

PROJECT MANUAL

HOLTS LANDING BOAT RAMP AT HOLTS LANDING STATE PARK NEAR OCEAN VIEW, DELAWARE

FOR

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

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

DNREC Contract No. 2015-HL-12
DNREC Project: H-2



Date: May 2015

Job No. 1945B001.D01

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**SERIES O – PROCUREMENT AND CONTRACT
REQUIREMENTS**

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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-4	Wingwall Details
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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 Parks and Recreation, Office of Design and Development will receive sealed bids in the Auditorium, DNREC Building, 89 Kings Highway, Dover Delaware 19901, until 3:00 p.m. local time on July 16, 2015 at which time they will be publicly opened and read aloud for the following Project: Holts Landing Boat Ramp in Holts Landing State Park; DNREC Contract No. 2015-HL-15; DNREC Project No. H-2

Project involves demolition of the existing decayed single-lane boat ramp with reconstruction of a dual-lane ramp.

A **MANDATORY** Pre-Bid Meeting will be held on June 30, 2015 at 11:30 a.m. local time at Holts Landing State Park near Ocean View 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 #H-2**" and addressed to:

Dept. of Natural Resources & Environmental Control
Division of Parks and Recreation
Office of Design and Development
89 Kings Highway, Dover DE 19901
Attn: Cindy A. Todd Phone Number: 302-739-9210

Prospective bidders may obtain bidding documents upon payment of \$25.00 for each disc at the above address. Checks are to be made payable to Division of Parks and Recreation. This payment is non-refundable and the disc/documents need not be returned.

Bidding documents will be available for review at the following locations: Division of Parks and Recreation; Delaware Contractors Association and Associated Builders and Contractors.

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.

David Small, Secretary

END OF SECTION 00 01 15

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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 AIA Document A101, Standard Form of Agreement between Owner and Contractor where the basis of payment is a STIPULATED SUM. 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.'
- 4.2 **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: In accordance with Delaware Code, Title 29, Section 6960, renovation projects whose total cost shall exceed \$15,000, and \$100,000 for new construction, 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 prevailing wage shall be the wage paid to a majority of employees performing similar work as reported in the Department's annual prevailing wage survey or in the absence of a majority, the average paid to all employees reported.
- 4.5.3 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.
- 4.5.4 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.
- 4.5.5 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. 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 and Bond, 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 AIA Document A305, 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 Unless otherwise required in the Bidding Documents, the Agreement for the Work will be written on AIA Document A101, Standard Form of Agreement Between Owner and Contractor Where the Basis of Payment is a Stipulated Sum.

END OF INSTRUCTIONS TO BIDDERS

NOT FOR BIDDING PURPOSES

HOLTS LANDING BOAT RAMP
at
HOLTS LANDING STATE PARK
Near
OCEAN VIEW, DELAWARE

DIVISION OF PARKS AND RECREATION CONTRACT No. 2015-HL-12

BID FORM

For Bids Due: July 01, 2015 @ 3:00 pm To: Dept. of Natural Resources and Environmental Control
Division of Parks and Recreation
Office of Design and Development
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:

LUMP SUM BID \$ _____

_____ Dollars (\$ _____)

HOLTS LANDING BOAT RAMP
at
HOLTS LANDING STATE PARK
Near
OCEAN VIEW, DELAWARE

DIVISION OF PARKS AND RECREATION CONTRACT No. 2015-HL-12

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	\$ _____	\$ _____
UNIT PRICE No. 2	Del. No. 57 Stone	\$ _____	\$ _____
UNIT PRICE No. 3	Del. No. 2 Stone	\$ _____	\$ _____
UNIT PRICE No. 4	Aluminum Sheet Piling	\$ _____	\$ _____
UNIT PRICE No. 5	Timber Piles	\$ _____	\$ _____

HOLTS LANDING BOAT RAMP
at
HOLTS LANDING STATE PARK
Near
OCEAN VIEW, DELAWARE
DIVISION OF PARKS AND RECREATION CONTRACT No. 2015-HL-12
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 sixty (60) 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 by December 31, 2015.

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.

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

(State of Corporation)

Business Address: _____

Witness: _____ By: _____
(Seal) (Authorized Signature)

ATTACHMENTS

Sub-Contractor List
Non-Collusion Statement
Bid Security
Delaware Business License
(Others as Required by Project Manual)

(Title)

Date: _____

HOLTS LANDING BOAT RAMP
at
HOLTS LANDING STATE PARK
Near
OCEAN VIEW, DELAWARE

DIVISION OF PARKS AND RECREATION CONTRACT No. 2015-HL-12

BID FORM

SUBCONTRACTOR LSIST

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.**

Subcontractor Category	Subcontractor	Address (City & State)	Subcontractors tax payer ID # or Delaware Business license #
1.			
2.			
3.			
4.			
5.			
6.			
7.			
8.			

HOLTS LANDING BOAT RAMP
at
HOLTS LANDING STATE PARK
Near
OCEAN VIEW, DELAWARE

DIVISION OF PARKS AND RECREATION CONTRACT No. 2015-HL-12
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 Management and Budget, Division of Facilities Management.

All the terms and conditions of the HOLTS 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 PUBLIC _____

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

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NOT FOR BIDDING PURPOSES

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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NOT FOR BIDDING PURPOSES

STANDARD FORM OF AGREEMENT BETWEEN OWNER AND CONTRACTOR A101-2007

The contract to be utilized on this project shall be the “Standard Form of Agreement Between Owner and Contractor” AIA Document A101-2007.

NOT FOR BIDDING PURPOSES

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NOT FOR BIDDING PURPOSES

**SECTION 005413 - SUPPLEMENT TO AGREEMENT BETWEEN OWNER AND CONTRACTOR
A101-2007**

The following supplements modify the "Standard Form of Agreement Between Owner and Contractor," AIA Document A101-2007. Where a portion of the Standard Form of Agreement is modified or deleted by the following, the unaltered portions of the Standard Form of Agreement shall remain in effect.

ARTICLE 5: PAYMENTS

5.1 PROGRESS PAYMENTS

5.1.3 Delete paragraph 5.1.3 in its entirety and replace with the following:

"Provided that a valid Application for Payment is received by the Architect that meets all requirements of the Contract, payment shall be made by the Owner not later than 30 days after the Owner receives the valid Application for Payment."

ARTICLE 6: DISPUTE RESOLUTION

6.2 BINDING DISPUTE RESOLUTION

Check Other – and add the following sentence:

"Any remedies available in law or in equity."

ARTICLE 8: MISCELLANEOUS PROVISIONS

8.2 Insert the following:

"Payments are due 30 days after receipt of a valid Application for Payment. After that 30 day period, interest may be charged at the rate of 1% per month not to exceed 12% per annum."

Delete paragraph 8.5 in its entirety and replace with the following:

"The Contractor's representative shall not be changed without ten days written notice to the Owner."

END OF SUPPLEMENT TO AGREEMENT BETWEEN OWNER AND CONTRACTOR

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NOT FOR BIDDING PURPOSES

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

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: _____ By: _____ (SEAL)
Name: _____
(Corporate Seal) Title: _____

SURETY

Name: _____

Witness or Attest: Address: _____

Name: _____ By: _____ (SEAL)
Name: _____
(Corporate Seal) Title: _____

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.

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: _____

Application and Certificate for Payment

TO OWNER: PROJECT: BHJ
FROM CONTRACTOR: Bernardon Haber Holloway Architects
 VIA ARCHITECT: PC
 Three Mill Road, Suite 211
 Wilmington, Delaware 19806

APPLICATION NO: 001
PERIOD TO:
CONTRACT FOR: General Construction
CONTRACT DATE:
PROJECT NOS: / /

Distribution to:
 OWNER: ☐
 ARCHITECT: ☐
 CONTRACTOR: ☐
 FIELD: ☐
 OTHER: ☐

CONTRACTOR'S APPLICATION FOR PAYMENT

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

1. ORIGINAL CONTRACT SUM \$ 0.00
2. Net change by Change Orders \$ 0.00
3. CONTRACT SUM TO DATE (Line 1 + 2) \$ 0.00
4. TOTAL COMPLETED & STORED TO DATE (Column G on G703) \$ 0.00

5. RETAINAGE:

- a. 0 % of Completed Work
(Column D + E on G703) \$ 0.00
- b. 0 % of Stored Material
(Column F on G703) \$ 0.00

Total Retainage (Lines 5a + 5b or Total in Column I of G703) \$ 0.00

6. TOTAL EARNED LESS RETAINAGE \$ 0.00

(Line 4 Less Line 5 Total)

7. LESS PREVIOUS CERTIFICATES FOR PAYMENT \$ 0.00

(Line 6 from prior Certificate)

8. CURRENT PAYMENT DUE \$ 0.00

9. BALANCE TO FINISH, INCLUDING RETAINAGE

(Line 3 less Line 6) \$ 0.00

CHANGE ORDER SUMMARY	ADDITIONS	DEDUCTIONS
Total changes approved in previous months by Owner	\$ 0.00	\$ 0.00
Total approved this Month	\$ 0.00	\$ 0.00
TOTALS	\$ 0.00	\$ 0.00
NET CHANGES by Change Order	\$	0.00

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

CONTRACTOR:

Date: _____

By: _____

State of: _____

County of: _____

Subscribed and sworn to before me this _____ day of _____

Notary Public

My Commission expires: _____

ARCHITECT'S CERTIFICATE FOR PAYMENT

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

AMOUNT CERTIFIED \$ 0.00

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

ARCHITECT:

By: _____

Date: _____

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

AIA[®] Document G703[™] – 1992

Continuation Sheet

AIA Document G702, APPLICATION AND CERTIFICATION FOR PAYMENT, containing Contractor's signed certification is attached.

In tabulations below, amounts are stated to the nearest dollar.

Use Column I on Contracts where variable retainage for line items may apply.

APPLICATION NO: 001

APPLICATION DATE:

PERIOD TO:

ARCHITECT'S PROJECT NO:

A ITEM NO.	B DESCRIPTION OF WORK	C SCHEDULED VALUE	D WORK COMPLETED		E THIS PERIOD	F MATERIALS PRESENTLY STORED (NOT IN D OR E)	G TOTAL COMPLETED AND STORED TO DATE (D+E+F)	H BALANCE TO FINISH (C - G)	I RETAINAGE (IF VARIABLE RATE)
			FROM PREVIOUS APPLICATION (D + E)						
		\$ 0.00	\$ 0.00		\$ 0.00	\$ 0.00	\$ 0.00	\$ 0.00	\$ 0.00
	GRAND TOTAL								

STATE OF DELAWARE
DIVISION OF FACILITIES MANAGEMENT

GENERAL CONDITIONS

**TO THE
CONTRACT**

The General Conditions of this Contract are as stated in the American Institute of Architects Document AIA A201 (2007 Edition) entitled General Conditions of the Contract for Construction and is part of this project manual as if herein written in full.

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NOT FOR BIDDING PURPOSES

SECTION 007313 - SUPPLEMENTARY GENERAL CONDITIONS A201-2007

The following supplements modify the “General Conditions of the Contract for Construction,” AIA Document A201-2007. Where a portion of the General Conditions is modified or deleted by the Supplementary Conditions, the unaltered portions of the General Conditions shall remain in effect.

TABLE OF ARTICLES

1. GENERAL PROVISIONS
2. OWNER
3. CONTRACTOR
4. ADMINISTRATION OF THE CONTRACT
5. SUBCONTRACTORS
6. CONSTRUCTION BY OWNER OR BY SEPARATE CONTRACTORS
7. CHANGES IN THE WORK
8. TIME
9. PAYMENTS AND COMPLETION
10. PROTECTION OF PERSONS AND PROPERTY
11. INSURANCE AND BONDS
12. UNCOVERING AND CORRECTION OF WORK
13. MISCELLANEOUS PROVISIONS
14. TERMINATION OR SUSPENSION OF THE CONTRACT
15. CLAIMS AND DISPUTES

ARTICLE 1: GENERAL PROVISIONS

1.1 BASIC DEFINITIONS

1.1.1 THE CONTRACT DOCUMENTS

Delete the last sentence in its entirety and replace with the following:

“The Contract Documents also include Advertisement for Bid, Instructions to Bidder, sample forms, the Bid Form, the Contractor’s completed Bid and the Award Letter.”

Add the following Paragraph:

1.1.1.1 In the event of conflict or discrepancies among the Contract Documents, the Documents prepared by the State of Delaware, Division of Parks and Recreation shall take precedence over all other documents.

1.2 CORRELATION AND INTENT OF THE CONTRACT DOCUMENTS

Add the following Paragraphs:

1.2.4 In the case of an inconsistency between the Drawings and the Specifications, or within either document not clarified by addendum, the better quality or greater quantity of work shall be provided in accordance with the Architect’s interpretation.

1.2.5 The word “PROVIDE” as used in the Contract Documents shall mean “FURNISH AND INSTALL” and shall include, without limitation, all labor, materials, equipment, transportation, services and other items required to complete the Work.

1.2.6 The word “PRODUCT” as used in the Contract Documents means all materials, systems and equipment.

1.5 OWNERSHIP AND USE OF DRAWINGS, SPECIFICATIONS AND OTHER INSTRUMENTS OF SERVICE

Delete Paragraph 1.5.1 in its entirety and replace with the following:

“All pre-design studies, drawings, specifications and other documents, including those in electronic form, prepared by the Architect under this Agreement are, and shall remain, the property of the Owner whether the Project for which they are made is executed or not. Such documents may be used by the Owner to construct one or more like Projects without the approval of, or additional compensation to, the Architect. The Contractor, Subcontractors, Sub-subcontractors and Material or Equipment Suppliers are authorized to use and reproduce applicable portions of the Drawings, Specifications and other documents prepared by the Architect and the Architect’s consultants appropriate to and for use in the execution of their Work under the Contract Documents. They are not to be used by the Contractor or any Subcontractor, Sub-subcontractor or Material and Equipment Supplier on

other Projects or for additions to this Project outside the scope of the Work without the specific written consent of the Owner, Architect and Architect's consultants.

The Architect shall not be liable for injury or damage resulting from the re-use of drawings and specifications if the Architect is not involved in the re-use Project. Prior to re-use of construction documents for a Project in which the Architect is not also involved, the Owner will remove from such documents all identification of the original Architect, including name, address and professional seal or stamp."

Delete Paragraph 1.5.2 in its entirety.

ARTICLE 2: OWNER

2.2 INFORMATION AND SERVICES REQUIRED OF THE OWNER

To Subparagraph 2.2.3 – Add the following sentence:

"The Contractor, at their expense shall bear the costs to accurately identify the location of all underground utilities in the area of their excavation and shall bear all cost for any repairs required, out of failure to accurately identify said utilities."

Delete Subparagraph 2.2.5 in its entirety and substitute the following:

2.2.5 The Contractor shall be furnished free of charge a specified number of copies of the Drawings and Project Manuals. Refer to Specification Section SUMMARY OF WORK. Additional sets will be furnished at the cost of reproduction, postage and handling.

ARTICLE 3: CONTRACTOR

3.2 REVIEW OF CONTRACT DOCUMENTS AND FIELD CONDITIONS BY CONTRACTOR

Amend Paragraph 3.2.2 to state that any errors, inconsistencies or omissions discovered shall be reported to the Architect and Owner immediately.

Delete the third sentence in Paragraph 3.2.3.

3.3 SUPERVISION AND CONSTRUCTION PROCEDURES

Add the following Paragraphs:

3.3.2.1 The Contractor shall immediately remove from the Work, whenever requested to do so by the Owner, any person who is considered by the Owner or Architect to be incompetent or disposed to be so disorderly, or who for any reason is not satisfactory to the Owner, and that person shall not again be employed on the Work without the consent of the Owner or the Architect.

3.3.4 The Contractor must provide suitable storage facilities at the Site for the proper protection and safe storage of their materials. Consult the Owner and the Architect before storing any materials.

3.3.5 When any room is used as a shop, storeroom, office, etc., by the Contractor or Subcontractor(s) during the construction of the Work, the Contractor making use of these areas will be held responsible for any repairs, patching or cleaning arising from such use.

3.4 LABOR AND MATERIALS

Add the Following Paragraphs:

3.4.4 Before starting the Work, each Contractor shall carefully examine all preparatory Work that has been executed to receive their Work. Check carefully, by whatever means are required, to insure that its Work and adjacent, related Work, will finish to proper contours, planes and levels. Promptly notify the General Contractor/Construction Manager of any defects or imperfections in preparatory Work which will in any way affect satisfactory completion of its Work. Absence of such notification will be construed as an acceptance of preparatory Work and later claims of defects will not be recognized.

3.4.5 Under no circumstances shall the Contractor's Work proceed prior to preparatory Work having been completely cured, dried and/or otherwise made satisfactory to receive this Work. Responsibility for timely installation of all materials rests solely with the Contractor responsible for that Work, who shall maintain coordination at all times.

3.5

3.5 WARRANTY

Add the following Paragraphs:

3.5.1 The Contractor will guarantee all materials and workmanship against original defects, except injury from proper and usual wear when used for the purpose intended, for two years after Acceptance by the Owner, and will maintain all items in perfect condition during the period of guarantee.

3.5.2 Defects appearing during the period of guarantee will be made good by the Contractor at his expense upon demand of the Owner, it being required that all work will be in perfect condition when the period of guarantee will have elapsed.

3.5.3 In addition to the General Guarantee there are other guarantees required for certain items for different periods of time than the two years as above, and are particularly so stated in that part of the specifications referring to same. The said guarantees will commence at the same time as the General Guarantee.

3.5.4 If the Contractor fails to remedy any failure, defect or damage within a reasonable time after receipt of notice, the Owner will have the right to replace,

repair, or otherwise remedy the failure, defect or damage at the Contractor's expense.

3.11 DOCUMENTS AND SAMPLES AT THE SITE

Add the following Paragraphs:

- 3.11.1 During the course of the Work, the Contractor shall maintain a record set of drawings on which the Contractor shall mark the actual physical location of all piping, valves, equipment, conduit, outlets, access panels, controls, actuators, including all appurtenances that will be concealed once construction is complete, etc., including all invert elevations.
- 3.11.2 At the completion of the project, the Contractor shall obtain a set of reproducible drawings from the Architect, and neatly transfer all information outlined in 3.11.1 to provide a complete record of the as-built conditions.
- 3.11.3 The Contractor shall provide two (2) prints of the as-built conditions, along with the reproducible drawings themselves, to the Owner and one (1) set to the Architect. In addition, attach one complete set to each of the Operating and Maintenance Instructions/Manuals.

3.13 USE OF SITE

Add the following new subparagraphs:

- 3.13.1 The Contractor will not load nor permit any part of the structure to be loaded with weight that will endanger the structure.
- 3.13.2 Storage areas will be defined for the storage of the Contractor's materials and equipment and he shall confine his materials, equipment, and operations of his workmen to such limits as indicated by the Owner. Unless otherwise indicated in the Specifications, the storage areas will be outdoors, and the contractor shall provide whatever shelter is necessary for his storage and fabricating needs. No workmen shall trespass within areas or buildings of the Owner other than those related to the Work of the Contract. The Contractor shall rigidly enforce this regulation. Any materials, equipment or temporary structures belonging to the Contractor shall be moved when so directed by the Owner to permit the execution of the work of others in connection with the Project.

- 3.17 In the second sentence of the paragraph, insert "indemnify" between "shall" and "hold".

ARTICLE 4: ADMINISTRATION OF THE CONTRACT

4.2 ADMINISTRATION OF THE CONTRACT

Delete the first sentence of Paragraph 4.2.7 and replace with the following:

The Architect will review and approve or take other appropriate action upon the Contractor's submittals such as Shop Drawings, Product Data and Samples for the purpose of checking for conformance with the Contract Documents.

Delete the second sentence of Paragraph 4.2.7 and replace with the following:

The Architect's action will be taken with such reasonable promptness as to cause no delay in the Work in the activities of the Owner, Contractor or separate Contractors, while allowing sufficient time in the Owner's professional judgment to permit adequate review.

Add the following Paragraph:

4.2.10.1 There will be no full-time project representative provided by the Owner or Architect on this project.

Add to Paragraph 4.2.13 "and in compliance with all local requirements." to the end of the sentence

ARTICLE 5: SUBCONTRACTORS

5.2 AWARD OF SUBCONTRACTS AND OTHER CONTRACTS FOR PORTIONS OF THE WORK

Delete Paragraph 5.2.3 in its entirety and replace with the following:

5.2.3 If the Owner or Architect has reasonable objection to a person or entity proposed by the Contractor, the Contractor shall propose another to whom the Owner or Architect has no reasonable objection, subject to the statutory requirements of 29 Delaware Code § 6962(d)(10)b.3 and 4.

ARTICLE 6: CONSTRUCTION BY OWNER OR BY SEPARATE CONTRACTORS

6.1 OWNER'S RIGHT TO PERFORM CONSTRUCTION AND TO AWARD SEPARATE CONTRACTS

Delete Paragraph 6.1.4 in its entirety.

6.2 MUTUAL RESPONSIBILITY

6.2.3 In the second sentence, strike the word "shall" and insert the word "may".

Add the following Paragraph to Article 6:

6.4 DEPARTMENT FURNISHED MATERIALS AND EQUIPMENT

6.4.1 If any materials or equipment are to be furnished by the Owner for the Work, they will be so specified in the Contract Documents. Unless otherwise specified, it shall be the Contractor's responsibility to locate, receive, handle and store, if necessary, any item of Owner furnished material or equipment which he is required by the

Contract to install, erect or handle in any way, from the time it is received by the Contractor at the jobsite or other Owner approved location until completion of the Work in accordance with the Contract Documents. Damaged or lost Owner furnished items shall be repaired or replaced by the Contractor without additional cost to the Owner. Refer to Specification Section SUMMARY OF WORK for list of Owner furnished materials and equipment.

ARTICLE 7: CHANGES IN THE WORK

(SEE ARTICLE 7: CHANGES IN WORK IN THE GENERAL REQUIREMENTS)

ARTICLE 8: TIME

8.2 PROGRESS AND COMPLETION

Add the following Paragraphs:

8.2.1.1 Refer to Specification Section SUMMARY OF WORK for Contract time requirements.

8.2.4 If the Work falls behind the Progress Schedule as submitted by the Contractor, the Contractor shall employ additional labor and/or equipment necessary to bring the Work into compliance with the Progress Schedule at no additional cost to the Owner.

8.3 DELAYS AND EXTENSION OF TIME

8.3.1 Strike "arbitration" and insert "remedies at law or in equity".

Add the following Paragraph:

8.3.2.1 The Contractor shall update the status of the suspension, delay, or interruption of the Work with each Application for Payment. (The Contractor shall report the termination of such cause immediately upon the termination thereof.) Failure to comply with this procedure shall constitute a waiver for any claim for adjustment of time or price based upon said cause.

Delete Paragraph 8.3.3 in its entirety and replace with the following:

8.3.3 Except in the case of a suspension of the Work directed by the Owner, an extension of time under the provisions of Paragraph 8.3.1 shall be the Contractor's sole remedy in the progress of the Work and there shall be no payment or compensation to the Contractor for any expense or damage resulting from the delay.

Add the following Paragraph:

8.3.4 By permitting the Contractor to work after the expired time for completion of the project, the Owner does not waive their rights under the Contract.

ARTICLE 9: PAYMENTS AND COMPLETION

9.2 SCHEDULE OF VALUES

Add the following Paragraphs:

9.2.1 The Schedule of Values shall be submitted using AIA Document G702, Continuation Sheet to G703.

9.2.2 The Schedule of Values is to include a line item for Project Closeout Document Submittal. The value of this item is to be no less than 1% of the initial contract amount.

9.3 APPLICATIONS FOR PAYMENT

Add the following Paragraph:

9.3.1.3 Application for Payment shall be submitted on AIA Document G702 "Application and Certificate for Payment", supported by AIA Document G703 "Continuation Sheet". Said Applications shall be fully executed and notarized.

Add the following Paragraphs:

9.3.4 Until Closeout Documents have been received and outstanding items completed the Owner will pay 95% (ninety-five percent) of the amount due the Contractor on account of progress payments.

9.3.5 The Contractor shall provide a current and updated Progress Schedule to the Architect with each Application for Payment. Failure to provide Schedule will be just cause for rejection of Application for Payment.

9.5 DECISIONS TO WITHHOLD CERTIFICATION

Add the following to 9.5.1:

- .8 failure to provide a current Progress Schedule;
- .9 a lien or attachment is filed;
- 10 failure to comply with mandatory requirements for maintaining Record Documents.

9.6 PROGRESS PAYMENTS

Delete Paragraph 9.6.1 in its entirety and replace with the following:

9.6.1 After the Architect has approved and issued a Certificate for Payment, payment shall be made by the Owner within 30 days after Owner's receipt of the Certificate for Payment.

9.7 FAILURE OF PAYMENT

In first sentence, strike “seven” and insert “thirty (30)”. Also strike “binding dispute resolution” and insert “remedies at law or in equity”.

9.8 SUBSTANTIAL COMPLETION

To Subparagraph 9.8.3 - Add the following sentence:

“If the Architect is required to make more than 2 inspections of the same portion of work, the Contractor shall be responsible for all costs associated with subsequent inspections including but not limited to any Architect’s fees.”

9.8.5 In the second sentence, strike “shall” and insert “may”.

ARTICLE 10: PROTECTION OF PERSONS AND PROPERTY

10.1 SAFETY PRECAUTIONS AND PROGRAMS

Add the following Paragraphs:

10.1.1.1.1 Each Contractor shall develop a safety program in accordance with the Occupational Safety and Health Act of 1970. A copy of said plan shall be furnished to the Owner and Architect prior to the commencement of that Contractor’s Work.

10.1.2 Each Contractor shall appoint a Safety Representative. Safety Representatives shall be someone who is on site on a full time basis. If deemed necessary by the Owner or Architect, Contractor Safety meetings will be scheduled. The attendance of all Safety Representatives will be required. Minutes will be recorded of said meetings by the Contractor and will be distributed to all parties as well as posted in all job offices/trailers etc.

10.2 SAFETY OF PERSONS AND PROPERTY

Add the following Paragraph:

10.2.4.1 As required in the Hazardous Chemical Act of June 1984, all vendors supplying any material 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 caution warning 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 foreseeable emergency situations. Material Safety Data Sheets shall be provided directly to the Owner, along with the shipping slips that include those products.

10.3 HAZARDOUS MATERIALS

Delete Paragraph 10.3.3 in its entirety.

Delete Paragraph 10.3.6 in its entirety.

ARTICLE 11: INSURANCE AND BONDS

11.1 CONTRACTOR'S LIABILITY INSURANCE

11.1.4 Strike "the Owner" immediately following "(1)" and strike "and (2) the Owner as an additional insured for claims caused in whole or in part by the Contractor's negligent acts or omissions during the Contractor's completed operations."

11.2 OWNER'S LIABILITY INSURANCE

Delete Paragraph 11.2 in its entirety.

11.3 PROPERTY INSURANCE

Delete Paragraph 11.3 in its entirety and replace with the following:

11.3 The State will not provide Builder's All Risk Insurance for the Project. The Contractor and all Subcontractors shall provide property coverage for their tools and equipment, as necessary. Any mandatory deductible required by the Contractor's Insurance shall be the responsibility of the Contractor.

11.4 PERFORMANCE BOND AND PAYMENT BOND

11.4.1 Add the following sentence: "The bonds will conform to those forms approved by the Office of Management and Budget."

ARTICLE 12: UNCOVERING AND CORRECTION OF WORK

12.2.2 AFTER SUBSTANTIAL COMPLETION

Add the following Paragraph:

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

12.2.2.1 Strike "one" and insert "two".

12.2.2.2 Strike "one" and insert "two".

12.2.2.3 Strike "one" and insert "two".

12.2.5 In second sentence, strike "one" and insert "two".

ARTICLE 13: MISCELLANEOUS PROVISIONS

13.1 GOVERNING LAW

Strike “except that, if the parties have selected arbitration as the method of binding dispute resolution, the Federal Arbitration Act shall govern Section 15.4.”

13.6 INTEREST

Strike “the date payment is due at such rate as the parties may agree upon in writing or, in the absence thereof, at the legal rate prevailing from time to time at the place where the Project is located.” Insert “30 days of presentment of the authorized Certificate of Payment at the annual rate of 12% or 1% per month.

13.7 TIME LIMITS ON CLAIMS

Strike the last sentence.

Add the following Paragraph:

13.8 CONFLICTS WITH FEDERAL STATUTES OR REGULATIONS

13.8.1 If any provision, specifications or requirement of the Contract Documents conflict or is inconsistent with any statute, law or regulation of the government of the United State of America, the Contractor shall notify the Architect and Owner immediately upon discovery.

ARTICLE 14: TERMINATION OR SUSPENSION OF THE CONTRACT

14.4 TERMINATION BY THE OWNER FOR CONVENIENCE

Delete Paragraph 14.4.3 in its entirety and replace with the following:

14.4.3 In case of such termination for the Owner’s convenience, the Contractor shall be entitled to receive payment for Work executed, and cost incurred by reason of such termination along with reasonable overhead.

ARTICLE 15: CLAIMS AND DISPUTES

15.1.2 Throughout the Paragraph strike “21” and insert “45”.

15.1.6 CLAIMS FOR CONSEQUENTIAL DAMAGES

Delete Paragraph 15.1.6 in its entirety.

15.2 INITIAL DECISION

Delete Paragraph 15.2.5 in its entirety and replace with the following:

15.2.5 The Architect will approve or reject Claims by written decision, which shall state the reasons therefore and shall notify the parties of any change in the

Contract Sum or Contract Time or both. The approval or rejection of a Claim by the Architect shall be subject to mediation and other remedies at law or in equity.

Delete Paragraph 15.2.6 and its subparagraphs in their entirety.

15.3 **MEDIATION**

15.3.1 Strike “binding dispute resolution” and insert “any or all remedies at law or in equity”.

15.3.2 In the first sentence, delete “administered by the American Arbitration Association in accordance with its Construction Industry Mediation Procedure in effect on the date of the Agreement,” Strike “binding dispute resolution” and insert “remedies at law and in equity”.

15.4 **ARBITRATION**

Delete Paragraph 15.4 and its sub-sections in its entirety.

END OF SECTION 007313

NOT FOR BIDDING PURPOSES

STATE OF DELAWARE
DEPARTMENT OF LABOR
DIVISION OF INDUSTRIAL AFFAIRS
OFFICE OF LABOR LAW ENFORCEMENT
PHONE: (302) 451-3423

Mailing Address:
225 CORPORATE BOULEVARD
SUITE 104
NEWARK, DE 19702

Located at:
225 CORPORATE BOULEVARD
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NEWARK, DE 19702

PREVAILING WAGES FOR HEAVY CONSTRUCTION EFFECTIVE MARCH 14, 2014

CLASSIFICATION	NEW CASTLE	KENT	SUSSEX
ASBESTOS WORKERS	21.14	18.60	40.43
BOILERMAKERS	71.87	30.73	56.37
BRICKLAYERS	44.98	22.19	23.83
CARPENTERS	50.91	50.91	40.47
CEMENT FINISHERS	27.30	23.30	16.00
ELECTRICAL LINE WORKERS	62.75	26.80	62.75
ELECTRICIANS	62.10	62.10	62.10
GLAZIERS	19.54	16.96	11.48
INSULATORS	51.48	51.48	51.48
IRON WORKERS	58.70	25.54	55.78
LABORERS	39.75	39.75	39.75
MILLWRIGHTS	63.53	63.53	50.10
PAINTERS	60.64	60.64	60.64
PILEDRIVERS	69.32	37.64	29.30
PLASTERERS	18.40	15.97	10.80
PLUMBERS/PIPEFITTERS/STEAMFITTERS	74.03	21.62	17.12
POWER EQUIPMENT OPERATORS	58.31	58.31	58.31
SHEET METAL WORKERS	29.40	18.23	17.13
SPRINKLER FITTERS	31.68	11.99	9.93
TRUCK DRIVERS	31.02	19.72	21.36

CERTIFIED: 1/20/15 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) 451-3423.

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

PROJECT: **Holts Landing State Boat Ramp Reconstruction, Sussex County**

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NOT FOR BIDDING PURPOSES

DELAWARE
PREVAILING WAGE
REGULATIONS



STATE OF DELAWARE
DEPARTMENT OF LABOR
OFFICE OF LABOR LAW ENFORCEMENT
225 PENCADER BLVD., STE. 104
NEWARK, DE 19702
(302) 451-3423

Adopted: April 3, 1992
Amended: July 1, 1993
Amended: September 15, 1993
Amended: December 28, 1994
Amended: October 15, 1995
Amended: January 9, 1998
Amended: December 12, 2000
Amended: July 11, 2001
Amended: October 13, 2003

Last Edited: February 2, 2009

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REGULATIONS PREVAILING WAGES

Pursuant to 29 Del.C. §8503(7), the Department of Labor, State of Delaware, hereby promulgates the following rules and regulations to implement the provisions of 29 Del.C. §6960, "Wage provisions in public construction contracts." These regulations supersede Regulations PW101, entitled "Regulations Concerning Apprentices and Supportive Service Program Trainees Employed on State Projects" (adopted April 11, 1978 and repealed April 5, 1992) and "Delaware Prevailing Wage Regulations" (adopted April 5, 1992 as amended September 15, 1993).

I. INTRODUCTION

The prevailing wage law states that the specifications for every contract or aggregate of contracts relating to a public works project in excess of \$100,000 for new construction (including painting and decorating) or \$15,000 for alteration, repair, renovation, rehabilitation, demolition or reconstruction (including painting and decorating of building or works) to which this State or any subdivision thereof is a party and for which the State appropriated any part of the funds and which requires or involves the employment of mechanics and/or laborers shall contain a provision stating the minimum wages to be paid various classes of laborers and mechanics which shall be based upon the wages that will be determined by the Delaware Department of Labor, Division of Industrial Affairs, to be prevailing in the county in which the work is to be performed.

II. ADMINISTRATION

The prevailing wage law assigns to the Department of Labor the responsibility for predetermining wage rates prevailing for the corresponding classes of laborers and mechanics employed on projects similar to the contract work in the counties where the work is to be performed. The Secretary of Labor has delegated the prescribed functions of the Department to the Administrator of the Office of Labor Law Enforcement of the Division of Industrial Affairs. The Office of Labor Law Enforcement has responsibility for enforcing and determining the prevailing rates, and ensuring that prevailing wages are paid in accordance with the provisions of the law.

Enforcement responsibility includes the conducting of investigations regarding compliance with the law; settling, adjusting and adjudicating, by informal means, cases involving the payment of prevailing wages; coordinating the enforcement activities of the various State agencies having contract compliance and enforcement responsibilities; requiring the withholding of payments to employers who have failed to pay prevailing wages; and recommending the commencement of legal proceedings against those failing to comply with the law.

III. CONCEPTS AND DEFINITIONS

This section presents definitions and explanations to provide a basic understanding of elements inherent in collecting wage data and issuing wage determinations, and enforcing prevailing rates.

- A. **Activity Covered.** 29 Del.C. §6960 applies to every contract or aggregate of contracts relating to a public works project in excess of \$100,000 for new construction (including painting or decorating) or \$15,000 for alteration, repair, renovation, rehabilitation, demolition or reconstruction (including painting and decorating of building or works) to which this State or any subdivision thereof is a party and for which the State appropriated any part of the funds and which requires or involves the employment of mechanics and/or laborers.
- B. **"Building" or "Work".** The terms "building" or "work" generally include construction activity as distinguished from manufacturing, furnishing of materials, or servicing and maintenance work. The terms include without limitation, buildings, structures, and improvements of all types, such as bridges, dams, plants, highways, parkways, streets, tunnels, sewers, mains, power lines, pumping stations, heavy generators, railways, airports, terminals, docks, piers, wharves, buoys, jetties, breakwaters, levees, canals, dredging, shoring, rehabilitation and reactivation of plants, scaffolding, drilling, blasting, excavating, clearing and landscaping. The manufacture or furnishing of materials, articles, supplies or equipment is not a "building" or "work" within the meaning of the regulations unless conducted at the site of such a building or work.
- C. **Laborers and Mechanics.** The terms "laborer" and "mechanic" include at least those workers whose duties are manual or physical in nature (including those workers who use tools or who are performing the work of a trade), as distinguished from mental or managerial. The term "laborer" or "mechanic" includes apprentices and Supportive Service Program (SSP) trainees. The term does not apply to workers whose duties are primarily administrative, executive, or clerical, rather than manual. Persons employed in a bona fide executive, administrative, or professional capacity are not deemed to be laborers or mechanics. Working foremen who devote more than twenty (20) percent of their time during a workweek to mechanic or laborer duties are deemed to be laborers and mechanics for the time so spent.

The terms "laborers" and "mechanics" do not apply to watchmen, guards, dispatchers, or weighmasters. The following classifications of workers are recognized by the Department:

- Asbestos Workers
- Boilermakers
- Bricklayers
- Carpenters
- Cement Finishers
- Electrical Line Worker
- Electricians
- Elevator Constructors
- Glaziers
- Insulators
- Iron Workers
- Laborers
- Millwrights
- Painters

Pile Driver
Plasterers
Plumbers/Pipefitters/Steamfitters
Power Equipment Operators
Roofers – Composition
Roofers – Shingle, Slate and Tile
Sheet Metal Workers
Soft Floor Layers
Sprinkler Fitters
Terrazzo/Marble/Tile Setters
Terrazzo/Marble/Tile Finishers
Truck Drivers

Definitions for each classification are contained in a separate document entitled "Classifications of Workers Under Delaware's Prevailing Wage Law." Workers shall be classified by the Department of Labor with the advice of the Prevailing Wage Advisory Council members. Classification determinations shall be recorded by the Department as they are made and shall be published annually.

Laborers and mechanics are to be paid the appropriate wage rates for the classification of work actually performed, without regard to skill.

D. Apprentices and Supportive Service Program Trainees.

1. Definitions. As used in this section:

- a. The term "**apprentice**" means persons who are indentured and employed in a bona fide apprenticeship program and individually registered by the program sponsor with the Delaware Department of Labor.
- b. The term "**apprenticeship agreement**" means a written agreement between an apprentice
- c. and either his/her employer or a joint apprenticeship committee which contains the terms and conditions of the employment and training of the apprentice.
- d. The term "**apprenticeship program**" means a complete plan of terms and conditions for the employment and training of apprentices.
- e. The term "**joint apprenticeship committee**" means a local committee equally representative of employers and employees which has been established by a group of employers with a bona fide bargaining agent or agents to direct the training of apprentices with whom it has made agreements.
- f. The term "**SSP Trainee**" or "**trainee**" means a participant in the "Supportive Service Program" mandated by the Federal Highway Administration for federally aided state highway projects.
- g. The term "**registration**" means the approval by the Department of Labor of an apprenticeship program or agreement as meeting the basic standards adopted by the Bureau of Apprenticeship and Training, United States Department of Labor. The term "registration" for SSP Trainees means the individual registration of a participant in a program which has received prior approval, evidenced by formal certification by the U.S. Department of Labor, Employment and Training Administration.

2. Employment of Apprentices and SSP Trainees on State Projects.

- a. Apprentices and SSP Trainees will be permitted to work as such on State contracts in excess of \$100,000 for new construction or \$15,000 for alteration, repair, renovation, rehabilitation, demolition or reconstruction only when they are registered with the Department of Labor or an approved SSP Training

Program. **b.** The mechanic's rate on all such State contracts is that rate determined by the Department of Labor. The percentage of the mechanic's rate that the registered apprentice or SSP Trainee receives will be the percentage that the apprentice or trainee qualifies for under the terms of the individual's formal Apprenticeship/Trainee agreement.

- b. Any person employed at an apprentice or trainee wage rate who is not registered as above, shall be paid the wage rate determined by the Department of Labor for the classification of work (s)he actually performed.
- c. The ratio of apprentices to mechanics on the site of any work covered by 29 Del.C. §6960 in any craft classification may not be greater than the ratio permitted to the contractor for the entire workforce under the registered apprenticeship program. Any apprentice performing work on the job site in excess of the ratio permitted under the registered program must be paid not less than the wage rate that the applicable wage determination specifies for the work (s)he actually performs.
- d. Entitlement to mechanic's wages shall be based upon seniority in the apprenticeship program or (in the case of equal seniority) seniority on the job site.

3. Records.

- a. Every employer who employs an apprentice or SSP trainee under this part must keep the records required by Title 19, Delaware Code, Chapters 9 and 11, including designation of apprentices or trainees on the payroll. In addition, every employer who employs apprentices or SSP trainees shall preserve the agreements under which the individuals were employed.
- b. Every joint apprenticeship committee or SSP Program sponsor shall keep a record of the cumulative amount of work experience gained by the apprentice or trainee.
- c. Every joint apprenticeship committee shall keep a list of the employers to whom the apprentice was assigned and the period of time (s)he worked for each. Every SSP Program sponsor shall keep a list of the projects to which the trainee was assigned and the period of time (s)he worked on each.
- d. The records required by paragraphs (a), (b), and (c) of this section shall be maintained and preserved for at least three (3) years from the termination of the apprenticeship or training period. Such records shall be kept safe and accessible at the place or places of employment or at a central location where such records are customarily maintained. All records shall be available at any time for inspection and copying by the Department of Labor.

E. Working Foremen. 29 Del.C. §6960 does not apply to (and therefore survey data are not collected for) workers whose duties are primarily administrative, executive or clerical, rather than manual. However, working foremen who devote more than twenty (20) percent of their time during a workweek to mechanic or laborer duties are laborers and mechanics for the time so spent and data will be collected for the hours spent as laborers or mechanics.

F. Helpers. Helper classifications are not recognized by the Department of Labor. All laborers and mechanics are to be paid the appropriate wage rate for the classification of work actually performed, without regard to skill.

G. Construction Projects. In the wage determination process, the term "project" refers to construction activity as distinguished from manufacturing, furnishing of materials, or servicing and maintenance work away from the site of the work and consists of all construction necessary to complete a facility regardless of the number of contracts involved so long as all contracts awarded are closely related in the purpose, time and

place. For example, demolition or site clearing work preparatory to construction is considered a part of the project.

1. **Character Similar.** 29 Del.C. §6960 requires the predetermination of wage rates which are prevailing on projects of a "character similar to the construction work." As a general rule, the Department identifies projects by end use type and classifies them into three major categories:

- a. **Building Construction.** Building construction generally is the construction of sheltered enclosures with walk-in access for the purpose of housing persons, machinery, equipment, or supplies. It includes all construction of such structures, the installation of utilities and the installation of equipment, both above and below grade level as well as incidental grading, utilities and paving. Additionally, such structures need not be "habitable" to be building construction. The installation of heavy machinery and/or equipment shall not change the project's character as a building. Examples: Alterations and additions to nonresidential buildings; Apartment buildings (5 stories and above); Arenas (enclosed); Auditoriums; Automobile parking garages; Banks and financial buildings; Barracks; Churches; Hospitals; Hotels; Industrial buildings; Institutional buildings; Libraries; Mausoleums; Motels; Museums; Nursing and convalescent facilities; Office buildings; Outpatient clinics; Passenger and freight terminal buildings; Police stations; Post offices; City halls; Civic centers; Commercial buildings; Court houses; Detention facilities; Dormitories; Farm buildings; Fire stations; Power plants; Prefabricated buildings; Remodeling buildings; Renovating buildings; Repairing buildings; Restaurants; Schools; Service stations; Shopping centers; Stores; Subway stations; Theaters; Warehouses; Water and sewage treatment plants (building only).
- b. **Heavy Construction.** Heavy projects are those that are not properly classified as either "building" or "highway". Unlike these classifications, heavy construction is not a homogeneous classification. Examples of Heavy construction: Antenna towers; Bridges (major bridges designed for commercial navigation); Breakwaters; Caissons (other than building or highway); Canals; Channels; Channel cut-offs; Chemical complexes or facilities (other than buildings); Cofferdams; Coke ovens; Dams; Demolition (not incidental to construction); Dikes; Docks; Drainage projects; Dredging projects; Electrification projects (outdoor); Flood control projects; Industrial incinerators (other than building); Irrigation projects; Jetties; Kilns; Land drainage (not incidental to other construction); Land leveling (not incidental to other construction); Land reclamation; Levees; Locks, Waterways; Oil refineries; Pipe lines; Ponds; Pumping stations (pre-fabricated drop-in units); Railroad construction; Reservoirs; Revetments; Sewage collection and disposal lines; Sewers (sanitary, storm, etc.); Shoreline maintenance; Ski tows; Storage tanks; Swimming pools (outdoor); Subways (other than buildings); Tipples; Tunnels; Unsheltered piers and wharves; Viaducts (other than highway); Water mains; Waterway construction; Water supply lines (not incidental to building); Water and sewage treatment plants (other than buildings); Wells.
- c. **Highway Construction.** Highway projects include the construction, alteration or repair of roads, streets, highways, runways, taxiways, alleys, trails, paths, parking areas, greenway projects and other similar projects not incidental to building or heavy construction. Examples: Alleys; Base courses; Bituminous treatments; Bridle paths; Concrete pavement; Curbs; Excavation and

embankment (for road construction); Fencing (highway); Grade crossing elimination (overpasses or underpasses); Parking lots; Parkways; Resurfacing streets and highways; Roadbeds; Roadways; Shoulders; Stabilizing courses; Storm sewers incidental to road construction; Street Paving; Guard rails on highway; Highway signs; Highway bridges (overpasses; underpasses; grade separation); Medians; Surface courses; Taxiways; Trails.

- d. **Multiple Categories.** In some cases a project includes construction items that in themselves encompass different categories of construction. Generally, a project is considered mixed and a "multiple schedule" used if the construction items are substantial in relation to project cost, i.e. more than twenty (20) percent. Only one schedule is used if construction items are "incidental" in function to the overall character of a project (e.g., paving of parking lots or an access road on a building project), and if there is not a substantial amount of construction in the second category.

2. **Site of Work.** A basic characteristic of the construction industry is the continual shift in the site of employment. 29 Del.C. §6960 provides that prevailing wages are to be paid to "...all mechanics and laborers employed directly upon the site of the work ..." (emphasis added). The site of the work is limited to the physical place or places where the construction called for in the contract will remain when work on it has been completed.

- H. **Prevailing Wage Rates.** Every contract and the specifications for every contract to which section 6960 applies are required to contain a provision stating the minimum wages to be paid various classes of laborers and mechanics. These rates are to be based upon the wages that the Department of Labor determines to be prevailing for the corresponding classes of laborers and mechanics employed on projects of a character similar to the contract work in the county in which the work is to be performed, as reported in the Department's annual prevailing wage survey. The prevailing wage shall be the wage paid to a majority of employees performing similar work as reported in the Department's annual prevailing wage survey or, in the absence of a majority, the weighted average wage paid to all employees reported.

- I. **Wages.** The term "wages" means the basic hourly rate of pay plus fringe benefits as defined below.

- J. **Fringe Benefits.** Fringe benefits may be considered in determining whether an employer has met his/her prevailing wage obligations. As a general rule, any fringe benefit may be considered as long as the employer is not legally required to provide it. Therefore, benefits such as health, welfare or retirement benefits, vacation, holiday pay or sick leave pay could be considered fringe benefits. Employer payments for unemployment insurance, workers' compensation, FICA, etc. (which are required by law) would not be considered fringe benefits.

In order to be considered a valid fringe benefit, payments must be made either in cash, or contributed to an irrevocable escrow account at least once each month. "Irrevocable" means that the benefit may not be forfeited. However, a benefit plan can be considered by the Department provided that payments to the plan are made irrevocably by the employer, even though certain employees may forfeit their individual rights to the benefits under certain prescribed conditions. Thus, if payments are made by the employer, and no return of those payments is possible, the plan would be acceptable, even though individual employees might not receive the benefits under certain situations. Benefits forfeited by such employees remain in an escrow account for the use of the other employees.

The actual cost of the benefit to the employer is the basis for evaluating the value of the fringe benefit. Administration costs are not considered fringe benefits. The cost of the benefits must be apportioned between employment on both public and private projects. Thus, the total value of the benefit would be divided by the total amount of time worked. This will result in benefit per unit of time which would be equally applicable to public and private employment projects. Example: an employee works two weeks (80 hours) on a public project and two weeks (80 hours) on a private project. The employer pays \$160 for the employee's health insurance for the month. The value of the benefit is \$1.00 per hour. The employer is not permitted to apply the entire premium to the public project alone.

- K. **Peak Week.** In determining prevailing wages, the Department utilizes a "peak week" survey concept to ensure that wage and fringe benefit data obtained from employers reflects for each classification, the payroll period during which the greatest number of workers in each classification is used on a project. The survey solicits the number of employees and wages paid at each given rate during the peak week. The contractor or reporting organization selects the week (between July 1 to December 31 of the previous year) during which the greatest number of each classification of laborers and mechanics was working. Peak weeks may be different for each classification of worker.
- L. **Wage Determinations.** A "wage determination" is the listing of wages (including fringe benefits) for each classification of laborers and mechanics, which the Administrator has determined to be prevailing in a given county and type of construction. Wage determinations are issued annually.
- M. **Maintenance Work.** To "maintain" means to preserve or keep in an existing state or condition to prevent a decline, lapse, or cessation from that state or condition. Wages paid to workers performing maintenance work shall not be used in determining prevailing wage rates.
- N. **Area.** The term "area" in determining wage rates under 29 Del.C. §6960 shall mean the county of the State in which the work is to be performed. The term "area" in determining classifications of workers under 29 Del.C. §6960 shall mean the State of Delaware.
- O. **Secretary.** "Secretary" means the Secretary of Labor for the State of Delaware.
- P. **Administrator.** "Administrator" means the Administrator of the Office of Labor Law Enforcement for the Delaware Department of Labor, Division of Industrial Affairs.
- Q. **Department.** "Department" means the Delaware Department of Labor.

IV. DETERMINING PREVAILING WAGES

The Department of Labor shall conduct an annual survey for obtaining and compiling wage rate information and shall encourage the voluntary submission of wage data by contractors, contractors' associations, labor organizations, public officials and other interested parties, reflecting wage rates paid to laborers and mechanics on various types of construction in the area.

- A. **Scope of Task.** State directed and assisted construction activity is not restricted to any geographic sector of the state or to any particular type of construction. As a result, data collection methods employed by the Department for gathering prevailing wage information must be capable of determining patterns of wage compensation, including fringe benefits, for virtually all classifications of construction workers in at least the three major types of construction, within each of the three counties in Delaware. And,

since the objective is determining "prevailing" wages, the collection of data must be completed within a relatively brief time frame.

B. Data to be Collected. Operation of the prevailing wage program necessitates an annual effort by the Department to obtain, compile and analyze wage rate information. This section explores the nature of the data and the means of collection.

1. **What Information.** Wage rates are issued for each classification of laborer and mechanic that will likely be employed in State funded or assisted construction in a certain type of construction. Information on wages paid, therefore, must be collected and tabulated on the basis of distinct job classifications and construction categories. The survey reporting form used by the Department to collect wage and fringe information, "Report of Construction Wage Rates", provides for reporting data which includes the contractor's name and address, telephone number, project description and location, the highest number of workers employed in each classification during the peak week of the survey period (which shall be within the period July 1 to December 31 of the year preceding the request for data) and the wage rate, including bona fide fringe benefits, paid to each worker.

2. **Geographic Scope.** A prime objective of the prevailing wage law is to protect local rates of pay and 29 Del.C. §6960 stipulates that the "area" for the determination of wage rates is to be the county in which the work is performed.

V. THE SURVEY

The purpose of prevailing wage surveys is to collect information on wage and fringe benefit rates paid to mechanics and laborers working on construction projects of a similar character in a predetermined geographic area and calendar period. The Department attempts to give each contractor equal opportunity to be included in the final data base from which the prevailing rates are derived. The Department shall conduct the survey in accordance with the following steps:

A. Plan the Survey.

The Department shall begin the survey preparation process no later than November of each year. Forms will be printed and supplies (envelopes, postage, etc.) will be ordered in preparation for the survey mailing. The Department will request from the Division of Unemployment Insurance a computer printout (with two sets of address labels) of the names and addresses of all employers in the following Standard Industrial Classification (SIC) Codes, who reported workers during the calendar year in which the request is made:

- 1522 Residential Buildings, Other Than Single-Family [The Department will specify that buildings under five stories should not be reported]
- 1541 Industrial Buildings and Warehouses
- 1542 Nonresidential Buildings, Other Than Industrial Buildings and Warehouses
- 1611 Highway and Street Construction, Except Elevated Highways
- 1622 Bridge, Tunnel, and Elevated Highway Construction
- 1623 Water, Sewer, Pipeline, and Communications and Power Line Construction
- 1629 Heavy Construction, Not Elsewhere Classified
- 1711 Plumbing, Heating and Air Conditioning
- 1721 Painting and Paper Hanging
- 1731 Electrical Work

- 1741 Masonry, Stone Setting, and Other Stone Work
- 1742 Plastering, Drywall, Acoustical, and Insulation Work
- 1743 Terrazzo, Tile, Marble, and Mosaic Work
- 1751 Carpentry Work
- 1752 Floor Laying and Other Floor Work, Not Elsewhere Classified
- 1761 Roofing, Siding, and Sheet Metal Work
- 1771 Concrete Work
- 1781 Water Well Drilling
- 1791 Structural Steel Erection
- 1793 Glass and Glazing Work
- 1794 Excavation Work
- 1795 Wrecking and Demolition Work
- 1796 Installation or Erection of Building Equipment, Not Elsewhere Classified
- 1799 Special Trade Contractors, Not Elsewhere Classified

The Department will begin to assemble the survey packets in mid-December of each year in preparation for the early January mailing.

B. Conduct the Survey.

On or before January 7th of each year, survey forms will be mailed to every employer identified by the Division of Unemployment Insurance as having employed workers in the SIC Codes listed above during the calendar year preceding the collection of data. Completed survey forms must be received by the Department or postmarked no later than February 8 of the survey year in order to be used in determining prevailing rates for that year. All other forms not complying with this deadline shall not be included. In the event that February 8th falls on a Saturday, Sunday, or legal holiday, the deadline for submitting survey forms shall be the next Department business day following the February 8th deadline.

By January 10th of each year, the Department shall notify the Delaware Contractor's Association, the Building Trades Council of Delaware, the Associated Builders and Contractors, the Delaware State AFL-CIO, the Secretary of the Department of Administrative Services, the Secretary of the Department of Transportation and the Roofing Contractors Association that the annual survey is being conducted. The notification shall contain a copy of the list of employers to whom survey forms were mailed and shall invite the addressees to submit the names and addresses of any employers whose names do not appear on the list. The notification shall also contain blank survey forms for the organizations' use.

C. Conduct Follow-Up.

On or before February 1st of each year, the Department shall mail a second notice to all employers who failed to respond to the first request for data. A second copy of the Department's master mailing list (indicating the employers who responded) shall be sent to the organizations listed in the preceding paragraph so that they can encourage the voluntary participation of their members.

D. Clarify and Analyze Data.

The data clarification process is to begin immediately upon receipt of survey responses. Each survey response is reviewed to determine completeness, appropriateness, and accuracy of data.

E. Code and Record Data.

Survey responses are to be coded as follows:

- "A" Survey response is usable (i.e., it is timely, complete, appropriate, and accurate)
- "B" Employer reports no employees during survey period
- "C" Survey response is incomplete
- "D" Survey response is not applicable
- "E" Survey request not deliverable at address used/Respondent not identified on survey form/Information is not usable

Data from usable responses are to be recorded weekly in a summary ledger which contains a breakdown of each classification of worker for each type of construction for each county. Survey responses coded "A" shall be filed by county and type of construction. Survey responses coded "B", "D", and "E" shall be kept in files separate from the usable responses.

Respondents who submit code "C" survey responses (incomplete) shall be contacted by telephone by the Department. The Department will give the respondent an opportunity to supply the missing information. Failure to submit the missing information prior to the publication of the Prevailing Wage Determination (see Regulation VI.C.) will result in a disqualification of the survey response (to the extent that it is not usable).

The master mailing list shall be coded weekly to show the identity of survey participants as well as the number and types of responses.

All survey responses and documents are to be retained by the Department for a period of three years.

F. Determine Adequacy of Data.

At the conclusion of the survey period, the Department will review the survey ledger to determine the adequacy of data in each classification in each type of construction in each county. Data will be considered adequate if the worker classification contains the wages of ten or more employees. Classification data not meeting the above criteria will be added to the previous year's survey data for the same classification. If the data still do not reflect the wages paid to at least ten workers, the data will be considered inadequate.

G. Compute Prevailing Wage Rates.

The Department will enter usable data (from the summary ledgers) in the computer. If a majority (i.e., more than 50% of the workers reported in a particular category are paid at the same rate, that rate shall be the prevailing wage rate for the classification. For example:

Laborers / New Castle County / Building Construction

Workers	Rate of Pay	[including benefits]
50 @	\$17.25	= Majority
39 @	\$16.75	
<u>10 @</u>	<u>\$17.55</u>	
99		

The prevailing wage rate = \$17.25

In the absence of a majority, the computer will determine the average (mean) of the wages paid, weighted by the numbers of workers paid at each rate. For example:

Laborers/New Castle County/Building Construction

Workers	Rate of Pay	[including benefits]
25 @	\$15.50	= \$387.50
25 @	17.25	= 431.25
39 @	16.75	= 653.25
10 @	17.55	= 175.50
99		\$1,647.50

$\$1,647.50 \div 99 \text{ workers} = \$16.64 \text{ prevailing rate}$

H. Determine Wage Rates for Classes of Workers For Which Inadequate Data Are Received.

The Department is required by law to determine wages to be paid to all classes of workers employed on public projects. For that reason, the Department must have a means by which it can determine rates for which no data or inadequate data were received. If no data are received for a given classification, or if inadequate data are received (i.e., fewer than 10 workers reported in a given classification), the previous year's prevailing rates shall be reissued.

VI. ISSUING WAGE DETERMINATIONS.

- A. Publication of Preliminary Determination:** On or before February 15th of each year, the Department shall publish a "Preliminary Determination of Prevailing Wage Rates." In the event that February 15th falls on a Saturday, Sunday, or legal holiday, the Department shall issue the preliminary results on the next Department business day following February 15th.
- B. Appeals:** From February 15th to February 25th, the Administrator of the Office of Labor Law Enforcement will consider protests and inquiries relating to the preliminary results. An interested person seeking review or reconsideration of a wage determination must present a request in writing accompanied by a statement with any supporting data or other pertinent information.

Requests for reconsideration must be substantive and specific in order to be considered by the Department. For example: A request stating that, "the highway rates don't look right", would not be considered substantive or specific. However, a request stating that, "residential rates appear to have been erroneously included for carpenters in New Castle County Building Construction" would be considered substantive and specific.

From February 25th to March 1st, the Department will attempt to gather information necessary to resolve objections and requests for reconsideration. However, no appeals, objections, or requests will be considered if received by the Department after the February 25th deadline. The Department will respond in writing to all interested persons who submit a written request for review.

An appeal from the Administrator's decision must be made in writing and received by the Secretary of Labor within five calendar days from the date of the postmark on the Administrator's decision. The Secretary or his/her designee shall render a final decision in writing.

- C. Issuance of Determination:** On or before March 15th of each year, the Department shall publish its annual "Prevailing Wage Determination." The Determination shall be valid for a period of one year or until subsequent rates or amendments are issued by the Department.

Public agencies (covered by the provisions of 29 Del.C. §6960) are required to use the rates which are in effect on the date of the publication of specifications for a given project. "Date of publication" means the date on which the specifications are made available to interested persons (as specified in the published bid notice). In the event that a contract 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.

- D. Post Determination Actions:** Wage determinations will be modified only for the purpose of correcting errors. Determinations will not be modified to include survey data received after the close of the survey period.

1. Amendment to Correct Errors of Inadvertence

Amendments may be issued to correct inadvertent errors in the written text of a wage determination. The sole purpose is to correct wage schedules so that the wage determination will accurately and fully reflect the actual rates prevailing in the locality at the time the wage determination was issued. Such amendments (which may be issued at any time) are used to correct errors due to transposition of rates and other clerical mistakes made in processing the schedule; they are not used to correct errors in judgment. Contracts which have already been awarded will not be affected by such amendments. Amendments issued more than ten (10) days prior to a bid opening must be used. Amendments issued less than ten (10) days prior to a bid opening may be disregarded.

2. Amendment to Correct Errors in Survey Data

Amendments which affect the validity of a wage determination may be issued to correct errors in rates resulting from erroneous information submitted by survey participants.

When the Department of Labor is notified in writing that a survey participant has submitted erroneous data (with regard to wages, fringe benefits, characterization of project, classification of workers, or county in which the work was performed), the Department shall determine the validity of the data. Corrections, if warranted, shall be made in the form of amended determinations at the end of each calendar quarter (beginning with the date the wage determination was issued). Contracts which have already been awarded will not be affected by such amendments. Amendments issued more than ten (10) days prior to a bid opening must be used. Amendments issued less than ten days prior to a bid opening may be disregarded.

3. Incorrect Wage Determinations: Before Contract Award

If notification is received from the Department of Labor any time prior to the contract award that the bid documents contain the wrong wage schedule, such schedule or wage determination shall no longer be valid and may not be used - without regard to whether the bid opening has occurred.

If the bid documents contain no wage schedule, it is the contractor's (or subcontractor's) responsibility to contact the Department of Labor for the correct wage schedule. Such requests must be in writing. Responses to such requests will be in writing. Any contractor or subcontractor found using an incorrect wage schedule will be required to pay the correct wages based upon the proper classification of work as determined by the Department of Labor.

4. Lack of Valid Wage Determination: After Contract Award

If a contract is awarded without a wage determination or awarded with an incorrect wage determination, the contractor is responsible for the payment of the appropriate prevailing wage rates as determined by the Department of Labor.

5. Additional Classifications

Any class of laborers or mechanics which is not listed in the applicable wage determination but which is to be employed under the contract is to be classified by the Department of Labor in accordance with the procedures set forth in Part III, Section C, of these regulations.

6. Determination of Wages for Classifications for Which No Rates Are Published

Whenever a public project requires the services of a laborer or mechanic for which no rate has been published, the Department shall be notified in writing and shall determine the worker classification (from among the 26 classifications recognized by the Department of Labor) and the rate to be paid. The rate shall be determined as follows:

- a. baseline rate in each county, the Department of Labor will determine the relationship between the "Building Construction" rates and the rates of the type of construction for which the rate is sought. To determine the relationship, (which is to be expressed as a percentage), the Department will use only those rates which were determined by data received in the relevant survey.
- b. The Department will compare only those classifications for which corresponding rates were determined.
- c. The total of the corresponding rates will be determined for each type of construction. The Heavy or Highway total will be divided by the Building rate to find what percentage of the Heavy or Highway rate to the Building rate.
- d. The Department of Labor will multiply the Building rate for the requested classification of worker by the percentage determined in "c" to establish the applicable prevailing wage rate.

Hypothetical example:

A plumber's rate is needed for a New Castle County Highway project. The Department of Labor has not published a rate for this classification. The Department of Labor will determine the relationship between New Castle County Highway rates and Building rates, comparing only corresponding rates which were actually determined by the relevant survey (rates carried forward from previous years due to lack of sufficient data are not to be used).

	N.C.C. Building	N.C.C. Highway
Bricklayers	\$ 19.65	\$ 12.29
Carpenters	\$ 23.37	\$ 21.69
Cement Finishers	\$ 23.55	\$ 15.52
Laborers	\$ 13.62	\$ 10.60
Power Equipment Operator	\$ 22.94	\$ 15.77

Truck Drivers	<u>\$ 15.15</u>	<u>\$ 13.75</u>
	\$118.28	\$ 89.62

$$\$89.62 \div 118.28 = 75.77\%$$

The plumber's rate for New Castle County Building is \$26.54. $\$26.54 \times 75.77\% = \20.11

The plumber's rate for New Castle County Highway = \$20.11

The same method can be used between the corresponding types of construction when the Building Construction rates do not contain a rate for the requested classification of worker; i.e., Heavy Construction rates in Sussex County can be compared with Heavy Construction rates in New Castle.

VII. ENFORCEMENT

The authority to enforce the prevailing wage rates derives from 29 Del.C. §6960(b) which states: "The Department of Labor shall investigate all claims that the prevailing wage rates as provided for under this section are not being or have not been paid."

A. DUTIES OF CONTRACTORS.

Every contractor and subcontractor on a public project shall:

1. Post in a prominent and accessible place at the site of the work, a legible copy of the applicable prevailing wage determination issued by the Department. The notice must remain posted during the life of the contract and must be supplemented in its entirety whenever amended wage rate determinations are issued by the Department.
2. Pay all mechanics and laborers employed directly upon the site of the work, unconditionally and not less often than once a week and without subsequent deduction or rebate on any account, the full amounts accrued at the time of payment, computed at wage rates not less than those stated in the prevailing wage rate determination.
 - a. Laborers or mechanics performing work in more than one occupation shall be compensated at least the rate specified for each occupation for the time actually worked therein.
 - b. An employer shall not pay or permit any worker to accept wages less than the prevailing rate of wages as determined by the Department;
 - c. Every employer performing work on a public project shall furnish weekly payroll reports to the Department of Labor on forms provided (upon request) by the Department. Payroll reports shall be mailed or delivered by the employer to the Department within one week from the last work day covered by the report. Failure to complete each and every section of the report (including the requirement that the form be notarized) will constitute a failure to submit sworn payroll information as required by the Department.
 - d. An employer shall not, at any time during the project, pay less than the prevailing rate of wages for each hour worked, regardless of the rate of pay being paid at any other time.
 - e. An employer shall not pay less than the prevailing rate of wages by docking pay, docking time, or deducting pay for any purpose unless provided for by law including the Wage Payment and Collection Act of the State of Delaware (19 Del.C. §1107).
 - f. A person shall not, either for himself/herself or any other person, request, demand, or receive, either before or after an employee is engaged, that such employee pay back, return, donate, contribute, or give any part or all of said employee's wages, salary, or thing of value, to any person, upon the statement, representation, or understanding that failure to comply with such request or demand will prevent

such employee from procuring or retaining employment. This paragraph does not apply to any agent or representative of a duly constituted labor organization acting in the collection of dues or assessments of such organization as permitted by law.

- g. A person shall not, directly or indirectly, aid, request, or authorize any person to sign a release for any claim of wages with the intent to avoid payment of the prevailing wage rates.
- 3. Keep the following records for a period of three years:
 - a. The name and address of each employee;
 - b. The social security number of each employee;
 - c. daily log for each individual employed upon the site of construction. The log must list (in general terms) the tasks performed by each employee and the amount of time spent performing each task. (examples, "hung drywall", "wired lighting fixtures", etc.);
 - d. Each employee's basic hourly rate of pay (If an employee performs public project work in more than one trade, the employer's record must reflect the hourly rate paid for each type of work performed; If an employee performs both prevailing wage work and non-prevailing wage work, the records must reflect the rates paid for each.)
 - e. The number of hours worked in each occupation on the project in the applicable pay schedule, the number of hours worked in each day, and the total number of hours worked each week;
 - f. The amount of wages paid each employee;
 - g. The amount of wages paid each employee as fringe benefit payments;
 - h. The amount of any deductions withheld from each employee's wages; and
 - i. An accurate description of the nature of the deductions withheld from each employee's wages. (Fringe benefit deductions must be supported by a written fringe benefit policy as required by the Wage Payment and Collection Act.)

B. INVESTIGATION

A complaint may be filed with the Department by any employee upon a public project or any interested party. The complaint shall be in writing. Upon receipt of a complaint or upon its own motion the Department shall initiate an investigation.

- 1. The Department shall notify the employer that a complaint has been filed and/or that an investigation has been initiated. The Department may request (or subpoena, if necessary) records, documents, or testimony necessary to make a determination as to the validity of the complaint or the employer's compliance with the law.
- 2. Upon finding that an employer has not paid or is not paying the correct prevailing wage rates, the Department of Labor shall notify the employer of the violations by certified mail and make an effort to obtain compliance.
- 3. Upon failure to obtain compliance within fifteen (15) days of receipt of said certified mail, the Department may direct the contracting agency and/or the prime contractor to withhold payments to the employer (in an amount equal to the prevailing wage deficiencies, as determined by the Department) which are to be remitted to the Department for distribution upon resolution of the matter. In addition, the Secretary may terminate all rights of the employer to proceed with the work under the contract and the employer shall be responsible for all damages resulting therefrom.
- 4. If the dispute between the Department and the employer pertains to the classification of workers as determined by the Office of Labor Law Enforcement, the determination shall be reviewable by the Secretary or his/her designee and shall be reversed only upon a finding of abuse of discretion. Such appeals from the Office of Labor Law

Enforcement's decision must be made in writing and must be received by the Secretary within fifteen (15) days from receipt of the Department's certified letter.

NOT FOR BIDDING PURPOSES

C. HEARINGS

A hearing shall be held only in cases involving the termination of rights to proceed with the work under the public construction contract.

D. HEARING PRACTICES AND PROCEDURES

1. SCOPE OF RULES

These rules shall govern the conduct of hearings initiated by the Department of Labor pursuant to 29 Del.C. §6960(d) to terminate all rights of the contractor or subcontractor to proceed with work under a public construction contract for failure to pay prevailing wage rates.

2. INITIATION OF HEARING

The Secretary of Labor may initiate a hearing by notifying the contractor or subcontractor by registered mail that said contractor or subcontractor is alleged to have violated 29 Del.C. §6960. The notice shall give 20 days prior notice to all parties as follows:

- a. The notice shall describe the subject matter of the proceedings;
- b. The notice shall give the date, time and place the hearing will be held;
- c. The notice shall cite the law or regulation giving the Department authority to act;
- d. The notice shall inform the party of his/her right to present evidence, to be represented by counsel, and to appear personally or by other representative; and
- e. The notice shall inform the parties that the Department will reach its decision based upon the evidence received.

3. CONDUCT OF HEARING

- a. The hearing may be conducted by the Secretary of Labor or by a hearing officer designated for that purpose by the Secretary.
- b. In connection with such hearing, the Secretary or hearing officer may:
 1. Issue subpoenas for witnesses and other sources of evidence, either on the Department's initiative or at the request of any party;
 2. Administer oaths to witnesses;
 3. Exclude plainly irrelevant, immaterial, insubstantial, cumulative and privileged evidence;
 4. Limit unduly repetitive proof, rebuttal and cross-examination;
 5. Hold prehearing conferences for the settlement or simplification of issues by consent, for the disposal of procedural requests or disputes and to regulate and to expedite the course of the hearing.
- c. The conduct of hearing shall not be bound by technical rules of evidence pursuant to 19 Del.C. §105(8).
- d. The burden of proof shall be upon the Department. (If the records maintained by the employer do not provide sufficient information to determine the exact amount of wages owed, the Department may make a determination based on available evidence.)
- e. A record from which a verbatim transcript can be prepared shall be made of all hearings in contested cases. Transcripts shall be made at the request and expense of the requesting party.

4. PROPOSED ORDERS

- a. Whenever a hearing officer presides over a hearing (s)he shall prepare a proposed order for the consideration of the Secretary which shall include:

1. A brief summary of the evidence and recommended findings of fact based upon the evidence;
 2. Recommended conclusions of law; and
 3. Recommended decision.
- b. When the proposed order is submitted to the Secretary, a copy shall be delivered to each of the other parties who shall have 10 days to submit in writing to the Secretary exceptions, comments and arguments respecting the proposed order.

5. RECORD

With respect to each case, all notices, correspondences between the agencies and the parties, all exhibits, documents in testimony admitted into evidence and all recommended orders, summary of evidence and findings of all interlocutory and final orders of the agency shall be included in the agency's record of the case and shall be retained by the agency for three (3) years.

6. DECISION; FINAL ORDER

- a. The Secretary shall make his/her decision based upon the entire record of the case and upon summaries and recommendations of the hearing officer.
- b. Every case decision of the Secretary shall be incorporated in a final order which shall include, where appropriate:
 1. A brief summary of the evidence;
 2. Findings of fact based upon the evidence;
 3. Conclusions of law;
 4. Any other conclusion required by the law or the Department of Labor;
 5. A concise statement of the Department of Labor's determination or action on the case.
- c. Every final order shall be authenticated by the signature of the Secretary.
- d. Every final order shall immediately be mailed or delivered to each party, to the contracting agency, and each other person requesting it.
- e. Every final order may be amended or modified by the same procedure used for the initial adoption of the order.

7. INFORMAL DISPOSITION

Informal disposition may be made of any matter set for hearing by stipulation, agreed settlement, consent order, or default.

VIII. SUBSEQUENT MODIFICATION OF REGULATIONS

The Secretary may, upon his/her own motion or upon the written request of any interested person setting forth reasonable grounds therefore, revoke or modify these regulations, after an opportunity has been given to interested persons to present their views on proposed changes. These regulations shall take effect in accordance with the requirements of the Administrative Procedures Act which is found at 29 Del. C. Chapter 101.

SO ORDERED, this 13th day of October, 2003.

Harold E. Stafford
Secretary of Labor

These Regulations were originally adopted April 3, 1992 and became effective on May 4, 1992.

Amended: July 1, 1993

Amended: September 15, 1993

Amended: December 28, 1994

Amended: October 15, 1995

Amended: January 9, 1998

Amended: December 12, 2000

Amended: June 14, 2001

Amended: October 13, 2003

NOT FOR BIDDING PURPOSES

CLASSIFICATION OF WORKERS

UNDER

DELAWARE'S

PREVAILING WAGE LAW



STATE OF DELAWARE
DEPARTMENT OF LABOR
OFFICE OF LABOR LAW ENFORCEMENT
225 CORPORATE BLVD., STE 104
NEWARK, DE 19702
(302) 451-3423

Adopted: April 3, 1992
Amended: July 1, 1993
Amended: September 15, 1993
Amended: December 28, 1994
Amended: August 15, 1996
Amended: September 15, 1997
Amended: July 10, 1998
Amended: June 24, 1999
Amended: July 11, 2001
Amended: October 30, 2003
Edited February 9, 2009
Amended February 12, 2013
Last Edited: February 12, 2013
Amended/Edited: July 31, 2014
Amended/Edited: October 8, 2014

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ASBESTOS WORKER

Removes asbestos from ceilings, walls, beams, boilers, and other structures, following hazardous waste handling guidelines: Removes asbestos pipes. Assembles scaffolding and seals off work area, using plastic sheeting and duct tape. Positions mobile decontamination unit or portable showers at entrance of work area. Builds connecting walkway between mobile unit or portable showers and work area, using handtools, lumber, nails, plastic sheeting, and duct tape. Positions portable air evacuation and filtration system inside work area. Sprays chemical solution over asbestos covered surfaces, using tank with attached hose and nozzle, to soften asbestos. Cuts and scrapes asbestos from surfaces, using knife and scraper. Shovels asbestos into plastic disposal bags and seals bags, using duct tape. Cleans work area of loose asbestos, using vacuum, broom, and dust pan. Places asbestos in disposal bags and seals bags, using duct tape. Dismantles scaffolding and temporary walkway, using handtools, and places plastic sheeting and disposal bags into transport bags. Seals bags, using duct tape, and loads bags into truck.

BOILERMAKER

Assembles, analyzes defects in, and repairs boilers, pressure vessels, tanks, and vats in field, following blueprints and using handtools and portable power tools and equipment: Locates and marks reference points for columns or plates on foundation, using master straightedge, squares, transit, and measuring tape, and applying knowledge of geometry. Attaches rigging or signals crane operator to lift parts to specified position. Aligns structures or plate sections to assemble boiler frame, tanks, or vats, using plumb bobs, levels, wedges, dogs, or turnbuckles. Hammers, flame- cuts, files, or grinds irregular edges of sections or structural parts to facilitate fitting edges together. Bolts or arc-welds structures and sections together. Positions drums and headers into supports and bolts or welds supports to frame. Aligns water tubes and connects and expands ends to drums and headers, using tube expander. Bells, beads with power hammer, or welds tube ends to ensure leak proof joints. Bolts or welds casing sections, uptakes, stacks, baffles, and such fabricated parts as chutes, air heaters, fan stands, feeding tube, catwalks, ladders, coal hoppers and safety hatch to frame, using wrench. Installs manholes, handholes, valves, gauges, and feedwater connection in drums to complete assembly of water tube boilers. Assists in testing assembled vessels by pumping water or gas under specified pressure into vessel and observing instruments for evidence of leakage. Repairs boilers or tanks in field by unbolting or flame cutting defective sections or tubes, straightening plates, using torch or jacks, installing new tubes, fitting and welding new sections and replacing worn lugs on bolts. May rivet and caulk sections of vessels, using pneumatic riveting and caulking hammers. May line firebox with refractory brick and asbestos rope and blocks. May fabricate such parts as stacks, uptakes, and chutes to adapt boiler to premises in which it is installed.

Assembles boilers, tanks, vats, and pressure vessels according to blueprint specifications, using power tools and handtools: Reads blueprint to determine location and relationship of parts. Connects firetubes to heads or watertubes to drums and headers of boilers, by expanding and beading ends, using tube expander and beading ends, using power hammer. Drills and taps holes for installation of studs, using portable drill. Tightens bolts to assemble frames, using hand or power wrenches. Mounts casings of watertube boilers, or attaches davit heads, burners, or furnace casing to firetube boilers, using wrenches. Bolts or screws accessories, such as manholes, handholes, fans, gauges, and valves to vessel, using handtools or power wrenches. Replaces defective parts, using power wrenches, prying bars, or handtools. May install and repair refractory brick. May thread and install stay bolts, using pipe wrench and dies. May remove and replace rivets and caulk seams to repair riveted shells and structures, using pneumatic chisel, riveter, and caulking hammer. May cut out defective parts, using acetylene torch.

BRICKLAYER

Lays building materials, such as brick, structural tile, and concrete cinder, glass, gypsum, and terra cotta block to construct or repair walls, partitions, arches, sewers, and other structures: Lays brick pavers for sidewalks. Measures distance from reference points and marks guidelines on working surface to lay out work. Spreads soft bed (layer) of mortar that serves as base and binder for block, using trowel. Applies mortar to end of block and positions block in mortar bed. Taps block with trowel to level, align, and embed in mortar, allowing specified thickness of joint. Removes excess mortar from face of block, using trowel. Finishes mortar between brick with pointing tool or trowel. Breaks bricks to fit spaces too small for whole brick, using edge of trowel or brick hammer. Determines vertical and horizontal alignment of courses, using plumb bob, gaugeline (tightly stretched cord), and level. Fastens brick or terra cotta veneer to face of structures, with tie wires embedded in mortar between bricks, or in anchor holes in veneer brick. May weld metal parts to steel structural members. May apply plaster to walls and ceiling using trowel, to complete repair work.

Lays firebrick and refractory tile to build, rebuild, reline, or patch high-temperature or heating equipment, such as boilers, ovens, furnaces, converters, cupolas, ladles, and soaking pits, according to job orders and blueprints: Lays out work, using chalklines, plumb bobs, tapes, squares, and levels. Calculates angles and courses for building walls, arches, columns, corners and bottoms. Removes burned or damaged brick and cleans surface of setting, using sledgehammer, pry bar, pneumatic chipping gun, scraper and wire brush. Cuts firebrick or refractory materials to size, using brick hammer or powered abrasive saw with refractory or firebrick blade. Spreads fire-clay mortar over brick with trowel and lays brick in place. Spreads or sprays refractories over exposed bricks to protect bricks against deterioration by heat, using trowel or spray gun. Positions or bends special frame or hanger over casings to lay arches. Cuts, notches, or drills openings to provide outlets, pyrometer mountings, brackets and heating elements, using handtools. Patches or replaces firebrick linings of ladles and furnace tap holes. Constructs refractory forms for controlling quantity and flow of molten materials from furnace to rolling machines. May replace bolts, brackets, and heating elements, repair coke oven doors, weld cracks or holes in shell, or perform other repairs.

May pack insulation into shells and frames to insulate heating equipment, such as furnaces, boilers, and ovens. Sets stone to build stone structures, such as piers, walls and abutments, or lays walks, curbstones, or special types of masonry, such as alberene (acid-resistant soapstone for vats, tanks, and floors), using mason's tools: Shapes stone preparatory to setting, using chisel hammer, and other shaping tools. Spreads mortar over stone and foundation with trowel and sets stone in place by hand or with aid of crane. Aligns stone with plumbline and finishes joints between stone with pointing trowel. May spread mortar along mortar guides to ensure joints of uniform thickness. May clean surface of finished wall to remove mortar, using muriatic acid and brush. May set cut and dressed ornamental and structural stone in buildings.

CARPENTER

Constructs, erects, installs, and repairs structures and fixtures of wood, plywood, and wallboard, using carpenter's handtools and power tools, and conforming to local building codes: Studies blueprints, sketches, or building plans for information pertaining to type of material required, such as lumber or fiberboard, and dimensions of structure or fixture to be fabricated. Selects specified type of lumber or other materials. Prepares layout, using rule, framing square, and calipers. Marks cutting and assembly lines on materials, using pencil, chalk, and marking gauge. Shapes materials to prescribed measurements, using saws, chisels, and planes. Assembles cut and shaped materials and fastens them together with nails, dowel pins, or glue. Verifies trueness of structure with plumb bob and carpenter's level. Erects framework for structures and lays subflooring. Builds stairs and lays out and installs partitions and cabinet work. Covers subfloor with building paper to keep out moisture and lays hardwood, parquet, and wood-strip-block floors by nailing floors to subfloor or cementing them to mastic or asphalt base. Applies shock-absorbing, sound-deadening, and decorative paneling to ceilings and walls. Fits and installs prefabricated window frames, doors, doorframes, weather stripping, interior and exterior trim, and finish hardware, such as locks, letterdrops, and kick plates. Constructs forms and chutes for pouring concrete. Erects scaffolding and ladders for assembling structures above ground level. May weld metal parts to steel structural members. Installs insulation (not sprayed urethane or polyurethane) in connection with carpentry work. Builds rough wooden structures, such as concrete forms with stakes, pins, wedges, nails, screws, zip ties, wire or other bonding materials, including insulated concrete form systems (ICF)*. Builds scaffolds, tunnel and sewer supports, and temporary frame shelters, according to sketches, blueprints, or oral instructions: Examines specifications to determine dimensions of structure. Measures boards, timbers, or plywood, using square, measuring tape, and ruler and marks cutting lines on materials, using pencil and scribe. Saws boards and plywood panels to required sizes. Nails cleats (braces) across boards to construct concrete-supporting forms. Braces forms in place with timbers, tie rods, and anchor bolts, for use in building concrete piers, footings, and walls. Erects chutes for pouring concrete. Cuts and assembles timbers to build trestles and cofferdams. Builds falsework to temporarily strengthen, protect, or disguise buildings undergoing construction. Erects scaffolding for buildings and ship structures and installs ladders, handrails, walkways, platforms, and gangways. Installs door and window bucks (rough frames in which finished frames are inserted) in designated positions in building framework, and braces them with boards nailed to framework. Installs subflooring in buildings. Nails plaster grounds (wood or metal strips) to studding to provide guide for plasterer. Fits and nails sheathing (first covering of boards) on outer walls and roofs of buildings. Setting and driving of wooden fence posts.

Plans gypsum drywall installations, erects metal framing and furring channels for fastening drywalls, and installs drywall to cover walls, ceilings, soffits, shafts, and movable partitions in residential, commercial, and industrial buildings: Reads blueprints and other specifications to determine method of installation, work procedures, and material, tool, and work aid requirements. Lays out reference lines and points for use in computing location and position of metal framing and furring channels and marks position for erecting metalwork, using chalkline. Measures, marks, and cuts metal runners, studs, and furring channels to specified size, using tape measure, straightedge and hand-and portable power-cutting tools. Secures metal framing to walls and furring channels to ceilings, using hand and portable power tools. Measures and marks cutting lines on drywall, using square, tape measure, and marking devices. Scribes cutting lines on drywall, using straightedge and utility knife and breaks board along cut lines. Fits and fastens board into specified position on wall, using screws, hand or portable power tools, or adhesive. Cuts openings into board for electrical outlets, vents or fixtures, using keyhole saw or other cutting tools. Measures, cuts, assembles and installs metal framing and decorative trim for windows, doorways, and vents. Fits, aligns, and hangs doors and installs hardware, such as locks and kickplates.

Installs plasterboard or other wallboard to ceiling and interior walls of building, using handtools and portable power tools: Installs horizontal and vertical metal or wooden studs for attachment of wallboard on interior walls, using handtools. Cuts angle iron and channel iron to specified size, using hacksaw, and suspends angle iron grid and channel iron from ceiling, using wire. Scribes measurements on wallboard, using straightedge and tape measure, and cuts wallboard to size, using knife or saw. Cuts out openings for electrical and other outlets, using knife or saw. Attaches wallboard to wall and ceiling supports, using glue, nails, screws, hammer, or powered screwdriver. Trims rough edges from wallboard to maintain even joints, using knife. Nails prefabricated metal pieces around windows and doors and between dissimilar materials to protect drywall edges. May remove plaster, drywall, or paneling during renovation project, using crowbar and hammer. Installs metal molding at corners in lieu of sealant and tape. The installation of exterior wall panels, including but not limited to panels made of metal, aluminum, vinyl, wood, or any other material. In connection with exterior wall panels, the installation of any insulation or other underlayment materials that are installed in connection with such wall panels, as well as any connections used to secure said panels to the structure or any building, window and door mounts and trim, exterior penetrations in any panels, and any sealant or waterproofing materials related to exterior wall panels.

Note: Installation of forms is also found in other classifications relating to other trades.

CEMENT FINISHER

Smooths and finishes surfaces of poured concrete floors, walls, sidewalks, or curbs to specified textures, using handtools or power tools, including floats, trowels, and screeds: Signals concrete deliverer to position truck to facilitate pouring concrete. Moves discharge chute of truck to direct concrete into forms. Spreads concrete into inaccessible sections of forms, using rake or shovel. Levels concrete to specified depth and workable consistency, using hand held screed and floats to bring water to surface and produce soft topping. Smooths and shapes surfaces of freshly poured concrete, using straightedge and float or power screed. Finishes concrete surfaces, using power trowel, or wets and rubs concrete with abrasive stone to impart finish. Prepares cement surfaces by using a steel shotblaster, scarifier or diamond grinder.

Removes rough or defective spots from concrete surfaces, using power grinder or chisel and hammer, and patches holes with fresh concrete or epoxy compound. Molds expansion joints and edges, using edging tools, jointers, and straight edge.

May sprinkle colored stone chips, powdered steel, or coloring powder on concrete to produce prescribed finish. May produce rough concrete surface, using broom. May mix cement, using hoe or concrete-mixing machine. Mixes and applies epoxy to cement. May direct subgrade work, mixing of concrete.

ELECTRICAL LINE WORKER

Installs, maintains, repairs and replaces transmission and distribution power lines and circuits to conduct electrical energy outside of isolated plants and the property lines of any given property, but not electric signs, and not street electrical decorations, except when messenger or guy wire is necessary for support and when fed and controlled from the street. Directs workers in installing light poles or tower equipment, and determines whether light poles or tower equipment are properly aligned. Climbs poles and installs necessary hardware, including insulators, voltage regulators, capacitors or sectionalizers. Strings wire conductors between erected poles. Splices, solders, and insulates conductors and related wiring to join sections of power lines and, to connect transformers and electrical accessories. Constructs and installs ground wires and/or ground rods, guy wires and crossarms, including installing a brace for crossarm if needed. Installs footings for tower, if necessary.

Installs, maintains, repairs and replaces traffic signals. Assembles poles and other hardware, as well as the lighting fixture or traffic light. After the fixture is attached on the pole, directs workers in placing the pole. When the pole is set, attaches the pole with anchor bolts and then pulls and terminates cables. Cuts sensor loops in the asphalt and places sensors in the road for traffic signals. Programs control cabinets and after installation is complete, connects and tests power.

ELECTRICIAN

Plans layout, installs, and repairs wiring (low voltage and high voltage*), electrical fixtures, apparatus, and control equipment, including fiberoptic systems, alarm systems and telecommunication equipment*. Plans new or modified installations to minimize waste of materials, provide access for future maintenance, and avoid unsightly, hazardous, and unreliable wiring, consistent with specifications and local electrical codes. Prepares sketches showing location of wiring and equipment, or follows diagrams or blueprints, ensuring that concealed wiring is installed before completion of future walls, ceilings, and flooring. Measures, cuts, bends, threads, assembles, and installs electrical conduit, using tools, such as hacksaw, pipe threader, and conduit bender. Drills holes in concrete for the placement of electrical wiring. Installs pull wire in empty conduit. Pulls wiring through conduit. Splices wires by stripping insulation from terminal leads, using knife or pliers, twisting or soldering wires together, and applying tape or terminal caps. Connects wiring to lighting fixtures and power equipment, using handtools. Installs control and distribution apparatus, such as switches, relays, and circuit-breaker panels, fastening in place with screws or bolts, using handtools and power tools. Connects power cables to equipment, such as electric range or motor, and installs grounding leads. Lays PVC pipe for main feed electric line.

Tests continuity of circuit to ensure electrical compatibility and safety of components, using testing instruments, such as ohmmeter, battery and buzzer, and oscilloscope. Observes functioning of installed equipment or system to detect hazards and need for adjustments, relocation, or replacement.

’ This is added as a clarification. These tasks have always been included within the description of tasks performed by Electricians.

ELEVATOR CONSTRUCTOR

Assembles and installs electric and hydraulic freight and passenger elevators, escalators, and dumbwaiters, determining layout and electrical connections from blueprints. Studies blueprints and lays out location of framework, counterbalance rails, motor pump, cylinder, and plunger foundations. Drills holes in concrete or structural steel members with portable electric drill. Secures anchor bolts or welds brackets to support rails and framework, and verifies alignment with plumb bob and level. Cuts prefabricated sections of framework, rails, and other elevator components to specified dimensions, using acetylene torch, power saw, and disc grinder. Installs cables, counterweights, pumps, motor foundations, escalator drives, guide rails, elevator cars, and control panels, using handtools. Connects electrical wiring to control panels and electric motors. Installs safety and control devices. Positions electric motor and equipment on top of elevator shaft, using hoists and cable slings.

GLAZIER

Installs glass in windows, skylights, store fronts, and display cases, or on surfaces, such as building fronts, interior walls, ceilings, and tabletops: Marks outline or pattern on glass, and cuts glass, using glasscutter. Breaks off excess glass by hand or with notched tool. Fastens glass panes into wood sash with glazier's points, and spreads and smoothes putty around edge of panes with knife to seal joints. Installs mirrors or structural glass on building fronts, walls, ceilings, or tables, using mastic, screws, or decorative molding. Bolts metal hinges, handles, locks, and other hardware to prefabricated glass doors. Sets glass doors into frame and fits hinges. May install metal window and door frames into which glass panels are to be fitted. May press plastic adhesive film to glass or spray glass with tinting solution to prevent light glare. May install stained glass windows. May assemble and install metal-framed glass enclosures for showers.

INSULATOR

Applies insulating material*, including closed cell spray foam applied with airless spray machine to exposed surfaces of structures, such as air ducts, hot and cold pipes, storage tanks, and cold storage rooms; Reads blueprints and selects required insulation material (in sheet, tubular, or roll form), such as fiberglass, foam rubber, styrofoam, cork, or urethane, based on material's heat retaining or excluding characteristics. Prepares and applies fire stopping materials. Brushes adhesives on or attaches metal adhesive-backed pins to flat surfaces as necessary to facilitate application of insulation material.

Measures and cuts insulation material to specified size and shape for covering flat or round surfaces, using tape measure, knife, or scissors.

Fits, wraps, or attaches required insulation material around or to structure, following blueprint specifications. Covers or seals insulation with preformed plastic covers, canvas strips, sealant, or tape to secure insulation to structure, according to type of insulation used and structure covered, using staple gun, trowel, paintbrush, or caulking gun.

’ Note: Installation of insulation is also found in other classifications relating to other trades.

IRONWORKER

Performs any combination of following duties (working as a member of a crew) to raise, place, and unite girders, columns, and other structural-steel, iron or fiber-reinforced polymers or other plastic members* to form completed structures or structure frameworks and performs any combination of following duties to raise and place girders, columns or other members when performing demolition of completed structures or structure framework if material will be re-used: Sets up hoisting equipment for raising and placing members. Fastens members to cable of hoist, using chain, cable, or rope. Signals worker operating hoisting equipment to lift and place member. Guides member, using tab line (rope) or rides on member in order to guide it into position. Pulls, pushes, or pries members into approximate position while member is supported by hoisting device. Forces members into final position, using turnbuckles, crowbars, jacks, and handtools. Aligns rivet holes in member with corresponding holes in previously placed member by driving drift pins or handle of wrench through holes. Verifies vertical and horizontal alignment of members, using plumb bob and level. Bolts aligned members to keep them in position until they can be permanently riveted, bolted, or welded in place. Catches hot rivets tossed by rivet heater (heat treating) in bucket and inserts rivets in holes, using tongs. Bucks (holds) rivets while riveter, pneumatic, uses air-hammer to form heads on rivets. Cuts and welds members to make alterations, using oxyacetylene welding equipment.

Positions and secures steel bars in concrete forms to reinforce concrete: Determines number, sizes, shapes, and locations of reinforcing rods from blueprints, sketches, or oral instructions. Selects and places rods in forms, spacing and fastening them together, using wire and pliers. Cuts bars to required lengths, using hacksaw, bar cutters, or acetylene torch. May bend steel rods with handtools or rodbending machine. May reinforce concrete with wire mesh. May weld reinforcing bars together, using arc- welding equipment. Welds deck pans on a bridge, reinforcing supports for the concrete structure.

Erects, trims, and fits together by means of bolts and clamps, iron grills, grating, and special stairways. Erects ornamental enclosures and other ironwork not included in structural ironwork. Installs chain link fences. Fastens ironwork to walls of buildings by means of bolts, brackets or anchors. Fastens newel posts, balusters, and other parts of stairways by fastening to supports or embedding them in sockets. Forges, welds, drills, and cuts as needed. Erects precast wall panels and prestressed roof panels by bolting, clamping or welding at the bottom to footing and at the top to steel joints as needed.

’ Hereinafter, “member/s” refers to structural steel, iron or fiber-reinforced polymers or other plastic material.

LABORER

Laborers may not assist mechanics in the performance of mechanic's work using tools peculiar to an established trade. Their work is to be confined to the following manual tasks:

- Digging and filling holes and trenches;
- Removes excess dirt or grout away by hand from augers as the auger progresses;
- Except as provided in other classifications, loading, unloading and stockpiling materials;
- Cleaning and sweeping;
- Driving stakes;
- Stripping forms;
- Ripping out material which is to be discarded;
- Ground clean-up of roof removal work. Performs roof removal work for demolition (Roof removal work for roof replacement is performed by Roofers;)
- Clearing and grubbing;
- Flagging;
- Replacing painted lines on a road with tape strips, lays strips;
- Using a tool driven by compressed air, gas, or electric power to perform such work as breaking old pavement, loosening or digging hard earth, trimming bottom and sides of trenches, breaking large rocks, driving sheeting, chipping concrete, trimming or cutting stone, caulking steel plates, or compaction of earthen backfill;
- Tending a stationary or portable liquid asphalt kettle, starting fires (usually fuel oil) under the kettle, controlling heat applied to the kettle by regulating dials or burners, maintaining desired temperature in asphalt, regulating valves for discharge of asphalt from kettle; --Cleaning and pouring asphalt joints in concrete paving with nozzle or can; Taking care of asphalt kettle and kettle heaters;
- Operating control lever on non-powered asphalt spreader pulled behind dump truck, operating the screed on the back of an asphalt spreader;
- Distributing asphaltic road-building materials evenly over road surface by raking and brushing materials to correct thickness; may control straightedge to regulate width and depth of materials; directing "Asphalt Shovelers" when to add or take away material to fill low spots or to reduce high spots;
- Manually operating a stationary or portable batching scale that weighs out concrete materials; adjusting scales for required weight of the materials; operating controls that admit materials separately from storage hoppers to weighing bins; observing scales or indicators that show when proper amount of materials have been made; discharging materials from weighing bin into truck or other carrier or mixer; measuring materials by volume instead of weight;
- Assisting in the pouring of concrete by spreading concrete, cleaning and caring of cement mason's tools, mixing mortar used in the patching of concrete, and performing other tasks as may be directed by cement mason or plasterer; Mixing mortar for plasterers and delivering same to location where plasterer is working; cleaning and caring for tools and equipment used in the preparation and application of plaster;
- Operating a power driven chain saw to clear areas of timber; fells trees and sometimes cuts the fallen trees into short sections to facilitate their removal;
- Operating chippers and/or stump grinders;
- Operating a device used to burn holes, etc., through concrete; (this device consists of a consumable aluminum- magnesium rod inside a small iron pipe; oxygen is forced through the pipe under pressure, and the end of the assembly is lighted; the concrete is melted by the intense heat of the device);

- Driving self-propelled buggy to transport concrete from mixer or source of supply to place of deposit, operating levers to dump load, operating buggy by pushing or pulling by hand between mixer or other source to site of work;
- Operating small remote control vibrating compactor (such as a “whacker”) in trenches;
- Preparing the surfaces of concrete masonry which is not to be finished (using tools other than those normally used by "Cement Masons") by patching holes and broken corners, and removing high spots and defective concrete;
- Operating a power driven, hand guided, water cooled saw which is used to cut through slabs of concrete, except as otherwise provided elsewhere;
- Cuts brick, cinder block and concrete slabs using power abrasive saw, including hand-held, table or walk-behind saw;
- Operating a machine which applies asphalt or concrete along the edge of highways or parking aprons to form a small curb;
- Using a cutting torch for demolition work on steel or other metal structures;
- Cleaning and vacuuming heating and air conditioning ductwork that does not involve any dismantling, reassembling, cutting or bending sheet metal;
- Disassembling lead ductwork for demolition;
- Removal of sheet metal ductwork for demolition;
- Fitting together, aligning and grading metal road forms for holding concrete in place on road and street surfaces; dismantling, moving and cleaning forms after concrete hardens;
- Installing preformed wire baskets by tapping hooks along the edge of the basket to keep it in place on highway projects;
- Keeping stakes and stringline set in place out in front of trenching machine so that machine will cut ditch in correct location, setting stakes so that pipelayers can fine-grade ditch and measure from the batter board down to correct depth of ditch;
- Assisting operator and handling the equipment and directing the placing of concrete or mortar that is moved by pressure or pneumatic equipment, such as gunite; may fine-grade and place wire mesh at times; may perform other related semi- skilled duties.
- Assisting brickmasons, stonemason, and blockmasons by preparing mortar mix, either by hand or machine, delivering material to masons on scaffold, operating small material moving equipment such as power buggy, hoists, mortar mix pumps and other similar equipment; dismantles bricklayer scaffolds.
- Constructing a means of permanent access to water and sewer lines for maintenance purposes. Work consists of laying brick or concrete block starting from a concrete slab at bottom of ditch up to an approximate grade line near the surface of the ground; brick or block is laid in by eyesight and is normally not to a plumb line; chipped or culled brick can be used and quite often is; no effort may be made to keep mortar off the face of the brick and joints are not pointed; applies coating of concrete to interior and exterior surfaces, except where tools of the trade are involved, performs other related duties.
- Mechanically mixing mortar ingredients to proper consistency and delivering to mason on scaffold or at site of work; keeping materials supplied to mason and assisting according to directions of mason;
- Assembling large diameter metal culverts by bolting together semi-circular pieces of metal to form a complete circle, and bolting each section of this circle to similar sections which are placed adjacently, repeating these processes until the required length of culvert is formed.

- On utility projects, laying tile, concrete, or corrugated metal pipe; receiving pipe lowered from top of trench; inserting spigot end of pipe into bell end of last laid pipe; adjusting pipe to line and grade; sealing joints with cement or other sealing compound;
- Mixing plaster to be used in a machine which is designed to apply plaster to surfaces by means of a hose; handling and maintaining hose, placing and moving machine, and servicing and maintaining machine;
- Cleaning, screening and feeding sand to hopper or pot of sandblasting machine;
- Supervising and assisting in locating, loading, and firing blast holes for breaking up hard materials; enlarging bottom of drilled holes by discharging small quantities of explosives, inserting detonator in charge of explosive, attaching fuse or electric wires, the stick and detonator forming a primer, the discharge of which effects the discharge of the remainder of the explosive; charging hole by placing explosive, including stick that contains detonator, in hole and tamping with a pole; depressing handle of blasting machine or lights fuse to fire explosive; may use prima-cord or delay caps;
- Carrying powder or other explosive to blaster or powderman and assisting by placing prepared explosive in hole, connecting lead wire to blasting machine, and performing other duties as directed;
- Attaching and assisting in the installation of guardrails (other than guardrails on bridges), guardrail posts, informational signs, and metal fencing (including barbed wire and woven wire, excluding chain link and security fencing) which is used to define right of way, medians, or driving lanes or provide safety for such areas using small hand tools such as hammer and spud wrench;
- Cleaning and preparing surfaces by the use of sandblasting equipment; sanding floors using buff machines or floor sanding machines;
- Cleaning and dressing the slopes of roadway cuts and embankments while suspended by ropes or cables using hand tools as required;
- Lowering hose-like flexible shaft of vibrator into newly poured concrete; starting power unit and holding shaft, allowing hammerhead on shaft to vibrate, thus compacting the concrete (air, electric, or gasoline operated vibrators are used);
- Operating hand guided vibratory or impact compactor, adjusting levers, throttles and other devices necessary for operation;
- Setting up and operating drilling mechanism that drills holes into concrete or rock; leveling machine by placing timbers under wheels; inserting and fastening drill steel in chuck; adjusting angle of drill tower and bolts into position; controlling drilling and speed of drill by moving levers;
- Assisting in setting up drill, assorting drill steels, and inserting drill steel into drill chuck (as Wagon, Air Track, Drill and Diamond Drillers' Tender - Outside); Lubricating drill;
- Cleans and washes windows;
- Handling the equipment and directing the placing of concrete or mortar 1 1/2" thickness or over that is moved by pneumatic equipment; may fine-grade; installing concrete around electrical conduits after pull-wires have been installed;
- Performing landscaping duties including site development, soil preparation, fertilizing, the building of garden accessories, preparation for the installation of garden sprinkler systems; operating small walking type farm equipment; duties shall not include electrical work, fencing, concrete retaining walls, or other work which is generally performed by skilled craftsmen;
- Assisting divers by performing tasks such as handling concrete hoses; handing tools to divers; delivering materials and monitoring two-way communication boxes; pouring epoxy material into piling encasements.

MILLWRIGHT

Installs machinery and equipment according to layout plans, blueprints, and other drawings in industrial establishment, using hoists, lift trucks, handtools, and power tools: Reads blueprints and schematic drawings to determine work procedures. Dismantles machines, using hammers, wrenches, crowbars, and other handtools. Moves machinery and equipment, using hoists, dollies, rollers, and trucks. Assembles and installs equipment, such as shafting, conveyors, and tram rails, using handtools and power tools. Constructs foundation for machines, using handtools and building materials, such as wood, cement, and steel.

Aligns machines and equipment, using hoists, jacks, handtools, squares, rules, micrometers, and plumb bobs. Assembles machines, and bolts, welds, rivets, or otherwise fastens them to foundation or other structures, using handtools and power tools. May operate engine lathe to grind, file, and turn machine parts to dimensional specifications. May repair and lubricate machines and equipment. May install robot and modify its program, using teach pendant. May perform installation and maintenance work as part of team of skilled trades workers.

PAINTER

Applies coats of paint, varnish, stain, enamel, or lacquer to decorate, waterproof and protect interior or exterior surfaces, trimmings, and fixtures of buildings and other structures, including decks for parking garages, roadway barriers and painting of roadway markings and lines with thermoplastic materials*: Reads work order or receives instructions from supervisor regarding painting. Smooths surfaces, using sandpaper, brushes, or steel wool, and removes old paint from surfaces, using paint remover, scraper, wire brush, or blowtorch to prepare surfaces for painting. Fills nail holes, cracks, and joints with caulk, putty, plaster, or other filler, using caulking gun and putty knife. Selects premixed paints, or mixes required portions of pigment, oil, and thinning and drying substances to prepare paint that matches specified colors. Removes fixtures, such as pictures and electric switchcovers from walls prior to painting, using screwdriver. Spreads drop cloths over floors and room furnishings, and covers surfaces, such as baseboards, door frames, and windows with masking tape and paper to protect surfaces during painting. Paints surfaces, using brushes, spray gun, or paint rollers. Simulates wood grain, marble, brick, or tile effects. Applies paint with cloth, brush, sponge, or fingers to create special effects. Erects scaffolding or sets up ladders to perform tasks above ground level. May be designated according to type of work performed as Painter, Interior Finish (construction); Painter, Maintenance (any industry); or according to type of material used as Calciminer (construction); Varnisher (construction). May also hang wallpaper and fabrics. May wash surfaces prior to painting with mildew remover, using brush.

Seals joints between plasterboard or other wallboards to prepare wall surface for painting or papering: Mixes sealing compound by hand or with portable electric mixer, and spreads compound over joints between boards, using trowel, broadknife, or spatula. Presses paper tape over joint to embed tape into compound and seal joint, or tapes joint, using mechanical applicator that spreads compound and embeds tape in one operation. Spreads and smooths cementing material over tape, using trowel or floating machine to blend joint with wall surface. Sands rough spots after cement has dried. Fills cracks and holes in walls and ceiling with sealing compound. May countersink nails or screws below surface of wall prior to applying sealing compound, using hammer or screwdriver.

*** This is added as a clarification. These tasks have always been included within the description of tasks performed by Painters.**

PILE DRIVER

Performs work involving pilings or sheeting of wood, concrete, steel or plastic on wharves, piers, docks, bulkheads, jetties, wooden bridges, ferry slips and pile foundations, including boring operations for the installation of auger cast piles. Sets up and tends all pile test loads. Performs any combination of the following duties in pile driving operations to raise and place wooden or concrete piles or steel sheeting: Sets up hoisting equipment for raising and placing wooden or concrete piles or steel sheeting sections to cable of hoist, using chain, cable or rope.

Signals worker operating hoisting equipment to lift and place the wooden or concrete pile or steel sheeting section. Guides wooden or concrete pile or steel sheeting section, using tag line (rope) or rides on pile or steel sheeting to guide it into position. Pulls, pushes or pries wooden or concrete pile or steel sheeting into place while pile or sheeting is supported by hoisting equipment. Dresses and caps the pilings which have been driven, and prepares them to receive the superstructure. Performs work in connection with shoring systems replacing sheeting (krings system and lagging). Installs tie-backs for the shoring system and tests shoring system.

Perform placement of rings, shores, bracing and jacking of all piles on the underpinning of buildings, bridges, railroads and all other underpinning operations. Handles, sets, secures, cuts and drills pre-cast piles and pile caps on bridges, piers, docks and wharves. Handles, sets, secures, cuts and drills pre-cast decking on piers, docks and wharves.

Repairs deteriorated pilings by installing a pile encasement.

PLASTERER

Applies coats of plaster to interior walls, ceilings, and partitions of buildings, to produce finished surface, according to blueprints, architect's drawings, or oral instructions, using handtools and portable power tools: Directs workers to mix plaster to desired consistency and to erect scaffolds. Spreads plaster over lath or masonry base, using trowel, and smooths plaster with darby and float to attain uniform thickness. Sprays fireproof insulation onto steel beams. Applies scratch, brown, or finish coats of plaster to wood, metal, or board lath successively. Roughens undercoat with scratcher (wire or metal scraper) to provide bond for succeeding coats of plaster. Creates decorative textures in finish coat by marking surface of coat with brush and trowel or by spattering surface with pebbles. May install lathing. May mix mortar. May install guide wires on exterior surface of buildings to indicate thickness of plaster to be applied. May install precast ornamental plaster pieces by applying mortar to back of pieces and pressing pieces into place on wall or ceiling.

Molds and installs ornamental plaster panels and trim, and runs (casts) ornamental plaster cornices and moldings by either of following methods: (1) Spreads freshly mixed plaster on table or in forms with trowel when molding and installing ornamental trim. Shapes plaster by hand, using template and cuts trim to size after plaster has hardened.

Applies coat of plaster to wall and presses trim into position. (2) Nails wooden strips to wall and ceiling to serve as guide for template when casting (running) cornices or moldings. Applies plaster to wall or ceiling, using trowel. Pushes template over plaster, striking off excess plaster until desired shape and smoothness of molding is obtained.

Applies weatherproof, decorative covering of Portland cement or gypsum plaster to outside building surfaces, using handtools. Decorates final or finish coat by marking coat with sand, or with brush or trowel, or by spattering with small stones. May nail wire mesh, lath, or similar material to outside surfaces to serve as binding device to hold stucco in place. May apply stucco, using spray gun. May install guide wires on surface of buildings to indicate thickness of stucco to be applied.

PLUMBER/PIPEFITTER/STEAMFITTER

Lays out, assembles, installs, and maintains pipe systems, pipe supports, and related hydraulic and pneumatic equipment, for steam, hot water, heating, cooling, lubricating, sprinkling, and industrial production and processing systems, applying knowledge of system operation, and following blueprints: Unloads and handles material to be used by plumbers and pipefitters under this definition; Selects type and size of pipe, and related materials and equipment, such as supports, hangers, and hydraulic cylinders, according to specifications. Inspects work site to determine presence of obstructions and to ascertain that holes cut for pipe will not cause structural weakness. Plans installation or repair to avoid obstructions and to avoid interfering with activities of other workers. Cuts pipe, using saws, pipe cutter, hammer and chisel, cutting torch, and pipe cutting machine. Threads pipe, using pipe threading machine. Bends pipe, using pipe bending tools and pipe bending machine. Assembles and installs a variety of metal and nonmetal pipes, tubes, and fittings, including iron, steel, copper, and plastic. Connects pipes, using threaded, caulked, soldered, brazed, fused, or cemented joints and handtools. Secures pipes to structure with brackets, clamps, and hangers, using handtools and power tools. Installs and maintains hydraulic and pneumatic components of machines and equipment, such as pumps and cylinders, using handtools. Installs and maintains refrigeration and air-conditioning systems, including compressors, pumps, meters, pneumatic and hydraulic controls, and piping, using handtools and power tools, and following specifications and blueprints. Increases pressure in pipe system and observes connected pressure gauge to test system for leaks. May weld pipe supports to structural steel members. Performs welds on steel casing for sanitary sewers. May operate machinery to verify repair. May operate machinery to verify repair. May modify programs of automated machinery, such as robots and conveyors, to change motion and speed of machine, using teach pendant, control panel, or keyboard and display screen of robot controller and programmable controller. May be designated Steam Fitter when installing piping systems that must withstand high pressure.

Assembles, installs, and repairs pipes, fittings, and fixtures of heating, water, and drainage systems, according to specification and plumbing codes: Studies building plans and working drawings to determine work aids required and sequence of installations. Inspects structure to ascertain obstructions to be avoided to prevent weakening of structure resulting from installation of pipe. Locates and marks position of pipe and pipe connections and passage holes for pipes in walls and floors, using ruler, spirit level, and plumb bob. Cuts openings in walls and floors to accommodate pipe and pipe fittings, using handtools and power tools. Cuts and threads pipe, using pipe cutters, cutting torch, and pipe-threading machine. Bends pipe to required angle by use of pipe-bending machine or by placing pipe over block and bending it by hand.

Assembles and installs valves, pipe fittings, and pipes composed of metals, such as iron, steel, brass, and lead, and nonmetals, such as glass, vitrified clay, and plastic, using handtools and power tools. Joins pipes by use of screws, bolts, fittings, solder, plastic solvent, heat fusion equipment and caulks joints. Fills pipe system with water or air and reads pressure gauges to determine whether system is leaking.

Installs and repairs plumbing fixtures, such as sinks, commodes, bathtubs, water heaters, hot water tanks, garbage disposal units, dishwashers, and water softeners. Repairs and maintains plumbing by replacing washers in leaky faucets, mending burst pipes, and opening clogged drains. May weld holding fixtures to steel structural members.

Test, adjust and balance heating and cooling piping systems in commercial and industrial buildings using specialized tools and equipment to attain performance standards specified in system design. Adjusts flow control valves in piping to balance system, using hand tools such as pliers, screwdriver, and wrenches.

Work with balancing personnel to perform tests to see if the heating and cooling systems are operating to specifications and detect malfunctions in piping system component parts.

POWER EQUIPMENT OPERATOR

Operates Steel and Stone handling equipment in connection with erection. Operates cranes, machine-handling machinery, cable spinning machine, helicopters, backhoes, cableways, conveyor loader, drag lines, keystones, all types of shovels, derricks, trench shovels, trenching machines, pippin type backhoe, hoists, pavers, milling machine, mucking machine, gradalls, front-end loaders, tandem scraper, drills (self-contained Drillmaster type), fork lift, motor patrols, batch plant with mixer, scraper and tournapull, rollers, spreaders, pan trucks, bulldozers, tractors, conveyors, pressure boilers, well drillers, ditch witch type trenchers, concrete breaking machines, fine grade machines, seamen pulverizing mixer, form line graders, road finishing machines, power boom, broom truck, street sweeper, seed spreader, grease truck (to provide fuel, lubrication and service for power equipment), wellpoints, compressors, pumps and machines similar to above. Sets up hollow stem auger equipment for attachment to crane. Included in this classification are mechanics for power equipment, tiremen on power equipment, asphalt plant engineers, maintenance engineer (power boat), firemen, oilers and deck hands (personnel boats), and grease truck helper.

ROOFER – COMPOSITION

Applies roofing materials, including insulation, underlayment, ice and water shield, felt paper, nailboard, vapor retarder, thermal layers, acoustic layers, waterproofing or protective materials in conjunction with the roof system, including metal roof systems. Applies low slope roof substrate materials used as vapor barrier, fireproofing, support or attachment surfaces for composition roof systems to the roof deck. Applies rigid insulation, including composite insulations having nailable surfaces bonded to the insulation, when used as components of low sloped roof systems or with waterproofing. Applies mineral aggregate, gravel, slag, ballast, pavers, protection boards, walkway pads and roof treads when used to surface or protect low slope composition roof systems or waterproofing. Installs base flashings, curb flashings and counter-flashings used to roof or waterproof intersecting surfaces on low slope roofs. Applies components of low slope composition roofing systems used to seal, coat and maintain the roof including roof cements, reinforcements, finishing and toppings. Applies spray-in-place foams such as urethane, polyurethane or polyisocyanurate and the coatings applied over them when used for roofing and waterproofing. Applies bituminous or asphaltic-based sheet, liquid, semi-liquid and/or pre-formed panels as necessary to waterproof low slope roofing system. Removes existing low slope composition roof materials in connection with the installation of a new composition roof at the same location. Removes existing sheet metal roofs and all associated components.

ROOFER – SHINGLE, SLATE AND TILE

Applies shingle, slate and tile roofing materials (including insulation incidental to the roof system) on steep slope roofs. Applies roofing felt, paper, membrane, and ice shield or vapor barrier as layer beneath shingle, slate and tile roofs. Aligns steep slope roofing material with roof edge and overlaps successive layers. Gauges distance of overlap with chalkline, gauge on shingling hatchet, or by lines on shingles. Fastens shingles to roof with asphalt, cement, or nails.

Cuts and punches holes in slate, tile, terra cotta or wood roofing shingles using punch and hammer. Applies rigid insulation, including composite insulation having nailable surfaces bonded to the insulation, to steep slope roofs where such insulation is related to the application of shingle, slate and/or tile roofing materials. May construct and install prefabricated roof sections to rafters.

Removes existing shingle, slate and/or tile roof materials in connection with the application of a new shingle, slate and/or tile roof at the same location.

SHEET METAL WORKER

Plans, lays out, fabricates, assembles, installs, and repairs sheet metal parts, equipment, and products, utilizing knowledge of working characteristics of metallic and nonmetallic materials, machining, and layout techniques, using handtools, power tools, machines, and equipment: Reads and interprets blueprints, sketches, or product specifications to determine sequence and methods of fabricating, assembling, and installing sheet metal products. Selects gauge and type of sheet metal, such as galvanized iron, copper, steel, or aluminum, or nonmetallic material, such as plastics or fiberglass, according to product specifications. Lays out and marks dimensions and reference lines on material, using scribes, dividers, squares, and rulers, applying knowledge of shop mathematics and layout techniques to develop and trace patterns of product or parts or using templates. Sets up and operates fabricating machines, such as shears, brakes, presses, forming rolls, and routers, to cut, bend, block and form, or straighten materials. Shapes metal material over anvil, block, or other form, using handtools. Trims, files, grinds, deburrs, buffs, and smooths surfaces, using handtools and portable power tools. Welds, solders, bolts, rivets, screws, clips, caulks, or bonds component parts to assemble products, using handtools, power tools, and equipment. Installs assemblies in supportive framework according to blueprints, using handtools, power tools, and lifting and handling devices. Installs standing-seam metal roofs (but not insulation and other roofing material — refer to definition for Roofer-Composition - installed in conjunction with metal roof systems. Installs aluminum fascia on roofs. Inspects assemblies and installation for conformance to specifications, using measuring instruments, such as calipers, scales, dial indicators, gauges, and micrometers. Repairs and maintains sheet metal products. May operate computer-aided-drafting (CAD) equipment to develop scale drawings of product or system. May operate laser-beam cutter or plasma arc cutter to cut patterns from sheet metal.

Installs sheet metal ductwork to facilitate the movement of air. Disassembly of existing sheet metal ductwork in connection with the installation of new sheet metal ductwork at the same location.

Cuts, patches, disassembles and reassembles ducts in duct-cleaning operations. Tests, adjusts, and balances heating, cooling, and ventilation systems in commercial and industrial buildings using specialized tools and test equipment to attain performance standards specified in system design. Studies system blueprints, specifications and performance data to determine configuration and purpose of system components, such as motors, pumps, fans, switches and ducts. Discusses systems malfunctions with users to isolate problems. Inspects systems to verify system compliance with plans and specifications and to detect malfunctions in system components parts. Adjusts system controls to settings recommended by vendor to prepare to perform tests. Tests performance of air systems, using specialized tools and test equipment, such as pitot tube, manometer, anemometer, velometer, tachometer, psychrometer, thermometer, to isolate problems and to determine where adjustments are necessary. Opens or closes louvers in system ductwork to balance system, using hand tools such as pliers, screwdrivers, or wrenches. Discusses system operations with users to verify that malfunctions have been corrected. Installs insulation (not sprayed urethane or polyurethane) incidental to sheet metal work.

SOFT FLOOR LAYER

Applies blocks, strips, or sheets of shock-absorbing, sound-deadening, or decorative covering to floors, walls, and cabinets: Disconnects and removes obstacles, such as appliances and light fixtures. Sweeps, scrapes, sands, or chips dirt and irregularities from base surfaces, and fills cracks with putty, plaster, or cement grout to form smooth, clean foundation. Measures and cuts covering materials, such as rubber, linoleum or cork tile, and foundation material, such as felt, according to blueprints and sketches, using rule, straightedge, linoleum knife, and snips. Spreads adhesive cement over floor to cement foundation material to floor for sound-deadening, and to prevent covering from wearing at board joints. Lays out centerlines, guidelines, and borderlines on foundation with chalkline and dividers. Spreads cement on foundation material with serrated trowel. Lays covering on cement, following guidelines, to keep tile courses straight and butts edges of blocks to match patterns and execute designs. Joins sections of sheet covering by overlapping adjoining edges and cutting through both layers with knife to form tight joint. Rolls finished floor to smooth it and press cement into base and covering. May soften area of floor covering with butane torch to fit materials around irregular surfaces. May lay carpet.

Applies decorative steel, aluminum, and plastic tile (known as soft tile to distinguish from ceramic tile) to walls and cabinets of bathrooms and kitchens: Measures surface to locate center points and draws horizontal and vertical guidelines through them. Brushes waterproof compound over plaster surfaces to seal pores. Spreads adhesive cement over wall, using trowel or broad knife. Positions tile on cement, following specified pattern. Presses tile into cement. Removes excess cement from joints between tile to clean finished surface, using damp cloth or cleaning compound. Rolls sheet wall covering with hand roller to press into cement. May wipe grout into joints of tile to seal them.

SPRINKLER FITTER

Installs and maintains all fire protection and fire control systems including the unloading, handling by hand, power equipment and installation of all piping or tubing, appurtenances and equipment pertaining thereto, including both overhead and underground water mains, fire hydrants and hydrant mains, standpipes and hose connections to sprinkler systems, sprinkler tank heaters, air lines and thermal systems used in connection with sprinkler and alarm systems, also all tanks and pumps connected thereto, also included shall be CO-2 and Cardox Systems, Dry Chemical Systems, Foam Systems, Halon and all other fire protection systems, the locating of and cutting or coring of all holes for piping and the setting of all sleeves and inserts required for the installation of the work.

TERRAZZO/MARBLE/TILE SETTER

Cuts, tools, and sets marble slabs in floors and walls of buildings and repairs and polishes slab previously set in buildings: Trims, faces, and cuts marble to specified size, using power sawing, cutting, and facing equipment and handtools. Drills holes in slab and attaches bracket. Spreads mortar on bottom of slab and on sides of adjacent slabs. Sets block in position, tamps it into place, and anchors bracket attachment with wire. Fills joints with grout. Removes excess grout from marble with sponge.

Cleans and bevels cracks or chips on slabs, using handtools and power tools.

Heats cracked or chipped area with blowtorch and fills defect with composition mastic that matches grain of marble. Polishes marble and other ornamental stone to high luster, using power tools or by hand.

Applies cement, sand, pigment, and marble chips to floors, stairways, and cabinet fixtures to attain durable and decorative surfacing according to specifications and drawings: Spreads roofing paper on surface of foundation. Spreads mixture of sand, cement, and water over surface with trowel to form terrazzo base. Cuts metal division strips and presses them into terrazzo base so that top edges form desired design or pattern and define level of finished floor surface. Spreads mixture of marble chips, cement, pigment, and water over terrazzo base to form finished surface, using float and trowel. Scatters marble chips over finished surface. Pushes roller over surface to imbed chips. Allows surface to dry, and pushes electric-powered surfacing machine over floor to grind and polish terrazzo surface. Grinds curved surfaces and areas inaccessible to surfacing machine, such as stairways and cabinet tops, with portable hand grinder. May precast terrazzo blocks in wooden forms.

Applies tile to walls, floors, ceilings, and promenade roof decks, following design specifications: Examines blueprints, measures and marks surfaces to be covered, and lays out work. Measures and cuts metal lath to size for walls and ceilings with tin snips. Tacks lath to wall and ceiling surfaces with staple gun or hammer. Spreads plaster base over lath with trowel and levels plaster to specified thickness, using screed. Spreads concrete on subfloor with trowel and levels it with screed. Spreads mastic or other adhesive base on roof deck using serrated spreader to form base for promenade tile. Cuts and shapes tile with tile cutters and biters. Positions tile and taps it with trowel handle to affix tile to plaster or adhesive base.

TERRAZZO/MARBLE/TILE FINISHER

Supplies and mixes construction materials for Marble Setter, applies grout, and cleans installed marble: Moves marble installation materials, tools, machines, and work devices to work areas. Mixes mortar, plaster, and grout, as required, following standard formulas and using manual or machine mixing methods. Moves mixed mortar or plaster to installation area, manually or using wheelbarrow. Selects marble slab for installation, following numbered sequence or drawings. Drills holes and chisels channels in edges of marble slabs to install metal wall anchors, using power drill and chisel. Bends wires to form metal anchors, using pliers, inserts anchors into drilled holes of marble slab, and secures anchors in place with wooden stake and plaster. Moves marble slabs to installation site, using dolly, hoist, or portable crane. Fills marble joints and surface imperfections with grout, using grouting trowel or spatula, and removes excess grout, using wet sponge. Grinds and polishes marble, using abrasives, chemicals, and manual or machine grinding and polishing techniques. Cleans installed marble surfaces, work and storage areas, installation tools, machinery, and work aids, using water and cleaning agents. Stores marble, installation materials, tools, machinery, and related items. May modify mixing, material moving, grouting, polishing, and cleaning methods and procedures, according to type of installation or materials. May repair and fill chipped, cracked, or broken marble pieces, using torch, spatula, and heat sensitive adhesive and filler. May secure marble anchors to studding, using pliers, and cover ends of anchors with plaster to secure anchors in place. May assist Marble Setter to saw and position marble. May erect scaffolding and related installation structures.

Supplies and mixes construction materials for Terrazzo Worker, applies grout, and finishes surface of installed terrazzo: Moves terrazzo installation materials, tools, machines, and work devices to work areas, manually or using wheelbarrow. Measures designated amounts of ingredients for terrazzo or grout, using graduated containers and scale, following standard formulas and specifications, and loads portable mixer, using shovel. Mixes materials according to experience and requests from Terrazzo Worker and dumps mixed materials that form base or top surface of terrazzo into prepared installation site, using wheelbarrow. Applies curing agent to installed terrazzo to promote even curing, using brush or sprayer. Grinds surface of cured terrazzo, using power grinders, to smooth terrazzo and prepare for grouting. Spreads grout across terrazzo to fill surface imperfections, using trowel. Fine grinds and polishes surface of terrazzo, when grout has set, using power grinders. Washes surface of polished terrazzo, using cleaner and water, and applies sealer, according to manufacturer's specifications, using brush. Installs grinding stone in power grinders, using handtools. Cleans installation site, mixing and storage areas, tools, machines, and equipment, using water and various cleaning devices. Stores terrazzo installation materials, machines, tools, and equipment. May modify mixing, grouting, grinding, and cleaning procedures according to type of installation or material used. May assist Terrazzo Worker to position and secure moisture membrane and wire mesh prior to pouring base materials for terrazzo installation.

May spread marble chips or other material over fresh terrazzo surface and press into terrazzo, using roller. May cut divider and joint strips to size as directed. May cut grooves in terrazzo stairs, using power grinder, and fill grooves with nonskid material.

Supplies and mixes construction materials for Tile Setter, applies grout, and cleans installed tile: Moves tiles, tilesetting tools, and work devices from storage area to installation site manually or using wheelbarrow. Mixes mortar and grout according to standard formulas and request from Tile Setter, using bucket, water hose, spatula, and portable mixer.

Supplies Tile Setter with mortar, using wheelbarrow and shovel. Applies grout between joints of installed tile, using grouting trowel. Removes excess grout from tile joints with wet sponge and scrapes corners and crevices with trowel. Wipes surface of tile after grout has set to remove grout residue and polish tile, using nonabrasive materials. Cleans installation site, mixing and storage areas, and installation machines, tools, and equipment, using water and various cleaning tools. Stores tile setting materials, machines, tools, and equipment. May apply caulk, sealers, acid, steam, or related agents to caulk, seal, or clean installed tile, using various application devices and equipment. May modify mixing, grouting, grinding, and cleaning procedures according to type of installation or material used. May assist Tile Setter to position and secure metal lath, wire mesh, or felt paper prior to installation of tile. May cut marked tiles to size, using power saw or tile cutter. Restores, seals, rejuvenates tile and grout.

TRUCK DRIVER

Operates dumps, dumpsters, escort and pilot vehicles, flat body material trucks, form trucks, greasers (to provide fuel, lubrication and service for trucks) and steamers, panel truck, pick-ups, rubber-tired towing and pushing vehicles, A-frames, agitators or mixers, asphalt distributors, low-boys, semi-trailers, tandems, batch truck, euclid type or similar off-highway equipment, off-highway tandem back-dump, specialized earth moving equipment, twin engine equipment and double-hitched equipment, and equipment similar to above. This classification also includes truck mechanics.

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NOT FOR BIDDING PURPOSES

GENERAL REQUIREMENTS

TABLE OF ARTICLES

1. GENERAL PROVISIONS
2. OWNER
3. CONTRACTOR
4. ADMINISTRATION OF THE CONTRACT
5. SUBCONTRACTORS
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7. CHANGES IN THE WORK
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9. PAYMENTS AND COMPLETION
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13. MISCELLANEOUS PROVISIONS
14. TERMINATION OR SUSPENSION OF THE CONTRACT

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.

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 materiel or performing labor in the performance of the Contract, of all sums of money due the person for such labor and materiel. (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 judgment 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.

5.2 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 direct salary plus customary fringe benefits (prevailing wage rates) and documented statutory costs such as workman's compensation insurance, Social Security/Medicare, and unemployment insurance (a maximum multiplier of 1.35 times DPE).
- 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 upon AIA Document G702. 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 Consent of Surety to final payment.

9.4.1.6 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
\$1,000,000
\$1,000,000 | for each person
for each occurrence
aggregate |
| Property Damage | \$500,000
\$1,000,000 | for each occurrence
aggregate |
- 11.7.2 Contractor's Protective Liability Insurance
- Minimum coverage to be:
- | | | |
|-----------------|---|---|
| Bodily Injury | \$500,000
\$1,000,000
\$1,000,000 | for each person
for each occurrence
aggregate |
| Property Damage | \$500,000
\$500,000 | for each occurrence
aggregate |
- 11.7.3 Automobile Liability Insurance
- Minimum coverage to be:
- | | | |
|-----------------|----------------------------|--|
| Bodily Injury | \$1,000,000
\$1,000,000 | for each person
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 Owner 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.

13.5 WARRANTY

- 13.5.1 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 SECTION 008113

DIVISION 1 – GENERAL REQUIREMENTS

NOT FOR BIDDING PURPOSES

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NOT FOR BIDDING PURPOSES

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.

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: Holts Landing Boat Ramp

1. Project Location: Holts Landing State Park near Ocean View, DE

- B. Owner: State of Delaware, Division of Natural Resources and Environmental Control, Parks and Recreation, 89 Kings Highway, Dover DE 19901.

- C. Architect/Engineer's Identification: The Contract Documents, dated March 2015, 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 decayed single-lane boat ramp with reconstruction of a dual-lane ramp.
- B. Type of Contract:
1. Project will be constructed under a single, lump sum prime 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, (Holts Landing State Park), 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.

1.16 MISCELLANEOUS PROVISIONS

A. SCHEDULE

1. The following is the required schedule for this work:
 - a. Bids Due: July 01, 2015 @ 3:00 pm
 - 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 by December 31, 2015.
 - f. Completion of Punch List: 21 days from date of substantial completion.
- 1) Refer to the General Requirements for additional details.

B. COMPLETION DATE

1. All work of this contract shall be completed within the time limit set out in Section 01 10 00 (1.16.A.1) – Schedule.

C. FAILURE TO COMPLETE WORK ON TIME

1. For each calendar day or work day that work remains uncompleted after the Contract time has expired or beyond the completion date established by the Contract, the sum specified in Subsection 1.16 D will be deducted from any money due the Contractor. This sum shall not be considered and treated as a penalty but as liquidated damages due the Department by reason of inconvenience to the public, added cost of engineering and supervision, and other extra expenditures of public funds due to the Contractor's failure to complete the work on time. Any adjustment of the Contract time for completion of work granted will be considered in the assessment of liquidated damages.
2. The column indicated in the charts as "Calendar Day" will also be used in the assessment of liquidated damages for contracts with a predetermined completion date.
3. Computations for the assessment of liquidated damages shall be made in accordance with the daily computations described in the definition of working day, when the Contract is a working contract. On all other contracts each and every consecutive calendar day, including Saturdays, Sundays and holidays, shall be included in the computations for the assessment of liquidated damages.

4. The Contractor shall become liable for liquidated damages for delays commencing from the date on which the Contract time, as adjusted by Section 01 25 00 – Contract Modification Procedures, shall expire.
5. If there is a delay in the delivery of critical materials, such as steel, copper, or aluminum, due to defense needs, energy crisis, etc. a time extension shall be allowed for such delays. Each case will be independently evaluated to determine if delays were, in fact, beyond the control of the Contractor or fabricator and delayed the Project completion. Satisfactory supported time extension requests shall be made concurrently with the delay and not after the fact.
6. Requests for time extensions shall be subject to review by the Engineer, and the Engineer will determine the amount of time extension allowed.
7. There will be no acceptance of unsupported claims of delays in delivery of material as a basis for time extensions. The Contractor is presumed to have included in its Contract price, allowance for any anticipated delays in procurement of materials, which procurement is its sole responsibility. Unless some unusual market condition such as an industrywide strike, natural disaster, or areawide storages arises after bids are taken and prevents procurement of materials within the allowable time limitations, delays in delivery of such materials do not provide sufficient reason for suspending time charges.
8. Permission for the Contractor or surety to continue and finish work after the Contract time and approved extensions have elapsed shall not waive the Department's rights under the Contract.
9. The Department may waive such portions of the liquidated damages as may accrue after the work is substantially complete and is in a condition for safe and convenient use by the traveling public.
10. Payment of liquidated damages will be deducted from payments otherwise due the Contractor or be made by direct payment by the Contractor in the event the total liquidated damages due exceed said deductions.

[See next page for Schedule of Liquidated Damages]

D. Schedule of Liquidated Damages

Awarded Contract Value		Daily Change	
For More Than---	To and including--	Work Day	Calendar Day
\$ 0	\$ 25,000	\$ 380.00	\$ 275.00
25,000	50,000	400.00	290.00
50,000	100,000	540.00	390.00
100,000	500,000	840.00	600.00
500,000	1,000,000	1,090.00	780.00
1,000,000	2,000,000	1,350.00	960.00
2,000,000	5,000,000	1,410.00	1,010.00
5,000,000	10,000,000	1,590.00	1,130.00
10,000,000	15,000,000	2,510.00	1,790.00
15,000,000	20,000,000	4,180.00	2,990.00
20,000,000	25,000,000	5,850.00	4,180.00
25,000,000	30,000,000	7,520.00	5,370.00
30,000,000	35,000,000	9,190.00	6,570.00
35,000,000	Over	10,870.00	7,760.00

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 Holts Landing State Park 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

NOT FOR BIDDING PURPOSES

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.
 - 5. Division 35 "WATERWAY and MARINE CONSTRUCTION," Section 35 31 16 "WINGWALLS" procedures for measurement and payment for Aluminum Sheet Piling.
 - 6. Division 35 "WATERWAY and MARINE CONSTRUCTION," Section 35 31 16 "WINGWALLS" procedures for measurement and payment for Timber Piles.

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 2 - PRODUCTS (Not Used)

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. No. 57 Stone
 - 1. Description: Inclusion of No. 57 stone within the “over-excavation” area as defined in Section 31 20 00 “EARTH MOVING”.
 - 2. Unit of Measurement: Ton
- C. Unit Price No. 3-Del No. 2 Stone
 - 1. Description: Inclusion of No. 2 stone into loose sand areas as defined in Section 31 20 00 “EARTH MOVING”.
 - 2. Unit of Measurement: Ton
- D. Unit Price No. 4-Aluminum Sheet Piling
 - 1. Description: Addition/Reduction of specified length for individual aluminum sheet piling as defined in Section 35 31 16 “WINGWALLS.”
 - 2. Unit of Measurement: Vertical Linear Feet (VLF)
- E. Unit Price No. 5-Timber Piles
 - 1. Description: Addition/Reduction of specified length for timber piles as defined in Section 35 31 16 “WINGWALLS.”
 - 2. Unit of Measurement: Linear Feet (LF)

END OF SECTION 012700

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. United States Army Corp of Engineers. (See Appendix)
- B. Department of Natural Resources and Environmental Control (DNREC).
 - 1. Subaqueous Land Permit and Water Quality Certification (See Appendix)
- C. State of Delaware Architectural Accessibility Board.

3.2 SCHEDULE OF PENDING PERMITS.

- A. None

END OF SECTION 012400

NOT FOR BIDDING PURPOSES

SECTION 012500 - CONTRACT MODIFICATION 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 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 AIA Document G710, "Architect's Supplemental Instructions."

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 AIA Document G701.

1.6 CONSTRUCTION CHANGE DIRECTIVE

- A. Construction Change Directive: Architect may issue a Construction Change Directive on AIA Document G714. Construction Change Directive instructs Contractor to proceed with a change in the Work, for subsequent inclusion in a Change Order.
1. Construction Change Directive contains a complete description of change in the Work. It also designates method to be followed to determine change in the Contract Sum or the Contract Time.
- B. Documentation: Maintain detailed records on a time and material basis of work required by the Construction Change Directive.
1. After completion of change, submit an itemized account and supporting data necessary to substantiate cost and time adjustments to the Contract.

PART 2 - PRODUCTS (Not Used)

PART 3 - EXECUTION (Not Used)

END OF SECTION 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 AIA Document G702 and AIA Document G703 Continuation Sheets as form for Applications for Payment.
- D. Application Preparation: Complete every entry on form. Notarize and execute by a person authorized to sign legal documents on behalf of Contractor. Architect will return incomplete applications without action.
1. Entries shall match data on the Schedule of Values and Contractor's Construction Schedule. Use updated schedules if revisions were made.
 2. Include amounts of Change Orders and Construction Change Directives issued before last day of construction period covered by application.
- E. Transmittal: Submit 3 signed and notarized original copies of each Application for Payment to Architect by a method ensuring receipt 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.
 2. AIA Document G706, "Contractor's Affidavit of Payment of Debts and Claims."
 3. AIA Document G706A, "Contractor's Affidavit of Release of Liens."
 4. AIA Document G707, "Consent of Surety to Final Payment."

PART 2 - PRODUCTS (Not Used)

PART 3 - EXECUTION (Not Used)

END OF SECTION 012900

NOT FOR BIDDING PURPOSES

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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NOT FOR BIDDING PURPOSES

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

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NOT FOR BIDDING PURPOSES

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.

14 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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NOT FOR BIDDING PURPOSES

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

NOT FOR BIDDING PURPOSES

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.

PART 2 - PRODUCTS (Not Used)

PART 3 - EXECUTION (Not Used)

END OF SECTION 01560

NOT FOR BIDDING PURPOSES

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NOT FOR BIDDING PURPOSES

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)

NOT FOR BIDDING PURPOSES



Knowledge for Creating
and Sustaining
the Built Environment

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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NOT FOR BIDDING PURPOSES

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. 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 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.
3. 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

NOT FOR BIDDING PURPOSES

DIVISIONS 2 to 35 - TECHNICAL SPECIFICATIONS

NOT FOR BIDDING PURPOSES

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NOT FOR BIDDING PURPOSES

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, 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.
 - 2. "Riprap" provided under Section 35 43 37.
- 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 steel 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.
- G. The existing riprap to be removed may be reused in the proposed sill.

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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NOT FOR BIDDING PURPOSES

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 DelDOT "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 picks 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 DelDOT 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 Contractor.

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, DelDOT 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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NOT FOR BIDDING PURPOSES

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 and bituminous roadway, 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 "RipRap" 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. "Wetland Planting" provided under Section 32 90 01.
 5. "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. Sand fill material at wetland planting area shall be medium to coarse grained sandy soils classified as SW and SP in "ANSI/ASTM D-2487, Classification of Soils for Engineering Purposes" are satisfactory. Crushed stone or slag will not be acceptable.

The sand fill material must contain less than 10% passing the number 100 sieve, not more than 15% by weight retained on a number 8 sieve. The material shall consist of rounded or semi-rounded grains with a medium diameter of 0.6 mm (± 0.25 mm). No frozen material, trash, roots, or other organic material will be permitted in the fill. Sand fill shall be obtained from an approved source off the project site except to the extent that on site cut may be utilized upon approval of the Owner or Owner's Representatives.

- C. 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.
- D. 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 Roadway and Parking Areas, shall be in accordance with the provisions of Section 821 "Graded Aggregates" of the Delaware DOT Standard Specifications being either Type "A" (CR-1) or Type "B" (Crusher Run).
- B. 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.
- C. 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 bituminous pavement, 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 to remove the very soft OL and OH soils. The Contractor shall base his lump sum price bid upon excavation and disposing offsite 850 cubic yards of excavated material. 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 **Parking Lot Area Excavation:**

- A. Drainage and Dewatering: Plan for and provide the structures, equipment and construction for the collection and disposal of river, surface and subsurface waters encountered in the course of construction. Drainage and dewatering necessary for completion of work specified is considered to be incidental to the construction. The Contractor shall include all costs for equipment, labor and incidentals in the respective Bid Item associated with each aspect of work. No additional cost will be paid by the Owner for drainage and/or dewatering activities. The Contractor shall conduct the activities subject to approval of DNREC; Division of Water Resources. The Contractor will be required to conduct the drainage and/or dewatering activities necessary to control the release of sediment from the project site.

1. Drainage: Surface water shall be directed away from excavation and construction sites so as to prevent erosion and undermining of foundations. Diversion ditches, dikes, and grading shall be provided and maintained as necessary to prevent erosion and sloughing. Excavation shall be performed so that the site and the area immediately surrounding the site and affecting operations at the site shall be continually and effectively drained.
2. Dewatering: Groundwater flowing toward or into excavations shall be controlled to prevent sloughing of excavation slopes and walls, boils, uplift and heave in the excavation and to eliminate interference with orderly progress of construction. French drains, sumps, ditches, or dewatering trenches will not be permitted within 3 feet of the foundation of any structure, except with specific written approval and after specific contractual provisions for restoration of the foundation area have been made. Control measures shall be taken by the time the excavation reaches the water level in order to maintain the integrity of the in-situ material. While the excavation is open, the water level shall be maintained continuously, at least 2 feet below the working level. Operate the dewatering system until work below existing water level is complete. Measure and record the performance of the dewatering system at the same time each day with observation wells and piezometers installed in conjunction with the dewatering system. The Contractor shall maintain a back-up pump and system on-site available for immediate use.

- B. It is possible that organic silt will be encountered at pavement subgrade areas. Following demolition operations, the existing aggregate base shall be proof rolled, where appropriate, with a heavy pneumatic tired vehicle, such as a dump truck. The purpose of proofrolling is to provide surface densification and to identify areas potentially requiring undercutting. The Contractor's geotechnical engineer shall look closely for soils containing very soft or loose soils after removal of the pavement. These areas shall be over-excavated as referenced elsewhere in the specifications and as shown on the Contract Drawings.

- C. Material Storage: Stockpile satisfactory excavated materials required for backfill or fill. Place, grade and shape stockpiles for proper drainage. Protect as necessary. Prevent saturation of soil above the optimum moisture content.
1. Locate and retain soil materials away from edge of excavations. Do not store within drip line of trees indicated to remain. Dispose of excess soil material and waste materials as herein specified. The Contractor shall stockpile all fill material in locations designated on the plans unless approval is specifically granted in writing by the Owner for placement in other locations on the project site within the specified limit of disturbance.
- D. Stability of Excavations: Slope sides of excavations to comply with local codes and ordinances having jurisdiction. Maintain sides and slopes of excavations in safe condition until completion of backfilling.
- E. Native 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 importation of high quality, granular material will be permitted by the Owner at the Contractor's expense. Sand, gravel or sand/gravel mixtures would be appropriate for wet weather placement. The SM materials will become unworkable at moisture contents greater than 3 percentage points above optimum. The Contractor will be required to dry these materials in order to use them as suitable fill under structures and pavements and as backfill for retaining walls, or set them aside for use in landscape areas.

3-3 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.
- D. While some of the excavation and grading will be in SM or SP sand materials, the geotechnical investigation identified underlying very soft organic SILTs (OL and OH) possibly peaty soils between approximately elevations -0.5' and -3.5' as referenced in the Geotechnical Engineer's Report. To prevent excessive differential ramp settlement, the very soft OL and OH material shall be excavated out to expose the SM sand below. Excavated material shall be disposed of off-site at an approved location.

3-4 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.

3-5 Parking Lot Fill:

- A. Loosely lay (not stretched) geotextile on the prepared subbase. Overlaps shall be 6 inches minimum and staggered a minimum of 5 feet. Rolls as great a length as it is economical for the Contractor to handle shall be used in order to minimize the number of overlaps.
- B. Place base material evenly adjacent to pavement to required elevations. Take care to prevent wedging action of backfill against paving or displacement of piping or conduit by carrying material uniformly around paving, piping or conduit to approximately same elevation in each lift. Base material shall extend a minimum of two (2') feet beyond the edges for the pavement.

3-6 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. If needed to stabilize any exposed very loose SM SANDS that may be encountered after removal of the OL and OH SILTs, the Contractor shall work No. 2 stone into the loose sand areas. In the event No. 2 stone is required, the contract price for incorporation of No. 2 stone shall be changed in accordance with the Unit Price Bid Item provided by the Contractor in the BID FORM.
- C. 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. The Contractor shall base his lump sum price bid upon placing 900 tons of #57 stone extending from the elevation of the geotextile specified to the bottom of over-excavation. 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.
- D. 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.

3-7 Wetlands Planting Fill:

- A. The Contractor shall remove all excess pavement, concrete rubble, stone, waste materials, rubbish, construction debris, etc. from the construction site prior to final grading including all waste larger than one (1") inch in its largest dimension which may be embedded in the soil.
- B. The Contractor shall only place sand fill material where indicated on the drawings, unless otherwise directed by the Owner or Owner's Representative. All disturbed areas shall be graded to provide positive drainage. The finish surface shall be smooth, compacted, and free of irregular surface changes and areas which collect water.
- C. The fill shall be compacted to 85% of the maximum dry density at +/- 3% of the optimum moisture content as determined in accordance with ASTM D698 unless otherwise directed by the Owner or Owner's Representative. In general, extensive soils testing will only be required if, in the opinion of the Owner or Owner's Representative, the Contractor is not sufficiently compacting the sand fill materials.
- D. The Contractor shall notify the Owner or Owner's Representative immediately upon the completion of sand fill placement. Upon approval of DNREC, the Contractor shall sprig the wetlands vegetation as shown on the Drawings and outlined in these specifications.

3-8 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 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. 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.

3-9 **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.

3-10 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.

3-11 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.

3-12 Soil Erosion Control:

- A. General: Contractor shall furnish all materials and shall install the erosion control devices as shown on the plans and these specifications. 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. Also, it should be noted that it is a requirement of the Erosion Control Plan that these devices are in place prior to general excavation and grading.
- B. Contractor shall be responsible for construction and maintenance of all sediment control structures and measures as indicated on drawings and/or required by local officials. Contractor shall schedule his work so that time for preliminary grading is reduced to a minimum.
- C. 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.

- D. 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.
- E. Public roads and other right-of-ways shall be kept free of sediment deposits left from heavy truck traffic leaving the construction site.
- F. 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. Refer to SECTION 32 9001 "WETLAND PLANTING" for sprigging of wetland vegetation.
- G. Place erosion and sediment control measures where shown on drawings, and install and construct all measures in accordance with the "Delaware Erosion and Sediment Control Handbook", and as shown on the plans.
- H. 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.

3-13 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".

3-14 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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NOT FOR BIDDING PURPOSES

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

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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 DelDOT Specifications.

C. Measurement and Payment

1. The DelDOT Specification provisions dealing with measurement and payment for pavement courses 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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NOT FOR BIDDING PURPOSES

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 AWP 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 AWP 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 32 90 01 – WETLAND PLANTING

Part 1 – General

1-1 Scope:

- A. The Contractor shall furnish all labor, materials, and equipment required to complete the wetland plantings in strict accordance with the Specifications and as specified on the Contract Drawings. Once the wetland plantings operation has been completed and approved by the Owner or Owner's Representative, the Contractor shall be responsible for replanting any areas, which do not show the proper density of grass for a period of one (1) year. The minimum acceptable density of surviving plants shall be 85% of area planted.
- B. Related work not included in this Section consists of the following:
 - 1. "Earth Moving" provided under Section 31 20 00.
 - 2. "Riprap" provided under Section 3543-37.
- C. 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.

Part 2 – Products

2-1 Fertilizer: Fertilize each transplant site with 1.0 ounce of Osmocote 3 to 4 month 19-6-12 or an approved equivalent slow-release fertilizer placed in the planting hole at the time of planting

2-2 Plant Stock:

- A. Spartina alterniflora Plant Stock: Plant stock shall be Smooth Cordgrass (*Spartina alterniflora*) grown in peat pots. Plants will be three to six months old and approximately 12 inches high. Individual pots will contain three or more plants.
 - B. Spartina patens Plant Stock: Plant stock shall be Saltmeadow Cordgrass (*Spartina patens*) grown in peat pots. Plants will be three to six months old and approximately 12 inches high. Individual pots will contain three or more plants.
- 2-3 Goose Exclusion Fence: Goose exclusion fence shall consist of 2 inch by 2 inch wooden posts, 5 feet in length with 12 ply cotton twine stretched taut between posts.

Part 3 - Execution

3-1 Preparation:

- A. The Contractor shall grade and place sand fill as referenced in Section 31 20 00 "Earth Moving" and as shown on the drawings.
- B. All areas that are to be planted shall be cleaned of rough grass, weeds, and debris, and the ground surfaces smoothed.
- C. Plants held at the site shall be watered by sprinkling with river water at least once a day. Plants shall not be removed from peat pots. Planting shall be done with moist, but not saturated, root masses.

- D. It will be the responsibility of the Contractor to maintain the vigor of the plants held at the site during site preparation work and construction.

3-2 Planting:

- A. The planting season for wetland sprigging shall preferably be accomplished between April 1 and June 30.
- B. *Spartina alterniflora* Soil Preparation and Planting:
1. Upon approval of the Owner or Owner's Representative, the MHW (Elev. = +1.9') lines shall be marked on the ground and plantings shall be made in staggered rows generally parallel to and between the MHW shoreline. Rows shall be 18 inches apart and plants 18 inches apart.
 2. Plantings shall be made by hand with dibble, spade or shovel by opening a hole at the planting site, placing the fertilizer and then the plant in the hole, closing the hole and firming the soil around the plant so that the surface soil level covers the top of the planting pot 1 to 2 inches. Plantings shall be accomplished during periods of low tide.
- C. *Spartina patens* Soil Preparation and Planting:
1. Upon approval of the Owner or Owner's Representative the MHW (Elev. =+ 1.9') lines shall be marked on the ground and plantings shall be made in rows parallel to and between the MHW line and elevation + 4.1'. Rows shall be 18 inches apart and plants 18 inches apart.
 2. Plantings shall be made by hand with dibble, spade or shovel by opening a hole at the planting site, placing the fertilizer and then the plant in the hole, closing the hole and firming the soil around the plant so that the surface soil level is ½ to 1 inch above the top of the planting pot root mass. If the soil at the planting site is not wet or damp, the plants shall be sufficiently watered with river water within 4 hours after planting.

- 3-3 Goose Exclusion Fence:** will be installed to protect new wetland plantings. 2-inch by 2-inch wooden posts, 5 feet in length, will be installed approximately 1.5 feet deep at about 10 foot intervals along the perimeter of the plantings. Cotton twine, 12 ply, will be stretched taut between posts, wrapped once around each post, and secured with staples. The first strand of string will be 6 inches above the ground level with 3 additional strands of string installed at even spacing higher up on the posts, for a total of 4 strands.

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-

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 (1) Forty (40') foot long test pile shall be driven where shown on the drawings at the permanent position of the wingwall pile.** This pile is 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 or 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 -

NOT FOR BIDDING PURPOSES

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SECTION 35 43 37 – RIPRAP

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 Geogrids: Geogrids for placement for the sill shall be equal to Tensar TX160 TriAx Geogrid. The Contractor shall provide to DNREC a certification stating the name of the manufacturer, product name, style number, and other pertinent information to fully describe the geosynthetic if a geogrid other than that referenced is used. The Certification shall be attested to by a person having the legal authority to bind the manufacturer.

2-3 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.

DNREC Holts Landing Boat Ramp

Andrews, Miller & Associates
Issue Date May 19, 2015
RIPRAP

- 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. Geogrid: The geogrid shall be laid smooth without wrinkles or folds and spread to the major axis of the sill. Adjacent geogrid rolls shall be overlapped in accordance with the manufacturer's recommendations. If placement of the backfill material causes damage to the geogrid, the damaged area shall be repaired immediately. Cover the damaged area with a geogrid patch which extends an amount equal to the required overlap beyond the damaged area. The placement procedure shall be modified to eliminate further damage from taking place.
- L. 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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NOT FOR BIDDING PURPOSES

SECTION 35 51 13 – FLOATING PIER

Part 1 – General

1-1 Scope

- A. The Contractor shall furnish all tools, equipment, materials, and supplies and shall perform all labor, supervision, fabrication, assembly, and installation of a complete pre-engineered floating dock system as shown on the drawings and/or as specified herein.
- B. The Contractor shall adhere to the terms of the various permits/approvals issued to this project. This shall include permits/approvals 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 or Owner's Representative, 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. "Cast-In-Place Concrete" provided under Section 03 30 53.
 - 2. "Wingwall" provided under Section 35 31 16.
- 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 Contractor Site Inspection

The Contractor shall examine the jobsite before preparing his shop drawings to verify all physical conditions and surroundings.

1-3 Submittals

- A. Prior to fabrication or construction, the Contractor and/ or supplier shall furnish sufficient information to describe his flotation system, and shall submit complete shop drawings for approval by the Owner or the Owner's Representative.
- B. Shop drawings shall show the floats, details of all connections, pile locations, pile guides, and all other details necessary and pertinent to the construction of the floating dock system.

Part 2 – Materials

2-1 General

- A. The Contractor shall submit for approval by the Owner, all items he intends on using for the construction of this project, as well as any alternate materials.
- B. The Owner or Owner's Representative will be allowed access to all sites where materials pertaining to this contract are manufactured or constructed for purposes of inspection.
- C. Materials delivered and stored at either the manufacturing facility, staging area, or jobsite shall be properly stored on dunnage or by other appropriate means to prevent direct contact with the ground and unnecessary damage.

2-2 Aluminum Floating Pier

- A. The manufacturer/supplier shall have a minimum of 5 years of continuous experience in commercial pier and dock fabrication and may be required to submit a list of previous experience on similar projects. If required, the previous experience record will be submitted to the Owner or his designated representative 5 working days prior to the bid opening. A representative of the floating pier supplier shall be present when the piers are delivered to the Contractor. The floating pier shall be manufactured by: Gator Dock and Marine, Inc. or an approved equal.

The supplier shall provide the floating pier with 18" minimum freeboard under dead load conditions. Freeboard under combined dead load and 40 psf minimum live load shall not be less than 8". The pier shall be designed to allow for easy removal by the Owner during the winter months. The method of removal shall be detailed on the shop drawings. The aluminum used shall be marine grade designated as being resistant to corrosive attack by salt water.

- B. Flotation units shall be a total flotation system and shall be composed of aluminum alloy 6061T6 totally encasing the solid urethane foam on all sides.
- C. Floating foam shall be urethane foam utilizing froth-in-place method. Density shall be 1.8-2.1 pounds per cubic foot. Pontoons shall be filled by the froth-in-place method under controlled temperature conditions or when the temperature is between 65 degrees and 85 degrees Fahrenheit.
- D. Dock Bumper Strip shall be installed continuously around the upper edge of floating piers. Bumper shall be a "D" style white vinyl with a minimum of 2" horizontal by 4" vertical and have the ability to protect boats from damage or discoloration due to normal docking procedures. This material shall not be affected by sunlight, salt water, oil, gasoline, or other agents or actions common to a marine salt water environment.
- E. The Pile Guides shall be designed to allow full vertical movement of the pier and shall minimize horizontal movement throughout the fluctuations in water elevations. The external pile guides shall be designed to allow easy removal of the pier for seasonal storage. The method of removal shall be detailed on the shop drawings. A replaceable **Ultra-High-Molecular-Weight (UHMW)** polyethylene strip shall be attached to the inside of the pile guide for a smoother orientation.

- F. Hardware shall be type 18-8 (300 series) stainless steel for bolts, hinges, nuts, washers and screws on the aluminum floating pier and access ramp.
- G. Deck shall be extruded aluminum slats embossed to provide a non-slip surface and shall not exceed 11-5/8 inches in width with not more than 3/8 inch air space between slats. Deck shall be secured to frame as detailed on the manufacturer's shop drawings and as approved by the Owner or Owner's Representative.
- H. Boat Cleats shall be 10" and secured to the deck as detailed on the manufacturer's shop drawings and as approved by the Owner or Owner's Representative.
- I. The floating boarding piers shall be attached to the fixed concrete piers using a "Narraganset" system or an approved equal. The "Narraganset" system shall be designed by the manufacturer to allow easy removal by the Owner and shall be detailed on the manufacturer's shop drawings.

2-3 Guide Pile System: The floating dock manufacturer shall provide the guide pile per size and quantity for their particular system. Piles shall consist of steel pipe as approved by the Owner or Owner's Representative.

- A. Steel Pipe Guide Piles shall be seamless or electrically welded pipe conforming to latest edition of ASTM A252 – Grade 2 or 3. Piles shall be 12" minimum diameter, Schedule 40 steel. The pile supplier shall furnish four copies of certified mill test reports covering chemical and physical tests conducted on the steel for each heat number of metal included in the shipment.
 - 1. Steel Pipe Cutting Shoe: Cast steel open ended inside pile cutting shoe with ledge to transfer forces from shoe to pile in compression rather than shear on welds. Equal to model 0-14001 inside flanged cutting shoe as manufactured by Associated Pile and Fitting Corporation, Box 1048, Clifton, New Jersey 07014.
 - 2. Galvanizing: Steel pipe guide piles shall be hot-dip galvanized in accordance with ASTM A-123. The zinc coating shall be applied to the inside and outside of the pipe, 2.0 ounces of zinc per square foot of hardware surface.
 - 3. Weather Guards: Black cone shaped plastic pile caps shall be used on guide piles. The pile cap shall be molded from 3/16 inch thick, ultra-violet resistant, low density polyethylene. Caps shall be securely anchored to piles with epoxy cement.

Part 3 – Execution

3-1 Shop Drawings

- A. After checking and verifying all field measurements, the Contractor will submit to the Engineer for approval six (6) copies of all shop drawings. Specifically, the shop drawings for the floating piers/ gangway shall detail the connection to the fixed piers, the pile guides, hinges, railing ramps, and floats in addition to the additional standard details associated with the pier suppliers system. In addition, the shop drawing submittal shall include flotation, stability and structural analysis calculations for the system.
- B. At the time of each submission, the Contractor will in writing call the Owner's attention to any deviations that the shop drawing or sample may have from the requirements of the Contract Documents.

- C. The Owner or Owner's Representative will check and approve with reasonable promptness shop drawings and samples, but his checking and approval shall be only for conformance with the design concept of the project and for compliance with the information given in the Contract Documents. The Contractor will make any corrections required by the Owner and return the required number of samples. The approval of a separate item as such will not indicate approval of the assembly in which the item functions.
- D. **NO WORK REQUIRING A SHOP DRAWING OR SAMPLE SUBMISSION SHALL BE PROCEEDED WITH UNTIL THE SUBMISSION HAS BEEN APPROVED BY THE OWNER OR OWNER'S REPRESENTATIVE.**
- E. The Engineer's and Owner's approval of shop drawings or samples shall not relieve the Contractor from his responsibility for any deviations from the requirements of the Contract Documents unless the Contractor has in writing called the Owner's attention to such deviations at the time of submission and the Owner has given written approval to the specific deviation, nor shall it relieve the Contractor from errors or omissions in the shop drawings.

3-2 Guide Piles

- A. All guide piles shall be driven by gravity, vibratory, or diesel hammer as approved by the Owner or the Owner's Representative. Any hammer which does not perform satisfactory on piles 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 pile has been driven to the required penetration set by the floating dock manufacturer. The quantity and location of piles shall be as shown on the floating dock manufacturers shop drawings.
- B. During driving, the top of the 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
- C. After driving, the length of the pile remaining above the elevation of cutoff shall not be more than 6 inches for damaged piles. The top of the 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 Owner's Representative. If the pile tops are not damaged, full length driving will be required.
- D. Piles which leak, or piles which are bent, crimped, buckled or otherwise unsatisfactory as herein specified, and which cannot be repaired, shall be removed and replaced by the Contractor at no additional cost to the Owner.
- E. Filling of Steel Pipe Guide Piles
1. The Contractor shall inspect each pile visually immediately prior to filling to ascertain that the inside of the pile is free from any organic or highly compressible material or solid matter, and from greater than a 2 inch depth of water.
 2. The Contractor shall place sand in the steel pile through a funnel having a neck not less than 2 feet long and diameter at least two inches smaller than the inside diameter of the pile. Provide a spacer at the neck to permit escape of air during filling. Placing of sand shall be continuous and in a manner which will assure

complete filling of pile. Sand shall not be placed through water unless approved by the Owner or Owner's Representative.

3. The Contractor may substitute concrete fill in lieu of sand fill provided there is no additional cost to the Owner and upon approval of the Owner or Owner's Representative.

3-3 Pre-Engineered Floating Dock System

- A. A representative of the floating pier manufacturer shall be present when the pier is delivered to the Contractor.
- B. Floating dock must move freely during the entire cycle of water level extremes with the normal expected wind condition.

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.

- END OF SECTION -

NOT FOR BIDDING PURPOSES

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NOT FOR BIDDING PURPOSES

APPENDIX 1
DNREC SUBAQUEOUS LANDS PERMIT (SP-379/14)
AND
WATER QUALITY CERTIFICATION (WQ-380/14)

NOT FOR BIDDING PURPOSES

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NOT FOR BIDDING PURPOSES



**DEPARTMENT OF NATURAL RESOURCES
AND
ENVIRONMENTAL CONTROL**

NOTICE OF AUTHORIZATION

Permit/Lease No. and Description: SP-379/14, WQ-380/14 TO REMOVE

- An existing boat ramp
- Pier
- Wing walls

TO EXCAVATE

- 170 cubic yards of subaqueous lands and add 130 cubic yards of concrete fill for a 2,100 square foot boat ramp with a 2 slip 45 foot wide by 49 foot long ramp and a 45 foot wide by 15 foot long concrete leveling pad

TO INSTALL

- An 8 foot wide by 67 foot long pier
- Two 64 linear foot wing walls
- 42 linear feet of temporary sheet piling to construct the boat ramp
- 30 linear feet of a low profile rip-rap sill

TO PLANT

- 1,035 square feet of Spartina Alterniflora and Patens

**IN THE INDIAN RIVER AT HOLTS LANDING STATE PARK AT THE TERMINATION OF HOLTS LANDING ROAD,
MILLVILLE,
SUSSEX COUNTY, DE**

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NOT FOR BIDDING PURPOSES



STATE OF DELAWARE
DEPARTMENT OF NATURAL RESOURCES &
ENVIRONMENTAL CONTROL
DIVISION OF WATER
89 KINGS HIGHWAY
DOVER, DELAWARE 19901

SUBAQUEOUS LANDS PERMIT
CONTRACTOR'S COMPLETION REPORT
POST-CONSTRUCTION

Subaqueous Lands Lease No.: SP-379/14

Scientist: Tyler Brown

Name: DNREC- Parks and Recreation

Project Description: SUBAQUEOUS LANDS PERMIT AND WATER QUALITY CERTIFICATION GRANTED TO
DNREC DIVISION OF PARKS AND RECREATION

TO REMOVE

- An existing boat ramp
- Pier
- Wing walls

TO EXCAVATE

- 170 cubic yards of subaqueous lands and add 130 cubic yards of concrete fill for a 2,100 square foot boat ramp with a 2 slip 45 foot wide by 49 foot long ramp and a 45 foot wide by 15 foot long concrete leveling pad

TO INSTALL

- An 8 foot wide by 67 foot long pier
- Two 64 linear foot wing walls
- 42 linear feet of temporary sheet piling to construct the boat ramp
- 30 linear feet of a low profile rip-rap sill

TO PLANT

- 1,035 square feet of *Spartina Alterniflora* and *Patens*

IN THE INDIAN RIVER AT HOLTS LANDING STATE PARK AT THE TERMINATION OF HOLTS LANDING
ROAD, MILLVILLE,
SUSSEX COUNTY, DE

I hereby certify that I have constructed the project authorized by the above-referenced Permit/Lease in accordance with the approved plans for the project.

Printed Name of Contractor

Name of Company

Contractor's Signature

Date

Daytime Telephone Number

Upon completion of construction, this form shall be completed, signed by the contractor, and mailed to the Wetlands and Subaqueous Lands Section at:

DNREC
Wetlands and Subaqueous Lands Section
89 Kings Highway
Dover, Delaware 19901

Or faxed to the Wetlands and Subaqueous Lands Section at: 302/739-6304

This form must be received by the Department within **ten days** of the date that construction is completed. Once the form has been received, the Department will call the contractor's telephone number listed above to confirm receipt.

For official use only

Compliance inspection date _____ Built in accordance with plans ☐ Yes ☐ No Scientist

Delaware's good nature depends on you!



STATE OF DELAWARE
DEPARTMENT OF NATURAL RESOURCES &
ENVIRONMENTAL CONTROL
DIVISION OF WATER
89 KINGS HIGHWAY
DOVER, DELAWARE 19901

Subaqueous Permit No.: SP-379/14

Water Quality Certification No: WQ-380/14

Date of Issuance: 12/22/2011

Construction Expiration Date: 12/22/2017

Amended Date:

Tax Parcel No: 1344.00-1.00

**SUBAQUEOUS LANDS PERMIT AND WATER QUALITY
CERTIFICATION GRANTED TO DNREC DIVISION OF
PARKS AND RECREATION**

TO REMOVE

- An existing boat ramp
- Pier
- Wing walls

TO EXCAVATE

- 170 cubic yards of subaqueous lands and add 130 cubic yards of concrete fill for a 2,100 square foot boat ramp with a 2 slip 45 foot wide by 49 foot long ramp and a 45 foot wide by 15 foot long concrete leveling pad

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- An 8 foot wide by 67 foot long pier
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- 42 linear feet of temporary sheet piling to construct the boat ramp
- 30 linear feet of a low profile rip-rap sill

TO PLANT

- 1,035 square feet of Spartina Alterniflora and Patens

**IN THE INDIAN RIVER AT HOLTS LANDING STATE PARK AT THE
TERMINATION OF HOLTS LANDING ROAD, MILLVILLE,
SUSSEX COUNTY, DE**

DNREC – Parks and Recreation
c/o: Cindy Todd
89 Kings Highway
Dover, DE 19901

Pursuant to the provisions of 7 Del. C. 7205, the Department's Regulations Governing the Use of Subaqueous Lands, 7 Del. C. 6604, the Department's Wetlands Regulations, 7 Del. C., Section 6003, the Department's Regulations Governing the Control of Water Pollution and Section 401 of the Clean Water Act, permission is hereby granted on this 22nd day of December A.D. 2014 to perform the above referenced project in accordance with the approved plans for this Permit/Certification (6 Sheets), as approved on December 17, 2014; and application dated November 3, 2014, and received by this Division on November 6, 2014.

WHEREAS, DNREC – Division of Parks and Recreation, owner of certain lands adjoining the Indian River have applied for permission to install a boat ramp, pier, wing walls, rip-rap, and plant wetland vegetation; and

WHEREAS, pursuant to the provisions of 7 Del. C. §7203, the Secretary of the Department of Natural Resources and Environmental Control through his duly authorized representative finds that it is not contrary to the public interest if this project is approved subject to the terms and conditions herein set forth.

WHEREAS, in accordance with Section 401 of the Clean Water Act, 33 U.S.C. Section 1341 and 7 Del. C., Chapter 60, the State of Delaware, by and through the Department of Natural Resources and Environmental Control, certifies that the permitted activity will be conducted in a manner which will not violate the applicable water quality standards of the State of Delaware, subject to the terms and conditions of this approval.

This approval is in accordance with the plans and application submitted to the Department of Natural Resources and Environmental Control, a copy of which is attached hereto and made a part hereof.

THIS Permit is issued subject to the following conditions:

SPECIAL CONDITIONS

1. The structures authorized by this Permit/Certification shall be constructed and maintained in a manner so as to assure water access to adjacent properties.
2. There shall be no stockpiling of material within State-regulated subaqueous lands.
3. There shall be no movement of equipment within subaqueous lands not specifically authorized by this Permit/Certification.
4. All water bodies and wetlands disturbed during construction activities, except for those intended to be permanently altered for the authorized permit, shall be restored to pre-disturbance conditions to include bank elevations and slopes, waterway and wetland surface elevations and contours, and wetland vegetation and densities.

5. To protect summer flounder and anadromous fish species no in-water work shall be conducted from March 15th to September 30th of any given year. If in-water work within this time period cannot be avoided, please contact the Wetlands and Subaqueous Lands Section along with the fisheries section Administrator John Clark to discuss possible options.
6. The Contractors Completion Report shall be filled out and returned within 10 days of completion of the authorized work.


GENERAL CONDITIONS

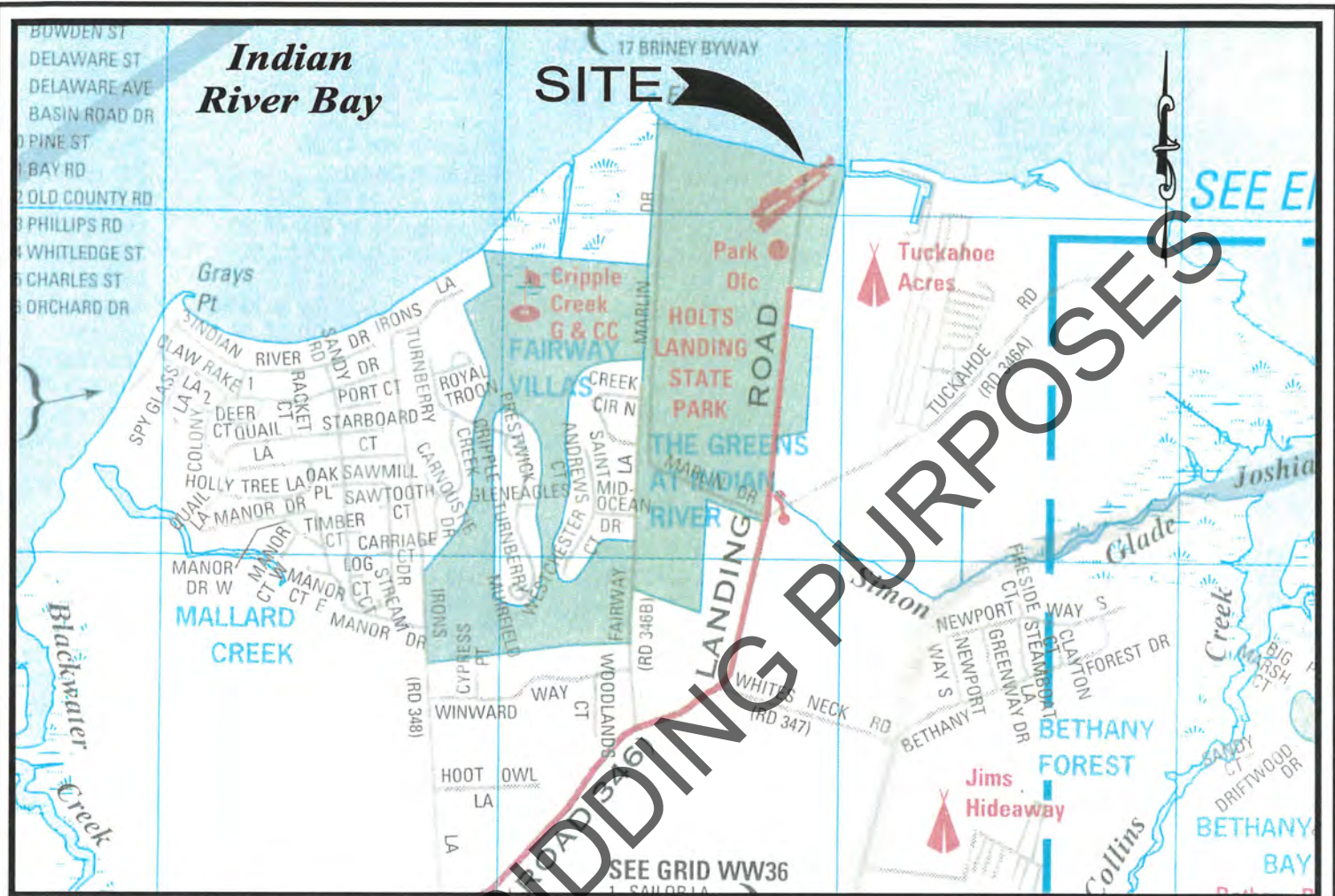
1. This Permit/Certification is granted for the purpose of providing water access, as stated in the permit application. Any other use without prior approval shall constitute reason for this Permit/Certification being revoked.
2. The structures, fill, and wetland planting authorized by this Permit/Certification is subject to the terms and conditions contained in the Pending Department of the Army Individual Permit.
3. The permittee and contractor shall at all times comply with all applicable laws and regulations of the Department of Natural Resources and Environmental Control.
4. The activities authorized herein shall be undertaken in accordance with the Permit/Certification conditions, the final stamped and approved plans, and with the information provided in the permit application.
5. A copy of this Permit/Certification and the stamped approved plans shall be available on-site during all phases of construction activity.
6. The conditions contained herein shall be incorporated into any and all construction contracts associated with the construction authorized herein. The permittee and contractor are responsible to ensure that the workers executing the activities authorized by this Permit/Certification have full knowledge of, and abide by, the terms and conditions of this Permit/Certification.
7. The permittee shall protect and save the State of Delaware harmless from any loss, cost or damage resulting from the activities authorized herein.
8. The issuance of this Permit/Certification does not constitute approval for any activities that may be required by any other local, state or federal government agency.
9. The issuance of this Permit/Certification does not imply approval of any other part, phase, or portion of any overall project the permittee may be contemplating.

10. This Permit/Certification authorizes only the activities described herein. Modifications to the project may require a supplemental approval from this office prior to the initiation of construction. A determination of the need for a supplemental approval will be made by this office pursuant to the permittee submitting written notification and revised plans indicating project changes. Failure to contact the Department prior to executing changes to the project shall constitute reason for this Permit being revoked.
11. Representatives of the Department of Natural Resources and Environmental Control shall be allowed to access the property to inspect all work during any phase of the construction and may conduct pre and post-construction inspections, collect any samples or conduct any tests that are deemed necessary.
12. The activities authorized herein shall be conducted so as not to violate the State of Delaware's Surface Water Quality Standards, as amended June 11, 2011.
13. All construction materials, waste or debris associated with this activity shall be properly disposed of and contained at all times to prevent its entry into waters or wetlands. Construction materials shall not be stockpiled in subaqueous lands or wetlands.
14. Disturbance of subaqueous lands or wetlands adjacent to the authorized structures or activities is prohibited. Disturbance of subaqueous lands or wetlands in the path of construction activity shall be minimized. Any temporarily impacted subaqueous lands or wetlands shall be returned to pre-disturbance elevations and conditions.
15. The permittee and contractor shall employ measures during construction to prevent spills of fuels, lubricants or other hazardous substances. In the event of a spill, the permittee and contractor shall make every effort to stop the leak and contain the spill, and shall immediately contact the Hazardous Spill Response Team (HAZMAT) at 1-800-662-8802 and this office at (302) 739-9943. The permittee and contractor are responsible to comply with all directives to contain and clean up the spilled material(s) as stipulated by the HAZMAT team, and to restore the site as may be required by this office.
16. None of the activities authorized herein shall occur after the construction expiration date identified on Page 1 of this Permit. The permittee may file one construction expiration date extension request of up to one (1) year if necessary to complete the authorized work. Such requests must be received by the Department at least thirty (30) days prior to the construction expiration date.
17. The permittee shall notify the Wetlands and Subaqueous Lands Section prior to the commencement of the work authorized by this Permit.
18. The permittee shall maintain all authorized structures and activities in a good and safe condition.

19. Any actions, operations or installations which are found by the Department to be contrary to the public interest may constitute reason for the discontinuance and/or removal of said action, operation or installation. Removal and restoration shall be at the expense of the permittee and/or upland property owner within thirty (30) days of receipt of written notice of revocation and demand for removal.
20. This Permit/Certification is personal and may not be transferred without the prior written consent of the Department. Prior to the transfer of the adjacent upland property, the permittee shall obtain the written consent of the Department to transfer the Permit to the new upland property owner. Failure to obtain such written consent may result in the revocation of this Permit and the removal of all structures authorized by this Permit at the expense of the permittee.
21. Failure to comply with any of the terms or conditions of this Permit/Certification may result in enforcement action which could include the revocation of this Permit/Certification and subsequent restoration of the site to preconstruction conditions.

IN WITNESS WHEREOF, I, J. Scott Figurski, Acting Section Manager, the duly authorized representative of David S. Small, Secretary of the Department of Natural Resources and Environmental Control, have hereunto set my hand this 22nd day of December, 2014.


By J. Scott Figurski, Acting Section Manager,
the duly authorized representative of the
Secretary of the Department of Natural Resources
and Environmental Control



Vicinity Map

SCALE : 1" = 2000'



Copyright ADC The Map People
Permitted Use No. 012814-08

SCOPE OF WORK

Boat Ramp: 45' wide x 49' long; 60' max.
Leveling Pad: 45' wide x 46' long; 15' max.
Wingwalls: (2) 95' long; 64' max.
Boarding Piers: (1) 8' x 11' concrete, (1) 8' x 56' floating; 82' max.
Sill: 15' x 26'; 17' max.
Existing Wetland Vegetation Filled: 1035 sf (0.024 ac)
Wetland Mitigation/Planting: 1035 sf (0.024 ac)

NOTES:

1. MEAN TIDAL RANGE IS APPROXIMATELY 1.9 FEET.
2. SOUNDINGS ARE IN FEET AND REFER TO MLW.
3. THESE DRAWINGS ARE FOR PERMIT PURPOSES ONLY. DESIGN DRAWINGS ARE TO BE PROVIDED SEPARATELY.

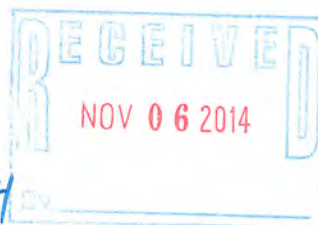
INDEX OF DRAWINGS

- 1 - COVER
- 2 - EXISTING CONDITIONS
- 3 - SITE PLAN
- 4 - SECTIONS
- 5 - SECTIONS

ADJOINING PROPERTY OWNERS

TAX MAP 134-4.00-4.00:
INDIAN RIVERVIEW, LP
30138 WHITES NECK ROAD
DAGSBORO, DE 19939

TAX MAP 134-3.00-4.00:
CENTEX HOMES
Ellis Point Ph. 2 & 3
219 W. 9th STREET
WILMINGTON, DE 19801



APPROVED PLANS
PERMIT # SP-379/14 WQ-380/14
DATE 12-17-14 TCB
(SEE PERMIT CONDITIONS)



Andrews, Miller & Associates

A Division of: ARCHITECTS ENGINEERS SURVEYORS



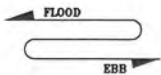
**DAVIS,
BOWEN &
FRIEDEL, INC.**

EASTON, MARYLAND (410) 770-4744
SALISBURY, MARYLAND (410) 543-9091
MILFORD, DELAWARE (302) 424-1441

SHEET 1 OF 5

Proposed Boat Ramp

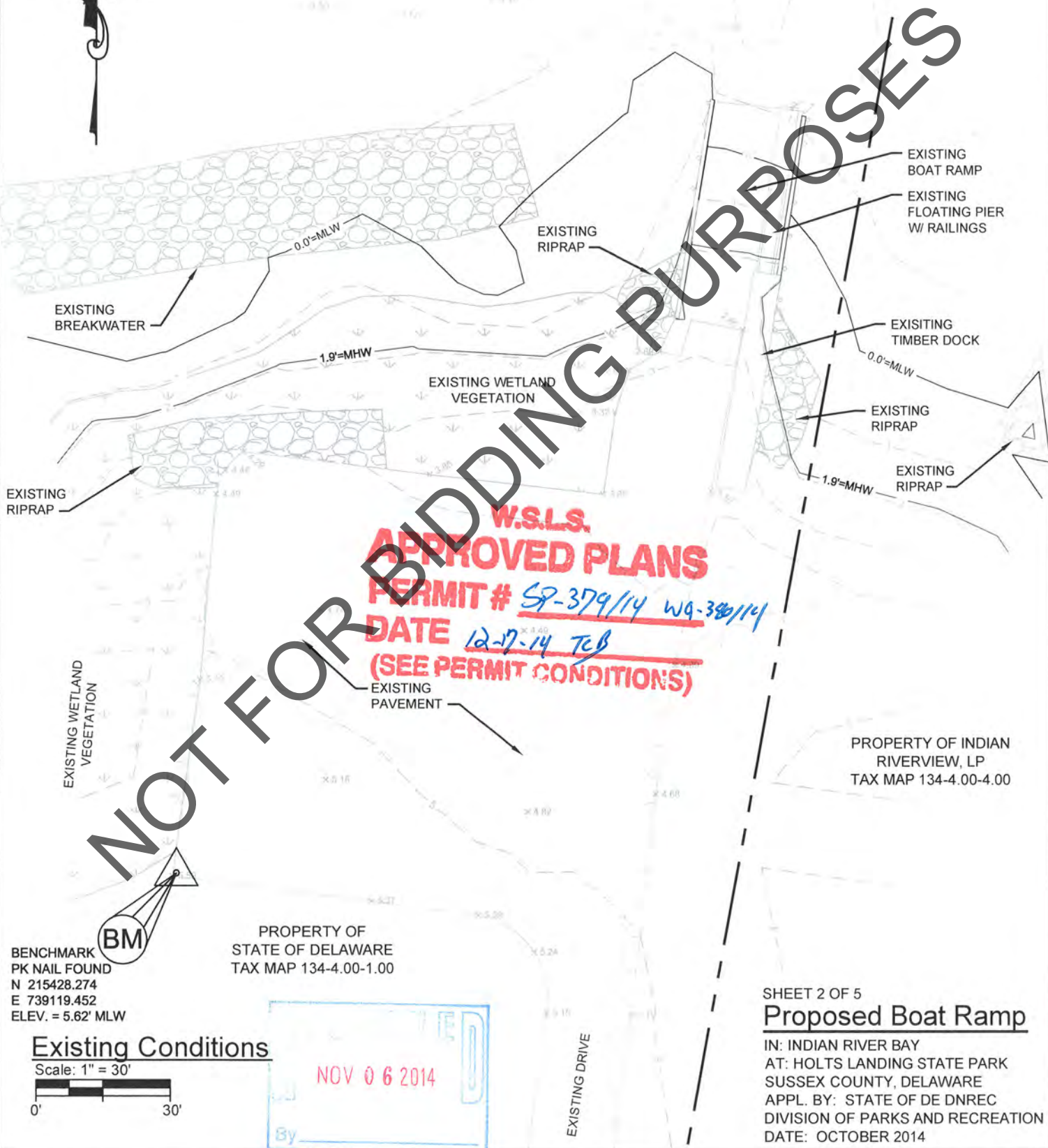
IN: INDIAN RIVER BAY
AT: HOLTS LANDING STATE PARK
SUSSEX COUNTY, DELAWARE
APPL. BY: STATE OF DE DNREC
DIVISION OF PARKS AND RECREATION
DATE: OCTOBER 2014



INDIAN

RIVER

BAY



BENCHMARK
PK NAIL FOUND
N 215428.274
E 739119.452
ELEV. = 5.62' MLW

PROPERTY OF
STATE OF DELAWARE
TAX MAP 134-4.00-1.00

PROPERTY OF INDIAN
RIVERVIEW, LP
TAX MAP 134-4.00-4.00

Existing Conditions

Scale: 1" = 30'

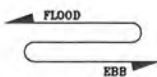
0' 30'

NOV 06 2014

SHEET 2 OF 5

Proposed Boat Ramp

IN: INDIAN RIVER BAY
AT: HOLTS LANDING STATE PARK
SUSSEX COUNTY, DELAWARE
APPL. BY: STATE OF DE DNREC
DIVISION OF PARKS AND RECREATION
DATE: OCTOBER 2014



INDIAN

RIVER

BAY

FUTURE DREDGING TO -4.0' MLW UNDER
SEPARATE PERMIT APPLICATION

EXTEND RIPRAP TO
PROPOSED WINGWALL
TOP ELEV. = 1.9' MLW
(95 SF, 52' MAX)

PROPOSED FLOATING &
BOARDING PIER
(67'x8'; 82' MAX)

PROPOSED BOAT RAMP
(49'x45'; 60' MAX)

EXISTING BOAT RAMP
TO BE DEMOLISHED;
EXCAVATE BOTTOM
TO AMBIENT
ELEVATION (<10 CY)

PROPOSED LOW
PROFILE SILL
(26'x15'; 17' MAX)

EXISTING
BREAKWATER

EXISTING WETLAND
VEGETATION TO BE
FILLED (1035 SF)

PROPOSED TIMBER
GUARDRAIL

EXISTING RIPRAP
TO BE REUSED

EXISTING
RIPRAP

PROPOSED WETLAND
MITIGATION (1035 SF)

EXISTING
RIPRAP

EXISTING
PAVEMENT TO
BE RESURFACED

PROPOSED
ACCESS ROUTE

NOT FOR BIDDING PURPOSES

PROPERTY OF INDIAN
RIVERVIEW, LP
TAX MAP 134-4.00-4.00

W.S.L.S.

APPROVED PLANS

PERMIT # SP-379/14 44-350/14

DATE 12-17-14 TLS

(SEE PERMIT CONDITIONS)

SHEET 3 OF 5

Proposed Boat Ramp

IN: INDIAN RIVER BAY
AT: HOLTS LANDING STATE PARK
SUSSEX COUNTY, DELAWARE
APPL. BY: STATE OF DE DNREC
DIVISION OF PARKS AND RECREATION
DATE: OCTOBER 2014

BENCHMARK
PK NAIL FOUND
N 215428.274
E 739119.452
ELEV. = 5.62' MLW

PROPERTY OF
STATE OF DELAWARE
TAX MAP 134-4.00-1.00

NOV 06 2014

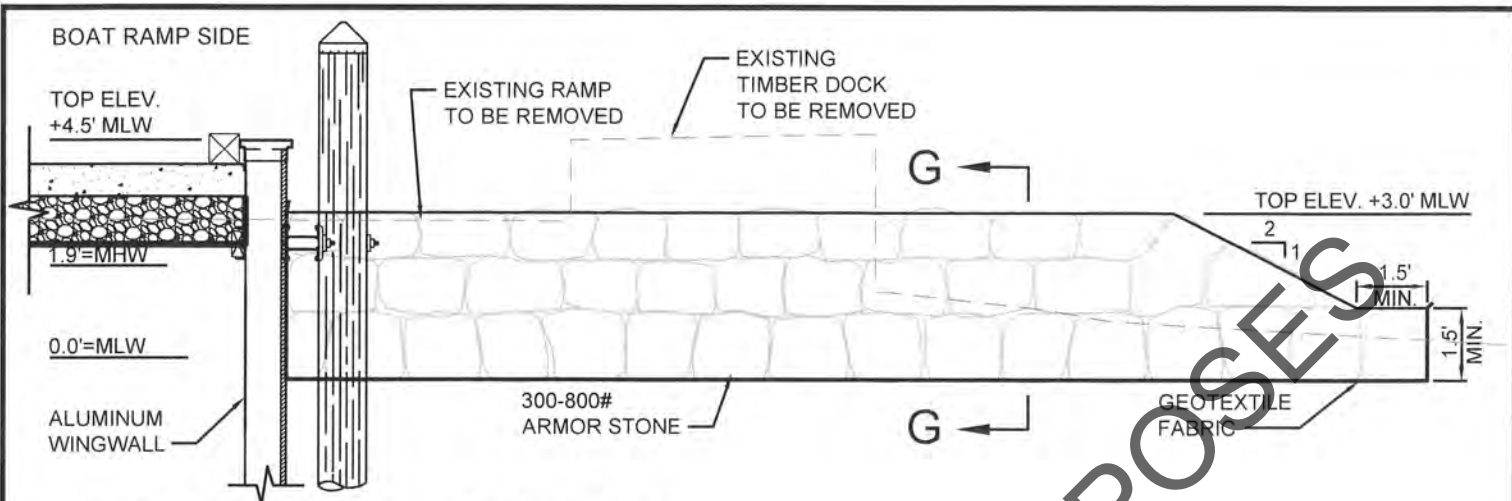
Site Plan

Scale: 1" = 30'



PROPOSED PAVEMENT

NOTE: EXISTING CAR/TRAILER PARKING IS
AVAILABLE AT THE EXISTING PARKING LOT



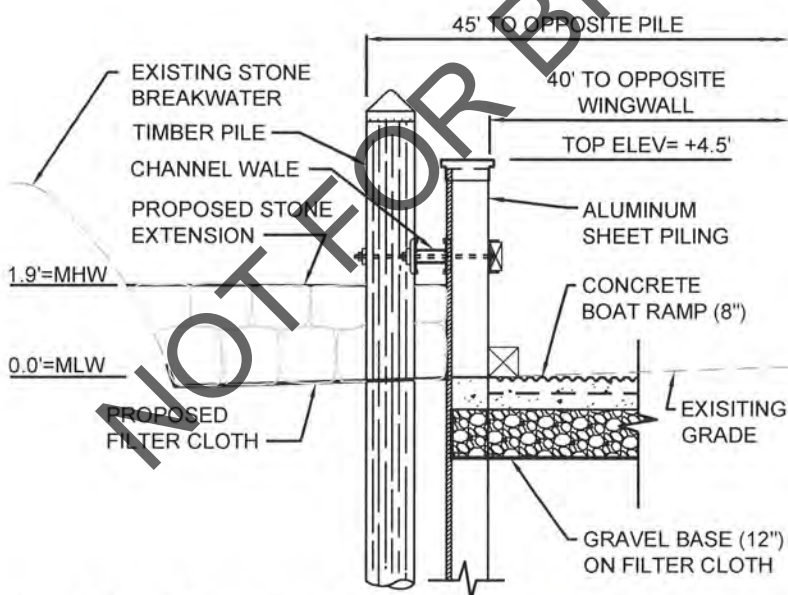
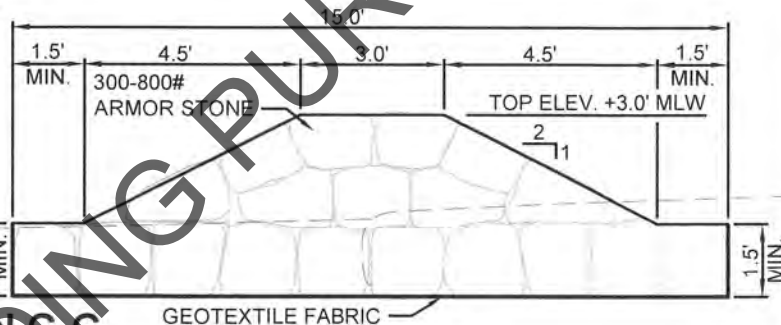
LOW PROFILE SILL - SECTION D

Scale: 1" = 4'

W.S.L.S.
APPROVED PLANS
PERMIT # SP-389/14 WQ-389/14
DATE 12-17-14 TCB
(SEE PERMIT CONDITIONS)

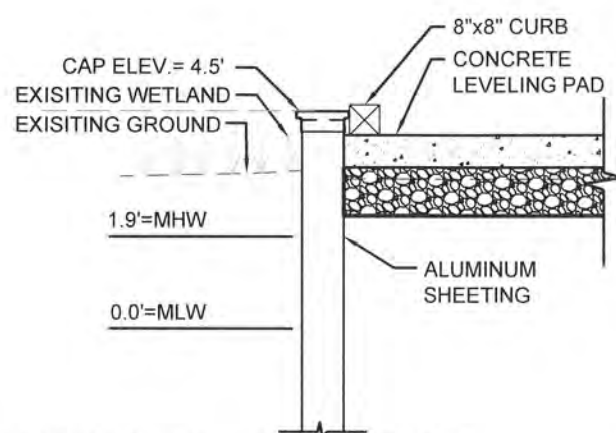
SECTION G-G

Scale: 1" = 4'



WINGWALL SECTION E

Scale: 1" = 4'



WINGWALL SECTION F

Scale: 1" = 4'

SHEET 5 OF 5

Proposed Boat Ramp

IN: INDIAN RIVER BAY
 AT: HOLTS LANDING STATE PARK
 SUSSEX COUNTY, DELAWARE
 APPL. BY: STATE OF DE DNREC
 DIVISION OF PARKS AND RECREATION
 DATE: OCTOBER 2014

NOV 06 2014

By

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NOT FOR BIDDING PURPOSES

APPENDIX 2
USACE PERMIT

NOT FOR BIDDING PURPOSES

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NOT FOR BIDDING PURPOSES



REPLY TO
ATTENTION OF

DEPARTMENT OF THE ARMY

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

Regulatory Branch
Application Section I

MAR 26 2015

SUBJECT: CENAP-OP-R-2015-102-85 (NWP36)
Project Name: Holts Landing Boat Ramp SX
Latitude/Longitude: 38.59158/-75.12610

Gary Williams
Andrews, Miller & Associates
106 North Washington Street
Easton, Maryland 21601

Dear Gary Williams:

This is in regard to your proposal to discharge 0.09 acre of fill material into waters of The United States to replace an existing, degraded single lane boat ramp with a new double lane boat ramp located in Dagsboro, 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 their adjacent wetlands.

Based upon our review of the information you have provided, it has been determined that the proposed work is approved by the existing Department of the Army Nationwide Permit (NWP) described in Enclosure 1, provided the work is conducted in compliance with the project specific special conditions listed below and the attached general conditions (Enclosure 2). 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 Corps of Engineers representative. The verification of a nationwide permit including all general and special conditions is not subject to appeal.

On March 16, 2012 the Division Engineer approved several Regional Conditions for NWPs within the Philadelphia District. The enclosed table (Enclosure 3) identifies those NWPs which require a preconstruction notification (PCN) to the Corps of Engineers, those which have been regionally conditioned by the Division Engineer, and those which have been denied 401 Water Quality Certification (WQC) and/or Coastal Zone Management (CZM) consistency by the Delaware Department of Natural Resources and Environmental Control (DDNREC). It should be carefully noted that DDNREC has denied the requisite WQC and CZM for certain NWP activities in ALL waters of the United States in Delaware. For other NWP activities, DDNREC has denied the requisite WQC and CZM for projects located in waters of the United States which have been determined to be critical resource waters.

For those NWP's for which DDNREC has denied the requisite WQC and CZM, the NWP authorization is considered denied without prejudice by the Corps of Engineers until an individual, project-specific WQC and/or CZM review and approval has been obtained from DDNREC. Furthermore, copies of the WQC and CZM approvals must be provided to the Corps of Engineers before the authorized work begins. Any project-specific conditions required by DDNREC for the WQC and/or CZM approval will automatically become part of the NWP authorization as well.

Please note that CZM consistency from DDNREC is only required for those activities in or affecting Delaware's coastal zone. Additionally, some of the NWP's do not involve a discharge of dredged or fill material and, as such, do not require a 401 WQC. For those NWP's not requiring a 401 WQC, the appropriate rows and columns of the enclosed table (Enclosure 3) have been identified with the term "NA".

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 & Associates, dated October 2014, entitled: *Proposed Boat Ramp In Indian River Bay At Holts Landing State Park Sussex County Delaware*, sheets 1 through 5. The stated purpose of the project is to discharge 0.09 acre of fill material into waters of The United States to replace an existing, degraded single lane boat ramp with a new double lane boat ramp located in Dagsboro, Sussex County, Delaware.
2. Construction activities shall not result in the disturbance or alteration of greater than 0.09 acre of waters of the United States.
3. 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.
4. This office shall be notified at least 10 days prior to the commencement of authorized work by completing and signing the enclosed Notification/ Certification of Work Commencement Form (Enclosure 4). This office shall also be notified within 10 days of the completion of the authorized work by completing and signing the enclosed Notification/Certification of Work Completion/Compliance Form (Enclosure 5). All notifications required by this condition shall be in writing and shall be transmitted to this office by registered mail. 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.
5. The permittee understands and agrees that, if future operations by the United States require the removal, relocation, or other alteration, of the structure or work herein authorized, or if, in the opinion of the Secretary of the Army or his authorized representative, said structure or work shall cause unreasonable obstruction to the free navigation of the navigable waters, the permittee will be required, upon due notice from the Corps of Engineers, to remove, relocate, or alter the structural work or obstructions caused thereby, without expense to the United States. No claim

shall be made against the United States on account of any such removal or alteration. (This special condition is applicable to Corps of Engineers permits that provide authorization under Section 10 of the Rivers and Harbors Act of 1899.)

6. 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.
7. The permittee 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.
8. The mechanical equipment used to execute the work authorized shall be operated in such a way as to minimize turbidity that could degrade water quality and adversely affect aquatic plant and animal life.
9. The disposal of trees, brush and other debris in any stream corridor, wetland or surface water is prohibited.
10. Every effort shall be made to keep construction debris from entering the waterway or wetland. Debris in the waterway or wetland shall be removed immediately.
11. 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.
12. Appropriate erosion and siltation controls must be used and maintained in effective operating condition during construction, and all exposed soil and other fills must be permanently stabilized at the earliest practicable date.
13. The movement of equipment within the wetland shall be limited to the minimum necessary to accomplish the work authorized herein.
14. This permit does not obviate the permittee from obtaining any State or local assent required by law for the activity authorized.

This verification is valid until the NWP is modified, reissued, or revoked. All of the existing NWPs are scheduled to be modified, reissued, or revoked prior to March 16, 2017. It is incumbent upon the permittee to remain informed of changes to the NWPs. We will issue a public notice when the NWPs are reissued. Furthermore, if you commence or are under contract to commence this activity before the date that the relevant NWP is modified or revoked, you will have 12 months from the date of the modification or revocation of the NWP to complete the activity under the present terms and conditions of this NWP.

Also enclosed is a pre-addressed postal card (Enclosure 6) soliciting your comments on the processing of your application. Any comments, positive or otherwise, on the procedures, timeliness, fairness, etc., may be made on this card. If you have any questions regarding this matter, please contact Michael Yost at 302-736-9763 or write to the above address.

Sincerely,

A handwritten signature in dark ink, appearing to read 'Frank J. Cianfrani', is written over the typed name and title.

Frank J. Cianfrani
Chief, Regulatory Branch

Enclosures

NOT FOR BIDDING PURPOSES

2012 Nationwide Permits

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 minimal adverse 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 minimal adverse 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.

Notification: The permittee must submit a pre-construction notification to the district engineer prior to commencing the activity if: (1) The discharge into waters of the United States exceeds 50 cubic yards, or (2) the boat ramp exceeds 20 feet in width. (See general condition 31.) (Sections 10 and 404)

Nationwide Permit General Conditions (2012)

Note: To qualify for NWP authorization, the prospective permittee must comply with the following general conditions, as applicable, in addition to any regional or case-specific conditions imposed by the division engineer or district engineer. Prospective permittees should contact the appropriate Corps district office to determine if regional conditions have been imposed on an NWP. Prospective permittees should also contact the appropriate Corps district office to determine the status of Clean Water Act Section 401 water quality certification and/or Coastal Zone Management Act consistency for an NWP. Every person who may wish to obtain permit authorization under one or more NWPs, or who is currently relying on an existing or prior permit authorization under one or more NWPs, has been and is on notice that all of the provisions of 33 CFR §§ 330.1 through 330.6 apply to every NWP authorization. Note especially 33 CFR § 330.5 relating to the modification, suspension, or revocation of any NWP authorization.

1. Navigation. (a) No activity may cause more than a minimal adverse effect on navigation.

(b) Any safety lights and signals prescribed by the U.S. Coast Guard, through regulations or otherwise, must be installed and maintained at the permittee's expense on authorized facilities in navigable waters of the United States. (c) The permittee understands and agrees that, if future operations by the United States require the removal, relocation, or other alteration, of the structure or work herein authorized, or if, in the opinion of the Secretary of the Army or his authorized representative, said structure or work shall cause unreasonable obstruction to the free navigation of the navigable waters, the permittee will be required, upon due notice from the Corps of Engineers, to remove, relocate, or alter the structural work or obstructions caused thereby, without expense to the United States. No claim shall be made against the United States on account of any such removal or alteration.

2. Aquatic Life Movements. No activity may substantially disrupt the necessary life cycle movements of those species of aquatic life indigenous to the waterbody, including those species that normally migrate through the area, unless the activity's primary purpose is to impound water. All permanent and temporary crossings of waterbodies shall be suitably culverted, bridged, or otherwise designed and constructed to maintain low flows to sustain the movement of those aquatic species.

3. Spawning Areas. Activities in spawning areas during spawning seasons must be avoided to the maximum extent practicable. Activities that result in the physical destruction (e.g., through excavation, fill, or downstream smothering by substantial turbidity) of an important spawning area are not authorized.

4. Migratory Bird Breeding Areas. Activities in waters of the United States that serve as breeding areas for migratory birds must be avoided to the maximum extent practicable.

5. Shellfish Beds. No activity may occur in areas of concentrated shellfish populations, unless the activity is directly related to a shellfish harvesting activity authorized by NWPs 4 and 48, or is a shellfish seeding or habitat restoration activity authorized by NWP 27.

6. Suitable Material. No activity may use unsuitable material (e.g., trash, debris, car bodies, asphalt, etc.). Material used for construction or discharged must be free from toxic pollutants in toxic amounts (see Section 307 of the Clean Water Act).

7. Water Supply Intakes. No activity may occur in the proximity of a public water supply intake, except where the activity is for the repair or improvement of public water supply intake structures or adjacent bank stabilization.

8. Adverse Effects From Impoundments. If the activity creates an impoundment of water, adverse effects to the aquatic system due to accelerating the passage of water, and/or restricting its flow must be minimized to the maximum extent practicable.

9. Management of Water Flows. To the maximum extent practicable, the pre-construction course, condition, capacity, and location of open waters must be maintained for each activity, including stream channelization and storm water management activities, except as provided below. The activity must be constructed to withstand expected high flows. The activity must not restrict or impede the passage of normal or high flows, unless the primary purpose of the activity is to impound water or manage high flows. The activity may alter the pre-construction course, condition, capacity, and location of open waters if it benefits the aquatic environment (e.g., stream restoration or relocation activities).

10. Fills Within 100-Year Floodplains. The activity must comply with applicable FEMA-approved state or local floodplain management requirements.

11. Equipment. Heavy equipment working in wetlands or mudflats must be placed on mats, or other measures must be taken to minimize soil disturbance.

12. Soil Erosion and Sediment Controls. Appropriate soil erosion and sediment controls must be used and maintained in effective operating condition during construction, and all exposed soil and other fills, as well as any work below the ordinary high water mark or high tide line, must be permanently stabilized at the earliest practicable date. Permittees are encouraged to perform work within waters of the United States during periods of low-flow or no-flow.

13. Removal of Temporary Fills. Temporary fills must be removed in their entirety and the affected areas returned to pre-construction elevations. The affected areas must be revegetated, as appropriate.

14. Proper Maintenance. Any authorized structure or fill shall be properly maintained, including maintenance to ensure public safety and compliance with applicable NWP general conditions, as well as any activity-specific conditions added by the district engineer to an NWP authorization.

15. Single and Complete Project. The activity must be a single and complete project. The same NWP cannot be used more than once for the same single and complete project.

16. Wild and Scenic Rivers. No activity may occur in a component of the National Wild and Scenic River System, or in a river officially designated by Congress as a "study river" for possible inclusion in the system while the river is in an official study status, unless the appropriate Federal agency with direct management responsibility for such river, has determined in writing that the proposed activity will not adversely affect the Wild and Scenic River designation or study status. Information on Wild and Scenic Rivers may be obtained from the appropriate Federal land management agency responsible for the designated Wild and Scenic River or study river (e.g., National Park Service, U.S. Forest Service, Bureau of Land Management, U.S. Fish and Wildlife Service).

17. Tribal Rights. No activity or its operation may impair reserved tribal rights, including, but not limited to, reserved water rights and treaty fishing and hunting rights.

18. Endangered Species. (a) No activity is authorized under any NWP which is likely to directly or indirectly jeopardize the continued existence of a threatened or endangered species or a species proposed for such designation, as identified under the Federal Endangered Species Act (ESA), or which will directly or indirectly destroy or adversely modify the critical habitat of such species. No activity is authorized under any NWP which "may affect" a listed species or critical habitat, unless Section 7 consultation addressing the effects of the proposed activity has been completed.

(b) Federal agencies should follow their own procedures for complying with the requirements of the ESA. Federal permittees must provide the district engineer with the appropriate documentation to demonstrate compliance with those requirements. The district engineer will review the documentation and determine whether it is sufficient to address ESA compliance for the NWP activity, or whether additional ESA consultation is necessary.

(c) Non-federal permittees must submit a pre-construction notification to the district engineer if any listed species or designated critical habitat might be affected or is in the vicinity of the project, or if the project is located in designated critical habitat, and shall not begin work on the activity until notified by the district engineer that the requirements of the ESA have been satisfied and that the activity is authorized. For activities that might affect Federally-listed endangered or threatened species or designated critical habitat, the pre-construction notification must include the name(s) of the endangered or threatened species that might be affected by the proposed work or that utilize the designated critical habitat that might be affected by the proposed work. The district engineer will determine whether the proposed activity "may affect" or will have "no effect" to listed species and designated critical habitat and will notify the non-Federal applicant of the Corps' determination within 45 days of receipt of a complete pre-construction notification. In cases where the non-Federal applicant has identified listed species or critical habitat that might be affected or is in the vicinity of the project, and has so notified the Corps, the applicant shall not begin work until the Corps has provided notification the proposed activities will have "no effect" on listed species or critical habitat, or until Section 7 consultation has been completed. If the non-Federal applicant has not heard back from the Corps within 45 days, the applicant must still wait for notification from the Corps.

(d) As a result of formal or informal consultation with the FWS or NMFS the district engineer may add species-specific regional endangered species conditions to the NWPs.

(e) Authorization of an activity by a NWP does not authorize the "take" of a threatened or endangered species as defined under the ESA. In the absence of separate authorization (e.g., an ESA Section 10 Permit, a Biological Opinion with "incidental take" provisions, etc.) from the U.S. FWS or the NMFS, The Endangered Species Act prohibits any person subject to the jurisdiction of the United States to take a listed species, where "take" means to harass, harm, pursue, hunt, shoot, wound, kill, trap, capture, or collect, or to attempt to engage in any such conduct. The word "harm" in the definition of "take" means an act which actually kills or injures wildlife. Such an act may include significant habitat modification or degradation where it actually kills or injures wildlife by significantly impairing essential behavioral patterns, including breeding, feeding or sheltering.

(f) Information on the location of threatened and endangered species and their critical habitat can be obtained directly from the offices of the U.S. FWS and NMFS or their world wide web pages at <http://www.fws.gov/> or <http://www.fws.gov/ipac> and <http://www.noaa.gov/fisheries.html> respectively.

19. Migratory Birds and Bald and Golden Eagles. The permittee is responsible for obtaining any "take" permits required under the U.S. Fish and Wildlife Service's regulations governing compliance with the Migratory Bird Treaty Act or the Bald and Golden Eagle Protection Act. The permittee should contact the appropriate local office of the U.S. Fish and Wildlife Service to determine if such "take" permits are required for a particular activity.

20. Historic Properties. (a) In cases where the district engineer determines that the activity may affect properties listed, or eligible for listing, in the National Register of Historic Places, the activity is not authorized, until the requirements of Section 106 of the National Historic Preservation Act (NHPA) have been satisfied.

(b) Federal permittees should follow their own procedures for complying with the requirements of Section 106 of the National Historic Preservation Act. Federal permittees must provide the district engineer with the appropriate documentation to demonstrate compliance with those requirements. The district engineer will review the documentation and determine whether it is sufficient to address section 106 compliance for the NWP activity, or whether additional section 106 consultation is necessary.

(c) Non-federal permittees must submit a pre-construction notification to the district engineer if the authorized activity may have the potential to cause effects to any historic properties listed on, determined to be eligible for listing on, or potentially eligible for listing on the National Register of Historic Places, including previously unidentified properties. For such activities, the pre-construction notification must state which historic properties may be affected by the proposed work or include a vicinity map indicating the location of the historic properties or the potential for the presence of historic properties. Assistance regarding information on the location of or potential for the presence of historic resources can be sought from the State Historic Preservation Officer or Tribal Historic Preservation Officer, as appropriate, and the National Register of Historic Places (see 33 CFR 330.4(g)). When reviewing pre-construction notifications, district engineers will comply with the current procedures for addressing the requirements of Section 106 of the National Historic Preservation Act. The district engineer shall make a reasonable and good faith effort to carry out appropriate identification efforts, which may include background research, consultation, oral history interviews, sample field investigation, and field survey. Based on the information submitted and these efforts, the district engineer shall determine whether the proposed activity has the potential to cause an effect on the historic properties. Where the non-Federal applicant has identified historic properties on which the activity may have the potential to cause effects and so notified the Corps, the non-Federal applicant shall not begin the activity until notified by the district engineer either that the activity has no potential to cause effects or that consultation under Section 106 of the NHPA has been completed.

(d) The district engineer will notify the prospective permittee within 45 days of receipt of a complete pre-construction notification whether NHPA Section 106 consultation is required. Section 106 consultation is not required when the Corps determines that the activity does not have the potential to cause effects on historic properties (see 36 CFR §800.3(a)). If NHPA section 106 consultation is required and will occur, the district engineer will notify the non-Federal applicant that he or she cannot begin work until Section 106 consultation is completed. If the non-Federal applicant has not heard back from the Corps within 45 days, the applicant must still wait for notification from the Corps.

(e) Prospective permittees should be aware that section 110(k) of the NHPA (16 U.S.C. 470h-2(k)) prevents the Corps from granting a permit or other assistance to an applicant who, with intent to avoid the requirements of Section 106 of the NHPA, has intentionally significantly adversely affected a historic property to which the permit would relate, or having legal power to prevent it, allowed such significant adverse effect to occur, unless the Corps, after consultation with the Advisory Council on Historic Preservation (ACHP), determines that circumstances justify granting such assistance despite the adverse effect created or permitted by the applicant. If circumstances justify granting the assistance, the Corps is required to notify the ACHP and provide documentation specifying the circumstances, the degree of damage to the integrity of any historic properties affected, and proposed mitigation. This documentation must include any views obtained from the applicant, SHPO/THPO, appropriate Indian tribes if the undertaking occurs on or affects historic properties on tribal lands or affects properties of interest to those tribes, and other parties known to have a legitimate interest in the impacts to the permitted activity on historic properties.

21. Discovery of Previously Unknown Remains and Artifacts. If you discover any previously unknown historic, cultural or archeological remains and artifacts while accomplishing the activity authorized by this permit, you must immediately notify the district engineer of what you have found, and to the maximum extent practicable, avoid construction activities that may affect the remains and artifacts until the required coordination has been completed. The district engineer will initiate the Federal, Tribal and state coordination required to determine if the items or remains warrant a recovery effort or if the site is eligible for listing in the National Register of Historic Places.

22. Designated Critical Resource Waters. Critical resource waters include, NOAA-managed marine sanctuaries and marine monuments, and National Estuarine Research Reserves. The district engineer may designate, after notice and opportunity for public comment, additional waters officially designated by a state as having particular environmental or ecological significance, such as outstanding national resource waters or state natural heritage sites. The district engineer may also designate additional critical resource waters after notice and opportunity for public comment.

(a) Discharges of dredged or fill material into waters of the United States are not authorized by NWPs 7, 12, 14, 16, 17, 21, 29, 31, 35, 39, 40, 42, 43, 44, 49, 50, 51, and 52 for any activity within, or directly affecting, critical resource waters, including wetlands adjacent to such waters.

(b) For NWPs 3, 8, 10, 13, 15, 18, 19, 22, 23, 25, 27, 28, 30, 33, 34, 36, 37, and 38, notification is required in accordance with general condition 31, for any activity proposed in the designated critical resource waters including wetlands adjacent to those

waters. The district engineer may authorize activities under these NWP's only after it is determined that the impacts to the critical resource waters will be no more than minimal.

23. Mitigation. The district engineer will consider the following factors when determining appropriate and practicable mitigation necessary to ensure that adverse effects on the aquatic environment are minimal:

(a) The activity must be designed and constructed to avoid and minimize adverse effects, both temporary and permanent, to waters of the United States to the maximum extent practicable at the project site (i.e., on site).

(b) Mitigation in all its forms (avoiding, minimizing, rectifying, reducing, or compensating for resource losses) will be required to the extent necessary to ensure that the adverse effects to the aquatic environment are minimal.

(c) Compensatory mitigation at a minimum one-for-one ratio will be required for all wetland losses that exceed 1/10-acre and require pre-construction notification, unless the district engineer determines in writing that either some other form of mitigation would be more environmentally appropriate or the adverse effects of the proposed activity are minimal, and provide a project-specific waiver of this requirement. For wetland losses of 1/10-acre or less that require pre-construction notification, the district engineer may determine on a case-by-case basis that compensatory mitigation is required to ensure that the activity results in minimal adverse effects on the aquatic environment. Compensatory mitigation projects provided to offset losses of aquatic resources must comply with the applicable provisions of 33 CFR part 332.

(1) The prospective permittee is responsible for proposing an appropriate compensatory mitigation option if compensatory mitigation is necessary to ensure that the activity results in minimal adverse effects on the aquatic environment.

(2) Since the likelihood of success is greater and the impacts to potentially valuable uplands are reduced, wetland restoration should be the first compensatory mitigation option considered.

(3) If permittee-responsible mitigation is the proposed option, the prospective permittee is responsible for submitting a mitigation plan. A conceptual or detailed mitigation plan may be used by the district engineer to make the decision on the NWP verification request, but a final mitigation plan that addresses the applicable requirements of 33 CFR 332.4(c)(2) – (14) must be approved by the district engineer before the permittee begins work in waters of the United States, unless the district engineer determines that prior approval of the final mitigation plan is not practicable or not necessary to ensure timely completion of the required compensatory mitigation (see 33 CFR 332.3(k)(3)).

(4) If mitigation bank or in-lieu fee program credits are the proposed option, the mitigation plan only needs to address the baseline conditions at the impact site and the number of credits to be provided.

(5) Compensatory mitigation requirements (e.g., resource type and amount to be provided as compensatory mitigation, site protection, ecological performance standards, monitoring requirements) may be addressed through conditions added to the NWP authorization, instead of components of a compensatory mitigation plan.

(d) For losses of streams or other open waters that require pre-construction notification, the district engineer may require compensatory mitigation, such as stream rehabilitation, enhancement, or preservation, to ensure that the activity results in minimal adverse effects on the aquatic environment.

(e) Compensatory mitigation will not be used to increase the acreage losses allowed by the acreage limits of the NWP's. For example, if an NWP has an acreage limit of 1/2-acre, it cannot be used to authorize any project resulting in the loss of greater than 1/2-acre of waters of the United States, even if compensatory mitigation is provided that replaces or restores some of the lost waters. However, compensatory mitigation can and should be used, as necessary, to ensure that a project already meeting the established acreage limits also satisfies the minimal impact requirement associated with the NWP's.

(f) Compensatory mitigation plans for projects in or near streams or other open waters will normally include a requirement for the restoration or establishment, maintenance, and legal protection (e.g., conservation easements) of riparian areas next to open waters. In some cases, riparian areas may be the only compensatory mitigation required. Riparian areas should consist of native species.

The width of the required riparian area will address documented water quality or aquatic habitat loss concerns. Normally, the riparian area will be 25 to 50 feet wide on each side of the stream, but the district engineer may require slightly wider riparian areas to address documented water quality or habitat loss concerns. If it is not possible to establish a riparian area on both sides of a stream, or if the waterbody is a lake or coastal waters, then restoring or establishing a riparian area along a single bank or shoreline may be sufficient. Where both wetlands and open waters exist on the project site, the district engineer will determine the appropriate compensatory mitigation (e.g., riparian areas and/or wetlands compensation) based on what is best for the aquatic environment on a watershed basis. In cases where riparian areas are determined to be the most appropriate form of compensatory mitigation, the district engineer may waive or reduce the requirement to provide wetland compensatory mitigation for wetland losses.

(g) Permittees may propose the use of mitigation banks, in-lieu fee programs, or separate permittee-responsible mitigation. For activities resulting in the loss of marine or estuarine resources, permittee-responsible compensatory mitigation may be environmentally preferable if there are no mitigation banks or in-lieu fee programs in the area that have marine or estuarine credits available for sale or transfer to the permittee. For permittee-responsible mitigation, the special conditions of the NWP verification must clearly indicate the party or parties responsible for the implementation and performance of the compensatory mitigation project, and, if required, its long-term management.

(h) Where certain functions and services of waters of the United States are permanently adversely affected, such as the conversion of a forested or scrub-shrub wetland to a herbaceous wetland in a permanently maintained utility line right-of-way, mitigation may be required to reduce the adverse effects of the project to the minimal level.

24. Safety of Impoundment Structures. To ensure that all impoundment structures are safely designed, the district engineer may require non-Federal applicants to demonstrate that the structures comply with established state dam safety criteria or have been designed by qualified persons. The district engineer may also require documentation that the design has been independently reviewed by similarly qualified persons, and appropriate modifications made to ensure safety.

25. Water Quality. Where States and authorized Tribes, or EPA where applicable, have not previously certified compliance of an NWP with CWA Section 401, individual 401 Water Quality Certification must be obtained or waived (see 33 CFR 330.4(c)). The district engineer or State or Tribe may require additional water quality management measures to ensure that the authorized activity does not result in more than minimal degradation of water quality.

26. Coastal Zone Management. In coastal states where an NWP has not previously received a state coastal zone management consistency concurrence, an individual state coastal zone management consistency concurrence must be obtained, or a presumption of concurrence must occur (see 33 CFR 330.4(d)). The district engineer or a State may require additional measures to ensure that the authorized activity is consistent with state coastal zone management requirements.

27. Regional and Case-By-Case Conditions. The activity must comply with any regional conditions that may have been added by the Division Engineer (see 33 CFR 330.4(e)) and with any case specific conditions added by the Corps or by the state, Indian Tribe, or U.S. EPA in its section 401 Water Quality Certification, or by the state in its Coastal Zone Management Act consistency determination.

28. Use of Multiple Nationwide Permits. The use of more than one NWP for a single and complete project is prohibited, except when the acreage loss of waters of the United States authorized by the NWPs does not exceed the acreage limit of the NWP with the highest specified acreage limit. For example, if a road crossing over tidal waters is constructed under NWP 14, with associated bank stabilization authorized by NWP 13, the maximum acreage loss of waters of the United States for the total project cannot exceed 1/3-acre.

29. Transfer of Nationwide Permit Verifications. If the permittee sells the property associated with a nationwide permit verification, the permittee may transfer the nationwide permit verification to the new owner by submitting a letter to the appropriate Corps district office to validate the transfer. A copy of the nationwide permit verification must be attached to the letter, and the letter must contain the following statement and signature: "When the structures or work authorized by this nationwide permit are still in existence at the time the property is transferred, the terms and conditions of this nationwide permit, including any special conditions, will continue to be binding on the new owner(s) of the property. To validate the transfer of this nationwide permit and the associated liabilities associated with compliance with its terms and conditions, have the transferee sign and date below."

(Transferee)

(Date)

30. Compliance Certification. Each permittee who receives an NWP verification letter from the Corps must provide a signed certification documenting completion of the authorized activity and any required compensatory mitigation. The success of any required permittee-responsible mitigation, including the achievement of ecological performance standards, will be addressed separately by the district engineer. The Corps will provide the permittee the certification document with the NWP verification letter. The certification document will include:

(a) A statement that the authorized work was done in accordance with the NWP authorization, including any general, regional, or activity-specific conditions;

(b) A statement that the implementation of any required compensatory mitigation was completed in accordance with the permit conditions. If credits from a mitigation bank or in-lieu fee program are used to satisfy the compensatory mitigation requirements, the certification must include the documentation required by 33 CFR 332.3(l)(3) to confirm that the permittee secured the appropriate number and resource type of credits; and

(c) The signature of the permittee certifying the completion of the work and mitigation.

31. Pre-Construction Notification. (a) **Timing.** Where required by the terms of the NWP, the prospective permittee must notify the district engineer by submitting a pre-construction notification (PCN) as early as possible. The district engineer must determine if the PCN is complete within 30 calendar days of the date of receipt and, if the PCN is determined to be incomplete, notify the prospective permittee within that 30 day period to request the additional information necessary to make the PCN complete. The request must specify the information needed to make the PCN complete. As a general rule, district engineers will request additional information necessary to make the PCN complete only once. However, if the prospective permittee does not provide all of the requested information, then the district engineer will notify the prospective permittee that the PCN is still incomplete and the PCN review process will not commence until all of the requested information has been received by the district engineer. The prospective permittee shall not begin the activity until either:

(1) He or she is notified in writing by the district engineer that the activity may proceed under the NWP with any special

conditions imposed by the district or division engineer; or

(2) 45 calendar days have passed from the district engineer's receipt of the complete PCN and the prospective permittee has not received written notice from the district or division engineer. However, if the permittee was required to notify the Corps pursuant to general condition 18 that listed species or critical habitat might be affected or in the vicinity of the project, or to notify the Corps pursuant to general condition 20 that the activity may have the potential to cause effects to historic properties, the permittee cannot begin the activity until receiving written notification from the Corps that there is "no effect" on listed species or "no potential to cause effects" on historic properties, or that any consultation required under Section 7 of the Endangered Species Act (see 33 CFR 330.4(f)) and/or Section 106 of the National Historic Preservation (see 33 CFR 330.4(g)) has been completed. Also, work cannot begin under NWPs 21, 49, or 50 until the permittee has received written approval from the Corps. If the proposed activity requires a written waiver to exceed specified limits of an NWP, the permittee may not begin the activity until the district engineer issues the waiver. If the district or division engineer notifies the permittee in writing that an individual permit is required within 45 calendar days of receipt of a complete PCN, the permittee cannot begin the activity until an individual permit has been obtained. Subsequently, the permittee's right to proceed under the NWP may be modified, suspended, or revoked only in accordance with the procedure set forth in 33 CFR 330.5(d)(2).

(b) Contents of Pre-Construction Notification: The PCN must be in writing and include the following information:

(1) Name, address and telephone numbers of the prospective permittee;

(2) Location of the proposed project;

(3) A description of the proposed project; the project's purpose; direct and indirect adverse environmental effects the project would cause, including the anticipated amount of loss of water of the United States expected to result from the NWP activity, in acres, linear feet, or other appropriate unit of measure; any other NWP(s), regional general permit(s), or individual permit(s) used or intended to be used to authorize any part of the proposed project or any related activity. The description should be sufficiently detailed to allow the district engineer to determine that the adverse effects of the project will be minimal and to determine the need for compensatory mitigation. Sketches should be provided when necessary to show that the activity complies with the terms of the NWP. (Sketches usually clarify the project and when provided results in a quicker decision. Sketches should contain sufficient detail to provide an illustrative description of the proposed activity (e.g., a conceptual plan), but do not need to be detailed engineering plans);

(4) The PCN must include a delineation of wetlands, other special aquatic sites, and other waters, such as lakes and ponds, and perennial, intermittent, and ephemeral streams, on the project site. Wetland delineations must be prepared in accordance with the current method required by the Corps. The permittee may ask the Corps to delineate the special aquatic sites and other waters on the project site, but there may be a delay if the Corps does the delineation, especially if the project site is large or contains many waters of the United States. Furthermore, the 45 day period will not start until the delineation has been submitted to or completed by the Corps, as appropriate;

(5) If the proposed activity will result in the loss of greater than 1/10-acre of wetlands and a PCN is required, the prospective permittee must submit a statement describing how the mitigation requirement will be satisfied, or explaining why the adverse effects are minimal and why compensatory mitigation should not be required. As an alternative, the prospective permittee may submit a conceptual or detailed mitigation plan.

(6) If any listed species or designated critical habitat might be affected or is in the vicinity of the project, or if the project is located in designated critical habitat, for non-Federal applicants the PCN must include the name(s) of those endangered or threatened species that might be affected by the proposed work or utilize the designated critical habitat that may be affected by the proposed work. Federal applicants must provide documentation demonstrating compliance with the Endangered Species Act; and

(7) For an activity that may affect a historic property listed on, determined to be eligible for listing on, or potentially eligible for listing on, the National Register of Historic Places, for non-Federal applicants the PCN must state which historic property may be affected by the proposed work or include a vicinity map indicating the location of the historic property. Federal applicants must provide documentation demonstrating compliance with Section 106 of the National Historic Preservation Act.

(c) Form of Pre-Construction Notification: The standard individual permit application form (Form ENG 4345) may be used, but the completed application form must clearly indicate that it is a PCN and must include all of the information required in paragraphs (b)(1) through (7) of this general condition. A letter containing the required information may also be used.

(d) Agency Coordination: (1) The district engineer will consider any comments from Federal and state agencies concerning the proposed activity's compliance with the terms and conditions of the NWPs and the need for mitigation to reduce the project's adverse environmental effects to a minimal level.

(2) For all NWP activities that require pre-construction notification and result in the loss of greater than 1/2-acre of waters of the United States, for NWP 21, 29, 39, 40, 42, 43, 44, 50, 51, and 52 activities that require pre-construction notification and will result in the loss of greater than 300 linear feet of intermittent and ephemeral stream bed, and for all NWP 48 activities that require pre-construction notification, the district engineer will immediately provide (e.g., via e-mail, facsimile transmission, overnight mail, or other expeditious manner) a copy of the complete PCN to the appropriate Federal or state offices (U.S. FWS, state natural resource or water quality agency, EPA, State Historic Preservation Officer (SHPO) or Tribal Historic Preservation Office (THPO), and, if appropriate, the NMFS). With the exception of NWP 37, these agencies will have 10 calendar days from the date the material is transmitted to telephone or fax the district engineer notice that they intend to provide substantive, site-specific comments. The comments must explain why the agency believes the adverse effects will be more than minimal. If so contacted by an agency, the district engineer will wait an additional 15 calendar days before making a decision on the pre-construction notification. The district engineer will fully consider agency comments received within the specified time frame concerning the proposed activity's

compliance with the terms and conditions of the NWP, including the need for mitigation to ensure the net adverse environmental effects to the aquatic environment of the proposed activity are minimal. The district engineer will provide no response to the resource agency, except as provided below. The district engineer will indicate in the administrative record associated with each pre-construction notification that the resource agencies' concerns were considered. For NWP 37, the emergency watershed protection and rehabilitation activity may proceed immediately in cases where there is an unacceptable hazard to life or a significant loss of property or economic hardship will occur. The district engineer will consider any comments received to decide whether the NWP 37 authorization should be modified, suspended, or revoked in accordance with the procedures at 33 CFR 330.5. (3) In cases of where the prospective permittee is not a Federal agency, the district engineer will provide a response to NMFS within 30 calendar days of receipt of any Essential Fish Habitat conservation recommendations, as required by Section 305(b)(4)(B) of the Magnuson-Stevens Fishery Conservation and Management Act.

(4) Applicants are encouraged to provide the Corps with either electronic files or multiple copies of pre-construction notifications to expedite agency coordination.

D. District Engineer's Decision

1. In reviewing the PCN for the proposed activity, the district engineer will determine whether the activity authorized by the NWP will result in more than minimal individual or cumulative adverse environmental effects or may be contrary to the public interest. For a linear project, this determination will include an evaluation of the individual crossings to determine whether they individually satisfy the terms and conditions of the NWP(s), as well as the cumulative effects caused by all of the crossings authorized by NWP. If an applicant requests a waiver of the 300 linear foot limit on impacts to intermittent or ephemeral streams or of an otherwise applicable limit, as provided for in NWPs 13, 21, 29, 36, 39, 40, 42, 43, 44, 50, 51 or 52, the district engineer will only grant the waiver upon a written determination that the NWP activity will result in minimal adverse effects. When making minimal effects determinations the district engineer will consider the direct and indirect effects caused by the NWP activity. The district engineer will also consider site specific factors, such as the environmental setting in the vicinity of the NWP activity, the type of resource that will be affected by the NWP activity, the functions provided by the aquatic resources that will be affected by the NWP activity, the degree or magnitude to which the aquatic resources perform those functions, the extent that aquatic resource functions will be lost as a result of the NWP activity (e.g., partial or complete loss), the duration of the adverse effects (temporary or permanent), the importance of the aquatic resource functions to the region (e.g., watershed or ecoregion), and mitigation required by the district engineer. If an appropriate functional assessment method is available and practicable to use, that assessment method may be used by the district engineer to assist in the minimal adverse effects determination. The district engineer may add case-specific special conditions to the NWP authorization to address site-specific environmental concerns.

2. If the proposed activity requires a PCN and will result in a loss of greater than 1/10 acre of wetlands, the prospective permittee should submit a mitigation proposal with the PCN. Applicants may also propose compensatory mitigation for projects with smaller impacts. The district engineer will consider any proposed compensatory mitigation the applicant has included in the proposal in determining whether the net adverse environmental effects to the aquatic environment of the proposed activity are minimal. The compensatory mitigation proposal may be either conceptual or detailed. If the district engineer determines that the activity complies with the terms and conditions of the NWP and that the adverse effects on the aquatic environment are minimal, after considering mitigation, the district engineer will notify the permittee and include any activity-specific conditions in the NWP verification the district engineer deems necessary. Conditions for compensatory mitigation requirements must comply with the appropriate provisions at 33 CFR 332.3(k). The district engineer must approve the final mitigation plan before the permittee commences work in waters of the United States, unless the district engineer determines that prior approval of the final mitigation plan is not practicable or not necessary to ensure timely completion of the required compensatory mitigation. If the prospective permittee elects to submit a compensatory mitigation plan with the PCN, the district engineer will expeditiously review the proposed compensatory mitigation plan. The district engineer must review the proposed compensatory mitigation plan within 45 calendar days of receiving a complete PCN and determine whether the proposed mitigation would ensure no more than minimal adverse effects on the aquatic environment. If the net adverse effects of the project on the aquatic environment (after consideration of the compensatory mitigation proposal) are determined by the district engineer to be minimal, the district engineer will provide a timely written response to the applicant. The response will state that the project can proceed under the terms and conditions of the NWP, including any activity-specific conditions added to the NWP authorization by the district engineer.

3. If the district engineer determines that the adverse effects of the proposed work are more than minimal, then the district engineer will notify the applicant either: (a) That the project does not qualify for authorization under the NWP and instruct the applicant on the procedures to seek authorization under an individual permit; (b) that the project is authorized under the NWP subject to the applicant's submission of a mitigation plan that would reduce the adverse effects on the aquatic environment to the minimal level; or (c) that the project is authorized under the NWP with specific modifications or conditions. Where the district engineer determines that mitigation is required to ensure no more than minimal adverse effects occur to the aquatic environment, the activity will be authorized within the 45-day PCN period, with activity-specific conditions that state the mitigation requirements. The authorization will include the necessary conceptual or detailed mitigation or a requirement that the applicant submit a mitigation plan that would reduce the adverse effects on the aquatic environment to the minimal level. When mitigation is required, no work in waters of the United States may occur until the district engineer has approved a specific mitigation plan or has determined that prior approval of a final mitigation plan is not practicable or not necessary to ensure timely completion of the required compensatory mitigation.

NWP CZM and WQC Status Table: Delaware, New Jersey, Pennsylvania (4.4.2012)

NWP #	PCN	DE CZM	DE WQC	NJ CZM	NJ WQC	PA CZM	PA WQC
NWP 1	NO	ISSUED	N/A				
NWP 2	NO	ISSUED	N/A				
NWP 3	YES *	DENIED #	DENIED #				
NWP 4	NO	ISSUED	ISSUED				
NWP 5	NO	ISSUED	ISSUED				
NWP 6	NO	ISSUED	ISSUED				
NWP 7	YES	ISSUED	ISSUED				
NWP 8	YES	DENIED	N/A				
NWP 9	NO	ISSUED	N/A				
NWP 10	YES *	ISSUED	N/A				
NWP 11	YES*	ISSUED	N/A				
NWP 12	YES	ISSUED	ISSUED				
NWP 13	YES *	DENIED #	DENIED #				
NWP 14	YES	ISSUED	ISSUED				
NWP 15	YES *	ISSUED	ISSUED				
NWP 16	NO	ISSUED	ISSUED				
NWP 17	YES	ISSUED	ISSUED				
NWP 18	YES *	DENIED #	DENIED #				
NWP 19	YES	ISSUED	ISSUED				
NWP 20	NO	ISSUED	ISSUED				
NWP 21	YES	ISSUED	ISSUED				
NWP 22	YES *	ISSUED	ISSUED				
NWP 23	YES	ISSUED	ISSUED				
NWP 24	NO	ISSUED	N/A				
NWP 25	YES *	ISSUED	ISSUED				
NWP 27	YES *	ISSUED	ISSUED				
NWP 28	YES	ISSUED	N/A				
NWP 29	YES	DENIED #	DENIED #				
NWP 30	YES *	ISSUED	ISSUED				
NWP 31	YES	ISSUED	ISSUED				
NWP 32	N/A	ISSUED	ISSUED				
NWP 33	YES	ISSUED	ISSUED				
NWP 34	YES	ISSUED	ISSUED				
NWP 35	YES	ISSUED	N/A				
NWP 36	YES *	ISSUED	ISSUED				
NWP 37	YES	ISSUED	ISSUED				
NWP 38	YES	ISSUED	ISSUED				
NWP 39	YES	DENIED #	DENIED #				
NWP 40	YES	DENIED	DENIED				
NWP 41	YES	DENIED	DENIED				
NWP 42	YES	DENIED	DENIED				
NWP 43	YES	DENIED	DENIED				
NWP 44	YES	DENIED	DENIED				
NWP 45	YES	ISSUED	ISSUED				
NWP 46	YES	DENIED	DENIED				
NWP 48	YES	ISSUED	ISSUED				
NWP 49	YES	ISSUED	ISSUED				
NWP 50	YES	ISSUED	ISSUED				
NWP 51	YES	DENIED	DENIED				
NWP 52	YES	DENIED	DENIED				

Note: *A PCN is required under certain circumstances. Review the terms of the NWP, general conditions, or regional conditions to identify those circumstances. # The State of Delaware has denied the CZM and WQC for this NWP in critical resource waters only.

ENCLOSURE 3

NOTIFICATION/CERTIFICATION OF WORK COMMENCEMENT FORM

Permit Number: CENAP-OP-R-2015-102-85
Name of Permittee: DDNREC Division of Parks and Recreation
Project Name: Holts Landing Boat Ramp SX
Waterway: Indian River Bay
County: Sussex State: Delaware
Compensation/Mitigation Work Required: Yes ☐ No ☒

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 discharge 0.09 acre of fill material into waters of The United States to replace an existing, degraded single lane boat ramp with a new double lane boat ramp located in Dagsboro, 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-2015-102-85
Name of Permittee: DDNREC Division of Parks and Recreation
Name of Contractor: _____
Project Name: Holts Landing Boat Ramp SX
County: Sussex State: Delaware
Waterway: Indian River Bay

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

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NOT FOR BIDDING PURPOSES

APPENDIX 3

GEOTECHNICAL REPORT

DATED JANUARY 19, 2015

NOT FOR BIDDING PURPOSES

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NOT FOR BIDDING PURPOSES



JOHN D. HYNES & ASSOCIATES, INC.

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

January 19, 2015

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

Re: Report of Subsurface Exploration and Geotechnical
Engineering Recommendations
DNREC – Holts Landing Boat Ramp
Improvements
Sussex County, Delaware
Project No.: JDH-10/14/421

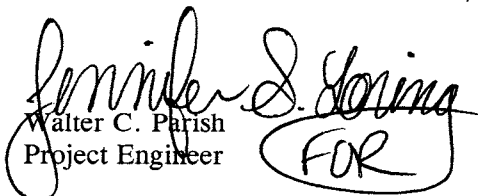
Dear Mr. Williams:

John D. Hynes & Associates, Inc. has completed the authorized subsurface exploration and geotechnical engineering evaluations for the proposed DNREC – Holts Landing Boat Ramp Improvements project in Sussex County, Delaware. Our evaluation was conducted, generally, in accordance with our proposal of October 1, 2014, your notice to proceed (NTP) of December 10, 2014, and our subsequent telephone and e-mail communications with Andrews, Miller & Associates, Inc (AMA).

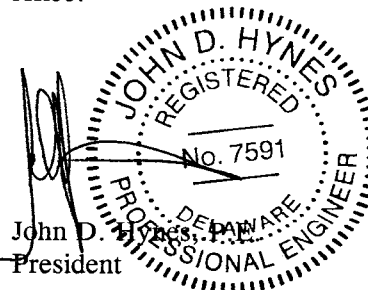
This report describes the exploration methods employed, exhibits the data obtained and presents our geotechnical engineering evaluations and recommendations. We include recommendations for the boat ramp subgrade preparation, and discussion of the boat ramp and walls. Also, we have evaluated timber piles with a minimum 12-inch butt and 8-inch tip for use in the proposed boat ramp, bulkhead and pier construction. Compressive and tensile (uplift) capacities are tabulated within this report for specific pile embedment tip elevations corresponding to a range of compressive and tensile capacities that are expected to satisfy the requirements of the site and proposed facilities. Compressive and tensile uplift capacities are also included for the 12-inch o/s diameter galvanized steel guide piles for the proposed floating piers at the waterward end of the proposed boat ramp. In addition to the pile capacity tabulations, we are including tabulations of soil design parameters for the full depth of the two ramp borings B-1 and B-2 for use in lateral timber and steel pile design considerations at the wall and pier structures. Reflecting generally similar subsurface soil characteristics, borings B-1 and B-2 are treated compositely to facilitate evaluations of the proposed piles' resistance to lateral loading.

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.


Walter C. Parish
Project Engineer

WCP: JDH/jsl


John D. Hynes, P.E.
President

JOHN D. HYNES
REGISTERED
No. 7591
PROFESSIONAL ENGINEER
DELAWARE

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NOT FOR BIDDING PURPOSES



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

**DNREC – HOLTS LANDING BOAT RAMP IMPROVEMENTS
SUSSEX COUNTY, DELAWARE**

**PREPARED FOR
ANDREWS, MILLER & ASSOCIATES**

**JANUARY 19, 2015
PROJECT NO.: JDH-10/14/421**



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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. Foundation recommendations including allowable bearing and tensile capacities for a range of timber and steel pile embedments;
4. Boat ramp slab support;
5. Lateral pressure, and passive resistance for new boat ramp walls and piers;
6. pH testing;
7. Groundwater and surface water considerations; and
8. 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 our Project Location Map (Drawing No.: JDH-10/14/421-A) and Boring Location Plan (Drawing No.: JDH-10/14/421-B) in the Appendix, the project site is the existing Holts Landing Boat Ramp which is located at the north limits of Holts Landing State Park in Sussex County, Delaware. The north end of the site fronts on Indian River Inlet at its easterly conjunction with the Atlantic Ocean. The existing boat ramp consists of a deteriorating concrete ramp within pile supported walls and adjacent boarding piers. A large weathered and broken, paved parking area for vehicles and trailers is located to the south of the existing ramp. An existing aluminum boarding dock is located to the east of the boat ramp. Most existing facilities are in a deteriorating condition. The existing boat ramp and aluminum dock are to be removed to make way for the new double ramps and piers. Also, the pavement area is to be improved. However, pavement area improvements were excluded from our scope of work.

FIELD EXPLORATION AND STUDY

In order to determine the nature of the subsurface conditions at the site, two structural borings, designated as B-1 and B-2, were drilled at locations shown on the Boring Location Plan (Drawing JDH-10/14/421-B) in the Appendix. The borings were drilled to depths of 50.5 feet at boring B-1 and 40.5 feet at boring B-2 on December 31, 2014, using a Mobile B-47 HD trailer-mounted drill rig. Both borings were scheduled for 40 feet. We drilled boring B-1 to 50.5 feet because relatively low blow counts at 40 feet. Note that soil improved significantly at 45 and 50 feet in boring B-1.

Our test drilling and sampling operations were conducted in accordance with ASTM Specification D-1586. 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 in the Appendix.



Samples of the subsurface soils were examined by our engineering staff and were visually classified in accordance with the Unified Soil Classification System (USCS), ASTM Specification D-2488. The estimated USCS symbols appear on the boring logs and a key to the system nomenclature is provided in the Appendix of this report. Also included are reference sheets which define the terms and symbols used on the boring logs and explains 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.

Our visual classifications were supplemented with laboratory testing. The laboratory at John D. Hynes & Associates, Inc. performed one Sieve Analysis test, one Atterberg Limits (Liquid and Plastic) test, and two Natural Moisture Content tests on the boring samples. The results of the tests are included on the boring logs in the Appendix. Also, two samples were taken at boring locations for pH testing for use in evaluating concrete and aluminum corrosivity at the site.

SUBSURFACE CONDITIONS

Surficial materials encountered at the boring locations consisted of the materials listed below:

Boring No.	Surficial Materials
B-1	10.25 inches of concrete and 10 inches of stone
B-2	4.75 inches of concrete and 4 inches of stone

Except as noted below, subsurface materials encountered in the borings consisted of interbedded Silty SANDs (SM), SANDs (SP) and Low-Silt SANDs (SP/SM and SP-SM) to boring termination depths. A layer of organic CLAY (OH) was encountered between 2.5 feet and 5.5 feet in boring B-1. Organic SILT (OL) was also encountered between 4 feet and 5.5 feet in boring B-2.

The sands in borings B-1 and B-2 were characterized by Standard Penetration Test (SPT) values (N-values) of 2 to 24 blows per foot. This range of penetration resistance indicates relative densities of very loose to medium dense. N-values in the cohesive soils were 2 blows per foot indicating an in-place consistency of very soft. These very soft, cohesive organic OL and OH SILTs, may be intermixed with peat. In terms of elevation, the very soft SILTs were encountered generally between Elevation -0.5 and Elevation -3.5, which will correspond to the new concrete ramp subgrade depths at some portions of the excavation.

Groundwater was encountered during drilling operations at approximately 3 to 3.5 feet below the surface at borings B-1 and B-2. This range of groundwater depth is between elevation +0.5 feet and -1.0 feet. This is nominally within the tidal range noted on AMA drawings, which is 0.0 (MLW) to 1.9 (MHW). Groundwater depths may vary at other times during the year depending upon the extent of surface development, the amount of precipitation and water levels in the adjacent inlet and ocean.



PROJECT CHARACTERISTICS

Proposed for development on the Holts Landing site are boat ramp improvements to continue to serve the public and governmental agencies as a small craft launching and retrieval facility. Prior to new ramp construction, the existing ramp facilities will be demolished. This will include all existing sheet pile wingwalls and bulkheads, and the existing floating courtesy and staging piers.

To protect the ramp area from tidal currents at the Indian River Inlet, wingwalls will be installed along each side of the proposed boat ramp for its full extension into the river. The wingwalls and bulkhead walls are to be constructed with aluminum sheet piles driven into the subsurface and extending to a height more or less equal to the surface grade at the shore end. Sheet pile embedment will be as required for stability. To provide lateral support for the sheet piles, Class 'B' timber piles are to be driven adjacent to the sheet piles at roughly 7.5 foot intervals and are to be connected to the sheets by means of horizontal double-channel steel wale members. If cantilevered timber soldier piles are unable to resist lateral load stresses at the outboard end, additional soldier piles may be installed at right angles to the ramp walls and trussed together laterally for stiffness or batter piles will be used for bracing as shown on AMA drawing C-5, in conjunction with a batter block.

Based on previous boat ramp projects, the following construction sequence usually applies. In order to construct the ramp in place, the aluminum sheet piles will be continued around the end of the ramp area to form a cofferdam. This will provide dewatering capability (usually by sumping and pumping) for ramp construction. Following ramp construction, the end wall will be cut off even with the top of the ramp structure slab. The bottom portion of the embedded sheets will remain for scour protection. Adjacent beach areas may have their shoreline protection improved as required by the local tidal and current action.

RECOMMENDATIONS

The following recommendations 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 project characteristics, such as revised boat ramp locations, elevations, etc., we request that this office be advised so that the recommendations of this report can be re-evaluated.

A. Site Preparation

Prior to the construction of the boat ramp and the placement of fill in structural areas, existing organic materials (surface), frozen or wet, excessively soft or loose soils, pavement debris, concrete rubble and other deleterious materials should be removed and wasted. Removal of all extraneous material, rubble or debris should be carried out to permit construction of the ramp and wingwalls. After the stripping operations have been completed, the exposed subgrade soils should be inspected by the Geotechnical Engineer or his approved representative. The inspector may require the exposed subgrade materials to be compacted to provide surficial densification. The contractor should, also, remove all organic debris that is observed during the site preparation process such as any timber elements and other deleterious materials at the site that may intrude into the ramp area.

While much of the excavation and grading, where required at the site, will be in (SM or SP) sand materials, borings B-1 and B-2 identified very soft, Organic SILTs (OL and OH) possibly peaty soils between Elevations -0.5 and -3.5, as noted above. Some excavations required to install the base course stone and



concrete will be within these soft soil strata (OL and OH SILT). Also, the layers of very loose (N=2) SM SANDs that may be encountered should be overexcavated out and/or stabilized by working No. 2 or No. 3 stone into the loose sand areas.

To prevent excessive differential ramp settlement, the cohesive, very soft OL and OH soils should be excavated out at the ramp structure to expose the SM sand below. The overexcavation should be backfilled with stone and structural fill back up to the slab stone base bearing elevation. The contractor will have to dewater inside the cofferdam to allow for fill placement. Geotextile should be installed below the slab stone base course as indicated on AMA Drawing C-4.

B. Fill Selection, Placement and Compaction

Structural fill materials should be used to increase grades at structural areas and for backfills at structural areas. It is recommended that all materials to be used as structural fill be inspected, tested and approved by the Geotechnical Engineer prior to use. Acceptable structural fill for the ramp and bulkhead element backfill should include GW, GP, GM, SW, SM, and SP materials classified in accordance with the Unified Soil Classification System (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, 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 (except for the ramp as noted). 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 soils better than SM. SM materials become unworkable at moisture contents greater than 3 percentage points above optimum. The contractor would have to dry these SM 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 Modified Proctor maximum dry density (ASTM D-1557). 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 at the site including, but not limited to ramp, and ground slab and bulkhead backfills.

C. Piles for the New Boat Ramp Piers and Walls

1. Timber Piles

Hynes & Associates' pile recommendations are based upon local site characteristics, the subsurface soil parameters determined from the field exploration and the physical characteristics of the piles, assuming minimum tip and butt diameters of 8 and 12 inches, respectively. Assuming conformance to the embedment requirements, the assigned pile capacities (listed below) may be used by the Structural Engineer for pile spacing according to structure design and the loads to be applied.



PILE CAPACITY SUMMARY
TIMBER: BUTT: MIN. 12 INCHES, TIP: 8 INCHES

File Type	Nominal Length (See Note 1) (feet)	Tip Elevation (feet)	Compressive Capacity (tons)	Tensile Capacity (tons)
Timber	30	-23	10	2.5
Timber	35	-28	15	4
Timber	40	-33	20	6

- Notes:
1. Timber pile lengths consider a pile top elevation of +5.5 with 1.5 feet allowed for cut off, except piles at farthest waterward end which are to have a top elevation of 6.5 feet, with 6 inches allowed for cut off. Thus, pile lengths are based on an assigned top elevation of +7 feet.
 2. Upper soils above Elevation -10 were omitted from vertical frictional support capacity to account for very soft, loose soils, negative friction in surficial soils and possible storm erosion.
 3. Based on AMA Drawings, existing ground outside the existing boat ramp is approximately Elevation +3. Dredge line will be at Elevation -4 feet (MLW).

Timber piles should conform to the dimensions and strength requirements of ASTM D-25, should be treated, and should be straight. For the required maximum design loads, it is recommended that the piles be no closer than 2.5 diameters, center to center.

The compression design capacity of each timber production pile should be confirmed by the geotechnical engineer or an experienced pile inspector during the pile driving operations by using an acceptable pile driving formula such as the Engineering News Formula. In instances where the design capacity cannot be obtained within the production pile lengths, longer piles or additional piles would be required. Minimum timber pile tip and butt diameters of 8 and 12 inches, respectively, are recommended. If other pile tonnages are requested by the Structural Engineer, our office should be consulted for additional recommendations.

The installation of all piles should be in accordance with local code requirements. In addition, the installation of all piles should be inspected by a qualified Geotechnical Engineer or foundation inspector. The inspector should verify and record all aspects of the installation including pile tip and butt diameters, pile length before driving, cut-off length, tip elevation, top elevation and the driving data.

The above timber piles will be designed to act as soldier piles and will be spaced as required along the boat ramp aluminum sheet pile wingwalls to support the walls to resist lateral loading from soils, current, wind, and dynamic loads from boats or debris, ice, etc. Further recommendations for pile design are indicated in Section "E", following.



2. Galvanized Steel Pipe Guide Piles

The 12-inch outside diameter, galvanized pipe piles are shown by AMA drawings to be located as shown at the waterward end of the boat ramps. They are to be installed (driven in place) to a top elevation of +13. The 40-foot length assigned to these piles establishes a tip elevation of -27. The function of the pipe piles is to retain the outboard floating pier (dock) which extends to boat ramp piers. The dock will have attachments to allow the dock to rise and fall with the water level within the guide piles which confine the dock laterally, and resist the applied lateral loads. As with the timber boat ramp piles, compressive and tensile capacities have been evaluated. We note that lateral capacity is the governing criterion for both pile types. However, vertical loads must still be resisted, as for the dock in a frozen environment with a rising and falling tide. So; design parameters for lateral loads are presented later in this Section 'C'. The pile capacity summary for the pipe piles is below.

Pile Type	Nominal Length (feet)	Tip Elevation (feet)	Compressive Capacity (tons)	Tensile Capacity (tons)	Driven
12 inch O/S Diameter					
Galvanized Steel	40	-27	20	5	Closed Ended, Filled
pipe Top of Pipe @ El. +13			8	4	Open Ended, No Fill

Hynes & Associates did not drill test borings offshore at the location of the Guide Piles. We used the test boring data from borings B-1 and B-2 to evaluate the guide piles. Again the upper soils above Elevation -10 were not considered to provide frictional support capacity.

3. Aluminum Sheet Piles

As described above in this report, current planning calls for aluminum sheet piles. These piling will comprise the wall elements of the boat ramp wingwalls. They will be supported in place by the proposed timber piles and wales and by their own embedment. Specifications and general installation suggestions for aluminum sheet piles are contained in the 1998 Edition of "Driven Sheet Piling," by the Deep Foundations Institute (DFI). For details on loading, passive resistance and backfill, refer to Section "E" below.

The installation of all piles should be in accordance with local code requirements. In addition, the installation of all piles should be inspected by a qualified Geotechnical Engineer or foundation inspector. The inspector should verify and record all aspects of the installation including pile tip and butt diameters, pile length before driving, cut-off length tip elevation and the driving data.

For calculations by the Structural Engineer relevant to the lateral capacity of piles to resist loads from soil, water, action, wind, etc., a knowledge of the subsurface soil design parameters is important. For this reason, we are including below a detailed tabulation of lateral soil design parameters for each major stratum of the boring locations (as noted) for their full depth.



Soil Design Parameters
Composite of Borings B-1 & B-2

1. Average N-Value	2. Depth Below Ground Surface (feet)	3. Soil Type (USCS)	4. Angle of Internal Friction (degrees ϕ)	5. Friction Factor* ($\tan \delta$) Steel/Concrete	6. Cohesion (c) (psf)	7. Moist Soil Weight (pcf) (γ)	8. Buoyant Soil Weight (pcf) (γ)	9. Passive Pressure Ordinate**	10. Modulus of Deformation k(pci)
12	+4 to 0	SM	30	0.38/0.43	0	120	58	3.00 γZ	50
2	0 to -3	OH	0	(275/275)	250	90	28	$\Sigma \gamma Z + 2C$	-100
2	-3 to -10	SP-SM	25	0.31/0.35	0	119	57	2.46 γZ	0
7	-10 to -15	SP	33	0.43/0.49	0	129	67	3.39 γZ	18
11	-15 to -25	SP-SM	33	0.43/0.49	0	127	65	3.39 γZ	30
11	-25 to -35	SP	35	0.46/0.53	0	131	69	3.69 γZ	30
15	-35 to -50	SP	36	0.48/0.54	0	132	70	3.85 γZ	44

Note: Groundwater table was at approximately Elevation zero on December 31, 2014.

Existing ground elevation is approximately 2.0 feet at Boring B-1 and 4.0 feet at Boring B-2.

Notes: * Values shown in parentheses are estimated values of adhesion.

** γ = Soil Weight, moist or buoyant as applicable.

**Z = The average layer depth; i.e., the average of the depth limits shown in the second column for each layer.

k_p is shown numerically for sands in column 9.

For passive pressure calculations relating to single piles, the design engineer should use a method, such as those suggested by B. B. Broms, Poulos & Davis, and other sources, that considers the active load on the pile relative to the physical characteristics of the pile, the soil design parameters shown above and the interaction of the pile and soil.

For single piles in cohesionless soils a multiplier of 3 may be applied to pile width to account for load spread in passive pressure.

A factor of safety of 1.5 should be used in passive pressure calculations.

For the active pressure coefficient, k_a , use the reciprocal of the k_p value shown for sands in Column 9.

For the at-rest pressure coefficient, k_0 , use the value of $1 - \sin \phi$ for the numerical value in Column 9.

For cohesive deposits of clays or silts:

Use $\gamma Z - 2C$ for active pressures.

Use γZ for at-rest pressures.

D. Boat Ramp Slab Support

The boat ramp slab may be supported on firm natural soils, or on controlled, structural fill. According to Andrews, Miller & Associates' preliminary Drawing C-4, "Boat Ramp Details," the slab is to be a minimum of 8 inches thick, with herring bone surface finish. For additional aluminum sheeting stability, the slab concrete is to be continued into the sheeting corrugations. Below the slab concrete the ramp subgrade should be covered with geotextile and at least 12 inches of No. 57 stone base course. Because the slab system is to be constructed within a dewatered sheet pile cofferdam as described under "Project Characteristics" above,



the slab and stone subgrade should be prepared in accordance with the procedures described in Sections "A" and "B" of this report. Particular attention should be paid to the removal and backfill of the very soft organic OH and OL silts at a portion of the ramp subgrade. Prior to placing the base stone, the subgrade should be free of standing water and mud. For native soil or fill material placed and compacted according to the procedures outlined in this report, we recommend using a value of modulus of subgrade reaction of 150 pounds per cubic inch.

Based on the possibility of some loose areas of SM sands below portions of the 16 foot wide to 40 foot wide slab and apron elements, allowable slab bearing is estimated to be at least 2,500 psf, using a factor of safety of 2.5. The total of slab dead load and vehicle and boat live loads should be only half, or less, of the allowable bearing. Also, since all boat loadings will be transitory, they would not contribute to slab settlement which, under the very low bearing pressures, is expected to be negligible.

For scour protection, the slab will be protected on the three water sides by the aluminum wing and end walls driven deep enough below slab subgrade to remain stable. Stone shore protection and stone placed on the sides of the ramp facility will further protect the slab from loss of ground and settlement from scour.

E. Lateral Pressures and Passive Resistance for New Boat Ramp Piles and Walls

As noted above, the boat ramp wingwalls and bulkheads will be composed of driven aluminum sheet piles supported by Class B timber piles and wales. The timber piles will act as soldier piles and be spaced as required to resist all vertical, and lateral loads to the wall system. Because of their function to resist river current, and impact loads from watercraft, ice or debris, the wall height is not expected to be above adjacent shore grade; i.e., Elevation +5.5 to +6.5 (MLW) as shown on AMA drawings. Thus, the walls should act as cantilever members. We understand some bracing will be added at the outboard end where total wall height is larger, and loading is greater. The end bracing is expected to consist of batter piles as shown on AMA Drawing C-5. Lateral wall loading will be in a triangular configuration. Some loading will be hydrostatic from the river, increased to account for current, etc. Soil and hydrostatic loads and any adjacent surcharge loads, should be applied in accordance with our Drawing No. JDH-10/14/421-C in the Appendix (Lateral Pressure Requirements for Bulkhead Retaining Walls). River loads, as noted, will be hydrostatic, with possible point loading from ice or impact from boats or floating debris.

For active soil loads, where present, and for passive resistance, soil parameters for design, listed in Section "C" above, should be applied in triangular configuration taking into account the buoyant soil weight. Calculated passive pressure values should be reduced for any downslope outside the walls and for the action of groundwater where applicable. While lateral loading is applied to the subject walls along their entire length, passive resistance acts only on the individual soldier pile diameters. However, passive resistance may be increased by a factor of 3 because of lateral load spread beyond the soldier piles. This factor will be reduced to 2 when a recommended safety factor of 1.5 is applied. The influence of the future slab should also be considered. Since this will act as a reaction point for the wall elements within the completed boat ramp facility, the construction stage of maximum wall stress; i.e., without the slab, should be a short term condition. For additional recommendations, this office should be consulted.



F. pH Testing

To meet the requirements that we test soil samples for acidity relative to its corrosive effects on aluminum sheet piles and concrete to be used for the boatramp construction, Hynes & Associates selected two soil samples at differing depths for pH testing. The following samples were selected:

Boring No.	Elevation	pH Value
Boring B-1	9 to 10.5	7.6
Boring B-2	14 to 15.5	7.9

Based on the above pH values, between 7.6 and 7.9, the degree of aggressiveness relative to alkalinity is somewhat weak.

G. Groundwater and Surface Water Considerations

Groundwater was encountered during boring operations at depths of 4 and 5 feet. At completion of boring operations, groundwater was encountered at 3 feet at Boring B-1 and 3.5 feet at Boring B-2. These depths correspond to Elevation -1 (MLW) at Boring B-1 and Elevation +0.5 (MLW) at Boring B-2. The tidal range at the site is 0.0 MLW to +1.9 MLW. Construction of the boat ramp will be carried out within a sheet pile cofferdam which is to be dewatered by sump and pump methods. Since much of the ramps subgrade will be below 0.0 (MLW), dewatering will have to be maintained for the entire ramp slab construction period in order to complete this work in dry conditions. This may require a backup power source at the site in case of a power failure during a period when continuing dewatering is required.

Efforts should be made to keep exposed subgrade areas dry during construction, primarily, because the soils will be susceptible to deterioration and loss of strength in the presence of moisture. Adequate drainage should be provided at the site to minimize any increase in moisture content of the boatramp and pavement subgrade soils. The final site drainage should also be designed such that run-off onto adjacent properties is controlled properly.

ADDITIONAL SERVICES RECOMMENDED

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

A. Site Preparation Monitoring

The Geotechnical Engineer or experienced soils inspector should inspect the boat ramp and pavement sites after they have been stripped and excavated. The inspector should determine where undercutting, stabilization, or in-place densification are necessary to prepare a subgrade for fill placement support. The inspection should determine if the existing unsuitable materials have been removed as recommended in this report to prepare the site for construction.



B. Fill Placement and Compaction Monitoring

The Geotechnical Engineer or experienced soils inspector should witness all fill and backfill 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 fill materials used and should determine if their existing moisture contents are suitable.

C. Pile Installation Inspection

The Geotechnical Engineer or experienced foundation inspector should verify and record all aspects of the timber pile installation including pile diameters, pile length before driving, cut off length, tip elevation, top elevation and the driving data. The inspecting engineer should verify that the driving data indicates that the design compression capacity of each pile had been achieved. He should confirm the design dimensions of the aluminum sheet piles and verify that these piles are driven according to pile manufacturer's specifications.

REMARKS

This report has been prepared solely and exclusively for the Andrews, Miller & Associates to provide guidance to design professionals in developing plans for the DNREC Nolts Landing Boat Ramp Improvements project 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. Additional recommendations can be provided as necessary.

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. If conditions are encountered during construction which differ significantly from those reported herein, our office should be notified so that our recommendations can be reviewed and revised as necessary. It is also recommended that we be given the opportunity to review the plans and specifications in order to comment on the interaction of soil conditions as described herein and the design requirements. This report, in its entirety, should be attached to the project specifications.

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. Boat Ramp Coring Location Plan
6. Lateral Pressure Requirements for Offshore Bulkhead Retaining Walls
7. Unified Soil Classification Sheet
8. Field Classification Sheet
9. Information Sheet



INVESTIGATIVE PROCEDURES

SOIL TEST BORINGS

Soil drilling and sampling operations were conducted in accordance with ASTM Specification D-1586. The borings were advanced by mechanically turning continuous hollow stem auger flights into the ground. When "running sand" conditions develop below the ground water table, our drilling technique is changed to mud rotary drilling. During mud rotary drilling, a slurry of bentonite gel is pumped through the drilling rods to the special cutting head. The bentonite slurry is used to wash the soil cuttings to the surface and to seal the sides of the excavation to prevent hole collapse. At regular intervals, samples were obtained with a standard 1.4 inch I.D., 2.0 inch O.D. splitspoon sampler. The sampler was first seated 6 inches to penetrate any loose cuttings and then driven an additional foot with blows of a 140-pound hammer falling 30 inches. The number of hammer blows required to drive the sampler the final foot is the "Standard Penetration Resistance". The penetration resistance, when properly evaluated, is an index to the soil's strength, density and behavior under applied loads. The soil descriptions and penetration resistances for each boring are presented on the Test Boring Records 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.

GRADATIONAL 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.

ATTERBERG LIMITS TEST

Portions from representative soil samples obtained during drilling operations were selected for Atterberg Limits tests. The Atterberg Limits are indicative of the soil's plasticity characteristics. The liquid limit is the moisture content at which the soil will flow as a heavy viscous fluid and is determined in accordance with ASTM Specification D-4318. The plastic limit is the moisture content at which the soil begins to lose its plasticity and is determined in accordance with ASTM Specification D-4318. The plastic limit is the moisture content at which the soil begins to lose its plasticity and is determined in accordance with ASTM Specification D-4318.



INVESTIGATIVE PROCEDURES (CONTINUED)

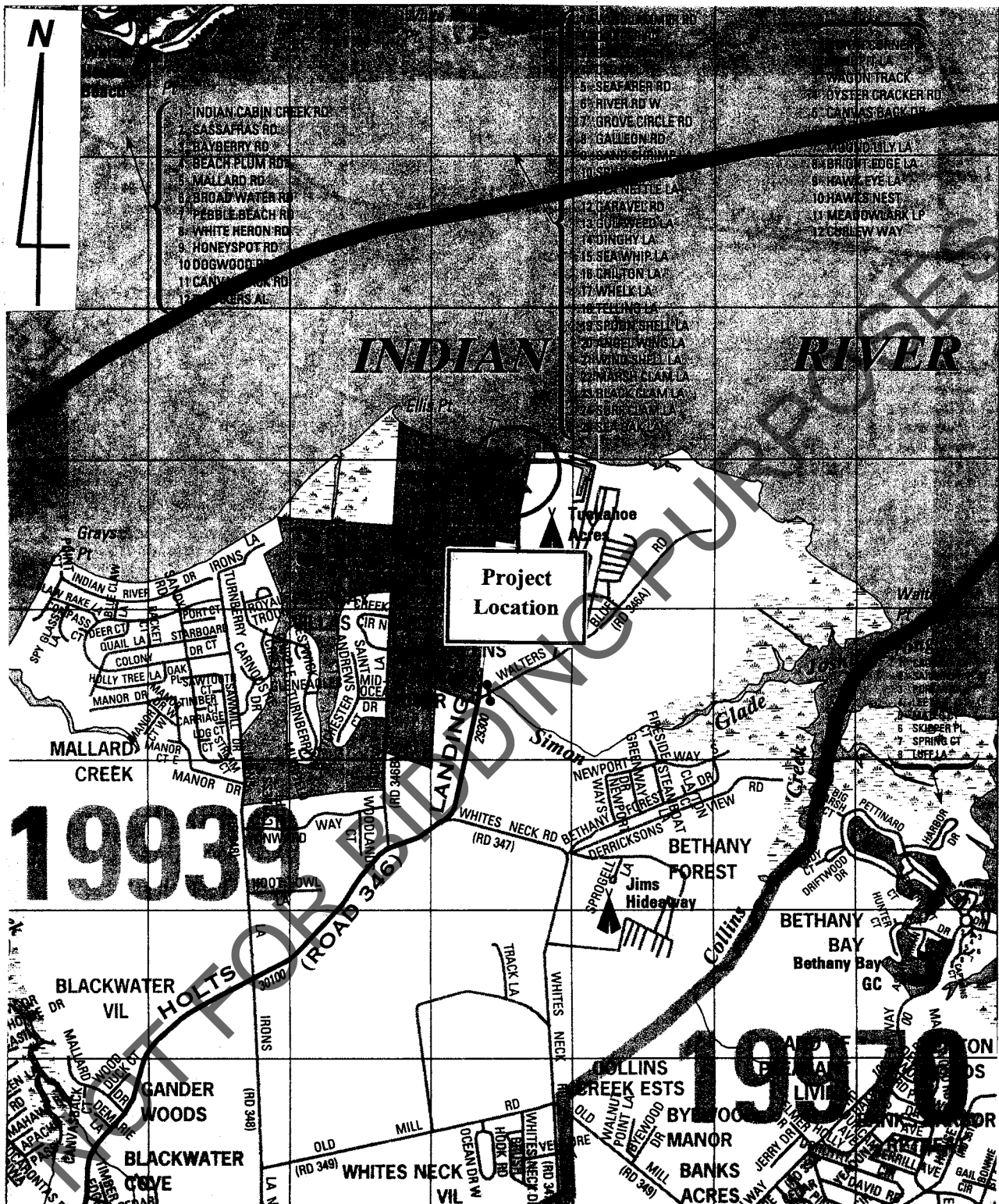
NATURAL MOISTURE

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 a oven with a standard drying temperature of 110 °C. The lost 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.

pH TESTING

For soils, the pH reference is primarily to the acidity of the soluble particles in trapped moisture within a soil mass. A pH of less than 7 indicates the sample is acidic, while a pH greater than 7 indicates the sample is basic (or alkaline). pH is tested by exposing the sample to chemical pH indicators, such as phenolphthalein which is brilliant red in alkaline substances and is decolorized as the degree of acidity increases.

NOT FOR BIDDING PURPOSES



JOHN D. HYNES & ASSOCIATES, INC.

32185 Beaver Run Drive • Salisbury, Maryland 21804

410-546-6462 / Fax: 410-548-5346

Date: January 2, 2015

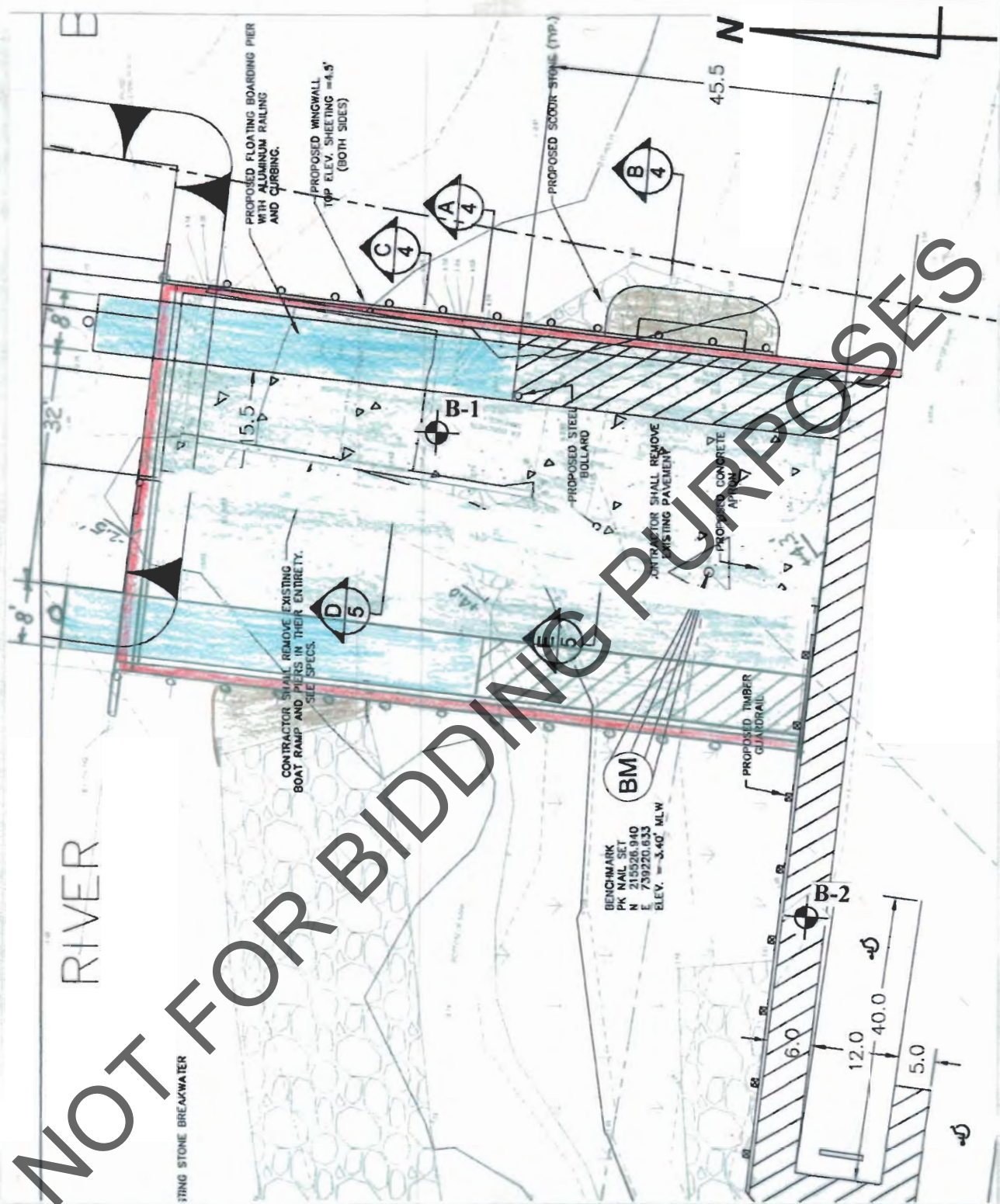
Scale: 1 in. = 2,000 ft.

Drawn: ADC Map

DWG. No.

JDH-10/14/421-A

Project Location Map
DNREC Holts Landing Boat Ramp Improvements
Sussex County, Delaware



JOHN D. HYNES & ASSOCIATES, INC.

32185 Beaver Run Drive • Salisbury, Maryland 21804

410-546-6462 / Fax: 410-548-5346

Date: January 2, 2015

Scale: 1 in. = 21 ft.

Drawn: Unknown

Boring Location Plan

DNREC Holts Landing Boat Ramp Improvements

Sussex County, Delaware

DWG. No.

JDH-10/14/421-B



**HYNES
&
ASSOCIATES**

LOG OF BORING B-1

(Page 1 of 1)

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

Date Completed: : December 31, 2014
Logged By: : J. Redding
Drilled By: : J. Briddell
Drilling Method: : HSA (Mobile B-47 HD)
Total Depth: : 50.5 feet

DNREC Holts Landing Boat Ramp Improvements

Project No.: JDH-10/14/421

Depth in Feet	Surf. Elev. 2.0	DESCRIPTION	GRAPHIC	USCS	Sample No.	Blows per 6 inches	Remarks
0	2	Light gray, wet to saturated, loose, fine to medium SAND, with little silt		SM	1	3-4-4	Scale 1" ~ 8 feet
2	0	Dark brown, saturated, very soft, clayey organic SILT, with trace fine to medium sand		OH	2	1-1-1	Approximately 10.25 inches of concrete and 10 inches of stone was encountered at the ground surface.
6	-4	Light gray, saturated, loose, fine to coarse SAND, with little fine gravel, trace to little silt		SP/SM	3	7-4-4	Groundwater was encountered at 2 feet during drilling operations.
10	-8	Light gray, saturated, very loose, fine to medium SAND, with little silt		SM	4	1-1-1	At completion water was at 3.5 feet; boring caved in at 4 feet.
14	-12	Light gray, saturated, loose, fine to medium SAND, with trace silt		SP	5	1-3-4	Laboratory Test Results
18	-16	Light brown, saturated, medium dense, fine to coarse SAND, with trace silt		SP	6	1-4-8	Natural Moisture = 26.8%
24	-22	Light gray, saturated, loose to medium dense, fine to coarse SAND, with trace silt			7	2-2-7	Sample No. 2 From 3 to 4.5 feet Atterberg Limits Liquid Limit = 299 Plasticity Index = 143 Natural Moisture = 266.7%
28	-26				8	2-2-5	Sample No. 3 From 6 to 7.5 feet
34	-32				9	2-5-6	Sieve Analysis Sieve Passing Size % 1 1/2" 100 1" 89.1 1/2" 82.5 3/8" 79.4 No. 4 77.1 No. 10 74.6 No. 20 67.2 No. 40 42.2 No. 60 24.4 No. 100 13.8 No. 200 9.9
40	-38				10	4-4-6	
46	-44				11	5-7-9	Natural Moisture = 15.8%
50	-48				12	4-7-11	Sample No. 4 From 9 to 10.5 feet pH = 7.6
52		Boring terminated at 50.5 feet.					



**HYNES
&
ASSOCIATES**

LOG OF BORING B-2

(Page 1 of 1)

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

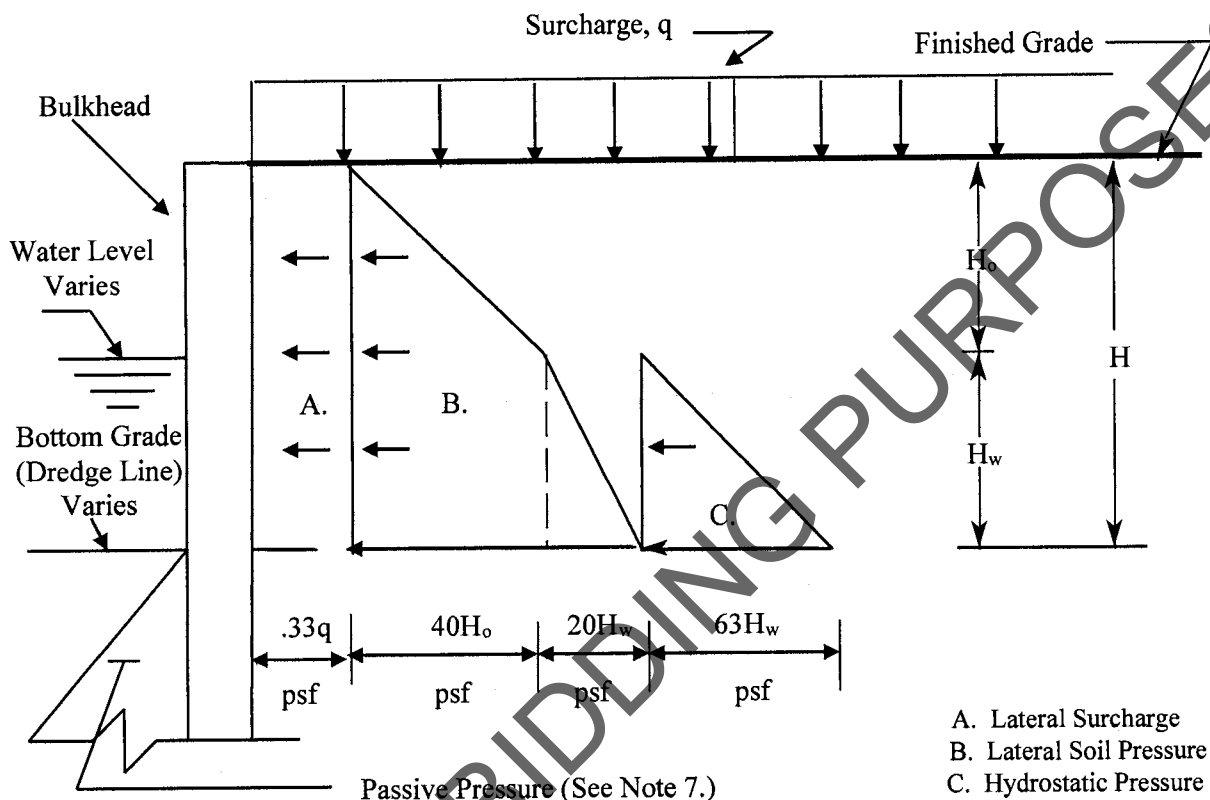
Date Completed: : December 31, 2014
Logged By: : J. Redding
Drilled By: : J. Briddell
Drilling Method: : HSA (Mobile B-47 HD)
Total Depth: : 40.5 feet

DNREC Holts Landing Boat Ramp Improvements

Project No.: JDH-10/14/421

Depth in Feet	Surf. Elev. 4.0	DESCRIPTION	GRAPHIC	USCS	Sample No.	Blows per 6 inches	Remarks
0 - 4		Gray to light brown, wet, medium dense, fine to medium SAND, with little silt, trace clay		SM	1	10-12-12	Scale 1" ~ 8 feet
2 - 2					2	2-1-1	Approximately 4.75 inches of concrete and 4 inches of stone was encountered at the ground surface.
4 - 0		Dark gray, wet to saturated, very soft, clayey organic SILT, with little fine to medium sand		OL	3	1-1-1	Groundwater was encountered at 5 feet during drilling operations.
6 - -2		Light gray, saturated, very loose, fine to coarse SAND, with trace to little silt, trace clay		SM	4	1-1-1	At completion water was at 3.5 feet; boring caved in at 6.25 feet.
8 - -4		Light gray, saturated, very loose, fine to coarse SAND, with trace to little silt		SP-SM	5	1-3-4	Laboratory Test Results
10 - -6					6	4-6-7	Sample No. 3 From 6 to 7.5 feet Natural Moisture = 18.7%
12 - -8		Light brown, saturated, loose, fine to medium SAND, with trace silt		SP	7	3-3-8	Sample No. 5 From 14 to 15.5 feet pH = 7.9
14 - -10					8	7-7-10	
16 - -12		Light gray, saturated, medium dense, fine to coarse SAND, with trace silt		SP	9	6-8-7	
18 - -14					10	6-8-8	
20 - -16		Light brown, saturated, medium dense, fine to medium SAND, with little silt		SP-SM			
22 - -18							
24 - -20		Light gray, saturated, medium dense, fine to coarse SAND, with trace fine gravel, trace silt		SP			
26 - -22							
28 - -24							
30 - -26							
32 - -28							
34 - -30							
36 - -32							
38 - -34							
40 - -36							
42 - -38		Boring terminated at 40.5 feet.					
44 - -40							
46 - -42							
48 - -44							
50 - -46							
52 - -48							

LATERAL PRESSURE REQUIREMENTS FOR BULKHEAD RETAINING WALLS



1. Load values based on an angle of internal friction of 32° and soil moist density of 130 pcf.
2. Pressure diagram assumes active soil pressures on cantilevered walls or walls with one support level.
3. Use only SP, SP-SM or better quality material for backfill.
4. Compact backfill in maximum 8-inch loose lifts to 92 to 95 percent maximum dry density (ASTM D-1557).
5. Use only light duty hand operated compaction equipment within 10 feet of walls.
6. For surcharge q , consider the greater of the maximum expected construction equipment live loads or traffic live load. Impact need not be applied to q .
7. For passive pressure requirements see tabulations of lateral soil design parameters in "Recommendations, Section C".



JOHN D. HYNES & ASSOCIATES, INC.

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

Date: January 12, 2015

Scale: Not to Scale

DRAWN: WCP

Lateral Pressure Requirements for Bulkhead Retaining Walls
DNREC - Holts Landing Boat Ramp Improvements
Sussex County, Delaware

DWG. No.

JDH-10/14/421-C

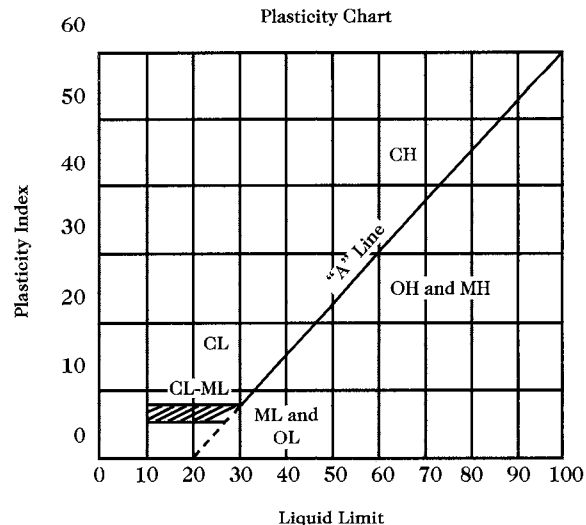


JOHN D. HYNES & ASSOCIATES, INC.

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)	GW	Well-graded gravels, gravel-sand mixtures, little or no fines
		GP	Poorly graded gravels, gravel sand mixtures, little or no fines
		GMA ^a	Silty gravels, gravel-sand-silt mixtures
		GC	Clayey gravels, gravel-sand-clay mixtures
	Sands (More than half of coarse fraction is smaller than No 4 sieve size)	SW	Well-graded sands, gravelly sands,
		SP	Poorly graded sands, gravelly sands, little or no fines
		SM ^a	Silty sands, sand-silt mixtures
		SC	Clayey sands, sand-clay mixtures
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
		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





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.



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