

PROJECT MANUAL

PHILLIPS LANDING BOAT RAMP AT NANTICOKE WILDLIFE AREA NEAR LAUREL, DELAWARE

FOR

STATE OF DELAWARE
DEPARTMENT OF NATURAL RESOURCES
AND ENVIRONMENTAL CONTROL (DNREC)

Division of Fish and Wildlife
89 Kings Highway
Dover, Delaware, 19901
(302) 739-9914

DNREC Project: NAT-201801/Phillips.Landing



Date: July 2018

Job No. 1945A006.B01

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100% CD Submittal



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Specifications for this project are arranged in accordance with the Construction Specification Institute numbering system and format. Section numbering is discontinuous and all numbers not appearing in the Table of Contents are not used for this Project.

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C-3	Site Plan
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END OF SECTION 00 01 15

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SECTION 00 11 16 – INVITATION TO BID

The Department of Natural Resources and Environmental Control, Division of Fish and Wildlife, Office Number A247 will receive sealed bids in the Auditorium, DNREC Building, 89 Kings Highway, Dover Delaware 19901, until 2:00 p.m. local time on Friday, September 7th, 2018 at which time they will be publicly opened and read aloud for the following Project: Phillips Landing Boat Ramp in Nanticoke Wildlife Area; DNREC Project No. NAT-201801/Phillips.Landing.

Project involves construction of a three lane boat ramp accompanied by a kayak launch.

A **MANDATORY** Pre-Bid Meeting will be held on Wednesday, August 15th, 2018 at 10:00 a.m. local time at Nanticoke Wildlife Area, Phillips Landing Boat Ramp, in Laurel, Delaware. **ATTENDANCE OF THIS MEETING IS A PREREQUISITE FOR ALL PROSPECTIVE BIDDERS AND WILL BE A PREREQUISITE FOR SUBMITTING A BID.**

Proposals shall be placed in a sealed envelope clearly marked: "**BID ENCLOSED, CONTRACT # NAT-201801/Phillips.Landing**" and addressed to:

Dept. of Natural Resources & Environmental Control
Division of Fish and Wildlife
Office Number A247
89 Kings Highway, Dover DE 19901
Attn: Jeremy Ashe Phone Number: 302-632-5404

Bid documents may be downloaded and printed from <http://www.bids.delaware.gov/>

Bidders will not be subject to discrimination on the basis of race, creed, color, sex, sexual orientation, gender identity or national origin in consideration of this award, and Minority Business Enterprises, Disadvantaged Business Enterprises, Women-Owned Business Enterprises and Veteran-Owned Business Enterprises will be afforded full opportunity to submit bids on this contract. Each bid must be accompanied by a bid security equivalent to ten percent of the bid amount and all additive alternates. The successful bidder must post a performance bond and payment bond in a sum equal to 100 percent of the contract price upon execution of the contract. The Owner reserves the right to reject any or all bids and to waive any informalities therein. The Owner may extend the time and place for the opening of the bids from that described in the advertisement, with not less than two calendar days' notice by certified delivery, facsimile machine or other electronic means to those bidders receiving plans.

END OF SECTION 00 11 16

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SECTION 00 21 13 - INSTRUCTIONS TO BIDDERS

TABLE OF ARTICLES

1. DEFINITIONS
2. BIDDER'S REPRESENTATION
3. BIDDING DOCUMENTS
4. BIDDING PROCEDURES
5. CONSIDERATION OF BIDS
6. POST-BID INFORMATION
7. PERFORMANCE BOND AND PAYMENT BOND
8. FORM OF AGREEMENT BETWEEN OWNER AND CONTRACTOR

ARTICLE 1: GENERAL

1.1 DEFINITIONS

1.1.1 Whenever the following terms are used, their intent and meaning shall be interpreted as follows:

1.2 STATE: The State of Delaware.

1.3 AGENCY: Contracting State Agency as noted on cover sheet.

1.4 DESIGNATED OFFICIAL: The agent authorized to act for the Agency.

1.5 BIDDING DOCUMENTS: Bidding Documents include the Bidding Requirements and the proposed Contract Documents. The Bidding Requirements consist of the Advertisement for Bid, Invitation to Bid, Instructions to Bidders, Supplementary Instructions to Bidders (if any), General Conditions, Supplementary General Conditions, General Requirements, Special Provisions (if any), the Bid Form (including the Non-collusion Statement), and other sample bidding and contract forms. The proposed Contract Documents consist of the form of Agreement between the Owner and Contractor, as well as the Drawings, Specifications (Project Manual) and all Addenda issued prior to execution of the Contract.

1.6 CONTRACT DOCUMENTS: The Contract Documents consist of the, Instructions to Bidders, Supplementary Instructions to Bidders (if any), General Conditions, Supplementary General Conditions, General Requirements, Special Provisions (if any), the form of agreement between the Owner and the Contractor, Drawings (if any), Specifications (Project Manual), and all addenda.

1.7 AGREEMENT: The form of the Agreement shall be the DNREC Contract Document contained in these specifications (SAMPLE CONTRACT). In the case of conflict between the instructions contained therein and the General Requirements herein, these General Requirements shall prevail.

1.8 GENERAL REQUIREMENTS (or CONDITIONS): General Requirements (or conditions) are instructions pertaining to the Bidding Documents and to contracts in general. They contain, in summary, requirements of laws of the State; policies of the Agency and instructions to bidders.

1.9 SPECIAL PROVISIONS: Special Provisions are specific conditions or requirements peculiar to the bidding documents and to the contract under consideration and are supplemental to the General Requirements. Should the Special Provisions conflict with the General Requirements, the Special Provisions shall prevail.

1.10 ADDENDA: Written or graphic instruments issued by the Owner/Architect prior to the execution of the contract which modify or interpret the Bidding Documents by additions, deletions, clarifications or corrections.

1.11 BIDDER OR VENDOR: A person or entity who formally submits a Bid for the material or Work contemplated, acting directly or through a duly authorized representative who meets the requirements set forth in the Bidding Documents.

- 1.12 SUB-BIDDER: A person or entity who submits a Bid to a Bidder for materials or labor, or both for a portion of the Work.
- 1.13 BID: A complete and properly executed proposal to do the Work for the sums stipulated therein, submitted in accordance with the Bidding Documents.
- 1.14 BASE BID: The sum stated in the Bid for which the Bidder offers to perform the Work described in the Bidding Documents as the base, to which Work may be added or from which Work may be deleted for sums stated in Alternate Bids (if any are required to be stated in the bid).
- 1.15 ALTERNATE BID (or ALTERNATE): An amount stated in the Bid, where applicable, to be added to or deducted from the amount of the Base Bid if the corresponding change in the Work, as described in the Bidding Documents is accepted.
- 1.16 UNIT PRICE: An amount stated in the Bid, where applicable, as a price per unit of measurement for materials, equipment or services or a portion of the Work as described in the Bidding Documents.
- 1.17 SURETY: The corporate body which is bound with and for the Contract, or which is liable, and which engages to be responsible for the Contractor's payments of all debts pertaining to and for his acceptable performance of the Work for which he has contracted.
- 1.18 BIDDER'S DEPOSIT: The security designated in the Bid to be furnished by the Bidder as a guaranty of good faith to enter into a contract with the Agency if the Work to be performed or the material or equipment to be furnished is awarded to him.
- 1.19 CONTRACT: The written agreement covering the furnishing and delivery of material or work to be performed.
- 1.20 CONTRACTOR: Any individual, firm or corporation with whom a contract is made by the Agency.
- 1.21 SUBCONTRACTOR: An individual, partnership or corporation which has a direct contract with a contractor to furnish labor and materials at the job site, or to perform construction labor and furnish material in connection with such labor at the job site.
- 1.22 CONTRACT BOND: The approved form of security furnished by the contractor and his surety as a guaranty of good faith on the part of the contractor to execute the work in accordance with the terms of the contract.

ARTICLE 2: BIDDER'S REPRESENTATIONS

- 2.1 PRE-BID MEETING
- 2.1.1 A pre-bid meeting for this project will be held at the time and place designated. Attendance at this meeting is a pre-requisite for submitting a Bid, unless this requirement is specifically waived elsewhere in the Bid Documents.
- 2.2 By submitting a Bid, the Bidder represents that:

2.2.1 The Bidder has read and understands the Bidding Documents and that the Bid is made in accordance therewith.

2.2.2 The Bidder has visited the site, become familiar with existing conditions under which the Work is to be performed, and has correlated the Bidder's his personal observations with the requirements of the proposed Contract Documents.

2.2.3 The Bid is based upon the materials, equipment, and systems required by the Bidding Documents without exception.

2.3 JOINT VENTURE REQUIREMENTS

2.3.1 For Public Works Contracts, each Joint Venturer shall be qualified and capable to complete the Work with their own forces.

2.3.2 Included with the Bid submission, and as a requirement to bid, a copy of the executed Joint Venture Agreement shall be submitted and signed by all Joint Venturers involved.

2.3.3 All required Bid Bonds, Performance Bonds, Material and Labor Payment Bonds must be executed by both Joint Venturers and be placed in both of their names.

2.3.4 All required insurance certificates shall name both Joint Venturers.

2.3.5 Both Joint Venturers shall sign the Bid Form and shall submit a copy of a valid Delaware Business License with their Bid.

2.3.6 Both Joint Venturers shall include their Federal E.I. Number with the Bid.

2.3.7 In the event of a mandatory Pre-bid Meeting, each Joint Venturer shall have a representative in attendance.

2.3.8 Due to exceptional circumstances and for good cause shown, one or more of these provisions may be waived at the discretion of the State.

2.4 ASSIGNMENT OF ANTITRUST CLAIMS

2.4.1 As consideration for the award and execution by the Owner of this contract, the Contractor hereby grants, conveys, sells, assigns and transfers to the State of Delaware all of its right, title and interests in and to all known or unknown causes of action it presently has or may now or hereafter acquire under the antitrust laws of the United States and the State of Delaware, relating to the particular goods or services purchased or acquired by the Owner pursuant to this contract.

ARTICLE 3: BIDDING DOCUMENTS

3.1 COPIES OF BID DOCUMENTS

3.1.1 Bidders may obtain complete sets of the Bidding Documents from the Architectural/Engineering firm designated in the Advertisement or Invitation to Bid in the number and for the deposit sum, if any, stated therein.

3.1.2 Bidders shall use complete sets of Bidding Documents for preparation of Bids. The issuing Agency nor the Architect assumes no responsibility for errors or misinterpretations resulting from the use of incomplete sets of Bidding Documents.

3.1.3 Any errors, inconsistencies or omissions discovered shall be reported to the Architect immediately.

3.1.4 The Agency and Architect may make copies of the Bidding Documents available on the above terms for the purpose of obtaining Bids on the Work. No license or grant of use is conferred by issuance of copies of the Bidding Documents.

3.2 INTERPRETATION OR CORRECTION OF BIDDING DOCUMENTS

3.2.1 The Bidder shall carefully study and compare the Bidding Documents with each other, and with other work being bid concurrently or presently under construction to the extent that it relates to the Work for which the Bid is submitted, shall examine the site and local conditions, and shall report any errors, inconsistencies, or ambiguities discovered to the Architect.

3.2.2 Bidders or Sub-bidders requiring clarification or interpretation of the Bidding Documents shall make a written request to the Architect at least seven days prior to the date for receipt of Bids. Interpretations, corrections and changes to the Bidding Documents will be made by written Addendum. Interpretations, corrections, or changes to the Bidding Documents made in any other manner shall not be binding.

3.2.3 The apparent silence of the specifications as to any detail, or the apparent omission from it of detailed description concerning any point, shall be regarded as meaning that only the best commercial practice is to prevail and only material and workmanship of the first quality are to be used. Proof of specification compliance will be the responsibility of the Bidder.

3.2.4 Unless otherwise provided in the Contract Documents, the Contractor shall provide and pay for all permits, labor, materials, equipment, tools, construction equipment and machinery, water, heat, utilities, transportation, and other facilities and services necessary for the proper execution and completion of the Work.

3.2.5 The Owner will bear the costs for all impact and user fees associated with the project.

3.3 SUBSTITUTIONS

3.3.1 The materials, products and equipment described in the Bidding Documents establish a standard of quality, required function, dimension, and appearance to be met by any proposed substitution. The specification of a particular manufacturer or model number is not intended to be proprietary in any way. Substitutions of products for those named will be considered, providing that the Vendor certifies that the function, quality, and performance characteristics of the material offered is equal or superior to that specified. It shall be the Bidder's responsibility to assure that the proposed substitution will not affect the intent of the design, and to make any installation modifications required to accommodate the substitution.

3.3.2 Requests for substitutions shall be made in writing to the Architect at least ten days prior to the date of the Bid Opening. Such requests shall include a complete description of the proposed substitution, drawings, performance and test data, explanation of required installation modifications due the substitution, and any other information necessary for an

evaluation. The burden of proof of the merit of the proposed substitution is upon the proposer. The Architect's decision of approval or disapproval shall be final. The Architect is to notify Owner prior to any approvals.

3.3.3 If the Architect approves a substitution prior to the receipt of Bids, such approval shall be set forth in an Addendum. Approvals made in any other manner shall not be binding.

3.3.4 The Architect shall have no obligation to consider any substitutions after the Contract award.

3.4 ADDENDA

3.4.1 Addenda will be mailed or delivered to all who are known by the Architect to have received a complete set of the Bidding Documents.

3.4.2 Copies of Addenda will be made available for inspection wherever Bidding Documents are on file for that purpose.

3.4.3 No Addenda will be issued later than 4 days prior to the date for receipt of Bids except an Addendum withdrawing the request for Bids or one which extends the time or changes the location for the opening of bids.

3.4.4 Each bidder shall ascertain prior to submitting his Bid that they have received all Addenda issued, and shall acknowledge their receipt in their Bid in the appropriate space. Not acknowledging an issued Addenda could be grounds for determining a bid to be non-responsive.

ARTICLE 4: BIDDING PROCEDURES

4.1 PREPARATION OF BIDS

4.1.1 Submit the bids on the Bid Forms included with the Bidding Documents.

4.1.2 Submit the original Bid Form for each bid. Bid Forms may be removed from the project manual for this purpose.

4.1.3 Execute all blanks on the Bid Form in a non-erasable medium (typewriter or manually in ink).

4.1.4 Where so indicated by the makeup on the Bid Form, express sums in both words and figures, in case of discrepancy between the two, the written amount shall govern.

4.1.5 Interlineations, alterations or erasures must be initialed by the signer of the Bid.

4.1.6 **BID ALL REQUESTED ALTERNATES AND UNIT PRICES, IF ANY.** If there is no change in the Base Bid for an Alternate, enter "No Change". The Contractor is responsible for verifying that they have received all addenda issued during the bidding period. Work required by Addenda shall automatically become part of the Contract.

4.1.7 Make no additional stipulations on the Bid Form and do not qualify the Bid in any other manner.

- 4.1.8 Each copy of the Bid shall include the legal name of the Bidder and a statement whether the Bidder is a sole proprietor, a partnership, a corporation, or any legal entity, and each copy shall be signed by the person or persons legally authorized to bind the Bidder to a contract. A Bid by a corporation shall further give the state of incorporation and have the corporate seal affixed. A Bid submitted by an agent shall have a current Power of Attorney attached, certifying agent's authority to bind the Bidder.
- 4.1.9 Bidder shall complete the Non-Collusion Statement form included with the Bid Forms and include it with their Bid.
- 4.1.10 In the construction of all Public Works projects for the State of Delaware or any agency thereof, preference in employment of laborers, workers or mechanics shall be given to bona fide legal citizens of the State who have established citizenship by residence of at least 90 days in the State.
- 4.1.11 Each bidder shall include in their bid a copy of a valid Delaware Business License.’
- 4.1.12 Each bidder shall include a signed Affidavit for the Bidder certifying compliance with OMB Regulation 4104 - “Regulations for the Drug Testing of Contractor and Subcontractor Employees Working on “Large Public Works Projects.” “Large Public Works” is based upon the current threshold required for bidding Public Works as set by the Purchasing and Contracting Advisory Council.
- 4.2 **BID SECURITY**
- 4.2.1 All bids shall be accompanied by a deposit of either a good and sufficient bond to the agency for the benefit of the agency, with corporate surety authorized to do business in this State, the form of the bond and the surety to be approved by the agency, or a security of the bidder assigned to the agency, for a sum equal to at least 10% of the bid plus all add alternates, or in lieu of the bid bond a security deposit in the form of a certified check, bank treasurer’s check, cashier’s check, money order, or other prior approved secured deposit assigned to the State. The bid bond need not be for a specific sum, but may be stated to be for a sum equal to 10% of the bid plus all add alternates to which it relates and not to exceed a certain stated sum, if said sum is equal to at least 10% of the bid. The Bid Bond form used shall be the standard OMB form (attached).
- 4.2.2 The Agency has the right to retain the bid security of Bidders to whom an award is being considered until either a formal contract has been executed and bonds have been furnished or the specified time has elapsed so the Bids may be withdrawn or all Bids have been rejected.
- 4.2.3 In the event of any successful Bidder refusing or neglecting to execute a formal contract and bond within 20 days of the awarding of the contract, the bid bond or security deposited by the successful bidder shall be forfeited.
- 4.3 **SUBCONTRACTOR LIST**
- 4.3.1 As required by Delaware Code, Title 29, section 6962(d)(10)b, each Bidder shall submit with their Bid a completed List of Sub-Contractors included with the Bid Form. **NAME ONLY ONE SUBCONTRACTOR FOR EACH TRADE.** A Bid will be considered non-responsive unless the completed list is included.

4.3.2 Provide the Name and Address for each listed subcontractor. Addresses by City, Town or Locality, plus State, will be acceptable.

4.3.3 It is the responsibility of the Contractor to ensure that their Subcontractors are in compliance with the provisions of this law. Also, if a Contractor elects to list themselves as a Subcontractor for any category, they must specifically name themselves on the Bid Form and be able to document their capability to act as Subcontractor in that category in accordance with this law.

4.4 EQUALITY OF EMPLOYMENT OPPORTUNITY ON PUBLIC WORKS

4.4.1 During the performance of this contract, the contractor agrees as follows:

A. The Contractor will not discriminate against any employee or applicant for employment because of race, creed, sex, color, sexual orientation, gender identity or national origin. The Contractor will take affirmative action to ensure the applicants are employed, and that employees are treated during employment, without regard to their race, creed, sex, color, sexual orientation, gender identity or national origin. Such action shall include, but not be limited to, the following: Employment, upgrading, demotion or transfer; recruitment or recruitment advertising; layoff or termination; rates of pay or other forms of compensation; and selection for training, including apprenticeship. The Contractor agrees to post in conspicuous places available to employees and applicants for employment notices to be provided by the contracting agency setting forth this nondiscrimination clause.

B. The Contractor will, in all solicitations or advertisements for employees placed by or on behalf of the Contractor, state that all qualified applicants will receive consideration for employment without regard to race, creed, sex, color, sexual orientation, gender identity or national origin."

4.5 PREVAILING WAGE REQUIREMENT

4.5.1 Wage Provisions: For renovation and new construction projects whose costs exceed the thresholds contained in Delaware Code, Title 29, Section 6960, the minimum wage rates for various classes of laborers and mechanics shall be as determined by the Department of Labor, Division of Industrial Affairs of the State of Delaware.

4.5.2 The employer shall pay all mechanics and labors employed directly upon the site of work, unconditionally and not less often than once a week and without subsequent deduction or rebate on any account, the full amounts accrued at time of payment, computed at wage rates not less than those stated in the specifications, regardless of any contractual relationship which may be alleged to exist between the employer and such laborers and mechanics.

4.5.3 The scale of the wages to be paid shall be posted by the employer in a prominent and easily accessible place at the site of the work.

4.5.4 Every contract based upon these specifications shall contain a stipulation that sworn payroll information, as required by the Department of Labor, be furnished weekly. The Department of Labor shall keep and maintain the sworn payroll information for a period of 6 months from the last day of the work week covered by the payroll.

4.6 SUBMISSION OF BIDS

- 4.6.1 Enclose the Bid, the Bid Security, and any other documents required to be submitted with the Bid in a sealed opaque envelope. Address the envelope to the party receiving the Bids. Identify with the project name, project number, and the Bidder's name and address. If the Bid is sent by mail, enclose the sealed envelope in a separate mailing envelope with the notation "BID ENCLOSED" on the face thereof. The State is not responsible for the opening of bids prior to bid opening date and time that are not properly marked.
- 4.6.2 Deposit Bids at the designated location prior to the time and date for receipt of bids indicated in the Advertisement for Bids. Bids received after the time and date for receipt of bids will be marked "LATE BID" and returned.
- 4.6.3 Bidder assumes full responsibility for timely delivery at location designated for receipt of bids.
- 4.6.4 Oral, telephonic or telegraphic bids are invalid and will not receive consideration.
- 4.6.5 Withdrawn Bids may be resubmitted up to the date and time designated for the receipt of Bids, provided that they are then fully in compliance with these Instructions to Bidders.
- 4.7 **MODIFICATION OR WITHDRAW OF BIDS**
- 4.7.1 Prior to the closing date for receipt of Bids, a Bidder may withdraw a Bid by personal request and by showing proper identification to the Architect. A request for withdraw by letter or fax, if the Architect is notified in writing prior to receipt of fax, is acceptable. A fax directing a modification in the bid price will render the Bid informal, causing it to be ineligible for consideration of award. Telephone directives for modification of the bid price shall not be permitted and will have no bearing on the submitted proposal in any manner.
- 4.7.2 Bidders submitting Bids that are late shall be notified as soon as practicable and the bid shall be returned.
- 4.7.3 A Bid may not be modified, withdrawn or canceled by the Bidder during a thirty (30) day period following the time and date designated for the receipt and opening of Bids, and Bidder so agrees in submitting their Bid. Bids shall be binding for 30 days after the date of the Bid opening.

ARTICLE 5: CONSIDERATION OF BIDS

5.1 OPENING/REJECTION OF BIDS

- 5.1.1 Unless otherwise stated, Bids received on time will be publicly opened and will be read aloud. An abstract of the Bids will be made available to Bidders.
- 5.1.2 The Agency shall have the right to reject any and all Bids. A Bid not accompanied by a required Bid Security or by other data required by the Bidding Documents, or a Bid which is in any way incomplete or irregular is subject to rejection.
- 5.1.3 If the Bids are rejected, it will be done within thirty (30) calendar day of the Bid opening.

5.2 COMPARISON OF BIDS

- 5.2.1 After the Bids have been opened and read, the bid prices will be compared and the result of such comparisons will be made available to the public. Comparisons of the Bids may be based on the Base Bid plus desired Alternates. The Agency shall have the right to accept Alternates in any order or combination.
- 5.2.2 The Agency reserves the right to waive technicalities, to reject any or all Bids, or any portion thereof, to advertise for new Bids, to proceed to do the Work otherwise, or to abandon the Work, if in the judgment of the Agency or its agent(s), it is in the best interest of the State.
- 5.2.3 An increase or decrease in the quantity for any item is not sufficient grounds for an increase or decrease in the Unit Price.
- 5.2.4 The prices quoted are to be those for which the material will be furnished F.O.B. Job Site and include all charges that may be imposed during the period of the Contract.
- 5.2.5 No qualifying letter or statements in or attached to the Bid, or separate discounts will be considered in determining the low Bid except as may be otherwise herein noted. Cash or separate discounts should be computed and incorporated into Unit Bid Price(s).
- 5.3 DISQUALIFICATION OF BIDDERS
- 5.3.1 An agency shall determine that each Bidder on any Public Works Contract is responsible before awarding the Contract. Factors to be considered in determining the responsibility of a Bidder include:
- A. The Bidder's financial, physical, personnel or other resources including Subcontracts;
 - B. The Bidder's record of performance on past public or private construction projects, including, but not limited to, defaults and/or final adjudication or admission of violations of the Prevailing Wage Laws in Delaware or any other state;
 - C. The Bidder's written safety plan;
 - D. Whether the Bidder is qualified legally to contract with the State;
 - E. Whether the Bidder supplied all necessary information concerning its responsibility; and,
 - F. Any other specific criteria for a particular procurement, which an agency may establish; provided however, that, the criteria be set forth in the Invitation to Bid and is otherwise in conformity with State and/or Federal law.
- 5.3.2 If an agency determines that a Bidder is nonresponsive and/or nonresponsible, the determination shall be in writing and set forth the basis for the determination. A copy of the determination shall be sent to the affected Bidder within five (5) working days of said determination.
- 5.3.3 In addition, any one or more of the following causes may be considered as sufficient for the disqualification of a Bidder and the rejection of their Bid or Bids.

- 5.3.3.1 More than one Bid for the same Contract from an individual, firm or corporation under the same or different names.
- 5.3.3.2 Evidence of collusion among Bidders.
- 5.3.3.3 Unsatisfactory performance record as evidenced by past experience.
- 5.3.3.4 If the Unit Prices are obviously unbalanced either in excess or below reasonable cost analysis values.
- 5.3.3.5 If there are any unauthorized additions, interlineation, conditional or alternate bids or irregularities of any kind which may tend to make the Bid incomplete, indefinite or ambiguous as to its meaning.
- 5.3.3.6 If the Bid is not accompanied by the required Bid Security and other data required by the Bidding Documents.
- 5.3.3.7 If any exceptions or qualifications of the Bid are noted on the Bid Form.
- 5.4 ACCEPTANCE OF BID AND AWARD OF CONTRACT
- 5.4.1 A formal Contract shall be executed with the successful Bidder within twenty (20) calendar days after the award of the Contract.
- 5.4.2 Per Section 6962(d)(13) a., Title 29, Delaware Code, "The contracting agency shall award any public works contract within thirty (30) days of the bid opening to the lowest responsive and responsible Bidder, unless the Agency elects to award on the basis of best value, in which case the election to award on the basis of best value shall be stated in the Invitation To Bid."
- 5.4.3 Each Bid on any Public Works Contract must be deemed responsive by the Agency to be considered for award. A responsive Bid shall conform in all material respects to the requirements and criteria set forth in the Contract Documents and specifications.
- 5.4.4 The Agency shall have the right to accept Alternates in any order or combination, and to determine the low Bidder on the basis of the sum of the Base Bid, plus accepted Alternates.
- 5.4.5 The successful Bidder shall execute a formal contract, submit the required Insurance Certificate, and furnish good and sufficient bonds, unless specifically waived in the General Requirements, in accordance with the General Requirement, within twenty (20) days of official notice of contract award. The successful Bidder shall provide, at least two business days prior to contract execution, copies of the Employee Drug Testing Program for the Bidder and all listed Subcontractors. Bonds shall be for the benefit of the Agency with surety in the amount of 100% of the total contract award. Said Bonds shall be conditioned upon the faithful performance of the contract. Bonds shall remain in affect for period of one year after the date of substantial completion.
- 5.4.6 If the successful Bidder fails to execute the required Contract, Bond and all required information, as aforesaid, within twenty (20) calendar days after the date of official Notice of the Award of the Contract, their Bid guaranty shall immediately be taken and become the property of the State for the benefit of the Agency as liquidated damages, and not as a

forfeiture or as a penalty. Award will then be made to the next lowest qualified Bidder of the Work or readvertised, as the Agency may decide.

5.4.7 Each bidder shall supply with its bid its taxpayer identification number (i.e., federal employer identification number or social security number) and a copy of its Delaware business license, and should the vendor be awarded a contract, such vendor shall provide to the agency the taxpayer identification license numbers of such subcontractors. Such numbers shall be provided on the later of the date on which such subcontractor is required to be identified or the time the contract is executed. The successful Bidder shall provide to the agency to which it is contracting, within 30 days of entering into such public works contract, copies of all Delaware Business licenses of subcontractors and/or independent contractors that will perform work for such public works contract. However, if a subcontractor or independent contractor is hired or contracted more than 20 days after the Bidder entered the public works contract the Delaware Business license of such subcontractor or independent contractor shall be provided to the agency within 10 days of being contracted or hired.

5.4.8 The Bid Security shall be returned to the successful Bidder upon the execution of the formal contract. The Bid Securities of unsuccessful bidders shall be returned within thirty (30) calendar days after the opening of the Bids.

ARTICLE 6: POST-BID INFORMATION

6.1 CONTRACTOR'S QUALIFICATION STATEMENT

6.1.1 Bidders to whom award of a Contract is under consideration shall, if requested by the Agency, submit a properly executed Contractor's Qualification Statement, unless such a statement has been previously required and submitted.

6.2 BUSINESS DESIGNATION FORM

6.2.1 Successful bidder shall be required to accurately complete an Office of Management and Budget Business Designation Form for Subcontractors.

ARTICLE 7: PERFORMANCE BOND AND PAYMENT BOND

7.1 BOND REQUIREMENTS

7.1.1 The cost of furnishing the required Bonds, that are stipulated in the Bidding Documents, shall be included in the Bid.

7.1.2 If the Bidder is required by the Agency to secure a bond from other than the Bidder's usual sources, changes in cost will be adjusted as provide in the Contract Documents.

7.1.3 The Performance and Payment Bond forms used shall be the standard OMB forms (attached).

7.2 TIME OF DELIVERY AND FORM OF BONDS

7.2.1 The bonds shall be dated on or after the date of the Contract.

7.2.2 The Bidder shall require the attorney-in-fact who executes the required bonds on behalf of the surety to affix a certified and current copy of the power of attorney.

ARTICLE 8: FORM OF AGREEMENT BETWEEN AGENCY AND CONTRACTOR

8.1 The Agreement for the Work will be DNREC Contract Document contained in these specifications.

END OF INSTRUCTIONS TO BIDDERS

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PHILLIPS LANDING BOAT RAMP
NANTICOKE WILDLIFE AREA
LAUREL, DELAWARE 19956

DIVISION OF FISH AND WILDLIFE CONTRACT No. NAT-201801/PHILLIPS.LANDING

BID FORM

For Bids Due: Friday, September 7th, 2018
At 2:00 PM

To: Dept. of Natural Resources and Environmental Control
Division of Fish and Wildlife
Office Number A247
89 Kings Highway, Dover DE 19901

Name of Bidder: _____

Delaware Business License No.: _____ **Taxpayer ID No.:** _____
(A copy of Bidder's Delaware Business License must be attached to this form.)

(Other License Nos.): _____

Phone Number: () _____ **Fax Number:** () _____

The undersigned, representing that he has read and understands the Bidding Documents and that this bid is made in accordance therewith, that he has visited the site and has familiarized himself with the local conditions under which the Work is to be performed, and that his bid is based upon the materials, systems and equipment described in the Bidding Documents without exception, hereby proposes and agrees to provide all labor, materials, plant, equipment, supplies, transport and other facilities required to execute the work described by the aforesaid documents for the lump sum itemized below:

BASE BID:

ITEM No. 1: 3 Lane Boat Ramp Renovation/Replacement and Parking Lot Improvements:

(\$ _____)

ITEM No. 2: Kayak Launch Improvements:

(\$ _____)

Total Bid = Item No. 1 + Item No. 2: _____
(\$ _____)

PHILLIPS LANDING BOAT RAMP

NANTICOKE WILDLIFE AREA

LAUREL, DELAWARE 19956

DIVISION OF FISH AND WILDLIFE CONTRACT No. NAT-201801/PHILLIPS.LANDING

BID FORM

UNIT PRICES

Unit prices conform to applicable project specification section. Refer to the specifications for a complete description of the following Unit Prices:

	DEDUCT	ADD
UNIT PRICE No. 1: Unsatisfactory Soils	\$ _____	\$ _____
1. Description: Excavation and disposal of unsatisfactory soils as defined in Section 31 20 00 Earth Moving		
2. Unit of Measurement: Cubic Yards (CY)		
UNIT PRICE No. 2 Del. Crusher Run Type B or CR-1	\$ _____	\$ _____
1. Description: Inclusion of GABC within the over-excavation areas as defined in section 31 20 00 Earth Moving		
2. Unit of Measurement: Ton		
UNIT PRICE No. 3	\$ _____	\$ _____
1. Description: Furnish & Install 12" – 3' Timber Piles		
2. Unit of Measurement: Vertical Foot		
UNIT PRICE No. 4	\$ _____	\$ _____
1. Description: Furnish & Install 12" Steel Guide Piles		
2. Unit of Measurement: Vertical Foot		

PHILLIPS LANDING BOAT RAMP
NANTICOKE WILDLIFE AREA
LAUREL, DELAWARE 19956

DIVISION OF FISH AND WILDLIFE CONTRACT No. NAT-201801/PHILLIPS.LANDING

BID FORM

I/We acknowledge Addendums numbered _____ and the price(s) submitted include any cost/schedule impact they may have.

This bid shall remain valid and cannot be withdrawn for thirty (30) days from the date of opening of bids, and the undersigned shall abide by the Bid Security forfeiture provisions. Bid Security is attached to this Bid.

The Owner shall have the right to reject any or all bids, and to waive any informality or irregularity in any bid received.

This bid is based upon work being accomplished by the Sub-Contractors named on the list attached to this bid.

Should I/We be awarded this contract, I/We pledge to achieve substantial completion of all the work within _____ calendar days of the Notice to Proceed.

The undersigned represents and warrants that he has complied and shall comply with all requirements of local, state, and national laws; that no legal requirement has been or shall be violated in making or accepting this bid, in awarding the contract to him or in the prosecution of the work required; that the bid is legal and firm; that he has not, directly or indirectly, entered into any agreement, participated in any collusion, or otherwise taken action in restraint of free competitive bidding.

Upon receipt of written notice of the acceptance of this Bid, the Bidder shall, within twenty (20) calendar days, execute the agreement in the required form and deliver the Contract Bonds, and Insurance Certificates, required by the Contract Documents.

I am / We are an Individual / a Partnership / a Corporation

By _____ Trading as _____
(Individual's/General Partner's /Corporate Name)

(State of Corporation)

Business Address: _____

Witness: _____

By: _____
(Authorized Signature)

(Seal)

(Title)

Date: _____

ATTACHMENTS

- Sub-Contractor List
- Non-Collusion Statement
- Affidavit(s) of Employee Drug Testing Program
- Bid Security
- (Others as Required by Project Manual)

PHILLIPS LANDING BOAT RAMP
NANTICOKE WILDLIFE AREA
LAUREL, DELAWARE 19956

DIVISION OF FISH AND WILDLIFE CONTRACT No. NAT-201801/PHILLIPS.LANDING

BID FORM

SUBCONTRACTOR LIST

In accordance with Title 29, Chapter 6962 (d)(10)b Delaware Code, the following sub-contractor listing must accompany the bid submittal. The name and address of the sub-contractor **must be listed for each category** where the bidder intends to use a sub-contractor to perform that category of work. In order to provide full disclosure and acceptance of the bid by the *Owner*, **it is required that bidders list themselves as being the sub-contractor for all categories where he/she is qualified and intends to perform such work.** This form must be filled out completely with no additions or deletions. **Note that all subcontractors listed below must have a signed Affidavit of Employee Drug Testing Program included with this bid.**

Subcontractor Category	Subcontractor	Address (City & State)	Subcontractors tax payer ID # or Delaware Business license #
1. Concrete	_____	_____	_____
	_____	_____	_____
2. Electric & Power	_____	_____	_____
	_____	_____	_____
3. Site Work	_____	_____	_____
	_____	_____	_____
4. General Construction	_____	_____	_____
	_____	_____	_____

PHILLIPS LANDING BOAT RAMP

NANTICOKE WILDLIFE AREA

LAUREL, DELAWARE 19956

DIVISION OF FISH AND WILDLIFE CONTRACT No. NAT-201801/PHILLIPS.LANDING

BID FORM

NON-COLLUSION STATEMENT

This is to certify that the undersigned bidder has neither directly nor indirectly, entered into any agreement, participated in any collusion or otherwise taken any action in restraint of free competitive bidding in connection with this proposal submitted this date to the Office of Design and Development, Division of Fish and Wildlife, DNREC.

All the terms and conditions of the Phillips Landing Boat Ramp have been thoroughly examined and are understood.

NAME OF BIDDER

AUTHORIZED REPRESENTATIVE

(TYPED):

AUTHORIZED REPRESENTATIVE

(SIGNATURE):

TITLE:

ADDRESS OF BIDDER:

E-MAIL:

PHONE NUMBER:

Sworn to and Subscribed before me this _____ day of _____ of 20

_____.

My commission expires _____.

NOTARY PULIC _____

THIS PAGE MUST BE SIGNED AND NOTORIZED FOR YOUR BID TO BE CONSIDERED.

PHILLIPS LANDING BOAT RAMP

NANTICOKE WILDLIFE AREA

LAUREL, DELAWARE 19956

DIVISION OF FISH AND WILDLIFE CONTRACT No. NAT-201801/PHILLIPS.LANDING

**AFFIDAVIT
OF
EMPLOYEE DRUG TESTING PROGRAM**

4104 Regulations for the Drug Testing of Contractor and Subcontractor Employees Working on Large Public Works Projects requires that Contractors and Subcontractors implement a program of mandatory drug testing for Employees who work on Large Public Works Contracts funded all or in part with public funds.

We hereby certify that we have in place or will implement during the entire term of the contract a Mandatory Drug Testing Program for our employees on the jobsite that complies with this regulation:

Contractor/Subcontractor Name: _____

Contractor/Subcontractor Address: _____

Authorized Representative (typed or printed): _____

Authorized Representative (signature): _____

Title: _____

Sworn to and Subscribed before me this _____ day of _____ 20____.

My Commission expires _____. NOTARY PUBLIC _____.

THIS PAGE MUST BE SIGNED AND NOTARIZED FOR YOUR BID TO BE CONSIDERED.

STATE OF DELAWARE
DEPARTMENT OF NATURAL RESOURCES AND ENVIRONMENTAL CONTROL

BID BOND

TO ACCOMPANY PROPOSAL
(Not necessary if security is used)

KNOW ALL MEN BY THESE PRESENTS That: _____
_____ of _____ in the County of _____
_____ and State of _____ as **Principal**, and _____
_____ of _____ in the County of _____
and State of _____ as **Surety**, legally authorized to do business in the State of Delaware
("State"), are held and firmly unto the **State** in the sum of _____
_____ Dollars (\$ _____), or _____ percent not to exceed _____
_____ Dollars (\$ _____)
of amount of bid on Contract No. _____, to be paid to the **State** for the use and
benefit of _____ (*insert State agency name*) for which payment
well and truly to be made, we do bind ourselves, our and each of our heirs, executors, administrators, and
successors, jointly and severally for and in the whole firmly by these presents.

NOW THE CONDITION OF THIS OBLIGATION IS SUCH That if the above bonded **Principal**
who has submitted to the _____ (*insert State agency name*) a
certain proposal to enter into this contract for the furnishing of certain material and/or services within the
State, shall be awarded this Contract, and if said **Principal** shall well and truly enter into and execute this
Contract as may be required by the terms of this Contract and approved by the _____
_____ (*insert State agency name*) this Contract to be entered into within twenty days after
the date of official notice of the award thereof in accordance with the terms of said proposal, then this
obligation shall be void or else to be and remain in full force and virtue.

Sealed with _____ seal and dated this _____ day of _____ in the year of our Lord two
thousand and _____ (20____).

SEALED, AND DELIVERED IN THE
Presence of

Name of Bidder (Organization)

Corporate
Seal

By:

Authorized Signature

Attest _____

Title

Name of Surety

Witness: _____

By:

Title

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DEPARTMENT OF NATURAL RESOURCES & ENVIRONMENTAL CONTROL

89 KINGS HIGHWAY

DOVER, DE 19901

CONTRACT DOCUMENT

FOR

RECONSTRUCTION OF THE PHILLIPS

LANDING BOAT RAMP

CONTRACT NO. NAT-201801/

PHILLIPS.LANDING

THIS AGREEMENT, made and executed this _____ day of _____, 2018, by and between _____ (Hereinafter designated as Contractor) party of the first part, and the Department of Natural Resources and Environmental Control, a Department created under the laws of the State of Delaware (hereinafter designated as Department) party of the second part.

WITNESSETH that the Contractor, in consideration of the covenants and agreements herein contained and made by the Department, agrees to the following:

ARTICLE ONE. The Contractor shall provide and furnish all the material, supplies, machinery, implements, appliances, tools and labor required to complete this contract in Sussex County, State of Delaware, as shown and specified in the specifications, proposals, drawings or plans as indicated in the project manual issued for the Department, with specifications, proposals, drawings or plans entitled **PHILLIPS LANDING BOAT RAMP #NAT201801/PHILLIPS.LANDING** is hereby incorporated by reference as part of this contract. This contract will be binding on both parties upon receipt by the Contractor of an approved State of Delaware Purchase Order (not to exceed _____ unless approved by a change order). An award letter was issued to the contractor on _____. The Contractor must prosecute the work in such order as to complete the project by _____.

The undersigned, representing that he has read and understands the Bidding Documents and that this bid is made in accordance therewith, that he has visited the site and has familiarized himself with the local conditions under which the Work is to be performed, and that his bid is based upon the materials, systems and equipment described in the Bidding Documents without exception, hereby proposes and agrees to abide by all required permits, provide all labor, materials, plant, equipment, supplies, transport and other facilities required to execute the work described by the aforesaid documents for the lump sum base bid with associated unit pricing to complete the reconstruction of the Millsboro boat ramp as described in the technical specs and contract drawings.

CONTRACT DOCUMENT (CONTINUED)

IN WITNESS WHEREOF, the said parties have duly executed this agreement in triplicate the day and year first above written.

IN WITNESS WHEREOF, the parties below have hereunto set their hands on the _____ day of _____, 2018.

Contractor

Witness

By: _____
Title

State of _____
County of _____

Sworn and subscribed before me this _____ day of _____, 2018.

Notary Public

IN WITNESS WHEREOF, the parties below have hereunto set their hands on the _____ day of _____, 2016.

Witness

Project Manager
Division of Fish and Wildlife

State of _____
County of _____

Sworn and subscribed before me this _____ day of _____, 2018.

Notary Public

CONTRACT DOCUMENT (CONTINUED)

IN WITNESS WHEREOF, the parties below have hereunto set their hands on the _____ day of _____, 2018.

Witness

Director, Division of Fish and Wildlife

State of _____
County of _____

Sworn and subscribed before me this _____ day of _____, 2018.

Notary Public

Witness

Secretary, Department of
Natural Resources &
Environmental Control

State of _____
County of _____

Sworn and subscribed before me this _____ day of _____, 2018.

Notary Public

STATE OF DELAWARE
OFFICE OF MANAGEMENT AND BUDGET

PERFORMANCE BOND

Bond Number: _____

KNOW ALL PERSONS BY THESE PRESENTS, that we, _____, as principal (“**Principal**”), and _____, a _____ corporation, legally authorized to do business in the State of Delaware, as surety (“**Surety**”), are held and firmly bound unto the _____ (“**Owner**”) (*insert State agency name*), in the amount of _____ (\$_____), to be paid to **Owner**, for which payment well and truly to be made, we do bind ourselves, our and each and every of our heirs, executors, administrations, successors and assigns, jointly and severally, for and in the whole, firmly by these presents.

Sealed with our seals and dated this _____ day of _____, 20__.

NOW THE CONDITION OF THIS OBLIGATION IS SUCH, that if **Principal**, who has been awarded by **Owner** that certain contract known as Contract No. _____ dated the _____ day of _____, 20__ (the “Contract”), which Contract is incorporated herein by reference, shall well and truly provide and furnish all materials, appliances and tools and perform all the work required under and pursuant to the terms and conditions of the Contract and the Contract Documents (as defined in the Contract) or any changes or modifications thereto made as therein provided, shall make good and reimburse **Owner** sufficient funds to pay the costs of completing the Contract that **Owner** may sustain by reason of any failure or default on the part of **Principal**, and shall also indemnify and save harmless **Owner** from all costs, damages and expenses arising out of or by reason of the performance of the Contract and for as long as provided by the Contract; then this obligation shall be void, otherwise to be and remain in full force and effect.

Surety, for value received, hereby stipulates and agrees, if requested to do so by **Owner**, to fully perform and complete the work to be performed under the Contract pursuant to the terms, conditions and covenants thereof, if for any cause **Principal** fails or neglects to so fully perform and complete such work.

Surety, for value received, for itself and its successors and assigns, hereby stipulates and agrees that the obligation of **Surety** and its bond shall be in no way impaired or affected by any extension of time, modification, omission, addition or change in or to the Contract or the work to be performed thereunder, or by any payment thereunder before the time required therein, or by any waiver of any provisions thereof, or by any assignment, subletting or other transfer thereof or of any work to be performed or any monies due or to become due thereunder; and **Surety** hereby waives notice of any and all such extensions, modifications, omissions, additions, changes, payments, waivers, assignments, subcontracts and transfers and hereby expressly stipulates and agrees that any and all things done and omitted to be done by and in relation to assignees, subcontractors, and other

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transferees shall have the same effect as to **Surety** as though done or omitted to be done by or in relation to **Principal**.

Surety hereby stipulates and agrees that no modifications, omissions or additions in or to the terms of the Contract shall in any way whatsoever affect the obligation of **Surety** and its bond.

Any proceeding, legal or equitable, under this Bond may be brought in any court of competent jurisdiction in the State of Delaware. Notices to **Surety** or Contractor may be mailed or delivered to them at their respective addresses shown below.

IN WITNESS WHEREOF, **Principal** and **Surety** have hereunto set their hand and seals, and such of them as are corporations have caused their corporate seal to be hereto affixed and these presents to be signed by their duly authorized officers, the day and year first above written.

PRINCIPAL

Name: _____

Witness or Attest: Address: _____

Name:

(Corporate Seal)

By: _____ (SEAL)
Name:
Title:

SURETY

Name: _____

Witness or Attest: Address: _____

Name:

(Corporate Seal)

By: _____ (SEAL)
Name:
Title:

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STATE OF DELAWARE
OFFICE OF MANAGEMENT AND BUDGET

PAYMENT BOND

Bond Number: _____

KNOW ALL PERSONS BY THESE PRESENTS, that we, _____, as principal (“**Principal**”), and _____, a _____ corporation, legally authorized to do business in the State of Delaware, as surety (“**Surety**”), are held and firmly bound unto the _____ (“**Owner**”) (*insert State agency name*), in the amount of _____ (\$_____), to be paid to **Owner**, for which payment well and truly to be made, we do bind ourselves, our and each and every of our heirs, executors, administrations, successors and assigns, jointly and severally, for and in the whole firmly by these presents.

Sealed with our seals and dated this _____ day of _____, 20__.

NOW THE CONDITION OF THIS OBLIGATION IS SUCH, that if **Principal**, who has been awarded by **Owner** that certain contract known as Contract No. _____ dated the _____ day of _____, 20__ (the “Contract”), which Contract is incorporated herein by reference, shall well and truly pay all and every person furnishing materials or performing labor or service in and about the performance of the work under the Contract, all and every sums of money due him, her, them or any of them, for all such materials, labor and service for which **Principal** is liable, shall make good and reimburse **Owner** sufficient funds to pay such costs in the completion of the Contract as **Owner** may sustain by reason of any failure or default on the part of **Principal**, and shall also indemnify and save harmless **Owner** from all costs, damages and expenses arising out of or by reason of the performance of the Contract and for as long as provided by the Contract; then this obligation shall be void, otherwise to be and remain in full force and effect.

Surety, for value received, for itself and its successors and assigns, hereby stipulates and agrees that the obligation of **Surety** and its bond shall be in no way impaired or affected by any extension of time, modification, omission, addition or change in or to the Contract or the work to be performed thereunder, or by any payment thereunder before the time required therein, or by any waiver of any provisions thereof, or by any assignment, subletting or other transfer thereof or of any work to be performed or any monies due or to become due thereunder; and **Surety** hereby waives notice of any and all such extensions, modifications, omissions, additions, changes, payments, waivers, assignments, subcontracts and transfers and hereby expressly stipulates and agrees that any and all things done and omitted to be done by and in relation to assignees, subcontractors, and other transferees shall have the same effect as to **Surety** as though done or omitted to be done by or in relation to **Principal**.

Surety hereby stipulates and agrees that no modifications, omission or additions in or to the terms of the Contract shall in any way whatsoever affect the obligation of **Surety** and its bond.

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Any proceeding, legal or equitable, under this Bond may be brought in any court of competent jurisdiction in the State of Delaware. Notices to **Surety** or Contractor may be mailed or delivered to them at their respective addresses shown below.

IN WITNESS WHEREOF, **Principal** and **Surety** have hereunto set their hand and seals, and such of them as are corporations have caused their corporate seal to be hereto affixed and these presents to be signed by their duly authorized officers, the day and year first above written.

PRINCIPAL

Name: _____

Witness or Attest: Address: _____

Name:

(Corporate Seal)

By: _____(SEAL)
Name:
Title:

SURETY

Name: _____

Witness or Attest: Address: _____

Name:

(Corporate Seal)

By: _____(SEAL)
Name:
Title:

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STATE OF DELAWARE
DEPARTMENT OF LABOR
DIVISION OF INDUSTRIAL AFFAIRS
4425 NORTH MARKET STREET
WILMINGTON, DELAWARE 19802

TELEPHONE (302) 761-8200
FAX (302) 761-6601

Via Electronic and Regular Mail

June 20, 2018

Mr. Jeremy Ashe
Delaware Division of Fish and Wildfire
89 Kings Highway
Dover, DE 19901

Re: NAT201801 Phillips Landing Boat Ramp ,Sussex County DE

Dear Mr. Ashe:

I am responding to your request for a category determination for the NAT201801 Phillips Landing Boat Ramp, which is a state funded construction project located in Sussex County, DE. The work consists of demo replace existing boat ramp and repaving an existing parking lot. [REDACTED]

Based upon the information you provided the Department of Labor has determined that this project is a Heavy Construction project and a Highway Construction project. The Heavy Construction is 79.5% of the work while the Highway Construction is 20.5% of the work. The Heavy construction consist of Mobilization/Demobilization, Sediment/Erosion Control/ SWM, Demolition/Clearing, Boat Ramp and Kayak Launch Area. The Highway Construction consist of Parking Lot Area Stripping and Alternate No.1 Parking Lot repair.

Delaware's Prevailing Wage Regulations provide that the rates applicable to a project are the rates in effect on the date of publication of the specifications for that project. I have enclosed a certified copy of the March 15, 2018, prevailing wage rates for Heavy Construction and Highway Construction to be included in your bid specification. However, please be advised that, in the event that a contract for a project is not executed within one hundred and twenty (120) days from the earliest date the specifications were published, the rates in effect at the time of the execution of the contract shall be the applicable rates for the project.

This determination is directed solely to the parties identified herein. It is based on the unique facts relevant to this matter. It does not constitute precedent and should not be cited as such by future parties.

Lastly, please see the enclosed debarment list. Entities/individuals listed shall not be permitted to bid on, be awarded or work on Delaware State funded construction projects, in the timeframe specified, as provided for under 29 Del.C. §6960 or other applicable State statutes.

If you have any questions or I can provide any additional assistance, please do not hesitate to contact me at (302) 761- 8325.

Sincerely,

Curtis Washington
Labor Law Enforcement Officer
curtisl.washington@state.de.us

STATE OF DELAWARE
DEPARTMENT OF LABOR
DIVISION OF INDUSTRIAL AFFAIRS
OFFICE OF LABOR LAW ENFORCEMENT
PHONE: 302 761 8200

Mailing Address:
4425 North Market St., 3rd Fl
Wilmington, DE 19802

Located at:
4425 North Market St., 3rd Fl
Wilmington, DE 19802

PREVAILING WAGES FOR HIGHWAY CONSTRUCTION EFFECTIVE MARCH 15, 2018

CLASSIFICATION	NEW CASTLE	KENT	SUSSEX
BRICKLAYERS	53.89	53.89	53.89
CARPENTERS	54.62	54.81	43.57
CEMENT FINISHERS	34.63	34.85	27.71
ELECTRICAL LINE WORKERS	24.02	46.36	22.69
ELECTRICIANS	68.70	68.70	68.70
IRON WORKERS	63.68	25.48	27.06
LABORERS	43.30	40.70	39.95
MILLWRIGHTS	17.20	16.69	14.41
PAINTERS	68.79	68.79	68.79
PILEDRIVERS	70.92	25.36	28.77
POWER EQUIPMENT OPERATORS	45.46	42.29	38.73
SHEET METAL WORKERS	24.30	21.68	19.64
TRUCK DRIVERS	36.49	30.14	36.72

CERTIFIED:

06/20/2018

BY:

ADMINISTRATOR, OFFICE OF LABOR LAW ENFORCEMENT

Julie Petroff
on behalf of Julie Petroff

NOTE: THESE RATES ARE PROMULGATED AND ENFORCED PURSUANT TO THE PREVAILING WAGE REGULATIONS ADOPTED BY THE DEPARTMENT OF LABOR ON APRIL 3, 1992.

CLASSIFICATIONS OF WORKERS ARE DETERMINED BY THE DEPARTMENT OF LABOR. FOR ASSISTANCE IN CLASSIFYING WORKERS, OR FOR A COPY OF THE REGULATIONS OR CLASSIFICATIONS, PHONE 302 761 8200

NON-REGISTERED APPRENTICES MUST BE PAID THE MECHANIC'S RATE.

PROJECT: NAT201801 Phillips Boat Ramp - Parking Lot Area Stripping. Alternate No. 1
Parking Lot Repair, Sussex County

STATE OF DELAWARE
DEPARTMENT OF LABOR
DIVISION OF INDUSTRIAL AFFAIRS
OFFICE OF LABOR LAW ENFORCEMENT
PHONE: 302 761 8200

Mailing Address:
4425 North Market St., 3rd Fl
Wilmington, DE 19802

Located at:
4425 North Market St., 3rd Fl
Wilmington, DE 19802

PREVAILING WAGES FOR HEAVY CONSTRUCTION EFFECTIVE MARCH 15, 2018

CLASSIFICATION	NEW CASTLE	KENT	SUSSEX
ASBESTOS WORKERS	22.57	19.85	43.17
BOILERMAKERS	79.62	32.80	60.17
BRICKLAYERS	67.95	23.69	25.44
CARPENTERS	54.81	54.81	43.57
CEMENT FINISHERS	44.52	24.87	18.53
ELECTRICAL LINE WORKERS	75.22	74.83	66.03
ELECTRICIANS	68.70	68.70	68.70
GLAZIERS	20.85	18.11	12.26
INSULATORS	56.53	56.53	56.53
IRON WORKERS	62.73	62.25	59.55
LABORERS	46.20	46.20	46.20
MILLWRIGHTS	71.60	71.60	57.70
PAINTERS	81.41	81.41	81.41
PILEDRIVERS	76.77	40.19	31.28
PLASTERERS	19.64	17.06	11.53
PLUMBERS/PIPEFITTERS/STEAMFITTERS	89.13	79.50	18.27
POWER EQUIPMENT OPERATORS	69.29	64.30	69.29
SHEET METAL WORKERS	31.38	19.47	18.28
SPRINKLER FITTERS	33.82	12.81	10.60
TRUCK DRIVERS	32.64	21.06	22.74

CERTIFIED:

06/20/2018

BY:

[Signature]
ADMINISTRATOR, OFFICE OF LABOR LAW ENFORCEMENT

NOTE: THESE RATES ARE PROMULGATED AND ENFORCED PURSUANT TO THE PREVAILING WAGE REGULATIONS ADOPTED BY THE DEPARTMENT OF LABOR ON APRIL 3, 1992.

CLASSIFICATIONS OF WORKERS ARE DETERMINED BY THE DEPARTMENT OF LABOR. FOR ASSISTANCE IN CLASSIFYING WORKERS, OR FOR A COPY OF THE REGULATIONS OR CLASSIFICATIONS, PHONE 302 761 8200

NON-REGISTERED APPRENTICES MUST BE PAID THE MECHANIC'S RATE.

PROJECT: NAT201801 Phillips Boat Ramp - Mobilization, Sediment, Erosion, SWM, Demo, Clearing, Boat Ramp, Kayak Launch, Sussex County

PREVAILING WAGE DEBARMENT LIST

The following contractors have been debarred for violations of the prevailing wage law 29Del.C. §6960 or other applicable State statutes.

Therefore, no public construction contract in this State shall be bid on, awarded to, or received by contractors and individuals on this list for a period of (3) three years from the date of the judgment or as deemed by a court of competent jurisdiction.

Contractor	Address	Date of Debarment
Mullen Brothers, Inc. and Daniel Mullen, individually	3375 Garnett Road, Boothwyn, PA 19060	Indefinite/ Civil Contempt
Site Work Safety Supplies, Inc. and Peter Coker, individually	4020 Seven Hickories Road Dover, DE 19904	1/12/2016
Green Granite and Jason Green, individually	604 Heatherbrooke Court Avondale, PA 19311	Indefinite/ Civil Contempt
Pro Image Landscaping, Inc. and Owner(s) individually	23 Commerce Street Wilmington, DE 19801 and/or 2 Cameo Road Claymont, DE 19703	Indefinite/19 <u>Del.C. §108 &</u> <u>10 Del.C. 542(c)</u>
Liberty Mechanical, LLC and Owner(s), individually	2032 Duncan Road Wilmington, DE 19801	Indefinite/ 19 <u>Del.C. 2374(f)</u>
Integrated Mechanical and Fire Systems Inc. and Allison Sheldon, individually	4601 Governor Printz Boulevard Wilmington, DE 19809	Indefinite/19 <u>Del.C. §108 &</u> <u>10 Del.C. 542(c)</u>

Updated: March 19, 2018

GENERAL REQUIREMENTS

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ARTICLE 1: GENERAL

1.1 CONTRACT DOCUMENTS

1.1.1 The intent of the Contract Documents is to include all items necessary for the proper execution and completion of the Work by the Contractor. The Contract Documents are complementary and what is required by one shall be as binding as if required by all. Performance by the Contractor shall be required to an extent consistent with the Contract Documents and reasonably inferable from them as being necessary to produce the intended results.

1.1.2 Work including material purchases shall not begin until the Contractor is in receipt of a bonafide State of Delaware Purchase Order. Any work performed or material purchases prior to the issuance of the Purchase Order is done at the Contractor's own risk and cost.

1.2 EQUALITY OF EMPLOYMENT OPPORTUNITY ON PUBLIC WORKS

1.2.1 For Public Works Projects financed in whole or in part by state appropriation the Contractor agrees that during the performance of this contract:

1. The Contractor will not discriminate against any employee or applicant for employment because of race, creed, sex, color, sexual orientation, gender identity or national origin. The Contractor will take positive steps to ensure that applicants are employed and that employees are treated during employment without regard to their race, creed, sex, color, sexual orientation, gender identity or national origin. Such action shall include, but not be limited to, the following: employment, upgrading, demotion or transfer; recruitment or recruitment advertising; layoff or termination; rates of pay or other forms of compensation; and selection for training, including apprenticeship. The Contractor agrees to post in conspicuous places available to employees and applicants for employment notices to be provided by the contracting agency setting forth this nondiscrimination clause.
2. The Contractor will, in all solicitations or advertisements for employees placed by or on behalf of the Contractor, state that all qualified applicants will receive consideration for employment without regard to race, creed, sex, color, sexual orientation, gender identity or national origin."

ARTICLE 2: OWNER

(NO ADDITIONAL GENERAL REQUIREMENTS – SEE SUPPLEMENTARY GENERAL CONDITIONS)

ARTICLE 3: CONTRACTOR

3.1 Schedule of Values: The successful Bidder shall within twenty (20) days after receiving notice to proceed with the work, furnish to the Owner a complete schedule of values on the various items comprising the work.

3.2 Subcontracts: Upon approval of Subcontractors, the Contractor shall award their Subcontracts as soon as possible after the signing of their own contract and see that all material, their own and those of their Subcontractors, are promptly ordered so that the work will not be delayed by failure of materials to arrive on time.

3.3 Before commencing any work or construction, the General Contractor is to consult with the Owner as to matters in connection with access to the site and the allocation of Ground Areas for the various features of hauling, storage, etc.

- 3.4 The Contractor shall supervise and direct the Work, using the Contractor's best skill and attention. The Contractor shall be solely responsible for and have control over construction means, methods, techniques, sequences and procedures and for coordinating all portions of the Work under the Contract, unless the Contract Documents give other specific instructions.
- 3.5 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
- 3.6 The Contractor warrants to the Owner that materials and equipment furnished will be new and of good quality, unless otherwise permitted, and that the work will be free from defects and in conformance with the Contract Documents. Work not conforming to these requirements, including substitutions not properly approved, may be considered defective. If required by the Owner, the Contractor shall furnish evidence as to the kind and quality of materials and equipment provided.
- 3.7 Unless otherwise provided, the Contractor shall pay all sales, consumer, use and other similar taxes, and shall secure and pay for required permits, fees, licenses, and inspections necessary for proper execution of the Work.
- 3.8 The Contractor shall comply with and give notices required by laws, ordinances, rules, regulations, and lawful orders of public authorities bearing on performance of the Work. The Contractor shall promptly notify the Owner if the Drawings and Specifications are observed to be at variance therewith.
- 3.9 The Contractor shall be responsible to the Owner for the acts and omissions of the Contractor's employees, Subcontractors and their agents and employees, and other persons performing portions of the Work under contract with the Contractor.
- 3.10 The Contractor shall keep the premises and surrounding area free from accumulation of waste materials or rubbish caused by operations under the Contract. At completion of the Work the Contractor shall remove from and about the Project all waste materials, rubbish, the Contractor's tools, construction equipment, machinery and surplus materials. The Contractor shall be responsible for returning all damaged areas to their original conditions.
- 3.11 STATE LICENSE AND TAX REQUIREMENTS
- 3.11.1 Each Contractor and Subcontractor shall be licensed to do business in the State of Delaware and shall pay all fees and taxes due under State laws. In conformance with Section 2503, Chapter 25, Title 30, Delaware Code, "the Contractor shall furnish the Delaware Department of Finance within ten (10) days after entering into any contract with a contractor or subcontractor not a resident of this State, a statement of total value of such contract or contracts together with the names and addresses of the contracting parties."
- 3.12 The Contractor shall comply with all requirements set forth in Section 6962, Chapter 69, Title 29 of the Delaware Code.
- 3.13 During the contract Work, the Contractor and each Subcontractor, shall implement an Employee Drug Testing Program in accordance with OMB Regulation 4104 - "Regulations for the Drug Testing of Contractor and Subcontractor Employees Working on "Large Public Works Projects". "Large Public Works" is based upon the current threshold required for bidding Public Works as set by the Purchasing and Contracting Advisory Council.

ARTICLE 4: ADMINISTRATION OF THE CONTRACT

4.1 CONTRACT SURETY

4.1.1 PERFORMANCE BOND AND LABOR AND MATERIAL PAYMENT BOND

4.1.2 All bonds will be required as follows unless specifically waived elsewhere in the Bidding Documents.

4.1.3 Contents of Performance Bonds – The bond shall be in the form approved by the Office of Management and Budget. The bond shall be conditioned upon the faithful compliance and performance by the successful bidder of each and every term and condition of the contract and the proposal, plans, specifications, and bid documents thereof. Each term and condition shall be met at the time and in the manner prescribed by the Contract, Bid documents and the specifications, including the payment in full to every person furnishing material or performing labor in the performance of the Contract, of all sums of money due the person for such labor and material. (The bond shall also contain the successful bidder's guarantee to indemnify and save harmless the State and the agency from all costs, damages and expenses growing out of or by reason of the Contract in accordance with the Contract.)

4.1.4 Invoking a Performance Bond – The agency may, when it considers that the interest of the State so require, cause judgement to be confessed upon the bond.

4.1.5 Within twenty (20) days after the date of notice of award of contract, the Bidder to whom the award is made shall furnish a Performance Bond and Labor and Material Payment Bond, each equal to the full amount of the Contract price to guarantee the faithful performance of all terms, covenants and conditions of the same. The bonds are to be issued by an acceptable Bonding Company licensed to do business in the State of Delaware and shall be issued in duplicate.

4.1.6 Performance and Payment Bonds shall be maintained in full force (warranty bond) for a period of two (2) years after the date of the Certificate for Final Payment. The Performance Bond shall guarantee the satisfactory completion of the Project and that the Contractor will make good any faults or defects in his work which may develop during the period of said guarantees as a result of improper or defective workmanship, material or apparatus, whether furnished by themselves or their Sub-Contractors. The Payment Bond shall guarantee that the Contractor shall pay in full all persons, firms or corporations who furnish labor or material or both labor and material for, or on account of, the work included herein. The bonds shall be paid for by this Contractor. The Owner shall have the right to demand that the proof parties signing the bonds are duly authorized to do so.

4.2 FAILURE TO COMPLY WITH CONTRACT

4.2.1 If any firm entering into a contract with the State, or Agency that neglects or refuses to perform or fails to comply with the terms thereof, the Agency which signed the Contract may terminate the Contract and proceed to award a new contract in accordance with this Chapter 69, Title 29 of the Delaware Code or may require the Surety on the Performance Bond to complete the Contract in accordance with the terms of the Performance Bond. Nothing herein shall preclude the Agency from pursuing additional remedies as otherwise provided by law.

4.3 CONTRACT INSURANCE AND CONTRACT LIABILITY

4.3.1 In addition to the bond requirements stated in the Bid Documents, each successful Bidder shall purchase adequate insurance for the performance of the Contract and, by submission of a Bid, agrees to indemnify and save harmless and to defend all legal or equitable actions brought against the State, any Agency, officer and/or employee of the State, for and from all claims of liability which is or may be the result of the successful Bidder's actions during the performance of the Contract.

4.3.2 The purchase or nonpurchase of such insurance or the involvement of the successful Bidder in any legal or equitable defense of any action brought against the successful Bidder based upon work performed pursuant to the Contract will not waive any defense which the State, its agencies and their respective officers, employees and agents might otherwise have against such claims, specifically including the defense of

sovereign immunity, where applicable, and by the terms of this section, the State and all agencies, officers and employees thereof shall not be financially responsible for the consequences of work performed, pursuant to said contract.

4.4 RIGHT TO AUDIT RECORDS

4.4.1 The Owner shall have the right to audit the books and records of a Contractor or any Subcontractor under any Contract or Subcontract to the extent that the books and records relate to the performance of the Contract or Subcontract.

4.4.2 Said books and records shall be maintained by the Contractor for a period of seven (7) years from the date of final payment under the Prime Contract and by the Subcontractor for a period of seven (7) years from the date of final payment under the Subcontract.

ARTICLE 5: SUBCONTRACTORS

5.1 SUBCONTRACTING REQUIREMENTS

5.1.1 All contracts for the construction, reconstruction, alteration or repair of any public building (not a road, street or highway) shall be subject to the following provisions:

1. A contract shall be awarded only to a Bidder whose Bid is accompanied by a statement containing, for each Subcontractor category, the name and address (city or town and State only – street number and P.O. Box addresses not required) of the subcontractor whose services the Bidder intends to use in performing the Work and providing the material for such Subcontractor category.
2. A Bid will not be accepted nor will an award of any Contract be made to any Bidder which, as the Prime Contractor, has listed itself as the Subcontractor for any Subcontractor unless:
 - A. It has been established to the satisfaction of the awarding Agency that the Bidder has customarily performed the specialty work of such Subcontractor category by artisans regularly employed by the Bidder's firm;
 - B. That the Bidder is duly licensed by the State to engage in such specialty work, if the State requires licenses; and
 - C. That the Bidder is recognized in the industry as a bona fide Subcontractor or Contractor in such specialty work and Subcontractor category.

5.1.2 The decision of the awarding Agency as to whether a Bidder who list itself as the Subcontractor for a Subcontractor category shall be final and binding upon all Bidders, and no action of any nature shall lie against any awarding agency or its employees or officers because of its decision in this regard.

5.1.3 After such a Contract has been awarded, the successful Bidder shall not substitute another Subcontractor for any Subcontractor whose name was set forth in the statement which accompanied the Bid without the written consent of the awarding Agency.

5.1.4 No Agency shall consent to any substitution of Subcontractors unless the Agency is satisfied that the Subcontractor whose name is on the Bidders accompanying statement:

- A. Is unqualified to perform the work required;
- B. Has failed to execute a timely reasonable Subcontract;

- C. Has defaulted in the performance on the portion of the work covered by the Subcontract;
or
- D. Is no longer engaged in such business.

5.1.5 Should a Bidder be awarded a contract, such successful Bidder shall provide to the agency the taxpayer identification license numbers of such subcontractors. Such numbers shall be provided on the later of the date on which such subcontractor is required to be identified or the time the contract is executed. The successful Bidder shall provide to the agency to which it is contracting, within 30 days of entering into such public works contract, copies of all Delaware Business licenses of subcontractors and/or independent contractors that will perform work for such public works contract. However, if a subcontractor or independent contractor is hired or contracted more than 20 days after the Bidder entered the public works contract the Delaware Business license of such subcontractor or independent contractor shall be provided to the agency within 10 days of being contracted or hired.

5.1.6 The Contractor may employ additional Subcontractors on the jobsite only after submitting a copy of the Subcontractor's Employee Drug Testing Program to the Owner for approval. A Contractor or Subcontractor shall not commence work until the Owner has concluded its review and determined that the submitted Employee Drug Testing Program complies with OMB Regulation 4104.

5.2 PENALTY FOR SUBSTITUTION OF SUBCONTRACTORS

5.2.1 Should the Contractor fail to utilize any or all of the Subcontractors in the Contractor's Bid statement in the performance of the Work on the public bidding, the Contractor shall be penalized in the amount of (project specific amount*). The Agency may determine to deduct payments of the penalty from the Contractor or have the amount paid directly to the Agency. Any penalty amount assessed against the Contractor may be remitted or refunded, in whole or in part, by the Agency awarding the Contract, only if it is established to the satisfaction of the Agency that the Subcontractor in question has defaulted or is no longer engaged in such business. No claim for the remission or refund of any penalty shall be granted unless an application is filed within one year after the liability of the successful Bidder accrues. All penalty amounts assessed and not refunded or remitted to the contractor shall be reverted to the State.

*one (1) percent of contract amount not to exceed \$10,000

5.3 ASBESTOS ABATEMENT

5.3.1 The selection of any Contractor to perform asbestos abatement for State-funded projects shall be approved by the Office of Management and Budget, Division of Facilities Management pursuant to Chapter 78 of Title 16.

5.4 STANDARDS OF CONSTRUCTION FOR THE PROTECTION OF THE PHYSICALLY HANDICAPPED

5.4.1 All Contracts shall conform with the standard established by the Delaware Architectural Accessibility Board unless otherwise exempted by the Board.

5.5 CONTRACT PERFORMANCE

5.5.1 Any firm entering into a Public Works Contract that neglects or refuses to perform or fails to comply with its terms, the Agency may terminate the Contract and proceed to award a new Contract or may require the Surety on the Performance Bond to complete the Contract in accordance with the terms of the Performance Bond.

ARTICLE 6: CONSTRUCTION BY OWNER OR SEPARATE CONTRACTORS

- 6.1 The Owner reserves the right to simultaneously perform other construction or operations related to the Project with the Owner's own forces, and to award separate contracts in connection with other portions of the Project or other Projects at the same site.
- 6.2 The Contractor shall afford the Owner and other Contractors reasonable opportunity for access and storage of materials and equipment, and for the performance of their activities, and shall connect and coordinate their activities with other forces as required by the Contract Documents.

ARTICLE 7: CHANGES IN THE WORK

- 7.1 The Owner, without invalidating the Contract, may order changes in the Work consisting of Additions, Deletions, Modifications or Substitutions, with the Contract Sum and Contract completion date being adjusted accordingly. Such changes in the Work shall be authorized by written Change Order signed by the Professional, as the duly authorized agent, the Contractor and the Owner.
- 7.2 The Contract Sum and Contract Completion Date shall be adjusted only by a fully executed Change Order.
- 7.3 The additional cost, or credit to the Owner resulting from a change in the Work shall be by mutual agreement of the Owner, Contractor and the Architect. In all cases, this cost or credit shall be based on the 'DPE' wages required and the "invoice price" of the materials/equipment needed.
 - 7.3.1 "DPE" shall be defined to mean "direct personnel expense". Direct payroll expense includes prevailing wage rates plus a maximum multiplier of 1.35 times DPE. For example, if the prevailing wage rate is \$50/hour, the DPE would be \$67.50/hour (50 x 1.35).
 - 7.3.2 "Invoice price" of materials/equipment shall be defined to mean the actual cost of materials and/or equipment that is paid by the Contractor, (or subcontractor), to a material distributor, direct factory vendor, store, material provider, or equipment leasing entity. Rates for equipment that is leased and/or owned by the Contractor or subcontractor(s) shall not exceed those listed in the latest version of the "Means Building Construction Cost Data" publication.
 - 7.3.3 In addition to the above, the General Contractor is allowed a fifteen percent (15%) markup for overhead and profit for additional work performed by the General Contractor's own forces. For additional subcontractor work, the Subcontractor is allowed a fifteen (15) percent overhead and profit on change order work above and beyond the direct costs stated previously. To this amount, the General Contractor will be allowed a mark-up not exceeding seven and one half percent (7.5%) on the subcontractors work. These mark-ups shall include all costs including, but not limited to: overhead, profit, bonds, insurance, supervision, etc. No markup is permitted on the work of the subcontractors subcontractor. No additional costs shall be allowed for changes related to the Contractor's onsite superintendent/staff, or project manager, unless a change in the work changes the project duration and is identified by the CPM schedule. There will be no other costs associated with the change order.

ARTICLE 8: TIME

- 8.1 Time limits, if any, are as stated in the Project Manual. By executing the Agreement, the Contractor confirms that the stipulated limits are reasonable, and that the Work will be completed within the anticipated time frame.
- 8.2 If progress of the Work is delayed at any time by changes ordered by the Owner, by labor disputes, fire, unusual delay in deliveries, abnormal adverse weather conditions, unavoidable casualties or other causes beyond the Contractor's control, the Contract Time shall be extended for such reasonable time as the Owner may determine.
- 8.3 Any extension of time beyond the date fixed for completion of the construction and acceptance of any part of the Work called for by the Contract, or the occupancy of the building by the Owner, in whole or in part, previous to the completion shall not be deemed a waiver by the Owner of his right to annul or terminate the

Contract for abandonment or delay in the matter provided for, nor relieve the Contractor of full responsibility

8.4 SUSPENSION AND DEBARMENT

8.4.1 Per Section 6962(d)(14), Title 29, Delaware Code, “Any Contractor who fails to perform a public works contract or complete a public works project within the time schedule established by the Agency in the Invitation To Bid, may be subject to Suspension or Debarment for one or more of the following reasons: a) failure to supply the adequate labor supply ratio for the project; b) inadequate financial resources; or, c) poor performance on the Project.”

8.4.2 “Upon such failure for any of the above stated reasons, the Agency that contracted for the public works project may petition the Director of the Office of Management and Budget for Suspension or Debarment of the Contractor. The Agency shall send a copy of the petition to the Contractor within three (3) working days of filing with the Director. If the Director concludes that the petition has merit, the Director shall schedule and hold a hearing to determine whether to suspend the Contractor, debar the Contractor or deny the petition. The Agency shall have the burden of proving, by a preponderance of the evidence, that the Contractor failed to perform or complete the public works project within the time schedule established by the Agency and failed to do so for one or more of the following reasons: a) failure to supply the adequate labor supply ratio for the project; b) inadequate financial resources; or, c) poor performance on the project. Upon a finding in favor of the Agency, the Director may suspend a Contractor from Bidding on any project funded, in whole or in part, with public funds for up to 1 year for a first offense, up to 3 years for a second offense and permanently debar the Contractor for a third offense. The Director shall issue a written decision and shall send a copy to the Contractor and the Agency. Such decision may be appealed to the Superior Court within thirty (30) days for a review on the record.”

8.5 RETAINAGE

8.5.1 Per Section 6962(d)(5) a.3, Title 29, Delaware Code: The Agency may at the beginning of each public works project establish a time schedule for the completion of the project. If the project is delayed beyond the completion date due to the Contractor’s failure to meet their responsibilities, the Agency may forfeit, at its discretion, all or part of the Contractor’s retainage.

8.5.2 This forfeiture of retainage also applies to the timely completion of the punchlist. A punchlist will only be prepared upon the mutual agreement of the Owner, Architect and Contractor. Once the punchlist is prepared, all three parties will by mutual agreement, establish a schedule for its completion. Should completion of the punchlist be delayed beyond the established date due to the Contractor’s failure to meet their responsibilities, the Agency may hold permanently, at its discretion, all or part of the Contractor’s retainage.

ARTICLE 9: PAYMENTS AND COMPLETION

9.1 APPLICATION FOR PAYMENT

9.1.1 Applications for payment shall be made to Department of Natural Resources and Environmental Control Division of Fish & Wildlife, 89 Kings Highway Dover DE 19901, Attn: Jeremy Ashe. There will be a five percent (5%) retainage on all Contractor’s monthly invoices until completion of the project. This retainage may become payable upon receipt of all required closeout documentation, provided all other requirements of the Contract Documents have been met.

9.1.2 A date will be fixed for the taking of the monthly account of work done. Upon receipt of Contractor’s itemized application for payment, such application will be audited, modified, if found necessary, and approved for the amount. Statement shall be submitted to the Owner.

9.1.3 Section 6516, Title 29 of the Delaware Code annualized interest is not to exceed 12% per annum beginning thirty (30) days after the “presentment” (as opposed to the date) of the invoice.

9.2 PARTIAL PAYMENTS

9.2.1 Any public works Contract executed by any Agency may provide for partial payments at the option of the Owner with respect to materials placed along or upon the sites or stored at secured locations, which are suitable for use in the performance of the contract.

9.2.2 When approved by the agency, partial payment may include the values of tested and acceptable materials of a nonperishable or noncontaminative nature which have been produced or furnished for incorporation as a permanent part of the work yet to be completed, provided acceptable provisions have been made for storage.

9.2.2.1 Any allowance made for materials on hand will not exceed the delivered cost of the materials as verified by invoices furnished by the Contractor, nor will it exceed the contract bid price for the material complete in place.

9.2.3 If requested by the Agency, receipted bills from all Contractors, Subcontractors, and material, men, etc., for the previous payment must accompany each application for payment. Following such a request, no payment will be made until these receipted bills have been received by the Owner.

9.3 SUBSTANTIAL COMPLETION

9.3.1 When the building has been made suitable for occupancy, but still requires small items of miscellaneous work, the Owner will determine the date when the project has been substantially completed.

9.3.2 If, after the Work has been substantially completed, full completion thereof is materially delayed through no fault of the Contractor, and without terminating the Contract, the Owner may make payment of the balance due for the portion of the Work fully completed and accepted. Such payment shall be made under the terms and conditions governing final payment that it shall not constitute a waiver of claims.

9.3.3 On projects where commissioning is included, the commissioning work as defined in the specifications must be complete prior to the issuance of substantial completion.

9.4 FINAL PAYMENT

9.4.1 Final payment, including the five percent (5%) retainage if determined appropriate, shall be made within thirty (30) days after the Work is fully completed and the Contract fully performed and provided that the Contractor has submitted the following closeout documentation (in addition to any other documentation required elsewhere in the Contract Documents):

9.4.1.1 Evidence satisfactory to the Owner that all payrolls, material bills, and other indebtedness connected with the work have been paid,

9.4.1.2 An acceptable RELEASE OF LIENS,

9.4.1.3 Copies of all applicable warranties,

9.4.1.4 As-built drawings,

9.4.1.5 Operations and Maintenance Manuals,

9.4.1.6 Instruction Manuals,

9.4.1.7 Consent of Surety to final payment.

9.4.1.8 The Owner reserves the right to retain payments, or parts thereof, for its protection until the foregoing conditions have been complied with, defective work corrected and all unsatisfactory conditions remedied.

ARTICLE 10: PROTECTION OF PERSONS AND PROPERTY

10.1 The Contractor shall be responsible for initiating, maintaining, and supervising all safety precautions and programs in connection with the performance of the Contract. The Contractor shall take all reasonable precautions to prevent damage, injury or loss to: workers, persons nearby who may be affected, the Work, materials and equipment to be incorporated, and existing property at the site or adjacent thereto. The Contractor shall give notices and comply with applicable laws ordinances, rules regulations, and lawful orders of public authorities bearing on the safety of persons and property and their protection from injury, damage, or loss. The Contractor shall promptly remedy damage and loss to property at the site caused in whole or in part by the Contractor, a Subcontractor, or anyone directly or indirectly employed by any of them, or by anyone for whose acts they may be liable.

10.2 The Contractor shall notify the Owner in the event any existing hazardous material such as lead, PCBs, asbestos, etc. is encountered on the project. The Owner will arrange with a qualified specialist for the identification, testing, removal, handling and protection against exposure or environmental pollution, to comply with applicable regulation laws and ordinances. The Contractor and Architect will not be required to participate in or to perform this operation. Upon completion of this work, the Owner will notify the Contractor and Architect in writing the area has been cleared and approved by the authorities in order for the work to proceed. The Contractor shall attach documentation from the authorities of said approval.

10.3 As required in the Hazardous Chemical Information Act of June 1984, all vendors supplying any materials that may be defined as hazardous, must provide Material Safety Data Sheets for those products. Any chemical product should be considered hazardous if it has a warning caution on the label relating to a potential physical or health hazard, if it is known to be present in the work place, and if employees may be exposed under normal conditions or in any foreseeable emergency situation. Material Safety Data Sheets must be provided directly to the Owner along with the shipping slips that include those products.

10.4 The Contractor shall certify to the Owner that materials incorporated into the Work are free of all asbestos. This certification may be in the form of Material Safety Data Sheet (MSDS) provided by the product manufacturer for the materials used in construction, as specified or as provided by the Contractor.

ARTICLE 11: INSURANCE AND BONDS

11.1 The Contractor shall carry all insurance required by law, such as Unemployment Insurance, etc. The Contractor shall carry such insurance coverage as they desire on their own property such as a field office, storage sheds or other structures erected upon the project site that belong to them and for their own use. The Subcontractors involved with this project shall carry whatever insurance protection they consider necessary to cover the loss of any of their personal property, etc.

11.2 Upon being awarded the Contract, the Contractor shall obtain a minimum of two (2) copies of all required insurance certificates called for herein, and submit one (1) copy of each certificate, to the Owner, within 20 days of contract award.

11.3 Bodily Injury Liability and Property Damage Liability Insurance shall, in addition to the coverage included herein, include coverage for injury to or destruction of any property arising out of the collapse of or structural injury to any building or structure due to demolition work and evidence of these coverages shall be filed with and approved by the Owner.

11.4 The Contractor's Property Damage Liability Insurance shall, in addition to the coverage noted herein, include coverage on all real and personal property in their care, custody and control damaged in any way by the Contractor or their Subcontractors during the entire construction period on this project.

11.5 Builders Risk (including Standard Extended Coverage Insurance) on the existing building during the entire construction period, shall not be provided by the Contractor under this contract. The Owner shall insure the existing building and all of its contents and all this new alteration work under this contract during entire construction period for the full insurable value of the entire work at the site. Note, however, that the Contractor and their Subcontractors shall be responsible for insuring building materials (installed and stored) and their tools and equipment whenever in use on the project, against fire damage, theft, vandalism, etc.

11.6 Certificates of the insurance company or companies stating the amount and type of coverage, terms of policies, etc., shall be furnished to the Owner, within 20 days of contract award.

11.7 The Contractor shall, at their own expense, (in addition to the above) carry the following forms of insurance:

11.7.1 Contractor's Contractual Liability Insurance

Minimum coverage to be:

Bodily Injury	\$500,000	for each person
	\$1,000,000	for each occurrence
	\$1,000,000	aggregate
Property Damage	\$500,000	for each occurrence
	\$1,000,000	aggregate

11.7.2 Contractor's Protective Liability Insurance

Minimum coverage to be:

Bodily Injury	\$500,000	for each person
	\$1,000,000	for each occurrence
	\$1,000,000	aggregate
Property Damage	\$500,000	for each occurrence
	\$500,000	aggregate

11.7.3 Automobile Liability Insurance

Minimum coverage to be:

Bodily Injury	\$1,000,000	for each person
	\$1,000,000	for each occurrence
Property Damage	\$500,000	per accident

11.7.4 Prime Contractor's and Subcontractors' policies shall include contingent and contractual liability coverage in the same minimum amounts as 11.7.1 above.

11.7.5 Workmen's Compensation (including Employer's Liability):

11.7.5.1 Minimum Limit on employer's liability to be as required by law.

11.7.5.2 Minimum Limit for all employees working at one site.

11.7.6 Certificates of Insurance must be filed with the Owner guaranteeing fifteen (15) days prior notice of cancellation, non-renewal, or any change in coverages and limits of liability shown as included on certificates.

11.7.7 Social Security Liability

11.7.7.1 With respect to all persons at any time employed by or on the payroll of the Contractor or performing any work for or on their behalf, or in connection with or arising out of the Contractor's business, the Contractor shall accept full and exclusive liability for the payment of any and all contributions or taxes or unemployment insurance, or old age retirement benefits, pensions or annuities now or hereafter imposed by the Government of the United States and the State or political subdivision thereof, whether the same be measured by wages, salaries or other remuneration paid to such persons or otherwise.

11.7.7.2 Upon request, the Contractor shall furnish Owner such information on payrolls or employment records as may be necessary to enable it to fully comply with the law imposing the aforesaid contributions or taxes.

11.7.7.3 If the Owner is required by law to and does pay any and/or all of the aforesaid contributions or taxes, the Contractor shall forthwith reimburse the Owner for the entire amount so paid by the Owner.

ARTICLE 12: UNCOVERING AND CORRECTION OF WORK

12.1 The Contractor shall promptly correct Work rejected by the Owner or failing to conform to the requirements of the Contract Documents, whether observed before or after Substantial Completion and whether or not fabricated, installed or completed, and shall correct any Work found to be not in accordance with the requirements of the Contract Documents within a period of two years from the date of Substantial Completion, or by terms of an applicable special warranty required by the Contract Documents. The provisions of this Article apply to work done by Subcontractors as well as to Work done by direct employees of the Contractor.

12.2 At any time during the progress of the work, or in any case where the nature of the defects shall be such that it is not expedient to have them corrected, the Owner, at their option, shall have the right to deduct such sum, or sums, of money from the amount of the contract as they consider justified to adjust the difference in value between the defective work and that required under contract including any damage to the structure.

ARTICLE 13: MISCELLANEOUS PROVISIONS

13.1 CUTTING AND PATCHING

13.1.1 The Contractor shall be responsible for all cutting and patching. The Contractor shall coordinate the work of the various trades involved.

13.2 DIMENSIONS

13.2.1 All dimensions shown shall be verified by the Contractor by actual measurements at the project site. Any discrepancies between the drawings and specifications and the existing conditions shall be referred to the Owner for adjustment before any work affected thereby has been performed.

13.3 LABORATORY TESTS

13.3.1 Any specified laboratory tests of material and finished articles to be incorporated in the work shall be made by bureaus, laboratories or agencies approved by the Owner and reports of such tests shall be submitted to the Owner. The cost of the testing shall be paid for by the Contractor.

13.3.2 The Contractor shall furnish all sample materials required for these tests and shall deliver same without charge to the testing laboratory or other designated agency when and where directed by the Owner.

13.4 ARCHAEOLOGICAL EVIDENCE

13.4.1 Whenever, in the course of construction, any archaeological evidence is encountered on the surface or below the surface of the ground, the Contractor shall notify the authorities of the State Historic Preservation Office and suspend work in the immediate area for a reasonable time to permit those authorities, or persons designated by them, to examine the area and ensure the proper removal of the archaeological evidence for suitable preservation by the Division of Historical and Cultural Affairs.

13.5 GLASS REPLACEMENT AND CLEANING

13.5.1 The General Contractor shall replace without expense to the Owner all glass broken during the construction of the project. If job conditions warrant, at completion of the job the General Contractor shall have all glass cleaned and polished.

13.6 WARRANTY

13.6.1 For a period of two (2) years from the date of substantial completion, as evidenced by the date of final acceptance of the work, the contractor warrants that work performed under this contract conforms to the contract requirements and is free of any defect of equipment, material or workmanship performed by the contractor or any of his subcontractors or suppliers. However, manufacturer's warranties and guarantees, if for a period longer than two (2) years, shall take precedence over the above warranties. The contractor shall remedy, at his own expense, any such failure to conform or any such defect. The protection of this warranty shall be included in the Contractor's Performance Bond.

ARTICLE 14: TERMINATION OF CONTRACT

14.1 If the Contractor defaults or persistently fails or neglects to carry out the Work in accordance with the Contract Documents or fails to perform a provision of the Contract, the Owner, after seven days written notice to the Contractor, may make good such deficiencies and may deduct the cost thereof from the payment then or thereafter due the Contractor. Alternatively, at the Owner's option, and the Owner may terminate the Contract and take possession of the site and of all materials, equipment, tools, and machinery thereon owned by the Contractor and may finish the Work by whatever method the Owner may deem expedient. If the costs of finishing the Work exceed any unpaid compensation due the Contractor, the Contractor shall pay the difference to the Owner.

14.2 "If the continuation of this Agreement is contingent upon the appropriation of adequate state, or federal funds, this Agreement may be terminated on the date beginning on the first fiscal year for which funds are not appropriated or at the exhaustion of the appropriation. The Owner may terminate this Agreement by providing written notice to the parties of such non-appropriation. All payment obligations of the Owner will cease upon the date of termination. Notwithstanding the foregoing, the Owner agrees that it will use its best efforts to obtain approval of necessary funds to continue the Agreement by taking appropriate action to request adequate funds to continue the Agreement."

END OF GENERAL REQUIREMENTS

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PHILLIPS LANDING/NANTICOKE WILDLIFE AREA

PHILLIPS LANDING BOAT RAMP

Date of Issue July 2018

Project Manual

Division of Fish and Wildlife Project No. NAT-201801/Phillips.Landing

STATE OF DELAWARE

DIVISION OF FACILITIES MANAGEMENT

DRUG TESTING FORMS

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EMPLOYEE DRUG TESTING REPORT FORM

Period Ending: _____

4104 Regulations for the Drug Testing of Contractor and Subcontractor Employees Working on Large Public Works Projects requires that Contractors and Subcontractors who work on Large Public Works Contracts funded all or in part with public funds submit Testing Report Forms to the Owner no less than quarterly.

Project Number: _____

Project Name: _____

Contractor/Subcontractor Name: _____

Contractor/Subcontractor Address: _____

Number of employees who worked on the jobsite during the report period: _____

Number of employees subject to random testing during the report period: _____

Number of Negative Results _____ Number of Positive Results _____

Action taken on employee(s) in response to a failed or positive random test:

Authorized Representative of Contractor/Subcontractor: _____
(typed or printed)

Authorized Representative of Contractor/Subcontractor: _____
(signature)

Date: _____

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**EMPLOYEE DRUG TESTING
REPORT OF POSITIVE RESULTS**

4104 Regulations for the Drug Testing of Contractor and Subcontractor Employees Working on Large Public Works Projects requires that Contractors and Subcontractors who work on Large Public Works Contracts funded all or in part with public funds to notify the Owner in writing of a positive random drug test.

Project Number: _____

Project Name: _____

Contractor/Subcontractor Name: _____

Contractor/Subcontractor Address: _____

Name of employee with positive test result: _____

Last 4 digits of employee SSN: _____

Date test results received: _____

Action taken on employee in response to a positive test result:

Authorized Representative of Contractor/Subcontractor: _____
(typed or printed)

Authorized Representative of Contractor/Subcontractor: _____
(signature)

Date: _____

This form shall be sent by mail to the Owner within 24 hours of receipt of test results.

Enclose this test results form in a sealed envelope with the notation "Drug Testing Form – DO NOT OPEN" on the face thereof and place in a separate mailing envelope.

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SECTION 011000 - SUMMARY

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.
- B. In the event of conflicts or discrepancies among the Contract Documents, interpretations will be based on the following priorities:
 - 1. Modifications.
 - 2. The Agreement (Contract)
 - 3. Addenda, with those of later date having precedence over those of earlier date.
 - 4. The Supplementary Conditions.
 - 5. The General Conditions of the Contract for Construction.
 - 6. Division 1 of the Specifications.
 - 7. Drawings and Divisions 2–49 of the Specifications.
 - 8. Other documents specifically enumerated in the Agreement as part of the Contract Documents.

1.2 SUMMARY

- A. Section Includes:
 - 1. Project information.
 - 2. Work covered by Contract Documents.
 - 3. Work under separate contract.
 - 4. Unit Prices.
 - 5. Applications for Payment.
 - 6. Owner Supplied Construction Documents.
 - 7. Coordination.
 - 8. Access to site.
 - 9. Coordination with occupants.
 - 10. Work restrictions.
 - 11. Specification and drawing conventions.
 - 12. Field Engineering.
 - 13. References and Standards.
 - 14. Miscellaneous provisions.
- B. Related Requirements:
 - 1. Section 015000 "Temporary Facilities and Controls" for limitations and procedures governing temporary use of Owner's facilities.

1.3 PROJECT INFORMATION

- A. Project Identification: Phillips Landing Boat Ramp
 - 1. Project Location: Nanticoke Wildlife Area near Laurel, DE
- B. Owner: State of Delaware, Division of Natural Resources and Environmental Control, Fish and Wildlife, 89 Kings Highway, Dover DE 19901.
- C. Architect/Engineer's Identification: The Contract Documents, dated July 2018, were prepared for this Project by AMA a division of Davis Bowen & Friedel, Inc., located at 106 North Washington Street, Suite 103, Easton, MD 21601.

1.4 WORK COVERED BY CONTRACT DOCUMENTS

- A. The Work of Project is defined by the Contract Documents and consists of the following:
 - 1. Demolition of the existing two-lane boat ramp and construction of a three-lane boat ramp with handicap accessibility. Parking lot to be milled, overlay with bituminous pavement and re-striped as shown on the plans.
- B. Type of Contract:
 - 1. Project will be constructed under a single, lump sum price contract.

1.5 WORK UNDER SEPARATE 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 or other contracts. Coordinate the Work of this Contract with work performed under separate contracts as it will have an impact on the General Contractor's scope of work. The General Contractor shall allow the separate contractors access to scaffolding and/or high reaches.
 - 1. No work shall be completed by others under this State contract, by tenant or others that is not included with this Project's scope of work.
 - 2. Items noted "NIC" (Not in Contract) will be furnished and installed by others.

1.6 UNIT PRICES

- A. Unit Prices quoted on the Bid form will be exercised as Owner option.
- B. Coordinate related work and modify surrounding work affected by accepted unit prices as required to complete the Work.
- C. Schedule of Unit Prices: Refer to Section 012200 Unit Prices.

1.7 APPLICATIONS FOR PAYMENT

- A. Submit three (3) originals of each application under procedures of Section 012900 Payment Procedures.
- B. Content and Format: Use the Project Manual table of contents to develop the Schedule of Values.

1.8 OWNER SUPPLIED CONSTRUCTION DOCUMENTS

- A. The Contractor will be furnished, free of charge, five (5) copies of the drawings and Project Manuals (or less if requested). Additional sets will be furnished at the cost of reproduction, postage and handling.

1.9 COORDINATION

- A. Coordinate Work of the various sections of Specifications to assure efficient and orderly sequence of installation of construction elements, with provisions for accommodating items installed later.
- B. Verify characteristics of elements of interrelated operating equipment are compatible; coordinate Work of various sections having interdependent responsibilities for installing, connecting to, and placing in service, such equipment.
- C. Coordinate space requirements and installation of electrical work which is indicated on Drawings.
- D. Execute cutting and patching to integrate elements of Work, uncover ill-timed defective and non-conforming work, provide openings for penetrations of existing surfaces, and provide samples for testing.

1.10 ACCESS TO SITE

- A. General: Contractor shall have partial use of Project site for construction operations as indicated on Drawings by the Contract limits and as indicated by requirements of this Section.
- B. Use of Site: Limit use of Project site to areas within the Contract limits. Do not disturb portions of Project site beyond areas in which the Work is indicated.
 - 1. Limits: Confine construction operations to the areas as indicated.
 - 2. Driveways, Walkways and Entrances: Keep public roads, public parking, driveways and entrances outside of the work area serving premises clear and available to Owner, Owner's employees, emergency vehicles and general public at all times. Do not use these areas for parking or storage of materials.
 - a. Schedule deliveries to minimize use of driveways and entrances by construction operations.

- b. Schedule deliveries to minimize space and time requirements for storage of materials and equipment on-site.
3. The adjacent building areas, site and properties are occupied and shall not be disturbed.

1.11 COORDINATION WITH OCCUPANTS

- A. Full Owner Occupancy: Owner will occupy site, (Nanticoke Wildlife Area), during entire construction period. Cooperate with Owner during construction operations to minimize conflicts and facilitate Owner usage. Perform the Work so as not to interfere with Owner's day-to-day operations. Maintain existing exits unless otherwise indicated.
 1. Maintain access to existing walkways, entrances, corridors, stairs and other adjacent occupied or used facilities. Do not close or obstruct walkways, entrances, stairs, corridors, or other occupied or used facilities without written permission from Owner and approval of authorities having jurisdiction. Entrances shall be open for the Owner's use at all times.
 2. The Boat Ramp will be closed during demolition and reconstruction operations.
 3. Notify Owner not less than one week in advance of activities that will affect Owner's operations.

1.12 WORK RESTRICTIONS

- A. Work Restrictions, General: Comply with restrictions on construction operations.
 1. Comply with limitations on use of public streets and with other requirements of authorities having jurisdiction.
 2. Refer to Section 011400 "Work Restrictions" for additional requirements.
- B. On-Site Work Hours: Limit work to the site to normal business working hours of 7:00 a.m. to 5:00 p.m., Monday through Friday, unless otherwise indicated.
 1. Weekend Hours: Weekend work shall not be allowed unless preapproved by the Owner.
 2. Early Morning Hours: Early morning hours are not allowed unless required for utility shut downs.
- C. Noise, Vibration, and Odors: Coordinate operations that may result in any level of noise and vibration, odors, or other disruption to the occupancy or use of adjacent occupied areas, the buildings and adjacent properties with the Owner.
 1. Notify Architect and Owner not less than seven (7) days in advance of proposed disruptive operations.
 2. Obtain Architect's and/or Owner's written permission before proceeding with disruptive operations.
- D. Nonsmoking Campus and Building: Smoking is prohibited within the boundaries of all state workplaces including all buildings, facilities, indoor and outdoor spaces and all the surrounding grounds owned by the State. This policy also includes but is not limited to parking lots, walkways, State vehicles and private vehicles parked or operated on State workplace property.

1.13 SPECIFICATION AND DRAWING CONVENTIONS

- A. 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. Imperative mood and streamlined language are generally used in the Specifications. 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.
 - 2. Specification requirements are to be performed by Contractor unless specifically stated otherwise.
- B. Division 01 General Requirements: Requirements of Sections in Division 01 apply to the Work of all Sections in the Specifications.
- C. Drawing Coordination: Requirements for materials and products identified on Drawings are described in detail in the Specifications. One or more of the following are used on Drawings to identify materials and products:
 - 1. Terminology: Materials and products are identified by the typical generic terms used in the individual Specifications Sections.
 - 2. Abbreviations: Materials and products are identified by abbreviations published as part of the U.S. National CAD Standard and scheduled on Drawings.
 - 3. Keynoting: Materials and products are identified by reference keynotes referencing Specification Section numbers found in this Project Manual.

1.14 FIELD ENGINEERING

- A. Provide field engineering services; establish grades, lines, and levels, by use of recognized engineering survey practices.
- B. Control datum for survey is that shown on drawings. Locate and protect control and reference points.

1.15 REFERENCES AND STANDARDS

- A. For products specified by association or trade standards, comply with requirements of the standard, except when more rigid requirements are specified or are required by applicable codes.
- B. The date of the standard is that in effect as of the Bid date, except when a specific date is specified.
- C. Obtain copies of standards when required by Contract Documents. Maintain copy at job site during progress of the specific work.

A. SCHEDULE

1. The following is the required schedule for this work:
 - a. Bids Due: September 7th, 2018
 - b. Notice of Building Contract Award: Within thirty (30) days of receipt and acceptance of qualified low bid.
 - c. Purchase Order Issuance: The issuance of a State of Delaware purchase order is contingent upon the successful Contractor submitting bonds on State-approved forms, signed contracts and insurance certificates to the State of Delaware within 20 days of Notice of Award. A purchase order will be issued in approximately thirty days after these items have been submitted to the State of Delaware.
 - d. On-Site Mobilization: Upon receipt of State of Delaware purchase order.
 - e. Substantial Completion: The work shall be completed in one-hundred and thirty (130) days.
 - f. Completion of Punch List: 21 days from date of substantial completion.
 - 1) Refer to the General Requirements for additional details.
 - g. All work shall be complete on or before May 1, 2019.

PART 2 - PRODUCTS (Not Used)

PART 3 - EXECUTION (Not Used)

END OF SECTION 011000

SECTION 011400 - WORK RESTRICTIONS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and other Division 1 Specification Sections, apply to this Section.

1.2 USE OF PREMISES

- A. Use of Site: Limit use of premises to work in areas indicated. Do not disturb portions of site beyond areas in which the Work is indicated.
 - 1. Limits: Confine construction operations to the limits indicated on the drawings. Do not disturb areas to remain occupied during the renovations.
 - 2. Owner Occupancy: The Nanticoke Wildlife Area will be open during construction. The surrounding occupied areas, site, buildings, roadways, access into the buildings, etc. beyond the work area shall remain accessible to the Owner.
 - 3. Dumpster: A dumpster shall be provided on-site at a location approved by the Owner. The dumpster shall be covered to avoid windblown debris. Debris shall be removed on a regular basis in order to avoid an overflowing dumpster. Restoration of grounds disturbed by the dumpster will be required upon completion of the Project. "No Trespassing" signs shall be placed on the dumpster.
 - 4. Public Roadways, Driveways, Entrances and Public Sidewalks: Keep public roadways, driveways, entrances and public sidewalks serving premises clear and available to the Public, Owner, Owner's employees and emergency vehicles at all times. Do not use these areas for parking or storage of materials.
 - a. Schedule deliveries to minimize use of roadways, driveways, sidewalks and entrances.
 - b. The Owner will not sign for any deliveries at any time.
 - c. Schedule deliveries to minimize space and time requirements for storage of materials and equipment on-site.
 - 5. Access to potable water will not be provided.
 - 6. There will be no restroom facilities available during construction. The Contractor shall provide a self-contained toilet unit securely attached to the ground and kept locked after hours.
 - 7. All work taking place on the site shall be monitored by the contractor's project superintendent at all times even if the General Contractor's work forces are not working at the site.
 - 8. The Project superintendent shall discuss weekly with the DNREC Project Manager to review the activities planned for that week to avoid miscommunication, facilitate the renovation process and to maintain the Owner's operations.

PART 2 - PRODUCTS (Not Used)

PART 3 - EXECUTION (Not Used)

END OF SECTION 011400

SECTION 012200 - UNIT PRICES

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and other Division 1 Specification Sections, apply to this Section.

1.2 SUMMARY

- A. This Section includes administrative and procedural requirements for unit prices.
- B. Related Sections include the following:
 - 1. Division 1 Section "Contract Modification Procedures" for procedures for submitting and handling Change Orders.
 - 2. Division 31 "EARTHWORK," Section 31 20 00 "EARTH MOVING" procedures for measurement and payment for excavation/ disposal of unsatisfactory soils.
 - 3. Division 31 "EARTHWORK," Section 31 20 00 "EARTH MOVING" procedures for measurement and payment for Del. No. 57 Stone.
 - 4. Division 31 "EARTHWORK, Section 31 20 00 "EARTH MOVING" procedures for measurement and payment for Del. No. 2 Stone.

1.3 DEFINITIONS

- A. Unit price is an amount proposed by bidders, stated on the Bid Form, as a price per unit of measurement for materials or services added to or deducted from the Contract Sum by appropriate modification, if 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.
- D. List of Unit Prices: A list of unit prices is included at the end of this Section. Specification Sections referenced in the schedule contain requirements for materials described under each unit price.

PART 3 - EXECUTION

3.1 LIST OF UNIT PRICES

A. Unit Price No. 1 –Unsatisfactory Soils.

1. Description: Excavation/disposal of unsatisfactory soils as defined in Section 31 20 00 “EARTH MOVING.”
2. Unit of Measurement: Cubic Yards (CY)

B. Unit Price No. 2-Del. Crusher Run Type B or CR-1

1. Description: Inclusion of GABC within the “over-excavation” area as defined in Section 31 20 00 “EARTH MOVING”.
2. Unit of Measurement: Ton

C. Unit Price No.3

1. Description: Furnish & Install 12”-3’ Timber Piles
2. Unit of Measurement: Vertical Foot

D. Unit Price No. 4

1. Description: Furnish & Install 12” Steel Guide Piles
2. Unit of Measurement: Vertical Foot

END OF SECTION 012200

SECTION 012400 - PERMITS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and other Division 1 Specification Sections, apply to this Section.

1.2 SUMMARY

- A. This Section includes permits that have been issued for this Project as well as permits-in-progress initiated by the Owner and those required Contractor application.

1.3 DEFINITIONS

- A. Permits: A document issued by the Authorities having jurisdiction approving specific construction. Permits may approve the documents as submitted or contain caveats that are to be followed.
 - 1. Preconstruction Permits: Permits issued prior to the bidding and award and which are required prior to proceeding to this stage.
 - 2. Post Bid Permits: Permits required to be applied for by the successful contractor. These include demolition permits, building permits and sub-permits such as mechanical, electrical, fire suppression and plumbing.
 - 3. Post Construction Permits: Permits issued by the authorities having jurisdiction stating that a structure or portion of the structure has been approved as complying with applicable laws, regulations and codes and may be occupied and put to its intended use.

1.4 RESPONSIBILITIES

- A. The Contractor shall abide by the approved permits which are to include the notations provided by the entity/person approving the permit.
- B. The Contractor is responsible for obtaining and paying for all construction permits unless stated otherwise in the construction documents.
 - 1. The Contractor shall conform to all of the regulations and requirements, and shall be responsible for costs associated therewith, of all permits required of the Work.
 - 2. The Contractor shall be responsible for scheduling all inspections as required by the permits.

PART 2 - PRODUCTS (Not Used)

PART 3 - EXECUTION

3.1 SCHEDULE OF ISSUED PERMITS

- A. State of Delaware Architectural Accessibility Board.
- B. Office of Natural Resources, Division of Fish and Wildlife
- C. Office of the Secretary, Delaware Coastal Management Program
- D. US Army Corps of Engineers.

3.2 SCHEDULE OF PENDING PERMITS.

- A. Office of Environmental Protection, Division of Water (Subaqueous Lands Permit)

END OF SECTION 012400

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and other Division 1 Specification Sections, apply to this Section.

1.2 SUMMARY

- A. This Section specifies administrative and procedural requirements for handling and processing Contract modifications.
- B. Related Sections include the following:
 - 1. Division 1 Section "Submittal Procedures" for administrative procedures for handling requests for substitutions made after Contract award.

1.3 MINOR CHANGES IN THE WORK

- A. Architect will issue supplemental instructions authorizing Minor Changes in the Work, not involving adjustment to the Contract Sum or the Contract Time, on Supplemental Instructions sheet.

1.4 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 time specified in Proposal Request 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 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.

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 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.
5. Comply with requirements in Division 1 Section "Product Requirements" if the proposed change requires substitution of one product or system for product or system specified.

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 Change Order sheet.

1.6 CONSTRUCTION CHANGE DIRECTIVE

- A. Construction Change Directive: Architect may issue a Construction Change Directive on applicable sheet. 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 012500

SECTION 012900 - PAYMENT PROCEDURES

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and other Division 1 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.
- B. Related Sections include the following:
 - 1. Division 1 Section "Contract Modification Procedures" for administrative procedures for handling changes to the Contract.
 - 2. Division 1 Section "Construction Progress Documentation" for administrative requirements governing preparation and submittal of Contractor's Construction Schedule.

1.3 DEFINITIONS

- A. Schedule of Values: A statement furnished by Contractor allocating portions of the Contract Sum to various portions of the Work and used as the basis for reviewing Contractor's Applications for Payment.

1.4 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.
 - 2. Submit the Schedule of Values to Architect at earliest possible date but no later than seven days before the date scheduled for submittal of initial Applications for Payment.
- 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. Arrange the Schedule of Values in tabular form with separate columns to indicate the following for each item listed:
 - a. Related Specification Section or Division.
 - b. Description of the Work.
 - c. Change Orders (numbers) that affect value.
 - d. Dollar value.
 - 1) Percentage of the Contract Sum to nearest one-hundredth percent, adjusted to total 100 percent.
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. Include evidence of insurance or bonded warehousing if required.
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. 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.
8. 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.

1.5 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 DNREC forms for Application 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 within 24 hours. 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. 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. List of Contractor's staff assignments (Project Superintendent specifically).
 - 5. Copies of building permits.
 - 6. Certificates of insurance and insurance policies.
 - 7. Performance and payment bonds.
- G. 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.
- H. 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. Updated final statement, accounting for final changes to the Contract Sum.

PART 2 - PRODUCTS (Not Used)

PART 3 - EXECUTION (Not Used)

END OF SECTION 012900

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SECTION 013100 - PROJECT MANAGEMENT AND COORDINATION

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and other Division 1 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. General project coordination procedures.
 - 2. Administrative and supervisory personnel.
 - 3. Project meetings.
- B. Related Sections: The following Sections contain requirements that relate to this Section:
 - 1. Division 1 Section "Construction Progress Documentation" for preparing and submitting the Contractor's Construction Schedule.
 - 2. Division 1 Section "Closeout Procedures" for coordinating Contract closeout.

1.3 COORDINATION

- A. Coordination: Coordinate construction operations included in various 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 subcontractors to ensure maximum accessibility for required maintenance, service, and repair.
 - 3. Make adequate provisions to accommodate items scheduled for later installation.
- B. If necessary, 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 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. Project closeout activities.

1.4 SUBMITTALS

- A. Staff Names: Within 15 days of notice to proceed, submit a list of principal staff assignments, including superintendent and other personnel in attendance at Project site. Identify individuals and their duties and responsibilities; list addresses and telephone numbers, including home and office telephone numbers. Provide names, addresses, and telephone numbers of individuals assigned as standbys in the absence of individuals assigned to Project.

1.5 PROJECT MEETINGS

- A. General: The Architect will 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.
 2. Minutes: The Architect will record significant discussions and agreements achieved. The minutes will be distributed to everyone concerned, including Owner, within 7 days of the meeting.
- B. Preconstruction Conference: A preconstruction conference will be scheduled before the start of construction, at a time convenient to the Owner and Contractor, but no later than 15 days after execution of the Agreement. The conference will be held at the Project. The meeting will be conducted to review responsibilities and personnel assignments.
 1. Attendees: Authorized representatives of Owner, Architect, and their consultants; Contractor and its superintendent; major subcontractors; 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: Items of significance that could affect progress will be discussed, including the following:
 - a. Tentative construction schedule.
 - b. Designation of responsible personnel.
 - c. Procedures for processing field decisions and Change Orders.
 - d. Procedures for processing Applications for Payment.
 - e. Submittal procedures.
 - f. Preparation of Record Documents.
 - g. Use of the premises.
 - h. Responsibility for temporary facilities and controls.
 - i. Parking availability.
 - j. Storage areas.
 - k. Equipment deliveries and priorities.
 - l. Progress cleaning.
 - m. Working hours.

C. Progress Meetings: Progress meetings will be conducted monthly. 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.
 - b. Review present and future needs of each entity present, including the following:
 - 1) Deliveries.
 - 2) Off-site fabrication.
 - 3) Access.
 - 4) Site utilization.
 - 5) Temporary facilities and controls.
 - 6) Work hours.
 - 7) Progress cleaning.
 - 8) Quality and work standards.
3. Reporting: The Architect will distribute minutes of the meeting to each party present and to parties who should have been present. A brief summary, in narrative form, of progress since the previous meeting and report will be included.
 - a. Schedule Updating: Revise Contractor's Construction Schedule after each progress meeting where revisions to the schedule have been made or recognized. The revised schedule will be issued concurrently with the report of each meeting.

PART 2 - PRODUCTS (Not Used)

PART 3 - EXECUTION (Not Used)

END OF SECTION 013100

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SECTION 013150 – FIELD ENGINEERING

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and other Division 1 Specification Sections, apply to this Section.

1.2 SUMMARY

- A. This Section includes administrative provisions and procedural requirements for Field Engineering services, including, but not necessarily limited to the following:

- 1. Land Survey Work.
- 2. Engineering services.

1.3 SUBMITTALS

- A. Certificates: Submit a certificate signed by the Land Surveyor certifying that the location and elevation of improvements comply with the Contract Documents.
- B. Project Record Documents: Submit a record of Work performed and record survey data as required under provisions of Sections "Submittals" and "Project Closeout".

1.4 QUALITY ASSURANCE

- A. Surveyor: Engage a Professional Land Surveyor, licensed in the State of Delaware, to perform required surveying services to ensure that grades, lines, levels, and locations of the Work are in compliance with the Contract Documents.
- B. Engineer: Engage a Professional Engineer of the discipline required, registered in the State of Delaware, to perform required engineering services.

1.5 EXAMINATION

- A. The Owner will identify existing control points and property line corner stakes.
- B. Verify layout information shown on the Drawings, in relation to the property survey and existing benchmarks before proceeding to layout the Work. Locate and protect existing benchmarks and control points. Preserve permanent reference points during construction.
 - 1. Do not change or relocate benchmarks or control points without prior written approval. Promptly report lost or destroyed reference points, or requirements to relocate reference points because of necessary changes in grades or locations.
 - 2. Promptly replace lost or destroyed Project control points. Base replacements on the original survey control points.

- C. Establish and maintain a minimum of two permanent benchmarks on the site, referenced to data established by survey control points.
 - 1. Record benchmark locations, with horizontal and vertical data, on Project Record Documents.
- D. Existing utilities and equipment: The existence and location of underground and other utilities and construction indicated as existing are not guaranteed. Before beginning sitework, investigate and verify the existence and location of underground utilities and other construction.

1.6 PERFORMANCE

- A. Working from lines and levels established by the property survey, establish benchmarks and markers to set lines and levels as needed to properly locate each element of the Project. Calculate and measure required dimensions within indicated or recognized tolerances. Do not scale Drawings to determine dimensions.
 - 1. Advise entities engaged in construction activities, of marked lines and levels provided for their use.
 - 2. As construction proceeds, check every major element for line, level and plumb.
- B. Surveyor's Log: Maintain a surveyor's log of control and other survey Work. Make this log available for reference.
 - 1. Record deviations from required lines and levels, and advise the Architect when deviations that exceed indicated or recognized tolerances are detected. On Project Record Drawings, record deviations that are accepted and not corrected.
 - 2. On completion of foundation walls, major site improvements, and other Work requiring field engineering services, prepare a certified survey showing dimensions, locations, angles and elevations of construction and sitework.
- C. Site Improvements: Locate and lay out site improvements, including pavements, stakes for grading, and fill by instrumentation and similar appropriate means.

PART 2 - PRODUCTS (Not Used)

PART 3 - EXECUTION (Not Used)

END OF SECTION 013150

SECTION 013200 - CONSTRUCTION PROGRESS DOCUMENTATION

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and other Division 1 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. Field condition reports.
- 3. Special reports.

- B. Related Sections include the following:

- 1. Division 1 Section "Payment Procedures" for submitting the Schedule of Values.
- 2. Division 1 Section "Project Management and Coordination" for submitting and distributing meeting and conference minutes.

1.3 DEFINITIONS

- A. Activity: A discrete part of a project that can be identified for planning, scheduling, monitoring, and controlling the construction project. Activities included in a construction schedule consume time and resources.

- 1. Critical activities are activities on the critical path. They must start and finish on the planned early start and finish times.

- B. CPM: Critical path method, which is a method of planning and scheduling a construction project where activities are arranged based on activity relationships. Network calculations determine when activities can be performed and the critical path of Project.

- C. Critical Path: The longest connected chain of interdependent activities through the network schedule that establishes the minimum overall Project duration and contains no float.

- D. Event: The starting or ending point of an activity.

- E. Major Area: A story of construction, a separate building, or a similar significant construction element.

- F. Milestone: A key or critical point in time for reference or measurement.

1.4 SUBMITTALS

- A. Preliminary Construction Schedule: Submit two opaque copies.
- B. Contractor's Construction Schedule: Submit two opaque copies of initial schedule, large enough to show entire schedule for entire construction period.
- C. Field Condition Reports: Submit two copies at time of discovery of differing conditions.
- D. Special Reports: Submit two copies at time of unusual event.

1.5 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. Procedures: Comply with procedures contained in AGC's "Construction Planning & Scheduling."
- B. Time Frame: Extend schedule from date established for commencement of the Work to date of Substantial 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.
- C. Activities: Treat each separate area as a separate numbered activity for each principal element of the Work. Comply with the following:
 - 1. Activity Duration: Define activities so no activity is longer than 20 days, unless specifically allowed by Architect.
 - 2. Submittal Review Time: Include review and resubmittal times indicated in Division 1 Section "Submittal Procedures" in schedule. Coordinate submittal review times in Contractor's Construction Schedule with Submittals Schedule.

3. Substantial Completion: Indicate completion in advance of date established for Substantial Completion, and allow time for Architect's administrative procedures necessary for certification of Substantial Completion.

- D. Constraints: Include constraints and work restrictions indicated in the Contract Documents and as follows in schedule, and show how the sequence of the Work is affected.
 1. Work Restrictions: Show the effect of the following items on the schedule:
 - a. Coordination with existing construction.
 - b. Use of premises restrictions.
 - c. Provisions for future construction.
 - d. Seasonal variations.
 - e. Environmental control.

 2. Work Stages: Indicate important stages of construction for each major portion of the Work, including, but not limited to, the following:
 - a. Mockups.
 - b. Fabrication.
 - c. Deliveries.
 - d. Installation.

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

- F. Contract Modifications: For each proposed contract modification and concurrent with its submission, prepare a time-impact analysis using fragnets to demonstrate the effect of the proposed change on the overall project schedule.

2.2 CONSTRUCTION SCHEDULE

- A. Bar-Chart Schedule: Submit horizontal bar-chart-type construction schedule within five days of date established for commencement of the Work.

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

2.3 REPORTS

- A. Daily Construction Reports: Prepare a daily construction report recording the following information concerning events at Project site:
 1. List of subcontractors at Project site.
 2. List of separate contractors at Project site.
 3. Approximate count of personnel at Project site.
 4. Equipment at Project site.
 5. Material deliveries.
 6. High and low temperatures and general weather conditions.

7. Accidents.
8. Meetings and significant decisions.
9. Unusual events (refer to special reports).
10. Stoppages, delays, shortages, and losses.
11. Emergency procedures.
12. Orders and requests of authorities having jurisdiction.
13. Change Orders received and implemented.
14. Construction Change Directives received and implemented.
15. Substantial Completions authorized.

- 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 interpretation. Include a detailed description of the differing conditions, together with recommendations for changing the Contract Documents.

2.4 SPECIAL REPORTS

- A. General: Submit special reports directly to Owner within one day of an occurrence. Distribute copies of report to parties affected by the occurrence.
- B. Reporting Unusual Events: When an event of an unusual and significant nature occurs at Project site, whether or not related directly to the Work, prepare and submit a special report. List chain of events, persons participating, response by Contractor's personnel, evaluation of results or effects, and similar pertinent information. Advise Owner in advance when these events are known or predictable.

PART 3 - EXECUTION

3.1 CONTRACTOR'S CONSTRUCTION SCHEDULE

- A. Contractor's Construction Schedule Updating: At bi-weekly intervals, update schedule to reflect actual construction progress and activities. Issue schedule at 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. As the Work progresses, indicate Actual Completion percentage for each activity.
- B. Distribution: Distribute copies of approved schedule to Architect, Owner, separate contractors, and other parties identified by Contractor with a need-to-know schedule responsibility.

END OF SECTION 013200

SECTION 013300 - SUBMITTAL PROCEDURES

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and other Division 1 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.
- B. Related Sections include the following:
 - 1. Division 1 Section 01 29 00 "Payment Procedures" for submitting Applications for Payment and the Schedule of Values.
 - 2. Division 1 Section 01 31 00 "Project Management and Coordination" for submitting and distributing meeting and conference minutes and for submitting Coordination Drawings.
 - 3. Division 1 Section 01 32 00 "Construction Progress Documentation" for submitting schedules and reports, including Contractor's Construction Schedule and the Submittals Schedule.
 - 4. Division 1 Section 01 40 00 "Quality Requirements" for submitting test and inspection reports.
 - 5. Division 1 Section 01 77 00 "Closeout Procedures" for submitting warranties.
 - 6. Division 1 Section 01 78 39 "Project Record Documents" for submitting Record Drawings, Record Specifications, and Record Product Data.

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 the Engineer for Contractor's use in preparing submittals. The Contractor will be responsible for field verifying existing conditions.
- 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. 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. Allow additional time if coordination with subsequent submittals is required. Architect will advise Contractor when a submittal being processed must be delayed for coordination.
 2. Intermediate Review: If intermediate submittal is necessary, process it in same manner as initial submittal.
 3. Resubmittal Review: Allow 15 days for review of each resubmittal.
 4. Sequential Review: Where sequential review of submittals by Architect's consultants, Owner, or other parties is indicated, allow 21 days for initial review of each submittal.
- D. 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 (150 by 200 mm) on label or beside title block to record Contractor's review and approval markings and action taken by Architect.
 3. Include the following information on label for processing and recording action taken:
 - a. Project name.
 - b. Date.
 - c. Name and address of Architect.
 - d. Name and address of Contractor.
 - e. Name and address of subcontractor.
 - f. Name and address of supplier.
 - g. Name of manufacturer.
 - h. Submittal number or other unique identifier, including revision identifier.
 - 1) Submittal number shall use Specification Section number followed by a decimal point and then a sequential number (e.g., 06100.01). Resubmittals shall include an alphabetic suffix after another decimal point (e.g., 06100.01.A).
- i. Number and title of appropriate Specification Section.
 - j. Drawing number and detail references, as appropriate.
 - k. Location(s) where product is to be installed, as appropriate.
 - l. Other necessary identification.
- E. Deviations: Highlight or otherwise specifically identify deviations from the Contract Documents on submittals.

- F. Additional Copies: Unless additional copies are required for final submittal, and unless Architect observes noncompliance with provisions in the Contract Documents, initial submittal may serve as final submittal.
1. Submit one copy of submittal to concurrent reviewer in addition to specified number of copies to Architect.
- G. Transmittal: Package each submittal individually and appropriately for transmittal and handling. Transmit each submittal using a transmittal form. Architect will return submittals, without review, received from sources other than Contractor.
1. Transmittal Form: Provide locations on form for the following information:
 - a. Project name.
 - b. Date.
 - c. Destination (To:).
 - d. Source (From:).
 - e. Names of subcontractor, manufacturer, and supplier.
 - f. Category and type of submittal.
 - g. Submittal purpose and description.
 - h. Specification Section number and title.
 - i. Drawing number and detail references, as appropriate.
 - j. Submittal and transmittal distribution record.
 - k. Remarks.
 - l. Signature of transmitter.
 2. On an attached separate sheet, prepared on Contractor's letterhead, record relevant information, requests for data, revisions other than those requested by Architect on previous submittals, and deviations from requirements in the Contract Documents, including minor variations and limitations. Include same label information as related submittal.
- H. Resubmittals: Make resubmittals in same form and number of copies 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 "Furnish as Submitted".
- 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 "Furnish as Submitted" or "Revise as Noted & Furnish" taken by Architect.

1.5 CONTRACTOR'S USE OF ENGINEER'S CAD FILES

- A. General: At Contractor's written request, Engineer's Digital Data Files: Electronic copies of digital data files of the Contract Drawing's site plan will be provided by Engineer per the following: Files for details, etc. will not be provided.
1. Auto CAD (or other dwg format files): Contractor or Sub-contractor to be utilizing the files will obtain and sign an Electronic File Agreement from the Engineer.
 - a. Engineer makes no representations as to the accuracy or completeness of digital data drawing files as they relate to the Contract Drawings. Files are for recipients use only and files are not to be transferred to others.
 - b. First Digital File (per order): Eight Hundred Dollars (\$800.00). A file is defined to mean a single drawing sheet.
 - c. Subsequent Files (per same order): Four Hundred Dollars (\$400). A file is defined to mean a single drawing sheet.
 - d. Digital File Format: AutoCAD 2007.
 - e. Electronic File Agreement and payment to be received by Engineer prior to release of file(s).
 2. PDF File Format on disc: Available where noted in the Invitation to Bid.
 1. CADD files are limited to those that have been generated for this Project.
 2. CADD files for the floor plans and roof plans shall be provided. Files for details, etc. will not be provided.
 3. Contractor will be asked to sign Architects waiver of release form before files will be delivered to the contractor.

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. Include the following information, as applicable:
 - a. Manufacturer's written recommendations.
 - b. Manufacturer's product specifications.
 - c. Manufacturer's installation instructions.
 - d. Standard color charts.
 - e. Manufacturer's catalog cuts.
 - f. Wiring diagrams showing factory-installed wiring.

- g. Printed performance curves.
 - h. Operational range diagrams.
 - i. Mill reports.
 - j. Standard product operation and maintenance manuals.
 - k. Compliance with specified referenced standards.
 - l. Testing by recognized testing agency.
 - m. Application of testing agency labels and seals.
 - n. Notation of coordination requirements.
4. Submit Product Data before or concurrent with Samples.
5. Number of Copies: Submit six (6) copies of Product Data, unless otherwise indicated. Architect will return three copies. Mark up and retain one returned copy as a Project Record Document.
- 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.
1. Preparation: Fully illustrate requirements in the Contract Documents. Include the following information, as applicable:
- a. Dimensions.
 - b. Identification of products.
 - c. Fabrication and installation drawings.
 - d. Roughing-in and setting diagrams.
 - e. Wiring diagrams showing field-installed wiring, including power, signal, and control wiring.
 - f. Shopwork manufacturing instructions.
 - g. Templates and patterns.
 - h. Schedules.
 - i. Design calculations.
 - j. Compliance with specified standards.
 - k. Notation of coordination requirements.
 - l. Notation of dimensions established by field measurement.
 - m. Relationship to adjoining construction clearly indicated.
 - n. Seal and signature of professional engineer if specified.
 - o. Wiring Diagrams: Differentiate between manufacturer-installed and field-installed wiring.
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 (215 by 280 mm) but no larger than 30 by 40 inches (750 by 1000 mm).
3. Number of Copies: Submit six (6) opaque copies of each submittal, unless copies are required for operation and maintenance manuals. Submit five copies where copies are required for operation and maintenance manuals. Architect will retain three copies; remainder will be returned.
- 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.
 4. Samples for Initial Selection: Submit manufacturer's color charts consisting of units or sections of units showing the full range of colors, textures, and patterns available.
 - a. Number of Samples: Submit one full set(s) of available choices where color, pattern, texture, or similar characteristics are required to be selected from manufacturer's product line. Architect will return submittal with options selected.
 5. Samples for Verification: Submit full-size units or Samples of size indicated, prepared from same material to be used for the Work, cured and finished in manner specified, and physically identical with material or product proposed for use, and that show full range of color and texture variations expected. Samples include, but are not limited to, the following: partial sections of manufactured or fabricated components; small cuts or containers of materials; complete units of repetitively used materials; swatches showing color, texture, and pattern; color range sets; and components used for independent testing and inspection.
 - a. Number of Samples: Submit four sets of Samples. Architect will retain three Sample sets; remainder will be returned.
 - 1) Submit a single Sample where assembly details, workmanship, fabrication techniques, connections, operation, and other similar characteristics are to be demonstrated.
 - 2) If variation in color, pattern, texture, or other characteristic is inherent in material or product represented by a Sample, submit at least four sets of paired units that show approximate limits of variations.
- 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. Include the following information in tabular form:
1. Type of product. Include unique identifier for each product.
 2. Number and name of room or space.

3. Location within room or space.
 4. Number of Copies: Submit three copies of product schedule or list, unless otherwise indicated. Architect will return two copies.
 - a. Mark up and retain one returned copy as a Project Record Document.
- F. Contractor's Construction Schedule: Comply with requirements specified in Division 1 Section "Construction Progress Documentation" for Construction Manager's action.
- G. Submittals Schedule: Comply with requirements specified in Division 1 Section "Construction Progress Documentation."
- H. Application for Payment: Comply with requirements specified in Division 1 Section "Payment Procedures."
- I. Schedule of Values: Comply with requirements specified in Division 1 Section "Payment Procedures."
- J. Subcontract List: Prepare a written summary identifying individuals or firms proposed for each portion of the Work, including those who are to furnish products or equipment fabricated to a special design. Include the following information in tabular form:
1. Name, address, and telephone number of entity performing subcontract or supplying products.
 2. Number and title of related Specification Section(s) covered by subcontract.
 3. Drawing number and detail references, as appropriate, covered by subcontract.
 4. Number of Copies: Submit three copies of subcontractor list, unless otherwise indicated. Architect will return two copies.
 - a. Mark up and retain one returned copy as a Project Record Document.

2.2 INFORMATIONAL SUBMITTALS

- A. General: Prepare and submit Informational Submittals required by other Specification Sections.
1. Number of Copies: Submit three 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 1 Section "Quality Requirements."
- B. Coordination Drawings: Comply with requirements specified in Division 1 Section "Project Management and Coordination."
- C. Contractor's Construction Schedule: Comply with requirements specified in Division 1 Section "Construction Progress Documentation."

- D. 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.
- E. Welding Certificates: Prepare written certification that welding procedures and personnel comply with requirements in the Contract Documents. Submit record of Welding Procedure Specification (WPS) and Procedure Qualification Record (PQR) on AWS forms. Include names of firms and personnel certified.
- F. 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.
- G. Manufacturer Certificates: Prepare written statements on manufacturer's letterhead certifying that manufacturer complies with requirements in the Contract Documents. Include evidence of manufacturing experience where required.
- H. Product Certificates: Prepare written statements on manufacturer's letterhead certifying that product complies with requirements in the Contract Documents.
- I. Material Certificates: Prepare written statements on manufacturer's letterhead certifying that material complies with requirements in the Contract Documents.
- J. 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.
- K. Product Test Reports: Prepare written reports indicating current product produced by manufacturer complies with requirements in the Contract Documents. Base reports on evaluation of tests performed by manufacturer and witnessed by a qualified testing agency, or on comprehensive tests performed by a qualified testing agency.
- L. Research/Evaluation Reports: Prepare written evidence, from a model code organization acceptable to authorities having jurisdiction, that product complies with building code in effect for Project. Include the following information:
 - 1. Name of evaluation organization.
 - 2. Date of evaluation.
 - 3. Time period when report is in effect.
 - 4. Product and manufacturers' names.
 - 5. Description of product.
 - 6. Test procedures and results.
 - 7. Limitations of use.
- M. Schedule of Tests and Inspections: Comply with requirements specified in Division 1 Section "Quality Requirements."
- N. Preconstruction Test Reports: Prepare reports written by a qualified testing agency, on testing agency's standard form, indicating and interpreting results of tests performed before installation of product, for compliance with performance requirements in the Contract Documents.

- O. Compatibility Test Reports: Prepare reports written by a qualified testing agency, on testing agency's standard form, indicating and interpreting results of compatibility tests performed before installation of product. Include written recommendations for primers and substrate preparation needed for adhesion.
- P. 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.
- Q. Maintenance Data: Prepare written and graphic instructions and procedures for operation and normal maintenance of products and equipment. Comply with requirements specified in Division 1 Section "Operation and Maintenance Data."
- R. Design Data: Prepare written and graphic information, including, but not limited to, performance and design criteria, list of applicable codes and regulations, and calculations. Include list of assumptions and other performance and design criteria and a summary of loads. Include load diagrams if applicable. Provide name and version of software, if any, used for calculations. Include page numbers.
- S. 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. Include the following, as applicable:
 - 1. Preparation of substrates.
 - 2. Required substrate tolerances.
 - 3. Sequence of installation or erection.
 - 4. Required installation tolerances.
 - 5. Required adjustments.
 - 6. Recommendations for cleaning and protection.
- T. Manufacturer's Field Reports: Prepare written information documenting factory-authorized service representative's tests and inspections. Include the following, as applicable:
 - 1. Name, address, and telephone number of factory-authorized service 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.
- U. 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.

- V. Material Safety Data Sheets (MSDSs): Submit information directly to Owner; do not submit to Architect.
 - 1. Architect will not review submittals that include MSDSs and will return the entire submittal for resubmittal.

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. Furnish as Submitted.
 - 2. Revise as Noted & Furnish.
 - 3. Revise as Noted & Furnish. Submit Revised Copy for Record.
 - 4. Revise & Resubmit.
- 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 General and Supplementary Conditions and other Division 1 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. Specific quality-assurance and -control requirements for individual construction activities are specified in the Sections that specify those activities. Requirements in those Sections may also cover production of standard products.
 - 2. Specified tests, inspections, and related actions do not limit Contractor's other quality-assurance and -control procedures that facilitate compliance with the Contract Document requirements.
 - 3. Requirements for Contractor to provide quality-assurance and -control services required by Architect, Owner or authorities having jurisdiction are not limited by provisions of this Section.
- C. Related Sections include but are not limited to the following:
 - 1. Division 1 Section "Construction Progress Documentation" for developing a schedule of required tests and inspections.

1.3 DEFINITIONS

- A. 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.
- B. 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. Services do not include contract enforcement activities performed by Architect.
- C. Mockups: Full-size, physical assemblies that are constructed on-site. Mockups are used to verify selections made under sample submittals, to demonstrate aesthetic effects and, where

indicated, qualities of materials and execution, and to review construction, coordination, testing, or operation; they are not Samples. Approved mockups establish the standard by which the Work will be judged.

- D. Laboratory Mockups: Full-size, physical assemblies that are constructed at testing facility to verify performance characteristics.
- E. Preconstruction Testing: Tests and inspections that are performed specifically for the Project before products and materials are incorporated into the Work to verify performance or compliance with specified criteria.
- F. Product Testing: Tests and inspections that are performed by an NRTL, an NVLAP, or a testing agency qualified to conduct product testing and acceptable to authorities having jurisdiction, to establish product performance and compliance with industry standards.
- G. Source Quality-Control Testing: Tests and inspections that are performed at the source, i.e., plant, mill, factory, or shop.
- H. Field Quality-Control Testing: Tests and inspections that are performed on-site for installation of the Work and for completed Work.
- I. Testing Agency: An entity engaged to perform specific tests, inspections, or both. Testing laboratory shall mean the same as testing agency.
- J. 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, and similar operations.
 - 1. Using a term such as "carpentry" does not imply that certain construction activities must be performed by accredited or unionized individuals of a corresponding generic name, such as "carpenter." It also does not imply that requirements specified apply exclusively to trades people of the corresponding generic name.
- K. Experienced: When used with an entity, "experienced" means having successfully completed a minimum of five previous projects similar in size and scope to this Project; being familiar with special requirements indicated; and having complied with requirements of authorities having jurisdiction.

1.4 CONFLICTING REQUIREMENTS

- A. General: If compliance with two or more standards is specified and the standards establish different or conflicting requirements for minimum quantities or quality levels, comply with the most stringent requirement. Refer uncertainties and requirements that are different, but apparently equal, to Architect for a decision 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.

1.5 SUBMITTALS

- A. Qualification Data: For testing agencies specified in "Quality Assurance" Article to demonstrate their capabilities and experience. Include proof of qualifications in the form of a recent report on the inspection of the testing agency by a recognized authority.
- B. Schedule of Tests and Inspections: Prepare in tabular form and include the following:
1. Specification Section number and title.
 2. Description of test and inspection.
 3. Identification of applicable standards.
 4. Identification of test and inspection methods.
 5. Number of tests and inspections required.
 6. Time schedule or time span for tests and inspections.
 7. Entity responsible for performing tests and inspections.
 8. Requirements for obtaining samples.
 9. Unique characteristics of each quality-control service.
- C. 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.
- 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.

1.6 QUALITY ASSURANCE

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

- B. **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.
- C. **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.
- D. **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.
- E. **Testing Agency Qualifications:** An NRTL, an NVLAP, or an independent agency with the experience and capability to conduct testing and inspecting indicated, as documented according to ASTM E 548; and with additional qualifications specified in individual Sections; and where required by authorities having jurisdiction, that is acceptable to authorities.
 - 1. **NRTL:** A nationally recognized testing laboratory according to 29 CFR 1910.7.
 - 2. **NVLAP:** A testing agency accredited according to NIST's National Voluntary Laboratory Accreditation Program.
- 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.
 - 1. **Testing Agency Responsibilities:** Submit a certified written report of each test, inspection, and similar quality-assurance service to Architect with copy to Contractor. Interpret tests and inspections and state in each report whether tested and inspected work complies with or deviates from the Contract Documents.

1.7 QUALITY CONTROL

- A. **Owner Responsibilities:** Where quality-control services are indicated as Owner's responsibility, Owner will engage a qualified testing agency to perform these 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.
 - 2. Costs for retesting and reinspecting construction that replaces or is necessitated by work that failed to comply with the Contract Documents will be charged to Contractor and the Contract Sum will be adjusted by Change Order.
- B. Tests and inspections not explicitly assigned to Owner are Contractor's responsibility. Unless otherwise indicated, provide quality-control services specified and those required by authorities having jurisdiction. Perform quality-control services required of Contractor by authorities having jurisdiction, whether specified or not.

1. Where services are indicated as Contractor's responsibility, engage a qualified testing agency to perform these quality-control services.
 - a. Contractor shall not employ same entity engaged by Owner, unless agreed to in writing by Owner.
 2. Notify testing agencies at least 24 hours in advance of time when Work that requires testing or inspecting will be performed.
 3. Where quality-control services are indicated as Contractor's responsibility, submit a certified written report, in duplicate, of each quality-control service.
 4. Testing and inspecting requested by Contractor and not required by the Contract Documents are Contractor's responsibility.
 5. Submit additional copies of each written report directly to authorities having jurisdiction, when they so direct.
- 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 1 Section "Submittal Procedures."
- D. **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.
- E. **Testing Agency Responsibilities:** Cooperate with Architect and Contractor in performance of duties. Provide qualified personnel to perform required tests and inspections.
1. Notify Architect and Contractor promptly of irregularities or deficiencies observed in the Work during performance of its services.
 2. Determine the location from which test samples will be taken and in which in-situ tests are conducted.
 3. Conduct and interpret tests and inspections and state in each report whether tested and inspected work complies with or deviates from requirements.
 4. Submit a certified written report, in duplicate, of each test, inspection, and similar quality-control service through Contractor.
 5. Do not release, revoke, alter, or increase the Contract Document requirements or approve or accept any portion of the Work.
 6. Do not perform any duties of Contractor.
- F. **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:
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. Preliminary design mix proposed for use for material mixes that require control by testing agency.
 7. Security and protection for samples and for testing and inspecting equipment at Project site.
- G. 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.
- H. Schedule of Tests and Inspections: Prepare a schedule of tests, inspections, and similar quality-control services required by the Contract Documents. Submit schedule within 30 days of date established for commencement of the Work.
1. Distribution: Distribute schedule to Owner, Architect testing agencies, and each party involved in performance of portions of the Work where tests and inspections are required.

1.8 SPECIAL TESTS AND INSPECTIONS

- A. Special Tests and Inspections: Owner will engage a qualified testing agency to conduct special tests and inspections required by authorities having jurisdiction as the responsibility of Owner, 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.
 1. Provide materials and comply with installation requirements specified in other Specification Sections. Restore patched areas and extend restoration into adjoining areas with durable seams that are as invisible as possible.
- 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 SECTION 014000

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SECTION 014200 - REFERENCE STANDARDS AND DEFINITIONS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and other Division 1 Specification Sections, apply to this Section.

1.2 DEFINITIONS

- A. General: Basic contract definitions are included in the Conditions of the Contract.
- B. "Indicated": The term "indicated" refers to graphic representations, notes, or schedules on the Drawings; or to other paragraphs or schedules in the Specifications and similar requirements in the Contract Documents. Terms such as "shown," "noted," "scheduled," and "specified" are used to help the user locate the reference. Location is not limited.
- C. "Directed": Terms such as "directed," "requested," "authorized," "selected," "approved," "required," and "permitted" mean directed by the Architect, requested by the Architect, and similar phrases.
- D. "Approved": The term "approved," when used in conjunction with the Architect's action on the Contractor's submittals, applications, and requests, is limited to the Architect's duties and responsibilities as stated in the Conditions of the Contract.
- E. "Regulations": The term "regulations" includes laws, ordinances, statutes, and lawful orders issued by authorities having jurisdiction, as well as rules, conventions, and agreements within the construction industry that control performance of the Work.
- F. "Furnish": The term "furnish" means to supply and deliver to the Project site, ready for unloading, unpacking, assembly, installation, and similar operations.
- G. "Install": The term "install" describes operations at the Project site including the actual unloading, temporary storage, unpacking, assembling, erecting, placing, anchoring, applying, working to dimension, finishing, curing, protecting, cleaning, and similar operations.
- H. "Provide": The term "provide" means to furnish and install, complete and ready for the intended use.
- I. "Installer": An installer is the Contractor or another entity engaged by the Contractor, either as an employee, subcontractor, or contractor of lower tier, to perform a particular construction activity, including installation, erection, application, or similar operations. Installers are required to be experienced in the operations they are engaged to perform.
 - 1. The term "experienced," when used with the term "installer," means having successfully completed a minimum of five previous projects similar in size and scope to this Project;

being familiar with the special requirements indicated; and having complied with requirements of authorities having jurisdiction.

2. Trades: Using a term such as "carpentry" does not imply that certain construction activities must be performed by accredited or unionized individuals of a corresponding generic name, such as "carpenter." It also does not imply that requirements specified apply exclusively to tradespersons of the corresponding generic name.
 3. Assigning Specialists: Certain Sections of the Specifications require that specific construction activities shall be performed by specialists who are recognized experts in those operations. The specialists must be engaged for those activities, and their assignments are requirements over which the Contractor has no option. However, the ultimate responsibility for fulfilling contract requirements remains with the Contractor.
 - a. This requirement shall not be interpreted to conflict with enforcing building codes and similar regulations governing the Work. It is also not intended to interfere with local trade-union jurisdictional settlements and similar conventions.
- J. "Project site" is the space available to the Contractor for performing construction activities, either exclusively or in conjunction with others performing other work as part of the Project. The extent of the Project site is shown on the Drawings and may or may not be identical with the description of the land on which the Project is to be built.
- K. "Testing Agencies": A testing agency is an independent entity engaged to perform specific inspections or tests, either at the Project site or elsewhere, and to report on and, if required, to interpret results of those inspections or tests.

1.3 SPECIFICATION FORMAT AND CONTENT EXPLANATION

- A. Specification Format: These Specifications are organized into Divisions and Sections based on the CSI/CSC's "MasterFormat" numbering system.
- B. Specification Content: These 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 interpolated as the sense requires. Singular words shall be interpreted as plural and plural words 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 the Contractor. At certain locations in the Section Text, subjective language is used for clarity to describe responsibilities that must be fulfilled indirectly by the 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.

1.4 INDUSTRY STANDARDS

- A. **Applicability of Standards:** Unless the Contract Documents include more stringent requirements, applicable construction industry standards have the same force and effect as if bound or copied directly into the Contract Documents to the extent referenced. Such standards are made a part of the Contract Documents by reference.
- B. **Publication Dates:** Comply with standards in effect as of the date of the Contract Documents.
- C. **Conflicting Requirements:** Where compliance with two or more standards is specified and the standards establish different or conflicting requirements for minimum quantities or quality levels, comply with the most stringent requirement. Refer uncertainties and requirements that are different, but apparently equal, to the Architect for a decision before proceeding.
 - 1. **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 the requirements. Refer uncertainties to the Architect for a decision before proceeding.
- D. **Copies of Standards:** Each entity engaged in construction on the Project must be familiar with industry standards applicable to its construction activity. Copies of applicable standards are not bound with the Contract Documents.
 - 1. Where copies of standards are needed to perform a required construction activity, the Contractor shall obtain copies directly from the publication source and make them available on request.
- E. **Abbreviations and Names:** Trade association names and titles of general standards are frequently abbreviated. Where abbreviations and acronyms are used in the Specifications or other Contract Documents, they mean the recognized name of the trade association, standards-producing organization, authorities having jurisdiction, or other entity applicable to the context of the text provision. Refer to Gale Research's "Encyclopedia of Associations" or Columbia Books' "National Trade & Professional Associations of the U.S.," which are available in most libraries.

1.5 SUBMITTALS

- A. **Permits, Licenses, and Certificates:** For the 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.

PRODUCTS (Not Applicable)

PART 2 - EXECUTION (Not Applicable)

END OF SECTION 014200

SECTION 015000 - TEMPORARY FACILITIES AND CONTROLS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and other Division 1 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 testing agencies and authorities having jurisdiction.

- B. Sewer Service: Sewer is not available at the site. Provide Porta-Potties. Pay service use charges for Porta-Potties usage by all entities for construction operations.

Water Service: Water is not available at the site. Pay water-service use charges for water used by all entities for construction operations.

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

- C. Telephone Service: Provide cellular phone service to the site as required to contact Contractor site representatives.

1.4 INFORMATIONAL SUBMITTALS

- A. Site Plan: Show temporary facilities, staging areas, and parking areas for construction personnel.

- B. Fire-Safety Program: Show compliance with requirements of NFPA 241 and authorities having jurisdiction. Indicate Contractor personnel responsible for management of fire-prevention program.

1.5 QUALITY ASSURANCE

- A. Comply with Federal, State and local codes and regulations as well as utility company requirements.

- B. Coordinate work with Owner's requirements.

- C. Materials: Materials must be new and adequate in capacity for the required usage. Materials must not create unsafe conditions nor violate requirements of applicable codes and standards.
- D. Tests and Inspections: Arrange for authorities having jurisdiction to test and inspect each temporary utility before use. Obtain required certifications and permits.

1.6 PROJECT CONDITIONS

- A. Maintain excavations free of water. Provide and operate pumping equipment. Grade site to drain water away from excavations.
- B. Provide temporary protection for installed products. Control traffic in immediate area to minimize damage.
- C. Prohibit traffic and storage on lawns and landscaped areas.

PART 2 - PRODUCTS

2.1 TEMPORARY FACILITIES

- A. Field Office, General: Not Required

2.2 EQUIPMENT

- A. Fire Extinguishers: Portable, UL rated; with class and extinguishing agent as required by locations and classes of fire exposures.
- B. Heating Equipment: Use of gasoline-burning space heaters, open-flame heaters, or salamander-type heating units is prohibited.

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.
 - 1. Provide superintendent with cellular telephone or portable two-way radio for use when away from field office.

3.2 SUPPORT FACILITIES INSTALLATION

- A. Security: Security of persons and property in the areas under control of the Contractor shall be the Contractor's exclusive responsibility.
 - 1. The Contractor, at his own expense, shall initiate whatever programs that are necessary to execute his responsibility.
 - 2. Control of access to the area under the Contractor's control shall be maintained. Visitors shall be required to report immediately to the Contractor's Superintendent and to produce full identification which will be recorded in the Contractor's Daily Log along with the purpose of the visit.
- B. Parking: Use designated areas of Owner's existing parking areas for construction personnel's private vehicles and of Contractor's light-weight vehicles.
- C. Project Signs: Not Required.
- D. Cleaning During Construction: Control accumulation of waste materials and rubbish. Periodically dispose of legally off site.
- E. Lifts and Hoists: Provide facilities necessary for hoisting materials and personnel.
 - 1. Truck cranes and similar devices used for hoisting materials are considered "tools and equipment" and not temporary facilities.
- F. Environmental Protection: Provide protection, operate temporary facilities, and conduct construction as required to comply with environmental regulations and that minimize possible air, waterway, and subsoil contamination or pollution or other undesirable effects.
- G. Temporary Erosion and Sedimentation Control: Provide measures to prevent soil erosion and discharge of soil-bearing water runoff and airborne dust to undisturbed areas and to adjacent properties and walkways, according to Drawings.
 - 1. Verify that flows of water redirected from construction areas or generated by construction activity do not enter or cross tree- or plant- protection zones.
 - 2. Inspect, repair, and maintain erosion- and sedimentation-control measures during construction until permanent vegetation has been established.
 - 3. Clean, repair, and restore adjoining properties and roads affected by erosion and sedimentation from Project site during the course of Project.
 - 4. Remove erosion and sedimentation controls and restore and stabilize areas disturbed during removal.
- H. Stormwater Control: Comply with requirements of authorities having jurisdiction. Provide barriers in and around excavations and subgrade construction to prevent flooding by runoff of stormwater from heavy rains.

3.3 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. 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. Materials and facilities that constitute temporary facilities are property of Contractor.

END OF SECTION 015000

SECTION 015600 - ENVIRONMENTAL PROTECTION

PART 1 - GENERAL

1.1 ENVIRONMENTAL PROTECTION

- A. Environmental protection considerations consist of, but are not limited to, the following factors:
1. Natural resources including air, water, and land.
 2. Solid waste disposal.
 3. Noise.
 4. Control of toxic substances and hazardous materials.
 5. The presence of chemical, physical, and biological elements and agents that adversely effect and alter ecological balances.

1.2 GENERAL REQUIREMENTS

- A. Provide and maintain environmental protection defined herein, other Sections and as indicated in the Drawings.
- B. Comply with all Federal, State, and local laws, ordinances and regulations pertaining to environmental protection.
- C. Compliance by subcontractors with the provisions of this and various other sections of these specifications is the responsibility of the Contractor.
- D. Use of equipment from which factory-installed, anti-pollution and noise control devices are removed or rendered ineffective, either intentionally or through lack of proper maintenance is prohibited.
- E. Furnish a certificate that all materials and operating equipment installed as a part of this project, the installation thereof and all equipment used in the construction, are in compliance with all applicable local laws, ordinances, regulations and permits concerning environmental pollution control and abatement.

1.3 PROTECTION OF NATURAL RESOURCES

- A. General: It is intended that the natural resources within the project boundaries and outside the limits of permanent work performed be preserved in their existing condition, be restored to an equivalent of the existing condition or improved as indicated, as approved by the Architect/Engineer, upon completion of the work. Confine on-site construction activities to areas defined by the drawings and specifications.

1.4 TOXIC SUBSTANCES

- B. Hazardous Materials are not known to be present at the project site. However, in the event the Contractor, during the course of the work on the project, encounters the presence of asbestos or any materials containing asbestos, or polychlorinated biphenyl (PCB's) or any other hazardous materials as recognized by local Authorities having jurisdiction, promptly notify the Owner through the Architect/Engineer. Do not perform any work pertinent to the asbestos or hazardous material prior to receipt of special instructions from the Owner through the Architect/Engineer. Any delay in the progress of the work as a result of encountering either asbestos or hazardous materials on the project will be mitigated by the Architect/Engineer. Within 24 hours of this notification to the Owner through the Architect/Engineer of the encountering of the presence of asbestos or hazardous materials, the Contractor will meet with the Architect/Engineer to replan and work around the affected area. The Architect/Engineer will provide the special instructions without delay and upon confirmation by the local Authorities of the actions taken and authorize work to progress.

1.5 CONTROL AND DISPOSAL OF UNSATISFACTORY SOILS, EXCESS MATERIAL, TRASH AND DEBRIS

- A. Dispose of excess excavated material that is approved by the Architect/Engineer as clean fill onsite if an onsite soil disposal area is approved by the Architect/Engineer. If no such site is approved, dispose of the material in accordance with the provision of paragraph 1.5 (C).
- B. Pick-up trash and place in containers. Empty containers on a regular schedule. Conduct handling and disposal to prevent contamination of the site and other areas. Do not dispose of in areas of natural vegetation. On completion, leave the area clean and natural looking.
- C. Dispose of excavated unsatisfactory soil, rubbish and debris as follows:
1. Transport all waste off the site and dispose of it in a manner that complies with State, and local requirements. Secure a permit or license prior to transporting any material off the site. Do not burn or bury waste materials on the site.

1.6 CONTROL AND DISPOSAL OF CHEMICAL AND SANITARY WASTES

- A. Store chemical waste in corrosion-resistant containers, remove from the project site, and dispose of as necessary, but not less frequently than monthly. Provide for disposal of chemical waste in accordance with standard established practices as approved by the Architect. Dispose of lubricants to be discarded in accordance with approved procedures meeting state, and local regulations.

1.7 DUST CONTROL

- A. Keep dust down at all times including nonworking hours, weekends, and holidays.
- B. Secure and cover transport equipment and loose materials in transit to ensure that materials do not become airborne during transit.

PHILLIPS LANDING/NANTICOKE WILDLIFE AREA

PHILLIPS LANDING BOAT RAMP

Date of Issue July 2018

Project Manual Division of Fish and Wildlife Project No. NAT-201801/Phillips.Landing

PART 2 - PRODUCTS (Not Used)

PART 3 - EXECUTION (Not Used)

END OF SECTION 01560

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SECTION 016000 - PRODUCT REQUIREMENTS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and other Division 1 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.
- B. Related Sections include but are not limited to the following:
 - 1. Division 1 Section "References" for applicable industry standards for products specified.
 - 2. Division 1 Section "Closeout Procedures" for submitting warranties for Contract closeout.
 - 3. Other included Sections for specific requirements for warranties on products and installations specified to be warranted.

1.3 DEFINITIONS

- A. Products: Items purchased for incorporating into the Work, whether purchased for Project or taken from previously purchased stock. The term "product" includes the terms "material," "equipment," "system," and terms of similar intent.
 - 1. Named Products: Items identified by manufacturer's product name, including make or model number or other designation shown or listed in manufacturer's published product literature that is current as of date of the Contract Documents.
 - 2. New Products: Items that have not previously been incorporated into another project or facility, except that products consisting of recycled-content materials are allowed, unless explicitly stated otherwise. Products salvaged or recycled from other projects are not considered new products.
 - 3. Comparable Product: Product that is demonstrated and approved through submittal process, or where indicated as a product substitution, to have the indicated qualities related to type, function, dimension, in-service performance, physical properties, appearance, and other characteristics that equal or exceed those of specified product.
- B. Substitutions: Changes in products, materials, equipment, and methods of construction from those required by the Contract Documents and proposed by Contractor.

- C. Basis-of-Design Product Specification: Where a specific manufacturer's product is named and accompanied by the words "basis of design," including make or model number or other designation, to establish the significant qualities related to type, function, dimension, in-service performance, physical properties, appearance, and other characteristics for purposes of evaluating comparable products of other named manufacturers.

1.4 SUBMITTALS

- A. Product List: Submit a list, in tabular form, showing specified products. Include generic names of products required. Include manufacturer's name and proprietary product names for each product.
1. Coordinate product list with Contractor's Construction Schedule and the Submittals Schedule.
 2. Form: Tabulate information for each product under the following column headings:
 - a. Specification Section number and title.
 - b. Generic name used in the Contract Documents.
 - c. Proprietary name, model number, and similar designations.
 - d. Manufacturer's name and address.
 - e. Supplier's name and address.
 - f. Installer's name and address.
 - g. Projected delivery date or time span of delivery period.
 - h. Identification of items that require early submittal approval for scheduled delivery date.
 3. Initial Submittal: Within 30 days after date of commencement of the Work, submit 3 copies of initial product list. Include a written explanation for omissions of data and for variations from Contract requirements.
 - a. At Contractor's option, initial submittal may be limited to product selections and designations that must be established early in Contract period.
 4. Completed List: Within 60 days after date of commencement of the Work, submit 3 copies of completed product list. Include a written explanation for omissions of data and for variations from Contract requirements.
 5. Architect's Action: Architect will respond in writing to Contractor within 15 days of receipt of completed product list. Architect's response will include a list of unacceptable product selections and a brief explanation of reasons for this action. Architect's response, or lack of response, does not constitute a waiver of requirement to comply with the Contract Documents.
- B. Substitution Requests: Submit three copies of each request for consideration. Identify product or fabrication or installation method to be replaced. Include Specification Section number and title and Drawing numbers and titles.
1. Substitution Request Form: Use CSI Form 13.1A at the end of this section.

2. Documentation: Show compliance with requirements for substitutions and the following, as applicable:
 - a. Statement indicating why specified material or product cannot be provided.
 - b. Coordination information, including a list of changes or modifications 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 substitution with those of the Work specified. Significant qualities may include attributes such as performance, weight, size, durability, visual effect, and specific features and requirements indicated.
 - d. Product Data, including drawings and descriptions of products and fabrication and installation procedures.
 - e. Samples, where applicable or requested.
 - f. List of similar installations for completed projects with project names and addresses and names and addresses of architects and owners.
 - g. Material test reports from a qualified testing agency indicating and interpreting test results for compliance with requirements indicated.
 - h. Research/evaluation reports evidencing compliance with building code in effect for Project, from a model code organization acceptable to authorities having jurisdiction.
 - i. Detailed comparison of Contractor's Construction Schedule using proposed substitution 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 lack of availability or delays in delivery.
 - j. Cost information, including a proposal of change, if any, in the Contract Sum.
 - k. Contractor's certification that proposed substitution complies with requirements in the Contract Documents and is appropriate for applications indicated.
 - l. 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.
 3. Architect's/Engineer's Action: If necessary, Architect/Engineer will request additional information or documentation for evaluation within 7 days of receipt of a request for substitution. Architect/Engineer will notify Contractor of acceptance or rejection of proposed substitution within 15 days of receipt of request, or 7 days of receipt of additional information or documentation, whichever is later.
 - a. Form of Acceptance: Change Order.
 - b. Use product specified if Architect/Engineer cannot make a decision on use of a proposed substitution within time allocated.
- C. Comparable Product Requests: Submit three copies of each request for consideration. Identify product or fabrication or installation method to be replaced. Include Specification Section number and title and Drawing numbers and titles.
1. Architect's Action: If necessary, Architect/Engineer will request additional information or documentation for evaluation within one week of receipt of a comparable product request. Architect/Engineer will notify Contractor of approval or rejection of proposed

comparable product request within 15 days of receipt of request, or 7 days of receipt of additional information or documentation, whichever is later.

- a. Form of Approval: As specified in Division 1 Section "Submittal Procedures."
- b. Use product specified if Architect cannot make a decision on use of a comparable product request within time allocated.

- D. Basis-of-Design Product Specification Submittal: Comply with requirements in Division 1 Section "Submittal Procedures." Show compliance with requirements.

1.5 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.
1. Each contractor is responsible for providing products and construction methods compatible with products and construction methods of other contractors.
 2. If a dispute arises between contractors over concurrently selectable but incompatible products, Architect/Engineer will determine which products shall be used.

1.6 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. Store foam plastic from exposure to sunlight, except to extent necessary for period of installation and concealment.

6. Comply with product manufacturer's written instructions for temperature, humidity, ventilation, and weather-protection requirements for storage.
7. Protect stored products from damage and liquids from freezing.
8. Provide a secure location and enclosure at Project site for storage of materials and equipment by Owner's construction forces. Coordinate location with Owner.

1.7 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.
 1. Manufacturer's Warranty: Preprinted written warranty published by individual manufacturer for a particular product and specifically endorsed by manufacturer to Owner.
 2. Special Warranty: Written warranty required by or incorporated into the Contract Documents, either to extend time limit provided by manufacturer's warranty or to provide more rights for Owner.
- B. Special Warranties: Prepare a written document that contains appropriate terms and identification, ready for execution. Submit a draft for approval before final execution.
 1. Manufacturer's Standard Form: Modified to include Project-specific information and properly executed.
 2. Specified Form: When specified forms are included with the Specifications, prepare a written document using appropriate form properly executed.
 3. Refer to Divisions 2 through 35 Sections for specific content requirements and particular requirements for submitting special warranties.
- C. Submittal Time: Comply with requirements in Division 1 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. Available Products: Where Specifications include a list of names of both products and manufacturers, provide one of the products listed, or an unnamed product, that complies with requirements. Comply with provisions in Part 2 "Comparable Products" Article for consideration of an unnamed product.
6. Available Manufacturers: Where Specifications include a list of manufacturers, provide a product by one of the manufacturers listed, or an unnamed manufacturer, that complies with requirements. Comply with provisions in Part 2 "Comparable Products" Article for consideration of an unnamed product.
7. 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.
8. 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.
9. Visual Matching Specification: Where Specifications require matching an established Sample, select a product that complies with requirements and matches Architect's/Engineer's sample. Architect's decision will be final on whether a proposed product matches.
 - a. If no product available within specified category matches and complies with other specified requirements, comply with provisions in Part 2 "Product Substitutions" Article for proposal of product.
10. 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.
 - a. Standard Range: Where Specifications include the phrase "standard range of colors, patterns, textures" or similar phrase, Architect will select color, pattern,

density, or texture from manufacturer's product line that does not include premium items.

- b. Full Range: Where Specifications include the phrase "full range of colors, patterns, textures" or similar phrase, Architect will select color, pattern, density, or texture from manufacturer's product line that includes both standard and premium items.

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/Engineer 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.

2.3 COMPARABLE PRODUCTS

- A. Conditions: Architect/Engineer will consider Contractor's request for comparable product 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. Evidence that the proposed product does not require extensive revisions to the Contract Documents that it is consistent with the Contract Documents and will produce the indicated results, and that it is compatible with other portions of the Work.
 2. Detailed comparison of significant qualities of proposed product with those named in the Specifications. Significant qualities include attributes such as performance, weight, size, durability, visual effect, and specific features and requirements indicated.
 3. Evidence that proposed product provides specified warranty.

4. List of similar installations for completed projects with project names and addresses and names and addresses of architects and owners, if requested.
5. Samples, if requested.

PART 3 - EXECUTION (Not Used)



**SUBSTITUTION
REQUEST**

(After the Bidding/Negotiating Phase)

Project: _____ Substitution Request Number: _____

 From: _____
 To: _____ Date: _____

 A/E Project Number: _____
 Re: _____ Contract For: _____

Specification Title: _____ Description: _____
 Section: _____ Page: _____ Article/Paragraph: _____

Proposed Substitution: _____
 Manufacturer: _____ Phone: _____
 Address: _____
 Trade Name: _____ Model No.: _____
 Installer: _____ Phone: _____
 Address: _____

History: New product 1-4 years old 5-10 years old More than 10 years old

Differences between proposed substitution and specified product:

Point-by-point comparative data attached — REQUIRED BY A/E

Reason for not providing specified item:

Similar Installation:

Project: _____ Architect: _____
 Address: _____ Owner: _____
 _____ Date Installed: _____

Proposed substitution affects other parts of Work: No Yes; explain _____

Savings to Owner for accepting substitution: _____ (\$ _____)

Proposed substitution changes Contract Time: No Yes [Add] [Deduct] _____ days.

Supporting Data Attached: Drawings Product Data Samples Tests Reports _____

**SUBSTITUTION
REQUEST**

(After the Bidding/Negotiating Phase — Continued)

The Undersigned certifies:

- Proposed substitution has been fully investigated and determined to be equal or superior in all respects to specified product.
- Same warranty will be furnished for proposed substitution as for specified product.
- Same maintenance service and source of replacement parts, as applicable, is available.
- Proposed substitution will have no adverse effect on other trades and will not affect or delay progress schedule.
- Cost data as stated above is complete. Claims for additional costs related to accepted substitution which may subsequently become apparent are to be waived.
- Proposed substitution does not affect dimensions and functional clearances.
- Payment will be made for changes to building design, including A/E design, detailing, and construction costs caused by the substitution.
- Coordination, installation, and changes in the Work as necessary for accepted substitution will be complete in all respects.

Submitted by: _____

Signed by: _____

Firm: _____

Address: _____

Telephone: _____

Attachments:

A/E's REVIEW AND ACTION

- Substitution approved - Make submittals in accordance with Specification Section 01 25 00 Substitution Procedures.
- Substitution approved as noted - Make submittals in accordance with Specification Section 01 25 00 Substitution Procedures.
- Substitution rejected - Use specified materials.
- Substitution Request received too late - Use specified materials.

Signed by: _____ Date: _____

Additional Comments: Contractor Subcontractor Supplier Manufacturer A/E
 Other:

END OF SECTION 016000

SECTION 017300 - EXECUTION REQUIREMENTS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and other Division 1 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. General installation of products.
 - 3. Coordination of Owner-installed products.
 - 4. Progress cleaning.
 - 5. Starting and adjusting.
 - 6. Protection of installed construction.
 - 7. Correction of the Work.
- B. Related Sections include the following:
 - 1. Division 1 Section "Project Management and Coordination" for procedures for coordinating field engineering with other construction activities.
 - 2. Division 1 Section "Closeout Procedures" for Submitted Project Record Documents, recording of Owner-accepted deviations from indicated lines and levels, and final cleaning.

PART 2 - PRODUCTS (Not Used)

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Existing Conditions: The existence and location of site improvements, utilities, and other construction indicated as existing are not guaranteed. Before beginning work, investigate and verify the existence and location of mechanical and electrical systems and other construction affecting the Work.
 - 1. Before construction, verify the location and points of connection of utility services.
- B. Existing Utilities: The existence and location of underground and other utilities and construction indicated as existing are not guaranteed. Before beginning sitework, investigate

and verify the existence and location of underground utilities and other construction affecting the Work.

1. Before construction, verify the location and invert elevation at points of connection of underground electrical services.
 2. Furnish location data for work related to Project that must be performed by public utilities serving Project site.
- C. 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 if 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.
 3. Examine electrical system to verify actual locations of connections before equipment and fixture installation.
 4. 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.
- D. Review of Contract Documents and Field Conditions: Immediately on discovery of the need for clarification of the Contract Documents, submit a request for information to Architect. Include a detailed description of problem encountered, together with recommendations for changing the Contract Documents. Submit requests on CSI Form 13.2A, "Request for Interpretation."

3.3 CONSTRUCTION LAYOUT

- A. Verification: Before proceeding to lay out the Work, verify layout information shown on Drawings, in relation to the property boundary and existing benchmarks. If discrepancies are discovered, notify Architect promptly. The property lines shown on the drawings are approximate only and are not intended to be a property line survey.
- B. Site Improvements: Locate and lay out site improvements, including boat ramp, pavements, grading, fill and sand placement, utility slopes, and invert elevations.
- C. Building Lines and Levels: Locate and lay out control lines and levels for foundations. Transfer survey markings and elevations for use with control lines and levels.
- D. 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 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 produces 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. 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.
- H. Hazardous Materials: Use products, cleaners, and installation materials that are not considered hazardous.

3.5 PROGRESS CLEANING

- A. General: Clean Project site and work areas daily. 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 (27 deg C).
 - 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. Concealed Spaces: Remove debris from concealed spaces before enclosing the space.
- F. Exposed Surfaces in Finished Areas: Clean exposed surfaces and protect as necessary to ensure freedom from damage and deterioration at time of Substantial Completion.
- G. 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.
- H. 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.
- I. 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.
- J. 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.

3.6 PROTECTION OF INSTALLED CONSTRUCTION

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

END OF SECTION 01 73 00

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 1 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. Inspection procedures.
 - 2. Project Record Documents.
 - 3. Warranties.
 - 4. Instruction of Owner's personnel.
 - 5. Final cleaning.
- B. Related Sections include the following:
 - 1. Division 1 Section "Payment Procedures" for requirements for Applications for Payment for Substantial and Final Completion.
 - 2. Division 1 Section "Project Record Documents" for submitting Record Drawings, Record Specifications, and Record Product Data.
 - 3. Divisions 02 through 35 Sections for specific closeout and special cleaning requirements for the Work in those Sections.

1.3 SUBSTANTIAL COMPLETION

- 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. Submit specific warranties, workmanship bonds, final certifications, and similar documents.
 - 3. Prepare and submit Project Record Documents.
 - 4. Deliver tools, spare parts, extra materials, and similar items to location designated by Owner. Label with manufacturer's name and model number where applicable.
 - 5. Submit test/records.
 - 6. Terminate and remove temporary facilities from Project site, along with construction tools, and similar elements.
 - 7. Complete final cleaning requirements.
 - 8. 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/Engineer will either proceed with inspection or notify Contractor of unfulfilled requirements. Architect/Engineer 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/Engineer, 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.

1.4 FINAL COMPLETION

- 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 1 Section "Payment Procedures."
 - 2. Submit copy of Architect's/Engineer's Substantial Completion inspection list of items to be completed or corrected (punch list). The copy of the list shall state that each item has been completed or otherwise resolved for acceptance.
- B. Inspection: Submit a written request for final inspection for acceptance. On receipt of request, Architect/Engineer 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.

1.5 LIST OF INCOMPLETE ITEMS (PUNCH LIST)

- A. Preparation: Submit three copies of list. Include name and identification of each 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.
 - 1. 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.

1.6 PROJECT RECORD DOCUMENTS

- A. General: Do not use Project Record Documents for construction purposes. Protect Project Record Documents from deterioration and loss. Provide access to Project Record Documents for Architect's reference during normal working hours.

- B. Record Drawings: Maintain and submit one original set of blue- or black-line white prints with two copies of Contract Drawings and Shop Drawings.
 1. 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 cannot be readily identified and recorded 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.
 - d. Mark Contract Drawings or Shop Drawings, whichever is most capable of showing actual physical conditions, completely and accurately. Where Shop Drawings are marked, show cross-reference on Contract Drawings.
 2. Mark record sets with erasable, red-colored pencil. Use other colors to distinguish between changes for different categories of the Work at the same location.
 3. Mark important additional information that was either shown schematically or omitted from original Drawings.
 4. Note Construction Change Directive numbers, Change Order numbers, alternate numbers, and similar identification where applicable.
 5. Identify and date each Record Drawing; include the designation "PROJECT RECORD DRAWING" in a prominent location. Organize into manageable sets; bind each set with durable paper cover sheets. Include identification on cover sheets.

- C. Record Specifications: Submit one copy of Project's Specifications, including addenda and contract modifications. Mark copy 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. Mark copy with the proprietary name and model number of products, materials, and equipment furnished, including substitutions and product options selected.
 3. Note related Change Orders, Record Drawings, and Product Data, where applicable.

- D. Record Product Data: Submit three copies of each Product Data submittal. Mark one set to indicate the actual product installation where installation varies substantially from that indicated in Product Data.
 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 Drawings, and Record Specifications, where applicable.

- E. Miscellaneous Record Submittals: 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.

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

PART 2 - PRODUCTS (Not Used)

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 for final cleaning. Clean surfaces to condition expected in an average commercial 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. Provide a magnetic sweep of all areas around the boat ramp to retrieve stray nails, screws and other fasteners or metal shards.
 - 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. Clean exposed exterior hard-surfaced finishes to a dirt-free condition, free of stains, films, and similar foreign substances.
- 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.

END OF SECTION 017700

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0SECTION 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 1 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.
- B. Related Sections include but are not limited to the following:
 - 1. Division 1 Section "Closeout Procedures" for general closeout procedures and maintenance manual requirements.
 - 2. Divisions 02 through 35 Sections for specific requirements for project record documents of the Work in those Sections.

1.3 SUBMITTALS

- A. Record Drawings: Comply with the following:
 - 1. Number of Copies: Submit copies of Record Drawings as follows:
 - a. Final Submittal: Submit three sets of marked-up Record Prints and one set of record transparencies. Print each Drawing, whether or not changes and additional information were recorded.
- B. Record Specifications: Submit three copies of Project's Specifications, including addenda and contract modifications.
- C. Record Product Data: Submit three copies of each Product Data submittal.
 - 1. Where Record Product Data is required as part of operation and maintenance manuals, submit marked-up Product Data as an insert in the manual instead of submittal as Record Product Data.

PART 2 - PRODUCTS

2.1 RECORD DRAWINGS

- A. Record Prints: Maintain one set of blue- or black-line white 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. Locations and depths of underground utilities.
 - d. Revisions to routing of piping and conduits.
 - e. Changes made by Change Order or Construction Change Directive.
 - f. Changes made following Architect's written orders.
 - g. Details not on the original Contract Drawings.
 - h. Field records for variable and concealed conditions.
 - i. 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 the same location.
 5. Mark important additional information that was either shown schematically or omitted from original Drawings.
 6. Note Construction Change Directive numbers, alternate numbers, Change Order numbers, and similar identification, where applicable.
- B. Record Transparencies: Immediately before inspection for Certificate of Substantial Completion, review marked-up Record Prints with Architect. When authorized, prepare a full set of corrected transparencies of the Contract Drawings and Shop Drawings.
1. Incorporate changes and additional information previously marked on Record Prints. Erase, redraw, and add details and notations where applicable.
 2. Refer instances of uncertainty to Architect for resolution.

3. Owner will furnish Contractor one set of transparencies of the Contract Drawings for use in recording information.
 4. Print the Contract Drawings and Shop Drawings for use as Record Transparencies. Architect will make the Contract Drawings available to Contractor's print shop.
- C. 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. Record Transparencies: Organize into unbound sets matching Record Prints. Place transparencies in durable tube-type drawing containers with end caps. Mark end cap of each container with identification. If container does not include a complete set, identify Drawings included.
 3. Record CAD Drawings: Organize CAD information into separate electronic files that correspond to each sheet of the Contract Drawings. Name each file with the sheet identification. Include identification in each CAD file.
 4. Identification: As follows:
 - a. Project name.
 - b. Date.
 - c. Designation "PROJECT RECORD DRAWINGS."
 - d. Name of Architect/Engineer.
 - 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. Mark copy with the proprietary name and model number of products, materials, and equipment furnished, including substitutions and product options selected.
 3. Record the name of the manufacturer, supplier, Installer, and other information necessary to provide a record of selections made.
 4. For each principal product, indicate whether Record Product Data has been submitted in operation and maintenance manuals instead of submitted as Record Product Data.
 5. Note related Change Orders, Record Drawings, and Product Data 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 Drawings, and Product Data 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: 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/Engineer's reference during normal working hours.

END OF SECTION 017839

SECTION 02 41 19 – SELECTIVE DEMOLITION

Part 1 – General

1-1 Scope:

- A. The Contractor shall provide all labor, material, equipment and services for and reasonably incidental to executing demolition and removal of the existing decayed boat ramp including the resulting rubbish and debris. Rubbish and debris shall be removed from the Owner's property daily, unless otherwise directed, to avoid accumulation at the demolition site. Materials that cannot be removed daily shall be stored in areas specified by the Owner or Owner's Representative.
- B. The Contractor shall adhere to the terms of the various permits and approvals issued to this project. This shall include permits and approvals from U.S. Army Corps of Engineers, Delaware Department of Natural Resources and Environmental Control and any other applicable permit authority.
- C. The Contractor shall give all notices and comply with all laws, ordinances, rules and regulations applicable to work. If the Contractor observes that the Specifications and/or Drawings are at variance therewith, he will give the Owner or Owner's Representative prompt written notice thereof. If the Contractor performs any work knowing it to be contrary to such laws, ordinances, rules and regulations, and without such notice to Owner or Owner's Representative, he will bear all costs arising therefrom.
- D. Work shall consist of, but not be limited to, the following:
 - 1. Demolition and removal of items indicated or required in order to complete the overall scope of work for this project including but not limited to removal of pavement, aggregate base, timber wingwalls, concrete slabs, boarding piers, and piles.
 - 2. Removal of all debris and trash.
- E. Related work not included in this Section consists of the following:
 - 1. "Earth Moving" provided under Section 31 20 00.
- F. Related Documents: The general provisions of the Contract including Division 1 – General Requirements; and all applicable supplements and addenda pertaining thereto apply to this section.

1-2 Job Conditions:

- A. Contractor's responsibility - It shall be Contractor's responsibility to have visited the site and to have examined all contract documents and determined to his complete satisfaction the extent of work to be accomplished.
- B. Burning - On-site burning will not be permitted.
- C. Use of Explosives – Use of explosives will not be permitted.
- D. Creosote Material – It is unknown if any creosote timber piles exist at the site. However, if found during demolition and/ or excavation, the Contractor shall dispose of properly at no

additional cost to the Owner. The Contractor shall provide documentation to the Owner of proper disposal.

1-3 Protection:

- A. Protection of Personnel
During the demolition work the Contractor shall continuously evaluate the condition of the structures being demolished and take immediate action to protect all personnel working in and around the demolition site. No area, section, or component of wall, decking/slab or other structural element will be allowed to be left standing without sufficient bracing, shoring, or lateral support to prevent collapse or failure while workmen remove debris or perform other work in the immediate area.
- B. Protection of Structures
Slabs and other structural components that are designed and constructed to stand without lateral support or shoring, and are determined to be in stable condition, shall remain standing without additional bracing, shoring, or lateral support until demolished, unless directed otherwise by the Owner or Owner's Representative. The Contractor shall ensure that no elements determined to be unstable are left unsupported and shall be responsible for placing and securing bracing, shoring, or lateral supports as may be required as a result of any cutting, removal, or demolition work performed under this contract.
- C. Protection of Existing Property
Before beginning any demolition work, the Contractor shall survey the site and examine the drawings and specifications to determine the extent of the work. The Contractor shall take necessary precautions to avoid damage to existing items to remain in place, to be reused, or to remain the property of the Owner. Any damaged items shall be repaired or replaced as approved by the Owner or Owner's Representative. The Contractor shall coordinate the work of this section with all other work and shall construct and maintain shoring, bracing, and supports as required. The Contractor shall ensure that structural elements are not overloaded and shall be responsible for increasing structural supports or adding new supports as may be required as a result of any cutting, removal, or demolition work performed under this contract.

Part 2 – Products Not Applicable

Part 3 - Execution

3-1 Preparation:

- A. The Contractor shall obtain a demolition permit from Sussex County a minimum of two (2) weeks prior to the start of demolition.
- B. The Contractor shall submit his proposed demolition and removal schedule and procedures to the Owner or Owner's Representative at the pre-construction meeting for approval before work is started. The Demolition Plan shall include procedures for the careful removal and disposition of materials, coordination with other work in progress, and a detailed description of methods and equipment to be used for each operation of the sequence of operations.
- C. Prior to any work of this Section, the Contractor shall carefully inspect the entire site and all objects designated to be removed and to be preserved, locate all existing utility lines and determine all requirements for disconnecting and capping, and locate all existing active utility lines traversing the project site and determine the requirements for the protection.

- D. Before beginning any demolition work, the Contractor shall survey the site and examine the drawings and specifications to determine the extent of the work. The Contractor shall take necessary precautions to avoid damage to existing items to remain in place, to be reused, or to remain the property of the Owner. Any damaged items shall be repaired or replaced as approved by the Owner or Owner's Representative. The Contractor shall coordinate the work of this section with all other work.
- E. The drawings do not purport to show all objects, such as utilities existing on the site. Before commencing any work of this Section, the Contractor shall verify with Owner or Owner's Representative all objects to be removed and all objects to be preserved.

3-2 Demolition:

- A. The existing floating pier shall be salvaged and retained by the Owner. The Contractor shall coordinate his activities with the Owner and shall provide the equipment necessary to remove the piers and load onto trucks provided by the Owner.
- B. All material removed (except as specified) shall become the property of the Contractor and shall be removed from the site to an approved off-site disposal area. Be advised that the landfills measure the tipping fee cost on a cost per ton basis. Contractor shall remove and transport debris and rubbish in a manner that will prevent spillage on pavements, streets, and/or adjacent areas. It will be the responsibility of the Contractor to obtain an approved sediment control plan for the off-site disposal area if necessary. Disposal of any creosote timber materials must be in an approved landfill with disposal documentation provided to Owner. He shall not use water if it results in hazardous or objectionable conditions such as, but not limited to, ice, flooding or pollution.
- C. The Contractor shall remove existing asphalt pavement to the limits indicated on the drawings, properly disposing the material off-site.
- D. The Contractor shall prevent the spread of dust and debris and avoid the creation of a nuisance or hazard in the surrounding area.
- E. The existing guide pile shall be removed in its entirety.
- F. The existing timber piles and timber sheeting specified to be removed shall be pulled out in their entirety as approved by the Owner or the Owner's Representative. The Contractor shall maintain the structural integrity of the new wingwalls at all times.

Part 4 - Measurement:

No measurement for payment of these items of work will be made since their cost shall be included in the lump sum base bid.

- END OF SECTION -

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SECTION 03 30 53 - CAST-IN-PLACE CONCRETE

Part 1 - General

1-1 Scope

- A. The Contractor shall provide all materials, labor, equipment and services necessary for, and reasonably incidental to furnishing and installing cast-in-place concrete such as, but not limited to apron and boat ramp slab, piers and pads.
- B. Work shall consist of necessary subbase grading, forming, reinforcing, expansion joints, mixing, pouring, curing, finishing, and protection of concrete structures and surfaces.
- C. Related Work not included in this Section consists of the following:
 - 1. "Earth Moving" provided under Section 31 20 00.
 - 2. "Pavement (Bituminous Concrete)" provided under Section 32 10 02.
 - 3. "Wingwall" provided under Section 35 31 16.
- D. Related Documents: The general provisions of the Contract; including Division 1 – General Requirements, the Geotechnical Report in Appendix 3; ASTM Standards in Building Codes, latest edition; ACI Manual of Concrete Practice, latest edition; and the DeIDOT "Standard Specifications for Road and Bridge Construction," August 2001, and all applicable supplements and addenda pertaining thereto apply to this section.

1-2 Quality Assurance

Skilled workforce experienced in concrete placement and finishing shall be used for all work. All materials shall be new and first order.

1-3 Testing Agency

The Contractor shall engage a professional testing agency to obtain concrete cylinders, conduct required breakage tests, and report findings in a suitable technical report format. Cost of testing, inspection and preparing the report shall be borne by the Contractor.

1-4 Submittals

- A. Submit the following information for approval prior to initiation of construction:
 - 1. Mix design, including complete information on all additives.
 - 2. Reinforcing steel certification.
 - 3. Expansion joint - manufacturer's catalog data.
- B. Submit all test reports upon receipt from the professional testing agency.

1-5 Delivery, Storage and Handling

Do not deliver concrete until forms, reinforcement, embedded items, and chamfer strips are in place and ready for concrete placement. Follow ACI 301 for job site storage of materials. Store reinforcement on racks raised above the ground to avoid excessive rusting. Protect materials from contaminants such as grease, oil, and dirt. Ensure materials can be accurately identified

after bundles are broken and tags removed.

Part 2 – Products

2-1 Concrete

- A. Contractor-Furnished Mix Design: ACI 211.1, ACI 301, and ACI 318 except as otherwise specified. The compressive strength (f'c) of the concrete for each portion of the structure(s) shall be indicated and as shown in Table I at the end of this section.
- B. Maximum slump shown in Table 1 may be increased one inch for methods of consolidation other than vibration. Slump may be increased to 7 inches when superplasticizers are used. Provide air entrainment using air-entraining admixture. The water soluble chloride ion concentrations in hardened concrete at ages from 28 to 42 days shall not exceed 0.15.
- C. Required Average Strength of Mix Design: The selected mixture shall produce an average compressive strength exceeding the specified strength by the amount indicated in ACI 301.

2-2 Materials

- A. Cement: ASTM C-150, Type I or II blended cement except as modified herein. The blended cement shall consist of a mixture of ASTM C-150 cement and one of the following materials: ASTM C-618 pozzolan or fly ash, or ASTM C-989 ground iron blast furnace slag. The pozzolan or fly ash content shall not exceed 25% by weight of the total cementitious material. The ground iron blast furnace slag shall not exceed 50% by weight of total cementitious material. For exposed concrete, use one manufacturer for each type of cement, ground slag, fly ash, and pozzolan.
- B. Water: Water shall be fresh, clean and potable.
- C. Aggregates: ASTM C-33, except as modified herein. Furnish aggregates for exposed concrete surfaces from one source. Aggregates shall not contain any substance which may be deleteriously reactive with the alkalis in the cement.
- D. Nonshrink Grout: ASTM C-1107.
- E. Admixtures: Calcium chloride shall not be used as an admixture.
 - 1. Air-Entraining: ASTM C-260.
 - 2. Accelerating: ASTM C-494/ C-494M, Type C.
 - 3. Retarding: ASTM C-494/ C-494M, Type B or D.
 - 4. Water Reducing: ASTM C-49/ C-494M Type A or E.
- F. Materials for Forms: Provide wood, plywood, or steel. Use plywood or steel forms where a smooth form finish is required. Lumber shall be square edged or tongue-and-groove boards, free of raised grain, knotholes, or other surface defects. Plywood: PS-1, B-B concrete form panels or better. Steel form surfaces shall not contain irregularities, dents, or sags.
 - 1. Form Ties and Accessories: The use of wire alone is prohibited. Form ties and

accessories shall not reduce the effective cover of the reinforcement.

2. Reinforcing Bars: ASTM A-615/A-615M and ASTM A-617/A-617M with the bars marked A, Grade 60; ASTM A-706/A-706M.
3. Chairs or concrete bricks to provide required clearances.

G. Reinforcement:

1. Reinforcing Bars: ACI 301/301M unless otherwise specified. ASTM A-615/A-615M and ASTM A-617/A-617M with bars marked A, grade 60. Epoxy-coated reinforcing steel bars ASTM A-775A/A-775M.
2. Welded Wire Fabric: ASTM A-185 or ASTM A-497. Provide flat sheets of welded wire fabric for slabs and toppings unless otherwise specified.

H. Materials for Curing Concrete:

1. Impervious Sheeting: ASTM C-171, waterproof paper, clear or white polyethylene sheeting, or polyethylene-coated burlap.
2. Liquid Membrane-Forming Compound: ASTM C-309, white pigmented, Type 2, Class B.

I. Miscellaneous Coatings: All aluminum materials in contact with concrete shall be treated with Bitumastic No. 300-M (Black) as manufactured by Koppers Company, Inc., Pittsburgh, Pennsylvania 15219 or an approved equal.

J. Expansion/Contraction Joint Filler: ASTM D-1751 or ASTM D-1752, 1/2 inch thick, unless otherwise indicated or as directed by the Owner or Owner's Representative.

Part 3 – Execution

3-1 Preparation

A. Subgrade: The Contractor shall prepare subgrade and place, grade and compact aggregate base course in accordance with Section 31 20 00 – “Earth Moving.” Forms and shoring shall not be placed until the Contractor's geotechnical consultant and the Owner's Representative have given approval.

3-2 Forms

ACI 301/301M. Provide forms and shoring for concrete placement. Set forms mortar-tight and true to line and grade. Forms shall be sufficiently strong to carry the dead weight of the concrete without deflection. Chamfer above grade exposed joints, edges, and external corners of concrete 0.75 inch unless otherwise indicated. Provide formwork with clean-out openings to permit inspection and removal of debris.

A. Coating: Before concrete placement, coat the contact surfaces of forms with a non-staining mineral oil, non-staining form coating compound, or two coats of nitrocellulose lacquer. Do not use mineral oil on forms for surfaces to which adhesive, paint, or other finish material is to be applied.

B. Removal of Forms and Supports: After placing concrete forms shall remain in place for the time periods specified in ACI 347R. Prevent concrete damage during form removal.

- C. Dewatering: The boat ramp's slab and subbase shall not be placed within the wingwall enclosure until the area has been dewatered and the wingwall/toewall has been inspected and approved by the Owner or Owner's Representative. Care shall be taken during the pouring and filling operation to maintain the alignment of the wingwall. The Contractor shall be responsible for adequately bracing the wingwalls/toewall as necessary before and during dewatering.

3-3 Placing Reinforcement and Miscellaneous Materials

ACI/MCP-2. Provide bars, wire fabric, wire ties, supports, and other devices necessary to install and secure reinforcement. Reinforcement must not have rust, scale, oil, grease, clay, or foreign substances that would reduce the bond. Rusting of reinforcement is a basis of rejection if the effective cross-sectional area or the nominal weight per unit length has been reduced. Remove loose rust prior to placing steel. Tack welding is prohibited.

- A. Reinforcement Supports: Place reinforcement and secure with galvanized or non-corrodible chairs or spacers as approved by the Owner or Owner's Representative. For supporting reinforcement on the ground, use concrete or other non-corrodible material, having a compressive strength equal to or greater than the concrete being placed.
- B. Epoxy Coated Reinforcing: Shall meet the requirements of ASTM A 775/A 775M including Appendix X1, "Guidelines for Job Site Practices" except as otherwise specified herein. Epoxy-coated bars shall be tied with plastic-coated tie wire; or other materials acceptable to the Owner or Owner's Representative.
- C. Epoxy Coated Reinforcing Steel Placement and Coating Repair: Carefully handle and install bars to minimize job site patching. Do not drag bars over other bars or over abrasive surfaces. Keep bar free of dirt and grit. When possible, assemble reinforcement as tied cages prior to final placement into the forms. Support assembled cages on padded supports. It is not expected that coated bars, when in final position ready for concrete placement, are completely free of damaged areas; however, excessive nicks and scrapes which expose steel is cause for rejection. Criteria for defects which require repair and for those that do not require repair are as indicated. Inspect for defects and provide required repairs prior to assembly. After assembly, reinspect and provide final repairs.
1. Immediately prior to application of the patching material, manually remove any rust and debonded coating from the reinforcement by suitable techniques employing devices such as wire brushes and emery paper. Exercise care during this surface preparation so that the damaged areas are not enlarged more than necessary to accomplish the repair. Clean damaged areas of dirt, debris, oil, and similar materials prior to application of the patching material.
 2. Do repair and patching in accordance with the patching material manufacturer's recommendations. These recommendations, including cure times, must be available at the job site at all times. Patching material must be referenced in shop drawing submittals.
 3. Allow adequate time for the patching materials to cure in accordance with the manufacturer's recommendation prior to concrete placement.
- D. Cover: ACI/MCP-2 for minimum coverage, unless otherwise indicated.
- E. Setting Miscellaneous Material: Place and secure anchors and bolts, pipe sleeves, conduits, chairs or concrete bricks to provide cover clearances, and other such items in

position before concrete placement. Plumb anchor bolts and check location and elevation. Temporarily fill voids in sleeves with readily removable material to prevent the entry of concrete.

- F. Construction Joints: Locate joints to least impair strength. Continue reinforcement across joints unless otherwise indicated. In paved areas exposed to vehicular traffic, provide construction joints in accordance with DeIDOT Standards and Specifications and as directed by the Owner or Owner's Representative.
- G. Expansion Joints and Contraction Joints: Provide expansion joints at edges of boat ramp slab on grade abutting vertical surfaces, and as indicated. Make expansion joints ½ inch wide unless indicated otherwise. Completely fill joints exposed to weather with joint filler material and joint sealant. Do not extend reinforcement or other embedded metal items bonded to the concrete through any expansion joint unless an expansion sleeve is used.

Provide contraction joints, at a maximum spacing of 10 feet unless otherwise indicated. Contractor joints shall be at a minimum of 1 inch depth after the surface has been finished. Complete saw joints within 4 to 12 hours after concrete placement. Protect joints from intrusion of foreign matter. Seal joints per Del DOT Standard Specification Section 808.

3-4 Batching, Measuring, Mixing, and Transporting Concrete

ASTM C-94/C-94M, ACI 301/301M, ACI 302.1R, and ACI 304R, except as modified herein. Batching equipment shall be such that the concrete ingredients are consistently measured within the following tolerances: 1% for cement and water, 2% for aggregate, and 3% for admixtures. Furnish mandatory batch ticket information for each load of ready mix concrete.

- A. Mixing: ASTM C-94/C-94M and ACI 301/301M. Machine mix concrete. Begin mixing within 30 minutes after the cement has been added to the aggregates. Place concrete within 90 minutes of either addition of mixing water to cement and aggregates or addition of cement to aggregates if the air temperature is less than 84° F.
 - 1. Reduce mixing time and place concrete within 60 minutes if the air temperature is greater than 84 degrees F except as follows: if set retarding admixture is used and slump requirements can be met, limit for placing concrete may remain at 90 minutes. Additional water may be added, provided that both the specified maximum slump and water-cement ratio are not exceeded. When additional water is added, an additional 30 revolutions of the mixer at mixing speed is required. If the entrained air content falls below the specified limit, add a sufficient quantity of admixture to bring the entrained air content within the specified limits. Dissolve admixtures in the mixing water and mix in the drum to uniformly distribute the admixture throughout the batch.
- B. Transporting: Transport concrete from the mixer to the forms as rapidly as practicable. Prevent segregation or loss of ingredients. Clean transporting equipment thoroughly before each batch. Do not use aluminum pipe or chutes. Remove concrete which has segregated in transporting and dispose of as directed.

3-5 Placing Concrete

All aluminum material shall be coated with Bitumastic 300-M at all aluminum/ concrete interfaces prior to placing concrete. Place concrete as soon as practicable after the forms and the reinforcement have been inspected and approved. Contractor shall contact the Owner or

Owner's Representative forty-eight (48) hours prior to pour to allow sufficient time for inspection and any corrections. Do not place concrete when weather conditions prevent proper placement and consolidation: in uncovered areas during periods of precipitation, or in standing water. Deposit concrete as close as practicable to the final position in the forms. Do not exceed a free vertical drop of 3 feet from the point of discharge. Place concrete in one continuous operation from one end of the structure towards the other.

- A. Vibration: ACI 301/301M and ASTM A 775. Furnish a spare, working, vibrator on the job site whenever concrete is placed. Consolidate concrete slabs greater than 4 inches in depth with high frequency mechanical vibrating equipment supplemented by hand spading and tamping. Consolidate concrete slabs 4 inches or less in depth by wood tampers, spading, and settling with a heavy leveling straightedge. Operate internal vibrators with vibratory element submerged in the concrete, with a minimum frequency of not less than 6000 impulses per minute when submerged. Do not use vibrators to transport the concrete in the forms. Insert and withdraw vibrators approximately 18 inches apart. Penetrate the previously placed lift with the vibrator when more than one lift is required. Place concrete in 18 inch maximum vertical lifts. External vibrators shall be used on the exterior surface of the forms when internal vibrators do not provide adequate consolidation of the concrete.
- B. Cold Weather: ACI 306.1. Do not allow concrete temperature to decrease below 50° F. Obtain approval prior to placing concrete when the ambient temperature is below 40° F or when concrete is likely to be subjected to freezing temperatures within 24 hours. Cover concrete and provide sufficient heat to maintain 50° F minimum adjacent to both the formwork and the structure while curing. Limit the rate of cooling to 5° F in any one hour and 50° F per 24 hours after heat application.
- C. Hot Weather: ACI 305R. Maintain required concrete temperature using Figure 2.1.5 in ACI 305R to prevent the evaporation rate from exceeding 0.2 pounds of water per square foot of exposed concrete per hour. Cool ingredients before mixing or use other suitable means to control concrete temperature and prevent rapid drying of newly placed concrete. Shade the fresh concrete as soon as possible after placing. Start curing when the surface of the fresh concrete is sufficiently hard to permit curing without damage.

Provide water hoses, pipes, spraying equipment, and water hauling equipment, where job site is remote to water source, to maintain a moist concrete surface throughout the curing period. Provide burlap cover or other suitable, permeable material with fog spray or continuous wetting of the concrete when weather conditions prevent the use of either liquid membrane curing compound or impervious sheets. For vertical surfaces, protect forms from direct sunlight and add water to top of structure once concrete is set.

3-6 Surface Finishes

- A. Concrete Leveling Pad and Pier: Use broom finish on surface of apron, pier, and pads unless otherwise indicated. Perform a floated finish, and then draw a broom or burlap belt across the surface to produce a coarse scored texture. Permit surface to harden sufficiently to retain the scoring or ridges. Broom at right angles to the slope of the slab. Unless otherwise indicated, provide a transverse slope of 1/48. Limit variation in cross section to 1/4 inch in 5 feet.
- B. Concrete Boat Ramp: The task of grooving the concrete boat ramp's surface has frequently been a problem for Contractors. Therefore, the purpose of the following is to present a tried and proven method whereby acceptable grooving can be accomplished at a reasonable expense. An acceptable finish has sharp crisp grooves in a true straight line at the appropriate angle from the edge of one form to the edge of the opposite form.

Grooves that cross, curve, are not continuous from edge to edge, or that have irregular faces, peaks or valleys shall not be acceptable.

A suitable tool for finishing concrete boat launching ramps can be easily fabricated in any welding shop and can usually be made out of scrap materials on hand. The tool should be approximately 20 to 30 inches long and 20 to 24 inches wide with a total weight of 22 to 25 pounds. The actual V-Groove finish is imparted to the fresh concrete by approximately six 1"x1"x3/16" angles. The tool is designed to be screwed onto a length of bull float type pipe which is used for a handle. The smaller tools have short handles attached to their backs similar to a hand float. Grooving tools to be provided by the Owner.

The following procedure is recommended;

1. Prior to beginning concrete work on the actual launching ramp, the Contractor shall make 4'x 8' X 4' V-groove concrete test panel on flat ground at the construction site. Upon approval of a test panel by the Owner or Owner's Representative the panel will demonstrate the Contractor's ability to form satisfactory V-grooves and will serve as an objective standard on the site for judging the acceptability of the V-grooves formed on the actual launching ramp.
2. The concrete should be placed, vibrated, screened, etc. as per normal procedures, making sure the aggregate is tamped approximately 1/2" deep and the surface floated smooth with a wood float.
3. Finish work should be started at the bottom corner of the ramp and proceed with the grooves oriented at 60 degrees from the axis of the ramp. Finishing work should proceed when the concrete has reached the proper consistency whereby smooth, crisp grooves can easily be formed.
4. It is suggested that a crew of not less than five (5) workers including at least two (2) finishers perform the work. Working from opposite sides, the finishers can easily match the grooves, and a uniform surface can be efficiently produced. All tools, supplies, equipment and materials are to be on site before beginning placement of concrete.
5. The actual forming of the grooves is accomplished by pushing and pulling the finish tool back and forth across the surface of the wet concrete. The length of the tool gives good stability and the tool should track nicely if one of the angles on the bottom is overlapped into the last previously formed groove. When the concrete is ready for finishing, two passes of the V-groove tool will usually form crisp, clean grooves. Contractors sometimes like to use a long straight length of 2" x 4" or 2" x 6" lumber as a guide for the finish tools. Two (2") inch pipe also works well with less deflection.
6. Because of the rectangular shape of the finishing tool, it is difficult to work the tool up close to the concrete forms on each side of the lane, especially since the grooves are 60 degrees to the forms. Therefore, another helpful tool can be made similar to the large tool, but only 6" to 8" long and about 4" to 3" wide with the 1" x 1" x 3/16" angles trimmed off at one end of the appropriate angle to allow cleaning up the ends of the V-grooves immediately adjacent to the concrete forms and in the corners of the forms. This work is done as a follow-up behind the main grooving work.

3-7 Curing and Protection

ACI 301/301M except 10 days for retaining walls or pavement and 21 days for concrete that will be in full-time or intermittent contact with seawater, salt spray, alkali soil or waters. Begin curing immediately following form removal. Avoid damage to concrete from vibration created by blasting, pile driving, movement of equipment in the vicinity, disturbance of formwork or protruding reinforcement, and any other activity resulting in ground vibrations. Protect concrete from injurious action by sun, rain, flowing water, frost, mechanical injury, tire marks, and oil stains. The materials and methods of curing shall be subject to approval by the Owner or Owner's Representative.

- A. Protection of Treated Surfaces: Prohibit pedestrian and vehicular traffic and other sources of abrasion at least 72 hours after compound application. Maintain continuity of the coating for the entire curing period and immediately repair any damage.

3-8 Field Quality Control

- A. Sampling ASTM C-172. Collect samples of fresh concrete to perform tests specified. ASTM C-31/ C-31M for making test specimens.
- B. Testing:
1. Slump Tests: ASTM C-143/ C-143M. Take concrete samples during concrete placement. The maximum slump may be increased as specified with the addition of an approved admixture provided that the water-cement ratio is not exceeded. Perform tests at commencement of concrete placement, when test cylinders are made, and for each batch (minimum) or every 20 cubic yards (maximum) of concrete.
 2. Temperature Tests: Test the concrete delivered and the concrete in the forms. Perform tests in hot or cold weather conditions (below 50° F and above 80° F) for each batch (minimum) or every 10 cubic yards (maximum) of concrete, until the specified temperature is obtained, and whenever test cylinders and slump tests are made.
 3. Compressive Strength Tests: ASTM C-39. Make three test cylinders for each set of tests in accordance with ASTM C-31/C-31M. Precautions shall be taken to prevent evaporation and loss of water from the specimen. Test one cylinder at 7 days, one cylinder at 28 days, and hold one cylinder in reserve. Samples for strength tests of each mix design and concrete placed each day shall be taken not less than once a day, not less than once for each 50 cubic yards of concrete. If the average of any three consecutive strength test results is less than f'c (referenced below) or if any strength test result falls below f'c by more than 500 psi, take a minimum of three ASTM C-42/C-42M core samples from the in-place work represented by the low test cylinder results and test. Concrete represented by core test shall be considered structurally adequate if the average of three cores is equal to at least 85% of f'c and if no single core is less than 75% of f'c. Locations represented by erratic core strengths shall be retested. Remove concrete not meeting strength criteria and provide new acceptable concrete. Repair core holes with non-shrink grout. Match color and finish of adjacent concrete.
 4. Air Content: ASTM C-231 for normal weight concrete. Test air-entrained concrete for air content at the same frequency as specified for slump tests.

TABLE 1					
f'c Cast-In-Place Concrete					
Location, DeIDOT Mix Designation	f'c (Min. 28 Day Comp. Strength) (psi)	ASTM C-33 Aggregate Size No.)	Range of Slump (inches)	Water-Cement Ratio (max. by weight)	Air Entr. (percent)
Boat Ramp, Apron, Pier and Pads (Class A)	4500	57	2-4	0.40	5-8
Post Footer Concrete (Class B)	3000	57	2-4	0.45	4-7

Part 4 - Measurement

No measurement for payment of these items of work will be made since their cost shall be included in the lump sum bid.

-END OF SECTION -

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SECTION 31 20 00 – EARTH MOVING

Part 1 – General

1-1 Scope:

- A. The Contractor shall provide all labor, material, equipment and services necessary for and reasonably incidental to executing all Earthwork for preparation of subgrade and base for the concrete apron & boat ramp furnishing and installing complete all backfilling, excavating and compacting, and related items as shown on the drawings and/or specified herein. Refer to Section 35 43 37 “Stone Scour Protection” for excavation/ placement of stonework.
- B. The Contractor shall adhere to the terms of the various permits and approvals issued to this project. This shall include permits and approvals from U.S. Army Corps of Engineers, Delaware Department of Natural Resources & Environmental Control, and any other applicable permits.
- C. The Contractor shall give all notices and comply with all laws, ordinances, rules and regulations applicable to work. If the Contractor observes that the Specifications and/or Drawings are at variance therewith, he will give the Owner prompt written notice thereof. If the Contractor performs any work knowing it to be contrary to such laws, ordinances, rules and regulations, and without such notice to the Owner, he will bear all costs arising therefrom.
- D. Work shall consist of, but not be limited to, preliminary rough grading; stripping of topsoil; excavation; bedding; providing off-site borrow; removal from the site of unsuitable soil materials; soil testing and certification; rough grading, structure subgrades, finish grading of subgrades, and dewatering. Erosion Control measures are included as part of this work.
- E. Definitions: “Excavation” consists of removal of material under existing structures or landward of the high tide line (and within the footprint of the proposed concrete apron and boat ramp) encountered to elevations specified and subsequent disposal of materials removed. “Dredging” consists of removal of material riverward of the high tide line (or proposed boat ramp) and subsequent disposal of material removed. “Fill” shall include supplying, placing and compacting on-site borrow or off-site borrow brought to the site to the elevations indicated. “Subgrade” is the bottom of aggregate base materials under/behind structures and pavements. In areas where aggregate base materials are not specified, subgrade shall mean the bottom of the topsoil, whichever is lower.
- G. All excavation, fill, bedding and backfill work provided under other sections of these specifications shall conform to requirements of this Section and all backfill shall be tested and certified by the Contractor’s soils testing agency provided as work of this Section.
- H. The Contractor is required to furnish for approval samples and gradation curves of the proposed sand fill to the Owner or Owner’s Representative prior to placement. The cost for materials testing shall be included in the lump sum price bid for furnishing the sand fill.
- I. The Contractor shall implement all measures necessary to protect the subgrade under all pavements and structures from damage due to construction activities and equipment. The Owner makes no representations that the existing soils are adequate to support construction equipment and materials without damage to the subgrade. The Contractor shall include in his Base Bid all labor, materials and equipment necessary to protect the subgrade from damage and shall repair any damage at no additional cost to the Owner.
- J. Included elsewhere in these Specifications are copies of construction permits which are required to be available at the construction site. They are included for the Contractor’s

convenience, compliance, and guidance, but the engineering sketches and notes are approximate and suitable only for permit purposes and the Contractor shall attach no significance to volumes mentioned in these permits, but shall compute his own.

- K. Related work not included in this Section consists of the following:
1. 'Selective Demolition" provided under Section 02 41 19.
 2. "Cast-In-Place Concrete" provided under Section 03 30 53.
 3. "Pavement (Bituminous)" provided under Section 32 10 02.
 4. "Wingwall" provided under Section 35 31 16.
- L. Related Documents: The general provisions of the Contract, including Division 1 – General Requirements, "ASTM Standards in Building Codes," latest edition; the DeIDOT "Standard Specifications for Road and Bridge Construction, August 2001; Delaware Erosion and Sediment Control Handbook, latest edition; and all applicable supplements and addenda pertaining thereto apply to this section.

1-2 Quality Assurance:

Codes and Standards: Perform excavation work in compliance with applicable requirements of governing authorities having jurisdiction.

1-3 Testing and Soils Testing Agency:

- A. The Contractor will engage a professional geotechnical firm for quality control testing and inspection during earthwork operations. Cost of testing and inspection shall be borne by the Contractor.
- B. The firm shall provide its professional opinion, by letter, sealed and signed by a professional engineer registered in the State of Delaware, that the earthwork has been completed in accordance with the plans and specifications.

1-4 Submittals:

- A. Test Reports-Excavating: Submit the following reports directly to Owner or Owner's Representative from the soils testing agency with copy to Contractor.
1. Test reports on borrow material.
 2. Field density test reports.
 3. One optimum moisture-maximum density curve for each type of soil encountered as a minimum.

1-5 Job Conditions:

- A. Site Information: Data on subsurface conditions (shown in Appendix) is not intended as representations or warranties of accuracy or continuity between soil borings. It is expressly understood that the Owner and Engineers will not be responsible for interpretations or conclusions drawn therefrom by Contractor. Data is made available for the convenience of the Contractor only. Should Contractor rely, for any purpose, upon accuracy or completeness of said borings, or log thereof, he does so at his own risk.
- B. Contaminants are not known to exist within the Limit of Disturbance at the project site. However, if contamination is encountered during earthwork activities, the Contractor shall

contact the Owner or Owner's Representative immediately. The Owner will arrange with a qualified specialist for the identification, testing, removal, handling and protection against exposure or environmental pollution, to comply with applicable regulation laws and ordinances. The Contractor will not be required to participate in or to perform this operation. Upon completion of this work, the Owner will notify the Contractor that the area has been cleared and approved by the authorities in order for the work to proceed.

- C. Existing Utilities: The Contractor shall notify the Owner or the Owner's Representative and Miss Utility forty-eight (48) hours prior to the start of earth moving activities. He shall locate existing underground utilities in areas of work. If utilities are to remain in place, provide adequate means of support and protection during earthwork operations. Should uncharted or incorrectly charted piping or other utilities be encountered during excavation, consult utility owner and the Owner or Owner's Representative immediately for directions. Cooperate with utility companies in keeping services and facilities in operation. Repair damaged utilities to satisfaction of utility owner. Do not interrupt existing utilities serving facilities occupied and used by Owner or others during occupied hours, except when permitted in writing by Owner or the Owner's Representative and then only after acceptable temporary utility service have been provided.
 - 1. Provide a minimum of 48-hour notice to Owner or the Owner's Representative and receive written notice to proceed before interrupting any utility.
- D. Explosives: Do not bring explosives onto site.
- E. Protection of Persons and Property: Barricade open excavations occurring as part of this work and post with warning lights. Operate warning lights as recommended by authorities having jurisdiction. Protect structures, utilities, sidewalks, pavements, and other facilities from damage caused by settlement, lateral movement, undermining washout and other hazards created by earthwork operations. Perform excavation within drip-line of large trees to remain by hand and protect the root system from damage or dryout to the greatest extent possible. Maintain moist condition for root system and cover exposed roots with burlap. Paint root cuts of 1" diameter and larger with emulsified asphalt tree paint.
- F. **Sheeting, Shoring and Dewatering necessary for completion of the work specified is considered to be incidental to the construction.** The Contractor shall include all costs for sheeting, shoring and dewatering equipment, labor and incidentals in the respective Bid Item associated with each aspect of work. No additional cost will be paid by Owner for dewatering activities. The Contractor shall conduct the sheeting, shoring and dewatering activities subject to approval of the Owner. The Contractor will be required to conduct the sheeting, shoring and dewatering activities as necessary to control the release of sediment from the project site. The Contractor shall be responsible for obtaining all permits required for dewatering activities from DNREC, Division of Water Resources.

Part 2 - Products

2-1 Soil Materials:

- A. Satisfactory ("select fill") soil materials are described and shall conform to the following soil classification groups of the United Soil Classifications in accordance with ASTM D2487: GW, GP, GM, SM, SW and SP with a Plasticity Index (P.I.) less than 20.
- B. Unsatisfactory soil materials are described and shall conform to the following soil classification groups of the United Soil Classifications in accordance with ASTM D2487: GC, SC, ML, MH, CL, CH, OL, OH and PT.

- C. Unsatisfactory Fill may be used for general site grading upon approval of the Owner or Owner's Representative in all areas where suitable material is not required unless otherwise specified.

2-2 Aggregate:

- A. Backfill and Fill Materials under Concrete Apron, Boat Ramp and within sheeting corrugations shall be in accordance with the provisions of Section 813 of the DelDOT Standard Specifications being Del. No. 57 stone.
- B. Stabilize very loose SM SANDs exposed after subgrade excavation by working No. 2 stone into the loose sand areas.

2-3 Geotextile Filter Fabric: Geotextile filter fabric for reinforcement of concrete apron and boat ramp sub-grade shall be equal to Contech C-120NW.

Part 3 - Execution

3-1 General Excavation:

- A. "Excavation" is unclassified and includes excavation to the proposed subgrade elevations indicated. Payment for any additional or reduced excavation shall be in accordance within the Unit Price Bid Item provided by the Contractor in the Bid Form.
- B. Unauthorized excavation consists of removal of materials beyond indicated subgrade elevations or one foot below existing grade, whichever is lower; or dimensions without specific direction of the Owner. Unauthorized excavation, as well as remedial work directed by the Owner, shall be at Contractor's expense. Backfill and compact unauthorized excavations as specified or authorized excavations of same classification, unless otherwise directed by the Owner or the Owner's Representative.
- C. Additional Excavation: When excavation has reached required subgrade elevations, the Owner or Owner's Representative will make an inspection along with the Contractor's soils testing agency of conditions.
 - 1. If unsuitable bearing materials are encountered at required subgrade elevations or one foot below existing grade, whichever is lower, the Contractor shall immediately contact the Owner for direction regarding how to proceed. It may be necessary to carry excavations deeper and replace excavated material as directed by the Owner and/or stabilize as appropriate. In the event unsuitable material is encountered beyond that shown on the drawings, the contract price shall be changed for the removal and disposal of unsuitable material and its replacement with Del. No. 57 stone in accordance with the Unit Price Bid Items provided by the Contractor in the BID Form.

3-2 Boat Ramp Excavation:

- A. In the event the Contractor utilizes any portion of the proposed wingwall/toe wall as part of his cofferdam, he shall be responsible for the structural adequacy of all construction when the ramp is dewatered for construction purposes. He shall be responsible for providing a certified sketch and design, prepared by an engineer licensed in the State of Delaware, delineating any and/or all bracing required, and shall be responsible for installation, maintenance and removal of the cofferdam as necessary to adequately provide continuous dewatering of the boat ramp area during placement of the sub-base and concrete and curing of the concrete.

- B. The existing decayed concrete boat ramp slabs shall be removed and disposed of off-site as referenced in Section 02 41 19 of the specifications.
- C. Excavation of the boat ramp's subgrade material shall be performed to the required depth, as shown on the Contract Drawings. Slopes shall be maintained as necessary or as otherwise directed or approved by the Owner or Owner's Representative. The Contractor will be responsible for maintaining the excavated slopes to the required limits until placement of the #57 stone base material is completed. Prior to initiation of excavation, the Contractor shall submit to the Owner or Owner's Representative for approval his proposed method of excavation.

3-3 General Backfill and Fill:

- A. Prior to placement of fill in structural areas, existing organic materials, frozen or wet, excessively soft or loose soils, pavement debris, concrete rubble and other deleterious materials shall be removed and wasted. Removal of all extraneous material, timber piles, rubble and/or debris shall be carried out to permit construction of the ramp and wingwalls. After demolition and excavation operations have been completed, the exposed subgrade soils shall be inspected by the Contractor's Geotechnical Consultant.
- B. Place acceptable soil material in layers to required subgrade elevations for each area classification listed below.
 - 1. Under concrete apron, boat ramp, in excavations resulting from construction of the boat ramp and within corrugations of wingwalls, use off-site granular material.
 - 2. Under bituminous pavements, use satisfactory excavated or off-site granular material.
- C. Place backfill and fill materials in layers not more than 8" in loose depth for material compacted by heavy compaction equipment and not more than 4" in loose depth for material compacted by hand operated tamper.
 - 1. Before compaction, moisten or aerate each layer as necessary to provide a moisture content appropriate to obtain the specified degree of compaction. Compact each layer to required percentage of maximum dry density or relative dry density for each area classification. Do not place backfill or fill material on surfaces that are muddy, frozen or contain frost or ice.
- D. No fill materials shall be placed, spread or rolled while it is frozen or thawing or during unfavorable weather conditions. When the work is interrupted by heavy rains, fill operations shall not be resumed until the Contractor's Testing Agency indicates that the moisture content and density of the previously placed fill are as specified.

3-4 Boat Ramp Backfill and Fill:

- A. No backfill (or concrete) shall be placed within the boat ramp's wingwall enclosure: 1) until the area has been completely dewatered; 2) until the wingwalls/toewall's aluminum sheeting have been coated with Bitumastic 300M to the surface of the concrete ramp, and 3) until the wingwall/toewall has been inspected and approved by the Owner or Owner's Representative. Care shall be taken during the filling (and pouring) operations to maintain the alignment of the toewall and wingwalls. **The Contractor shall be**

responsible for adequately bracing the wingwalls/toewall before and during dewatering.

- B. Upon approval by the Owner or Owner's Representative, the Contractor shall backfill the excavated subgrade with #57 stone, install the geotextile and continue placing the backfill with #57 stone to the bottom of the concrete slab. Payment for any additional or reduced tonnage of #57 stone within this area shall be in accordance with the Units Price Bid Item provided by the Contractor in the Bid Form.
- C. All backfill material within the boat ramp's wingwall enclosure shall be placed from the bottom up in successive 4" maximum in loose horizontal layers and compacted by hand operated tampers to the approval of the Owner or Owner's Representative. Heavy equipment shall be kept at least 10' from the wingwalls/ toe wall unless specifically approved by the Owner or Owner's Representative. The Contractor shall protect the structural integrity of the wingwalls from damage during the backfill and grading operations at all times.

3-5 Compaction:

- A. General: Control soil compaction during construction providing minimum percentage of density specified for each area classification indicated below.
- B. After the excavation, demolition and/or stripping operations have been completed, the exposed subgrade soils shall be inspected by the Contractor's Geotechnical Consultant. The Owner will require the exposed subgrade materials be proofrolled, where appropriate, utilizing a heavily loaded dump truck or other pneumatic tired vehicle of similar size and weight. The purpose of proofrolling will be to provide surfical densification and to locate any isolated areas of soft or loose soils requiring undercutting. Proofrolling is not advised in wet areas, which may deteriorate under repeated vehicular loading. The Contractor shall contact the Owner immediately if the subgrade is suspected to be weak prior to proofrolling to receive direction from the Engineer regarding how to proceed. Precipitation may result in standing water (perched water) at low areas. The Contractor may be directed by the Owner to proofroll a specific area or areas with a lightly loaded truck when conditions warrant a change and subject to advance approval of the Owner. The Contractor shall implement all measures necessary to convey water away from fill placement areas, or use dewatering measures to protect the subgrade prior to placement of fill materials. The cost for these measures shall be included in the Base Bid.
- C. Percentage of Maximum Density Requirements: Compact soil to not less than the following percentages of maximum density for soils which exhibit a well-defined moisture density relationship determined in accordance with ASTM D -1557.
 - 1. Pavements, Ramps, and Slabs: Compact each 8 inch (maximum) layer of backfill or fill material to a minimum of 95 percent of the modified proctor maximum dry density. Adjustments to the natural moisture content of the soils may be required in order to obtain the specified compaction levels.
 - 2. Lawn Areas: Compact each layer of backfill or fill material to a minimum of 85% of the maximum dry density.
- D. Moisture Control: Where subgrade or layer of soil material must be moisture conditioned before compaction, uniformly apply water to surface of subgrade or layer of soil material. Apply water in manner to prevent free water appearing on surface during or subsequent to compaction operations.

1. Remove and replace or scarify and air dry soil material that is too wet to permit compaction to specified density.
 2. Soil material that has been removed because it is too wet to permit compaction may be stockpiled or spread and allowed to dry. Assist drying by disking, harrowing or pulverizing until moisture content is reduced to a satisfactory value.
- E. For the proofrolling and fill compaction operations, compaction shall extend at least two (2') feet beyond the pavement boundaries except as shown on the plans and/or as directed by the Owner or Owner's Representative. A sufficient number of in-place density tests shall be performed by the Contractor's geotechnical consultant to verify that the proper degree of compaction is being obtained in all fill soils. As a minimum, the number of tests shall be as specified under Paragraph 3-10 of this Section.

3-6 Grading:

- A. General: Uniformly grade areas within limits of grading under this section, including adjacent transition areas. Smooth finish surface within specified tolerances, compact with uniform levels or slopes between points where elevations are indicated or between such points and existing grades. If earthwork is conducted in the presence of moisture, the traffic of heavy equipment, including heavy compaction equipment, may create pumping and a general deterioration of the subgrade soils. Construction traffic should be minimized at structural subgrade areas. If at all possible, the grading should be carried out during dry weather.
- B. Grading Surface of Fill: Grade smooth and even, free of voids, compacted as specified and to required elevation. Provide final grades within a tolerance of 1/2" when tested with a 10' straight edge.

3-7 Field Quality Control:

- A. Quality Control Testing during Construction: Soil Testing Agency must approve subgrades and fill layers before further construction work is performed.
1. Perform field density tests in accordance with ASTM D 1556 (sand cone method) or ASTM D 2922 (Nuclear Density Moisture Gauge), as applicable.
 2. Pavement Areas: In each compacted fill layer, make one field density test for every 5000 square feet. The testing agency shall recommend additional testing if in their opinion, the above recommendations are not sufficient.
- B. If in the opinion of the Owner, based on testing service reports and inspection, subgrade or fills which have been placed are below specified density, provide additional compaction and testing at no additional expense to the Owner.
- C. Cost of inspection and testing shall be borne by the Contractor.
- D. The Contractor's geotechnical consultant shall provide their professional written opinion that the fill and backfill materials have been placed and compacted in accordance with the specifications.

3-8 Maintenance:

- A. Protection of Graded Areas: Protect newly graded areas from traffic and erosion. Keep free of trash and debris.
- B. Repair and re-establish grades in settled, eroded and rutted areas to specified tolerances.

- C. Reconditioning Compacted Areas: Where completed compacted areas are disturbed by subsequent construction operations or adverse weather, scarify surface, reshape and compact to required density prior to further construction.
- D. Settling: Where settling is measurable or observable on excavated areas during general project warranty period, remove surface (pavement, concrete, lawn or other finish), add backfill material, compact and replace surface treatment. Restore appearance, quality and condition of surface or finish to match adjacent work and eliminate evidence of restoration to greatest extent possible and to the satisfaction of the Owner or Owner's Representative.

3-9 Soil Erosion Control:

- A. This project consists of less than 5,000 sq. ft. of upland land disturbing activity. Soil erosion and sediment control measures are not required. However, the Contractor is required to provide adequate measures to prevent soil erosion and sediment control during all phases of construction to reduce / prevent sediment laden runoff and the tracking of material onto public roadways. The items provided below are provided as a reference.
- B. General: Contractor shall furnish all materials and shall install erosion control devices as necessary. The Contractor's attention is specifically directed to the fact that these plans refer to the Delaware Erosion and Sediment Control Handbook, current version, and approved supplements.
- C. Contractor shall be responsible for construction and maintenance of all sediment control structures and measures as required by local officials. Contractor shall schedule his work so that time for preliminary grading is reduced to a minimum.
- D. Site shall be rough graded to drain naturally immediately after work commences. All foundation work drainage shall be pumped to sediment control devices until backfilling has been completed.
- E. All disturbed areas other than that required for the pavement and wetland planting areas shall be either temporarily seeded or brought to finished grade and seeded.
- F. Public roads and other right-of-ways shall be kept free of sediment deposits left from heavy truck traffic leaving the construction site.
- G. If permanent stabilization does not occur prior to May 15, temporary seeding will be required until August 15 when permanent seeding will take place unless otherwise approved by the Owner in writing.
- H. Place erosion and sediment control measures and install and construct all measures in accordance with the "Delaware Erosion and Sediment Control Handbook", and as shown on the plans.
- I. The Contractor shall cooperate fully with all sediment and erosion control inspection personnel and shall observe all measures indicated on the Contract Drawings. The CCR inspection shall be conducted by the Owner.

3-10 Disposal of Excess and Waste Materials:

- A. Removal from Owner's Property: Remove waste materials, including unacceptable excavated material, tree stumps, roots, greenery, trash and debris, and legally dispose of it off the Owner's property.

- B. Remove excess excavated earth material and legally dispose of off-site if the materials are not suitable for fill on-site, subject to the approval of the Owner.
- C. Refer to SECTION 02 41 19 "SELECTIVE DEMOLITION".

3-11 Guarantee:

- A. Contractor's attention is directed to guarantee obligations contained in General Conditions.
- B. In addition to any other guarantee obligation contained elsewhere in General Conditions or specifications, Contractor shall be responsible for any settlement caused by work of the project and for any damage caused by such settlement during full length of guarantee period.

Part 4 - Measurement

No measurement for payment of these items of work will be made since their cost shall be included in the lump sum price bid.

- END OF SECTION -

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SECTION 32 10 02 – PAVEMENT (BITUMINOUS CONCRETE)

Part 1 - General

1-1 Scope

- A. Contractor shall provide all labor, materials, equipment and services necessary for and reasonably incidental to, furnishing and installing complete all related items as shown on the drawings and/or as specified herein.
- B. The Contractor shall adhere to the terms of the various permits and approvals issued to this project.
- C. The Contractor shall give all notices and comply with all laws, ordinances, rules and regulations applicable to work. If the Contractor observes that the Specifications and/or Drawings are at variance therewith, he will give the Owner or the Owner's Representative prompt written notice thereof. If the Contractor performs any work knowing it to be contrary to such laws, ordinances, rules and regulations, and without such notice to the Owner or the Owner's Representative, he will bear all costs arising therefrom.
- D. Work shall consist of, but not be limited to installing prime coats, tack coats, bituminous concrete pavement, line painting and handicapped symbol painting.
- E. Related work not included in this Section consists of the following:
 - 1. "Selective Demolition" provided under Section 02 41 19.
 - 2. "Cast-In-Place Concrete" provided under Section 03 30 53.
 - 3. "Earth Moving" provided under Section 31 20 00.
 - 4. "Barricades, Guardrail and Signage" provided under Section 32 30 01.
- F. Related Documents: The general provisions of the Contract, including Division 1 – General Requirements, the Geotechnical Report in Appendix 3; ASTM Standards in Building Codes, and The DelDOT "Standard Specification for Road and Bridge Construction, August 2001; and all applicable supplements and addenda pertaining thereto apply to this section.

1-2 Quality Assurance

- A. Source Quality Control: Maintain quality in products by using those of a qualified bituminous concrete producer having qualified plant operating personnel.
- B. Experience: The bituminous concrete producer shall be a bulk producer regularly engaged in production of hot-mixed, hot-laid bituminous concrete conforming to the standards referenced herein.
- C. Workmen Qualifications: Provide at least one person thoroughly trained and experienced in the skills required who readily understands the design and is completely familiar with the application of stone base and bituminous concrete paving work. Said person shall be present at all times during progress of the stone base and bituminous concrete paving work and shall direct the performance of said work. For actual finishing of bituminous

concrete surfaces and operation of the equipment, use only personnel thoroughly trained and experienced in the skills required.

Part 2- Materials

2-1 Paving and Aggregate Products

A. Roadwork and Paving

All new road surfaces and paved areas where indicated on the plans shall consist of Bituminous Concrete Surface Course (Superpave Type C), Bituminous Concrete Base Course (Superpave Type B), over the compacted aggregate base. Roads shall be installed to the sizes, dimensions, grades, slopes and elevations as shown on the contract drawings. Existing pavement shall be scarified, cleaned and resurfaced with Bituminous Concrete Surface Course (Superpave Type C).

The Contractor shall submit in writing at least three weeks in advance of the paving operation the following information for the Owner or Owner's Representative.

1. Source of each aggregate component.
2. Source of asphalt and anti-stripping agent.
3. Complete gradation.
4. Plant from which material will be ordered.

B. Aggregate Base Course

1. Aggregate Base Course: The aggregate base course shall be in accordance with the provisions of Section 821; "Aggregates" Type A (CR-1) or Type B (Crusher Run) of the DeDOT Specifications.

C. Measurement and Payment

1. The DeDOT Specification provisions dealing with measurement and payment for pavement coarses shall not be applicable to this contract. No measurement for this item of work will be made since its' cost shall be included in the lump sum price bid.

2-2 Pavement Paint

Paint shall be in accordance with Federal Highway Administration Specification TT-P115. Roadways and parking areas shall be delineated with white paint.

Part 3- Execution

3-1 Preparation

- A. The Contractor shall prepare subgrade and place, grade and compact aggregate base course at the new and replacement pavement areas in accordance with Section 31 20 00 "Earth Moving".

3-2 Bituminous Concrete

- A. Bituminous Concrete Pavement material shall be applied only to dry surfaces.
- B. Equipment and methods of construction shall be in accordance with Section 401 of the Delaware Department of Transportation Standard Specifications for Road and Bridge construction.
- C. Bituminous Concrete Pavement base and surface courses shall be laid to the grade and cross section as shown on the drawings.
- D. The terminus of all proposed paving shall be butted to match existing pavement. This shall be in accordance with the provisions of Section 761 of the Delaware Department of Transportation Standard Specifications for Road and Bridge construction.
- E. No traffic will be permitted on the bituminous concrete pavement until it has set sufficiently to prevent marking.
- F. The Contractor shall take all steps necessary to prevent damage to completed pavements during construction until final acceptance of the project by the Owner. Construction equipment and materials shall not travel over or be stored on pavements accepted by the Owner. Any damage to the pavements or the base materials by construction activities shall be repaired as directed by the Owner or the Owner's Representative at no additional cost to the Owner.

3-3 Pavement Painting

The Contractor shall paint paved areas with white paint as shown on the drawings. Any parking stall lines shall be 4" wide. Paint shall be material especially adapted for this use being equal to Gliddens "Romard Traffic Paint" or Degracon "Traffic Master" Standard Type. Contractor shall allow the pavement to cure for at least 21 days before applying paint. Clean the pavement to remove loose sand, stones, dust, oil, grease, water, and other substances that are harmful to paint or adversely affect the adhesion of paint. Do not apply paint if conditions prevent neat, uniform application.

Part 4- Measurement

No measurement for payment of these items of work will be made since their cost shall be included in the lump sum price bid.

- END OF SECTION -

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SECTION 32 30 01 – BARRICADES, GUARD RAILING AND SIGNAGE

Part 1- General

1-1 Scope

- A. The Contractor shall furnish all labor, materials tools, equipment, services and performing of all work necessary to furnishing and installing all barricades, and signage to the lines and grades as indicated on the drawings and specified herein as directed by the Owner or Owner's Representative. Guard railing is NOT-IN-Contract. (NIC)
- B. The Contractor shall give all notices and comply with all laws, ordinances, rules and regulations applicable to work. If the Contractor observes that the Specifications and/or Drawings are at variance therewith, he will give the Owner or Owner's Representative prompt written notice thereof. If the Contractor performs any work knowing it to be contrary to such laws, ordinances, rules and regulations, and without such notice to the Owner or Owner's Representative, he will bear all costs arising therefrom.
- C. Related work not included in this Section consists of the following:
 - 1. "Cast-In-Place Concrete" provided under Section 03 30 53.
 - 2. "Pavement (Bituminous Concrete)" provided under Section 32 10 02.
- D. Related Documents: The general provisions of the Contract, including the General Conditions and DIVISION 1 - GENERAL REQUIREMENTS, and Delaware Erosion and Sediment Control Handbook, current edition, apply to this Section.

1-2 Submittals

- A. Shop Drawings: Furnish complete shop drawings before delivery of any material to the job site. Shop drawings shall be prepared in accordance with Division 1 – General Requirements.
- B. Product Data:
 - 1. Material list of items proposed to be provided under this section.
 - 2. Manufacturer's specifications and other data needed to prove compliance with the specified requirements.
 - 3. Names and addresses of the nearest service and maintenance organization that readily stocks repair parts.
 - 4. Manufacturer's recommended installation procedures which, when approved by the Owner or Owner's Representative will become the basis for accepting or rejecting actual installation procedures used on the work.

1-3 Product Handling

- A. Protection: Store barricades, railing, and accessories in a secure and dry place. Use all means necessary to protect the materials of this section and to protect the installed work.
- B. Replacements: In the event of damage, immediately make all repairs and replacements necessary to the approval of the Owner or Owner's Representative and at no additional cost to the Owner.

Part 2- Products

2-1 **Barricades**

- A. **Steel Bollards**: Shall be Schedule 40 galvanized steel pipe as detailed on the design plans filled with concrete.
- B. **Post Sleeve**: Shall be yellow 0.25" HDPE Dome top.
- C. **Concrete** shall be in accordance with Section 03 30 53 of these Specifications conforming to Delaware Class B having a minimum compressive strength of 3,000 psi at 28 days.

2-2 **Guardrail (NIC)**

- A. **Lumber**: All timbers, dimension lumber, and boards shall be graded and carry an identifiable grade mark in accordance with the Grading Rules of the Southern Pine Inspection Bureau. The in place length of lumber shall be shown on the Drawings. Lumber shall comply with the following specifications.
 - 1. **Posts, Rails and Blocks**: Grade No. 1 minimum SR rough sawn.
- B. **Hardware**: Hardware to be used for the construction of the guardrail shall be manufactured from good, commercial quality material and shall meet the minimum requirements of the following specifications:
 - 1. **Bolts and Nuts**: All bolts and nuts shall conform to ASTM Specification A-307 for Grade A Steel and shall have hexagonal heads.
 - 2. **NYDD and Standard Cut Washers** shall be fabricated from a commercial grade steel and conform to ASTM Specification Designation F 844-83 with the exception that galvanizing shall be as specified below.
 - 3. **Spikes and Nails**: Shall be annular wire type and shall meet AISI Specification 1010 or 1020 for steel.
 - 4. **Steel Plates**: All plate washers and splice plates shall conform to ASTM A-36 for Grade A Steel unless otherwise specified and shall be hot dip galvanized. Plates shall be sheared to final size and all machining completed before hot dip galvanizing.
 - 5. Threads on all fasteners shall be of the rolled type. All bolts shall show ¼ inch of thread on the outside face of the nuts.
 - 6. All of the above hardware shall be hot-dipped galvanized in accordance with ASTM designation A-153. The zinc coating shall be Class A, 2.0 ounces of zinc per square foot of hardware surface.
- C. **Treatment**: All lumber shall be treated with preservative by the pressure process in accordance with the following requirements.
 - 1. Lumber shall be squared to length in accordance with the Drawings before treatment.
 - 2. **C.C.A. Treatment**:

- a. All posts shall be pressure treated with C.C.A. Type C in accordance with requirements of the American Wood Preservers Association. Standard P5 to a final net retention of not less than 2.5 lbs. of chromated copper arsenate per cubic foot of wood as determined by chemical assay according to AWPA Standard A2.
 - b. The railing and blocks be C.C.A Type C treated to a minimum net retention of 1.5 lb. of chromated copper arsenate per cubic foot of wood as determined by chemical assay according to AWPA Standard A2.
3. In general, treated materials shall be branded or tagged after treatment for identification. Lumber shall be bundled and tagged with the appropriate information.
- D. **Certification:** Prior to delivery of materials to the construction site, the Contractor shall supply to the Owner or Owner's Representative certifications in accordance with Section 35 31 16 of these specifications.
- E. **Inspection and Testing:** Inspection and testing shall be in accordance with Section 35 31 16 of these specifications.

2-3 **Signage**

- A. All signs and post assemblies will be provided by the Owner.

Part 3- Execution

3-1 **Storage of Materials:**

The method of storing and handling materials at the construction site shall be such as to avoid injury and to protect them against the weather. Lumber shall be stored 12 inches above the ground to provide ventilation, piled to shed water and to prevent warp. The Owner or Owner's Representative may require suitable covering to protect the materials from the weather.

3-2 **Guardrails (NIC)**

- A. Excavate shallow pilot holes (7" max.) as necessary for the posts to the size and spacing specified without disturbing the underlying materials.
- B. All posts and lumber whenever possible shall be cut to size trimmed and bored before assembly.
- C. All field cuts, trimmed areas and holes shall be given three coats of Bitumastic No. 300-M (Black) in accordance with the manufacturer's instructions.
- D. All posts shown on the drawings shall be driven by gravity or vibratory hammer as approved by the Owner or Owner's Representative. Any hammer which does not perform satisfactorily on posts being driven, regardless of prior approval, shall be replaced by a hammer acceptable to the Owner or Owner's Representative. Driving shall be continuous without intermission until the post has been driven to the required penetration. In general, the penetration for any post shall not be less than shown on the Plans even in hard materials.
- E. During driving, the top of posts shall be protected from damage by using a head or cap. The head or cap shall cover the entire surface of the top of the post. Trimming the top of the post to fit the cap shall be kept to a minimum.

- F. All materials shall be accurately assembled, set, regularly spaced, and coursed; and they shall be true to line, even, square, plumb, tight and level.
- G. In the installation of bolts, all bolt holes shall be a minimum diameter to assure a tight and driving fit. Holes shall be of a diameter such that bolts are inserted by light tapping. All counterbored holes for the installation of washers shall not be more than 1.0 inch in depth.
- H. All bolts shall have a ¼ inch length of thread outside the fence of all nuts after tightening, cutting and trimming of bolt ends is completed.

3-4 Barricades

- A. Steel Bollards.
 - 1. Excavate holes for bollards to the diameter and spacing shown on the Drawings without disturbing the underlying materials.
 - 2. Center and align bollards. Place concrete around bollards, and vibrate or tamp for consolidation. Recheck vertical and top alignment of bollards and make necessary corrections. Extend concrete footings 1 inch above grade, and trowel to a crown to shed water. Unless otherwise specified and/or approved by the Owner or Owner's Representative, no materials shall be installed on the posts, nor shall the bollards be disturbed within 7 days after the individual bollards footing is completed.
 - 3. Set bollards plumb in concrete footings (maximum variation from plumb: ¼ inch).
 - 4. Upon approval of the Owner or Owner's Representative, place HDPE post sleeve over pipe. Attach per manufacturer's instructions

3-5 Signage

- A. Post assemblies for signage (both provided by the Owner) shall be driven at the locations shown. Posts shall be set plumb and signage tight and level as directed.

Part 4- Measurement

No measurement for payment for this work will be made since the cost shall be included in the lump sum price bid.

- END OF SECTION -

SECTION 35 31 16 – WINGWALL

Part 1 - General

1-1 Scope

- A. The Contractor shall furnish all labor, materials and equipment necessary to construct the wingwalls and toewall as shown on the drawings, and as specified herein.
- B. The Contractor shall adhere to the terms of the various permits issued to this project. This shall include permits from the U. S. Army Corps of Engineers, Delaware Department of Natural Resources and Environmental Control, and any other applicable permits.
- C. The Contractor shall give all notices and comply with all laws, ordinances, rules and regulations applicable to work. If the Contractor observes that the Specifications and/or Drawings are at variance therewith, he will give the Owner prompt written notice thereof. If the Contractor performs any work knowing it to be contrary to such laws, ordinances, rules and regulations, and without such notice to the Owner, he will bear all costs arising therefrom.
- D. Included elsewhere in these Specifications are copies of construction permits which are required to be available at the construction site. They are included for the contractor's convenience, compliance and guidance, but the engineering sketches and notes are approximate and suitable only for permit purposes and the Contractor shall attach no significance to volumes mentioned in these permits, but shall compute his own.
- E. Related work not included in this Section consists of the following:
 - 1. "Selective Demolition" provided under Section 02 41 19.
 - 2. "Cast-in-Place Concrete" provided under Section 03 30 53.
 - 3. "Earth Moving" provided under Section 31 20 00.
- F. **Related Documents:** The general provisions of the Contract; including Division 1 – General Requirements, "ASTM Standards in Building Codes, latest edition; the Geotechnical Engineers Report in Appendix 3, and all applicable supplements and addenda pertaining thereto apply to this section.

Part 2 - Products

2-1 **Timber:** All timber shall be Southern Yellow Pine unless otherwise approved by the Owner or Owner's Representative. Virginia Pine is not acceptable. Timber shall be free from all defects which will impair its strength and durability. All timber shall comply with the following specifications.

A. **Round Timber Piles:**

- 1. **General Quality:** Piles shall meet the requirements of the ASTM D25 "Standard Specifications for Round Timber Piles", except as modified by the Drawings and Specifications.

Piles shall be cut from sound, live trees and shall be free from decay and insect attack. Piles shall be cut above the ground swell and have a gradual taper from three feet below the butt to the tip as specified on the Drawings. Piles shall be free from defects such as holes, scars, checks, shakes, splits, twist of grain, compression wood and knots as required by ASTM Specification D25.

2. **Sizes:** In place length of piles, minimum butt and tip diameter, minimum butt and tip circumferences, and pile taper shall be as specified in the Drawings. Pile length shall be sufficient to achieve 10 tons minimum bearing on each pile. **Prior to ordering the piles and sheeting, one (2) Forty (50') foot long test pile shall be driven where shown on the drawings at the permanent position of the wingwall pile.** These piles are to verify the pile and sheeting design lengths shown on the drawings. In the event that the pile and sheeting lengths are changed, the contract price shall be changed in accordance with the Unit Price Bid Items provided by the Contractor in the BID FORM.
 3. **Sapwood:** Piles shall have a minimum sapwood thickness of three (3.0) inches. The sapwood shall be measured continuously along the radius at mid-point of length and at the butt of the pile.
 4. **Straightness:** Piles shall be within a straightness requirement where a line drawn from the center of the tip to the center of the butt does not fall outside the center of the pile at any point by more than 1¼% of the length of the pile, or shall be entirely within the body of the pile, whichever is less.
 5. **Peeling and Cutting:** Prior to treatment, piles shall be clean peeled of all outer bark and at least a minimum of 80% of the inner bark. The butts and tips of piles shall be sawed square with the axis of the pile. The allowable tolerance shall be 10% from square.
- B. **Lumber:** All timbers, dimension lumber, and boards shall be graded and carry an identifiable grade mark in accordance with the Grading Rules of the Southern Pine Inspection Bureau. The in place length of lumber shall be as shown on the Drawings. Lumber shall comply with the following specifications.
1. **Batter Blocks:** Grade No. 1 Dense, surfaced on four sides (S4S).

2-2 Aluminum Sheet Piling and Caps

- A. **General:** The aluminum wingwalls and toewall along with all components required for installation shall be manufactured by Gator Dock and Marine Inc. or an approved equal. Sheet piling shall be of the interlocking type. Sections shall be those shown on plans or an approved equal in all respects. Dimensions shown on the drawings are dimensional for "Gator Dock and Marine, Inc." PZH-153 sheet piling. Any change in the manufacturer may require dimension changes. The computed length of the wall may vary from the actual wall length because of rolling tolerances, setting and driving practices. The aluminum sheet piling shall be straight and free from all defects either in web of interlock tending to impair its strength or durability. The methods of manufacture, storing, handling, and driving shall be that injury to the sheeting will be avoided. Piling which has been damaged during shipping or storing shall, at the direction of the Owner or Owner's Representative, be removed from the site of the work and be replaced with satisfactory piling. A representative of the sheet pile supplier shall be present when the sheet pile and appurtenances are delivered.
- B. **Length:** The length of piling furnished shall be adequate to provide the finished lengths shown on the drawings with the tops of the finished piling at the elevations called for on the drawings. Splicing of sheet piles will not be permitted.
- C. **Aluminum:** All aluminum components (sheet pilings, caps, cap inserts, channel wales, splice plates, wale clips and corners) shall conform to the requirements of ASTM B 221 alloy 6061-T6.

2-3 Hardware: Hardware to be used for the construction of the wingwalls and toewall shall be manufactured from good, commercial quality material and shall meet the minimum requirements of the following specifications:

- A. Rods, Bolts and Nuts: All rods, bolts and nuts shall conform to ASTM A-307 for Grade A Steel and shall have hexagonal heads.
- B. Plate Washers shall conform to ASTM A-36 for Grade A Steel unless otherwise specified and shall be stainless steel.
- C. NYDD Washers shall be fabricated from a commercial grade steel and conform to ASTM F 844 with the exception that galvanizing shall be as specified below.
- D. Threads on all fasteners shall be of the rolled type. All bolts and rods shall show ¼ inch of thread on the outside face of the nuts.
- E. All of the above hardware, in contact with any aluminum sheeting and appurtenances shall be stainless steel type 18-8 (300 series) in accordance with ASTM A-193B8 (except for bolts, nuts and washers fastening batter pile and block to vertical piles which shall be hot-dipped galvanized in accordance with ASTM A-153. The zinc coating shall be Class A, 2.0 ounces of zinc per square foot of hardware surface.). NO GALVANIZED HARDWARE SHALL HAVE CONTACT WITH ANY ALUMINUM MATERIAL.

2-4 Weather Guards:

- A. All vertical pile and batter block tops shall be covered with black plastic pile caps. They shall be molded from 3/16 inch thick, ultra-violet resistant, low-density polyethylene as approved by the Owner or Owner's Representative.
- B. All Covered pile tops shall be trimmed as shown on the plans and the end grains treated with Bitumastic 300-M and coated with 1/8 inch asphalt roofing cement.
- C. Weather guards for top of batter piles shall be made by using roofing tar paper. The tops of the batter and vertical anchor piles shall be treated with Bitumastic 300-M coated within 1/8 inch minimum thickness of asphalt roofing cement. Batter pile tops shall be further covered with tar paper prior to placement of the batter block.
- D. All submerged vertical pile tops shall receive 1/8 inch minimum thickness of epoxy no. A-788 Splash Zone Compound as manufactured by Kop-Coat, Inc. or an approved equal.

2-5 Miscellaneous Materials:

- A. All timber field cuts, trimmed areas and holes shall be treated with Bitumastic No. 300-M (Black) as manufactured by Koppers Company, Inc., Pittsburgh, Pennsylvania, 15219. All coatings shall be done in accordance with the manufacturer's instructions.
- B. Asphalt roofing cement for weather guards on batter piles shall be a high grade, waterproof cement, easily spread by trowel to 1/8 inch in one coat, meeting Federal Specifications SS-c-153 Type 1, Class B. Use Clipper Ship Roofing Cement MP51 or equivalent.
- C. Tar paper for weather guards on batter piles shall be the type classified as roofing tar paper, weighing 50 lbs. per square inch, without granules, and approximately 1/8" thick. If 50 lbs. per square roofing paper is unavailable two layers of 30 lbs. per square paper shall be applied with asphalt roofing cement spread on all paper surfaces as directed by the Owner or Owner's Representative.

2-6 **Treatment:** All piles and lumber shall be treated with preservative by the pressure process in accordance with the following requirements.

- A. Piles and lumber shall be squared to length in accordance with the Drawings before treatment.
- B. **C.C.A. Treatment:** All piles and batter blocks shall be pressure treated with C.C.A. Type C in accordance with the requirements of the American Wood Preservers Association. Standard P5 to a final net retention of not less than 2.5 lbs. of chromated copper arsenate per cubic foot of wood as determined by chemical assay according to AWPA Standard A2.
- C. In general, treated materials shall be branded or tagged after treatment for identification. Branding of piles shall be accomplished three feet from the butt by burning on the surface with legible lettering the supplier's brand, plant designation, date of treatment, species of timber, type of preservative and retention of preservative. Lumber shall be bundled and tagged with the appropriate information.

2-7 **Certifications:** Prior to delivery of materials to the construction site, the Contractor shall supply to the Owner or Owner's Representative the following certifications:

- A. A notarized Certificate attesting to the fact that all timber meets the requirements of the Drawings and Specifications as to species, grade, strength, finish and size.
- B. A notarized Certificate of Treatment from the supplier indicating that all timber meets the Specifications as to type of CCA treatment used, method of application and final net retention by assay in pounds per cubic foot. The Certificate shall include the number of pieces involved and their description. Accompanying the Certificate shall be a copy of the Charge Report and a copy of the chart obtained from the combination recorder. A date shall be shown when the gauges and recorder were certified by a particular inspection agency.
- C. A notarized Certificate indicating that all hardware (bolts, washers, rods, etc.) meet these specifications as to galvanizing and steel (stainless steel / Grade A steel) type. The certificate shall list the materials in detail.

2-8 **Inspection and Testing:**

- A. All materials are subject to initial inspection and testing by an independent firm acceptable to the Owner or Owner's Representative in order to insure compliance with the Drawings, Specifications, AWPA Standards and other specified standards.
- B. This independent firm shall specialize in the inspection and testing of timber materials and will be retained to provide these services by the Contractor or material supplier.
- C. Inspection and testing of timber materials from approved treatment plants within a 120-mile radius of Ocean View, Delaware shall be performed by the Engineer and/or an independent firm retained by the Engineer.
- D. Inspection and testing of timber materials from approved treatment plants outside a 120-mile radius of Ocean View, Delaware shall be performed by an independent firm retained by the Contractor and/or the material supplier.
- E. The inspection and testing of timber materials shall be carried out in accordance with the Grading Rules of the Southern Pine Inspection Bureau and the AWPA Standard M2. These

inspections shall be performed before treatment and after treatment, preferably on complete order and only at the treating plants.

- F. If the Contractor chooses to obtain timber materials from a treatment plant located OUTSIDE the established limits, all costs relating to the inspection and testing of these materials shall be borne by him and/or the material supplier, and shall be included in the lump sum price bid for the project.
- G. In cases where the treatment is WITHIN the established limits, the Contractor or material supplier shall notify the Engineer prior to treatment and after treatment when the timber materials are ready for inspection and testing.
- H. In ordering materials, the Contractor is required to notify the Owner or Owner's Representative of the source from which he proposes to obtain all timber materials. He shall make available to the material supplier (and independent firm, if applicable) copies of the project Drawings and Specifications.
- I. Acceptance or rejection of materials shall be made on the basis of adherence to the specified standards. Rejected materials shall be replaced and/or retreated. The cost of inspecting replaced or retreated materials shall be incurred by the treating plant. An independent inspection agency acceptable to the Owner or Owner's Representative shall be retained for this purpose.
- J. Notwithstanding the inspection of materials at the treatment plant, the Owner or Owner's Representative reserves the right to reject any individual timber pieces not meeting the specified requirements. The Contractor shall be responsible for the replacement of any materials rejected at the project site.
- K. Accepted timber materials shall be identified by hammering with an identifiable mark as evidence of inspection and testing. All required paperwork including certificates and test reports shall be made available to the Owner or the Owner's Representative prior to the release of the materials from the treating plant. Materials shall not be delivered to the project site without prior notification and approval of the Owner or the Owner's Representative.

Part 3 - Execution:

3-1 General

- A. Complete descriptions of timber pile and aluminum sheet pile driving equipment including hammers, extractors, protection caps and other installation appurtenances and procedures shall be submitted to the Owner or Owner's Representative and approved prior to the start of the work and no more than 15 work days following the pre-construction meeting.
- B. All timber piles and lumber whenever possible shall be cut to size, trimmed and bored before assembly.
- C. All timber field cuts, trimmed areas and holes shall be given three coats to a minimum thickness of 16 dry mils of Bitumastic No. 300-M (Black) in accordance with the manufacturer's instructions.
- D. All materials shall be accurately assembled, set, regularly spaced and coursed; and they shall be true to line, even, square, plumb, tight and level.
- E. Soil tests indicate a relatively weak pH value for the soil at the areas sampled. However, sacrificial anodes shall be placed along the wingwalls as recommended in writing by Gator

Dock and Marine, Inc. and approved by the Owner or Owner's Representative. The Contractor will be responsible for monitoring the anodes during the warranty period.

- F. All areas where aluminum is in contact with either concrete or treated material shall be treated with a coal tar epoxy coating and/or separated with roofing tar paper as recommended by the manufacturer and approved by the Owner or Owner's Representative.

3-2 Storage of Materials:

- A. Timber Material: The method of storing and handling timber materials at the construction site shall be such as to avoid injury and to protect them against the weather. Timber piles shall be arranged so that they are not subjected to unequal forces which will tend to twist or warp them. Lumber shall be stored 12 inches above the ground to provide ventilation, piled to shed water and to prevent warp. The Owner or Owner's Representative may require suitable covering to protect the materials from the weather.
- B. Aluminum Sheet Piling: Upon delivery of sheet piling to the site, Contractor shall visually inspect all materials for defects or damage. If serious defect or damage is detected, Contractor shall notify Owner or Owner's Representative immediately. Store bundled sheet piling on relatively level surface with a slight pitch to allow water to drain. Contractor should not break bundled sheets until ready for immediate installation.

3-3 Aluminum Sheet Piling

- A. Sheet piling shall be carefully located as shown on the Drawings, and driven in a plumb position, each sheet pile interlocked with adjoining sheet piles for its entire length as to form a continuous diaphragm throughout the length of each run of bulkhead/wingwall. The Contractor shall drive all sheet piles as true to line as practicable and shall provide suitable guide structures to ensure that sheet piles are driven in correct alignment. All sheet piles shall be driven to the top elevations shown on the Drawings.
- B. Deformation of the sheeting during driving shall be minimized to the fullest extent possible. The Contractor shall be responsible for any additional sheet piling required due to stretching or compression during driving.
- C. Mandrel, helmet or driving shoe may be required if driving through hard soil strata or obstructions. In general, jetting will not be permitted for installation of the sheet piles; however, jetting is permissible in hard materials upon approval of the Owner or Owner's Representative. Water jet by displacing of soil shall only be used with non-cohesive soils (sands and gravels). Water jet shall not be used if driving through clay, silts, or immediately adjacent to existing structures without the written approval from the Owner or Owner's Representative. Approval of jetting will be at the sole discretion of the Owner or Owner's Representative.
- D. It is very important that the Contractor drive sheets to required embedment depth. Under no circumstances shall the Contractor cut-off or install shorter sheets without written authorization from the Engineer or Owner. Adequate precautions shall be taken to insure that piles are driven plumb. For alignment, the maximum permissible horizontal allowance shall not exceed 1" in 100' and the maximum permissible vertical allowance shall not exceed ½" in 10'.
- E. Damage to the top of the sheeting shall be minimized. The top of the sheeting shall be protected during driving by using a cap. The maximum allowable cutoff of sheeting to the top

wall elevation shall not be more than six (6) inches for damaged material. Cutoff of sheeting after driving shall not take place without the approval of the Owner or Owner Representative. If the top of the sheeting is not damaged, full length driving will be required.

- F. Sheet piling may be driven by vibratory means with equipment which creates a force or impulse which when delivered to the pile energizes the pile and drives it to the desired elevation by sustained elastic vibrations. The exciting frequency shall not be less than 60 cycles per second, except during startup or run-down of the equipment. If necessary, brakes or other devices shall be provided to control the run-down period to the satisfaction of the Owner or Owner's Representative.
- G. Pile hammers shall be of approved sizes and types and shall be maintained in proper alignment during driving operations by use of suitable leads or by guides attached to the hammer. A protective cap of approved design shall be employed in driving, to prevent damage to the top of piles. Each run of the sheet piling shall be driven progressively from the start and no cutting edge shall lead its neighbor by more than 10 feet and shall be driven to the top elevations shown on the Drawings.
- H. Drive sheet piling (preferably in pairs) by "Driving in Steps" or "Gang Driving." Progress in driving sheeting shall be accomplished by using the "male" end as the leading edge. Controlled excavation for placement of sheeting may be allowed where bottom conditions prevent driving by normal methods. The specific methods on controlled excavation shall be approved by the Owner or Owner's Representative.
- I. Upon approaching bends, corners or ends of the wall, take careful measurements adjusting sheet piling slightly so that they finish the run at the correct point. Be careful not to distort the corrugation.
- J. Sheet piling driven out of interlock with adjacent piles or otherwise damaged shall be removed and replaced by new piles at the Contractor's expense.
- K. After driving the wingwall's and toewall's sheet piling to the design grade, use stainless steel bolts and washers to fasten the sheets to the wales.

3-4 Wale System:

- A. The aluminum wingwall's double-channel wale system shall be attached to aluminum sheeting with stainless steel bolts, nuts, clips and washers as specified. The Contractor shall use the longest length of channel wherever applicable (40' length) that is available from the sheeting supplier.
- B. All bolt and rod holes drilled through the timber batter block and piles shall be a minimum diameter to assure a tight and driving fit. Holes shall be of a diameter such that bolts are inserted by light tapping. No countersinking of holes for the installation of washers at the batter blocks is allowed.
- C. All bolts and rods shall have a ¼ inch length of thread outside the face of all nuts after tightening, cutting and trimming of bolt and rod ends are completed.

3-5 Aluminum Cap: The aluminum wingwall caps shall be mitered by cutting with a saw, where changes in alignment occur. These cuts should have its edges filed smooth to avoid injuries. Cuts and holes shall not be made with an acetylene torch. The best method of installing the cap is to bolt the cap to the sheeting in the middle and the ends of the cap. All bolts shall be located on the bottom "V" groove of the cap lip. A splice insert is included with each section of cap which when installed will assist in aligning the cap at the joints. Always place the "next" cap to be installed on the sheeting making sure

the insert is installed before installing the bolts in the first piece of cap. Be sure to allow an appropriate gap in the cap sections for thermal expansion as recommended by the manufacturer. Welded splice inserts shall be placed at changes in alignment.

3-6 Timber Piles:

- A. All timber piles as shown on the drawings shall be driven by gravity, vibratory (except for test piles) or diesel hammer as approved by the Owner or the Owner's Representative. Any hammer which does not perform satisfactorily on piles being driven, regardless of prior approval, shall be replaced by a hammer acceptable to the Owner or the Owner's Representative. A pile driving record shall be maintained by the Contractor. He shall record the bearing value of each wingwall pile driven in accordance with ENR pile capacity formulas. Driving shall be continuous without intermission until the pile has been driven to the required penetration. In general, the penetration for any pile shall not be less than shown on the Plans even in hard materials. Jetting or augering is permissible in hard materials, if approved by the Owner or the Owner's Representative, but the last 2 feet of penetration must be driven without damage to the pile. In any event, the penetration of the piles shall be such as to give a minimum safe bearing value of 10 tons. The test pile shall not be driven unless the Owner or Owner's Representative is at the site. Jetting will not be permitted in soft material. If necessary, steel tips shall be added to the pile to facilitate driving in hard material.
- B. Each timber pile is expected to provide adequate pile bearing capacity. If during driving operations the Contractor finds inadequate bearing on piles, he shall stop driving and immediately contact the Owner or the Owner's Representative. The Contractor is advised that in the event that the length of piles shown on the Drawings is found to be inadequate on the basis of bearing value, longer replacement piles may be required. It is anticipated that the replacement piles may be up to 50% longer than the piles shown on the Drawings. Conversely, in the event that the length of piles shown in the drawings is found to be excessive on the basis of bearing value (>30 tons), shorter replacement piles may be allowed. It is anticipated that the shorter replacement piles may be up to 25% shorter than the piles shown on the Drawings. These piles shall be installed as directed by the Owner or the Owner's Representative. Payment for replacement piles shall be in accordance with the Unit Price Bid Item provided by the Contractor in the BID FORM.
- C. Broken or shattered timber piles shall not be accepted. Piles shall not be more than 3 inches out of place along the construction line of the wall and not more than 2% out of plumb. Piles damaged by overdriving or which do not conform to the above tolerances shall be removed and replaced with new piles at the Contractor's expense.
- D. During driving, the top of timber piles shall be protected from damage by using a head or cap. The head or cap shall cover the entire surface of the top of the pile. Trimming the top of the pile to fit the cap shall be kept to a minimum. Damage to the top of the pile shall be restricted to the top 6 inches.
- E. After driving, the length of timber pile remaining above the elevation of cutoff shall not be more than 6 inches for damaged piles. The top of piles shall be sawed to a true plane of elevation fixed by the Drawings. Cutoff of piles shall not take place without the approval of the Owner or the Owner's Representative. If the pile tops are not damaged, full length driving will be required. Pile tops shall then be trimmed and waterproofed. Batter blocks shall be placed and bolts installed as specified.

3-7 EXCAVATION / Fill:

- A. Excavation and Fill shall be performed as referenced in Section 31 20 00 of these specifications.
- B. The boat ramps' concrete surface and sub-base shall not be placed within the wingwall enclosure until the area has been dewatered and the wingwall/toewall has been inspected and approved by the Owner or Owner's Representative. The aluminum sheeting shall be coated with Bitumastic 300M at all aluminum/ concrete interfaces extending to the surface of the concrete ramp. Care shall be taken during the pouring and filling operation to maintain the alignment of the wingwalls and toewall. The Contractor shall be responsible for adequately bracing the wingwalls/toewall before and during dewatering operations as-well-as during excavation of unsatisfactory soils and placement of aggregate base and concrete.

Part 4 – Measurement

No measurement for payment of these items of work will be made since their cost shall be included in the lump sum bid.

- END OF SECTION –

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SECTION 35 43 37 – STONE SCOUR PROTECTION

Part 1 – General

1-1 Scope

- A. The Contractor shall furnish all labor, materials and equipment necessary to construct the stonework at the shoreline consisting of the stone sill and breakwater connection as shown on the Drawings, as described in these Specifications and as directed by the Owner or the Owner's Representative.
- B. The Contractor shall adhere to the terms of the various permits issued to this project. This shall include permits from the U. S. Army Corps of Engineers, the Department of Natural Resources and Environmental Control and any other applicable permits.
- C. The Contractor shall give all notices and comply with all laws, ordinances, rules and regulations applicable to work. If the Contractor observes that the Specifications and/or Drawings are at variance therewith, he will give the Owner prompt written notice thereof. If the Contractor performs any work knowing it to be contrary to such laws, ordinances, rules and regulations, and without such notice to the Owner, he will bear all costs arising therefrom.
- D. Included elsewhere in these Specifications are copies of construction permits which are required to be available at the construction site. They are included for the Contractor's convenience, compliance and guidance, but the engineering sketches and notes are approximate and suitable only for permit purposes and the Contractor shall attach no significance to volumes mentioned in these permits, but shall compute his own.
- E. Related work not included in this Section consists of the following:
 - 1. "Selective Demolition" provided under Section 02 41 19.
 - 2. "Earth Moving" provided under Section 31 20 00.
 - 3. Wingwall provided under Section 35 31 16.
- F. Related Documents: The general provisions of the Contract; "ASTM Standards in Building Codes, latest edition; and all applicable supplements and addenda pertaining thereto apply to this section.

Part 2 - Products

2-1 Filter Fabric:

- A. Filter fabric shall be a porous, plastic sheet of woven, calendered and palmered filament yarn. The plastic yarn shall consist of a long-chain synthetic polymer composed of at least 85 percent by weight of propylene, ethylene, ester, amide or vinylidene-chloride, and shall contain stabilizers and/or inhibitors added to the base plastic if necessary to make the filaments resistant to deterioration due to ultra-violet light and heat exposure. The fabric shall conform to the following minimum requirements:

PROPERTY	TEST METHOD	CRITERIA
AOS	ASTM D-4751	70-100 U.S. Standard Sieve No.
% Open Area	COE CW-02215-86	5% or More
Tensile Strength	ASTM D-4632	200 Lb. All principal directions
Burst Strength	ASTM D-3786	500 psi
Puncture Strength	ASTM D-4833	135 Lb.
Abrasion resistance	ASTM D-4157/D-4158	60 Lb.
Seam breaking strength	ASTM D-1683	195 Lb.
Clogging resistance		$\frac{AOS (mm)}{0.149 (mm)} \geq 1$ or Gradient Ratio ≤ 3.0
Water Permeability Coefficient	ASTM D-4491	0.02 cm/sec (Permeability)
Ultra-Violet Stabilization	ASTM D-4355	90% retained strength

- B. Seams of fabric shall be sewn with thread meeting or exceeding specifications given for plastic yarn and shall be bonded by cementing or calendering. Seams shall be tested in accordance with method ASTM D-1683. The seam strength shall meet the strength specified herein but shall not be less than 90% of the tensile strength of the imaged fabric in any principal direction.
- C. Temporary securing pins shall be 3/16 inch in diameter, of steel, pointed on one end and fabricated such that the head retains a steel washer of 1.5" diameter or more. Pins shall be no less than 18" in length.
- D. All filter fabrics to be used shall be tested for compliance with the above specifications. The Contractors shall submit in duplicate a certificate or affidavit signed by a legally authorized person from the company manufacturing the fabric. The certificate shall state that chemical, physical and manufacturing requirements are met as specified herein. In addition, evidence of a service record of any filter cloth not previously approved by the Owner or Owner's Representative shall be submitted, proving successful performance in projects of similar scope. Approval of the filter fabric shall be obtained from the Owner or Owner's Representative prior to installation.

2-2 Stone:

- A. Armor stone shall be such that a minimum of 90% of the individual stones shall weigh from 300 lbs. to 800 lbs. and shall have a well-graded distribution of these sizes through these limits. Not more than 10% of the individual stones shall weigh more than 800 lbs. No armor stones shall weigh less than 300 lbs.
- B. Suitable tests and service records shall be submitted and will be used to determine the acceptability of the stone protection materials. In the event suitable test reports and a service record that are satisfactory to the Owner or Owner's Representative are not available, as in the case of newly operated sources, the material shall be subjected to such test as are necessary to determine its acceptability for use in the work. Tests to which the

materials may be subjected include petrographic analysis, specific gravity, abrasion, absorption, wetting and drying, freezing and thawing, and such other tests as may be considered necessary to demonstrate to the satisfaction of the Owner or Owner's Representative that the materials are acceptable for use in the work. All tests will be made by and at the expense of the Contractor, under the supervision of the Owner or Owner's Representative.

- C. The Contractor shall supply samples of stone to be displayed at the site with appropriate individual weights marked as follows: 300 lbs. and 800 lbs. These samples of stone shall be from the same quarry and of the same type of stone as that to be supplied for the job and shall be delivered to the site in advance of the time when placing the stone protection is expected to begin. Final approval of stone for the protection work will be based upon these samples. The Contractor will not be granted an extension of time or extra compensation due to delay caused by sampling, testing, approval or disapproval of stone protection material under the requirements of these specifications.
- E. The Contractor shall obtain from the quarry and submit to Owner or Owner's Representative a certificate indicating the following:
 - 1. Stone Classification
 - 2. Weight per cubic foot
 - 3. Sizes stipulated in the specifications are being supplied to the site.
 - 4. Stone quality meets all project specifications, including undesirable weathering and disintegration.
- F. All stone for the protection work shall be durable quarried stone as approved by the Owner or Owner's Representative. The stone shall be hard and angular, free from laminations, weak cleavages, or undesirable weathering, and of such character that it will not disintegrate from the action of air, salt water, freezing and thawing, and in handling and placing. Sedimentary stone will be unacceptable. Individual stones shall be approximately rectangular in cross section and free from thin slabby pieces having a maximum dimension more than three and one-half times the least dimension. The armor stones shall have a minimum unit weight of 160 lbs. per cubic foot.

Part 3 - Execution:

3-1 Method of Construction:

- A. The Contractor shall supply samples of stone to be displayed at the site with appropriate individual weights marked as follows: 300 lbs. and 800 lbs. These samples of stone shall be from the same quarry and of the same type of stone as that to be supplied for the job and shall be delivered to the site in advance of the time when placing the stone protection is expected to begin. Final approval of stone for the protection work will be based upon these samples. The Contractor will not be granted an extension of time or extra compensation due to delay caused by sampling, testing, approval or disapproval of stone protection material under the requirements of these specifications.
- B. The existing armor stone removed during demolition that meets the size requirements referenced may be incorporated into the proposed sill and breakwater extension.

- C. The Contractor shall remove any existing timber piles, sheeting, concrete slabs and scattered concrete rubble/ stone and dispose of off-site (except as referenced) at an approved location. See Section 02 41 19 "Selective Demolition" of these specifications.
- D. All materials removed shall become the property of the Contractor and shall be removed from the site to an approved disposal area. Be advised that the landfills measure the tipping fee cost on a cost per ton basis. The Contractor shall remove and transport debris and rubbish in a manner that will prevent spillage on pavements, streets, and/or adjacent areas. It will be the responsibility of the Contractor to obtain an approved sediment control plan for the off-site disposal area if necessary.
- E. The filter cloth, geogrid and armor stone shall be placed within the limits and to the lines and grades shown on the Drawings or otherwise required by the Owner or Owner's Representative. The structures shall extend no further outboard than is necessary to construct the improvements to the lines and grades shown. The surface, as graded, shall be free from any projections or abrupt changes in slope, which may cause damage to or bulging of the filter cloth.
- F. The Contractor shall schedule his operations so that the length of time newly graded areas are left exposed to wave action is minimized. Immediately prior to placement of filter cloth/geogrid, the structures backfill slopes shall be fine graded to a tolerance of plus or minus three-tenths (0.3) of a foot from a smooth surface as measured by an approved template. The Contractor shall not prepare more area than can be covered with stone by the end of each working day. Temporary protection for the exposed ends of the structure shall be provided at the end of each working day.
- G. The strips of filter cloth shall be spread parallel to the major axis of the structure on the prepared foundation as shown on the Drawings. The cloth shall be loosely laid (not stretched) with no more than one overlap parallel to the major axis of the structure. The overlap shall be a minimum of 5 feet. Strips of cloth shall be spread in a manner such that the strips totally in contact with the soil shall be the upper strip. Overlaps perpendicular to the major axis of the structure shall be staggered a minimum of 5 feet. Rolls of as great a length as it is economical for the Contractor to handle shall be used whenever possible in order to minimize the number of overlaps perpendicular to the major axis of the structure. Overlaps shall also be a minimum of 5 feet. Overlaps at or around incidental structures such as revetments shall also be a minimum of 5 feet. Existing stones larger than 1" in its largest dimension shall be removed prior to placement of filter cloth to prevent damage to cloth.
- I. Adequate precaution shall be taken to prevent damage of the cloth from placement of overlaying materials. Stone weighing more than 100 pounds should not be dropped from a height greater than 5 feet onto the plastic cloth. Stones weighing more than 500 pounds should not be dropped from a height greater than 2 feet. Any filter cloth damaged or displaced before or during placement of overlying layers shall be replaced or repaired to the satisfaction of the Engineer at the Contractor's expense.
- J. The filter cloth may be temporarily pinned in place with securing pins to prevent slippage during construction. The pins shall be retained until sufficient armor stones are set to hold the filter cloth. The securing pins shall then be removed as additional armor stones are placed to relieve high tensile stress, which may cause damage to the filter cloth. Alternate anchoring methods may be used subject to the approval of the Owner or Owner's Representative.
- K. Each armor stone shall be placed by equipment suitable for lifting, manipulating, and placing armor units of the size and shape specified. Armor stone units shall be placed in such a manner as to produce a well-graded mass of rock with a minimum percentage of

voids and shall be constructed to the specified lines and grades (template). Stones shall be placed so there is a well-graded distribution of the various sizes throughout the structure. Any oversize stones shall be placed at the toe of the structure. Unless otherwise approved in writing by the Owner or Owner's Representative, placement of armor toe stone at any given section shall be accomplished before any other specified gradation of stone is placed in that same section. The finished structure shall be free from pockets of small stones and clusters of larger stones. Placement efforts shall ensure that each stone is firmly set and supported by underlying materials and adjacent stones on all sides. Voids in the structure equal to or larger than the smallest size armor stone shall be filled with armor stone or the adjacent stones shall be rearranged to eliminate the void and conform to the other placement requirements specified. Rearranging of individual stones by mechanical equipment or by hand will be required to the extent necessary to obtain a well graded distribution of stone size and placement of individual stones in accordance with the requirements specified. Loose armor units shall be reset and/or replaced as approved by the Owner or Owner's Representative. The Contractor shall maintain the structure until accepted and any material displaced by any cause shall be replaced at his expense to the lines and grades shown on the Drawings. He shall be responsible for maintaining the minimum design elevation until conditional acceptance is provided by the Owner or Owner's Representative.

Part 4 - Measurement

No measurement for payment of these items of work will be made since their cost shall be included in the lump sum bid.

-END OF SECTION-

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ATTACHMENT No. 1

DNREC Wetland License

DNREC Wetland License

- Pending -

ATTACHMENT No. 2

USACE Permit



REPLY TO
ATTENTION OF

Regulatory Branch
Application Section I

DEPARTMENT OF THE ARMY

PHILADELPHIA DISTRICT CORPS OF ENGINEERS
WANAMAKER BUILDING, 100 PENN SQUARE EAST
PHILADELPHIA, PENNSYLVANIA 19107-3390

JUN -5 2018

SUBJECT: CENAP-OP-R-2018-303-23 (NWP36)
Project Name: DDNREC Phillips Landing Boat Ramp SX
Latitude/Longitude: 38.564289° N /-75.672322° W (NAD 83)

Ken B. Eaton
Andrews Miller and Associates, Incorporated
106 North Washington Street, Suite 103
Easton, Maryland 21601-3128

Dear Mr. Eaton:

This is in regard to a proposal by the Delaware Division of Fish and Wildlife to modify and re-construct the existing Phillips Landing Boat Launching Facility located on Broad Creek at the Nanticoke Wildlife Area, Tax Parcel 432-6.00-5.00, Sussex County, Delaware.

Under current Federal regulations, a Department of the Army permit is required for work or structures in navigable waters of the United States and/or the discharge of dredged or fill material into waters of the United States including wetlands.

Based upon our review of the information you have provided, it has been determined that the work is approved by the existing Department of the Army Nationwide Permit (NWP) described below, provided the work is conducted in compliance with the NWP general conditions, regional conditions, and the project specific special conditions.

NWP 36. Boat Ramps. Activities required for the construction of boat ramps, provided the activity meets all of the following criteria:

- (a) The discharge into waters of the United States does not exceed 50 cubic yards of concrete, rock, crushed stone or gravel into forms, or in the form of pre-cast concrete planks or slabs, unless the district engineer waives the 50 cubic yard limit by making a written determination concluding that the discharge will result in no more than minimal adverse environmental effects;**
- (b) The boat ramp does not exceed 20 feet in width, unless the district engineer waives this criterion by making a written determination concluding that the discharge will result in no more than minimal adverse environmental effects;**
- (c) The base material is crushed stone, gravel or other suitable material;**
- (d) The excavation is limited to the area necessary for site preparation and all excavated material is removed to an area that has no waters of the United States; and,**
- (e) No material is placed in special aquatic sites, including wetlands.**

The use of unsuitable material that is structurally unstable is not authorized. If dredging in navigable waters of the United States is necessary to provide access to the boat ramp, the dredging must be authorized by another NWP, a regional general permit, or an individual permit.

A copy of the NWP General Conditions and the Philadelphia District 2017 NWP Regional Permit Conditions for Delaware for which this verification is subject to, can be found at:

<http://www.nap.usace.army.mil/Portals/39/docs/regulatory/publicnotices/2017%20Nationwide%20Permit%20General%20Conditions.pdf>

http://www.nap.usace.army.mil/Portals/39/docs/regulatory/publicnotices/2017_DE_Reg%20Cond_Final.pdf

In instances where you are unable to access a digital copy of the 2017 NWP General conditions and/or the 2017 NWP Regional Permit Conditions for Delaware, a hard copy will be transmitted by registered mail to you per request. It is further noted that you may request a copy by email at any time in which the NWP General Conditions and Regional Permit Conditions will be provided to you by facsimile or other electronic means per your request.

You should carefully note that this NWP authorization is based upon your agreement to comply with the terms and conditions of this NWP including any and all project specific special conditions listed below. Initiation of any authorized work shall constitute your agreement to comply with all of the NWP's conditions. You should also note that the authorized work may be subject to periodic inspections by a representative of this office. The verification of a Nationwide Permit including all general and special conditions is not subject to appeal.

You are advised that this verification of NWP authorization is valid until the NWPs expire on March 18, 2022, unless the NWP authorization is modified, suspended or revoked prior to this date. In the event that the NWP authorization is modified during that time period, this expiration date will remain valid, provided the activity complies with any subsequent modification of the NWP authorization.

Activities which have commenced (i.e, are under construction) or are under contract to commence in reliance upon an NWP will remain authorized provided the activity is completed within twelve months of the date of an NWP's expiration, modification, or revocation, unless discretionary authority has been exercised on a case-by-case basis to modify, suspend, or revoke the authorization in accordance with 33 CFR 330.4(e) and 33 CFR 330.5 (c) or (d). Activities completed under the authorization of an NWP which was in effect at the time the activity was completed continue to be authorized by that NWP.

PROJECT SPECIFIC SPECIAL CONDITIONS:

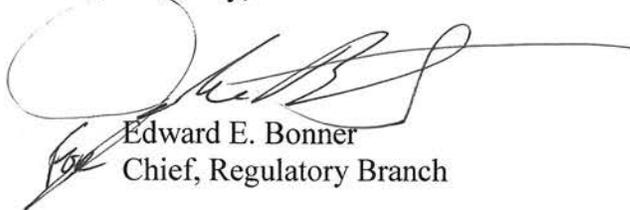
1. All work performed in association with the above noted project shall be conducted in accordance with the project plans prepared by Andrews Miller and Associates, Inc., dated

January 2018, titled: *Proposed Boat Ramp in Broad Creek at Phillips Landing State Park, Sussex County, Delaware, Appl. By State of DE DNREC, Division of Fish and Wildlife*, five sheets.

2. Any deviation in construction methodology or project design from that shown on the above noted drawings must be approved by this office, in writing, prior to performance of the work. All modifications to the above noted project plans shall be approved, in writing, by this office. No work shall be performed prior to written approval of this office.
3. This office shall be notified at least 10 days prior to the commencement of authorized work by completing and signing the attached Notification/ Certification of Work Commencement Form (Enclosure 1). This office shall also be notified within 10 days of the completion of the authorized work by completing and signing the attached Notification/Certification of Work Completion/Compliance Form (Enclosure 2). Notifications required by this condition may be in writing by mail, fax, or electronic notification via email. Oral notifications are not acceptable. Similar notification is required each time maintenance work is to be done under the terms of this Corps of Engineers permit.
4. Representatives of the U.S. Army Corps of Engineers shall be permitted to inspect the project during its phase of construction, and to collect any samples, or to conduct any tests deemed necessary.
5. The permit holder is responsible for ensuring that the contractor and/or workers executing the activity(s) authorized by this permit have knowledge of the terms and conditions of the authorization and that a copy of the permit document is at the project site throughout the period the work is underway.
6. All material to be used as fill shall be obtained from an upland source. The fill material shall be free of oil and grease, debris, wood, general refuse, plaster, and other pollutants, and shall contain no broken asphalt.
7. In order to minimize the effects of the project on spawning alosine fish species (i.e., shad, herring), in-water work shall not be conducted between March 1 and June 1 of any year.

If you have any questions regarding this matter, please contact John Brundage at (302) 736-9763, by email at john.g.brundage@usace.army.mil or by writing to the above address.

Sincerely,



Edward E. Bonner
Chief, Regulatory Branch

Enclosures

NOTIFICATION/CERTIFICATION OF WORK COMMENCEMENT FORM

Permit Number: CENAP-OP-R-2018- 303-23 (NWP36)
Name of Permittee: DDNREC Fish and Wildlife
Project Name: Phillips Landing Boat Ramp
Waterway: Broad Creek
County: Sussex State: Delaware
Compensation/Mitigation Work Required: Yes No X

TO: U.S. Army Corps of Engineers, Philadelphia District
Wanamaker Building - 100 Penn Square East
Philadelphia, Pennsylvania 19107-3390
Attention: CENAP-OP-R

I have received authorization to modify and re-construct the existing Phillips Landing Boat Launching Facility located on Broad Creek at the Nanticoke Wildlife Area, Tax Parcel 432-6.00-5.00, Sussex County, Delaware.

The work will be performed by:

Name of Person or Firm _____

Address: _____

I hereby certify that I have reviewed the approved plans, have read the terms and conditions of the above referenced permit, and shall perform the authorized work in strict accordance with the permit document. The authorized work will begin on or about _____ and should be completed on or about _____.

Please note that the permitted activity is subject to compliance inspections by the Army Corps of Engineers. If you fail to return this notification form or fail to comply with the terms or conditions of the permit, you are subject to permit suspension, modification, revocation, and/or penalties.

Permittee (Signature and Date)

Telephone Number

Contractor (Signature and Date)

Telephone Number

NOTE: This form shall be completed/signed and returned to the Philadelphia District Office a minimum of 10 days prior to commencing work.

NOTIFICATION/CERTIFICATION OF WORK COMPLETION/COMPLIANCE FORM

Permit Number: CENAP-OP-R-2018-303-23 (NWP36)
Name of Permittee: DDNREC Fish and Wildlife
Name of Contractor: _____
Project Name: Phillips Landing Boat Ramp
County: Sussex State: Delaware
Waterway: Broad Creek

Within 10 days of completion of the activity authorized by this permit, please sign this certification and return it to the following address:

U.S. Army Corps of Engineers, Philadelphia District
Wanamaker Building - 100 Penn Square East
Philadelphia, Pennsylvania 19107-3390
Attention: CENAP-OP-R

Please note that the permitted activity is subject to a compliance inspection by an Army Corps of Engineers representative. If you fail to return this notification form or fail to perform work in compliance with the permit, you are subject to administrative, civil and/or criminal penalties. Further, the subject permit may be suspended or revoked.

The authorized work was commenced on _____.

The authorized work was completed on _____.

I hereby certify that the work authorized by the above referenced permit has been completed in accordance with the terms and conditions of the above noted permit.

Signature of Contractor

Signature of Permittee

Address: _____

Address: _____

Telephone Number: _____

Telephone Number: _____

For project located in areas identified as shellfish habitat, you must include with this form a bill of lading; sales order or any other document(s) demonstrating non-polluting materials were purchased and utilized for your project. I hereby certify that I and/or my contractor have utilized non-polluting materials as defined in the above noted permit.

Signature of Contractor

Signature of Permittee

ATTACHMENT No. 3

Geotechnical Engineers Report



JOHN D. HYNES & ASSOCIATES, INC.

*Geotechnical and Environmental Consultants
Monitoring Well Installation
Construction Inspection and Materials Testing*

April 11, 2014

Gary O. Williams
Andrews, Miller & Associates
106 North Washington Street, Suite 103
Easton, Maryland 21601

Re: Report of Pavement Evaluation and Rehabilitation
Design Services
Phillips Landing Parking Area Improvements
Sussex County, Delaware
Project No.: JDH-10/14/138

Dear Mr. Williams:

John D. Hynes & Associates, Inc. has completed the authorized subsurface exploration and geotechnical engineering evaluations for the Phillips Landing Parking Area Improvements project located in Sussex County, Delaware. Our services were conducted, generally, in accordance with our proposal dated October 1, 2013 and subsequent communications between our offices.

This report describes the exploration methods employed, exhibits the data obtained, and presents our evaluations and recommendations relating to the rehabilitation of the subject existing parking area pavement.

We appreciate the opportunity to be of service to you. If you have any questions regarding the contents of this report or if we may be of further assistance, please contact our office.

Respectfully,

JOHN D. HYNES & ASSOCIATES, INC.

John D. Hynes, P.E.
President

JDH/jsl





**REPORT OF
SUBSURFACE EXPLORATION
AND
GEOTECHNICAL ENGINEERING RECOMMENDATIONS**

**PHILLIPS LANDING PARKING AREA IMPROVEMENTS
SUSSEX COUNTY, DELAWARE**

**PREPARED FOR
ANDREWS, MILLER & ASSOCIATES**

**APRIL 11, 2014
PROJECT NO.: JDH-10/14/138**



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PURPOSE AND SCOPE

The subsurface exploration study was performed to evaluate the subsurface conditions with respect to the following:

1. General site and subgrade preparation;
2. Fill and backfill construction;
3. Rehabilitation/replacement of existing pavement;
4. Location of groundwater and applicable construction dewatering control procedures; and
5. Other aspects of the design and construction for the proposed structures indicated by the exploration.

An evaluation of the site, with respect to potential construction problems and recommendations dealing with earthwork and inspection during construction, is included. The inspection is considered necessary both to confirm the subsurface conditions and to verify that the soils related construction phases are performed properly.

EXISTING SITE CONDITIONS

As shown on the Project Location Map (Drawing JDH-10/14/138-A) in the Appendix, the project site is the existing Phillips Landing Parking area, in the Nanticoke Wildlife Area in Sussex County, Delaware. The parking area is asphalt paved as described below and consists of a circular loop road which provides access to the main parking area and allows for turning, backing and exiting of vehicles and vehicles towing boat trailers. Entrance to the site is from Phillips Landing Road. There are some parking slots along the loop road, however most parking is within the main parking area. Marked parking slots are for angled parallel parking, with the spaces long enough to accommodate the vehicles with trailers. Three boat ramps and adjacent piers extend from the parking area pavement into Broad Creek for boat launching.

Topographically the project site is relatively flat with grades ranging between Elevation 7 and Elevation 4, and lower where the ramps and shoreline slope into Broad Creek. The asphalt pavements is somewhat deteriorated in some areas and, based on cores drilled during our site exploration, pavement thickness ranges between approximately a little over 2 inches to roughly 5 ½ inches. Our borings indicated that the asphalt pavement bears on a soil subgrade. No subbase stone was encountered. See the sections following for details of pavement and subgrade.

FIELD EXPLORATION AND STUDY

In order to determine the nature of the subsurface conditions at the site, 10 structural borings, designated as P-1 through P-10, were drilled on February 26, 2014 at locations shown on our Boring Location Plan (Drawing No.: JDH-10/14/138-B) in the Appendix. The borings were all drilled from locations on the pavement surface. All borings were cored through the pavement using a core drill with core barrel. The core diameter was 6 inches. When the subgrade was exposed, the borings were all advanced to a depth of 3 feet by hand augering. For convenience, the tabulation below includes the surface elevation, the pavement thickness, the total depth drilled/augered, and the groundwater depth.



Boring No.	Surface Elevation	Pavement Thickness (inches)	Total Depth Drilled (feet)	Groundwater Depth (feet)
P-1	6.0	2.2	3	2.0
P-2	5.0	4.3	3	2.0
P-3	4.0	4.2	3	2.0
P-4	4.0	2.2	3	2.0
P-5	6.5	3.7	3	2.0
P-6	6.3	4.3	3	2.0
P-7	5.7	4.9	3	2.5
P-8	6.0	5.6	3	2.5
P-9	6.0	4.7	3	2.5
P-10	7.0	5.2	3	2.5

A brief description of our field procedures is included in the Appendix. The results of all boring and sampling operations are shown on the boring logs.

Samples of the subsurface soils were examined by our engineering staff and were visually classified in accordance with the Unified Soil Classification System (USCS), the AASHTO soil classification system, and ASTM Specification D-2488. The estimated USCS symbols and AASHTO symbols appear on the boring logs. Also included are reference sheets which define the terms and symbols used on the boring logs and explain the Standard Penetration Test procedures.

We note that the test boring records represent our interpretation of the field data based on visual examination and selected soil classification tests. Indicated interfaces between materials may be gradual.

The field exploration data was supplemented with laboratory testing data. The laboratory at John D. Hynes & Associates, Inc. performed four Sieve Analysis tests. The test results are noted on the boring logs in the Appendix. Also, two samples were taken at a pavement area for California Bearing Ratio (CBR) testing. The CBR test and Proctor test results are included in graphical format in the Appendix.

SUBSURFACE CONDITIONS

At the time of our field exploration, approximately 2.2 inches to 5.6 inches of asphalt was encountered at the surface at the borings. The 6-inch diameter cores were retrieved and taken to the Hynes & Associates laboratory for observation and measurement.

Subsurface soils, visually classified in accordance with the USCS, consisted of Silty SANDs (SM), SANDs (SP) and Low Silt SANDs (SP-SM) to the 3 foot termination depth. The soils were also classified in accordance with AASHTO criteria. The samples were classified as either A-2-4 or A-3 in accordance with the AASHTO classification system.



Groundwater was encountered during drilling operations at depths of 2 to 2.5 feet below the pavement surface. Groundwater elevations may vary at other times during the year depending upon the amount of precipitation, the extent of local surface development and the steam level in the adjacent Broad Creek.

PROJECT CHARACTERISTICS

Proposed for development on the site is the rehabilitation of the Phillips Landing Parking area. In consideration of the condition and thickness of the existing pavement, our report provides applicable recommendations for pavement patching/repairs or overlays/replacement, as required.

RECOMMENDATIONS

The following recommendations and considerations are based on our understanding of the proposed construction, the data obtained from the exploration, and our previous experience with similar subsurface conditions and projects. If there are any significant changes to the current existing project characteristics, we request that this office be advised so the recommendations of this report can be re-evaluated.

A. Site Preparation

Prior to the construction of pavements at new pavement areas, or the placement of fill in any structural areas, all existing organic materials, frozen or wet, excessively soft or loose soils, demolition debris, and other deleterious materials should be removed and wasted. The existing organic bearing soil should, also, be removed from structural areas. The associated excavations should be backfilled in accordance with Section B below. If groundwater or perched surface water are encountered during any grading or excavation process, Hynes & Associates should be consulted for additional recommendations regarding the stabilization of the bases of the excavations and backfilling.

After the stripping operations have been completed, the exposed subgrade soils should be inspected by the Geotechnical Engineer or his approved representative. The inspector should verify that organic matter has been removed from structural subgrade areas. At large pavement areas (not small patch areas), the inspector should require that the exposed subgrade materials be proofrolled and compacted to provide surficial densification and to locate any isolated areas of soft or loose soils requiring undercutting. Proofrolling is not advised in wet areas which may deteriorate under repeated vehicular loading. Wet areas should be drained and be allowed to dry prior to proofrolling. Proofrolling should be monitored by a qualified geotechnical engineer to avoid causing the destabilization of subgrade soils due to shallow groundwater conditions. Precipitation may result in standing water (perched water) at low areas. If the water is allowed to pond, the areas should be drained and allowed to dry. The Geotechnical Engineer should be consulted to evaluate poor subgrade conditions during construction. The site should be effectively graded so that stormwater runs off the pavement subgrades.

Care should be exercised during the grading operations at the site. Shallow SM, SM/SP and SP materials were identified at the boring locations. These materials shift or rut easily. Also because of shallow groundwater, heavy rubber tired vehicles should be kept off the subgrade. If earthwork is conducted in the presence of moisture, the traffic of heavy equipment, including heavy compaction equipment, may create pumping, rutting and a general deterioration of the subgrade soils. Construction traffic should be minimized at structural subgrade areas. If subgrade problems arise, the Geotechnical Engineer should be consulted for



an evaluation of the conditions. Overexcavated areas resulting from the removal of organic matter, abandoned utilities, or otherwise unsuitable materials should be backfilled with properly compacted materials in accordance with the procedures discussed in the following section.

B. Fill Selection, Placement and Compaction

It is recommended that all materials to be used as structural fill be inspected, tested and approved by the Geotechnical Engineer prior to use. The existing SM, SP and SM/SP soils that do not contain organics may be re-used for structural fill. Acceptable borrow material should include GW, GP, GM, SM, SW and SP classified in accordance with the USCS. Furthermore, the material to be utilized as structural fill should have a Plasticity Index (PI) less than 20.

The importation of high quality, granular material should be allowed for use as structural fill, and acceptable unit rates for importation and placement should be established. Sand, gravel or sand/gravel mixtures would be appropriate for wet weather placement. Otherwise, the materials noted above will be acceptable for use as structural fill. Native or imported SM soils will be sensitive to alteration in moisture content and will become unworkable during and following periods of precipitation. For this reason, if earthwork is attempted in late autumn, winter or early spring, the above mentioned high quality imported granular material should be limited to those better than SM. SM materials become unworkable at moisture contents greater than 3 percentage points above optimum. The contractor would have to dry these materials or set them aside for use in landscaping areas.

Structural fill should be placed in lifts which are eight inches or less in loose thickness and should be compacted to at least 95 percent of the Standard Proctor maximum dry density (ASTM D-698). Medium size (not large) compaction equipment should be used on this project. Due to shallow groundwater, the vibratory function of compaction equipment should not be used at this site. Adjustments to the natural moisture content of the soils may be required in order to obtain specified compaction levels. Should utility construction be performed after earthwork, the Contractor should be responsible for achieving 95 percent compaction in all trench backfill. These guidelines should be set for all structural fill and back fill at the site.

A sufficient number of in-place density tests should be performed by an engineering technician to verify that the proper degree of compaction is being obtained in all fill soils.

C. Pavement Subgrade Preparation and Design

All pavement subgrade areas should be inspected and proofrolled in accordance with Section A and B of this report. The pavement subgrade soils consist of materials having the classifications of "SP, SP/SM or SM" in accordance with the USCS. The SP and SP/SM soils provide moderate (SM and SM/SP) to poor (SP) pavement subgrade support. The top 12 inches of the natural subgrades at pavement areas should be compacted to 95 percent of the Standard Proctor maximum dry density (ASTM D-698) prior to fill or stone placement. The subgrade preparation should be monitored closely by a qualified geotechnical engineer to avoid overworking the subgrade and the destabilization of the subgrade. Groundwater is, also, shallow at the site.



We collected two samples of subgrade soil for CBR testing (borings P-1 and P-8). The CBR results were 11.9 and 17.2, respectively. Please see the test result sheets in the Appendix for detailed CBR results. We based our design on a CBR of 14.5, which is approximately $\frac{2}{3}$ of the average test results.

In consideration of the CBR results, the shallow groundwater conditions, and the pavement use as a boat ramp and parking lot, we recommend the following pavement thickness for new and replaced pavements:

Hot Mix Asphalt Surface Course (Superpave 9.5 mm)	2 inches
Hot Mix Asphalt Base Course (Superpave 19 mm)	3 inches

The pavement materials and construction should be in general accordance with the Delaware Department of Transportation, "Standard Specifications", latest edition, and this report.

The pavement subgrade and pavement layers should be graded such that surface water is carried off the pavement areas and away from building areas. The surface water should not be allowed to pond. Runoff onto adjacent properties should be controlled property.

Hynes & Associates recommends that rigid pavement be designed and installed for use at trash container storage and pick-up locations. These "dumpster pad" locations receive extreme wheel loads during emptying and placement. Also, hydraulic oils usually accumulate at these areas causing a breakdown in asphalt pavement mixtures.

D. Pavement Repair

Generally, the existing pavement was observed to be in good condition except along the entrance and exit loop. The pavement was full depth asphalt over a prepared subgrade. It is our opinion that full depth asphalt is appropriate because of the shallow groundwater conditions at the site. Groundwater was measured at depths of 2 to 2 ½ feet in the boring excavations.

As noted above, the existing pavement thickness varied between 2.2 and 5.6 inches. Locations P-1 and P-4 were 2.2 inches thick. P-5 was 3.7 inches thick. The other 7 locations were greater than 4 inches thick.

Large sections of the entrance and exit loop roads have failed, particularly the south loop. The asphalt aprons at the boat ramp have deteriorated significantly. A large area south of the "Monument Island" in the boat storage pavement has, also, failed. It is our opinion that the loop roadways and boat ramp aprons should be removed and replaced with the recommended pavement section.

Because of the relatively good condition of the boat parking area pavement, the pavement may be cut and patched at failed areas and be overlaid with a surface course material overlay. The overlay material should be DelDOT approved Superpave 9.5 mm material installed on the prepared surface in a layer 1 ½ inches thick. Prior to installing the overlay the existing failed areas should be cut and patched with square or rectangular patches installed in accordance with DelDOT guidelines. The subgrade should be prepared in accordance with Sections A and B of this report. The patch material should be DelDOT approved Superpave 12 mm or 19 mm material placed and compacted. The patches should be the same thickness at the existing pavement except that the base patch should not be less than 3 inches thick. As an alternative the pavement may be removed and replaced with the recommended full depth asphalt section discussed in Section C.



For pavement repairs, all patches must be saw cut and be rectangular in shape. The edges of the patches must be in tight contact with the existing pavement. The materials and installation should be in accordance with Delaware DOT specifications. All asphalt for the project should be compacted to 92 to 97 percent of the Marshall value.

E. Groundwater and Drainage

Groundwater was encountered at depths of 2 to 2 ½ feet in all borings. Groundwater elevations may vary at other times during the year depending on the amount of precipitation and the extent of surface development. When preparing the subgrade, the contractor shall be careful not to destabilize the subgrade. As noted the vibratory function of compaction equipment should not be used at the site. Wet areas should be allowed to drain.

ADDITIONAL SERVICES RECOMMENDED

Additional engineering, testing and consulting services recommended for this project are summarized below.

A. Site Preparation and Proofrolling Monitoring

The Geotechnical Engineer or experienced soils inspector should inspect the site after it has been stripped and excavated. The inspector should determine if any undercutting or in-place densification is necessary to prepare a subgrade for fill placement, or pavement support. The Geotechnical Engineer should provide additional recommendations as needed to fill at wet areas and to stabilize subgrade where needed.

B. Fill Placement and Compaction Monitoring

The Geotechnical Engineer or experienced soils inspector should witness all fill operations and take sufficient in-place density tests to verify that the specified degree of fill compaction is achieved. The inspector should observe and approve borrow materials used and should determine if their existing moisture contents are suitable.

C. Pavement Construction Inspections

Pavement subgrade soils should be inspected prior to the placement of pavement materials to verify that proper compaction has been achieved and that project specifications are being followed. In addition, the pavement inspector should verify that the patches are being installed properly and at overlay areas that the surface is prepared properly.

REMARKS

This report has been prepared solely and exclusively for Andrews, Miller & Associates, Inc. to provide guidance to design professionals in developing facilities plans for the Phillips Landing Parking Area Improvements project located in Sussex County, Delaware. It has not been developed to meet the needs of others, and application of this report for other than its intended purpose could result in substantial difficulties. The Consulting Engineer cannot be held accountable for any problems which occur due to the application of this report to other than its intended purpose. This report in its entirety should be attached to the project specifications.



These analyses and recommendations are, of necessity, based on the concepts made available to us at the time of the writing of this report, and on-site conditions, surface and subsurface that existed at the time the exploratory borings were drilled. Further assumption has been made that the limited exploratory borings, in relation both to the areal extent of the site and to depth, are representative of conditions across the site. It is also recommended that we be given the opportunity to review all plans for the project in order to comment on the interaction of soil conditions as described herein and the design requirements.

Our professional services have been performed, our findings obtained and our recommendations prepared in accordance with generally accepted engineering principles and practices.



APPENDIX

1. Investigative Procedures
2. Project Location Map
3. Boring Location Plan
4. Boring Logs
5. Modified Proctor and CBR Test Results
6. Unified Soil Classification Sheet
7. AASHTO Soil Classification Sheet
8. Field Classification Sheet
9. Information Sheet



INVESTIGATIVE PROCEDURES

HAND AUGER SOIL TEST BORINGS

Test borings were conducted using a 3 inch O.D. hand auger. The auger is manually advanced by rotating the shaft of the auger. The auger is withdrawn at short intervals for inspection of soils collected in the auger head. Soil samples are taken when soil conditions are noted to change. The soil descriptions for each boring are presented on the boring logs in the Appendix.

SOIL CLASSIFICATION

Soil classifications provide a general guide to the engineering properties of various soil types and enable the engineer to apply his past experience to current problems. In our investigation, jar samples obtained during drilling operations are examined in our laboratory and visually classified by the geotechnical engineer in accordance with ASTM Specification D-2488. The soils are classified according to the AASHTO or Unified Classification System (ASTM D-2487). Each of these classification systems and the in-place physical soil properties provides an index for estimating the soil's behavior.

NATURAL MOISTURE

Portions from representative soil samples obtained during drilling operations were selected for Natural Moisture Content tests. The Natural Moisture Content Test determines the water content of soils by drying into an oven with a standard drying temperature of 110 °C. The loss of mass drying the sample, determines the water content into the soil. The water content of the sample is calculated in percentage. The water content of soils (natural moisture) is determined in accordance with ASTM Specification D-2216.

SIEVE ANALYSIS

Gradational analysis tests were performed to determine the particle size and distribution of the samples tested. The grain size distribution of soils coarser than a No. 200 sieve is determined by passing the sample through a standard set of nested sieves. The percentage of materials passing the No. 200 sieve is determined by washing the material over a No. 200 sieve. These tests are in accordance with ASTM D-421, D-422 and D-1140. The results are presented in the Appendix to our report.

MODIFIED PROCTOR

Bulk samples were obtained from the pavement area test borings. A Modified Proctor compaction test (ASTM D 1557) was performed on this soil to determine its compaction characteristics, including its maximum dry density and optimum moisture content.



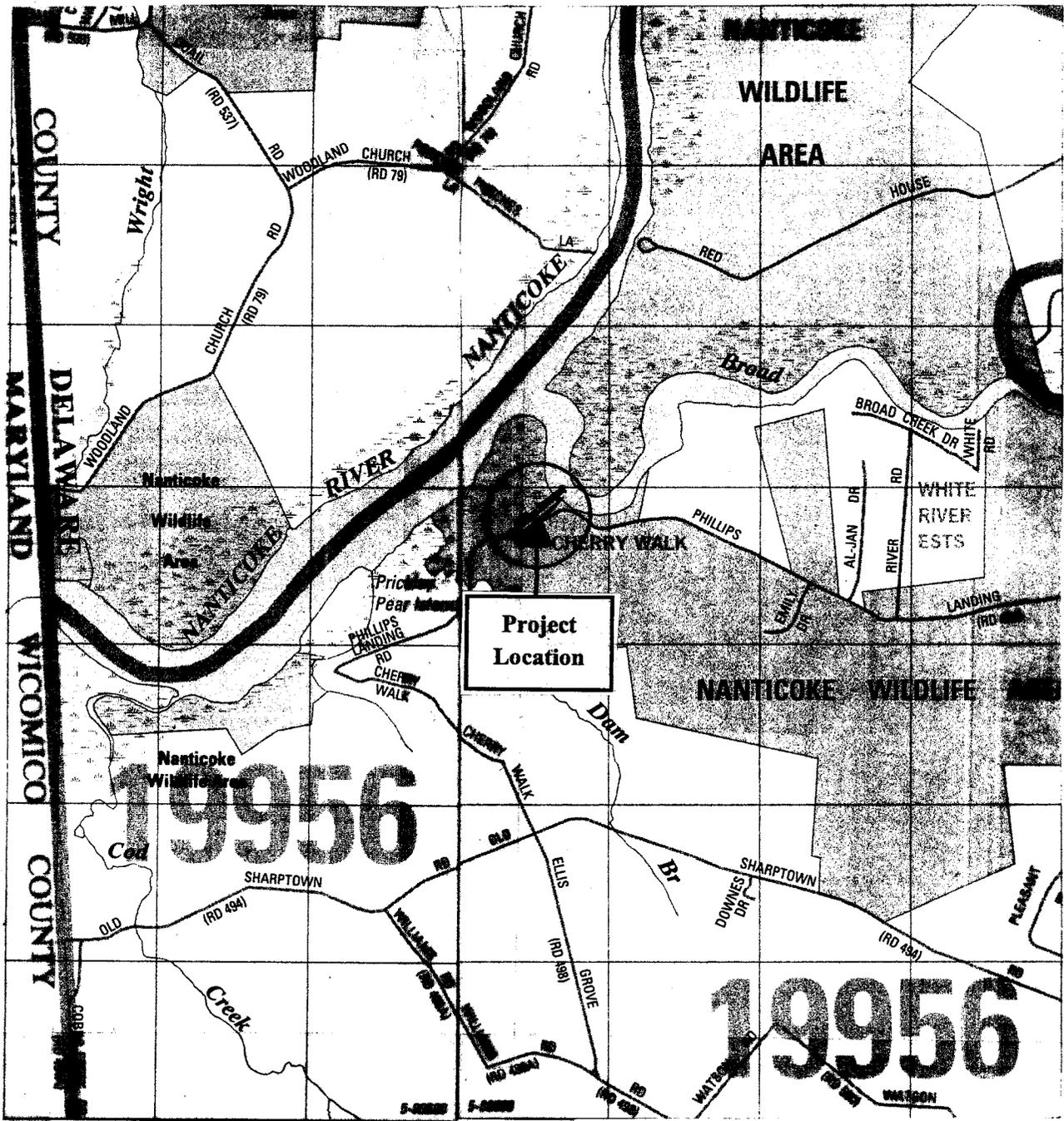
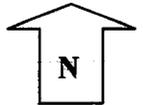
INVESTIGATIVE PROCEDURES (CONTINUED)

CALIFORNIA BEARING RATIO

The results of the compaction testing described above were utilized in compacting samples for the laboratory California Bearing Ratio tests. The California Bearing Ratio, abbreviated as CBR, is a punching shear test. It provides data that are a semi-empirical index of the strength and deflection characteristics of a soil that has been correlated with pavement performance. This correlation has resulted in the establishment of design curves for pavement thickness.

The test is performed on a 6-inch diameter, 5-inch thick, disc of compacted soil which is confined in a steel cylinder. The specimens are first tested immediately after compaction and then soaked for four (4) days to simulate a saturated pavement subgrade.

A 1.95-inch diameter piston is forced into the soil at a standard rate and the resistance of the piston penetration is measured. The CBR is the ratio expressed as a percentage of the load at 1.0-inch piston penetration compared to the load required to produce the same penetration in a standard crushed stone.



JOHN D. HYNES & ASSOCIATES, INC.

32185 Beaver Run Drive • Salisbury, Maryland 21804
410-546-6462 / Fax: 410-548-5346

Date: March 6, 2014

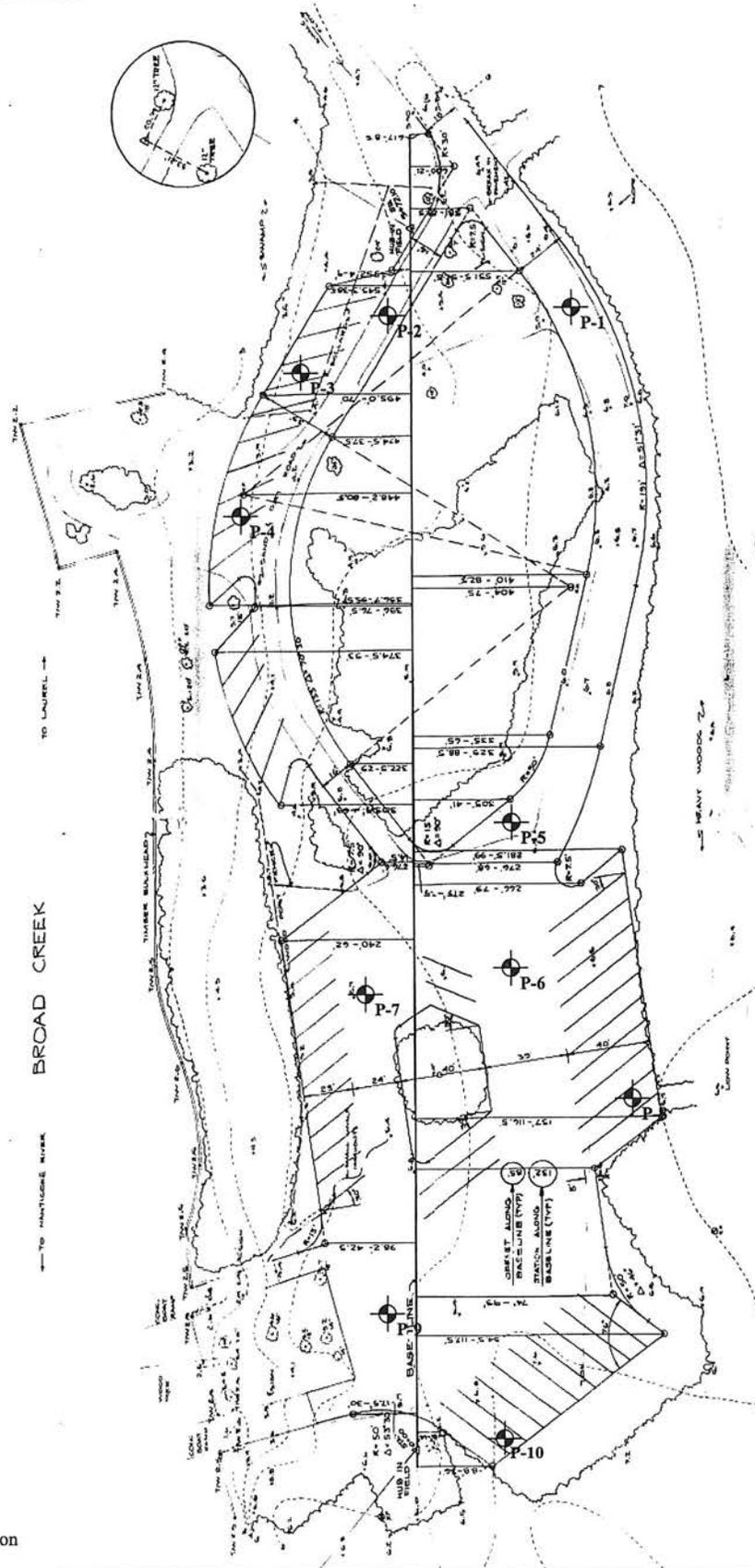
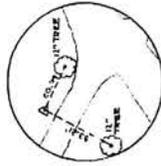
Scale: 1:2,400

Drawn: ADC

Project Location Map
Phillips Landing Parking Area Improvements
Sussex County, Delaware

Drawing Number:

JDH-10/14/138-A



○ -- Soil Boring Location



JOHN D. HYNES & ASSOCIATES, INC.

32185 Beaver Run Drive • Salisbury, Maryland 21804
410-546-6462 / Fax: 410-548-5346

Date: March 6, 2014

Scale: 1:360

Drawn: Richardson Associates

Boring Location Plan
Phillips Landing Parking Area Improvements
Sussex County, Delaware

DWG. No.

JDH-10/14/138-B



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LOG OF BORING P-1

(Page 1 of 1)

Andrews, Miller & Associates
106 North Washington Street, Suite 103
Easton, Maryland 21601

Date Completed: : February 26, 2014
Logged By: : C. Dalton
Drilled By: : J. Briddell
Drilling Method: : Hand Auger
Total Depth: : 3 feet

Phillips Landing Parking Area Improvements
Project No.: JDH-10/14/138

Depth in Feet	Surf. Elev. 6.0	DESCRIPTION	GRAPHIC	USCS	Sample No.	Remarks																				
0	6	Brown, wet, fine to coarse SAND, with trace to little silt, trace gravel (A-2-4)		SP/SM	1	Scale 1" ~ 2.25 feet																				
1	5	Brown, wet, fine to medium SAND, with trace silt (A-3)		SP	2	Approximately 2.2 inches of asphalt was encountered at the ground surface.																				
2	4	Brown, saturated, fine to medium SAND, with trace silt (A-3)		SP	3	Groundwater was encountered at 2 feet during augering operations.																				
3	3	Boring terminated at 3 feet.				Laboratory Test Results																				
4	2					Sample No. 1 From 0 to 1 feet																				
5	1					Sieve Analysis																				
6	0					<table border="1"> <thead> <tr> <th>Sieve Size</th> <th>Passing %</th> </tr> </thead> <tbody> <tr><td>1/2"</td><td>100</td></tr> <tr><td>3/8"</td><td>98.9</td></tr> <tr><td>No. 4</td><td>94.3</td></tr> <tr><td>No. 10</td><td>88.8</td></tr> <tr><td>No. 20</td><td>74.3</td></tr> <tr><td>No. 40</td><td>48.2</td></tr> <tr><td>No. 60</td><td>25.1</td></tr> <tr><td>No. 100</td><td>14.5</td></tr> <tr><td>No. 200</td><td>10.3</td></tr> </tbody> </table>	Sieve Size	Passing %	1/2"	100	3/8"	98.9	No. 4	94.3	No. 10	88.8	No. 20	74.3	No. 40	48.2	No. 60	25.1	No. 100	14.5	No. 200	10.3
Sieve Size	Passing %																									
1/2"	100																									
3/8"	98.9																									
No. 4	94.3																									
No. 10	88.8																									
No. 20	74.3																									
No. 40	48.2																									
No. 60	25.1																									
No. 100	14.5																									
No. 200	10.3																									
7	-1					Natural Moisture = 6.4%																				
8	-2					Note: Surface elevations at boring locations were estimated from contour lines and ground shots on E. H. Richardson Associates Stake Out Plan.																				
9	-3																									
10	-4																									
11	-5																									
12	-6																									
13	-7																									
14	-8																									
15																										

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**HYNES
&
ASSOCIATES**

LOG OF BORING P-2

(Page 1 of 1)

Andrews, Miller & Associates
106 North Washington Street, Suite 103
Easton, Maryland 21601

Date Completed: : February 26, 2014
Logged By: : C. Dalton
Drilled By: : J. Briddell
Drilling Method: : Hand Auger
Total Depth: : 3 feet

Phillips Landing Parking Area Improvements

Project No.: JDH-10/14/138

Depth in Feet	Surf. Elev. 5.0	DESCRIPTION	GRAPHIC	USCS	Sample No.	Remarks
0 - 5		Brown, wet, fine to medium SAND, with trace silt, trace fine gravel (A-3)		SP	1	Scale 1" ~ 2.25 feet
1 - 4						Approximately 4.3 inches of asphalt was encountered at the ground surface.
2 - 3		Brown, wet, fine to coarse SAND, with trace fine gravel, trace silt (A-3)		SP	2	Groundwater was encountered at 2 feet during augering operations.
3 - 2						Note: Surface elevations at boring locations were estimated from contour lines and ground shots on E. H. Richardson Associates Stake Out Plan.
4 - 1		Boring terminated at 3 feet.				
5 - 0						
6 - -1						
7 - -2						
8 - -3						
9 - -4						
10 - -5						
11 - -6						
12 - -7						
13 - -8						
14 - -9						
15						



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&
ASSOCIATES**

LOG OF BORING P-3

(Page 1 of 1)

Andrews, Miller & Associates
106 North Washington Street, Suite 103
Easton, Maryland 21601

Phillips Landing Parking Area Improvements
Project No.: JDH-10/14/138

Date Completed: : February 26, 2014
Logged By: : C. Dalton
Drilled By: : J. Briddell
Drilling Method: : Hand Auger
Total Depth: : 3 feet

Depth in Feet	Surf. Elev. 4.0	DESCRIPTION	GRAPHIC	USCS	Sample No.	Remarks
0	4	Brown, wet, fine to medium SAND, with trace silt (A-3)		SP	1	Scale 1" ~ 2.25 feet
1	3					Approximately 4.2 inches of asphalt was encountered at the ground surface.
2	2	Brown, saturated, fine to medium SAND, with trace silt, trace fine gravel (A-3)		SP	2	Groundwater was encountered at 2 feet during augering operations.
3	1	Boring terminated at 3 feet.				Laboratory Test Results
4	0					Sample No. 1 From 0 to 1.5 feet
5	-1					Sieve Analysis
6	-2					Sieve Size Passing %
7	-3					3/8" 100
8	-4					No. 4 99.7
9	-5					No. 10 99.4
10	-6					No. 20 89.9
11	-7					No. 40 58.1
12	-8					No. 60 29.6
13	-9	No. 100 7.8				
14	-10	No. 200 3.4				
15		Natural Moisture = 13.5 %				
		Note: Surface elevations at boring locations were estimated from contour lines and ground shots on E. H. Richardson Associates Stake Out Plan.				

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LOG OF BORING P-4

(Page 1 of 1)

Andrews, Miller & Associates
106 North Washington Street, Suite 103
Easton, Maryland 21601
Phillips Landing Parking Area Improvements
Project No.: JDH-10/14/138

Date Completed: : February 26, 2014
Logged By: : C. Dalton
Drilled By: : J. Briddell
Drilling Method: : Hand Auger
Total Depth: : 3 feet

Depth in Feet	Surf. Elev. 4.0	DESCRIPTION	GRAPHIC	USCS	Sample No.	Remarks
0 - 4		Brown, wet, fine to medium SAND, with trace silt (A-3)		SP	1	Scale 1" ~ 2.25 feet Approximately 2.2 inches of asphalt was encountered at the ground surface.
1 - 3						Groundwater was encountered at 2 feet during augering operations.
2 - 2		Brown, saturated, fine to medium SAND, with trace silt (A-3)		SP	2	Note: Surface elevations at boring locations were estimated from contour lines and ground shots on E. H. Richardson Associates Stake Out Plan.
3 - 1		Boring terminated at 3 feet.				
4 - 0						
5 - -1						
6 - -2						
7 - -3						
8 - -4						
9 - -5						
10 - -6						
11 - -7						
12 - -8						
13 - -9						
14 - -10						
15						



**HYNES
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ASSOCIATES**

LOG OF BORING P-5

(Page 1 of 1)

Andrews, Miller & Associates
106 North Washington Street, Suite 103
Easton, Maryland 21601

Date Completed: : February 26, 2014
Logged By: : C. Dalton
Drilled By: : J. Briddell
Drilling Method: : Hand Auger
Total Depth: : 3 feet

Phillips Landing Parking Area Improvements

Project No.: JDH-10/14/138

Depth in Feet	Surf. Elev. 6.5	DESCRIPTION	GRAPHIC	USCS	Sample No.	Remarks
0	6.5	Brown, wet, fine to coarse SAND, with little silt, trace fine gravel (A-2-4)		SM	1	Scale 1" ~ 2.25 feet
1	5.5	Brown, wet, fine to medium SAND, with trace to little silt (A-3)		SP-SM	2	Approximately 3.7 inches of asphalt was encountered at the ground surface.
2	4.5	Brown, saturated, fine to medium SAND, with trace silt (A-3)		SP	3	Groundwater was encountered at 2 feet during augering operations.
3	3.5	Boring terminated at 3 feet.				Note: Surface elevations at boring locations were estimated from contour lines and ground shots on E. H. Richardson Associates Stake Out Plan.
4	2.5					
5	1.5					
6	.5					
7	-.5					
8	-1.5					
9	-2.5					
10	-3.5					
11	-4.5					
12	-5.5					
13	-6.5					
14	-7.5					
15						



**HYNES
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ASSOCIATES**

LOG OF BORING P-6

(Page 1 of 1)

Andrews, Miller & Associates
106 North Washington Street, Suite 103
Easton, Maryland 21601
Phillips Landing Parking Area Improvements
Project No.: JDH-10/14/138

Date Completed: : February 26, 2014
Logged By: : C. Dalton
Drilled By: : J. Briddell
Drilling Method: : Hand Auger
Total Depth: : 3 feet

Depth in Feet	Surf. Elev.	DESCRIPTION	GRAPHIC	USCS	Sample No.	Remarks
0	6.3	Brown, wet, fine to coarse SAND, with little silt, trace fine gravel (A-2-4)		SM	1	Scale 1" ~ 2.25 feet
1	5.3	Brown, wet, fine to medium SAND, with trace to little silt (A-3)		SP-SM	2	Approximately 4.3 inches of asphalt was encountered at the ground surface.
2	4.3	Brown, saturated, fine to medium SAND, with trace silt (A-3)		SP	3	Groundwater was encountered at 2 feet during augering operations.
3	3.3	Boring terminated at 3 feet.				Laboratory Test Results
4	2.3					Sample No. 1 From 0 to 1 feet
5	1.3					Sieve Analysis
6	.3					Sieve Size Passing %
7	-7					3/8" 100
8	-1.7					No. 4 98.9
9	-2.7					No. 10 89.8
10	-3.7					No. 20 68.7
11	-4.7					No. 40 37.9
12	-5.7					No. 60 24.8
13	-6.7					No. 100 19.7
14	-7.7					No. 200 17.0
15						Natural Moisture = 9.2 %
						Note: Surface elevations at boring locations were estimated from contour lines and ground shots on E. H. Richardson Associates Stake Out Plan.



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LOG OF BORING P-7

(Page 1 of 1)

Andrews, Miller & Associates
106 North Washington Street, Suite 103
Easton, Maryland 21601

Date Completed: : February 26, 2014
Logged By: : C. Dalton
Drilled By: : J. Briddell
Drilling Method: : Hand Auger
Total Depth: : 3 feet

Phillips Landing Parking Area Improvements
Project No.: JDH-10/14/138

Depth in Feet	Surf. Elev.	DESCRIPTION	GRAPHIC	USCS	Sample No.	Remarks
0	5.7	Brown, wet, fine to medium SAND, with trace to little silt (A-3)		SP-SM	1	Scale 1" ~ 2.25 feet
1	4.7	Brown, wet to saturated, fine to medium SAND, with trace silt (A-3)		SP	2	Approximately 4.9 inches of asphalt was encountered at the ground surface.
2	3.7					Groundwater was encountered at 2.5 feet during augering operations.
3	2.7	Boring terminated at 3 feet.				Note: Surface elevations at boring locations were estimated from contour lines and ground shots on E. H. Richardson Associates Stake Out Plan.
4	1.7					
5	.7					
6	-.3					
7	-1.3					
8	-2.3					
9	-3.3					
10	-4.3					
11	-5.3					
12	-6.3					
13	-7.3					
14	-8.3					
15						



**HYNES
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LOG OF BORING P-8

(Page 1 of 1)

Andrews, Miller & Associates
106 North Washington Street, Suite 103
Easton, Maryland 21601

Date Completed: : February 26, 2014
Logged By: : C. Dalton
Drilled By: : J. Briddell
Drilling Method: : Hand Auger
Total Depth: : 3 feet

Phillips Landing Parking Area Improvements
Project No.: JDH-10/14/138

Depth in Feet	Surf. Elev. 6.0	DESCRIPTION	GRAPHIC	USCS	Sample No.	Remarks
0	6	Brown, wet, fine to medium SAND, with trace to little silt (A-3)	[Vertical Line]	SP-SM	1	Scale 1" ~ 2.25 feet
1	5					Approximately 5.6 inches of asphalt was encountered at the ground surface.
2	4	Brown, wet to saturated, fine to medium SAND, with trace silt (A-3)	[Vertical Line]	SP	2	Groundwater was encountered at 2.5 feet during augering operations.
3	3	Boring terminated at 3 feet.				Note: Surface elevations at boring locations were estimated from contour lines and ground shots on E. H. Richardson Associates Stake Out Plan.
4	2					
5	1					
6	0					
7	-1					
8	-2					
9	-3					
10	-4					
11	-5					
12	-6					
13	-7					
14	-8					
15						



**HYNES
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ASSOCIATES**

LOG OF BORING P-9

(Page 1 of 1)

Andrews, Miller & Associates
106 North Washington Street, Suite 103
Easton, Maryland 21601

Date Completed: : February 26, 2014
Logged By: : C. Dalton
Drilled By: : J. Briddell
Drilling Method: : Hand Auger
Total Depth: : 3 feet

Phillips Landing Parking Area Improvements
Project No.: JDH-10/14/138

Depth in Feet	Surf. Elev. 6.0	DESCRIPTION	GRAPHIC	USCS	Sample No.	Remarks
0	6	Brown, wet, fine to medium SAND, with trace to little silt (A-3)		SP-SM	1	Scale 1" ~ 2.25 feet
1	5	Brown, wet to saturated, fine to coarse SAND, with trace silt (A-3)		SP	2	Approximately 4.7 inches of asphalt was encountered at the ground surface.
2	4					Groundwater was encountered at 2.5 feet during augering operations.
3	3	Boring terminated at 3 feet.				Laboratory Test Results Sample No. 2 From 1 to 3 feet
4	2					Sieve Analysis
5	1					Sieve Size Passing %
6	0					No. 4 100
7	-1					No. 10 98.4
8	-2					No. 20 88.2
9	-3					No. 40 58.3
10	-4					No. 60 25.0
11	-5					No. 100 6.9
12	-6					No. 200 4.4
13	-7					Natural Moisture = 14.2 %
14	-8					Note: Surface elevations at boring locations were estimated from contour lines and ground shots on E. H. Richardson Associates Stake Out Plan.
15						



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LOG OF BORING P-10

(Page 1 of 1)

Andrews, Miller & Associates
106 North Washington Street, Suite 103
Easton, Maryland 21601

Date Completed: : February 26, 2014
Logged By: : C. Dalton
Drilled By: : J. Briddell
Drilling Method: : Hand Auger
Total Depth: : 3 feet

Phillips Landing Parking Area Improvements
Project No.: JDH-10/14/138

Depth in Feet	Surf. Elev. 7.0	DESCRIPTION	GRAPHIC	USCS	Sample No.	Remarks
0	7	Brown, wet, fine to medium SAND, with trace to little silt (A-3)		SP-SM	1	Scale 1" ~ 2.25 feet
1	6	Brown, wet to saturated, fine to medium SAND, with trace silt (A-3)		SP	2	Approximately 5.2 inches of asphalt was encountered at the ground surface.
2	5					Groundwater was encountered at 2.5 feet during augering operations.
3	4	Boring terminated at 3 feet.				Note: Surface elevations at boring locations were estimated from contour lines and ground shots on E. H. Richardson Associates Stake Out Plan.
4	3					
5	2					
6	1					
7	0					
8	-1					
9	-2					
10	-3					
11	-4					
12	-5					
13	-6					
14	-7					
15						

04-10-2014 J:\Mtech 2010\Phillips Landing Parking Area Improvements-14138P-10.bor



JOHN D. HYNES & ASSOCIATES, INC.

Geotechnical and Environmental Consultants
Monitoring Well Installation
Construction Inspection and Materials Testing

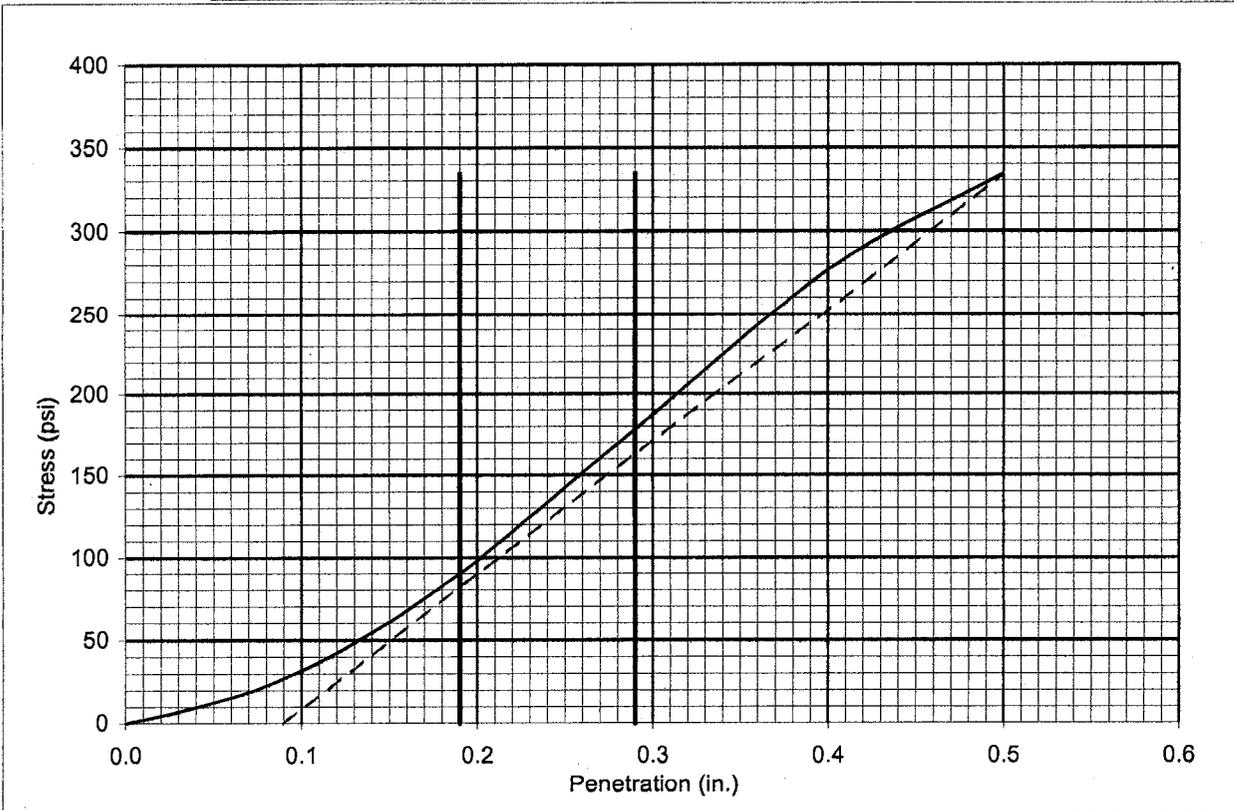
RECORD No: JDH-10/14/138 TEST TYPE: California Bearing Ratio (CBR) Test

MADE FOR: Andrews, Miller, & Associates TEST DATE: March 11, 2014

PROJECT: Phillips Landing Parking Area Improvements

LOCATION: P-1 (11093) TEST METHOD: ASTM D-1883

DESCRIPTION: Brown, fine to course SAND, with trace to little silt (SP/SM)



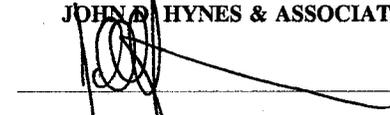
Sample Condition: Soaked

Zero correction: 0.090 inches

Piston Penetration (inches):	<u>0.1</u>	<u>0.2</u>	<u>Design</u>
CBR Value:	<u>9.1</u>	<u>11.9</u>	<u>11.9</u>

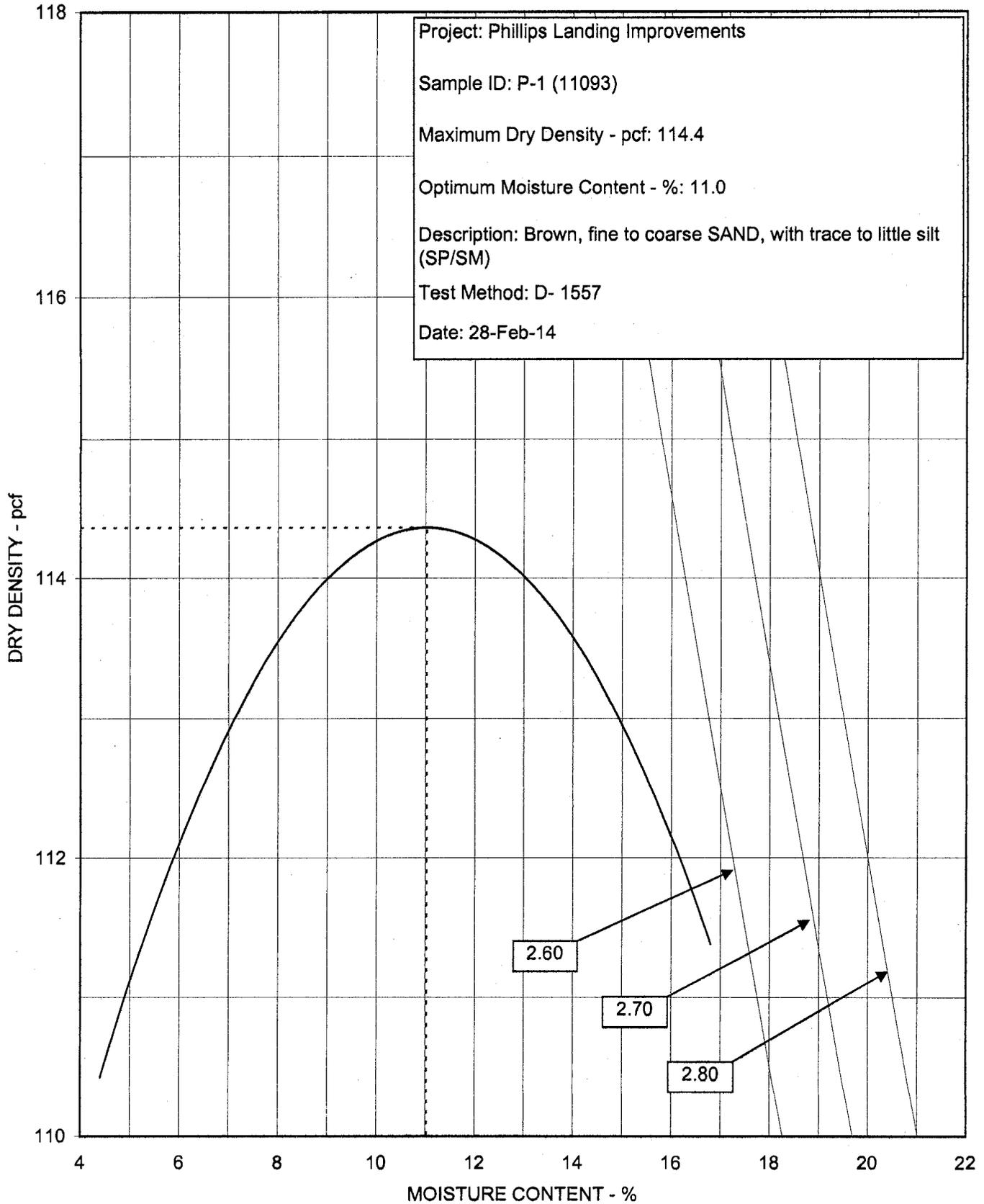
Maximum Dry Density: 114.4 pcf
 Optimum Moisture Content: 11.0 %
 Dry Density of CBR Sample: 108.2 pcf
 Moisture Content Before Soak: 18.1 %
 Moisture Content After Soak: 17.7 %
 Top 1-in Layer After Soak: 14.7 %
 Average Moisture Content After Soak: 16.2 %

JOHN D. HYNES & ASSOCIATES, INC.

By: 



John D. Hynes & Associates





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*Geotechnical and Environmental Consultants
Monitoring Well Installation
Construction Inspection and Materials Testing*

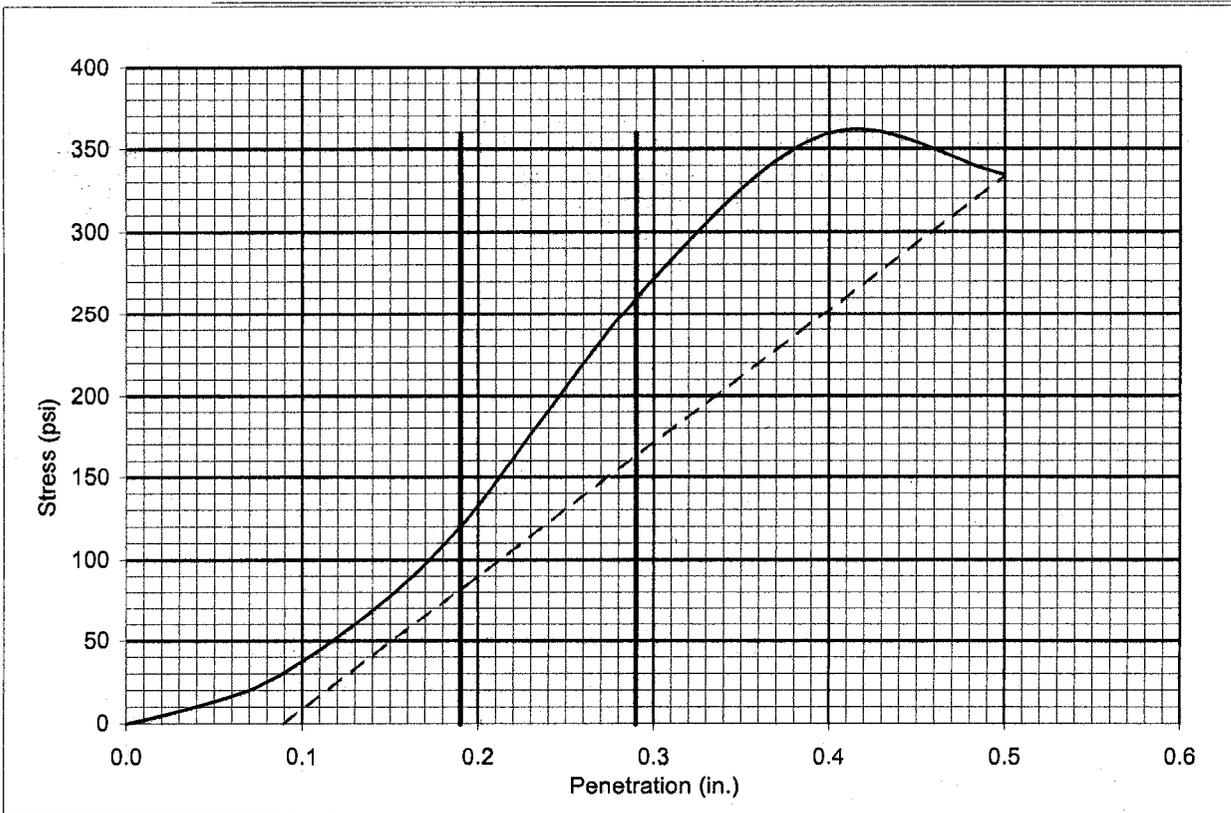
RECORD No: JDH-10/14/138 TEST TYPE: California Bearing Ratio (CBR) Test

MADE FOR: Andrews, Miller, & Associates TEST DATE: March 11, 2014

PROJECT: Phillips Landing Parking Area Improvements

LOCATION: P-8 (11092) TEST METHOD: ASTM D-1883

DESCRIPTION: Brown, fine to course SAND, with trace to little silt (SP/SM)



Sample Condition: Soaked

Zero correction:	0.090	inches	
Piston Penetration (inches):	0.1	0.2	Design
CBR Value:	12.3	17.2	17.2

Maximum Dry Density:	112.5 pcf
Optimum Moisture Content:	13.2 %
Dry Density of CBR Sample:	106.2 pcf
Moisture Content Before Soak:	18.1 %
Moisture Content After Soak:	17.6 %
Top 1-in Layer After Soak:	16.1 %
Average Moisture Content After Soak:	16.9 %

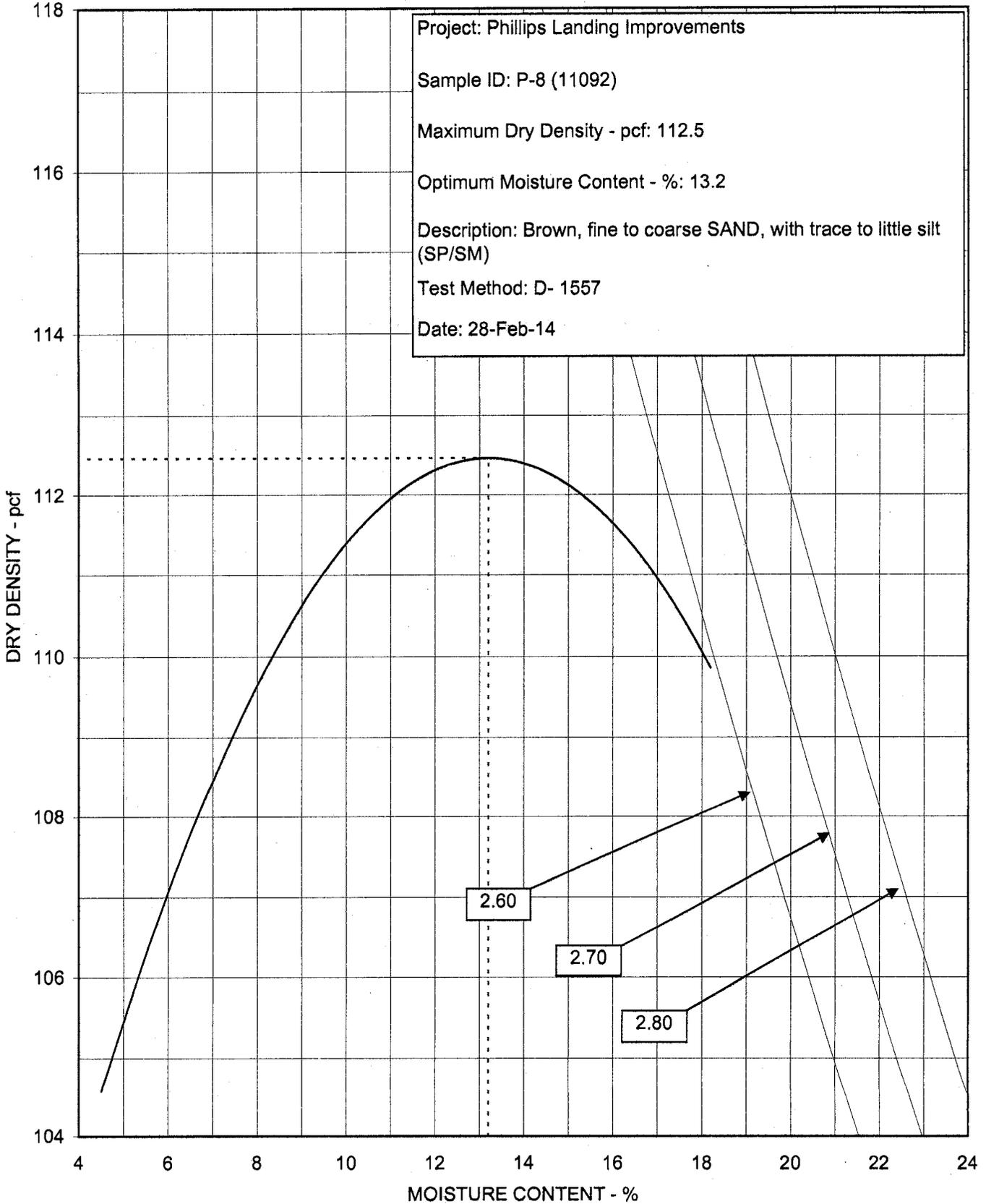
JOHN D. HYNES & ASSOCIATES, INC.

By: _____

32185 Beaver Run Drive, Salisbury, Maryland 21804
302-678-9718 • Fax 302-678-9733



John D. Hynes & Associates





JOHN D. HYNES & ASSOCIATES, INC.

Geotechnical and Environmental Consultants
 Monitoring Well Installation
 Construction Inspection and Materials Testing

UNIFIED SOIL CLASSIFICATION SYSTEM

Major Divisions		Group Symbols	Typical Names	Laboratory Classification Criteria			
Coarse-grained soils (More than half of material is larger than No 200 sieve size)	Gravels (More than half of coarse fraction is larger than No 4 sieve size)	Clean gravels (Little or no fines)	GW	Well-graded gravels, gravel-sand mixtures, little or no fines	$C_u = \frac{D_{60}}{D_{10}}$ greater than 4; $C_c = \frac{(D_{30})^2}{D_{10} \times D_{60}}$ between 1 and 3		
			GP	Poorly graded gravels, gravel sand mixtures, little or no fines		Not meeting all gradation requirements for GW	
		Gravels with fines (Appreciable amount of fines)	GMA	d u	Silty gravels, gravel-sand-silt mixtures	Atterberg limits below "A" line or P.I. less than 4	Above "A" line with P.I. between 4 and 7 are border-line cases requiring use of dual symbols
			GC		Clayey gravels, gravel-sand-clay mixtures	Atterberg limits above "A" line with P.I. greater than 7	
	Sands (More than half of coarse fraction is smaller than No 4 sieve size)	Clean sands (Little or no fines)	SW	Well-graded sands, gravelly sands.	$C_u = \frac{D_{60}}{D_{10}}$ greater than 6; $C_c = \frac{(D_{30})^2}{D_{10} \times D_{60}}$ between 1 and 3		
			SP	Poorly graded sands, gravelly sands, little or no fines		Not meeting all gradation requirements for SW	
		Sands with fines (Appreciable amount of fines)	SMA	d u	Silty sands, sand-silt mixtures	Atterberg limits below "A" line or P.I. less than 4	Above "A" line with P.I. between 4 and 7 are border-line cases requiring use of dual symbols.
			SC		Clayey sands, sand-clay mixtures	Atterberg limits above "A" line with P.I. greater than 7	
		Determine percentages of sand and gravel from grain-size curve. Depending on percentage of fines (fraction smaller than No 200 sieve size), coarse grained soils are classified as follows: Less than 5 percent More than 12 percent 5 to 12 percent					
		GW, GP, SW, SP GM, GC, SM, SC Borderline cases requiring dual symbols					
Determine percentages of sand and gravel from grain-size curve. Depending on percentage of fines (fraction smaller than No 200 sieve size), coarse grained soils are classified as follows: Less than 5 percent More than 12 percent 5 to 12 percent							
Fine-grained soils (More than half material is smaller than No 200 sieve)	Sils and clays (Liquid limit less than 50)	ML	Inorganic silts and very fine sands, rock flour, silty or clayey fine sands, or clayey silts with slight plasticity	Plasticity Chart 			
		CL	Inorganic clays of low to medium plasticity, gravelly clays, sandy clays, silty clays, lean clays				
		OL	Organic silts and organic silty clays of low plasticity				
	Sils and clays (Liquid limit greater than 50)	MH	Inorganic silts, micaceous or diatomaceous fine sandy or silty soils, elastic silts				
		CH	Inorganic clays of high plasticity, fat clays				
		OH	Organic clays of medium to high plasticity, organic silts				
	Highly organic soils	Pt	Peat and other highly organic soils				



JOHN D. HYNES & ASSOCIATES, INC.

Geotechnical and Environmental Consultants
 Monitoring Well Installation
 Construction Inspection and Materials Testing

AASHTO SOIL CLASSIFICATION SYSTEM

General classification	Granular materials (35% or less of total sample passing No. 200 sieve)						
	A-1		A-3	A-2			
Group classification	A-1-a	A-1-b		A-3	A-2-4	A-2-5	A-2-6
Sieve analysis (% passing) No. 10 sieve No. 40 sieve No. 200 sieve	50 max 30 max 15 max	50 max 25 max	51 min 10 max	35 max	35 max	35 max	35 max
For fraction passing No. 40 sieve Liquid limit (<i>LL</i>) Plasticity index (<i>PI</i>)	6 max		Non-plastic	40 max 10 max	41 min 10 max	40 max 11 min	41 min 11 min
Usual types of material	Stone fragments, gravel, and sand		Fine sand	Silty or clayey gravel and sand			
Subgrade rating	Excellent to good						

General classification	Silt-clay materials (More than 35% of total sample passing No. 200 sieve)			
	A-4	A-5	A-6	A-7 A-7-5 ^a A-7-6 ^b
Sieve analysis (% passing) No. 10 sieve No. 40 sieve No. 200 sieve	36 min	36 min	36 min	36 min
For fraction passing No. 40 sieve Liquid limit (<i>LL</i>) Plasticity index (<i>PI</i>)	40 max 10 max	41 min 10 max	40 max 11 min	41 min 11 min
Usual types of material	Mostly silty soils		Mostly clayey soils	
Subgrade rating	Fair to poor			

^aIf $PI \leq LL - 30$, it is A-7-5

^bIf $PI > LL - 30$, it is A-7-6

Main Office - 32185 Beaver Run Drive • Salisbury, Maryland 21804 • 410-546-6462 • Fax 410-548-5346

Dover Office - 1039 Fowler Court • Dover, Delaware 19901 • 302-678-9718 • Fax 302-678-9733

E-mail - Salisbury jdhyes@aol.com



FIELD CLASSIFICATION SYSTEM FOR SOIL EXPLORATION

NON-COHESIVE SOILS (Silt, Sand, Gravel and Combinations)

DENSITY

Very Loose	- 5 blows/ft. or less
Loose	- 6 to 10 blows/ft.
Medium Dense	- 11 to 30 blows/ft.
Dense	- 31 to 50 blows/ft.
Very Dense	- 51 blows/ft. or more

PARTICLE SIZE IDENTIFICATION

Boulders	- 8 inch diameter or more
Cobbles	- 3 to 8 inch diameter
Gravel	- Coarse - 1 to 3 inch - Medium - 1/2 to 1 inch - Fine - 4.75 mm to 1/2 inch
Sand	- Coarse - 2.0 mm to 4.75 mm - Medium - 0.425 mm to 2.0 mm - Fine - 0.075 mm to 0.425 mm
Silt	- 0.075 mm to 0.002 mm

RELATIVE PROPORTIONS

Descriptive Term	Percent
Trace	1 - 10
Little	11 - 20
Some	21 - 35
And	36 - 50

COHESIVE SOILS (Clay, Silt and Combinations)

CONSISTENCY

Very Soft	- 3 blows/ft. or less
Soft	- 4 to 5 blows/ft.
Medium Stiff	- 6 to 10 blows/ft.
Stiff	- 11 to 15 blows/ft.
Very Stiff	- 16 to 30 blows/ft.
Hard	- 31 blows/ft. or more

PLASTICITY

Degree of Plasticity	Plasticity Index
None to Slight	0 - 4
Slight	5 - 7
Medium	8 - 22
High to Very High	over 22

Classification on logs are made by visual inspection of samples unless a sample has been subjected to laboratory classification testing.

Standard Penetration Test - Driving a 2.0" O.D., 1-3/8" I.D., splitspoon sampler a distance of 1.0 foot into undisturbed soil with a 140 pound hammer free falling a distance of 30.0 inches. It is customary to drive the spoon 6 inches to seat into undisturbed soil, then perform the test. The number of hammer blows for seating the spoon and making the test are recorded for each 6 inches of penetration on the drill log (Example - 6/8/9). The standard penetration test value (N - value) can be obtained by adding the last two figures (i.e. 8 + 9 = 17 blows/ft.). (ASTM D-1586)

Strata Changes - In the column "Soil Descriptions," on the drill log, the horizontal lines represent strata changes. A solid line (—) represents an actually observed change, a dashed line (---) represents an estimated change.

Groundwater - Observations were made at the times indicated. Porosity of soil strata, weather conditions, site topography, etc. may cause changes in the water levels indicated on the logs.

Important Information About Your Geotechnical Engineering Report

Subsurface problems are a principal cause of construction delays, cost overruns, claims, and disputes.

The following information is provided to help you manage your risks.

Geotechnical Services Are Performed for Specific Purposes, Persons, and Projects

Geotechnical engineers structure their services to meet the specific needs of their clients. A geotechnical engineering study conducted for a civil engineer may not fulfill the needs of a construction contractor or even another civil engineer. Because each geotechnical engineering study is unique, each geotechnical engineering report is unique, prepared *solely* for the client. *No one except you* should rely on your geotechnical engineering report without first conferring with the geotechnical engineer who prepared it. *And no one—not even you*—should apply the report for any purpose or project except the one originally contemplated.

Read the full report

Serious problems have occurred because those relying on a geotechnical engineering report did not read it all. Do not rely on an executive summary. Do not read selected elements only.

A Geotechnical Engineering Report Is Based on A Unique Set of Project-Specific Factors

Geotechnical engineers consider a number of unique, project-specific factors when establishing the scope of a study. Typical factors include: the client's goals, objectives, and risk management preferences; the general nature of the structure involved, its size, and configuration; the location of the structure on the site; and other planned or existing site improvements, such as access roads, parking lots, and underground utilities. Unless the geotechnical engineer who conducted the study specifically indicates otherwise, *do not rely on a geotechnical engineering report* that was:

- not prepared for you,
- not prepared for your project,
- not prepared for the specific site explored, or
- completed before important project changes were made.

Typical changes that can erode the reliability of an existing geotechnical engineering report include those that affect:

- the function of the proposed structure, as when

it's changed from a parking garage to an office building, or from a light industrial plant to a refrigerated warehouse,

- elevation, configuration, location, orientation, or weight of the proposed structure,
- composition of the design team, or
- project ownership.

As a general rule, *always* inform your geotechnical engineer of project changes—even minor ones—and request an assessment of their impact. *Geotechnical engineers cannot accept responsibility or liability for problems that occur because their reports do not consider developments of which they were not informed.*

Subsurface Conditions Can Change

A geotechnical engineering report is based on conditions that existed at the time the study was performed. *Do not rely on a geotechnical engineering report* whose adequacy may have been affected by: the passage of time; by man-made events, such as construction on or adjacent to the site; or by natural events, such as floods, earthquakes, or groundwater fluctuations. *Always* contact the geotechnical engineer before applying the report to determine if it is still reliable. A minor amount of additional testing or analysis could prevent major problems.

Most Geotechnical Findings Are Professional Opinions

Site exploration identifies subsurface conditions *only* at those points where subsurface tests are conducted or samples are taken. Geotechnical engineers review field and laboratory data and then apply their professional judgment to render an *opinion* about subsurface conditions throughout the site. Actual subsurface conditions may differ—sometimes significantly—from those indicated in your report. Retaining the geotechnical engineer who developed your report to provide construction observation is the most effective method of managing the risks associated with unanticipated conditions.

A Report's Recommendations Are *Not* Final

Do not overrely on the construction recommendations included in your report. *Those recommendations are not final*, because geotechnical engineers develop them principally from judgment and opinion. Geotechnical engineers can finalize their recommendations only by observing actual subsurface conditions revealed during construction. *The geotechnical engineer who developed your report cannot assume responsibility or liability for the report's recommendations if that engineer does not perform construction observation.*

A Geotechnical Engineering Report Is Subject To Misinterpretation

Other design team members' misinterpretation of geotechnical engineering reports has resulted in costly problems. Lower that risk by having your geotechnical engineer confer with appropriate members of the design team after submitting the report. Also retain your geotechnical engineer to review pertinent elements of the design team's plans and specifications. Contractors can also misinterpret a geotechnical engineering report. Reduce that risk by having your geotechnical engineer participate in prebid and preconstruction conferences, and by providing construction observation.

Do Not Redraw the Engineer's Logs

Geotechnical engineers prepare final boring and testing logs based upon their interpretation of field logs and laboratory data. To prevent errors or omissions, the logs included in a geotechnical engineering report should *never* be redrawn for inclusion in architectural or other design drawings. Only photographic or electronic reproduction is acceptable, *but recognize that separating logs from the report can elevate risk.*

Give Contractors a Complete Report and Guidance

Some owners and design professionals mistakenly believe they can make contractors liable for unanticipated subsurface conditions by limiting what they provide for bid preparation. To help prevent costly problems, give contractors the complete geotechnical engineering report, *but* preface it with a clearly written letter of transmittal. In that letter, advise contractors that the report was not prepared for purposes of bid development and that the

report's accuracy is limited; encourage them to confer with the geotechnical engineer who prepared the report (a modest fee may be required) and/or to conduct additional study to obtain the specific types of information they need or prefer. A prebid conference can also be valuable. *Be sure contractors have sufficient time* to perform additional study. Only then might you be in a position to give contractors the best information available to you, while requiring them to at least share some of the financial responsibilities stemming from unanticipated conditions.

Read Responsibility Provisions Closely

Some clients, design professionals, and contractors do not recognize that geotechnical engineering is far less exact than other engineering disciplines. This lack of understanding has created unrealistic expectations that have led to disappointments, claims, and disputes. To help reduce such risks, geotechnical engineers commonly include a variety of explanatory provisions in their reports. Sometimes labeled "limitations", many of these provisions indicate where geotechnical engineers' responsibilities begin and end, to help others recognize their own responsibilities and risks. *Read these provisions closely.* Ask questions. Your geotechnical engineer should respond fully and frankly.

Geoenvironmental Concerns Are Not Covered

The equipment, techniques, and personnel used to perform a *geoenvironmental* study differ significantly from those used to perform a *geotechnical* study. For that reason, a geotechnical engineering report does not usually relate any geoenvironmental findings, conclusions, or recommendations; e.g., about the likelihood of encountering underground storage tanks or regulated contaminants. *Unanticipated environmental problems have led to numerous project failures.* If you have not yet obtained your own geoenvironmental information, ask your geotechnical consultant for risk management guidance. *Do not rely on an environmental report prepared for someone else.*

Rely on Your Geotechnical Engineer for Additional Assistance

Membership in ASFE exposes geotechnical engineers to a wide array of risk management techniques that can be of genuine benefit for everyone involved with a construction project. Confer with your ASFE-member geotechnical engineer for more information.



8811 Colesville Road Suite G106 Silver Spring, MD 20910

Telephone: 301-565-2733 Facsimile: 301-589-2017

email: info@asfe.org www.asfe.org

ATTACHMENT No. 4

Architectural Accessibility Approval Letter



STATE OF DELAWARE
Architectural Accessibility Board
540 S. DuPont Highway, Suite 1
Dover, Delaware 19901

February 9, 2018

Mr. Kenneth Eaton
Andrew, Miller and Associates
106 North Washington Street
Easton, MD 21601

RE: Phillips Landing/ Nanticoke Wildlife Area Boat Ramp Replacement
Case No. 18017

Dear Mr. Eaton:

State of Delaware's Architectural Accessibility Board (AAB) met via email on Thursday, February 8, 2018, at which time your submission for the above referenced project was reviewed. Based on your plans and drawings your submission was unanimously approved.

The AAB's review and approval is not intended to assume any responsibility or liability for this project. Please know that there may be items pertaining to various codes, or other regulations, that may not have been addressed. You, however, are responsible for ensuring full compliance with all applicable accessibility codes, standards and/or other requirements. You are advised that potential changes to this project's design may have a direct affect on accessibility, and this should be considered prior to any changes or revisions to these drawings. Likewise, errors could also occur when the actual construction deviates from the approved design.

If you have any questions regarding this letter, please contact me at (302) 739-5644.

Very truly yours,

A handwritten signature in black ink, appearing to read "Jennifer Lieber".

Jennifer Lieber
Chief Administrator, AAB

cc: Board Members

ATTACHMENT No. 5

DNREC, F & W SCRP Letter



STATE OF DELAWARE
DEPARTMENT OF NATURAL RESOURCES
& ENVIRONMENTAL CONTROL
DIVISION OF FISH & WILDLIFE
89 Kings Highway
Dover, Delaware 19901

OFFICE OF THE
DIRECTOR

Phone: (302) 739-9910
Fax: (302) 739-6157

March 13, 2018

Ken B. Eaton
Andrews, Miller & Associates
106 North Washington St.
Suite 103
Easton, MD 21601

Re: AMAI 2018 DNREC Phillips Landing Boat Ramp

Dear Mr. Eaton,

Thank you for contacting the Species Conservation and Research Program about information on rare, threatened and endangered species, unique natural communities, and other significant natural resources as they relate to the above referenced project.

Atlantic Sturgeon

Atlantic Sturgeon (*Acipenser oxyrinchus*), a federally endangered species, is known to occur in the Nanticoke River watershed has been confirmed. Data collected through sampling efforts and acoustic telemetry suggest this species is likely inhabiting the river system from approximately August 15th through November 1st. A time of year restriction on in-water work is recommended to avoid impacts to this species. Note that these data are based on a project in the first few years of study and recommendations may change in the future. Also note that Section 7 consultation may be required.

Other Anadromous Species

Broad Creek is utilized during upstream migration by several fish species of concern. American shad (*Alosa sapidissima*), blueback herring (*Alosa aestivalis*), and alewife (*Alosa pseudoharengus*) collectively known as alosines, utilize the river during spawning and then as a nursery habitat for young-of-the-year.

Habitat degradation is one factor leading to a decline in the populations of these species. American shad numbers have indicated serious declines along the East Coast and is a species currently undergoing restoration efforts on the Nanticoke River. Alewife (*Alosa pseudoharengus*) and blueback herring (*Alosa aestivalis*), often collectively referred to as 'river herring', are listed by the National Marine Fisheries

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Service as a Species of Concern^[1]. In addition, these species are important to both commercial and recreational fisheries and form an important forage base for other fish and animal species.

In Delaware, these species spawn between late March and mid-May. In water work should be avoided between March 15 and after June 1 to avoid affecting these species.

Also, alosines are very sensitive to changes in their natural environment so for shoreline work, efforts should be made to: 1) minimize noise transmitted into the water column (i.e. driving piles) so as not to interrupt their migration upstream, 2) minimize sedimentation, 3) maintain adequate shoreline buffers to protect water quality and 4) minimize the replacement of natural shoreline with hard materials (i.e. rip-rap, bulkheads, etc.) when feasible.

Mussels

The Nanticoke River watershed is the most diverse in the State with regard to freshwater mussels. Because freshwater mussels are filter feeders, and have a long lifespan and complex life cycle, they often serve as excellent indicators of water quality. Impacts to this population of freshwater mussels should be minimized by taking measures to decrease downstream sedimentation during construction activities.

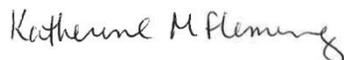
Ramp Closures

Please notify Edna Stetzar (Edna.Stetzar@state.de.us, 302-735-8654) at least two weeks prior to any necessary boat ramp closures so that a press release can be issued to inform fishing clubs that may have already scheduled tournaments.

We are continually updating our records on Delaware's rare, threatened and endangered species, unique natural communities and other significant natural resources. If the start of the project is delayed more than a year past the date of this letter, please contact us again for the latest information.

Please feel free to contact me with any questions or if you require additional information.

Sincerely,



Kate Fleming
Wildlife Biologist/Environmental Review Coordinator
(302) 735-8658; fax: (302) 653-3431; Kate.Fleming@state.de.us

(See invoice on next page)

^[1] **Species of Concern** are those species about which NOAA's National Marine Fisheries Service (NMFS) has some concerns regarding status and threats, but for which insufficient information is available to indicate a need to list the species under the Endangered Species Act (ESA).

INVOICE - PAYMENT DUE

It is our policy to charge a fee for this environmental review service. This letter constitutes an invoice for \$35.00 (\$35.00/hour for a minimum of one hour). Please make your check payable to “Delaware Division of Fish and Wildlife” and submit to:

DE Division of Fish and Wildlife
89 Kings Hwy.
Dover, DE 19901
ATTN: Pamela Severson

**In order for us to properly process your payment, you must reference
“AMAI 2018 DNREC Phillips Landing Boat Ramp” on your check.**

cc: Pamela Severson, Fish and Wildlife Coordination/Accounting; Code to 72900

ATTACHMENT No. 6

DNREC, DCMP – Consistency Determination



STATE OF DELAWARE
DEPARTMENT OF NATURAL RESOURCES & ENVIRONMENTAL CONTROL
OFFICE OF THE SECRETARY

DELAWARE COASTAL
MANAGEMENT PROGRAM

100 W. WATER STREET, SUITE 7B
DOVER, DELAWARE 19904

Phone: (302) 739- 9283
Fax: (302) 739-2048

May 1, 2018

Ken B. Eaton
Andrews, Miller and Associates
106 North Washington Street, Suite 103
Easton MD, 21601

**RE: Delaware Coastal Management Federal Consistency Certification/Determination
Phillips Landing Boat Ramp (FC 2018.0024)**

Dear Mr. Eaton,

The Delaware Coastal Management Program (DCMP) has received and reviewed your consistency determination for Phillips Landing Boat Ramp (FC 2018.0024). The project includes demolition and removal of an existing two lane boat ramp, which is reaching the end of its serviceable life, construction of a new three lane ramp to provide the public with recreational boating access to the Indian River Bay, and conversion of an existing single lane boat ramp into a kayak/canoe launch. Based upon our review and pursuant to National Oceanic & Atmospheric Administration regulations (15 CFR 930), the DCMP conditionally concurs with your consistency determination for the above referenced project. Our concurrence is based on the following conditions:

Policy 5.11.2 specific to Fish and Wildlife:

- 1) The Nanticoke River watershed is the most diverse in the state with regard to freshwater mussels. Impacts to this population of freshwater mussels should be minimized by taking measures to decrease downstream sedimentation, such as the use of coffer dams or turbidity curtains, during demolition and construction activities.

Policy 5.11.3 specific to Nongame and Endangered Species

- 2) Atlantic Sturgeon (*Acipenser oxyrinchus*), a federally endangered species, is known to occur in the Nanticoke River watershed. In-water work shall not occur from August 15 through November 1 to avoid impacts to this species.

- 3) Broad Creek is utilized during upstream migration by several fish species of concern. American shad (*Alosa sapidissima*), blueback herring (*Alosa aestivalis*), and alewife (*Alosa pseudoharengus*), collectively known as alosines, utilize the river during spawning and then as a nursery habitat for young-of-the-year. In-water work shall not occur between March 15 and June 1 to avoid impacts to these species

Policies 5.3.1.3 specific to Coastal Waters Management and 5.17.1.2 specific to Recreation and Tourism

- 4) Notify Edna Stetzar, DNREC Division of Fish and Wildlife, Fisheries Section (edna.stetzar@state.de.us or 302-739-9914), at least two weeks prior to boat ramp closures to allow sufficient time to issue a press release to inform users that may have already scheduled tournaments or other activities at the site.

Failure to comply with the conditions above will result in this concurrence henceforth being considered an objection. Under that scenario, the applicant is advised that pursuant to 15 CFR part 930, subpart H, and within 30 days from receipt of this letter, you may request that the Secretary of Commerce override the objection. In order to overturn a state objection, the Secretary must find that the activity is consistent with the objectives or purposes of the Coastal Management Act, or is necessary in the interest of national security. A copy of the request and supporting information must be sent to the Delaware Coastal Management Program and the federal permitting or licensing agency. The Secretary may collect fees for administering and processing your request.

If you have any questions please contact me, or Nicole Rodi of my staff, at (302) 739-9283.

Sincerely,



Kimberly B. Cole, Administrator
Delaware Coastal Management Program

KBC/nr

cc: File (FC 2018.0024)
Matt Jones- DNREC WLS
Kate Fleming -DNREC WSCR
Michael Yost- USACE Philadelphia District, Dover Office

ATTACHMENT No. 7

Time of Year Restriction Chart

Time of Year Restrictions
 Phillips Landing Boat Ramp
 Contract #NAT2018/Phillips.Landing

Species	TOY Restriction Start	TOY Restriction End	January	February	March	April	May	June	July	August	September	October	November	December
Atlantic Sturgeon	15-Aug	1-Nov												
American shad														
blueback herring	15-Mar	1-Jun												
alewife														

