CITY OF HANAHAN
Request for Bid

HANAHAN AMPHITHEATER BOARDWALK

Solicitation Number:	COH#050520
Solicitation Date:	May 14, 2020
Bid Submission Deadline:	June 11, 2020 -- 2:00 P.M.
Bid Award Date:	June 25, 2020

City of Hanahan
Procurement Office
1255 Yeamans Hall Road
Hanahan, South Carolina 29410
(843) 576-5254

CITY OF HANAHAN
PROCUREMENT DEPARTMENT
Kitty Farias: Purchasing Agent
1255 Yeamans Hall Road
Hanahan, S.C. 29410

REQUEST FOR BID(S)

GENERAL CONTRACTOR
Hanahan Amphitheater Boardwalk

BID TITLE: HANAHAN AMPHITHEATER BOARDWALK

BID NUMBER: COH#-050520

CLOSING DATE AND TIME: June 11, 2020 at 2:00 p.m.

BID SECURITY, PERFORMANCE OR PAYMENT BONDS: **All are Required**

CONTRACT: **Project Only**

You are invited to submit a BID in accordance with the requirements of this solicitation, which are contained herein. It is requested that your proposal be submitted to the City of Hanahan Procurement Office not later than June 11, 2020 @ 2:00 P.M. EDT (local time), at which time, depending on the nature of this BID, respondents request(s) may or may not be publicly identified. In the event of possible negotiation(s) with Bidders offers, prices may not be divulged at the time of an open announcement.

*Questions regarding this bid and substitution requests, must be submitted by June 1, 2020 at 5:00 P.M EDT. Questions may be emailed to kfarias@cityofhanahan.com.

CONTACT:
Kitty Farias
(843) 576-5254
EMAIL: kfarias@cityofhanahan.com

PRE-BID CONFERENCE: Please contact Randy Moneymaker at (843) 266-0723 or email at rmoneymaker@cityofhanahan.com for an appointment to view the site. No pre-bid conference will be held.

An official authorized to bind the Bidder must sign the bid proposal and it shall contain a statement to the effect that the proposal shall remain valid for a period of at least (ninety) 90 calendar days from the closing date for submission of Bid. The bid submittal must be submitted in a sealed envelope showing

the above proposal title, proposal number and closing date/time and Bidder's business name and address. This Request for Bid (BID) does not commit City of Hanahan to award a contract, to pay any cost incurred in the preparation of a bid proposal or to procure or contract for the articles of goods or services. The City of Hanahan reserves the right to accept or reject any or all Bids received as a result of this request, to negotiate with all qualified Bidders, or to cancel in part or in its entirety this proposal if it is in the best interest of the City to do so.

Bidders/Bidders can download a copy of the BID documents and any amendments from the City of Hanahan Web Site (preferred) or request by email to kfarias@cityofhanahan.com:

WEB ADDRESS: https://cityofhanahan.com/government/administration/purchasing/

GO TO:
- DEPARTMENTS
- ADMINISTRATION
- PURCHASING
- SOLICITATIONS

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SECTION 1
GENERAL INFORMATION

Bids will be considered as specified herein or attached hereto under the terms and conditions of this Request for Bids.

A proposal must be made in the official name of the firm or individual under which business is conducted (showing the official business address) and must be signed in blue ink by a person duly authorized to legally bind the person, partnership, company, or corporation submitting the proposal.

Bidders are to include all applicable requested information and are encouraged to include any additional information they wish to be considered. Additional information shall be a separate section of the proposal and shall be identified as such.

Two (2) clearly identified originals of your bid are required. The proposal must be complete, clear and concise**.**

Bids will be received by City of Hanahan until June 11, 2020 at 2:00 P.M. on the closing date shown. Bids must be submitted to, or at the time, date and exact location specified to be considered. No late Bids, emailed, uploaded on City's webset, mailed, telegraphic, or telephone Bids will be accepted.

DIGITAL SUBMITTALS:

WEB ADDRESS: https://cityofhanahan.com/government/administration/purchasing/

GO TO: - DEPARTMENTS
- ADMINISTRATION
- PURCHASING
- SOLICITATIONS

HAND CARRY/DELIVERY SERVICE TO:
City of Hanahan Procurement Office
ATTN: Kitty Farias
1255 Yeamans Hall Road
Hanahan, South Carolina
29410

Bidder is required to have printed on the envelope or wrapping containing his Bid; Bidder's business name and address, the proposal title, proposal number and the proposal closing date and time. City of ***Hanahan shall not be responsible for unidentified Bids***. Failure to do so can result in a non-responsive bid.

Bids may be withdrawn by Bidder prior to, but not after, the time set for the closing. A telegraphic or (Email) request is acceptable provided it is received before the closing date and time.

All entries shall be entered in ink or type written and shall remain valid for a period of not less than

ninety (90) calendar days. Mistakes may be crossed-out and corrections inserted adjacent thereto, and shall be initialed, in ink, by the person signing the proposal.

Offers, amendments thereto or withdrawal requests must be received by the time advertised for BID closing date and time to be timely filed. It is the Bidder's sole responsibility to ensure that the documents are received by the person (or office) at the time indicated in the solicitation document.

By submission of an offer, you are guaranteeing that all goods, workmanship and services meet the requirements of the solicitation during the contract period.

City of Hanahan **reserves** the right:

- To accept or reject any or all Bids received as a result of this solicitation, or to cancel in part or in its entirety this solicitation if it is in the best interest of the City to do so;
- To waive any or all informalities;
- To solicit additional information from the Bidders, or any one Bidder should City of Hanahan deem such information necessary;
- To consider modifications received at any time before the award is made, if such action is in the best interest of the City; and
- To negotiate contract terms, conditions and cost.

This contract will be awarded to the Bidder whose bid/proposal is within the competitive range and determined to be in the best interest of City of Hanahan.

The words "Contractor", "Vendor", "Bidder", "Bidder", "Consultant", "Proposer", Offerer, Contractor, are used interchangeably throughout this BID to define the companies submitting offers, and replace terms such as person(s), firm(s), or corporation(s).

The Bidder is responsible for clarifying any ambiguity, conflict, discrepancy; omission or other error in the BID, or it shall be deemed waived.

Failure to submit all required information may be determined as a non-responsive proposal.

This solicitation does not commit City of Hanahan to award a contract, to pay any cost incurred in the preparation of a proposal or to procure or contract for the articles of goods or services.

ADDENDA: If it becomes necessary to revise any part of this BID, an addendum will be posted on the Web Page at the address provided on the Cover Sheet. All addenda become part of the Request for Bids and are contractually binding **whether or not received by the Bidder**.

SECTION 2
TERMS AND CONDITIONS

CONTRACTOR LICENSE REQUIREMENT:
The Contractor shall procure all permits and licenses and pay all charges and fees necessary and incidental to the lawful conduct of his business. He shall keep himself fully informed of existing and future Federal, State, and Local Laws, ordinances and regulations which in any manner affect the fulfillment of his contract and shall comply with the same.

INSURANCE:
The successful bidder shall procure, maintain, and provide proof of, insurance coverage for injuries to persons and/or property damage as may arise from or in conjunction with, the work performed on behalf of the City by the bidder, his agents, representatives, employees or subcontractors. Proof of coverage as contained herein shall be submitted ten (10) days prior to the commencement of work and such coverage shall be maintained by the bidder for the duration of the contract period; for occurrence policies.

General Liability

Coverage shall be as broad as: Comprehensive General Liability endorsed to include Broad Form, Commercial General Liability form including Products/Completed Operations.

Minimum Limits

General Liability:

$1,000,000	General Aggregate Limit
$1,000,000	Products & Completed Operations
$1,000,000	Personal and Advertising Injury
$1,000,000	Each Occurrence Limit
$50,000	Fire Damage Limit
$5,000	Medical Expense Limit

Automobile Liability

Coverage sufficient to cover all vehicles owned, used, or hired by the bidder, his agents, representatives, employees or subcontractors.

Minimum Limits

Automobile Liability:

$1,000,000	Combined Single Limit
$1,000,000	Each Occurrence Limit
$5,000	Medical Expense Limit

Workers' Compensation

Limits as required by the Workers' Compensation Act of SC. Employers Liability - $1,000,000.

Professional Liability

Minimum limits are $1,000,000 per occurrence.

Coverage Provisions

1. All deductibles or self-insured retention shall appear on the certificate(s) and shall appear on the certificate(s) and be subject to approval by the City. At the option of the City, either; the insurer shall reduce or eliminate such deductible or self-insured retention; or the bidder shall be required to procure a bond guaranteeing payment of losses and related claims expenses.
2. Failure to comply with any reporting provisions of the policy(s) shall not affect coverage provided by the City, its officers/officials/assigns/employees or volunteers.
3. The insurer shall agree to waive all rights of subrogation against the City, its' officers/officials/assigns/agents, employees or volunteers for any act, omission or condition of premises which the parties may be held liable by reason of negligence.
4. The bidder shall furnish the City certificates of insurance including endorsement affecting coverage. The certificates are to be signed by a person authorized by the insurance company(s) to bind coverage on its' behalf, if executed by a broker, notarized copy of authorization to bind, or certify coverage must be attached**.**
5. The City of Hanahan, its' officers/officials, employees, agents and volunteers shall be added as "additional insured" as their interests may appear. This provision does not apply to Professional Liability or Workers' Compensation/Employers Liability.
6. The Offeror's insurance shall be primary over any applicable insurance or self-insurance maintained by the City.
7. Shall provide thirty (30) days written notice to the City before any cancellation, suspension, or void of coverage in whole or part, where such provision is reasonable.
8. All coverage for subcontractors of the bidder shall be subject to all of the requirements stated herein.
9. All insurance shall be placed with insurers maintaining A.M. Best rating of no less than an A.

QUALITY ESTIMATES:
City of Hanahan does not guarantee to purchase any amount under the contract to be awarded. Estimated quantities are for the purposes of submitting proposals only and are not to be construed as a guarantee to purchase any amount.

SPECIFICATIONS:
Any deviation from specifications **must** be clearly indicated by offeror, otherwise, it will be considered that the bid proposal is in strict noncompliance. Product substitutions will be considered on other makes, models or brands having comparable quality, style, workmanship and performance characteristics. All product substitution requests shall be submitted in writing prior to the June 1, 2020, 5:00 p.m. EDT deadline for consideration. Alternate bid proposals offering lower quality or inferior performance will not be considered.

ACCEPTANCE OR REJECTION OF PROPOSALS:
The City of Hanahan reserves the right to accept or reject any or all proposals or parts of proposals, and to waive informalities therein.

TAXES:
Proposal prices shall be exclusive of state sales and federal excise taxes. **Where the state or city government entities are not exempt from sales taxes on sales within their state**, the Contractor shall add the sales taxes on the billing invoice as a separate entry. **The City of Hanahan is not tax exempt.**

MODIFICATION OR WITHDRAWAL OF PROPOSALS:
Proposals may be modified or withdrawn prior to the time set for the opening of proposals. After the time set for the opening of proposals no proposal may be modified or withdrawn, unless done in response to a request for a "Best and Final Offer" from the City of Hanahan.

PATENTS, COPYRIGHTS, ETC.:
The Contractor shall release, indemnify and hold the City, its officers, agents and employees harmless from liability of any kind or nature, including the Contractor's use of any copyrighted or uncopyrighted composition, secret process, patented or unpatented invention, article or appliance furnished or used in the performance of this contract.

SECURITY REQUIRED:

A. Bid Security

Each bid must be accompanied by a bid bond acceptable to the City. Bid bonds must be issued by a corporate surety registered and authorized to do business in the State of South Carolina. Bid bonds shall be payable to the City, shall be for at least five (5%) percent of the total amount of the bid, and shall serve as a guarantee deposit that the bid will be carried out to the complete satisfaction of the City. In lieu of a bond, Bidder may submit a certified check or cashier's check in aforesaid amount payable in U.S. funds. Faxed bid bonds will not be acceptable.

B. Forfeiture of Bid Security

Nonperformance by the successful Bidder, or its failure to execute the Contract and meet performance and payment bond requirements and insurance requirements within Five (5) Business Days after issuance of Notice of Award, shall result in its bid security being forfeited as liquidated damages, and the Notice of Award and Contract will be rescinded and awarded to another Bidder. Withdrawal of a bid after the opening date and time but prior to final award after the opening date, may also result in forfeiture of bid security.

C. Return of Bid Security

Bid security will be returned to all bidders after the successful Bidder has executed the Contract and delivered all required bonds and insurance certificates and endorsements. Bidders will not be entitled to any interest earnings on returned funds, and in the case of bid security by check, such

will be returned to bidder.

D. Payment and Performance Security

(1) The successful Bidder shall provide performance and payment bonds, in a form satisfactory to the City, in the following amounts:

Payment Bond: 100% of the total amount of the Contract.

Performance Bond: 100% of the total amount of the Contract.

(2) The aforesaid payment and performance bonds must be issued by a corporate surety, registered and authorized to do business in South Carolina, and must be counter-signed by a licensed, authorized South Carolina agent.

(3) Attorneys-in-fact who sign bid bonds or performance bonds must file with each bond a certified and effective, dated copy of their power of attorney.

AWARD:
The City of Hanahan ***may* award multiple contracts** as the result of this solicitation. Awards shall be made to the responsible offeror(s) whose bid proposal is determined to be the most advantageous to the City of Hanahan, taking into consideration price and the other evaluation factors that may be set forth in this solicitation.

NON-COLLUSION:
By signing the proposal/bid the offeror certifies that the proposal submitted, has been arrived at independently and has been submitted without collusion with, and without any agreement, understanding or planned common course of action with, any other vendor of materials, supplies, equipment or services described in the Request for Bid, designed to limit independent bidding or competition. (**See Attached Statement of Non-Collusion)**.

CONTRACTOR PERSONNEL: The Contractor shall enforce strict discipline and good order among the contractor's employees and other persons carrying out the contract. The Contractor shall not permit employment of unfit persons or persons not skilled in tasks assigned to them.

ETHICS CERTIFICATE
By submitting an offer, the offeror certifies that the offeror has and will comply with, and has not, and will not, induce a person to violate **Title 8, Chapter 13** of the South Carolina Code of Laws, as amended (ethics act). The following statutes require special attention: **Section 8-13-700**, regarding use of official position for financial gain; **Section 8-13-705**, regarding gifts to influence action of public official; **Section 8-13-720**, regarding offering money for advice or assistance of public official; Sections **8-13-755** and **8- 13-760**, regarding restrictions on employment by former public official; **Section 8-13-775**, prohibiting public official with economic interests from acting on contracts; **Section 8-13-790**, regarding recovery of kickbacks; **Section 8-13-1150**, regarding statements to be filed by consultants; and **Section 8-13- 1342**, regarding restrictions on contributions by Contractor to candidate who participated in awarding of contract.

The City may rescind any contract and recover all amounts expended as a result of any action taken in violation of this provision. If Contractor participates, directly or indirectly, in the evaluation or award

of public contracts, including without limitation, change orders or task orders regarding a public contract, Contractor shall, if required by law to file such a statement, provide the statement required by **Section 8- 13-1150** to the procurement officer at the same time the law requires the statement to be filed. [02- 2A075-2]

CANCELLATION:
The City may cancel its participation upon thirty days (30) written notice, unless otherwise limited or stated in the terms and conditions of this solicitation. Cancellation may be in whole or in part. Any cancellation under this provision shall not affect the rights and obligations attending orders outstanding at the time of cancellation, including any right of and Purchasing Entity to indemnification by the contractor, rights of payment for goods/services delivered and accepted, and rights attending any warranty or default in performance in association with any order. Cancellation of the contract due to Contractor default may be immediate.

DEFAULT AND REMEDIES:
Any of the following events shall constitute cause for the City of Hanahan to declare Contractor in default of the contract: 1. **Nonperformance of contractual requirements**; 2. **A material breach of any term or condition of this contract** the City of Hanahan shall issue a written notice of default providing a period in which Contractor shall have an opportunity to cure. Time allowed for cure shall not diminish or eliminate contractor's liability for liquidated or other damages. If the default remains, after Contractor has been provided the opportunity to cure, the City of Hanahan may do one or more of the following: **1. Exercise any remedy provided by law; 2. Terminate this contract and any related contracts or portions thereof; 3. Impose liquidated damages; 4. Suspend Contractor from receiving future proposal solicitations.**

LAWS AND REGULATIONS:
Any and all supplies, services and equipment offered and furnished shall comply fully with all applicable Federal, State and City laws and regulations.

CONFLICT OF TERMS:
In the event of any conflict between these standard terms and conditions and any special terms and conditions which follow; the special terms and conditions shall govern.

HOLD HARMLESS:
The Contractor shall release, protect, indemnify and hold the City of Hanahan and their respective, officers, agencies, employees, harmless from and against any damage, cost or liability, including reasonable attorney's fees for any or all injuries to persons, property or claims for money damages arising from acts or omissions of the contractor, his employees or subcontractors or volunteers.

RISK OF LOSS:
Contractor agrees to bear all risks of loss, injury or destruction of goods and materials ordered herein which occur prior to delivery and acceptance; and such loss, injury or destruction shall not release Contractor from any obligation hereunder.

JURISDICTION
Contractor acknowledges that it is subject to the jurisdiction and process of the City of Hanahan as to all matters and disputes arising pursuant to the Agreement and the performance thereof, including any questions as to liability for taxes, licenses, or fees levied by the State or its political subdivisions. Contractor agrees to execute any and all agreements necessary to accomplish this provision.

AMENDMENTS:
The terms of this contract shall not be waived, altered, modified, supplemented or amended in any manner whatsoever without prior written approval of the designated City of Hanahan contract administrator.

ASSIGNMENT/SUBCONTRACT:
Contractor shall not assign, sell, transfer, subcontract or sublet rights, or delegate responsibilities under this contract, in whole or in part, **without the prior written approval** of the City of Hanahan designated contract administrator.

NOTE: If Contractor intends to hire subcontractors, they must be listed by the Contractor in the bid documents.

NONDISCRIMINATION:
The offeror agrees to abide by the provisions of Title VI and Title VII of the Civil Rights Act of 1964 (42 USC 2000e), which prohibit discrimination against any employee or applicant for employment, or any applicant or recipient of services, on the basis of race, religion, color, or national origin; and further agrees to abide by Executive Order No. 11246, as amended, which prohibits discrimination on basis of sex; 45 CFR 90 which prohibits discrimination on the basis of age, and **Section 504 of the Rehabilitation Act of 1973**, or the **Americans with Disabilities Act of 1990** which prohibits discrimination on the basis of disabilities. The offeror further agrees to furnish information and reports to requesting State(s), upon request, for the purpose of determining compliance with these statutes. Offeror agrees to comply with each individual state's certification requirements, if any, as stated in the special terms and conditions. This contract may be canceled if the offeror fails to comply with the provisions of these laws and regulations. The offeror must include this provision in every subcontract relating to purchases by the States to ensure that subcontractors and vendors are bound by this provision.

ILLEGAL IMMIGRATION REFORM ACT COMPLIANCE: By submitting an offer, Bidder certifies that it will comply with the applicable requirements of **Title 8, Chapter 14** of the South Carolina code of Laws (originally enacted as **Section 3** of The South Carolina Illegal Immigration act, 2008 S.C. Act No. 280) and agrees to provide upon request any documentation required to establish either: (a) the applicability of **Title 8, Chapter 14** to Bidder and any subcontractor or sub-subcontractors; or (b) the compliance with **Title 8, Chapter 14** by Bidder 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". Bidder agrees to include in any contracts with its subcontractors' language requiring the subcontractors to (a) comply with the applicable requirements of **Title 8, Chapter 14**, and (b) include in any contracts with the sub-subcontractor's language requiring the sub-subcontract to comply with the applicable requirements of **Title 8, Chapter 14**. In the event any contractor, subcontractor and/or sub-subcontractor is found not to be in compliance with the **SC Immigration Reform Act [hereinafter "The Act"]**, the Contractor agrees to fully indemnify the City for any loss suffered by the City as a result of such contractor, subcontractor or sub-subcontractor's failure to comply with the Act.

FEDERAL, STATE AND LOCAL LAWS: The Contractor assumes full responsibility and liability for compliance with any and all local, state and federal laws and regulations applicable to Contractor and his employees including, but not limited to, compliance with the EEO guidelines, the **Occupational Safety and Health Act of 1970**, and minimum wage guidelines.

SEVERABILITY:
If any provision of this contract is declared by a court to be illegal or in conflict with any law, the validity of the remaining terms and provisions shall not be affected; and the rights and obligations of the parties shall be construed and enforced as if the contract did not contain the particular provision held to be invalid.

PAYMENT:
Payment for completion of a contract is normally made within thirty (30) days following the date the entire order is delivered or the date a correct invoice is received, whichever is later. After forty-five (45) days the Contractor may assess overdue account charges up to a maximum rate of one percent per month on the outstanding balance. Payments will be remitted by mail. Payments may be made via a State or political subdivision "Purchasing Card."

FORCE MAJEURE:
Neither party to this contract shall be held responsible for delay or default caused by fire, riot, pandemic(s), acts of God and/or war which is beyond that party's reasonable control. CITY OF HANAHAN may terminate this contract after determining such delay or default will reasonably prevent successful performance of the contract.

HAZARDOUS CHEMICAL INFORMATION:
The Contractor will provide one set of the appropriate material safety data sheet(s) and container label(s) upon delivery of a hazardous material to the user agency. All safety data sheets and labels will be in accordance with each participating state's requirements, if applicable**.**

FIRM PRICE:
Unless otherwise stated in the special terms and conditions, for the purpose of award, offers made in accordance with this solicitation must be good and firm for a period of ninety (90) days from the date of proposal opening. Prices must remain firm for the full term of the contract.

EXTENSION OF PRICES:
In the case of error in the extension of prices in the proposal, the unit prices will govern.

BID PROPOSAL PREPARATION COSTS: The City of Hanahan is not liable for any costs incurred by the offeror in bid proposal preparation.

CONFLICT OF INTEREST:
The Contractor certifies that it has not offered or given any gift or compensation prohibited by the state laws of any the City of Hanahan participants to any officer or employee of the City of Hanahan to secure favorable treatment with respect to being awarded this contract.

CONTRACTOR LIABILITY: The Contractor assumes full responsibility for all injuries to, or death of any person and for all damage to property, including property and employees of the City and for all claims, losses or expense which may in any way arise out of the performance of the work, whether caused by negligence or otherwise; and the Contractor shall indemnify and save the City harmless from all claims, losses, expense, or suits for any such injuries, death or damages to property, and from all liens, losses, expenses, claims or causes of action of any sort which may arise out of the performance of the work, and shall defend, on behalf of the City and suit brought against the City for attorney's fees and for all other expenses incurred by the City in connection with or as a result of any such suit, claims, or loss. Under no circumstances and with no exception will City of Hanahan act as arbitrator between the Contractor and any subcontractor. The Contractor will be solely responsible for compliance with building code requirements, all dimensions, and all conditions relating to his work under this contract. Workmanship shall be first quality in every respect. All measures necessary to ensure a first-class job shall be taken.

INDEPENDENT CONTRACTOR:
The Contractor shall be an independent contractor, and as such shall have no authorization, express or implied to bind the City of Hanahan to any agreements, settlements, liability or understanding whatsoever, and agrees not to perform any acts as agent for City of Hanahan, except as expressly set forth herein.

DEBARMENT:
The Contractor certifies that neither it nor its principals are presently debarred, suspended, proposed for debarment, declared ineligible, or voluntarily excluded from participation in this transaction (contract) by any governmental department or agency. If the Contractor cannot certify this statement, attach a written explanation for review by City of Hanahan.

GOVERNING LAW:
This procurement and the resulting agreement shall be governed by and construed in accordance with the laws of the city and state sponsoring and administering the procurement. The construction and effect of any Participating Addendum or order against the contract(s) shall be governed by and construed in accordance with the laws of the Participating Entity's City and State. Venue for any claim, dispute or action concerning an order placed against the contract(s) or the effect of a Participating Addendum shall be in the Purchasing Entity 's City and State.

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ENTIRE AGREEMENT:
This Agreement, and any attached exhibits hereto, and the solicitation documents, if any, constitute the entire Agreement between the parties and shall not be amended, altered or changed except after prior written approval from the City of Hanahan Procurement Office, in compliance with the S.C. Consolidated Procurement Code, and by written agreement, signed by the parties.

Accepted and executed the date stated above.

CONTRACTOR/VENDOR/OFFEROR:

BY: _____

ITS: _____

CITY:

BY: _____

ITS: _____

SECTION 3
REQUIREMENTS –SOW

SCOPE OF WORK:

The City of Hanahan will be constructing a new 8' wide boardwalk, approximately 365' in length, over the Goose Creek Reservoir along with asphalt paths to connect the Hanahan Amphitheater and Bettis Boat Landing.

For a site visit to view current site conditions, access, etc. before submitting a quote, please contact Randy Moneymaker – Information below.

Contact Information:
Randy Moneymaker
3100 Mabeline Road
Hanahan, South Carolina, 29410
(843) 266-0723
email: rmoneymaker@cityofhanahan.com

- **Please include any detailed explanation of services offered, as they relate to the City Requirements provided herein, and your recommended approach to addressing the City needs.**

License and Permits

The Contractor must be bonded and obtain all applicable licenses, and promptly pay all taxes required by the State of South Carolina, and/or City of Hanahan. Contractor is required to be licensed as a General Contractor by the State of South Carolina and shall supply a copy of all licensing.

Transmittal Letter

The transmittal letter and attachments must include:

- ☐ Name of the firm responding, including mailing address, telephone number, fax number and email address.
- ☐ A statement that the offer submitted as a result of this solicitation is binding on the Bidder for ninety (90) calendar days following the BID due date**.**
- ☐ Signed by authorized person.
- ☐ Contractor's Licenses and Certificates held by you and/or your company and subcontractors
- ☐ Executed/Signed Terms and Conditions
- ☐ Proposal Transmittal Agreement
- ☐ Price Proposal - **Cost Sheet must be in a separate envelope**
- ☐ Bid Security
- ☐ Construction Schedule
- ☐ Statement of Non-Collusion
- ☐ Compliance with Illegal Immigration Act
- ☐ Equal Employment Opportunity Certification

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SECTION 4
PROPOSAL TRANSMITTAL AND AGREEMENT

The undersigned, having fully familiarized himself with the information contained within this Request for Bids, (including the Instructions to Bidders, General Conditions, Special Conditions (if applicable), Requirements, Bid Sheets, Affidavits of Bidder, and subsequently received written Amendment as listed below), submit the attached proposal. I verify (to the best of my knowledge and belief) this proposal to be true and correct. All requirements of the Request for Bids are hereby incorporated into the bid/proposal submitted and shall be incorporated by reference into the purchase contract or Agreement.

Respectfully submitted by: _____
(FIRM NAME)

Signature: _____

Representative Name: _____

Title: _____

Address: _____

Date: _____

Telephone No: _____

Fax Number: _____

Email: _____

ATTACHMENT #1
PRICE PROPOSAL

"HANAHAN AMPHITHEATER BOARDWALK"

Please provide sufficient detail to show all cost. ***(Detail cost must be submitted in a separate sheet and envelope and attached with this Section Sheet).***

Note: The SOW is not a comprehensive list of all Work Materials or Labor that will be required. Contractor must visit site to ascertain materials and scope of work that may be in addition to what is listed in this bid document. See Exhibits A and B attached and incorporated into this solicitation.

The undersigned acknowledges receipt of addenda numbered:

Addendum No. _____ Date:_____

Addendum No. _____ Date:_____

Addendum No. _____ Date:_____

The undersigned has examined the complete IFB and requirements contained in the solicitation for Construction of the Hanahan Amphitheater Boardwalk and is submitting this Bid in full compliance with those requirements.

_____
Company Name

_____
Representative/Title

_____
Signature of Authorized Representative

BASE BID

Construction of Hanahan Amphitheater Boardwalk

_____Dollars ($_____).
(Written)

CITY OF HANAHAN REQUEST FOR BID
HANAHAN AMPHITHEATER BOARDWALK

BID SECURITY:

Amount Enclosed (5% of Bid) $_____ (Bid Bond or Cashier's Check)

BUSINESS LICENSE:

Does your business have a valid City of Hanahan Business License? ❑ No ❑ Yes #_____
Note: Work performed inside the corporate limits of a municipality will necessitate a business license for that municipality.

Please submit one (1) original, one (1) copy, and one (1) CD or Flash Drive of the solicitation's "Procurement Forms".

Respectfully submitted this _____ day of _____, 2020

Company Name:_____

By:_____ _____
Signature Print Name

Title:_____ (e.g. Owner, Partner, Corporate Officer, etc.)

Mailing Address:_____

City:_____ **State:**_____ **Zip:**____

Remittance Address:_____

City:_____ **State:**_____ **Zip:**____

Telephone:_____ **Fax:**_____ **FEIN:**_____

Email Address:_____

Vendor[Bidder] is a/an: ❑ Sole Proprietorship ❑ Partnership ❑ LLC ❑ Corporation – list the state of incorporation _____

SC Contractor's License No._____

Contractor's Federal Tax I.D. No._____

ATTACHMENT #2
NONCOLLUSION AFFIDAVIT OF BIDDER

(1) He is_____(owner, partner, officer, representative or agent) of_____, the Bidder that has submitted the attached Proposal:

(2) He is fully informed regarding the preparation and contents of the attached Proposal and of all pertinent circumstances regarding such Bids:

(3) Such Proposal is genuine and is not a collusive or sham Proposal;

(4) Neither the said Bidder not any of its officers, partners, owners, agents, representatives, employees or parties in interest, including this affidavit, has in any way colluded, conspired, connived or agreed, directly or indirectly with any other Bidder, firm or person to submit a collusive or sham Proposal in connection with the Contract for which the attached Proposal has been submitted or to refrain from quoting in connection with such Contract, or has in any manner directly or indirectly, sought by agreement or collusion or communication or conference with any other Bidder, firm or person to fix the price or prices in the attached Proposal or of any other Bidder, or to fix any overhead, profit or cost element of the Proposal price or the Proposal price of any other Bidder or to secure through any collusion, conspiracy, connivance or unlawful agreement any advantage against the City of Berkeley, South Carolina, or any person interested in the proposed contract; and

(5) The price or prices quoted in the attached Proposal are fair and proper and are not tainted by any collusion, conspiracy, connivance or unlawful agreement on the part of the Bidder or any of its agents, representatives, owners, employees, or parties in interest, including this affidavit.

SIGNED: _____

TITLE: _____

EXHIBIT A - SPECIFICATIONS

TABLE OF CONTENTS

SECTION 011000 – SUMMARY

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including other Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

A. This Section includes the following:

1. Work covered by the Contract Documents.
2. Work schedule.
3. Work under other contracts.
4. Owner-furnished products.
5. Use of premises.
6. Work restrictions.
7. Specification formats and conventions.
8. Regulatory Requirements

1.3 WORK COVERED BY CONTRACT DOCUMENTS

A. Project Identification: Hanahan Amphitheater Boardwalk

1. Project Location: City of Hanahan, South Carolina

B. Owner: City of Hanahan Parks and Recreation
3100 Mabeline Road
Hanahan, South Carolina 29410

1. Owner's Representative: Randy Moneymaker (843.266.0723)

C. Architect: Seamon, Whiteside & Associates, Inc.
501 Wando Park Boulevard, Suite 200
Mount Pleasant, South Carolina 29464

1. Architect’s Representative: Ms. Jennifer Palmer, P.E. (843.884.1667)

D. Generally and without force or effect on the Contract requirements, the Work consists of the following:

1. Construction includes constructing a new 8' wide boardwalk, approximately 365' in length, over the Goose Creek Reservoir along with asphalt paths to connect the Hanahan Amphitheater and Bettis Boat Landing.

E. Testing Agency: Contractual responsibilities for testing are identified in Division 1 Section “Quality Requirements”. Specific testing requirements are identified in individual Sections as applicable.

F. Construction Surveying: Contractor shall provide construction surveying and stakeout using personnel meeting the Land Surveyor Qualifications set forth in the Division 1 Section "Execution".

G. Traffic Control Plan: Where required by authorities having jurisdiction, Contractor shall prepare, submit for approval and implement a traffic control plan as necessary for work in the vicinity of the existing roadways.

1.4 WORK SCHEDULE

A. Before commencing Work, submit a schedule showing the sequence, commencement and completion dates, and move-out and -in dates of Owner's personnel for all phases of the Work.

1.5 WORK UNDER OTHER CONTRACTS

A. General: Cooperate fully with separate contractors so work on those contracts may be carried out smoothly, without interfering with or delaying work under this Contract. Coordinate the Work of this Contract with work performed under separate contracts.

1.1 OWNER-FURNISHED PRODUCTS

A. None.

1.2 USE OF PREMISES

A. General: Contractor shall have full use of premises for construction operations, including use of Project site, during construction period. Contractor's use of premises is limited only by Owner's right to perform work or to retain other contractors on portions of Project.

B. Use of Site: Limit use of premises to work in areas indicated. Do not disturb portions of Project site beyond areas in which the Work is indicated.

C. Environmentally Sensitive Areas: Encroachment into saltwater marshes, freshwater wetlands, buffers, and other environmental sensitive areas is prohibited except in areas where specifically indicated and permitted by authorities having jurisdiction.

1.3 OWNER'S OCCUPANCY REQUIREMENTS

A. Owner Occupancy of Completed Areas of Construction: Owner reserves the right to occupy and to place and install equipment in completed areas of the Project provided such occupancy does not interfere with completion of the Work. Such placement of equipment and partial occupancy shall not constitute acceptance of the total Work.

1.4 WORK RESTRICTIONS

A. On-Site Work Hours: Work shall be generally performed Monday through Friday during normal business working hours of 7:00 a.m. to 7:00 p.m. and from 7:00a.m. to 5:00p.m. on Saturday. No work shall be permitted on Sundays or Holidays unless agreed to in advance by Owner.

B. Existing Utility Interruptions: Do not interrupt utilities serving facilities occupied by Owner or others unless permitted under the following conditions and then only after arranging to provide temporary utility services according to requirements indicated:

1. Notify Architect not less than two (2) days in advance of proposed utility interruptions.
2. Do not proceed with utility interruptions without Architect's written permission.

1.5 SPECIFICATION FORMATS AND CONVENTIONS

A. Specification Format: The Specifications are organized into Divisions and Sections.

1. Section Identification: The Specifications use Section numbers and titles to help cross-referencing in the Contract Documents. Sections in the Project Manual are in numeric sequence; however, the sequence is incomplete because all available Section numbers are not used. Consult the table of contents at the beginning of the Project Manual to determine numbers and names of Sections in the Contract Documents.
2. Division 01: Sections in Division 01 govern the execution of the Work of all Sections in the Specifications.

B. Specification Content: The Specifications use certain conventions for the style of language and the intended meaning of certain terms, words, and phrases when used in particular situations. These conventions are as follows:

1. Abbreviated Language: Language used in the Specifications and other Contract Documents is abbreviated. Words and meanings shall be interpreted as appropriate. Words implied, but not stated, shall be inferred as the sense requires. Singular words shall be interpreted as plural, and plural words shall be interpreted as singular where applicable as the context of the Contract Documents indicates.
2. Imperative mood and streamlined language are generally used in the Specifications. Requirements expressed in the imperative mood are to be performed by Contractor. Occasionally, the indicative or subjunctive mood may be used in the Section Text for clarity to describe responsibilities that must be fulfilled indirectly by Contractor or by others when so noted.
   a. The words "shall," "shall be," or "shall comply with," depending on the context, are implied where a colon (:) is used within a sentence or phrase.

1.6 REGULATORY REQUIREMENTS

A. Authorities Having Jurisdiction: Conform to requirements of all authorities having jurisdiction.

1. Where conflicts exist between the requirements of the Contract Documents and those of authorities having jurisdiction, the higher quality or more restrictive requirement shall apply.
2. Submit copies of all permits and licenses, required by governing authorities having jurisdiction, to Owner and Architect.

PART 2 - PRODUCTS (Not Used)

PART 3 - EXECUTION (Not Used)

END OF SECTION 011000

SECTION 012200 - UNIT PRICES

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including other Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

A. This Section includes administrative and procedural requirements for unit prices.

B. Related Sections:

1. Division 01 Section "Contract Modification Procedures" for procedures for submitting and handling Change Orders.

1.3 DEFINITIONS

A. Unit price is an amount incorporated in the Agreement, applicable during the duration of the Work as a price per unit of measurement for materials, equipment, or services, or a portion of the Work, added to or deducted from the Contract Sum by appropriate modification, if the scope of Work or estimated quantities of Work required by the Contract Documents are increased or decreased.

1.4 PROCEDURES

A. Unit prices include all necessary material, plus cost for delivery, installation, insurance, applicable taxes, overhead, and profit.

B. Measurement and Payment: Refer to individual Specification Sections for work that requires establishment of unit prices. Methods of measurement and payment for unit prices are specified in those Sections.

C. Owner reserves the right to reject Contractor's measurement of work-in-place that involves use of established unit prices and to have this work measured, at Owner's expense, by an independent surveyor acceptable to Contractor.

PART 2 - PRODUCTS (Not Used)

PART 3 - EXECUTION (Not Used)

END OF SECTION 012200

SECTION 012500 - SUBSTITUTION PROCEDURES

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and other Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

A. Section includes administrative and procedural requirements for substitutions.

1.3 DEFINITIONS

A. Substitutions: Changes in products, materials, equipment, and methods of construction from those required by the Contract Documents and proposed by Contractor.

1. Substitutions for Cause: Changes proposed by Contractor that are required due to changed Project conditions, such as unavailability of product, regulatory changes, or unavailability of required warranty terms.
2. Substitutions for Convenience: Changes proposed by Contractor or Owner that are not required in order to meet other Project requirements but may offer advantage to Contractor or Owner.

1.4 ACTION SUBMITTALS

A. Substitution Requests: Submit request for consideration in PDF format electronically. Identify product or fabrication or installation method to be replaced. Include Specification Section number and title and Drawing numbers and titles.

1. Substitution Requests should be submitted during the Bidding phase.
2. Substitution Request Form: Use form provided in Project Manual.
3. Documentation: Show compliance with requirements for substitutions and the following, as applicable:

    a. Statement indicating why specified product or fabrication or installation method cannot be provided, if applicable.
    b. Coordination of information, including a list of changes or revisions needed to other parts of the Work and to construction performed by Owner and separate contractors that will be necessary to accommodate proposed substitution.
    c. Detailed comparison of significant qualities of proposed substitutions with those of the Work specified. Include annotated copy of applicable Specification Section. Significant qualities may include attributes, such as performance, weight, size, durability, visual effect, sustainable design characteristics, warranties, and specific features and requirements indicated. Indicate deviations, if any, from the Work specified.
    d. Product Data, including drawings and descriptions of products and fabrication and installation procedures.
    e. Samples, where applicable or requested.

f. Certificates and qualification data, where applicable or requested.
g. List of similar installations for completed projects, with project names and addresses as well as names and addresses of architects and owners.
h. Material test reports from a qualified testing agency, indicating and interpreting test results for compliance with requirements indicated.
i. Research reports evidencing compliance with building code in effect for Project, from ICC-ES.
j. Detailed comparison of Contractor's construction schedule using proposed substitutions with products specified for the Work, including effect on the overall Contract Time. If specified product or method of construction cannot be provided within the Contract Time, include letter from manufacturer, on manufacturer's letterhead, stating date of receipt of purchase order, lack of availability, or delays in delivery.
k. Cost information, including a proposal of change, if any, in the Contract Sum.
l. Contractor's certification that proposed substitution complies with requirements in the Contract Documents, except as indicated in substitution request, is compatible with related materials and is appropriate for applications indicated.
m. Contractor's waiver of rights to additional payment or time that may subsequently become necessary because of failure of proposed substitution to produce indicated results.

4. Architect's Action: If necessary, Architect will request additional information or documentation for evaluation within seven days of receipt of a request for substitution. Architect will notify Contractor of acceptance or rejection of proposed substitution within 15 days of receipt of request, or seven days of receipt of additional information or documentation, whichever is later.

a. Forms of Acceptance: Addenda, Change Order, Construction Change Directive, or Architect's Supplemental Instructions for minor changes in the Work.
b. Use product specified if Architect does not issue a decision on use of a proposed substitution within time allocated.

1.5 QUALITY ASSURANCE

A. Compatibility of Substitutions: Investigate and document compatibility of proposed substitution with related products and materials. Engage a qualified testing agency to perform compatibility tests recommended by manufacturers.

1.6 PROCEDURES

A. Coordination: Revise or adjust affected work as necessary to integrate work of the approved substitutions.

1.7 SUBSTITUTIONS

A. Substitutions for Convenience: Not allowed.

PART 2 - PRODUCTS (Not Used)

PART 3 - EXECUTION (Not Used)

END OF SECTION 012500

SECTION 012600 - CONTRACT MODIFICATION PROCEDURES

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including other Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

A. This Section specifies administrative and procedural requirements for handling and processing Contract modifications.

1.3 PROPOSAL REQUESTS

A. Owner-Initiated Proposal Requests: Architect will issue a detailed description of proposed changes in the Work that may require adjustment to the Contract Sum or the Contract Time. If necessary, the description will include supplemental or revised Drawings and Specifications.

1. Proposal Requests issued by Architect are for information only. Do not consider them instructions either to stop work in progress or to execute the proposed change.
2. Within five (5) business days after receipt of Proposal Request, submit a quotation estimating cost adjustments to the Contract Sum and the Contract Time necessary to execute the change.

    a. Include a list of quantities of products required or eliminated and unit costs, with total amount of purchases and credits to be made. If requested, furnish survey data to substantiate quantities.
    b. Indicate applicable taxes, delivery charges, equipment rental, and amounts of trade discounts.
    c. Include costs of labor and supervision directly attributable to the change.
    d. Include an updated Contractor's Construction Schedule that indicates the effect of the change, including, but not limited to, changes in activity duration, start and finish times, and activity relationship. Use available total float before requesting an extension of the Contract Time.

B. Contractor-Initiated Proposals: If latent or unforeseen conditions require modifications to the Contract, Contractor may propose changes by submitting a request for a change to Architect.

1. Include a statement outlining reasons for the change and the effect of the change on the Work. Provide a complete description of the proposed change. Indicate the effect of the proposed change on the Contract Sum and the Contract Time.
2. Include a list of quantities of products required or eliminated and unit costs, with total amount of purchases and credits to be made. If requested, furnish survey data to substantiate quantities.
3. Indicate applicable taxes, delivery charges, equipment rental, and amounts of trade discounts.
4. Include costs of labor and supervision directly attributable to the change.
5. Include an updated Contractor's Construction Schedule that indicates the effect of the change, including, but not limited to, changes in activity duration, start and finish times,

and activity relationship. Use available total float before requesting an extension of the Contract Time.

6. Comply with requirements in Division 01 Section "Product Requirements" if the proposed change requires substitution of one product or system for product or system specified.

C. Proposal Request Form: Use AIA Document G709 for Proposal Requests.

1.4 ALLOWANCES

A. Allowance Adjustment: Change Order proposal shall be based on the difference between purchase amount and the allowance.

B. Submit claims for increased costs because of a change in scope or nature of the allowance described in the Contract Documents.

1.5 CHANGE ORDER PROCEDURES

A. On Owner's approval of a Proposal Request, Architect will issue a Change Order for signatures of Owner and Contractor on AIA Document G701.

1.6 CONSTRUCTION CHANGE DIRECTIVE

A. Construction Change Directive: Architect may issue a Construction Change Directive on AIA Document G714. Construction Change Directive instructs Contractor to proceed with a change in the Work, for subsequent inclusion in a Change Order.

1. Construction Change Directive contains a complete description of change in the Work. It also designates method to be followed to determine change in the Contract Sum or the Contract Time.

B. Documentation: Maintain detailed records on a time and material basis of work required by the Construction Change Directive.

1. After completion of change, submit an itemized account and supporting data necessary to substantiate cost and time adjustments to the Contract.

PART 2 - PRODUCTS (Not Used)

PART 3 - EXECUTION (Not Used)

END OF SECTION 012600

SECTION 012900 - PAYMENT PROCEDURES

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including other Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

A. This Section specifies administrative and procedural requirements necessary to prepare and process Applications for Payment.

1.3 SCHEDULE OF VALUES

A. Coordination: Coordinate preparation of the Schedule of Values with preparation of Contractor's Construction Schedule.

1. Correlate line items in the Schedule of Values with other required administrative forms and schedules, including the following:

    a. Application for Payment forms with Continuation Sheets.
    b. Submittals Schedule.
    c. Contractor's Construction Schedule.

B. Format and Content: Use the Project Manual table of contents as a guide to establish line items for the Schedule of Values. Provide at least one line item for each Specification Section.

1. Identification: Include the following Project identification on the Schedule of Values:

    a. Project name and location.
    b. Name of Architect.
    c. Architect's project number.
    d. Contractor's name and address.
    e. Date of submittal.

2. Submit draft of AIA Document G703 Continuation Sheets.

3. Provide a breakdown of the Contract Sum in enough detail to facilitate continued evaluation of Applications for Payment and progress reports. Coordinate with the Project Manual table of contents. Provide several line items for principal subcontract amounts, where appropriate.

4. Round amounts to nearest whole dollar; total shall equal the Contract Sum.

5. Provide a separate line item in the Schedule of Values for each part of the Work where Applications for Payment may include materials or equipment purchased or fabricated and stored, but not yet installed.

a. Differentiate between items stored on-site and items stored off-site. If specified, include evidence of insurance or bonded warehousing.

6. Provide separate line items in the Schedule of Values for initial cost of materials, for each subsequent stage of completion, and for total installed value of that part of the Work.

7. Allowances: Provide a separate line item in the Schedule of Values for each allowance. Show line-item value of unit-cost allowances, as a product of the unit cost, multiplied by measured quantity. Use information indicated in the Contract Documents to determine quantities.

8. Each item in the Schedule of Values and Applications for Payment shall be complete. Include total cost and proportionate share of general overhead and profit for each item.

a. Temporary facilities and other major cost items that are not direct cost of actual work-in-place may be shown either as separate line items in the Schedule of Values or distributed as general overhead expense, at Contractor's option.

9. Schedule Updating: Update and resubmit the Schedule of Values before the next Applications for Payment when Change Orders or Construction Change Directives result in a change in the Contract Sum.

a. Include each Change Order or Construction Change Directive as a new line item on the Schedule of Values.

1.4 APPLICATIONS FOR PAYMENT

A. Each Application for Payment shall be consistent with previous applications and payments as certified by Architect and paid for by Owner.

1. Initial Application for Payment, Application for Payment at time of Substantial Completion, and final Application for Payment involve additional requirements.

B. Payment Application Times: The date for each progress payment is indicated in the Agreement between Owner and Contractor. The period of construction Work covered by each Application for Payment is the period indicated in the Agreement.

C. Payment Application Forms: Use AIA Document G702 and AIA Document G703 Continuation Sheets as form for Applications for Payment.

D. Application Preparation: Complete every entry on form. Notarize and execute by a person authorized to sign legal documents on behalf of Contractor. Architect will return incomplete applications without action.

1. Entries shall match data on the Schedule of Values and Contractor's Construction Schedule. Use updated schedules if revisions were made.
2. Include amounts of Change Orders and Construction Change Directives issued before last day of construction period covered by application.

E. Transmittal: Submit 3 signed and notarized original copies of each Application for Payment to Architect by a method ensuring receipt. One copy shall include waivers of lien and similar attachments if required.

1. Transmit each copy with a transmittal form listing attachments and recording appropriate information about application.

F. Waivers of Mechanic's Lien: With each Application for Payment, submit waivers of mechanic's liens from subcontractors and suppliers for construction period covered by the previous application.

1. Submit partial waivers on each item for amount requested in previous application, after deduction for retainage, on each item.
2. When an application shows completion of an item, submit final or full waivers.
3. Owner reserves the right to designate which entities involved in the Work must submit waivers.
4. Submit final Application for Payment with or preceded by final waivers from every entity involved with performance of the Work covered by the application who is lawfully entitled to a lien.
5. Waiver Forms: Submit waivers of lien on forms, executed in a manner acceptable to Owner.

G. Initial Application for Payment: Administrative actions and submittals that must precede or coincide with submittal of first Application for Payment include the following:

1. List of subcontractors.
2. Schedule of Values.
3. Contractor's Construction Schedule (preliminary if not final).
4. Schedule of Unit Prices.
5. Submittals Schedule (preliminary if not final).
6. List of Contractor's staff assignments.
7. List of Contractor's principal consultants.
8. Copies of building permits.
9. Copies of authorizations and licenses from authorities having jurisdiction for performance of the Work.
10. Initial progress report.
11. Report of preconstruction conference.
12. Certificates of insurance and insurance policies.

H. Application for Payment at Substantial Completion: After issuing the Certificate of Substantial Completion, submit an Application for Payment showing 100 percent completion for portion of the Work claimed as substantially complete.

1. Include documentation supporting claim that the Work is substantially complete and a statement showing an accounting of changes to the Contract Sum.
2. This application shall reflect Certificates of Partial Substantial Completion issued previously for Owner occupancy of designated portions of the Work.

I. Final Payment Application: Submit final Application for Payment with releases and supporting documentation not previously submitted and accepted, including, but not limited, to the following:

1. Evidence of completion of Project closeout requirements.
2. Insurance certificates for products and completed operations where required and proof that taxes, fees, and similar obligations were paid.
3. Updated final statement, accounting for final changes to the Contract Sum.
4. AIA Document G706, "Contractor's Affidavit of Payment of Debts and Claims."
5. AIA Document G706A, "Contractor's Affidavit of Release of Liens."
6. AIA Document G707, "Consent of Surety to Final Payment."

7. Evidence that claims have been settled.
8. Final meter readings for utilities, a measured record of stored fuel, and similar data as of date of Substantial Completion or when Owner took possession of and assumed responsibility for corresponding elements of the Work.
9. Final, liquidated damages settlement statement.

PART 2 - PRODUCTS (Not Used)

PART 3 - EXECUTION (Not Used)

END OF SECTION 012900

SECTION 013100 - PROJECT MANAGEMENT AND COORDINATION

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including other Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

A. This Section includes administrative provisions for coordinating construction operations on Project including, but not limited to, the following:

1. Coordination.
2. Administrative and supervisory personnel.
3. Project meetings.
4. Requests for Information (RFIs).

1.3 DEFINITIONS

A. RFI: Request from Contractor seeking interpretation or clarification of the Contract Documents.

1.4 COORDINATION

A. Coordination: Coordinate construction operations included in different Sections of the Specifications to ensure efficient and orderly installation of each part of the Work. Coordinate construction operations, included in different Sections, that depend on each other for proper installation, connection, and operation.

1. Schedule construction operations in sequence required to obtain the best results where installation of one part of the Work depends on installation of other components, before or after its own installation.
2. Coordinate installation of different components with other contractors to ensure maximum accessibility for required maintenance, service, and repair.
3. Make adequate provisions to accommodate items scheduled for later installation.
4. Where availability of space is limited, coordinate installation of different components to ensure maximum performance and accessibility for required maintenance, service, and repair of all components, including mechanical and electrical.

B. Prepare memoranda for distribution to each party involved, outlining special procedures required for coordination. Include such items as required notices, reports, and list of attendees at meetings.

1. Prepare similar memoranda for Owner and separate contractors if coordination of their Work is required.

C. Administrative Procedures: Coordinate scheduling and timing of required administrative procedures with other construction activities and activities of other contractors to avoid conflicts

and to ensure orderly progress of the Work. Such administrative activities include, but are not limited to, the following:

1. Preparation of Contractor's Construction Schedule.
2. Preparation of the Schedule of Values.
3. Installation and removal of temporary facilities and controls.
4. Delivery and processing of submittals.
5. Progress meetings.
6. Preinstallation conferences.
7. Startup and adjustment of systems.
8. Project closeout activities.

D. Drawings: Prepare drawings in accordance with requirements of the Contract Documents.

E. Electronic Submittal Coordination

1. The Contractor shall process all shop drawings and product data via electronic submittal process; the Contractor shall establish an account with a vendor providing a comprehensive online system for exchanging, reviewing, and archiving construction submittals, RFIs, and other construction communications. Items requiring physical samples for review shall be submitted as described in individual specification sections.

F. Conservation: Coordinate construction activities to ensure that operations are carried out with consideration given to conservation of energy, water, and materials.

1. Salvage materials and equipment involved in performance of, but not actually incorporated into, the Work. Refer to other Sections for disposition of salvaged materials that are designated as Owner's property.

1.5 ADMINISTRATIVE AND SUPERVISORY PERSONNEL

A. General: In addition to Project superintendent, provide other administrative and supervisory personnel as required for proper performance of the Work.

1.6 PROJECT MEETINGS

A. General: Schedule and conduct meetings and conferences at Project site, unless otherwise indicated.

1. Attendees: Inform participants and others involved, and individuals whose presence is required, of date and time of each meeting. Notify Owner and Architect of scheduled meeting dates and times.
2. Agenda: Prepare the meeting agenda. Distribute the agenda to all invited attendees.
3. Minutes: Record significant discussions and agreements achieved. Distribute the meeting minutes to everyone concerned, including Owner and Architect, within three days of the meeting.

B. Preconstruction Conference: Schedule a preconstruction conference before starting construction, at a time convenient to Owner and Architect, but no later than 10 days after execution of the Agreement. Hold the conference at Project site or another convenient location. Conduct the meeting to review responsibilities and personnel assignments.

1. Attendees: Authorized representatives of Owner, Architect, and their consultants; Contractor and its superintendent; major subcontractors; suppliers; and other concerned parties shall attend the conference. All participants at the conference shall be familiar with Project and authorized to conclude matters relating to the Work.
2. Agenda: Discuss items of significance that could affect progress, including the following:

    a. Tentative construction schedule.
    b. Phasing.
    c. Critical work sequencing and long-lead items.
    d. Designation of key personnel and their duties.
    e. Procedures for processing field decisions and Change Orders.
    f. Procedures for RFIs.
    g. Procedures for testing and inspecting.
    h. Procedures for processing Applications for Payment.
    i. Distribution of the Contract Documents.
    j. Submittal procedures.
    k. Preparation of Record Documents.
    l. Use of the premises.
    m. Work restrictions.
    n. Owner's occupancy requirements.
    o. Responsibility for temporary facilities and controls.
    p. Construction waste management and recycling.
    q. Parking availability.
    r. Office, work, and storage areas.
    s. Equipment deliveries and priorities.
    t. First aid.
    u. Security.
    v. Progress cleaning.
    w. Working hours.

3. Minutes: Record and distribute meeting minutes.

C. Preinstallation Conferences: Conduct a preinstallation conference at Project site where required by individual Specification Sections and before each construction activity that requires coordination with other construction.

1. Attendees:

    a. Contractor’s Project Supervisor.
    b. Installer.
    c. Representative of authority have jurisdiction (where required by authority).
    d. Representatives of manufacturers and fabricators involved in or affected by the installation and its coordination or integration with other materials and installations that have preceded or will follow (where necessary to assure proper installation).

2. Advise Architect of scheduled meeting dates and invite attendance.

3. Agenda: Review progress of other construction activities and preparations for the particular activity under consideration, including requirements for the following:

    a. The Contract Documents.
    b. Options.
    c. Related RFIs.
    d. Related Change Orders.
    e. Purchases.

f. Deliveries.
g. Submittals.
h. Review of mockups.
i. Possible conflicts.
j. Compatibility problems.
k. Time schedules.
l. Weather limitations.
m. Manufacturer's written instructions.
n. Warranty requirements.
o. Compatibility of materials.
p. Acceptability of substrates.
q. Temporary facilities and controls.
r. Space and access limitations.
s. Requirements of authorities having jurisdiction.
t. Testing and inspecting requirements.
u. Installation procedures.
v. Coordination with other work.
w. Required performance results.
x. Protection of adjacent work.
y. Protection of construction and personnel.

4. Record significant conference discussions, agreements, and disagreements, including required corrective measures and actions.
5. Reporting: Distribute minutes of the meeting to Architect, each party present, and to parties who should have been present.
6. Do not proceed with installation if the conference cannot be successfully concluded. Initiate whatever actions are necessary to resolve impediments to performance of the Work and reconvene the conference at earliest feasible date.

D. Progress Meetings: Conduct progress meetings at regular intervals. Coordinate dates of meetings with preparation of payment requests.

1. Attendees: In addition to representatives of Owner and Architect, each contractor, subcontractor, supplier, and other entity concerned with current progress or involved in planning, coordination, or performance of future activities shall be represented at these meetings. All participants at the conference shall be familiar with Project and authorized to conclude matters relating to the Work.
2. Agenda: Review and correct or approve minutes of previous progress meeting. Review other items of significance that could affect progress. Include topics for discussion as appropriate to status of Project.

a. Contractor's Construction Schedule: Review progress since the last meeting. Determine whether each activity is on time, ahead of schedule, or behind schedule, in relation to Contractor's Construction Schedule. Determine how construction behind schedule will be expedited; secure commitments from parties involved to do so. Discuss whether schedule revisions are required to ensure that current and subsequent activities will be completed within the Contract Time.

1) Review schedule for next period.

b. Review present and future needs of each entity present, including the following:

1) Interface requirements.
2) Sequence of operations.
3) Status of submittals.

4) Deliveries.
5) Off-site fabrication.
6) Access.
7) Site utilization.
8) Temporary facilities and controls.
9) Work hours.
10) Hazards and risks.
11) Progress cleaning.
12) Quality and work standards.
13) Requirements of authorities having jurisdiction.
14) Status of correction of deficient items.
15) Field observations.
16) RFIs.
17) Status of proposal requests.
18) Pending changes.
19) Status of Change Orders.
20) Pending claims and disputes.
21) Documentation of information for payment requests.
22) Closeout Procedures (where applicable).

3. Minutes: Record the meeting minutes.
4. Reporting: Distribute minutes of the meeting to each party present and to parties who should have been present.

a. Schedule Updating: Revise Contractor's Construction Schedule after each progress meeting where revisions to the schedule have been made or recognized. Issue revised schedule concurrently with the report of each meeting.

1.7 REQUESTS FOR INFORMATION (RFIs)

A. Procedure: Immediately on discovery of the need for interpretation of the Contract Documents, and if not possible to request interpretation at Project meeting, prepare and submit an RFI in the form specified.

1. RFIs shall originate with Contractor. RFIs submitted by entities other than Contractor will be returned with no response.
2. Coordinate and submit RFIs in a prompt manner so as to avoid delays in Contractor's work or work of subcontractors.
3. Insure that RFI's are not frivolous by carefully reviewing Contract Documents to confirm that the required information is not overlooked. Architect reserves the right to request compensation by Contractor for time spent responding to repeated submittals of RFI's for information clearly provided in the Contract Documents.

B. Content of the RFI: Include a detailed, legible description of item needing interpretation and the following:

1. Project name.
2. Date.
3. Name of Contractor.
4. Name of Architect.
5. RFI number, numbered sequentially.
6. Specification Section number and title and related paragraphs, as appropriate.
7. Drawing number and detail references, as appropriate.
8. Field dimensions and conditions, as appropriate.

9. Contractor's suggested solution(s). If Contractor's solution(s) impact the Contract Time or the Contract Sum, Contractor shall state impact in the RFI.
10. Contractor's signature.
11. Attachments: Include drawings, descriptions, measurements, photos, Product Data, Shop Drawings, and other information necessary to fully describe items needing interpretation.

    a. Supplementary drawings prepared by Contractor shall include dimensions, thicknesses, structural grid references, and details of affected materials, assemblies, and attachments.

C. RFI Forms: AIA Form G716.

1. Identify each page of attachments with the RFI number and sequential page number.

D. Software-Generated RFIs: Software-generated form with substantially the same content as indicated above.

1. Attachments shall be electronic files in Adobe Acrobat PDF format.

E. Architect's Action: Architect will review each RFI, determine action required, and return it. Allow 5 working days for Architect's response for each RFI. RFIs received after 1:00 p.m. will be considered as received the following working day.

1. The following RFIs will be returned without action:

    a. Requests for approval of submittals.
    b. Requests for approval of substitutions.
    c. Requests for coordination information already indicated in the Contract Documents.
    d. Requests for adjustments in the Contract Time or the Contract Sum.
    e. Requests for interpretation of Architect's actions on submittals.
    f. Incomplete RFIs or RFIs with numerous errors.

2. Architect's action may include a request for additional information, in which case Architect's time for response will start again.
3. Architect's action on RFIs that may result in a change to the Contract Time or the Contract Sum may be eligible for Contractor to submit Change Proposal according to Division 01 Section "Contract Modification Procedures."

    a. If Contractor believes the RFI response warrants change in the Contract Time or the Contract Sum, notify Architect in writing within 5 days of receipt of the RFI response.

F. On receipt of Architect's action, update the RFI log and immediately distribute the RFI response to affected parties. Review response and notify Architect within 5 days if Contractor disagrees with response.

G. RFI Log: Prepare, maintain, and submit a tabular log of RFIs organized by the RFI number. Submit log after weekly or after each update, whichever is longer.

PART 2 - PRODUCTS (Not Used)

PART 3 - EXECUTION (Not Used)

END OF SECTION 013100

SECTION 013200 - CONSTRUCTION PROGRESS DOCUMENTATION

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including other Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

A. This Section includes administrative and procedural requirements for documenting the progress of construction during performance of the Work, including the following:

1. Contractor's Construction Schedule.
2. Submittals Schedule.
3. Field condition reports.

1.3 SUBMITTALS

A. Format for Submittals: Submit required submittals in the following format:

1. Working electronic copy of schedule file, where indicated.
2. PDF file.

B. Startup construction schedule.

1. Submittal of cost-loaded, startup construction schedule will not constitute approval of schedule of values for cost-loaded activities.

C. Contractor's Construction Schedule: Initial schedule, of size required to display entire schedule for entire construction period.

1. Submit a working digital copy of schedule, using software indicated, and labeled to comply with requirements for submittals.

D. Construction Schedule Updating Reports: Submit with Applications for Payment.

E. Daily Construction Reports: Submit at weekly intervals.

F. Material Location Reports: Submit at monthly intervals.

G. Site Condition Reports: Submit at time of discovery of differing conditions.

H. Unusual Event Reports: Submit at time of unusual event.

I. Qualification Data: For scheduling consultant.

1.4 COORDINATION

A. Coordinate preparation and processing of schedules and reports with performance of construction activities and with scheduling and reporting of separate contractors.

B. Coordinate Contractor's Construction Schedule with the Schedule of Values, list of subcontracts, Submittals Schedule, progress reports, payment requests, and other required schedules and reports.

1. Secure time commitments for performing critical elements of the Work from parties involved.
2. Coordinate each construction activity in the network with other activities and schedule them in proper sequence.

PART 2 - PRODUCTS

2.1 CONTRACTOR'S CONSTRUCTION SCHEDULE, GENERAL

A. Time Frame: Extend schedule from date established for the Notice to Proceed to date of Final Completion.

1. Contract completion date shall not be changed by submission of a schedule that shows an early completion date, unless specifically authorized by Change Order.

B. Milestones: Include milestones indicated in the Contract Documents in schedule, including, but not limited to, the Notice to Proceed, Substantial Completion, and Final Completion.

C. Contractor's Construction Schedule Updating: At monthly intervals, update schedule to reflect actual construction progress and activities. Issue schedule one week before each regularly scheduled progress meeting.

2.2 STARTUP CONSTRUCTION SCHEDULE

A. Gantt-Chart Schedule: Submit startup, horizontal, Gantt-chart-type construction schedule within seven days of date established for the Notice of Award.

B. Preparation: Indicate each significant construction activity separately. Identify first workday of each week with a continuous vertical line. Outline significant construction activities for first 90 days of construction. Include skeleton diagram for the remainder of the Work and a cash requirement prediction based on indicated activities.

2.3 CONTRACTOR'S CONSTRUCTION SCHEDULE (GANTT CHART)

A. Gantt-Chart Schedule: Submit a comprehensive, fully developed, horizontal Gantt-chart-type, Contractor's Construction Schedule within 15 days of date established for the Notice to Proceed.

B. Preparation: Indicate each significant construction activity separately. Identify first workday of each week with a continuous vertical line.

2.4 REPORTS

A. Daily Reports: Prepare a daily construction report outlining activities / operations at Project.

B. Field Condition Reports: Immediately on discovery of a difference between field conditions and the Contract Documents, prepare and submit a detailed report. Submit with a Request for Information on AIA Form G716. Include a detailed description of the differing conditions, together with recommendations for changing the Contract Documents.

PART 3 - EXECUTION

3.1 CONTRACTOR'S CONSTRUCTION SCHEDULE

A. Contractor's Construction Schedule Updating: At monthly intervals, update schedule to reflect actual construction progress and activities. Issue schedule one week before each regularly scheduled progress meeting.

1. Revise schedule immediately after each meeting or other activity where revisions have been recognized or made. Issue updated schedule concurrently with the report of each such meeting.
2. Include a report with updated schedule that indicates every change, including, but not limited to, changes in logic, durations, actual starts and finishes, and activity durations.
3. As the Work progresses, indicate Actual Completion percentage for each activity.

B. Distribution: Distribute copies of approved schedule to Architect, Owner, separate contractors, testing and inspecting agencies, and other parties identified by Contractor with a need-to-know schedule responsibility.

1. Post copies in Project meeting rooms and temporary field offices.
2. When revisions are made, distribute updated schedules to the same parties and post in the same locations. Delete parties from distribution when they have completed their assigned portion of the Work and are no longer involved in performance of construction activities.

END OF SECTION 013200

SECTION 013300 - SUBMITTAL PROCEDURES

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including other Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

A. This Section includes administrative and procedural requirements for submitting Shop Drawings, Product Data, Samples, and other submittals.

1.3 DEFINITIONS

A. Action Submittals: Written and graphic information that requires Architect's responsive action.

B. Informational Submittals: Written information that does not require Architect's responsive action. Submittals may be rejected for not complying with requirements.

1.4 SUBMITTAL PROCEDURES

A. General: Electronic copies of CAD Drawings of the Contract Drawings will be provided by Architect for Contractor's use in preparing submittals, subject to the following terms:

1. The computer generated CAD Drawings are the property of Architect and are protected by copyright. Contractor is granted a license to use the CAD Drawings for his personal, noncommercial use only. Contractor shall not reproduce, sell, distribute, publish, circulate, commercially exploit, or modify the CAD Drawings, or any portion thereof, without the written permission of Architect.
2. Architect makes the CAD Drawings available to Contractor "as is" and makes no warranty, expressed or implied, with regard to the CAD Drawings. All implied warranties including the warranties of the merchantability and fitness for a particular use are hereby excluded. In no event shall Architect be liable for any lost profits, lost savings, or other consequential, special, or indirect damages, even if Architect has been advised of such losses or damages. In any event, the liability of Architect arising out of any legal claim (whether tort, contract, or otherwise) in connection of the CAD Drawings will not exceed fifty dollars.

B. Coordination: Coordinate preparation and processing of submittals with performance of construction activities.

1. Coordinate each submittal with fabrication, purchasing, testing, delivery, other submittals, and related activities that require sequential activity.
2. Coordinate transmittal of different types of submittals for related parts of the Work so processing will not be delayed because of need to review submittals concurrently for coordination.

a. Architect reserves the right to withhold action on a submittal requiring coordination with other submittals until related submittals are received.

C. Format: Prepare and submit submittals required by individual Specification Sections. Types of submittals are indicated in individual Specification Sections.

1. Web-Based Project Software: Prepare submittals in PDF form, and upload to web-based Project software website, Submittal Exchange. Enter required data in web-based software site to fully identify submittal.
2. Submittals shall be provided as a PDF incorporating information about the type of submittal, indicating its review by Contractor, and required action(s) by Architect with reference to Project.

D. Processing Time: Allow enough time for submittal review, including time for resubmittals, as follows. Time for review shall commence on Architect's receipt of submittal. No extension of the Contract Time will be authorized because of failure to transmit submittals enough in advance of the Work to permit processing, including resubmittals.

1. Initial Review: Allow 15 days for initial review of each submittal. Architect will advise Contractor when a submittal being processed must be delayed for coordination.

E. Identification: Place a permanent label or title block on each submittal for identification.

1. Indicate name of firm or entity that prepared each submittal on label or title block.
2. Provide a space approximately 6 by 8 inches on label or beside title block to record Contractor's review and approval markings and action taken by Architect.

F. Deviations: Highlight or otherwise specifically identify deviations from the Contract Documents on submittals.

G. Transmittal: Package each submittal individually and appropriately for transmittal and handling. Transmit each submittal using a transmittal form. Architect will discard submittals received from sources other than Contractor.

H. Resubmittals: Make resubmittals in same form as initial submittal.

1. Note date and content of previous submittal.
2. Note date and content of revision in label or title block and clearly indicate extent of revision.
3. Resubmit submittals until they are marked "Approved" or “Accepted”.

I. Distribution: Furnish copies of final submittals to manufacturers, subcontractors, suppliers, fabricators, installers, authorities having jurisdiction, and others as necessary for performance of construction activities. Show distribution on transmittal forms.

J. Use for Construction: Use only final submittals with mark indicating "Accepted” or “Approved".

PART 2 - PRODUCTS

2.1 ACTION SUBMITTALS

A. General: Prepare and submit Action Submittals required by individual Specification Sections.

B. Product Data: Collect information into a single submittal for each element of construction and type of product or equipment.

1. If information must be specially prepared for submittal because standard printed data are not suitable for use, submit as Shop Drawings, not as Product Data.
2. Mark each copy of each submittal to show which products and options are applicable.
3. Submit Product Data before or concurrent with Samples.

C. Shop Drawings: Prepare Project-specific information, drawn accurately to scale. Do not base Shop Drawings on reproductions of the Contract Documents or standard printed data, unless submittal of Architect's CAD Drawings are otherwise permitted.

1. Preparation: Fully illustrate requirements in the Contract Documents.
2. Sheet Size: Except for templates, patterns, and similar full-size drawings, submit Shop Drawings on sheets at least 8-1/2 by 11 inches but no larger than 30 by 40 inches.
   a. PDF Electronic file.

D. Samples: Submit Samples for review of kind, color, pattern, and texture for a check of these characteristics with other elements and for a comparison of these characteristics between submittal and actual component as delivered and installed.

1. Transmit Samples that contain multiple, related components such as accessories together in one submittal package.
2. Identification: Attach label on unexposed side of Samples that includes the following:

   a. Generic description of Sample.
   b. Product name and name of manufacturer.
   c. Sample source.
   d. Number and title of appropriate Specification Section.

3. Disposition: Maintain sets of approved Samples at Project site, available for quality-control comparisons throughout the course of construction activity. Sample sets may be used to determine final acceptance of construction associated with each set.

   a. Samples that may be incorporated into the Work are indicated in individual Specification Sections. Such Samples must be in an undamaged condition at time of use.
   b. Samples not incorporated into the Work, or otherwise designated as Owner's property, are the property of Contractor.

E. Product Schedule or List: As required in individual Specification Sections, prepare a written summary indicating types of products required for the Work and their intended location.

F. Application for Payment: Comply with requirements specified in Division 01 Section "Payment Procedures."

G. Schedule of Values: Comply with requirements specified in Division 01 Section "Payment Procedures."

2.2 INFORMATIONAL SUBMITTALS

A. General: Prepare and submit Informational Submittals required by other Specification Sections.

1. Number of Copies: Submit two copies of each submittal, unless otherwise indicated. Architect will not return copies.
2. Certificates and Certifications: Provide a notarized statement that includes signature of entity responsible for preparing certification. Certificates and certifications shall be signed by an officer or other individual authorized to sign documents on behalf of that entity.
3. Test and Inspection Reports: Comply with requirements specified in Division 01 Section "Quality Requirements."

B. Contractor's Construction Schedule: Comply with requirements specified in Division 01 Section "Construction Progress Documentation."

C. Qualification Data: Prepare written information that demonstrates capabilities and experience of firm or person. Include lists of completed projects with project names and addresses, names and addresses of Architects and owners, and other information specified.

D. Installer Certificates: Prepare written statements on manufacturer's letterhead certifying that Installer complies with requirements in the Contract Documents and, where required, is authorized by manufacturer for this specific Project.

E. Material Certificates: Prepare written statements on manufacturer's letterhead certifying that material complies with requirements in the Contract Documents.

F. Material Test Reports: Prepare reports written by a qualified testing agency, on testing agency's standard form, indicating and interpreting test results of material for compliance with requirements in the Contract Documents.

G. Schedule of Tests and Inspections: Comply with requirements specified in Division 01 Section "Quality Requirements."

H. Field Test Reports: Prepare reports written by a qualified testing agency, on testing agency's standard form, indicating and interpreting results of field tests performed either during installation of product or after product is installed in its final location, for compliance with requirements in the Contract Documents.

I. Maintenance Data: Prepare written and graphic instructions and procedures for operation and normal maintenance of products and equipment. Comply with requirements specified in Division 01 Section "Operation and Maintenance Data."

J. Manufacturer's Instructions: Prepare written or published information that documents manufacturer's recommendations, guidelines, and procedures for installing or operating a product or equipment. Include name of product and name, address, and telephone number of manufacturer.

K. Insurance Certificates and Bonds: Prepare written information indicating current status of insurance or bonding coverage. Include name of entity covered by insurance or bond, limits of coverage, amounts of deductibles, if any, and term of the coverage.

2.3 DELEGATED-DESIGN SERVICES

A. Performance and Design Criteria: Where professional design services or certifications by a design professional are specifically required of Contractor by the Contract Documents, provide products and systems complying with specific performance and design criteria indicated.

1. If criteria indicated are insufficient to perform services or certification required, submit a written request for additional information to Architect.

B. Delegated-Design Services Certification: In addition to Shop Drawings, Product Data, and other required submittals, submit digitally signed PDF file paper copies of certificate, signed and sealed by the responsible design professional, for each product and system specifically assigned to Contractor to be designed or certified by a design professional.

1. Indicate that products and systems comply with performance and design criteria in the Contract Documents. Include list of codes, loads, and other factors used in performing these services.

PART 3 - EXECUTION

3.1 CONTRACTOR'S REVIEW

A. Review each submittal and check for coordination with other Work of the Contract and for compliance with the Contract Documents. Note corrections and field dimensions. Mark with approval stamp before submitting to Architect.

B. Approval Stamp: Stamp each submittal with a uniform, approval stamp. Include Project name and location, submittal number, Specification Section title and number, name of reviewer, date of Contractor's approval, and statement certifying that submittal has been reviewed, checked, and approved for compliance with the Contract Documents.

3.2 ARCHITECT'S ACTION

A. General: Architect will not review submittals that do not bear Contractor's approval stamp and will return them without action.

B. Action Submittals: Architect will review each submittal, make marks to indicate corrections or modifications required, and return it. Architect will stamp each submittal with an action stamp and will mark stamp appropriately to indicate action taken, as follows:

1. No Exception Taken: Where submittals are marked "No Exception Taken", the Architect does not object to proceeding with that part of Work covered by the submittal provided it complies with requirements of Contract Documents; final acceptance will depend upon that compliance.
2. Make Corrections Noted: When submittals are marked " Make Corrections Noted", the Architect does not object to proceeding with that part of Work covered by the submittal provided it complies with notations or corrections on submittal and requirements of Contract Documents; final acceptance will depend on that compliance.
3. Revise and Resubmit: When submittal is marked "Revise and Resubmit," do not proceed with that part of Work covered by submittal, including purchasing, fabrication, delivery, or other activity. Revise or prepare new submittal in accordance with notations; resubmit without delay. Repeat if necessary to obtain different action mark.
4. Rejected: When submittal is marked "Rejected," do not proceed with that part of Work covered by submittal, including purchasing, fabrication, delivery, or other activity. Submittal was deemed nonresponsive, unacceptable, or inadequate to the extent that notations or corrections were not practical. Contact Architect for further instructions.
5. Submit Specified Item: When submittal is marked "Submit Specified Item," do not proceed with that part of Work covered by submittal, including purchasing, fabrication, delivery, or

other activity. Resubmit, without delay, with additional information in accordance with notations. Repeat if necessary to obtain different action mark.

C. Informational Submittals: Architect will review each submittal and will not return it, or will return it if it does not comply with requirements. Architect will forward each submittal to appropriate party.

D. Partial submittals are not acceptable, will be considered nonresponsive, and will be returned without review.

E. Submittals not required by the Contract Documents may not be reviewed and may be discarded.

END OF SECTION 013300

SECTION 014000 - QUALITY REQUIREMENTS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including other Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

A. This Section includes administrative and procedural requirements for quality assurance and quality control.

B. Testing and inspecting services are required to verify compliance with requirements specified or indicated. These services do not relieve Contractor of responsibility for compliance with the Contract Document requirements.

1.3 DEFINITIONS

A. Experienced: When used with an entity or individual, "experienced" unless otherwise further described means having successfully completed a minimum of five previous projects similar in nature, size, and extent to this Project; being familiar with special requirements indicated; and having complied with requirements of authorities having jurisdiction.

B. Field Quality-Control Tests: Tests and inspections that are performed on-site for installation of the Work and for completed Work.

C. Installer/Applicator/Erector: Contractor or another entity engaged by Contractor as an employee, Subcontractor, or Sub-subcontractor, to perform a particular construction operation, including installation, erection, application, assembly, and similar operations.

1. Use of trade-specific terminology in referring to a trade or entity does not require that certain construction activities be performed by accredited or unionized individuals, or that requirements specified apply exclusively to specific trade(s).

D. Mockups: Full-size physical assemblies that are constructed on-site either as freestanding temporary built elements or as part of permanent construction. Mockups are constructed to verify selections made under Sample submittals; to demonstrate aesthetic effects and qualities of materials and execution; to review coordination, testing, or operation; to show interface between dissimilar materials; and to demonstrate compliance with specified installation tolerances. Mockups are not Samples. Unless otherwise indicated, approved mockups establish the standard by which the Work will be judged.

1. Laboratory Mockups: Full-size physical assemblies constructed and tested at testing facility to verify performance characteristics.
2. Integrated Exterior Mockups: Mockups of the exterior envelope constructed on-site as freestanding temporary built elements, consisting of multiple products, assemblies, and subassemblies.
3. Room Mockups: Mockups of typical interior spaces complete with wall, floor, and ceiling finishes; doors; windows; millwork; casework; specialties; furnishings and equipment; and lighting.

E. Preconstruction Testing: Tests and inspections performed specifically for Project before products and materials are incorporated into the Work, to verify performance or compliance with specified criteria.

F. Product Tests: Tests and inspections that are performed by a nationally recognized testing laboratory (NRTL) according to 29 CFR 1910.7, by a testing agency accredited according to NIST's National Voluntary Laboratory Accreditation Program (NVLAP), or by a testing agency qualified to conduct product testing and acceptable to authorities having jurisdiction, to establish product performance and compliance with specified requirements.

G. Source Quality-Control Tests: Tests and inspections that are performed at the source; for example, plant, mill, factory, or shop.

H. Testing Agency: An entity engaged to perform specific tests, inspections, or both. Testing laboratory shall mean the same as testing agency.

I. Quality-Assurance Services: Activities, actions, and procedures performed before and during execution of the Work to guard against defects and deficiencies and substantiate that proposed construction will comply with requirements.

J. Quality-Control Services: Tests, inspections, procedures, and related actions during and after execution of the Work to evaluate that actual products incorporated into the Work and completed construction comply with requirements. Contractor's quality-control services do not include contract administration activities performed by Architect.

1.4 DELEGATED-DESIGN SERVICES

A. Performance and Design Criteria: Where professional design services or certifications by a design professional are specifically required of Contractor by the Contract Documents, provide products and systems complying with specific performance and design criteria indicated.

1. If criteria indicated are not sufficient to perform services or certification required, submit a written request for additional information to Architect.

1.5 CONFLICTING REQUIREMENTS

A. Conflicting Standards and Other Requirements: If compliance with two or more standards or requirements are specified and the standards or requirements establish different or conflicting

requirements for minimum quantities or quality levels, comply with the most stringent requirement. Refer conflicting requirements that are different, but apparently equal, to Architect for direction before proceeding.

B. Minimum Quantity or Quality Levels: The quantity or quality level shown or specified shall be the minimum provided or performed. The actual installation may comply exactly with the minimum quantity or quality specified, or it may exceed the minimum within reasonable limits. To comply with these requirements, indicated numeric values are minimum or maximum, as appropriate, for the context of requirements. Refer uncertainties to Architect for a decision before proceeding.

1.6 CONTRACTOR'S QUALITY-CONTROL PLAN

A. Quality-Control Plan, General: Submit quality-control plan within 10 days of Notice to Proceed, and not less than five days prior to preconstruction conference. Submit in format acceptable to Architect. Identify personnel, procedures, controls, instructions, tests, records, and forms to be used to carry out Contractor's quality-assurance and quality-control responsibilities. Coordinate with Contractor's Construction Schedule.

B. Quality-Control Personnel Qualifications: Engage qualified personnel trained and experienced in managing and executing quality-assurance and quality-control procedures similar in nature and extent to those required for Project.

C. Submittal Procedure: Describe procedures for ensuring compliance with requirements through review and management of submittal process. Indicate qualifications of personnel responsible for submittal review.

D. Testing and Inspection: In quality-control plan, include a comprehensive schedule of Work requiring testing or inspection, including the following:

1. Contractor-performed tests and inspections including Subcontractor-performed tests and inspections. Include required tests and inspections and Contractor-elected tests and inspections. Distinguish source quality-control tests and inspections from field quality-control tests and inspections.
2. Special inspections required by authorities having jurisdiction and indicated on the Statement of Special Inspections.
3. Owner-performed tests and inspections indicated in the Contract Documents.

E. Continuous Inspection of Workmanship: Describe process for continuous inspection during construction to identify and correct deficiencies in workmanship in addition to testing and inspection specified. Indicate types of corrective actions to be required to bring work into compliance with standards of workmanship established by Contract requirements and approved mockups.

F. Monitoring and Documentation: Maintain testing and inspection reports including log of approved and rejected results. Include work Architect has indicated as nonconforming or defective. Indicate corrective actions taken to bring nonconforming work into compliance with requirements. Comply with requirements of authorities having jurisdiction.

1.7 SUBMITTALS

A. Test and Inspection Reports: Prepare and submit certified written reports that include the following:

1. Date of issue.
2. Project title and number.
3. Name, address, and telephone number of testing agency.
4. Dates and locations of samples and tests or inspections.
5. Names of individuals making tests and inspections.
6. Description of the Work and test and inspection method.
7. Identification of product and Specification Section.
8. Complete test or inspection data.
9. Test and inspection results and an interpretation of test results.
10. Record of temperature and weather conditions at time of sample taking and testing and inspecting.
11. Comments or professional opinion on whether tested or inspected Work complies with the Contract Document requirements.
12. Name and signature of laboratory inspector.
13. Recommendations on retesting and reinspecting.

B. Manufacturer's Technical Representative's Field Reports: Prepare written information documenting manufacturer's technical representative's tests and inspections specified in other Sections. Include the following:

1. Name, address, telephone number, and email address of technical representative making report.
2. Statement on condition of substrates and their acceptability for installation of product.
3. Statement that products at Project site comply with requirements.
4. Summary of installation procedures being followed, whether they comply with requirements and, if not, what corrective action was taken.
5. Results of operational and other tests and a statement of whether observed performance complies with requirements.
6. Statement whether conditions, products, and installation will affect warranty.
7. Other required items indicated in individual Specification Sections.

C. Factory-Authorized Service Representative's Reports: Prepare written information documenting manufacturer's factory-authorized service representative's tests and inspections specified in other Sections. Include the following:

1. Name, address, telephone number, and email address of factory-authorized service representative making report.
2. Statement that equipment complies with requirements.
3. Results of operational and other tests and a statement of whether observed performance complies with requirements.
4. Statement whether conditions, products, and installation will affect warranty.
5. Other required items indicated in individual Specification Sections.

D. Permits, Licenses, and Certificates: For Owner's records, submit copies of permits, licenses, certifications, inspection reports, releases, jurisdictional settlements, notices, receipts for fee payments, judgments, correspondence, records, and similar documents, established for compliance with standards and regulations bearing on performance of the Work.

1.8 QUALITY ASSURANCE

A. General: Qualifications paragraphs in this Article establish the minimum qualification levels required; individual Specification Sections specify additional requirements.

B. Authorities Having Jurisdication: Conform to requirements of all authorities having jurisdiction.

1. Where conflicts exist between the requirements of the Contract Documents and those of authorities having jurisdiction, the higher quality or more restrictive requirement shall apply.

C. Installer Qualifications: A firm or individual experienced in installing, erecting, or assembling work similar in material, design, and extent to that indicated for this Project, whose work has resulted in construction with a record of successful in-service performance.

D. Manufacturer Qualifications: A firm experienced in manufacturing products or systems similar to those indicated for this Project and with a record of successful in-service performance, as well as sufficient production capacity to produce required units.

E. Fabricator Qualifications: A firm experienced in producing products similar to those indicated for this Project and with a record of successful in-service performance, as well as sufficient production capacity to produce required units.

F. Factory-Authorized Service Representative Qualifications: An authorized representative of manufacturer who is trained and approved by manufacturer to inspect installation of manufacturer's products that are similar in material, design, and extent to those indicated for this Project.

G. Professional Engineer Qualifications: A professional engineer who is legally qualified to practice in jurisdiction where Project is located and who is experienced in providing engineering services of the kind indicated. Engineering services are defined as those performed for installations of the system, assembly, or product that are similar in material, design, and extent to those indicated for this Project.

H. Specialists: Certain Specification Sections require that specific construction activities shall be performed by entities who are recognized experts in those operations. Specialists shall satisfy qualification requirements indicated and shall be engaged for the activities indicated.

1. Requirements of authorities having jurisdiction shall supersede requirements for specialists.

I. Manufacturer's Technical Representative Qualifications: An authorized representative of manufacturer who is trained and approved by manufacturer to observe and inspect installation

of manufacturer's products that are similar in material, design, and extent to those indicated for this Project.

J. Mockups: Before installing portions of the Work requiring mockups, build mockups for each form of construction and finish required to comply with the following requirements, using materials indicated for the completed Work:

1. Build mockups in location and of size as directed by Architect. Composite exterior wall mockup is required by governing authorities. Architect will provide sketch of required mockup.
2. Notify Architect seven days in advance of dates and times when mockups will be constructed.
3. Demonstrate the proposed range of aesthetic effects and workmanship.
4. Obtain Architect's approval of mockups before starting work, fabrication, or construction.
5. Maintain mockups during construction in an undisturbed condition as a standard for judging the completed Work.
6. Demolish and remove mockups when directed, unless otherwise indicated.

1.9 QUALITY CONTROL

A. Testing Responsibilities: Owner will engage a qualified testing agency to perform quality control services.

1. Owner will furnish Contractor with names, addresses, and telephone numbers of testing agencies engaged and a description of types of testing and inspecting they are engaged to perform.

B. Retesting/Reinspecting: Regardless of whether original tests or inspections were Contractor's responsibility, provide quality-control services, including retesting and reinspecting for construction that replaced Work that failed to comply with the Contract Documents.

C. Manufacturer's Field Services: Where indicated, engage a factory-authorized service representative to inspect field-assembled components and equipment installation, including service connections. Report results in writing as specified in Division 01 Section "Submittal Procedures."

D. Associated Services: Cooperate with agencies performing required tests, inspections, and similar quality-control services, and provide reasonable auxiliary services as requested. Notify agency sufficiently in advance of operations to permit assignment of personnel. Provide the following, as applicable:

1. Access to the Work.
2. Incidental labor and facilities necessary to facilitate tests and inspections.
3. Adequate quantities of representative samples of materials that require testing and inspecting. Assist agency in obtaining samples.
4. Facilities for storage and field curing of test samples.
5. Delivery of samples to testing agencies.

6. Security and protection for samples and for testing and inspecting equipment at Project site.

E. Coordination: Coordinate sequence of activities to accommodate required quality-assurance and -control services with a minimum of delay and to avoid necessity of removing and replacing construction to accommodate testing and inspecting.

1. Schedule times for tests, inspections, obtaining samples, and similar activities.

1.10 SPECIAL TESTS AND INSPECTIONS

A. Special Tests and Inspections: Owner will engage a qualified special inspector to conduct special tests and inspections required by authorities having jurisdiction as the responsibility of Owner, as indicated in the Statement of Special Inspections attached to this Section, and as follows:

1. Verifying that manufacturer maintains detailed fabrication and quality-control procedures and reviewing the completeness and adequacy of those procedures to perform the Work.
2. Notifying Architect and Contractor promptly of irregularities and deficiencies observed in the Work during performance of its services.
3. Submitting a certified written report of each test, inspection, and similar quality-control service to Architect with copy to Contractor and to authorities having jurisdiction.
4. Submitting a final report of special tests and inspections at Substantial Completion, which includes a list of unresolved deficiencies.
5. Interpreting tests and inspections and stating in each report whether tested and inspected work complies with or deviates from the Contract Documents.
6. Retesting and reinspecting corrected work.

PART 2 - PRODUCTS (Not Used)

PART 3 - EXECUTION

3.1 TEST AND INSPECTION LOG

A. Prepare a record of tests and inspections. Include the following:

1. Date test or inspection was conducted.
2. Description of the Work tested or inspected.
3. Date test or inspection results were transmitted to Architect.
4. Identification of testing agency or special inspector conducting test or inspection.

B. Maintain log at Project site. Post changes and modifications as they occur. Provide access to test and inspection log for Architect's reference during normal working hours.

3.2 REPAIR AND PROTECTION

A. General: On completion of testing, inspecting, sample taking, and similar services, repair damaged construction and restore substrates and finishes.

B. Protect construction exposed by or for quality-control service activities.

C. Repair and protection are Contractor's responsibility, regardless of the assignment of responsibility for quality-control services.

END OF SECTION 014000

SECTION 015000 - TEMPORARY FACILITIES AND CONTROLS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including other Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

A. This Section includes requirements for temporary utilities, support facilities, and security and protection facilities.

1.3 USE CHARGES

A. General: Cost or use charges for temporary facilities shall be included in the Contract Sum. Allow other entities to use temporary services and facilities without cost, including, but not limited to, Owner, Architect, testing agencies, and authorities having jurisdiction.

B. Water Service: Pay water service use charges for water used by all entities for construction operations.

C. Sewer Service: Pay sewer service use charges for sewer usage by all entities for construction operations.

D. Electric Power Service: Pay electric power service use charges for electricity used by all entities for construction operations.

1.4 SUBMITTALS

A. Site Plan: Submit site plan indicating location of temporary facilities including utility connections, driveways / parking areas, and applicable staging areas for the temporary facility.

1.5 QUALITY ASSURANCE

A. Access: Comply with ADA Guidelines.

B. Electric Service: Comply with NECA, NEMA, and UL standards and regulations for temporary electric service. Install service to comply with NFPA 70.

C. Tests and Inspections: Arrange for authorities having jurisdiction to test and inspect each temporary facility and temporary utility before use. Obtain required certifications and permits.

PART 2 - PRODUCTS

2.1 MATERIALS

A. Chain-Link Fencing: Minimum 2-inch, 0.148-inch-thick, galvanized steel, chain-link fabric fencing; minimum 6 feet high with galvanized steel pipe posts; minimum 2-3/8-inch OD line posts and 2-7/8-inch OD corner and pull posts, with 1-5/8-inch OD top rails.

B. Portable Chain-Link Fencing: Minimum 2-inch, 9-gage, galvanized steel, chain-link fabric fencing; minimum 6 feet high with galvanized steel pipe posts; minimum 2-3/8-inch OD line posts and 2-7/8-inch OD corner and pull posts, with 1-5/8-inch OD top and bottom rails. Provide concrete bases for supporting posts.

2.2 TEMPORARY FACILITIES

A. Field Offices, General: Prefabricated or mobile units with serviceable finishes, temperature controls, and foundations adequate for normal loading.

B. Storage and Fabrication Sheds: Provide sheds sized, furnished, and equipped to accommodate materials and equipment for construction operations.

1. Store combustible materials apart from building.

2.3 EQUIPMENT

A. Fire Extinguishers: Portable, UL rated; with class and extinguishing agent as required by locations and classes of fire exposures.

PART 3 - EXECUTION

3.1 INSTALLATION, GENERAL

A. Locate facilities where they will serve Project adequately and result in minimum interference with performance of the Work. Relocate and modify facilities as required by progress of the Work.

B. Provide each facility ready for use when needed to avoid delay. Do not remove until facilities are no longer needed or are replaced by authorized use of completed permanent facilities.

3.2 TEMPORARY UTILITY INSTALLATION

A. General: Install temporary service or connect to existing service.

1. Arrange with utility company, Owner, and existing users for time when service can be interrupted, if necessary, to make connections for temporary services.

B. Sewers and Drainage: Provide temporary utilities as necessary to remove effluent lawfully.

1. Where required, connect temporary sewers to existing system as directed by authorities having jurisdiction.

C. Water Service: Provide temporary water supply as required for completion of the Work. At Substantial Completion, restore these facilities to condition existing before initial use.

D. Sanitary Facilities: Provide temporary toilets, wash facilities, and drinking water for use of construction personnel. Comply with authorities having jurisdiction for type, number, location, operation, and maintenance of fixtures and facilities.

E. Electric Power Service: Provide temporary electric power service as required for completion of the Work.

3.3 SUPPORT FACILITIES INSTALLATION

A. General: Comply with the following:

1. Maintain support facilities until near Substantial Completion. Remove before Substantial Completion. Personnel remaining after Substantial Completion will be permitted to use permanent facilities, under conditions acceptable to Owner.

B. Temporary Roads and Paved Areas: Construct and maintain temporary roads and paved areas adequate for construction operations.

C. Traffic Controls: Comply with requirements of authorities having jurisdiction.

1. Protect existing site improvements to remain including curbs, pavement, and utilities.
2. Maintain access for fire-fighting equipment and access to fire hydrants.

D. Parking: Provide temporary parking areas or coordinate with Owner to use designated areas of existing parking areas for construction personnel.

E. Dewatering Facilities and Drains: Comply with requirements of authorities having jurisdiction. Maintain Project site, excavations, and construction free of water.

1. Dispose of rainwater in a lawful manner that will not result in flooding Project or adjoining properties nor endanger permanent Work or temporary facilities.
2. Remove snow and ice as required to minimize accumulations.

F. Project Identification and Temporary Signs: Provide temporary directional signs as may be necessary to inform construction personnel and visitors seeking entrance to Project.

G. Waste Disposal Facilities: Provide waste-collection containers in sizes adequate to handle waste from construction operations. Comply with requirements of authorities having jurisdiction. Comply with Division 01 Section "Execution" for progress cleaning requirements.

H. Lifts and Hoists: Provide facilities necessary for hoisting materials and personnel.

3.4 SECURITY AND PROTECTION FACILITIES INSTALLATION

A. Environmental Protection: Provide protection, operate temporary facilities, and conduct construction in ways and by methods that comply with environmental regulations and that

minimize possible air, waterway, and subsoil contamination or pollution or other undesirable effects.

1. Comply with work restrictions specified in Division 01 Section "Summary."

B. Temporary Erosion and Sedimentation Control: Comply with requirements specified in Division 31 Section "Site Clearing and Erosion Control."

C. Stormwater Control: Comply with authorities having jurisdiction. Provide barriers in and around excavations and subgrade construction to prevent flooding by runoff of stormwater from heavy rains.

D. Tree and Plant Protection: Comply with requirements specified in Division 31 Section "Site Clearing and Erosion Control."

E. Site Enclosure Fence: Furnish and install site enclosure fence as required by Contractor in a manner that will prevent people and animals from easily entering site except by entrance gates.

F. Barricades, Warning Signs, and Lights: Comply with requirements of authorities having jurisdiction for erecting structurally adequate barricades, including warning signs and lighting.

G. Temporary Enclosures: Provide temporary enclosures for protection of construction, in progress and completed, from exposure, foul weather, other construction operations, and similar activities.

H. Temporary Fire Protection: Install and maintain temporary fire-protection facilities of types needed to protect against reasonably predictable and controllable fire losses. Comply with NFPA 241.

1. Prohibit smoking in hazardous fire-exposure areas.
2. Supervise welding operations, combustion-type temporary heating units, and similar sources of fire ignition according to requirements of authorities having jurisdiction.
3. Develop and supervise an overall fire-prevention and -protection program for personnel at Project site. Review needs with local fire department and establish procedures to be followed. Instruct personnel in methods and procedures. Post warnings and information.

3.5 OPERATION, TERMINATION, AND REMOVAL

A. Supervision: Enforce strict discipline in use of temporary facilities. To minimize waste and abuse, limit availability of temporary facilities to essential and intended uses.

B. Maintenance: Maintain facilities in good operating condition until removal.

C. Temporary Facility Changeover: Do not change over from using temporary security and protection facilities to permanent facilities until Substantial Completion.

D. Termination and Removal: Remove each temporary facility when need for its service has ended, when it has been replaced by authorized use of a permanent facility, or no later than Substantial Completion. Complete or, if necessary, restore permanent construction that may have been delayed because of interference with temporary facility. Repair damaged Work, clean exposed surfaces, and replace construction that cannot be satisfactorily repaired.

1. Remove temporary paving not intended for or acceptable for integration into permanent paving. Where area is intended for landscape development, remove soil and aggregate

fill that do not comply with requirements for fill or subsoil. Remove materials contaminated with road oil, asphalt and other petrochemical compounds, and other substances that might impair growth of plant materials or lawns. Repair or replace street paving, curbs, and sidewalks at temporary entrances, as required by authorities having jurisdiction.

2. At Substantial Completion, clean and renovate permanent facilities used during construction period. Comply with final cleaning requirements specified in Division 01 Section "Closeout Procedures."

END OF SECTION 015000

SECTION 016000 - PRODUCT REQUIREMENTS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including other Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

A. This Section includes administrative and procedural requirements for selection of products for use in Project; product delivery, storage, and handling; manufacturers' standard warranties on products; special warranties; product substitutions; and comparable products.

1.3 QUALITY ASSURANCE

A. Compatibility of Options: If Contractor is given option of selecting between two or more products for use on Project, product selected shall be compatible with products previously selected, even if previously selected products were also options.

B. Authorities Having Jurisdiction: Conform to requirements of all authorities having jurisdiction.

1. Where conflicts exist between the requirements of the Contract Documents and those of authorities having jurisdiction, the higher quality product shall be used.

1.4 PRODUCT DELIVERY, STORAGE, AND HANDLING

A. Deliver, store, and handle products using means and methods that will prevent damage, deterioration, and loss, including theft. Comply with manufacturer's written instructions.

B. Delivery and Handling:

1. Schedule delivery to minimize long-term storage at Project site and to prevent overcrowding of construction spaces.
2. Coordinate delivery with installation time to ensure minimum holding time for items that are flammable, hazardous, easily damaged, or sensitive to deterioration, theft, and other losses.
3. Deliver products to Project site in an undamaged condition in manufacturer's original sealed container or other packaging system, complete with labels and instructions for handling, storing, unpacking, protecting, and installing.
4. Inspect products on delivery to ensure compliance with the Contract Documents and to ensure that products are undamaged and properly protected.

C. Storage:

1. Store products to allow for inspection and measurement of quantity or counting of units.
2. Store materials in a manner that will not endanger Project structure.
3. Store products that are subject to damage by the elements, under cover in a weathertight enclosure above ground, with ventilation adequate to prevent condensation.

4. Store cementitious products and materials on elevated platforms.
5. Comply with product manufacturer's written instructions for temperature, humidity, ventilation, and weather-protection requirements for storage.
6. Protect stored products from damage and liquids from freezing.

1.5 PRODUCT WARRANTIES

A. Warranties specified in other Sections shall be in addition to, and run concurrent with, other warranties required by the Contract Documents. Manufacturer's disclaimers and limitations on product warranties do not relieve Contractor of obligations under requirements of the Contract Documents.

B. Submittal Time: Comply with requirements in Division 01 Section "Closeout Procedures."

PART 2 - PRODUCTS

2.1 PRODUCT SELECTION PROCEDURES

A. General Product Requirements: Provide products that comply with the Contract Documents, that are undamaged and, unless otherwise indicated, that are new at time of installation.

1. Provide products complete with accessories, trim, finish, fasteners, and other items needed for a complete installation and indicated use and effect.
2. Standard Products: If available, and unless custom products or nonstandard options are specified, provide standard products of types that have been produced and used successfully in similar situations on other projects.
3. Owner reserves the right to limit selection to products with warranties not in conflict with requirements of the Contract Documents.
4. Where products are accompanied by the term "as selected," Architect will make selection.
5. Where products are accompanied by the term "match sample," sample to be matched is Architect's.
6. Descriptive, performance, and reference standard requirements in the Specifications establish "salient characteristics" of products.
7. Or Equal: Where products are specified by name and accompanied by the term "or equal" or "or approved equal" or "or approved," comply with provisions in Part 2 "Comparable Products" Article to obtain approval for use of an unnamed product.

B. Product Selection Procedures:

1. Product: Where Specifications name a single product and manufacturer, provide the named product that complies with requirements.
2. Manufacturer/Source: Where Specifications name a single manufacturer or source, provide a product by the named manufacturer or source that complies with requirements.
3. Products: Where Specifications include a list of names of both products and manufacturers, provide one of the products listed that complies with requirements.
4. Manufacturers: Where Specifications include a list of manufacturers' names, provide a product by one of the manufacturers listed that complies with requirements.
5. Product Options: Where Specifications indicate that sizes, profiles, and dimensional requirements on Drawings are based on a specific product or system, provide the specified product or system. Comply with provisions in Part 2 "Product Substitutions" Article for consideration of an unnamed product or system.

6. Basis-of-Design Product: Where Specifications name a product and include a list of manufacturers, provide the specified product or a comparable product by one of the other named manufacturers. Drawings and Specifications indicate sizes, profiles, dimensions, and other characteristics that are based on the product named. Comply with provisions in Part 2 "Comparable Products" Article for consideration of an unnamed product by the other named manufacturers.
7. Visual Matching Specification: Where Specifications require matching an established Sample, select a product that complies with requirements and matches Architect's sample. Architect's decision will be final on whether a proposed product matches.
8. Visual Selection Specification: Where Specifications include the phrase "as selected from manufacturer's colors, patterns, textures" or a similar phrase, select a product that complies with other specified requirements.

2.2 PRODUCT SUBSTITUTIONS

A. Timing: Architect will consider requests for substitution if received within 30 days after the Notice to Proceed. Requests received after that time may be considered or rejected at discretion of Architect.

B. Conditions: Architect will consider Contractor's request for substitution when the following conditions are satisfied. If the following conditions are not satisfied, Architect will return requests without action, except to record noncompliance with these requirements:

1. Requested substitution offers Owner a substantial advantage in cost, time, energy conservation, or other considerations, after deducting additional responsibilities Owner must assume. Owner's additional responsibilities may include compensation to Architect for redesign and evaluation services, increased cost of other construction by Owner, and similar considerations.
2. Requested substitution does not require extensive revisions to the Contract Documents.
3. Requested substitution is consistent with the Contract Documents and will produce indicated results.
4. Substitution request is fully documented and properly submitted.
5. Requested substitution will not adversely affect Contractor's Construction Schedule.
6. Requested substitution has received necessary approvals of authorities having jurisdiction.
7. Requested substitution is compatible with other portions of the Work.
8. Requested substitution has been coordinated with other portions of the Work.
9. Requested substitution provides specified warranty.
10. If requested substitution involves more than one contractor, requested substitution has been coordinated with other portions of the Work, is uniform and consistent, is compatible with other products, and is acceptable to all contractors involved.

PART 3 - EXECUTION (Not Used)

END OF SECTION 016000

SECTION 017300 - EXECUTION

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including other Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

A. This Section includes general procedural requirements governing execution of the Work including, but not limited to, the following:

1. Construction layout.
2. Field engineering and surveying.
3. General installation of products.
4. Progress cleaning.
5. Starting and adjusting.
6. Protection of installed construction.
7. Correction of the Work.

1.3 SUBMITTALS

A. Qualification Data: For land surveyor.

B. Certificates: Submit certificate signed by land surveyor certifying that location and elevation of improvements comply with requirements.

C. Landfill Receipts: Submit copy of receipts issued by a landfill facility, licensed to accept hazardous materials, for hazardous waste disposal.

D. Certified Surveys: Submit two copies signed by land surveyor.

1.4 QUALITY ASSURANCE

A. Land Surveyor Qualifications: A professional land surveyor who is legally qualified to practice in jurisdiction where Project is located and who is experienced in providing land-surveying services of the kind indicated.

B. Authorities Having Jurisdiction: Conform to requirements of all authorities having jurisdiction.

1. Where conflicts exist between the requirements of the Contract Documents and those of authorities having jurisdiction, the higher quality or more restrictive requirement shall apply.

PART 2 - PRODUCTS (Not Used)

PART 3 - EXECUTION

3.1 EXAMINATION

A. Existing Conditions: The existence and location of site improvements, underground and other utilities, and construction indicated as existing are not guaranteed. Before beginning sitework, investigate and verify the existence and location of site improvements, underground utilities and other utilities, and other construction affecting the Work.

1. Before construction, verify the location and invert elevation at points of connection of sanitary sewer, storm sewer, and water-service piping; and underground electrical services.
2. Furnish location data for work related to Project that must be performed by public utilities serving Project site.

B. Acceptance of Conditions: Examine substrates, areas, and conditions, with Installer or Applicator present where indicated, for compliance with requirements for installation tolerances and other conditions affecting performance. Record observations.

1. Written Report: Where a written report listing conditions detrimental to performance of the Work is required by other Sections, include the following:

a. Description of the Work.
b. List of detrimental conditions, including substrates.
c. List of unacceptable installation tolerances.
d. Recommended corrections.

2. Verify compatibility with and suitability of substrates, including compatibility with existing finishes or primers.
3. Proceed with installation only after unsatisfactory conditions have been corrected. Proceeding with the Work indicates acceptance of surfaces and conditions.

3.2 PREPARATION

A. Existing Utility Information: Furnish information to local utility that is necessary to adjust, move, or relocate existing utility structures, utility poles, lines, services, or other utility appurtenances located in or affected by construction. Coordinate with authorities having jurisdiction.

B. Field Measurements: Take field measurements as required to fit the Work properly. Recheck measurements before installing each product. Where portions of the Work are indicated to fit to other construction, verify dimensions of other construction by field measurements before fabrication. Coordinate fabrication schedule with construction progress to avoid delaying the Work.

C. Space Requirements: Verify space requirements and dimensions of items shown diagrammatically on Drawings.

3.3 CONSTRUCTION LAYOUT

A. Verification: Before proceeding to lay out the Work, verify layout information shown on Drawings, in relation to the property survey and existing benchmarks. If discrepancies are discovered, notify Architect promptly.

B. General: Engage a land surveyor to lay out the Work using accepted surveying practices.

1. Establish benchmarks and control points to set lines and levels at each story of construction and elsewhere as needed to locate each element of Project.
2. Establish dimensions within tolerances indicated. Do not scale Drawings to obtain required dimensions.
3. Inform installers of lines and levels to which they must comply.
4. Check the location, level and plumb, of every major element as the Work progresses.
5. Notify Architect when deviations from required lines and levels exceed allowable tolerances.
6. Close site surveys with an error of closure equal to or less than the standard established by authorities having jurisdiction.

C. Site Improvements: Locate and lay out site improvements, including pavements, grading, fill and topsoil placement, utility slopes, and invert elevations.

D. Building Lines and Levels: Locate and lay out control lines and levels for structures, foundations, etc. including those required for mechanical and electrical work.

E. Record Log: Maintain a log of layout control work. Record deviations from required lines and levels. Include beginning and ending dates and times of surveys, weather conditions, name and duty of each survey party member, and types of instruments and tapes used. Make the log available for reference by Architect.

3.4 FIELD ENGINEERING

A. Identification: Owner will identify existing benchmarks, control points, and property corners.

B. Reference Points: Locate existing permanent benchmarks, control points, and similar reference points before beginning the Work. Preserve and protect permanent benchmarks and control points during construction operations.

1. Do not change or relocate existing benchmarks or control points without prior written approval of Architect. Report lost or destroyed permanent benchmarks or control points promptly. Report the need to relocate permanent benchmarks or control points to Architect before proceeding.
2. Replace lost or destroyed permanent benchmarks and control points promptly. Base replacements on the original survey control points.

C. Benchmarks: Establish and maintain a minimum of two permanent benchmarks on Project site, referenced to data established by survey control points. Comply with authorities having jurisdiction for type and size of benchmark.

1. Record benchmark locations, with horizontal and vertical data, on Project Record Documents.
2. Where the actual location or elevation of layout points cannot be marked, provide temporary reference points sufficient to locate the Work.

3. Remove temporary reference points when no longer needed. Restore marked construction to its original condition.

3.5 INSTALLATION

A. General: Locate the Work and components of the Work accurately, in correct alignment and elevation, as indicated.

1. Make vertical work plumb and make horizontal work level.
2. Where space is limited, install components to maximize space available for maintenance and ease of removal for replacement.

B. Comply with manufacturer's written instructions and recommendations for installing products in applications indicated.

C. Install products at the time and under conditions that will ensure the best possible results. Maintain conditions required for product performance until Substantial Completion.

D. Conduct construction operations so no part of the Work is subjected to damaging operations or loading in excess of that expected during normal conditions of occupancy.

E. Tools and Equipment: Do not use tools or equipment that produce harmful noise levels.

F. Templates: Obtain and distribute to the parties involved templates for work specified to be factory prepared and field installed. Check Shop Drawings of other work to confirm that adequate provisions are made for locating and installing products to comply with indicated requirements.

G. Anchors and Fasteners: Provide anchors and fasteners as required to anchor each component securely in place, accurately located and aligned with other portions of the Work.

1. Mounting Heights: Where mounting heights are not indicated, mount components at heights directed by Architect.
2. Allow for building movement, including thermal expansion and contraction.
3. Coordinate installation of anchorages. Furnish setting drawings, templates, and directions for installing anchorages, including sleeves, concrete inserts, anchor bolts, and items with integral anchors, that are to be embedded in concrete or masonry. Deliver such items to Project site in time for installation.

H. Joints: Make joints of uniform width. Where joint locations in exposed work are not indicated, arrange joints for the best visual effect. Fit exposed connections together to form hairline joints.

I. Hazardous Materials: Use products, cleaners, and installation materials that are not considered hazardous.

3.6 PROGRESS CLEANING

A. General: Clean Project site and work areas daily, including common areas. Coordinate progress cleaning for joint-use areas where more than one installer has worked. Enforce requirements strictly. Dispose of materials lawfully.

1. Comply with requirements in NFPA 241 for removal of combustible waste materials and debris.

2. Do not hold materials more than 7 days during normal weather or 3 days if the temperature is expected to rise above 80 deg F.
3. Containerize hazardous and unsanitary waste materials separately from other waste. Mark containers appropriately and dispose of legally, according to regulations.

B. Site: Maintain Project site free of waste materials and debris.

C. Work Areas: Clean areas where work is in progress to the level of cleanliness necessary for proper execution of the Work.

1. Remove liquid spills promptly.
2. Where dust would impair proper execution of the Work, broom-clean or vacuum the entire work area, as appropriate.

D. Installed Work: Keep installed work clean. Clean installed surfaces according to written instructions of manufacturer or fabricator of product installed, using only cleaning materials specifically recommended. If specific cleaning materials are not recommended, use cleaning materials that are not hazardous to health or property and that will not damage exposed surfaces.

E. Waste Disposal: Burying or burning waste materials on-site will not be permitted. Washing waste materials down sewers or into waterways will not be permitted.

F. During handling and installation, clean and protect construction in progress and adjoining materials already in place. Apply protective covering where required to ensure protection from damage or deterioration at Substantial Completion.

G. Clean and provide maintenance on completed construction as frequently as necessary through the remainder of the construction period. Adjust and lubricate operable components to ensure operability without damaging effects.

H. Limiting Exposures: Supervise construction operations to assure that no part of the construction, completed or in progress, is subject to harmful, dangerous, damaging, or otherwise deleterious exposure during the construction period.

3.7 RECYCLING

A. Salvage and recycle waste materials where possible.

1. Provide appropriately marked containers or bins for controlling recyclable waste until they are removed from Project site. Include list of acceptable and unacceptable materials at each container and bin.

a. Inspect containers and bins for contamination and remove contaminated materials if found.

2. Recycle paper and beverage containers used by on-site workers.
3. Salvage or recycle waste or excess construction materials where possible.

3.8 STARTING AND ADJUSTING

A. Start equipment and operating components to confirm proper operation. Remove malfunctioning units, replace with new units, and retest.

B. Adjust operating components for proper operation without binding. Adjust equipment for proper operation.

C. Test each piece of equipment to verify proper operation. Test and adjust controls and safeties. Replace damaged and malfunctioning controls and equipment.

D. Manufacturer's Field Service: If a factory-authorized service representative is required to inspect field-assembled components and equipment installation, comply with qualification requirements in Division 01 Section "Quality Requirements."

3.9 PROTECTION OF INSTALLED CONSTRUCTION

A. Provide final protection and maintain conditions that ensure installed Work is without damage or deterioration at time of Substantial Completion.

B. Comply with manufacturer's written instructions for temperature and relative humidity.

3.10 CORRECTION OF THE WORK

A. Repair or remove and replace defective construction. Restore damaged substrates and finishes. Comply with requirements in Division 01 Section "Cutting and Patching."

1. Repairing includes replacing defective parts, refinishing damaged surfaces, touching up with matching materials, and properly adjusting operating equipment.

B. Restore permanent facilities used during construction to their specified condition.

C. Remove and replace damaged surfaces that are exposed to view if surfaces cannot be repaired without visible evidence of repair.

D. Repair components that do not operate properly. Remove and replace operating components that cannot be repaired.

E. Remove and replace chipped, scratched, and broken glass or reflective surfaces.

END OF SECTION 017300

SECTION 017329 - CUTTING AND PATCHING

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including other Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

A. This Section includes procedural requirements for cutting and patching.

1.3 QUALITY ASSURANCE

A. Structural Elements: Do not cut and patch structural elements in a manner that could change their load-carrying capacity or load-deflection ratio.

B. Operational Elements: Do not cut and patch operating elements and related components in a manner that results in reducing their capacity to perform as intended or that results in increased maintenance or decreased operational life or safety.

C. Miscellaneous Elements: Do not cut and patch miscellaneous elements or related components in a manner that could change their load-carrying capacity, that results in reducing their capacity to perform as intended, or that results in increased maintenance or decreased operational life or safety.

D. Visual Requirements: Do not cut and patch construction in a manner that results in visual evidence of cutting and patching. Do not cut and patch construction exposed on the exterior or in occupied spaces in a manner that would, in Architect's opinion, reduce its aesthetic qualities. Remove and replace construction that has been cut and patched in a visually unsatisfactory manner.

1.4 WARRANTY

A. Existing Warranties: Remove, replace, patch, and repair materials and surfaces cut or damaged during cutting and patching operations, by methods and with materials so as not to void existing warranties.

PART 2 - PRODUCTS

2.1 MATERIALS

A. General: Comply with requirements specified in other Sections.

B. In-Place Materials: Use materials identical to in-place materials. For exposed surfaces, use materials that visually match in-place adjacent surfaces to the fullest extent possible.

1. If identical materials are unavailable or cannot be used, use materials that, when installed, will match the visual and functional performance of in-place materials.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Examine surfaces to be cut and patched and conditions under which cutting and patching are to be performed.

1. Compatibility: Before patching, verify compatibility with and suitability of substrates, including compatibility with in-place finishes or primers.
2. Proceed with installation only after unsafe or unsatisfactory conditions have been corrected.

3.2 PREPARATION

A. Temporary Support: Provide temporary support of Work to be cut.

B. Protection: Protect in-place construction during cutting and patching to prevent damage. Provide protection from adverse weather conditions for portions of Project that might be exposed during cutting and patching operations.

C. Adjoining Areas: Avoid interference with use of adjoining areas or interruption of free passage to adjoining areas.

D. Existing Utility Services and Mechanical/Electrical Systems: Where existing operational services/systems are required to be removed, relocated, or abandoned, bypass such services/systems before cutting to minimize interruption to occupied areas.

3.3 PERFORMANCE

A. General: Employ skilled workers to perform cutting and patching. Proceed with cutting and patching at the earliest feasible time, and complete without delay.

1. Cut in-place construction to provide for installation of other components or performance of other construction, and subsequently patch as required to restore surfaces to their original condition.

B. Cutting: Cut in-place construction by sawing, drilling, breaking, chipping, grinding, and similar operations, including excavation, using methods least likely to damage elements retained or adjoining construction. If possible, review proposed procedures with original Installer; comply with original Installer's written recommendations.

1. In general, use hand or small power tools designed for sawing and grinding, not hammering and chopping. Cut holes and slots as small as possible, neatly to size required, and with minimum disturbance of adjacent surfaces. Temporarily cover openings when not in use.
2. Finished Surfaces: Cut or drill from the exposed or finished side into concealed surfaces.
3. Concrete and Masonry: Cut using a cutting machine, such as an abrasive saw or a diamond-core drill.

4. Excavating and Backfilling: Comply with requirements in applicable Division 31 Sections where required by cutting and patching operations.
5. Mechanical and Electrical Services: Cut off pipe or conduit in walls or partitions to be removed. Cap, valve, or plug and seal remaining portion of pipe or conduit to prevent entrance of moisture or other foreign matter after cutting.
6. Proceed with patching only after all construction operations requiring cutting are complete.

C. Patching: Patch construction by filling, repairing, refinishing, closing up, and similar operations following performance of other Work. Patch with durable seams that are as invisible as possible. Provide materials and comply with installation requirements specified in other Sections.

1. Inspection: Where feasible, test and inspect patched areas after completion to demonstrate integrity of installation.
2. Exposed Finishes: Restore exposed finishes of patched areas and extend finish restoration into retained adjoining construction in a manner that will eliminate evidence of patching and refinishing.

    a. Clean piping, conduit, and similar features before applying paint or other finishing materials.
    b. Restore damaged pipe covering to its original condition.

D. Cleaning: Clean areas and spaces where cutting and patching are performed. Completely remove paint, mortar, oils, putty, and similar materials.

END OF SECTION 017329

SECTION 017700 - CLOSEOUT PROCEDURES

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and other Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

A. This Section includes administrative and procedural requirements for contract closeout, including, but not limited to, the following:

1. Substantial Completion procedures
2. Final Completion procedures
3. Inspection procedures.
4. Warranties.
5. Final cleaning.
6. Repair of work.

1.3 ACTION SUBMITTALS

A. Product Data: For each type of cleaning agent.

B. Contractor's List of Incomplete Items: Initial submittal at Substantial Completion.

C. Certified List of Incomplete Items: Final submittal at final completion.

1.4 CLOSEOUT SUBMITTALS

A. Certificates of Release: From authorities having jurisdiction.

B. Certificate of Insurance: For continuing coverage.

C. Field Report: For pest control inspection.

1.5 MAINTENANCE MATERIAL SUBMITTALS

A. Schedule of Maintenance Material Items: For maintenance material submittal items specified in other Sections.

1.6 SUBSTANTIAL COMPLETION PROCEDURES

A. Preliminary Procedures: Before requesting inspection for determining date of Substantial Completion, complete the following. List items below that are incomplete in request.

1. Prepare a list of items to be completed and corrected (punch list), the value of items on the list, and reasons why the Work is not complete.
2. Advise Owner of pending insurance changeover requirements.
3. Submit specific warranties, workmanship bonds, maintenance service agreements, final certifications, and similar documents.
4. Obtain and submit releases permitting Owner unrestricted use of the Work and access to services and utilities. Include occupancy permits, operating certificates, and similar releases.
5. Prepare and submit Project Record Documents, operation and maintenance manuals, Final Completion construction photographs, damage or settlement surveys, property surveys, and similar final record information.
6. Deliver tools, spare parts, extra materials, and similar items to location designated by Owner. Label with manufacturer's name and model number where applicable.
7. Where applicable, make final changeover of permanent locks and deliver keys to Owner. Advise Owner's personnel of changeover in security provisions.
8. Complete startup testing of systems.
9. Submit test/adjust/balance records.
10. Terminate and remove temporary facilities from Project site, along with mockups, construction tools, and similar elements.
11. Advise Owner of changeover in heat and other utilities.
12. Submit changeover information related to Owner's occupancy, use, operation, and maintenance.
13. Complete final cleaning requirements, including touchup painting.
14. Touch up and otherwise repair and restore marred exposed finishes to eliminate visual defects.

B. Inspection: Submit a written request for inspection for Substantial Completion. On receipt of request, Architect will either proceed with inspection or notify Contractor of unfulfilled requirements. Architect will prepare the Certificate of Substantial Completion after inspection or will notify Contractor of items, either on Contractor's list or additional items identified by Architect, that must be completed or corrected before certificate will be issued.

1. Reinspection: Request reinspection when the Work identified in previous inspections as incomplete is completed or corrected.
2. Results of completed inspection will form the basis of requirements for Final Completion.

1.7 FINAL COMPLETION PROCEDURES

A. Preliminary Procedures: Before requesting final inspection for determining date of Final Completion, complete the following:

1. Submit a final Application for Payment according to Division 01 Section "Payment Procedures."
2. Submit certified copy of Architect's Substantial Completion inspection list of items to be completed or corrected (punch list), endorsed and dated by Architect. The certified copy of the list shall state that each item has been completed or otherwise resolved for acceptance.
3. Submit evidence of final, continuing insurance coverage complying with insurance requirements.
4. Instruct Owner's personnel in operation, adjustment, and maintenance of products, equipment, and systems.

B. Inspection: Submit a written request for final inspection for acceptance. On receipt of request, Architect will either proceed with inspection or notify Contractor of unfulfilled requirements.

Architect will prepare a final Certificate for Payment after inspection or will notify Contractor of construction that must be completed or corrected before certificate will be issued.

1. Reinspection: Request reinspection when the Work identified in previous inspections as incomplete is completed or corrected.

1.8 LIST OF INCOMPLETE ITEMS (PUNCH LIST)

A. Preparation: Submit list in PDF format via electronic file. Include name and identification of each space and area affected by construction operations for incomplete items and items needing correction including, if necessary, areas disturbed by Contractor that are outside the limits of construction. Use CSI Form 14.1A or other approved form.

1. Organize list of spaces in sequential order starting with exterior areas first.
2. For interior items, organize items applying to each space by major element, including categories for ceiling, individual walls, floors, equipment, and building systems.
3. Include the following information at the top of each page:

    a. Project name.
    b. Date.
    c. Name of Architect.
    d. Name of Contractor.
    e. Page number.

1.9 WARRANTIES

A. Submittal Time: Submit written warranties on request of Architect for designated portions of the Work where commencement of warranties other than date of Substantial Completion is indicated.

B. Partial Occupancy: Submit properly executed warranties within 15 days of completion of designated portions of the Work that are completed and occupied or used by Owner during construction period by separate agreement with Contractor.

C. Organize warranty documents into an orderly sequence based on the table of contents of the Project Manual.

D. Warranty Electronic File: Provide warranties and bonds in PDF format. Assemble complete warranty and bond submittal package into a single electronic PDF file with bookmarks enabling navigation to each item. Provide bookmarked table of contents at beginning of document.

1. Submit by uploading to web-based project software site.

E. Warranties in Paper Form:

1. Bind warranties and bonds in heavy-duty, 3-ring, vinyl-covered, loose-leaf binders, thickness as necessary to accommodate contents, and sized to receive 8-1/2-by-11-inch paper.
2. Provide heavy paper dividers with plastic-covered tabs for each separate warranty. Mark tab to identify the product or installation. Provide a typed description of the product or installation, including the name of the product and the name, address, and telephone number of Installer.

3. Identify each binder on the front and spine with the typed or printed title "WARRANTIES," Project name, and name of Contractor.

F. Provide additional copies of each warranty to include in operation and maintenance manuals.

G. Where required, provide warranties, bonds, and certifications to authorities having jurisdiction as necessary for their acceptance of the Work for operation and maintenance.

PART 2 - PRODUCTS

2.1 MATERIALS

A. Cleaning Agents: Use cleaning materials and agents recommended by manufacturer or fabricator of the surface to be cleaned. Do not use cleaning agents that are potentially hazardous to health or property or that might damage finished surfaces.

PART 3 - EXECUTION

3.1 FINAL CLEANING

A. General: Provide final cleaning. Conduct cleaning and waste-removal operations to comply with local laws and ordinances and Federal and local environmental and antipollution regulations.

B. Cleaning: Employ experienced workers or professional cleaners for final cleaning. Clean each surface or unit to condition expected in an average cleaning and maintenance program. Comply with manufacturer's written instructions.

1. Complete the following cleaning operations before requesting inspection for certification of Substantial Completion for entire Project or for a portion of Project:

    a. Clean Project site, yard, and grounds, in areas disturbed by construction activities, including landscape development areas, of rubbish, waste material, litter, and other foreign substances.
    b. Sweep paved areas broom clean. Remove petrochemical spills, stains, and other foreign deposits.
    c. Rake grounds that are neither planted nor paved to a smooth, even-textured surface.
    d. Remove tools, construction equipment, machinery, and surplus material from Project site.
    e. Remove snow and ice to provide safe access.
    f. Clean exposed exterior and interior hard-surfaced finishes including any mechanical components to a dirt-free condition, free of stains, films, and similar foreign substances. Avoid disturbing natural weathering of exterior surfaces. Restore reflective surfaces to their original condition.
    g. Leave Project clean and ready for occupancy.

C. Comply with safety standards for cleaning. Do not burn waste materials. Do not bury debris or excess materials on Owner's property. Do not discharge volatile, harmful, or dangerous materials into drainage systems. Remove waste materials from Project site and dispose of lawfully.

D. Pest Control: Comply with pest control requirements in Section 015000 "Temporary Facilities and Controls." Prepare written report.

3.2 REPAIR OF THE WORK

A. Complete repair and restoration operations before requesting inspection for determination of Substantial Completion.

B. Repair, or remove and replace, defective construction. Repairing includes replacing defective parts, refinishing damaged surfaces, touching up with matching materials, and properly adjusting operating equipment. Where damaged or worn items cannot be repaired or restored, provide replacements. Remove and replace operating components that cannot be repaired. Restore damaged construction and permanent facilities used during construction to specified condition.

1. Remove and replace chipped, scratched, and broken glass, reflective surfaces, and other damaged transparent materials.
2. Touch up and otherwise repair and restore marred or exposed finishes and surfaces. Replace finishes and surfaces that that already show evidence of repair or restoration.

    a. Do not paint over "UL" and other required labels and identification, including mechanical and electrical nameplates. Remove paint applied to required labels and identification.

3. Replace parts subject to operating conditions during construction that may impede operation or reduce longevity.
4. Replace burned-out bulbs, bulbs noticeably dimmed by hours of use, and defective and noisy starters in fluorescent and mercury vapor fixtures to comply with requirements for new fixtures.

END OF SECTION 017700

SECTION 017839 - PROJECT RECORD DOCUMENTS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and other Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

A. This Section includes administrative and procedural requirements for Project Record Documents, including the following:

1. Record Drawings.
2. Record Specifications.
3. Record Product Data.
4. As-Built Surveys.

1.3 SUBMITTALS

A. Record Drawings: Comply with the following:

1. Number of Copies: Submit one set of marked-up Record Prints and distribute scanned Record Drawings (PDF).

B. Record Specifications: Submit one copy of Project's Specifications, including addenda and contract modifications and distribute scanned Record Specifications (PDF).

C. Record Product Data: Submit one copy of each Product Data including an electronic copy (PDF).

1. Where Record Product Data is required as part of operation and maintenance manuals, submit marked-up Product Data as an insert in manual instead of submittal as Record Product Data.

D. As-Built Surveys: Comply with the following:

1. Number of Copies: Submit one set of As-Built Surveys including distribution of an electronic copy of the As-Builts Surveys (PDF and DWG Formats).

PART 2 - PRODUCTS

2.1 RECORD DRAWINGS

A. Record Prints: Maintain one set of prints of the Contract Drawings and Shop Drawings.

1. Preparation: Mark Record Prints to show the actual installation where installation varies from that shown originally. Require individual or entity who obtained record data,

whether individual or entity is Installer, subcontractor, or similar entity, to prepare the marked-up Record Prints.

a. Give particular attention to information on concealed elements that would be difficult to identify or measure and record later.
b. Accurately record information in an understandable drawing technique.
c. Record data as soon as possible after obtaining it. Record and check the markup before enclosing concealed installations.

2. Content: Types of items requiring marking include, but are not limited to, the following:

a. Dimensional changes to Drawings.
b. Revisions to details shown on Drawings.
c. Depths of foundations.
d. Locations and depths of underground utilities.
e. Revisions to routing of piping and conduits.
f. Revisions to mechanical and electric components.
g. Actual equipment locations including applicable infrastructure.
h. Changes made by Change Order.
i. Changes made following Architect's written orders.
j. Details not on the original Contract Drawings.
k. Field records for variable and concealed conditions.
l. Record information on the Work that is shown only schematically.

3. Mark the Contract Drawings or Shop Drawings, whichever is most capable of showing actual physical conditions, completely and accurately. If Shop Drawings are marked, show cross-reference on the Contract Drawings.
4. Mark record sets with erasable, red-colored pencil. Use other colors to distinguish between changes for different categories of the Work at same location.
5. Mark important additional information that was either shown schematically or omitted from original Drawings.
6. Note Alternate numbers, Change Order numbers, and similar identification, where applicable.

B. Format: Identify and date each Record Drawing; include the designation "PROJECT RECORD DRAWING" in a prominent location.

1. Record Prints: Organize Record Prints and newly prepared Record Drawings into manageable sets. Bind each set with durable paper cover sheets. Include identification on cover sheets.
2. Identification: As follows:

a. Project name.
b. Date.
c. Designation "PROJECT RECORD DRAWINGS."
d. Name of Architect.
e. Name of Contractor.

2.2 RECORD SPECIFICATIONS

A. Preparation: Mark Specifications to indicate the actual product installation where installation varies from that indicated in Specifications, addenda, and contract modifications.

1. Give particular attention to information on concealed products and installations that cannot be readily identified and recorded later.
2. Note related Change Orders, Record Product Data, and Record Drawings where applicable.

2.3 RECORD PRODUCT DATA

A. Preparation: Mark Product Data to indicate the actual product installation where installation varies substantially from that indicated in Product Data submittal.

1. Give particular attention to information on concealed products and installations that cannot be readily identified and recorded later.
2. Include significant changes in the product delivered to Project site and changes in manufacturer's written instructions for installation.
3. Note related Change Orders, Record Specifications, and Record Drawings where applicable.

2.4 MISCELLANEOUS RECORD SUBMITTALS

A. Assemble miscellaneous records required by other Specification Sections for miscellaneous record keeping and submittal in connection with actual performance of the Work. Bind or file miscellaneous records and identify each, ready for continued use and reference.

PART 3 - EXECUTION

3.1 RECORDING AND MAINTENANCE

A. Recording: Maintain one copy of each submittal during the construction period for Project Record Document purposes. Post changes and modifications to Project Record Documents as they occur; do not wait until the end of Project.

B. Maintenance of Record Documents and Samples: Store Record Documents and Samples in the field office apart from the Contract Documents used for construction. Do not use Project Record Documents for construction purposes. Maintain Record Documents in good order and in a clean, dry, legible condition, protected from deterioration and loss. Provide access to Project Record Documents for Architect's reference during normal working hours.

END OF SECTION 017839

SECTION 311000 - SITE CLEARING AND EROSION CONTROL

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

A. This Section includes the following:

1. Protecting existing vegetation to remain.
2. Removing existing vegetation.
3. Clearing and grubbing.
4. Selective clearing
5. Stripping and stockpiling/removing topsoil.
6. Removing above-grade site improvements.
7. Temporary erosion and sedimentation control measures.

1.3 DEFINITIONS

A. Topsoil: Natural or cultivated surface-soil layer containing organic matter and sand, silt, and clay particles; friable, pervious, and black or a darker shade of brown, gray, or red than underlying subsoil; reasonably free of subsoil, clay lumps, gravel, and other objects more than 2 inches in diameter; and free of subsoil and weeds, roots, toxic materials, or other nonsoil materials.

B. Tree Protection Zone: Area surrounding individual trees or groups of trees to be protected during construction and defined by the drip line of individual trees or the perimeter drip line of groups of trees, unless otherwise indicated.

1.4 MATERIAL OWNERSHIP

A. Except for stripped topsoil to be stockpiled on site or other materials indicated to remain Owner's property, cleared materials shall become Contractor's property and shall be removed from Project site.

1.5 SUBMITTALS

A. Photographs or videotape, sufficiently detailed, of existing conditions of trees and plantings, adjoining construction, and site improvements that might be misconstrued as damage caused by site clearing.

B. Minutes of preinstallation conference.

1.6 QUALITY ASSURANCE

A. Preinstallation Conference: Conduct conference at Project site to comply with requirements. in Division 01 Section "Project Management and Coordination."

B. Authorities Having Jurisdiction: Conform to requirements of all authorities having jurisdiction.

1. Where conflicts exist between the requirements of the Contract Documents and those of authorities having jurisdiction, the higher quality or more restrictive requirement shall apply.

1.7 PROJECT CONDITIONS

A. Traffic: Minimize interference with adjoining roads, streets, walks, and other adjacent occupied or used facilities during site-clearing operations.

1. Do not close or obstruct streets, walks, or other adjacent occupied or used facilities without permission from Owner and authorities having jurisdiction.
2. Provide alternate routes around closed or obstructed traffic ways if required by authorities having jurisdiction.

B. Utility Locator Service: Notify utility locator service for area where Project is located before site clearing. Do not proceed with operations until existing utilities are located and clearly marked.

C. Do not commence site clearing operations until temporary erosion and sedimentation control measures are in place.

D. Suspend clearing operations during wet conditions unless otherwise directed by Architect.

PART 2 - PRODUCTS

2.1 EROSION CONTROL MATERIALS

A. Silt Fence Geotextile: Woven geotextile fabric, manufactured for silt fence applications, made from polyolefins or polyesters; with elongation less than 20 percent; complying with AASHTO M 288 and the following, measured per test methods referenced:

1. Grab Tensile Strength: 100 lbf; ASTM D 4632.
2. Permittivity: 0.05 per second, minimum; ASTM D 4491.
3. UV Stability: 70 percent after 500 hours' exposure; ASTM D 4355.

B. Silt Fence Post: Steel, either integrally manufactured with the silt fence as part of a complete system or separately provided. Where separately provided, the following shall apply:

1. Steel posts: T or U cross-sectional shape. Minimum weight 1.3 pounds per foot. Minimum length 5 feet. Shall have projections to aid in fastening wire of fabric. Shall have a metal plate welded near the bottom such that, when driven to proper depth, it will be below ground and will aid stability.
2. Fasteners: Galvanized wire or other fasteners as required for a secure installation.
3. Maximum Spacing: 6 feet on center.

C. Separation Geotextile: Woven geotextile fabric, manufactured for separation applications, made from polyolefins or polyesters; with elongation less than 50 percent; complying with AASHTO M 288 and the following, measured per test methods referenced:

1. Survivability: Class 2; SCDOT Standard Specs
2. Grab Tensile Strength: 200 lbf; ASTM D 4632.
3. Sewn Seam Strength: 180 lbf; ASTM D 4632.
4. Puncture Strength: 80 lbf; ASTM D 4833.
5. Apparent Opening Size: No. 60 sieve, maximum; ASTM D 4751.
6. Permittivity: 0.1 per second, minimum; ASTM D 4491.
7. UV Stability: 50 percent after 500 hours' exposure; ASTM D 4355.

D. Subsurface Drainage Geotextile: Nonwoven needle-punched geotextile, manufactured for subsurface drainage applications, made from polyolefins or polyesters; with elongation greater than 50 percent; complying with AASHTO M 288 and the following, measured per test methods referenced:

1. Survivability: Class 1; SCDOT Standard Specs
2. Grab Tensile Strength: 90 lbf; ASTM D 4632.
3. Sewn Seam Strength: 80 lbf; ASTM D 4632.
4. Puncture Strength: 40 lbf; ASTM D 4833.
5. Apparent Opening Size: No. 40 sieve, maximum; ASTM D 4751.
6. Permittivity: 0.2 per second, minimum; ASTM D 4491.
7. UV Stability: 50 percent after 500 hours' exposure; ASTM D 4355.

E. Woven Wire Fabric: ASTM A 116, Class1, wire and opening sizes as indicated.

F. Erosion Control Aggregate: Naturally or artificially graded mixture of crushed gravel or stone, in accordance with the gradation requirements indicated on the Drawings and the material requirements of the South Carolina Department of Transportation Standard Specifications for Highway Construction.

1. Material shall be free of shale, clay, friable material, debris, waste, frozen materials, vegetation, organic material, or other deleterious matter.

G. Riprap: Broken, irregular size and shape, graded stone conforming to Section 804 of the South Carolina Department of Transportation Standard Specifications for Highway Construction

1. Gradation: Class B.

2.2 TREE PROTECTION MATERIALS

A. Fence Material: As indicated. Orange polypropylene safety mesh, as indicated. Minimum weight 16 lbs per 4 foot x 100 foot roll.

B. Wood Posts and Rails: As indicated. 2 inch x 4 inch framing lumber. Minimum post length 6 feet.

PART 3 - EXECUTION

3.1 PREPARATION

A. Protect and maintain benchmarks and survey control points from disturbance during construction.

B. Locate and clearly flag trees and vegetation to remain or to be relocated.

C. Protect existing site improvements to remain from damage during construction.

1. Restore damaged improvements to their original condition, as acceptable to Owner.

3.2 TEMPORARY EROSION AND SEDIMENTATION CONTROL

A. Provide temporary erosion and sedimentation control measures to prevent soil erosion and discharge of soil-bearing water runoff or airborne dust to adjacent properties and walkways, according to a Stormwater Pollution Prevention Plan (SWPPP), specific to the site, that complies with EPA 832/R-92-005 or the requirements of authorities having jurisdiction, whichever is more stringent.

B. Inspect, repair, and maintain erosion and sedimentation control measures during construction until permanent vegetation has been established.

C. When directed by Architect, remove erosion and sedimentation controls and restore and stabilize areas disturbed during removal.

3.3 TREE PROTECTION

A. Erect and maintain temporary fencing around tree protection zones before starting site clearing. Remove fence when construction is complete.

1. Do not store construction materials, debris, or excavated material within fenced area.
2. Do not permit vehicles, equipment, or foot traffic within fenced area.
3. Maintain fenced area free of weeds and trash.

B. Do not excavate within tree protection zones, unless otherwise indicated.

C. Where excavation for new construction is required within tree protection zones, hand clear and excavate to minimize damage to root systems. Use narrow-tine spading forks, comb soil to expose roots, and cleanly cut roots as close to excavation as possible.

1. Cover exposed roots with burlap and water regularly.
2. Temporarily support and protect roots from damage until they are permanently redirected and covered with soil.
3. Coat cut faces of roots more than 1-1/2 inchesin diameter with an emulsified asphalt or other approved coating formulated for use on damaged plant tissues.
4. Backfill with soil as soon as possible.

D. Repair or replace trees and vegetation indicated to remain that are damaged by construction operations, in a manner approved by Architect.

1. Employ an arborist, licensed in jurisdiction where Project is located, to submit details of proposed repairs and to repair damage to trees and shrubs.
2. Replace trees that cannot be repaired and restored to full-growth status, as determined by Architect.

3.4 UTILITIES

A. Existing Utilities: Do not interrupt utilities serving facilities occupied by Owner or others unless permitted under the following conditions and then only after arranging to provide temporary utility services according to requirements indicated:

1. Notify Owner, Architect and operating utility not less than two days in advance of proposed utility interruptions.
2. Do not proceed with utility interruptions without the permission of all of the parties noted above.

3.5 CLEARING AND GRUBBING

A. Remove obstructions, trees, shrubs, grass, and other vegetation to permit installation of new construction.

1. Do not remove trees, shrubs, and other vegetation indicated to remain or to be relocated.
2. Cut minor roots and branches of trees indicated to remain in a clean and careful manner where such roots and branches obstruct installation of new construction.
3. Completely remove stumps and roots greater than 1” in diameter, obstructions, and debris extending to a depth of 24 inches below exposed subgrade.
4. Use only hand methods for grubbing within tree protection zone.

B. Fill depressions caused by clearing and grubbing operations with satisfactory soil material unless further excavation or earthwork is indicated and is to be performed immediately. Do not leave depressions overnight.

1. Place fill material in horizontal layers not exceeding a loose depth of 8 inches, and compact each layer to a density equal to adjacent original ground.

3.6 SELECTIVE CLEARING

A. Contractor shall cut, clear, grub, and remove the smallest and least desirable trees (up to six (6) inches in diameter), brush, shrubs, log, down timber saplings, other growth, and debris from the areas shown on the Construction Documents.

B. Area’s of selective clearing are to be reviewed by the Owner, Landscape Architect and Contractor prior to commencement of selective clearing activities.

3.7 TOPSOIL STRIPPING

A. Remove sod and grass before stripping topsoil.

B. Strip topsoil to whatever depths are encountered in a manner to prevent intermingling with underlying subsoil or other waste materials.

1. Remove subsoil and nonsoil materials from topsoil, including trash, debris, weeds, roots, and other waste materials.

C. Dispose of topsoil as specified for surplus soil material in disposal article below.

D. Stockpile topsoil materials away from edge of excavations without intermixing with subsoil. Grade and shape stockpiles to drain surface water. Cover to prevent windblown dust.
1. Do not stockpile topsoil within tree protection zones.
2. Dispose of excess topsoil as specified for surplus soil material in disposal article below.

3.8 SITE IMPROVEMENTS

A. Remove existing above-grade improvements as indicated and as necessary to facilitate new construction.

B. Remove slabs, paving, curbs, gutters, and aggregate base as indicated.

1. Unless existing full-depth joints coincide with line of demolition, neatly saw-cut length of existing pavement to remain before removing existing pavement. Saw-cut faces vertically.
2. Paint cut ends of steel reinforcement in concrete to remain to prevent corrosion.

3.9 DISPOSAL

A. Disposal: Remove surplus soil material, and unsuitable topsoil. Remove obstructions, demolished materials, and waste materials including trash and debris.

1. Legally dispose of removed materials off Owner's property.
2. All chipping operations shall be legally conducted so as to not adversely affect the project schedule.
3. Chipping operations shall not be undertaken where noise is likely to disturb adjacent occupants and shall be suspended if complaints are received.
4. Separate recyclable materials produced during site clearing from other nonrecyclable materials. Store or stockpile without intermixing with other materials and transport them to recycling facilities.

END OF SECTION 311000

SECTION 312000 - EARTH MOVING

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

A. This Section includes the following:

1. Preparing subgrades for slabs-on-grade, walks, pavements, lawns and grasses, and exterior plants.
2. Excavating and backfilling for structures.
3. Base course for asphalt paving.

1.3 UNIT PRICES

A. Dimensions of excavations shall be established and accepted by Architect prior to initiation of Work. Quantity for payment shall be based on calculation of volume using accepted dimensions. Volumes documented by truck counts are not acceptable.

B. Volumes shall be based on in-situ measure. Swell factors for expansion of excavated material will not be accepted.

C. Payment shall not be made without prior acceptance of proposed work by the Architect, or for quantities in excess of the quantity accepted by the Architect.

1.4 DEFINITIONS

A. Backfill: Soil material or controlled low-strength material used to fill an excavation.

B. Base Course: Course placed between the subgrade and paving materials.

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

D. 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 unit prices.
2. Bulk Excavation: Excavation more than 10 feetin width and more than 30 feet in length.
3. 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.

E. Fill: Soil materials used to raise existing grades.

F. Filter aggregate: Aggregate backfill material that acts as a filter medium in subdrainage systems.

G. 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.

H. Subgrade: Soil surface or elevation remaining after completing excavation, or top surface of a fill or backfill immediately below base course, subbase, drainage fill, or topsoil materials, as applicable.

I. Utilities: On-site underground pipes, conduits, ducts, and cables, as well as underground services within buildings.

1.5 SUBMITTALS

A. Product Data: For the following:
   1. Geotextile.

B. Material Test Reports: From a qualified testing agency indicating and interpreting test results for compliance of the following with requirements indicated:

   1. Classification according to ASTM D 2487 of each on-site and borrow soil material proposed for fill and backfill.
   2. Laboratory compaction curve according to ASTM D 1557 for each on-site and borrow soil material proposed for fill and backfill.
   3. Certification that Recycled Portland Cement Concrete Base Course (RPCCBC) meets the requirements of Section 305 of the South Carolina Department of Transportation Standard Specifications for Highway Construction.

C. Pre-excavation Photographs or Videotape: Show existing conditions of adjoining construction and site improvements, including finish surfaces, that might be misconstrued as damage caused by earthwork operations. Submit before earthwork begins.

D. Minutes of pre-excavation conference.

1.6 QUALITY ASSURANCE

A. Geotechnical Testing Agency Qualifications: An independent testing agency qualified according to ASTM E 329 to conduct soil materials and rock-definition testing, as documented according to ASTM D 3740 and ASTM E 548.

B. Pre-excavation Conference: Conduct conference at Project site to comply with requirements in Division 01 Section "Project Management and Coordination.".

C. Authorities Having Jurisdiction: Conform to requirements of all authorities having jurisdiction.

   1. Where conflicts exist between the requirements of the Contract Documents and those of authorities having jurisdiction, the higher quality or more restrictive requirement shall apply.

a. For locations within areas of DOT jurisdiction, perform all work, testing, and inspections in accordance with applicable DOT standards and procedures.

1.7 PROJECT CONDITIONS

A. Existing Utilities: Do not interrupt utilities serving facilities occupied by Owner or others unless permitted in writing by Architect and then only after arranging to provide temporary utility services according to requirements indicated.

1. Notify Architect not less than two days in advance of proposed utility interruptions.
2. Do not proceed with utility interruptions without Architect's written permission.
3. Contact utility-locator service for area where Project is located before excavating.

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: ASTM D 2487 Soil Classification Groups GW, GP, GM, SW, SP, and SM, AASHTO M 145 Soil Classification Groups A-1, A-2-4, A-2-5, and A-3, or a combination of these groups; free of rock or gravel larger than 3 inches in any dimension, debris, waste, frozen materials, vegetation, and other deleterious matter.

1. For locations within areas of DOT jurisdiction, Satisfactory Soils shall be as defined by Standard Specifications for that DOT for the applicable work classification.

a. For drainage pipe culverts located within areas of SCDOT jurisdiction, backfill shall only be sand or gravel meeting the requirements of Soil Classification Groups A-1, in accordance with Supplementary Technical Specification SC-M-714 of the South Carolina Department of Transportation Standard Specifications for Highway Construction.

C. Unsatisfactory Soils: ASTM D 2487 Soil Classification Groups GC, SC, CL, ML, OL, CH, MH, OH, and PT, AASHTO M 145 Soil Classification Groups A-2-6, A-2-7, A-4, A-5, A-6, and A-7 , or a combination of these groups.

1. Unsatisfactory soils also include satisfactory soils not brought to within 2 percent of optimum moisture content at time of compaction. These soils are not eligible for compensation under any Unit Price provisions for removal of unsatisfactory soil.

2.2 AGGREGATE MATERIALS

A. All sand and aggregate materials shall be free of shale, clay, friable material, debris, waste, frozen materials, vegetation, organic material, or other deleterious matter.

B. Aggregate materials shall not be composed of marine limestone or slag unless specifically allowed in the individual paragraph(s) below.

C. Graded Aggregate Base Course (GABC): Naturally or artificially graded crushed stone (macadam) or marine limestone in accordance with Section 305 of the South Carolina Department of Transportation Standard Specifications for Highway Construction.

D. Filter Aggregate: Naturally or artificially graded mixture of crushed gravel or stone, in accordance with the gradation requirements for Coarse Aggregate #57 as defined by the South Carolina Department of Transportation Standard Specifications for Highway Construction.

E. Sand: Natural or manufactured sand in accordance with the gradation requirements for Fine Aggregate FA-10 (natural) or FA-10M (manufactured) as defined by the South Carolina Department of Transportation Standard Specifications for Highway Construction.

2.3 GEOTEXTILES

A. Subsurface Drainage Geotextile: Nonwoven needle-punched geotextile, manufactured for subsurface drainage applications, made from polyolefins or polyesters; with elongation greater than 50 percent; complying with AASHTO M 288 and the following, measured per test methods referenced:

1. Survivability: Class 1, Type A, B, or C; SCDOT Standard Specs
2. Grab Tensile Strength: 90 lbf; ASTM D 4632.
3. Puncture Strength: 60 lbf; ASTM D 4833.
4. Trapezoidal Tear: 40 lbf; ASTM D-4533
5. Apparent Opening Size: No. 70 sieve, maximum; ASTM D 4751.
6. Permittivity: 2.2 second-1, minimum; ASTM D 4491.
7. UV Stability: 70 percent after 500 hours' exposure; ASTM D 4355.
8. Water Flow Rate: 150 gal/min/ft^2; ASTM D-4491

B. Separation Geotextile: Woven geotextile fabric, manufactured for separation applications, made from polyolefins or polyesters; with elongation less than 15 percent; complying with AASHTO M 288 and the following, measured per test methods referenced:

1. Survivability: Class 1, Type D; SCDOT Standard Specs
2. Grab Tensile Strength: 200 lbf; ASTM D 4632.
3. Mullen Burst: 400 psi; ASTM D-3786
4. Puncture Strength: 90 lbf; ASTM D 4833.
5. Trapezoidal Tear: 75 lbf; ASTM D-4533
6. Apparent Opening Size: No. 50 sieve, maximum; ASTM D 4751.
7. Permittivity: 0.05 second-1, minimum; ASTM D 4491.
8. UV Stability: 70 percent after 500 hours' exposure; ASTM D 4355.
9. Water Flow Rate: 5 gal/min/ft^2; ASTM D-4491

2.4 FLOWABLE FILL

A. Flowable Fill: Low-density, self-compacting, flowable concrete material (controlled low-strength material) in accordance with the requirements for Excavatable Flowable Fill as defined by Section 210 of the South Carolina Department of Transportation Standard Specifications for Highway Construction.

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 earthwork operations.

B. Preparation of subgrade for earthwork operations including removal of vegetation, topsoil, debris, obstructions, and deleterious materials from ground surface is specified in Section titled "Site Clearing."

C. Protect and maintain erosion and sedimentation controls, which are specified in Section titled "Site Clearing," during earthwork operations.

3.2 DEWATERING

A. Prevent surface water and ground water from entering excavations, from ponding on prepared subgrades, and from flooding Project site and surrounding area.

B. Protect subgrades from softening, undermining, washout, and damage by rain or water accumulation.

1. Reroute surface water runoff away from excavated areas. Do not allow water to accumulate in excavations. Do not use excavated trenches as temporary drainage ditches.
2. Where required, install a dewatering system to keep subgrades dry and convey ground water away from excavations. Maintain until dewatering is no longer required.

3.3 EXPLOSIVES

A. Explosives: Do not use explosives.

3.4 EXCAVATION, GENERAL

A. Classified Excavation: Excavate to subgrade elevations. Material to be excavated will be classified as earth and rock. Do not excavate rock until it has been classified and cross sectioned based on the recommendations of the Geotechnical Testing Agency. Changes in the Contract time may be authorized for rock excavation.

1. If excavated materials intended for fill and backfill include unsatisfactory soil materials or rock, replace with satisfactory soil materials. The Contract Sum will be adjusted for replacement of unsatisfactory soils according to unit prices included in the Contract Documents.
2. Earth excavation includes excavating pavements and obstructions visible on surface; underground structures, utilities, and other items indicated to be removed; together with soil, boulders, and other materials not classified as rock or unauthorized excavation.
    a. Intermittent drilling; blasting, if permitted; ram hammering; or ripping of material not classified as rock excavation is earth excavation.

3. Rock excavation includes removal and disposal of rock. Remove rock to lines and subgrade elevations indicated to permit installation of permanent construction without exceeding the following dimensions:

   a. 24 inches outside of concrete forms other than at footings.
   b. 12 inches outside of concrete forms at footings.
   c. 6 inches outside of minimum required dimensions of concrete cast against grade.
   d. Outside dimensions of concrete walls indicated to be cast against rock without forms or exterior waterproofing treatments.
   e. 6 inches beneath bottom of concrete slabs on grade.
   f. 6 inches beneath pipe in trenches, and the greater of 24 inches wider than pipe or 42 inches wide.

3.5 EXCAVATION FOR STRUCTURES

A. Excavate to indicated elevations and dimensions within a tolerance of plus or minus 1 inch. If applicable, extend excavations a sufficient distance from structures for placing and removing concrete formwork, for installing services and other construction, and for inspections.

1. Excavations for Footings and Foundations: Do not disturb bottom of excavation. Excavate by hand to final grade just before placing concrete reinforcement. Trim bottoms to required lines and grades to leave solid base to receive other work.

3.6 EXCAVATION FOR WALKS AND PAVEMENTS

A. Excavate surfaces under walks and pavements to indicated lines, cross sections, elevations, and subgrades.

3.7 SUBGRADE INSPECTION

A. Notify Architect when excavations have reached required subgrade.

B. If based on the recommendations of the Geotechnical Testing Agency, determined that unsatisfactory soil is present: a) continue excavation and replace with compacted backfill or fill material or; b) prepare cement modified subgrade as directed.

1. Authorized additional excavation and replacement material or cement modified subgrade will be paid for according to unit prices included in the Contract Documents.

C. Proof-roll subgrade below the building slabs and pavements with heavy pneumatic-tired equipment to identify soft pockets and areas of excess yielding. Do not proof-roll wet or saturated subgrades. Unless otherwise directed by Architect, based on the recommendations of the Geotechnical Testing Agency (typically, in order to avoid over-compaction of porous pavement subgrades) perform proof-rolls as follows:

1. Completely proof-roll subgrade in one direction and, where dimensions permit, repeating proof-rolling in direction perpendicular to first direction. Limit vehicle speed to 3 mph.
2. Proof-roll with a loaded 10-wheel, tandem-axle dump truck weighing not less than 15 tons.
3. Excavate soft spots, unsatisfactory soils, and areas of excessive pumping or rutting, as determined by Architect, based on the recommendations of the Geotechnical Testing Agency, and replace with compacted backfill or fill as directed.

D. Reconstruct subgrades damaged by freezing temperatures, frost, rain, accumulated water, or construction activities, as directed by Architect, based on the recommendations of the Geotechnical Testing Agency, without additional compensation.

3.8 UNAUTHORIZED EXCAVATION

A. Fill unauthorized excavation under foundations, wall footings, utility pipe, or other construction as directed by Architect, based on the recommendations of the Geotechnical Testing Agency.

3.9 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.

3.10 BACKFILL

A. Place and compact backfill in excavations promptly, but not before completing the following, as applicable:

1. Making arrangements for required testing and evaluation of subdrainage requirements by Geotechnical Testing Agency.
2. Construction below finish grade including, where applicable, subdrainage, dampproofing, waterproofing, and perimeter insulation.
3. Surveying locations of underground utilities for Record Documents.
4. Testing and inspecting underground utilities.
5. Removing concrete formwork.
6. Removing trash and debris.
7. Removing temporary shoring and bracing, and sheeting.
8. Installing permanent or temporary horizontal bracing on horizontally supported walls.

B. Place backfill on subgrades free of mud, frost, snow, or ice.

C. Comply with the requirements indicated in the paragraph below titled “Compaction of Soil Backfills and Fills”.

3.11 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. Make arrangements for required testing by Geotechnical Testing Agency as required. Do not place subsequent layers until required testing is complete and acceptable results have been obtained and documented.
2. Under grass and planted areas, use satisfactory soil material.
3. Under walks and pavements, use satisfactory soil material.
4. Under steps and ramps, use satisfactory soil material.

5. Under building slabs, use satisfactory soil material.
6. Under footings and foundations, use satisfactory soil material.

C. Place soil fill on subgrades free of mud, frost, snow, or ice.

D. Do not place soil fill on yielding or unapproved subgrade.

3.12 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 density.

3.13 COMPACTION OF SOIL BACKFILLS AND FILLS

A. Place backfill and fill soil materials in layers not more than 8 inches in loose depth for material compacted by heavy compaction equipment, and not more than 4 inches in loose depth for material compacted by hand-operated tampers.

1. Make arrangements for required testing by Geotechnical Testing Agency as required. Do not place subsequent layers until required testing is complete and acceptable results have been obtained and documented.

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 density according to ASTM D 1557:

1. Under structures, building slabs, steps, and pavements, compact each layer of backfill or fill soil material at 95 percent.
2. Under walkways, compact each layer of backfill or fill soil material at 92 percent.
3. Under lawn or unpaved areas, compact each layer of backfill or fill soil material at 85 percent.
4. For utility trenches under lawns or unpaved areas, compact each layer of initial and final backfill soil material at 85 percent. For all other areas compact to the level required for that area.
5. For porous pavements, compact each layer of backfill or fill soil material to the level specified by the Architect, based on the recommendations of the Geotechnical Testing Agency. Generally, this level will be that required to provide a level of permeability and stability that is equivalent to the original, undisturbed subgrade soil.

3.14 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.

1. Provide a smooth transition between adjacent existing grades and new grades.
2. Cut out soft spots, fill low spots, and trim high spots to comply with required surface tolerances.

B. Site Grading: Slope grades to direct water away from buildings and to prevent ponding. Finish subgrades to required elevations within the following tolerances:

1. Lawn or Unpaved Areas: Plus or minus 1 inch.
2. Walks and Pavements: Plus or minus 1/2 inch.

3.15 GRADED AGGREGATE BASE COURSE (GABC)

A. Place GABC on subgrades free of mud, frost, snow, or ice.

B. Immediately prior to placing GABC, proof-roll subgrade as directed in the “Subgrade Inspection” paragraph above. Do not proceed with placement of GABC until subgrade is approved.

C. On prepared and approved subgrade, place GABC under pavements as follows:

1. Make arrangements for required testing by Geotechnical Testing Agency.
2. Where indicated, install separation geotextile on prepared subgrade according to manufacturer's written instructions, overlapping sides and ends.
3. Place GABC material over subgrade under pavements as indicated.
4. Shape GABC to required crown elevations and cross-slope grades.
5. Place GABC 8 inches or less in compacted thickness in a single layer.
6. Place GABC that exceeds 8 inches in compacted thickness in layers of equal thickness, with no compacted layer more than 8 inches thick or less than 4 inches thick.
   a. Do not place subsequent layers until required testing is complete and acceptable results have been obtained and documented.
7. Compact GABC at optimum moisture content to required grades, lines, cross sections, and thickness to not less than 100 percent of maximum dry density according to ASTM D 1557.

D. Shoulders: Where installation is not bordered by concrete curb, walks or alternate confinement system, place shoulders along edges of GABC to prevent lateral movement. Construct shoulders, at least 12 inches wide, of satisfactory soil materials and compact simultaneously with each base layer to not less than 92 percent of maximum dry density according to ASTM D 1557.

3.16 FIELD QUALITY CONTROL

A. Geotechnical Testing Agency: Responsible party will engage a qualified independent geotechnical engineering testing agency to perform field quality-control testing.

B. Special Inspections: Owner will engage a special inspector to perform field tests and inspections and prepare test reports in accordance with requirements of International Building Code Chapter 1704.7.

1. Soils: Verify site preparation complies with approved soils report.
2. Placement and Compaction: Verify placement and compaction of fill materials comply with approved soils report.
3. Dry-Density: Verify dry-density of compacted fill complies with approved soils report.

C. Allow Geotechnical Testing Agency to inspect and test subgrades, each fill or backfill layer, and each base course layer as applicable. Proceed with subsequent earthwork only after test results for previously completed work comply with requirements.

D. Footing Subgrade: At footing subgrades, at least one test of each soil stratum will be performed to verify design bearing capacities. Subsequent verification and approval of other footing subgrades may be based on a visual comparison of subgrade with tested subgrade when approved by Architect, based on the recommendations of the Geotechnical Testing Agency.

E. Geotechnical Testing Agency will test compaction of soils and base course in place according to ASTM D 1556 or ASTM D 2922 as applicable, except for locations within areas of SCDOT jurisdiction which shall be tested according to applicable SCDOT procedures and rates.

1. Unless otherwise indicated or required by SCDOT or other authorities having jurisdiction, tests will be performed at the following locations and frequencies:

a. Paved and Building Slab Areas: At subgrade, each compacted fill and backfill layer, and each base course layer, at least 1 test for every 5000 sq. ft or less of paved area or building slab, but in no case fewer than 3 tests.
b. Foundation Wall Backfill: At each compacted backfill layer, at least 1 test for each 100 feet or less of wall length, but no fewer than 2 tests.
c. Trench Backfill: At each compacted initial and final backfill layer, at least 1 test for each 300 feet or less of trench length, but no fewer than 2 tests.

F. When Goetechnical Testing Agency reports that subgrades, fills, backfills, or base course have not achieved degree of compaction specified, scarify and moisten or aerate, or remove and replace to depth required; recompact and retest until specified compaction is obtained.

3.17 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.

1. Scarify or remove and replace soil material to depth as directed by Architect; reshape and recompact.

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.

3.18 DISPOSAL OF SURPLUS AND WASTE MATERIALS

A. Disposal: Unless directed to stockpile onsite, remove surplus satisfactory and unsatisfactory soil and legally dispose of it off Owner's property. Remove waste material, trash, and debris, and legally dispose of it off Owner's property.

END OF SECTION 312000

SECTION 312319 - DEWATERING

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

A. Section includes construction dewatering.

1.3 PERFORMANCE REQUIREMENTS

A. Dewatering Performance: Design, furnish, install, test, operate, monitor, and maintain dewatering system of sufficient scope, size, and capacity to control hydrostatic pressures and to lower, control, remove, and dispose of ground water and permit excavation and construction to proceed on dry, stable subgrades.

1. Continuously monitor and maintain dewatering operations to ensure erosion control, stability of excavations and constructed slopes, that excavation does not flood, and that damage to subgrades and permanent structures is prevented.
2. Prevent surface water from entering excavations by grading, dikes, or other means.
3. Accomplish dewatering without damaging existing buildings, structures, and site improvements adjacent to excavation.
4. Remove dewatering system when no longer required for construction.

1.4 SUBMITTALS

A. Photographs or Videotape: Show existing conditions of adjoining construction and site improvements that might be misconstrued as damage caused by dewatering operations.

B. Minutes of preinstallation conference.

1.5 QUALITY ASSURANCE

A. Installer Qualifications: An experienced installer that has specialized in design of dewatering systems and dewatering work.

B. Regulatory Requirements: Comply with governing EPA notification regulations before beginning dewatering. Comply with hauling and disposal regulations of authorities having jurisdiction.

C. Preinstallation Conference: Conduct conference at Project site

1. Review methods and procedures related to dewatering including, but not limited to, the following:

a. Discussion of condition of site to be dewatered including coordination with temporary erosion control measures and temporary controls and protections.
b. Geotechnical Report.
c. Proposed site clearing and excavations.
d. Existing utilities and subsurface conditions.
e. Construction schedule.
f. Monitoring of dewatering system.

D. Authorities Having Jurisdiction: Conform to requirements of all authorities having jurisdiction.

1. Where conflicts exist between the requirements of the Contract Documents and those of authorities having jurisdiction, the higher quality or more restrictive requirement shall apply.

1.6 PROJECT CONDITIONS

A. Interruption of Existing Utilities: Do not interrupt any utility serving facilities occupied by Owner or others unless permitted under the following conditions and then only after arranging to provide temporary utility according to requirements indicated:

1. Notify Architect and Owner no fewer than two days in advance of proposed interruption of utility.
2. Do not proceed with interruption of utility without Owner's written permission.

B. Project-Site Information: A geotechnical report has been prepared for this Project and is available for information only. The opinions expressed in this report are those of geotechnical engineer and represent interpretations of subsoil conditions, tests, and results of analyses conducted by geotechnical engineer. Owner will not be responsible for interpretations or conclusions drawn from this data.

1. Make additional test borings and conduct other exploratory operations necessary for dewatering.

C. Survey Work: Where the dewatering is in the vicinity of existing structures, engage a qualified land surveyor or professional engineer to survey adjacent existing buildings, structures, and site improvements, establishing exact elevations at fixed points to act as benchmarks. Clearly identify benchmarks and record existing elevations.

1. During dewatering, regularly resurvey benchmarks, maintaining an accurate log of surveyed elevations for comparison with original elevations. Promptly notify Architect if changes in elevations occur or if cracks, sags, or other damage is evident in adjacent construction.

PART 2 - PRODUCTS (Not Used)

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 dewatering operations.

1. Prevent surface water and subsurface or ground water from entering excavations, from ponding on prepared subgrades, and from flooding site and surrounding area.
2. Protect subgrades and foundation soils from softening and damage by rain or water accumulation.

B. Install dewatering system to ensure minimum interference with roads, streets, walks, and other adjacent occupied and used facilities.

1. Do not close or obstruct streets, walks, or other adjacent occupied or used facilities without permission from Owner and authorities having jurisdiction. Provide alternate routes around closed or obstructed traffic ways if required by authorities having jurisdiction.

C. Provide temporary grading to facilitate dewatering and control of surface water.

D. Monitor dewatering systems continuously.

E. Promptly repair damages to adjacent facilities caused by dewatering.

F. Protect and maintain erosion and sedimentation controls, which are specified in Section titled "Site Clearing," during earthwork operations.

3.2 INSTALLATION

A. Install dewatering system utilizing wells, well points, or similar methods complete with pump equipment, standby power and pumps, filter material gradation, valves, appurtenances, water disposal, and surface-water controls.

1. Space well points or wells at intervals required to provide sufficient dewatering.
2. Use filters or other means to prevent pumping of fine sands or silts from the subsurface.

B. Before excavating below ground-water level, place system into operation to lower water to specified levels. Operate system continuously until drains, sewers, and structures have been constructed and fill materials have been placed or until dewatering is no longer required.

C. Provide an adequate system to lower and control ground water to permit excavation, construction of structures, and placement of fill materials on dry subgrades. Install sufficient dewatering equipment to drain water-bearing strata above and below bottom of foundations, drains, sewers, and other excavations.

1. Do not permit open-sump pumping that leads to loss of fines, soil piping, subgrade softening, and slope instability.

D. Reduce hydrostatic head in water-bearing strata below subgrade elevations of foundations, drains, sewers, and other excavations.

1. Maintain piezometric water level a minimum of 24 inches below surface of excavation.

E. Dispose of water removed by dewatering in a manner that avoids endangering public health, property, and portions of work under construction or completed. Dispose of water and sediment in a manner that avoids inconvenience to others and complies with the requirements of authorities having jurisdiction. Provide sumps, sedimentation tanks, and other flow-control devices as required by authorities having jurisdiction.

F. Provide standby equipment on site, installed and available for immediate operation, to maintain dewatering on continuous basis if any part of system becomes inadequate or fails. If dewatering requirements are not satisfied due to inadequacy or failure of dewatering system, restore damaged structures and foundation soils at no additional expense to Owner.

1. Remove dewatering system from Project site on completion of dewatering. Plug or fill well holes with sand or cut off and cap wells a minimum of 36 inches below overlying construction.

G. Damages: Promptly repair damages to adjacent facilities caused by dewatering operations.

END OF SECTION 312319

SECTION 321216 - ASPHALT PAVING

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

A. Section Includes:
   1. Hot-mix asphalt paving.

1.3 DEFINITION

A. Hot-Mix Asphalt Paving Terminology: Refer to ASTM D 8 for definitions of terms.

1.4 SUBMITTALS

A. Product Data: For each type of product indicated. Include technical data and tested physical and performance properties.

   1. Job-Mix Designs: Certification, by authorities having jurisdiction, of approval of each job mix proposed for the Work.

B. Minutes of preinstallation conference.

1.5 QUALITY ASSURANCE

A. Regulatory Requirements: Comply with materials, workmanship, and other applicable requirements of the South Carolina Department of Transportation for asphalt paving work.

   1. Measurement and payment provisions and safety program submittals included in standard specifications do not apply to this Section.

B. Authorities Having Jurisdiction: Conform to requirements of all authorities having jurisdiction.

   1. Where conflicts exist between the requirements of the Contract Documents and those of authorities having jurisdiction, the higher quality or more restrictive requirement shall apply.

      a. For locations within areas of DOT jurisdiction, perform all work, testing, and inspections in accordance with applicable DOT standards and procedures.

1.6 DELIVERY, STORAGE, AND HANDLING

A. Deliver pavement-marking materials to Project site in original packages with seals unbroken and bearing manufacturer's labels containing brand name and type of material, date of manufacture, and directions for storage.

B. Store pavement-marking materials in a clean, dry, protected location within temperature range required by manufacturer. Protect stored materials from direct sunlight.

1.7 PROJECT CONDITIONS

A. Traffic Control: Maintain access for vehicular and pedestrian traffic as required for other construction activities.

1. Where Work activities encroach into public rights-of-way, provide traffic control to maintain safe transit of work area by vehicular and pedestrian traffic.

a. All traffic control shall be in accordance with the requirements of the authorities having jurisdiction.

B. Environmental Limitations: Do not apply asphalt materials if subgrade is frozen, wet or excessively damp, if rain is imminent or expected before time required for adequate cure, or if the following conditions are not met:

1. During the months of December, January and February except with the written permission of the Architect.
2. Lift thickness of 1.0” or less: Min surface temp: 55 deg F and rising at time of placement.
3. Lift thickness of 1.1” to 2.0”: Min surface temp: 45 deg F and rising at time of placement.
4. Lift thickness of 2.1” to 3.0”: Min surface temp: 40 deg F and rising at time of placement.
5. Lift thickness of 3.1” to 4.5”: Min surface temp: 35 deg F and rising at time of placement.

PART 2 - PRODUCTS

2.1 ASPHALT PAVING MIXES

A. Asphalt Surface Course: Type C Hot Mix Asphalt Surface Course in accordance with Sections 401 and 403 of the South Carolina Department of Transportation Standard Specifications for Highway Construction.

2.2 AUXILIARY MATERIALS

A. Joint Sealant: ASTM D 6690, Type II, hot-applied, single-component, polymer-modified bituminous sealant.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Verify that the base course has been installed in accordance with the requirements of Division 31 Section “Earth Moving”, and that its dry and in suitable condition to begin paving.

B. Proceed with paving only after unsatisfactory conditions have been corrected.

3.2 PATCHING

A. Hot-Mix Asphalt Pavement: Saw cut perimeter of patch and excavate existing pavement section to sound base. Excavate rectangular patches, extending 12 inches into adjacent sound pavement, unless otherwise indicated. Cut excavation faces vertically. Remove excavated material. Recompact existing unbound-aggregate base course to form new subgrade.

B. Tack Coat: Apply uniformly to vertical surfaces abutting or projecting into new, hot-mix asphalt paving at a rate of 0.05 to 0.15 gal./sq. yd.

1. Allow tack coat to cure undisturbed before applying hot-mix asphalt paving.
2. Avoid smearing or staining adjoining surfaces, appurtenances, and surroundings. Remove spillages and clean affected surfaces.

C. Patching: Fill excavated pavements with hot-mix asphalt surface course, in lifts not to exceed 3 inches thick, and compact each lift while still hot. Compact final lift flush with adjacent surface.

3.3 SURFACE PREPARATION

A. General: Immediately before placing asphalt materials, remove loose and deleterious material from substrate surfaces. Ensure that prepared base course is ready to receive paving.

B. Tack Coat: Apply uniformly to surfaces of existing pavement at a rate of 0.05 to 0.15 gal./sq. yd.

1. Allow tack coat to cure undisturbed before applying hot-mix asphalt paving.
2. Avoid smearing or staining adjoining surfaces, appurtenances, and surroundings. Remove spillages and clean affected surfaces.

3.4 HOT-MIX ASPHALT PLACING

A. Machine place hot-mix asphalt on prepared surface, spread uniformly, and strike off. Place asphalt mix by hand to areas inaccessible to equipment in a manner that prevents segregation of mix. Place each course to required grade, cross section, and thickness when compacted.

1. Place hot-mix asphalt intermediate (binder) course to the total thicknesses indicated in lifts not to exceed 4 inches in thickness.
2. Place hot-mix asphalt surface course to the total thicknesses indicated in lifts not to exceed 3 inches in thickness.
3. Spread mix at temperature of not less than 250 deg F nor more than 325 deg F.
4. Begin applying mix along centerline of crown for crowned sections and on high side of one-way slopes unless otherwise indicated.

5. Regulate paver machine speed to obtain smooth, continuous surface free of pulls and tears in asphalt-paving mat.

B. Place paving in a minimum number of equal width consecutive strips, up to a maximum width of 12 feet for each strip.

1. Adjust width and number of strips as necessary to provide the minimum number while maintaining requirement for longitudinal joint spacing of successive courses as indicated below. Make adjustments in lower courses such that the top course will be applied using the minimum possible number of strips.
2. The width of each strip of the top course shall equal the width of the travel lane unless otherwise indicated.
3. After first strip has been placed and rolled, place succeeding strips and extend rolling to overlap previous strips. Complete a section of each asphalt course before beginning a succeeding course.

C. Promptly correct surface irregularities in paving course behind paver. Use suitable hand tools to remove excess material forming high spots. Fill depressions with hot-mix asphalt to prevent segregation of mix; use suitable hand tools to smooth surface.

3.5 JOINTS

A. Construct joints to ensure a continuous bond between adjoining paving sections. Construct joints free of depressions, with same texture and smoothness as other sections of hot-mix asphalt course.

1. Clean contact surfaces and apply tack coat to joints.
2. Offset longitudinal joints, in successive courses, a minimum of 6 inches.
3. Offset transverse joints, in successive courses, a minimum of 24 inches.
4. Construct transverse joints at each point where paver ends a day's work and resumes work at a subsequent time. Construct these joints using either "bulkhead" or "papered" method according to AI MS-22, for both "Ending a Lane" and "Resumption of Paving Operations."
5. Compact joints as soon as hot-mix asphalt will bear roller weight without excessive displacement.
6. Compact asphalt at joints to a density within 2 percent of specified course density.

3.6 COMPACTION

A. General: Begin compaction, starting at outside edges and joints, as soon as placed hot-mix paving will bear roller weight without excessive displacement. Compact hot-mix paving with hot, hand tampers or with vibratory-plate compactors in areas inaccessible to rollers.

1. Complete compaction before mix temperature cools to 185 deg F.
2. Roll with an 8 to 12 ton tandem steel-wheel roller conforming to the requirements of Section 401 of the South Carolina Department of Transportation Standard Specifications for Highway Construction.

B. Breakdown Rolling: Complete breakdown or initial rolling immediately after rolling joints and outside edge. Examine surface immediately after breakdown rolling for indicated crown, grade, and smoothness. Correct laydown and rolling operations to comply with requirements.

C. Intermediate Rolling: Begin intermediate rolling immediately after breakdown rolling while hot-mix asphalt is still hot enough to achieve specified density. Continue rolling until hot-mix asphalt course has been uniformly compacted to the following density:

1. Average Density: between 98% and 102% of the target density established in accordance with SCDOT Specification SC-T-65.

D. Finish Rolling: Finish roll paved surfaces to remove roller marks while hot-mix asphalt is still warm.

E. Edge Shaping: While surface is being compacted and finished, trim edges of pavement to proper alignment. Bevel edges while asphalt is still hot; compact thoroughly.

F. Repairs: Remove paved areas that are defective or contaminated with foreign materials and replace with fresh, hot-mix asphalt. Compact by rolling to specified density and surface smoothness.

G. Protection: After final rolling, do not permit vehicular traffic on pavement until it has cooled and hardened.

H. Erect barricades to protect paving from traffic until mixture has cooled enough not to become marked.

3.7 INSTALLATION TOLERANCES

A. Pavement Thickness: Compact each course to produce the thickness indicated within the following tolerances:

1. Surface Course: Plus 1/4 inch, no minus.

B. Pavement Surface Smoothness: Compact each course to produce a surface smoothness within the following tolerances as determined by using a 10-foot straightedge applied transversely or longitudinally to paved areas:

1. Surface Course: 1/8 inch.
2. Crowned Surfaces: Test with crowned template centered and at right angle to crown. Maximum allowable variance from template is 1/4 inch.

C. Testing Agency: Contractual responsibilities for testing are identified in Division 1 Section “Quality Requirements”. Responsible party will engage a qualified independent testing agency to perform tests and inspections.

D. Thickness: In-place compacted thickness of hot-mix asphalt courses will be determined by core samples in accordance with SCDOT Specification SC-T-100.

1. One core sample will be taken for every 1000 sq. yd. or less of installed pavement, with no fewer than 3 samples taken, except for locations within areas of DOT jurisdiction which shall be sampled according to applicable DOT rates.
2. Replace and compact hot-mix asphalt where core tests were taken.

E. Surface Smoothness: Finished surface of each hot-mix asphalt course will be tested for compliance with smoothness tolerances.

F. In-Place Density: Testing agency will take samples of uncompacted paving mixtures and compacted pavement in accordance with SCDOT Specifications SC-T-65 and SC-T-100.

1. Reference maximum theoretical density will be determined by averaging results from four samples of hot-mix asphalt-paving mixture delivered daily to site, prepared according to SCDOT Specification SC-T-65, and compacted according to job-mix specifications.
2. In-place density of compacted pavement will be determined by nuclear gauge in accordance with SCDOT Specifications SC-T-65, SC-T-68 and SC-T-100, as applicable.

    a. One test will be taken for every 1000 sq. yd. or less of installed pavement, with no fewer than 3 tests taken, except for locations within areas of DOT jurisdiction which shall be tested according to applicable DOT rates.

G. Remove and replace or install additional hot-mix asphalt where test results or measurements indicate that it does not comply with specified requirements.

3.8 DISPOSAL

A. Except for material indicated to be recycled, remove excavated materials from Project site and legally dispose of them in an EPA-approved landfill.

3.9 PROTECTION

A. Protect paving installations from deposition of sediments from adjoining grounds and vehicular traffic.

1. Install and maintain erosion control measures as necessary, at boundaries of paving installations, to prevent migration of sediment onto the pavement surface.
2. Where practicable, erect and maintain barricades to prevent construction traffic on the paving surface.
3. Do not allow tracking of mud or debris onto the pavement surface by any vehicle.
4. If deposition of sediment on the paving surface is noted, remove and clean pavement surface immediately. Do not delay cleaning efforts as subsequent rainfall events may worsen potential damage.

END OF SECTION 321216

SECTION 321313 - CONCRETE PAVING

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

A. This Section includes exterior cement concrete pavement for the following:

1. Walkways.

1.3 SUBMITTALS

A. Product Data: For each type of manufactured material and product indicated.

B. Design Mixtures: For each concrete pavement mixture. Include alternate mixture designs when characteristics of materials, Project conditions, weather, test results, or other circumstances warrant adjustments.

C. Field quality-control test reports.

D. Minutes of preinstallation conference.

1.4 QUALITY ASSURANCE

A. Manufacturer Qualifications: Manufacturer of ready-mixed concrete products who complies with the equipment, material and production requirements of Section 701 of the South Carolina Department of Transportation Standard Specifications for Highway Construction.

B. Concrete Testing Agency Qualifications: An independent testing agency qualified according to ASTM E 329 and ASTM C 1077 to perform material evaluation tests and to design concrete mixtures.

C. Preinstallation Conference: Conduct conference at Project site to comply with requirements in Division 01 Section "Project Management and Coordination."

D. Authorities Having Jurisdiction: Conform to requirements of all authorities having jurisdiction.

1. Where conflicts exist between the requirements of the Contract Documents and those of authorities having jurisdiction, the higher quality or more restrictive requirement shall apply.

1.5 PROJECT CONDITIONS

A. Traffic Control: Maintain access for vehicular and pedestrian traffic as required for other construction activities.

1. Where Work activities encroach into public rights-of-way, provide traffic control to maintain safe transit of work area by vehicular and pedestrian traffic.

a. All traffic control shall be in accordance with the requirements of the authorities having jurisdiction.

B. Environmental Limitations: Do not install concrete paving if subgrade is frozen, wet or excessively damp, if rain is imminent or expected before time required for adequate cure, or if the ambient air temperature is below, or is expected to fall below, 40 deg F during the time of placement.

PART 2 - PRODUCTS

2.1 FORMS

A. Form Materials: Plywood, metal, metal-framed plywood, or other approved panel-type materials to provide full-depth, continuous, straight, smooth exposed surfaces.

1. Use flexible or curved forms for curves as necessary in order to prevent a chord effect in the alignment of the finished work.

B. Form-Release Agent: Commercially formulated form-release agent that will not bond with, stain, or adversely affect concrete surfaces and will not impair subsequent treatments of concrete surfaces.

2.2 STEEL REINFORCEMENT

A. Plain-Steel Welded Wire Reinforcement: ASTM A 185, fabricated from as-drawn steel wire into flat sheets.

B. Reinforcing Bars: ASTM A 615/A 615M, Grade 60; deformed.

C. Plain Steel Wire: ASTM A 82, as drawn.

D. Joint Dowel Bars: Plain steel bars, ASTM A 615/A 615M, Grade 60. Cut bars true to length with ends square and free of burrs.

E. Tie Bars: ASTM A 615/A 615M, Grade 60, deformed.

F. Hook Bolts: ASTM A 307, Grade A, internally and externally threaded. Design hook-bolt joint assembly to hold coupling against pavement form and in position during concreting operations, and to permit removal without damage to concrete or hook bolt.

G. Bar Supports: Bolsters, chairs, spacers, and other devices for spacing, supporting, and fastening reinforcing bars, welded wire reinforcement, and dowels in place. Manufacture bar supports according to CRSI's "Manual of Standard Practice" from steel wire, plastic, or precast concrete of greater compressive strength than concrete, and as follows:

1. Equip wire bar supports with sand plates or horizontal runners where base material will not support chair legs.
2. For epoxy-coated reinforcement, use epoxy-coated or other dielectric-polymer-coated wire bar supports.

H. Epoxy Repair Coating: Liquid two-part epoxy repair coating, compatible with epoxy coating on reinforcement.

I. Zinc Repair Material: ASTM A 780.

2.3 CONCRETE MATERIALS

A. Concrete: Class 3000 concrete in accordance with Section 701 of the South Carolina Department of Transportation Standard Specifications for Highway Construction.

B. Water: ASTM C 94/C 94M.

C. Admixtures: Air-entraining, accelerating, retarding, and water reducing admixtures shall be in accordance with Section 701 of the South Carolina Department of Transportation Standard Specifications for Highway Construction.

2.4 CURING MATERIALS

A. Absorptive Cover: AASHTO M 182, Class 2, burlap cloth made from jute or kenaf, weighing approximately 9 oz./sq. yd. dry.

B. Moisture-Retaining Cover: ASTM C 171, polyethylene film or white burlap-polyethylene sheet.

C. Water: Potable.

D. Evaporation Retarder: Waterborne, monomolecular film forming; manufactured for application to fresh concrete.

1. Products:

a. Axim Concrete Technologies; Cimfilm.
b. Burke by Edeco; BurkeFilm.
c. ChemMasters; Spray-Film.
d. Conspec Marketing & Manufacturing Co., Inc.; Aquafilm.
e. Dayton Superior Corporation; Sure Film.
f. Euclid Chemical Company (The); Eucobar.
g. Kaufman Products, Inc.; Vapor Aid.
h. Lambert Corporation; Lambco Skin.
i. L&M Construction Chemicals, Inc.; E-Con.
j. MBT Protection and Repair, ChemRex Inc.; Confilm.
k. Meadows, W. R., Inc.; Sealtight Evapre.
l. Metalcrete Industries; Waterhold.
m. Nox-Crete Products Group, Kinsman Corporation; Monofilm.
n. Sika Corporation, Inc.; SikaFilm.
o. Symons Corporation; Finishing Aid.

E. Clear Waterborne Membrane-Forming Curing Compound: ASTM C 309, Type 1, Class B.

1. Products:

    a. Anti-Hydro International, Inc.; AH Curing Compound #2 DR WB.
    b. Burke by Edoko; Aqua Resin Cure.
    c. ChemMasters; Safe-Cure Clear.
    d. Conspec Marketing & Manufacturing Co., Inc.; W.B. Resin Cure.
    e. Dayton Superior Corporation; Day Chem Rez Cure (J-11-W).
    f. Euclid Chemical Company (The); Kurez DR VOX.
    g. Kaufman Products, Inc.; Thinfilm 420.
    h. Lambert Corporation; Aqua Kure-Clear.
    i. L&M Construction Chemicals, Inc.; L&M Cure R.
    j. Meadows, W. R., Inc.; 1100 Clear.
    k. Nox-Crete Products Group, Kinsman Corporation; Resin Cure E.
    l. Symons Corporation; Resi-Chem Clear.
    m. Tamms Industries Inc.; Horncure WB 30.

F. White Waterborne Membrane-Forming Curing Compound: ASTM C 309, Type 2, Class B.

1. Products:

    a. Anti-Hydro International, Inc.; AH Curing Compound #2 WP WB.
    b. Burke by Edoco; Resin Emulsion White.
    c. ChemMasters; Safe-Cure 2000.
    d. Conspec Marketing & Manufacturing Co., Inc.; W.B. Resin Cure.
    e. Dayton Superior Corporation; Day-Chem White Pigmented Cure (J-10-W).
    f. Euclid Chemical Company (The); Kurez VOX White Pigmented.
    g. Kaufman Products, Inc.; Thinfilm 450.
    h. Lambert Corporation; Aqua Kure-White.
    i. L&M Construction Chemicals, Inc.; L&M Cure R-2.
    j. Meadows, W. R., Inc.; 1200-White.
    k. Symons Corporation; Resi-Chem White.
    l. Tamms Industries, Inc.; Horncure 200-W.

2.5 RELATED MATERIALS

A. Preformed Joint Filler: AASHTO M 153, preformed sponge rubber expansion joint filler.

1. Use only materials manufactured from rubber.
2. Use materials that require a load of not less than 340 kPa or greater than 5,200kPa to compress to 50% of its thickness when tested in accordance with AASHTO T 42.
3. Use materials that have a recovery of at least 70% when tested in accordance with AASHTO T 42.
4. For locations within areas of SCDOT jurisdiction, use only products that are listed on SCDOT Qualified Product List 81.

B. Bonding Agent: ASTM C 1059, Type II, non-redispersible, acrylic emulsion or styrene butadiene.

C. Epoxy Bonding Adhesive: ASTM C 881, two-component epoxy resin, capable of humid curing and bonding to damp surfaces, of class suitable for application temperature and of grade to requirements, and as follows:

1. Types I and II, non-load bearing, for bonding hardened or freshly mixed concrete to hardened concrete.

2.6 CONCRETE MIXTURES

A. Prepare design mixtures, proportioned according to Section 701 of the South Carolina Department of Transportation Standard Specifications for Highway Construction, for each type and strength of normal-weight concrete determined by either laboratory trial mixes or field experience.

1. Use a qualified independent testing agency for preparing and reporting proposed concrete mixture designs for the trial batch method.

B. Proportion mixtures to provide normal-weight concrete with the following properties:

1. Compressive Strength (28 Days): 3000 psi/ as indicated.
2. Maximum Water-Cementitious Materials Ratio at Point of Placement: in accordance with Section 701 of the South Carolina Department of Transportation Standard Specifications for Highway Construction.
3. Slump Limit: 5 inches, plus or minus 1 inch, except where lower slump is required for automatic machine placement or other specialized applications.

C. Add air-entraining admixture at manufacturer's prescribed rate to result in normal-weight concrete at point of placement having an air content as follows:

1. Air Content: 6 percent plus or minus 1.5 percent for 3/4-inch nominal maximum aggregate size

D. Chemical Admixtures: Use admixtures according to manufacturer's written instructions.

E. Cementitious Materials: Limit percentage, by weight, of cementitious materials other than portland cement according to the requirements of Section 701 of the South Carolina Department of Transportation Standard Specifications for Highway Construction as follows:

1. Fly Ash: 20 percent.
2. Ground Granulated Blast-Furnace Slag: 50 percent.

2.7 CONCRETE MIXING

A. Ready-Mixed Concrete: Measure, batch, and mix concrete materials and concrete according to Sections 501 and 701 of the South Carolina Department of Transportation Standard Specifications for Highway Construction. Furnish batch certificates for each batch discharged and used in the Work.

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

PART 3 - EXECUTION

3.1 EXAMINATION

A. Examine exposed subgrades and subbase surfaces for compliance with requirements for dimensional, grading, and elevation tolerances.

B. For concrete curb and gutter and pavements to be subjected to vehicular traffic, proof-roll prepared subbase surface with heavy pneumatic-tired equipment to identify soft pockets and areas of excess yielding.

1. Completely proof-roll subbase in one direction. Limit vehicle speed to 3 mph.
2. Proof-roll with a loaded 10-wheel tandem-axle dump truck weighing not less than 15 tons.
3. Subbase with soft spots and areas of pumping or rutting exceeding depth of 1/2 inch require correction according to requirements in Section titled "Earth Moving."

C. Proceed with concrete pavement operations only after nonconforming conditions have been corrected and subgrade is ready to receive pavement.

3.2 PREPARATION

A. Remove loose material from compacted subbase surface immediately before placing concrete.

3.3 EDGE FORMS AND SCREED CONSTRUCTION

A. Set, brace, and secure edge forms, bulkheads, and intermediate screed guides for pavement to required lines, grades, and elevations. Install forms to allow continuous progress of work and so forms can remain in place at least 24 hours after concrete placement.

B. Clean forms after each use and coat with form-release agent to ensure separation from concrete without damage.

3.4 STEEL REINFORCEMENT

A. General: Comply with Sections 501 and 703 of the South Carolina Department of Transportation Standard Specifications for Highway Construction and CRSI's "Manual of Standard Practice" for fabricating, placing, and supporting reinforcement.

B. Clean reinforcement of loose rust and mill scale, earth, ice, or other bond-reducing materials.

C. Arrange, space, and securely tie bars and bar supports to hold reinforcement in position during concrete placement. Maintain minimum cover to reinforcement.

D. Install welded wire reinforcement in lengths as long as practicable. Lap adjoining pieces at least one full mesh, and lace splices with wire. Offset laps of adjoining widths to prevent continuous laps in either direction.

3.5 JOINTS

A. General: Form construction, isolation, and contraction joints and tool edgings true to line with faces perpendicular to surface plane of concrete. Construct transverse joints at right angles to centerline, unless otherwise indicated.

1. When joining existing pavement, place transverse joints to align with previously placed joints, unless otherwise indicated.
2. For locations within areas of DOT jurisdiction, perform all work, testing, and inspections in accordance with applicable DOT standards and procedures.

B. Construction Joints: Set construction joints at side and end terminations of pavement and at locations where pavement operations are stopped for more than one-half hour unless pavement terminates at isolation joints.

1. Continue steel reinforcement across construction joints, unless otherwise indicated. Do not continue reinforcement through sides of pavement strips, unless otherwise indicated.
2. Provide tie bars at sides of pavement strips where indicated.
3. Butt Joints: Use bonding agent or epoxy bonding adhesive at joint locations where fresh concrete is placed against hardened or partially hardened concrete surfaces.
4. Doweled Joints: Install dowel bars and support assemblies at joints where indicated. Lubricate or asphalt-coat one-half of dowel length to prevent concrete bonding to one side of joint.

C. Isolation Joints: Form isolation joints of preformed joint filler strips abutting concrete curbs, catch basins, manholes, inlets, structures, walks, other fixed objects, and where indicated.

1. Unless otherwise indicated, joints shall be 3/4 inch in width.
2. Locate expansion joints at intervals of 100 feet, unless otherwise indicated.
3. Extend joint fillers full width and depth of joint.
4. Place top of joint filler flush with finished concrete surface.
5. Furnish joint fillers in one-piece lengths. Where more than one length is required, lace or clip joint-filler sections together.
6. Protect top edge of joint filler during concrete placement with metal, plastic, or other temporary preformed cap. Remove protective cap after concrete has been placed on both sides of joint.

D. Contraction (Control) Joints: Form weakened-plane contraction joints, sectioning concrete into areas as indicated. Construct contraction joints for a depth equal to at least one-fourth of the concrete thickness, as follows:

1. Grooved Joints: Form contraction joints after initial floating by grooving and finishing each edge of joint with grooving tool to a 1/2-inch radius. Repeat grooving of contraction joints after applying surface finishes. Eliminate groover marks on concrete surfaces unless indicated to remain.

2. Spacing in Pavements: Unless otherwise indicated, locate as follows:

   a. Locate transverse contraction joints at intervals twice the width of the pavement, not to exceed 10 feet.

   b. Where the pavement width exceeds 10 feet to a maximum of 24 feet, locate a longitudinal contraction joint along the centerline of the pavement.

   c. Where the pavement width exceeds 24 feet, locate longitudinal contraction joints at evenly spaced divisions not to exceed 10 feet.

3. Spacing in Curb: Unless otherwise indicated, locate contraction joints to coincide with the adjoining concrete pavement or, where an adjoining concrete pavement does not exist, at an interval of 10 feet.

E. Edging: Tool edges of pavement, gutters, curbs, and joints in concrete after initial floating with an edging tool to a 1/2-inch radius. Repeat tooling of edges after applying surface finishes. Eliminate tool marks on concrete surfaces unless indicated to remain.

3.6 CONCRETE PLACEMENT

A. Inspection: Before placing concrete, inspect and complete formwork installation, steel reinforcement, and items to be embedded or cast in. Notify other trades to permit installation of their work.

B. Remove snow, ice, or frost from subbase surface and reinforcement before placing concrete. Do not place concrete on frozen surfaces.

C. Moisten subbase to provide a uniform dampened condition at time concrete is placed. Do not place concrete around manholes or other structures until they are at required finish elevation and alignment.

D. Comply with the requirements of Sections 501, 701, and 720 of the South Carolina Department of Transportation Standard Specifications for Highway Construction for measuring, mixing, transporting, and placing concrete.

E. Do not add water to fresh concrete after testing.

F. Deposit and spread concrete in a continuous operation between transverse joints. Do not push or drag concrete into place or use vibrators to move concrete into place.

G. Consolidate concrete according to Sections 501 and 720 of the South Carolina Department of Transportation Standard Specifications for Highway Construction by mechanical vibrating equipment supplemented by hand spading, rodding, or tamping.

1. Consolidate concrete along face of forms and adjacent to transverse joints with an internal vibrator. Keep vibrator away from joint assemblies, reinforcement, or side forms. Use only square-faced shovels for hand spreading and consolidation. Consolidate with care to prevent dislocating reinforcement, dowels, and joint devices.

H. Screed pavement surfaces with a straightedge and strike off.

I. Commence initial floating using bull floats or darbies to impart an open textured and uniform surface plane before excess moisture or bleed water appears on the surface. Do not further disturb concrete surfaces before beginning finishing operations or spreading surface treatments.

J. Curbs and Gutters: When automatic machine placement is used for curb and gutter placement, submit revised mix design and laboratory test results that meet or exceed requirements. Produce curbs and gutters to required cross section, lines, grades, finish, and jointing as specified for formed concrete. If results are not approved, remove and replace with formed concrete.

K. Slip-Form Pavers: When automatic machine placement is used for pavement, submit revised mix design and laboratory test results that meet or exceed requirements. Produce pavement to required thickness, lines, grades, finish, and jointing as required for formed pavement.

1. Compact subbase and prepare subgrade of sufficient width to prevent displacement of paver machine during operations.

L. When adjoining pavement lanes are placed in separate pours, do not operate concrete installation equipment on placed concrete until it has attained 85 percent of its 28-day compressive strength.

M. Cold-Weather Placement: Comply with Sections 501, 701, and 702 of the South Carolina Department of Transportation Standard Specifications for Highway Construction and as follows. Protect concrete work from physical damage or reduced strength that could be caused by frost, freezing actions, or low temperatures.

1. Concrete operations shall not be undertaken when air temperature has fallen to or is expected to fall below 40 deg F.
2. Do not use frozen materials or materials containing ice or snow.
3. Do not use calcium chloride, salt, or other materials containing antifreeze agents or chemical accelerators unless otherwise specified and approved in mix designs.

N. Hot-Weather Placement: Comply with Sections 501, 701, and 702 of the South Carolina Department of Transportation Standard Specifications for Highway Construction and as follows when hot-weather conditions exist:

1. Cool ingredients before mixing to maintain concrete temperature below 90 deg F at time of placement. Chilled mixing water or chopped ice may be used to control temperature, provided water equivalent of ice is calculated to total amount of mixing water. Using liquid nitrogen to cool concrete is Contractor's option.
2. Cover steel reinforcement with water-soaked burlap so steel temperature will not exceed ambient air temperature immediately before embedding in concrete.
3. Fog-spray forms, steel reinforcement, and subgrade just before placing concrete. Keep subgrade moisture uniform without standing water, soft spots, or dry areas.

3.7 FLOAT FINISHING

A. General: Do not add water to concrete surfaces during finishing operations.

B. Float Finish: Begin the second floating operation when bleed-water sheen has disappeared and concrete surface has stiffened sufficiently to permit operations. Float surface with power-driven floats, or by hand floating if area is small or inaccessible to power units. Finish surfaces to true planes. Cut down high spots and fill low spots. Refloat surface immediately to uniform granular texture.

1. Medium-to-Fine-Textured Broom Finish: Draw a soft bristle broom across float-finished concrete surface perpendicular to line of traffic to provide a uniform, fine-line texture.

3.8 CONCRETE PROTECTION AND CURING

A. General: Protect freshly placed concrete from premature drying and excessive cold or hot temperatures.

B. Comply with Sections 501, 701, and 702 of the South Carolina Department of Transportation Standard Specifications for Highway Construction for cold-weather protection.

C. Evaporation Retarder: Apply evaporation retarder to concrete surfaces if hot, dry, or windy conditions cause moisture loss approaching 0.2 lb/sq. ft. 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.

D. Begin curing after finishing concrete but not before free water has disappeared from concrete surface.

E. Curing Methods: Cure concrete by moisture curing, moisture-retaining-cover curing, curing compound, or a combination of these as follows:

1. Moist Curing: Keep surfaces continuously moist for not less than seven days with the following materials:

   a. Water.
   b. Continuous water-fog spray.
   c. Absorptive cover, water saturated and kept continuously wet. Cover concrete surfaces and edges with 12-inch lap over adjacent absorptive covers.

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, and sealed by waterproof tape or adhesive. 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.

3.9 PAVEMENT TOLERANCES

A. Comply with tolerances of Section 501 of the South Carolina Department of Transportation Standard Specifications for Highway Construction and as follows:

1. Elevation: 1/4 inch.
2. Thickness: Plus 3/8 inch, minus 1/4 inch.
3. Surface: Gap below 10-foot- long, unleveled straightedge not to exceed 1/4 inch.
4. Lateral Alignment and Spacing of Tie Bars and Dowels: 1 inch.
5. Vertical Alignment of Tie Bars and Dowels: 1/4 inch.
6. Alignment of Tie-Bar End Relative to Line Perpendicular to Pavement Edge: 1/2 inch.
7. Alignment of Dowel-Bar End Relative to Line Perpendicular to Pavement Edge: Length of dowel 1/4 inch per 12 inches.
8. Joint Spacing: 3 inches.
9. Contraction Joint Depth: Plus 1/4 inch, no minus.
10. Joint Width: Plus 1/8 inch, no minus.

3.10 FIELD QUALITY CONTROL

A. Testing Agency: Contractual responsibilities for testing are identified in Division 1 Section “Quality Requirements”. Responsible party will engage a qualified independent testing and inspecting agency to perform field tests and inspections and prepare test reports.

B. Testing Services: Testing of composite samples of fresh concrete obtained according to ASTM C 172 shall be performed according to the following requirements:

1. Testing Frequency: Obtain at least 1 composite sample for each 100 cu. yd. or fraction thereof of each concrete mix placed each day, except for locations within areas of DOT jurisdiction which shall be sampled according to applicable DOT rates.

   a. When frequency of testing will provide fewer than five compressive-strength tests for each concrete mixture, testing shall be conducted from at least five randomly selected batches or from each batch if fewer than five are used.

2. Slump: ASTM C 143/C 143M; one test at point of placement for each composite sample, but not less than one test for each day's pour of each concrete mix. Perform additional tests when concrete consistency appears to change.
3. Air Content: ASTM C 231, pressure method; one test for each composite sample, but not less than one test for each day's pour of each concrete mix.
4. Concrete Temperature: ASTM C 1064; one test hourly when air temperature is 40 deg F and below and when 80 deg F and above, and one test for each composite sample.
5. Compression Test Specimens: ASTM C 31/C 31M; cast and laboratory cure one set of three standard cylinder specimens for each composite sample.
6. Compressive-Strength Tests: ASTM C 39/C 39M; test 1 specimen at 7 days and 2 specimens at 28 days.

    a. A compressive-strength test shall be the average compressive strength from 2 specimens obtained from same composite sample and tested at 28 days.

C. Strength of each concrete mix will be satisfactory if average of any 3 consecutive compressive-strength tests equals or exceeds specified compressive strength and no compressive-strength test value falls below specified compressive strength by more than 500 psi.

D. Test results shall be reported in writing to Architect, concrete manufacturer, and Contractor within 48 hours of testing. Reports of compressive-strength tests shall contain Project identification name and number, date of concrete placement, name of concrete testing and inspecting agency, location of concrete batch in Work, design compressive strength at 28 days, concrete mixture proportions and materials, compressive breaking strength, and type of break for both 7- and 28-day tests.

E. Nondestructive Testing: Impact hammer, sonoscope, or other nondestructive device may be permitted by Architect but will not be used as sole basis for approval or rejection of concrete.

F. Additional Tests: Testing and inspecting agency shall make additional tests of concrete when test results indicate that slump, air entrainment, compressive strengths, or other requirements have not been met, as directed by Architect.

G. Remove and replace concrete pavement where test results indicate that it does not comply with specified requirements.

H. Additional testing and inspecting, at Contractor's expense, will be performed to determine compliance of replaced or additional work with specified requirements.

3.11 REPAIRS AND PROTECTION

A. Remove and replace concrete pavement that is broken, damaged, or defective or that does not comply with requirements in this Section.

B. Drill test cores, where directed by Architect, when necessary to determine magnitude of cracks or defective areas. Fill drilled core holes in satisfactory pavement areas with portland cement concrete bonded to pavement with epoxy adhesive.

C. Protect concrete from damage. Exclude vehicular traffic from pavement for at least 7 days after placement. When construction traffic is permitted, maintain pavement as clean as possible by removing surface stains and spillage of materials as they occur.

D. Maintain concrete pavement free of stains, discoloration, dirt, and other foreign material. Sweep concrete pavement not more than two days before date scheduled for Substantial Completion inspections.

END OF SECTION 321313

EXHIBIT B - DRAWINGS

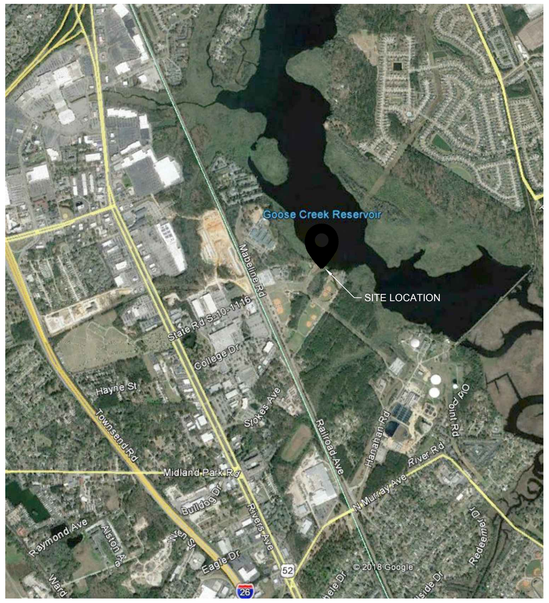
HANAHAN AMPHITHEATER BOARDWALK
BERKELEY COUNTY

HANAHAN, SC

TMS# 265-02-00-015, 259-00-00-092, 259-00-00-093

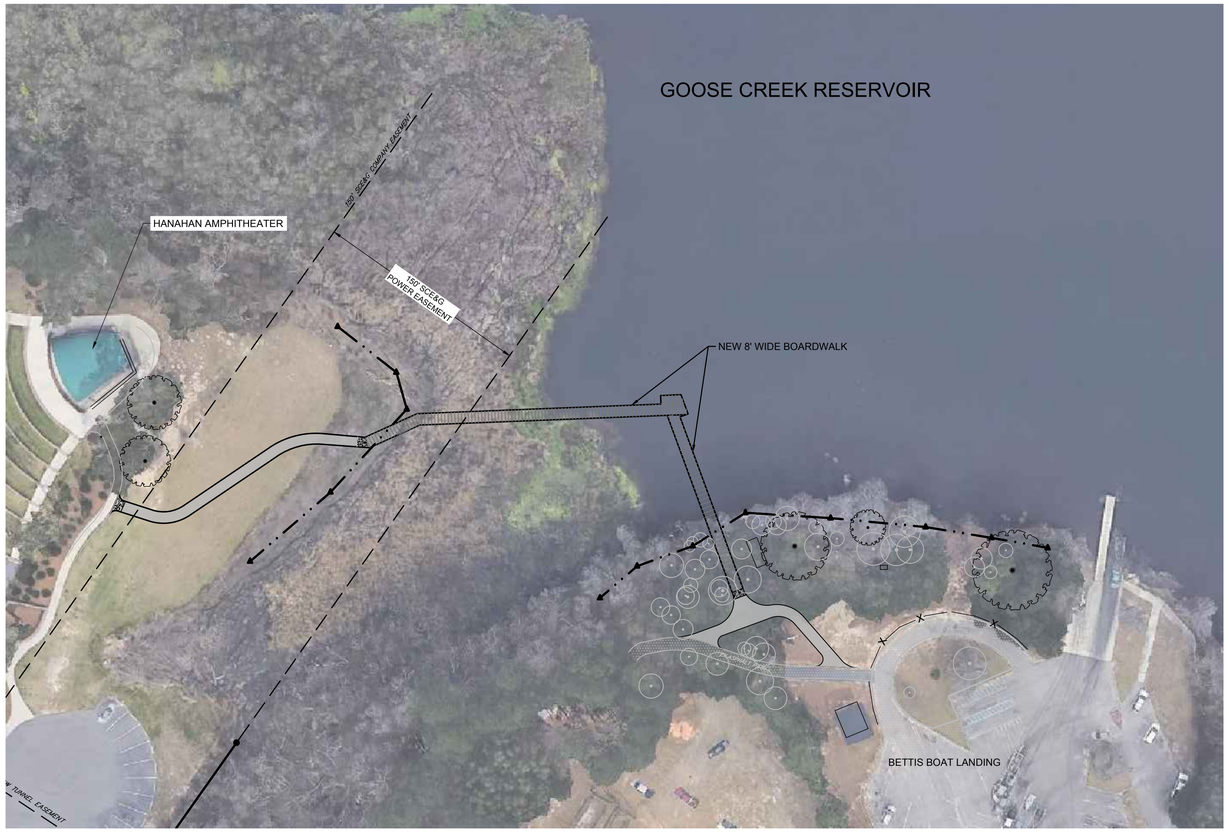
BID SET
05/14/2020

SITE LOCATION MAP



NOT TO SCALE

SITE OVERVIEW



0 25 50 100
SCALE: 1" = 50'

N
W E
S

PROJECT DESCRIPTION

THE CITY OF HANAHAN WILL BE CONSTRUCTING A NEW 8' WIDE BOARDWALK, APPROXIMATELY 350' IN LENGTH, OVER THE GOOSE CREEK RESERVOIR ALONG WITH ASPHALT PATHS TO CONNECT THE HANAHAN AMPHITHEATER AND BETTIS BOAT LANDING.

GENERAL NOTES

1. ALL TOPOGRAPHICAL INFORMATION, UTILITY LOCATIONS AND ELEVATIONS ARE BASED ON THE TOPOGRAPHIC SURVEY PROVIDED BY PARKER LAND SURVEYING DATED 10-24-2018.
2. ALL ELEVATIONS ARE BASED ON NAVD 1988 DATUM.
   FLOOD ZONE INFORMATION:
   FLOOD ZONE X / AE
   PER FEMA FLOOD INSURANCE RATE MAP.
   SEE COMMUNITY PANEL 45015C0695E
   DATED DECEMBER 7, 2018
3. THE CONTRACTOR SHALL VERIFY THE EXISTING TOPOGRAPHIC WORK, EXISTING UTILITY LINE LOCATIONS AND ELEVATIONS PRIOR TO BEGINNING WORK. SHOULD THE CONTRACTOR FIND ANY DISCREPANCIES ON THE DRAWINGS PRIOR TO BEGINNING WORK OR DURING CONSTRUCTION, THE ENGINEER SHALL BE NOTIFIED IMMEDIATELY.
4. THE CONTRACTOR SHALL MAINTAIN AND BE SOLELY RESPONSIBLE FOR JOBSITE SAFETY.
5. AN AUTOCAD BASE PLAN OF THIS DRAWING CAN BE PROVIDED TO THE CONTRACTOR UPON REQUEST. ENGINEER SHALL NOT BE RESPONSIBLE FOR ERRORS IN ELECTRONIC DATA.
6. ALL TRAFFIC CONTROL DEVICES SHALL CONFORM TO M.U.T.C.D. (MANUAL OF UNIFORM TRAFFIC CONTROL DEVICES).
7. PROPERTY ADDRESS: 3100 MABELINE RD. HANAHAN, SC 29410
8. ZONING: TMS# 265-02-00-015 AND TMS# 259-00-00-092 CP
9. CONTRACTOR SHALL COORDINATED CONSTRUCTION ACCESS WITH THE CITY OF HANAHAN RECREATION DEPARTMENT.

Sheet List Table

Sheet Number	Sheet Title	3/22/19	9/3/19
C1.0	TITLESHEET	A	B
C1.1	LEGEND & REVISION NOTES	A	B
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C2.0	SWPPP PLAN	A	B
C2.1	SWPPP NOTES	A	
C2.2	SWPPP DETAILS	A	
C3.0	SITE PLAN	A	B
C4.0	GRADING PLAN	A	B
S1	PROPOSED SITE PLAN	A	
S2	PIER FRAME PLAN	A	
S3	FRAMING DETAILS	A	
S4	FRAMING DETAILS	A	

PROJECT CONTACTS

OWNER/DEVELOPER:
CITY OF HANAHAN
1255 YEAMANS HALL ROAD
HANAHAN, SC 29410
CONTACT: RANDY MONEYMAKER
PHONE: 843-268-0760

CIVIL ENGINEER & LANDSCAPE ARCHITECT:
SEAMON WHITESIDE & ASSOCIATES
128 S. MAIN STREET, #B
SUMMERVILLE, SC 29483
CONTACT: JENNIFER PALMER, P.E.
PHONE: 843-884-1667

SURVEYOR:
PARKER LAND SURVEYING , LLC.
5910 GRIFFIN ST.
HANAHAN, SC 29410
CONTACT: ANDY GILLETTE, PLS
PHONE: 843-554-7777

UTILITY CONTACTS:
DOMINION ENERGY:
CONTACT: WILLIAM REID
PHONE: 843-576-8737

CHARLESTON WATER SYSTEM:
CONTACT: LYDIA OWENS
PHONE: 843-727-6869

MUNICIPALITY CONTACTS:
CITY OF HANAHAN ENGINEERING:
CONTACT:JEFFREY HAJEK
PHONE: 843-576-5259

ENVIRONMENTAL ENGINEERS:
NEWKIRK ENVIRONMENTAL
CONTACT:RYAN CLAREY
PHONE: 843-388-6585

STRUCTURAL ENGINEER:
McSWEENEY ENGINEERS
495 C MEETING ST.
CHARLESTON, SC 29403
CONTACT: JOEY PORRELLO, EIT
PHONE: 843-975-5621

SEAMONWHITESIDE
MOUNT PLEASANT, SC
843.884.1667
GREENVILLE, SC
864.298.0534
SUMMERVILLE, SC
843.884.1667
WWW.SEAMONWHITESIDE.COM

SOUTH CAROLINA
SEAMON, WHITESIDE & ASSOCIATES, INC.
CERTIFICATE OF AUTHORIZATION
No. C00472

SOUTH CAROLINA
PROFESSIONAL ENGINEER
No. 20961
JENNIFER R. PALMER

HANAHAN AMPHITHEATER BOARDWALK
CITY OF HANAHAN
HANAHAN, SOUTH CAROLINA

SW+ PROJECT: 7957
DATE: 01/02/2019
DRAWN BY: BET
CHECKED BY: JRP

REVISION HISTORY

A	3/22/19	
B	9/3/19	
0	5/14/20	

TITLESHEET

C1.0

PLOTTED:5/13/2020 3:19 PM, BY Brian Titze N:\7957\CD\WD\CD's\7957_Titlesheet & Legend.dwg

DRAWING LEGEND

OBJECTS AND SYMBOLS	EXISTING	NEW
Adjoining Property Line		N/A
Centerline		(Same as Existing)
Easement		
Setback		(Same as Existing)
Sanitary Sewer (Gravity)	ES ES	S S
Sanitary Sewer (Force Main)	EFM EFM	FM FM
Water Line	EW EW	W W
Curb & Gutter (Straight)		
Curb & Gutter (Roll)		
Storm Drain	ED ED	(Width varies with size)
Roof Drain	ERD ERD	RD RD
Subsurface Drainage	EUD EUD	UD UD
Silt Fence, Standard	ESF ESF	SF SF
Silt Fence, Reinforced	ERSF	RSF RSF
Phase Line	N/A	
Wetland Line		N/A
Flood Zone	ZONE 'X' ZONE 'AE'	N/A
Conduit	EC EC	C C
Natural Gas	EG EG	G G
Overhead Electrical	EP EP	P P
Underground Electrical	EUP EUP	UP UP
Underground Telephone	ET ET	T T
Underground Cable	ETV ETV	TV TV
Underground Fiber Optic	EFO EFO	FO FO
Fence	X X	
Elevation Contour	22	22
Revision Cloud (Encloses Revision)	N/A	

OBJECTS AND SYMBOLS	EXISTING	NEW
Benchmark		N/A
Sanitary Sewer Manhole	S	
Sanitary Sewer Manhole ID #	N/A	MH #
Sanitary Sewer Cleanout	C	
Double Sanitary Sewer Service (Residential Only)		
Single Sanitary Sewer Service (Residential Only)		
TYPE 1 Storm Drainage Structure		
TYPE 16 Storm Drainage Structure		
TYPE 17 Storm Drainage Structure (Right)		
TYPE 17 Storm Drainage Structure (Left)		
TYPE 18 Storm Drainage Structure		
Catch Basin		
Isolation Box		
Storm Drainage Junction Structure		
Yard Inlet		YI
Storm Drainage Structure ID #	N/A	#
Telephone Box	T	N/A
Telephone Manhole	T	N/A
Electrical Box	E	N/A
Electrical Manhole	E	N/A
Power Pole		
Light Pole		
Fire Hydrant Assembly		
Water Blowoff		
Water Line Bends, Angle Varies	N/A	
Water Line Valve		
Water Line Reducer		
Single Water Service (Residential Only)		
Double Water Service (Residential Only)		
Sign		
ADA Accessible Parking Space		
Spot Elevation	X.XX	X.XX
Watershed Area	N/A	X.XX Ac
Detail ID #	N/A	# (Sheet #) # (ID #)
Keynote	N/A	#
Parking Count ID #	N/A	#
Lot #	N/A	#
Revision ID #	N/A	#

ABBREVIATIONS	EXISTING	NEW
Sewer Easement	Ex. S.E.	S.E.
Storm Easement	Ex. W.E.	W.E.
Drainage Easement	Ex. D.E.	D.E.
General Utility Easement	Ex. G.U.E.	G.U.E.
Access Easement	Ex. A.E.	A.E.
Ingress/Egress Easement	Ex. I/E E.	I/E E
Pond Maintenance Easement	Ex. P.M.E.	P.M.E.
Water Surface Elevation	Ex. W.S.E.	W.S.E.
Polyvinyl Chloride Pipe	Ex. PVC	PVC
Reinforced Concrete Pipe	Ex. RCP	RCP
High Density Corrugated Polyethylene Pipe	Ex. HDPE	HDPE
Ductile Iron Pipe	Ex. DIP	DIP
Corrugated Metal Pipe	Ex. CMP	CMP
Home Owner's Association	Ex. HOA	HOA
Property Owners Association	Ex. POA	POA

HATCH PATTERNS

Wetland/ Water

Limits of Disturbance

Existing Asphalt

New Asphalt

New Boardwalk

SWPP PLAN LEGEND

Turf Reinforcement Mat (See Turf And Grasses Species)	TR
Sodding (See Turf and Grasses Specs)	S
Surface Roughening (Surface Tracking/Stair Stepping-See Detail)	SR
Temporary Seeding (See Schedule in EC Notes)	TS
Permanent Seeding (See Turf and Grasses Species)	PS
Mulching (See Turf and Grasses Species)	M
Typical Lot Erosion Control Plan (See Detial)	LE
Flexible Growth Medium (See Turf and Grasses Species)	FG
Erosion Control Blanket (See Turf and Grasses Species)	EC
Dust Control	DC
Bonded Fiber Matrix (See Turf and Grasses Species)	BF
Concrete Washout Basin (See Detail)	CW
Block & Stone Inlet Protection (See Detail)	
Temp. Sediment Control Tube (See Tube)	
Temp. Rock Ditch Checks (See Detail)	
Turf Reinforcement Mat Outlet Protection (See Detail and Turf and Grasses Specs)	
Filter Fabric Inlet Protection (See Detail)	
Temp. Curb Inlet Weep Filter (See Detail)	
Curb Inlet Sediment Filter (See Detail)	
Both Curb Inlet Filters (See Above)	
Construction Entrance	

REVISION LEGEND
A - ORIGINAL PLAN SUBMITTAL
DATE- 3/22/19

B - BOARDWALK LAYOUT UPDATED BASED ON DOMINION ENERGY COMMENTS
DATE- 9/3/19
- SHEET: C2.0 - SILT FENCE AND LIMITS OF DISTURBANCE SHIFTED FOR NEW BOARDWALK ALIGNMENT.
- SHEET: C3.0 - BOARDWALK ALIGNMENT ADJUSTED.
- SHEET C4.0 - GRADING ADJUSTED FOR NEW BOARDWALK ALIGNMENT.

0 - ISSUED FOR BID
DATE- 5/14/20

SEAMONWHITESIDE
MOUNT PLEASANT, SC
843.884.1667
GREENVILLE, SC
864.298.0534
SUMMERVILLE, SC
843.884.1667
WWW.SEAMONWHITESIDE.COM

SOUTH CAROLINA SEAMON, WHITESIDE & ASSOCIATES, INC. No. C00472 CERTIFICATE OF AUTHORIZATION

SOUTH CAROLINA REGISTERED PROFESSIONAL ENGINEER JENNIFER R. PALMER No. 29961 5/13/20

HANAHAN AMPHITHEATER BOARDWALK
CITY OF HANAHAN
HANAHAN, SOUTH CAROLINA

SW+ PROJECT:	7957
DATE:	01/02/2019
DRAWN BY:	BET
CHECKED BY:	JRP

REVISION HISTORY

A	3/22/19
B	9/3/19
0	5/14/20

LEGEND & REVISION NOTES

C1.1

NOTES / REFERENCES:

1. VERTICAL DATUM NAVD 88.
2. HORIZONTAL DATUM SCNAD 83 (2011).
3. ONLY TREES GREATER THAT 8" DBH SHOWN WITHIN SURVEY LIMITS.
4. PROPERTY LINES AND EASEMENTS SHOWN ARE BASED ON REFERENCES ONLY. A BOUNDARY SURVEY WAS NOT PERFORMED.
5. REFERENCE PLAT BERKELEY COUNTY ROD PLAT CABINET N PAGE 127.

LEGEND
PROPERTY LINE
EASEMENT LINE (AS DESCRIBED)
WETLAND LINE ESTABLISHED BY NEWKIRK & SURVEYED BY PLS
ONE FOOT (1') CONTOUR
NGVD 29 8' CONTOUR PER REFERENCE PLAT
OVERHEAD POWER
FENCE LINE
OPEN WATER

N
SC GRID

150'
150' SCE&G COMPANY EASEMENT
TMS# 265-02-00-015
COMMISSIONER OF PUBLIC WORKS
GOOSE CREEK RESERVOIR
WATER SURFACE ELEV: 5.9'
10/24/2018
WATERS EDGE INACCESSIBLE
DUE TO FLOATING VEGETATION.
AMPHITHEATER
SIDEWALK
LP #914548
LP #914508
N 401666.16
E 2299320.52
N 401634.21
E 2299356.47
N 401608.46
E 2299368.76
N 401550.54
E 2299317.59
N 401502.14
E 2299259.44
N 401512.88
E 2299568.63
N 401498.80
E 2299528.75
N 401476.61
E 2299503.81
N 401536.0860
E 2299605.4510
N 401532.3440
E 2299664.9630
N 401526.0740
E 2299731.3300
N 401518.5390
E 2299777.3060
N 401511.5620
E 2299816.5940
PUMP HOUSE
PICNIC TABLE
PP #485016
PP #378856
ASPHALT PATH
COVERED AWNING
PROJECT BENCH MARK
3/4" REBAR
N: 401393.91
E: 2299746.00
ELEV: 16.53 (NAVD 88)
TMS# 259-00-00-092
CITY OF HANAHAN
100' CPW TUNNEL EASEMENT
100'

TREE TABLE

TREE #	DESCRIPTION
50	8 BRADFORD PEAR
51	23 BRADFORD PEAR
53	17-39 OAK
57	9 PINE
58	10 OAK
59	15 PINE
60	14 PINE
77	22 OAK
78	19 OAK
79	22 OAK
80	10 GUM
89	25 OAK
90	23 OAK
96	9 GUM
97	10 HICKORY
98	19 OAK
99	22-26 OAK
109	10 OAK
110	5-9 BLACK GUM
111	11 BLACK GUM
112	13 BLACK GUM
113	17 MAPLE
130	17 PINE
131	12 OAK
132	16 OAK
133	19 PINE
134	16 PINE
154	14 PINE
155	14 PINE
156	16 PINE
158	9 PINE
159	19 PINE
160	9 OAK
161	10 OAK
162	7-10 OAK
163	16 PINE
164	5-6 OAK
165	5-5 OAK
166	19 PINE
167	11 PINE
168	13 PINE
169	14 PINE
170	4-5-10 HICKORY
172	14 OAK
173	12 PINE
174	16 PINE
175	14 OAK
178	13 GUM
179	8 PINE
180	10 TALLOW
181	8 PINE
182	8 GUM
183	14 PINE
187	17 GUM
190	5-5 HICKORY
191	12 PINE
192	16 PINE
193	12 PINE
194	20 PINE
195	10 PINE
196	13 PINE
199	13 PINE
287	36 OAK
288	38 OAK

GRAPHIC SCALE
30 0 15 30 60 120
(IN FEET)
1 inch = 30 ft.

NO.	DATE	REVISIONS

TITLE
TOPOGRAPHIC SURVEY
GOOSE CREEK RESERVOIR
BOARDWALK PROJECT
CITY OF HANAHAN
BERKELEY COUNTY, SOUTH CAROLINA

SOUTH CAROLINA PARKER LAND SURVEYING, LLC NO. 3014 CERTIFICATE OF AUTHORIZATION

Parker Land Surveying, LLC
5910 Griffin Street
Hanahan, SC 29410
Phone: (843) 554-7777
Fax: (843) 554-7779

PLS

DESIGNED :	-
DRAWN :	ACG Jr
CHECKED :	ACG Jr
APPROVED :	ACG Jr
SCALE :	1"=30'
DATE :	10/24/2018
PROJECT NO. :	18-125
SHEET	1 OF 1

150' SCE&G POWER EASEMENT

EXISTING OVERHEAD POWER LINES

TMS# 259-00-00-093
CITY OF HANAHAN

TMS# 265-02-00-015
COMMISSIONERS OF PUBLIC WORKS

GOOSE CREEK RESERVOIR
WSE: 5.9'

EXISTING AMPHITHEATER

EXISTING POWER POLE

NEW 8' ASPHALT PATH

38" OAK

TREE PROTECTION, TYP.

LP #914548

56" OAK

NEW 8' BOARDWALK

DC TS SR
ALL DISTURBED AREAS, TYP.

EXISTING CONCRETE SIDEWALK

SILT FENCE, TYP. (SEE DETAIL)

LP #914508

WETLAND BOUNDARY LINE, TYP.

APPROXIMATE PROPERTY LINE PER PLAT

100'

24'

CONSTRUCTION ENTRANCE

EXISTING AMPHITHEATER PARKING LOT

TUNNEL EASEMENT

EXISTING PUMP HOUSE

EXISTING TREE'S TO BE REMOVED, TYP.

EXISTING PICNIC TABLE

TMS# 259-00-00-092
CITY OF HANAHAN

SILT FENCE & TREE PROTECTION, TYP. (SEE DETAIL)

EXISTING FENCE

LP #859016

EXISTING ASPHALT PATH

8" BRADFORD-PEAR

EXISTING COVERED AWNING

EXISTING UTILITY NOTE:

THE LOCATION OF EXISTING UNDERGROUND UTILITIES ARE SHOWN IN AN APPROXIMATE WAY ONLY AND HAVE NOT BEEN INDEPENDENTLY VERIFIED BY THE OWNER OR ITS REPRESENTATIVE. THE CONTRACTOR SHALL DETERMINE THE EXACT LOCATION OF ALL EXISTING UTILITIES BEFORE COMMENCING ANY WORK, AND AGREES TO BE FULLY RESPONSIBLE FOR ANY AND ALL DAMAGES WHICH MIGHT OCCUR DUE TO THE CONTRACTOR'S FAILURE TO EXACTLY LOCATE AND PRESERVE ANY AND ALL UNDERGROUND UTILITIES.

LEGEND

- SF SF — SILT FENCE
- SF-TP SF-TP — SILT FENCE & TREE PROTECTION
- TP TP — TREE PROTECTION
- LD LD — LIMITS OF DISTURBANCE
- AREA OF LAND DISTURBANCE
- CONSTRUCTION ENTRANCE

DISTURBED ACREAGE
0.50 ACRES

TREE SUMMARY	
EXISTING TOTAL INCHES	1022 in.
TOTAL INCHES REMOVED	178 in.
TOTAL INCHES REMAINING	844 in.

NOTE:
ALL DISTURBED AREAS SHALL RECEIVE PERMANENT STABILIZATION, PER NOTES ON SHEET C2.1.

NOTE:
ALL SEDIMENT AND EROSION CONTROL BMP'S ARE TO REMAIN IN PLACE UNTIL FINAL STABILIZATION IS ACHIEVED UNLESS OTHERWISE NOTED.

NOTE:
CONTRACTOR TO PROVIDE SECURITY CONSTRUCTION FENCING TO BE LEASED BY CONTRACTOR. SUBMIT SECURITY FENCING PLAN TO OWNER FOR APPROVAL PRIOR TO CONSTRUCTION.

SEE SHEET C1.1 FOR LEGEND.
SEE SHEETS C2.1 - C2.2 FOR ADDITIONAL NOTES AND DETAILS.

811 Know what's below. Call before you dig.

0 10 20 40
SCALE: 1" = 20'

N W E S

SEAMONWHITESIDE
MOUNT PLEASANT, SC
843.884.1667
GREENVILLE, SC
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No. C00472

SOUTH CAROLINA PROFESSIONAL ENGINEER
No. 29961
JENNIFER R. PALMER
5/13/20

HANAHAN AMPHITHEATER BOARDWALK

CITY OF HANAHAN
HANAHAN, SOUTH CAROLINA

SW+ PROJECT:	7957
DATE:	01/02/2019
DRAWN BY:	BET
CHECKED BY:	JRP

REVISION HISTORY

A	3/22/19	
B	9/3/19	
0	5/14/20	

SWPPP PLAN

C2.0

PLOTTED: 5/13/2020 3:19 PM, BY Brian Titze N:\7957\Civil\CD's\7957_SWPPP Plan.dwg

501 WANDO PARK BOULEVARD, SUITE 200 | MOUNT PLEASANT, SC 29464 | 508 RHETT STREET, SUITE 101 | GREENVILLE, SC 29601

DRAINAGE FACILITIES MAINTENANCE PLAN

1. TEMPORARY STORMWATER AND SEDIMENT CONTROLS (SSC'S):
   A. THE CONTRACTOR SHALL BE RESPONSIBLE FOR ALL MAINTENANCE INCLUDING BUT NOT NECESSARILY LIMITED TO:
      I. DURING CONSTRUCTION (UNTIL FINAL APPROVAL BY THE AUTHORITIES HAVING JURISDICTION AND THE OWNER):
         (1) DAILY:
            (A) OBSERVING PAVED AREAS THAT ARE UTILIZED FOR SITE ACCESS TO LOOK FOR SIGNS OF SOIL BEING TRACKED FROM THE SITE AND TAKING CORRECTIVE ACTION AS NECESSARY (SEE NOTE #6 UNDER "STORMWATER AND SEDIMENT CONTROL").
            (B) CORRECTING ANY DAMAGE TO SSC'S AS SOON AS POSSIBLE WHEN IT OCCURS.
         (2) WEEKLY (SEE NOTE #3 UNDER "STORMWATER AND SEDIMENT CONTROL"-CONTRACTOR SHALL COORDINATE WITH ENGINEER TO CONFIRM THAT ARRANGEMENTS ARE IN PLACE FOR REQUIRED INSPECTIONS AND LOG MANAGEMENT):
            (A) INSPECTING SSC'S FOR DAMAGE AND ACCUMULATED SEDIMENT. REMOVING SEDIMENT AND REPAIRING OR REPLACING DAMAGED SSC'S AS NECESSARY.
            (B) EVALUATING PERFORMANCE AND AMENDING, MODIFYING, IMPROVING, OR RELOCATING SSC'S AS NECESSARY.
            (C) LOGGING INSPECTION OBSERVATIONS, RECOMMENDATIONS, REPAIRS, RELOCATIONS, AMENDMENTS, AND IMPROVEMENTS AS NECESSARY.
         (3) BI-WEEKLY:
            (A) EVALUATING SITE AND INSTALLING PERMANENT LANDSCAPING OR TEMPORARY SEEDING AS NECESSARY.
      II. AT COMPLETION OF CONSTRUCTION (UPON FINAL APPROVAL BY AUTHORITIES HAVING JURISDICTION AND THE OWNER) REMOVAL OF ALL TEMPORARY SSC'S.

2. POND(S) AND/OR DETENTION BASIN(S) AND DITCHES
   A. DURING CONSTRUCTION (UNTIL FINAL APPROVAL BY THE AUTHORITIES HAVING JURISDICTION AND THE OWNER):
      I. THE CONTRACTOR SHALL BE RESPONSIBLE FOR ALL MAINTENANCE INCLUDING BUT NOT NECESSARILY LIMITED TO:
         (1) REMOVING ACCUMULATED SEDIMENT.
         (2) MAINTAINING POND AND DITCH BANKS INCLUDING PREVENTION AND REPAIR OF SLOPE EROSION.
         (3) ESTABLISHING AND MAINTAINING TEMPORARY AND PERMANENT STABILIZATION (LANDSCAPING AND/OR GRASS AS INDICATED ON THE PLANS).
   B. AFTER CONSTRUCTION:
      I. THE OWNER OR HIS ASSIGNS SHALL BE RESPONSIBLE FOR PERPETUAL MAINTENANCE INCLUDING BUT NOT NECESSARILY LIMITED TO:
         (1) MONTHLY (BI-WEEKLY DURING GROWING SEASON):
            (A) AESTHETIC MAINTENANCE OF THE POND BANKS, PROJECT INTERNAL DITCHES AND SURROUNDING COMMON AREAS INCLUDING MOWING, LANDSCAPE MAINTENANCE, AND REMOVAL OF TRASH AND DEBRIS.
         (2) EVERY 6 MONTHS:
            (A) INSPECTION OF THE POND(S) AND ASSOCIATED OUTLET STRUCTURE(S) AND DITCHES.
            (B) REMOVAL OF ANY BLOCKAGES AND ACCUMULATED DEBRIS AT THE OUTLET STRUCTURE(S).
            (C) REPAIR AND STABILIZATION OF ANY BANK EROSION.
            (D) REPAIR OR REPLACEMENT OF ANY DAMAGE TO THE OUTLET STRUCTURE(S).
         (3) EVERY 12 MONTHS:
            (A) TREATMENT, AS NECESSARY, FOR AQUATIC WEED CONTROL.
         (4) EVERY 5 YEARS:
            (A) INSPECTION OF SEDIMENT COLLECTION AND WHEN NECESSARY, REMOVAL AND PROPER DISPOSAL OF ACCUMULATED SEDIMENT. REMOVAL OF COLLECTED SEDIMENT IS NECESSARY WHEN THE DRAINAGE FLOW OF INLET/OUTLET PIPES OR STRUCTURES ARE IMPAIRED AND/OR DETENTION STORAGE CAPACITY IS REDUCED FROM THE ORIGINAL DESIGN PARAMETERS.
            (B) MORE FREQUENT REMOVAL OF COLLECTED SEDIMENT MAY BE NECESSARY WHEN CONDITIONS REQUIRE.
      I. THE OWNER OR HIS ASSIGNS SHALL BE RESPONSIBLE FOR COORDINATING WITH THE MS4 OPERATOR TO INSURE COMPLIANCE WITH OTHER INSPECTION PROCEDURES AND/OR DOCUMENTATION.

3. DRAINAGE CULVERTS AND STRUCTURES:
   A. DURING CONSTRUCTION (UNTIL FINAL APPROVAL BY THE AUTHORITIES HAVING JURISDICTION AND THE OWNER):
      I. THE CONTRACTOR SHALL BE RESPONSIBLE FOR ALL MAINTENANCE INCLUDING BUT NOT NECESSARILY LIMITED TO:
         (1) PROTECTING THE CULVERTS AND STRUCTURES FROM DAMAGE.
         (2) PREVENTING SEDIMENT FROM ENTERING THE CULVERTS AND STRUCTURES.
         (3) REPAIR OF ANY DAMAGE AND REMOVAL OF SEDIMENT AS SOON AS POSSIBLE AFTER IT OCCURS.
   B. AFTER CONSTRUCTION
      I. FOR PUBLIC ROADWAY AND EASEMENT AREAS, THESE AREAS WILL BE DEDICATED TO AN OPERATING GOVERNMENTAL AUTHORITY UPON COMPLETION AND THAT AUTHORITY WILL PERFORM MAINTENANCE.
      II. FOR PRIVATE PROPERTY AREAS, THE OWNER OR HIS ASSIGNS WILL BE RESPONSIBLE FOR MAINTENANCE IN PERPETUITY.

TEMPORARY BUFFER ZONE MANAGEMENT AND SURFACE WATER PROTECTION:

TEMPORARY (CONSTRUCTION) BUFFERS ARE NOT TO BE CONFUSED WITH PERMANENT BUFFERS THAT MAY BE SHOWN ELSEWHERE IN THE CONSTRUCTION PLANS. EXERCISE CARE TO DIFFERENTIATE BETWEEN TEMPORARY AND PERMANENT BUFFERS AND THEIR ASSOCIATED REQUIREMENTS.

ALL PERIMETER AND SEDIMENT CONTROL BMPs, SHALL BE INSTALLED PRIOR TO THE DISCHARGE OF STORMWATER RUNOFF INTO THE ADJACENT SURFACE WATER'S AND SHALL BE MAINTAINED UNTIL FINAL STABILIZATION.

AREAS CONTRIBUTING DIRECT RUNOFF TO TEMPORARY BUFFER AREAS SHALL BE STABILIZED PRIOR TO COMMENCING WORK WITHIN THE TEMPORARY BUFFER AREA.

ONCE CONSTRUCTION WITHIN AND ADJACENT TO TEMPORARY BUFFER AREAS IS COMPLETED, THE AREAS SHALL BE STABILIZED AS SOON AS PRACTICAL.

IN THE EVENT A BUFFER IS ACCIDENTALLY DISTURBED, THE CONTRACTOR SHALL STABILIZE THE AREA AS SOON AS POSSIBLE AND THE ENGINEER REGARDING REMEDIAL MEASURES OR EROSION CONTROL MEASURES.

NO DISTURBANCE SHALL OCCUR WITHIN CRITICAL AREAS (IE: SALTWATER MARSH).

PERMANENT SEEDING (TO BE USED WHERE PERMANENT TURF AND/OR STABILIZATION IS INDICATED ON PLANS AND/OR DETAILS. UNLESS OTHERWISE DEFINED ON THE PLANS, ALL AREAS DISTURBED MUST BE STABILIZED).

1. IN PARTICULAR, IT IS THE CONTRACTOR'S RESPONSIBLITY TO;
   A. ESTABLISH A UNIFORM PERENNIAL STAND OF VEGETATION WITH A ROOT SYSTEM THAT IS SUFFICIENTLY DEVELOPED TO SURVIVE DRY PERIODS AND WINTER WEATHER AND BE CAPABLE OF RE-ESTABLISHMENT IN THE SPRING.
   B. PROVIDE MINIMUM UNIFORM DENSITY COVERAGE OF 70% THROUGHOUT THE SEEDED AREA, IN ACCORDANCE WITH THE DEFINITION OF "FINAL STABILIZATION" AS DEFINED IN THE SCDHEC NPDES GENERAL PERMIT.
   C. MAINTAIN THE STAND OF VEGETATION INCLUDING MOWING; FERTILIZING; WEED, DISEASE AND INSECT CONTROL; AND WATERING AS NECESSARY, UNTIL FINAL ACCEPTANCE BY THE OWNER AND/OR AUTHORITY HAVING JURISDICTION.

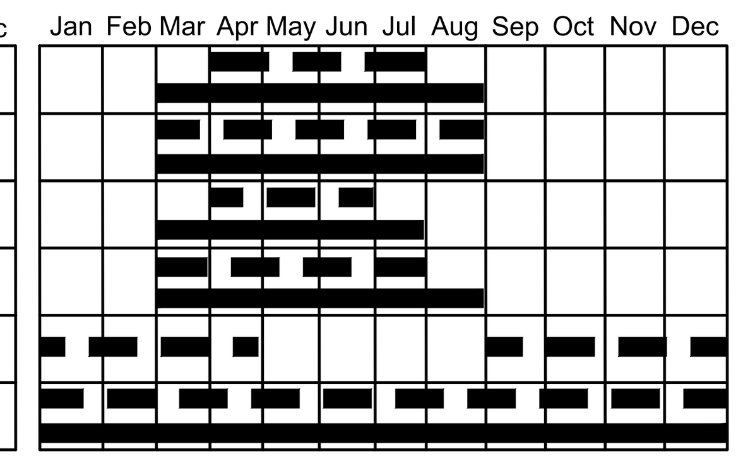
2. ALL NECESSARY (GROUND BED) PREPARATION, INSTALLATION, AND MAINTENANCE SHALL BE IN ACCORDANCE WITH THE LANDSCAPING SPECIFICATIONS FOR THE PROJECT OR, IN INSTANCES WHERE LANDSCAPING SPECIFICATIONS DO NOT EXIST, IN ACCORDANCE WITH APPLICABLE PORTIONS (INCLUDING BED PREPARATION, MULCH, FERTILIZERS, STIMULANTS, TACKIFIERS, ETC) OF SECTION 810 OF THE SCDOT STANDARD SPECIFICATIONS FOR HIGHWAY CONSTRUCTION (LATEST EDITION).

3. UNLESS OTHERWISE INDICATED ON THIS SHEET OR IN SPECIFICATIONS, PERMANENT SEED SELECTION AND APPLICATION SHALL BE IN ACCORDANCE WITH APPENDIX C OF THE SOUTH CAROLINA DHEC STORM WATER MANAGEMENT BMP HANDBOOK. SEED SPECIES AND APPLICATION RATE SHALL BE AS INDICATED FOR THE PROJECT LOCATION, SOIL TYPE, AND DATE OF INSTALLATION.

4. PERMANENT SEED SELECTION (SELECTION METHOD BELOW FOLLOWS SCDOT RECOMMENDATIONS): SELECT A MINIMUM OF TWO (2) SEED SPECIES FROM TABLE 1 BELOW, AND A MINIMUM OF ONE (1) ACCEPTABLE ANNUAL NURSE CROP SEED SPECIES FROM TABLE 2 BELOW (UNDER THE TEMPORARY SEEDING SECTION), OR;
   SELECT ONE (1) SEED SPECIES FROM TABLE 1 AT DOUBLE THE SPECIFIED RATE WITH A MINIMUM OF ONE (1) ACCEPTABLE ANNUAL NURSE CROP SEED SPECIES FROM TABLE 2 AT THE SPECIFIED RATE. DURING APPLICATION IN "NON-PRIMARY MONTHS", THE SEED MIX SHALL BE PREPARED TO PROVIDE FOR GERMINATION OF PERMANENT SPECIES IN THE FOLLOWING SPRING AND SUMMER TO INSURE 70% COVERAGE IS ACHIEVED AS DESCRIBED IN NOTE 1 ABOVE.

TABLE 1 - PERMANENT SEEDING (Perennial Seed)

Species	Lbs/Ac
* Common Bermuda	30
Carpet Grass	15
Centipedegrass	10
* * Bahiagrass	30
* * Tall Fescue	50
* * Weeping Lovegrass	5



= UPPER STATE (Primary Months)
= LOWER STATE (Primary Months)

* Use unhulled seed during fall and winter months.

* * Only use where specified on plans or in specifications or if approved by the owner, engineer or landscape architect.

TEMPORARY SEEDING (TO BE USED ONLY FOR TEMPORARY STABILIZATION DURING CONSTRUCTION)

1. IN PARTICULAR THE CONTRACTOR SHALL:
   A. ESTABLISH A STAND OF VEGETATION THAT IS CAPABLE TO PREVENT EROSION AND SEDIMENT LOSS, IN ACCORDANCE WITH THE DEFINITION OF "TEMPORARY STABILIZATION" AS DEFINED IN THE SCDHEC NPDES GENERAL PERMIT.
   B. INITIATE TEMPORARY STABILIZATION EFFORTS AS REQUIRED IN NOTE 2 AND 12 OF THE "STORMWATER AND SEDIMENT CONTROL" NOTES LISTED ON THIS PAGE.
   C. MAINTAIN THE STAND OF VEGETATION UNTIL REPLACED BY PERMANENT LANDSCAPING OR SUBSEQUENT CONSTRUCTION.

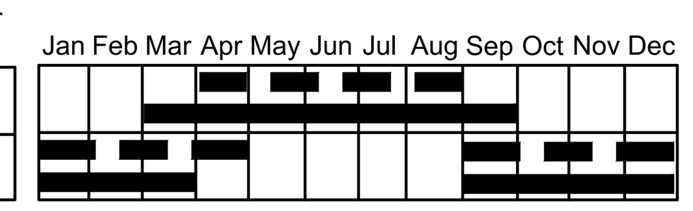
2. ALL NECESSARY (GROUND BED) PREPARATION, INSTALLATION, AND MAINTENANCE OF TEMPORARYSEEDING SHALL BE IN ACCORDANCE WITH APPLICABLE PORTIONS (INCLUDING BED PREPARATION, MULCH, FERTILZERS STIMULANTS, TACKIFIERS, ETC) OF SECTION 810 OF THE SCDOT STANDARD SPECIFICATIONS FOR HIGHWAY CONSTRUCTION (LATEST EDITION).

3. UNLESS OTHERWISE INDICATED ON THIS SHEET OR IN SPECIFICATIONS, TEMPORARY SEED SHALL BE IN ACCORDANCE WITH APPENDIX C OF THE SOUTH CAROLINA DHEC STORM WATER MANAGEMENT BMP HANDBOOK. SEED SPECIES AND APPLICATION RATE SHALL BE AS INDICATED FOR THE PROJECT LOCATION, SOIL TYPE, AND DATE OF INSTALLATION.

4. TEMPORARY SEED SELECTION (SELECTION METHOD BELOW FOLLOWS SCDOT RECOMMENDATIONS): FOR SHORT DURATION APPLICATIONS, SELECT A MINIMUM OF ONE (1) SEED SPECIES FROM TABLE 2 BELOW.
   FOR LONGER DURATION APPLICATIONS, SELECT A MINIMUM OF ONE (1) SEED SPECIES FROM TABLE 1 ABOVE (UNDER PERMANENT SEEDING) AND FROM TABLE 2 BELOW, AND APPLY AT THE RATES SPECIFIED.

TABLE 2 - NURSE CROP AND TEMPORARY SEEDING (Annual Seed)

Species	Nurse Crop Lbs/Ac	Temp. Cover Lbs/Ac
Browntop Millet	15	60
Ryegrass	75	200



= UPPER STATE
= LOWER STATE

PERMITTING NOTES

1. THESE PLANS HAVE BEEN PREPARED TO MEET THE INITIAL REQUIREMENTS OF A STORMWATER POLLUTION PREVENTION PLAN (SWPPP) FOR COVERAGE UNDER THE NPDES GENERAL PERMIT FOR STORMWATER DISCHARGES FROM LARGE AND SMALL CONSTRUCTION ACTIVITIES (NPDES). THE OWNER AND CONTRACTOR(S) ARE ADVISED THAT ADDITIONAL REQUIREMENTS, WHICH ARE BEYOND THE SCOPE OF THESE PLANS, MUST BE MET IN ORDER TO ASSURE CONTINUED COVERAGE UNDER THE NPDES.

2. COVERAGE UNDER THE NPDES IS INITIATED BY THE SC DEPT. OF HEALTH AND ENVIRONMENTAL CONTROL'S (SCDHEC) APPROVAL OF THE PROJECT FOR CONSTRUCTION. THE OWNER'S SUBMITTAL OF AN ENVIRONMENT PROTECTION AGENCY (EPA) NOTICE OF INTENT (NOI) SERVES AS THE OWNER'S CERTIFICATION THAT HE HAS PREPARED, AND WILL IMPLEMENT AND MAINTAIN, A SWPPP THROUGHOUT THE CONSTRUCTION PERIOD. FURTHERMORE, IT CERTIFIES THAT HE WILL DOCUMENT AND WHERE REQUIRED, REPORT SITE CONDITIONS, REMEDIAL EFFORTS, SWPPP MODIFICATIONS, AND OTHER STORMWATER RELATED ACTIVITIES IN ACCORDANCE WITH NPDES REQUIREMENTS. COVERAGE UNDER THE NPDES IS TERMINATED UPON THE OWNER'S SUBMITTAL OF AN EPA NOTICE OF TERMINATION (NOT) WHEN SCDHEC APPROVAL OF THE COMPLETED PROJECT HAS BEEN RECEIVED.

3. THE OWNER IS ADVISED THAT SWA'S SCOPE OF SERVICES DOES NOT NECESSARILY INCLUDE EFFORTS TO DOCUMENT AND REPORT ACTIVITIES IN ACCORDANCE WITH NPDES REQUIREMENTS. WHILE SWA CAN PERFORM THESE SERVICES UPON REQUEST, THEY CAN ALSO BE PROVIDED BY THIRD PARTY FIRMS WHO SPECIALIZE IN DOCUMENTATION AND REPORTING OF NPDES RELATED ACTIVITIES. REGARDLESS, THESE ACTIVITIES MUST BE ACCOMPLISHED, DOCUMENTED, AND WHERE REQUIRED, REPORTED THROUGHOUT THE CONSTRUCTION PERIOD IN ORDER TO AVOID AN NPDES VIOLATION.

4. ADDITIONAL PARTIES WHO ARE ASSOCIATED WITH A PROJECT THAT HAS RECEIVED NPDES COVERAGE ARE REQUIRED TO ADHERE TO THE REQUIREMENTS OF THE PROJECT SWPPP FOR THOSE PORTIONS THAT PERTAIN TO THEIR ACTIVITIES (REFER TO SECTIONS 2.1 & 2.2 OF THE STATE GENERAL PERMIT). IN ADDITION, PARTIES WHO ARE ASSOCIATED WITH ACTIVITIES THAT ARE PART OF A "LARGER COMMON PLAN" (LCP) THAT HAS RECEIVED NPDES COVERAGE MAY ALSO SHARE RESPONSIBILITY FOR COMPLIANCE AS A "SECONDARY PERMITTEE" (REFER TO SECTIONS 2.2.2 OF THE STATE GENERAL PERMIT). ALL PARTIES ASSOCIATED WITH ANY CONSTRUCTION ACTIVITIES ARE ADVISED TO CLARIFY THEIR RESPONSIBILITIES FOR COMPLIANCE WITH THE STATE GENERAL PERMIT AND THE PROJECT'S NPDES PERMIT AND SWPPP.

5. RESIDENTIAL SUBDIVISIONS REQUIRE EROSION CONTROL FEATURES FOR INFRASTRUCTURE AS WELL AS FOR INDIVIDUAL LOT CONSTRUCTION. INDIVIDUAL PROPERTY OWNERS ARE REQUIRED TO SUBMIT AN "INDIVIDUAL LOT NOTICE OF INTENT" MEETING THE REQUIREMENTS OF SECTION 2.3.2 AT LEAST SEVEN (7) BUISNESS DAYS PRIOR TO COMMENCEMENT OF CONSTRUCTION ACTIVITIES. REFER TO SECTION 2.2.2 AND SECTION 2.3.2 OF THE STATE GENERAL PERMIT.

SWPPP PHASE 1 - INITIAL LAND DISTURBANCE PHASE - SEQUENCE OF CONSTRUCTION:

1.1 RECEIVE NPDES COVERAGE FROM DHEC.

1.2 CONDUCT PRE-CONSTRUCTION MEETING (AS DEFINED IN SECTION 4.1 OF THE STATE GENERAL PERMIT OR AS SPECIFIED IN THE PROJECTS NPDES PERMIT).

1.3 NOTIFY DHEC EQC OFFICE OR DHEC-OCRM AND THE MS 4 OPERATOR 48 HOURS PRIOR TO BEGINNING LAND DISTURBING ACTIVITIES.

1.4 INSTALL CONSTRUCTION ENTRANCE(S) AND BEGIN MAINTENANCE OF SEDIMENT CONTROLS AS NECESSARY. CONTINUE MAINTENANCE UNTIL ALL FINAL STABILIZATION MEASURES ARE IN PLACE AND REMOVAL OF CONTROLS IS APPROVED BY THE AUTHORITY HAVING JURISDICTION.

1.5 CLEAR AND GRUB FOR THE INSTALLATION OF PERIMETER CONTROLS (SILT FENCE) AND TREE BARRICADES. COORDINATE A INSPECTION WITH THE MS4 OPERATOR OR LOCAL MUNICIPALITY AND THE ENGINEER PRIOR TO CONTINUING ANY WORK ACTIVITIES.

1.6 INITIATE CLEARING AND GRUBBING FOR THE BALANCE OF THE SITE.

1.7 POND EXCAVATION AND MASS GRADING MAY BEGIN. THIS CAN BEGIN AS SOON AS AREAS ALLOW AFTER CLEARING AND GRUBBING.

SWPPP PHASE 1 - INITIAL LAND DISTURBANCE PHASE - NOTES:

THE FOLLOWING EROSION CONTROL MEASURES SHALL BE IMPLEMENTED DURING THE INITIAL LAND DISTURBANCE PHASE.

1.A INLET SEDIMENT PROTECTION MEASURES SHALL BE INSTALLED ON ALL EXISTING STORM DRAINAGE STRUCTURES AS INDICATED.

1.B STONE CHECK DAMS OR OTHER APPROPRIATE BMP'S SHALL BE INSTALLED IN AREAS OF CONCENTRATED FLOWS OR DITCHES WHERE INDICATED ON PLANS OR IN OTHER AREAS WHERE NEEDED.

1.C CONTRACTOR SHALL PERFORM DE-WATERING WITH APPROPRIATE BMP'S IN A MANNER THAT MEETS LOCAL AND STATE REGULATIONS WITH REGARD TO DISPOSAL OF WATER AND REMOVED SEDIMENT.

1.D TREE PROTECTION FENCING SHALL BE INSTALLED PRIOR TO THE START OF ANY LAND DISTURBANCE AND SHALL BE MAINTAINED UNTIL FINAL LANDSCAPING IS INSTALLED. ANY FAILURES OF FENCING SHALL BE REPAIRED IMMEDIATELY.

1.E NO BURN OR BURY PITS SHALL BE PERMITTED ON THE CONSTRUCTION SITE WITHOUT PERMISSION OF THE AUTHORITIES HAVING JURISDICTION, THE OWNER, AND THE ENGINEER.

1.F THE CONSTRUCTION ENTRANCE / EXIT SHALL BE MAINTAINED IN A CONDITION THAT WILL PREVENT TRACKING OR FLOW OF MUD ONTO PAVED AREAS.

1.G THE SITE CONTRACTOR SHALL BE RESPONSIBLE FOR MAINTENANCE OF ALL EROSION CONTROL MEASURES INCLUDING REPLACING OR REPAIRING ANY DAMAGED DEVICES.

1.H THE LOCATION OF SOME EROSION CONTROL DEVICES MAY NEED TO BE ALTERED FROM THAT SHOWN ON THE PLANS IF DRAINAGE PATTERNS DEVIATE FROM THOSE PROPOSED. IT IS THE CONTRACTORS RESPONSIBILITY TO ACCOMPLISH EROSION CONTROL FOR ALL DRAINAGE PATTERNS CREATED AT VARIOUS STAGES DURING CONSTRUCTION. ANY DIFFICULTY IN CONTROLLING EROSION DURING ANY PHASE OF CONSTRUCTION SHALL BE REPORTED TO THE ENGINEER.

1.I FOLLOW ALL "STORMWATER AND SEDIMENT CONTROL" NOTES LISTED ON THIS PAGE.

SWPPP PHASE 2 - CONSTRUCTION PHASE - SEQUENCE OF CONSTRUCTION:

2.1 CONTINUE MAINTENANCE OF ALL EROSION AND SEDIMENT CONTROL MEASURES UNTIL ALL FINAL STABILIZATION MEASURES ARE IN PLACE AND REMOVAL OF CONTROLS IS APPROVED BY THE AUTHORITY HAVING JURISDICTION.

2.2 CLEAR AND GRUB THE REMAINDER OF THE SITE.

2.3 COMPLETE POND EXCAVATIONS, MASS GRADING OPERATIONS, AND ROUGH GRADING.

2.4 INITIATE INSTALLATION OF WATER AND SEWER SYSTEMS. DRY UTILITY INSTALLATION MAY BEGIN DURING PHASE 2 IF POSSIBLE.

2.5 INSTALL STORM DRAINAGE SYSTEM INCLUDING SEDIMENT PROTECTION AS EACH STRUCTURE IS INSTALLED.

2.6 WHEN APPLICABLE, VERTICAL CONSTRUCTION MAY BEGIN DURING PHASE 2.

SWPPP PHASE 2 - CONSTRUCTION PHASE - NOTES:

THE FOLLOWING EROSION CONTROL MEASURES SHALL BE IMPLEMENTED DURING THE CONSTRUCTION PHASE.

2.A STORM DRAIN OUTLET PROTECTION (RIP RAP, TURF REINFORCING FABRICS, CHECK DAMS, ETC) AS DEFINED ON THE PLANS, SHALL BE PLACED AT ALL OUTLETS AS THEY ARE INSTALLED.

2.B APPROPRIATE MEASURES ARE TO BE IMPLEMENT AS REQUIRED TO PREVENT SEDIMENT FROM ENTERING INLET PIPES AND BOXES. EACH PROTECTIVE MEASURE IS TO BE IN PLACE AS SOON AS POSSIBLE, AND PRIOR TO ANY RAIN EVENT, AFTER PIPE, STRUCTURE, ETC. IS INSTALLED. ACCUMULATED SEDIMENT SHALL BE REMOVED AND PLACED ON-SITE IN SUCH A MANNER THAT IT DOES NOT ACCUMULATE AGAIN.

2.C FINAL CUT AND FILL SLOPES ARE TO FOLLOW THE CONSTRUCTION PLANS. TEMPORARY CUT AND FILL SLOPES SHALL NOT NOT EXCEED 2H:1V. 3H:1V OR BETTER IS PREFERRED IN ALL LOCATIONS UNLESS INFEASIBLE.

2.D FOLLOW ALL "STORMWATER AND SEDIMENT CONTROL" NOTES LISTED ON THIS PAGE.

SWPPP PHASE 3 - STABILIZATION PHASE - SEQUENCE OF CONSTRUCTION:

3.1 CONTINUE MAINTENANCE OF ALL EROSION AND SEDIMENT CONTROL MEASURES UNTIL ALL FINAL STABILIZATION MEASURES ARE IN PLACE AND REMOVAL OF CONTROLS IS APPROVED BY THE AUTHORITY HAVING JURISDICTION.

3.2 COMPLETE ALL UTILITIES AND SITE SURFACE IMPROVEMENTS AS APPLICABLE, INCLUDING BUT NOT NECESSARILY LIMITED TO: WATER, SEWER, DRAINAGE, POWER, COMMUNICATIONS, GAS, BUILDING SHELL, CURBS, WALKS, PAVEMENT, COURTYARDS, PLAZAS, FOUNTAINS, MONUMENTS, TRAILS, SITE LIGHTING, ETC.

3.3 INSTALL LANDSCAPING AND/OR ESTABLISH PERMANENT SOIL STABILIZATION.

3.4 WHEN APPLICABLE, CLEAN, RE-GRADE, AND RE-ESTABLISH SOIL STABILIZATION FOR DETENTION BASINS/PONDS; MODIFY DETENTION BASIN/POND STRUCTURES AS DEFINED ON PLANS TO CONVERT IT TO THE PERMANENT OUTLET.

3.5 REMOVE TEMPORARY SEDIMENT AND EROSION CONTROL MEASURES AFTER THE ENTIRE AREA FLOWING TO EACH MEASURE IS PERMANENTLY STABILIZED AND APPROVED BY THE AUTHORITY HAVING JURISDICTION.

3.6 PERFORM AS-BUILT SURVEYS OF THE DRAINAGE SYSTEM, AS REQUIRED BY AUTHORITIES HAVING JURISDICTION, AND SUBMIT TO THE OWNER AND ENGINEER FOR REVIEW AND SUBMITTAL TO DHEC AND/OR THE MS4 FOR REVIEW AND APPROVAL.

3.7 SUBMITTAL NOTICE OF TERMINATION (NOT) TO DHEC, BY THE OWNER AND ENGINEER.

SWPPP PHASE 3 - STABILIZATION PHASE - NOTES:

3.A AFTER CURBING, AGGREGATE BASE AND PAVING HAS BEEN COMPLETED, ALL INLET SEDIMENT TRAPS INSTALLED ON CURB INLETS SHALL BE REMOVED AND REPLACED WITH INLET FILTER PROTECTION. PROTECTION DEVICES MAY BE REMOVED ONCE AREA DRAINING TO EACH INLET HAS BEEN FULLY STABILIZED.

3.B UPON COMPLETION OF THE PROJECT AND AUTHORIZATION FROM THE AUTHORITY HAVING JURISDICTION, THE CONTRACTOR SHALL REMOVE AND PROPERLY DISPOSE ALL TEMPORARY EROSION CONTROL MEASURES, UNLESS OTHERWISE NOTED.

3.C FOLLOW ALL "STORMWATER AND SEDIMENT CONTROL" NOTES LISTED ON THIS PAGE.

STORMWATER AND SEDIMENT CONTROL
UNLESS OTHERWISE NOTED, CONTRACTOR SHALL PROVIDE FOR ALL OF THE REQUIREMENTS LISTED BELOW, AS APPLICABLE, AS PART OF HIS WORK INCLUDED IN HIS BASE BID.

1. IF NECESSARY, SLOPES THAT EXCEED 8 VERTICAL FEET IN HEIGHT SHALL BE STABILIZED WITH SYNTHETIC OR VEGETATIVE MATS, IN ADDITION TO SEEDING. TEMPORARY SLOPE DRAINS AND/OR BERMS SHALL BE INSTALLED AS NECESSARY UNTIL FINAL GRADE AND STABILIZATION IS ESTABLISHED.

2. STABILIZATION MEASURES (EITHER PERMANENT LANDSCAPING OR TEMPORARY SEEDING) SHALL BE INSTALLED AS SOON AS PRACTICAL ON PORTIONS OF THE SITE WHERE CONSTRUCTION ACTIVITIES HAVE TEMPORARILY OR PERMANENTLY CEASED, BUT IN NO CASE MORE THAN 14 DAYS AFTER CONSTRUCTION HAS CEASED, EXCEPT AS STATED BELOW:
   A. WHERE STABILIZATION BEFORE THE 14TH DAY IS PRECLUDED BY SNOW COVER OR FROZEN GROUND CONDITIONS, STABILIZATION MEASURES SHALL BE INSTALLED AS SOON AS PRACTICABLE.
   B. WHERE CONSTRUCTION ACTIVITY ON A PORTION OF THE SITE HAS TEMPORARILY CEASED AND LAND DISTURBING ACTIVITIES WILL RESUME WITHIN 14 DAYS, TEMPORARY STABILIZATION MEASURES DO NOT HAVE TO BE INITIATED ON THAT PORTION OF THE SITE.

3. ALL SEDIMENT AND EROSION CONTROL DEVICES SHALL BE INSPECTED ONCE EVERY CALENDAR WEEK. IF PERIODIC INSPECTION OR OTHER INFORMATION INDICATES THAT A BMP IS INAPPROPRIATE, OR HAS BEEN INCORRECTLY INSTALLED, THE PERMITTEE MUST ADDRESS THE NECESSARY REPLACEMENT OR MODIFICATION REQUIRED TO CORRECT THE BMP WITHIN 48 HOURS OF IDENTIFICATION.

4. PROVIDE SILT FENCE AND/OR OTHER EROSION CONTROL DEVICES, AS MAY BE REQUIRED, TO CONTROL EROSION DURING UTILITY CONSTRUCTION. ALL DISTURBED AREAS SHALL BE CLEANED, GRADED AND STABILIZED BY PERMANENT SEEDING, OR OTHER MEASURES WHERE INDICATED ON THE PLANS, IMMEDIATELY AFTER UTILITY CONSTRUCTION IS COMPLETE UNLESS ADDITIONAL CONSTRUCTION IS TO TAKE PLACE. BACKFILLING OF THE TRENCH AT THE END OF EACH DAY IS MANDATORY AND TEMPORARY SEEDING IS RECOMMENDED. IF WATER IS ENCOUNTERED WHILE TRENCHING, THE WATER ADDITION SHALL BE FILTERED TO REMOVE SEDIMENT BEFORE BEING PUMPED INTO ANY WATERS OF THE STATE.

5. ALL EROSION CONTROL DEVICES SHALL BE PROPERLY MAINTAINED DURING ALL PHASES OF CONSTRUCTION UNTIL THE COMPLETION OF ALL CONSTRUCTION ACTIVITIES AND ALL DISTURBED AREAS HAVE BEEN STABILIZED. ADDITIONAL CONTROL DEVISES MAY BE REQUIRED DURING CONSTRUCTION IN ORDER TO CONTROL EROSION OND/OR OFFSITE SEDIMENTATION. ALL TEMPORARY CONTROL DEVICES SHALL BE REMOVED ONCE CONSTRUCTION IS COMPLETE AND THE SITE IS STABILIZED.

6. THE CONTRACTOR SHALL TAKE NECESSARY ACTIONS TO PREVENT TRACKING OF SOIL ONTO PAVED AREAS THAT ARE UTILIZED FOR ACCESS TO THE SITE AND TO MINIMIZE THE GENERATION OF DUST. SHOULD TRACKING OCCUR THE CONTRACTOR SHALL IMMEDIATELY CEASE OR MODIFY CAUSAL OPERATIONS. THE CONTRACTOR SHALL DAILY REMOVE SOIL FROM PAVEMENT AS MAY BE REQUIRED.

7. RESIDENTIAL SUBDIVISIONS REQUIRE EROSION CONTROL FEATURES FOR INFRASTRUCTURE AS WELL AS FOR INDIVIDUAL LOT CONSTRUCTION. INDIVIDUAL PROPERTY OWNERS SHALL FOLLOW THESE PLANS DURING CONSTRUCTION OR OBTAIN APPROVAL OF AN INDIVIDUAL PLAN IN ACCORDANCE WITH S.C. REG. 72-300 ET SEQ. AND SCR100000.

8. TEMPORARY DIVERSION BERMS AND/OR DITCHES SHALL BE INSTALLED AS NEEDED DURING CONSTRUCTION TO PROTECT WORK AREAS FROM UPSLOPE RUNOFF AND/OR TO DIVERT SEDIMENT LADEN WATER TO APPROPRIATE TRAPS OR STABLE OUTLETS.

9. ALL WATERS OF THE STATE (WOS), INCLUDING WETLANDS, ARE TO BE FLAGGED OR OTHERWISE CLEARLY MARKED IN THE FIELD. A DOUBLE ROW OF SILT FENCE (OR PROTECTION AS OTHERWISE REQUIRED BY AUTHORITY HAVING JURISDICTION) SHALL BE INSTALLED IN ALL AREAS WHERE A 50 FT BUFFER CANNOT BE MAINTAINED BETWEEN THE DISTURBED AREA AND THE WOS. IN ADDITION, A 10 FT BUFFER SHALL BE MAINTAINED BETWEEN THE NEAREST ROW OF SILT FENCE AND THE WOS.

10. LITTER, CONSTRUCTION DEBRIS, OILS, FUELS, CHEMICALS, AND BUILDING PRODUCTS WITH SIGNIFICANT POTENTIAL FOR IMPACT (SUCH AS STOCKPILES OF FRESHLY TREATED LUMBER) SHALL BE PREVENTED FROM ENTERING OR OTHERWISE POLLUTING STORMWATER DISCHARGES.

11. A COPY OF THE SWPPP, INSPECTION RECORDS, AND RAINFALL DATA MUST BE RETAINED AT THE CONSTRUCTION SITE OR A NEARBY LOCATION EASILY ACCESSIBLE DURING NORMAL BUSINESS HOURS, FROM THE DATE OF COMMENCEMENT OF CONSTRUCTION ACTIVITIES UNTIL THE DATE THAT FINAL STABILIZATION IS ACHIEVED.

12. INITIATE STABILIZATION MEASURES ON ANY EXPOSED STEEP SLOPE (3H:1V OR GREATER) WHERE LAND-DISTURBING ACTIVITIES HAVE PERMANENTLY OR TEMPORARILY CEASED AND WILL NOT RESUME FOR A PERIOD OF 7 CALENDAR DAYS.

13. MINIMIZE SOIL COMPACTION AND, UNLESS INFEASIBLE, PRESERVE TOPSOIL.

14. MINIMIZE THE DISCHARGE OF POLLUTANTS FROM EQUIPMENT AND VEHICLE WASHING, WHEEL WASHING, AND OTHER WASH WATERS. WASH WATERS MUST BE TREATED IN A SEDIMENT BASIN OR ALTERNATIVE CONTROL THAT PROVIDES EQUIVALENT OR BETTER TREATMENT PRIOR TO DISCHARGE.

15. MINIMIZE THE DISCHARGE OF POLLUTANTS FROM DEWATERING OF TRENCHES AND EXCAVATED AREAS. THESE DISCHARGES ARE TO BE ROUTED THROUGH THE APPROPRIATE BMP'S (SEDIMENT BASIN, FILTER BAG, ETC.).

16. THE FOLLOWING DISCHARGES FROM THE SITE ARE PROHIBITED:
   A. WASTEWATER FROM WASHOUT OF CONCRETE, UNLESS MANAGED BY AN APPROPRIATE CONTROL;
   B. WASTEWATER FROM WASHOUT AND CLEANING OF STUCCO, PAINT, PAINT, FORM RELEASE OILS, CURING COMPOUNDS, AND OTHER CONSTRUCTION MATERIALS;
   C. FUELS, OILS, OR OTHER POLLUTANTS USED IN VEHICLE AND EQUIPMENT OPERATIONS AND MAINTENANCE; AND
   D. SOAPS OR SOLVENTS USED IN VEHICLE AND EQUIPMENT WASHING.

17. AFTER CONSTRUCTION ACTIVITIES BEGIN, INSPECTION MUST BE CONDUCTED AT A MINIMUM OF AT LEAST ONCE EVERY CALENDAR WEEK AND MUST BE CONDUCTED UNTIL FINAL STABILIZATION IS ACHIEVED ON ALL AREAS OF THE CONSTRUCTION SITE.

18. IF EXISTING BMP'S NEED TO BE MODIFIED OR IF ADDITIONAL BMP'S ARE NECESSARY TO COMPLY WITH THE REQUIREMENTS OF THIS PERMIT AND/OR SC'S WATER QUALITY STANDARDS, IMPLEMENTATION MUST BE COMPLETED BEFORE THE NEXT STORM EVENT WHENEVER PRACTICABLE. IF IMPLEMENTATION BEFORE THE NEXT STORM EVENT IS IMPRACTICABLE, THE SITUATION MUST BE DOCUMENTED IN THE SWPPP AND ALTERNATIVE BMPS MUST BE IMPLEMENTED AS SOON AS REASONABLY POSSIBLE.

19. A PRE-CONSTRUCTION CONFERENCE MUST BE HELD FOR EACH CONSTRUCTION SITE AND SHALL INCLUDE REVIEW OF THE APPROVED ON-SITE SWPPP PRIOR TO THE IMPLEMENTATION OF CONSTRUCTION ACTIVITIES. FOR NON-LINEAR PROJECTS THAT DISTURB 10 ACRES OR MORE THIS CONFERENCE MUST BE HELD ON-SITE UNLESS THE DEPARTMENT HAS APPROVED OTHERWISE.

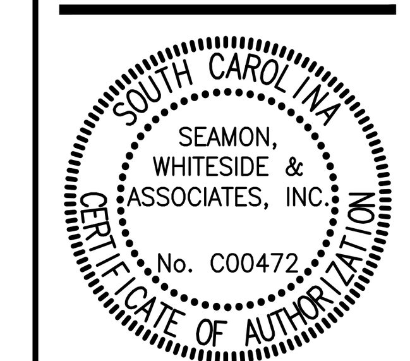
20. THE CONSTRUCTION EXIT SHALL BE MAINTAINED IN A CONDITION WHICH WILL PREVENT TRACKING OR FLOW OF MUD ONTO PAVED AREAS. ALL MATERIALS SPILLED, DROPPED, WASHED OR TRACKED FROM VEHICLES ONTO PAVED AREAS OR INTO STORM DRAINAGE SHALL BE REMOVED AS SOON AS REASONABLY POSSIBLE.

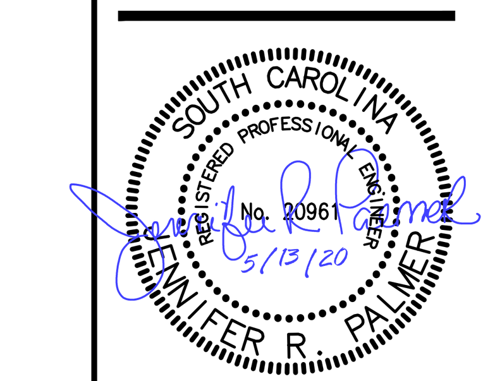
21. THE SILT FENCE SHALL BE KEPT ERECT AT ALL TIMES AND REPAIRED WHEN REQUESTED BY THE SITE INSPECTOR OR ENGINEER. SILT SHALL BE REMOVED WHEN ACCUMULATION REACHES 1/3 HEIGHT OF THE BARRIER. THE PERIMETER SILT FENCE SHALL BE INSPECTED REGULARLY ONCE EVERY WEEK AND WITHIN 24 HOURS OF A RAIN EVENT THAT PRODUCES 1 / 2" OR MORE OF PRECIPITATION.

22. SILT FENCE SHALL BE PLACED AT THE TOE OF OF ALL DIRT STOCK PILE AREAS (ON THE LOW SIDE WHERE SEDIMENT CAN BE WASHED AWAY).

23. THE CONTRACTOR SHALL MAINTAIN ALL PONDS, SEDIMENT BASINS, AND EROSION CONTROL MEASURES UNTIL PERMANENT GROUND COVER IS ESTABLISHED. SEDIMENT SHALL BE REMOVED FROM BASINS WHEN IT REACHES THE HALFWAY POINT ON THE RISER.

SEAMONWHITESIDE
MOUNT PLEASANT, SC
843.884.1667
GREENVILLE, SC
864.298.0534
SUMMERVILLE, SC
843.884.1667
WWW.SEAMONWHITESIDE.COM





HANAHAN AMPHITHEATER BOARDWALK

CITY OF HANAHAN

HANAHAN, SOUTH CAROLINA

SW+ PROJECT:	7957
DATE:	01/02/2019
DRAWN BY:	BET
CHECKED BY:	JRP

REVISION HISTORY

A	3/22/19	
0	5/14/20	

SWPPP NOTES

C2.1

PLOTTED: 5/13/2020 3:20 PM, BY Brian Titze N:\7957\CDWG\CD's\SWPPP DETAILS.dwg

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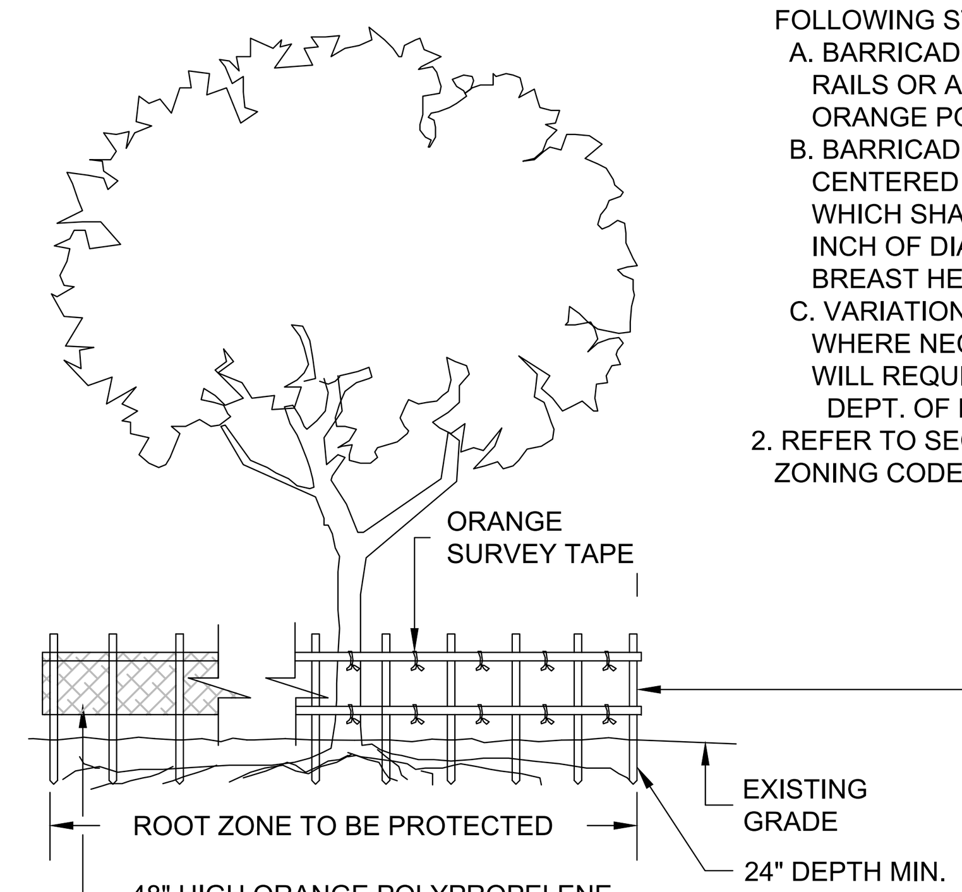
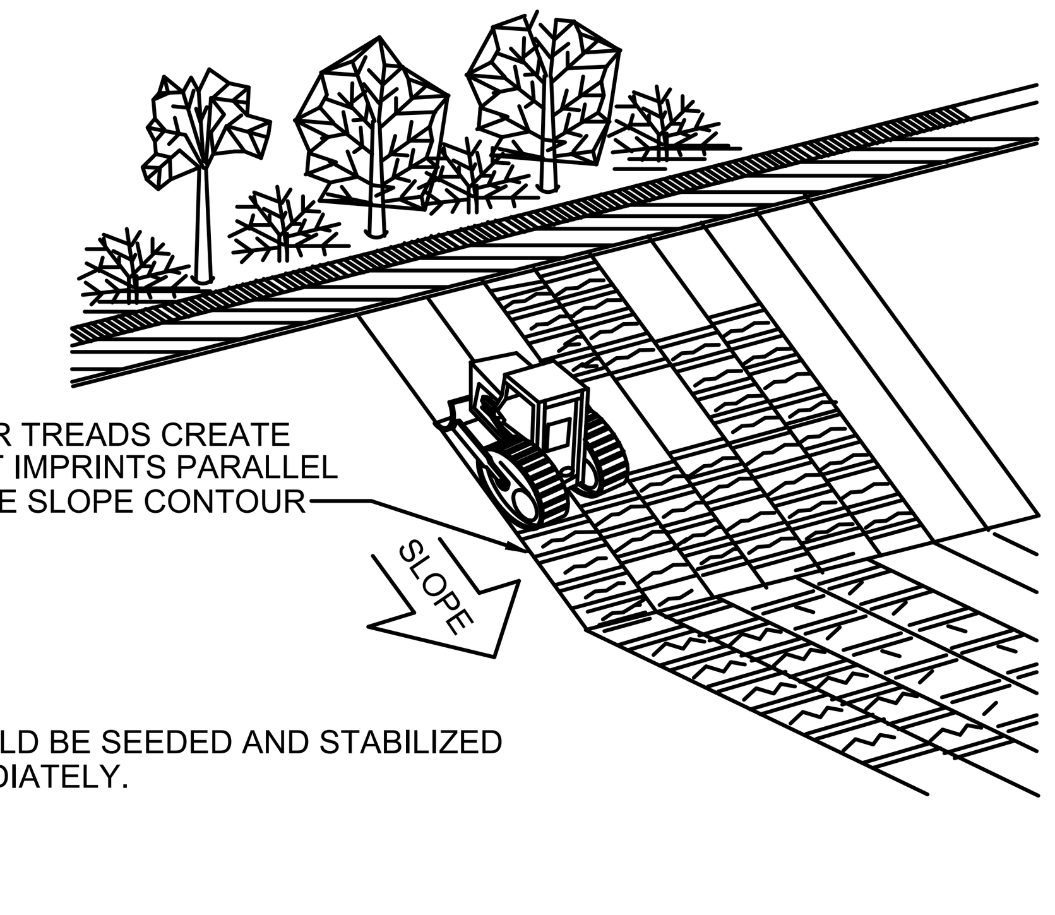
NOTES:
1. BARRICADES SHALL BE INSTALLED AROUND ALL TREES INDICATED ON THE PLANS ACCORDING TO THE FOLLOWING STANDARDS:
   A. BARRICADES SHALL HAVE EITHER TWO WOODEN RAILS OR A SINGLE WOODEN TOP RAIL WITH ORANGE POLY FENCING AS INDICATED.
   B. BARRICADES SHALL ENCLOSE A CIRCULAR AREA CENTERED ABOUT THE TREE, THE DIAMETER OF WHICH SHALL BE EQUAL TO ONE FOOT FOR EACH INCH OF DIAMETER OF THE TREE MEASURED AT BREAST HEIGHT (DBH).
   C. VARIATIONS FROM THE ABOVE STANDARDS, WHERE NECESSARY DUE TO SITE CONDITIONS, WILL REQUIRE APPROVAL OF BERKELEY COUNTY DEPT. OF PLANNING & DEVELOPMENT.
2. REFER TO SECTION 156.226 OF THE MT. PLEASANT ZONING CODE FOR ADDITIONAL INFORMATION.



1 TREE PROTECTION
(NOT TO SCALE)

PLAN SYMBOL
(SR)

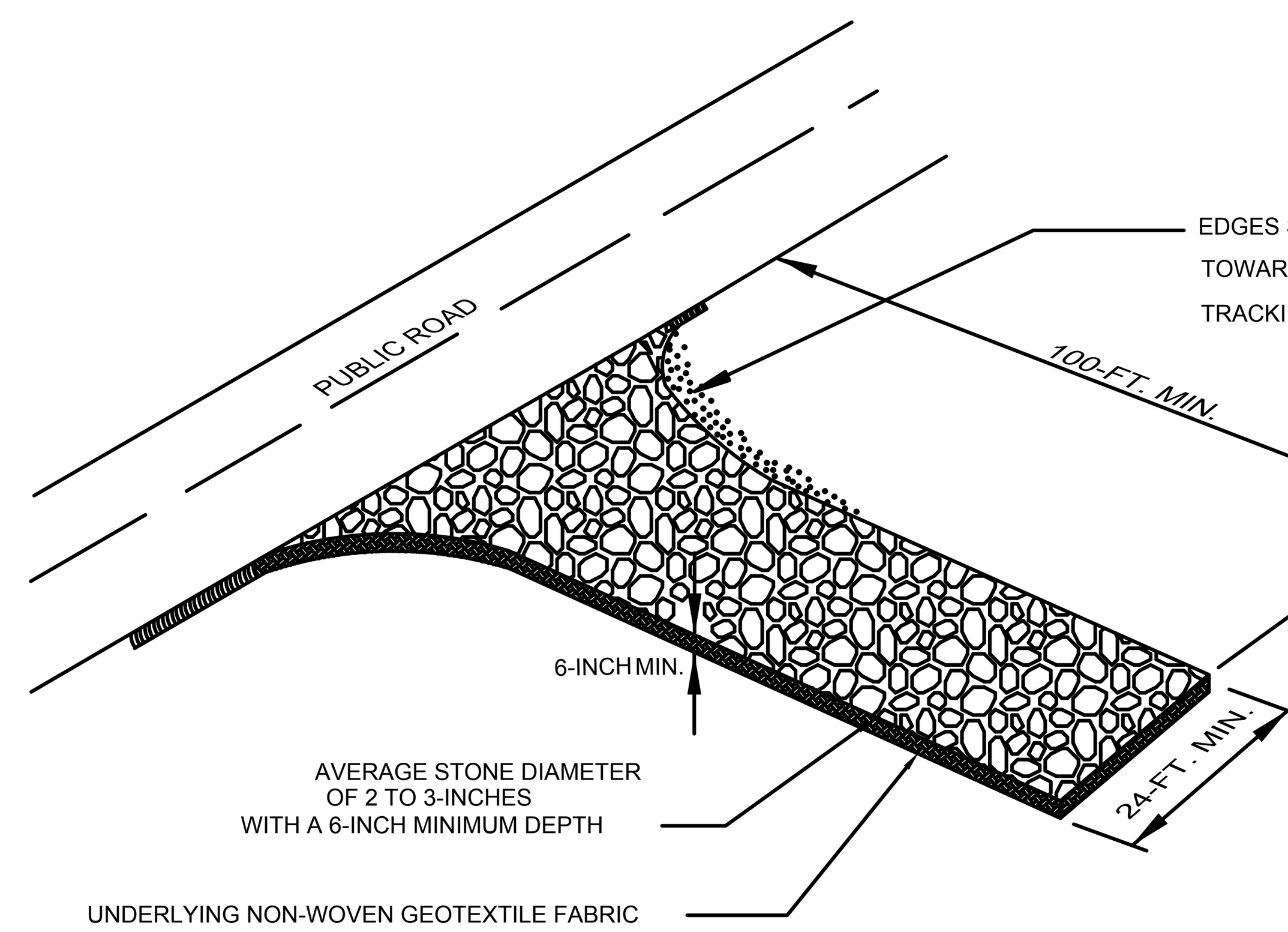


SHOULD BE SEEDED AND STABILIZED IMMEDIATELY.

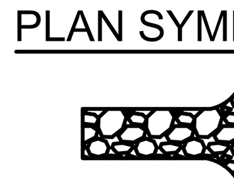
TRACKING

South Carolina Department of Health and Environmental Control
TRACKING
STANDARD DRAWING NO. EC-01
APPROVED BY: SCDHEC AUGUST, 2005 DATE

2



PLAN SYMBOL



SPECIFICATION	SIZE
ROCK PAD THICKNESS	6 INCHES
ROCK PAD WIDTH	24 FEET
ROCK PAD LENGTH	100 FEET
ROCK PAD STONE SIZE	D = 2-3 INCHES

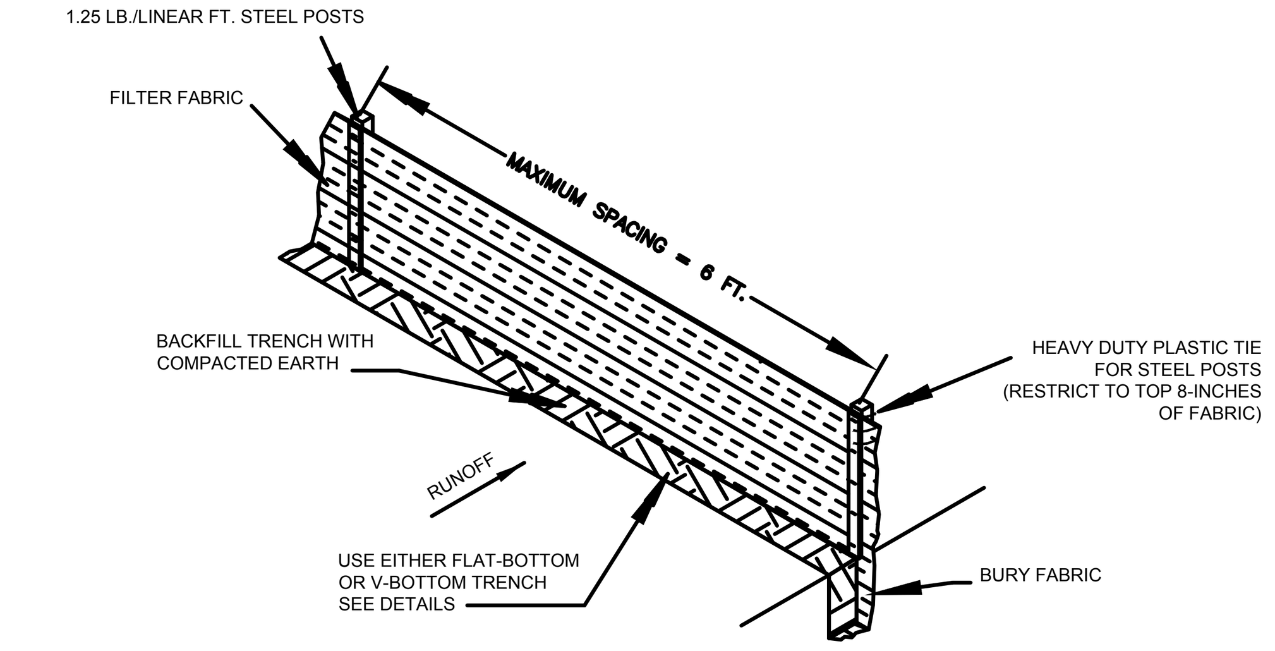
CONSTR. ENTRANCE - INSPECTION & MAINTENANCE
1. The key to functional construction entrances is weekly inspections, routine maintenance, and regular sediment removal.
2. Regular inspections of construction entrances shall be conducted once every calendar week and, as recommended, within 24-hours after each rainfall even that produces 1/2-inch or more of precipitation.
3. During regular inspections, check for mud and sediment buildup and pad integrity. Inspection frequencies may need to be more frequent during long periods of wet weather.
4. Reshape the stone pad as necessary for drainage and runoff control.
5. Wash or replace stones as needed and as directed by site inspector. The stone in the entrance should be washed or replaced whenever the entrance fails to reduce the amount of mud being carried off-site by vehicles. Frequent washing will extend the useful life of stone pad.
6. Immediately remove mud and sediment tracked or washed onto adjacent impervious surfaces by brushing or sweeping. Flushing should only be used when the water can be discharged to a sediment trap or basin.
7. During maintenance activities, any broken pavement should be repaired immediately.
8. Construction entrances should be removed after the site has reached final stabilization. Permanent vegetation should replace areas from which construction entrances have been removed, unless area will be converted to an impervious surface to serve post-construction.

CONSTRUCTION ENTRANCE - GENERAL NOTES
1. Stabilized construction entrances should be used at all points where traffic will egress/ingress a construction site onto a public road or any impervious surfaces, such as parking lots.
2. Install a non-woven geotextile fabric prior to placing any stone.
3. Install a culvert pipe across the entrance when needed to provide positive drainage.
4. The entrance shall consist of 2-inch to 3-inch D50 stone placed at a minimum depth of 6-inches.
5. Minimum dimensions of the entrance shall be 24-feet wide by 100-feet long, and may be modified as necessary to accommodate site constraints.
6. The edges of the entrance shall be tapered out towards the road to prevent tracking at the edge of the entrance.
7. Divert all surface runoff and drainage from the stone pad to a sediment trap or basin or other sediment trapping structure.
8. Limestone may not be used for the stone pad.

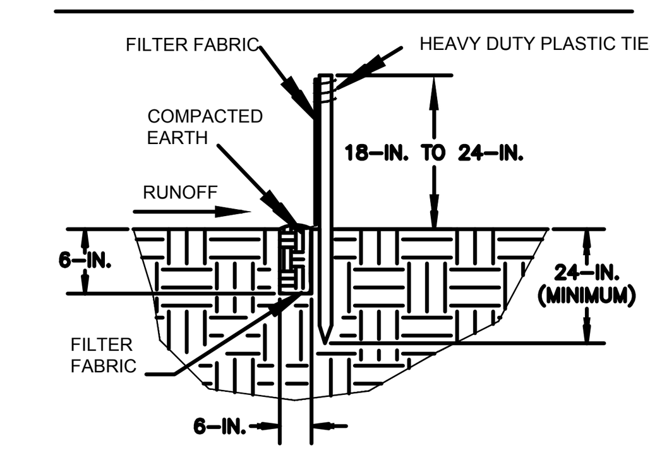
South Carolina Department of Health and Environmental Control
CONSTRUCTION ENTRANCE
STANDARD DRAWING NO. SC-06
NOT TO SCALE FEBRUARY 2014 DATE

3

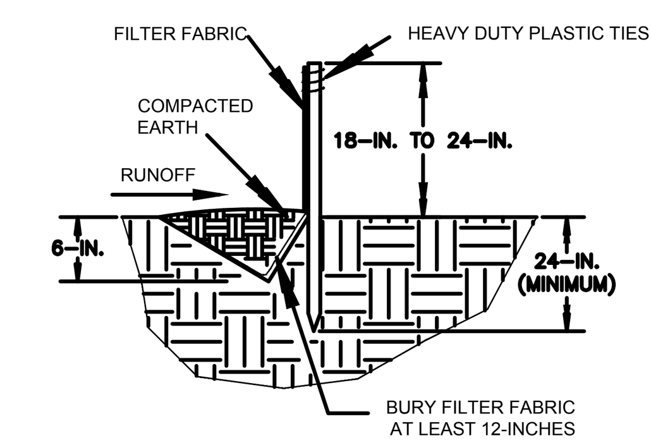
SILT FENCE INSTALLATION



FLAT-BOTTOM TRENCH DETAIL



V-SHAPED TRENCH DETAIL



SILT FENCE - GENERAL NOTES

1. Do not place silt fence across channels or in other areas subject to concentrated flows. Silt fence should not be used as a velocity control BMP. Concentrated flows are any flows greater than 0.5 cfs.
2. Maximum sheet or overland flow path length to the silt fence shall be 100-feet.
3. Maximum slope steepness (normal [perpendicular] to the fence line) shall be 2:1.
4. Silt fence joints, when necessary, shall be completed by one of the following options:
- Wrap each fabric together at a support post with both ends fastened to the post, with a 1-foot minimum overlap;
- Overlap silt fence by installing 3-feet passed the support post to which the new silt fence roll is attached. Attach old roll to new roll with heavy-duty plastic ties; or,
- Overlap entire width of each silt fence roll from one support post to the next support post.
5. Attach filter fabric to the steel posts using heavy-duty plastic ties that are evenly spaced within the top 8-inches of the fabric.
6. Install the silt fence perpendicular to the direction of the stormwater flow and place the silt fence the proper distance from the toe of steep slopes to provide sediment storage and access for maintenance and cleanout.
7. Install Silt Fence Checks (Tie-Backs) every 50-100 feet, dependent on slope, along silt fence that is installed with slope and where concentrated flows are expected or are documented along the proposed/installed silt fence.

SILT FENCE - POST REQUIREMENTS
1. Silt Fence posts must be 48-inch long steel posts that meet, at a minimum, the following physical characteristics.
- Composed of a high strength steel with a minimum yield strength of 50,000 psi.
- Include a standard "T" section with a nominal face width of 1.38-inches and a nominal "T" length of 1.48-inches.
- Weigh 1.25 pounds per foot (± 8%)
2. Posts shall be equipped with projections to aid in fastening of filter fabric.
3. Steel posts may need to have a metal soil stabilization plate welded near the bottom when installed along steep slopes or installed in loose soils. The plate should have a minimum cross section of 17-square inches and be composed of 15 gauge steel, at a minimum. The metal soil stabilization plate should be completely buried.
4. Install posts to a minimum of 24-inches. A minimum height of 1- to 2- inches above the fabric shall be maintained, and a maximum height of 3 feet shall be maintained above the ground.
5. Post spacing shall be at a maximum of 6-feet on center.

SILT FENCE - FABRIC REQUIREMENTS
1. Silt fence must be composed of woven geotextile filter fabric that consists of the following requirements:
- Composed of fibers consisting of long chain synthetic polymers of at least 85% by weight of polyolefins, polyesters, or polyamides that are formed into a network such that the filaments or yarns retain dimensional stability relative to each other;
- Free of any treatment or coating which might adversely alter its physical properties after installation;
- Free of any defects or flaws that significantly affect its physical and/or filtering properties; and,
- Have a minimum width of 36-inches.
2. Use only fabric appearing on SC DOT's Qualified Products Listing (QPL), Approval Sheet #34, meeting the requirements of the most current edition of the SC DOT Standard Specifications for Highway Construction.
3. 12-inches of the fabric should be placed within excavated trench and toed in when the trench is backfilled.
4. Filter Fabric shall be purchased in continuous rolls and cut to the length of the barrier to avoid joints.
5. Filter Fabric shall be installed at a minimum of 24-inches above the ground.

SILT FENCE - INSPECTION & MAINTENANCE
1. The key to functional silt fence is weekly inspections, routine maintenance, and regular sediment removal.
2. Regular inspections of silt fence shall be conducted once every calendar week and, as recommended, within 24-hours after each rainfall even that produces 1/2-inch or more of precipitation.
3. Attention to sediment accumulations along the silt fence is extremely important. Accumulated sediment should be continually monitored and removed when necessary.
4. Remove accumulated sediment when it reaches 1/3 the height of the silt fence.
5. Removed sediment shall be placed in stockpile storage areas or spread thinly across disturbed area. Stabilize the removed sediment after it is relocated.
6. Check for areas where stormwater runoff has eroded a channel beneath the silt fence, or where the fence has sagged or collapsed due to runoff overtopping the silt fence. Install checks/tie-backs and/or reinstall silt fence, as necessary.
7. Check for tears within the silt fence, areas where silt fence has begun to decompose, and for any other circumstance that may render the silt fence ineffective. Removed damaged silt fence and reinstall new silt fence immediately.
8. Silt fence should be removed within 30 days after final stabilization is achieved and once it is removed, the resulting disturbed area shall be permanently stabilized.

South Carolina Department of Health and Environmental Control
SILT FENCE
STANDARD DRAWING NO. SC-03
NOT TO SCALE FEBRUARY 2014 DATE

4

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MOUNT PLEASANT, SC
843.884.1667
GREENVILLE, SC
864.298.0534
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SOUTH CAROLINA REGISTERED PROFESSIONAL ENGINEER No. 20961 JENNIFER R. PALMER

[illegible]
5/13/20

HANAHAN AMPHITHEATER BOARDWALK

CITY OF HANAHAN
HANAHAN, SOUTH CAROLINA

SW+ PROJECT:	7957
DATE:	01/02/2019
DRAWN BY:	BET
CHECKED BY:	JRP

REVISION HISTORY

A	3/22/19	
0	5/14/20	

SWPPP DETAILS

C2.2

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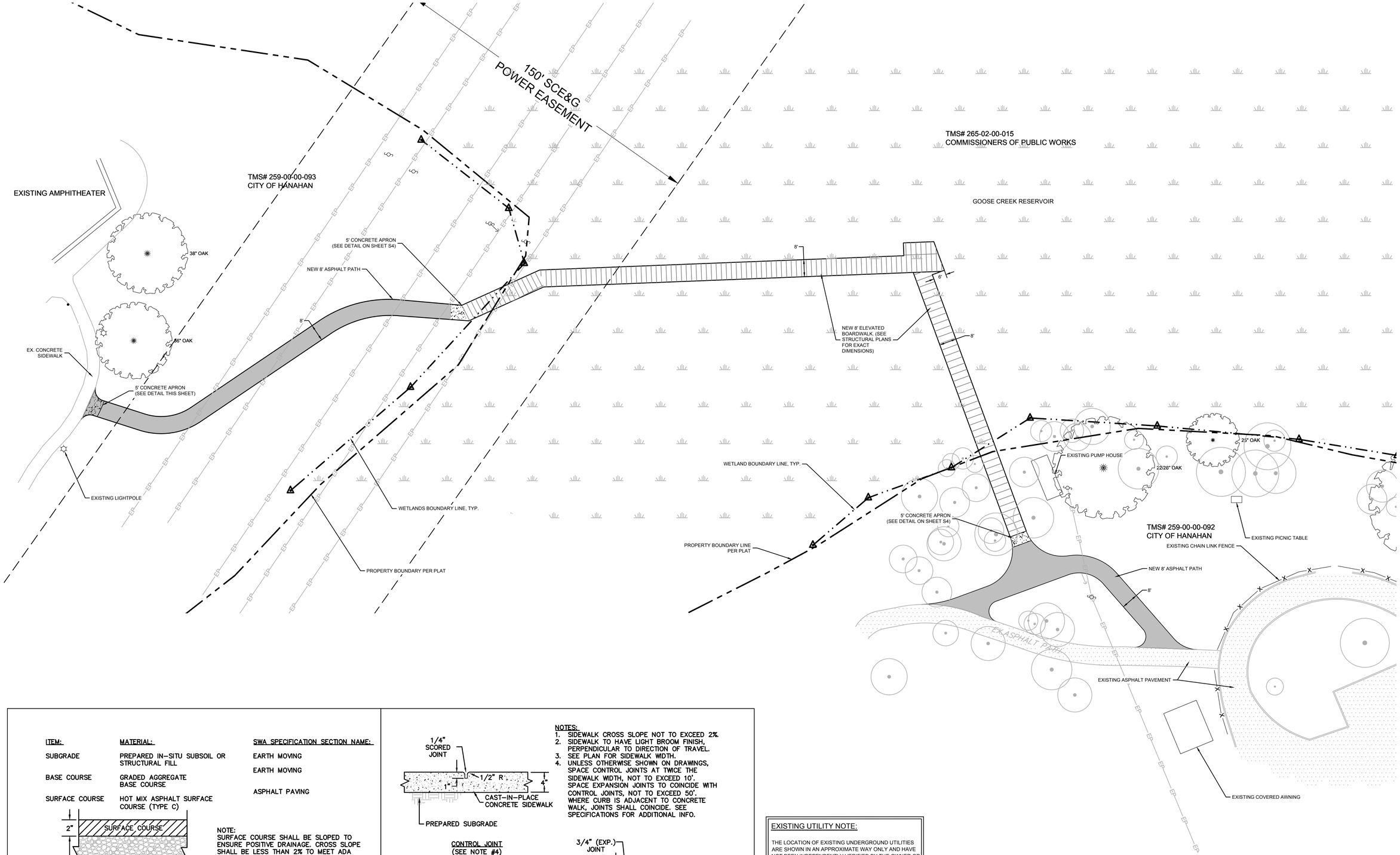
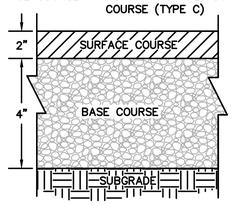


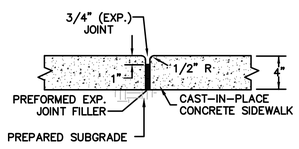
ITEM:	MATERIAL:	SWA SPECIFICATION SECTION NAME:
SUBGRADE	PREPARED IN-SITU SUBSOIL OR STRUCTURAL FILL	EARTH MOVING
BASE COURSE	GRADED AGGREGATE BASE COURSE	EARTH MOVING
SURFACE COURSE	HOT MIX ASPHALT SURFACE COURSE (TYPE C)	ASPHALT PAVING



NOTE:
SURFACE COURSE SHALL BE SLOPED TO ENSURE POSITIVE DRAINAGE. CROSS SLOPE SHALL BE LESS THAN 2% TO MEET ADA REQUIREMENTS.

ASPHALT PATH PAVING SECTION
(NOT TO SCALE)

CONTROL JOINT
(SEE NOTE #4)



EXPANSION JOINT
(SEE NOTE #4)

NOTES:
1. SIDEWALK CROSS SLOPE NOT TO EXCEED 2%.
2. SIDEWALK TO HAVE LIGHT BROOM FINISH, PERPENDICULAR TO DIRECTION OF TRAVEL.
3. SEE PLAN FOR SIDEWALK WIDTH.
4. UNLESS OTHERWISE SHOWN ON DRAWINGS, SPACE CONTROL JOINTS AT TWICE THE SIDEWALK WIDTH, NOT TO EXCEED 10'. SPACE EXPANSION JOINTS TO COINCIDE WITH CONTROL JOINTS, NOT TO EXCEED 50'. WHERE CURB IS ADJACENT TO CONCRETE WALK, JOINTS SHALL COINCIDE. SEE SPECIFICATIONS FOR ADDITIONAL INFO.

CONCRETE SIDEWALK APRON
(NOT TO SCALE)

EXISTING UTILITY NOTE:

THE LOCATION OF EXISTING UNDERGROUND UTILITIES ARE SHOWN IN AN APPROXIMATE WAY ONLY AND HAVE NOT BEEN INDEPENDENTLY VERIFIED BY THE OWNER OR ITS REPRESENTATIVE. THE CONTRACTOR SHALL DETERMINE THE EXACT LOCATION OF ALL EXISTING UTILITIES BEFORE COMMENCING ANY WORK, AND AGREES TO BE FULLY RESPONSIBLE FOR ANY AND ALL DAMAGES WHICH MIGHT OCCUR DUE TO THE CONTRACTOR'S FAILURE TO EXACTLY LOCATE AND PRESERVE ANY AND ALL UNDERGROUND UTILITIES.

NOTES:
1. SEE SHEET C1.1 FOR LEGEND
2. SEE SHEET C4.0 FOR GRADING
3. SEE STRUCTURAL PLANS FOR BOARDWALK

811 Know what's below. Call before you dig.

0 10 20 40
SCALE: 1" = 20'

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843.884.1667
WWW.SEAMONWHITESIDE.COM

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No. C00472
CERTIFICATE OF AUTHORIZATION

SOUTH CAROLINA
PROFESSIONAL ENGINEER
No. 29961
JENNIFER R. PALMER
5/13/20

HANAHAN AMPHITHEATER BOARDWALK
CITY OF HANAHAN
HANAHAN, SOUTH CAROLINA

SW+ PROJECT:	7957
DATE:	01/02/2019
DRAWN BY:	BET
CHECKED BY:	JRP

REVISION HISTORY

A	3/22/19	
B	9/3/19	
0	5/14/20	

SITE PLAN

C3.0

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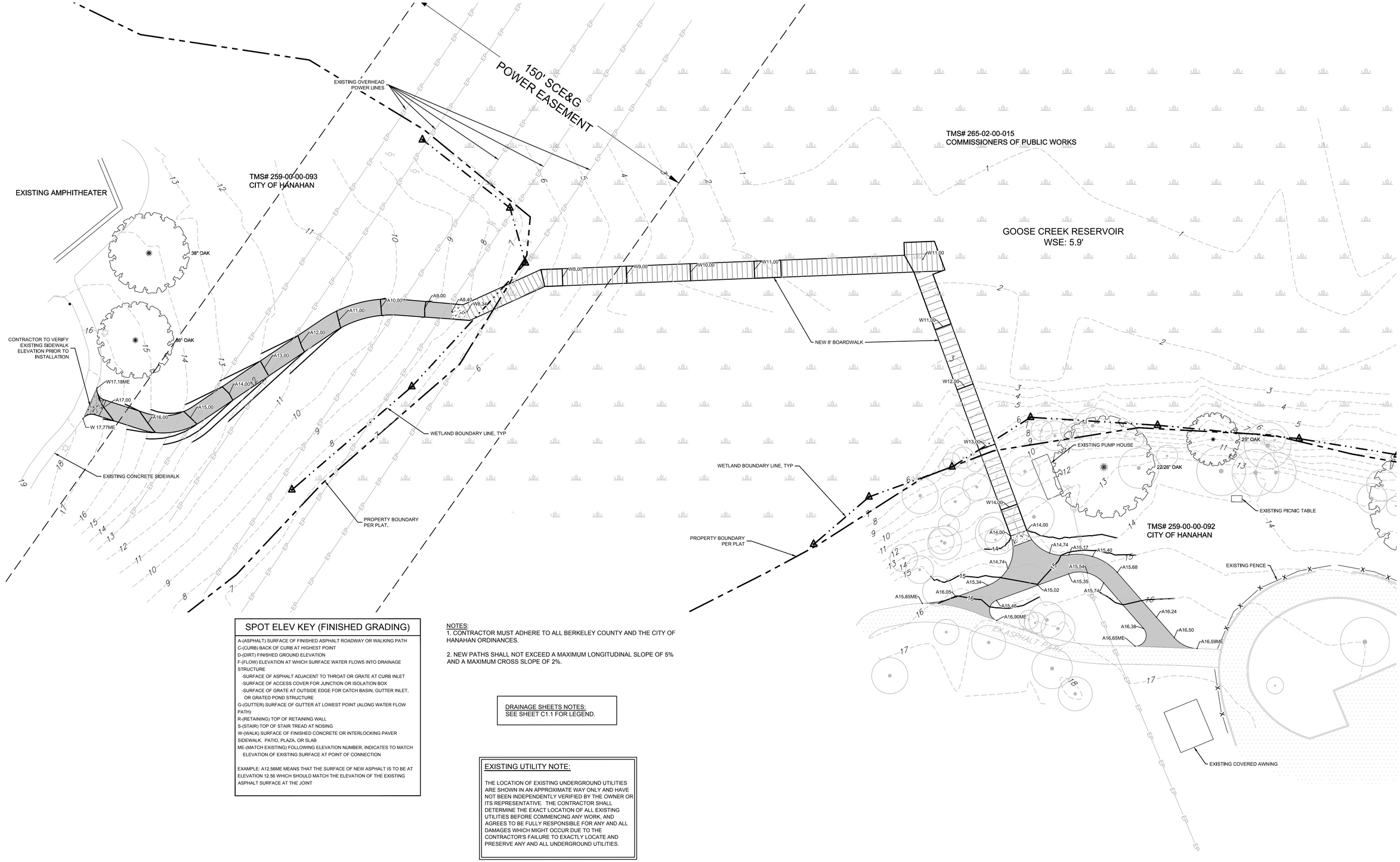

SPOT ELEV KEY (FINISHED GRADING)

A-(ASPHALT) SURFACE OF FINISHED ASPHALT ROADWAY OR WALKING PATH
C-(CURB) BACK OF CURB AT HIGHEST POINT
D-(DIRT) FINISHED GROUND ELEVATION
F-(FLOW) ELEVATION AT WHICH SURFACE WATER FLOWS INTO DRAINAGE STRUCTURE
-SURFACE OF ASPHALT ADJACENT TO THROAT OR GRATE AT CURB INLET
-SURFACE OF ACCESS COVER FOR JUNCTION OR ISOLATION BOX
-SURFACE OF GRATE AT OUTSIDE EDGE FOR CATCH BASIN, GUTTER INLET, OR GRATED POND STRUCTURE
G-(GUTTER) SURFACE OF GUTTER AT LOWEST POINT (ALONG WATER FLOW PATH)
R-(RETAINING) TOP OF RETAINING WALL
S-(STAIR) TOP OF STAIR TREAD AT NOSING
W-(WALK) SURFACE OF FINISHED CONCRETE OR INTERLOCKING PAVER SIDEWALK, PATIO, PLAZA, OR SLAB
ME-(MATCH EXISTING) FOLLOWING ELEVATION NUMBER, INDICATES TO MATCH ELEVATION OF EXISTING SURFACE AT POINT OF CONNECTION

EXAMPLE: A12.56ME MEANS THAT THE SURFACE OF NEW ASPHALT IS TO BE AT ELEVATION 12.56 WHICH SHOULD MATCH THE ELEVATION OF THE EXISTING ASPHALT SURFACE AT THE JOINT

NOTES:
1. CONTRACTOR MUST ADHERE TO ALL BERKELEY COUNTY AND THE CITY OF HANAHAN ORDINANCES.

2. NEW PATHS SHALL NOT EXCEED A MAXIMUM LONGITUDINAL SLOPE OF 5% AND A MAXIMUM CROSS SLOPE OF 2%.

DRAINAGE SHEETS NOTES:
SEE SHEET C1.1 FOR LEGEND.

EXISTING UTILITY NOTE:

THE LOCATION OF EXISTING UNDERGROUND UTILITIES ARE SHOWN IN AN APPROXIMATE WAY ONLY AND HAVE NOT BEEN INDEPENDENTLY VERIFIED BY THE OWNER OR ITS REPRESENTATIVE. THE CONTRACTOR SHALL DETERMINE THE EXACT LOCATION OF ALL EXISTING UTILITIES BEFORE COMMENCING ANY WORK, AND AGREES TO BE FULLY RESPONSIBLE FOR ANY AND ALL DAMAGES WHICH MIGHT OCCUR DUE TO THE CONTRACTOR'S FAILURE TO EXACTLY LOCATE AND PRESERVE ANY AND ALL UNDERGROUND UTILITIES.

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SCALE: 1" = 20'

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No. C00472

SOUTH CAROLINA PROFESSIONAL ENGINEER
No. 29617
5/13/20
JENNIFER R. PALMER

HANAHAN AMPHITHEATER BOARDWALK

CITY OF HANAHAN
HANAHAN, SOUTH CAROLINA

SW+ PROJECT:	7957
DATE:	01/02/2019
DRAWN BY:	BET
CHECKED BY:	JRP

REVISION HISTORY

A	3/22/19	
B	9/3/19	
0	5/14/20	

GRADING PLAN

C4.0

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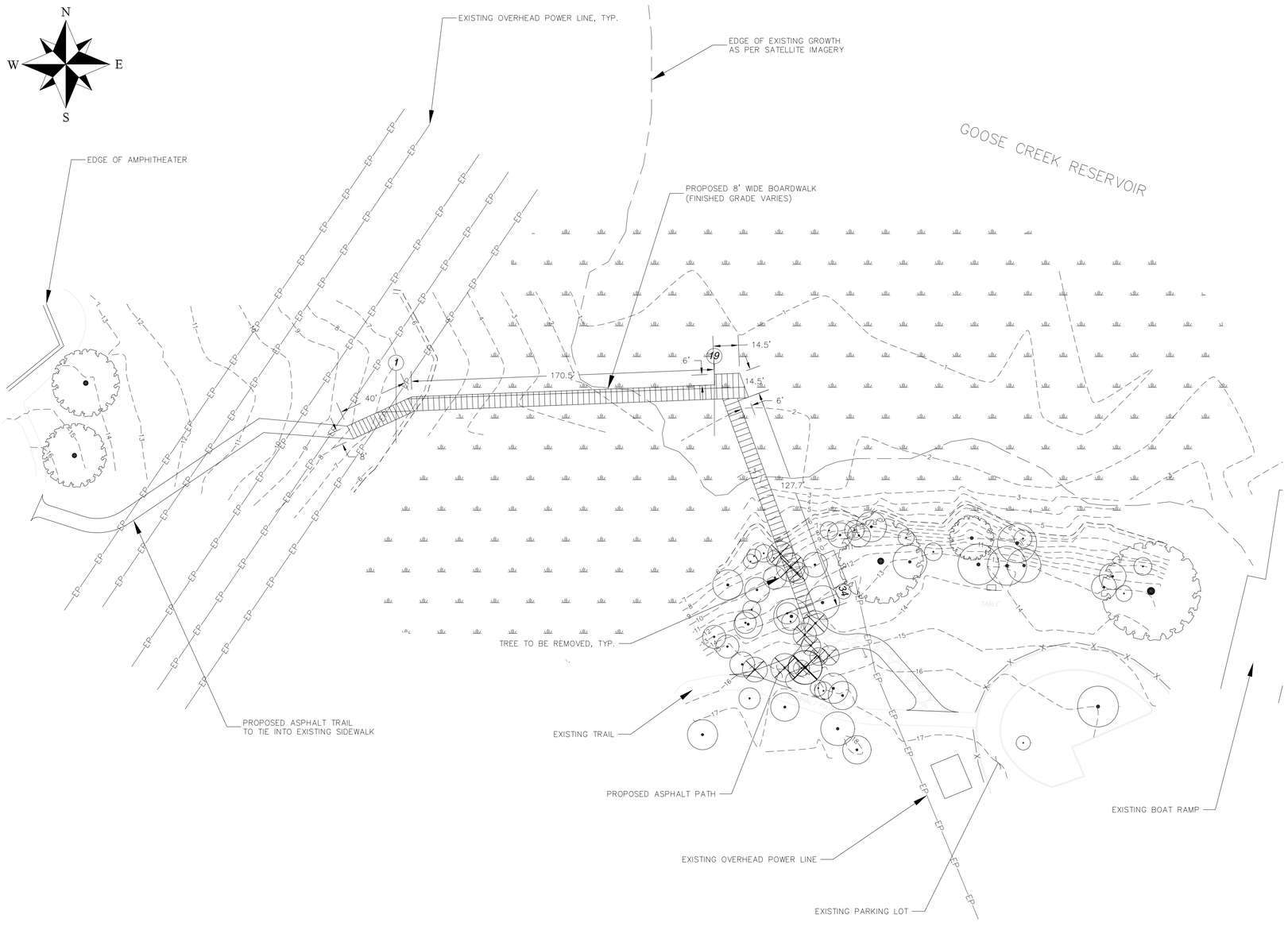

HANAHAN BOARDWALK
SITE PLAN
SCALE: 1/32" = 1'

GENERAL NOTES:

1. ELEVATIONS IF SHOWN ARE BASED ON NAVD 88.
2. ALL EXISTING DIMENSIONS, ELEVATIONS AND CONDITIONS RELATING TO THE WORK SHALL BE FIELD VERIFIED BY THE CONTRACTOR. ALL DISCREPANCIES SHALL BE BROUGHT TO THE ATTENTION OF THE ENGINEER BEFORE ORDERING MATERIALS AND STARTING THE WORK.
3. CONTRACTOR SHALL MAINTAIN ADEQUATE SURVEY CONTROL AT ALL TIMES TO ESTABLISH AND MAINTAIN ALL LINES AND ELEVATIONS.
4. IT IS THE CONTRACTOR'S RESPONSIBILITY TO DETERMINE ERECTION PROCEDURES AND SEQUENCE TO ENSURE THE SAFETY OF THE FACILITY. THE CONTRACTOR IS RESPONSIBLE TO ERECT, MAINTAIN AND REMOVE TEMPORARY SHORING TO COMPLETE THE WORK. ALL PROPOSED STAGING AREAS SHALL BE COORDINATED WITH THE OWNER BEFORE STARTING THE WORK.
5. THE CONTRACTOR IS RESPONSIBLE FOR ALL DAMAGE DONE TO STRUCTURES, UTILITIES, AND VESSELS OR INJURIES TO THE PUBLIC DURING THE PERFORMANCE OF THE WORK. ANY DAMAGE CAUSED DURING CONSTRUCTION OPERATIONS SHALL BE REPAIRED AT NO ADDITIONAL COST TO THE OWNER.
6. CONTRACTOR SHALL PROVIDE CONTROL MEASURES AS NECESSARY FOR PREVENTING DEBRIS FROM ENTERING THE WATER.

HARDWARE NOTES:

1. ALL GALVANIZED BOLTS, NUTS, AND WASHERS SHALL BE HOT DIPPED GALVANIZED PER ASTM-153 WITH 20 OUNCES OF ZINC PER SQUARE FOOT.
2. ALL BOLTS HALL BE EQUIPPED WITH WASHERS, LOCK WASHERS, AND NUTS.
3. ALL WOOD SCREWS SHALL BE 316 STAINLESS STEEL.
4. ALL NAILS (IF USED) SHALL BE STAINLESS STEEL RING SHANK.
5. SET SCREW HEAD FLUSH WITH MEMBER TO BE CONNECTED AND DO NOT ALLOW TIP OR THREADS TO PROTRUDE.
6. ROUND OVER (EASE EDGE) ALL HANDRAIL COMPONENTS.

TIMBER FRAMING NOTES:

1. TIMBER GRADE SHALL AS INDICATED ON THE TIMBER AND FASTENER SCHEDULE AS INDICATED ON THESE PLANS AND SHALL BE PRESSURE TREATED IN ACCORDANCE WITH THE AMERICAN WOOD PRESERVERS ASSOCIATION (AWPA) AND SHALL BEAR A STAMP INDICATING QUALITY AND TREATMENT.
2. ALL TIMBER MATERIALS SHALL BE NEW UNLESS SPECIFICALLY PROVIDED OTHERWISE IN THE CONTRACT DOCUMENTS.
3. CUT JOINTS ACCURATELY TO MAKE A NEAT, SNUG FIT. TOLERANCE SHALL BE 1/16".
4. REMOVE ANY STAINING FROM SOIL, OIL, OR GREASE.
5. TIMBERS WITH A MODERATE BOW ARE PERMITTED WHERE THEIR INTENDED USE WILL STRAIGHTEN THEM. DO NOT USE SEVERELY BOWED TIMBERS OR TIMBERS BOWED IN MORE THAN ONE DIRECTION.
6. TIMBER CONSTRUCTION SHALL CONFORM TO NATIONAL DESIGN STANDARD FOR WOOD CONSTRUCTION, CURRENT EDITION.
7. ALL CUTS, HOLES, AND DAMAGE TO THE SURFACE OF TREATED WOOD SHALL BE FIELD TREATED WITH COPPER NAPTHALATE (OR EQUAL).

TIMBER PILE NOTES:

1. PILES SHALL BE PRESSURE TREATED PER AWPA RECOMMENDATIONS. TREATMENT LEVEL AS INDICATED ON THESE PLANS.
2. DRIVE PILES THE FULL LENGTH. JETTING SHALL NOT BE PERMITTED.
3. PILES SHALL BE INSTALLED TRUE AND PLUMB TO THE EMBEDMENT DEPTH AS SPECIFIED ON THESE DRAWINGS.

SEAMONWHITESIDE
MOUNT PLEASANT, SC
843.884.1667
GREENVILLE, SC
864.298.0534
SUMMERVILLE, SC
843.884.1667
WWW.SEAMONWHITESIDE.COM

McSweeney Engineers
495C MEETING STREET
CHARLESTON, SC 29403
(843) 974-5621
www.McSweeneyEngineers.com

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McSWEENEY ENGINEERS No. 5140
CERTIFICATE OF AUTHORIZATION

SOUTH CAROLINA
REGISTERED
No. 25057
2/5/20
WILLIAM D. McSWEENEY

HANAHAN BOARDWALK
BETTIS BOAT LANDING ROAD
BERKELEY COUNTY, SOUTH CAROLINA

SW+ PROJECT:	7552
DATE:	02/05/2020
DRAWN BY:	JTP
CHECKED BY:	DBM

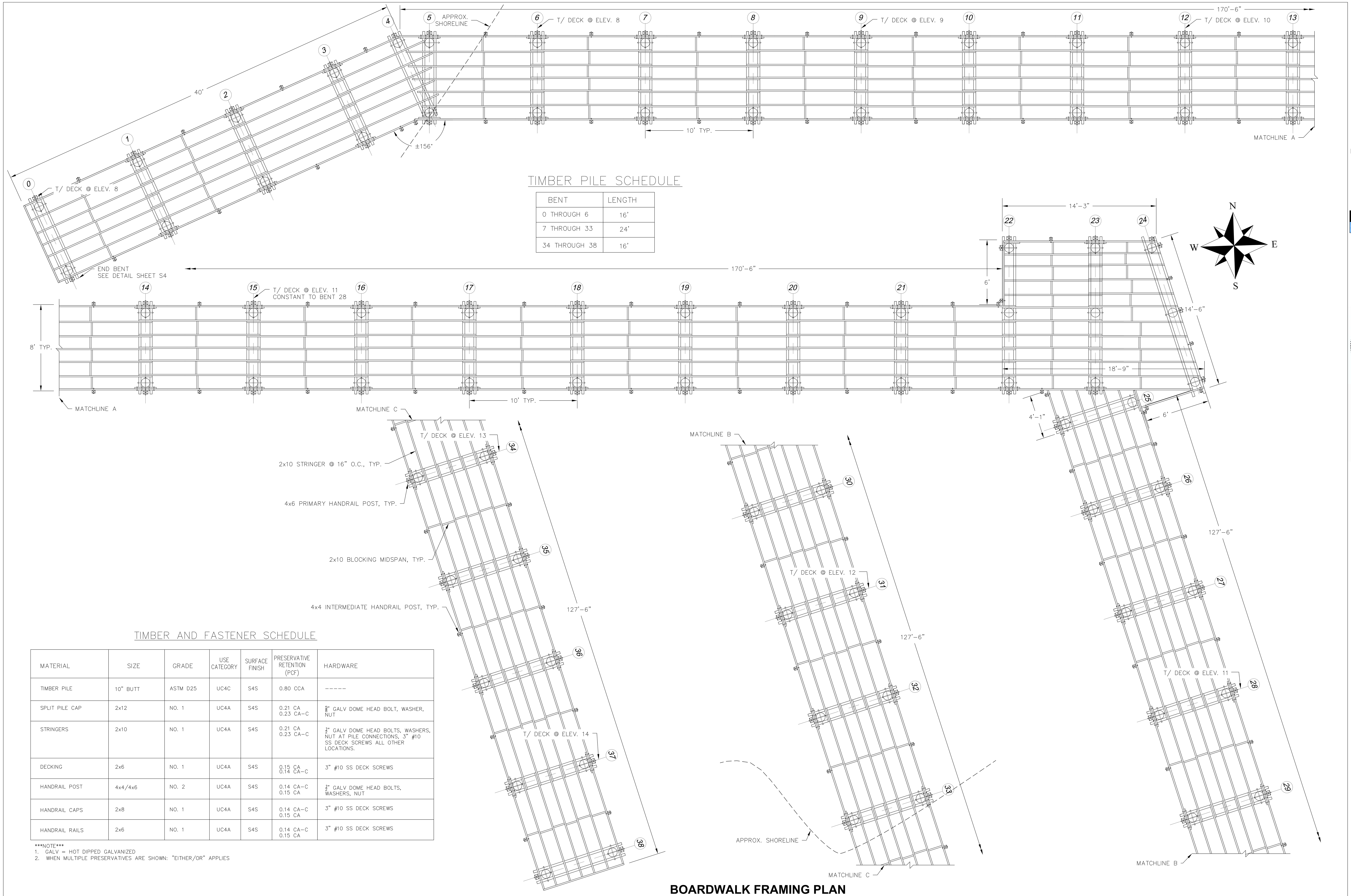
REVISION HISTORY

0 5/14/20	

PROPOSED SITE PLAN

S1

PLOTTED: 2/14/2020 9:16 AM, BY Bill Y:\2018\Hanahan Boardwalk\Design\Hanahan Boardwalk Design - Path Adjustment Revised.dwg



TIMBER PILE SCHEDULE

BENT	LENGTH
0 THROUGH 6	16'
7 THROUGH 33	24'
34 THROUGH 38	16'

TIMBER AND FASTENER SCHEDULE

MATERIAL	SIZE	GRADE	USE CATEGORY	SURFACE FINISH	PRESERVATIVE RETENTION (PCF)	HARDWARE
TIMBER PILE	10" BUTT	ASTM D25	UC4C	S4S	0.80 CCA	-----
SPLIT PILE CAP	2x12	NO. 1	UC4A	S4S	0.21 CA 0.23 CA-C	5/8" GALV DOME HEAD BOLT, WASHER, NUT
STRINGERS	2x10	NO. 1	UC4A	S4S	0.21 CA 0.23 CA-C	1/2" GALV DOME HEAD BOLTS, WASHERS, NUT AT PILE CONNECTIONS, 3" #10 SS DECK SCREWS ALL OTHER LOCATIONS.
DECKING	2x6	NO. 1	UC4A	S4S	0.15 CA 0.14 CA-C	3" #10 SS DECK SCREWS
HANDRAIL POST	4x4/4x6	NO. 2	UC4A	S4S	0.14 CA-C 0.15 CA	1/2" GALV DOME HEAD BOLTS, WASHERS, NUT
HANDRAIL CAPS	2x8	NO. 1	UC4A	S4S	0.14 CA-C 0.15 CA	3" #10 SS DECK SCREWS
HANDRAIL RAILS	2x6	NO. 1	UC4A	S4S	0.14 CA-C 0.15 CA	3" #10 SS DECK SCREWS

NOTE
1. GALV = HOT DIPPED GALVANIZED
2. WHEN MULTIPLE PRESERVATIVES ARE SHOWN: "EITHER/OR" APPLIES

BOARDWALK FRAMING PLAN

SCALE: 1/4" = 1'

SEAMONWHITESIDE
MOUNT PLEASANT, SC
843.884.1667
GREENVILLE, SC
864.298.0534
SUMMERVILLE, SC
843.884.1667
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495C MEETING STREET
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SOUTH CAROLINA CERTIFICATE OF AUTHORIZATION McSWEENEY ENGINEERS No. 5140

SOUTH CAROLINA LICENSED PROFESSIONAL ENGINEER No. 25057 WILLIAM D. BARNA 2/5/20

HANAHAN BOARDWALK

BETTIS BOAT LANDING ROAD

BERKELEY COUNTY, SOUTH CAROLINA

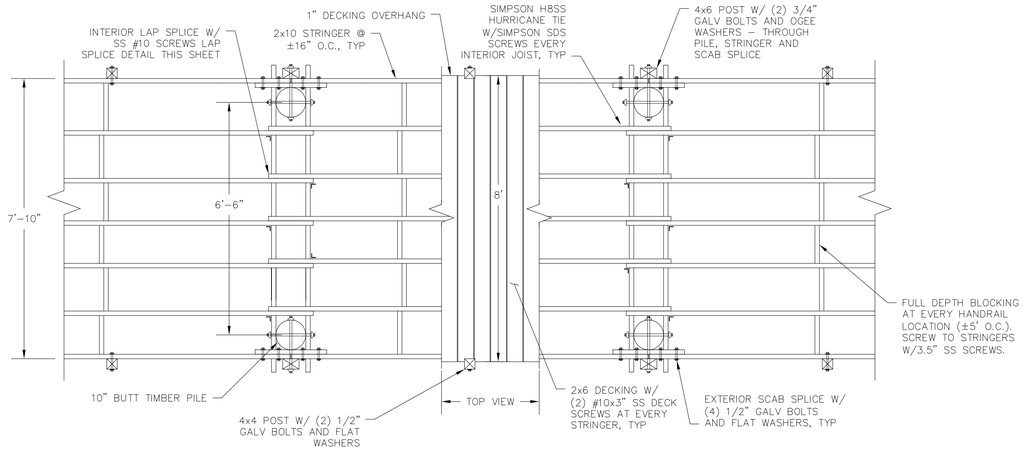
SW+ PROJECT: 7552
DATE: 02/05/2020
DRAWN BY: JTP
CHECKED BY: DBM

REVISION HISTORY

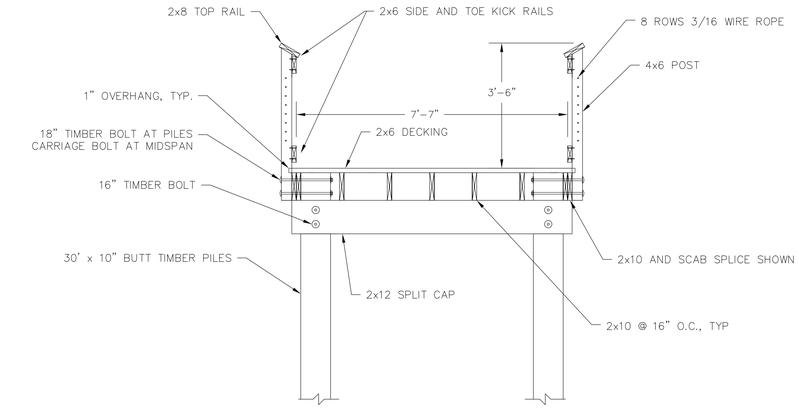
0 5/14/20

PIER FRAMING PLAN

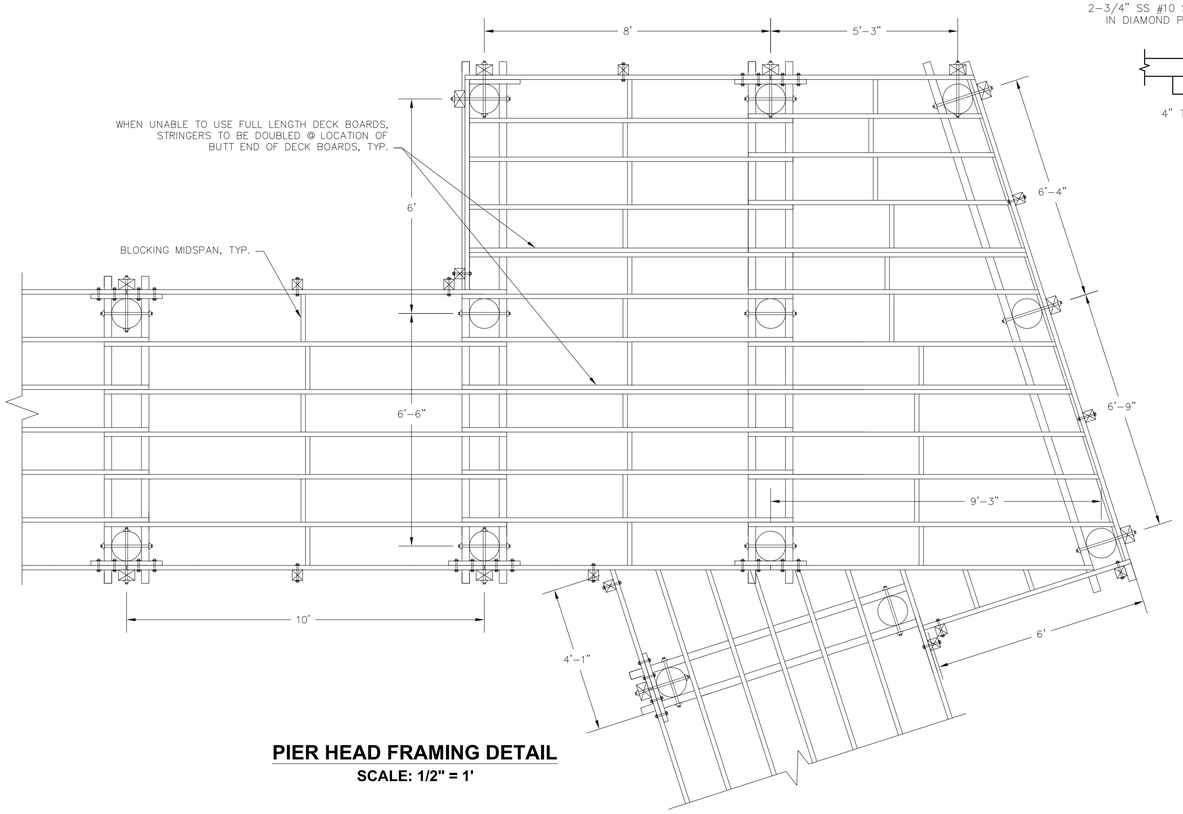
S2



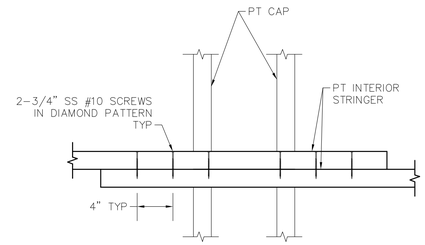
TYPICAL FRAMING DETAIL
SCALE: 1/2" = 1'



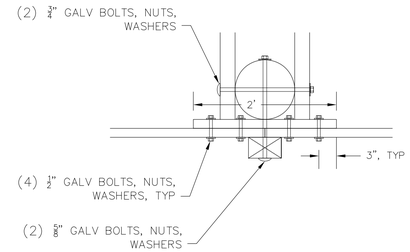
TYPICAL PIER CROSS SECTION
SCALE: 1/2" = 1'



PIER HEAD FRAMING DETAIL
SCALE: 1/2" = 1'



LAP SPLICE DETAIL
SCALE: 2" = 1'



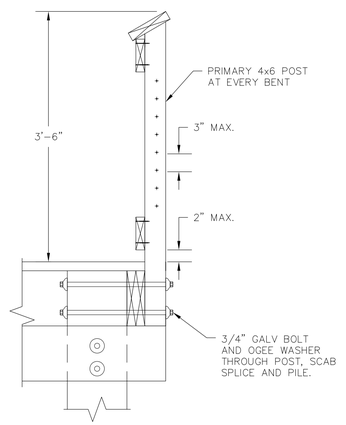
TYPICAL EXTERIOR SCAB SPLICE DETAIL
SCALE: 1" = 1'

NOTE
ALL TIMBER HANDRAIL COMPONENTS SHALL BE KILN DRIED AFTER TREATMENT.

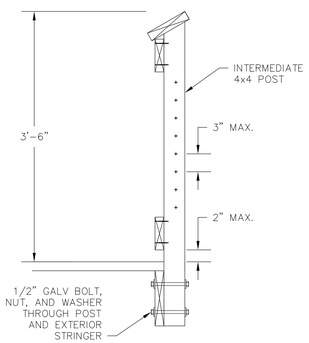
ALL HANDRAIL CONNECTION HARDWARE TO STAINLESS STEEL.

ALL SCREW HEADS TO BE SET FLUSH.

ROUND OVER AND SMOOTH ALL HANDRAIL COMPONENTS.



PRIMARY HANDRAIL POST
SCALE: 1" = 1'



INTERMEDIATE HANDRAIL POST
SCALE: 1" = 1'

TYPICAL HANDRAIL DETAILS
SCALE: AS SHOWN

SEAMONWHITESIDE
MOUNT PLEASANT, SC
843.884.1667
GREENVILLE, SC
864.298.0534
SUMMERVILLE, SC
843.884.1667
WWW.SEAMONWHITESIDE.COM

McSweeney Engineers
495C MEETING STREET
CHARLESTON, SC 29403
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SOUTH CAROLINA REGISTERED PROFESSIONAL ENGINEER No. 25057 2/5/20 WILLIAM D. BARNA

HANAHAN BOARDWALK
BETTIS BOAT LANDING ROAD
BERKELEY COUNTY, SOUTH CAROLINA

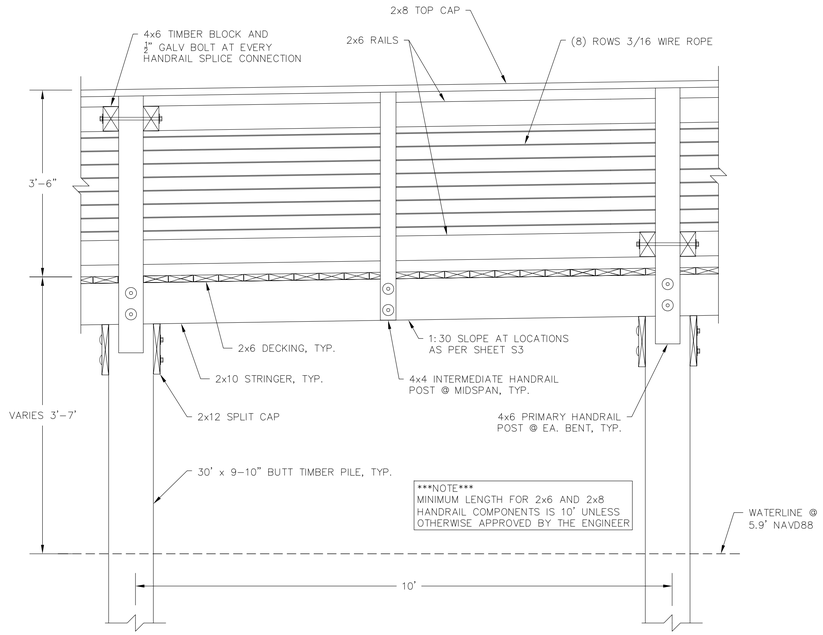
SW+ PROJECT:	7552
DATE:	02/05/2020
DRAWN BY:	JTP
CHECKED BY:	DBM

REVISION HISTORY

0	5/14/20

FRAMING DETAILS

PLOTTED: 2/14/2020 9:16 AM, BY Bill Y:\2018\Hanahan Boardwalk\Design\Hanahan Boardwalk Design - Path Adjustment Revised.dwg

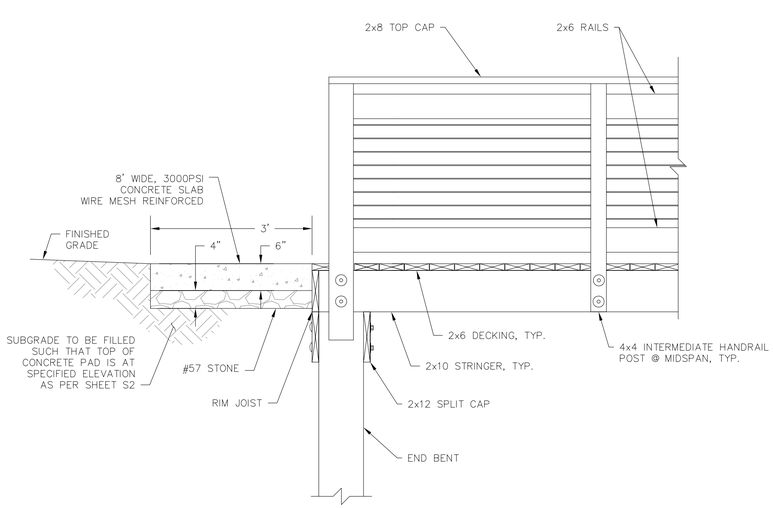


TYPICAL PIER ELEVATION

SCALE: 3/4" = 1'

HANDRAIL NOTES:

1. CABLES SHALL BE 3/16" DIA 316 SS 1X19 WIRE ROPE.
2. ALL STAINLESS STEEL HANDRAIL COMPONENTS SHALL BE RAILEASY, MANUFACTURED BY ATLANTIS RAIL SYSTEMS, INC OR ENGINEER APPROVED EQUAL.
3. MINIMUM HOLE SIZE IN POST IS 3/8" DIA.
4. ALL TOGGLES, TURNBUCKLES, FITTINGS, AND HARDWARE SHALL BE 316 SS.
5. MAXIMUM RUN FOR TURNBUCKLE IS SHALL BE 50 FEET AND CONTRACTOR SHALL USE FITTINGS AT EACH END WITH AN ADJUSTABLE THREADED STUD OR TURNBUCKLE.
6. INSTALL CABLES, TURNBUCKLES, AND TOGGLE END CONNECTIONS IN ACCORDANCE WITH MANUFACTURERS RECOMMENDATIONS.
7. TIGHTEN THE CABLES TO 350 LB OF TENSION. VERIFY TENSION USING CABLE TENSION GAUGE AND RECORD TENSION IN CABLE.
8. ONE WEEK AFTER INSTALLATION OF EACH SECTION INSTALLED, RE-TIGHTEN CABLES TO SPECIFIED TENSION AFTER THE INITIAL STRETCH OF CABLE HAS OCCURRED OR AS RECOMMENDED BY CABLE AND HARDWARE MANUFACTURER. CONTRACTOR SHALL RECORD FINAL TENSION IN CABLE.
9. APPLY THREAD LOCKING COMPOUND TO ALL THREAD TURNBUCKLE PARTS. CONTRACTOR SHALL TIGHTEN EVERY CABLE TO REQUIRED TENSION AND PROVIDE WRITTEN TABULATED VERIFICATION OF RECORDED TENSION TO KICA.
10. ALL TIMBER USED FOR THE HORIZONTAL PORTIONS OF THE HANDRAIL SHALL BE NO. 1, PRESSURE TREATED SOUTHERN YELLOW PINE. TREATMENT SHALL BE COPPER AZOLE KILN DRIED AFTER TREATMENT.
11. DO NOT USE TIMBER MEMBERS WITH LENGTHS LESS THAN 10 FT FOR ANY PORTION OF THE HANDRAIL ASSEMBLIES UNLESS OTHERWISE SPECIFICALLY NOTED ON THESE PLANS.
12. STAGGER HORIZONTAL AND VERTICAL JOINTS ALONG THE HANDRAIL ASSEMBLIES WHEREVER POSSIBLE.
13. ROUND OVER AND/OR BEVEL ROUGH EDGES OF ALL HANDRAIL COMPONENTS.
14. TIMBER CONSTRUCTION SHALL CONFORM TO NATIONAL DESIGN STANDARD FOR WOOD CONSTRUCTION, CURRENT EDITION.



TYPICAL BOARDWALK TERMINATION

SCALE: 3/4" = 1'

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FRAMING DETAILS

S4

PLOTTED: 2/14/2020 9:16 AM, BY Bill Y:\2018\Hanahan Boardwalk\Design\Hanahan Boardwalk Design - Path Adjustment Revised.dwg