Face Dock.

3) Morgan Creek Dock 2: Morgan Creek Dock 2 includes Restaurant Docks and the Fuel Pier. The Restaurant Docks include the construction of a 3' X 25' gangway from land and a 6' X 80' gangway from an 8' X 5' fixed access pier both leading to a 192' long floating dock with a width of 15' along an approximate 100' section and 10' along the remaining that will be parallel to the shoreline. The work also includes the construction of an 8' X 110' finger pier, an 8' X 65' finger pier, two (2) 5' X 45' finger piers, and fifteen (15) floating jet docks. Construction of the Fuel Pier includes the construction of a 3' X 30' gangway from the access pier leading to a 9' X 88' floating pier that is parallel with the shoreline, a 10' X 63' floating pier, a 23.5' X 23.5' floating fuel hut, and a 12' X 122' fuel dock, and two (2) floating jet docks.

4) Boat Ramp: The existing Boat Ramp will be demolished and re-graded. The authorized work includes the discharge of 400 cubic yards of fill material into tidal waters for the construction of a 50' X 100' concrete boat ramp (5,000 square feet).

Project Location:

The project is located on Morgan Creek and the Atlantic Intracoastal Waterway (AIWW) at the Isle of Palms Marina located at 50 41st Avenue in the City of Isle of Palms, Charleston County, South Carolina (Latitude: 32.8058 °, Longitude: -79.7599 °).

General Permit Conditions:

1. The time limit for completing the work authorized ends on June 30, 2025. If you find that you need more time to complete the authorized activity, submit your request for a time extension to this office for consideration at least one month before the above date is reached.
2. You must maintain the activity authorized by this permit in good condition and in conformance with the terms and conditions of this permit. You are not relieved of this requirement if you abandon the permitted activity, although you may make a good faith transfer to a third party in compliance with General Condition 4 below. Should you wish to cease to maintain the authorized activity or should you desire to abandon it without a good faith transfer, you must obtain a modification of this permit from this office, which may require restoration of the area.
3. If you discover any previously unknown historic or archeological remains while accomplishing the activity authorized by this permit, you must immediately notify this office of what you have found. We will initiate the Federal and state coordination required to determine if the remains warrant a recovery effort or if the site is eligible for listing in the National Register of Historic Places.
4. If you sell the property associated with this permit, you must obtain the signature of the new owner in the space provided and forward a copy of the permit to this office to validate the transfer of this authorization.
5. If a conditioned water quality certification has been issued for your project, you must comply with the conditions specified in the certification as special conditions to this permit. For your convenience, a copy of the certification is attached if it contains such conditions.
6. You must allow representatives from this office to inspect the authorized activity at any time deemed necessary to ensure that it is being or has been accomplished in accordance with the terms and conditions of your permit.

Special Permit Conditions:

See Appendix A, pages 6 through 9

Further information:

1. Congressional Authorities: You have been authorized to undertake the activity described above pursuant to:

Section 10 of the Rivers and Harbors Act of 1899 (33 USC 403)

Section 404 of the Clean Water Act (33 USC 1344)

Section 103 of the Marine Protection, Research and Sanctuaries Act of 1972 (33 USC 1413)

2. Limits of this authorization.

a. This permit does not obviate the need to obtain other Federal, State or local authorizations required by law.

b. This permit does not grant any property rights or exclusive privileges.

c. This permit does not authorize any injury to the property or rights of others.

d. This permit does not authorize interference with any existing or proposed Federal project.

3. Limits of Federal Liability. In issuing this permit, the Federal Government does not assume liability for:

a. Damages to the permitted project or uses thereof as a result of other permitted or unpermitted activities or from natural causes.

b. Damages to the permitted project or uses thereof as a result of current or future activities undertaken by or on behalf of the United States in the public interest.

c. Damages to persons, property, or to other permitted or unpermitted activities or structures caused by the activity authorized by this permit.

d. Design or construction deficiencies associated with the permitted work.

e. Damage claims associated with any future modification, suspension, or revocation of this permit.

4. Reliance on Applicant's Data. The determination of this office that issuance of this permit is not contrary to the public interest was made in reliance on the information you provided.

5. Reevaluation of Permit Decision. This office may reevaluate its decision on this permit at any time the circumstances warrant. Circumstances that could require a reevaluation include, but are not limited to, the following:

a. You fail to comply with the terms and conditions of this permit.

b. The information provided by you in support of your permit application proves to have been false, incomplete, or inaccurate (See 4 above).

c. Significant new information surfaces which this office did not consider in reaching the original public interest decision

Such a reevaluation may result in a determination that it is appropriate to use the suspension, modification, and revocation procedures contained in 33 CFR 325.7 or enforcement procedures such as those contained in 33 CFR 326.4 and 326.5. The referenced enforcement procedures provide for the issuance of an administrative order requiring you to comply with the terms and conditions of your permit and for the initiation of legal action where appropriate. You will be required to pay for any corrective measures ordered by this office, and if you fail to comply with such directive, this office may in certain situations (such as those specified in 33 CFR 209.170) accomplish the corrective measures by contract or otherwise and bill you for the cost.

6. Extensions. General condition 1 establishes a time limit for the completion of the activity authorized by this permit. Unless there are circumstances requiring either a prompt completion of the authorized activity or a reevaluation of the public interest decision, the Corps will normally give favorable consideration to a request for an extension of this time limit.

Your signature below, as permittee, indicates that you accept and agree to comply with the terms and conditions of Department of the Army Permit SAC-2019-01124.



(PERMITEE)
DESIREE FRAGOSO


May 25, 2020

(DATE)

Desiree Fragoso

PRINT NAME

This permit becomes effective when the Federal official, designated to act for the Secretary of the Army, has signed below.



Digitally signed by COLLER-SOCHA.ROBIN.DALE.122983387
8
Date: 2020.06.11 13:53:33 -04'00'

6/11/20

(DATE)

(DISTRICT ENGINEER)
RACHEL A. HONDERD, LTC
or their Designee
Travis G. Hughes
Chief, Regulatory Division

When the structures or work authorized by this permit are still in existence at the time the property is transferred, the terms and conditions of this permit will continue to be binding on the new owner(s) of the property. To validate the transfer of this permit and the associated liabilities associated with compliance with its terms and conditions, have the transferee sign and date below.

(TRANSFEREE) (PRINT NAME)

(DATE)

APPENDIX A
SPECIAL CONDITIONS FOR PERMIT SAC 2019-01124

- a. The permittee agrees to provide all contractors associated with construction of the authorized activity a copy of the permit and drawings. A copy of the permit must be available at the construction site at all times.
- b. The permittee shall submit a signed compliance certification to the Corps within 60 days following completion of the authorized work and any required mitigation. The certification will include:
 1. A copy of this permit.
 2. A statement that the authorized work was done in accordance with the Corps authorization, including any general or specific conditions.
 3. The signature of the permittee certifying the completion of the work.
- c. It is recognized that this structure is to be constructed on/or adjacent to an area subject to a prism and/or disposal easement held by the United States in perpetuity in conjunction with a Congressionally authorized project for the maintenance and improvement of the Atlantic Intracoastal Waterway (AIWW). This permit does not convey any property rights either in real estate or material or any exclusive use privileges; nor does it relinquish any right the United States has for the use of its easement or the maintenance and future widening or deepening of the AIWW pursuant to its easement rights.
- d. It is understood and agreed that if the District Commander determines this structure shall in any way in the future conflict with the improvement, operation, maintenance and widening or deepening of the AIWW, the owners themselves, their heirs, successors and assigns will remove said structure within 45 days from the date that written notice is given by the District Commander, and there shall be no entitlement to compensation from the United States for damage or injury.
- e. Conveyance of this permit applies only to the structure authorized and does not authorize the construction of any permanent structure or any structure suitable for habitation or any utility leading either to permanent structures suitable for habitation or to permanent structures within the bounds of areas on which the Corps of Engineers enjoys easement rights.
- f. The permittee agrees that no permanent structures, beyond those authorized by this document, will be placed on the prism easement or on any adjacent disposal easement without written approval of the District Commander.
- g. That the Secretary of the Army, representing the United States of America, hereby consents to the herein authorized facilities or structures to be located on or across easement lands vested in the United States of America for the construction and operation of the AIWW. The permittee shall not engage in any act which may interfere with or abridge the easement interests of the United States, except those specifically authorized herein.
- h. A survey completed by a registered land surveyor showing the proposed structure, including State Plane Coordinated (NAD 1983) for a minimum of two corners on each structure where it is closest to

the federal channel. The survey shall also identify the distance of the proposed structure from the edge of the federal channel.

- i. The permittee understands and agrees that, if future operations by the United States require the removal, relocation, or other alteration, of the structure or work herein authorized, or if, in the opinion of the Secretary of the Army or their authorized representative, said structure or work shall cause unreasonable obstruction to the free navigation of the navigable waters, the permittee will be required, upon due notice from the Corps of Engineers, to remove, relocate, or alter the structural work or obstructions caused thereby, without expense to the United States. No claim shall be made against the United States on account of any such removal or alteration.
- j. Use of the permitted activity must not interfere with the public's right to free navigation on all navigable waters of the U.S.
- k. Floating docks shall be located in areas of adequate depth to ensure that clearance between the float and the bottom is maintained at all times. In areas where the depth is not adequate to maintain clearance, floating docks shall be fitted with structures (i.e. float stops) that prevent the float from contacting the bottom.
- l. That the permittee shall incorporate Best Management Practices (BMPs) during construction to protect adjacent wetlands and Waters of the United States from sediment and erosion during construction. BMPs to be utilized, independently or in combination, may include but are not limited to; erosion control matting, mulch, silt screens, sediment tubes, and other devices. BMPs shall be maintained until the fill material is stabilized.
- m. That prior to the commencement of the placement of fill authorized by this permit, the permittee agrees to install a silt screen around the area of fill activity. The screen must be of sufficient depth to extend from the surface to the bottom sediments during all tidal cycles, and include absorbent material to catch oil, creosote, and flotsam, to minimize the migration of suspended particles, and contain turbidity. Further, the silt screen must have adequate positioning and anchoring devices to assure its performance and be adequately marked to insure safe navigation in the area. The bottom must be maintained to prevent its migration during various phases of tide and wave action. At 8:00 A.M. each morning and every four (4) hours thereafter until the completion of work that day, an inspection must be performed by the inspector on the silt screen to insure its integrity. If the screen is damaged, all fill activity must immediately cease until the silt screen is repaired or replaced. A log of these inspections must be maintained on site and ready for review by this office at any time. The silt screen must remain in place until the fill material is stabilized.
- n. That the permittee shall use only clean fill material obtained from an upland source.
- o. Prior to beginning the authorized work, the permittee must coordinate with the local NFIP flood plain manager and comply with FEMA requirements. A list of NFIP floodplain managers may be found at: <http://www.dnr.sc.gov/water/flood/index.html>.
- p. In order to ensure protection of any threatened or endangered species, and designated critical habitat that may be present in the project area during construction activities, the permittee will comply with the following:
 - 1. The permittee shall instruct all personnel associated with the project of the potential presence of and the need to avoid collisions with protected species, which may include but is not limited to West

Indian manatees, Atlantic sturgeon, shortnose sturgeon, sea turtles, blue whale, fin whale, humpback whale, North Atlantic right whale, sei whale and sperm whale.

2. The permittee shall advise all construction personnel that there are civil and criminal penalties for harming, harassing, or killing protected species, to include manatee(s), which are protected under the Marine Mammal Protection Act of 1972 and/or the Endangered Species Act of 1973.
3. Any siltation barriers used during the project shall be made of material in which protected species, to include manatee(s), cannot become entangled and must be properly secured, and regularly monitored to avoid protected species entrapment.
4. All vessels associated with the project shall operate at "no wake/idle" speeds at all times while in the construction area and while in water where the draft of the vessel provides less than a four-foot clearance from the bottom. All vessels will follow routes of deep water whenever possible.
5. If protected species, to include manatee(s), are seen within 100 yards of the active construction area all appropriate precautions shall be implemented to ensure protection of the protected species, to include manatee(s). These precautions shall include the operation of all moving equipment no closer than 50 feet to a protected species, to include manatee(s). Operation of any equipment closer than 50 feet to a protected species, to include manatee(s), shall necessitate immediate shutdown of that equipment. Activities will not resume until the protected species, to include manatee(s), has departed the project area of its own volition.
6. Incidents where any individuals of sea turtles, Atlantic sturgeon, shortnose sturgeon, blue whale, fin whale, humpback whale, North Atlantic right whale, sei whale and sperm whale listed by NOAA Fisheries under the Endangered Species Act appear to be injured or killed as a result of discharges of dredged or fill material into waters of the United States or structures or work in navigable waters of the United States authorized by this DA permit shall be reported to NOAA Fisheries, Office of Protected Species at (727) 824-5312, the SCDNR Hotline at 1-800-922-5431, and the Regulatory Office of the Charleston District of the U.S. Army Corps of Engineers at (843) 329-8044. The finder should leave the animal alone, make note of any circumstances likely causing the death or injury, note the location and number of individuals involved and, if possible, take photographs. Adult animals should not be disturbed unless circumstances arise where they are obviously injured or killed by discharge exposure, or some unnatural cause. The finder may be asked to carry out instructions provided by NOAA Fisheries, Office of Protected Resources, to collect specimens or take other measures to ensure that evidence intrinsic to the specimen is preserved.
7. The permittee understands and agrees that all in-water lines (rope, chain, and cable, including the lines to secure turbidity curtains) must be stiff, taut, and non-looping. Examples of such lines are heavy metal chains or heavy cables that do not readily loop and tangle. Flexible in-water lines, such as nylon rope or any lines that could loop or tangle, must be enclosed in a plastic or rubber sleeve/tube to add rigidity and prevent the line from looping and tangling. In all instances, no excess line is allowed in the water. Where appropriate, in water wires should be fitted with PVC sleeve from the surface to the bottom to prevent any potential scraping of the passing manatees.
8. The permittee understands and agrees that pilings will be installed using a water jet or vibratory hammer, to the maximum extent practicable. In the event standard pile driving (impact hammer) is

utilized, the permittee understands and agrees that a soft-strike procedure (three strikes at 40%-60% energy level once a minute for 3 minutes) must be conducted prior to beginning pile driving activities and after any pile driving interruptions of more than 30 minutes.

9. That the permittee understands and agrees that pile driving activities must be limited to 12 hours per day with a 12-hour rest period between pile driving activities to avoid potential cumulative noise impacts to Federally-listed Threatened and Endangered (T&E) species.

q. In order to ensure protection and reduce potential construction-related impacts to West Indian manatees that may enter the project area during construction activities performed outside the winter months, to discountable and insignificant levels, the permittee will comply with the following for all projects affecting the coastal waters of South Carolina:

1. The permittee shall instruct all personnel associated with the project of the potential presence of manatees and the need to avoid collisions with manatees. All construction personnel MUST monitor water-related activities for the presence of manatee(s) during May 1 - November 15. Construction personnel are requested to monitor outside of that timeframe as manatees may be in the area before or after the above dates.

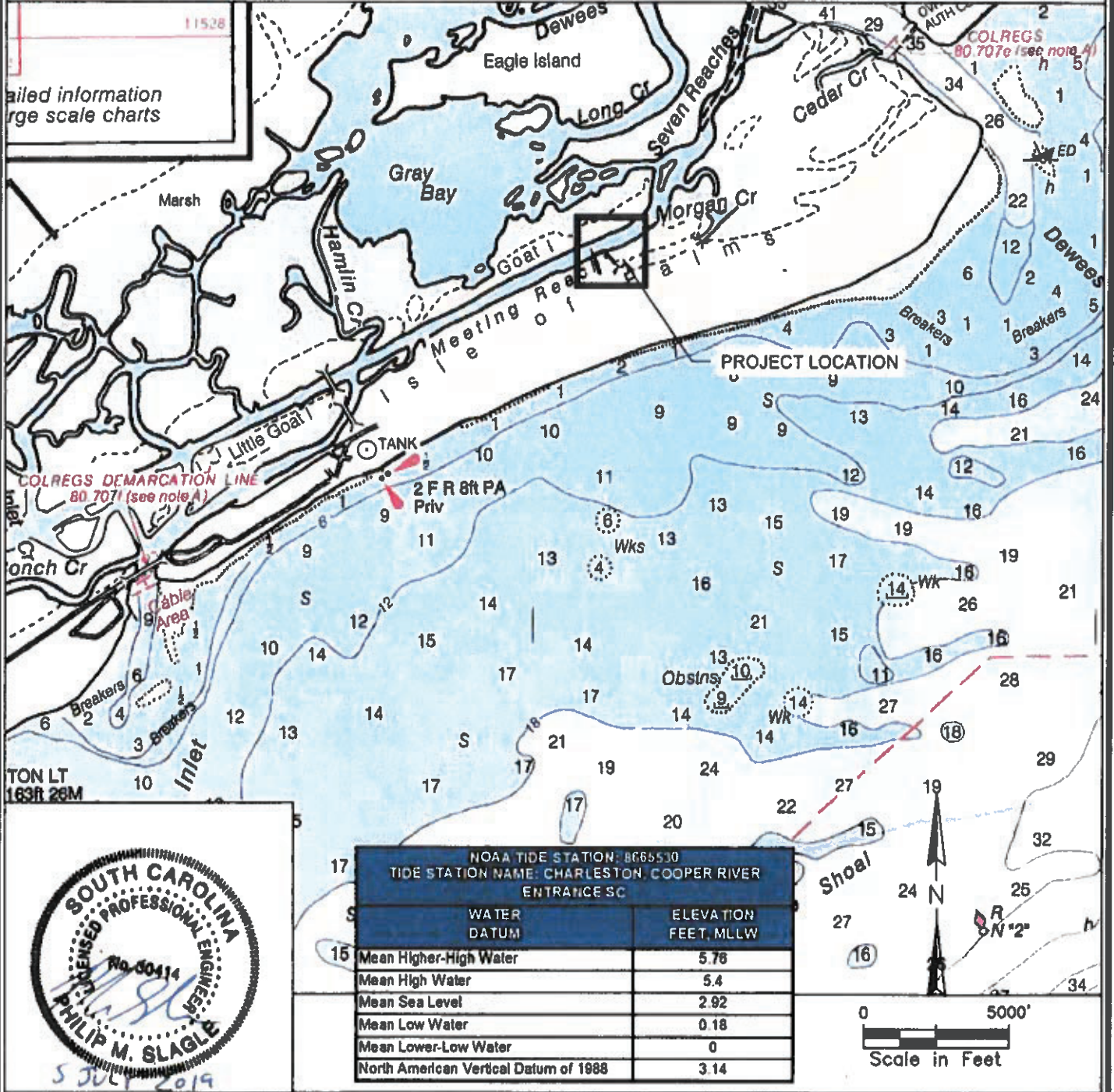
2. Any collision with and/or injury to a manatee shall be reported immediately to the U.S. Fish and Wildlife Service contacts: Melanie Olds, South Carolina Manatee Lead, Charleston Field Office, at 843-727-4707 ext. 205; or Terri Calleson, Manatee Recovery Coordinator, North Florida Field Office, at 904-731-3286.

FOR PERMITTING PURPOSES ONLY
 "NOT FOR CONSTRUCTION"

**PERMITTED
 PLANS**

SAC-2019-01124
 IOP Marina
 Sheet 1 of 13
 January 2020

**ISLE OF PALMS MARINA
 REDEVELOPMENT**



NOAA TIDE STATION: 8665530 TIDE STATION NAME: CHARLESTON, COOPER RIVER ENTRANCE SC	
WATER DATUM	ELEVATION FEET, MLLW
Mean Higher-High Water	5.78
Mean High Water	5.4
Mean Sea Level	2.92
Mean Low Water	0.18
Mean Lower-Low Water	0
North American Vertical Datum of 1988	3.14



PROJECT: Isle of Palms Marina
 Redevelopment
WATERBODY: Morgan Creek
COUNTY: Charleston
STATE: South Carolina
LATITUDE: 32°48'20.90"N
LONGITUDE: 79°45'36.35"W

**COVER PAGE &
 LOCATION MAP**
 Requested by: City of Isle of Palms
 Project Address: 50 41st Avenue, Isle of Palms
 Parcel ID: 571080007



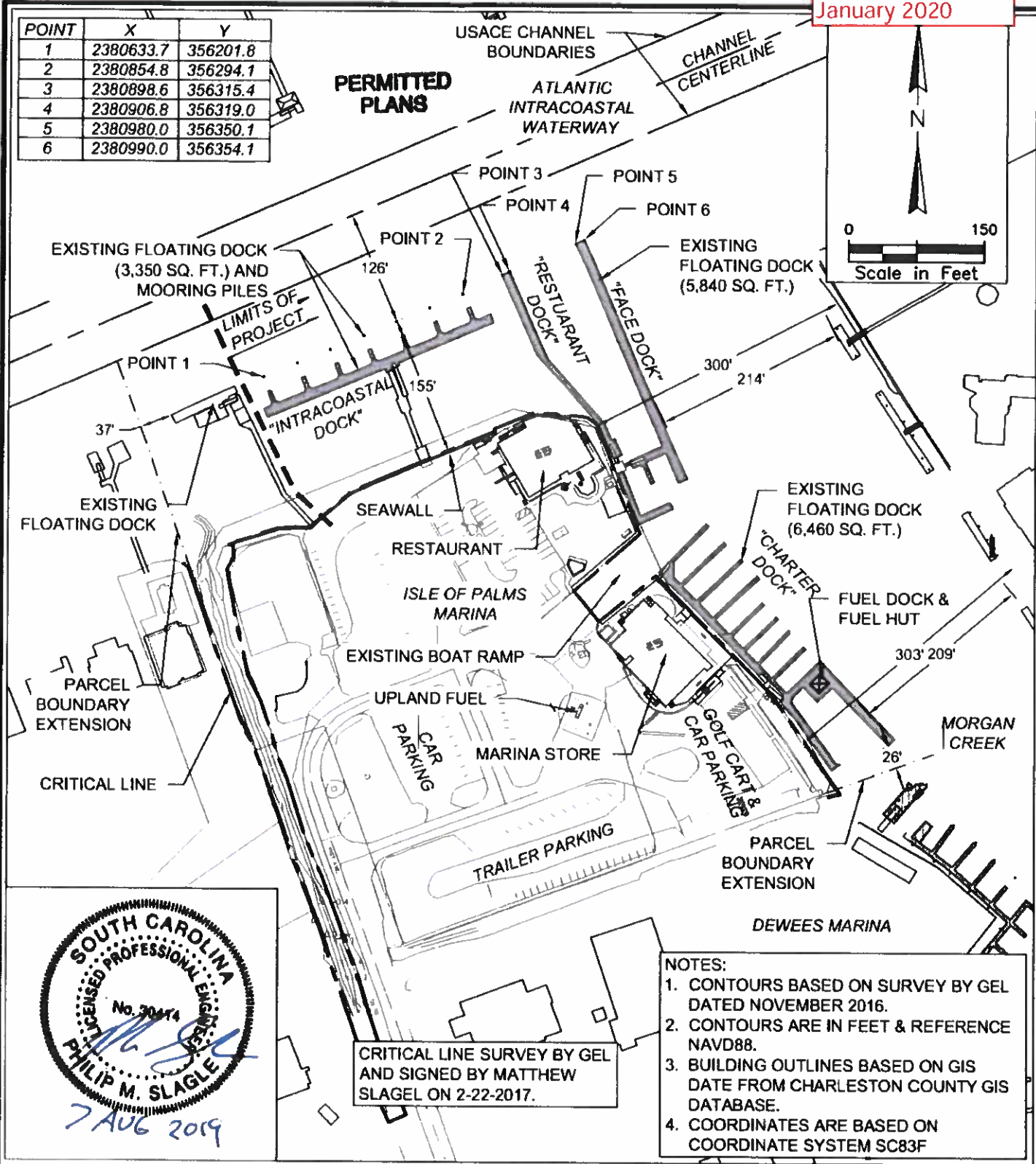
July 3, 2019
 SHEET 1

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FOR PERMITTING PURPOSES ONLY
 "NOT FOR CONSTRUCTION"

SAC-2019-01124
 IOP Marina
 Sheet 2 of 13
 January 2020

POINT	X	Y
1	2380633.7	356201.8
2	2380854.8	356294.1
3	2380898.6	356315.4
4	2380906.8	356319.0
5	2380980.0	356350.1
6	2380990.0	356354.1



CRITICAL LINE SURVEY BY GEL AND SIGNED BY MATTHEW SLAGEL ON 2-22-2017.

- NOTES:
1. CONTOURS BASED ON SURVEY BY GEL DATED NOVEMBER 2016.
 2. CONTOURS ARE IN FEET & REFERENCE NAVD88.
 3. BUILDING OUTLINES BASED ON GIS DATE FROM CHARLESTON COUNTY GIS DATABASE.
 4. COORDINATES ARE BASED ON COORDINATE SYSTEM SC83F

PROJECT: Isle of Palms Marina
 Redevelopment
 WATERBODY: Morgan Creek
 COUNTY: Charleston
 STATE: South Carolina
 LATITUDE: 32°48'20.90"N
 LONGITUDE: 79°45'36.35"W

EXISTING CONDITIONS
 Requested by: City of Isle of Palms
 Project Address: 50 41st Avenue, Isle of Palms
 Parcel ID: 5710800007

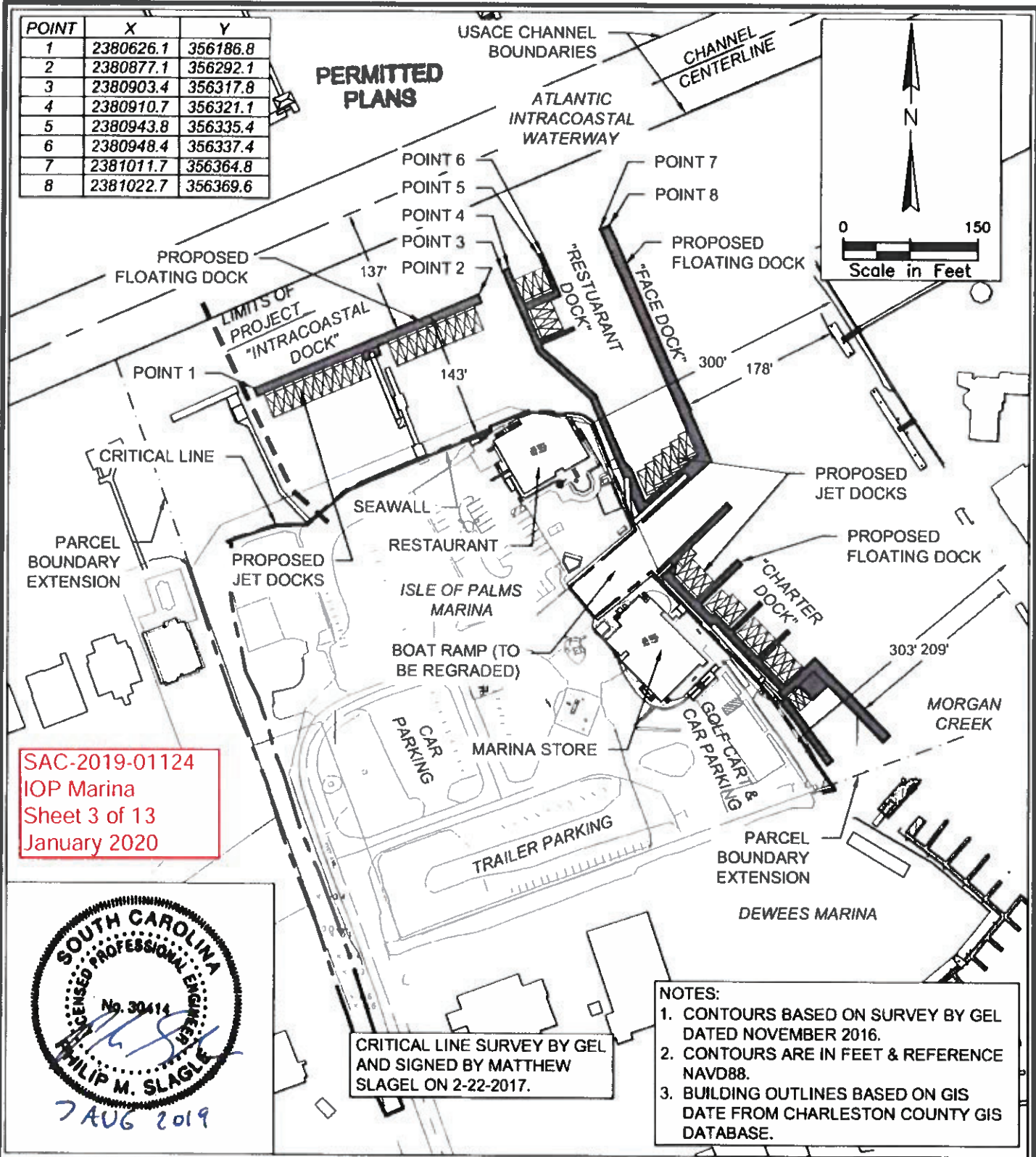
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 Revised August 7, 2019
 SHEET 2

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 NOTE: THESE DRAWINGS AND DESIGNS ARE STRICTLY CONFIDENTIAL AND PROTECTED BY INTERNATIONAL COPYRIGHT LAW. DETAILS MUST NOT BE DISCLOSED, REPRODUCED OR COMMUNICATED TO A 3rd PARTY IN ANY FORM OR MANNER WITHOUT THE PRIOR WRITTEN APPROVAL OF ATM TECHNOLOGY & MANAGEMENT.

FOR PERMITTING PURPOSES ONLY
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POINT	X	Y
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3	2380903.4	356317.8
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5	2380943.8	356335.4
6	2380948.4	356337.4
7	2381011.7	356364.8
8	2381022.7	356369.6

PERMITTED PLANS



SAC-2019-01124
 IOP Marina
 Sheet 3 of 13
 January 2020



CRITICAL LINE SURVEY BY GEL
 AND SIGNED BY MATTHEW
 SLAGEL ON 2-22-2017.

- NOTES:**
1. CONTOURS BASED ON SURVEY BY GEL DATED NOVEMBER 2016.
 2. CONTOURS ARE IN FEET & REFERENCE NAVD88.
 3. BUILDING OUTLINES BASED ON GIS DATE FROM CHARLESTON COUNTY GIS DATABASE.

PROJECT: Isle of Palms Marina
 Redevelopment
WATERBODY: Morgan Creek
COUNTY: Charleston
STATE: South Carolina
LATITUDE: 32°48'20.90"N
LONGITUDE: 79°45'36.35"W

PROPOSED IMPROVEMENTS
 Requested by: City of Isle of Palms
 Project Address: 50 41st Avenue, Isle of Palms
 Parcel ID: 5710800007



Revised August 7, 2019
 SHEET 3

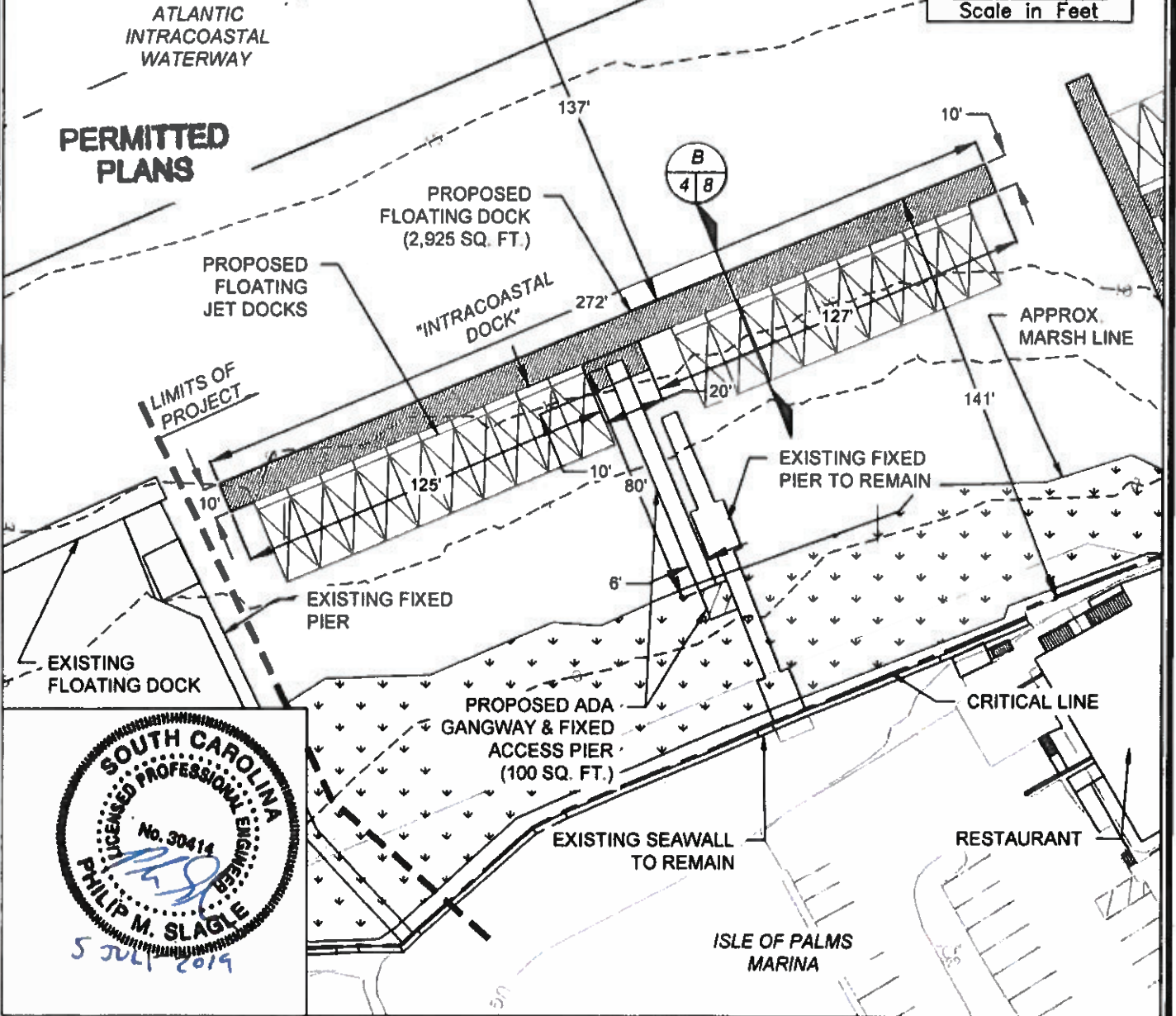
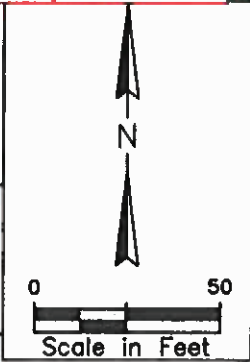
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SAC-2019-01124
 IOP Marina
 Sheet 4 of 13
 January 2020

- NOTES:
1. CONTOURS BASED ON SURVEY BY GEL DATED NOVEMBER 2016.
 2. CONTOURS ARE IN FEET & REFERENCE NAVD88.
 3. BUILDING OUTLINES BASED ON GIS DATE FROM CHARLESTON COUNTY GIS DATABASE.

CRITICAL LINE SURVEY BY GEL AND SIGNED BY MATTHEW SLAGEL ON 2-22-2017.



PROJECT:	Isle of Palms Marina Redevelopment
WATERBODY:	Morgan Creek
COUNTY:	Charleston
STATE:	South Carolina
LATITUDE:	32°48'20.90"N
LONGITUDE:	79°45'36.35"W

PROPOSED IMPROVEMENTS INTRACOASTAL DOCK	
Requested by: City of Isle of Palms	
Project Address: 50 41st Avenue, Isle of Palms	
Parcel ID: 571080007	

ATM ENGINEERING

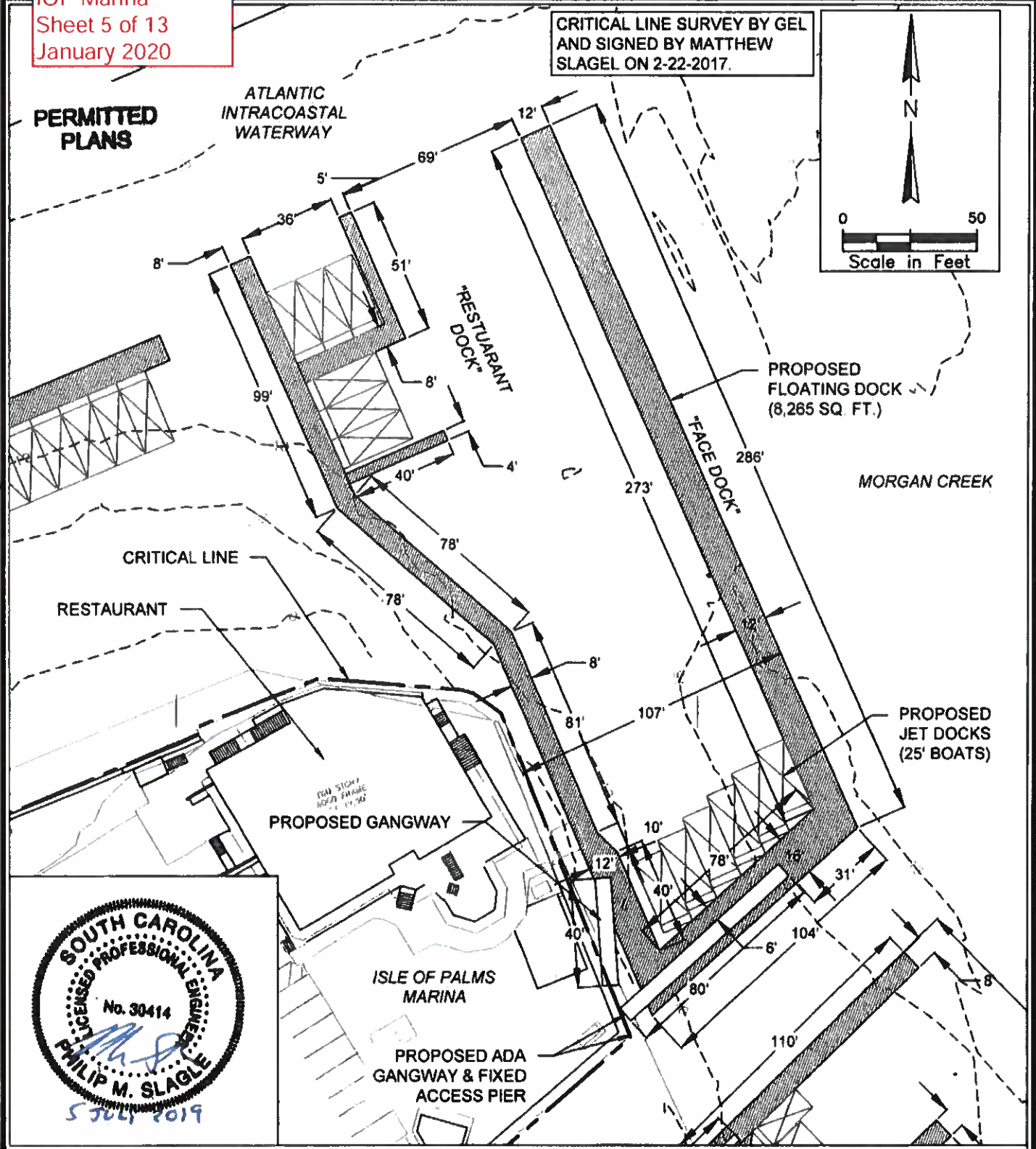
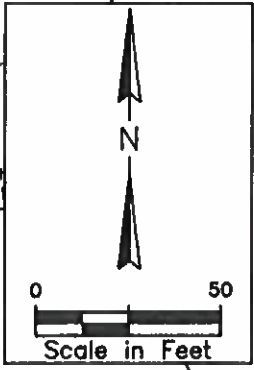
July 3, 2019
SHEET 4

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 "NOT FOR CONSTRUCTION"

SAC-2019-01124
 IOP Marina
 Sheet 5 of 13
 January 2020

CRITICAL LINE SURVEY BY GEL
 AND SIGNED BY MATTHEW
 SLAGEL ON 2-22-2017.



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 APPLIED TECHNOLOGY & MANAGEMENT

PROJECT:	Isle of Palms Marina Redevelopment
WATERBODY:	Morgan Creek
COUNTY:	Charleston
STATE:	South Carolina
LATITUDE:	32°48'20.90"N
LONGITUDE:	79°45'36.35"W

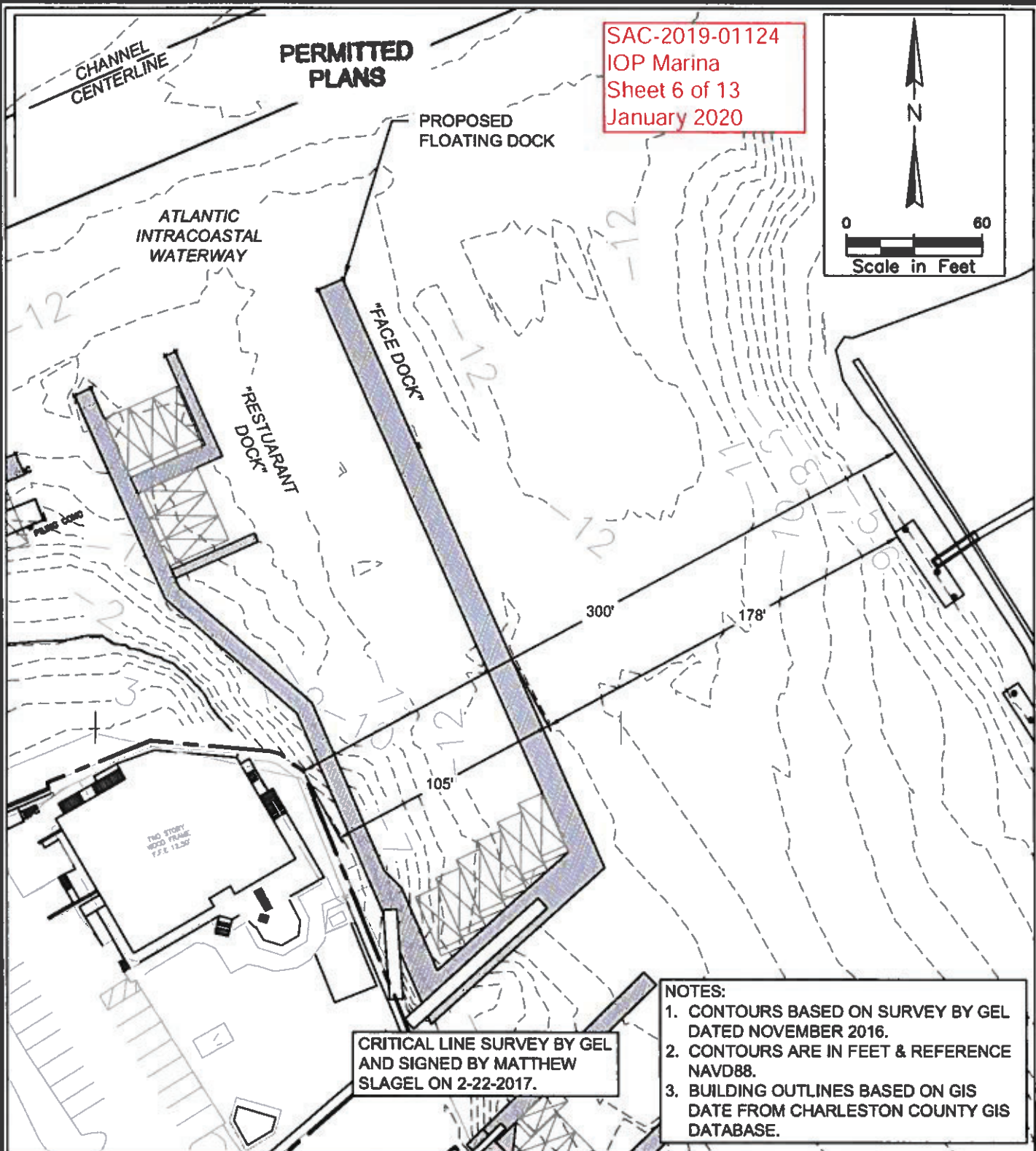
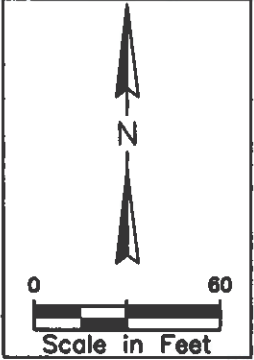
PROPOSED IMPROVEMENTS MORGAN CREEK DOCK 1
Requested by: City of Isle of Palms
Project Address: 50 41st Avenue, Isle of Palms
Parcel ID: 5710800007

ATM ENGINEERING CONSULTANTS, P.C.

July 3, 2019
 SHEET 5

FOR PERMITTING PURPOSES ONLY
 "NOT FOR CONSTRUCTION"

SAC-2019-01124
 IOP Marina
 Sheet 6 of 13
 January 2020



CRITICAL LINE SURVEY BY GEL
 AND SIGNED BY MATTHEW
 SLAGEL ON 2-22-2017.

- NOTES:
1. CONTOURS BASED ON SURVEY BY GEL DATED NOVEMBER 2016.
 2. CONTOURS ARE IN FEET & REFERENCE NAVD88.
 3. BUILDING OUTLINES BASED ON GIS DATE FROM CHARLESTON COUNTY GIS DATABASE.

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PROJECT: Isle of Palms Marina
 Redevelopment
 WATERBODY: Morgan Creek
 COUNTY: Charleston
 STATE: South Carolina
 LATITUDE: 32°48'20.90"N
 LONGITUDE: 79°45'36.35"W

PROPOSED
 IMPROVEMENTS
 Requested by: City of Isle of Palms
 Project Address: 50 41st Avenue, Isle of Palms
 Parcel ID: 571080007

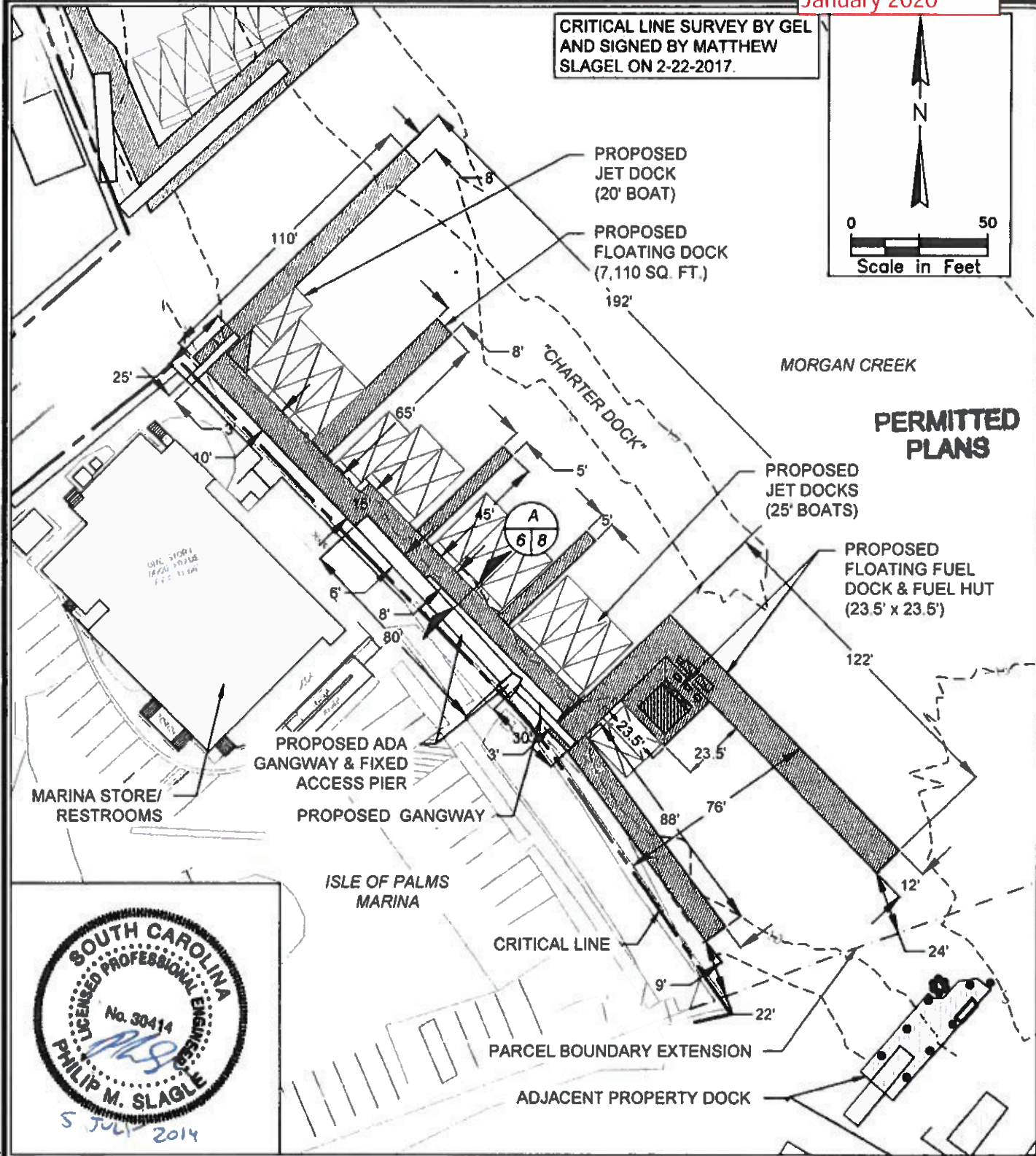
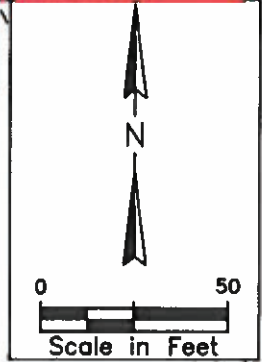


April 22, 2020
 SHEET 3A

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 "NOT FOR CONSTRUCTION"

SAC-2019-01124
 IOP Marina
 Sheet 7 of 13
 January 2020

CRITICAL LINE SURVEY BY GEL
 AND SIGNED BY MATTHEW
 SLAGEL ON 2-22-2017.



**PERMITTED
 PLANS**



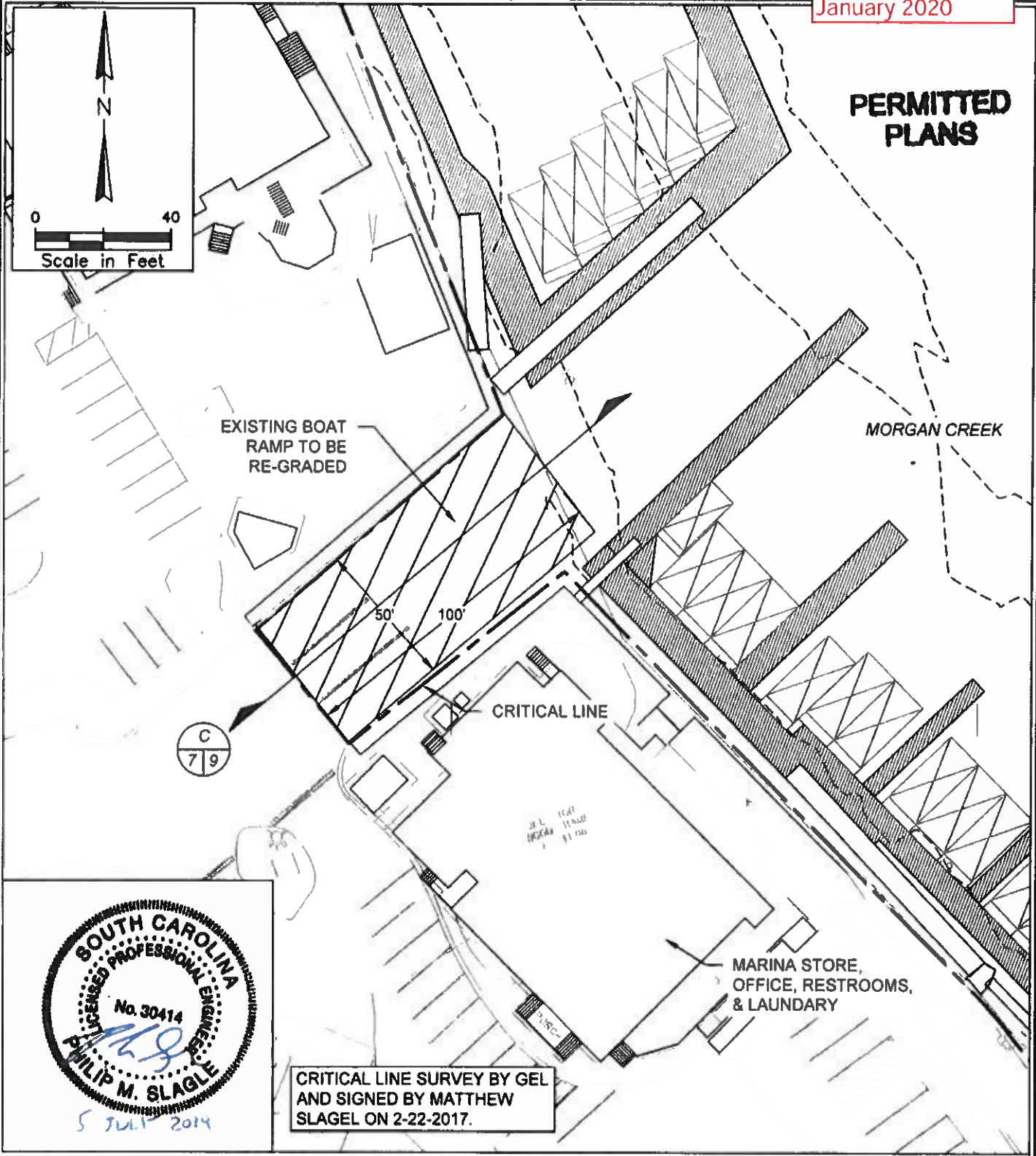
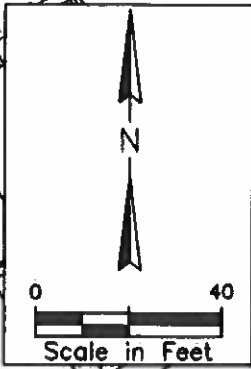
PROJECT:	Isle of Palms Marina Redevelopment	<p>PROPOSED IMPROVEMENTS MORGAN CREEK DOCK 2</p> <p>Requested by: City of Isle of Palms</p> <p>Project Address: 50 41st Avenue, Isle of Palms</p> <p>Parcel ID: 571080007</p>	
WATERBODY:	Morgan Creek		
COUNTY:	Charleston		
STATE:	South Carolina		
LATITUDE:	32°48'20.90"N		
LONGITUDE:	79°45'36.35"W	July 3, 2019 SHEET 6	

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 APPLIED TECHNOLOGY & MANAGEMENT.

FOR PERMITTING PURPOSES ONLY
 "NOT FOR CONSTRUCTION"

SAC-2019-01124
 IOP Marina
 Sheet 8 of 13
 January 2020

**PERMITTED
 PLANS**



CRITICAL LINE SURVEY BY GEL
 AND SIGNED BY MATTHEW
 SLAGEL ON 2-22-2017.

PROJECT: Isle of Palms Marina
 Redevelopment
 WATERBODY: Morgan Creek
 COUNTY: Charleston
 STATE: South Carolina
 LATITUDE: 32°48'20.90"N
 LONGITUDE: 79°45'36.35"W

**PROPOSED IMPROVEMENTS
 BOAT RAMP**

Requested by: City of Isle of Palms

Project Address: 50 41st Avenue, Isle of Palms

Parcel ID: 571080007



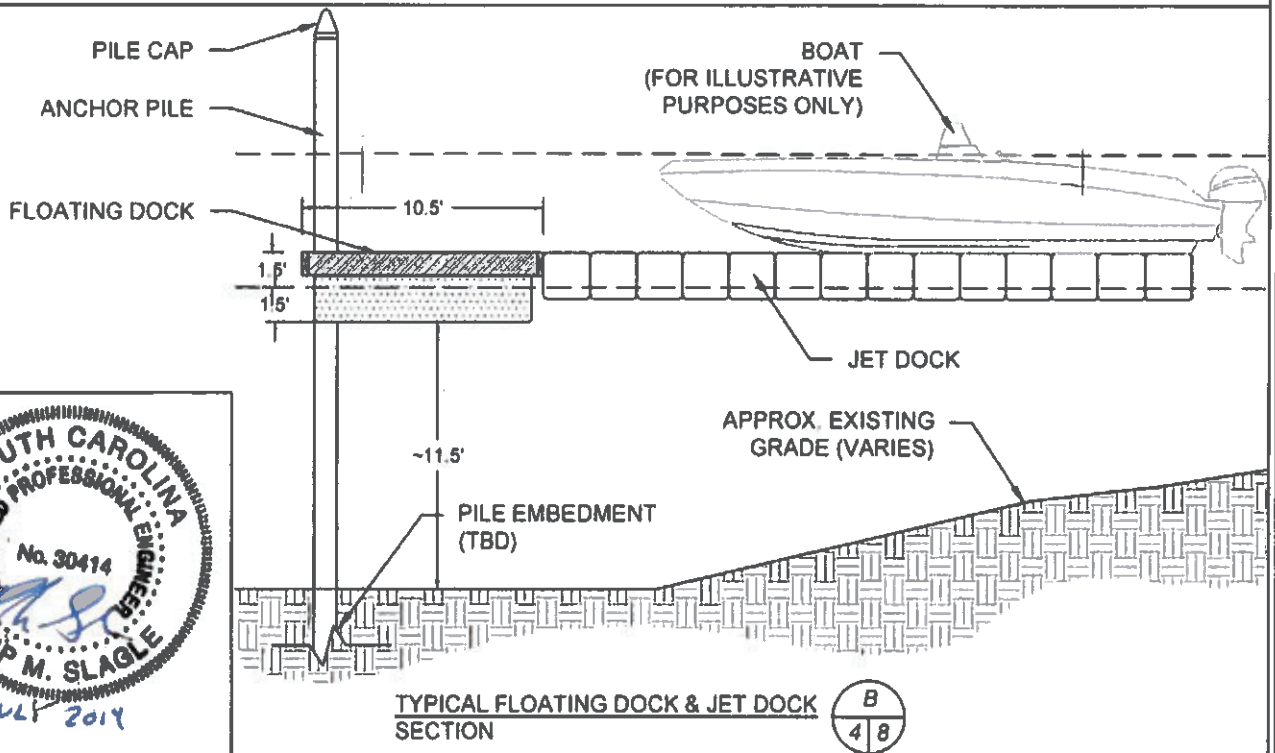
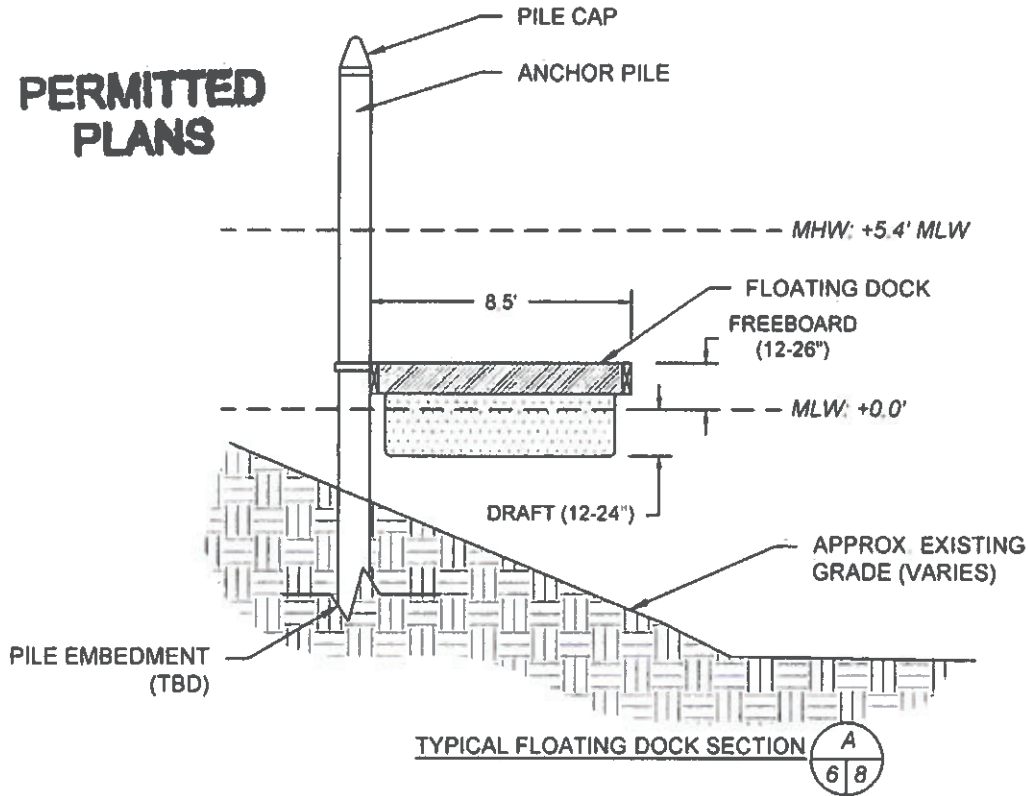
July 3, 2019
 SHEET 7

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FOR PERMITTING PURPOSES ONLY
 "NOT FOR CONSTRUCTION"

SAC-2019-01124
 IOP Marina
 Sheet 9 of 13
 January 2020

**PERMITTED
 PLANS**



PROJECT: Isle of Palms Marina
 Redevelopment
 WATERBODY: Morgan Creek
 COUNTY: Charleston
 STATE: South Carolina
 LATITUDE: 32°48'20.90"N
 LONGITUDE: 79°45'36.35"W

**TYPICAL DOCK
 SECTIONS**

Requested by: City of Isle of Palms

Project Address: 50 41st Avenue, Isle of Palms

Parcel ID: 5710800007



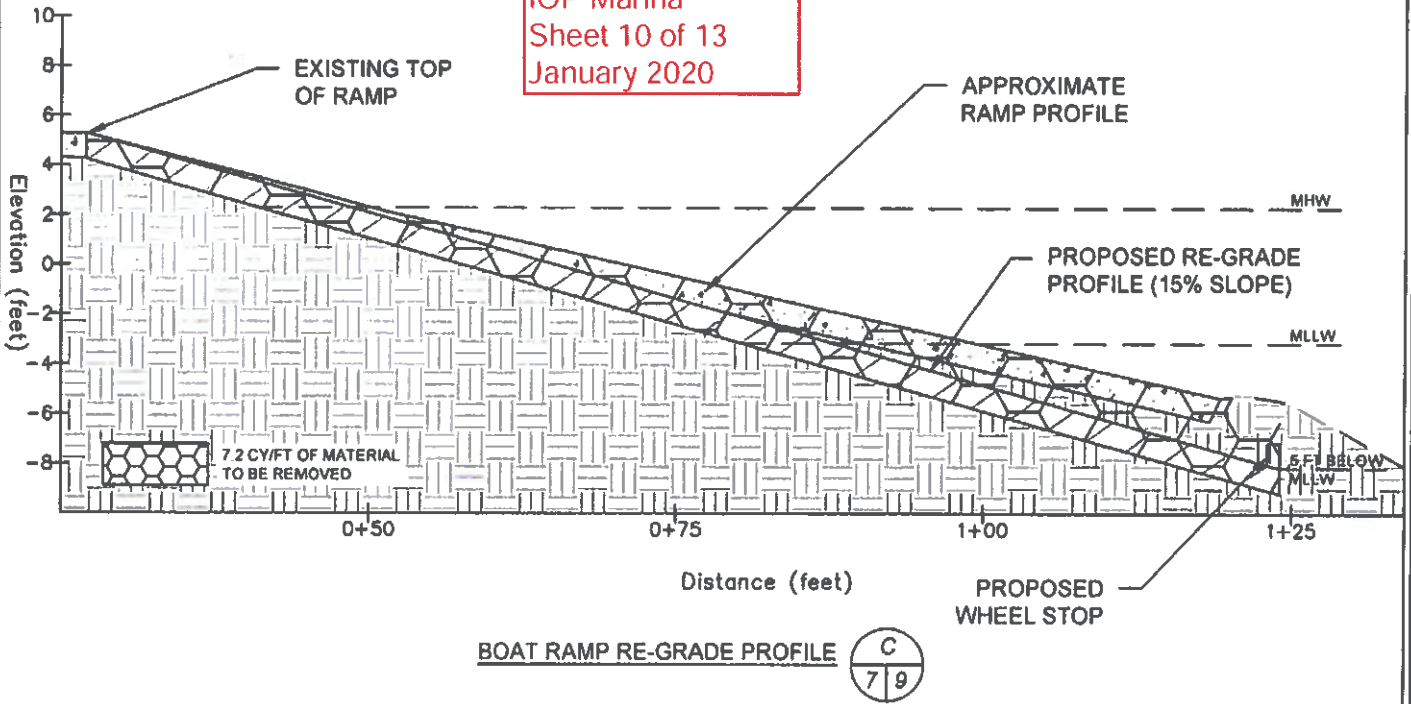
July 3, 2019
 SHEET 8

C:\projects\19-0287 IOP Marina Permitting & Design\DWG\perm\plan\19-0287-IOP Marina_perm\plans.dwg 8/6/2019
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FOR PERMITTING PURPOSES ONLY
 "NOT FOR CONSTRUCTION"

**PERMITTED
 PLANS**

SAC-2019-01124
 IOP Marina
 Sheet 10 of 13
 January 2020



PROJECT: Isle of Palms Marina Redevelopment
 WATERBODY: Morgan Creek
 COUNTY: Charleston
 STATE: South Carolina
 LATITUDE: 32°48'20.90"N
 LONGITUDE: 79°45'36.35"W

**TYPICAL RAMP
 SECTION**

Requested by: City of Isle of Palms

Project Address: 50 41st Avenue, Isle of Palms

Parcel ID: 5710800007

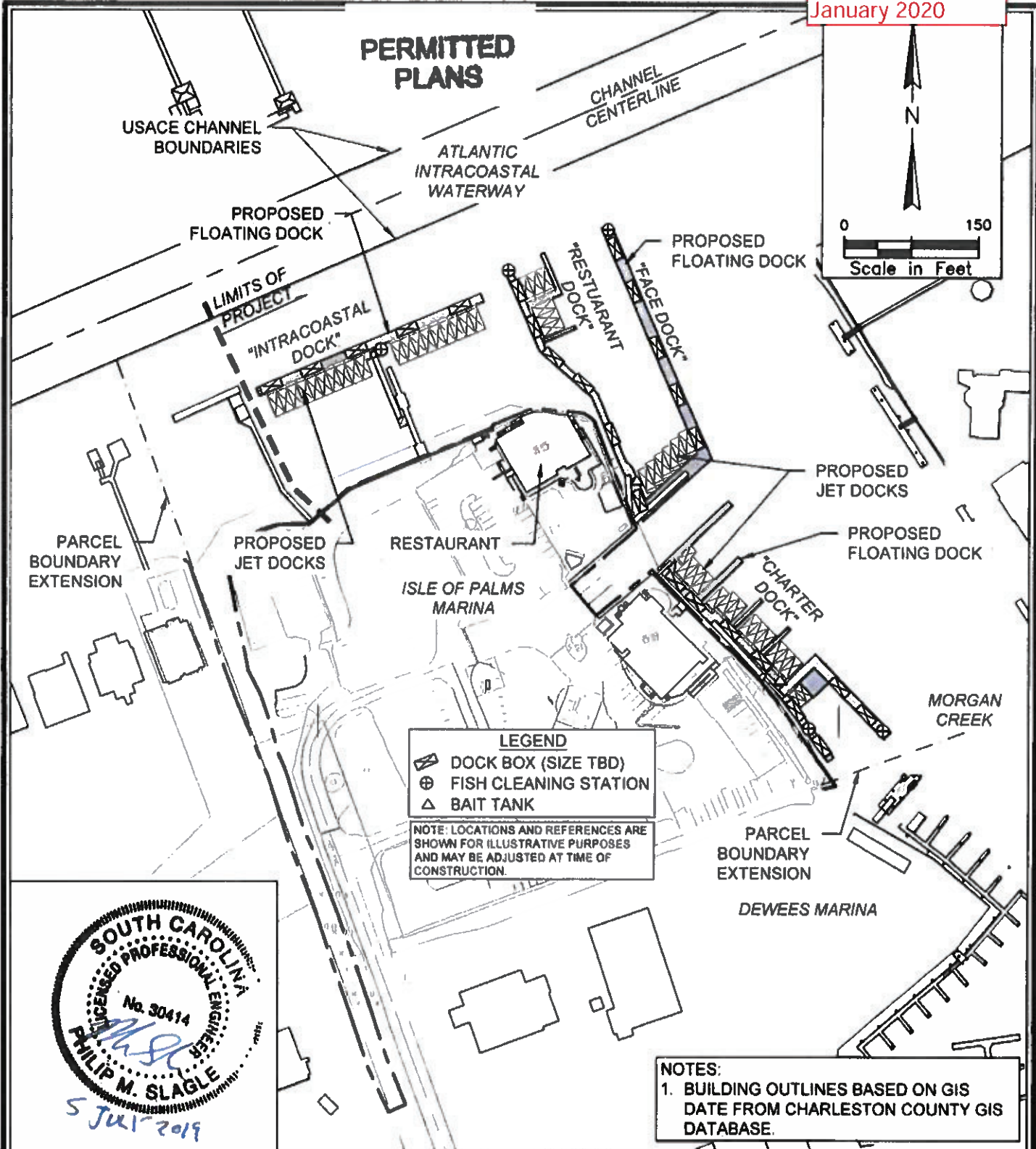


July 3, 2019
 SHEET 9

O:\Projects\18-3287 IOP Marina Permitting & Design\DWG_Permitting\18-3287-IOP Marina_Permitting.dwg 9/22/19
 NOTE: THESE DRAWINGS AND DESIGN ARE STRICTLY CONFIDENTIAL AND PROTECTED BY INTERNATIONAL COPYRIGHT LAW. DETAILS MUST NOT BE DISCLOSED, REPRODUCED OR COMMUNICATED TO A 3RD PARTY IN ANY FORM OR MANNER WITHOUT THE PRIOR WRITTEN APPROVAL OF
 APPLIED TECHNOLOGY & MANAGEMENT

FOR PERMITTING PURPOSES ONLY
 "NOT FOR CONSTRUCTION"

SAC-2019-01124
 IOP Marina
 Sheet 11 of 13
 January 2020

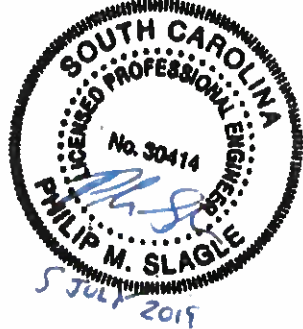
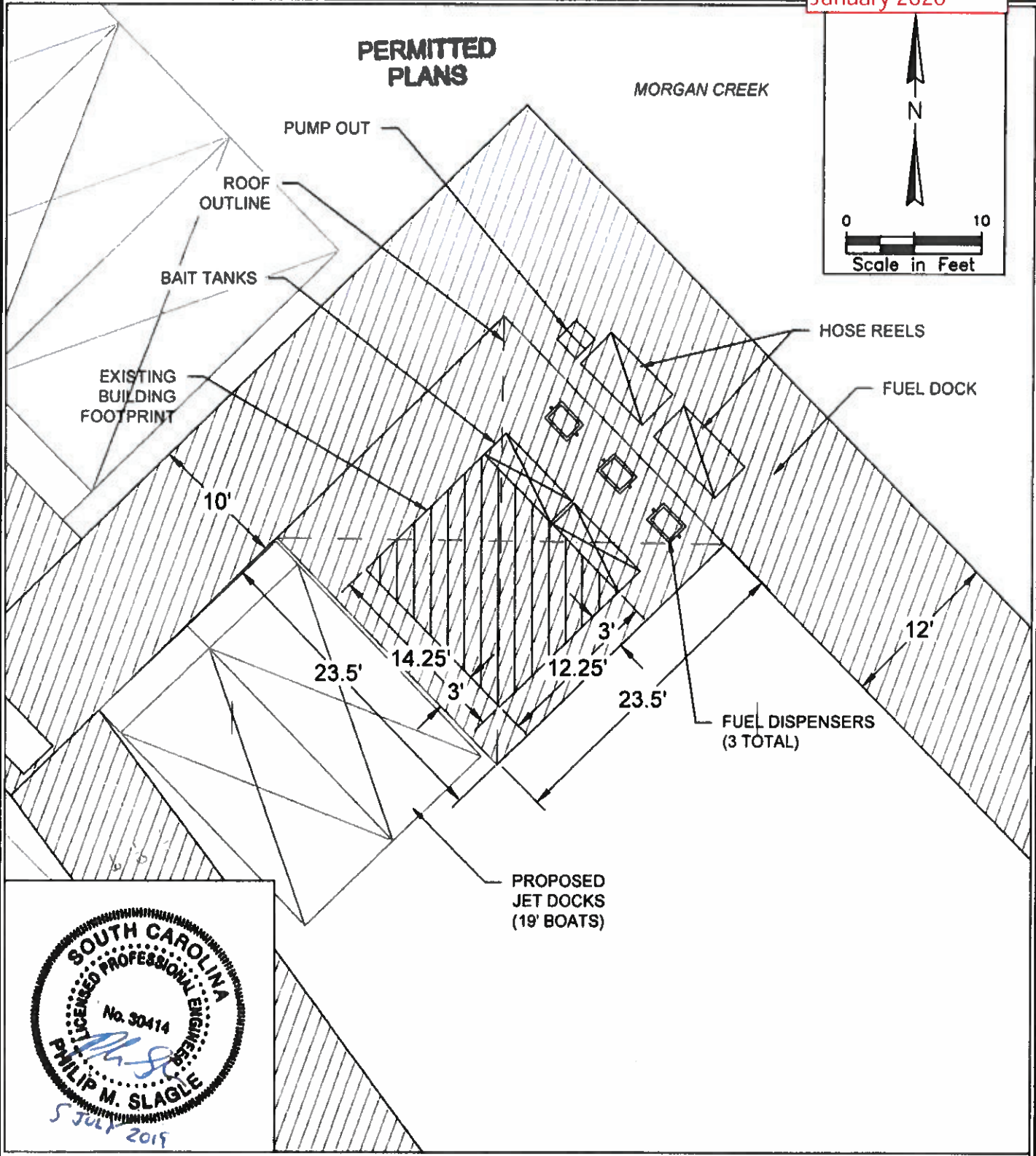
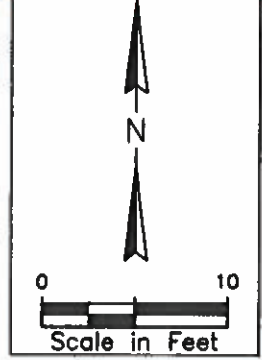


PROJECT: Isle of Palms Marina Redevelopment WATERBODY: Morgan Creek COUNTY: Charleston STATE: South Carolina LATITUDE: 32°48'20.90"N LONGITUDE: 79°45'36.35"W	PROPOSED DOCK ACCESSORIES		
	Requested by: City of Isle of Palms		July 3, 2019 SHEET 10
	Project Address: 50 41st Avenue, Isle of Palms		
	Parcel ID: 571080007		

C:\Projects\18-3287 IOP Marina Permitting & Design\DWG_Permit\18-3287-IOP Marina_Permit.dwg 10 8/21/19
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SAC-2019-01124
 IOP Marina
 Sheet 12 of 13
 January 2020



PROJECT:	Isle of Palms Marina Redevelopment
WATERBODY:	Morgan Creek
COUNTY:	Charleston
STATE:	South Carolina
LATITUDE:	32°48'20.90"N
LONGITUDE:	79°45'36.35"W

PROPOSED IMPROVEMENTS FUEL HUT	
Requested by: City of Isle of Palms	
Project Address: 50 41st Avenue, Isle of Palms	
Parcel ID: 571080007	



July 3, 2019
 SHEET 11

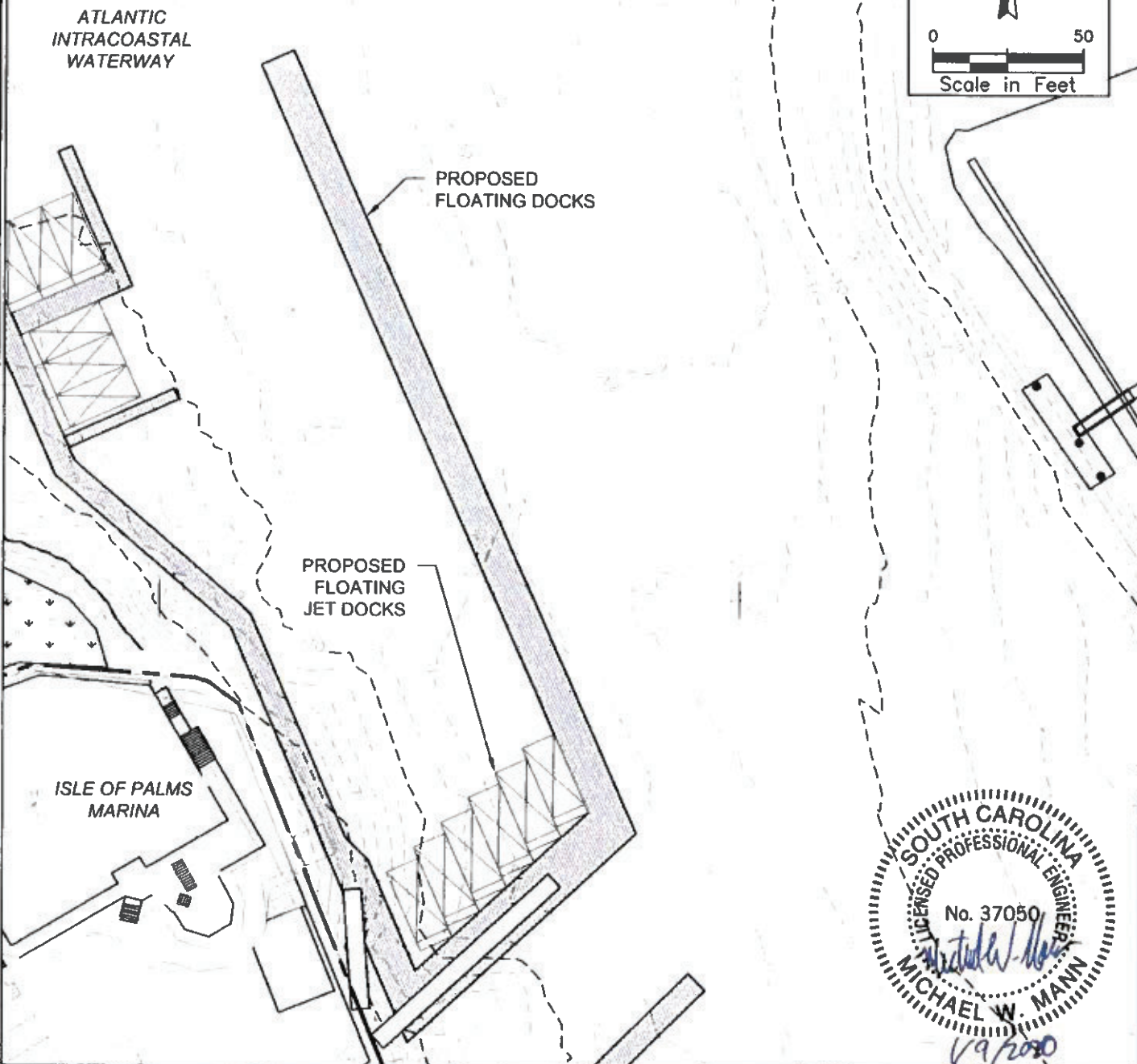
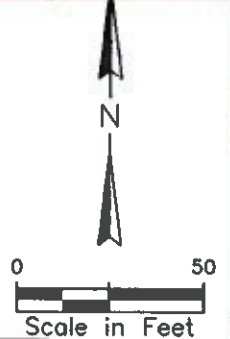
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 NOTE: THESE DRAWINGS AND DESIGNS ARE STRICTLY CONFIDENTIAL AND PROTECTED BY INTERNATIONAL COPYRIGHT LAW. DETAILS MUST NOT BE DISCLOSED, REPRODUCED OR COMMUNICATED TO A 3rd PARTY IN ANY FORM OR MANNER WITHOUT THE PRIOR WRITTEN APPROVAL OF APPLIED TECHNOLOGY & MANAGEMENT.

FOR PERMITTING PURPOSES ONLY
 "NOT FOR CONSTRUCTION"

SAC-2019-01124
 IOP Marina
 Sheet 13 of 13
 January 2020

- NOTES:
1. CONTOURS BASED ON SURVEY BY GEL DATED NOVEMBER 2016.
 2. CONTOURS ARE IN FEET & REFERENCE MEAN LOW WATER.
 3. BUILDING OUTLINES BASED ON GIS DATE FROM CHARLESTON COUNTY GIS DATABASE.

PERMITTED
 PLANS



O:\Projects\18-3287 IOP Marina Permitting & Design\DWG - permits\18-3287-IOP Marina permits\18-3287-13.dwg 13 1/9/20
 NOTE: THESE DRAWINGS AND DESIGNS ARE STRICTLY CONFIDENTIAL AND PROTECTED BY INTERNATIONAL COPYRIGHT LAW. DETAILS MUST NOT BE DISCLOSED, REPRODUCED OR COMMUNICATED TO A 3rd PARTY IN ANY FORM OR MANNER WITHOUT THE PRIOR WRITTEN APPROVAL OF ATM APPLIED TECHNOLOGY & MANAGEMENT.

PROJECT:	Isle of Palms Marina Redevelopment
WATERBODY:	Morgan Creek
COUNTY:	Charleston
STATE:	South Carolina
LATITUDE:	32°48'20.90"N
LONGITUDE:	79°45'36.35"W

PROPOSED IMPROVEMENTS MORGAN CREEK DOCK 1
Requested by: City of Isle of Palms
Project Address: 50 41st Avenue, Isle of Palms
Parcel ID: 5710800007



January 9, 2020
 SHEET 12



January 13, 2020

City of Isle of Palms
c/o Desiree Fragoso,
1207 Palm Blvd
Isle of Palms, SC29451

Re: OCRM01959

Dear Desiree Fragoso, City of Isle of Palms:

The Office of Ocean and Coastal Resource Management (the Department) has reviewed your application to modify an existing marina at the end of 41st Ave, Isle of Palms, Charleston County, South Carolina and has issued a permit for this work. You should carefully read the description of the authorized project and special conditions that have been placed on the permit, as these conditions may modify the permitted activity. In addition, there are a series of general conditions that should be reviewed. The original and one photocopy of the permit, as issued, are enclosed. After carefully reading the permit, if you wish to accept the permit as issued, sign and date in the signature block entitled "PERMITTEE" on the original version of the permit and return it to this Department. **Keep the photocopy for your records.**

PLEASE READ CAREFULLY: You are required to sign and return the original version of your permit to this Department. If this permit is not signed and returned within thirty (30) days of issuance, **OR** appealed within 15 days as described on the enclosed "Guide to Board Review", the Department reserves the right to cancel this permit. Please carefully review the enclosed "Guide to Board Review" for information and deadlines for appealing this permit.

We have also enclosed a "request for a construction placard" card. You must send in this card before the time you wish to start construction. At that time a construction placard will be sent to you to post at the construction site.

PLEASE NOTE: You are not authorized to commence work under the permit until we have received the original version of the entire permit signed and accepted by you, and a construction placard has been issued and posted at the construction site. The receipt of this permit does not relieve you of the responsibility of acquiring any other federal or local permits that may be required. Please return the signed permit to the following address:

Office of Ocean and Coastal Resource Management
1362 McMillan Ave, Suite 400
Charleston, SC29405

Sincerely,

A handwritten signature in black ink that reads "Josh Hoke".

Joshua D Hoke
Project Manager
Critical Area Permitting Section

Enclosure

cc: Mr. Blair Williams, Critical Area Permitting Section Manager

**SOUTH CAROLINA DEPARTMENT OF HEALTH AND ENVIRONMENTAL CONTROL
OFFICE OF OCEAN AND COASTAL RESOURCE MANAGEMENT**

CRITICAL AREA PERMIT & WATER QUALITY CERTIFICATION

Permittee(s): City of Isle of Palms
Permit Number(s): OCRM01959
Date of Issuance: January 13, 2020
Expiration Date: January 13, 2025
Location: On and adjacent to Morgan Creek at end of 41st Ave, Isle of Palms
Charleston County, South Carolina (TMS#:571-08-00-007)

This permit/certification is issued under the provisions of 25A S.C. Code Ann. Regs. 61-101 (Supp. 2005), *et seq.*, and 23A S.C. Code Ann. Regs. 30-1 through 30-18 (Supp. 2005). Additionally, as required by R.61-101, Department staff have reviewed plans for this project and determined there is a reasonable assurance the project will be conducted in a manner consistent with Certification requirements of Section 401 of the Clean Water Act. We also certify that this project, subject to the indicated conditions, is consistent with applicable provisions of Section 303 of the Clean Water Act, as amended, that there are no applicable effluent limitations under Sections 301(b) and 302, and that there are no applicable standards under Sections 306 and 307.

This permit contains required certification pursuant to Section 401 of the Clean Water Act. PLEASE CAREFULLY READ THE ENCLOSED "GUIDE TO BOARD REVIEW."

Please carefully read the project description and any special conditions that may appear on this permit/certification as they will affect the work that is allowed and may modify the work from that shown on the submitted plans. All special conditions attached to the permit will take precedent over submitted plans. If there are no special conditions, then the work is authorized as described in the project description and as modified by general conditions. The general conditions are also a part of this permit/certification and should be read in their entirety. The S. C. Contractor's Licensing Act of 1999, enacted as Section 40-11-5 through 430, requires that all construction with a total cost of \$5,000 or more be performed by a licensed contractor with a valid contractor's license for marine class construction, except for construction performed by a private landowner for strictly private purposes. Your signature on and acceptance of this permit denotes your understanding of the stated law regarding use of licensed contractors. **All listed special and general conditions will remain in effect for the life of the project if work commences during the life of the permit. This applies to permittee, future property owners, or permit assignees.**

DESCRIPTION OF THE PROJECT, AS AUTHORIZED

The plans submitted by you, attached hereto, show the work consists the demolition and modification /replacement of the floating dock system, associated marina utilities, and boat ramp at the Isle of Palms Marina. The existing fuel dock will be widened from 10.5' to 12', the marina fuel hut will be replaced with an enclosure of the same dimension. All sides of the hut will be accessible with a minimum distance of 4' from the hut walls to the edge of the floating dock. The finger piers behind the marina store will be so that two vessels will be accommodated between finger piers. The finger piers closest to the boat ramp will be widened from 4' to 8', an 80' ADA compliant gangway will be integrated in to the dock system behind the marina store, leading to a 104' floating dock. The outer dock will be widened from 10.5' to 12'. The inner

shore parallel floating dock will be widened. The floating dock on the intercoastal water way will have the existing finger piers and mooring piles removed to create a side tie dock, and the dock will be moved channel ward. Jet docks will be added. Additionally, the existing concrete boat ramp at the project site will be demolished, re-graded and re-built in its current footprint, but extended slightly channelward. The purpose of the project is to accommodate design standards for safety and navigation and provide boaters with easier access to marina facilities including a renovated boat ramp.

CRITICAL AREA PERMIT SPECIAL CONDITIONS

1. The new marina construction is completed in accordance with "Attachment A"
2. The operations of the marina shall be reviewed by the Department as deemed appropriate, but at least every five years. Based on this review, the Department may require, among other things, changes or additions to the Operations and Maintenance Manual (manual) to address any water quality or other environmental problems, and a reduction in the size of, or a change in the configuration of, the marina. Such action may be taken at any time the Department determines that significant state water quality compliance or other problems exist, at the time the Department enlarges the closure area, or at the time of a review. The manual submitted for this facility is made a part of this permit and must be followed in the operation of this facility unless otherwise amended in writing by OCRM. The manual must be reviewed and revised to keep it up-to-date with existing facilities and operations. The manual must be in accordance with R. 30-12(E)(6) or the Rules and Regulations for Permitting in the Critical Areas of the Coastal Zone and with OCRM's Marina/Commercial Dock Operations And Maintenance Manual Requirements.
3. A complete copy of the marina permit, including any required marina report, the Operations and Maintenance Manual, all conditions or requirements placed on the permit and copies of all water quality monitoring reports required pursuant to the permit, shall be readily available at the marina.
4. Adequate litter receptacles must be located near all docks and walkways and around the marina facilities and should be maintained daily. Containers or other provisions for the disposal of oil, grease, old fuel, or other toxic or potentially hazardous substances should be found at the marina but shall not be placed over or near the water.
5. Any painting, major engine repair, or other maintenance which may result in a discharge to the water must be performed in a designated upland site and not in or over the waters of the marina.
6. The discharge of any kind of waste into state waters, including, but not limited to, garbage, refuse, trash or debris, will be prohibited at the marina. Any lease agreement used to rent dock space shall include a statement prohibiting the discharge of these items or general garbage or other deleterious substances into the waters of the marina. It will also stress the need to maintain good water quality within the marina.
7. The storage or disposal of new or used batteries, oil or lubrication containers, fuel containers, solvents, toxic cleaners, paint cans, etc., on the marina docks is prohibited.
8. An as-built survey of the dock must be submitted to the Department within 90 days from completion of construction. The survey must be performed by a registered land surveyor, must show all components of the dock, and must list the starting and ending coordinates of the dock walkway in the SC State Plane Coordinate System, which can be obtained by survey-grade Global Positioning System equipment.

9. The marina must have adequate booms available to isolate any oil or fuel spill around the fuel dock, a leaking boat, or a sunken boat. These booms must be stored in a location where they are quickly and easily accessible.
10. The marina lease agreement with boat owners must include a provision requiring that boat owners comply with all applicable State and federal regulations. The marina shall ensure that violations are reported promptly to the proper authorities.
11. In the event that any historic or cultural resources and/or archaeological materials are found during the course of work, the applicant must notify the State Historic Preservation Office and the South Carolina Institute of Archaeology and Anthropology. Historic or cultural resources consist of those sites listed in the National Register of Historic Places and those sites that are eligible for the National Register. Archaeological materials consist of any items, fifty years old or older, which were made or used by man. These items include, but are not limited to, stone projectile points (arrowheads), ceramic sherds, bricks, worked wood, bone and stone, metal and glass objects, and human skeletal materials.

WATER QUALITY SPECIAL CONDITIONS

1. The applicant must implement best management practices that will minimize erosion and migration of sediments on and off the project site during and after construction. These practices should include the use of appropriate grading and sloping techniques, mulches, silt fences, or other devices capable of preventing erosion, migration of sediments, and bank failure. All disturbed land surfaces and sloped areas must be stabilized and sloped.
2. Once project construction is initiated, it must be carried to completion in an expeditious manner in order to minimize the period of disturbance to the environment.
3. All necessary measures must be taken to prevent oil, tar, trash, debris and other pollutants from entering the adjacent waters or wetlands during construction.
4. Construction activities must avoid to the greatest extent possible, encroachment into any wetland areas not designated as impact areas.
5. The floating dock must be constructed with encased or encapsulated floatation devices.
6. Signs must be posted on all docks, piers and areas adjacent to the facility stating the following:

"It is against both Federal and State Laws to Discharge raw, untreated sewage from any description of watercraft into waters of the South Carolina."

Signs should be at least 14" x 18" in size so the can be read clearly.

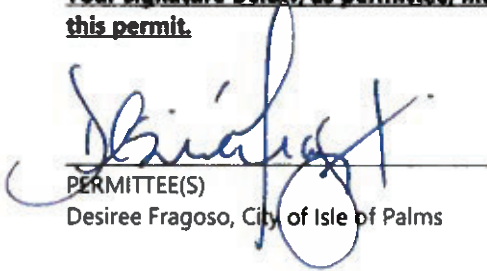
PERMITTEE'S ATTENTION IS DIRECTED TO GENERAL CONDITIONS NUMBERS FOUR (4) AND (5), BY ACCEPTANCE OF THIS PERMIT, PERMITTEE IS PLACED ON NOTICE THAT THE STATE OF SOUTH CAROLINA, BY ISSUING THIS PERMIT, DOES NOT WAIVE ITS RIGHTS TO REQUIRE PAYMENT OF A REASONABLE FEE FOR USE OF STATE LANDS AT A FUTURE DATE IF SO DIRECTED BY STATUTE.

THE PERMITTEE, BY ACCEPTANCE OF THIS PERMIT, AGREES TO ABIDE BY THE TERMS AND CONDITIONS CONTAINED HEREIN AND TO PERFORM THE WORK IN STRICT ACCORDANCE WITH THE PLANS AND SPECIFICATIONS ATTACHED HERETO AND MADE A PART HEREOF. ANY DEVIATION FROM THESE CONDITIONS, TERMS, PLANS AND

SPECIFICATIONS SHALL BE GROUNDS FOR REVOCATION, SUSPENSION OR MODIFICATION OF THIS PERMIT AND THE INSTITUTION OF SUCH LEGAL PROCEEDINGS AS THE DEPARTMENT MAY CONSIDER APPROPRIATE.

Permit Number: **OCRM01959**

Your signature below, as permittee, indicates that you accept and agree to comply with the terms and conditions of this permit.


PERMITTEE(S)
Desiree Fragoso, City of Isle of Palms

2-12-2020
DATE

This permit becomes effective when the State official, designated to act for the Office of Ocean and Coastal Resource Management, has signed below.


CRITICAL AREA PERMITTING PROJECT MANAGER
Joshua D Hoke
Or Other Authorized State Official

1-13-20
DATE

GENERAL CONDITIONS:

This construction and use permit is expressly contingent upon the following conditions which are binding on the permittee:

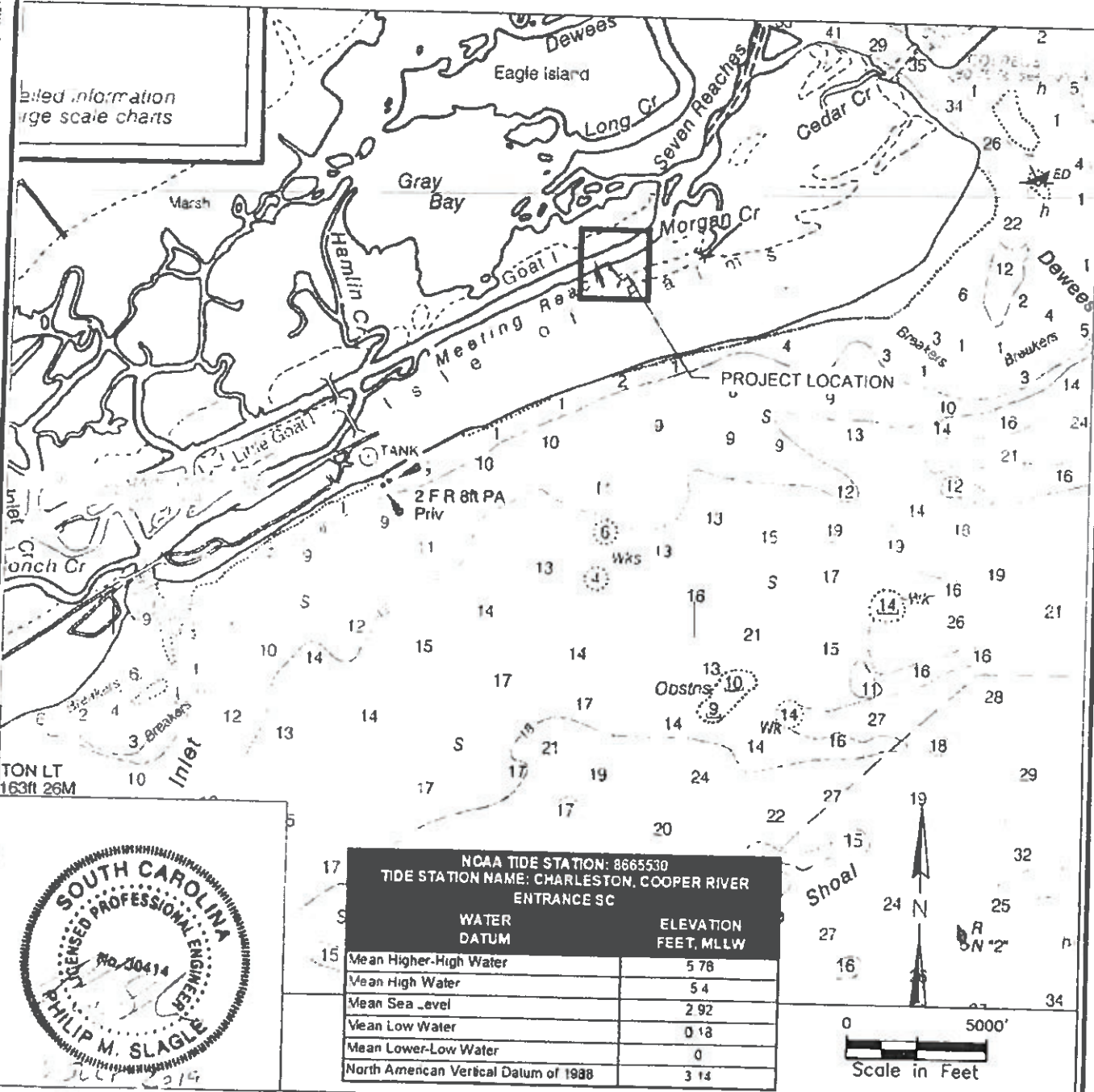
1. The permittee, in accepting this permit, covenants and agrees to comply with and abide by the provisions and conditions herein and assumes all responsibility and liability and agrees to save OCRM and the State of South Carolina, its employees or representatives, harmless from all claims of damage arising out of operations conducted pursuant to this permit.
2. If the activity authorized herein is not constructed or completed within five years of the date of issuance, this permit shall automatically expire. A request, in writing, for an extension of time shall be made not less than thirty days prior to the expiration date.
3. All authorized work shall be conducted in a manner that minimizes any adverse impact on fish, wildlife and water quality.
4. This permit does not relieve the permittee from the requirements of obtaining a permit from the U. S. Army Corps of Engineers or any other applicable federal agency, nor from the necessity of complying with all applicable local laws, ordinances, and zoning regulations. This permit is granted subject to the rights of the State of South Carolina in the navigable waters and shall be subject, further, to all rights held by the State of South Carolina under the public trust doctrine as well as any other right the State may have in the waters and submerged lands of the coast.
5. This permit does not convey, expressly or impliedly, any property rights in real estate or material nor any exclusive privileges; nor does it authorize the permittee to alienate, diminish, infringe upon or otherwise restrict the property rights of any other person or the public; nor shall this permit be interpreted as appropriating public properties for private use.
6. The permittee shall permit OCRM or its authorized agents or representatives to make periodic inspections at any time deemed necessary in order to ensure that the activity being performed is in accordance with the terms and conditions of this permit.
7. Any abandonment of the permitted activity will require restoration of the area to a satisfactory condition as determined by OCRM.
8. This permit may not be transferred to a third party without prior written notice to OCRM, either by the transferee's written agreement to comply with all terms and conditions of this permit or by the transferee subscribing to this permit and thereby agreeing to comply.
9. If the display of lights and signals on any structure or work authorized herein is not otherwise provided for by law, such lights and special signals as may be prescribed by the United States Coast Guard shall be installed and maintained by and at the expense of the permittee.
10. The permit construction placard or a copy of the placard shall be posted in a conspicuous place at the project site during the entire period of work.
11. The structure or work authorized herein shall be in accordance with the permit, as issued, and shall be maintained in good condition. Failure to build in accordance with the permit, as issued, or failure to maintain the structure in good condition, shall result in the revocation of this permit.
12. The authorization for activities or structures herein constitutes a revocable license. OCRM may require the permittee to modify activities or remove structures authorized herein if it is determined by OCRM that such activity or structures violates the public's health, safety, or welfare, or if any activity is inconsistent with the public trust doctrine. Modification or removal under this condition shall be ordered only after reasonable notice stating the reasons therefore and provision to the permittee of the opportunity to respond in writing. When the Permittee is notified that OCRM intends to revoke the permit, Permittee agrees to immediately stop work pending resolution of the revocation.
13. OCRM shall have the right to revoke, suspend, or modify this permit in the event it is determined the permitted structure (1) significantly impacts the public health, safety and welfare, and/or is violation of Section 48-39-150, (2) adversely impacts public rights, (3) that the information and data which the permittee or any other agencies have provided in connection with the permit application is either false, incomplete or inaccurate, or (4) that the activity is in violation of the terms and/or conditions, including any special conditions of the permit. That the permittee, upon receipt of OCRM's written intent to revoke, suspend, or modify the permit has the right to a hearing. Prior to revocation, suspension, or modification of this permit, OCRM shall provide written notification of intent to revoke to the

permittee, and permittee can respond with a written explanation to OCRM. (South Carolina Code Section 1-23-370 shall govern the procedure for revocation, suspension or modification herein described).

14. Any modification, suspension or revocation of this permit shall not be the basis of any claim for damages against OCRM or the State of South Carolina or any employee, agent, or representative of OCRM or the State of South Carolina.
15. All activities authorized herein shall, if they involve a discharge or deposit into navigable waters or ocean waters, be at all times consistent with all applicable water quality standards, effluent limitations and standards of performance, prohibitions, and pretreatment standards established pursuant to applicable federal, state and local laws.
16. Extreme care shall be exercised to prevent any adverse or undesirable effects from this work on the property of others. This permit authorizes no invasion of adjacent private property, and OCRM assumes no responsibility or liability from any claims of damage arising out of any operations conducted by the permittee pursuant to this permit.

FOR PERMITTING PURPOSES ONLY
 "NOT FOR CONSTRUCTION"

ISLE OF PALMS MARINA REDEVELOPMENT



NOAA TIDE STATION: 8665530 TIDE STATION NAME: CHARLESTON, COOPER RIVER ENTRANCE SC	
WATER DATUM	ELEVATION FEET, MLLW
Mean Higher-High Water	5.78
Mean High Water	5.4
Mean Sea Level	2.92
Mean Low Water	0.18
Mean Lower-Low Water	0
North American Vertical Datum of 1988	3.14

PROJECT	Isle of Palms Marina Redevelopment
WATERBODY	Morgan Creek
COUNTY	Charleston
STATE	South Carolina
LATITUDE	32°48'20.90"N
LONGITUDE	79°45'36.35"W

COVER PAGE & LOCATION MAP
Requested by City of Isle of Palms
Project Address 50 41st Avenue Isle of Palms
Parcel ID 5710800007

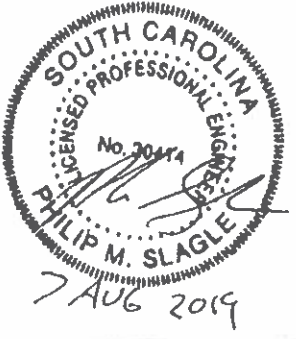
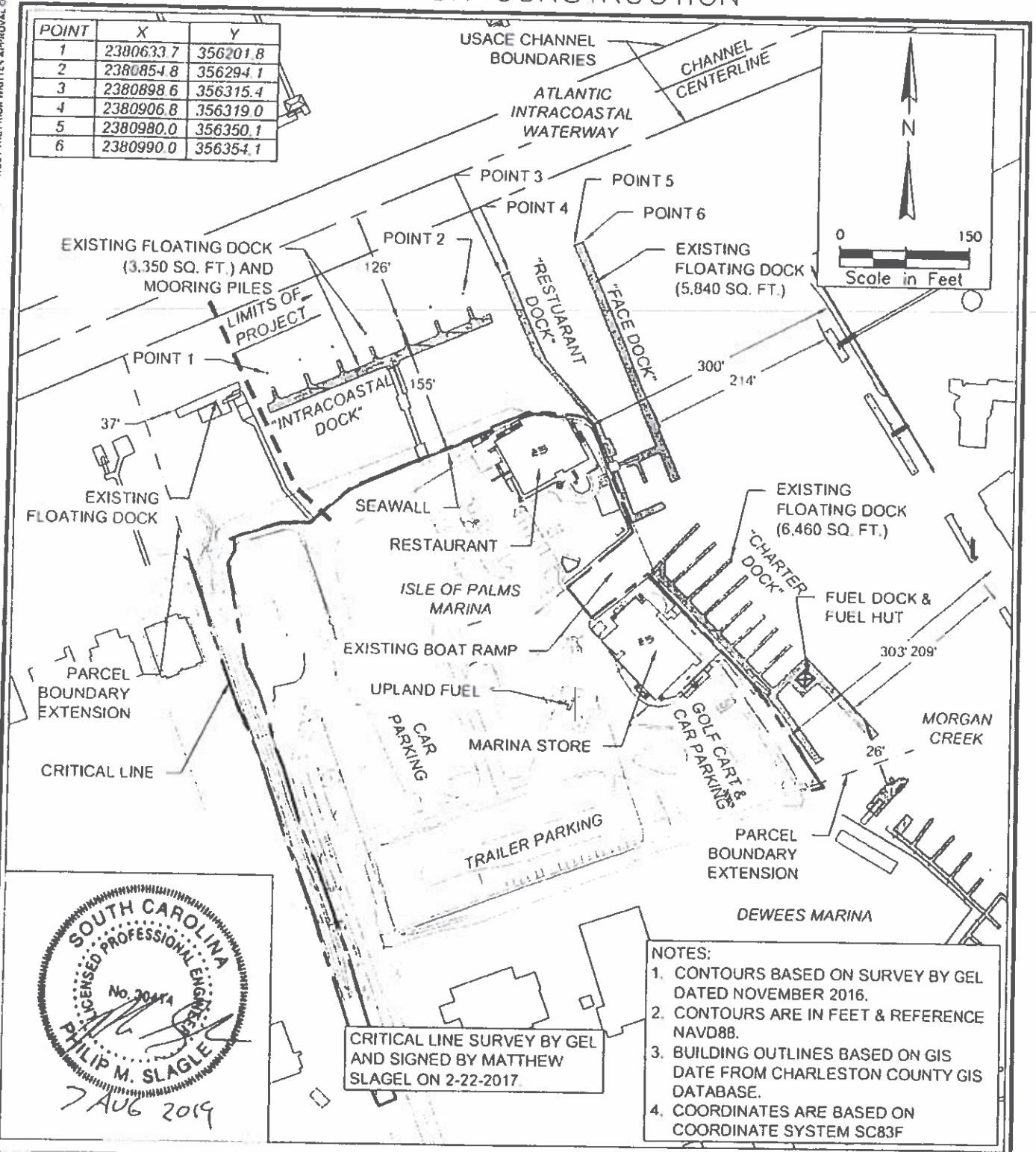
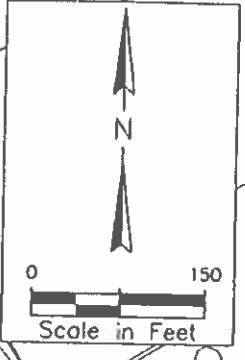


July 3 2019
 SHEET 1

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POINT	X	Y
1	2380633.7	356201.8
2	2380854.8	356294.1
3	2380898.6	356315.4
4	2380906.8	356319.0
5	2380980.0	356350.1
6	2380990.0	356354.1



CRITICAL LINE SURVEY BY GEL AND SIGNED BY MATTHEW SLAGEL ON 2-22-2017.

- NOTES:
1. CONTOURS BASED ON SURVEY BY GEL DATED NOVEMBER 2016.
 2. CONTOURS ARE IN FEET & REFERENCE NAVD88.
 3. BUILDING OUTLINES BASED ON GIS DATE FROM CHARLESTON COUNTY GIS DATABASE.
 4. COORDINATES ARE BASED ON COORDINATE SYSTEM SC83F

PROJECT:	Isle of Palms Marina Redevelopment
WATERBODY:	Morgan Creek
COUNTY:	Charleston
STATE:	South Carolina
LATITUDE:	32°48'20.90"N
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EXISTING CONDITIONS	
Requested by: City of Isle of Palms	
Project Address: 50 41st Avenue, Isle of Palms	
Parcel ID: 571080007	

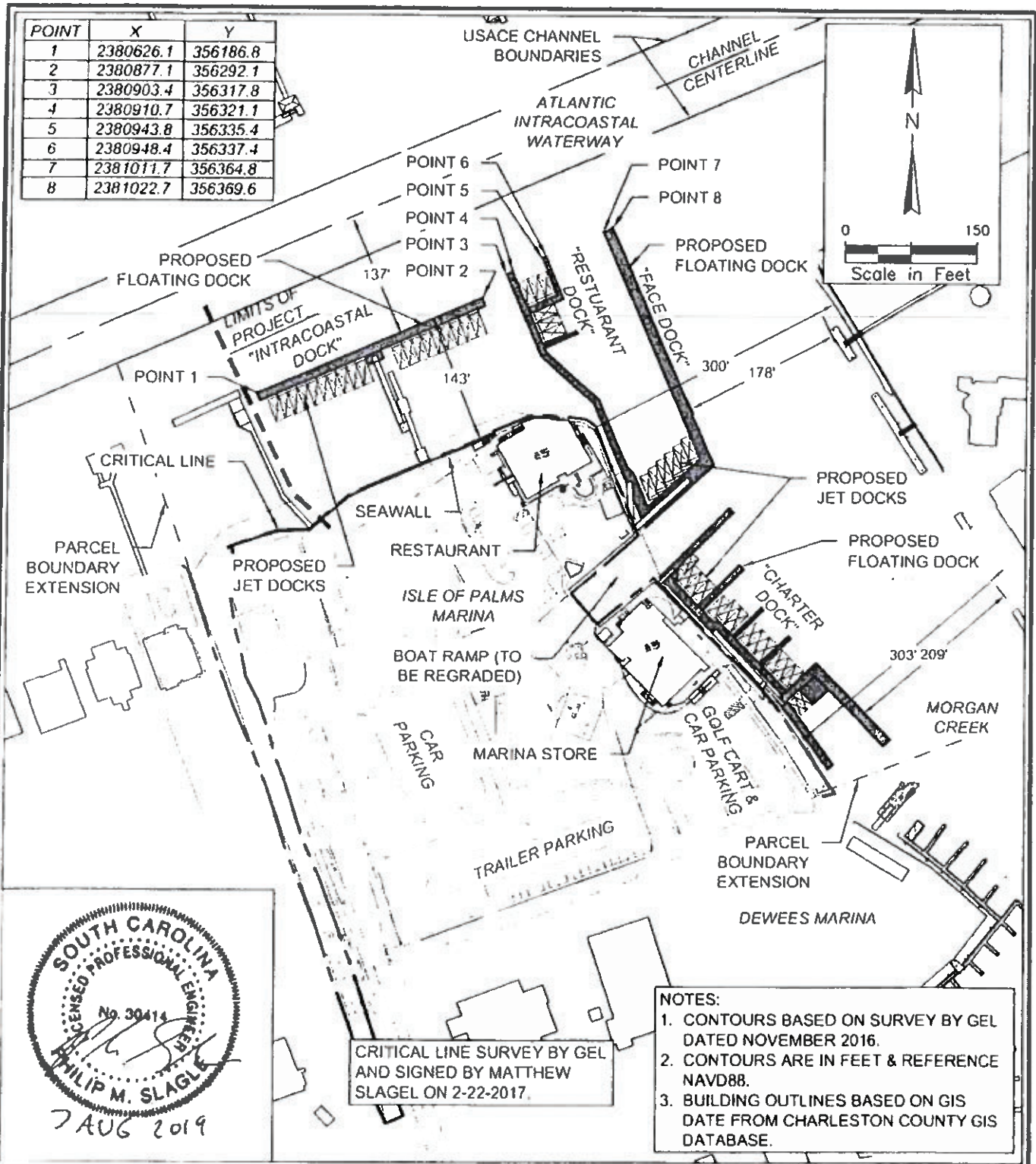
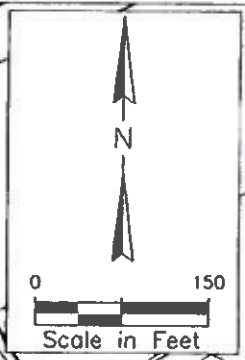


Revised August 7, 2019
 SHEET 2

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FOR PERMITTING PURPOSES ONLY
 "NOT FOR CONSTRUCTION"

POINT	X	Y
1	2380626.1	356186.8
2	2380877.1	356292.1
3	2380903.4	356317.8
4	2380910.7	356321.1
5	2380943.8	356335.4
6	2380948.4	356337.4
7	2381011.7	356364.8
8	2381022.7	356369.6



CRITICAL LINE SURVEY BY GEL
 AND SIGNED BY MATTHEW
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PROJECT: Isle of Palms Marina
 Redevelopment
 WATERBODY: Morgan Creek
 COUNTY: Charleston
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 LATITUDE: 32° 48' 20.90" N
 LONGITUDE: 79° 45' 36.35" W

PROPOSED
 IMPROVEMENTS
 Requested by: City of Isle of Palms
 Project Address: 50 41st Avenue, Isle of Palms
 Parcel ID: 5710800007



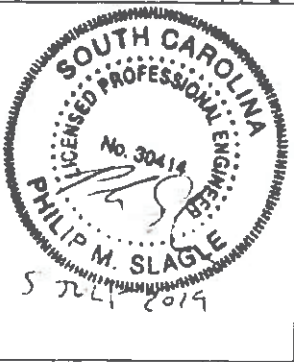
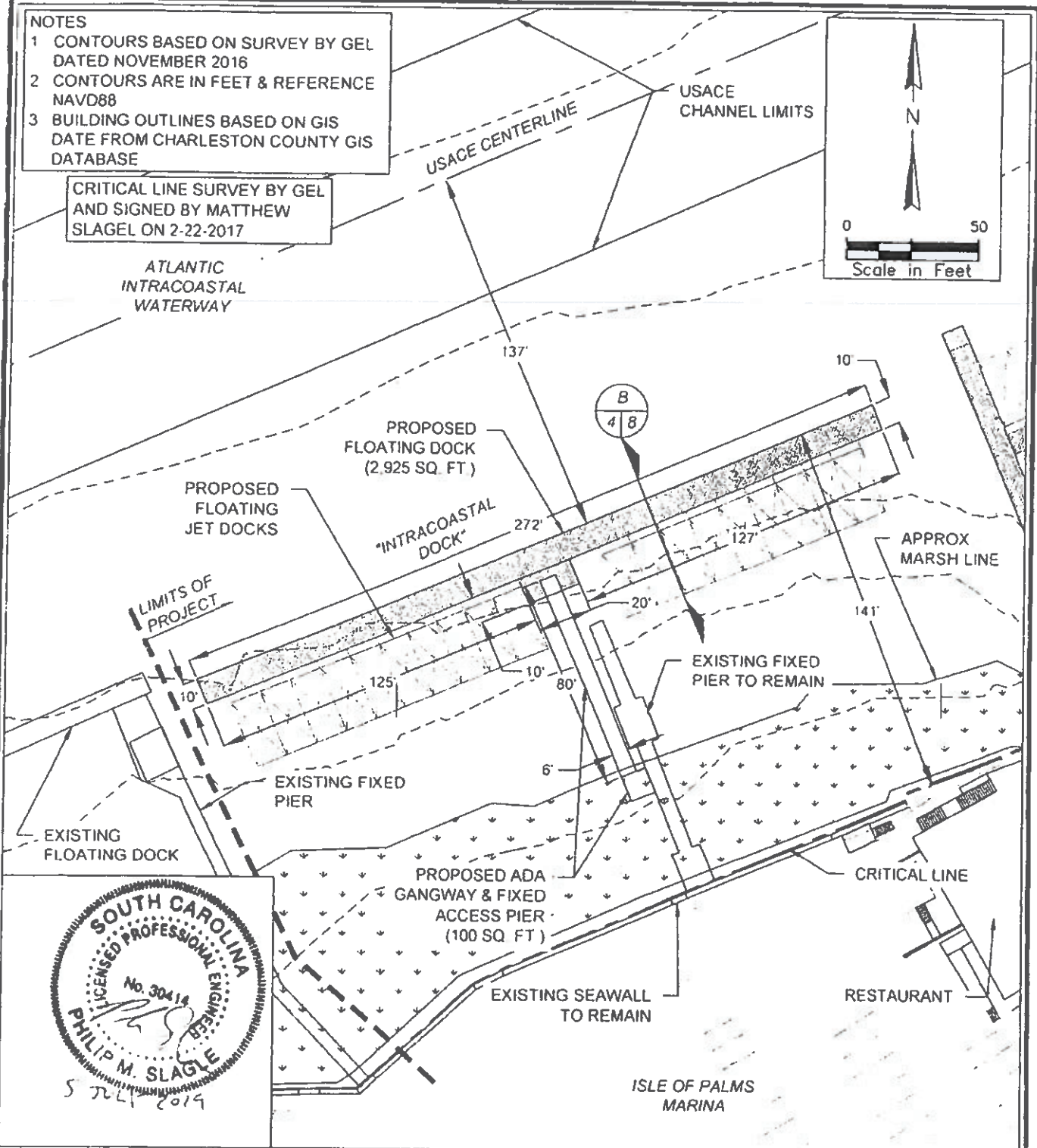
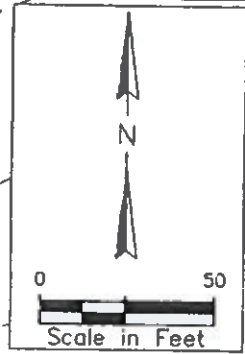
Revised August 7, 2019
 SHEET 3

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- NOTES**
- 1 CONTOURS BASED ON SURVEY BY GEL DATED NOVEMBER 2016
 - 2 CONTOURS ARE IN FEET & REFERENCE NAVD88
 - 3 BUILDING OUTLINES BASED ON GIS DATE FROM CHARLESTON COUNTY GIS DATABASE

CRITICAL LINE SURVEY BY GEL AND SIGNED BY MATTHEW SLAGEL ON 2-22-2017



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PROJECT	Isle of Palms Marina Redevelopment
WATERBODY	Morgan Creek
COUNTY	Charleston
STATE	South Carolina
LATITUDE	32°48'20.90"N
LONGITUDE	79°45'36.35"W

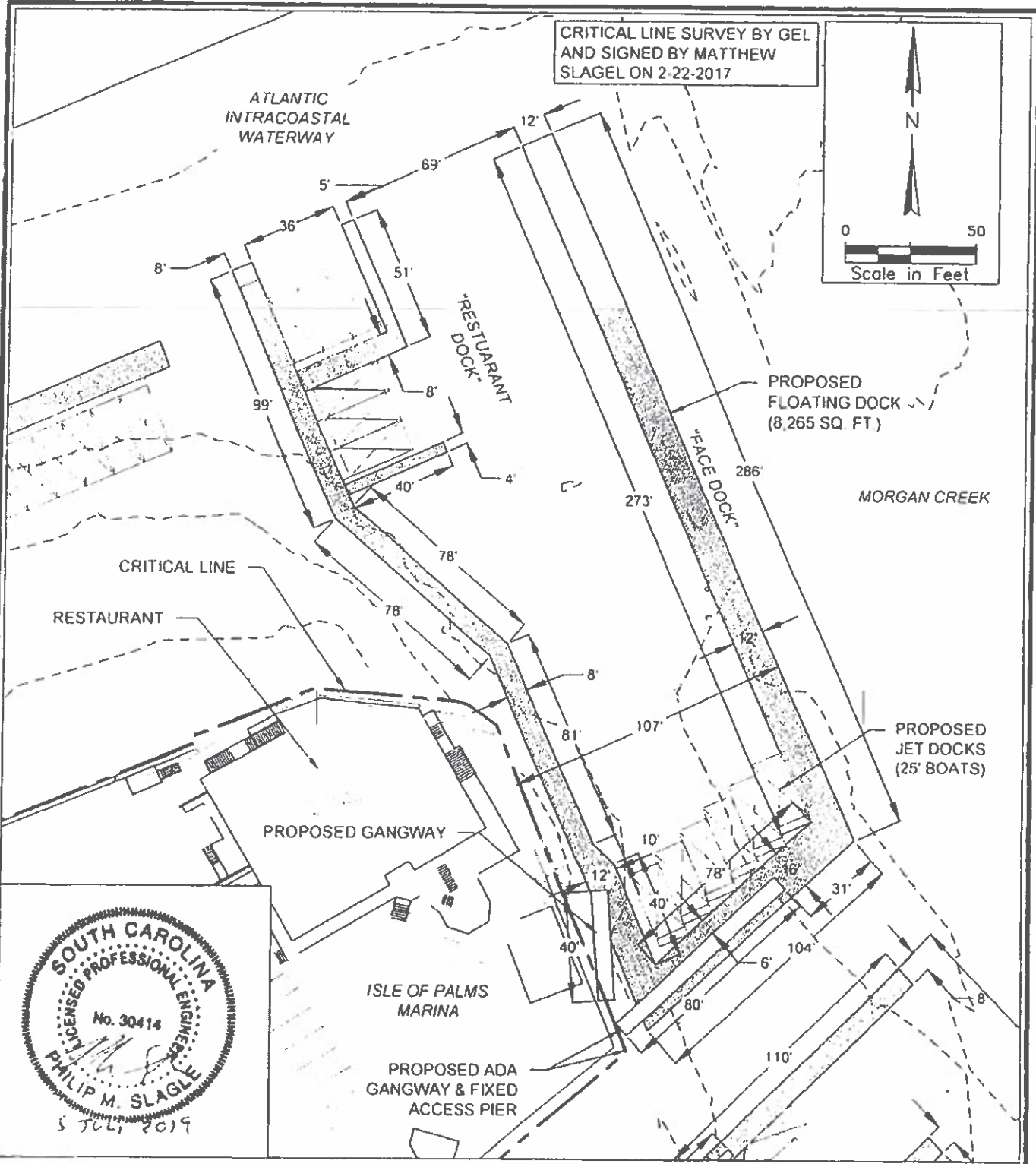
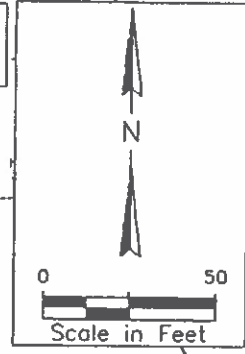
PROPOSED IMPROVEMENTS INTRACOASTAL DOCK	
Requested by City of Isle of Palms	
Project Address 50 41st Avenue, Isle of Palms	
Parcel ID 5710800007	



July 3 2019
SHEET 4

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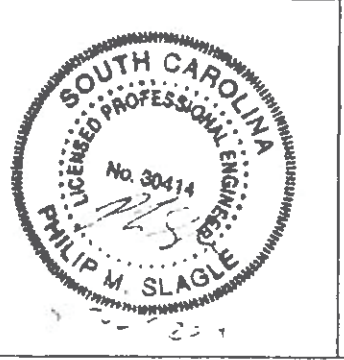
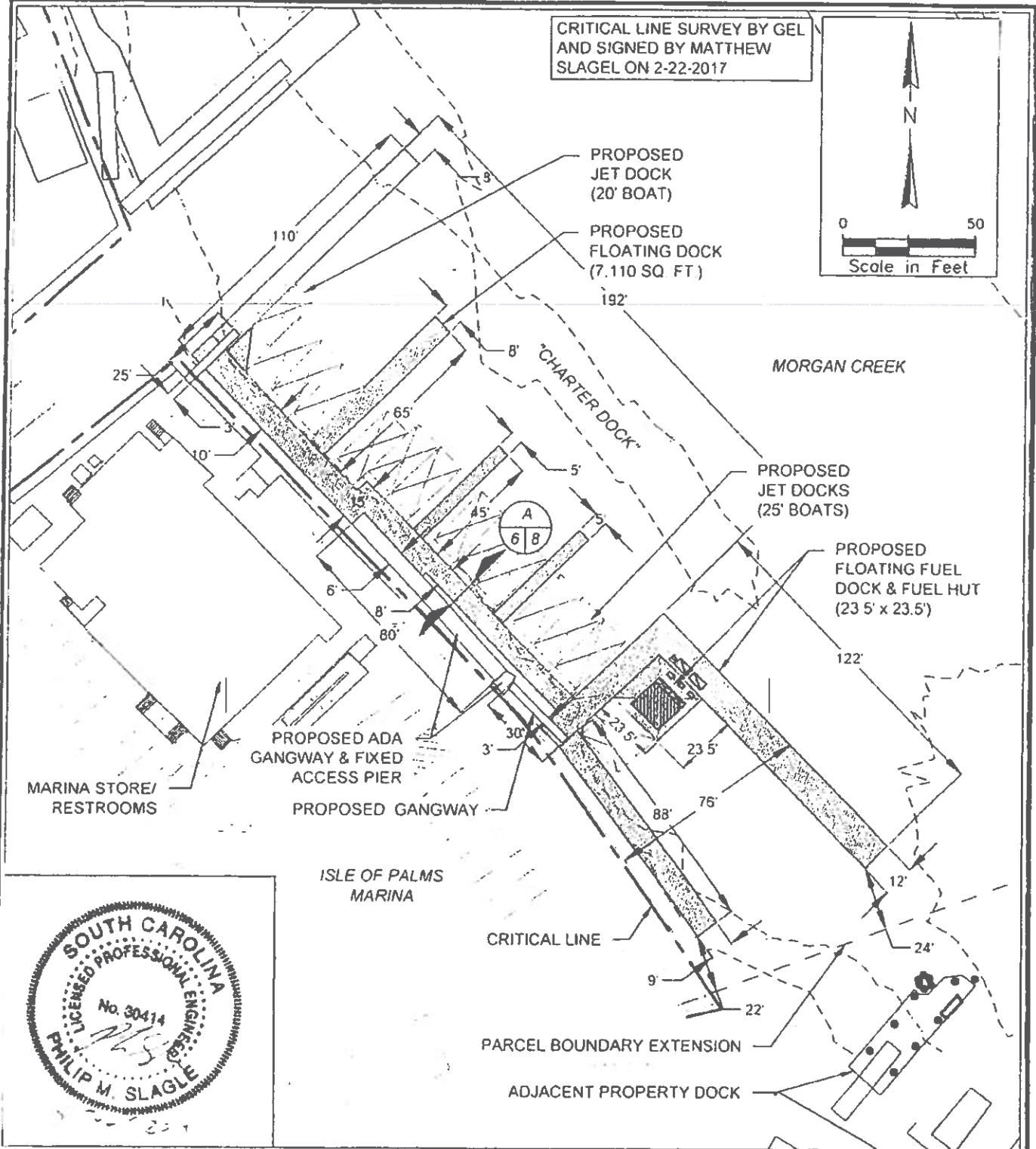
CRITICAL LINE SURVEY BY GEL
 AND SIGNED BY MATTHEW
 SLAGEL ON 2-22-2017



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PROJECT	Isle of Palms Marina Redevelopment	PROPOSED IMPROVEMENTS MORGAN CREEK DOCK 1	
WATERBODY	Morgan Creek	Requested by City of Isle of Palms	
COUNTY	Charleston	Project Address 50 41st Avenue Isle of Palms	
STATE	South Carolina	Parcel ID 5710800007	
LATITUDE	32°48'20.90"N		
LONGITUDE	79°45'36.35"W		July 3 2019 SHEET 5

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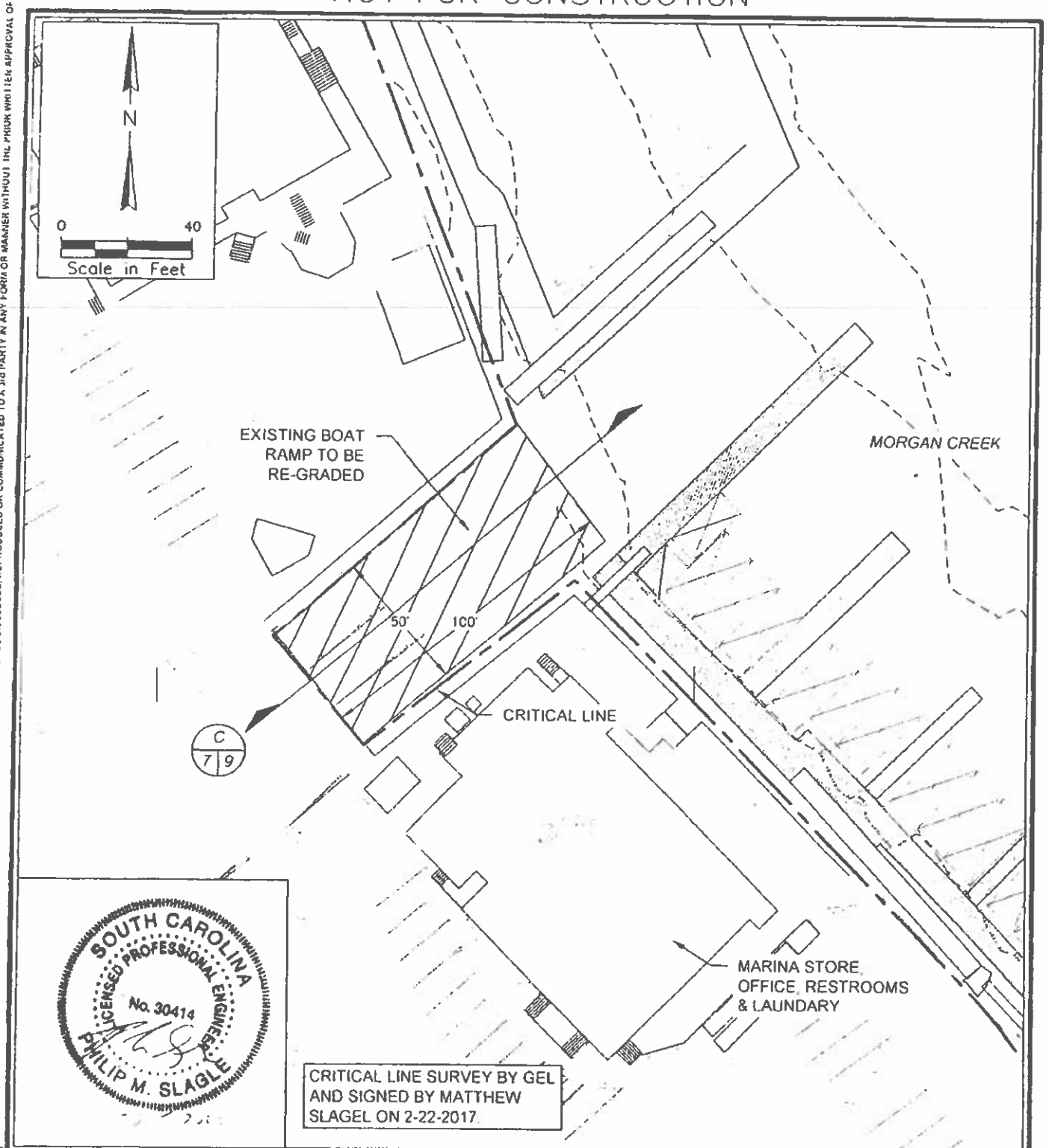
PROJECT	Isle of Palms Marina Redevelopment
WATERBODY	Morgan Creek
COUNTY	Charleston
STATE	South Carolina
LATITUDE	32°48'20.90"N
LONGITUDE	79°45'36.35"W

PROPOSED IMPROVEMENTS MORGAN CREEK DOCK 2
Requested by City of Isle of Palms
Project Address 50 41st Avenue, Isle of Palms
Parcel ID 571080007

ATM ENGINEERING

July 3 2019
SHEET 5

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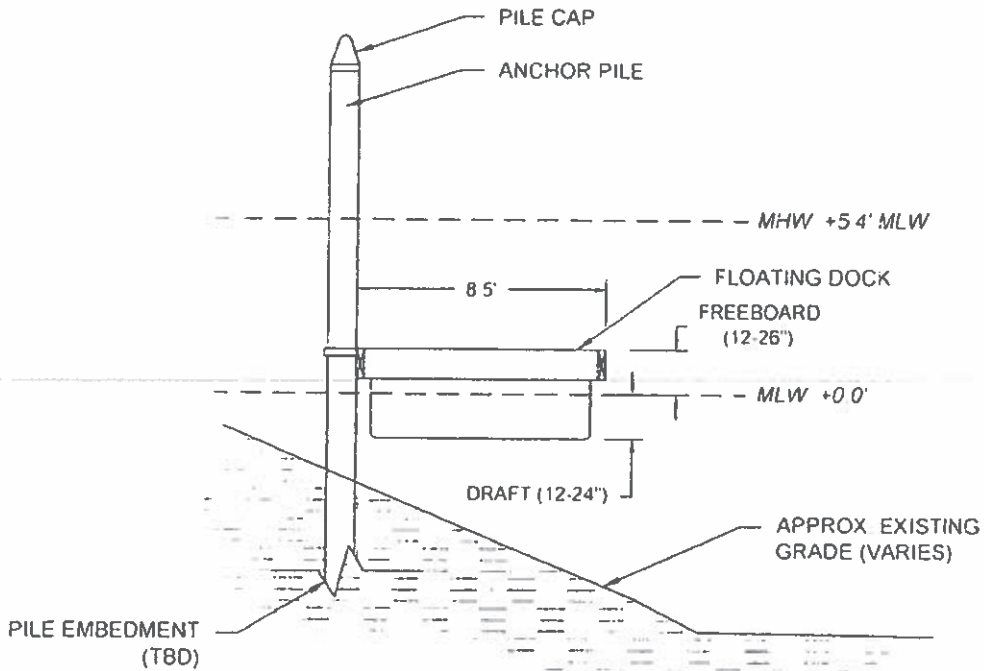
PROJECT	Isle of Palms Marina Redevelopment
WATERBODY	Morgan Creek
COUNTY	Charleston
STATE	South Carolina
LATITUDE	32°48'20 90"N
LONGITUDE	79°45'36 35"W

PROPOSED IMPROVEMENTS BOAT RAMP
Requested by City of Isle of Palms
Project Address 50 41st Avenue Isle of Palms
Parcel ID 571080007

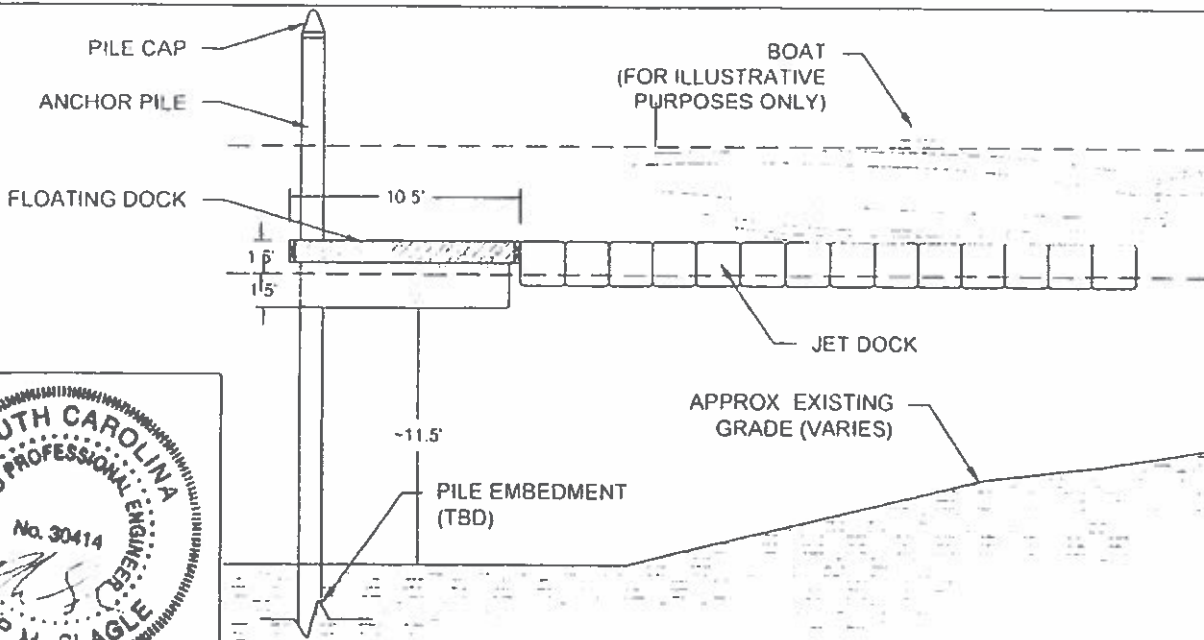
ATM ENGINEERING

July 3 2019
SHEET 7

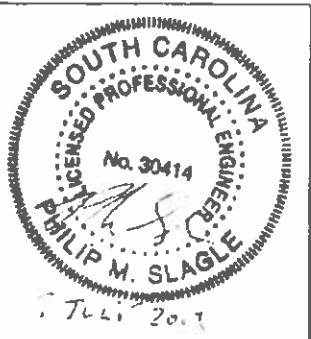
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TYPICAL FLOATING DOCK SECTION A
6/8



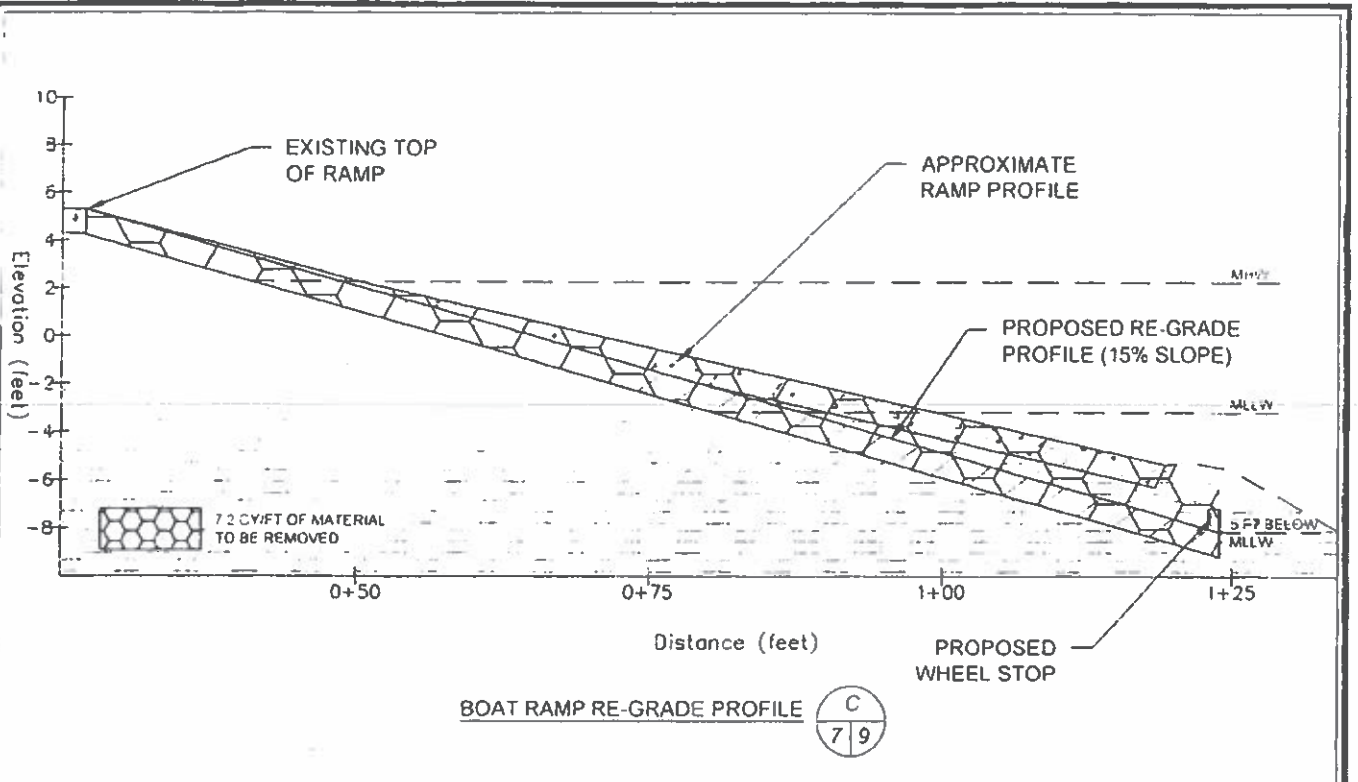
TYPICAL FLOATING DOCK & JET DOCK SECTION B
4/8




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PROJECT	Isle of Palms Marina Redevelopment	TYPICAL DOCK SECTIONS Requested by City of Isle of Palms Project Address 50 41st Avenue Isle of Palms Parcel ID 571080007	 July 3 2019 SHEET 8
WATERBODY	Morgan Creek		
COUNTY	Charleston		
STATE	South Carolina		
LATITUDE	32°48'20 90"N		
LONGITUDE	79°45'36 35"W		

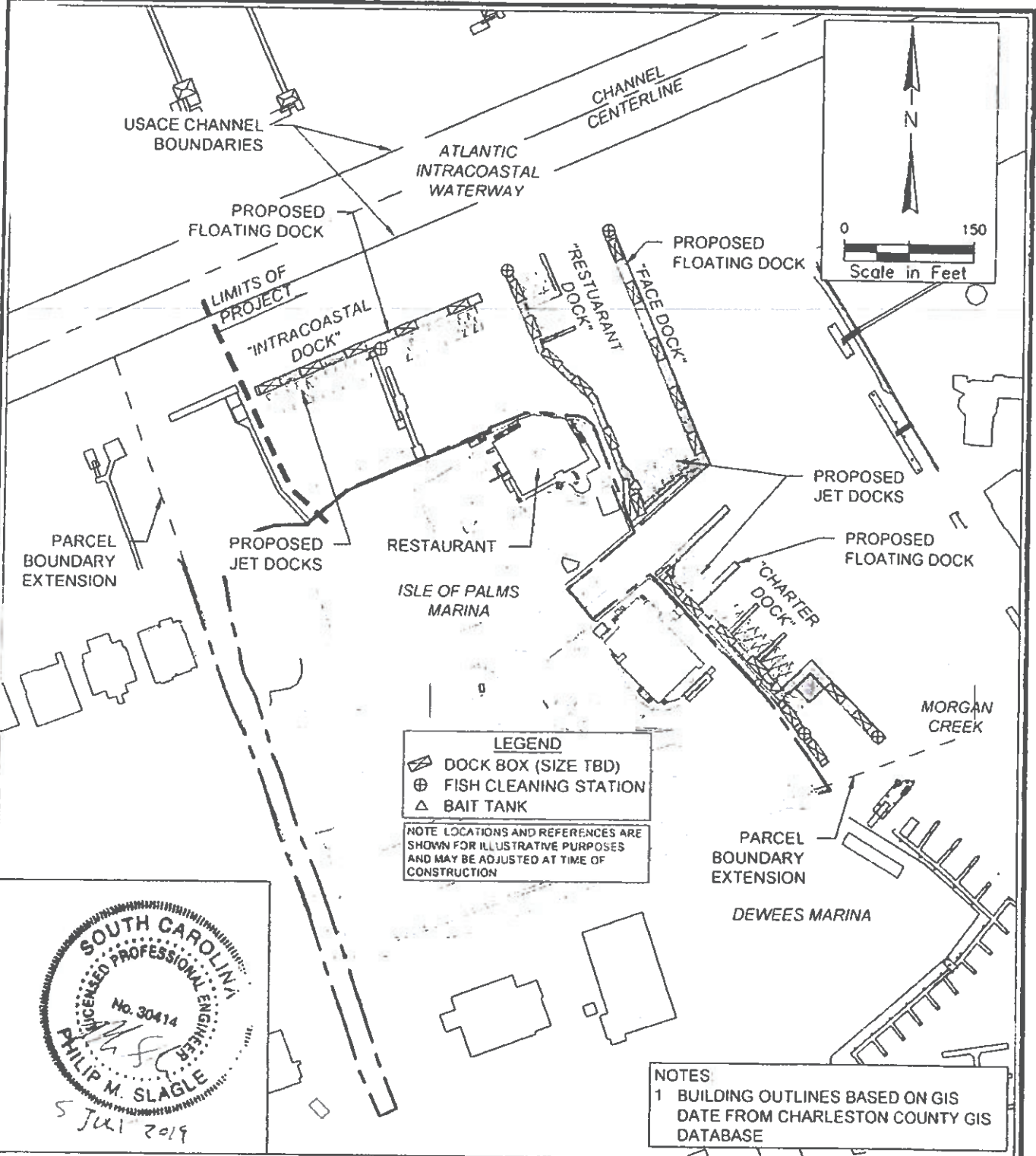
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PROJECT	Isle of Palms Marina Redevelopment	TYPICAL RAMP SECTION	 July 3 2019 SHEET 9
WATERBODY	Morgan Creek	Requested by: City of Isle of Palms	
COUNTY	Charleston	Project Address 50 41st Avenue Isle of Palms	
STATE	South Carolina	Parcel ID 5710800007	
LATITUDE	32° 48' 20" 90" N		
LONGITUDE	79° 45' 36" 35" W		

FOR PERMITTING PURPOSES ONLY
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PROJECT	Isle of Palms Marina Redevelopment
WATERBODY	Morgan Creek
COUNTY	Charleston
STATE	South Carolina
LATITUDE	32° 48' 20 90" N
LONGITUDE	79° 45' 36 35" W

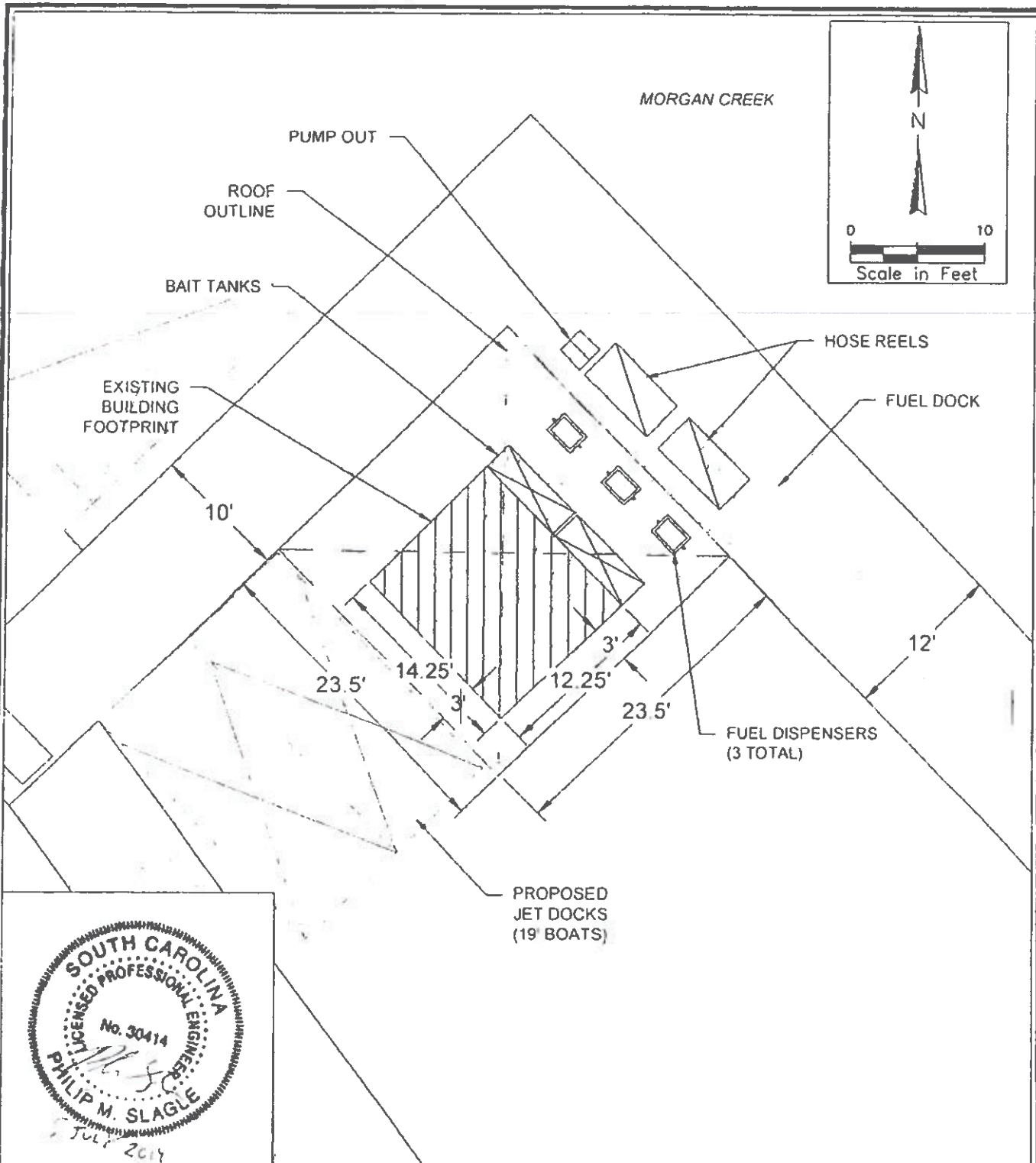
PROPOSED DOCK ACCESSORIES	
Requested by: City of Isle of Palms	
Project Address 50 41st Avenue Isle of Palms	
Parcel ID 571080007	



July 3 2019
 SHEET 10

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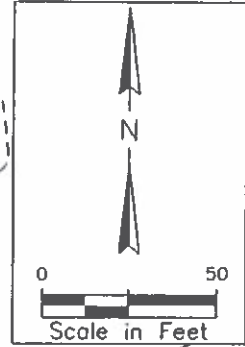
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PROJECT	Isle of Palms Marina Redevelopment	PROPOSED IMPROVEMENTS FUEL HUT	
WATERBODY	Morgan Creek	Requested by City of Isle of Palms	
COUNTY	Charleston	Project Address 50 41st Avenue, Isle of Palms	
STATE	South Carolina	Parcel ID 5710800007	
LATITUDE	32°48'20.90"N		July 3 2019
LONGITUDE	79°45'36.35"W		SHEET 11

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NOTES

1. CONTOURS BASED ON SURVEY BY GEL DATED NOVEMBER 2016.
2. CONTOURS ARE IN FEET & REFERENCE MEAN LOW WATER.
3. BUILDING OUTLINES BASED ON GIS DATE FROM CHARLESTON COUNTY GIS DATABASE.



ATLANTIC
INTRACOASTAL
WATERWAY

PROPOSED
FLOATING DOCKS

PROPOSED
FLOATING
JET DOCKS

ISLE OF PALMS
MARINA



PROJECT: Isle of Palms Marina
 Redevelopment
 WATERBODY: Morgan Creek
 COUNTY: Charleston
 STATE: South Carolina
 LATITUDE: 32°48'20.90"N
 LONGITUDE: 79°45'36.35"W

PROPOSED IMPROVEMENTS
 MORGAN CREEK DOCK 1

Requested by: City of Isle of Palms

Project Address: 50 41st Avenue, Isle of Palms

Parcel ID: 5710800007



January 9, 2020
 SHEET 12

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respond to the Clerk's email within forty-eight (48) hours and will request further review. If no Board member requests further review of the RFR within the forty-eight (48) hour period, the Clerk will send a letter by certified mail to the Requestor, with copy by regular mail to the applicant, permittee, or licensee, if not the Requestor, stating the Board will not hold a Final Review Conference. Contested case guidance will be included within the letter.

NOTE: If the time periods described above end on a weekend or State holiday, the time is automatically extended to 5:00 p.m. on the next business day.

9. If the RFR is to be considered by the RFR Committee, the Clerk will notify the Presiding Member of the RFR Committee and the Chairman that further review is requested by the Board. RFR Committee meetings are open to the public and will be public noticed at least 24 hours in advance.
10. Following RFR Committee or Board consideration of the RFR, if it is determined no Conference will be held, the Clerk will send a letter by certified mail to the Requestor, with copy by regular mail to the applicant, permittee, or licensee, if not the Requestor, stating the Board will not hold a Conference. Contested case guidance will be included within the letter.

II. Final Review Conference Scheduling

1. If a Conference will be held, the Clerk will send a letter by certified mail to the Requestor, with copy by regular mail to the applicant, permittee, or licensee, if not the Requestor, informing the Requestor of the determination.
2. The Clerk will request Department staff provide the Administrative Record.
3. The Clerk will send Notice of Final Review Conference to the parties at least ten (10) days before the Conference. The Conference will be publically noticed and should:
 - include the place, date and time of the Conference;
 - state the presentation times allowed in the Conference;
 - state evidence may be presented at the Conference;
 - if the conference will be held by committee, include a copy of the Chairman's order appointing the committee; and
 - inform the Requestor of his or her right to request a transcript of the proceedings of the Conference prepared at Requestor's expense.
4. If a party requests a transcript of the proceedings of the Conference and agrees to pay all related costs in writing, including costs for the transcript, the Clerk will schedule a court reporter for the Conference.

III. Final Review Conference and Decision

1. The order of presentation in the Conference will, subject to the presiding officer's discretion, be as follows:
 - Department staff will provide an overview of the staff decision and the applicable law to include [10 minutes]:
 - Type of decision (permit, enforcement, etc.) and description of the program.
 - Parties
 - Description of facility/site
 - Applicable statutes and regulations
 - Decision and materials relied upon in the administrative record to support the staff decision.
 - Requestor(s) will state the reasons for protesting the staff decision and may provide evidence to support amending, modifying, or rescinding the staff decision. [15 minutes] *NOTE: The burden of proof is on the Requestor(s)*
 - Rebuttal by Department staff [15 minutes]
 - Rebuttal by Requestor(s) [10 minutes]

Note: Times noted in brackets are for information only and are superseded by times stated in the Notice of Final Review Conference or by the presiding officer.
2. Parties may present evidence during the conference; however, the rules of evidence do not apply.
3. At any time during the conference, the officers conducting the Conference may request additional information and may question the Requestor, the staff, and anyone else providing information at the Conference.
4. The presiding officer, in his or her sole discretion, may allow additional time for presentations and may impose time limits on the Conference.
5. All Conferences are open to the public.
6. The officers may deliberate in closed session.
7. The officers may announce the decision at the conclusion of the Conference or it may be reserved for consideration.
8. The Clerk will mail the written final agency decision (FAD) to parties within 30 days after the Conference. The written decision must explain the basis for the decision and inform the parties of their right to request a contested case hearing before the Administrative Law Court or in matters pertaining to decisions under the South Carolina Mining Act, to request a hearing before the South Carolina Mining Council. The FAD will be sent by certified mail, return receipt requested.
9. Communications may also be sent by electronic mail, in addition to the forms stated herein, when electronic mail addresses are provided to the Clerk.

The above information is provided as a courtesy; parties are responsible for complying with all applicable legal requirements.

South Carolina Board of Health and Environmental Control

Guide to Board Review

Pursuant to S.C. Code Ann. § 44-1-60

The decision of the South Carolina Department of Health and Environmental Control (Department) becomes the final agency decision fifteen (15) calendar days after notice of the decision has been mailed to the applicant, permittee, licensee and affected persons who have requested in writing to be notified, unless a written request for final review accompanied by a filing fee in the amount of \$100 is filed with Department by the applicant, permittee, licensee or affected person.

Applicants, permittees, licensees, and affected parties are encouraged to engage in mediation or settlement discussions during the final review process.

If the Board declines in writing to schedule a final review conference, the Department's decision becomes the final agency decision and an applicant, permittee, licensee, or affected person may request a contested case hearing before the Administrative Law Court within thirty (30) calendar days after notice is mailed that the Board declined to hold a final review conference. In matters pertaining to decisions under the South Carolina Mining Act, appeals should be made to the South Carolina Mining Council.

I. Filing of Request for Final Review

1. A written Request for Final Review (RFR) and the required filing fee of one hundred dollars (\$100) must be received by Clerk of the Board within fifteen (15) calendar days after notice of the staff decision has been mailed to the applicant, permittee, licensee, or affected persons. If the 15th day occurs on a weekend or State holiday, the RFR must be received by the Clerk on the next working day. RFRs will not be accepted after 5:00 p.m.
2. RFRs shall be in writing and should include, at a minimum, the following information:
 - The grounds for amending, modifying, or rescinding the staff decision;
 - a statement of any significant issues or factors the Board should consider in deciding how to handle the matter;
 - the relief requested;
 - a copy of the decision for which review is requested; and
 - mailing address, email address, if applicable, and phone number(s) at which the requestor can be contacted.
3. RFRs should be filed in person or by mail at the following address:

South Carolina Board of Health and Environmental Control
Attention: Clerk of the Board
2600 Bull Street
Columbia, South Carolina 29201

Alternatively, RFR's may be filed with the Clerk by facsimile (803-898-3393) or by electronic mail (boardclerk@dhec.sc.gov).

4. The filing fee may be paid by cash, check or credit card and must be received by the 15th day.
5. If there is any perceived discrepancy in compliance with this RFR filing procedure, the Clerk should consult with the Chairman or, if the Chairman is unavailable, the Vice-Chairman. The Chairman or the Vice-Chairman will determine whether the RFR is timely and properly filed and direct the Clerk to (1) process the RFR for consideration by the Board or (2) return the RFR and filing fee to the requestor with a cover letter explaining why the RFR was not timely or properly filed. Processing an RFR for consideration by the Board shall not be interpreted as a waiver of any claim or defense by the agency in subsequent proceedings concerning the RFR.
6. If the RFR will be processed for Board consideration, the Clerk will send an Acknowledgement of RFR to the Requestor and the applicant, permittee, or licensee, if other than the Requestor. All personal and financial identifying information will be redacted from the RFR and accompanying documentation before the RFR is released to the Board, Department staff or the public.
7. If an RFR pertains to an emergency order, the Clerk will, upon receipt, immediately provide a copy of the RFR to all Board members. The Chairman, or in his or her absence, the Vice-Chairman shall based on the circumstances, decide whether to refer the RFR to the RFR Committee for expedited review or to decline in writing to schedule a Final Review Conference. If the Chairman or Vice-Chairman determines review by the RFR Committee is appropriate, the Clerk will forward a copy of the RFR to Department staff and Office of General Counsel. A Department response and RFR Committee review will be provided on an expedited schedule defined by the Chairman or Vice-Chairman.
8. The Clerk will email the RFR to staff and Office of General Counsel and request a Department Response within eight (8) working days. Upon receipt of the Department Response, the Clerk will forward the RFR and Department Response to all Board members for review, and all Board members will confirm receipt of the RFR to the Clerk by email. If a Board member does not confirm receipt of the RFR within a twenty-four (24) hour period, the Clerk will contact the Board member and confirm receipt. If a Board member believes the RFR should be considered by the RFR Committee, he or she will

NOTICE OF COMMENCEMENT OR COMPLETION
OF WORK AUTHORIZED BY PERMIT

DATE

WORK AUTHORIZED BY DEPARTMENT OF THE ARMY PERMIT _____

DATED _____

TO PERFORM WORK IN _____
(WATERBODY NAME)

WAS COMMENCED ON _____
WAS COMPLETED (DATE)
(circle appropriate response)

(SIGNATURE)

FL 130
5 MAR 79

NOTICE OF COMMENCEMENT OR COMPLETION
OF WORK AUTHORIZED BY PERMIT

DATE

WORK AUTHORIZED BY DEPARTMENT OF THE ARMY PERMIT _____

DATED _____

TO PERFORM WORK IN _____
(WATERBODY NAME)

WAS COMMENCED ON _____
WAS COMPLETED (DATE)
(circle appropriate response)

(SIGNATURE)

FL 130
5 MAR 79

APPENDIX B
GEO TECHNICAL REPORT



Geotechnical Exploration
Isle of Palms Marina Replacement
Isle of Palms, South Carolina
S&ME Project No. 1413-19-101

PREPARED FOR:

**City of Isle of Palms
Post Office Box 508
Isle of Palms, South Carolina 29451**

PREPARED BY:

**S&ME, Inc.
620 Wando Park Boulevard
Mount Pleasant, South Carolina 29464**

March 3, 2020



March 3, 2020

City of Isle of Palms
Post Office Box 508
Isle of Palms, South Carolina 29451

Attention: Ms. Desiree Fragoso, City Administrator

Reference: **Geotechnical Exploration**
Isle of Palms Marina Replacement
Isle of Palms, South Carolina
S&ME Project No. 1413-19-101

Dear Ms. Fragoso:

We have completed our geotechnical exploration for the Isle of Palms Marina Replacement project in Isle of Palms, South Carolina. Our services were performed pursuant to S&ME Proposal No. 14-1900469R dated August 30, 2019. The purpose of our geotechnical services was to explore the subsurface conditions at the site, evaluate those conditions, and provide recommendations for pile foundation support for the new docks and platforms. This report presents our understanding of the project, the site and subsurface conditions encountered, and our conclusions and recommendations.

◆ Project Information

We understand the Isle of Palms Marina will be refurbished. The work will include removal and replacement of most of the floating docks, marina piling, and pile-supported access platforms within the main basin of the marina. The marina is located along the Atlantic Intercoastal Water and Morgan Creek, both waterways are active, and the marina is in operation. The mean tide range is approximately +5.1 ft, and mud line elevations vary from approximately 10 to 15 ft mean low water (MLW).

Applied Technology & Management (ATM) is designing the project and will submit plans with and specifications to prospective dock vendors who will submit design-build proposals for their respective systems. The dock vendors will perform the final dock design and determine pile loading, pile type, and pile design.

This project information was provided in RFP 2019-04. The project information and assumptions presented above should be reviewed and confirmed by the appropriate team members. Modifications to our conclusions and recommendations may be required if the actual conditions vary substantially from the project information and assumptions stated herein.



◆ **Methods of Exploration**

Field Testing

Our exploration included a reconnaissance by a geotechnical engineer and the performance of five soil test borings. The borings were drilled from a floating barge platform to a depth of approximately 50 ft below the mudline. The borings were advanced using mud-rotary drilling techniques, and split-spoon sampling and Standard Penetration Testing (N values) were performed at 5-ft intervals in general accordance with ASTM D1586. The recovered samples were visually logged in the field using the Unified Soil Classification System (ASTM D2487).

The test locations were established in the field by S&ME personnel using a hand-held GPS device. The elevations shown on the boring logs are tidally influenced, the water surface level referenced to mean low low water (MLLW) at the Charleston Harbor gauge (<http://tidesandcurrents.noaa.gov>), and adjusted to the Isle of Palms. Consequently, horizontal locations and vertical elevations are approximate. A Test Location Plan illustrating the boring locations and the boring logs are included in the Appendix.

Laboratory Testing

Select split-spoon samples were subjected to laboratory natural moisture content, grain size distribution, and Atterberg limits testing. Laboratory testing was performed using applicable ASTM standards, and the results are presented in the Appendix and shown on the Boring Logs.

◆ **Site and Subsurface Conditions**

Site Conditions

The Isle of Palms Marina is at 50 41st Avenue on the Isle of Palms, South Carolina. The marina is located along the Atlantic Intercoastal Water and Morgan Creek, both waterways are active, and the marina is in operation. The existing marina includes a boat ramp, ship's store, and fixed and floating docks. The docks are mostly of wood construction with timber and pre-stressed concrete piles. The mean tide range is approximately +5.1 ft, and mud line elevations vary from approximately 10 to 15 ft mean low water (MLW).

Subsurface Conditions

Details of the subsurface conditions encountered by the borings are shown on the logs in the Appendix. These logs represent our interpretation of the subsurface conditions based upon field data. Stratification lines on the boring logs represent approximate boundaries between soil types; however, the actual transition may be gradual. The general subsurface conditions and their pertinent characteristics are discussed in the following paragraphs.

All five borings encountered similar subsurface conditions. Generally, the borings penetrated a stratum of interbedded very soft sandy silts/clays and very loose silty/clayey sands from the mudline to approximately 15 ft below the mudline. The borings then penetrated a stratum of very loose to loose sands and silty sands to the top



of the Cooper Marl.¹ Marl was encountered at depths from approximately 34 to 40 ft below the mudline, which corresponds to a top of marl elevation from -38 ft to -49 ft MLLW.

◆ Conclusions and Recommendations

The exploration indicates the site is adaptable for the proposed marina construction. The new platforms and docks can be supported by piles driving into the Cooper marl. Common piles used in the local Charleston market include timber, 12 to 12-in. square pre-stressed concrete (PSC), composite 20 to 24-in. PSC piles with HP steel section stingers, and open-end steel pipe piles. Displacement piles larger than 14-in. may be difficult to drive deep into the marl and are not commonly used.

The following presents our geotechnical recommendations for axial and lateral pile design. During review of these recommendations, it should be kept in mind that with any previously developed site, unexpected subsurface conditions will be encountered. These conditions could include such things as buried debris and remnants of previous development. Such conditions can normally be handled during construction by field engineering evaluation.

Seismic Considerations

We performed a liquefaction analysis based on the design earthquake prescribed by the 2018 edition of the International Building Code (IBC 2018).² This analysis indicates the sands between depths of about 10 to 40 ft below the mudline have the potential to liquefy during the design seismic event. The analysis predicts the sands and silty sands at this site will liquefy during the IBC 2018 design earthquake.

Section 1613.2.2 of the IBC 2018 classifies sites with the potential for liquefaction as Seismic Site Class F. However, the IBC 2018 allows the design spectral response accelerations for a site to be determined without regard to liquefaction provided the structure has a fundamental period of less than or equal to 0.5 seconds and the risks of liquefaction are considered in design. We assume the proposed structures will meet these criteria; however, this must be confirmed by the Structural Engineer. Provided the above criteria are met, the design accelerations may be calculated using Site Class D site coefficients as shown in Table 1, but the Site Class is still F.

¹ The Cooper Marl, locally referred to as "marl", is a relatively incompressible, thick (≥ 200 ft) stratum which underlies the area and is typically the bearing stratum for deep foundations in the Charleston area.

² Liquefaction, the loss of a soil's shear strength due to the increase in porewater pressure resulting from seismic vibrations, is always a potential concern in coastal South Carolina. Analysis was performed using the "simplified procedure" presented by Youd et al. (2001).

The IBC design earthquake has a hazard equal to 2% probability of exceedance in 50 years. This is statistically equivalent to an event that occurs about once every 2,500 years. The design ground motions incorporate a target risk of structural collapse equal to 1% in 50 years. Our liquefaction analysis was based on an earthquake with a magnitude of 7.3 and ground surface acceleration of 0.36g.



Table 1 – Ground Motion Parameters

Site Class	S _s	S ₁	F _a	F _v	PGA _M	S _{DS}	S _{D1}
F	0.992g	0.296g	1.103	2.00*	0.675g	0.729g	0.395g*

* The acceleration parameters should only be used when calculating the Seismic Response Coefficient (C_s) per the exception to the site-specific ground motion procedures requirement detailed in section 11.4.8 of ASCE 7-16.

The 1-second spectral acceleration (S₁) for this site is 0.296g. IBC 2018 requires site-specific ground motion procedures to be followed when S₁ is greater than or equal to 0.2g (see ASCE 7-16 section 11.4.8). However, the code provides an exception to this requirement in ASCE 7-16 section 11.4.8 if certain conditions are met when determining the Seismic Response Coefficient (C_s). As with the liquefaction-related exception, Site Class D site coefficients and corresponding spectral accelerations, as presented in Table 1, may be used for purposes of computing C_s in accordance with the S₁ exception.

Soil Parameters for Pile Design

We understand the pile type and pile design will be performed by the selected dock vendor. The following paragraphs provide soil parameters and general recommendations for geotechnical axial and lateral pile analyses. The actual geo-structural pile analyses and design will be the responsibility of the geotechnical and/or structural engineer of record for the marina structures. Table 2 presents general soil parameters gleaned from the boring data, correlated from the N values, and based on our experience.

Table 2 – Boring Data and Soil Parameters

Stratum	Depth Below Mudline	N value	USCS	Submerged Unit Weight	Friction Angle	Undrained Shear Strength
I	0 – 15 ft	0 to 7	ML/CH/SP/SM	32 pcf	28°	0.1 ksf*
II	15 – 40 ft	2 to 6	SP/SM	37 pcf	30°	-
III	≥ 40 ft	5 to 8	ML (marl)	57 pcf	-	4 ksf

* Use friction angle with sand or undrained shear strength with silt/clay.

Axial Pile Resistance

Table 3 presents ultimate (i.e., LRFD nominal) skin friction and end bearing values for the soil stratum encountered in the borings. These values are applicable to timber, PSC, and steel piles. Appropriate factors of safety (or LRFD resistance factors) must be applied to these ultimate values. Scour analyses is beyond the scope of services for this report; however, scour should be considered in the analyses. In the seismic case, stratum 1 and 2 in Table 3 will liquefy and lose strength, which should be considered in the analyses.



Table 3 – Ultimate Axial Resistance

Stratum	Depth Below Mudline	Skin Friction	End Bearing
I	0 – 15 ft	0.05 ksf	-
II	15 – 40 ft	0.25 ksf	-
III	≥ 40 ft	2.6 ksf	26 ksf

Lateral Pile Analysis Parameters

Table 4 presents soil parameters that can be used in lateral pile analyses programs such as Lpile or ALLPILE. In the seismic case, stratum 1 and 2 in Table 4 will liquefy and lose strength, which should be considered in the analyses.

Table 4 – Lateral Analyses Parameters

Stratum	Depth Below Mudline	k	e50	Relative Density
I	0 – 15 ft	0.70 pci	0.02	0.20
II	15 – 40 ft	20 pci	-	0.20
III	≥ 40 ft	28 pci	0.005	-

Construction Considerations

Based on our experience with similar projects, hydraulic, air, or diesel hammers having rated energies in the range of 20 to 40 ft-kips should be suitable for pile installation for non-displacement piles and displacement piles up to 14-in. square. Larger displacement piles may need a larger hammer. Prior to the start of construction, a wave equation analysis should be performed to verify that the proposed driving system (i.e. hammer type and size) is capable of effectively driving the piles to the desired depth without damage to the piles.

We anticipate the pile design will be controlled by lateral loading, and large axial loads are not anticipated. As such, a test pile program is not necessary. Safety factors and/or resistance factors should be selected accordingly.

We expect a two-stage template will be required to install piles in design locations and maintain pile alignment. Jetting should be prohibited. Vibratory hammers may be used, but it should be noted in the geotechnical design that installing piles into the Cooper Marl with vibratory equipment will significantly reduce the axial resistance of the marl.

All pile driving at the site should be observed by an Engineering Technician under the Geotechnical Engineer’s supervision. The purpose of these observations is to evaluate whether the piles are installed at the proper location and to the proper depth, whether they are encountering expected driving resistances, and to note any damage or other concerns during installation.



◆ Limitations of Report

This report has been prepared in accordance with generally accepted geotechnical engineering practice for specific application to this project. The conclusions and recommendations contained in this report are based upon applicable standards of our practice in this geographic area at the time this report was prepared. No other representation or warranty either express or implied, is made.

We relied on project information given to us to develop our conclusions and recommendations. If project information described in this report is not accurate, or if it changes during project development, we should be notified of the changes so that we can modify our recommendations based on this additional information if necessary.

Our conclusions and recommendations are based on limited data from a field exploration program. Subsurface conditions can vary widely between explored areas. Some variations may not become evident until construction. If conditions are encountered which appear different than those described in our report, we should be notified. This report should not be construed to represent subsurface conditions for the entire site.

Unless specifically noted otherwise, our field exploration program did not include an assessment of regulatory compliance, environmental conditions or pollutants or presence of any biological materials (i.e., mold, fungi, bacteria). If there is a concern about these items, other studies should be performed. S&ME can provide a proposal and perform these services if requested.

S&ME should be retained to review the final plans and specifications to confirm that earthwork, foundation, and other recommendations are properly interpreted and implemented. The recommendations in this report are contingent on S&ME’s review of final plans and specifications followed by our observation and monitoring of earthwork and foundation construction activities.

◆ Closure

S&ME appreciates the opportunity to be of service on this project. If you have any questions concerning this report, please call.

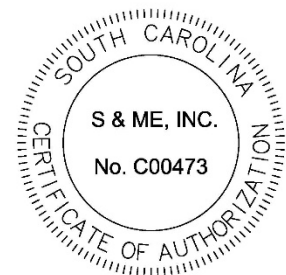
Sincerely,

S&ME, Inc.

Kyle L. Murrell, PE
Geotechnical Area Manager



Michael S. Ulmer, PE
Principal Engineer/VP



Appendix

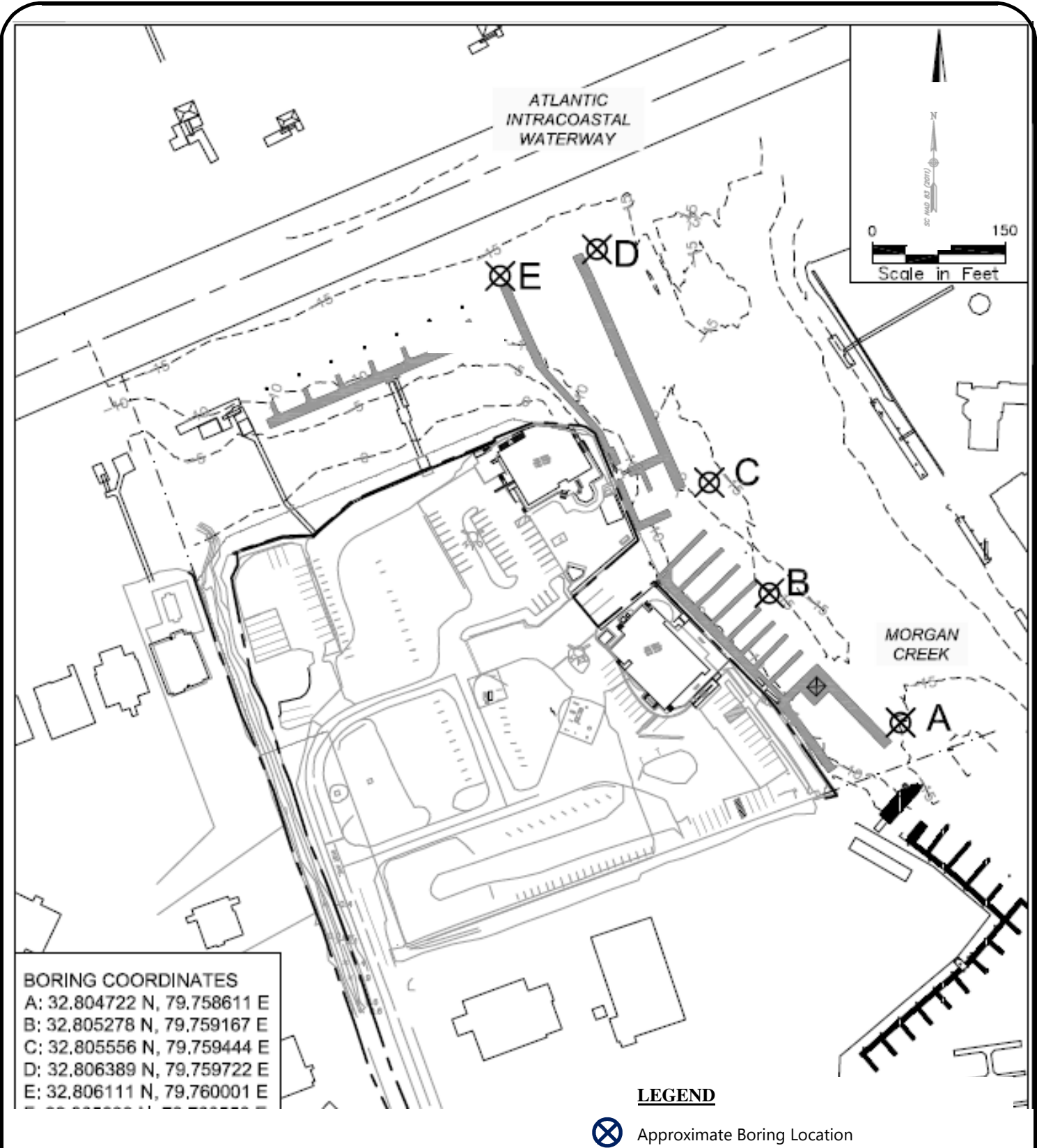
Test Location Plan – Figure 1

Legend to Soil Classification

Boring Logs


Summary of Laboratory Testing

Laboratory Testing




BORING COORDINATES
 A: 32.804722 N, 79.758611 E
 B: 32.805278 N, 79.759167 E
 C: 32.805556 N, 79.759444 E
 D: 32.806389 N, 79.759722 E
 E: 32.806111 N, 79.760001 E

LEGEND

 Approximate Boring Location

Test locations are approximate. This plan should not be used for design or construction.

	TEST LOCATION PLAN		SCALE: AS SHOWN	FIGURE NO. 1
	ISLE OF PALMS MARINA REPLACEMENT ISLE OF PALMS, SOUTH CAROLINA		DATE: 1/19/2020	
			PROJECT NUMBER 1413-19-101	

LEGEND TO SOIL CLASSIFICATION AND SYMBOLS




SOIL TYPES

(Shown in Graphic Log)

	Fill
	Asphalt
	Concrete
	Topsoil
	Gravel
	Sand
	Silt
	Clay
	Organic
	Silty Sand
	Clayey Sand
	Sandy Silt
	Clayey Silt
	Sandy Clay
	Silty Clay
	Partially Weathered Rock
	Cored Rock
	Marl

WATER LEVELS

(Shown in Water Level Column)

-  = Water Level At Termination of Boring
-  = Water Level Taken After 24 Hours
-  = Loss of Drilling Water
- HC = Hole Cave

CONSISTENCY OF COHESIVE SOILS

CONSISTENCY

Very Soft
Soft
Firm
Stiff
Very Stiff
Hard
Very Hard

STD. PENETRATION RESISTANCE BLOWS/FOOT

0 to 2
3 to 4
5 to 8
9 to 15
16 to 30
31 to 50
Over 50

RELATIVE DENSITY OF COHESIONLESS SOILS

RELATIVE DENSITY

Very Loose
Loose
Medium Dense
Dense
Very Dense

STD. PENETRATION RESISTANCE BLOWS/FOOT

0 to 4
5 to 10
11 to 30
31 to 50
Over 50

SAMPLER TYPES

(Shown in Samples Column)

-  Shelby Tube
-  Split Spoon
-  Rock Core
-  No Recovery

TERMS

Standard Penetration Resistance - The Number of Blows of 140 lb. Hammer Falling 30 in. Required to Drive 1.4 in. I.D. Split Spoon Sampler 1 Foot. As Specified in ASTM D-1586.

REC - Total Length of Rock Recovered in the Core Barrel Divided by the Total Length of the Core Run Times 100%.

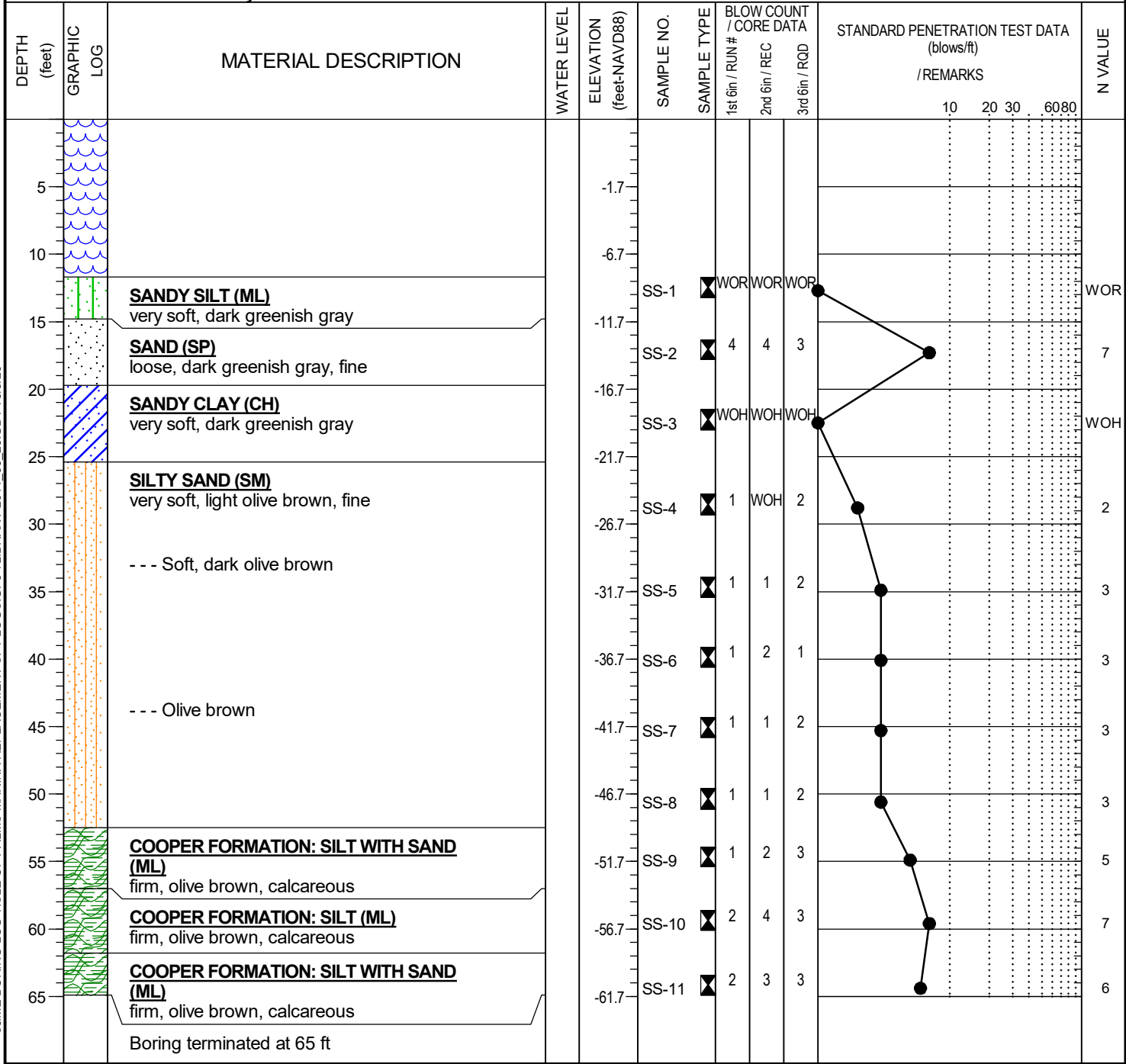
RQD - Total Length of Sound Rock Segments Recovered that are Longer Than or Equal to 4" (mechanical breaks excluded) Divided by the Total Length of the Core Run Times 100%.



DATE DRILLED: 2/12/20	ELEVATION: 3.3 ft	NOTES: Elevation is water surface level at TOB (MLLW)
DRILL RIG: CME 45-B	BORING DEPTH: 65.0 ft	
DRILLER: T. White	WATER LEVEL: Tidal	
HAMMER TYPE: Automatic	LOGGED BY: V. Steck	

SAMPLING METHOD: Split spoon	NORTHING:	EASTING:
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DRILLING METHOD: **Mud Rotary**



NOTES:

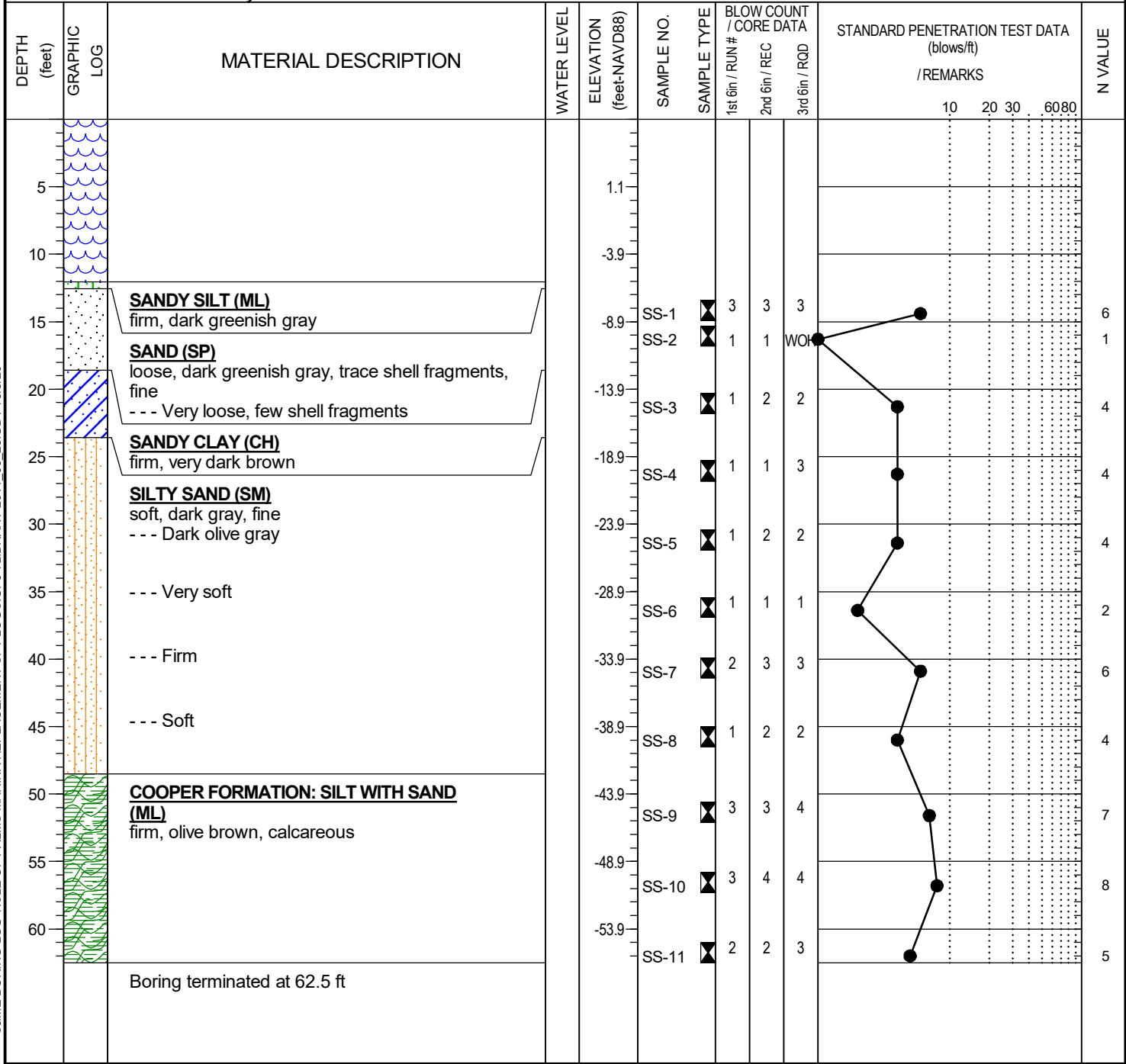
1. THIS LOG IS ONLY A PORTION OF A REPORT PREPARED FOR THE NAMED PROJECT AND MUST ONLY BE USED TOGETHER WITH THAT REPORT.
2. BORING, SAMPLING AND PENETRATION TEST DATA IN GENERAL ACCORDANCE WITH ASTM D-1586.
3. STRATIFICATION AND GROUNDWATER DEPTHS ARE NOT EXACT.
4. WATER LEVEL IS AT TIME OF EXPLORATION AND WILL VARY.



DATE DRILLED: 2/12/20	ELEVATION: 6.1 ft	NOTES: Elevation is water surface level at TOB (MLLW)
DRILL RIG: CME 45-B	BORING DEPTH: 62.5 ft	
DRILLER: T. White	WATER LEVEL: Tidal	
HAMMER TYPE: Automatic	LOGGED BY: V. Steck	

SAMPLING METHOD: Split spoon	NORTHING:	EASTING:
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DRILLING METHOD: **Mud Rotary**



S&ME BORING LOG \ ISLE OF PALMS MARINA REPLACEMENT SPT LOGS.GPJ \ LIBRARY 2011_06_28.GDT \ 3/3/20

NOTES:

1. THIS LOG IS ONLY A PORTION OF A REPORT PREPARED FOR THE NAMED PROJECT AND MUST ONLY BE USED TOGETHER WITH THAT REPORT.
2. BORING, SAMPLING AND PENETRATION TEST DATA IN GENERAL ACCORDANCE WITH ASTM D-1586.
3. STRATIFICATION AND GROUNDWATER DEPTHS ARE NOT EXACT.
4. WATER LEVEL IS AT TIME OF EXPLORATION AND WILL VARY.



PROJECT: Isle of Palms Marina Replacement Isle of Palms, South Carolina S&ME Project No. 1413-19-101		BORING LOG C													
DATE DRILLED: 2/12/20	ELEVATION: 4.5 ft	NOTES: Elevation is water surface level at TOB (MLLW)													
DRILL RIG: CME 45-B	BORING DEPTH: 62.0 ft														
DRILLER: T. White	WATER LEVEL: Tidal														
HAMMER TYPE: Automatic	LOGGED BY: V. Steck														
SAMPLING METHOD: Split spoon		NORTHING:	EASTING:												
DRILLING METHOD: Mud Rotary															
DEPTH (feet)	GRAPHIC LOG	MATERIAL DESCRIPTION	WATER LEVEL	ELEVATION (feet-NAVD88)	SAMPLE NO.	SAMPLE TYPE	BLOW COUNT / CORE DATA			STANDARD PENETRATION TEST DATA (blows/ft) /REMARKS				N VALUE	
							1st 6in / RUN #	2nd 6in / REC	3rd 6in / RQD	10	20	30	6080		
5															
10															
15		SILTY SAND (SM) very loose, dark greenish gray, fine			SS-1	WOH	WOH	WOH							WOH
20		SANDY CLAY (CH) very soft, dark greenish gray			SS-2	WOR	WOR	WOR							WOR
25		CLAY (CH) firm, greenish gray			SS-3	3	2	3							5
30		SILTY SAND (SM) very loose, olive brown, fine			SS-4	3	2	2							4
35					SS-5	1	1	1							2
40		--- Light olive brown			SS-6	1	1	1							2
45					SS-7	2	1	2							3
50		--- No recovery			SS-8	2	2	2							4
55		COOPER FORMATION: SILT (ML) firm, olive brown, calcareous			SS-9	3	3	5							8
60		COOPER FORMATION: SANDY SILT (ML) firm, olive brown, calcareous			SS-10	3	4	3							7
62		Boring terminated at 62 ft			SS-11	3	3	3							6

S&ME BORING LOG \ ISLE OF PALMS MARINA REPLACEMENT SPT LOGS.GPJ \ LIBRARY 2011_06_28.GDT \ 3/3/20

NOTES:

1. THIS LOG IS ONLY A PORTION OF A REPORT PREPARED FOR THE NAMED PROJECT AND MUST ONLY BE USED TOGETHER WITH THAT REPORT.
2. BORING, SAMPLING AND PENETRATION TEST DATA IN GENERAL ACCORDANCE WITH ASTM D-1586.
3. STRATIFICATION AND GROUNDWATER DEPTHS ARE NOT EXACT.
4. WATER LEVEL IS AT TIME OF EXPLORATION AND WILL VARY.



DATE DRILLED: 2/11/20	ELEVATION: 1.2 ft	NOTES: Elevation is water surface level at TOB (MLLW)
DRILL RIG: CME 45-B	BORING DEPTH: 63.0 ft	
DRILLER: T. White	WATER LEVEL: Tidal	
HAMMER TYPE: Automatic	LOGGED BY: V. Steck	

SAMPLING METHOD: **Split spoon** NORTHING: EASTING:

DRILLING METHOD: **Mud Rotary**

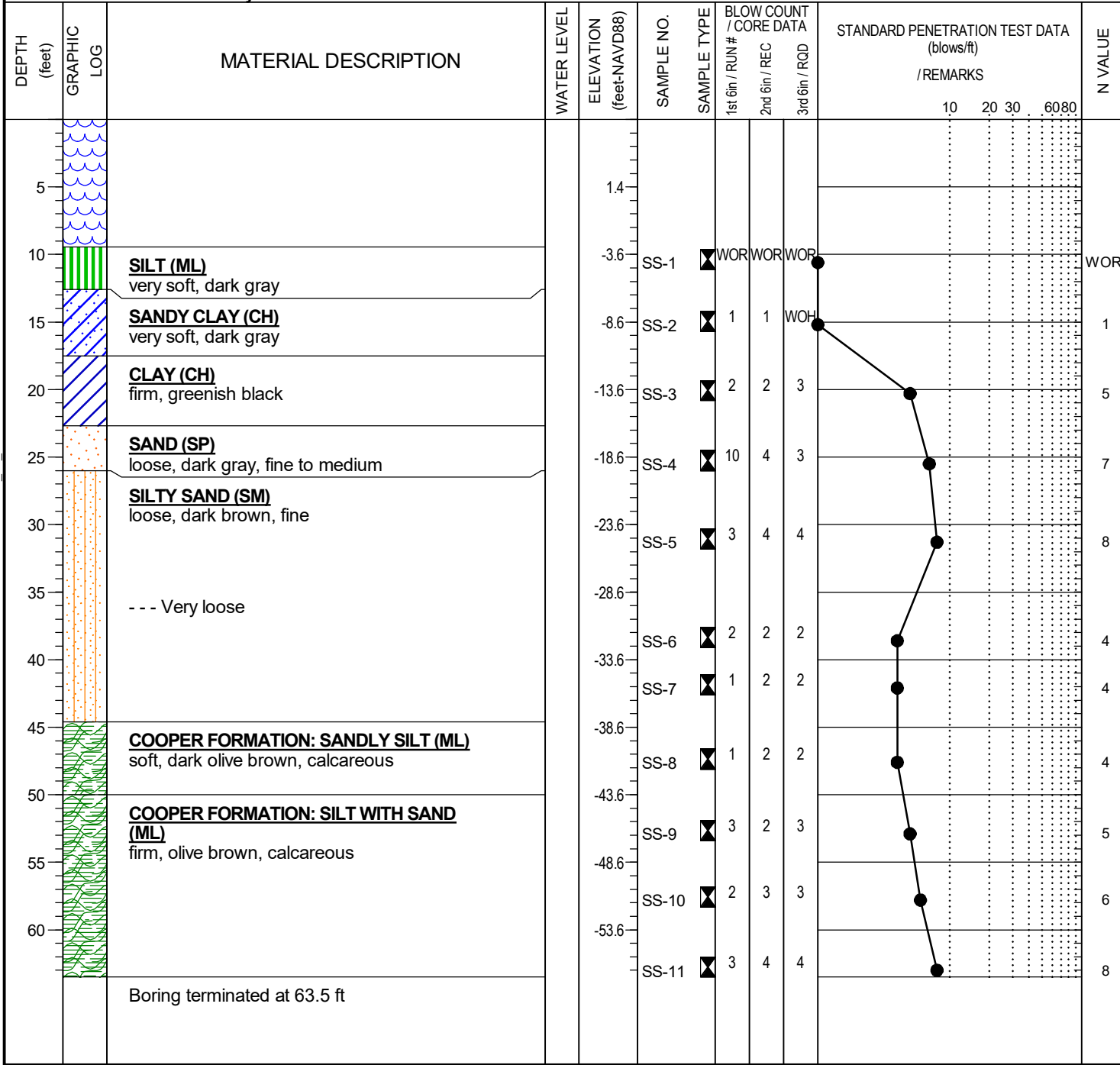
DEPTH (feet)	GRAPHIC LOG	MATERIAL DESCRIPTION	WATER LEVEL	ELEVATION (feet-NAVD88)	SAMPLE NO.	SAMPLE TYPE	BLOW COUNT / CORE DATA			STANDARD PENETRATION TEST DATA (blows/ft) /REMARKS				N VALUE	
							1st 6in / RUN #	2nd 6in / REC	3rd 6in / RQD	10	20	30	6080		
5				-3.8											
10		SILT WITH SAND (ML) very soft, dark greenish gray		-8.8	SS-1	W	W	W							WOR
15		SANDY CLAY (CH) very soft, dark greenish gray		-13.8	SS-2	W	W	W							WOH
20		--- Firm, dark greenish gray		-18.8	SS-3		1	2	3						5
25		SAND (SP) very loose, dark gray, fine to medium		-23.8	SS-4		1	1	2						3
30		SILTY SAND (SM) very loose, dark olive brown, fine		-28.8	SS-5		1	1	1						2
35				-33.8	SS-6		1	1	1						2
40		--- Olive brown		-38.8	SS-7		1	2	2						4
45		COOPER FORMATION: SANDY SILT (ML) soft, olive brown, calcareous		-43.8	SS-8		1	2	1						3
50		COOPER FORMATION: SILT (ML) firm, olive brown, calcareous		-48.8	SS-9		3	3	3						6
55				-53.8	SS-10		2	3	3						6
60				-58.8	SS-11		3	2	3						5
63		Boring terminated at 63 ft													

S&ME BORING LOG \ ISLE OF PALMS MARINA REPLACEMENT SPT LOGS.GPJ \ LIBRARY 2011_06_28.GDT 1/3/20

DATE DRILLED: 2/11/20	ELEVATION: 6.4 ft	NOTES: Elevation is water surface level at TOB (MLLW)
DRILL RIG: CME 45-B	BORING DEPTH: 63.5 ft	
DRILLER: T. White	WATER LEVEL: Tidal	
HAMMER TYPE: Automatic	LOGGED BY: V. Steck	

SAMPLING METHOD: Split spoon	NORTHING:	EASTING:
-------------------------------------	-----------	----------

DRILLING METHOD: **Mud Rotary**



S&ME BORING LOG \ ISLE OF PALMS MARINA REPLACEMENT SPT LOGS.GPJ \ LIBRARY 2011_06_28.GDT \ 3/3/20

Summary of Laboratory Test Data

Isle of Palms Marina Replacement
Isle of Palms, South Carolina
S&ME Project No. 1413-19-101

Sample Location	Sample Depth (ft)	USCS Symbol	Natural Moisture (%)	% Finer #200	Atterberg Limits	
					LL	PI
A S-2	2.5 to 4.0	SP	32.0	5.2	np	
C S-4	15.5-17.0	SM	31.0	18.4	np	
D S-3	9.5 to 11.0	CH	31.9	58.6	57	34
E S-2	6 to 7.5	CH	59.5	79.5	50	25

np = non-plastic

LIQUID LIMIT, PLASTIC LIMIT, & PLASTIC INDEX



ASTM D 4318 AASHTO T 89 AASHTO T 90

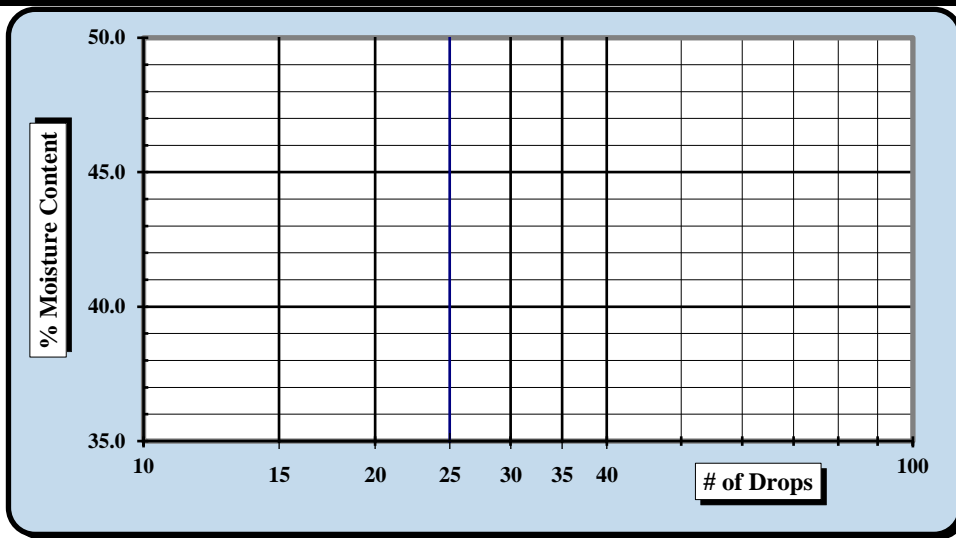
S&ME, Inc. - Charleston: 620 Wando Park Boulevard, Mt. Pleasant, SC 29464

Project #:	1413-19-101	Report Date:	2/19/2020
Project Name:	Isle of Palms Marina Replacement	Test Date(s)	2/16/2020
Client Name:	City of Isle Palms		
Client Address:	Post Office Box 508: Isle of Palms, SC 29451		

Boring #:	A	Sample #:	S-2	Sample Date:	2/11-2/12/2020
Location:					Depth 2.5 to 4.0 FT

Sample Description: Gray, fine, SAND (SP)					
Type and Specification	S&ME ID #	Cal Date:	Type and Specification	S&ME ID #	Cal Date:
Balance (0.01 g)	6976	1/7/2020	Grooving tool	10747	6/4/2019
LL Apparatus	6238	5/19/2019	Grooving tool		
Oven	13796	5/16/2019	Grooving tool		

Pan #	Tare #:	Liquid Limit						Plastic Limit		
		1	2	3	4	5	6	7	8	9
A	Tare Weight									
B	Wet Soil Weight + A									
C	Dry Soil Weight + A									
D	Water Weight (B-C)									
E	Dry Soil Weight (C-A)									
F	% Moisture (D/E)*100									
N	# OF DROPS									
LL	LL = F * FACTOR									
Ave.	Average									



One Point Liquid Limit			
N	Factor	N	Factor
20	0.974	26	1.005
21	0.979	27	1.009
22	0.985	28	1.014
23	0.99	29	1.018
24	0.995	30	1.022
25	1.000		

NP, Non-Plastic

Liquid Limit

Plastic Limit

Plastic Index

Group Symbol

Multipoint Method

One-point Method

Wet Preparation Dry Preparation Air Dried Estimate the % Retained on the #40 Sieve: 10%

Notes / Deviations / References:

Kim Gonzalez
Technician Name

2/19/2020
Date

Talon Wagenknecht
Technical Responsibility

2/19/2020
Date

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LIQUID LIMIT, PLASTIC LIMIT, & PLASTIC INDEX



ASTM D 4318 AASHTO T 89 AASHTO T 90

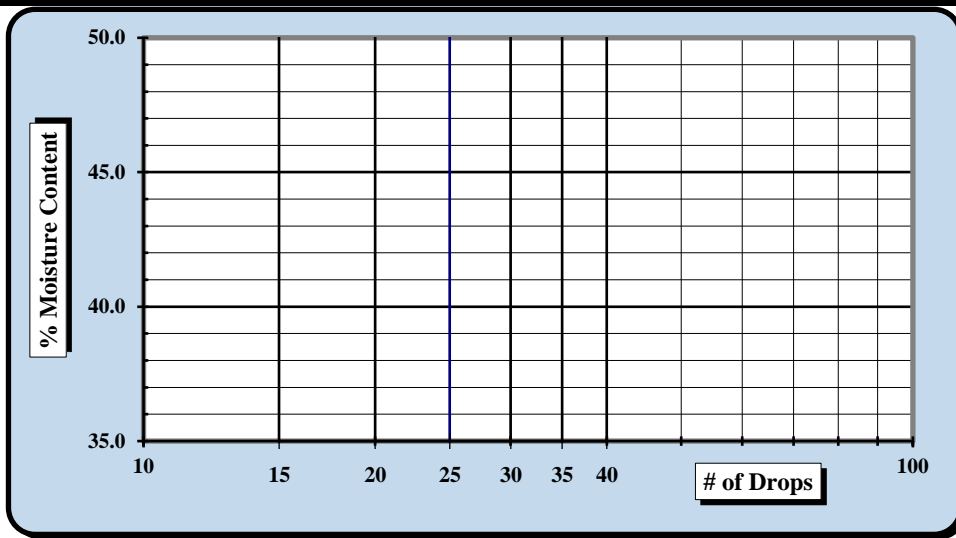
S&ME, Inc. - Charleston: 620 Wando Park Boulevard, Mt. Pleasant, SC 29464

Project #:	1413-19-101	Report Date:	2/19/2020
Project Name:	Isle of Palms Marina Replacement	Test Date(s)	2/16/2020
Client Name:	City of Isle Palms		
Client Address:	Post Office Box 508: Isle of Palms, SC 29451		

Boring #:	C	Sample #:	S-4	Sample Date:	2/11-2/12/2020
Location:		Depth 15.5 to 17.0 FT			

Sample Description: Olive brown, silty SAND (SM)					
Type and Specification	S&ME ID #	Cal Date:	Type and Specification	S&ME ID #	Cal Date:
Balance (0.01 g)	6976	1/7/2020	Grooving tool	10747	6/4/2019
LL Apparatus	6238	5/19/2019	Grooving tool		
Oven	13796	5/16/2019	Grooving tool		

Pan #	Tare #:	Liquid Limit					Plastic Limit			
		1	2	3	4	5	6	7	8	9
A	Tare Weight									
B	Wet Soil Weight + A									
C	Dry Soil Weight + A									
D	Water Weight (B-C)									
E	Dry Soil Weight (C-A)									
F	% Moisture (D/E)*100									
N	# OF DROPS									
LL	LL = F * FACTOR									
Ave.	Average									



One Point Liquid Limit			
N	Factor	N	Factor
20	0.974	26	1.005
21	0.979	27	1.009
22	0.985	28	1.014
23	0.99	29	1.018
24	0.995	30	1.022
25	1.000		

NP, Non-Plastic

Liquid Limit

Plastic Limit

Plastic Index

Group Symbol

Multipoint Method

One-point Method

Wet Preparation Dry Preparation Air Dried Estimate the % Retained on the #40 Sieve: 10%

Notes / Deviations / References:

Kim Gonzalez
Technician Name

2/19/2020
Date

Talon Wagenknecht
Technical Responsibility

2/19/2020
Date

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LIQUID LIMIT, PLASTIC LIMIT, & PLASTIC INDEX



ASTM D 4318 AASHTO T 89 AASHTO T 90

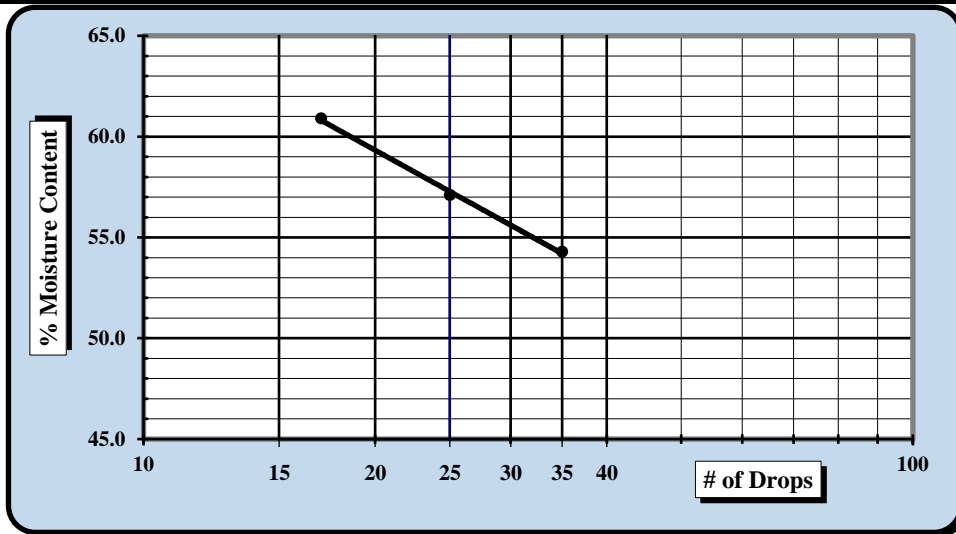
S&ME, Inc. - Charleston: 620 Wando Park Boulevard, Mt. Pleasant, SC 29464

Project #:	1413-19-101	Report Date:	2/19/2020
Project Name:	Isle of Palms Marina Replacement	Test Date(s)	2/16/2020
Client Name:	City of Isle Palms		
Client Address:	Post Office Box 508: Isle of Palms, SC 29451		

Boring #:	D	Sample #:	S-3	Sample Date:	2/11-2/12/2020
Location:		Depth 9.5 to 11.0 FT			

Sample Description: Gray sandy fat CLAY (CH)					
Type and Specification	S&ME ID #	Cal Date:	Type and Specification	S&ME ID #	Cal Date:
Balance (0.01 g)	6976	1/7/2020	Grooving tool	10747	6/4/2019
LL Apparatus	6238	5/19/2019	Grooving tool		
Oven	13796	5/16/2019	Grooving tool		

Pan #	Tare #:	Liquid Limit					Plastic Limit			
		1	2	3	4	5	6	7	8	9
A	Tare Weight	22.80	21.30	21.10				21.10	20.60	
B	Wet Soil Weight + A	42.40	44.40	47.00				25.90	25.60	
C	Dry Soil Weight + A	35.50	36.00	37.20				25.00	24.70	
D	Water Weight (B-C)	6.90	8.40	9.80				0.90	0.90	
E	Dry Soil Weight (C-A)	12.70	14.70	16.10				3.90	4.10	
F	% Moisture (D/E)*100	54.3%	57.1%	60.9%				23.1%	22.0%	
N	# OF DROPS	35	25	17						
LL	LL = F * FACTOR									
Ave.	Average							22.6%		



One Point Liquid Limit			
N	Factor	N	Factor
20	0.974	26	1.005
21	0.979	27	1.009
22	0.985	28	1.014
23	0.99	29	1.018
24	0.995	30	1.022
25	1.000		

NP, Non-Plastic	<input type="checkbox"/>
Liquid Limit	57
Plastic Limit	23
Plastic Index	34
Group Symbol	CH

Multipoint Method
 One-point Method

Wet Preparation Dry Preparation Air Dried Estimate the % Retained on the #40 Sieve: 10%

Notes / Deviations / References:

Kim Gonzalez
 Technician Name

2/19/2020
 Date

Talon Wagenknecht
 Technical Responsibility

2/19/2020
 Date

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LIQUID LIMIT, PLASTIC LIMIT, & PLASTIC INDEX



ASTM D 4318 AASHTO T 89 AASHTO T 90

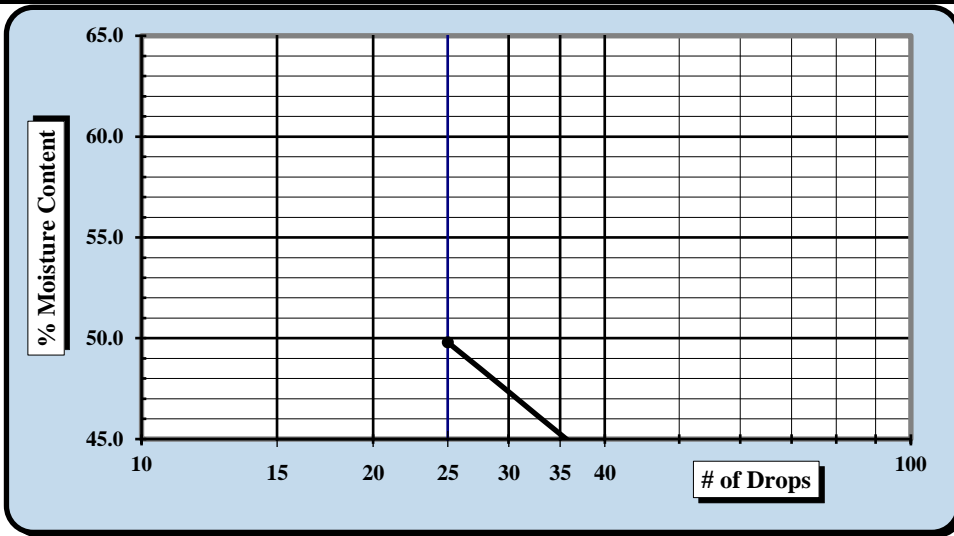
S&ME, Inc. - Charleston: 620 Wando Park Boulevard, Mt. Pleasant, SC 29464

Project #:	1413-19-101	Report Date:	2/19/2020
Project Name:	Isle of Palms Marina Replacement	Test Date(s)	2/16/2020
Client Name:	City of Isle Palms		
Client Address:	Post Office Box 508: Isle of Palms, SC 29451		

Boring #:	E	Sample #:	S-2	Sample Date:	2/11-2/12/2020
Location:		Depth 6.0 to 7.5 FT			

Sample Description: Gray Fat CLAY (CH), with sand					
Type and Specification	S&ME ID #	Cal Date:	Type and Specification	S&ME ID #	Cal Date:
Balance (0.01 g)	6976	1/7/2020	Grooving tool	10747	6/4/2019
LL Apparatus	6238	5/19/2019	Grooving tool		
Oven	13796	5/16/2019	Grooving tool		

Pan #	Tare #:	Liquid Limit						Plastic Limit		
		1	2	3	4	5	6	7	8	9
A	Tare Weight	22.40						22.10	20.80	
B	Wet Soil Weight + A	52.50						25.50	25.60	
C	Dry Soil Weight + A	42.50						24.80	24.70	
D	Water Weight (B-C)	10.00						0.70	0.90	
E	Dry Soil Weight (C-A)	20.10						2.70	3.90	
F	% Moisture (D/E)*100	49.8%						25.9%	23.1%	
N	# OF DROPS	25								
LL	LL = F * FACTOR									
Ave.	Average							24.5%		



One Point Liquid Limit			
N	Factor	N	Factor
20	0.974	26	1.005
21	0.979	27	1.009
22	0.985	28	1.014
23	0.99	29	1.018
24	0.995	30	1.022
25	1.000		

NP, Non-Plastic	<input type="checkbox"/>
Liquid Limit	50
Plastic Limit	25
Plastic Index	25
Group Symbol	CH

Multipoint Method
 One-point Method

Wet Preparation Dry Preparation Air Dried Estimate the % Retained on the #40 Sieve: 10%

Notes / Deviations / References:

Kim Gonzalez
 Technician Name

2/19/2020
 Date

Talon Wagenknecht
 Technical Responsibility

2/19/2020
 Date

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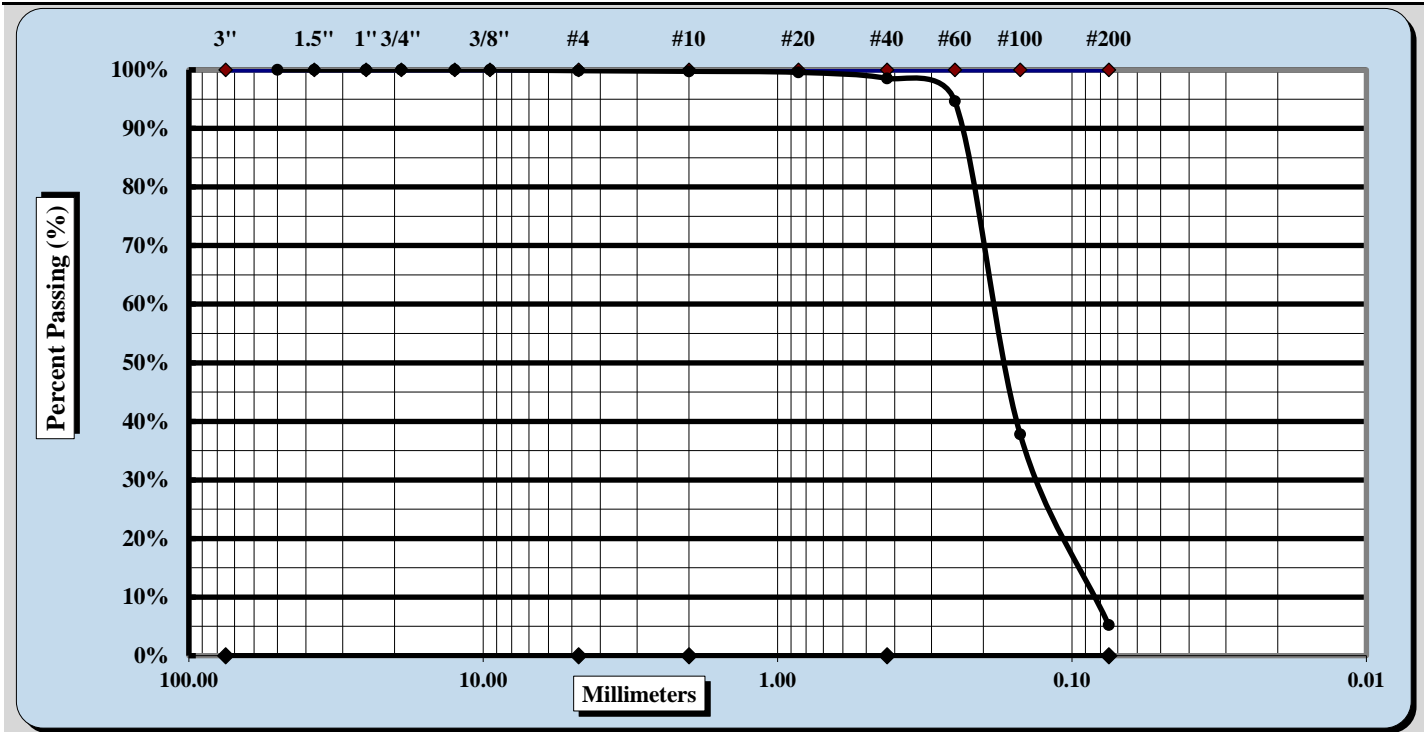


ASTM D 422

S&ME, Inc. - Charleston: 620 Wando Park Boulevard, Mt. Pleasant, SC 29464

Project #:	1413-19-101	Report Date:	2/19/2020
Project Name:	Isle of Palms Marina Replacement	Test Date(s):	2/14/2020
Client Name:	City of Isle Palms		
Client Address:	Post Office Box 508: Isle of Palms, SC 29451		
Sample Id. A	Type:	Sample Date:	2/11-2/12/2020
Location:	Sample: S-2	Depth	2.5 to 4.0 FT

Sample Description: Gray, fine, SAND (SP)



Cobbles	< 300 mm (12") and > 75 mm (3")	Fine Sand	< 0.425 mm and > 0.075 mm
Gravel	< 75 mm and > 4.75 mm (#4)	Silt	< 0.075 and > 0.005 mm
Coarse Sand	< 4.75 mm and > 2.00 mm (#10)	Clay	< 0.005 mm
Medium Sand	< 2.00 mm and > 0.425 mm (#40)	Colloids	< 0.001 mm

Maximum Particle Size	#4	Coarse Sand	0.1%	Fine Sand	93.3%
Gravel	0.1%	Medium Sand	1.2%	Silt & Clay	5.2%
Liquid Limit	NP	Plastic Limit	NP	Plastic Index	NP
Specific Gravity				Moisture Content	32.0%
Coarse Sand	0.1%	Medium Sand	1.2%	Fine Sand	93.3%
Description of Sand & Gravel Particles:		Rounded	<input type="checkbox"/>	Angular	<input type="checkbox"/>
Hard & Durable	<input type="checkbox"/>	Soft	<input type="checkbox"/>	Weathered & Friable	<input type="checkbox"/>

Notes / Deviations / References:

Talon Wagenknecht
Technical Responsibility

[Signature]
Signature

Group Leader
Position

2/19/2020
Date

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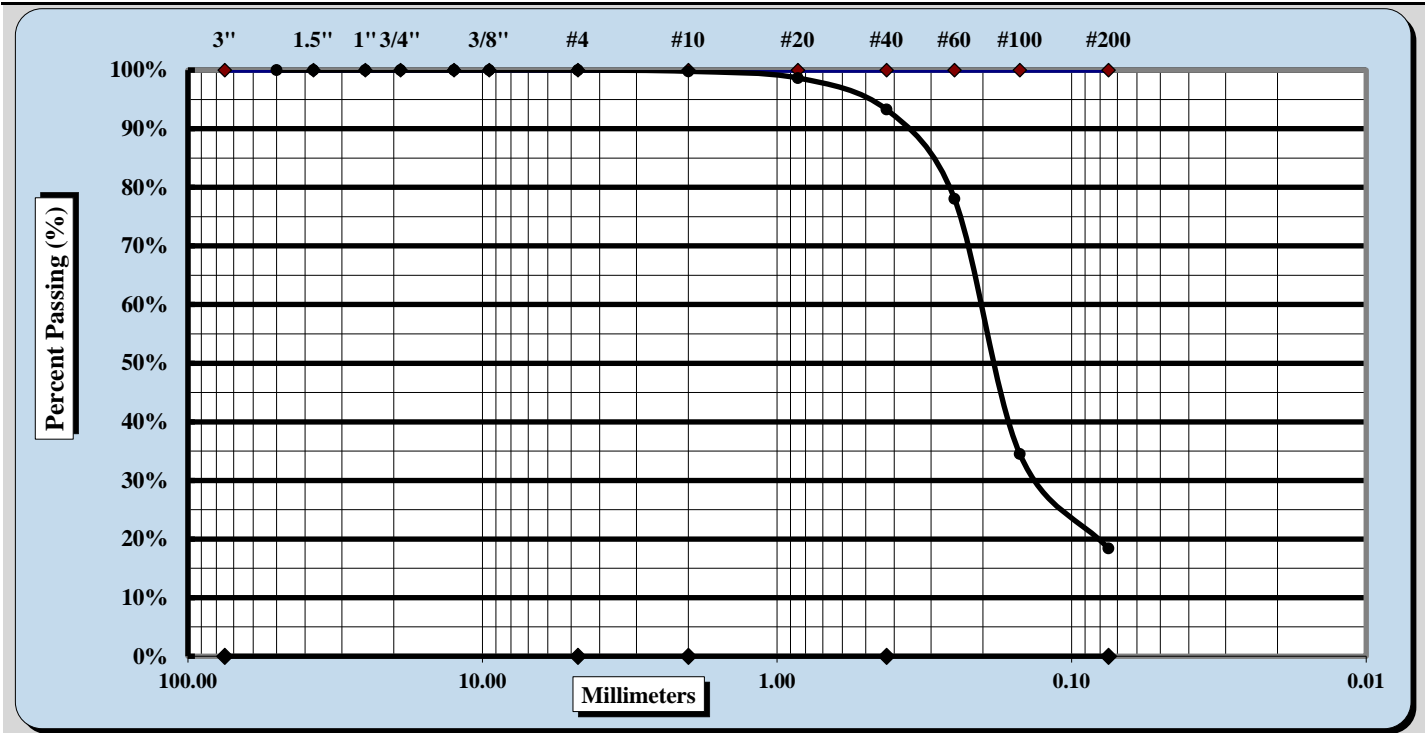


ASTM D 422

S&ME, Inc. - Charleston: 620 Wando Park Boulevard, Mt. Pleasant, SC 29464

Project #:	1413-19-101	Report Date:	2/19/2020
Project Name:	Isle of Palms Marina Replacement	Test Date(s):	2/14/2020
Client Name:	City of Isle Palms		
Client Address:	Post Office Box 508: Isle of Palms, SC 29451		
Sample Id. C	Type:	Sample Date:	2/11-2/12/2020
Location:	Sample: S-4	Depth	15.5 to 17.0 FT

Sample Description: Olive brown, silty SAND (SM)



Cobbles	< 300 mm (12") and > 75 mm (3")	Fine Sand	< 0.425 mm and > 0.075 mm
Gravel	< 75 mm and > 4.75 mm (#4)	Silt	< 0.075 and > 0.005 mm
Coarse Sand	< 4.75 mm and > 2.00 mm (#10)	Clay	< 0.005 mm
Medium Sand	< 2.00 mm and > 0.425 mm (#40)	Colloids	< 0.001 mm

Maximum Particle Size	#4	Coarse Sand	0.2%	Fine Sand	74.9%
Gravel	0.0%	Medium Sand	6.5%	Silt & Clay	18.4%
Liquid Limit	NP	Plastic Limit	NP	Plastic Index	NP
Specific Gravity				Moisture Content	31.0%
Coarse Sand	0.2%	Medium Sand	6.5%	Fine Sand	74.9%
Description of Sand & Gravel Particles:		Rounded	<input type="checkbox"/>	Angular	<input type="checkbox"/>
Hard & Durable	<input type="checkbox"/>	Soft	<input type="checkbox"/>	Weathered & Friable	<input type="checkbox"/>

Notes / Deviations / References:

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Technical Responsibility

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Group Leader
Position

2/18/2020
Date

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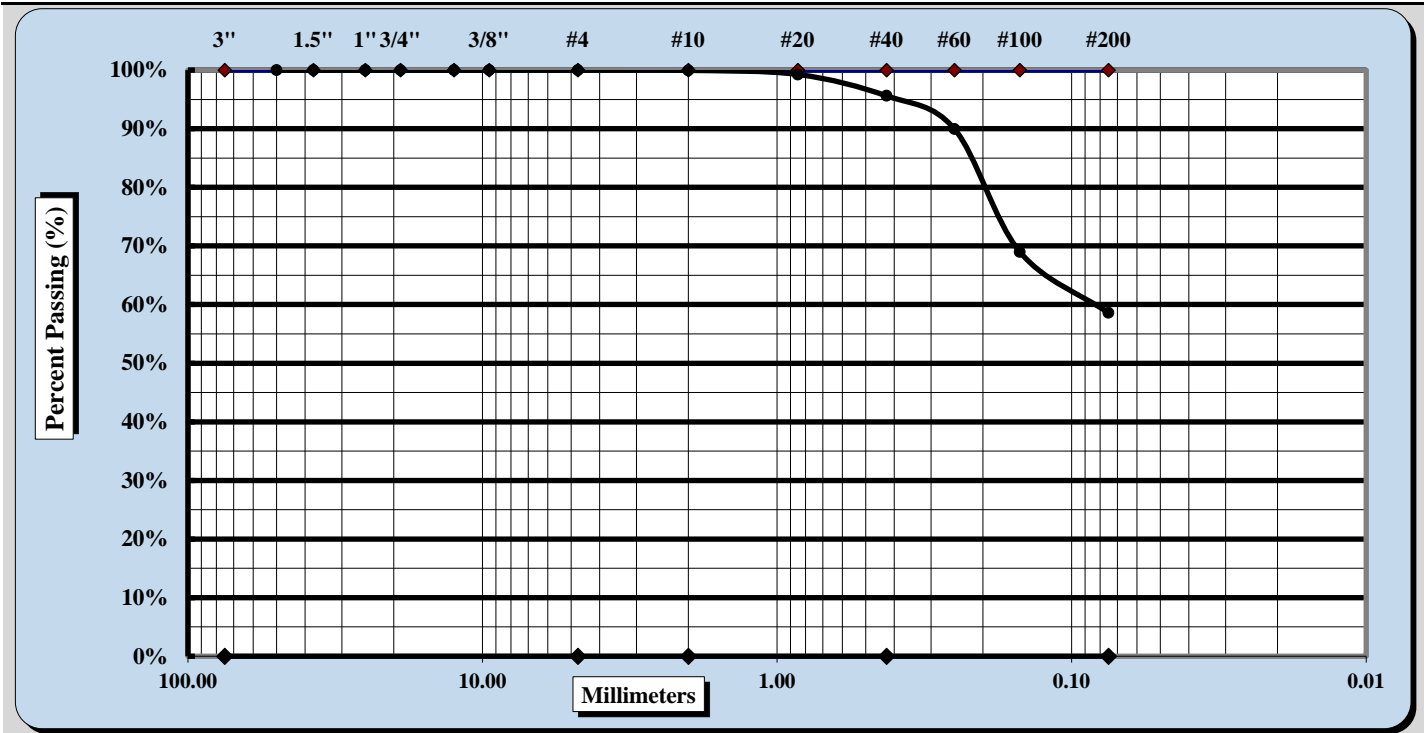


ASTM D 422

S&ME, Inc. - Charleston: 620 Wando Park Boulevard, Mt. Pleasant, SC 29464

Project #:	1413-19-101	Report Date:	2/19/2020
Project Name:	Isle of Palms Marina Replacement	Test Date(s):	2/14/2020
Client Name:	City of Isle Palms		
Client Address:	Post Office Box 508: Isle of Palms, SC 29451		
Sample Id. D	Type:	Sample Date:	2/11-2/12/2020
Location:	Sample: S-3	Depth	9.5 to 11.0 FT

Sample Description: Gray, sandy fat CLAY (CH)



Cobbles	< 300 mm (12") and > 75 mm (3")	Fine Sand	< 0.425 mm and > 0.075 mm
Gravel	< 75 mm and > 4.75 mm (#4)	Silt	< 0.075 and > 0.005 mm
Coarse Sand	< 4.75 mm and > 2.00 mm (#10)	Clay	< 0.005 mm
Medium Sand	< 2.00 mm and > 0.425 mm (#40)	Colloids	< 0.001 mm

Maximum Particle Size	#10	Coarse Sand	0.0%	Fine Sand	37.0%
Gravel	0.0%	Medium Sand	4.3%	Silt & Clay	58.6%
Liquid Limit	57	Plastic Limit	23	Plastic Index	34
Specific Gravity				Moisture Content	31.9%
Coarse Sand	0.0%	Medium Sand	4.3%	Fine Sand	37.0%
Description of Sand & Gravel Particles:		Rounded	<input type="checkbox"/>	Angular	<input type="checkbox"/>
Hard & Durable	<input type="checkbox"/>	Soft	<input type="checkbox"/>	Weathered & Friable	<input type="checkbox"/>

Notes / Deviations / References:

Talon Wagenknecht

Technical Responsibility

Signature

Group Leader

Position

2/18/2020

Date

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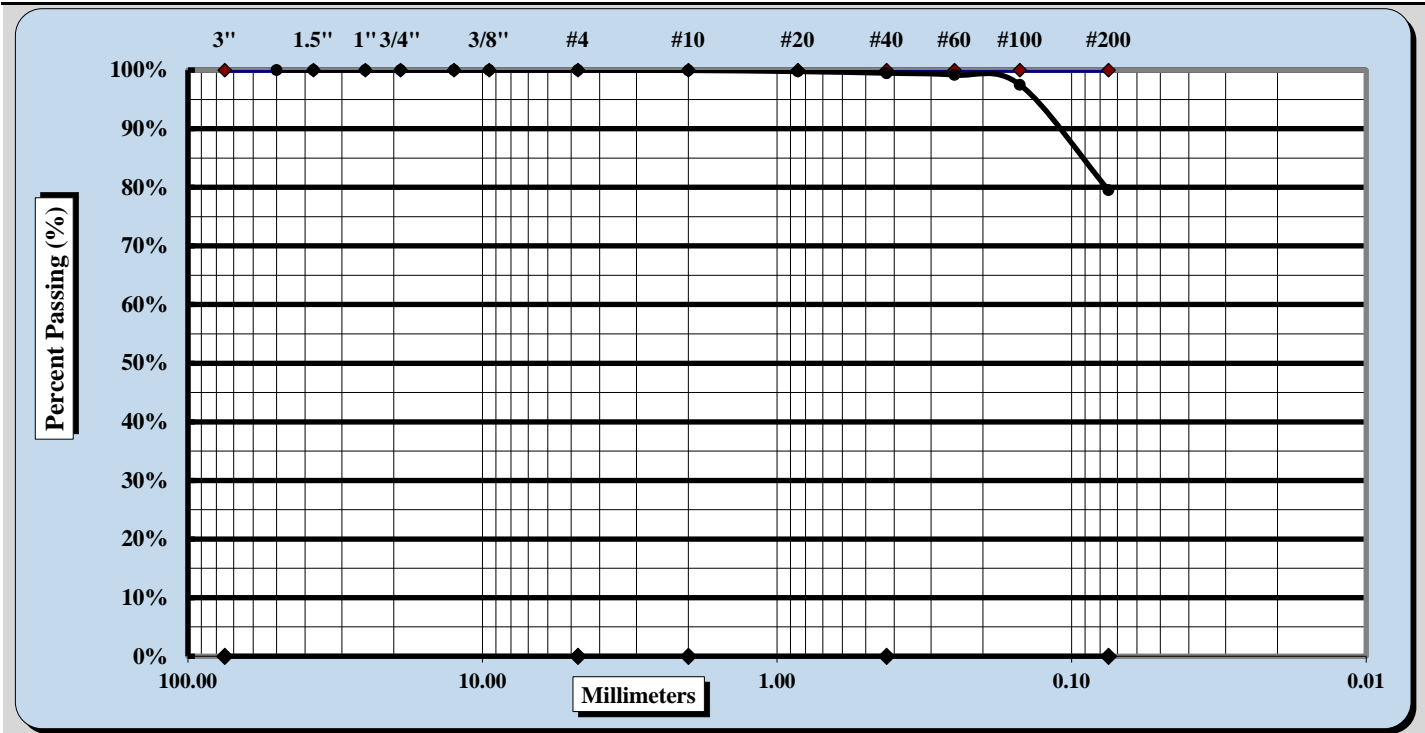


ASTM D 422

S&ME, Inc. - Charleston: 620 Wando Park Boulevard, Mt. Pleasant, SC 29464

Project #:	1413-19-101	Report Date:	2/19/2020
Project Name:	Isle of Palms Marina Replacement	Test Date(s):	2/14/2020
Client Name:	City of Isle Palms		
Client Address:	Post Office Box 508: Isle of Palms, SC 29451		
Sample Id. E	Type:	Sample Date:	2/11-2/12/2020
Location:	Sample: S-2	Depth	6.0 to 7.5 FT

Sample Description: Gray, Fat CLAY (CH), with sand



Cobbles	< 300 mm (12") and > 75 mm (3")	Fine Sand	< 0.425 mm and > 0.075 mm
Gravel	< 75 mm and > 4.75 mm (#4)	Silt	< 0.075 and > 0.005 mm
Coarse Sand	< 4.75 mm and > 2.00 mm (#10)	Clay	< 0.005 mm
Medium Sand	< 2.00 mm and > 0.425 mm (#40)	Colloids	< 0.001 mm

Maximum Particle Size	#10	Coarse Sand	0.0%	Fine Sand	19.9%
Gravel	0.0%	Medium Sand	0.5%	Silt & Clay	79.5%
Liquid Limit	50	Plastic Limit	25	Plastic Index	25
Specific Gravity	Cc = 0.003	Cu = 8.636	Moisture Content	59.5%	
Coarse Sand	0.0%	Medium Sand	0.5%	Fine Sand	19.9%
Description of Sand & Gravel Particles:		Rounded	<input type="checkbox"/>	Angular	<input type="checkbox"/>
Hard & Durable	<input type="checkbox"/>	Soft	<input type="checkbox"/>	Weathered & Friable	<input type="checkbox"/>

Notes / Deviations / References:

Talon Wagenknecht
Technical Responsibility

[Signature]
Signature

Group Leader
Position

2/19/2020
Date

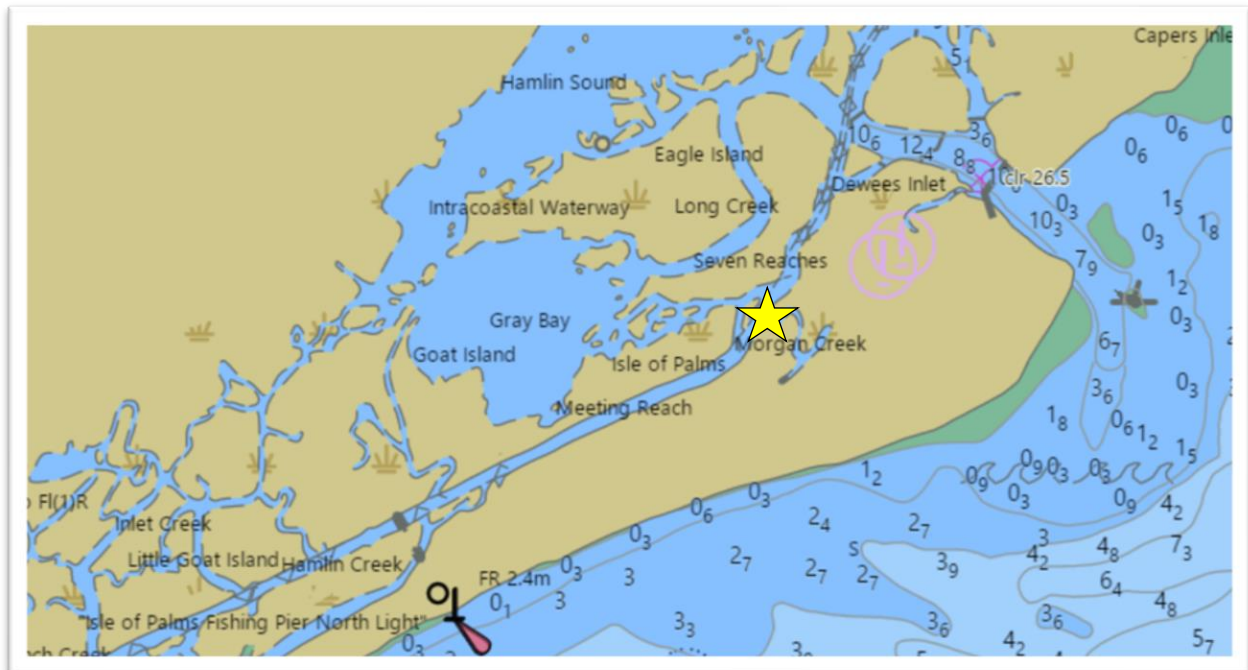
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APPENDIX C
COASTAL CONDITIONS ASSESSMENT



Coastal Conditions Assessment

Isle of Palms Marina Rehabilitation



November 2019



Applied Technology and Management, Inc.
941 Houston Northcutt Boulevard
Mount Pleasant, South Carolina
www.appliedtm.com

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1.0 Background

Applied Technology and Management, Inc. (ATM) was contracted to complete a coastal conditions assessment for a proposed marina rehabilitation at Isle of Palms Marina, Isle of Palms, South Carolina. The analysis included a desktop review of readily available information in the project area to determine operational and extreme event environmental conditions that may have a marked impact on the updated dock layout and its design and operation.

2.0 Project Site

The project site is an existing marina on the north side of Isle of Palms. The upland portion of the marina includes a restaurant, ships store, gas pump, car parking, and trailer parking. The shoreline is bordered on the north by the Atlantic Intracoastal Waterway (AIWW) and the east by Morgan Creek. The upland site is surrounded by a steel bulkhead adjacent to the waters of Morgan Creek and fronted by intertidal marsh along the AIWW section of the site. A three-lane concrete boat ramp is located on Morgan Creek. Morgan Creek is approximately 300 feet wide at the site and the AIWW channel centerline is approximately 280 feet from the marina shoreline. Figure 2 shows the proposed marina rehabilitation configuration with docks in Morgan Creek and the AIWW.

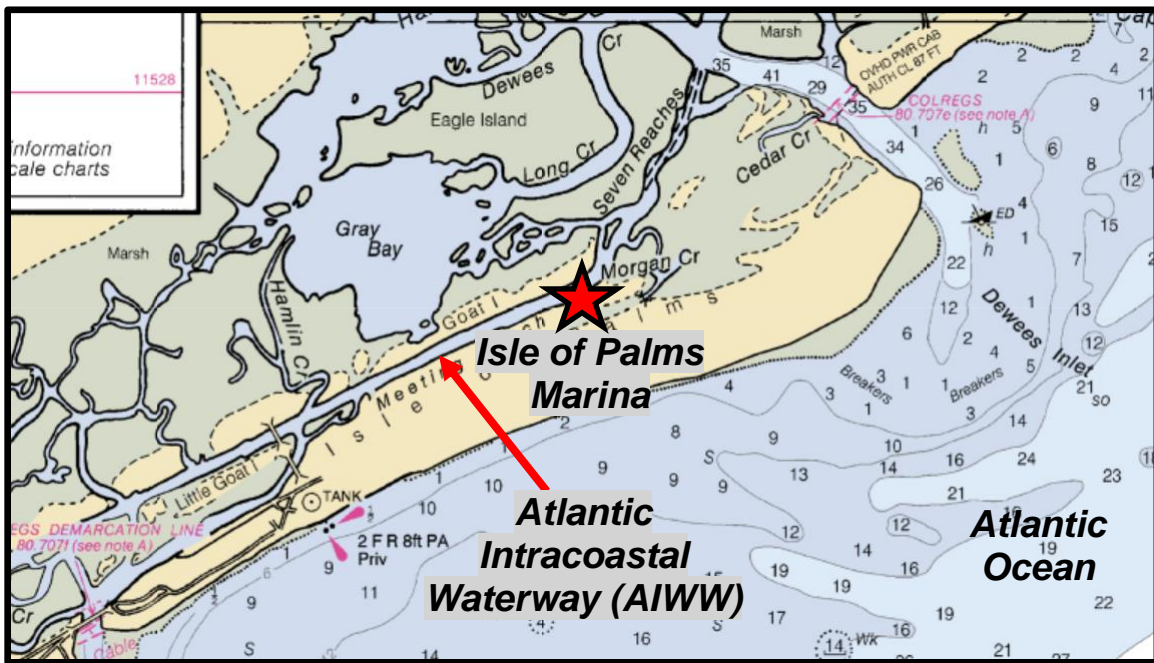


Figure 1: Project location on NOAA Nautical Chart.

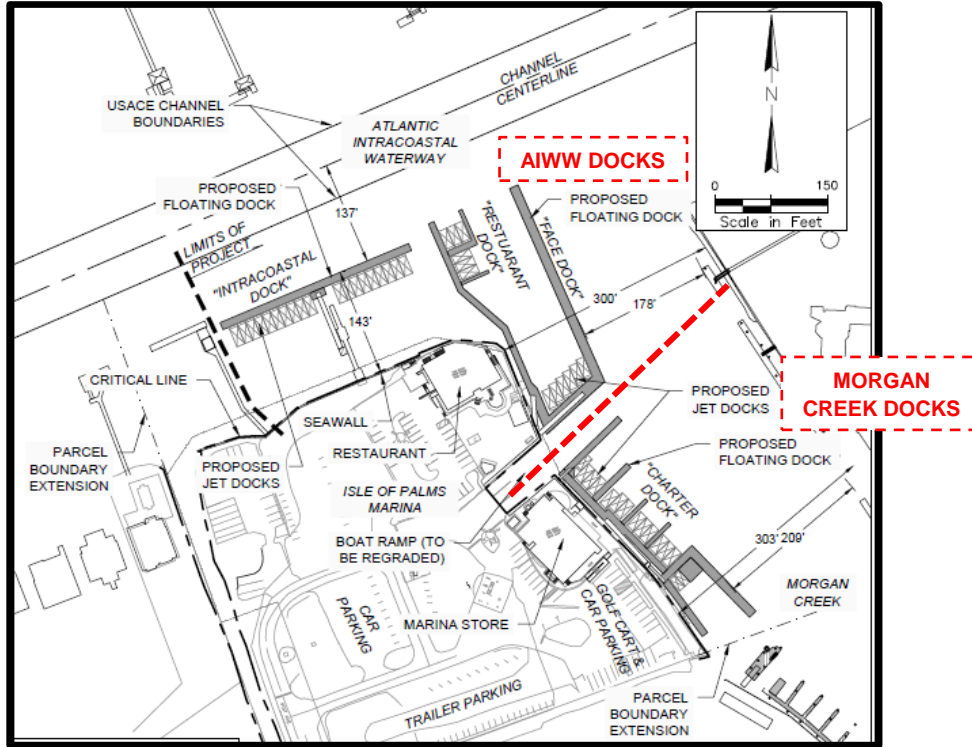


Figure 2: Proposed Dock Layout. (note delineation between AIWW and Morgan Creek Docks)

In Figure 2, note the delineation between AIWW Docks (Intracoastal, Restaurant, and Face Docks) versus Morgan Creek Docks (Charter and Fuel Docks). These docks will have different design wave conditions because of the protected nature of the docks within Morgan Creek versus the more exposed AIWW docks.

3.0 Water Levels

Water levels at the project site are influenced by ocean tides and storm surge. The nearest NOAA tidal prediction station is located in Hamlin Creek (Station 8665387, ~2.5 miles southwest of the marina). Tide levels at the site based on NOAA's prediction station are shown in Table 1. The average tide range at the site is 5 feet.

Table 1: NOAA Tide Prediction Stations.

<i>Datum</i>	<i>Abbreviation</i>	<i>Water Level ft (MLLW)</i>
Mean Higher High Water	MHHW	5.6
Mean High Water	MHW	5.2
North American Vertical Datum, 1988	NAVD88	3.1
Mean Sea Level	MSL	2.8
Mean Low Water	MLW	0.2
Mean Lower Low Water	MLLW	0.0

Extreme stillwater (i.e. storm surge) levels are predicted by FEMA for areas within Charleston County in the Flood Information Study (FIS) that took effect in 2004. FEMA is working to update their flood mapping and has provided a preliminary FIS report for the County. Table 2 provides extreme event water levels from both the effective and preliminary FIS reports. FEMA's preliminary FIS report predicts stillwater elevations to be lower for each return interval. For conservatism, it is recommended to utilize the effective FIS report extreme water levels for design.

Table 2: FEMA FIS Preliminary and Effective Stillwater Elevations.

<i>Datum</i>	<i>Abbreviation</i>	<i>Preliminary FIS ft (MLLW)</i>	<i>Effective FIS ft (MLLW)</i>
100-YR Stillwater Elevation	100-YR SWEL	12.6	14.1
50-YR Stillwater Elevation	50-YR SWEL	10.8	13.6
25-YR Stillwater Elevation	25-YR SWEL	10.0	12.5
10-YR Stillwater Elevation	10-YR SWEL	8.5	11.2

4.0 Bathymetry

A bathymetric survey of the marina area was completed in 2016 by GEL. The survey included capturing bathymetry near the marina bulkhead across the entire width of Morgan Creek and from the marsh out to the centerline of the AIWW and **Figure 3** shows those survey limits. Depths around the docks in Morgan Creek range from 6 to 11 feet below MLLW and depths along the dock in the AIWW range from 4.5 to 9 feet below MLLW. Bathymetry slopes gradually up moving toward the site shoreline. Along the AIWW, an intertidal marsh fronts the upland and along Morgan Creek, the steel bulkhead directly fronts the waters of the marina project.

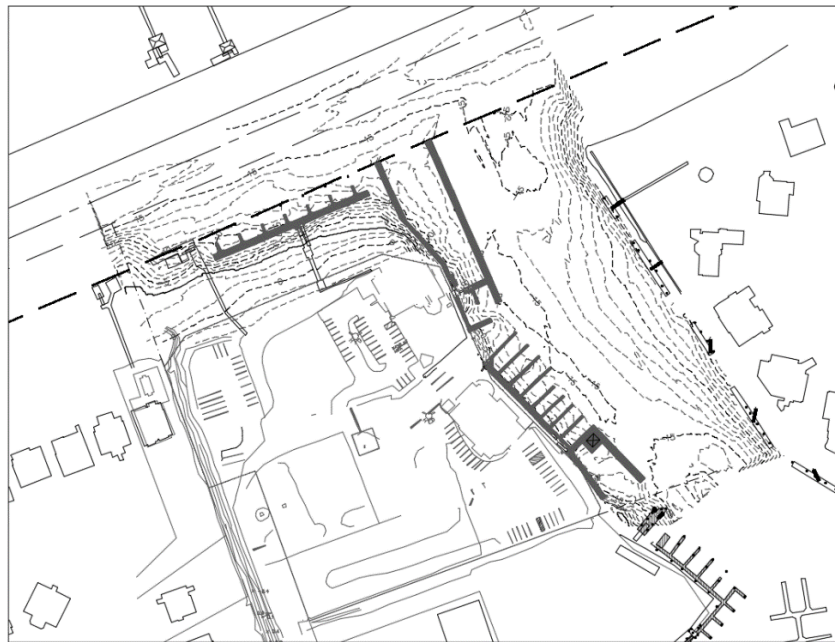


Figure 3: Bathymetry at Project Site (GEL Engineering, LLC 2016).

The USACE completed a hydrographic survey of the AIWW in November 2018. The USACE survey indicates depths in the channel ranged between 11 and 16 feet below MLLW.

5.0 Currents

Currents at the site are mainly associated with tidal fluctuations. No current measurements or NOAA tidal current prediction stations are located at or near the project site. Based on the nearest NOAA tidal current prediction station (mouth of the AIWW ~7 miles south of the project site, Station ACT6721), tidal surface currents up to approximately +1.7 knots can be expected near the AIWW in Charleston Harbor. Current speeds in the AIWW are conservatively expected to be similar to Charleston Harbor, based on available data. To confirm presence of design current speeds, ATM recommends that field measurements of in-situ currents at the proposed dock area be taken during a spring tidal cycle during the preliminary design phase. Currents within Morgan Creek are anticipated to be less than those in the AIWW.

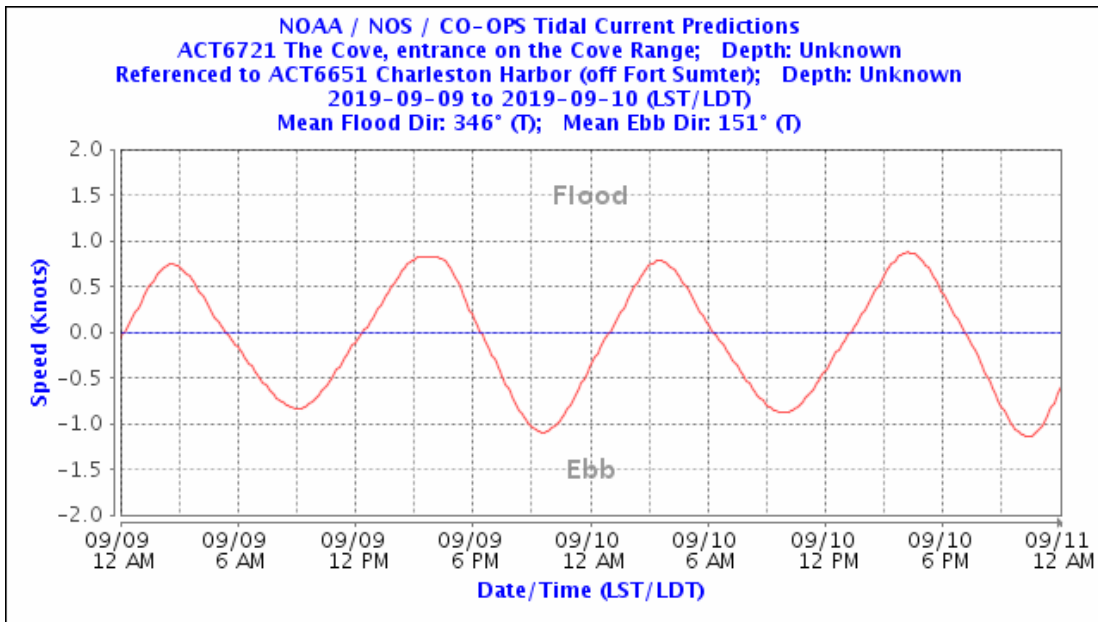


Figure 4: NOAA Tidal Prediction Station in Charleston Harbor.

6.0 Winds

6.1 Operational Wind Data

Typical wind conditions were evaluated using readily available wind data near the coast of Charleston County at sites listed below:

- Mount Pleasant [LRO] (Data recorded from 2008 to 2019)
- Charleston Executive Airport [IZI] (Data recorded from 2008 to 2019)

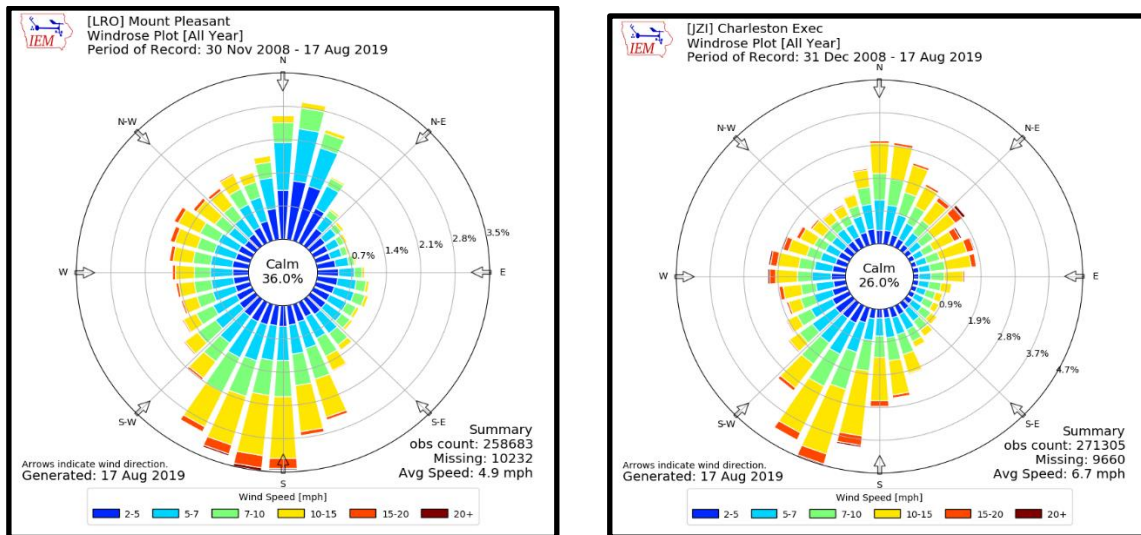


Figure 5: (Left) Mount Pleasant [LRO] windrose and (Right) Charleston Executive Airport [JZI] windrose.

The windroses for both stations (Figure 5) agree with the most common winds coming from the south/southwest and, to a lesser extent, the north/northeast. April through August winds come predominantly from the south/southwest and the rest of the year has a strong north/northeasterly wind component, with some westerly winds. The average wind speed at both stations is less than 10 miles per hour.

6.2 Extreme Event Wind Data

The design wind speeds for marine structures are typically based upon the anticipated extreme wind conditions associated with long return period storm events (i.e. hurricanes). The ASCE 7 design standards (2016 version) provide extreme event wind speeds for use in flood/hurricane analysis and structural design. These guidelines present extreme wind speeds that are omnidirectional. That is, they consider extreme winds that can come from any direction.

Table 3: ASCE Predicted Extreme Wind Speeds.

Mean Return Interval	ASCE 7-16 3-Sec Gust, MPH
100-YR	117
50-YR	104
25-YR	91
10-YR	78

Operational and extreme event windspeeds will be used as inputs to calculate wind-generated waves that may impact the project site. Extreme windspeeds will also be utilized for final design loading of the floating dock structure and anchorage.

7.0 Site Exposure and Wave Conditions

7.1 Site Exposure

Site exposure refers to the unprotected nature of a project area to coastal hazards. The exposure of a particular site will depend on regional and local bathymetry, coastal shoreline structures, and surrounding geography/topology. The existing marina is located on the south side of a narrow channel and is adjacent to a bend in the river. The bend protects the marina from direct effects along the river to the north. The AIWW is lined with fixed piers and floating docks southwest of the site narrowing the channel even further. These factors will influence the specific conditions that may realistically impact a marine structure at the subject site. Recall that the Morgan Creek docks are less exposed and will be less vulnerable to larger wind and vessel generated waves.

7.2 Waves

7.2.1 Wind-Generated Waves

Wind generated waves are mainly controlled by fetch, or the distance wind can blow across water unobstructed. Generally, a longer, deeper water fetch generates larger waves. The site has very restricted fetch from a direction sense. That is, the extreme event wind would have to blow from a very specific direction to generate design waves. Based on local geography, bathymetric conditions, restricted nature of the AIWW, and wind-wave generation characteristics, two critical design fetches were developed. The critical exposures and design fetches are:

- 0.65 miles to the NE along AIWW
- 0.9 miles to the SW along AIWW

The USACE wave forecasting model, ACES (USACE, 1992), was used to evaluate the potential locally generated extreme event wind-wave conditions at the site. The model utilizes various input parameters including, but not limited to: observed wind speed, fetch distance (i.e. - distance over which wind-generated waves may form), and average water depths over the fetch distance to estimate the peak wave heights and periods associated with different return period events. The critical fetches were entered in to calculate predicted wave characteristics for different storm return intervals. A summary table of outputs is given below.

Table 4: ACES summary table.

Direction From	Case	Design Water Level	ASCE 7-16 Wind Speed	Significant Wave Height, Hs	Peak Wave Period, Tp
		(feet, MLLW)	(mph, 3-sec gust)	(feet)	(seconds)
Southwest	10-YR	20.1	78	2.0	2.2
	25-YR	21.4	91	2.4	2.4
	50-YR	22.5	104	2.9	2.5
Northeast	10-YR	24.1	78	1.7	2.0
	25-YR	25.4	91	2.1	2.1
	50-YR	26.5	104	2.5	2.3

7.2.2 Vessel Generated Wakes

Boat wakes are anticipated to be the cause of larger operational and controlling design waves at the marina, on a daily basis. This is due to the narrow configuration of the AIWW, proximity of the project site to the AIWW navigation channel, and common occurrence of relatively larger vessels traveling at unrestricted speeds.

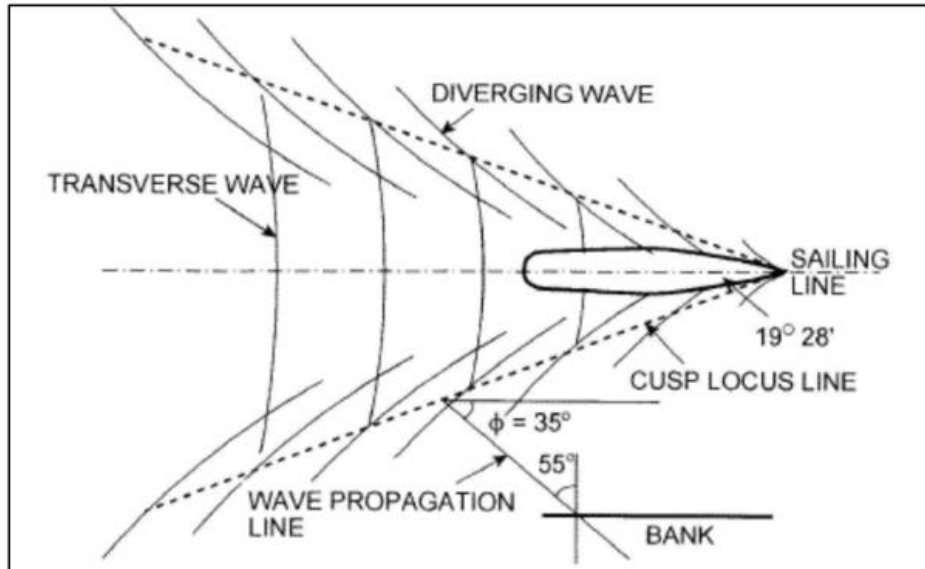


Figure 6: Illustration of Secondary Vessel Waves (Wakes) (Schiereck, 2001).

Boat wake heights and periods were estimated using several industry standard methods including: Kriebel, Seelig, & Judges (2005); Schiereck (2001); and Weggel and Sorensen (1986). These prediction methods use a variety of parameters such as a depth, ship displacement, speed, length, beam, draft, and entry length to determine the estimated wake conditions a certain distance away from the vessel. The existing AIWW channel boundary is approximately 91 ft away from the closest proposed docks and controlling channel depths of 18 feet during high tide conditions are present near the site. In addition to normal operating wakes, vessels can also produce increased wakes due to certain maneuvers such changes in speed and direction or if vessels travel at speed outside the channel limits, which is likely near the proposed marina facility. Based on the range of results from the wake prediction methods and ATM engineering judgement and experience with similar projects, controlling design wakes at the project site are estimated to have heights of **2.5 ft** and periods of **3.5 sec**.

8.0 Risk Potential

There is always some risk of damage and even total loss of waterfront structures, which can be estimated by the following equation:

$$R = 1 - (1 - 1/T_r)^n$$

where R is the probability or risk that an event with a return period of T_r years will occur at least once during a time period (project life) of n years.

Table 6 presents some theoretical examples of risk of occurrence for particular design levels and project design lives.

Table 5: Theoretical occurrence percentages for varying time spans.

<i>Return Period (Years)</i>	<i>Theoretical Occurrence over 1 Year</i>	<i>Theoretical Occurrence over 5 years</i>	<i>Theoretical Occurrence over 10 years</i>	<i>Theoretical Occurrence over 25 years</i>
10	10%	41%	64%	93%
25	4%	19%	34%	64%
50	2%	10%	18%	40%

This means that statistically, there is an 18 percent chance of a 50-year design condition occurring over a consecutive 10-year period and 40 percent chance over a consecutive 25-year period. For a 25-year design condition and a 25-year life expectancy, there is a 64 percent chance of that event occurring during the life of the project.

Typical marina facilities, neglecting economic analyses, are generally designed for 25- to 50-year recurrence interval event (annual chance of occurrence of 4% and 2%, respectively) as the “design or survival condition”. This implies survival with some damage expected during the design storm event unless economics or other considerations result in a reduction (or increase) in the design level. ASCE Manual 50 (2012) states that a 50-yr design storm coupled with a typical 25 to 30-year project lifespan for marine facilities is a typically accepted risk scenario. A reduction in design level will also mean an increase in accepted level of risk of possible structure damage or destruction. Reduced design levels may be justified for projects that are temporary or where structure damage/destruction will not involve loss of life or significant injury. The City must evaluate these risks versus insurance premiums, available coverage, design life, risk of life/safety, and capital costs so that an informed decision can be made regarding the required robustness of the final design.

Numerous commercial floating dock products and manufacturers exist that vary in construction material, robustness, connection/joint type, and other attributes that will ultimately impact the type of wave conditions they may endure/survive. Floating dock and anchorage product types, acceptable risk, and other considerations must be weighed moving forward through the planning and design process.

9.0 Summary of Potential Design Considerations

Based on the assessment described herein, below is a summary of potential design conditions that may occur at the proposed site:

Water Levels

Typical Tidal Range:	5.0 feet
Mean High Water:	+2.1' NAVD88
Mean Low Water:	-2.9' NAVD88
FEMA 50-yr MRI Water Level:	+10.5' NAVD88
FEMA 25-yr MRI Water Level:	+9.4' NAVD88

Wind Speeds

50-yr MRI Windspeed:	104 MPH (3-sec gust)
25-yr MRI Windspeed:	91 MPH (3-sec gust)
ASCE 7-10 Risk Cat I Windspeed:	135 MPH (3-sec gust)

*Wind speed on berthed vessels may be adjusted to a 30 second duration for determination of wind pressure loads.

Current Speeds	1.7 knots
-----------------------	-----------

Wave Conditions

AIWW Docks (Figure 2 - Intracoastal, Restaurant, and Face Docks)

50-yr MRI Wave Conditions:	$H_s = 2.9$ ft, $T_p = 2.5$ sec
25-yr MRI Wave Conditions:	$H_s = 2.4$ ft, $T_p = 2.4$ sec

Morgan Creek Docks (Figure 2 – Charter and Fuel Docks)

50-yr MRI Wave Conditions:	$H_s = 1.5$ ft, $T_p = 2.5$ sec
25-yr MRI Wave Conditions:	$H_s = 1.1$ ft, $T_p = 2.4$ sec

Vessel Wakes

AIWW Docks

Operational Wake Conditions	$H = 2.5$ ft, $T = 3.5$ sec
-----------------------------	-----------------------------

Morgan Creek Docks

Operational Wake Conditions	$H = 1.0$ ft, $T = 3.5$ sec
-----------------------------	-----------------------------

Calculations for different project and structure types utilize different statistical wave heights as design inputs. The significant wave heights referenced in this report are the highest 1/3 of observed waves within any given wave spectrum. Wave heights referred to as H_{10} (highest 10% of waves = $H_s * 1.27$) and H_1 (highest 1% of waves = $H_s * 1.67$) may also be considered by the final designer. Vessel wake heights can be considered maximum wave heights.

10.0 References

- American Society of Civil Engineers (ASCE), 2016. Minimum Design Loads for Buildings and Other Structures, ASCE Standard ASCE/SEI 7-16, Reston, Virginia.
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- Iowa State University, Iowa Environmental Mesonet. Website:
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