

**City of Isle of Palms, South Carolina**  
**Request for Bids (RFB) 2017-08**  
**Isle of Palms Marina Bulkhead Rehabilitation**

In compliance with the City's Procurement Ordinance, the City of Isle of Palms, South Carolina is seeking bids from qualified firms to rehabilitate the bulkhead at the Isle of Palms Marina per the engineered drawings 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.

Bids should be submitted to the following:

Linda Lovvorn Tucker, City Administrator  
City of Isle of Palms  
1207 Palm Boulevard  
Post Office Box 508  
Isle of Palms, South Carolina 29451

**Deadline for Questions:** The deadline for questions is **5:00 p.m. Eastern Standard Time, December 15, 2017**. Send questions regarding this Request for Bids to Desirée Fragoso, Assistant City Administrator, in writing or email [desireef@iop.net](mailto:desireef@iop.net). Questions received before this deadline will be answered via an addendum posted to the City's website at <http://www.iop.net/requests-for-bids-proposals>. Questions received after this date and time will not be answered. If an addendum is issued, bidders must acknowledge receipt of the addendum with their bid.

**Pre-Bid Meeting:** A mandatory pre-bid meeting will be held at **2:00 p.m., December 20, 2017** at the Isle of Palms Marina, located at 50 Forty-first Avenue, Isle of Palms, South Carolina 29451.

**Deadline for Submission:** The deadline for submission is **2:00 p.m. Eastern Standard Time, January 4, 2018**. Submissions 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 2017-08 Isle of Palms Marina Bulkhead Rehabilitation" and include one (1) hard copy and one (1) electronic copy saved to a compact disc (CD) or 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. Contractors mailing bids should allow delivery time to ensure timely receipt of their bid. The responsibility for getting the bid to City of Isle of Palms on or before the specified time and date is solely and strictly the responsibility of the proposing firm. Any bids received later than the submission deadline will not be accepted or considered. Electronic bids will not be accepted.

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 bidder or any member of the bidder'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. Bidders are responsible for submission of accurate, adequate and clear descriptions of the information requested. 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 bidder even if all the requirements in the RFB have been met.

Bidders must have or be able to procure an Isle of Palms Business License.

Contractors 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. Each Bid must be accompanied by a certified check of the Bidder, or by a Bid Bond made payable to the City for an amount equal to no less than five (5%) percent of the total bid as a guarantee that, if the bid is accepted, the required Contract will be executed and that a 100% Performance Bond and 100% Payment Bond will be furnished. Bonds shall be in the form provided with 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.

The City further reserves the right to make such investigation as it deems necessary to determine the capability of the bidders to furnish the required services, and bidders shall furnish all such information for this purpose as the City may request.

Bidders must specifically identify any portions of their submittals deemed to contain confidential and proprietary information, or trade secrets. However, the bidder should also understand that information submitted may be subject to FOIA and may be disclosed if requested.

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.

## **Description of Project**

The Isle of Palms Marina was originally constructed with a timber bulkhead, timber cap, and all original buildings on timber piles. During routine monitoring and inspection of the condition of the wall in 2008 by Jon Guerry Taylor and Associates, Inc. (JGT), it was noticed that there was severe decay, soil loss, marine borer damage, bowing (deflection), and toe kick-out (translation at the toe of the bulkhead) as documented in their report dated June 11, 2008. Subsequently, it was recommended that the wall be replaced with a steel sheet pile wall directly waterside of the existing timber bulkhead leaving it in place.

In recent years, severe erosion has occurred behind the wall, both in front of the Morgan Creek Grill and the Marina store. On August 16, 2016, City Council awarded a contract to Johnson, Mirmiran & Thompson, Inc. (JMT) to conduct an evaluation of the new bulkhead at the Isle of Palms Marina, and provide a recommendation for repairs.

The Isle of Palms Marina Bulkhead Rehabilitation consists of demolishing the concrete cap in order to gain access to the back of the steel sheet pile wall and expose the buried timber wall. Excavate the fill between the walls along the entire length of the bulkhead and remove the existing weep drains. Each weep drain location will then be replaced with a JETfilter®, or engineer approved equivalent product, the entire excavation lined with filter fabric and backfilled with a combination of SCDOT #67 stone, pea gravel and quality fill material. After proper compaction, a french drain or curb and gutter system would be installed behind the timber wall, at the inland side of the concrete, to collect and distribute the sheetflow water coming from the parking and grassed areas. This sheetflow water would be directed through the trench drain system and dispersed through designed release points on either end of the bulkhead. The concrete cap would then be replaced, including recast over the timber wall to seal from any material washing over the wall. Engineered drawings and construction specifications are included as part of the RFB document.

All work must be completed prior to April 15, 2018.

## **BID BOND (SURETY) REQUIREMENT**

Bid Surety acts to protect the City of Isle of Palms from delays and expenses incurred in the lengthy competitive sealed bid processes, and provides the City with some financial assurance that should the bidder be awarded the project, the successful bidder will enter into the contract with the City. The successful bidder forfeits its Bid Surety in the event it cannot perform the work required by the RFB.

**Bid Surety in the amount of at least five percent (5%) of the proposed project costs must be submitted with the bid. Failure to satisfy this Bid Surety requirement will result in your bid being considered non-responsive and removed from further consideration for award of the subject contract. Bid Surety can be provided as discussed below.**

### **BID SURETY:**

For all bidders, a deposit in the amount of five percent (5%) of the proposed contract price must accompany the bid. These deposits shall take the form of a certified check, cashier's check or a surety bond executed by a corporate surety licensed under the laws of South Carolina. **PERSONAL OR COMPANY CHECKS DO NOT MEET THIS REQUIREMENT.** The cashier's check or certified check shall be deposited to the City's account if the successful bidder fails to enter into the proposed contract. Bid deposits of unsuccessful bidders will be returned as soon as the contract is awarded.

**Failure to satisfy this Bid Surety requirement will result in your bid being considered non-responsive and removed from further consideration for award of the subject project's contract.**

SAMPLE BID BOND

KNOW ALL MEN BY THESE PRESENTS, THAT WE, the undersigned, \_\_\_\_\_, as Principal, and \_\_\_\_\_, as Surety, are hereby held and firmly bound unto, As Owner, in the penal sum of \_\_\_\_\_ (\$ \_\_\_\_\_), for the payment of which, well and truly to be made, we hereby jointly and severally bind ourselves, our heirs, executors, administrators, successors and assigns.

Signed, this \_\_\_\_\_ day of \_\_\_\_\_, 20 .

The condition of the above obligation is such that whereas the Principal has submitted to \_\_\_\_\_ a certain Bid, attached hereto and hereby made a part hereof into a contract in writing, for the \_\_\_\_\_.

NOW, THEREFORE,

- (a) If said Bid shall be rejected, or in the alternate,
- (b) If said Bid shall be accepted and the Principal shall execute and deliver a contract in the Form of Contract attached hereto (properly completed in accordance with said Bid) and shall in all other respects perform the agreement caused by the acceptance of said Bid, then this obligation shall be void, otherwise the same shall remain in force and effect; it being expressly understood and agreed that the liability of the surety for any and all claims hereunder shall, in no event, exceed the penal amount of this obligation as herein stated.

The Surety, for value received, hereby stipulates and agrees that the obligations of said Surety and its bond shall be in no way impaired or affected by any extension of the time within which the Owner may accept such Bid; and said Surety does hereby waive notice of any such extension.

IN WITNESS WHEREOF, the Principal and the Surety have hereunto set their hands and seals, and such of them as are corporations have caused their corporate seals to be hereto affixed and these presents to be signed by their proper officers, the day and year first set forth above.

\_\_\_\_\_(L. S.)  
PRINCIPAL

\_\_\_\_\_  
SURETY

By: \_\_\_\_\_  
(SEAL)

## **PAYMENT BOND REQUIREMENT**

A Payment Bond must be submitted to the City of Isle of Palms by the successful Contractor once it has been awarded the contract. Payment Bonds encompass the prime Contractor's obligation to pay subcontractor and others for material and labor used in the project. A Payment Bond guarantees that the Contractor will pay certain bills for labor and materials (including those from subcontractors and suppliers), which are associated with the subject contract. The Payment Bond requirement helps assure that the Contractor provides suitable evidence of its financial condition and ability to complete the project without financial difficulty.

**A Payment Bond in the amount of one hundred percent (100%) of the contract price must be submitted by the Contractor with the executed contract to the City. Failure to satisfy this Payment Bond requirement will result in the Contractor being considered non-responsive and possibly removed from consideration for award of future City contracts. Payment Bond guaranty options are discussed below.**

### **PAYMENT BOND GUARANTY OPTIONS:**

**This Payment Bond requirement can be satisfied utilizing one of the two options below:**

(1) **Option A:**

The Contractor must submit a Payment Bond in the required amount discussed above and executed by a corporate surety licensed under the laws of South Carolina. Contractors not meeting this requirement must furnish an alternative Payment Bond Guaranty as discussed in Option B below.

(2) **Option B:**

For all Contractors not meeting the criteria of "Option A" above, a deposit in the amount of one hundred percent (100%) of the contract price must be submitted by the Contractor with the proposed contract to the City. This deposit shall take the form of a certified check or a cashier's check deposited with the City. An irrevocable standby letter of credit issued by the bank is an acceptable alternate. **PERSONAL OR COMPANY CHECKS DO NOT MEET THIS REQUIRMENT.** Failure of the Contractor to satisfactorily fulfill its obligations under the subject contract shall result in the forfeiture of this deposit.

**One of the above requirements must be met and submitted by the successful Contractor with the executed contract to the City. Failure to satisfactorily fulfill its obligations under the subject contract shall result in the forfeiture of the Payment Bond guaranty.**

**Responders failing to enter the proposed contract and also post the required Payment Bond may be subject to Debarment or Suspension from future consideration for award of contracts.**

## **PERFORMANCE BOND REQUIREMENT**

A Performance Bond must be submitted to the City of Isle of Palms by the successful Contractor once it has been awarded the contract. The Performance Bond insures that the project will be completed even if the prime Contractor defaults or abandons the project. A Performance Bond guarantees contract performance by the Contractor, according to the contract specifications, terms and conditions. The Performance Bond requirement helps assure that the Contractor provides suitable evidence of its financial condition and ability to complete the project without financial difficulty.

**A Performance Bond in the amount of one hundred percent (100%) of the contract price must be submitted by the Contractor with the executed contract to the City. Failure to satisfy this Performance Bond requirement will result in the Contractor being considered non-responsive and possibly removed from consideration for award of future City contracts. Performance Bond guaranty options are discussed below.**

### **PERFORMANCE BOND GUARANTY OPTIONS:**

**This Performance Bond guaranty requirement can be satisfied utilizing one of the two options below:**

#### **(3) Option A:**

The Contractor must submit a Performance Bond in the required amount discussed above and executed by a corporate surety licensed under the laws of South Carolina. Contractors not meeting this requirement must furnish an alternative Performance Bond Guaranty as discussed in Option B below.

#### **(4) Option B:**

For all Contractors not meeting the criteria of “Option A” above, a deposit in the amount of one hundred percent (100%) of the contract price must be submitted by the Contractor with the proposed contract to the City. This deposit shall take the form of a certified check or a cashier’s check deposited with the City. An irrevocable standby letter of credit issued by the bank is an acceptable alternate. **PERSONAL OR COMPANY CHECKS DO NOT MEET THIS REQUIREMENT.** Failure of the Contractor to satisfactorily fulfill its obligations under the subject contract shall result in the forfeiture of this deposit.

**One of the above requirements must be met and submitted by the successful Contractor with the executed contract to the City. Failure to satisfactorily fulfill its obligations under the subject contract shall result in the forfeiture of the Performance Bond Guaranty.**

**Responders failing to enter the proposed contract and also post the required Performance Bond may be subject to Debarment or Suspension from future consideration for award of contract.**

STATE OF SOUTH CAROLINA )  
  )     AGREEMENT FOR MARINA  
  )     BULKHEAD REHABILITATION  
COUNTY OF CHARLESTON    )

THIS AGREEMENT (“Agreement”) is made and entered into this \_\_\_\_\_ day of \_\_\_\_\_, 2017, by and between the City of Isle of Palms, S.C., a South Carolina municipal corporation (“City”), and \_\_\_\_\_ (“Contractor”).

WHEREAS, Contractor was the successful bidder under the City’s Request for Bids (RFB) No. 2017-08, “Isle of Palms Marina Bulkhead Rehabilitation;” and

WHEREAS, the parties hereto desire to enter into this Agreement to set forth the exact rights, duties and obligations of each party regarding the work to be performed by Contractor pursuant to the bid.

THEREFORE, in consideration of the mutual covenants and promises set forth herein, City and Contractor agree as follows:

1. SCOPE OF WORK.

A. Contractor agrees to provide all labor, equipment, tools, materials, supplies, and incidentals necessary to rehabilitate the bulkhead located at the Isle of Palms Marina (the “Project”) pursuant to the construction drawings and specifications set forth in the “RFB No. 2017-08, Isle of Palms Marina Bulkhead Rehabilitation,” (the “RFB”), a copy of which is attached hereto as Exhibit I and made a part of this Agreement by reference thereto. In the event of any conflict between the provisions of this Agreement and the RFB, the terms of this Agreement shall control.

B. Contractor agrees to use its best skill and attention and be solely responsible for all means, methods, techniques, sequences, and procedures in the performance of the work on the Project. Contractor hereby warrants to City that all work on the Project shall be performed in a good and workmanlike manner.



C. Contractor agrees to comply with all applicable federal, state and local laws, rules and regulations, including, but not limited to, all applicable safety and environmental laws and regulations, regarding all work performed by Contractor pursuant to this Agreement.

D. Contractor agrees to comply with all requirements of the South Carolina Department of Health and Environmental Control (SCDHEC) applicable to this Project, including any existing SCDHEC permits for the Marina Bulkhead.

2. CONTRACT PRICE. For all work under this Agreement, City agrees to pay to Contractor the sum of \_\_\_\_\_ (\$ \_\_\_\_\_) Dollars.

3. CHANGE ORDERS. The City has the right to require alterations or changes (“Change Orders”) to the Project and in such case Contractor agrees to make such alterations or changes; provided, however, that the details and additional cost or credit of such Change Order must be agreed to by the City and Contractor in writing prior to the commencement of the Change Order.

4. COMPLETION SCHEDULE. TIME IS OF THE ESSENCE. Contractor agrees to complete the Project prior to April 15, 2018. Provided, however, that if performance by the Contractor is delayed for reasons or causes beyond the control of Contractor (including but not limited to, acts of God, weather conditions, site conditions, labor or material shortages, delays caused by City, and casualty losses) the Project completion date shall be extended accordingly.

5. LIQUIDATED DAMAGES. In order to ensure a sincere and reasonable effort on the Contractor's part to accomplish the work within the required timeframe provided in Section 4 of this Agreement, liquidated damages due to inconveniences to the City for work not being accomplished on time will be at the rate of Five Hundred Dollars (\$500.00) per day.

6. INSURANCE. Contractor agrees to maintain comprehensive general liability insurance coverage on the work 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. Contractor agrees to maintain automobile liability insurance coverage for bodily injury, including death, and property damage in the amount of \$1,000,000.00 each occurrence. Contractor agrees to maintain umbrella liability insurance in an amount not less than \$5,000,000 each occurrence and \$5,000,000 aggregate. Contractor also agrees to maintain worker's 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. Each policy shall contain a requirement that, in the event of change or cancellation, 30 days' prior written notice must be given to City. Proof of such insurance shall be provided to City prior to execution of this Agreement.

7. BONDS. Contractor shall provide Payment and Performance Bonds each in the amount of 100% of the contract price prior to execution of this Agreement. Bonding surety shall be licensed in the State of South Carolina.

8. PERMITS, FEES AND LICENSES. Contractor agrees to apply for, obtain and pay for all governmental permits, fees, licenses, and inspections by governmental agencies necessary for the Contractor's proper performance and completion of the Project, including, but not limited to, a City business license.

9. INDEMNIFICATION. Contractor agrees to hold harmless and indemnify City and its officers, agents and employees from and against any loss or damage, including all reasonable attorney's fees and expenses, incurred as a result of any and all claims, demands, causes of action, suits, judgments, fines or penalties (including but not limited to all fees and expenses incurred as a result of death or injury to persons or for loss of or damage to property) arising out of or in connection with Contractor's performance of the work under this Agreement.

10. SITE INVESTIGATION. Contractor acknowledges and agrees that Contractor has visited and inspected the service areas with City's authorized representative and has determined the nature of the work and the difficulties and facilities attending performance of the work, and all other matters which Contractor contemplates may in any way affect the work under this Agreement.

11. MEDIATION. Any claim, dispute, or controversy arising under or in connection with this Agreement shall be subject to mediation as a condition precedent to litigation. A request for mediation shall be made in writing, delivered to the other party to the Agreement, and filed with the proposed mediator. Mediation shall be conducted in Charleston County, South Carolina. The mediator shall be a member of the South Carolina Bar and shall be selected by mutual consent and agreement of the parties. If a party fails to object to the mediator proposed by the party requesting mediation within 30 days of the initial request for mediation, the mediator shall be deemed selected as proposed. If the parties fail to agree upon a mutually acceptable mediator within 60 days of the initial request for mediation, the mediator shall be selected from the official roster of active certified mediators in Charleston County, as provided by the South Carolina Supreme Court's Commission on Alternative Dispute Resolution and Board of Arbitrator and Mediator Certification, by choosing in alphabetical order the first available circuit court mediator from the roster. The parties shall equally divide the mediator's fee and any filing fees. Agreements reached in mediation shall be enforceable as settlement agreements in any court of competent jurisdiction. Nothing contained herein shall preclude either party from seeking enforcement of the terms of mediation pursuant to this Paragraph through a court of competent jurisdiction, and the prevailing party shall also be entitled to reimbursement by the losing party for all reasonable fees and costs, including attorney's fees, incurred in the proceedings seeking enforcement.

12. NOTICES. All notices, consents, and approvals required by any provision of this Agreement shall be in writing and shall be deemed to be properly given and received when personally delivered to the representatives of each party or when deposited in the United States mail, registered or certified, with return receipt requested, postage prepaid, and addressed to:

City of Isle of Palms:

Representative: Linda Lovvorn Tucker, City Administrator  
Address: P.O. Box 508, Isle of Palms, SC 29451

[Contractor]\_\_\_\_\_:

Representative: \_\_\_\_\_  
Address: \_\_\_\_\_

13. BREACH.

A. In the event that either party breaches any provision of this Agreement, and the same continues for a period of seven (7) days after receipt of written notice thereof, then the non-breaching party may exercise any and all remedies at law or in equity regarding the breach of this Agreement. Without prejudice to any other rights or remedies available for the said breach, the non-breaching party may terminate this Agreement and cease further performance under this Agreement.

B. Unless authorized by this Agreement, if the Contractor completely ceases work on the Project for a period of fifteen (15) days, or defaults or persistently fails or neglects to carry out the Project, the City may, after seven (7) days' written notice to the Contractor, complete the Project and if the unpaid balance of the contract price exceeds the City's actual cost of completing the Project, such excess shall be paid to the Contractor, but if such expense exceeds the unpaid balance, the Contractor shall pay the difference to the city.

14. EFFECT OF WAIVER OR CONSENT. A waiver or consent, express or implied, to or of any breach or default by a party in the performance of its obligations under this Agreement is not a consent or waiver to or of any other breach or default in the performance by that party of the same or any other obligations of that party with respect to this Agreement. Failure on the part of a party to complain of any act of the other party or to declare a party in default with respect to this Agreement, irrespective of how long that failure continues, does not constitute a waiver by that party of its rights with respect to that default until the applicable statute-of-limitation period has run.

15. SUB-CONTRACT OR ASSIGNMENT. Contractor agrees not to enter into any subcontracts or assignments pertaining to the performance of all or any part of this Agreement, either voluntarily or by operation of law, without prior written approval of City.

16. BINDING AGREEMENT. This Agreement shall be binding upon and inure to the benefit of the parties hereto and their respective successors and permitted assigns.

17. GOVERNING LAW; SEVERABILITY. This Agreement is governed by and shall be construed and interpreted in accordance with the laws of the State of South Carolina. If any provision of this Agreement is held invalid or unenforceable to any extent by a court of competent jurisdiction, the remainder of this Agreement is not affected thereby and that provision shall be enforced to the greatest extent permitted by law.

18. ENTIRE AGREEMENT. This Agreement constitutes the entire agreement between the parties hereto relating to the subject matter hereof, and supersedes and nullifies all prior or contemporaneous contracts, agreements, understandings or representations, whether oral or written, which are not expressly stated in this agreement. Neither party is relying upon any

representation not expressly contained herein. This Agreement may be amended and modified from time to time only upon the written mutual consent of City and Contractor.

19. SECTION HEADINGS. The headings of Sections or paragraphs used in this Agreement have been inserted for convenience only and are not to be used in determining the contents contained herein.

*[The remainder of this page has been intentionally left blank. The signature pages follow.]*

IN WITNESS WHEREOF, the City and Contractor have hereunto set their hands and seals,  
by and through the undersigned officers, as of the day and year first above written.

WITNESS:

\_\_\_\_\_  
[Contractor]

\_\_\_\_\_  
(#1 as to Contractor)

By: \_\_\_\_\_

\_\_\_\_\_  
(#2 as to Contractor)

Title: \_\_\_\_\_

The City of Isle of Palms, S.C.

\_\_\_\_\_  
(#1 as to City)

By: \_\_\_\_\_

\_\_\_\_\_  
(#2 as to City)

Title: \_\_\_\_\_

EXHIBIT I

[Attach City's RFB 2017-08, "Isle of Palms Marina Bulkhead Rehabilitation" including construction drawings and specifications provided by JMT]





## GENERAL NOTES

- CONTRACTOR TO VERIFY ALL DIMENSIONS AND SITE CONDITIONS PRIOR TO STARTING WORK. IF ANY DISCREPANCIES ARE NOTED, CONTRACTOR SHALL NOTIFY ARCHITECT AND ENGINEER IMMEDIATELY.
- STRUCTURAL DRAWINGS ARE TO BE USED IN CONJUNCTION WITH ANY OTHER TRADE RELATED DRAWINGS.
- THE CONTRACTOR IS SOLELY RESPONSIBLE FOR THE DESIGN AND ERECTION OF ANY TEMPORARY SHORING OR BRACING NECESSARY TO PROVIDE FOR THE SAFE CONSTRUCTION OF THE STRUCTURE.
- ALL FEDERAL, STATE, AND LOCAL SAFETY REGULATIONS ARE TO BE STRICTLY FOLLOWED. METHODS OF CONSTRUCTION AND INSTALLATION OF MATERIALS IS THE CONTRACTOR'S RESPONSIBILITY. ALL WORK UNDER THIS CONTRACT SHALL COMPLY WITH "THE SAFETY AND HEALTH REGULATIONS FOR CONSTRUCTION" (OSHA 29 CFR 1926), THE STATE OF SOUTH CAROLINA, AND ALL OTHER APPLICABLE CODES AND REGULATIONS OF AGENCIES HAVING JURISDICTION.
- THE CONTRACTOR SHALL EXERCISE CAUTION DURING CONSTRUCTION OPERATIONS TO PREVENT ANY DAMAGE TO ADJACENT BUILDINGS, STRUCTURES, AND STRUCTURAL COMPONENTS NOT WITHIN THE SCOPE OF THE OUTLINED WORK. BUILDING MEMBERS, STRUCTURES, AND STRUCTURAL COMPONENTS NOT WITHIN THE SCOPE OF THIS PROJECT THAT ARE DAMAGED DURING THE REPAIR OPERATIONS SHALL BE REPAIRED OR REPLACED AT THE EXPENSE OF THE CONTRACTOR TO THE SATISFACTION OF THE OWNER.
- ALL UTILITIES SHALL BE TEMPORARILY SUPPORTED OR REMOVED AND REATTACHED COMPARABLE TO EXISTING CONDITIONS TO THE SATISFACTION OF THE OWNER. THIS WORK SHALL BE CONSIDERED INCIDENTAL TO THE SPECIFIED REPAIR WORK. ANY UTILITIES DAMAGED IN THE PROCESS OF THE CONTRACTOR'S OPERATIONS SHALL BE REPAIRED OR REPLACED AT THE EXPENSE OF THE CONTRACTOR TO THE SATISFACTION OF THE OWNER.
- FOR ALL REPAIR ITEMS REQUIRING THE REMOVAL OF EXISTING STRUCTURE MATERIALS, MARINE GROWTH AND OTHER DELETERIOUS SUBSTANCES, THE CONTRACTOR SHALL CAPTURE ALL MATERIALS AND SUBSTANCES REMOVED AND NOT ALLOW THEIR DISCHARGE INTO THE SURROUNDING LAND, WATER, OR AIR. ALL DEBRIS CREATED DURING THE EXECUTION OF THE SPECIFIED WORK SHALL BE REMOVED FROM THE PROJECT SITE. NO OIL OR OTHER HAZARDOUS SUBSTANCES SHALL BE DISCHARGED INTO THE WATER AROUND THE PROJECT SITE. ALL PRODUCTS OF REMOVAL OPERATIONS, DEBRIS, AND HAZARDOUS SUBSTANCES SHALL BE PROPERLY DISPOSED OF ACCORDING TO THE CONTRACT DOCUMENTS AND REGULATIONS OF ALL GOVERNING AGENCIES, AND SHALL BE THE SOLE RESPONSIBILITY OF THE CONTRACTOR.
- THE CONTRACTOR SHALL BE RESPONSIBLE FOR VERIFYING AND LOCATING ALL ABOVEGROUND AND UNDERGROUND UTILITY LINES AND STRUCTURES BEFORE BEGINNING WORK. OTHER UTILITIES OR STRUCTURES MAY BE IN PLACE AND THE CONTRACTOR SHALL ACCEPT RISK OF OTHER UNDERGROUND UTILITIES. THE CONTRACTOR SHALL FAMILIARIZE HIMSELF WITH THE EXISTING CONDITIONS AND BE PREPARED TO ADEQUATELY CARE FOR AND SAFEGUARD HIMSELF AND THE OWNER FROM DAMAGE.

## DESIGN NOTES

DESIGN BASIS:  
 AISC MANUAL OF STEEL CONSTRUCTION, 14TH EDITION  
 ASCE 7-10 MINIMUM DESIGN LOADS FOR BUILDINGS AND OTHER STRUCTURES  
 ACI 318-11 MANUAL FOR CONCRETE CONSTRUCTION.

## FOUNDATION, EXCAVATION & FILL

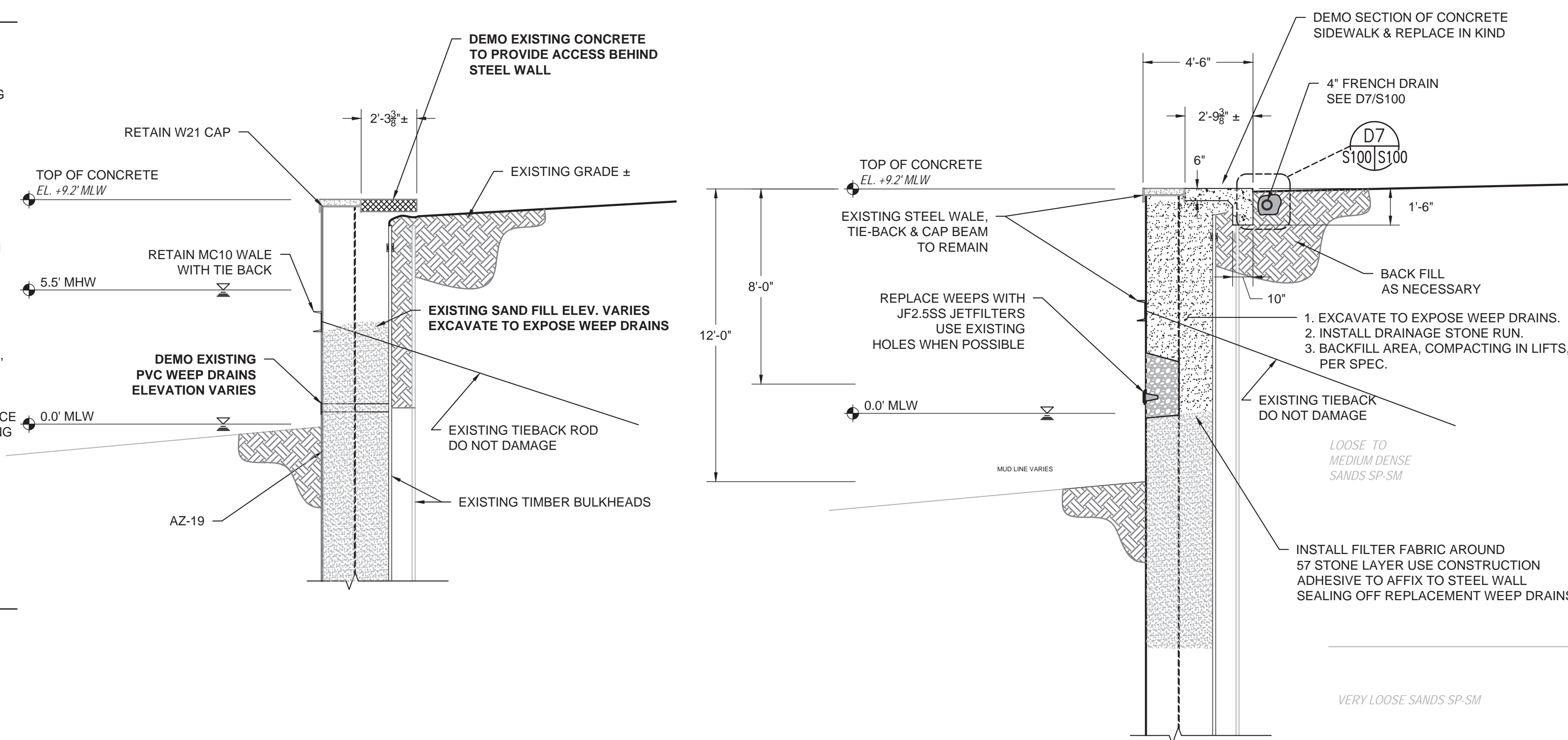
- COMPACTED FILL MATERIAL SHALL BE FREE OF ORGANICS, STONES, ROCKS, BROKEN BRICKS, WOOD FRAGMENTS, OR OTHER DELETERIOUS MATERIAL THAT AFFECTS THE COMPACTIBILITY OF THE MATERIAL. THE MATERIAL SHALL CONSIST OF A MAXIMUM OF 15% FINES (MATERIAL PASSING A #200 SIEVE) AND HAVE A MAXIMUM DRY DENSITY (MODIFIED PROCTOR ASTM D-1557) OF AT LEAST 100 PCF. THE MATERIAL'S LIQUID LIMIT SHALL NOT EXCEED 30 AND THE PLASTICITY INDEX SHALL NOT BE GREATER THAN 15.
- STRUCTURAL FILL MATERIAL SHALL BE PLACED IN LIFTS NOT TO EXCEED 10" AND COMPACTED TO AT LEAST 95% OF THE MODIFIED PROCTOR MAXIMUM DRY DENSITY.
- ANY SOFT AREAS OR AREAS SUSPECTED OF POOR MATERIAL SHALL BE REMOVED TO A DEPTH OF NOT LESS THAN 6" BELOW THE UNSUITABLE MATERIAL AND REPLACED WITH A SUITABLE FILL MATERIAL AS DESCRIBED ABOVE.
- PROVIDE SHORING, BRACING, AND SHEETING IN ACCORDANCE WITH COE EM 385-1-1, AS NEEDED.

## CONCRETE

- ALL CONCRETE WORK SHALL BE PERFORMED IN ACCORDANCE WITH ACI 301 AND ACI 318, UNLESS OTHERWISE NOTED.
- ALL CONCRETE SHALL BE COMPACTED USING HIGH FREQUENCY, INTERNAL MECHANICAL VIBRATING EQUIPMENT, SUPPLEMENTED BY HAND SPADING AND TAMPING.
- ALL CEMENT SHALL CONFORM TO ASTM C 595, TYPE I, II OR III.
- CONCRETE AGGREGATES SHALL CONFORM TO THE REQUIREMENTS OF ASTM C 33.
- ADMIXTURES FOR CONCRETE SHALL BE IN ACCORDANCE WITH THE MANUFACTURER'S RECOMMENDATIONS AND SHALL CONFORM TO THE REQUIREMENTS OF ASTM C 494.
- CAST-IN-PLACE CONCRETE SHALL BE NORMAL WEIGHT HAVING A DESIGN COMPRESSIVE STRENGTH OF 3,000 PSI MINIMUM AT 28 DAYS.
- ALL CONCRETE SHALL CONTAIN 5% AIR ENTRAINMENT, ±1.5%.
- CONCRETE SLUMP SHALL NOT EXCEED 4" UNLESS AN APPROVED MIX DESIGN PERMITS GREATER.
- GROUT SHALL BE NON-METALLIC, NON-SHRINK WITH A MINIMUM STRENGTH OF 5,000 PSI AT 28 DAYS, UNLESS OTHERWISE NOTED.
- PROVIDE NEW BILLET STEEL DEFORMED REINFORCING BARS FOR CAST-IN-PLACE CONCRETE CONFORMING TO ASTM A 615, GRADE 60. UNLESS NOTED OTHERWISE, DETAIL, FABRICATE AND PLACE REINFORCING STEEL IN CONFORMANCE WITH THE "MANUAL OF STANDARD PRACTICE FOR DETAILING REINFORCED CONCRETE STRUCTURES" - ACI 315.
- CHAMFER ALL EXTERNAL EXPOSED CORNERS OF CONCRETE WITH A ¼ INCH, 45 DEGREE, UNLESS OTHERWISE NOTED.
- ALL CONSTRUCTION JOINTS SHALL BE BONDED WITH AN EPOXY BONDING AGENT AND SHALL BE ROUGHENED ¼ INCH AMPLITUDE.

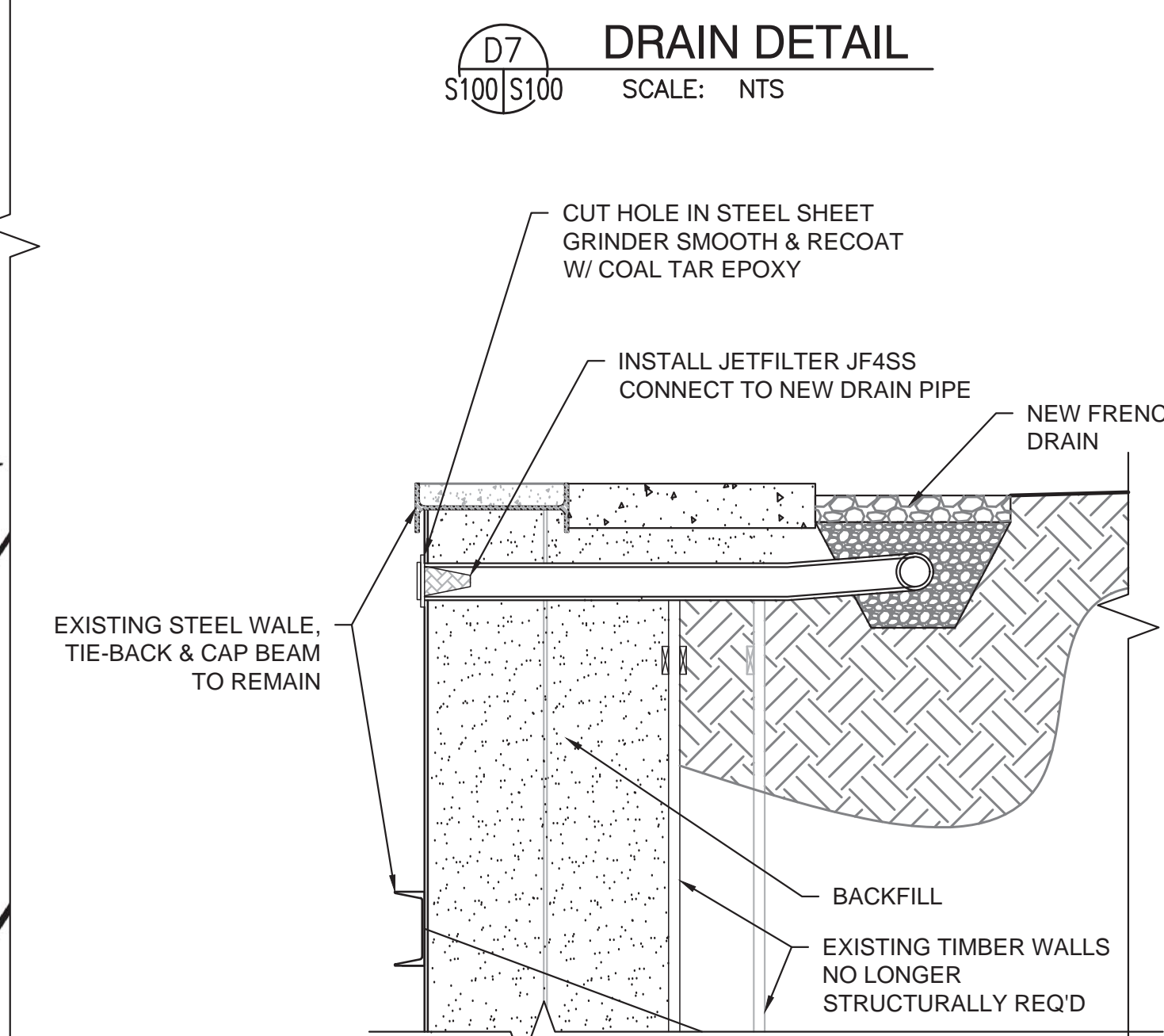
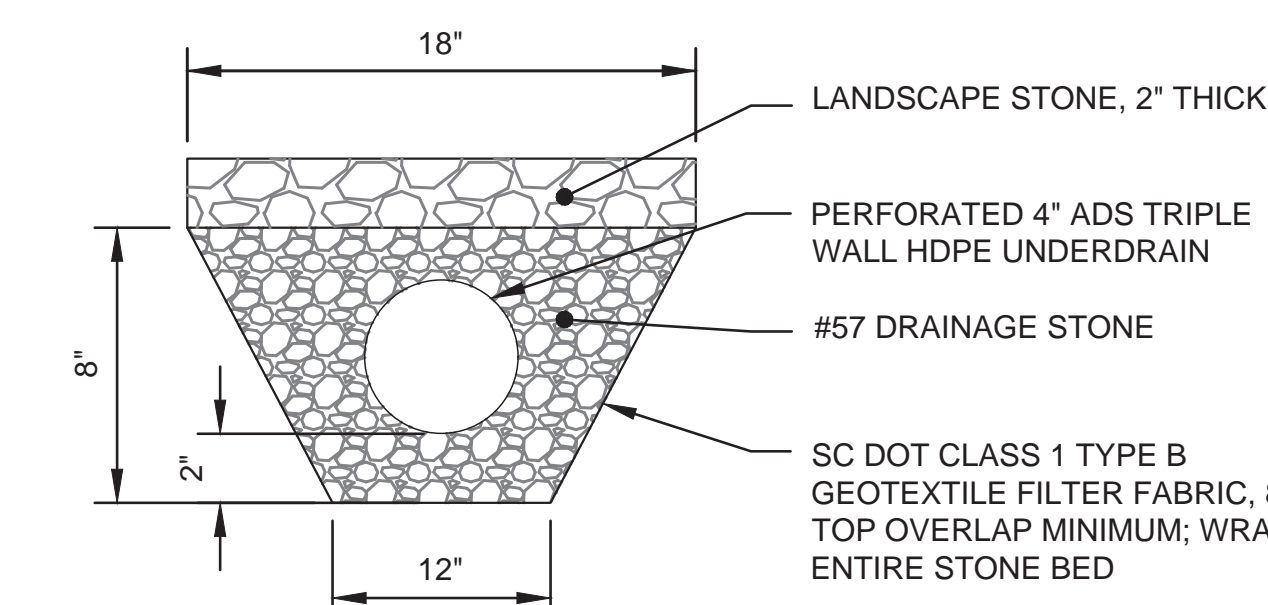
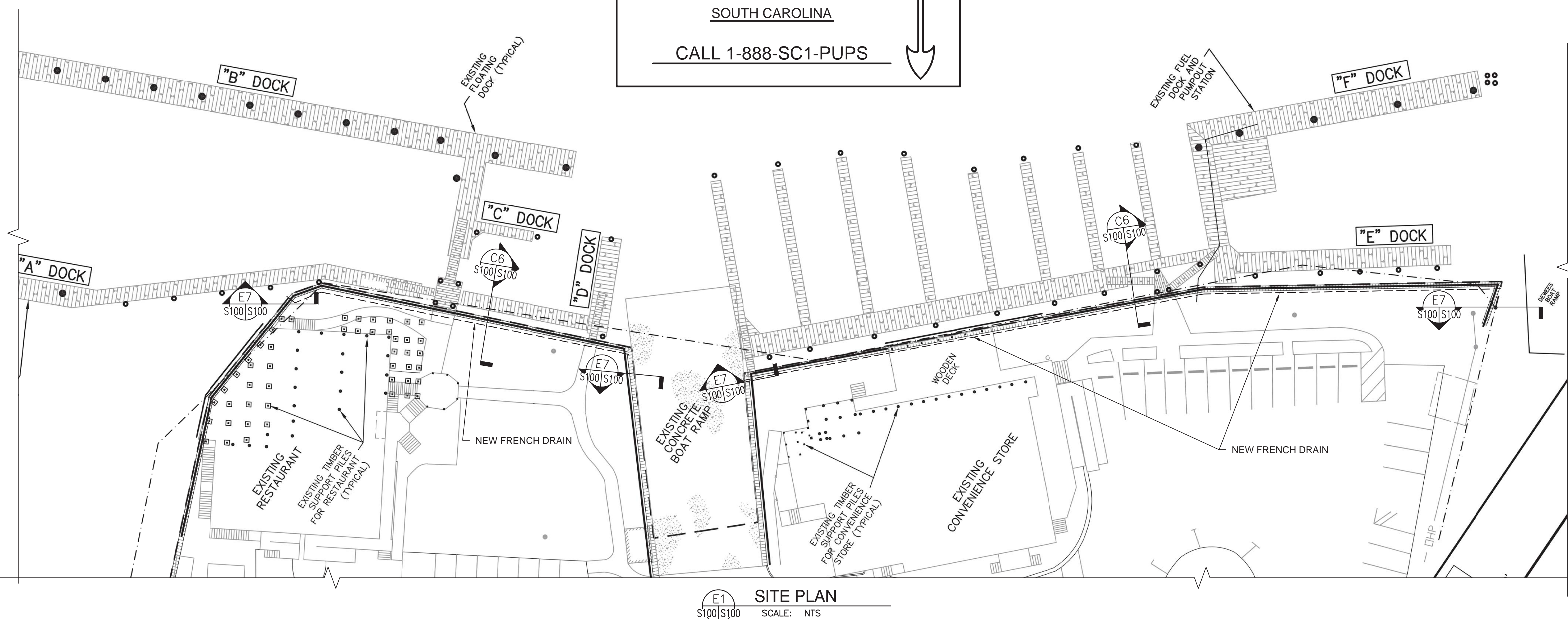
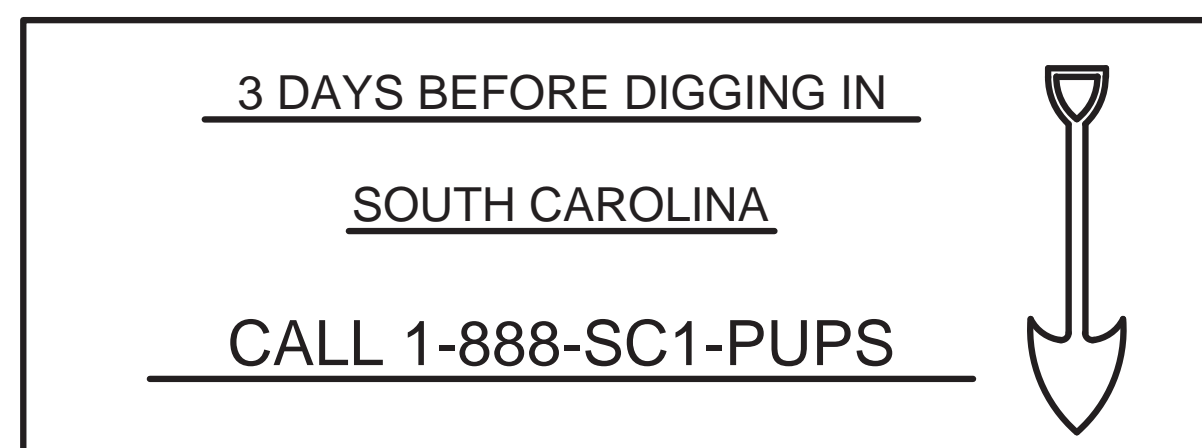
## STRUCTURAL STEEL

- ALL STEEL WORK SHALL BE PERFORMED IN ACCORDANCE WITH THE AISC SPECIFICATION FOR THE DESIGN, FABRICATION AND ERECTION OF STRUCTURAL STEEL FOR BUILDINGS.
- ALL WELDING SHALL CONFORM TO AWS D1.1.
- STEEL MATERIALS SHALL CONFORM TO THE FOLLOWING UNLESS OTHERWISE NOTED:
  - STRUCTURAL CARBON STEEL: ASTM A36
  - HIGH STRENGTH CARBON STEEL: ASTM A572, GRADE 50
  - HIGH STRENGTH BOLTS AND NUTS: ASTM A325, ASME/ANSI B18.2.2.
  - ANCHOR RODS: ASTM F1554 OR AS SPECIFIED BY PRODUCT MANUF.
- ALL MISCELLANEOUS STEEL STRUCTURES SHALL BE HOT DIP GALVANIZED, UNLESS OTHERWISE NOTED.
- FIELD TREAT DAMAGED GALVANIZED FINISH WITH TWO COATS OF HIGH ZINC DUST OXIDE PAINT, COLD GALVANIZING COMPOUNDS OR APPROVED EQUAL CONFORMING TO THE REQUIREMENTS OF ASTM A760.



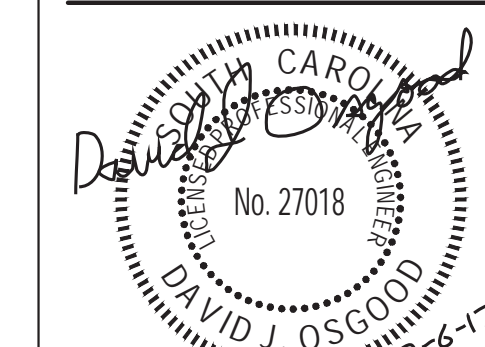
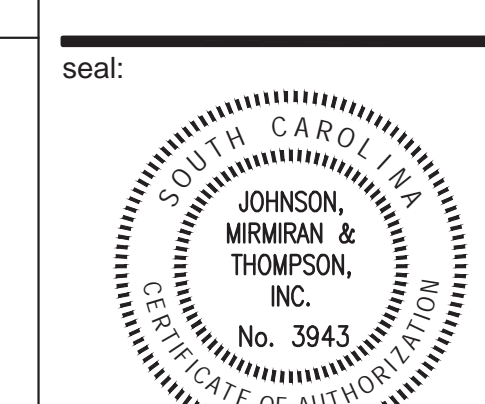
C5  
 S100/S100  
 SCALE: 1/4" = 1'-0"

C6  
 S100/S100  
 SCALE: 1/4" = 1'-0"



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ISLE OF PALMS MARINA  
 BULKHEAD REPAIRS  
 CHARLESTON COUNTY, SOUTH CAROLINA



job number	16-0833-001
scale	AS NOTED
drawn by	DJO
designed by	DJO
checked by	NL
no. date	02FEB2017
issue	FOR BID

sheet title:  
 SITE PLAN  
 SECTIONS & DETAILS

sheet number:  
**S100**

## SECTION 024119 - SELECTIVE DEMOLITION

## PART 1 - GENERAL

## 1.1 SUMMARY

- A. Section Includes:
  - 1. Demolition and removal of selected site elements.
  - 2. Salvage of existing items to be reused or recycled.

## 1.2 MATERIALS OWNERSHIP

- A. Unless otherwise indicated, demolition waste becomes property of Contractor.
- B. Historic items, relics, antiques, and similar objects including, but not limited to, cornerstones and their contents, commemorative plaques and tablets, and other items of interest or value to Owner that may be uncovered during demolition remain the property of Owner.
  - 1. Carefully salvage in a manner to prevent damage and promptly return to Owner.

## 1.3 PREINSTALLATION MEETINGS

- A. Predemolition Conference: Conduct conference at Project site.

## 1.4 INFORMATIONAL SUBMITTALS

- A. Proposed Protection Measures: Submit report, including Drawings, as needed, that indicates the measures proposed for protecting individuals and property, for dust and noise control. Indicate proposed locations and construction of barriers.
- B. Schedule of selective demolition activities with starting and ending dates for each activity.

## 1.5 FIELD CONDITIONS

- A. Owner will occupy portions of building immediately adjacent to selective demolition area. Conduct selective demolition so Owner's operations will not be disrupted.
- B. Conditions existing at time of inspection for bidding purpose will be maintained by Owner as far as practical.
- C. Hazardous Materials: It is not expected that hazardous materials will be encountered in the Work.
  - 1. Hazardous materials will be removed by Owner before start of the Work.

- D. Utility Service: Maintain existing utilities indicated to remain in service and protect them against damage during selective demolition operations.
  - 1. Coordinate any required temporary utility outages with Owner/Operators of adjacent facilities during selective demolition operations.
- E. Arrange selective demolition schedule so as not to interfere with Owner's operations.

## PART 2 - PRODUCTS

### 2.1 PERFORMANCE REQUIREMENTS

- A. Regulatory Requirements: Comply with governing EPA notification regulations before beginning selective demolition. Comply with hauling and disposal regulations of authorities having jurisdiction.

## PART 3 - EXECUTION

### 3.1 EXAMINATION

- A. Verify that utilities have been disconnected and capped before starting selective demolition operations.

### 3.2 UTILITY SERVICES AND MECHANICAL/ELECTRICAL SYSTEMS

- A. Existing Services/Systems to Remain: Maintain services/systems indicated to remain and protect them against damage.
  - 1. Owner will arrange to shut off indicated services/systems when requested by Contractor.
  - 2. If services/systems are required to be removed, relocated, or abandoned, provide temporary services/systems that bypass area of selective demolition and that maintain continuity of services/systems to other parts of building.

### 3.3 PROTECTION

- A. Temporary Protection: Provide temporary barricades and other protection required to prevent injury to people and damage to adjacent buildings and facilities to remain.
- B. Remove temporary barricades and protections where hazards no longer exist.

### 3.4 SELECTIVE DEMOLITION

- A. General: Demolish and remove existing construction only to the extent required by new construction and as indicated. Use methods required to complete the Work within limitations of governing regulations and as follows:

1. Neatly cut openings and holes plumb, square, and true to dimensions required. Use cutting methods least likely to damage construction to remain or adjoining construction. Use hand tools or small power tools designed for sawing or grinding, not hammering and chopping. Temporarily cover openings to remain.
  2. Do not use cutting torches until work area is cleared of flammable materials. At concealed spaces, such as duct and pipe interiors, verify condition and contents of hidden space before starting flame-cutting operations. Maintain portable fire-suppression devices during flame-cutting operations.
  3. Maintain fire watch during and for at least 1 hours after flame-cutting operations.
  4. Locate selective demolition equipment and remove debris and materials so as not to impose excessive loads on supporting walls, floors, or framing.
  5. Dispose of demolished items and materials promptly.
- B. Site Access and Temporary Controls: Conduct selective demolition and debris-removal operations to ensure minimum interference with roads, streets, walks, walkways, and other adjacent occupied and used facilities.
- C. Removed and Salvaged Items:
1. Clean salvaged items.
  2. Store items in a secure area until delivery to Owner.
- D. Removed and Reinstalled Items:
1. Clean and repair items to functional condition adequate for intended reuse.
  2. Reinstall items in current locations. Comply with installation requirements for new materials and equipment. Provide connections, supports, and miscellaneous materials necessary to make item functional for use indicated.

### 3.5 CLEANING

- A. Remove demolition waste materials from Project site and dispose of them in an approved construction and demolition waste landfill acceptable to authorities having jurisdiction.
1. Do not allow demolished materials to accumulate on-site.
  2. Remove and transport debris in a manner that will prevent spillage on adjacent surfaces and areas.
- B. Burning: Do not burn demolished materials.
- C. Clean adjacent structures and improvements of dust, dirt, and debris caused by selective demolition operations. Return adjacent areas to condition existing before selective demolition operations began.

END OF SECTION 024119

## SECTION 033000 - CAST-IN-PLACE CONCRETE

## PART 1 - GENERAL

## 1.1 SUMMARY

- A. Section includes cast-in-place concrete, including formwork, reinforcement, concrete materials, mixture design, placement procedures, and finishes.
- B. Related Requirements:
  - 1. Section 312000 "Earth Moving" for drainage fill under slabs-on-grade.

## 1.2 ACTION SUBMITTALS

- A. Product Data: For each type of product.
- B. Design Mixtures: For each concrete mixture.
- C. Steel Reinforcement Shop Drawings: Placing Drawings that detail fabrication, bending, and placement.

## 1.3 INFORMATIONAL SUBMITTALS

- A. Material certificates.
- B. Material test reports.

## 1.4 QUALITY ASSURANCE

- A. Manufacturer Qualifications: A firm experienced in manufacturing ready-mixed concrete products and that complies with ASTM C 94/C 94M requirements for production facilities and equipment.
  - 1. Manufacturer certified according to NRMCA's "Certification of Ready Mixed Concrete Production Facilities."
- B. Testing Agency Qualifications: An independent agency, acceptable to authorities having jurisdiction, qualified according to ASTM C 1077 and ASTM E 329 for testing indicated.

## 1.5 FIELD CONDITIONS

- A. Cold-Weather Placement: Comply with ACI 306.1.

1. Do not use calcium chloride, salt, or other materials containing antifreeze agents or chemical accelerators unless otherwise specified and approved in mixture designs.
- B. Hot-Weather Placement: Comply with ACI 301 (ACI 301M).

## PART 2 - PRODUCTS

### 2.1 CONCRETE, GENERAL

- A. ACI Publications: Comply with the following unless modified by requirements in the Contract Documents:
1. ACI 301 (ACI 301M).
  2. ACI 117 (ACI 117M).

### 2.2 FORM-FACING MATERIALS

- A. Smooth-Formed Finished Concrete: Form-facing panels that provide continuous, true, and smooth concrete surfaces. Furnish in largest practicable sizes to minimize number of joints.
- B. Rough-Formed Finished Concrete: Plywood, lumber, metal, or another approved material. Provide lumber dressed on at least two edges and one side for tight fit.

### 2.3 STEEL REINFORCEMENT

- A. Reinforcing Bars: ASTM A 615/A 615M, Grade 60 (Grade 420), deformed.
- B. Plain-Steel Welded-Wire Reinforcement: ASTM A 1064/A 1064M, plain, fabricated from as-drawn steel wire into flat sheets.
- C. Deformed-Steel Welded-Wire Reinforcement: ASTM A 1064/A 1064M, flat sheet.
- D. Bar Supports: Bolsters, chairs, spacers, and other devices for spacing, supporting, and fastening reinforcing bars and welded-wire reinforcement in place. Manufacture bar supports from steel wire, plastic, or precast concrete according to CRSI's "Manual of Standard Practice."

### 2.4 CONCRETE MATERIALS

- A. Cementitious Materials:
1. Portland Cement: ASTM C 150/C 150M, Type I or Type II or Type I/II.
  2. Fly Ash: ASTM C 618, Class F or C.
  3. Slag Cement: ASTM C 989/C 989M, Grade 100 or 120.
- B. Normal-Weight Aggregates: ASTM C 33/C 33M, graded.
1. Maximum Coarse-Aggregate Size: 3/4 inch (19 mm) nominal.

2. Fine Aggregate: Free of materials with deleterious reactivity to alkali in cement.
- C. Air-Entraining Admixture: ASTM C 260/C 260M.
- D. Chemical Admixtures: Certified by manufacturer to be compatible with other admixtures and that do not contribute water-soluble chloride ions exceeding those permitted in hardened concrete. Do not use calcium chloride or admixtures containing calcium chloride.
  1. Water-Reducing Admixture: ASTM C 494/C 494M, Type A.
  2. Retarding Admixture: ASTM C 494/C 494M, Type B.
  3. Water-Reducing and Retarding Admixture: ASTM C 494/C 494M, Type D.
  4. High-Range, Water-Reducing Admixture: ASTM C 494/C 494M, Type F.
  5. High-Range, Water-Reducing and Retarding Admixture: ASTM C 494/C 494M, Type G.
  6. Plasticizing and Retarding Admixture: ASTM C 1017/C 1017M, Type II.
- E. Water: ASTM C 94/C 94M and potable.

## 2.5 CURING MATERIALS

- A. Evaporation Retarder: Waterborne, monomolecular film forming, manufactured for application to fresh concrete.
- B. Absorptive Cover: AASHTO M 182, Class 2, burlap cloth made from jute or kenaf, weighing approximately 9 oz./sq. yd. (305 g/sq. m) when dry.
- C. Moisture-Retaining Cover: ASTM C 171, polyethylene film or white burlap-polyethylene sheet.
- D. Water: Potable.

## 2.6 RELATED MATERIALS

- A. Expansion- and Isolation-Joint-Filler Strips: ASTM D 1751, asphalt-saturated cellulosic fiber or ASTM D 1752, cork or self-expanding cork.

## 2.7 CONCRETE MIXTURES, GENERAL

- A. Prepare design mixtures for each type and strength of concrete, proportioned on the basis of laboratory trial mixture or field test data, or both, according to ACI 301 (ACI 301M).
- B. Cementitious Materials: Use fly ash, pozzolan, slag cement, and silica fume as needed to reduce the total amount of portland cement, which would otherwise be used, by not less than 40 percent.
- C. Admixtures: Use admixtures according to manufacturer's written instructions.
  1. Use water-reducing admixture in pumped concrete, concrete for heavy-use industrial slabs and parking structure slabs, concrete required to be watertight, and concrete with a w/c ratio below 0.50.



## 2.8 CONCRETE MIXTURES FOR BUILDING ELEMENTS

### A. Normal-Weight Concrete:

1. Minimum Compressive Strength: 3000 psi (20.7 MPa) at 28 days.
2. Slump Limit: 5 inches (125 mm) plus or minus 1 inch (25 mm), unless otherwise directed by engineer approved mix design.
3. Air Content: 6 percent, plus or minus 1.5 percent at point of delivery for 3/4-inch (19-mm) nominal maximum aggregate size.

## 2.9 FABRICATING REINFORCEMENT

### A. Fabricate steel reinforcement according to CRSI's "Manual of Standard Practice."

## 2.10 CONCRETE MIXING

### A. Ready-Mixed Concrete: Measure, batch, mix, and deliver concrete according to ASTM C 94/C 94M, and furnish batch ticket information.

1. When air temperature is between 85 and 90 deg F (30 and 32 deg C), reduce mixing and delivery time from 1-1/2 hours to 75 minutes; when air temperature is above 90 deg F (32 deg C), reduce mixing and delivery time to 60 minutes.

## PART 3 - EXECUTION

### 3.1 FORMWORK INSTALLATION

- A. Design, erect, shore, brace, and maintain formwork, according to ACI 301 (ACI 301M), to support vertical, lateral, static, and dynamic loads, and construction loads that might be applied, until structure can support such loads.
- B. Construct formwork so concrete members and structures are of size, shape, alignment, elevation, and position indicated, within tolerance limits of ACI 117 (ACI 117M).
- C. Chamfer exterior corners and edges of permanently exposed concrete.

### 3.2 EMBEDDED ITEM INSTALLATION

- A. Place and secure anchorage devices and other embedded items required for adjoining work that is attached to or supported by cast-in-place concrete. Use setting drawings, templates, diagrams, instructions, and directions furnished with items to be embedded.

### 3.3 STEEL REINFORCEMENT INSTALLATION

- A. General: Comply with CRSI's "Manual of Standard Practice" for fabricating, placing, and supporting reinforcement.

### 3.4 JOINTS

- A. General: Construct joints true to line with faces perpendicular to surface plane of concrete.
- B. Construction Joints: Install so strength and appearance of concrete are not impaired, at locations indicated or as approved by Architect.
- C. Contraction Joints in Slabs-on-Grade: Form weakened-plane contraction joints, sectioning concrete into areas as indicated. Construct contraction joints for a depth equal to at least one-fourth of concrete thickness as follows:
  - 1. Grooved Joints: Form contraction joints after initial floating by grooving and finishing each edge of joint to a radius of 1/8 inch (3.2 mm). Repeat grooving of contraction joints after applying surface finishes. Eliminate groover tool marks on concrete surfaces.
  - 2. Sawed Joints: Form contraction joints with power saws equipped with shatterproof abrasive or diamond-rimmed blades. Cut 1/8-inch- (3.2-mm-) wide joints into concrete when cutting action does not tear, abrade, or otherwise damage surface and before concrete develops random contraction cracks.
- D. Isolation Joints in Slabs-on-Grade: After removing formwork, install joint-filler strips at slab junctions with vertical surfaces, such as column pedestals, foundation walls, grade beams, and other locations, as indicated.

### 3.5 CONCRETE PLACEMENT

- A. Before placing concrete, verify that installation of formwork, reinforcement, and embedded items is complete and that required inspections are completed.
- B. Deposit concrete continuously in one layer or in horizontal layers of such thickness that no new concrete is placed on concrete that has hardened enough to cause seams or planes of weakness. If a section cannot be placed continuously, provide construction joints as indicated. Deposit concrete to avoid segregation.
  - 1. Consolidate placed concrete with mechanical vibrating equipment according to ACI 301 (ACI 301M).

### 3.6 FINISHING FORMED SURFACES

- A. Smooth-Formed Finish: As-cast concrete texture imparted by form-facing material, arranged in an orderly and symmetrical manner with a minimum of seams. Repair and patch tie holes and defects. Remove fins and other projections that exceed specified limits on formed-surface irregularities.
  - 1. Apply to concrete surfaces exposed to public view.
- B. Related Unformed Surfaces: At tops of walls, horizontal offsets, and similar unformed surfaces adjacent to formed surfaces, strike off smooth and finish with a texture matching adjacent formed surfaces. Continue final surface treatment of formed surfaces uniformly across adjacent unformed surfaces unless otherwise indicated.

## 3.7 FINISHING FLOORS AND SLABS

- A. General: Comply with ACI 302.1R recommendations for screeding, restraighening, and finishing operations for concrete surfaces. Do not wet concrete surfaces.
- B. Float Finish: Consolidate surface with power-driven floats or by hand floating if area is small or inaccessible to power-driven floats. Restraighten, cut down high spots, and fill low spots. Repeat float passes and restraighening until surface is left with a uniform, smooth, granular texture.
  - 1. Apply float finish to all walking surfaces.
  - 2. Install shells to replicate tabby finish concrete to match existing.

## 3.8 CONCRETE PROTECTING AND CURING

- A. General: Protect freshly placed concrete from premature drying and excessive cold or hot temperatures. Comply with ACI 306.1 for cold-weather protection and ACI 301 (ACI 301M) for hot-weather protection during curing.
- B. Evaporation Retarder: Apply evaporation retarder to unformed concrete surfaces if hot, dry, or windy conditions cause moisture loss approaching 0.2 lb/sq. ft. x h (1 kg/sq. m x h) before and during finishing operations. Apply according to manufacturer's written instructions after placing, screeding, and bull floating or darbying concrete, but before float finishing.
- C. Formed Surfaces: Cure formed concrete surfaces, including underside of beams, supported slabs, and other similar surfaces. If forms remain during curing period, moist cure after loosening forms. If removing forms before end of curing period, continue curing for remainder of curing period.
- D. Cure concrete according to ACI 308.1, by one or a combination of the following methods:
  - 1. Moisture Curing: Keep surfaces continuously moist for not less than seven days.
  - 2. Moisture-Retaining-Cover Curing: Cover concrete surfaces with moisture-retaining cover for curing concrete, placed in widest practicable width, with sides and ends lapped at least 12 inches (300 mm), and sealed by waterproof tape or adhesive. Cure for not less than seven days. Immediately repair any holes or tears during curing period, using cover material and waterproof tape.
  - 3. Curing Compound: Apply uniformly in continuous operation by power spray or roller according to manufacturer's written instructions. Recoat areas subjected to heavy rainfall within three hours after initial application. Maintain continuity of coating and repair damage during curing period.
  - 4. Curing and Sealing Compound: Apply uniformly to floors and slabs indicated in a continuous operation by power spray or roller according to manufacturer's written instructions. Recoat areas subjected to heavy rainfall within three hours after initial application. Repeat process 24 hours later and apply a second coat. Maintain continuity of coating and repair damage during curing period.

3.9 CONCRETE SURFACE REPAIRS

- A. Defective Concrete: Repair and patch defective areas when approved by Architect. Remove and replace concrete that cannot be repaired and patched to Architect's approval.

END OF SECTION 033000

## SECTION 312000 - EARTH MOVING

## PART 1 - GENERAL

## 1.1 SUMMARY

## A. Section Includes:

1. Excavating and filling for rough grading the Site.
2. Preparing subgrades for walks, turf and grasses and plants.
3. Drainage course for concrete slabs-on-grade.
4. Excavating and backfilling trenches for utilities and pits for buried utility structures.

## 1.2 DEFINITIONS

## A. Backfill: Soil material used to fill an excavation.

1. Initial Backfill: Backfill placed beside and over pipe in a trench, including haunches to support sides of pipe.
2. Final Backfill: Backfill placed over initial backfill to fill a trench.

## B. Base Course: Aggregate layer placed between the subbase course and hot-mix asphalt paving.

## C. Bedding Course: Aggregate layer placed over the excavated subgrade in a trench before laying pipe.

## D. Borrow Soil: Satisfactory soil imported from off-site for use as fill or backfill.

## E. Drainage Course: Aggregate layer supporting the slab-on-grade that also minimizes upward capillary flow of pore water.

## F. Excavation: Removal of material encountered above subgrade elevations and to lines and dimensions indicated.

1. Authorized Additional Excavation: Excavation below subgrade elevations or beyond indicated lines and dimensions as directed by Architect. Authorized additional excavation and replacement material will be paid for according to Contract provisions for changes in the Work.
2. Unauthorized Excavation: Excavation below subgrade elevations or beyond indicated lines and dimensions without direction by Architect. Unauthorized excavation, as well as remedial work directed by Architect, shall be without additional compensation.

## G. Fill: Soil materials used to raise existing grades.

## H. Structures: Buildings, footings, foundations, retaining walls, slabs, tanks, curbs, mechanical and electrical appurtenances, or other man-made stationary features constructed above or below the ground surface.

- I. Subbase Course: Aggregate layer placed between the subgrade and base course for hot-mix asphalt pavement, or aggregate layer placed between the subgrade and a cement concrete pavement or a cement concrete or hot-mix asphalt walk.
- J. Subgrade: Uppermost surface of an excavation or the top surface of a fill or backfill immediately below subbase, drainage fill, drainage course, or topsoil materials.
- K. Utilities: On-site underground pipes, conduits, ducts, and cables as well as underground services within buildings.

### 1.3 PREINSTALLATION MEETINGS

- A. Preinstallation Conference: Conduct preexcavation conference at Project site.

### 1.4 INFORMATIONAL SUBMITTALS

- A. Material test reports.

### 1.5 FIELD CONDITIONS

- A. Utility Locator Service: Notify utility locator service for area where Project is located before beginning earth-moving operations.

## PART 2 - PRODUCTS

### 2.1 SOIL MATERIALS

- A. General: Provide borrow soil materials when sufficient satisfactory soil materials are not available from excavations.
- B. Satisfactory Soils: Soil Classification Groups GW, GP, SW, and SP according to ASTM D 2487 (Groups A-1, A-2-4, A-2-5, and A-3 according to AASHTO M 145), or a combination of these groups; free of rock or gravel larger than 3 inches (75 mm) in any dimension, debris, waste, frozen materials, vegetation, and other deleterious matter.
  - 1. Liquid Limit: 30.
  - 2. Plasticity Index: 15.
- C. Unsatisfactory Soils: Soil Classification Groups GC, SC, CL, ML, OL, CH, MH, OH, and PT according to ASTM D 2487 Groups A-2-6, A-2-7, A-4, A-5, A-6, and A-7 according to AASHTO M 145, or a combination of these groups.
  - 1. Unsatisfactory soils also include satisfactory soils not maintained within 2 percent of optimum moisture content at time of compaction.

- D. Subbase Material: Naturally or artificially graded mixture of natural or crushed gravel, crushed stone, and natural or crushed sand; ASTM D 2940/D 2940M; with at least 90 percent passing a 1-1/2-inch (37.5-mm) sieve and not more than 12 percent passing a No. 200 (0.075-mm) sieve.
- E. Base Course: Naturally or artificially graded mixture of natural or crushed gravel, crushed stone, and natural or crushed sand; ASTM D 2940/D 2940M 0; with at least 95 percent passing a 1-1/2-inch (37.5-mm) sieve and not more than 8 percent passing a No. 200 (0.075-mm) sieve.
- F. Engineered Fill: Naturally or artificially graded mixture of natural or crushed gravel, crushed stone, and natural or crushed sand; ASTM D 2940/D 2940M; with at least 90 percent passing a 1-1/2-inch (37.5-mm) sieve and not more than 12 percent passing a No. 200 (0.075-mm) sieve.
- G. Bedding Course: Naturally or artificially graded mixture of natural or crushed gravel, crushed stone, and natural or crushed sand; ASTM D 2940/D 2940M; except with 100 percent passing a 1-inch (25-mm) sieve and not more than 8 percent passing a No. 200 (0.075-mm) sieve.
- H. Drainage Course: Narrowly graded mixture of crushed stone, or crushed or uncrushed gravel; ASTM D 448; coarse-aggregate grading Size 57; with 100 percent passing a 1-1/2-inch (37.5-mm) sieve and zero to 5 percent passing a No. 8 (2.36-mm) sieve.

## 2.2 ACCESSORIES

- A. Warning Tape: Acid- and alkali-resistant, polyethylene film warning tape manufactured for marking and identifying underground utilities, 6 inches (150 mm) wide and 4 mils (0.1 mm) thick, continuously inscribed with a description of the utility; colored to comply with local practice or requirements of authorities having jurisdiction.
- B. Detectable Warning Tape: Acid- and alkali-resistant, polyethylene film warning tape manufactured for marking and identifying underground utilities, a minimum of 6 inches (150 mm) wide and 4 mils (0.1 mm) thick, continuously inscribed with a description of the utility, with metallic core encased in a protective jacket for corrosion protection, detectable by metal detector when tape is buried up to 30 inches (750 mm) deep; colored to comply with local practice or requirements of authorities having jurisdiction.

## PART 3 - EXECUTION

### 3.1 PREPARATION

- A. Protect structures, utilities, sidewalks, pavements, and other facilities from damage caused by settlement, lateral movement, undermining, washout, and other hazards created by earth-moving operations.
- B. Protect and maintain erosion and sedimentation controls during earth-moving operations.
- C. Protect subgrades and foundation soils from freezing temperatures and frost. Remove temporary protection before placing subsequent materials.

## 3.2 EXCAVATION, GENERAL

- A. Unclassified Excavation: Excavate to subgrade elevations regardless of the character of surface and subsurface conditions encountered. Unclassified excavated materials may include rock, soil materials, and obstructions. No changes in the Contract Sum or the Contract Time will be authorized for rock excavation or removal of obstructions.
  - 1. If excavated materials intended for fill and backfill include unsatisfactory soil materials and rock, replace with satisfactory soil materials.

## 3.3 SUBGRADE INSPECTION

- A. Reconstruct subgrades damaged by freezing temperatures, frost, rain, accumulated water, or construction activities, as directed by Architect, without additional compensation.

## 3.4 STORAGE OF SOIL MATERIALS

- A. Stockpile borrow soil materials and excavated satisfactory soil materials without intermixing. Place, grade, and shape stockpiles to drain surface water. Cover to prevent windblown dust.
  - 1. Stockpile soil materials away from edge of excavations. Do not store within drip line of remaining trees.

## 3.5 SOIL FILL

- A. Plow, scarify, bench, or break up sloped surfaces steeper than 1 vertical to 4 horizontal so fill material will bond with existing material.
- B. Place and compact fill material in layers to required elevations as follows:
  - 1. Under grass and planted areas, use satisfactory soil material.
  - 2. Under walks and pavements, use satisfactory soil material.
  - 3. Under steps and ramps, use satisfactory soil material.

## 3.6 SOIL MOISTURE CONTROL

- A. Uniformly moisten or aerate subgrade and each subsequent fill or backfill soil layer before compaction to within 2 percent of optimum moisture content.
  - 1. Do not place backfill or fill soil material on surfaces that are muddy, frozen, or contain frost or ice.
  - 2. Remove and replace, or scarify and air dry, otherwise satisfactory soil material that exceeds optimum moisture content by 2 percent and is too wet to compact to specified dry unit weight.



### 3.7 COMPACTION OF SOIL BACKFILLS AND FILLS

- A. Place backfill and fill soil materials in layers not more than 10 inches (200 mm) in loose depth for material compacted by heavy compaction equipment and not more than 4 inches (100 mm) in loose depth for material compacted by hand-operated tampers.
- B. Place backfill and fill soil materials evenly on all sides of structures to required elevations and uniformly along the full length of each structure.
- C. Compact soil materials to not less than the following percentages of maximum dry unit weight according to ASTM D 1557:
  - 1. Under walkways, scarify and recompact top 6 inches (150 mm) below subgrade and compact each layer of backfill or fill soil material at 92 percent.
  - 2. Under turf or unpaved areas, scarify and recompact top 6 inches (150 mm) below subgrade and compact each layer of backfill or fill soil material at 85 percent.

### 3.8 GRADING

- A. General: Uniformly grade areas to a smooth surface, free of irregular surface changes. Comply with compaction requirements and grade to cross sections, lines, and elevations indicated.
- B. Site Rough Grading: Slope grades to direct water away from buildings and to prevent ponding. Finish subgrades to elevations required to achieve indicated finish elevations, within the following subgrade tolerances:
  - 1. Turf or Unpaved Areas: Plus or minus 1 inch (25 mm) .
  - 2. Walks: Plus or minus 1 inch (25 mm).
  - 3. Pavements: Plus or minus 1/2 inch (13 mm).

### 3.9 FIELD QUALITY CONTROL

- A. Testing Agency: Owner will engage a qualified geotechnical engineering testing agency to perform tests and inspections.
- B. Allow testing agency to inspect and test subgrades and each fill or backfill layer. Proceed with subsequent earth moving only after test results for previously completed work comply with requirements.
- C. When testing agency reports that subgrades, fills, or backfills have not achieved degree of compaction specified, scarify and moisten or aerate, or remove and replace soil materials to depth required; recompact and retest until specified compaction is obtained.

### 3.10 PROTECTION

- A. Protecting Graded Areas: Protect newly graded areas from traffic, freezing, and erosion. Keep free of trash and debris.

- B. Repair and reestablish grades to specified tolerances where completed or partially completed surfaces become eroded, rutted, settled, or where they lose compaction due to subsequent construction operations or weather conditions.
- C. Where settling occurs before Project correction period elapses, remove finished surfacing, backfill with additional soil material, compact, and reconstruct surfacing.
  - 1. Restore appearance, quality, and condition of finished surfacing to match adjacent work, and eliminate evidence of restoration to greatest extent possible.

### 3.11 DISPOSAL OF SURPLUS AND WASTE MATERIALS

- A. Remove surplus satisfactory soil and waste materials, including unsatisfactory soil, trash, and debris, and legally dispose of them off Owner's property.

END OF SECTION 312000