
PROJECT MANUAL

JOSEPHINE FOUNTAIN RESTORATION

at

WILMINGTON STATE PARK

1001 North Park Drive

Wilmington, DE 19801

for

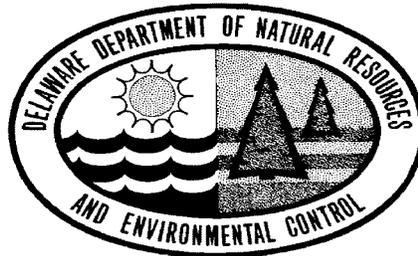
Department of Natural Resources and Environmental Control

Division of Parks and Recreation

80 Kings Highway

Dover, DE 19901

DNREC Project: WB-18



Conservator

Materials Conservation
1625 North Howard Street
Philadelphia, PA 19122

Issued for Bid
March 27, 2017

NOT FOR BIDDING

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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END OF SECTION 00 01 15

NOT FOR BIDDING

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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 2:00 PM local time on Thursday, May 18, 2017, at which time they will be publicly opened and read aloud in the Auditorium. Bidder bears the risk of late delivery. Any bid received after the stated time will be returned unopened.

Project involves restoration of a historic water fountain.

A **MANDATORY** Pre-Bid Meeting will be held on Tuesday, May 2, 2017 at 10:00 AM at the Josephine Fountain, North Park Drive (between North Van Buren Street and Washington Street), Wilmington, DE 19801 for the purpose of establishing the listing of subcontractors and to answer questions. Representatives of each party to any Joint Venture must attend this meeting. **ATTENDANCE OF THIS MEETING IS A PREREQUISITE FOR BIDDING ON THIS CONTRACT.**

Sealed bids shall be addressed to the following address. The outer envelope should clearly indicate **"DNREC CONTRACT NO. 2016-WB-100 SEALED BIDS - DO NOT OPEN"**.

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, RLA. Phone Number: 302-739-9210

Contract documents may be obtained at the office of the Division of Parks and Recreation upon receipt of \$25.00 for each disc. This payment is non-refundable and the documents need not be returned. Checks are to be made payable to Division of Parks and Recreation.

Bidding documents will be available for review at the following locations: Division of Parks and Recreation.

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 equal 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.

Shawn Gavin, Secretary

END OF SECTION 00 01 15

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SECTION 00 21 13 - INSTRUCTIONS TO BIDDERS

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2. BIDDER'S REPRESENTATION
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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 LUMP 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 assume 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 to 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 the Bid.
- 4.1.10 In the construction of all Public Works projects for the State of Delaware or any agency thereof, preference in employment of laborers, workers or mechanics shall be given to bona fide legal citizens of the State who have established citizenship by residence of at least 90 days in the State.
- 4.1.11 Each bidder shall include in their bid a copy of a valid Delaware Business License.’
- 4.1.12 Each bidder shall include signed Affidavit(s) for the Bidder and each listed Subcontractor certifying compliance with OMB Regulation 4104- “Regulations for the Drug Testing of Contractor and Subcontractor Employees Working on “Large Public Works Projects.” “Large Public Works” is based upon the current threshold required for bidding Public Works as set by the Purchasing and Contracting Advisory Council.

4.2 **BID SECURITY**

- 4.2.1 All bids shall be accompanied by a deposit of either a good and sufficient bond to the agency for the benefit of the agency, with corporate surety authorized to do business in this State, the form of the bond and the surety to be approved by the agency, or a security of the bidder assigned to the agency, for a sum equal to at least 10% of the bid plus all add alternates, or in lieu of the bid bond a security deposit in the form of a certified check, bank treasurer’s check, cashier’s check, money order, or other prior approved secured deposit assigned to the State. The bid bond need not be for a specific sum, but may be stated to be for a sum equal to 10% of the bid plus all add alternates to which it relates and not to exceed a certain stated sum, if

said sum is equal to at least 10% of the bid. The Bid Bond form used shall be the standard OMB form (attached).

4.2.2 The Agency has the right to retain the bid security of Bidders to whom an award is being considered until either a formal contract has been executed and bonds have been furnished or the specified time has elapsed so the Bids may be withdrawn or all Bids have been rejected.

4.2.3 In the event of any successful Bidder refusing or neglecting to execute a formal contract and bond within 20 days of the awarding of the contract, the bid bond or security deposited by the successful bidder shall be forfeited.

4.3 SUBCONTRACTOR LIST

4.3.1 As required by Delaware Code, Title 29, section 6962(d)(10)b, each Bidder shall submit with their Bid a completed List of Subcontractors included with the Bid Form. NAME ONLY ONE SUBCONTRACTOR FOR EACH TRADE. A Bid will be considered non-responsive unless the completed list is included.

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

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

4.4 EQUALITY OF EMPLOYMENT OPPORTUNITY ON PUBLIC WORKS

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

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

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

4.5 PREVAILING WAGE REQUIREMENT

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

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

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

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

4.6 SUBMISSION OF BIDS

4.6.1 Enclose the Bid, the Bid Security, and any other documents required to be submitted with the Bid in a sealed opaque envelope. Address the envelope to the party receiving the Bids. Identify with the project name, project number, and the Bidder's name and address. If the Bid is sent by mail, enclose the sealed envelope in a separate mailing envelope with the notation "BID ENCLOSED" on the face thereof. The State is not responsible for the opening of bids prior to bid opening date and time that are not properly marked.

4.6.2 Deposit Bids at the designated location prior to the time and date for receipt of bids indicated in the Advertisement for Bids. Bids received after the time and date for receipt of bids will be marked "LATE BID" and returned.

4.6.3 Bidder assumes full responsibility for timely delivery at location designated for receipt of bids.

4.6.4 Oral, telephonic or telegraphic bids are invalid and will not receive consideration.

4.6.5 Withdrawn Bids may be resubmitted up to the date and time designated for the receipt of Bids, provided that they are then fully in compliance with these Instructions to Bidders.

4.7 MODIFICATION OR WITHDRAW OF BIDS

4.7.1 Prior to the closing date for receipt of Bids, a Bidder may withdraw a Bid by personal request and by showing proper identification to the Architect. A request for withdraw by letter or fax, if the Architect is notified in writing prior to receipt of fax, is acceptable. A fax directing a modification in the bid price will render the Bid informal, causing it to be ineligible for consideration of award. Telephone directives for modification of the bid price shall not be permitted and will have no bearing on the submitted proposal in any manner.

- 4.7.2 Bidders submitting Bids that are late shall be notified as soon as practicable and the bid shall be returned.
- 4.7.3 A Bid may not be modified, withdrawn or canceled by the Bidder during a thirty (30) day period following the time and date designated for the receipt and opening of Bids, and Bidder so agrees in submitting their Bid. Bids shall be binding for 30 days after the date of the Bid opening.

ARTICLE 5: CONSIDERATION OF BIDS

5.1 OPENING/REJECTION OF BIDS

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

5.2 COMPARISON OF BIDS

- 5.2.1 After the Bids have been opened and read, the bid prices will be compared and the result of such comparisons will be made available to the public. Comparisons of the Bids may be based on the Base Bid plus desired Alternates. The Agency shall have the right to accept Alternates in any order or combination.
- 5.2.2 The Agency reserves the right to waive technicalities, to reject any or all Bids, or any portion thereof, to advertise for new Bids, to proceed to do the Work otherwise, or to abandon the Work, if in the judgment of the Agency or its agent(s), it is in the best interest of the State.
- 5.2.3 An increase or decrease in the quantity for any item is not sufficient grounds for an increase or decrease in the Unit Price.
- 5.2.4 The prices quoted are to be those for which the material will be furnished F.O.B. Job Site and include all charges that may be imposed during the period of the Contract.
- 5.2.5 No qualifying letter or statements in or attached to the Bid, or separate discounts will be considered in determining the low Bid except as may be otherwise herein noted. Cash or separate discounts should be computed and incorporated into Unit Bid Price(s).

5.3 DISQUALIFICATION OF BIDDERS

- 5.3.1 An agency shall determine that each Bidder on any Public Works Contract is responsible before awarding the Contract. Factors to be considered in determining the responsibility of a Bidder include:

- A. The Bidder's financial, physical, personnel or other resources including Subcontracts;
 - B. The Bidder's record of performance on past public or private construction projects, including, but not limited to, defaults and/or final adjudication or admission of violations of the Prevailing Wage Laws in Delaware or any other state;
 - C. The Bidder's written safety plan;
 - D. Whether the Bidder is qualified legally to contract with the State;
 - E. Whether the Bidder supplied all necessary information concerning its responsibility; and,
 - F. Any other specific criteria for a particular procurement, which an agency may establish; provided, however, that, the criteria be set forth in the Invitation to Bid and is otherwise in conformity with State and/or Federal law.
- 5.3.2 If an agency determines that a Bidder is nonresponsive and/or nonresponsible, the determination shall be in writing and set forth the basis for the determination. A copy of the determination shall be sent to the affected Bidder within five (5) working days of said determination.
- 5.3.3 In addition, any one or more of the following causes may be considered as sufficient for the disqualification of a Bidder and the rejection of their Bid or Bids.
- 5.3.3.1 More than one Bid for the same Contract from an individual, firm or corporation under the same or different names.
 - 5.3.3.2 Evidence of collusion among Bidders.
 - 5.3.3.3 Unsatisfactory performance record as evidenced by past experience.
 - 5.3.3.4 If the Unit Prices are obviously unbalanced either in excess or below reasonable cost analysis values.
 - 5.3.3.5 If there are any unauthorized additions, interlineation, conditional or alternate bids or irregularities of any kind which may tend to make the Bid incomplete, indefinite or ambiguous as to its meaning.
 - 5.3.3.6 If the Bid is not accompanied by the required Bid Security and other data required by the Bidding Documents.
 - 5.3.3.7 If any exceptions or qualifications of the Bid are noted on the Bid Form.
- 5.4 ACCEPTANCE OF BID AND AWARD OF CONTRACT
- 5.4.1 A formal Contract shall be executed with the successful Bidder within twenty (20) calendar days after the award of the Contract.

- 5.4.2 Per Section 6962(d)(13) a., Title 29, Delaware Code, “The contracting agency shall award any public works contract within thirty (30) days of the bid opening to the lowest responsive and responsible Bidder, unless the Agency elects to award on the basis of best value, in which case the election to award on the basis of best value shall be stated in the Invitation To Bid.”
- 5.4.3 Each Bid on any Public Works Contract must be deemed responsive by the Agency to be considered for award. A responsive Bid shall conform in all material respects to the requirements and criteria set forth in the Contract Documents and specifications.
- 5.4.4 The Agency shall have the right to accept Alternates in any order or combination, and to determine the low Bidder on the basis of the sum of the Base Bid, plus accepted Alternates.
- 5.4.5 The successful Bidder shall execute a formal contract, submit the required Insurance Certificate, and furnish good and sufficient bonds, unless specifically waived in the General Requirements, in accordance with the General Requirement, within twenty (20) days of official notice of contract award. The successful Bidder shall provide two business days prior to contract execution copies of the Employee Drug Testing Program for the Bidder and all listed Subcontractors. Bonds shall be for the benefit of the Agency with surety in the amount of 100% of the total contract award. Said Bonds shall be conditioned upon the faithful performance of the contract. Bonds shall remain in affect for period of one year after the date of substantial completion.
- 5.4.6 If the successful Bidder fails to execute the required Contract, Bond and all required information, as aforesaid, within twenty (20) calendar days after the date of official Notice of the Award of the Contract, their Bid guaranty shall immediately be taken and become the property of the State for the benefit of the Agency as liquidated damages, and not as a forfeiture or as a penalty. Award will then be made to the next lowest qualified Bidder of the Work or re-advertised, 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

JOSEPHINE FOUNTAIN
WILMINGTON STATE PARKS
1001 NORTH PARK ROAD, WILMINGTON, DE 19801
DIVISION OF PARKS AND RECREATION CONTRACT No. 2016-WB-100

BID FORM

For Bids Due: May 18, 2017 at 2:00 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:

\$ _____

(\$ _____)

NOT FOR BIDDING

JOSEPHINE FOUNTAIN
WILMINGTON STATE PARKS
1001 NORTH PARK ROAD, WILMINGTON, DE 19801
DIVISION OF PARKS AND RECREATION CONTRACT No. 2016-WB-100

BID FORM

ALTERNATES

Alternate prices conform to applicable project specification section. Refer to specifications for a complete description of the following Alternates. An "ADD" or "DEDUCT" amount is indicated by the crossed out part that does not apply.

ALTERNATE No. 1: Step Restoration as shown on Sheet A-2.

Add/Deduct: _____
(\$ _____)

No. of Days to Complete Alternate 1: _____

ALTERNATE No. 2: Provide laser scan and 3D model of the conserved columns for the Owner's records.

Add/Deduct: _____
(\$ _____)

No. of Days to Complete Alternate 2: _____

ALTERNATE No. 3: Delete the infill of the existing lighting cavities with concrete. Provide new waterproof, vandal proof light fixtures to replace the existing light fixtures.

Add/Deduct: _____
(\$ _____)

No. of Days to Complete Alternate 3: _____

NOT FOR BIDDING

JOSEPHINE FOUNTAIN
WILMINGTON STATE PARKS
1001 NORTH PARK ROAD, WILMINGTON, DE 19801
DIVISION OF PARKS AND RECREATION CONTRACT No. 2016-WB-100

BID FORM

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

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

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

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

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

The undersigned represents and warrants that he has completed 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 this bid is legal and firm; that he has not, directly or indirectly, entered into any agreement, participated in any collusion, or otherwise taken action in restraint of free competitive bidding.

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

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

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

(State of Corporation)

Business Address: _____

Witness: _____

By: _____
(Authorized Signature)

(Seal)

(Title)

Date: _____

ATTACHMENTS

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

NOT FOR BIDDING

JOSEPHINE FOUNTAIN
 WILMINGTON STATE PARKS
 1001 NORTH PARK ROAD, WILMINGTON, DE 19801
 DIVISION OF PARKS AND RECREATION CONTRACT No. 2016-WB-100

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. Pavers	_____	_____	_____
2. Masonry Restoration	_____	_____	_____
3. Cast Stone Replication	_____	_____	_____
4. Crane Operator	_____	_____	_____

NOT FOR BIDDING

NOT FOR BIDDING

JOSEPHINE FOUNTAIN
WILMINGTON STATE PARKS
1001 NORTH PARK ROAD, WILMINGTON, DE 19801
DIVISION OF PARKS AND RECREATION CONTRACT No. 2016-WB-100

BID FORM

NON-COLLUSION STATEMENT

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

All the terms and conditions of the Josephine Fountain Restoration 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.

NOT FOR BIDDING

JOSEPHINE FOUNTAIN
WILMINGTON STATE PARKS
1001 NORTH PARK ROAD, WILMINGTON, DE 19801
DIVISION OF PARKS AND RECREATION CONTRACT No. 2016-WB-100

**AFFIDAVIT
OF
EMPLOYEE DRUG TESTING PROGRAM**

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

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

Contractor/Subcontractor Name: _____

Contractor/Subcontractor Address: _____

Authorized Representative (type or printed): _____

Authorized Representative (signature): _____

Title: _____

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

My Commission expires _____. NOTARY PUBLIC _____.

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

NOT FOR BIDDING

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 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 _____ 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

NOT FOR BIDDING

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

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NOT FOR BIDDING

**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

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:

(Corporate Seal)

By: _____ (SEAL)

Name:

Title:

SURETY

Name: _____

Witness or Attest: Address: _____

Name:

(Corporate Seal)

By: _____ (SEAL)

Name:

Title:

NOT FOR BIDDING

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__ (“**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: _____

By: _____ (SEAL)

Name: _____
Name: _____
Title: _____

(Corporate Seal)

SURETY

Name: _____

Witness or Attest: Address: _____

By: _____ (SEAL)

Name: _____
Name: _____
Title: _____

(Corporate Seal)

NOT FOR BIDDING

Application and Certificate for Payment

TO OWNER: PROJECT: BHH APPLICATION NO: 001 Distribution to: OWNER: ARCHITECT: CONTRACTOR: FIELD: OTHER:

PERIOD TO: CONTRACT FOR: General Construction

CONTRACT DATE: PROJECT NOS: / /

FROM: VIA: **ARCHITECT:** **CONTRACTOR:**

Richardson Haber Holloway Architects
 1000 Pineapple Road, Suite 211
 Wilmington, Delaware 19806

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

NOT FOR BIDDING

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.

NOT FOR BIDDING

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NOT FOR BIDDING

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 PRECEDENCE 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, or for 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 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 In 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



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

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

Via Electronic and Regular Mail

February 1, 2017

Mr. Kevin Rychlicki
DNREC - Division of Parks and Recreation
89 Kings Highway
Dover, DE 19901

Re: Contract # 2016-WB-100 Josephine Fountain Restoration, New Castle County, DE

Dear Mr. Rychlicki:

I am responding to your request for category determination for Contract # 2016-WB-100 Josephine Fountain Restoration, which is a state funded construction project located in New Castle County, DE. The work consists of Restoration and Reconstruction of Historic fountain. You estimate the total cost of construction for this project to be \$250,000.00.

Based upon the information you provided the Department of Labor has determined that this project is a Heavy Construction project.

Delaware's Prevailing Wage Regulations provide that the rates applicable to a project are the rates in effect on the date of publication of the specifications for that project. I have enclosed a certified copy of the March 1, 2016, prevailing wage rates for Heavy Construction to be included in your bid specifications. However, please be advised that, in the event that a contract for a project is not executed within one hundred and twenty (120) days from the earliest date the specifications were published, the rates in effect at the time of the execution of the contract shall be the applicable rates for the project.

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

If you have any questions or I can provide any additional assistance, please do not hesitate to contact me at (302) 761- 8321.

Sincerely,

David Burns
Labor Law Enforcement Officer
David.Burns@state.de.us
Enclosures

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

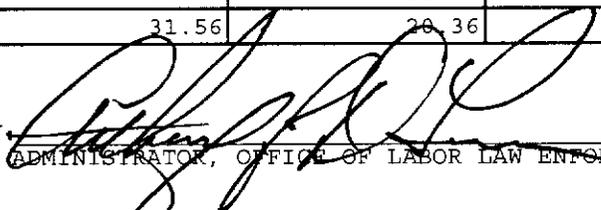
Mailing Address:
225 CORPORATE BOULEVARD
SUITE 104
NEWARK, DE 19702

Located at:
225 CORPORATE BOULEVARD
SUITE 104
NEWARK, DE 19702

PREVAILING WAGES FOR HEAVY CONSTRUCTION EFFECTIVE MARCH 15, 2016

CLASSIFICATION	NEW CASTLE	KENT	SUSSEX
ASBESTOS WORKERS	21.82	19.20	41.74
BOILERMAKERS	75.62	31.72	58.19
BRICKLAYERS	46.43	22.91	24.60
CARPENTERS	52.81	52.81	41.97
CEMENT FINISHERS	43.05	24.05	17.91
ELECTRICAL LINE WORKERS	72.73	27.89	63.84
ELECTRICIANS	65.10	65.10	65.10
GLAZIERS	20.17	17.51	11.85
INSULATORS	54.38	54.38	54.38
IRON WORKERS	60.19	60.19	57.58
LABORERS	43.60	43.60	43.60
MILLWRIGHTS	66.83	66.83	53.40
PAINTERS	75.26	75.26	75.26
PILEDRIVERS	72.97	38.86	30.25
PLASTERERS	18.99	16.49	11.15
PLUMBERS/PIPEFITTERS/STEAMFITTERS	82.03	76.87	17.67
POWER EQUIPMENT OPERATORS	61.36	61.36	61.36
SHEET METAL WORKERS	30.35	18.82	17.68
SPRINKLER FITTERS	32.70	12.38	10.25
TRUCK DRIVERS	31.56	28.36	21.99

CERTIFIED: 2/11/17

BY: 
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.

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

PROJECT: 2016-WB-100 Josephine Fountain Restoration, New Castle County

PREVAILING WAGE DEBARMENT LIST

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

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

Contractor	Address	Date of Debarment
Mullen Brothers, Inc. and Daniel Mullen, individually	3375 Garnett Road, Boothwyn, PA 19060	Indefinite/ Civil Contempt
MMR Associates D. Peninsula Glass and Michael Rooper, individually	679 Horse Pond Road, Dover, DE 19901	1/20/2015
Site Work Safety Supplies, Inc. and individually	4020 Seven Hickories Road Dover, DE 19904	1/12/2016
Green Granite and Jason Green, individually	604 Heatherbrooke Court Avondale, PA 19311	Indefinite/ Civil Contempt
PCS Staffing & Cleaning Professionals, LLC	4805 Garrison Blvd. Suite 200 Baltimore, MD 21821	Indefinite/ 19 <u>Del.C. 2374(f)</u>
Image Landscaping, Inc. and Owner(s) individually	23 Commerce Street Wilmington, DE 19801 and/or 2 Cameo Road Claymont, DE 19703	Indefinite/19 <u>Del.C. §108 & 10 Del.C. 542(c)</u>
Liberty Mechanical, LLC and Owner(s), individually	2032 Duncan Road Wilmington, DE 19801	Indefinite/ 19 <u>Del.C. 2374(f)</u>
Integrated Mechanical and Fire Systems Inc. and Allison Sheldon, individually	4601 Governor Printz Boulevard Wilmington, DE 19809	Indefinite/19 <u>Del.C. §108 & 10 Del.C. 542(c)</u>

NOT FOR BIDDING

DELAWARE
PREVAILING WAGE
REGULATIONS



NOT FOR BIDDING

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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NOT FOR BIDDING

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 and either his/her employer or a joint apprenticeship committee which contains the terms and conditions of the employment and training of the apprentice.
- c. The term "**apprenticeship program**" means a complete plan of terms and conditions for the employment and training of apprentices.
- d. 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.
- e. 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.

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; Bus tracks; 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; Educational 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 primary 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 for 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. Appeal:** 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 a 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

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

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Amended: January 9, 1998

Amended: December 12, 2000

Amended: June 14, 2001

Amended: October 13, 2003

NOT FOR BIDDING

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
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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. Disassembles 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 support 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 ties which are embedded in mortar between bricks, or in anchor holes in veneer brick. May weld metal plates 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 openings. Removes burned or damaged brick and cleans surface of setting, using sledge hammer, 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 lays 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 square. 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, doorway, 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 screw driver. 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. Installs 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 of 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 it is 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 material, 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 wall 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 glass cutter. 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 tag 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 passing 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 passed by rivet heater (heat treating) in bucket and inserts rivets in holes, using tongs. Bucks (nods) 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, and 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 asphalt 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 brick masons, 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 time 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 surface 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 tab 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. 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 the 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 pile 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 scaffolding. Spreads plaster over lath or masonry base, using trowel, and smoothes 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 or 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, ravers, 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 material. 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, blank 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 smoothes 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 — see 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 (non-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 and 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 hand tools. 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 and 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, tandem, batch truck, euclid type or similar off-highway equipment, off-highway tandem back-dump, specialized earth moving equipment, twin engine equipment and double-itched equipment, and equipment similar to above. This classification also includes truck mechanics.

NOT FOR BIDDING

NOT FOR BIDDING

GENERAL REQUIREMENTS

TABLE OF ARTICLES

1. GENERAL PROVISIONS
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ARTICLE 1: GENERAL

1.1 CONTRACT DOCUMENTS

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

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

1.2 EQUALITY OF EMPLOYMENT OPPORTUNITY ON PUBLIC WORKS

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

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

ARTICLE 2: OWNER

(NO ADDITIONAL GENERAL REQUIREMENTS – SEE SUPPLEMENTARY GENERAL CONDITIONS)

ARTICLE 3: CONTRACTOR

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

- 3.2 Subcontracts: Upon approval of Subcontractors, the Contractor shall award their Subcontracts as soon as possible after the signing of their own contract and see that all material, their own and those of their Subcontractors, are promptly ordered so that the work will not be delayed by failure of materials to arrive on time.
- 3.3 Before commencing any work or construction, the General Contractor is to consult with the Owner as to matters in connection with access to the site and the allocation of Ground Areas for the various features of hauling, storage, etc.
- 3.4 The Contractor shall supervise and direct the Work, using the Contractor's best skill and attention. The Contractor shall be solely responsible for and have control over construction means, methods, techniques, sequences and procedures and for coordinating all portions of the Work under the Contract, unless the Contract Documents give other specific instructions.
- 3.5 The Contractor shall enforce strict discipline and good order among the Contractor's employees and other persons carrying out the Contract. The Contractor shall not permit employment of unfit persons or persons not skilled in tasks assigned to them.
- 3.6 The Contractor warrants to the Owner that materials and equipment furnished will be new and of good quality, unless otherwise permitted, and that the work will be free from defects and in conformance with the Contract Documents. Work not conforming to these requirements, including substitutions not properly approved, may be considered defective. If required by the Owner, the Contractor shall furnish evidence as to the kind and quality of materials and equipment provided.
- 3.7 Unless otherwise provided, the Contractor shall pay all sales, consumer, use and other similar taxes, and shall secure and pay for required permits, fees, licenses, and inspections necessary for proper execution of the Work.
- 3.8 The Contractor shall comply with and give notices required by laws, ordinances, rules, regulations, and lawful orders of public authorities bearing on performance of the Work. The Contractor shall promptly notify the Owner if the Drawings and Specifications are observed to be in variance therewith.
- 3.9 The Contractor shall be responsible to the Owner for the acts and omissions of the Contractor's employees, Subcontractors and their agents and employees, and other persons performing portions of the Work under contract with the Contractor.
- 3.10 The Contractor shall keep the premises and surrounding area free from accumulation of waste materials or rubbish caused by operations under the Contract. At completion of the Work the Contractor shall remove from and about the Project all waste materials, rubbish, the Contractor's tools, construction equipment, machinery and surplus materials. The Contractor shall be responsible for returning all damaged areas to their original conditions.
- 3.11 **STATE LICENSE AND TAX REQUIREMENTS**
- 3.11.1 Each Contractor and Subcontractor shall be licensed to do business in the State of Delaware and shall pay all fees and taxes due under State laws. In conformance with Section 2503, Chapter 25, Title 30, Delaware Code, "the Contractor shall furnish the

Delaware Department of Finance within ten (10) days after entering into any contract with a contractor or subcontractor not a resident of this State, a statement of total value of such contract or contracts together with the names and addresses of the contracting parties.”

- 3.12 The Contractor shall comply with all requirements set forth in Section 6962, Chapter 69, Title 29 of the Delaware Code.
- 3.13 During the contract Work, the Contractor and each listed Subcontractor, shall implement an Employee Drug Testing Program in accordance with OMB Regulation 4104-“Regulations for the Drug Testing of Contractor and Subcontractor Employees Working on “Large Public Works Projects”. “Large Public Works” is based upon the current threshold required for bidding “Public Works as set by the Purchasing and Contracting Advisory Council.

ARTICLE 4: ADMINISTRATION OF THE CONTRACT

4.1 CONTRACT SURETY

4.1.1 PERFORMANCE BOND AND LABOR AND MATERIAL PAYMENT BOND

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

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

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

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

4.1.6 Performance and Payment Bonds shall be maintained in full force (warranty bond) for a period of two (2) years after the date of the Certificate for Final Payment. The Performance Bond shall guarantee the satisfactory completion of the Project and that the Contractor will make good any faults or defects in his work which may develop during the period of said

guarantees as a result of improper or defective workmanship, material or apparatus, whether furnished by themselves or their Sub-Contractors. The Payment Bond shall guarantee that the Contractor shall pay in full all persons, firms or corporations who furnish labor or material or both labor and material for, or on account of, the work included herein. The bonds shall be paid for by this Contractor. The Owner shall have the right to demand that the proof parties signing the bonds are duly authorized to do so.

4.2 FAILURE TO COMPLY WITH CONTRACT

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

4.3 CONTRACT INSURANCE AND CONTRACT LIABILITY

4.3.1 In addition to the bond requirements stated in the Bid Documents, each successful Bidder shall purchase adequate insurance for the performance of the Contract and, by submission of a Bid, agree 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 amount 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 it does not relieve the Contractor of full responsibility.

8.4 SUSPENSION AND DEBARMENT

8.4.1 Per Section 6052(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 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 6-16, Title 29 of the Delaware Code annualized interest is not to exceed 12% per annum beginning thirty (30) days after the "presentment" (as opposed to the date) of the invoice.

9.2 PARTIAL PAYMENTS

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

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

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

- 9.2.3 If requested by the Agency, receipted bills from all Contractors, Subcontractors, and material, men, etc., for the previous payment must accompany each application for payment. Following such a request, no payment will be made until these receipted bills have been received by the Owner.
- 9.3 SUBSTANTIAL COMPLETION
- 9.3.1 When the building has been made suitable for occupancy, but still requires small items of miscellaneous work, the Owner will determine the date when the project has been substantially completed.
- 9.3.2 If, after the Work has been substantially completed, full completion thereof is materially delayed through no fault of the Contractor, and without terminating the Contract, the Owner may make payment of the balance due for the portion of the Work fully completed and accepted. Such payment shall be made under the terms and conditions governing final payment that it shall not constitute a waiver of claims.
- 9.3.3 On projects where commissioning is included, the commissioning work as defined in the specifications must be complete prior to the issuance of substantial completion.
- 9.4 FINAL PAYMENT
- 9.4.1 Final payment, including the five percent (5%) retainage if determined appropriate, shall be made within thirty (30) days after the Work is fully completed and the Contract fully performed and provided that the Contractor has submitted the following closeout documentation (in addition to any other documentation required elsewhere in the Contract Documents):
- 9.4.1.1 Evidence satisfactory to the Owner that all payrolls, material bills, and other indebtedness connected with the work have been paid,
 - 9.4.1.2 An acceptable RELEASE OF LIENS,
 - 9.4.1.3 Copies of all applicable warranties,
 - 9.4.1.4 As-built drawings,
 - 9.4.1.5 Operations and Maintenance Manuals,
 - 9.4.1.6 Instruction Manuals,
 - 9.4.1.7 Consent of Surety to final payment.
 - 9.4.1.8 The Owner reserves the right to retain payments, or parts thereof, for its protection until the foregoing conditions have been complied with, defective work corrected and all unsatisfactory conditions remedied.

ARTICLE 10: PROTECTION OF PERSONS AND PROPERTY

- 10.1 The Contractor shall be responsible for initiating, maintaining, and supervising all safety precautions and programs in connection with the performance of the Contract. The Contractor shall take all reasonable precautions to prevent damage, injury or loss to: workers, persons nearby who may be affected, the Work, materials and equipment to be incorporated, and existing property at the site or adjacent thereto. The Contractor shall give notices and comply with applicable laws ordinances, rules regulations, and lawful orders of public authorities bearing on the safety of persons and property and their protection from injury, damage, or loss. The Contractor shall promptly remedy damage and loss to property at the site caused in whole or in part by the Contractor, a Subcontractor, or anyone directly or indirectly employed by any of them, or by anyone for whose acts they may be liable.
- 10.2 The Contractor shall notify the Owner in the event any existing hazardous material such as lead, PCBs, asbestos, etc. is encountered on the project. The Owner will arrange with a qualified specialist for the identification, testing, removal, handling and protection against exposure or environmental pollution, to comply with applicable regulation laws and ordinances. The Contractor and Architect will not be required to participate in or to perform this operation. Upon completion of this work, the Owner will notify the Contractor and Architect in writing the area has been cleared and approved by the authorities in order for the work to proceed. The Contractor shall attach documentation from the authorities of said approval.
- 10.3 As required in the Hazardous Chemical Information Act of June 1984, all vendors supplying any materials that may be defined as hazardous, must provide Material Safety Data Sheets for those products. Any chemical product should be considered hazardous if it has a warning caution on the label relating to a potential physical or health hazard, if it is known to be present in the work place, and if employees may be exposed under normal conditions or in any foreseeable emergency situation. Material Safety Data Sheets must be provided directly to the Owner along with the shipping slips that include those products.
- 10.4 The Contractor shall certify to the Owner that materials incorporated into the Work are free of asbestos. This certification may be in the form of Material Safety Data Sheet (MSDS) provided by the product manufacturer for the materials used in construction, as specified or as provided by the Contractor.

ARTICLE 11: INSURANCE AND BONDS

- 11.1 The Contractor shall carry all insurance required by law, such as Unemployment Insurance, etc. The Contractor shall carry such insurance coverage as they desire on their own property such as a field office, storage sheds or other structures erected upon the project site that belong to them and for their own use. The Subcontractors involved with this project shall carry whatever insurance protection they consider necessary to cover the loss of any of their personal property, etc.
- 11.2 Upon being awarded the Contract, the Contractor shall obtain a minimum of two (2) copies of all required insurance certificates called for herein, and submit one (1) copy of each certificate, to the Owner, within 20 days of contract award.

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

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

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

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

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

11.7.1 Contractor's Contractual Liability Insurance

Minimum coverage to be:

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

11.7.2 Contractor's Protective Liability Insurance

Minimum coverage to be:

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

11.7.3 Automobile Liability Insurance

Minimum coverage to be:

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

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

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

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

11.7.5.2 Minimum Limit for all employees working at one site.

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

11.7.7 Social Security Liability

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

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

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

ARTICLE 12: UNCOVERING AND CORRECTION OF WORK

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

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

ARTICLE 13: MISCELLANEOUS PROVISIONS

13.1 CUTTING AND PATCHING

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

13.2 DIMENSIONS

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

13.3 LABORATORY TESTS

- 13.3.1 Any specified laboratory tests of material and finished articles to be incorporated in the work shall be made by bureaus, laboratories or agencies approved by the Owner and reports of such tests shall be submitted to the Owner. The cost of the testing shall be paid for by the Contractor.
- 13.3.2 The Contractor shall furnish all sample materials required for these tests and shall deliver same without charge to the testing laboratory or other designated agency when and where directed by the Owner.

13.4 ARCHAEOLOGICAL EVIDENCE

- 13.4.1 Whenever, in the course of construction, any archaeological evidence is encountered on the surface or below the surface of the ground, the Contractor shall notify the authorities of the Delaware Archaeological Board 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 in the State Museum.

13.5 GLASS REPLACEMENT AND CLEANING

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

13.6 WARRANTY

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

ARTICLE 14: TERMINATION OF CONTRACT

- 14.1 If the Contractor defaults or persistently fails or neglects to carry out the Work in accordance with the Contract Documents or fails to perform a provision of the Contract, the Owner, after seven days written notice to the Contractor, may make good such deficiencies and may deduct the cost thereof from the payment then or thereafter due the Contractor. Alternatively, at the Owner's option, 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

OFFICE OF MANAGEMENT AND BUDGET
DIVISION OF FACILITIES MANAGEMENT

Statutory Authority: 29 Delaware Code, Section 6908(a)(6) (29 **Del.C.** §6908(a)(6))

FINAL

ORDER

4104 Regulations for the Drug Testing of Contractor and Subcontractor Employees Working on Large Public Works Projects

NATURE OF THE PROCEEDINGS:

The Office of Management and Budget (OMB) initiated proceedings to adopt the Regulations for the Drug Testing of Contractor and Subcontractor Employees Working on Large Public Works Projects. The OMB proceedings to adopt regulations were initiated pursuant to 29 **Del.C.** Chapter 101 and authority as prescribed by 29 **Del.C.** Ch. 69, §6908(a)(6).

On January 1, 2015 (Volume 18, Issue 7), OMB published in the Delaware *Register of Regulations* its notice of proposed regulations, pursuant to 29 **Del.C.** §10115. It was requested that written materials and suggestions from the public concerning the proposed regulations be delivered to OMB by March 6, 2015 or be presented at a public hearing on February 11, 2015, after which time OMB would review information, factual evidence and public comment to the said proposed regulations.

Written comments were received during the public comment period and evaluated. The results of that evaluation are summarized in the accompanying "Summary of Evidence." This is OMB's "conclusion" and "order" as required by 29 **Del.C.** §10118(b).

SUMMARY OF EVIDENCE

In accordance with Delaware Law, public notices regarding proposed Regulations for the Drug Testing of Contractor and Subcontractor Employees Working on Large Public Works Projects were published in the *Delaware State News*, the *News Journal* and the *Delaware Register of Regulations*.

Written and verbal comments were received on the proposed regulations during the public comment period (January 1, 2015 through March 6, 2015). Individuals offering comments included:

- Dr. Brian Shinkle, DO, CIMF.
- Mr. James Maravelias, President, Delaware Building & Construction Trades Council.

Public comments and the OMB (Agency) responses are as follows:

Brian Shinkle, DO, CIMF

Comment: Studies show that blood/breath alcohol level directly correlates with impairment, but urine alcohol level has no correlation with impairment. Urine alcohol only reasonably shows that someone has used alcohol within the last few days, which is not illegal. You also cannot tell how much alcohol someone used via a urine alcohol test, due to variable urine dilution rates. A better model is to follow the DOT protocol which is to perform breath alcohol testing (which does correlate directly with blood alcohol level and impairment) and to perform this type of alcohol testing in one or all of the following scenarios: post-accident, random or reasonable suspicion.

Agency response: Thank you for your comment. This comment refers to Section 4.3 of the proposed regulation that reads as follows:

4.3 Employees subject to drug testing shall be tested using at a minimum a seven-panel protocol testing plus urine alcohol screening for the following:

Substance	Common Name	Cutoff
Marijuana metabolite		50 ng/ml
Cocaine metabolite		150 ng/ml
Opiate metabolite		2000 ng/ml
Acetylmorphine	Heroin metabolite	10 ng/ml
Phencyclidine	PCP	25 ng/ml
Amphetamines (including Methamphetamines)	Meth	500 ng/ml
MDMA	Ecstasy	250 ng/ml

Urine Alcohol	0.04% BAC
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Inasmuch as the state has included testing for alcohol as a means to gauge impairment, OMB is in agreement that a urine alcohol test should not be specified. The specification has been changed to a more generic "alcohol test".

James Maravelias, President, Delaware Building & Construction Trades Council

Comment: The seven panel test specified in Section 4.3 of the regulation is insufficient and should be changed to require a ten panel test. Keeping in mind that the goal is to provide the safest workplace for employees, protect the general public and instill Delawareans confidence that those individuals working on state funded projects are working safely, the ten-panel protocol is necessary to capture drugs that are highly abused, extremely addictive and can cause a deadly and unsafe work environment for all those around.

Agency response: Thank you for your comment. This comment refers to Section 4.3 of the proposed regulation that reads as follows:

4.3 Employees subject to drug testing shall be tested using at a minimum a seven-panel protocol testing plus urine alcohol screening for the following:

Substance	Common Name	Cutoff
Marijuana metabolite		50 ng/ml
Cocaine metabolite		150 ng/ml
Opiate metabolite		2000 ng/ml
Acetylmorphine	Heroin metabolite	10 ng/ml
Phencyclidine	PCP	25 ng/ml
Amphetamines (including Methamphetamines)	Meth	500 ng/ml
MDMA	Ecstasy	250 ng/ml
Urine Alcohol		0.04% BAC

There are no universal standards for the optimal number of panels that must be tested in an employee drug testing program. In fact, Federal DOT standards from which much of this regulation was modeled, requires a five panel testing regimen. The proposed regulation was constructed with a measure of flexibility by mandating "...a minimum of seven-panel protocol testing....", therefore allowing for additional panels to be tested. Accordingly the proposed regulation will not be further amended.

FINDINGS OF FACT:

The Department finds that the proposed regulation as set forth in the January 2015 *Register of Regulations* with the one insubstantial change noted in section 4.3 should be adopted. While the Office of Management and Budget appreciates the other suggestions brought forth, it is felt the existing content of the regulation as published in the January 2015 *Register of Regulations* represents a fair balance to protect management, labor and members of the public.

NOW THEREFORE, under the statutory authority and for the reasons set forth above, the Director of the Delaware Office of Management and Budget does hereby ORDER that the Regulation be, and that it hereby is, adopted and promulgated. The effective date of this Order is for all large public works projects advertised for bid on or after January 1, 2016.

Ann Sheehan Misalli, Director
Office of Management and Budget

4104 Regulations for the Drug Testing of Contractor and Subcontractor Employees Working on Large Public Works Projects

1.0 Purpose

The Office of Management and Budget ("Office"), has developed these regulations that require Contractors and Subcontractors to implement a program of mandatory drug testing for Employees who work on Large Public Works Contracts funded all or in part with public funds pursuant to 29 Del.C. §6908(a)(6). The regulations establish the mechanism, standards and requirements of a Mandatory Drug Testing Program that will be incorporated by reference into all Large Public Works Contracts awarded pursuant to 29 Del.C. §6962.

2.0 Definitions

- “Contractor”** means an entity such as, but not limited to, an individual, firm, partnership or corporation that has a contractual obligation to perform work for contracts awarded pursuant to 29 **Del.C.** §6962.
- “Division of Facilities Management” and “DFM”** means the Division of Facilities Management within the Office of Management and Budget.
- “Drug Testing Firm”** is an entity engaged in the business of providing drug testing services for businesses, individuals, governments or any entity that requires drug testing of Employees, applicants, licensees, etc., in compliance with these requirements.
- “Employee”** means an individual employed by a Contractor or Subcontractor who works on the Jobsite of a Large Public Works Contract but does not fulfill a clerical or administrative function. For the purpose of this definition, clerical or administrative functions shall refer to job responsibilities that do not generally require an employee to work outside of the Contractor’s Jobsite office, home office or other employer-provided office. For the purposes of this regulation, the term “Employee” shall also include supervisors and foremen working on the Jobsite. The term “Employee” shall also include delivery personnel employed by a Contractor or Subcontractor working on or delivering materials and equipment to and from a Jobsite.
- “Impairment” or “Impaired”** means symptoms that an Employee while working may be under the influence of drugs or alcohol that may decrease or less in the Employee's performance of the duties or tasks of the Employee's job position, including symptoms of the Employee's speech, walking, standing, physical dexterity, agility, coordination, actions, movement, demeanor, appearance, clothing, odor, irrational or unusual behavior, negligence or carelessness in operating equipment, machinery or production or manufacturing processes, disregard for the safety of the Employee or others, or other symptoms causing a reasonable suspicion of the use of drugs or alcohol.
- “Jobsite”** means the site or area directly or indirectly owned, operated or controlled by the Owner in which the Contractor or Subcontractor performs work or delivers services to the Owner. For the purpose of this definition, “Jobsite” does not mean a remote work site not under the direct or indirect control of the Owner in which work is performed to fulfill the Contractor’s or Subcontractor’s obligations.
- “Large Public Works Contract”** means a contract for a public works construction awarded pursuant to 29 **Del.C.** §6962.
- “Mandatory Drug Testing Program” and “Program”** means a defined set of basic procedures, requirements and rules that must be used by a Contractor or Subcontractor to test Employees for drugs in compliance with these requirements.
- “Owner”** is the state agency, school district or entity that awards a Large Public Works Contract to a Contractor pursuant to 29 **Del.C.** §6962.
- “Positive Test Result” and “Fail a Drug Test”** means the result reported by a Health and Human Services certified laboratory when a specimen contains a drug or drug metabolite equal to or greater than the cutoff concentration. For purposes of these regulations, an Employee shall not be considered to have a Positive Test Result nor shall an Employee be considered to “Fail a Drug Test” if:
- The Employee is a Registered Qualifying Patient and;
 - The drug detected was marijuana, a component of marijuana, or marijuana metabolites.
- “Random Drug Testing”** means that an Employee is chosen at random for testing without advance notice, from a pool of Employees working on the Jobsite. Specific requirements for random drug testing conducted under these regulations are described in Section 5.0.
- “Registered Qualifying Patient”** means a person (1) validly issued and in possession of an unexpired Registry Identification Card as defined by 16 **Del.C.** §4902A (14), and (2) subject to confirmation through a “verification system” as set forth at 16 **Del.C.** §4902A(17).
- “Subcontractor”** means an entity such as, but not limited to, an individual, firm, partnership or corporation that has a contractual obligation to perform work for, or supply services to a Contractor as defined in section 2.1.
- “Testing Result Forms”** means a form summarizing drug testing completed monthly by the Contractor and Subcontractor and submitted to the Owner in accordance with requirements contained in the bid solicitation.

3.0 Employee drug testing documentation requirements.

3.1 The following documentation requirements apply:

- 3.1.1** At bid submission - A solicitation for a Large Public Works Contract must require each Contractor that submits a bid for the work to submit with the bid signed individual affidavit(s) for the Contractor and each listed Subcontractor certifying that the Contractor and Subcontractor has in place or will implement during the entire term of the contract a Mandatory Drug Testing Program for their Employees that complies with this regulation.

- 3.1.2 Two business days prior to contract execution – The awarded Contractor shall provide to the Owner copies of the Employee Drug Testing Program for the Contractor and for all listed Subcontractors.
- 3.1.3 During contract execution – Contractors that employ additional Subcontractors on the jobsite may do so only after submitting a copy of the Subcontractor’s Employee Drug Testing Program. A Contractor or Subcontractor shall not commence work until the Owner has concluded the Employee Drug Testing Program complies with this Regulation as per Section 3.2.
- 3.1.4 In the event of an emergency a Contractor may employ additional Subcontractors on the jobsite prior to submitting the Subcontractor’s Employee Drug Testing Program provided that said Program is submitted to the Owner as soon as practicable.
- 3.2 A Contractor or Subcontractor shall be treated as having a Mandatory Drug Testing Program that complies with this regulation if the Program includes the following:
 - 3.2.1 The Program meets the minimum standards in section 4.0 of this regulation.
 - 3.2.2 The Program provides for the frequency of testing of Employees as per section 5.0 of this regulation:
 - 3.2.3 The Program imposes disciplinary measures on an Employee who fails a drug test as per section 6.0 of this regulation.
- 3.3 Prequalified Contractors and Subcontractors – A Contractor or Subcontractor may meet the provisions of Section 3.1 if they are Prequalified through the DFM Prequalification and if the DFM Prequalification includes provisions requiring an Employee Mandatory Drug Testing Program that meet the requirements of Sections 4.0, 5.0 and 6.0 of this Regulation
- 3.4 The State shall not be obligated to pay and the Contractor or Subcontractor shall expressly agree that, any portion of work performed by a Contractor or Subcontractor commenced before that Contractor or Subcontractor has complied with Sections 3.1 and 3.2, provided however that emergency work as referenced in 3.1.4 may not be subject to this provision.

4.0 Minimum Standards for a Mandatory Drug Testing Program

- 4.1 Testing for the presence of drugs in an Employee’s system and the handling of test specimens shall be conducted in accordance with guidelines for the collection, chain-of-custody procedures, laboratory testing, and Medical Officer Review procedures contained within the Mandatory Guidelines for Federal Workplace Drug Testing Programs promulgated by the Substance Abuse and Mental Health Services Administration (SAMHSA). http://workplace.samhsa.gov/DrugTesting/Level_1_Pages/mandatory_guidelines5_1_10.html All tests must be processed by a federal Health and Human Services certified laboratory. Contractors must provide documentation detailing the procedures used in the collection, testing and reporting of drug tests sufficient to show compliance with SAMHSA guidelines.
- 4.2 Contractors and Subcontractors subject to these regulations may procure the services of an appropriate Drug Testing Firm to administer their program. A Contractor or Subcontractor may also implement a Mandatory Drug Testing Program using in-house personnel and resources. However a Contractor or Subcontractor doing so shall have to demonstrate that the program meets or exceeds the requirements specified herein to the satisfaction of the Owner.
- 4.3 Employees subject to drug testing shall be tested using at a minimum a seven-panel protocol testing plus **[urine]** alcohol screening for the following:

<u>Substance</u>	<u>Common Name</u>	<u>Cutoff</u>
<u>Marijuana metabolite</u>		<u>50 ng/ml</u>
<u>Cocaine metabolite</u>		<u>150 ng/ml</u>
<u>Opiate metabolite</u>		<u>2000 ng/ml</u>
<u>Heroin metabolite</u>	<u>Heroin metabolite</u>	<u>10 ng/ml</u>
<u>Phencyclidine</u>	<u>PCP</u>	<u>25 ng/ml</u>
<u>Amphetamines (including Methamphetamines)</u>	<u>Meth</u>	<u>500 ng/ml</u>
<u>MDMA</u>	<u>Ecstasy</u>	<u>250 ng/ml</u>
<u>[Urine] Alcohol</u>		<u>0.04% BAC</u>

- 4.4 The frequency of Random Drug Testing and the methodology for selecting Employees to be screened are defined in section 5.0 and shall be incorporated into Contractor and Subcontractor mandatory testing procedures. A Contractor or Subcontractor may incorporate rules or requirements that exceed the requirements defined herein.

5.0 Drug Testing Requirements – Frequency for the Testing of Employees

- 5.1 Initial Drug Testing - Employees commencing work on a Jobsite must be tested with the exception that an Employee who has passed a random or scheduled drug test within the past 60 days from the date of commencing work shall be permitted to work at the Jobsite without further testing; however, the Employee is still subject to random testing.
- 5.2 Random Drug Testing - During the course of a project, each Contractor and Subcontractor with Employees on the Jobsite shall implement Random Drug Testing according to the following requirements.
- 5.2.1 All Employees will be subject to random, unannounced testing.
- 5.2.2 The selection of Employees shall be made by a scientifically valid method of randomly generating an Employee identifier from a Contractor or Sub-contractor's pool of Employees.
- 5.2.3 No less than 10% of a Contractor's or Subcontractor's anticipated workforce based on construction schedules validated by certified payrolls shall be randomly selected each month for testing. Contractors or Subcontractors with less than 10 Employees shall test at least one of their Employees, selected randomly per month. Each Employee shall have an equal chance of selection each time the selection is made. Because the selection process is random, some Employees may not be tested within a year, while others may be tested more than once.
- 5.2.4 Employees notified that they have been selected must report within four hours for testing to a site specified. Employees so notified must have been given such notification at least four hours before the scheduled closing time of the testing facility. Any failure to report for random testing, or to cooperate with the testing procedure shall be considered a positive result.
- 5.2.5 Purposely impeding or delaying an Employee's fulfillment of the testing requirements herein by a Contractor or Subcontractor may subject the Contractor or Subcontractor to sanctions listed in Section 8.
- 5.3 Reasonable Suspicion Testing – An Employee will be required to take a drug test at any time his or her employing Contractor, Subcontractor or the Owner reasonably believes that he or she has an Impairment caused by drugs and/or alcohol. Further, an Employee may be required to take a drug test at any time his or her employing Contractor, Subcontractor or the Owner finds drug paraphernalia and/or open alcohol containers on the Jobsite.
- 5.4 Return to Duty Testing – As required in Section 6.0.
- 5.5 Accident Triggered Testing – An Employee will be required to take a drug test and may be subject to an onsite alcohol breathalyzer test any time there is a Jobsite accident involving loss or significant property damage, injury or death to an Employee of the Contractor, Subcontractor, or Owner or member of the public.
- 5.5.1 As soon as practicable following an accident, the Contractor will notify the Employee(s) whose performance could have contributed to the accident of the need for the test.
- 5.5.2 The appropriate Contractor shall ensure that an Employee, required to be tested under this section, is tested as soon as practicable, but no longer than 4 hours after the accident. Employees so notified must have been given such notification at least four hours before the scheduled closing time of the testing facility. If the drug test is not conducted within 4 hours, attempts to conduct the test must cease and the reasons for the failure to test documented.
- 5.5.3 An Employee who is subject to post-accident testing who fails to remain readily available for such testing, including notifying a supervisor of his or her location if he or she leaves the scene of the accident prior to submission to such test, may be deemed to have refused to submit to testing.
- 5.5.4 If an Employee fails or refuses to be tested, he/she must be removed from the Jobsite.
- 5.5.5 Nothing in this section shall be construed to require the delay of necessary medical attention for the injured following an accident, or to prohibit an Employee from leaving the scene of an accident for the period necessary to obtain assistance in responding to the accident, or to obtain necessary emergency medical care.
- 5.6 All testing required by this section shall be administered according to the standards outlined in Section 4.0.

6.0 Consequences of a Positive Test Result

- 6.1 The disciplinary measures contained within a Contractor's or Subcontractor's drug testing program for an employee who tests positive to a mandatory drug test must include at a minimum, all of the following:
- 6.1.1 The Employee is subject to an immediate suspension from any public works Jobsite.
- 6.1.2 The Employee is not eligible for reinstatement by the Contractor or Subcontractor to any public works Jobsite until 30 days after the Employee tests negative on a seven drug panel plus alcohol test certified by a medical review officer.

- 6.1.3 The Employee is subject to unscheduled monthly random testing for at least one (1) year after reinstatement, or during the term of the Large Public Works Contract, whichever is less.
- 6.1.4 An Employee who has tested positive for more than one drug test within a three year period shall be permanently banned from working at public works Jobsites.
- 6.1.5 An Employee who has tested positive for marijuana, a component of marijuana, or marijuana metabolites and is a Registered Qualifying Patient shall be exempted from the disciplinary actions contained in this section unless:
 - 6.1.5.1 The Employee was Impaired by marijuana at the Jobsite
 - 6.1.5.2 Employment of the Registered Qualifying Patient would cause the Owner to lose monetary or licensing-related benefits under Federal law.
- 6.2 A Contractor or Subcontractor shall report the Positive Test Result to the Employee's professional licensing board, if applicable.

7.0 Contractor and Subcontractor Certification of Compliance with Regulations

- 7.1 During the term of the contract:
 - 7.1.1 During the term of the contract, Contractors and Subcontractors shall submit Testing Report Forms to the Owner as set forth herein:
 - 7.1.1.1 The Testing Report Forms shall be submitted to the Owner no less than quarterly.
 - 7.1.1.2 An Owner may require monthly submissions of the Testing Report Forms.
 - 7.1.1.3 A Contractor or Subcontractor that is employed on the Jobsite for less than 30 days shall not be subject to the reporting requirements contained in Sections 7.1.1 and 7.1.2 of this regulation, unless the Owner specifies that such reporting is required in the Invitation to Bid or Specifications relating to the work to be performed.
 - 7.1.2 The forms shall at a minimum contain the following information:
 - 7.1.2.1 The number of Employees who worked on the Jobsite during the previous month.
 - 7.1.2.2 The number of Employees subjected to random testing during the previous month.
 - 7.1.2.3 The number of negative results and the number of positive results.
 - 7.1.2.4 Action taken by the Contractor or Subcontractor on an Employee who failed or tested positive to a random test.
 - 7.1.3 Testing Result Forms may be submitted electronically to an Owner.
 - 7.1.4 Any Positive Test Result including the Employee name and action taken in response by a Contractor or Subcontractor must be reported by the Contractor or Subcontractor to the Owner within 24 hours of the Contractor or Subcontractor receiving the test results. A Positive Test Result must be submitted to the Owner in writing.
 - 7.1.5 The Owner shall have the right to periodically audit all Contractor and Subcontractor test results at the Contractor or Subcontractor's offices.
 - 7.1.6 The failure to comply with these reporting requirements shall be considered a material breach of any agreement relating to the performance of work by the Contractor or Subcontractor.

8.0 Penalties

- 8.1 A Contractor or Subcontractor on a Large Public Works contract that fails to implement a Mandatory Drug Testing program in accordance with this regulation or falsifies testing results shall be subject to the following sanctions:
 - 8.1.1 Written warning (1st offense).
 - 8.1.2 Prohibition from bidding on new public works jobs for a period not to exceed three months (2nd offense) and one year (3rd offense).
 - 8.1.3 For subsequent offenses, debarment or bond revocation.
- 8.2 Notwithstanding any other provision of this regulation, if any failure to comply with the requirements of this regulation are particularly flagrant or egregious, the Owner may seek a termination for cause, a temporary suspension, a determination that the Contractor or Subcontractor **[are is]** not responsible, debarment or bond revocation, and any other statutory, common law, or equitable remedy.

**AFFIDAVIT
OF
EMPLOYEE DRUG TESTING PROGRAM**

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

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

Contractor/Subcontractor Name: _____

Contractor/Subcontractor Address: _____

Authorized Representative (typed or printed): _____

Authorized Representative (signature): _____

Title: _____

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

My Commission expires _____. NOTARY PUBLIC _____.

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

EMPLOYEE DRUG TESTING REPORT FORM

Period Ending: _____

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

Project Number: _____

Project Name: _____

Contractor/Subcontractor Name: _____

Contractor/Subcontractor Address: _____

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

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

Number of Negative Results _____ Number of Positive Results _____

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

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

Authorized Representative of Contractor/Subcontractor: _____
(signature)

Date: _____

NOT FOR BIDDING

**EMPLOYEE DRUG TESTING
REPORT OF POSITIVE RESULTS**

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

Project Number: _____

Project Name: _____

Contractor/Subcontractor Name: _____

Contractor/Subcontractor Address: _____

Name of employee with positive test result: _____

Last 4 digits of employee SSN: _____

Date test results received: _____

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

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

Authorized Representative of Contractor/Subcontractor: _____
(signature)

Date: _____

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

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

SECTION 008114 – EMPLOYEE DRUG TESTING FORMS

1. Affidavit of Employee Drug Testing Program
2. Employee Drug Testing Report Form
3. Employee Drug Testing Report of Positive Results

END OF SECTION 008114

NOT FOR BIDDING

EMPLOYEE DRUG TESTING REPORT FORM

Period Ending: _____

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

Project Number: _____

Project Name: _____

Contractor/Subcontractor Name: _____

Contractor/Subcontractor Address: _____

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

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

Number of Negative Results _____ Number of Positive Results _____

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

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

Authorized Representative of Contractor/Subcontractor: _____
(signature)

Date: _____

**EMPLOYEE DRUG TESTING
REPORT OF POSITIVE RESULTS**

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

Project Number: _____

Project Name: _____

Contractor/Subcontractor Name: _____

Contractor/Subcontractor Address: _____

Name of employee with positive test result: _____

Last 4 digits of employee SSN: _____

Date test results received: _____

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

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

Authorized Representative of Contractor/Subcontractor: _____
(signature)

Date: _____

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

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

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. Applications for Payment.
5. Owner Supplied Construction Documents.
6. Coordination.
7. Access to site.
8. Coordination with occupants.
9. Work restrictions.
10. Specification and drawing conventions.
11. Reference and Standards.
12. 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: Josephine Fountain Restoration

1. Project Location: 1001 North Park Drive, Wilmington, DE 19801.

- 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 27, 2017 were prepared for this Project by Material Conservation, 1625 N Howard Street, Philadelphia, PA 19122

- D. History:

1. The fountain was constructed in 1933 of dolomitic limestone.
2. Two major repair campaigns: one in 1979 and the other in 1995.
3. Some elements have been replaced with Indiana limestone and others with cast stone. Refer to key table on Sheet A-1.
4. In 2015, a condition assessment of the fountain determined that key structural elements, the mermaids, were deteriorated beyond their useful life.
5. In 2016, the fountain was disassembled in order to remove the mermaids.
6. A 3-D model of the mermaids was developed.
7. The disassembled elements were placed in protective crates and stored on site.

1.4 WORK COVERED BY CONTRACT DOCUMENTS

A. The Work of Project is defined by the Contract Documents and consists of the following:

1. Conserve all salvaged fountain elements including those in-situ and those in crates.
2. Prepare existing elements for reassembly.
3. Recreate the mermaids in cast stone using computer files of a laser scan and 3D model, provided by owner, to match the limestone elements.
4. Restore and refinish the pool basin.
5. Install new plumbing as per plumbing sheets.
6. Rig and reassemble elements in original placement.
7. Back point and finish point all masonry joints during assembly.
8. Remove and replace all the plaza's existing concrete pavers.

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. The Division of Parks and Recreation has no plan for work to be completed by others during this contract.

2. Items noted "NIC" (Not in Contract) will be furnished and installed by others.

1.6 ALLOWANCES

A. Schedule of Allowances: Refer to Section 012100 Allowances.

1.7 ALTERNATES

- A. Alternates quoted in the Bid Form will be exercised as Owner option. Accepted alternates will be listed in the Owner-Contractor agreement.
- B. Coordinate related work and modify surrounding work affected by accepted alternates as required to complete the Work.
- C. Schedule of Alternates: Refer to Section 012300 Alternates.

1.8 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.

1.9 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.

1.10 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 mechanical, electrical and plumbing work which are indicated diagrammatically on Drawings. Follow routing shown for pipes, ducts, and conduits, as closely as practicable; make runs parallel with lines of building. Utilize spaces efficiently to maximize accessibility for other installations, for maintenance, and for repairs.
- D. In finished areas (except as otherwise shown), conceal pipes, ducts, and wiring in the construction. Coordinate locations of fixtures and outlets with finish elements.
- E. 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. Seal penetrations through floors, walls, and ceilings.

1.11 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 area, site and properties are occupied and shall not be disturbed.

1.12 COORDINATION WITH OCCUPANTS

- A. Full Owner Occupancy: Owner and public will occupy the surrounding site during entire construction period. Cooperate with Owner during construction operations to minimize conflicts and facilitate Owner and public usage. Perform the Work so as not to interfere with Owner's day-to-day operations.
 - 1. Maintain access to existing walkways, entrances, and other adjacent occupied or used facilities. Do not close or obstruct walkways, entrances, 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. Barricade work areas to keep the public from entering.
 - 3. Notify Owner not less than one week in advance of activities that will affect Owner's operations.

1.13 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 or required by the City of Wilmington.

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 Buildings: 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.

1.14 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 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.

1.15 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: May 4, 2017
 - 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 shall be completed 150 days from on-site start of work, which includes removal of the existing crated components.
 - f. Completion of Punch List: 21 days from date of substantial completion.
 - 1) Refer to the General Requirements for additional details.

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 surrounding occupied areas, site, buildings, roadways, access into the buildings, etc. beyond the work area shall remain accessible to the Owner and general public. The area surrounding the fountain, material lay down area and contractor parking shall be secured with fencing.
 - 3. Parking: Parking for two vehicles can be reserved. Additional parking may be available if not used by the general public.
 - 4. Dumpster: A dumpster will be allowed in the parking area. 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.
 - 5. Access: Direct access to the Fountain is available from the parking lot.
 - 6. Storage: Storage structures will be allowed in the parking area. Restoration of grounds disturbed by the storage structures will be required upon completion of the Project.
 - 7. Restroom: Restroom facilities are not available at this location. Portable units are to be provided. Units shall be locked after hours and secured to the ground to prevent tipping.
 - 8. 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.
 - 9. Contractor and subcontractor promotional signage will not be allowed at the project site or within the Park unless approved by the Owner.
- B. Existing Fountain: Repair damage caused by construction operations. Protect Fountain during construction period.

1. The Contractor shall be provided full access to the site as necessary to complete the work. Use of the Owner's telephones will not be allowed.
2. Flammable materials shall not be stored around the Fountain. Flammable materials shall be kept outside, away from all buildings, in a flammable liquid/material storage box.
3. Gas powered equipment will not be allowed or near windows and intake louvers at any time.
4. Debris shall be removed from and around the site including the sidewalks, trails and parking areas on a daily basis.
5. At no times shall equipment be left operating around site after hours or when no one is present.
6. Noisy activities shall take place during the hours defined by the City of Wilmington and prescheduled with the Owner to avoid disruption of their activities.
7. Access to water will be provided. The contractor shall modify the water source to meet their needs and return back to the original condition after the completion of the restoration.
8. Dogs or other animals shall not be brought onto the property at any time.
9. Children shall not be brought onto the site at any time.
10. The general surrounds of site are open to the public and those working at the site shall not use abusive language.
11. Radios or other music-playing devices will not be allowed. Head phones and ear buds will not be allowed.
12. 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.
13. 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. The superintendent shall be able to communicate with State Park staff.
14. Contractor and/or subcontractor company identifying signage will not be allowed at the site.

PART 2 - PRODUCTS (Not Used)

PART 3 - EXECUTION (Not Used)

END OF SECTION 011400

SECTION 012300 - ALTERNATES

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 alternates.

1.3 DEFINITIONS

- A. Alternate: An amount proposed by bidders and stated on the Bid Form for certain work defined in the Bidding Requirements that may be added to or deducted from the Base Bid amount if Owner decides to accept a corresponding change either in the amount of construction to be completed or in the products, materials, equipment, systems, or installation methods described in the Contract Documents.
 - 1. The cost or credit for each alternate is the net addition to or deduction from the Contract Sum to incorporate alternate into the Work. No other adjustments are made to the Contract Sum.

1.4 PROCEDURES

- A. Coordination: Modify or adjust affected adjacent work as necessary to completely integrate work of the alternate into Project.
 - 1. Include as part of each alternate, miscellaneous devices, accessory objects, and similar items incidental to or required for a complete installation whether or not indicated as part of alternate.
- B. Notification: Immediately following award of the Contract, notify each party involved, in writing, of the status of each alternate. Indicate if alternates have been accepted, rejected, or deferred for later consideration. Include a complete description of negotiated modifications to alternates.
- C. Execute accepted alternates under the same conditions as other work of the Contract.
- D. Schedule: A Schedule of Alternates is included at the end of this Section. Specification Sections referenced in schedule contain requirements for materials necessary to achieve the work described under each alternate.

PART 2 - PRODUCTS (Not Used)

PART 3 - EXECUTION

3.1 SCHEDULE OF ALTERNATES

A. Alternate 1: Step Restoration as shown on Sheet A-2.

1. State the amount to be added/deducted from the Base Bid to remove, catalog and salvage existing Fountain treads, restore additional concrete base and risers, apply setting bed and reinstall treads in original locations. The work indicated in the base bid is to be completed in addition to the alternate. Refer to Sheet A-2 for additional information.
2. Base Bid includes not removing, salvaging and resetting the cast stone treads. The concrete base restoration is limited to that indicated on Sheet A-2.

B. Alternate 2: Provide laser scan and 3D model of the conserved columns.

1. State the amount to be added/deducted from the Base Bid to provide laser scan and 3D model of the conserved columns for the Owner's records.
2. Base Bid includes no laser scan and 3D model of the conserved columns

C. Alternate 2: Delete the infill of the existing lighting cavities with concrete. Provide new waterproof, vandal proof light fixtures to replace the existing light fixtures.

1. State the amount to be added/deducted from the Base Bid to delete the infill of the existing lighting cavities with concrete. Provide new waterproof, vandal proof light fixtures to replace the existing light fixtures.
2. Base Bid includes infilling of the existing lighting cavities and no new lighting.

END OF SECTION 012300

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. Delaware Department of Transportation (DelDOT): Not Applicable
- B. United States Army Corp of Engineers: Not Applicable
- C. Department of Natural Resources and Environmental Control (DNREC).
 - 1. Sediment and Stormwater Plan Approval: Not Applicable
- D. State of Delaware Architectural Accessibility Board: Completed
- E. Jurisdiction Having Authority Historic Area Commission: Not required.
- F. City of Wilmington: Not required.
- G. Delaware State Historic Preservation Office (SHPO): Completed.

3.2 SCHEDULE OF PENDING PERMITS.

- A. None Pending

END OF SECTION 012400

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 "Summary 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 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 4 - PRODUCTS (Not Used)

PART 5 - 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.
 - b. 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 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 Initial 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

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SECTION 013100 - PROJECT MANAGEMENT AND COORDINATION

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

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

1.2 SUMMARY

- A. This Section includes administrative provisions for coordinating construction operations on Project including, but not limited to, the following:
 - 1. General project coordination procedures.
 - 2. Administrative and supervisory personnel.
 - 3. Project meetings.
- B. Related Sections: The following Sections contain requirements that relate to this Section:
 - 1. Division 1 Section "Construction Progress Documentation" for preparing and submitting the Contractor's Construction Schedule.
 - 2. Division 1 Section "Closeout Procedures" for coordinating Contract closeout.

1.3 COORDINATION

- A. Coordination: Coordinate construction operations included in various Sections of the Specifications to ensure efficient and orderly installation of each part of the Work. Coordinate construction operations, included in different Sections that depend on each other for proper installation, connection, and operation.
 - 1. Schedule construction operations in sequence required to obtain the best results where installation of one part of the Work depends on installation of other components, before or after its own installation.
 - 2. Coordinate installation of different components with subcontractors to ensure maximum accessibility for required maintenance, service, and repair.
 - 3. Make adequate provisions to accommodate items scheduled for later installation.
- B. If necessary, prepare memoranda for distribution to each party involved, outlining special procedures required for coordination. Include such items as required notices, reports, and list of attendees at meetings.
 - 1. Prepare similar memoranda for Owner if coordination of their Work is required.
- C. Administrative Procedures: Coordinate scheduling and timing of required administrative procedures with other construction activities and activities of other contractors to avoid conflicts and to ensure orderly progress of the Work. Such administrative activities include, but are not limited to, the following:

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

1.4 SUBMITTALS

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

1.5 PROJECT MEETINGS

- A. General: The Architect will schedule and conduct meetings and conferences at Project site, unless otherwise indicated.
 1. Attendees: Inform participants and others involved, and individuals whose presence is required, of date and time of each meeting.
 2. Minutes: The Architect will record significant discussions and agreements achieved. The minutes will be distributed to everyone concerned, including Owner, within 7 days of the meeting.
- B. Preconstruction Conference: A preconstruction conference will be scheduled before the start of construction, at a time convenient to the Owner and Contractor, but no later than 15 days after execution of the Agreement. The conference will be held at the Project. The meeting will be conducted to review responsibilities and personnel assignments.
 1. Attendees: Authorized representatives of Owner, Architect, and their consultants; Contractor and its superintendent; major subcontractors; and other concerned parties shall attend the conference. All participants at the conference shall be familiar with Project and authorized to conclude matters relating to the Work.
 2. Agenda: Items of significance that could affect progress will be discussed, including the following:
 - a. Tentative construction schedule.
 - b. Designation of responsible personnel.
 - c. Procedures for processing field decisions and Change Orders.
 - d. Procedures for processing Applications for Payment.
 - e. Submittal procedures.
 - f. Preparation of Record Documents.
 - g. Use of the premises.
 - h. Responsibility for temporary facilities and controls.
 - i. Parking availability.
 - j. Storage areas.
 - k. Equipment deliveries and priorities.

- l. Progress cleaning.
 - m. Working hours.
- C. Progress Meetings: Progress meetings will be conducted every two weeks. 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 when 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

NOT FOR BIDDING

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 sequencing 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, 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 013233 - PHOTOGRAPHIC DOCUMENTATION

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

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

1.2 SUMMARY

- A. This Section includes administrative and procedural requirements for the following:
 - 1. Preconstruction photographs.
 - 2. Periodic construction photographs.
 - 3. Final Completion construction photographs.
- B. Related Sections include the following:
 - 1. Division 01 Section "Submittal Procedures" for submitting photographic documentation.
 - 2. Division 01 Section "Closeout Procedures" for submitting digital media as Project Record Documents at Project closeout.
 - 3. Division 01 Section "Selective Demolition" for photographic documentation before selective demolition operations commence.

1.3 SUBMITTALS

- A. Construction Digital Images: Submit a complete set of digital image electronic files as part of the Project closeout on CD-ROM, DVD or flash drive. Identify electronic media with date photographs were taken. Submit images that have same aspect ratio as the sensor, uncropped.

PART 2 - PRODUCTS

2.1 PHOTOGRAPHIC MEDIA

- A. Digital Images: Provide images in uncompressed TIFF or JPEG format, produced by a digital camera with minimum sensor size of 12.0 megapixels, and at an image resolution of not less than 4000 by 3000 pixels.

PART 3 - EXECUTION

3.1 CONSTRUCTION PHOTOGRAPHS

- A. General: Take photographs using the maximum range of depth of field, and that are in focus, to clearly show the Work. Photographs with blurry or out-of-focus areas will not be accepted.
 - 1. Photographs are to be taken weekly at a minimum during normal construction and daily during small duration projects or significant activities.

2. Photographs are to be taken prior to the start of the work to record existing conditions.
 3. Photographs are to be taken when areas are opened prior to the start of the new work.
 4. Photographs are to be taken during demolition operations.
 5. Provide temporary lighting when required to produce clear, well-lit photographs without obscuring shadows.
- B. Digital Images: Submit digital images exactly as originally recorded in the digital camera, without alteration, manipulation, editing, or modifications using image-editing software.
1. Date and Time: Include date and time in filename for each image.
 2. Field Office Images: Maintain one set of images on CD-ROM in the field office at Project site, available at all times for reference. Identify images same as for those submitted to Architect.
- C. Preconstruction Photographs: Before commencement of excavation and/or demolition, and starting of construction take color, digital photographs of Project building interior and exterior, site and surrounding properties, including existing items to remain during construction, from different vantage points, or as directed by Architect.
1. Flag excavation areas and construction limits before taking construction photographs.
 2. Take a minimum of eight photographs to show existing conditions adjacent to building before starting the work.
 3. Take a minimum of eight photographs of existing buildings adjacent to the building to accurately record physical conditions at start of construction.
 4. Take a minimum of four photographs of each existing room even if renovations are not planned in that space.
 5. Take as many photographs as necessary to document the exterior of the existing building.
 6. Take additional photographs as required to record settlement or cracking of adjacent pavements, and other improvements.
- D. Architect-Directed Construction Photographs: From time to time, Architect will instruct the Contractor about number and frequency of color, digital photographs and general directions on vantage points. Select actual vantage points and take photographs to show the status of construction and progress since last photographs were taken.
- E. Final Completion Construction Photographs: Take a minimum of four color photographs of each room and eight color photographs of the exterior after date of Substantial Completion for submission as Project Record Documents. Architect will direct photographer for desired vantage points.
1. Do not include date stamp.

END OF SECTION 013233

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 "Payment Procedures" for submitting Applications for Payment and the Schedule of Values.
 - 2. Division 1 Section "Project Management and Coordination" for submitting and distributing meeting and conference minutes and for submitting Coordination Drawings.
 - 3. Division 1 Section "Construction Progress Documentation" for submitting schedules and reports, including Contractor's Construction Schedule and the Submittals Schedule.
 - 4. Division 1 Section "Quality Requirements" for submitting test and inspection reports and for modeling requirements.
 - 5. Division 1 Section "Closeout Procedures" for submitting warranties.
 - 6. Division 1 Section "Project Record Documents" for submitting Record Drawings, Record Specifications, and Record Product Data.
 - 7. Division 1 Section "Operation and Maintenance Data" for submitting operation and maintenance manuals.

1.3 DEFINITIONS

- A. Action Submittals: Written and graphic information that requires Architect's responsive action.
- B. Informational Submittals: Written information that does not require Architect's responsive action. Submittals may be rejected for not complying with requirements.

1.4 SUBMITTAL PROCEDURES

- A. General: Electronic copies of CAD Drawings of the Contract Drawings will be provided by Architect for Contractor's use in preparing submittals. 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 an 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.
 2. Additional copies submitted for maintenance manuals will be marked with action taken and will be returned.
- 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 ARCHITECT'S CAD FILES

- A. General: At Contractor's written request, copies of Architect's CAD files will be provided to Contractor for Contractor's use in connection with Project, subject to the following conditions:
 - 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 Architect's waiver of release form before files will be delivered to the contractor.

PART 2 - PRODUCTS

2.1 ACTION SUBMITTAL

- A. General: Prepare and submit Action Submittals required by individual Specification Sections.
- B. Product Data: Compile 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 drawings.
 - 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 certification requirements.
 - l. Notation of dimensions established by field measurement.
 - m. Relationship to adjoining construction clearly indicated.
 - n. Seal and signature of professional engineer if specified.
 - o. Wiring Diagrams: Differentiate between manufacturer-installed and field-installed wiring.
 2. Sheet Size: Except for templates, patterns, and similar full-size drawings, submit Shop Drawings on sheets at least 8-1/2 by 11 inches (215 by 280 mm) but no larger than 30 by 40 inches (750 by 1000 mm).
 3. Number of Copies: Submit six (6) opaque copies of each submittal, unless copies are required for operation and maintenance manuals. Submit five copies where copies are required for operation and maintenance manuals. Architect will retain three copies; remainder will be returned.
- D. Samples: Submit Samples for review of kind, color, pattern, and texture for a check of these characteristics with other elements and for a comparison of these characteristics between submittal and actual component as delivered and installed.
1. Transmit Samples that contain multiple, related components such as accessories together in one submittal package.
 2. Identification: Attach label on unexposed side of Samples that includes the following:
 - a. Generic description of Sample.
 - b. Product name and name of manufacturer.
 - c. Sample source.
 - d. Number and title of appropriate Specification Section.

3. Disposition: Maintain sets of approved Samples at Project site, available for quality-control comparisons throughout the course of construction activity. Sample sets may be used to determine final acceptance of construction associated with each set.
 - a. Samples that may be incorporated into the Work are indicated in individual Specification Sections. Such Samples must be in an undamaged condition at time of use.
 - b. Samples not incorporated into the Work, or otherwise designated as Owner's property, are the property of Contractor.
4. Samples for Initial Selection: Submit manufacturer's color charts consisting of units or sections of units showing the full range of colors, textures, and patterns available.
 - a. Number of Samples: Submit one full set(s) of available choices where color, pattern, texture, or similar characteristics are required to be selected from manufacturer's product line. Architect will return submittal with options selected.
5. Samples for Verification: Submit full-size units or Samples of size indicated, prepared from same material to be used for the Work, cured and finished in manner specified, and physically identical with material or product proposed for use, and that show full range of color and texture variations expected. Samples include, but are not limited to, the following: partial sections of manufactured or fabricated components; small cuts or containers of materials; complete units of repetitively used materials; swatches showing color, texture, and pattern; color range sets; and components used for independent testing and inspection.
 - a. Number of Samples: Submit four sets of Samples. Architect will retain three sample sets; remainder will be returned.
 - 1) Submit a single Sample where assembly details, workmanship, fabrication techniques, connections, operation, and other similar characteristics are to be demonstrated.
 - 2) If variation in color, pattern, texture, or other characteristic is inherent in material or product represented by a Sample, submit at least four sets of paired units that show approximate limits of variations.
- E. Product Schedule or List: As required in individual Specification Sections, prepare a written summary indicating types of products required for the Work and their intended location. Include the following information in tabular form:
 1. Type of product. Include unique identifier for each product.
 2. Number and name of room or space.
 3. Location within room or space.
 4. Number of Copies: Submit three copies of product schedule or list, unless otherwise indicated. Architect will return two copies.
 - a. Mark up and retain one returned copy as a Project Record Document.

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

2.2 INFORMATIONAL SUBMITTALS

- A. General: Prepare and submit Informational Submittals required by other Specification Sections.
 - 1. Number of Copies: Submit three copies of each submittal, unless otherwise indicated. Architect will not return copies.
 - 2. Certificates and Certifications: Provide a notarized statement that includes signature of entity responsible for preparing certification. Certificates and certifications shall be signed by an officer or other individual authorized to sign documents on behalf of that entity.
 - 3. Test and Inspection Reports: Comply with requirements specified in Division 1 Section "Quality Requirements."
- B. Coordination Drawings: Comply with requirements specified in Division 1 Section "Project Management and Coordination."
- C. Contractor's Construction Schedule: Comply with requirements specified in Division 1 Section "Construction Progress Documentation."
- D. Qualification Data: Prepare written information that demonstrates capabilities and experience of firm or person. Include lists of completed projects with project names and addresses, names and addresses of architects and owners, and other information specified.

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

before installation of product. Include written recommendations for primers and substrate preparation needed for adhesion.

- P. Field Test Reports: Prepare reports written by a qualified testing agency, on testing agency's standard form, indicating and interpreting results of field tests performed either during installation of product or after product is installed in its final location, for compliance with requirements in the Contract Documents.
- Q. Maintenance Data: Prepare written and graphic instructions and procedures for operation and normal maintenance of products and equipment. Comply with requirements specified in Division 1 Section "Operation and Maintenance Data."
- R. Design Data: Prepare written and graphic information, including, but not limited to, performance and design criteria, list of applicable codes and regulations, and calculations. Include list of assumptions and other performance and design criteria and a summary of loads. Include load diagrams if applicable. Provide name and version of software, if any, used for calculations. Include page numbers.
- S. Manufacturer's Instructions: Prepare written or published information that documents manufacturer's recommendations, guidelines, and procedures for installing or operating a product or equipment. Include name of product and name, address, and telephone number of manufacturer. Include the following, as applicable:
1. Preparation of substrates.
 2. Required substrate tolerances.
 3. Sequence of installation or erection.
 4. Required installation tolerances.
 5. Required adjustments.
 6. Recommendations for cleaning and protection.
- T. Manufacturer's Field Reports: Prepare written information documenting factory-authorized service representative's tests and inspections. Include the following, as applicable:
1. Name, address, and telephone number of factory-authorized service representative making report.
 2. Statement on condition of substrates and their acceptability for installation of product.
 3. Statement that products at Project site comply with requirements.
 4. Summary of installation procedures being followed, whether they comply with requirements and, if not, what corrective action was taken.
 5. Results of operational and other tests and a statement of whether observed performance complies with requirements.
 6. Statement whether conditions, products, and installation will affect warranty.
 7. Other required items indicated in individual Specification Sections.
- U. Insurance Certificates and Bonds: Prepare written information indicating current status of insurance or bonding coverage. Include name of entity covered by insurance or bond, limits of coverage, amounts of deductibles, if any, and term of the coverage.

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

PART 3 - EXECUTION

3.1 CONTRACTOR'S REVIEW

- A. Review each submittal and check for coordination with other Work of the Contract and for compliance with the Contract Documents. Note corrections and field dimensions. Mark with approval stamp before submitting to Architect.
- B. Approval Stamp: Stamp each submittal with a uniform, approval stamp. Include Project name and location, submittal number, Specification Section title and number, name of reviewer, date of Contractor's approval, and statement certifying that submittal has been reviewed, checked, and approved for compliance with the Contract Documents.

3.2 ARCHITECT'S ACTION

- A. General: Architect will not review submittals that do not bear Contractor's approval stamp and will return them without action.
- B. Action Submittals: Architect will review each submittal, make marks to indicate corrections or modifications required, and return it. Architect will stamp each submittal with an action stamp and will mark stamp appropriately to indicate action taken, as follows:
 - 1. Furnish as Submitted.
 - 2. Revise as Noted & Furnish.
 - 3. Revise as Noted & Furnish. Submit Revised Copy for Record.
 - 4. Revise & Resubmit.
- C. Informational Submittals: Architect will review each submittal and will not return it, or will return it if it does not comply with requirements. Architect will forward each submittal to appropriate party.
- D. Partial submittals are not acceptable, will be considered nonresponsive, and will be returned without review.
- E. Submittals not required by the Contract Documents may not be reviewed and may be discarded.

END OF SECTION 013300

SECTION 013591 - HISTORIC TREATMENT PROCEDURES

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

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

1.2 SUMMARY

- A. Section includes general protection and treatment procedures for designated historic spaces, areas and surfaces in Project.

1.3 DEFINITIONS

- A. Consolidate: To strengthen loose or deteriorated materials in place.
- B. Design Reference Sample: A sample that represents the Architect's prebid selection of work to be matched; it may be existing work or work specially produced for the Project.
- C. Dismantle: To disassemble or detach a historic item from a surface, or a non-historic item from a historic surface using gentle methods and equipment to prevent damage to historic items and surfaces; disposing of items unless indicated to be salvaged or reinstalled.
- D. Historic: Spaces, areas, surfaces, materials, finishes, and overall appearance that are important to the successful preservation, rehabilitation, restoration and reconstruction as determined by Architect. Designated historic spaces, areas and surfaces are indicated on Drawings.
 - 1. Restoration Zones Grade 1 Areas: Areas of greatest architectural importance, integrity, and visibility; to be preserved and restored to the original, circa 1932 design and finish as indicated on Drawings.
 - 2. Renovation Zones Grade 2 Areas: Areas of significant architectural importance, integrity, and visibility; to be preserved and restored consistent with the remaining historic fabric and to the extent indicated on Drawings.
- E. Match: To blend with adjacent construction and manifest no apparent difference in material type, species, cut, form, detail, color, grain, texture, or finish; as approved by Architect.
- F. Refinish: To remove existing finishes to base material and apply new finish to match original, or as otherwise indicated.
- G. Reinstall: To protect removed or dismantled item, repair and clean it as indicated for reuse, and reinstall it in original position, or where indicated.

- H. Remove: To take down or detach a nonhistoric item located within a historic space, area, or room, using methods and equipment to prevent damage to historic items and surfaces; disposing of items unless indicated to be salvaged or reinstalled.
- I. Repair: To correct damage and defects, retaining existing materials, features, and finishes while employing as little new material as possible. This includes patching, piecing-in, splicing, consolidating, or otherwise reinforcing or upgrading materials.
- J. Replace: To remove, duplicate, and reinstall entire item with new material. The original item is the pattern for creating duplicates unless otherwise indicated.
- K. Replicate: To reproduce in exact detail, materials, and finish unless otherwise indicated.
- L. Reproduce: To fabricate a new item, accurate in detail to the original, and from either the same or a similar material as the original, unless otherwise indicated.
- M. Restore: To consolidate, replicate, reproduce, repair, and refinish as required to achieve the indicated results.
- N. Retain: To keep existing items that are not to be removed or dismantled.
- O. Reversible: New construction work, treatments, or processes that can be removed or undone in the future without damage to historic materials unless otherwise indicated.
- P. Salvage: To protect removed or dismantled items until time to reinstall or to deliver them to Owner if indicated.
- Q. Stabilize: To provide structural reinforcement of unsafe or deteriorated items while maintaining the essential forms as it exists at present; also, to reestablish a weather-resistant enclosure.
- R. Strip: To remove existing finish down to base material unless otherwise indicated.

1.4 COORDINATION

- A. Historic Treatment Subschedule: A construction schedule coordinating the sequencing and scheduling of historic treatment work for entire Project, including each activity to be performed in historic spaces and areas, and on historic surfaces; and based on Contractor's Construction Schedule. Secure time commitments for performing critical construction activities from separate entities responsible for historic treatment work.
 - 1. Schedule construction operations in sequence required to obtain best historic treatment results.
 - 2. Coordinate sequence of historic treatment work activities to accommodate the following:
 - a. Other known work in progress..
 - b. Tests and inspections.
 - 3. Detail sequence of historic treatment work, with start and end dates.

4. Utility Services: Indicate how long utility services will be interrupted. Coordinate shutoff, capping, and continuation of utility services.
5. Use of existing stairs and entrance doors.
6. Equipment Data: List gross loaded weight, axle-load distribution, and wheel-base dimension data for mobile and heavy equipment proposed for use. Do not use such equipment without certification from the Architect and Owner that the structure and surfaces can support the imposed loadings without damage.

- B. Public Circulation: Coordinate historic treatment work with public circulation patterns at Project site. Some work is near public circulation patterns, specifically the south terrace and north handicap ramp. Public circulation patterns cannot be closed off entirely, and in places can be only temporarily redirected around small areas of work. Plan and execute the Work accordingly.

1.5 PROJECT MEETINGS FOR HISTORIC TREATMENT

- A. Preliminary Historic Treatment Conference: Before starting historic treatment work, Architect will conduct conference at Project site to be held during the preconstruction meeting.

1. Attendees: In addition to representatives of Owner, Architect, and Contractor, historic treatment specialists and installers whose work interfaces with or affects historic treatment shall be represented at the meeting.
2. Agenda: Discuss items of significance that could affect progress of historic treatment work, including review of the following:

- a. Historic Treatment Subschedule: Discuss and finalize; verify availability of materials, historic treatment specialists' personnel, equipment, and facilities needed to make progress and avoid delays.
- b. Fire-prevention plan.
- c. Governing regulations.
- d. Areas where existing construction is to remain and the required protection.
- e. Hauling routes.
- f. Sequence of historic treatment work operations.
- g. Storage, protection, and accounting for salvaged and specially fabricated items.
- h. Existing conditions, staging, and structural loading limitations of areas where materials are stored.
- i. Qualifications of personnel assigned to historic treatment work and assigned duties.
- j. Requirements for extent and quality of work, tolerances, and required clearances.
- k. Methods and procedures related to historic treatments, including product manufacturers' written instructions and precautions regarding historic treatment procedures and their effects on materials, components, and vegetation.
- l. Embedded work such as flashings, special details, collection of wastes, protection of occupants and the public, and condition of other construction that affect the Work or will affect the work.

3. Reporting: Architect will record conference results and distribute copies to everyone in attendance and to others affected by decisions or actions resulting from conference.

- B. Coordination Meetings: Conduct coordination meetings specifically for historic treatment work at biweekly intervals. Coordination meetings are in addition to specific meetings held for other purposes, such as progress meetings and preinstallation conferences.
1. Attendees: In addition to representatives of Owner, Architect, and Contractor, each historic treatment specialist, supplier, installer, and other entity concerned with progress or involved in planning, coordination, or performance of historic treatment work activities shall be represented at these meetings. All participants at conference shall be familiar with Project and authorized to conclude matters relating to historic treatment work.
 2. Agenda: Review and correct or approve minutes of previous coordination meeting. Review other items of significance that could affect progress of historic treatment work. Include topics for discussion as appropriate to status of Project.
 - a. Historic Treatment Subschedule: Review progress since last coordination meeting. Determine whether each schedule item is on time, ahead of schedule, or behind schedule. Determine how construction behind schedule will be expedited with retention of quality, secure commitments from parties involved to do so. Discuss whether schedule revisions are required to ensure that current and subsequent activities are completed within the Contract Time.
 - b. Schedule Updating: Revise Contractor's Historic Treatment Subschedule after each coordination meeting where revisions to schedule have been made or recognized. Issue revised schedule concurrently with report of each meeting.
 - c. Review present and future needs of each entity present, including review items listed in the "Preliminary Historic Treatment Conference" Paragraph above and the following:
 - 1) Interface requirements of historic treatment work with other Project Work.
 - 2) Status of submittals for historic treatment work.
 - 3) Access to historic treatment work.
 - 4) Effectiveness of fire-prevention plan.
 - 5) Quality and work standards of historic treatment work.
 - 6) Change Orders for historic treatment work.
 2. Reporting: Record meeting results and distribute copies to everyone in attendance and to others affected by decisions or actions resulting from each meeting.

1.6 MATERIALS OWNERSHIP

- A. Historic items, relics, and similar objects including, but not limited to, commemorative plaques and tablets, antiques, and other items of interest or value to Owner that may be encountered or uncovered during the Work, regardless of whether they were previously documented, remain Owner's property.

1.7 INFORMATIONAL SUBMITTALS

- A. Historic Treatment Subschedule:

1. Submit historic treatment subschedule within seven (7) days of date established for commencement of historic treatment work.

- B. Preconstruction Documentation: Show preexisting conditions of adjoining construction and site improvements, including finish surfaces, that might be misconstrued as damage caused by Contractor's historic treatment operations.

1.8 QUALITY ASSURANCE

- A. Safety and Health Standard: Comply with ANSI/ASSE A10.6.

1.9 STORAGE AND HANDLING OF HISTORIC MATERIALS

- A. Historic Materials for Reinstallation
 1. Repair and clean historic items for reuse as indicated.
 2. Pack or crate items after cleaning and repairing; cushion against damage during handling. Label contents of containers.
 3. Protect items from damage during transport and storage.
 4. Reinstall items in locations indicated. Comply with installation requirements for new materials and equipment unless otherwise indicated. Provide connections, supports, and miscellaneous materials to make item functional for use indicated.
- B. Existing Historic Materials to Remain: Protect construction indicated to remain against damage and soiling from construction work. Where permitted by Architect, items may be dismantled and taken to a suitable, protected storage location during construction work and reinstalled in their original locations after historic treatment and construction work in the vicinity is complete.

1.10 FIELD CONDITIONS

- A. Size Limitations in Historic Spaces: Materials, products, and equipment used for performing the Work and for transporting debris, materials, and products shall be of sizes that clear surfaces within historic spaces, areas, openings, including temporary protection, by 6 inches or more.

PART 2 - PRODUCTS - (Not Used)

PART 3 - EXECUTION

3.1 PROTECTION, GENERAL

- A. Protect persons, motor vehicles, surrounding surfaces of building, building site, plants, and surrounding buildings from harm resulting from historic treatment procedures.

1. Use only proven protection methods, appropriate to each area and surface being protected.
 2. Provide temporary barricades, barriers, and directional signage to exclude the public from areas where historic treatment work is being performed.
 3. Erect temporary barriers to form and maintain fire-egress routes.
 4. Erect temporary protective covers over walkways and at points of pedestrian and vehicular entrance and exit that must remain in service during historic treatment work.
 5. Contain dust and debris generated by historic treatment work, and prevent it from reaching the public or adjacent surfaces.
 6. Provide shoring, bracing, and supports as necessary. Do not overload structural elements.
 7. Protect floors and other surfaces along hauling routes from damage, wear, and staining.
 8. Provide supplemental sound-control treatment to isolate removal and dismantling work from other areas of the building.
- B. Temporary Protection of Historic Materials:
1. Protect existing historic materials with temporary protections and construction. Do not remove existing materials unless otherwise indicated.
 2. Do not attach temporary protection to historic surfaces except as indicated as part of the historic treatment program and approved by Architect.
- C. Comply with each product manufacturer's written instructions for protections and precautions. Protect against adverse effects of products and procedures on people and adjacent materials, components, and vegetation.
- D. Utility and Communications Services:
1. Notify Owner, Architect, authorities having jurisdiction, and entities owning or controlling wires, conduits, pipes, and other services affected by historic treatment work before commencing operations.
 2. Disconnect and cap pipes and services as required by authorities having jurisdiction, as required for historic treatment work.
 3. Maintain existing services unless otherwise indicated; keep in service, and protect against damage during operations. Provide temporary services during interruptions to existing utilities.
- E. Existing Drains: Prior to the start of work in an area, test drainage system to ensure that it is functioning properly. Notify Architect immediately of inadequate drainage or blockage. Do not begin work in an area until the drainage system is functioning properly.
1. Prevent solids such as stone or mortar residue or other debris from entering the drainage system. Clean out drains and drain lines that become sluggish or blocked by sand or other materials resulting from historic treatment work.
 2. Protect drains from pollutants. Block drains or filter out sediments, allowing only clean water to pass.

3.2 PROTECTION FROM FIRE

- A. General: Follow fire-prevention plan and the following:
1. Comply with NFPA 241 requirements unless otherwise indicated.
 2. Remove and keep area free of combustibles, including rubbish, paper, waste, and chemicals, unless necessary for the immediate work.
 - a. If combustible material cannot be removed, provide fire blankets to cover such materials.
 3. Prohibit smoking by all persons on State property which includes the sidewalks around the Fountain, the Park and parking lot.
- B. Heat-Generating Equipment and Combustible Materials: Comply with the following procedures while performing work with heat-generating equipment or combustible materials, including welding, torch-cutting, soldering, brazing, removing paint with heat, or other operations where open flames or implements using high heat or combustible solvents and chemicals are anticipated:
1. Obtain Owner's approval for operations involving use of open-flame or other high-heat equipment. Notify Owner at least 72 hours before each occurrence, indicating location of such work.
 2. Do not perform work with heat-generating equipment in areas where flammable liquids or explosive vapors are present or thought to be present. Use a combustible gas indicator test to ensure that the area is safe.
 3. Use fireproof baffles to prevent flames, sparks, hot gases, or other high-temperature material from reaching surrounding combustible material.
- C. Fire Extinguishers, Fire Blankets, and Rag Buckets: Maintain fire extinguishers, fire blankets, and rag bucket for disposal of rags with combustible liquids. Maintain each as suitable for the type of fire risk in each work area. Ensure that nearby personnel and the fire-watch personnel are trained in fire-extinguisher and blanket use.

3.3 GENERAL HISTORIC TREATMENT

- A. Have historic treatment work performed only by qualified historic treatment specialists.
- B. Ensure that supervisory personnel are present when historic treatment work begins and during its progress.
- C. Record existing work before each procedure (preconstruction), and record progress during the work. Use digital preconstruction documentation photographs. Comply with requirements in Section 013233 "Photographic Documentation."
- D. Perform surveys of Project Site as the Work progresses to detect hazards resulting from historic treatment procedures.

- E. Follow the procedures in subparagraphs below and procedures approved in historic treatment program unless otherwise indicated:
 - 1. Retain as much existing material as possible; repair and consolidate rather than replace.
 - 2. Use additional material or structure to reinforce, strengthen, prop, tie, and support existing material or structure.
 - 3. Use reversible processes wherever possible.
 - 4. Use historically accurate repair and replacement materials and techniques unless otherwise indicated.
 - 5. Record existing work before each procedure (preconstruction) and progress during the work with digital preconstruction documentation photographs. Comply with requirements in Section 013233 "Photographic Documentation."
- F. Notify Architect of visible change in the integrity of material or components whether from environmental causes including biological attack, UV degradation, freezing, or thawing or from structural defects including cracks, movement, or distortion.
 - 1. Do not proceed with the work in question until directed by Architect.
- G. Where missing features are indicated to be repaired or replaced, provide work with appearance based on accurate duplications rather than on conjecture, subject to approval of Architect.
- H. Where work requires existing features to be removed or dismantled and reinstalled, perform these operations without damage to the material itself, to adjacent materials, or to the substrate.
- I. Identify new and replacement materials and features with permanent marks hidden in the completed Work to distinguish them from original materials. Record a legend of identification marks and the locations of the items on record Drawings.

END OF SECTION 013591

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NOT FOR BIDDING

NOT FOR BIDDING

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.
 - 2. Division 1 Section "Cutting and Patching" for repair and restoration of construction disturbed by testing and inspecting activities.

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, Sub-contractor, or Sub-subcontractor, to perform a particular construction operation, including installation, erection, application, and similar operations.
 - 1. Using a term such as "carpentry" does not imply that certain construction activities must be performed by accredited or unionized individuals of a corresponding generic name, such as "carpenter." It also does not imply that requirements specified apply exclusively to trades people of the corresponding generic name.
- K. Experienced: When used with an entity, "experienced" means having successfully completed a minimum of five previous projects similar in size and scope to this Project; being familiar with special requirements indicated; and having complied with requirements of authorities having jurisdiction.

1.4 CONFLICTING REQUIREMENTS

- A. General: If compliance with two or more standards is specified and the standards establish different or conflicting requirements for minimum quantities or quality levels, comply with the

most stringent requirement. Refer uncertainties and requirements that are different, but apparently equal, to Architect for a decision before proceeding.

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

1.5 SUBMITTALS

- A. **Qualification Data:** For testing agencies specified in "Quality Assurance" Article to demonstrate their capabilities and experience. Include proof of qualifications in the form of a recent report on the inspection of the testing agency by a recognized authority.

- B. **Schedule of Tests and Inspections:** Prepare in tabular form and include the following:

1. Specification Section number and title.
2. Description of test and inspection.
3. Identification of applicable standards.
4. Identification of test and inspection methods.
5. Number of tests and inspections required.
6. Time schedule or time span for tests and inspections.
7. Entity responsible for performing tests and inspections.
8. Requirements for obtaining samples.
9. Unique characteristics of each quality-control service.

- C. **Reports:** Prepare and submit certified written reports that include the following:

1. Date of issue.
2. Subject 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 authority 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.

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

1. Build mockups in location and of size indicated or, if not indicated, as directed by Architect.
2. Notify Architect seven days in advance of dates and times when mockups will be constructed.
3. Demonstrate the proposed range of aesthetic effects and workmanship.

4. Obtain Architect's approval of mockups before starting work, fabrication, or construction.
 - a. Allow seven days for initial review and each re-review of each mockup.
5. Maintain mockups during construction in an undisturbed condition as a standard for judging the completed Work.
6. Demolish and remove mockups when directed, unless otherwise indicated.

1.7 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 re-inspecting 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 to 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.

Testing and inspecting requested by Contractor and not required by the Contract Documents are Contractor's responsibility.

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

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.
2. Comply with the Contract Document requirements for Division 1 Section "Cutting and Patching."

- 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

NOT FOR BIDDING

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 these 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/CES'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

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. Water Service: Water from Owner's existing water system is available for use without metering and without payment of use charges. Provide modified connections and extensions of services as required for construction operations. Restore water service arrangement at the completion of the Work.
- C. Electric Power Service: Electric power from Owner's existing system is available for use without metering and without payment of use charges. Provide modified connections and extensions of services as required for construction operations. Restore connections to original configuration at the completion of the work.
- D. Telephone Service: Provide phone service to the site as required to contact Contractor site representatives.

1.4 INFORMATIONAL SUBMITTALS

- A. Site Plan: Show temporary facilities, utility hookups, staging areas, and parking areas for construction personnel.
- B. Moisture-Protection Plan: Describe procedures and controls for protecting materials and construction from water absorption and damage.
 - 1. Describe delivery, handling, and storage provisions for materials subject to water absorption or water damage.
 - 2. Indicate procedures for discarding water-damaged materials, protocols for mitigating water intrusion into completed Work, and replacing water-damaged Work.

3. Indicate sequencing of work that requires water, such as plastering and describe plans for dealing with water from these operations. Show procedures for verifying that wet construction has dried sufficiently to permit installation of finish materials.

C. Dust Control Plan: Submit coordination drawing and narrative that indicates the dust control measures proposed for use, proposed locations, and proposed time frame for their operation. Identify further options if proposed measures are later determined to be inadequate. Include the following:

1. Waste handling procedures.
2. Other dust-control measures.

1.5 QUALITY ASSURANCE

- A. Electric Service: Comply with NFPA 70, NEMA, and UL standards and regulations for temporary electric service. Install service to comply with NFPA 70.
- B. Comply with Federal, State and local codes and regulations as well as utility company requirements.
- C. Coordinate work with Owner's requirements.
- D. 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.
- E. 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. Temporary Use of Permanent Facilities: Installer of each permanent service shall assume responsibility for operation, maintenance, and protection of each permanent service during its use as a construction facility before Owner's acceptance, regardless of previously assigned responsibilities.
- B. Maintain excavations free of water. Provide and operate pumping equipment. Grade site to drain water away from buildings and excavations.
- C. Provide temporary protection for installed products. Control traffic in immediate area to minimize damage.
- D. Prohibit traffic and storage on waterproofed surfaces, on lawns and landscaped areas unless preapproved by the Owner.

PART 2 - PRODUCTS

2.1 MATERIALS

- A. Chain-Link Fencing: Minimum 2-inch (50-mm), 0.148-inch- (3.8-mm-) thick, galvanized-steel, chain-link fabric fencing; minimum 6 feet (1.8 m) high with galvanized-steel pipe posts; minimum 2-3/8-inch- (60-mm-) OD line posts and 2-7/8-inch- (73-mm-) OD corner and pull posts, with 1-5/8-inch- (42-mm-) OD top rails.
- B. Portable Chain-Link Fencing: Minimum 2-inch (50-mm), 0.148-inch- (3.8-mm-) thick, galvanized-steel, chain-link fabric fencing; minimum 6 feet (1.8 m) high with galvanized-steel pipe posts; minimum 2-3/8-inch- (60-mm-) OD line posts and 2-7/8-inch- (73-mm-) OD corner and pull posts, with 1-5/8-inch- (42-mm-) OD top and bottom rails. Provide concrete bases for supporting posts.
- C. Lumber and Plywood: Pressure-treated dimension lumber and plywood suitable for exterior exposure.
- D. Paint: Exterior latex primer and matching topcoat.

2.2 TEMPORARY FACILITIES

- A. Storage and Fabrication Sheds: Provide sheds sized, furnished, and equipped to accommodate materials and equipment for construction operations.
 - 1. Store combustible materials apart from building.

2.3 EQUIPMENT

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

PART 3 - EXECUTION

3.1 INSTALLATION, GENERAL

- A. Locate facilities where they will serve Project adequately and result in minimum interference with performance of the Work. Relocate and modify facilities as required by progress of the Work.
- B. Provide each facility ready for use when needed to avoid delay. Do not remove until facilities are no longer needed or are replaced by authorized use of completed permanent facilities.

3.2 TEMPORARY UTILITY INSTALLATION

- A. General: Install temporary service or connect to existing service.
 - 1. Arrange with utility company, Owner, and existing users for time when service can be interrupted, if necessary, to make connections for temporary services.
- B. Water Service: Connect to Owner's existing water service facilities. Clean and maintain water service facilities in a condition acceptable to Owner. At Substantial Completion, restore these facilities to condition existing before initial use.

Provide potable water for drinking and construction purposes.

- 1. The Contractor shall make all necessary arrangements for temporary water service for construction purposes, and furnish at his own expense all piping and accessories required.
 - 2. Take positive measures to preclude cross-connections and backflow.
 - 3. The Contractor will assume the cost of water consumed if responsible care and restraint are not exercised by the contractor in its use.
- C. Sanitary Facilities: Provide temporary toilets, wash facilities, and drinking water for use of construction personnel. Comply with requirements of authorities having jurisdiction for type, number, location, operation, and maintenance of fixtures and facilities.
- D. Construction Aids: The General Contractor and each Subcontractor shall provide construction aids and equipment required by their personnel and to facilitate execution of their Work. Examples are scaffolds, staging, ladders, stairs, ramps, runways, platforms, railings, hoists, cranes, chutes, and other such facilities and equipment. Mutual use may be arranged by the Contractor when applicable.
- E. Isolation of Work Areas near Occupied Facilities: Control dust, fumes, and odors from entering occupied areas.
 - 1. Shut down operations that may create excessive dust.
 - 2. Perform daily construction cleanup and final cleanup.
 - 3. DNREC and/or the City may stop operations that are excessively dusty.
 - 4. Dust that lands on public vehicles may need to be cleaned by the contractor via free car washes at local providers.
- F. Electric Power Service: Connect to Owner's existing electric power service. Maintain equipment in a condition acceptable to Owner.
- G. Lighting: Provide temporary lighting with local switching that provides adequate illumination for construction operations, observations and inspections.
 - 1. Install and operate temporary lighting that fulfills security and protection requirements without operating entire system.

3.3 SUPPORT FACILITIES INSTALLATION

- A. General: Comply with the following:

1. Provide construction for temporary shops and sheds located within construction area or within 30 feet (9 m) of building lines that is noncombustible according to ASTM E 136. Comply with NFPA 241.
 2. Maintain support facilities until Architect/Engineer schedules Substantial Completion inspection. Remove before Substantial Completion. Personnel remaining after Substantial Completion will be permitted to use permanent facilities, under conditions acceptable to Owner.
- B. 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.
- C. Traffic Controls: Comply with requirements of authorities having jurisdiction.
1. Protect existing site improvements to remain including curbs, pavement, and utilities.
 2. Maintain access to fire-fighting equipment and access to fire hydrants and control valves.
 3. Provide and maintain uninterrupted vehicular access to site.
 4. Maintain traffic areas free of excavated materials, construction equipment, products, snow, ice and debris.
- D. Traffic Regulation: Obtain all necessary permits for access to and use of public roads and streets for construction and hauling purposes. Comply with traffic control regulations applying to permit issuance.
1. Provide markers, signs, lights and barriers on and near the site to safely control construction traffic and public access.
- E. Parking: Use designated areas of Owner's existing parking areas for construction personnel's private vehicles and of Contractor's light-weight vehicles.
- F. Cleaning During Construction: Control accumulation of waste materials and rubbish. Periodically dispose of legally off site.
1. Clean interior areas prior to the start of finish work. Maintain areas free of dust and other contaminants during finishing operations.
- G. 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.

- H. Protection of Existing Facilities: Protect existing vegetation, equipment, structures, utilities, and other improvements at Project site and on adjacent properties, except those indicated to be removed or altered. Repair damage to existing facilities.
- I. 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.
- J. 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.
1. Verify that flows of water redirected from construction areas or generated by construction activity do not enter or cross tree and plant-protection zones.
 2. Clean, repair, and restore adjoining properties and roads affected by erosion and sedimentation from Project site during the course of Project.
 3. Remove erosion and sedimentation controls and restore and stabilize areas disturbed during removal.
- K. Tree and Plant Protection: Install temporary fencing located as indicated or outside the drip line of trees to protect vegetation from damage from construction operations. Protect tree root systems from damage, flooding, and erosion.
- L. Site Enclosure Fence: Before construction operations begin, furnish and install site enclosure fence in a manner that will prevent people and animals from easily entering site except by entrance gates.
1. Extent of Fence: As required to enclose portion of site determined sufficient to accommodate construction operations and maintain security.
 2. Maintain security by limiting number of keys and restricting distribution to authorized personnel. Furnish 10 sets of keys to Owner unless double locking is utilized where both the contractor's and DNREC's locks are used.
- M. Barricades, Warning Signs, and Lights: Comply with requirements of authorities having jurisdiction for erecting structurally adequate barricades, including warning signs and lighting.
- N. Temporary Fire Protection: Install and maintain temporary fire-protection facilities of types needed to protect against reasonably predictable and controllable fire losses. Comply with NFPA 241; manage fire-prevention program.
1. Prohibit smoking in construction areas.

3.4 MOISTURE CONTROL

- A. Contractor's Moisture-Protection Plan: Avoid trapping water in finished work. Document visible signs of mold that may appear during construction.
- B. Exposed Construction Phase: Before installation of weather barriers, when materials are subject to wetting and exposure and to airborne mold spores, protect as follows:

1. Protect porous materials from water damage.
2. Protect stored and installed material from flowing or standing water.
3. Keep porous and organic materials from coming into prolonged contact with concrete.
4. Remove standing water from decks.

3.5 OPERATION, TERMINATION, AND REMOVAL

- A. Supervision: Enforce strict discipline in use of temporary facilities. To minimize waste and abuse, limit availability of temporary facilities to essential and intended uses.
- B. Maintenance: Maintain facilities in good operating condition until removal.
 1. Maintain operation of temporary enclosures, heating, cooling, humidity control, ventilation, and similar facilities on a 24-hour basis where required to achieve indicated results and to avoid possibility of damage.
- C. Temporary Facility Changeover: Do not change over from using temporary security and protection facilities to permanent facilities until Substantial Completion.
- D. Termination and Removal: Remove each temporary facility when need for its service has ended, when it has been replaced by authorized use of a permanent facility, or no later than Substantial Completion. Complete or, if necessary, restore permanent construction that may have been delayed because of interference with temporary facility. Repair damaged Work, clean exposed surfaces, and replace construction that cannot be satisfactorily repaired.
 1. Material and facilities that constitute temporary facilities are property of Contractor. Owner reserves right to take possession of Project identification signs.
 2. At Substantial Completion, repair, renovate, and clean permanent facilities used during construction period. Comply with final cleaning requirements specified in Section 017700 "Closeout Procedures."

END OF SECTION 015000

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NOT FOR BIDDING

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 all contractors 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. Asbestos and Hazardous Materials Procedure: 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.
- C. Comply with all applicable provisions of the National Emission Standards for Asbestos (40 CFR 61 Subpart B).
- D. Comply with the local regulations of polychlorinated biphenyl (PCB). Since these chemicals are used in some existing installation, existing fixed and vehicular transformers, assure proper marking, handling, and disposal of any PCB's in accordance with the regulations of 40 CFR 761.
1. Do not use PCB chemical substance, mixture, equipment, container, sealant, coating, or dust-control agent except in accordance with regulations of 40 CFR 761.
 2. Immediately report any PCB chemical substance, mixture, equipment, container, sealant, coating or dust control agent found stored within the project area to the Architect in writing and stop work in the area.
- E. Lead paint is not known to be present.
- F. Asbestos is not known to be present

1.5 CONTROL AND DISPOSAL OF 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 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 transport.

PART 2 - PRODUCTS (Not Used)

PART 3 - EXECUTION (Not Used)

END OF SECTION 01510

NOT FOR BIDDING

SECTION 015639 - TEMPORARY TREE AND PLANT PROTECTION

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 general protection and pruning of existing trees and plants that are affected by execution of the Work, whether temporary or permanent construction.
- B. Related Sections:
 - 1. Section 015000 "Temporary Facilities and Controls" for temporary site fencing.

1.3 DEFINITIONS

- A. Caliper: Diameter of trunk measured by a diameter tape at 6 inches (150 mm) above the ground for trees up to, and including, 4-inch (100-mm) size; and 12 inches (300 mm) above the ground for trees larger than 4-inch (100-mm) size.
- B. Plant-Protection Zone: Area surrounding individual trees, groups of trees, shrubs, or other vegetation to be protected during construction, and indicated on Drawings.
- C. Tree-Protection Zone: Area surrounding individual trees or groups of trees to be protected during construction, and defined by a circle concentric with each tree with a radius 1.5 times the diameter of the drip line unless otherwise indicated.
- D. Vegetation: Trees, shrubs, groundcovers, grass, and other plants.

1.4 ACTION SUBMITTALS

- A. Product Data: For each type of product indicated.
- B. Samples for Verification: For each type of the following:
 - 1. Protection-Zone Fencing: Assembled Samples of manufacturer's standard size made from full-size components.
 - 2. Protection-Zone Signage: Full-size Samples of each size and text, ready for installation.

1.5 INFORMATIONAL SUBMITTALS

- A. Existing Conditions: Documentation of existing trees and plantings indicated to remain, which establishes preconstruction conditions that might be misconstrued as damage caused by construction activities.
1. Use sufficiently detailed photographs or videotape.
 2. Include plans and notations to indicate specific wounds and damage conditions of each tree or other plants designated to remain.

1.6 QUALITY ASSURANCE

- A. Tree Service Firm Qualifications: An experienced tree service firm that has successfully completed temporary tree and plant protection work similar to that required for this Project and that will assign an experienced, qualified arborist to Project site during execution of the Work.
- B. Preinstallation Conference: Conduct conference at Project site.
1. Review methods and procedures related to temporary tree and plant protection including, but not limited to the following:
 - a. Construction schedule. Verify availability of materials, personnel, and equipment needed to make progress and avoid delays.
 - b. Enforcing requirements for protection zones.
 - c. Field quality control.

1.7 PROJECT CONDITIONS

- A. The following practices are prohibited within protection zones:
1. Storage of construction materials, debris, or excavated material.
 2. Parking vehicles or equipment.
 3. Foot traffic.
 4. Erection of sheds or structures.
 5. Impoundment of water.
 6. Excavation or other digging unless otherwise indicated.
 7. Attachment of signs to or wrapping materials around trees or plants unless otherwise indicated.
- B. Do not direct vehicle or equipment exhaust toward protection zones.
- C. Prohibit heat sources, flames, ignition sources, and smoking within or near protection zones and organic mulch.

PART 2 - PRODUCTS

2.1 MATERIALS

- A. Protection-Zone Fencing: Fencing fixed in position and meeting one of the following requirements.
1. Plastic Protection-Zone Fencing: Plastic construction fencing constructed of high-density extruded and stretched polyethylene fabric with 2-inch (50-mm) maximum opening in pattern and weighing a minimum of 0.4 lb/ft. (0.6 kg/m); remaining flexible from minus 60 to plus 200 deg F (minus 16 to plus 93 deg C); inert to most chemicals and acids; minimum tensile yield strength of 2000 psi (13.8 MPa) and ultimate tensile strength of 2680 psi (18.5 MPa); secured with plastic bands or galvanized-steel or stainless-steel wire ties; and supported by tubular or T-shape galvanized-steel posts spaced not more than 8 feet (2.4 m) apart.
 - a. Height: 4 feet (1.2 m).
 - b. Color: High-visibility orange, nonfading.
- B. Protection-Zone Signage: Shop-fabricated, rigid plastic or metal sheet with attachment holes prepunched and reinforced, legibly printed with nonfading lettering and as follows:
1. Size and Text: 30" x 48" NOT ENTER. TREE PROTECTION ZONE.
 2. Lettering: 3/4" (19-mm) high minimum, white characters on red background.

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Erosion and Sedimentation Control: Examine the site to verify that temporary erosion- and sedimentation-control measures are in place. Verify that flows of water redirected from construction areas or generated by construction activity do not enter or cross protection zones.
- B. For the record, prepare written report listing conditions detrimental to tree and plant protection.

3.2 PREPARATION

- A. Locate and clearly identify trees, shrubs, and other vegetation to remain. Flag each tree trunk at 54 inches (1372 mm) above the ground.
- B. Protect tree root systems from damage caused by runoff or spillage of noxious materials while mixing, placing, or storing construction materials. Protect root systems from ponding, eroding, or excessive wetting caused by dewatering operations.

3.3 TREE- AND PLANT-PROTECTION ZONES

- A. Protection-Zone Fencing: Install protection-zone fencing along edges of protection zones before materials or equipment are brought on the site and construction operations begin in a manner that will prevent people from easily entering protected area except by entrance gates. Construct fencing so as not to obstruct safe passage or visibility at vehicle intersections where fencing is located adjacent to pedestrian walkways or in close proximity to street intersections, drives, or other vehicular circulation.
1. Chain-Link Fencing: Install to comply with ASTM F 567 and with manufacturer's written instructions.
 2. Posts: Set or drive posts into ground one-third the total height of the fence without concrete footings. Where a post is located on existing paving or concrete to remain, provide appropriate means of post support acceptable to Architect.
- B. Protection-Zone Signage: Install protection-zone signage in visibly prominent locations in a manner approved by Architect. Install one sign spaced approximately every 20 feet (6 m) on protection-zone fencing, but no more than one sign with each facing a different direction.
- C. Maintain protection zones free of weeds and trash.
- D. Repair or replace trees, shrubs, and other vegetation indicated to remain that are damaged by construction operations, in a manner approved by Architect.
- E. Maintain protection-zone fencing and signage in good condition as acceptable to Architect and remove when construction operations are complete and equipment has been removed from the site.
1. Do not remove protection-zone fencing, even temporarily, to allow deliveries or equipment access through the protection zone.
 2. Temporary access is permitted subject to preapproval in writing by arborist if a root buffer effective against soil compaction is constructed as directed by arborist. Maintain root buffer so long as access is permitted.

3.4 REPAIR AND REPLACEMENT

- A. General: Repair or replace trees, shrubs, and other vegetation indicated to remain or be relocated that are damaged by construction operations, in a manner approved by Architect.
1. Submit details of proposed root cutting and tree and shrub repairs.
 2. Have arborist perform the root cutting, branch pruning, and damage repair of trees and shrubs.
 3. Treat damaged trunks, limbs, and roots according to arborist's written instructions.
 4. Perform repairs within 24 hours.
 5. Replace vegetation that cannot be repaired and restored to full-growth status, as determined by Architect.

- B. Trees: Remove and replace trees indicated to remain that are more than 25 percent dead or in an unhealthy condition before the end of the corrections period or are damaged during construction operations that Architect determines are incapable of restoring to normal growth pattern.
 - 1. Provide new trees of same size and species as those being replaced for each tree that measures 6 inches (150 mm) or smaller in caliper size.
 - a. Species: Match existing tree to be replaced.
- C. Soil Aeration: Where directed by Architect, aerate surface soil compacted during construction. Aerate 10 feet (3 m) beyond drip line and no closer than 36 inches (900 mm) to tree trunk. Drill 2-inch- (50-mm-) diameter holes a minimum of 12 inches (300 mm) deep at 24 inches (600 mm) o.c. Backfill holes with an equal mix of augered soil and sand.

3.5 DISPOSAL OF SURPLUS AND WASTE MATERIALS

- A. Disposal: Remove excess excavated material, displaced trees, trash and debris, and legally dispose of them off Owner's property.

END OF SECTION 015639

NOT FOR BIDDING

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. Project 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.

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.

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, as 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.

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: Reprinted 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 33 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 re-design 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



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 year old 5-10 years old More than 10 years old

Differences between proposed substitution and specified product:

Point-by-point comparison 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 _____

Drawings 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 01 Section "Project Management and Coordination" for procedures for coordinating field engineering with other construction activities.
 - 2. Division 01 Section "Cutting and Patching" for procedural requirements for cutting and patching necessary for the installation or performance of other components of the Work.
 - 3. Division 1 Section "Closeout Procedures" for submitting final property survey with Project Record Documents, recording of Owner-accepted deviations from indicated lines and levels, and final cleaning.
 - 4. Division 02 Section "Selective Demolition" for demolition and removal of selected portions of the building.

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 sanitary sewer, storm sewer, and water-service piping; and underground electrical services.

2. Furnish location data for work related to Project that must be performed by public utilities serving Project site.

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 is required by other Sections, include the following:

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

2. Verify compatibility with and suitability of substrates, including compatibility with existing finishes or primers.

3. Examine roughing-in for mechanical and electrical systems to verify actual locations of connections before equipment and fixture installation.

4. Examine walls, floors, and roofs for suitable conditions where products and systems are to be installed.

5. 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 survey and existing benchmarks. If discrepancies are discovered, notify Architect promptly.
- B. Site Improvements: Locate and lay out site improvements, including pavements, grading, fill and topsoil placement, utility slopes, and invert elevations.
- C. Building Lines and Levels: Locate and lay out control lines and levels for foundations including those required for mechanical and electrical work. Transfer survey markings and elevations for use with control lines and levels. Level foundations from two or more locations.
- 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.
 - 3. Conceal pipes, ducts, and wiring in finished areas, unless otherwise indicated.
 - 4. Maintain minimum headroom clearance of 8 feet (2.4 m) in spaces without a suspended ceiling.
- 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. Anchors and Fasteners: Provide anchors and fasteners as required to anchor each component securely in place, accurately located and aligned with other portions of the Work.
 - 1. Mounting Heights: Where mounting heights are not indicated, mount components at heights directed by Architect/engineer.
 - 2. Allow for building movement including thermal expansion and contraction.
 - 3. Coordinate installation of anchorages. Furnish setting drawings, templates, and directions for installing anchorages, including sleeves, concrete inserts, anchor bolts, and items with integral anchors that are to be embedded in concrete or masonry. Deliver such items to Project site in time for installation.
- H. Joints: Make joints of uniform width. Where joint locations in exposed work are not indicated, arrange joints for the best visual effect. Fit exposed connections together to form hairline joints.
- I. Hazardous Materials: Use products, cleaners, and installation materials that are not considered hazardous.

3.5 OWNER-INSTALLED PRODUCTS

- A. Site Access: Provide access to Project site for Owner's construction forces.
- B. Coordination: Coordinate construction and operations of the Work with work performed by Owner's construction forces.
 - 1. Construction Schedule: Inform Owner of Contractor's preferred construction schedule for Owner's portion of the Work. Adjust construction schedule based on a mutually agreeable timetable. Notify Owner if changes to schedule are required due to differences in actual construction progress.
 - 2. Preinstallation Conferences: Include Owner's construction forces at preinstallation conferences covering portions of the Work that are to receive Owner's work. Attend preinstallation conferences conducted by Owner's construction forces if portions of the Work depend on Owner's construction.

3.6 PROGRESS CLEANING

- A. General: Clean Project site and work areas daily, including common areas. Coordinate progress cleaning for joint-use areas where more than one installer has worked. Enforce requirements strictly. Dispose of materials lawfully.
1. Comply with requirements in NFPA 241 for removal of combustible waste materials and debris.
 2. Do not hold materials more than 7 days during normal weather or 3 days if the temperature is expected to rise above 80 deg F (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 impede 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.

3.7 STARTING AND ADJUSTING

- A. Start equipment and operating components to confirm proper operation. Remove malfunctioning units, replace with new units, and retest.
- B. Adjust operating components for proper operation without binding. Adjust equipment for proper operation.
- C. Test each piece of equipment to verify proper operation. Test and adjust controls and safeties. Replace damaged and malfunctioning controls and equipment.
- D. Manufacturer's Field Service: If a factory-authorized service representative is required to inspect field-assembled components and equipment installation, comply with qualification requirements in Division 1 Section "Quality Requirements."

3.8 PROTECTION OF INSTALLED CONSTRUCTION

- A. Provide final protection and maintain conditions that ensure installed Work is without damage or deterioration at time of Substantial Completion.
- B. Comply with manufacturer's written instructions for temperature and relative humidity.

3.9 CORRECTION OF THE WORK

- A. Repair or remove and replace defective construction. Restore damaged substrates and finishes. Comply with requirements in Division 1 Section "Cutting and Patching."
 - 1. Repairing includes replacing defective parts, refinishing damaged surfaces, touching up with matching materials, and properly adjusting operating equipment.
- B. Restore permanent facilities used during construction to their specified condition.
- C. Remove and replace damaged surfaces that are exposed to view if surfaces cannot be repaired without visible evidence of repair.
- D. Repair components that do not operate properly. Remove and replace operating components that cannot be repaired.
 - 1. Remove and replace chipped, scratched, and broken glass or reflective surfaces.

END OF SECTION 017000

SECTION 017329 - CUTTING AND PATCHING

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 procedural requirements for cutting and patching.
- B. Related Sections include the but are not limited to the following:
 - 1. Division 2 Section "Selective Demolition" for demolition of selected portions of the building for alterations.

1.3 DEFINITIONS

- A. Cutting: Removal of existing construction necessary to permit installation or performance of other Work.
- B. Patching: Finish and repair work required to restore surfaces to original conditions after installation of other Work.

1.4 QUALITY ASSURANCE

- A. Structural Elements: Do not cut and patch structural elements in a manner that could change their load-carrying capacity or load-deflection ratio.
- B. Operational Elements: Do not cut and patch the following operating elements and related components in a manner that results in reducing their capacity to perform as intended or that result in increased maintenance or decreased operational life or safety.
 - 1. Primary operational systems and equipment.
 - 2. Fire-protection systems.
 - 3. Control systems.
 - 4. Communication systems.
 - 5. Electrical wiring systems.
- C. Miscellaneous Elements: Do not cut and patch the following elements or related components in a manner that could change their load-carrying capacity, which results in reducing their capacity to perform as intended, or that result in increased maintenance or decreased operational life or safety.

1. Water, moisture, or vapor barriers.
 2. Membranes and flashings.
 3. Piping and ductwork.
- D. Visual Requirements: Do not cut and patch construction in a manner that results in visual evidence of cutting and patching. Do not cut and patch construction exposed on the exterior or in occupied spaces in a manner that would, in Architect's opinion, reduce the building's aesthetic qualities. Remove and replace construction that has been cut and patched in a visually unsatisfactory manner.
- E. Cutting and Patching Conference: Before proceeding, meet at Project site with parties involved in cutting and patching, including mechanical and electrical trades. Review areas of potential interference and conflict. Coordinate procedures and resolve potential conflicts before proceeding.

PART 2 - PRODUCTS

2.1 MATERIALS

- A. General: Comply with requirements specified in other Sections of these Specifications.
- B. Existing Materials: Use materials identical to existing materials. For exposed surfaces, use materials that visually match existing adjacent surfaces to the fullest extent possible.
1. If identical materials are unavailable or cannot be used, use materials that, when installed, will match the visual and functional performance of existing materials.

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Examine surfaces to be cut and patched and conditions under which cutting and patching are to be performed.
1. Compatibility: Before patching, verify compatibility with and suitability of substrates, including compatibility with existing finishes or primers.
 2. Proceed with installation only after unsafe or unsatisfactory conditions have been corrected.

3.2 PREPARATION

- A. Temporary Support: Provide temporary support of Work to be cut.
- B. Protection: Protect existing construction during cutting and patching to prevent damage. Provide protection from adverse weather conditions for portions of Project that might be exposed during cutting and patching operations.
- C. Adjoining Areas: Avoid interference with use of adjoining areas or interruption of free passage to adjoining areas.

3.3 PERFORMANCE

- A. General: Employ skilled workers to perform cutting and patching. Proceed with cutting and patching at the earliest feasible time, and complete without delay.
 - 1. Cut existing construction to provide for installation of other components or performance of other construction, and subsequently patch as required to restore surfaces to their original condition.
- B. Cutting: Cut existing construction by sawing, drilling, breaking, chipping, grinding, and similar operations, including excavation, using methods least likely to damage elements retained or adjoining construction. If possible, review proposed procedures with original Installer; comply with original Installer's written recommendations.
 - 1. In general, use hand or small power tools designed for sawing and grinding, not hammering and chopping. Cut holes and slots as small as possible, neatly to size required, and with minimum disturbance of adjacent surfaces. Temporarily cover openings when not in use.
 - 2. Existing Finished Surfaces: Cut or drill from the exposed or finished side into concealed surfaces.
 - 3. Concrete & Masonry: Cut using a cutting machine, such as an abrasive saw or a diamond-core drill.
 - 4. Excavating and Backfilling: Comply with requirements in applicable Division 2 Sections where required by cutting and patching operations.
 - 5. Proceed with patching after construction operations requiring cutting are complete.
- Patching: Patch construction by filling, repairing, refinishing, closing up, and similar operations following performance of other Work. Patch with durable seams that are as invisible as possible. Provide materials and comply with installation requirements specified in other Sections of these Specifications.
 - 1. Inspection: Where feasible, test and inspect patched areas after completion to demonstrate integrity of installation.

2. Exposed Finishes: Restore exposed finishes of patched areas and extend finish restoration into retained adjoining construction in a manner that will eliminate evidence of patching and refinishing.
3. Floors and Walls: Where walls or partitions that are removed extend one finished area into another, patch and repair floor and wall surfaces in the new space. Provide an even surface of uniform finish, color, texture, and appearance. Remove existing floor and wall coverings and replace with new materials, if necessary, to achieve uniform color and appearance.
 - a. Where patching occurs in a painted surface, apply primer and intermediate paint coats over the patch and apply final paint coat over entire unbroken surface containing the patch. Provide additional coats until patch blends with adjacent surfaces.
4. Ceilings: Patch, repair, or rehab existing ceilings as necessary to provide an even-plane surface of uniform appearance.
5. Exterior Building Enclosure: Patch components in a manner that restores enclosure to a weathertight condition.

END OF SECTION 017329

NOT FOR BIDDING

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. Operation and maintenance manuals.
 - 4. Warranties.
 - 5. Instruction of Owner's personnel.
 - 6. 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. Division 1 Section "Operation and Maintenance Data" for operation and maintenance manual requirements.
 - 4. Divisions 02 through 09 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. Advise Owner of pending insurance changeover requirements.
 - 3. Submit specific warranties, workmanship bonds, maintenance service agreements, final certifications, and similar documents.
 - 4. Obtain and submit releases permitting Owner unrestricted use of the Work and access to services and utilities. Include occupancy permits, operating certificates, and similar releases.
 - 5. Prepare and submit Project Record Documents, operation and maintenance manuals, damage or settlement surveys, and similar final record information.

6. Deliver tools, spare parts, extra materials, and similar items to location designated by Owner. Label with manufacturer's name and model number where applicable.
7. Complete startup testing of systems.
8. Submit test/adjust/balance records.
9. Terminate and remove temporary facilities from Project site, along with mockups, construction tools, and similar elements.
10. Advise Owner of changeover in heat and other utilities.
11. Submit changeover information related to Owner's occupancy, use, operation, and maintenance.
12. Complete final cleaning requirements, including touchup painting.
13. 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 certified copy of Architect's/Engineer's Substantial Completion inspection list of items to be completed or corrected (punch list), endorsed and dated by Architect/Engineer. The certified copy of the list shall state that each item has been completed or otherwise resolved for acceptance.
3. Submit evidence of final, continuing insurance coverage complying with insurance requirements.
4. Submit pest-control final inspection report and warranty.
5. Instruct Owner's personnel in operation, adjustment, and maintenance of products, equipment, and systems. Submit demonstration and training videotapes.

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 space and area affected by construction operations for incomplete items and items needing correction including, if necessary, areas disturbed by Contractor that are outside the limits of construction.
 1. Organize list of spaces in sequential order, starting with exterior areas first and proceeding from lowest floor to highest floor.
 2. Organize items applying to each space by major element, including categories for ceiling, individual walls, floors, equipment and building systems.
 3. Include the following information at the top of each page:
 - a. Project name.
 - b. Date.
 - c. Name of Architect.
 - d. Name of Contractor.
 - e. Page number.

1.6 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 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 OPERATION AND MAINTENANCE MANUALS

- A. Assemble three complete sets of operation and maintenance data indicating the operation and maintenance of each system, subsystem, and piece of equipment not part of a system. Include operation and maintenance data required in individual Specification Sections and as follows:
1. Maintenance Data:
 - a. Manufacturer's information, including list of spare parts.
 - b. Name, address, and telephone number of Installer or supplier.
 - c. Maintenance procedures.
 - d. Maintenance and service schedules for preventive and routine maintenance.
 - e. Maintenance record forms.
 - f. Sources of spare parts and maintenance materials.
 - g. Copies of maintenance service agreements.
 - h. Copies of warranties and bonds.

- B. Organize operation and maintenance manuals into suitable sets of manageable size. Bind and index data in heavy-duty, 3-ring, vinyl-covered, loose-leaf binders, in thickness necessary to accommodate contents, with pocket inside the covers to receive folded oversized sheets. Identify each binder on front and spine with the printed title "OPERATION AND MAINTENANCE MANUAL," Project name, and subject matter of contents.

1.8 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.
- C. Provide additional copies of each warranty to include in each operation and maintenance manual.

PART 2 - PRODUCTS

2.1 MATERIALS

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

PART 3 - EXECUTION

3.1 FINAL CLEANING

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

- B. Cleaning: Employ experienced workers or professional cleaners for final cleaning. Clean each surface or unit to condition expected in an average commercial building cleaning and maintenance program. Comply with manufacturer's written instructions.
1. Complete the following cleaning operations before requesting inspection for certification of Substantial Completion for entire Project or for a portion of Project:
 - a. Clean Project site, yard, and grounds, in areas disturbed by construction activities, including landscape development areas, of rubbish, waste material, litter, and other foreign substances. Provide a magnetic sweep of all areas around the building 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 and interior hard-surfaced finishes to a dirt-free condition, free of stains, films, and similar foreign substances. Avoid disturbing natural weathering of exterior surfaces. Restore reflective surfaces to their original condition.
 - f. Remove debris and surface dust from limited access spaces, including roofs, plenums, shafts, trenches, equipment vaults, manholes, attics, and similar spaces.
 - g. Sweep concrete floors broom clean in unoccupied spaces.
 - h. Clean transparent materials, including glass in doors and windows. Remove glazing compounds and other noticeable, vision-obscuring materials. Replace chipped or broken glass and other damaged transparent materials.
 - i. Remove labels that are not permanent.
 - j. Touch up and otherwise repair and restore marred, exposed finishes and surfaces. Replace finishes and surfaces that cannot be satisfactorily repaired or restored or that already show evidence of repair or restoration.
 - 1) Do not paint over "UL" and similar labels, including mechanical and electrical nameplates.
 - k. Wipe surfaces of mechanical and electrical equipment, and similar equipment. Remove excess lubrication, paint and mortar droppings, and other 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

SECTION 017823 - MAINTENANCE DATA

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 preparing maintenance manuals, including the following:
 - 1. Maintenance documentation directory.
 - 2. Maintenance manual for the care and maintenance of products, and materials.
- B. Related Sections include but are not limited to the following:
 - 1. Division 1 Section "Submittal Procedures" for submitting copies of submittals for maintenance manuals.
 - 2. Division 1 Section "Closeout Procedures" for submitting maintenance manuals.
 - 3. Division 1 Section "Project Record Documents" for preparing Record Drawings for maintenance manuals.
 - 4. Divisions 02 through 09 Sections for specific maintenance manual requirements for the Work in these Sections.

1.3 SUBMITTALS

- A. Final Submittal: Submit 1 copy of each manual in final form at least 15 days before final inspection. Architect will return copy with comments within 15 days after final inspection.
 - 1. Correct or modify each manual to comply with Architect's/Engineer's comments. Submit 3 copies of each corrected manual within 15 days of receipt of Architect's/Engineer's comments.

1.4 COORDINATION

- A. Where maintenance documentation includes information on installations by more than one factory-authorized service representative, assemble and coordinate information furnished by representatives and prepare manuals.

PART 2 - PRODUCTS

2.1 MAINTENANCE DOCUMENTATION DIRECTORY

- A. Organization: Include a section in the directory for each of the following:
 - 1. List of documents.
 - 2. Table of contents.
- B. Tables of Contents: Include a table of contents for each emergency, operation, and maintenance manual.

2.2 MANUALS, GENERAL

- A. Organization: Unless otherwise indicated, organize each manual into a separate section for each system and subsystem, and a separate section for each piece of equipment not part of a system. Each manual shall contain the following materials, in the order listed:
 - 1. Title page.
 - 2. Table of contents.
 - 3. Manual contents.
- B. Title Page: Enclose title page in transparent plastic sleeve. Include the following information:
 - 1. Subject matter included in manual.
 - 2. Name and address of Project.
 - 3. Name and address of Owner.
 - 4. Date of submittal.
 - 5. Name, address, and telephone number of Contractor.
 - 6. Name and address of Architect/Engineer.
- C. Table of Contents: List each product included in manual, identified by product name, indexed to the content of the volume, and cross-referenced to Specification Section number in Project Manual.
 - 1. If maintenance documentation requires more than one volume to accommodate data, include comprehensive table of contents for all volumes in each volume of the set.
- D. Manual Contents: Organize into sets of manageable size. Arrange contents alphabetically by system, subsystem, and equipment. If possible, assemble instructions for subsystems, equipment, and components of one system into a single binder.
 - 1. Binders: Heavy-duty, 3-ring, vinyl-covered, loose-leaf binders, in thickness necessary to accommodate contents, sized to hold 8-1/2-by-11-inch paper; with clear plastic sleeve on spine to hold label describing contents and with pockets inside covers to hold folded oversize sheets.

- a. If two or more binders are necessary to accommodate data of a system, organize data in each binder into groupings by subsystem and related components. Cross-reference other binders if necessary to provide essential information for proper operation or maintenance of equipment or system.
 - b. Identify each binder on front and spine, with printed title "MAINTENANCE MANUAL," Project title or name, and subject matter of contents. Indicate volume number for multiple-volume sets.
2. Dividers: Heavy-paper dividers with plastic-covered tabs for each section. Mark each tab to indicate contents. Include typed list of products and major components of equipment included in the section on each divider, cross-referenced to Specification Section number and title of Project Manual.
 3. Protective Plastic Sleeves: Transparent plastic sleeves designed to enclose diagnostic software diskettes for computerized electronic equipment.
 4. Supplementary Text: Prepared on 8-1/2-by-11-inch, 20-lb/sq. ft. white bond paper.
 5. Drawings: Attach reinforced punched binder tabs on drawings and bind with text.
 - a. If oversize drawings are necessary, fold drawings to same size as text pages and use as foldouts.
 - b. If drawings are too large to be used as foldouts, fold and place drawings in labeled envelopes and bind envelopes in rear of manual. At appropriate locations in manual, insert rewritten pages indicating drawing titles, descriptions of contents, and drawing locations.

2.3 PRODUCT MAINTENANCE MANUAL

- A. Content: Organize manual into a separate section for each product, material, and finish. Include source information, product information, maintenance procedures, repair materials and sources, and warranties and bonds, as described below.
- B. Source Information: List each product included in manual, identified by product name and arranged to match manual's table of contents. For each product, list name, address, and telephone number of Installer or supplier and maintenance service agent, and cross-reference Specification Section number and title in Project Manual.
- C. Product Information: Include the following, as applicable:
 1. Product name and model number.
 2. Manufacturer's name.
 3. Color, pattern, and texture.
 4. Material and chemical composition.
 5. Reordering information for specially manufactured products.
- D. Maintenance Procedures: Include manufacturer's written recommendations and the following:
 1. Inspection procedures.
 2. Types of cleaning agents to be used and methods of cleaning.
 3. List of cleaning agents and methods of cleaning detrimental to product.
 4. Schedule for routine cleaning and maintenance.

5. Repair instructions.
- E. Repair Materials and Sources: Include lists of materials and local sources of materials and related services.
- F. Warranties and Bonds: Include copies of warranties and bonds and lists of circumstances and conditions that would affect validity of warranties or bonds.
 1. Include procedures to follow and required notifications for warranty claims.

PART 3 - EXECUTION

3.1 MANUAL PREPARATION

- A. Maintenance Documentation Directory: Prepare a separate manual that provides an organized reference to operation and maintenance manuals.
- B. Product Maintenance Manual: Assemble a complete set of maintenance data indicating care and maintenance of each product, material, and finish incorporated into the Work.
- C. Maintenance Manuals: Assemble a complete set of operation and maintenance data indicating operation and maintenance of each system, subsystem, and piece of equipment not part of a system.
- D. Manufacturers' Data: Where manuals contain manufacturers' standard printed data, include only sheets pertinent to product or component installed. Mark each sheet to identify each product or component incorporated into the Work. If data include more than one item in a tabular format, identify each item using appropriate references from the Contract Documents. Identify data applicable to the Work and delete references to information not applicable.
 1. Prepare supplementary text if manufacturers' standard printed data are not available and where the information is necessary for proper operation and maintenance of equipment or systems.
- E. Drawings: Prepare drawings supplementing manufacturers' printed data to illustrate the relationship of component parts of equipment and systems and to illustrate control sequence and flow diagrams. Coordinate these drawings with information contained in Record Drawings to ensure correct illustration of completed installation.
 1. Do not use original Project Record Documents as part of maintenance manuals.
 2. Comply with requirements of newly prepared Record Drawings in Division 1 Section "Project Record Documents."
- F. Comply with Division 1 Section "Closeout Procedures" for the schedule for submitting maintenance documentation.

END OF SECTION 017823

SECTION 017839 - PROJECT RECORD DOCUMENTS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and other Division 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 Specification
 - 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. Division 1 Section "Operation and Maintenance Data" for operation and maintenance manual requirements.
 - 3. Divisions 2 through 33 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. Depths of foundations below first floor.
 - d. Locations and depths of underground utilities.
 - e. Revisions to routing of piping and conduits.
 - f. Revisions to electrical circuitry.
 - g. Actual equipment locations.
 - h. Duct size and routing.
 - i. Locations of concealed internal utilities.
 - j. Changes made by Change Order or Construction Change Directive.
 - k. Changes made following Architect's written orders.
 - l. Details not on the original Contract Drawings.
 - m. Field records for variable and concealed conditions.
 - n. Record information on the Work that is shown only schematically.
 3. Mark the Contract Drawings or Shop Drawings, whichever is most capable of showing actual physical conditions, completely and accurately. If Shop Drawings are marked, show cross-reference on the Contract Drawings.
 4. Mark record sets with erasable, red-colored pencil. Use other colors to distinguish between changes for different categories of the Work at the same location.
 5. Mark important additional information that was either shown schematically or omitted from original Drawings.
 6. Note Construction Change Directive numbers, alternate numbers, Change Order numbers, and similar identification, where applicable.

- B. Record Transparencies: Immediately before inspection for Certificate of Substantial Completion, review marked-up Record Prints with Architect. When authorized, prepare a full set of corrected transparencies of the Contract Drawings and Shop Drawings.
1. Incorporate changes and additional information previously marked on Record Prints. Erase, redraw, and add details and notations where applicable.
 2. Refer instances of uncertainty to Architect for resolution.
 3. Owner will furnish Contractor one set of transparencies of the Contract Drawings for use in recording information.
 4. Print the Contract Drawings and Shop Drawings for use as Record Transparencies. Architect will make the Contract Drawings available to Contractor's print shop.
- C. Format: Identify and date each Record Drawing; include the designation "PROJECT RECORD DRAWING" in a prominent location.
1. Record Prints: Organize Record Prints and newly prepared Record Drawings into manageable sets. Bind each set with durable paper cover sheets. Include identification on cover sheets.
 2. Record Transparencies: Organize into unbound sets matching Record Prints. Place transparencies in durable slide-type drawing containers with end caps. Mark end cap of each container with identification. If container does not include a complete set, identify Drawings included.
 3. Record CAD Drawings: Organize CAD information into separate electronic files that correspond to each sheet of the Contract Drawings. Name each file with the sheet identification. Include identification in each CAD file.
 4. Identification: As follows:
 - a. Project name.
 - b. Date.
 - c. Designation "PROJECT RECORD DRAWINGS."
 - d. Name of Architect/Engineer.
 - e. Name of Contractor.

2.2 RECORD SPECIFICATIONS

- A. Preparation: Mark Specifications to indicate the actual product installation where installation varies from that indicated in Specifications, addenda, and contract modifications.
1. Give particular attention to information on concealed products and installations that cannot be readily identified and recorded later.
 2. Mark copy with the proprietary name and model number of products, materials, and equipment furnished, including substitutions and product options selected.
 3. Record the name of the manufacturer, supplier, Installer, and other information necessary to provide a record of selections made.
 4. For each principal product, indicate whether Record Product Data has been submitted in operation and maintenance manuals instead of submitted as Record Product Data.
 5. Note related Change Orders, Record Drawings, and Product Data where applicable.

2.3 RECORD PRODUCT DATA

- A. Preparation: Mark Product Data to indicate the actual product installation where installation varies substantially from that indicated in Product Data submittal.
 - 1. Give particular attention to information on concealed products and installations that cannot be readily identified and recorded later.
 - 2. Include significant changes in the product delivered to Project site and changes in manufacturer's written instructions for installation.
 - 3. Note related Change Orders, Record Drawings, and Product Data where applicable.

2.4 MISCELLANEOUS RECORD SUBMITTALS

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

PART 3 - EXECUTION

3.1 RECORDING AND MAINTENANCE

- A. Recording: Maintain one copy of each submittal during the construction period for Project Record Document purposes. Post changes and modifications to Project Record Documents as they occur; do not wait until the end of Project.
- B. Maintenance of Record Documents and Samples: Store Record Documents and Samples in the field office apart from the Contract Documents used for construction. Do not use Project Record Documents for construction purposes. Maintain Record Documents in good order and in a clean, dry, legible condition, protected from deterioration and loss. Provide access to Project Record Documents for Architect's/Engineer's reference during normal working hours.

END OF SECTION 017839

SECTION 018200 - DEMONSTRATION AND TRAINING

PART 1 - GENERAL

1.1 SUMMARY

- A. This Section includes administrative and procedural requirements for instructing Owner's personnel, including the following:
 - 1. Demonstration of operation of systems, subsystems, and equipment.
 - 2. Training in operation and maintenance of systems, subsystems, and equipment.
 - 3. Demonstration and training video tapes.
- B. See Divisions 2 through 9 Sections for specific requirements for demonstration and training for products in those Sections.

1.2 SUBMITTALS

- A. Instruction Program: Submit two copies of outline of instructional program for demonstration and training, including a schedule of proposed dates, times, length of instruction time, and instructors' names for each training module. Include learning objective and outline for each training module.
- B. Demonstration and Training CDs/Flash Drives: Submit two copies within seven days of end of each training module.

1.3 QUALITY ASSURANCE

- A. Facilitator Qualifications: A firm or individual experienced in training or educating maintenance personnel in a training program similar in content and extent to that indicated for this project, and whose work has resulted in training or education with a record of successful learning performance.
- B. Instructor Qualifications: A factory-authorized service representative, complying with requirements in Division 1 Section "Quality Requirements," experienced in operation and maintenance procedures and training.
- C. Coordinate content of training modules with content of approved emergency, operation, and maintenance manuals. Do not submit instruction program until operation and maintenance data has been reviewed and approved by Architect.

PART 2 - PRODUCTS

2.1 INSTRUCTION PROGRAM

- A. Program Structure: Develop an instruction program that includes individual training modules for each system and equipment not part of a system, as required by individual Specification Sections.
- B. Training Modules: Develop a learning objective and teaching outline for each module. Include a description of specific skills and knowledge that participant is expected to master. For each module, include instruction for the following:
 - 1. Basis of System Design, Operational Requirements, and Criteria: Include system and equipment descriptions, operating standards, regulatory requirements, equipment function, operating characteristics, limiting conditions, and performance curves.
 - 2. Documentation: Review emergency, operations, and maintenance manuals; Project Record Documents; identification systems; warranties and bonds; and maintenance service agreements.
 - 3. Emergencies: Include instructions on stopping; shutdown instructions; operating instructions for conditions outside normal operating limits; instructions on meaning of warnings, trouble indications, and error messages; and required sequences for electric or electronic systems.
 - 4. Operations: Include startup, break-in, control, and safety procedures; stopping and normal shutdown instructions; routine, normal, seasonal, and weekend operating instructions; operating procedures for emergencies and equipment failure; and required sequences for electric or electronic systems.
 - 5. Adjustments: Include alignments and checking, noise, vibration, economy, and efficiency adjustments.
 - 6. Troubleshooting: Include diagnostic instructions and test and inspection procedures.
 - 7. Maintenance: Include inspection procedures, types of cleaning agents, methods of cleaning, procedures for preventive and routine maintenance, and instruction on use of special tools.
 - 8. Repairs: Include diagnosis, repair, and disassembly instructions; instructions for identifying parts; and review of spare parts needed for operation and maintenance.

PART 3 - EXECUTION

3.1 INSTRUCTION

- A. Facilitator: Engage a qualified facilitator to prepare instruction program and training modules, to coordinate instructors, and to coordinate between Contractor and Owner for number of participants, instruction times, and location.
- B. Engage qualified instructors to instruct Owner's personnel to adjust, operate, and maintain systems, subsystems, and equipment not part of a system.

1. Owner will describe Owner's operational philosophy.
- C. Scheduling: Provide instruction at mutually agreed on times. For equipment that requires seasonal operation, provide similar instruction at start of each season.
 1. Schedule training with Owner, through Architect, with at least seven days' advance notice.
- D. Evaluation: At conclusion of each training module, assess and document each participant's mastery of module by use of a demonstration performance-based test.

END OF SECTION 018200

NOT FOR BIDDING

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SECTION 024119 - SELECTIVE DEMOLITION

PART 1 - GENERAL

1.1 DESCRIPTION

A. This section describes the Contractor's requirements for:

1. Selective removal and subsequent disposal of portions of existing structure as indicated on drawings and as required to accommodate construction.
2. Disassembly and salvage of existing materials as indicated. Materials to be salvaged include, but are not necessarily limited to, the following:
 - a. Cast stone steps and paving slabs if indicated by Bid Alternate.

B. Related work:

1. Documents affecting work of this section include but are not limited to General Conditions, Supplementary Conditions, and Sections of Division 1 of these specifications.
2. Section 033130 – Concrete Restoration
3. Section 040310 – Masonry Cleaning
4. Section 040343 – Mortar and Repointing
5. Section 040345 – Stone Consolidation
6. Section 047200 – Cast Stone Replication
7. Section 055000 – Metal Metals
8. Section 079200 – Sealant

1.2 CODES, REGULATIONS AND STANDARDS

- A. All procedures shall be done in accordance with regulations, safety standards and requirements of all federal, state and local authorities having jurisdiction over the work including but not limited to the applicable standards for protecting the public and control of pollutants and OSHA regulations for the protection of the workers and the public.
- B. Comply with relevant ASTM Standards for all materials.
- C. All work shall comply with the *Code of Ethics and Guidelines for Practice* of the American Institute for Conservation of Historic & Artistic Works (AIC).
- D. All work shall comply with the Secretary of the Interior's *Standards for the Treatment of Historic Properties* as interpreted by the Agent of the Owner.

1.3 QUALITY ASSURANCE

- A. Use adequate numbers of skilled workmen who are thoroughly trained and experienced in the necessary crafts and who are completely familiar with the specified requirements and the methods needed for a proper performance of the work of this Section.
- B. The Contractor shall maintain a steady work crew consisting of skilled craftspeople who are experienced with the materials and methods specified herein and familiar with the design

requirements and a full time foreman. The Contractor shall certify that all workmen under his direction fully understand the requirements of the work.

- C. Comply with provisions, references documents, and standards listed in these specifications unless otherwise noted.
- D. The Contractor shall perform all work according to the approved treatment plan and to the approval of the Agent of the Owner. All treatments shall be the best practice and meet the highest standards of the field. All work shall be coordinated and phased with other work on the project and performed so as to minimize risk of damage to the cultural property. No allowance for unskilled work will be made.
- E. Qualification Data: All work shall be performed by a company having a minimum of five (5) years of successful experience in masonry restoration of statuary or historic buildings of a compatible nature to this project and employing individuals skilled in restoration work on historic masonry or statuary.
- F. The Contractor shall replace all broken, lost, and damaged masonry resulting from repair, removal, transportation, cleaning or storing at an additional expense to the Owner.
- G. The Work of this section shall be carefully coordinated with the masonry cleaning, consolidation, and repointing work specified in other sections of these specifications.

1.4 SUBMITTALS

- A. Schedule: Indicate proposed sequence of operations for selective demolition Work.
 - 1. Indicate provisions for dust and noise control.
 - 2. Submit the following information about where salvaged materials will be stored and conserved.
 - a. Address and contact information.
 - b. Plan of storage area; minimum scale ¼ inch = 1 foot.
 - c. Photographs of storage facility showing exterior and interior conditions. Submit a minimum of twelve (12) photographs.
 - d. Allow access to the storage / work facility if requested by Project Coordinator.
 - 3. Submit for review before commencing selective demolition.
 - a. Photographs – Submit photographs of existing conditions that might be misconstrued as damage related to selective demolition operations.
- B. Demolition / Salvage plan: Submit a keyed plan showing all masonry units to be removed and stored to ensure reinstallation in their original locations. Masonry units to be stored shall be labeled with numbers, codes or similar marking corresponding to the submitted plan.

1.04 JOB CONDITIONS

- A. Condition of Structures: Owner assumes no responsibility for actual condition of items or structures to be demolished.

- B. Damages: Repair damages caused to adjacent facilities by selective demolition work at no additional cost to the Owner.
- C. Traffic: Conduct selective demolition operations and debris removal to ensure minimum interference with roads, streets, walks, and other adjacent occupied or used facilities.
 - 1. Do not close, block, or obstruct streets, walks, or other rights of way without prior written permission from authorities having jurisdiction. Provide alternate routes if required.
- D. Flame Cutting: No flame cutting is permitted.
- E. Environmental Controls: Limit dust and dirt migration to thoroughfares and adjacent properties.
- F. The Contractor is responsible for any masonry components damaged in the course of the work and for any work that does not conform to the specified requirements. Correct deficiencies as specified by the Agent of the Owner. Repair at no additional cost to the Owner.

PART 2 - PRODUCTS

2.1 PACKING AND SHIPPING MATERIALS

- A. Plywood: Non-treated, CD, 1/2 inch minimum thickness
 - 1. Fasteners: Nails, screws, brackets and miscellaneous hardware, hot-dip galvanized or stainless steel for exterior exposure
- B. Wood pallets and A frames:
 - 1. Framing: Non-treated 2 x 4
 - 2. Sheathing: 1x sheathing
 - 3. Miscellaneous cleats and blocking: 1x stock
- C. Misc padding: Corrugated cardboard, cotton batting, kraft or other non-printed paper
- D. Slings and straps; clean nylon, no rope or wire rope
- E. Waterproof barrier: 6 mil polyethylene film

PART 3 - EXECUTION

3.1 PREPARATION

- A. Protections: Provide temporary barricades and other forms of protection to protect personnel and general public from injury due to selective demolition.
 - 1. Provide shoring, bracing, and temporary supports to prevent movement, settlement, or collapse of structure or element to be demolished and adjacent construction to remain.
 - 2. Protect existing construction that is to remain from damage.

3. Provide temporary weather protection during interval between selective demolition operations which expose below grade work areas to weather or water.
4. Provide secure enclosure around the site to prevent unauthorized access to exposed below-grade cavities.

B. Utilities: Locate, identify, stub off, and disconnect existing utilities encountered during the course of demolition work.

3.2 DEMOLITION

A. General: Perform selective demolition work in systematic manner and approximately in reverse order of construction. Comply with demolition plan and governing regulations.

B. Disassembly: Disassemble materials as indicated on the Drawings in a careful and orderly manner to allow for removal from the project site.

1. Rake all joints between masonry units to be disassembled free of mortar and sealant before attempting to remove units.
2. Protect edges and arrises of stone units during disassembly to prevent chipping. Do not pry directly against stone surfaces.
3. Provide adequate support for stone slabs during removal and handling to prevent point loading and fracture.
4. Label all masonry units to be salvaged with a permanent stamp or marking on an unexposed surface. Markings shall correspond to a key plan based on the Contract Drawings.
5. Rough stone masonry to be removed for access to repair areas shall be washed clean and stockpiled on site for reuse if required.

3.3 MATERIALS

A. Salvage Items: When indicated on drawings, carefully remove indicated items, transport to approved facility, clean, conserve and store for reinstallation.

B. All materials resulting from selective demolition operations except where indicated for reuse / reinstallation shall become the property of the Contractor. Remove from site and dispose of legally. Burning of materials is not allowed.

3.4 LOADING

A. Load masonry components on wood A-frames or pallets in consecutive order with labeled edge facing upward where possible.

1. Do not stack units.
2. Provide padding underneath bottom surface.
3. Interleave stone surfaces with padding material. Stone surfaces shall not rub against one another.
4. Secure masonry components using nylon straps with padding to protect stone surfaces.

B. Non-rectangular components should be stored on a flat edge, if available. Ensure that the identification label is at least visible without moving the unit.

- C. Curved or otherwise irregularly shaped components shall be given additional protection to immobilize the units and prevent damage to protruding corners.
- D. If necessary, irregular or very fragile pieces may be laid on a padded surface rather than loaded on edge. Continuous support must be provided underneath each unit.
- E. Units that are removed in multiple pieces shall be loaded together into sturdy crates, interleaved with layers of padding. Do not intermix pieces from multiple units.
- F. Load crates / pallets into the storage facility in reverse order to facilitate removal for reinstallation. Provide adequate circulation room for personnel to locate and handle individual units with minimal disturbance.
- G. If salvaged masonry components are to be stored outdoors, place pallets, A frames and other storage containers on pallets or dunnage over a paved or gravel surface to prevent soiling from dust and mud. Cover loosely with waterproof barrier material to prevent moisture ingress while allowing air to circulate between units.

3.5 CLEANUP AND REPAIR

- A. General: Upon completion of demolition work, remove temporary facilities and all demolished materials. Leave site broom clean.
- B. Repairs: Repair demolition performed in excess of that required or indicated. Return elements of construction and surface to remain to condition existing prior to start of operations.

END OF SECTION

NOT FOR BIDDING

SECTION 033130 - CONCRETE RESTORATION

PART 1 - GENERAL

1.1 DESCRIPTION

- A. Work included: Provide repairs to existing concrete basin as indicated on the drawings, as specified herein, and as needed for a complete and proper installation.
- B. Related work:
 - 1. Documents affecting work of this Section include but are not limited to General Conditions, Supplementary Conditions and Sections – Division 1 of these specifications.
 - 2. Section 040343 – Mortar and Repointing
 - 3. Section 040342 – Masonry Restoration
 - 4. Section 040310 – Masonry Cleaning
 - 5. Section 040345 – Stone Consolidation
 - 6. Section 079200 – Sealants
 - 7. Section 099100 – Painting

1.2 CODES, REGULATIONS AND STANDARDS

- A. All work shall comply with the *Code of Ethics and Guidelines for Practice* of the American Institute for Conservation of Historic & Artistic Works (AIC) as interpreted by the Agent of the Owner.
- B. All work shall comply with the Secretary of the Interior's *Standards for the Treatment of Historic Properties* as interpreted by the Agent of the Owner.
- C. Comply with relevant ASTM Standards for all materials.

1.3 QUALITY ASSURANCE

- A. Use adequate numbers of skilled workmen who are trained and experienced in the necessary crafts and are thoroughly familiar with the specified requirements and the methods needed for proper performance of the work of this section.
- B. The Contractor shall perform all work according to the approved treatment plan and to the approval of the Agent of the Owner. All treatments shall be the best practice and meet the highest standards of the field. All work shall be coordinated and phased with other work on the project and performed so as to minimize risk of damage to the cultural property. No allowance for unskilled work will be made.
- C. Comply with provisions, references documents, and standards listed in these specifications unless otherwise noted.

D. Qualification Data: All work shall be performed by a company having a minimum of five (5) years of successful experience in concrete restoration of fountains of a compatible nature to this project and employing individuals skilled in work on historic concrete.

1. In accepting and rejecting the work, no account shall be taken for incompetence on the part of the workers.
2. The Contractor shall maintain a steady work crew consisting of skilled craftspeople who are experienced with the materials and methods specified herein and familiar with the design requirements and a full time foreman. The Contractor shall certify that all workmen under his direction fully understand the requirements of the work.
3. Submit to the Agent of the Owner a list of similar concrete restoration projects performed in the previous five (5) years. For each project include project address, description of restoration scope of work, list of materials and systems used, and verifiable Owner contact information.

E. Project Team Requirements

1. General

- a. Qualification Requirements: Review of the qualifications of each workman for the work of this section is a requirement of this project. In order to be qualified for this work submit for each team member resume and list of at least five (5) representative projects showing the experience of each team member as related to this Project.
- b. Identify each reference project by name and location, provide an outline description of the scope of work, dollar value of the contract, date of completion, a verifiable reference contact, and a description of the worker's responsibility on the project.
- c. If, in the opinion of the Agent of the Owner, the worker does not meet the requirements for this section, submit alternate workmen with their references for review.

2. General Qualifications

- a. Company Qualifications: The Contractor shall be an experienced concrete restoration firm to perform the work of this Section. The firm shall have completed work similar in material, design and extent to that indicated for this Project with a record of successful in-service performance. The Contractor and all staff directly involved in concrete restoration shall be fully trained, knowledgeable and experienced in all phases of concrete restoration. Examples of previous work successfully completed by the contractor shall include performance of concrete restoration techniques similar to those specified herein.
- b. Field Supervision: Designate an individual with commensurate experience to act as the foreman to oversee concrete restoration through the duration of the project. The foreman shall be on site at all times that concrete restoration is being performed. The foreman shall participate in the initial mock-up installations. Foremen shall not be changed during the course of the Project except for causes beyond control of the Contractor. Changes in foremen during the course of the project may require the Contractor to prepare additional sample installations under the direction of the new foreman to be subject to review and acceptance by the Agent of the Owner. The foreman shall be fluent in English.
- c. Restoration Worker Qualifications: All personnel to be employed for the work of this Section shall be experienced in the specified concrete restoration procedures and are familiar with the use of the specified products. Submit resume and reference projects as described above.

3. Specialty Restoration Products Training: All restoration work must be performed by craftspeople familiar with specified specialty restoration systems for concrete. Where required by product manufacturers, training sessions and mock-ups will be required so as to allow for the certification of workmen who will be performing procedures using specialty products.
 - a. Contractor shall arrange for a minimum of one (1) training session of at least one (1) day duration to be provided by the manufacturers of the specified systems.
 - b. Provide on-site training for each system, using specified materials and methods, and using tools and equipment intended to be used by the workmen performing work.
 - c. Provide additional training if procedures are not yielding consistent results.
 - d. Provide additional training sessions as required for new workmen.
4. All subcontractors shall meet the same requirements as the Contractor.
5. Source of Materials: Obtain materials from a single source for each type of material required to ensure a match in quality, color and texture.

1.4 SUBMITTALS

- A. Product data: Within 15 calendar days after the Contractor has received the Owner's Notice to Proceed, submit:
 1. Materials 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. Manufacturer's recommended installation procedures which, when approved by the Agent of the Owner, shall become the basis for accepting or rejecting the actual installation procedures used on the work.
- B. Mock Ups:
 1. At an area of the work approved in advance by the Agent of the Owner, provide a mock-up of the concrete repairs;
 2. Make mock up approximately 1 foot high by 1 foot wide;
 3. Secure the approval of the Agent of the Owner;
 4. Refine procedures as necessary to obtain the approval of the Agent of the Owner; and
 5. Mock up may be part of the finish work when approved by the Agent of the Owner.

1.5 DELIVERY, STORAGE, AND HANDLING

- A. Deliver materials to site in manufacturer's original unopened containers and packaging, bearing labels to manufacturer, type and name of products, grade, batch and production data. Do not use materials in broken packages or which show evidence of damage. Damaged or otherwise unsuitable materials shall be removed from the jobsite.
- B. Protect repair materials during storage and construction. Keep containers tightly closed and away from damage. Protect liquid components from freezing. Comply with manufacturer's recommendations for minimum and maximum temperature requirements for storage.

- C. Store cementitious materials on elevated platforms, under cover, and in a dry location. Do not use cementitious materials that have become damp.
- D. Dispose of unused product, containers, debris and waste associated with the work of this Section in accordance with local, state and federal regulations. Do not reuse containers.
- E. Do not store materials on the scaffold.

PART 2 - PRODUCTS

2.1 REINFORCEMENT PROTECTION

- A. Provide solvent-free, moisture tolerant anti-corrosion coating.
- B. Acceptable Products:
 - 1. "Armatec 110 EpoCem" by Sika Corporation, Lyndhurst, NJ.
 - 2. "Primkote 8608-1" by Abatron, Inc., Gilberts, IL.
 - 3. "ECB" as manufactured by Conproco Coatings, Hooksett, NH.; or
 - 4. Equal, as approved in advance by the Agent of the Owner.

2.2 BONDING AGENT

- A. Provide formulation of acrylic polymers and modifiers in liquid form, specifically prepared to adhere new concrete patching materials to existing concrete.
- B. Acceptable Products:
 - 1. "Armatec 110 EpoCem" by Sika Corporation, Lyndhurst, NJ.
 - 2. "Acryl 60" by Thero System Products, Miami, FL.
 - 3. "Conproco Prime" by Conproco Corporation, Hooksett, NH.
 - 4. Equal, as approved in advance by the Agent of the Owner.

2.3 PATCHING MATERIAL

- A. Provide polymer-modified cementitious, non-sag repair mortar for replacing concrete in spalled areas.
- B. Acceptable Products :
 - 1. "Mono Top" by Sika Corporation, Lyndhurst, NJ.
 - 2. "Abocrete" by Abatron, Inc., Gilberts, IL
 - 3. "Conpro Set" by Conproco Corporation, Hooksett, NH.
 - 4. Equal, as approved in advance by the Agent of the Owner.

2.4 OTHER MATERIALS

- A. Provide other materials not specifically described but required for a complete and proper installation as selected by the Contractor and approved by the Agent of the Owner.

PART 3 - EXECUTION

3.1 SURFACE CONDITIONS

- A. Examine areas and conditions under which work of this section will be performed. Correct conditions detrimental to timely and proper completion of the work. Do not proceed until unsatisfactory conditions are corrected.

3.2 PREPARATION

- A. Remove all deteriorated, loose and spalled concrete from the areas to be patched.
- B. Cut surfaces back as needed to sound concrete.
- C. If area to be patched has exposed steel reinforcement, clean the steel of all rust using sandblasting or other approved methods.
- D. If the exposed steel reinforcement has excessive rusting causing the loss of more than 25% of its cross section, do not proceed with any preparation work in that area. Notify the Agent of the Owner immediately for further instructions.

3.3 REINFORCEMENT PROTECTION

- A. Apply by bristle brush only. Do not use spray equipment.
- B. Coat all surfaces of exposed steel reinforcement.
- C. Allow coating to thoroughly dry and apply a second coat.
- D. Allow coating to thoroughly dry before proceeding.

3.4 BONDING AGENT

- A. Apply by bristle brush only. Do not use spray equipment.
- B. Work the bonding agent as a slurry into all substrate surfaces to ensure a complete coverage of all irregularities.
- C. Apply the patching mortar before the bonding agent has thoroughly dried.

3.5 PATCHING MORTAR

- A. Apply patching mortar by hand trowel only.
- B. Work mortar into the prepared substrate by scrubbing the material into all voids.
- C. Apply the patching mortar material while the bonding agent is still wet.
- D. Work from the edges of the patch toward the center, consolidate, then screed off the patch.

- E. Apply in as many layers as required, scoring each successive layer to provide an acceptable substrate. Allow the previous layer adequate time to dry before adding another layer. Reapply the bonding agent between coats as needed.
- F. Screed off latent material, sponge float and texture the finish coat to match the original concrete surface being patched.
- G. The concrete shall be tested for integrity and soundness.

3.6 CLEANING UP

- A. Wipe metal accessories clean after application of each coat.
- B. In addition to other protection, protect adjacent surfaces from the accidental application of repair materials.
- C. In addition to other requirements for cleaning, immediately upon completion of this portion of the work visually inspect adjacent surfaces and remove all traces of spilled and splashed repair materials.

END OF SECTION

NOT FOR BIDDING

SECTION 040310 - MASONRY CLEANING

PART 1 - GENERAL

1.1 DESCRIPTION

- A. This Section describes cleaning techniques to be used on stone and cast stone masonry. The intent of this cleaning project is to remove surface soiling and disfiguring stains without removing the patina of the masonry surfaces.
- B. The work of this Section includes, but is not necessarily limited to, the following items:
1. Apply mock-up panels of all specified cleaning systems.
 2. Perform general cleaning of all surfaces of limestone and cast stone masonry with proprietary cleaning products, processes and equipment. Types of soiling present include:
 - a. Atmospheric soiling
 - b. Biological soiling
 3. Remove localized severe soiling or staining from limestone and cast stone masonry by use of gel, clay and/or latex poultices. Types of stains to be locally treated include:
 - a. Copper staining
 - b. Skateboard marks
 4. Provide access to all work areas during cleaning project for inspection by Agent of the Owner.
- C. Related Sections
1. Drawings and general provisions of the contract, including General and Supplemental Conditions and Division 1 Specification Sections, apply to this Section.
 2. Section 040342 - Masonry Restoration
 3. Section 040343 - Mortar and Repointing
 4. Section 040345 - Stone Consolidation
 5. Section 047200 - Cast Stone Replication
- D. Definitions
1. Very Low-Pressure Water: Less than 100 psi; 4 to 6 gpm.
 2. Low-Pressure Water: 100 to 400 psi; 4 to 6 gpm.
 3. Medium-Pressure Water: 400 to 800 psi; 4 to 6 gpm.
 4. High Pressure Water: 800 to 1200 psi; 4 to 6 gpm.

1.2 CODES, REGULATIONS AND STANDARDS

- A. All masonry cleaning procedures shall be done in accordance with regulations, safety standards and requirements of all federal, state and local authorities having jurisdiction over the work including but not limited to the applicable standards for protecting the public and control of pollutants, including State of Delaware regulated Volatile Organic Compounds (VOC's), and OSHA regulations for the protection of the workers and the public.
- B. Comply with relevant ASTM Standards for all materials.

- C. All work shall comply with the *Code of Ethics and Guidelines for Practice* of the American Institute for Conservation of Historic & Artistic Works (AIC).
- D. All work shall comply with the Secretary of the Interior's *Standards for the Treatment of Historic Properties* as interpreted by the Agent of the Owner.
- E. Except as modified by Construction Documents, applicable portions of the latest editions of following reference documents shall govern the Work.
 - 1. "Preservation Brief No. 1, Assessing Cleaning and Water-Repellent Treatments for Historic Masonry Buildings" by Robert C. Mack, FAIA and Anne Grimmer as published by the National Park Service (2000).
 - 2. ASTM C1515 - 01 Standard Guide for Cleaning of Exterior Dimension Stone, Vertical and Horizontal Surfaces, New or Existing.

1.3 QUALITY ASSURANCE

- A. Use adequate numbers of skilled workmen who are thoroughly trained and experienced in the necessary crafts and who are completely familiar with the specified requirements and the methods needed for a proper performance of the work of this Section.
- B. The Contractor shall perform all work according to the approved treatment plan and to the approval of the Agent of the Owner. All treatments shall be the best practice and meet the highest standards of the field. All work shall be coordinated and phased with other work on the project and performed so as to minimize risk of damage to the cultural property. No allowance for unskilled work will be made.
- C. Comply with provisions, references documents, and standards listed in these specifications unless otherwise noted.
- D. Qualification Data: All work shall be performed by a company having a minimum of five (5) years of successful experience in masonry cleaning of statuary or historic buildings of a compatible nature to this project and employing individuals skilled in cleaning masonry work.
 - 1. In accepting and rejecting the work, no account shall be taken for incompetence on the part of the workers.
 - 2. The Contractor shall maintain a steady work crew consisting of skilled craftspeople who are experienced with the materials and methods specified herein and familiar with the design requirements and a full time foreman. The Contractor shall certify that all workmen under his direction fully understand the requirements of the work.
 - 3. Submit to the Agent of the Owner a list of similar masonry cleaning projects performed in the previous five (5) years. For each project, include project address, description of masonry cleaning scope of work, list of cleaning materials and systems used, and verifiable Owner contact information.
- E. Project Team Requirements
 - 1. General
 - a. Qualification Requirements: Review of the qualifications of each workman for the work of this section is a requirement of this project. In order to be qualified for this work submit for

- each team member a resume and list of at least five (5) representative projects showing the experience of each team member as related to this Project.
- b. Identify each reference project by name and location, provide an outline description of the scope of work, dollar value of the contract, date of completion, a verifiable reference contact, and a description of the worker's responsibility on the project.
 - c. If, in the opinion of the Agent of the Owner, the worker does not meet the requirements for this section, submit alternate workmen with their references for review.

2. General Qualifications

- a. **Company Qualifications:** The Contractor shall be an experienced masonry restoration and cleaning firm to perform the work of this Section. The firm shall have completed work similar in material, design, and extent to that indicated for this Project with a record of successful in-service performance. The contractor and all staff directly involved in masonry cleaning shall be fully trained, knowledgeable and experienced in all phases of historic masonry cleaning. Examples of the contractor's work successfully completed by the contractor shall include performance of masonry cleaning techniques similar to those specified herein.
- b. **Field Supervision:** Designate an individual with commensurate experience to act as the foreman to oversee masonry cleaning through the duration of the project. The foreman shall be on site at all times that masonry cleaning is being performed. The foreman shall participate in the initial mock-up installations. Foremen shall not be changed during the course of the Project except for causes beyond control of the Contractor. Changes in foremen during the course of the project may require the Contractor to prepare additional sample installations under the direction of the new foreman to be subject to review and acceptance by the Owner. The foreman shall be fluent in English.
- c. **Restoration Worker Qualifications:** All personnel to be employed for the work of this Section shall be experienced in the specified masonry cleaning procedures and are familiar with the use of the specified products. Submit resume and reference projects as described above.

3. Conservator

All work on the column, plinth or base must be completed by a qualified conservator.

- a. The Conservator shall be of recognized standing in the architectural conservation field with a proven record of satisfactory work and a minimum of ten (10) years proven practical experience using similar restorative techniques. The Conservator shall employ personnel with experience in preservation and maintenance of historic fabric and shall have successfully completed five (5) similar projects in the last ten (10) years and three (3) of these project in the last five (5) years.
- b. The lead Conservator of the firm must be a Professional Associate of an accredited professional conservation organization such as AIC for a minimum of five (5) years.
- c. The lead Conservator shall have a minimum of a Master's Degree in art conservation or architectural conservation from a recognized university or a Master's Degree in a related field with a certification in conservation or architectural conservation from a recognized university. The conservation program of the Master's Degree must include materials in conservation work.
- d. The site Conservator must be a full-time employee of the conservation firm and shall submit a resume that demonstrates experience in cleaning historic masonry and sculpture.
- e. If, in the opinion of the Agent of the Owner, the Conservator does not meet the requirements for this section, submit alternate conservators with their references for review.

3. Specialty Cleaning Products Training: All cleaning work must be performed by craftspeople familiar with specified specialty cleaning systems for historic limestone and cast stone. Where required by product manufacturers, training sessions and mock-ups will be required so as to allow for the certification of workmen who will be performing cleaning procedures using specialty products including stain removal poultices.
 - a. Contractor shall arrange for a minimum of one (1) training session of at least one (1) day duration to be provided by the manufacturers of the specified cleaning systems.
 - b. Provide on-site training for each poultice cleaning system, using specified materials and methods, and using tools and equipment intended to be used by the workmen performing work.
 - c. Provide additional training if cleaning procedures are not yielding consistent results.
 - d. Provide additional training sessions as required for new workmen.
 4. All subcontractors shall meet the same requirements as the Contractor.
- F. Source of Materials: Obtain all materials for masonry cleaning from a single source for each type of material required to ensure consistent quality, strength and performance.
- G. Cleaning Product and Equipment Manufacturer Qualifications: Cleaning products and equipment shall be provided by a firm(s) regularly engaged in producing masonry cleaning products that have been used for similar applications with successful results, and with technical representatives who are available for consultation, project site inspection and assistance throughout the duration of the project at no additional cost to the project.
 1. Obtain materials for each restoration procedure specified from a single manufacturer to ensure consistent quality, strength and performance.
- H. Prior to proceeding with mock-up samples, test all cleaners and cleaning methods for adverse reactions on adjacent masonry materials or other materials that may be affected by the cleaning process, if those materials are to remain unprotected. Test areas of adjacent materials shall be small (less than 2 square feet) and in unobtrusive locations. Protect against known deleterious effects of chemical cleaners and cleaning methods during testing.

1.4 SUBMITTALS

- A. Product Data: Within 15 calendar days after the Contractor has received the Owner's Notice to Proceed, submit the following for the approval of the Agent of the Owner :
1. Materials 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. Submit three (3) copies of manufacturer's product literature including technical data, handling and application instructions.
 4. Maintain Safety Data Sheets (SDS) for all manufactured products to be used in cleaning on site at all times.
- B. Samples:

1. Submit samples of proposed chemical cleaning products if requested by the Agent of the Owner for testing on adjacent surfaces to determine the likelihood of deleterious effects.
 2. Submit sample of cleaning media specified in 250ml containers with safety screw caps where appropriate and with contents clearly marked.
- C. Testing: Complete testing of cleaning materials and techniques to determine the least invasive but yet effective methodology for cleaning this masonry. The intent of this cleaning project is to remove surface soiling and disfiguring stains without removing the patina of the masonry surfaces. Submit methodology for cleaning and manufacturer's specifications for cleaning procedures for Approval by the Agent of the Owner prior to mock-up.
- D. Mock-ups: Prepare field mock-ups at the project site to demonstrate masonry cleaning methods and procedures and allow evaluation of the finished appearance and quality of materials and execution. The mock-ups shall serve to demonstrate the Contractor's ability to complete the work in conformance with these specifications and to the satisfaction of the Agent of the Owner.
1. Submit methodology for cleaning and manufacturer's specifications for cleaning procedures for Approval by the Agent of the Owner prior to mock-up.
 2. The location(s) of the field mock-up shall be as designated by the Agent of the Owner and are representative of each underlying condition requiring treatment. Provide a sample of each treatment type using specified materials and methods, and using tools and equipment intended to be used by the workmen performing work.
 3. All cleaning materials and procedures shall be demonstrated through mock-ups. Each test shall demonstrate the effectiveness of the materials and procedures. Upon evaluation of the mock-ups the Agent of the Owner in consultation with the manufacturer's representative, shall determine the most effective system for each material and area of application.
 4. Where more than one treatment will occur at the same location, plan mock-ups to allow for each procedure to be evaluated individually as well as in sequential combination. Coordinate preparation of successive mock-ups with contractors performing preceding or succeeding work.
 5. Prepare mock-up under same weather conditions as are expected during Project Work.
 6. Allow a waiting period of not less than fourteen (14) days after completion of sample cleaning to permit a study of sample area for effectiveness of the cleaning technique and for negative reactions.
 7. Label all mock-ups with the following information using removable/reversible materials:
 - a. Products or materials used (as applicable)
 - b. Procedures completed (as applicable)
 - c. Date of preparation and temperature/weather conditions
 8. Document photographically the mock-up locations before and after preparation of the mock-up treatment(s). Submit printed and digital photographs showing mock-up locations for approval prior to beginning work.
 9. Additional mock-ups shall be made until an acceptable result is achieved on each type of soiling on each type of stone material. Please note that minor adjustments to cleaning materials and media, methods of application, dilutions, and dwell times of products shall be made in accordance with limits defined in manufacturer's recommendations. Commence work only after each field mock-up has been reviewed and accepted by the Agent of the Owner.
 10. The accepted samples are the standard for subsequent work. Retain and protect samples throughout the duration of the project as references for the work and, upon completion, incorporate samples into the work.

11. Prepare the following mock-ups:
- a. General Cleaning: Four areas, each approximately four (4) square feet in area.
 - b. Stain removal / Poultice Cleaning: Two areas for each type of poultice, approximately one (1) square foot each.
- E. Test data: Submit test data from the water source to be used in the cleaning of stone masonry surfaces. Test data shall include soluble salt content, metallic ion content and organic components. Test samples shall be taken before the start of the masonry cleaning and at monthly intervals for the duration of the masonry cleaning work.
- F. Treatment Program: For each phase of the masonry cleaning process, provide detailed descriptions of materials, methods, equipment, and sequence of operations to be used including access provisions and other general conditions items. Provide a project schedule that details all work phases on all elements.
1. No masonry cleaning work shall occur prior to receipt of written approval of the treatment plan.
 2. If materials and methods proposed to use differ from those recommended by the material manufacturer or specified herein, provide a written description and justification, including evidence of successful use on comparable projects, and a testing program to demonstrate their effectiveness for this Project.
- G. Hazardous Materials and Procedures Assessment: Submit a written assessment detailing specific safety and health concerns associated with each material and procedure described in the Treatment Plan. The assessment shall include proposed procedures to protect personnel and the public from the identified hazards and descriptions of all personal and site protection equipment required for each activity listed in the Hazard Assessment. The scope of the assessment shall also address the safe transport, handling and storage of all tools and materials outlined in the Treatment Plan.
- H. Safety Plan: Submit a written safety plan describing the procedures implemented by the Contractor to protect project personnel and the public throughout the work in compliance with OSHA and other applicable regulatory agencies. The safety plan should include containment provisions for both use and spills for all materials used in the treatment.
- I. Temporary Protection Plan: Provide a temporary protection plan detailing the means and methods to be used to protect all surrounding surfaces, landscaping, utilities structures and public property during the course of the work. The plan should include protection of the masonry during installation of access and scaffolding (if applicable), during all cleaning work, and after completion of the work as well as plans to protect adjacent materials. Detail the sequence of installation and removal of temporary protection in order to insure that adequate environmental conditions required for the work are maintained.
- J. Documentation of Treatment: Submit written and photographic documentation of the masonry cleaning process in accordance with recognized conservation practice and the American Institute for Conservation (AIC) guidelines for documentation. Documentation shall include, but is not necessarily limited to, the following:
1. Results from materials testing both before and after treatment as applicable.
 2. Final treatment procedures as implemented on the project including, but not limited to, materials composition, strength, application parameters, curing procedures, etc.

3. Photographs documenting the appearance of cleaned surfaces before, during and after treatment. Photographs shall be in color and black and white with the color images calibrated to a standard scale.
4. As-built drawings created on the elevation drawings provided in the Contract Documents. The as-built drawings shall indicate location, type and dates of cleaning procedures performed.

1.5 DELIVERY, STORAGE, AND HANDLING

- A. Deliver materials to the site in manufacturer's original and unopened containers and packaging, bearing labels indicating type and names of products and manufacturers. Check materials and/or containers upon arrival to inspect for damage. Do not use materials showing evidence of damage or contamination. Remove damaged and contaminated materials from the site.
- B. Store materials off the ground and under waterproof covers in an area removed from construction operations. Do not stack pallets. Comply with manufacturer's recommendations for minimum and maximum temperature requirements for storage. Protect liquid components from freezing.
- C. Keep all containers tightly closed when not in use. Mark any container with the date of first use upon opening.
- D. Dispose of unused product, containers, debris and waste associated with the work of this Section in accordance with local, state and federal regulations. Do not reuse containers.

1.6 PROJECT CONDITIONS

- A. All work shall be performed in strict accordance with the manufacturer's recommendations and these specifications, as approved by the Agent of the Owner. Any measures necessary to comply with local, state, and federal requirements for noise, pollution and environmental control shall be implemented by the Contractor at no additional cost to the Owner. Confine operations at site to areas permitted by laws, permits, contract, and the Owner.
- B. Examine project surfaces, substrates, support and conditions under which the work is to be performed and notify the Agent of the Owner of conditions detrimental to the proper completion of the Work. Do not proceed with work until unsatisfactory conditions are corrected.
 1. Where conditions are uncovered that are not anticipated by the Drawings and Specifications, notify the Agent of the Owner immediately before cleaning is initiated.
 2. Where discrepancies occur between anticipated and actual conditions, the Contractor is not to perform the work of this Section until a written evaluation and direction is received from the Agent of the Owner. Proceeding with repairs at these locations without direction from the Agent of the Owner is entirely at the risk and cost of the Contractor.
- C. All features on the project site that are designated to remain shall be protected from all forms of damage during the performance of the Work. The Contractor shall be responsible to restore or replace, at the direction of the Agent of the Owner, any component damaged during the Work to the satisfaction of and at no additional cost to the Owner.
 1. Temporarily mask surfaces in the vicinity of the cleaning area as required to prevent cleaning materials from staining surrounding surfaces adjacent to the area of Work. Do not allow masonry cleaning materials to bleach, etch or stain concrete and other materials not to be cleaned.

2. Protect surrounding surfaces from spillage and overspray at all times. Immediately clean adjacent areas of spilled or sprayed materials. The Contractor is responsible for any over spray, spillage or damage to private property caused by their work.
3. Protect passing cars and pedestrians from overspray of cleaning materials.

D. Environmental conditions:

1. The Contractor shall comply with all regulations of all local governmental agencies having jurisdiction for the control, neutralization, and disposal of all cleaning residues involved in the work. The Contractor shall submit a statement from the local governing authority which specifies the required procedures for such work
2. Masonry cleaning work shall take place only when ambient conditions are suitable to the materials to be used and / or the procedures to be performed.
 - a. Clean masonry surfaces only when the air temperature and stone substrate surface temperature is between 45° F and 90° F and is predicted to remain so for at least 14 days after completion of cleaning.
 - b. No chemical cleaning shall be performed when the air temperature and stone substrate surface temperature is less than 45° F or greater than 90° F and is predicted to remain so for at least 14 days after completion of cleaning.
 - c. Do not apply cleaner to stone masonry during inclement weather such as rain, fog, mist, snow, etc. nor to damp or wet surfaces, or when these conditions are imminent.
 - d. Protect site features, adjacent properties, passers-by and personnel against wind-driven spread of cleaning materials. No masonry cleaning shall be performed when winds are sufficiently strong to spread cleaning materials to unprotected areas. Temporary enclosures may be provided to enable work to continue.
 - e. The Owner retains the right to hire an industrial hygienist to monitor the runoff and cleaning procedure. The Contractor shall provide the Owner's Industrial Hygienist with access to the area during the work at locations designated by the Owner. Access shall be provided for periodic review of the cleaning procedures.
 - f. Provide a method to prevent solids such as masonry residue from entering the drains or drain lines. Contractor shall be responsible for cleaning out drains and drain lines that become clogged or filled by sand or other debris solids because of work performed under this Section. Provide on-site neutralizing tanks where required by the manufacturer and/or where required by the governmental agency having jurisdiction over the work.
2. Perform masonry cleaning only during hours approved by Agent of the Owner and in accordance with local codes and ordinances.

E. Worker Safety: The Contractor shall maintain on site all materials and equipment necessary to ensure worker safety and health and to remediate accidental material spills.

1. Maintain in the general work area emergency medical equipment and supplies as recommended by the manufacturer of the treatment materials to be used. Such equipment may include, but is not limited to, eyewash stations and emergency showers.
2. Contractor personnel performing treatments shall wear properly fitted and approved respiratory protection with the correct filtering media in accordance with the recommendations of the material manufacturer and OSHA requirements. All personnel shall have medical approval to

wear the required respirator protection prior to being issued their own respiratory protection device.

3. Contractor personnel engaged in treatments shall wear all required personnel protective equipment including gloves, eye protection, disposable clothing, etc. when working with and applying the product.
4. Contractor shall maintain on site manufacturer's product data and Safety Data Sheets (SDS) for all treatment materials used on site as required by applicable laws and regulations.

1.7 SEQUENCING AND SCHEDULING

A. Perform cleaning work in the following sequence relative to other masonry work.

1. Remove plant growth (vines, etc.).
2. Perform testing and submit methodology for approval.
3. Perform Mock-up(s) and obtain the Agent of the Owner's approval to allow for accurate color matching of subsequent patching and repointing materials.
4. Perform masonry general cleaning and stain removal poultices as specified.
5. Perform consolidation as specified.
6. Perform scheduled cementitious patching after cleaning and consolidation.

PART 2 - PRODUCTS

2.1 WATER

A. Clean, potable water which shall not contain any mineral content that would result in staining of stone.

1. Water shall have elemental iron content of less than two (2) parts per million, or 0.0002 percent (by weight).
2. Contractor shall arrange for laboratory testing of water before starting work and every three (3) months thereafter.

2.2 CLEANING EQUIPMENT

A. Scrub brushes

1. Do not use wire brushes or scrapers. Use natural bristle brushes or plastic brushes.
2. For chemical cleaning, use only brushes that are resistant to chemical cleaners being used.

B. Scrapers and spatulas

1. Scrapers and spatulas for poultice application and removal shall be wood or plastic. No metal tools are to be used.

C. Paint Brushes

1. Paint brushes for application of cleaning materials shall be natural bristle brushes with non-metallic ferrules.

D. Steam Cleaner for Skateboard wax

2.3 CLEANING MATERIALS

A. Acceptable Chemical Cleaners:

1. Vulpex Liquid Soap, manufactured by Picreator Enterprises Limited.
2. Or equal, as approved in advance by the Agent of the Owner and demonstrated effective through test panel.

B. Biocide

1. *D/2 Biological Solution*, a quaternary ammonium chloride solution, pH = 9.5 at undiluted concentration, by D/2 Biological Solutions, Inc.
2. Or equal, as approved in advance by the Agent of the Owner and demonstrated effective through test panel.

C. Custom Poultice Materials

1. Stain Removal Materials

- a. Copper Stains: 942 Limestone and Marble Cleaner, manufactured by Prosoco.

D. Solvents

1. Acetone

E. All materials shall comply with all provisions of applicable restrictions regarding volatile organic compounds (VOCs) as regulated by the governmental agencies having jurisdiction over the work.

2.4 PROTECTION MATERIALS

A. Polyethylene sheets, no less than 6 mils thick, taped around the entire perimeter to provide an impervious barrier to chemical cleaning processes. Backing for the polyethylene sheets may be necessary to secure the sheets and provide a wind-proof, watertight system.

B. Masking: Provide an approved strippable mask of sufficient thickness and applied without bubbles, holes, or defects to adequately protect the surface underneath.

2.5 OTHER MATERIALS

A. Provide other materials not specifically described but required for a complete and proper cleaning as approved by the Agent of the Owner.

PART 3 - EXECUTION

3.1 PROTECTION

- A. Comply with all applicable safety codes and regulations that govern the work, including city, state, water department, OSHA and Federal regulations covering protection and waste water disposal.
- B. Take any precautions necessary to insure the safety of passers-by and those working in the project area. Prevent chemical cleaning solutions from coming into contact with pedestrians, motor vehicles, landscaping, and other surfaces that could be harmed by such contact.
- C. Erect temporary protective enclosures around active work areas. Cover adjacent surfaces with materials that are proven to resist chemical cleaners used unless chemical cleaners being used will not damage adjacent surfaces.
 - 1. Use masking materials that contain only waterproof, UV-resistant adhesives. Apply masking agents to comply with manufacturer's written instructions. When no longer needed, promptly remove masking to prevent adhesive staining. Materials to which protection was attached shall be left in the same condition as that previous to the cleaning operations.
- D. Comply with chemical cleaner manufacturer's written instructions for protecting other surfaces against damage from exposure to its products.
 - 1. Protect paving from staining or damage by the cleaning operations. Repair damaged paving without any additional cost to the Owner.
- E. Protect all open joints and other openings from cleaning materials and water infiltration.

3.2 CLEANING MASONRY, GENERAL

- A. The purpose of the cleaning process is to remove atmospheric deposits, soil, staining, biological growth and other contaminants without damage to or disintegration of the masonry surface.
- B. The result of the cleaning is not expected to return all surfaces to a new appearance. The level of cleaning shall be as approved in the mock-ups as specified herein.
- C. The cleaning procedures shall not damage, etch, burn, bleach, streak, or discolor any stone masonry surface.
- D. It is recognized that variations of the cleaning materials and their application may be required as the job proceeds. However, no variation from previously approved procedures will be acceptable without written approval of the Agent of the Owner.
- E. Apply cleaning materials in strict compliance with the manufacturer's written instructions and as specified. Notify the Agent of the Owner if any conflict is encountered between the specifications and the manufacturer's recommendations for any specified cleaning product or system.
- F. Use only those cleaning methods and materials indicated for each masonry material and location.

- G. Perform each cleaning method indicated in a manner that results in uniform coverage of all surfaces, including comers, moldings, and interstices, and that produces a consistent appearance without streaking or damaging masonry surfaces.

3.3 PRELIMINARY CLEANING

- A. Removal of Plant Growth: Completely remove plant, vines, moss, and shrub growth from masonry surfaces. Carefully remove plants, creepers, and vegetation by cutting at roots and allow to dry for as long as possible before removal. Remove loose soil and debris from open masonry joints.
- B. Before beginning general cleaning, remove extraneous substances that are resistant to cleaning methods being used, as determined by test samples. Extraneous substances include sealant, asphalt, and tar.
- C. Carefully remove heavy accumulations of material from surface of masonry with wood or plastic scrapers. Do not scratch or chip masonry surface.
- D. Remove all remaining setting mortar by hand from disassembled units and the top units of those that remain in-situ in preparation of reassembly.

3.4 BIOLOGICAL GROWTH

- A. Heavy biological deposits should first be loosened using a low pressure washer (100 to 400 psi), or by mechanical scraping using wood or plastic tools.
- B. Apply specified biocidal cleaner, undiluted, with a brush, roller or pump sprayer to a dry surface. Do not pre-wet the surface.
- C. Allow cleaner to dwell on the masonry surface from 2 to 5 minutes as determined by the approved Treatment Plan and mock-up panels. Scrub the surface with non-metallic, short bristle scrub brushes to loosen soiling.
- D. Allow the indicated biocide to remain on the surface 5 to 10 minutes longer as determined by the approved Treatment Plan and mock-up panels. Apply additional biocide solution to maintain a wet surface and continue scrubbing.
- E. Rinse with clean water. Wash down in the same sequence of sections in which product was applied. Test the wall surface with pH paper after final rinsing of cleaning solutions.
- F. Repeat application as described above if required to match the approved mock-up panel.
- G. Work sections that can easily be applied, scrubbed and rinsed in one shift.
- H. Clearly mark work areas, identifying time of application and dwell time.
- I. Thoroughly rinse surrounding adjacent surfaces. After cleaning is complete, remove protection no longer required. Remove tape and adhesive marks.

3.5 SKATEBOARD WAX CLEANING

- A. Gently remove wax mechanically with stiff bristle brushes and plastic scrapers.
- B. Remove remaining wax by wiping with cotton cloth and acetone.
- C. Remove remaining wax with steam cleaner, as wax melts, remove with cotton cloth.

3.6 CLEAN-UP

- A. Collect and remove from the site all cleaning residue and comply with all governmental agencies having jurisdiction regarding the proper containment and disposal of all cleaning materials. Certify to the Owner, in writing, that all materials have been properly disposed of and that all governmental regulations have been met.
- B. The premises shall be kept in clean and orderly condition at all times during the progress of the work. Rubbish, barriers, dirt, debris, tools, equipment, and unused materials shall be removed from the site each day.
- C. Surrounding pavement shall be thoroughly rinsed of all chemicals, dirt, pollutants, and other materials washed off the building each day.
- D. Remove all empty drums, cleaning materials, and related supplies from the site.
- E. After cleaning has been completed, remove any protection.

END OF SECTION

NOT FOR BIDDING

SECTION 040342 - MASONRY RESTORATION

PART 1 - GENERAL

1.1 DESCRIPTION

A. Work included: Provide restoration measures for existing masonry and cast stone masonry including dutchmen, composite patching, and mechanical anchorage where shown on the drawings and as otherwise required for a complete restoration of the masonry.

B. Related work:

1. Documents affecting work of this section include but are not limited to General Conditions, Supplementary Conditions, and Sections of Division 1 of these specifications.
2. Section 040310 – Masonry Cleaning
3. Section 040343 – Mortar and Repointing
4. Section 040345 – Stone Consolidation
5. Section 047200 – Cast Stone Replication

C. Conservator vs. General Contractor/Mason Scope of Work:

- a. Refer to Key Table on Sheet 01.
- b. The masonry elements included in the Conservator's scope of work include the all of the statuary elements including but not limited to: figure, figure pedestal, upper bowl, column, main bowl, main bowl pedestal, plinth and base.
- c. Conservator shall be the lead in coordinating the reassembly. Conservator will submit detailed installation plan for approval by Agent of the Owner prior to work. Conservator and rigger shall work closely with plumber during the re-installation.

1.2 CODES, REGULATIONS AND STANDARDS

A. All masonry restoration procedures shall be done in accordance with regulations, safety standards and requirements of all federal, state and local authorities having jurisdiction over the work including but not limited to the applicable standards for protecting the public and control of pollutants and OSHA regulations for the protection of the workers and the public.

B. Comply with relevant ASTM Standards for all materials.

C. All work shall comply with the *Code of Ethics and Guidelines for Practice* of the American Institute for Conservation of Historic & Artistic Works (AIC).

D. All work shall comply with the Secretary of the Interior's *Standards for the Treatment of Historic Properties* as interpreted by the Agent of the Owner.

1.3 QUALITY ASSURANCE

A. Use adequate numbers of skilled workmen who are thoroughly trained and experienced in the necessary crafts and who are completely familiar with the specified requirements and the methods needed for a proper performance of the work of this Section.

- B. Comply with provisions, reference documents, and standards listed in these specifications unless otherwise noted.
- C. The Contractor shall perform all work according to the approved treatment plan and to the approval of the Agent of the Owner. All treatments shall be the best practice and meet the highest standards of the field. All work shall be coordinated and phased with other work on the project and performed so as to minimize risk of damage to the cultural property. No allowance for unskilled work will be made.
- D. Qualification Data: All work shall be performed by a company having a minimum of five (5) years of successful experience in masonry restoration of statuary or historic buildings of a compatible nature to this project and employing individuals skilled in restoration work on historic masonry or statuary.
1. In accepting and rejecting the work, no account shall be taken for incompetence on the part of the workers.
 2. The Contractor shall maintain a steady work crew consisting of skilled craftspeople who are experienced with the materials and methods specified herein and familiar with the design requirements and a full time foreman. The Contractor shall certify that all workmen under his direction fully understand the requirements of the work.
 3. Submit to the Agent of the Owner a list of similar masonry restoration projects performed in the previous five (5) years. For each project, include project address, description of masonry scope of work, list of materials and systems used, and verifiable Owner contact information.
- E. Project Team Requirements
1. General
 - a. Qualification Requirements: Review of the qualifications of each workman for the work of this section is a requirement of this project. In order to be qualified for this work, submit for each team member a resume and list of at least five (5) representative projects showing the experience of each team member as related to this Project.
 - b. Identify each reference project by name and location, provide an outline description of the scope of work, dollar value of the contract, date of completion, a verifiable reference contact, and a description of the worker's responsibility on the project.
 - c. If, in the opinion of the Agent of the Owner, the worker does not meet the requirements for this section, submit alternate workmen with their references for review.
 2. General Qualifications
 - a. Company Qualifications: The Contractor shall be an experienced masonry restoration firm to perform the work of this Section. The firm shall have completed work similar in material, design, and extent to that indicated for this Project with a record of successful in-service performance. The Contractor and all staff directly involved in masonry restoration shall be fully trained, knowledgeable and experienced in all phases of historic masonry restoration. Examples of previous work successfully completed by the contractor shall include performance of masonry restoration techniques similar to those specified herein.
 - b. Field Supervision: Designate an individual with commensurate experience to act as the foreman to oversee masonry restoration through the duration of the project. The foreman shall be on site at all times that masonry restoration is being performed. The foreman shall participate in the initial mock-up installations. Foremen shall not be changed during the course of the Project except for causes beyond control of the Contractor. Changes in foremen

- during the course of the project may require the Contractor to prepare additional sample installations under the direction of the new foreman to be subject to review and acceptance by the Agent of the Owner. The foreman shall be fluent in English.
- c. Restoration Worker Qualifications: All personnel to be employed for the work of this Section shall be experienced in the specified masonry restoration procedures and familiar with the use of the specified products. Submit resume and reference projects as described above.
3. Conservator: All work on the figure, figure pedestal, upper bowl, column, main bowl, main bowl pedestal, plinth, and base must be completed by a qualified conservator.
 - a. The Conservator shall be of recognized standing in the architectural conservation field with a proven record of satisfactory work and a minimum of ten (10) years proven practical experience using similar restorative techniques. The Conservator shall employ personnel with experience in preservation and maintenance of historic fabric and shall have successfully completed five (5) similar projects in the last ten (10) years and three (3) of these project in the last five (5) years.
 - b. The lead Conservator of the firm must be a Professional Associate of an accredited professional conservation organization such as AIC for a minimum of five (5) years.
 - c. The lead Conservator shall have a minimum of a Master's Degree in art conservation or architectural conservation from a recognized university or a Master's Degree in a related field with a certification in conservation or architectural conservation from a recognized university. The conservation program of the Master's Degree must include materials in conservation work.
 - d. The site Conservator must be a full-time employee of the conservation firm and shall submit a resume that demonstrates experience and skillfulness in carving and the replication of historic features.
 - e. If, in the opinion of the Agent of the Owner, the Conservator does not meet the requirements for this section, submit alternate conservators with their references for review.
 4. Specialty Restoration Products Training: All restoration work must be performed by craftspeople familiar with specified specialty restoration systems for historic limestone and cast masonry. Where required by product manufacturers, training sessions and mock-ups will be required so as to allow for the certification of workmen who will be performing procedures using specialty products.
 - a. Contractor shall arrange for a minimum of one (1) training session of at least one (1) day duration to be provided by the manufacturers of the specified systems.
 - b. Provide on-site training for each system, using specified materials and methods, and using tools and equipment intended to be used by the workmen performing work.
 - c. Provide additional training if procedures are not yielding consistent results.
 - d. Provide additional training sessions as required for new workmen.
 5. All subcontractors shall meet the same requirements as the Contractor.
- F. Manufacturer Qualifications: Manufacturers supplying products for restoration treatments shall have been regularly engaged and specializing for the past 10 years, in the formulation, manufacture and distribution of the specified products.

- G. Source of Materials: Obtain materials for masonry restoration from a single source for each type of material required to ensure a match in quality, color and texture.
- H. The Contractor shall replace all broken, lost and damaged masonry resulting from repair, removal, transportation, cleaning or storing at no additional expense to the Owner.
- I. The Work of this section shall be carefully coordinated with the masonry cleaning, consolidation, and repointing work specified in other sections of these specifications.

1.4 SUBMITTALS

- A. Product data: Within 15 calendar days after the Contractor has received the Owner's Notice to Proceed, submit the following for the approval of the Agent of the Owner:
 - 1. Materials 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. Manufacturer's recommendations in the form of current product data sheets, recommendations for installation including relevant cautions, safety and environmental precautions and application rates. Repair materials technical literature shall describe material properties, storage condition and handling precautions, installation procedures, and material testing requirements of manufacturer.
- B. Shop Drawings:
 - 1. Within 15 calendar days after the Contractor has received the Owner's Notice to Proceed, submit complete shop drawings of all masonry restoration work to the Agent of the Owner for approval. These drawings when viewed together, shall show all details of bedding, bonding, anchoring and other essential aspects of the work. In addition, the finish dimensions and setting number of each piece of masonry shall be shown on the shop drawings.
 - 2. The Contractor shall be responsible for all field measurements and the preparation of setting drawings fully defining the conditions for the installation of the masonry. The Contractor shall review, approve and countersign all shop drawings prior to their submission to the Agent of the Owner for review and approval.
 - 3. The cut masonry fabricator shall prepare all shop drawings, fully defining the conditions for fabricating, finishing and fastening all masonry dutchman.
- C. Samples: Within 15 calendar days after receiving the Owner's Notice to Proceed, submit for the review and approval of the Agent of the Owner, prior to erecting the mock-up:
 - 1. Mortar patching materials: For each stock and custom-mixed masonry patching material, provide samples in the form of briquettes, at least 3 inches long by 1-1/2 inches wide. Document each sample with manufacturer and stock number or other information necessary to order or replicate the material.
 - 2. Each individual to complete composite patching must provide a sample patch completed by that individual in a separate masonry material to show proficiency in working with the specified

- patching material. If the Agent of the Owner rejects the sample, that individual shall not be assigned to install composite patches.
3. Replacement masonry: Provide sets of at least three (3) 12-by-12-inch samples for each type of replacement masonry. The samples shall be finished to match that of existing masonry to be repaired or replaced. If salvage material from the dismantled mermaid group (stored onsite in crates) is sufficient to use for Dutchman, material must be approved by Agent of the Owner.
 4. Hardware: Provide three (3) samples of each type of hardware to be used in the project including:
 - a. Nuts, bolts, and washers
 - b. Masonry anchors
 - c. Shims
 - d. Rods and pins
 5. The Contractor shall be responsible for matching existing masonry to obtain the approval of the Agent of the Owner.
- D. Treatment Plan: For each phase of the masonry treatment process, provide detailed description of materials, methods, equipment, and sequence of operations to be used including access provisions and other general conditions items. Provide a project schedule that details all work phases on all elements.
1. No masonry repair work will occur prior to receipt of written approval of the treatment plan.
 2. If materials and methods proposed for use differ from those recommended by the material manufacturer or specified herein, provide a written description and justification, including evidence of successful use on comparable projects, and a testing program to demonstrate their effectiveness for this Project.
- E. Mock-Up Panels: Prepare field mock-ups at the project site to demonstrate specified repair methods and procedures and allow evaluation of the finished appearance and quality of materials and execution. The mock-ups shall serve to demonstrate the Contractor's ability to complete the work in conformance with these specifications and to the satisfaction of the Agent of the Owner.
1. The location(s) of the field mock-ups shall be as designated by the Agent of the Owner and are representative of each underlying condition requiring treatment. Each worker to perform masonry repairs shall provide a sample of each treatment type, using specified materials and methods, and using tools and equipment intended to be used by the workmen performing work.
 2. Where more than one treatment will occur at the same location, plan mock-ups to allow for each procedure to be evaluated individually as well as in sequential combination. Coordinate preparation of successive mock-ups with contractors performing preceding or succeeding work.
 3. Prepare mock-ups under same weather conditions as are expected during project work.
 4. Allow mock-up areas to cure at least ten (10) days prior to evaluation.
 5. Label all mock-ups with the following information using removable/reversible materials:
 - a. Products or materials used (as applicable).
 - b. Procedures completed (as applicable).
 - c. Date of preparation and temperature/weather conditions.

6. Document photographically the mock-up locations before and after preparation of the mock-up repair(s). Submit digital photographs showing mock-up locations for approval prior to beginning work.
 7. Provide additional mock-ups until results acceptable to the Agent of the Owner are achieved. Commence work only after each field mock-up has been reviewed and accepted by the Agent of the Owner.
 8. The accepted mock-ups are the standard for subsequent work. Retain and protect samples throughout the duration of the project as references for the work and, upon completion, incorporate samples into the work.
 9. If the mock-ups are rejected, remove the rejected work completely.
 10. Prepare the following mock-ups:
 - a. Crack injection repair.
 - b. Cementitious crack fill.
 - c. Mortar patch repair, three (3) locations approximately.
 - d. Pin anchor repair, one (1) location.
 - e. Flush Dutchman installation, set in lime putty, one location. Commence installation of Dutchman sample only after the Agent of the Owner has inspected the repair opening.
- F. Safety Plan: Submit a written safety plan describing the procedures to protect project personnel and the public throughout the work in compliance with OSHA and other applicable regulatory agencies. The safety plan should include containment provisions for both use and accidental spills for all materials used in the treatment.
- G. Temporary Protection Plan: Provide a temporary protection plan detailing the means and methods to be used to protect all surrounding surfaces, landscaping, utilities, structures and public property during the course of the work. Detail the sequence of installation and removal of temporary protection in order to insure that adequate environmental conditions required for the work are maintained.
- H. Documentation of Treatment: Submit written and photographic documentation of the masonry repair process in accordance with recognized conservation practice and the American Institute for Conservation (AIC) guidelines for documentation. Documentation shall include, but is not necessarily limited to, the following:
 1. Results from materials testing both before and after treatment as applicable.
 2. Final treatment procedures as implemented on the project including, but not limited to, materials composition, strength, application parameters, curing procedures, etc.
 3. Photographs documenting the appearance of repaired surfaces before, during and after treatment. Photographs shall be in color and black and white with the color images calibrated to a standard scale.
- I. Reassembly Plan: Conservator to submit detailed reassembly plan for approval.

1.5 DELIVERY, STORAGE, AND HANDLING

A. Delivery

1. General

- a. Deliver materials to site in manufacturer's original and unopened containers and packaging. Labels shall bear types and names of products and manufacturers.
- b. Deliver, store, and handle materials to prevent deterioration or the intrusion of foreign matter.
- c. Do not use materials in broken packages or which show evidence of damage. Damaged or otherwise unsuitable materials shall be removed from the jobsite.

2. Fabricated Masonry Units

- a. Inspect new fabricated masonry units for dimensional accuracy, finish, color, and defects. Reject masonry units delivered to the job site that do not meet the project specifications.
- b. Provide sufficient notification of the arrival of masonry to the Agent of the Owner to allow for their inspection prior to installing the masonry.
- c. Provide assistance to move masonry units for proper visual inspections by the Agent of the Owner.

B. Storage

1. Store materials and new and salvaged masonry components in a secure location.
2. Store components clear of the ground on non-staining skids (i.e. cypress, white pine, poplar, or yellow pine without an excessive amount of resin). Do not use chemically treated wood. DO NOT use chestnut, walnut, oak, birch, and other woods containing tannin or other substances that may stain.
3. Protect repair materials during storage and construction. Keep containers tightly closed and away from damage. Protect liquid components from freezing. Comply with manufacturer's recommendations for minimum and maximum temperature requirements for storage.
4. Store cementitious materials on elevated platforms, under cover, and in a dry location. Do not use cementitious materials that have become damp.
5. Store hydrated lime in manufacturer's original and unopened containers. Discard lime if containers have been damaged or have been opened for more than two days. Store lime putty covered with water in sealed containers.
6. Store sand and other aggregates in such a manner that grading and other required characteristics can be maintained and contamination avoided.
7. Do not store on scaffolding or roof surfaces.

C. Handling Comply with manufacturer's recommendations for handling epoxy materials.

D. Dispose of unused product, containers, debris and waste associated with the work of this section in accordance with local, state and federal regulations. Do not reuse containers.

1. PROJECT CONDITIONS

- A. All work shall be performed in strict accordance with the manufacturer's recommendations and these specifications, as approved by the Agent of the Owner. Any measures necessary to comply with local, state, and federal requirements for noise, pollution and environmental control shall be implemented by the Contractor at no additional cost to the Owner.
- B. Examine project features, substrates, support and conditions under which the work is to be performed and notify the Agent of the Owner of conditions detrimental to the proper completion of the Work. Do not proceed with work until unsatisfactory conditions are corrected.

1. Where conditions are uncovered that are not anticipated by the Drawings and Specifications, notify the Agent of the Owner immediately before repairs are initiated.
2. Where discrepancies occur between anticipated and actual conditions, the Contractor is not to perform the work of this section until a written evaluation and direction is received from the Agent of the Owner. Proceeding with repairs at these locations without direction from the Agent of the Owner is entirely at the risk and cost of the Contractor.

C. Coordination with Other Work:

1. Patching and repairs should proceed after surface cleaning and consolidation of deteriorated masonry surfaces.
2. Patching and repairs should be completed after raking of the mortar joints but before final joint pointing.

D. All features on the project site that are designated to remain shall be protected from all forms of damage during the performance of the Work. The Contractor shall be responsible to restore or replace, at the direction of the Agent of the Owner, any component damaged during the Work to the satisfaction of and at no additional cost to the Owner.

1. Temporarily mask surfaces in the vicinity of the work area as required to prevent treatment materials from staining masonry and existing or new materials in and adjacent to the area of Work. Do not allow masonry patching materials or adhesives to stain materials not to be treated.
2. Protect surrounding surfaces from spillage and overspray at all times. Immediately clean adjacent areas of spilled or sprayed materials. The Contractor is responsible for any over spray, spillage or damage to private property caused by their work.

E. Environmental Conditions:

1. Proceed with mortar and grout preparation and placement only when air and surface temperatures are between 45 and 95 deg F and are predicted to remain in that range for at least 7 days after completion of work.
2. Cold-Weather Requirements: Comply with the following procedures for mortar preparation and use when ambient air and surface temperatures fall below 45 deg F:
 - a. Do not prepare or place mortar when ambient temperature is below 45 deg F or when the substrate surface temperature is colder than 45 deg F.
 - b. When the temperature is expected to fall below 45 deg F during the 48 hours after installation of patching mortar, provide insulating blankets as required to maintain surface temperatures at or above 45 deg F.
 - c. Do not use frozen materials or materials mixed or coated with ice or frost. Do not lower the freezing point of mortar by the use of admixtures or anti-freeze agents. Do not use chlorides in the mortar.
 - d. Do not apply cementitious materials to frosted or frozen surfaces.
 - e. Remove work exposed to subfreezing temperatures if directed by the Agent of the Owner.
3. Hot Weather Requirements: Comply with the following procedures for mortar preparation and use when ambient air and surface temperatures exceed 85 deg F:
 - a. On days when air temperature is predicted to go above 90 deg F, schedule patching work to coincide with time that surface being patched will be in shade or during cooler morning

- hours. Supply temporary screening and protection for work areas where necessary to protect mortar from direct sunlight and wind when the ambient air temperature exceeds 85 deg F.
- b. Do not apply cement-based products to substrates with temperatures of 90 deg F and above. Use special precautions as recommended by manufacturer when ambient temperatures exceed 90 deg F.
 - c. Do not use or prepare mortar when ambient air temperature is above 95 deg F.
4. Cover partially completed work when work is not in progress.
 5. Conditions for Use of Epoxy Products
 - a. Apply epoxies only to dry surfaces meeting the manufacturer's recommendations for surface preparation and working temperatures.
 - b. Apply epoxies to surfaces free of moisture, dirt, organic materials, efflorescent salts, and other contaminants.

1.7 SITE SAFETY

- A. This site is particularly sensitive being a public park and adjacent to the Brandywine River. The utmost care must be taken to maintain a clean, neat job site and to prevent restoration materials from spreading.
- B. The Contractor shall maintain on site all materials and equipment necessary to ensure worker safety and health and to remediate accidental material spills.
- C. Maintain in the general area an emergency medical equipment and supplies as recommended by the manufacturer of the treatment materials to be used. Such equipment may include, but is not limited to, eyewash stations and first aid supplies.
- D. Contractor personnel performing masonry grinding and cutting work or using any product for which the manufacturer recommends shall wear properly fitted and approved respiratory protection with the correct filtering media in accordance with the recommendations of the material manufacturer and OSHA requirements. All personnel shall have medical approval to wear the required respirator protection prior to being issued their own respiratory protection device.
- E. Contractor personnel engaged in treatments shall wear all required personnel protective equipment including respiratory protection, gloves, eye protection, disposable clothing, etc. when working with and applying the product.
- F. Contractor shall provide and maintain on site manufacturer's product data and Safety Data Sheets (SDS) for all treatment materials used on site as required by applicable laws and regulations.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

- A. In other Part 2 articles where titles below introduce lists, the following requirements apply for product selection:
1. Manufacturers: Subject to compliance with requirements, provide products by the manufacturers specified.
 2. Products: Subject to compliance with requirements, provide one of the products specified. Where the use of approved equivalent products is allowed, submittals for approval shall be handled according to Division 1 Substitution procedures.

2.2 MASONRY FOR UNIT REPLACEMENT AND DUTCHMEN

- A. All masonry shall match adjacent existing in color, texture and finish where unit replacement and dutchmen are called for on the drawings. Before matching any masonry specified in this section, a 4' x 4' foot area of existing masonry to be matched shall be thoroughly cleaned in order to show true color and texture. Comply with Section 040310 – Masonry Cleaning. Use salvaged stone from extant Mermaids onsite in crates if material is acceptable and approved by Agent of the Owner.
- B. For cast stone replication units comply with Section 047200 – Cast Stone Replication
- C. No masonry shall be fabricated until color, texture and finish match has been approved in writing by the Agent of the Owner.
- D. The existing masonry exhibits a range of colors, texture, grain, veining, finishes, sizes, and shapes. Provide masonry that proportionally matches that range rather than masonry that matches an individual color, texture, grain, veining, finish, size, or shape within that range.
- E. Profile:
1. All profiles shall match the existing.
 2. Ends and planes shall be square, dressed uniformly, free of projections, mars, chips or depressions. Tapers as approved.
 3. Holes for anchors shall be diamond cored.
- F. Joints and Beds:
1. Joints shall be located only where shown on the approved shop drawings.
 - a. Maximum width of joints to receive sealant shall be 5/16 inch and maximum depth shall be 3/4 inch.
 - b. Fill joints with sealant (color and type as selected by the Agent of the Owner). Rake joints concave, not to project beyond face of masonry.
 2. Mortar beds shall not exceed 3/8 inch.

2.3 REPAIR MORTARS

- A. Comply with Section 040343 of these specifications.
- B. Dutchman Setting Mortar: The setting mortar for dutchman patches shall be composed of lime, sand and water as determined by the manufacturer and supplier.
2. Pre-bagged Setting Mortar (hydraulic lime grout):
 - a. St. Astier, NHL 5.0; as distributed by Limeworks, Telford, PA;
 - b. U.S. Heritage Group, Chicago, IL;
 - c. Cathedral Stone Products, Inc.; Hanover, MD.
 3. Mix designs shall be in accordance with manufacturer's recommendations and approved submittal, as required to meet joint width requirements as specified herein.
 - a. Sand aggregate shall conform to the requirements of ASTM C144, Standard Specification for Aggregate for Masonry Mortar.
 4. No Portland cement, masonry cements, admixtures, additives, accelerators, colorants, or pigments shall be added or used in pre-mixed mortars at any time.
- C. Repair Grouts: The repair grouts shall be composed of lime, aggregates, and water as determined by the manufacturer and supplier.
1. Pre-bagged Lime Grout:
 - a. St. Astier, NHL 5.0 as distributed by Limeworks, Telford, PA;
 - b. DHL (Dispersed Hydrated Lime) Injection Mortar as distributed by U.S. Heritage Group, Chicago, IL; or
 - c. M30 Micro Crack Injection Grout as distributed by Cathedral Stone Products Inc., Hanover, MD.
 2. Mix design shall be in accordance with manufacturer's recommendations and approved submittal, as required to meet field conditions and requirements as specified by the Agent of the Owner.
 3. Sand aggregate shall conform to the requirements of ASTM C144, Standard Specification for Aggregate for Masonry Mortar.
 4. No Portland cement, masonry cements, admixtures, additives, accelerators, colorants, or pigments shall be added or used in the grout at any time.
- D. Composite Patching Mortar
1. Provide custom blended and colored repair mortar from the following manufacturer:
 - a. Lithos Arte, (custom-match will be close to A6 Mergel) as distributed by Remmers BVBA, Grobbendonk, Belgium. Special attention must be paid to lead times with this material.
 2. Multiple blends may be required to match the existing masonry, Rainbow pigments may be added to custom match to help match specific location.

3. Each individual to complete composite patching must provide a sample patch completed by that individual in a separate masonry material to show proficiency in working with the specified patching material. If the Agent of the Owner rejects the sample, that individual shall not be assigned to install composite patches.

E. Setting and Pointing Mortar

1. Provide mortar for bedding and pointing as specified in Section 040343 of these specifications.

2.4 HARDWARE

A. General

1. Metal to be installed in direct contact with masonry shall be corrosion resistant.

B. Masonry Anchors:

1. Provide stainless steel anchors and reinforcements to re-adhere spalled masonry, anchor dutchman and to reinforce cracks and fissures in the masonry.
2. Anchors and reinforcement shall be threaded stainless steel rods.
3. Stainless steel rods shall comply with ASTM Type 302 and 304.
4. Expansion bolts, cinch bolts and plugs shall not be used.
5. Lifting clamps: Manufacturer's standard.

2.5 ADHESIVE MATERIAL

A. Anchor Embedment Epoxy used in conjunction with steel anchor components.

1. Epoxy for embedment of masonry anchors shall be two-component Hilti HY150 system as manufactured by Hilti, Tulsa, Oklahoma, or as equal approved in advance by the Agent of the Owner.
2. Epoxy for in installation: HIT-C20 adhesive as manufactured by Hilti, Tulsa, Oklahoma or Dur-O-Pair Epoxy as manufactured by Dur-O-Wal, Inc., Arlington Heights, Illinois, or as equal approved in advance by the Agent of the Owner.

B. Injection Adhesives

1. Epoxy for injection repairs shall be Sikadur 35, Hi-Mod LV as manufactured By Sika Corporation, Lindhurst, NJ or as equal approved in advance by the Agent of the Owner.
2. Epoxy for sealing injection ports shall be Sikadur 31, Hi-Mod Gel as manufactured by Sika Corporation, Lindhurst, NJ or as equal approved in advance by the Agent of the Owner.
3. Provide automated injection equipment in accordance with manufacturer's recommendations.

2.6 WATER

- #### A. Clean, potable water which shall not contain any mineral content that would result in staining of masonry.

1. Water shall have elemental iron content of less than two (2) parts per million, or 0.0002 percent (by weight).
2. Contractor shall arrange for laboratory testing of water before starting work and every three (3) months thereafter.

2.7 SPECIAL EQUIPMENT

- A. Drill for anchor installation holes into existing masonry shall be a high speed, rotary percussion drill (3 jaw chuck type). SDS hammer drills (i.e. Hilti hammer drill) shall not be used for drilling anchor installation holes.
- B. Coring drill with diamond core bits.

2.8 IN-PAINTING

- A. Provide potassium silicate coating formulated for masonry. Multiple colors may be required to adequately match masonry. Acceptable products:
 1. Keim Mineral Paints, Charlotte, NC; or
 2. Equal, when approved in advance by the Agent of the Owner.

2.9 OTHER MATERIALS

- A. Provide other materials, not specifically described but required for a complete and proper restoration, as selected by the Contractor and approved by the Agent of the Owner.

PART 3 – EXECUTION

3.1 SURFACE CONDITIONS

- A. Examine the areas and conditions under which work of this section will be performed. Correct conditions detrimental to timely and proper completion of the work. Do not proceed until unsatisfactory conditions are corrected.

3.2 GENERAL

- A. Maintain a field set of drawings describing the types and locations of all masonry repairs.

B. Protection of Work

1. Temporarily mask surfaces as required to prevent repair materials from staining surrounding surfaces and materials in and adjacent to the area of Work. Immediately clean surfaces and adjacent areas of spilled materials.
2. Cover partially completed anchors, cracks and joints that are not sealed at the end of each working day or shutdown or when work is not in progress. Extend cover beyond each side of partially completed anchors, cracks and joints and secure tightly in place to prevent exposure to weather.
3. Cover partially completed work at the end of each working day or when work is not in progress. Carefully cover tops and sides of incomplete areas when construction is discontinued at end of

work day, to protect are from precipitation. Protect joints in masonry work to make them watertight until they are permanently sealed.

4. Protect surfaces from mortar droppings at all times.

3.3 SETTING TOLERANCES

A. Set masonry to comply with the following tolerances:

1. Variation from Plumb: Do not exceed 1/8 in. in 10 ft.
2. Variation from Level: Do not exceed 1/8 in. in 10 ft.
3. Joint Tolerance: +25/-25 percent
4. Tolerances shall not be cumulative.

B. Existing Conditions: Where new or salvaged materials are to be integrated within existing assemblies, the following guidelines apply.

1. Install new materials in existing assemblies such that the resulting surface varies no more than +/- 1/32 inch from flush on any side.
2. Install new materials such that tool marks are visually continuous with those on the existing surface.
3. Masonry to masonry joints at Dutchman patches shall be of uniform width end to end and shall be a minimum width of 1/32 inch, not to exceed 1/16 inch in width.
4. Circular Dutchman plug covers: Diameter not more than 1/16 to 1/8 inch smaller than mortise, maintaining a 1/32 inch joint around repair hole.

3.4 INSTALLATION OF ANCHORS AND HARDWARE

A. Install supports, anchors, fasteners and other attachments as indicated in the Contract Documents or as necessary to secure masonry work in place. Adjust anchors, supports and accessories as necessary to secure masonry in accordance with drawings and specifications.

B. Shims

1. Install permanent shims only where indicated on the Drawings.
2. Use single shims of the required thickness where possible.
3. If multiple shims are needed to achieve the required dimension, use shim thickness combination resulting in the fewest shims. Limit the number of shims in a shim stack to three. Shims in stacks are to be adhered or pinned together.
4. Limit the maximum thickness of shim / shim stack to 1/2 inch.

C. Dowels and Pins

1. Drill holes for pins and dowels using rotary, non-impact equipment. Drill anchor holes such as to leave an annular space of 1/8 inch around the dowel or pin to be installed. Length of holes shall allow for maneuvering of components during installation.
2. Drill mating holes straight and level so that pins are parallel to the length of the holes. Use removable register marks as required to ensure proper alignment of mating holes.

3.5 SELECTIVE DISASSEMBLY AND RESETTING

- A. Carefully dismantle selected areas of masonry where designated on the Drawings. Dismantle adjacent assemblies as required for access to the designated masonry, salvaging components for reuse to the greatest extent possible.
- B. Rake or grind mortar from joints to the greatest extent possible before attempted removal of the masonry units. Avoid excessive prying against the arrises of the selected masonry units to avoid spalling and chipping.
- C. Clean old mortar and sealants from masonry units to be reassembled.
- D. Complete pinned repairs on broken units and re-dressing of bearing surfaces where indicated on the Drawings.
- E. Reset masonry units to proper position – right and plumb and true to line and level, with full mortar bed. Ensure that vertical head joints are completely filled with mortar. Rake and point as described in Section 040343, raking final profile for pointing with flexible sealant.
- F. Reinstall adjacent materials or patch in kind as required to complete the installation.

3.6 UNIT REPLACEMENT

- A. Comply with Section 047200 – Cast Stone Replication.
- B. Preparation
 1. Examination – Contractor and Agent of the Owner, together, shall check cast stone materials for fit and finish prior to installation. Do not set unacceptable units.
 2. Brace, secure and retain structural integrity of the adjoining masonry and grade areas; and
 3. Clean adjoining masonry surfaces of mortar using hand tools only.
- C. Setting
 1. All cast stone units shall be laid plumb, level and true to lines;
 2. Match coursing in the adjoining work and as indicated on pre-deconstruction photographs;
 3. Set stones 1/8 in. or less, within the plane of adjacent units.
 4. Joints shall match existing in width and tooling – see Section 040343 of these specifications.
 5. Mortar beds shall not exceed 3/8 inch.
 6. Mortar joints shall be completely filled with mortar; and
 7. Ends of cast stone units shall be buttered with sufficient mortar to completely fill the end joints.
 8. Mortar joints shall be sized and tooled to match the existing conditions. All joints shall be compressed and compacted.
 9. Drench stones with clear, running water just prior to setting.
 10. Fill all dowel holes and anchor slots solid with mortar or non-shrink grout.
 11. Set units in full bed of mortar, unless otherwise detailed.
 12. Rake mortar joints 3/4 in. in for finished pointing.
 13. Remove excess mortar from unit faces immediately after setting.

- D. Mortar joints shall be sized and tooled to match the existing conditions. All joints shall be compressed and compacted.

3.7 MASONRY DUTCHMAN

A. General

1. All masonry dutchman shall be cut accurately to shape and dimension with the jointing as shown on all approved shop drawings. All exposed surfaces are to be true, arrises are to be shaped and continuous with adjoining arrises.
2. Bed and joints shall be dressed for the full thickness of the masonry in which the dutchman is being installed and shall be at right angles to the face unless otherwise shown.
3. All exterior projecting surfaces of the masonry dutchman shall have top surface cut with a wash unless otherwise shown. Where work is built upon masonry having a wash, raised seats at lugs shall be provided to form a level bed.
4. Holes and sinkages shall be cut to receive anchors, cramps, dowels, etc., called for by specification or as indicated on the approved shop drawings.

B. Setting Dutchman Masonry:

1. Cut back damaged masonry to sound material. Provide square edges and rectangular shaped void. Protect edges of existing masonry from damage during insertion of dutchman.
2. Set masonry dutchman in existing masonry with approved moisture insensitive epoxy accurately and in accordance with the approved setting drawings. Thin layer of epoxy shall be applied to masonry to within 1/8 inch of its edges. Do not allow epoxy to spread out over exposed edges.
3. Anchor the dutchman to the adjoining masonry by means of blind dowels using threaded stainless steel rods set in moisture insensitive epoxy. Install rods generally at 16-24 inches on centers.
4. If blind dowels are infeasible, countersink rods to 3/4 inch below surface of dutchman. Fill surface of countersunk entry portal with approved patching mortar.
5. The thickness of joints in all masonry shall be uniform and shall match those in the adjacent work in which the unit replacement or dutchman is being installed. In no case shall the joint exceed 1/4 inch.
6. Patching of defects in the dutchman shall not be permitted. Chips and stains on surfaces shall be redressed, cleaned or replaced with new masonry. No acid leaching agent shall be permitted.

3.8 POINTING

- A. All masonry shall be repointed with mortar as specified in Section 040343 of these specifications, except where sealing is specified.
- B. Except where sealed joints are called for, the face joints of all masonry shall be raked out to a depth of 3/4 inch. All joints shall then be wetted and pointed. The pointing shall be thoroughly packed into the joints completely filling same.
- C. The joints between cut masonry shall be flush with the face of the masonry work and shall be finished smooth. On weathered masonry, tool back the edge of the joint. The joints between masonry and adjoining masonry shall be finished to match the adjoining work.
- D. Generally, all joints shall be hand raked. The use of power tools for the cutting of joints to be repointed is prohibited except where:

1. hard, portland cement based mortar is present in the joint;
2. the use of such power tools will cause less residual damage to the adjoining masonry;
3. the Contractor has demonstrated to the Agent of the Owner that the individual performing the mechanical removal of mortar has the care and skill necessary to satisfactorily perform this task;
AND
4. the Agent of the Owner has approved and agreed to this method of removal in advance.

3.9 CRACK REPAIR

A. Criteria to determine which repair will be used at each location shall be established by the Agent of the Owner.

B. Grout Preparation:

1. Thoroughly mix injection grout in accordance with these specifications to a flowable consistency.
2. If above grout mix results in a grout that is difficult to place, do not proceed with grouting work. Notify Agent of the Owner immediately.
3. Do not retemper grout.
4. Discard grout that is no longer flowable.

C. Adhesive Preparation:

1. Mix epoxy resin components in strict accordance with manufacturer's instructions. Use within the manufacturer's recommended pot life.

D. Injection

1. Remove existing crack fillers (if any) taking care not to damage remaining adjacent masonry work.
2. Remove loose material by blowing out routed crack and crevice beyond with oil-free compressed air.
3. Wash surface and interior of crack using clean water to remove dust, loose or deleterious material which could prevent proper flow or adhesion of grout.
4. Crack should be sealed with removable, non-staining clay or patching mortar as required to create injection ports.
5. For cementitious and lime-based grouts, moisten interior of crack immediately before pumping by flushing with clean water. If interior surfaces dry out before grout is injected, this step must be repeated.
6. Using a clean hypodermic syringe, inject specified grout into the top portion of crack and allow a continuous flow into crack crevice. Verify that the clay or other crack sealant remains intact and repeat this process until crack is filled. Clean up grout or adhesive overflow immediately.
7. Remove clay filler after 48 hours.
8. Fill routed crack area in lifts with specified masonry patching mortar following preparation, cleaning and installation procedures as specified herein.

E. Removal of Ferrous Anchors

1. Remove existing ferrous anchors from masonry components where indicated.
2. Identify and bring to Agent of the Owner's attention existing ferrous anchors that are still in service and not indicated on the Drawings. Do not remove anchors unless directed to do so.

3. Remove anchors by core drilling a small plug if direct removal is not successful.
4. Patch hole after removal of anchor.
 - a. Holes less than 1 inch diameter: Use specified patching mortar.
 - b. Holes 1 inch diameter and greater: Install masonry plug cover Dutchman repair.

3.10 COMPOSITE PATCHING

A. Comply with manufacturers recommendations.

B. Patch the following masonry units:

1. Units indicated to be patched on drawings and confirmed in field by Agent of the Owner.
2. Remove and replace existing patches using hand chisels or dremel, unless otherwise indicated or approved by Agent of the Owner.

C. Surface Preparation

1. Remove loose particles, soil, debris, oil, and other contaminants from existing masonry units at locations to be patched by sweeping with stiff-fiber brush.
2. Remove loose and deteriorated masonry from patch area plus an additional 1/16" of what appears to be sound masonry to a minimum depth of 1 inch with a maximum total depth of 3 inches to ensure that the surface of the masonry to be patched is solid and stable. Use manual or pneumatic cutting techniques only. Do not damage adjacent masonry. Saw cutting is not permitted. Sound prepare patch area with an acrylic hammer to verify masonry integrity.
3. The void created should have square-cut edges, maintaining 90° angle. Undercut edges for larger patches to improve adhesion. Surfaces must be clean but rough cut and tooled to assure optimum bonding of mortar patching material.
4. Where indicated on the Drawings, install threaded stainless steel dowels (or other acceptable anchors) for large mortar patches.
5. Complete preparation by washing surface with clean water and a bristle brush. Surfaces to receive mortar patches must be sound and free of dust, dirt, grease, laitance and/or other coating or foreign substance which may prevent proper adhesion.

D. Installing Lithos Arte Patching Material

1. Stone surface should be dry and free of coatings, cracks, etc.
2. Carve back at least 1 cm or until sound stone. Liquid component should be used as a primer to "etch" the surface of the stone to better receive the Lithos Arte. This is especially true if using the Lithos Arte fairly dry. Care must be taken as liquid component can stain surface of stone. Method can also be used whereby apply in its wet consistency as an initial layer and then build up with as the Lithos Arte dries.
3. Thoroughly mix powder and liquid components the proper ratio of 2.5:1 (powder : liquid). The mix will initially be very runny, but will get gradually harder within 5-15 minutes. Ratio cannot be altered. Do not add additional liquid as the mortar dries. Never introduce water (either into mix or on surface of stone). Mix in small quantities because of short cure time. Workable time about 15 min (dependent on ambient temperature). Hard after 2 hours (dependent on ambient temperature). Complete curing 24 hours (dependent on ambient temperature).

4. As the Lithos Arte cures, shape and carve into desired form.
5. Surface of cured Lithos Arte should be finished with sandpaper (or equal) to create a uniform color and the color that was established by the formulators. Large areas or areas which are exposed to a lot of water should be anchored with non-metal pins. Not recommended to be used as a skim coat, especially in areas that are exposed to water. Does not shrink as hardens. Can be applied to itself.

E. Curing

1. During hot weather (greater than 70 degrees Fahrenheit) protect freshly repaired areas with burlap or plastic sheeting for the first 24 hours after installation. If plastic sheeting is used, it should never come into direct contact with mortar during initial curing and until fully set. It should be hung 3-4" clear of work.
2. Protect newly repaired areas from direct sun and winds.
3. Care should be exercised on masonry surfaces to prevent water run-off from precipitation and/or site operations from saturating mortar patches.

F. Finishing

1. Fine single profile finishes can be achieved by troweling at time of initial setting.
2. Simulation of masonry rough finishes can be made approximately 1 hour from time of application. If shaping, forming of details, or tooling is required, scraping to profile or level with metal tools, and finishing work must be done before material achieves its final set.
3. Carving that does not match shall be removed and replaced. The Agent of the Owner will be the sole opinion of the carving.
4. In-paint if required to aesthetically integrate to adjacent stone. Note that the natural stone has a mottled appearance. In-painting should be anticipated.

3.11 SURFACE TREATMENTS

A. Tinting (in-paint) Surfaces

1. Where cured cementitious patches or crack injection does not provide a satisfactory match to the surrounding surface, the Agent of the Owner may approve the use of the specified mineral silicate coating to tone the surface and improve the finished appearance.

3.12 CLEAN UP

- A. Where staining of masonry surfaces has occurred as a result of patching and/or repair work, notify Agent of the Owner. Do not attempt stain removal prior to consulting with Agent of the Owner. Clean up of staining caused by masonry repair work shall be completed by the Contractor to the satisfaction of, and at no additional cost to, the Owner.
- B. At the conclusion of masonry work, remove scaffolding and equipment used in work. Clean up debris, refuse and surplus material and remove same from premises.

- C. After masonry repair work is completed and joints are pointed, masonry work shall be washed with fiber brushes and clean water to remove construction debris.

END OF SECTION

NOT FOR BIDDING

SECTION 040343 - MORTAR AND REPOINTING

PART 1 - GENERAL

1.1 DESCRIPTION

- A. This Section describes setting and pointing techniques to be used on stone and cast stone masonry.
- B. Work included : Provide all labor, materials, equipment and services required for the work indicated on the drawings, specified in this Section, and as may be required by field conditions, by governmental agencies having jurisdiction over the work and by standards governing the work. Including but not limited to:
1. Rake and repoint existing masonry as indicated on drawings; and
 2. Providing mortar for the setting of new or existing masonry.
- C. Related work:
1. Documents affecting work of this section include but are not limited to General Conditions, Supplementary Conditions and Sections of Division 1 of these specifications.
 2. Section 040310 – Masonry Cleaning
 3. Section 040342 – Masonry Restoration
 4. Section 040345 – Stone Consolidation
 5. Section 047200 – Cast Stone Replication
 6. Section 079200 – Sealants
- D. Conservator vs. General Contractor/Mason Scope of Work:
- a. Refer to Key Table on Sheet A-1.
 - b. The masonry elements included in the Conservator's scope of work include the all of the statuary elements including but not limited to: figure, figure pedestal, upper bowl, column, main bowl, main bowl pedestal, plinth, and base.
 - c. Conservator shall be the lead in coordinating the reassembly. Conservator will submit detailed installation plan for approval by Agent of the Owner prior to work. Conservator and rigger shall work closely with plumber during the re-installation.
- E. Mortar and Joint Sealants:
Pointing mortar to be used at all joint locations *except* the concrete basin and the pool wall sealant to be used in these locations.

1.2 CODES, REGULATIONS AND STANDARDS

- A. All work shall comply with the *Code of Ethics and Guidelines for Practice* of the American Institute for Conservation of Historic & Artistic Works (AIC).
- B. All work shall comply with the Secretary of the Interior's *Standards for the Treatment of Historic Properties* as interpreted by the Agent of the Owner.

- C. Except as modified by Construction Documents, applicable portions of the latest editions of the following reference documents shall govern the Work.
 - 1. National Park Service Cultural Resources, Preservation Brief 2, "Repointing Mortar Joints in Historic Masonry Buildings," revised edition October 1998.
- D. Comply with relevant ASTM Standards for all materials, including but not limited to:
 - 1. ASTM C 0114-2006 Chemical Analysis of Hydraulic Cement.
 - 2. ASTM C 144 Standard Specification for Aggregate for Masonry Mortar.
 - 3. ASTM C 270 Standard Specification for Mortar for Unit Masonry.
 - 4. ASTM C 1218/ C1218M-99 Standard Test Method for Water-Soluble Chloride in Mortar and Concrete
 - 5. ASTM C 1152/ C I 152M-04 Standard Test Method for Acid-Soluble Chloride in Mortar and Concrete
- E. Masonry repointing work shall comply with Specification for Masonry Structures ACI 530.1-08 / ASCE 6-08. Contractor shall maintain at least one copy of ACI 530.1-08 / ASCE 6-08 on site.

1.3 QUALITY ASSURANCE

- A. Use adequate numbers of skilled workmen who are thoroughly trained and experienced in the necessary crafts and who are completely familiar with the specified requirements and the methods needed for a proper performance of the work of this Section.
- B. The Contractor shall perform all work according to the approved treatment plan and to the approval of the Agent of the Owner. All treatments shall be the best practice and meet the highest standards of the field. All work shall be coordinated and phased with other work on the project and performed so as to minimize risk of damage to the cultural property. No allowance for unskilled work will be made.
- C. Comply with provisions, references documents, and standards listed in these specifications unless otherwise noted.
- D. Qualification Data: All work shall be performed by a company having a minimum of five (5) years of successful experience in masonry pointing of statuary or historic buildings of a compatible nature to this project and employing individuals skilled in pointing work on historic masonry or statuary.
 - 1. In accepting and rejecting the work, no account shall be taken for incompetence on the part of the workers.
 - 2. The Contractor shall maintain a steady work crew consisting of skilled craftspeople who are experienced with the materials and methods specified herein and familiar with the design requirements and a full time foreman. The Contractor shall certify that all workmen under his direction fully understand the requirements of the work.
 - 3. Submit to the Agent of the Owner a list of similar masonry pointing projects performed in the previous five (5) years. For each project, include project address, description of masonry pointing scope of work, and verifiable Owner contact information.

E. Project Team Requirements

1. General

- a. **Qualification Requirements:** Review of the qualifications of each workman for the work of this section is a requirement of this project. In order to be qualified for this work, submit for each team member a resume and list of at least five (5) representative projects showing the experience of each team member as related to this Project.
- b. Identify each reference project by name and location, provide an outline description of the scope of work, dollar value of the contract, date of completion, a verifiable reference contact, and a description of the worker's responsibility on the project.
- c. If, in the opinion of the Agent of the Owner, the worker does not meet the requirements for this section, submit alternate workmen with their references for review.

2. General Qualifications

- a. **Company Qualifications:** The Contractor shall be an experienced masonry restoration firm to perform the work of this Section. The firm shall have completed work similar in material, design, and extent to that indicated for this Project with a record of successful in-service performance. The Contractor and all staff directly involved in masonry restoration shall be fully trained, knowledgeable and experienced in all phases of historic masonry restoration. Examples of previous work successfully completed by the contractor shall include performance of masonry restoration techniques similar to those specified herein.
- b. **Field Supervision:** Designate an individual with commensurate experience to act as the foreman to oversee masonry restoration through the duration of the project. The foreman shall be on site at all times that masonry restoration is being performed. The foreman shall participate in the initial mock-up installations. Foremen shall not be changed during the course of the Project except for causes beyond control of the Contractor. Changes in foremen during the course of the project may require the Contractor to prepare additional sample installations under the direction of the new foreman to be subject to review and acceptance by the Agent of the Owner. The foreman shall be fluent in English.
- c. **Restoration Worker Qualifications:** All personnel to be employed for the work of this Section shall be experienced in the specified masonry restoration procedures and familiar with the use of the specified products. Submit resume and reference projects as described above.

3. Conservator: All work on the figure, figure pedestal, upper bowl, column, main bowl, main bowl pedestal, plinth, and base must be completed by a qualified conservator.

- a. The Conservator shall be of recognized standing in the architectural conservation field with a proven record of satisfactory work and a minimum of ten (10) years proven practical experience using similar restorative techniques. The Conservator shall employ personnel with experience in preservation and maintenance of historic fabric and shall have successfully completed five (5) similar projects in the last ten (10) years and three (3) of these project in the last five (5) years.
- b. The lead Conservator of the firm must be a Professional Associate of an accredited professional conservation organization such as AIC for a minimum of five (5) years.
- c. The lead Conservator shall have a minimum of a Master's Degree in art conservation or architectural conservation from a recognized university or a Master's Degree in a related field with a certification in conservation or architectural conservation from a recognized

- university. The conservation program of the Master's Degree must include materials in conservation work.
- d. The site Conservator must be a full time employee of the conservation firm and shall submit a resume that demonstrates experience and skillfulness in carving and the replication of historic features.
 - e. If, in the opinion of the Agent of the Owner, the Conservator does not meet the requirements for this section, submit alternate conservators with their references for review.
4. Specialty Restoration Products Training: All restoration work must be performed by craftspeople familiar with specified specialty restoration systems for historic limestone and cast stone. Where required by product manufacturers, training sessions and mock-ups will be required so as to allow for the certification of workmen who will be performing procedures using specialty products.
- a. Contractor shall arrange for a minimum of one (1) training session of at least one (1) day duration to be provided by the manufacturers of the specified systems.
 - b. Provide on-site training for each system, using specified materials and methods, and using tools and equipment intended to be used by the workmen performing work.
 - c. Provide additional training if procedures are not yielding consistent results.
 - d. Provide additional training sessions as required for new workmen.
5. All subcontractors shall meet the same requirements as the Contractor.
- F. Source of Materials: Obtain materials for mortar from a single source for each type of material required to ensure a match in quality, color and texture.

1.4 SUBMITTALS

- A. Product data: Within 5 calendar days after the Contractor has received the Owner's Notice to Proceed, submit
1. Material lists for systems proposed to be provided under this Section;
 2. Technical literature on mortar, grout and accessory materials shall describe material properties, storage condition and handling precautions, installation procedures, and material testing requirements of manufacturer.
- B. Samples - Within 15 calendar days after receiving the Owner's Notice to Proceed, submit samples for the Agent of the Owner's approval of color and texture. Resubmit samples until approved by the Agent of the Owner.
1. Submit three (3) cured hand samples of setting and pointing mortar set in 1/2 inch by 6 inch plastic or aluminum channels.
 2. Pointing and setting mortars: Match mortar to existing original mortar and use materials matched to components.
- C. Safety Plan: Submit a written safety plan describing the procedures implemented by the contractor to protect project personnel and the public throughout the work in compliance with OSHA and other applicable regulatory agencies. The safety plan should include containment provisions for both use and spills for all materials used in the treatment.

- D. Mock-ups: Prepare field mock-ups at the project site to demonstrate raking and pointing procedures and allow the evaluation of the finished appearance and quality of materials and execution. The mock-ups shall serve to demonstrate the Contractor's ability to complete the work in conformance with these specifications and to the satisfaction of the Agent of the Owner.
1. The location(s) of the field mock-ups shall be as designated by the Agent of the Owner and are representative of each type of pointing to be completed. Tooling of finish mortar shall match intact masonry. Each worker to perform pointing shall provide a sample of each pointing type, using specified materials and methods, and using tools and equipment intended to be used by the workmen performing work.
 2. Prepare mockups under same weather conditions as are expected during Project Work.
 3. Allow mock-up areas to cure at least ten (10) calendar days prior to evaluation.
 4. Label all mockups with the following information using removable/reversible materials:
 - a. Products or materials used (as applicable)
 - b. Procedures completed (as applicable)
 - c. Date of preparation and temperature and weather conditions
 5. Provide additional samples until results acceptable to the Agent of the Owner are achieved. Commence work only after each field mock-up has been reviewed and accepted by Agent of the Owner.
 6. The accepted samples are the standard for subsequent work. Retain and protect samples throughout the duration of the project as references for the work and, upon completion, incorporate samples into the work.
 7. Each craftsperson proposed for the project shall prepare the following mock-ups:
 - a. Each type of joint raking and repointing required, not to exceed three (3) linear feet each.

1.5 DELIVERY, STORAGE, AND HANDLING

- A. Deliver materials to site in manufacturer's original unopened containers and packaging, bearing labels as to manufacturer, type and name of products, grade, batch and production data. Do not use materials in broken packages or which show evidence of damage. Damaged or otherwise unsuitable materials shall be removed from the jobsite.
- B. Protect repair materials during storage and construction. Keep containers tightly closed and away from damage. Protect liquid components from freezing. Comply with manufacturer's recommendations for minimum and maximum temperature requirements for storage.
- C. Store cementitious materials on elevated platforms, under cover, and in a dry location. Do not use cementitious materials that have become damp.
- D. Store hydrated lime in manufacturer's original and unopened containers. Discard lime if containers have been damaged or have been opened for more than two days. Store lime putty covered with water in sealed containers.
- E. Store sand in such a manner that grading and other required characteristics can be maintained and contamination avoided.
- F. Dispose of unused product, containers, debris and waste associated with the work of this Section in accordance with local, state and federal regulations. Do not reuse containers.

G. Do not store materials on the scaffold.

1.6 ENVIRONMENTAL CONDITIONS

- A. Proceed with mortar and grout preparation and placement only when air and surface temperatures are between and 40 and 95 deg F and are predicted to remain in that range for at least 7 days after completion of work.
- B. Cold-Weather Requirements: Comply with the following procedures for mortar and grout preparation and use when ambient air and surface temperatures fall below 40 deg F:
1. Do not prepare or place pointing or patching mortar when ambient temperature is below 40 deg F or when the substrate surface temperature is colder than 40 deg F.
 2. When the temperature is expected to fall below 40 deg F during the 48 hours after installation of patching or pointing mortar, provide insulating blankets as required to maintain surface temperatures at or above 40 deg F.
 3. Do not use frozen materials or materials mixed or coated with ice or frost. Do not lower the freezing point of mortar by the use of admixtures or anti-freeze agents. Do not use chlorides in the mortar.
 4. Do not apply cementitious materials to frosted or frozen surfaces.
 5. Remove work exposed to sub-freezing temperatures if directed by the Agent of the Owner.
- C. Hot Weather Requirements: Comply with the following procedures for mortar preparation and use when ambient air and surface temperatures exceed 85 deg F:
1. On days when air temperature is predicted to go above 90 deg F, schedule pointing work to coincide with time that surface being pointed will be in shade or during cooler morning hours. Supply temporary screening and protection for work areas where necessary to protect mortar from direct sunlight and wind when the ambient air temperature exceeds 85 deg F.
 2. Do not apply cement-based products to substrates with temperatures of 90 deg F and above. Use special precautions as recommended by manufacturer when ambient temperatures exceed 90° deg F.
 3. Do not use or prepare mortar when ambient air temperature is above 95 deg F.
- D. Cover partially completed work when work is not in progress.

1.7 SITE SAFETY

- A. The site is particularly sensitive being a public park and adjacent to the Brandywine River. The utmost care must be taken to maintain a clean, neat job site and to prevent the spread of restoration materials.
- B. The Contractor shall maintain on site all materials and equipment necessary to ensure worker safety and health and to remediate accidental material spills.
- C. Maintain in the general work area emergency medical equipment and supplies as recommended by the manufacturer of the treatment materials to be used. Such equipment may include, but is not limited to, eyewash stations and first aid supplies.

- D. Contractor personnel performing joint raking operations shall wear properly fitted and approved respiratory protection with the correct filtering media in accordance with the recommendations of the material manufacturer and OSHA requirements. All personnel shall have medical approval to wear the required respirator protection prior to being issued their own respiratory protection device.
- E. Contractor personnel engaged in treatments shall wear all required personnel protective equipment including respiratory protection, gloves, eye protection, disposable clothing, etc.
- F. Contractor shall provide and maintain on site manufacturer's product data and Safety Data Sheets (SDS) for all treatment materials used on site as required by applicable laws and regulations.

PART 2 - PRODUCTS

2.1 MATERIALS

- A. Rosendale Natural Cement 10C as distributed by Edison Coatings, Inc. complying with ASTM C10 or equal as approved in advance by the Agent of the Owner.
- B. Natural Hydraulic Lime 5 as manufactured by Limeworks, Telford, PA, complying with ASTM C141 or equal as approved in advance by the Agent of the Owner.
- C. Natural Hydraulic Lime 3.5 as manufactured by Limeworks, Telford, PA, complying with ASTM C141 or equal as approved in advance by the Agent of the Owner.
- D. White Portland Cement.
- E. Sand: Provide clean, sharp, well-graded aggregate free from soluble salts, dust, lumps, shale, alkali, surface coatings and organic matter and complying with ASTM C144.
 - 1. Yellow Bar Sand
 - 2. 00 Sand
- F. Admixtures such as anti-freeze or air entraining shall not be permitted.
- G. Water shall be potable and free from deleterious amounts of acids, alkali or organic materials.
- H. Admixt. ingredients (to include "other materials") as directed by the Agent of the Owner.

2.2 MORTAR MIXES

A. Pointing Mortar Formula:

- 1 part Rosendale Natural Cement 10C (ASTM C10)
- 2 parts NHL 5 Lime
- 3 parts Yellow Bar Sand
- 6 parts 00 Sand
- 1. Adjust the formula as required to match the color of the pointing mortar as found on the extant in-situ fountain.

B. Parge Formula for Stair Risers:

- 1 part NHL 3.5 Lime
- 1 part white Portland cement
- 2 parts Yellow Bar Sand
- 4 parts 00 sand

1. Adjust the formula as required to match the color of the cast stone stairs.

C. Mortar Types

1. All new mortars shall comply with ASTM C270 for the types listed below:

- a. Type S Mortar - To be used in below grade foundation wall pointing.
- b. Type N Mortar - Bedding mortar for replacement masonry.
- c. Type N or O Mortar - Pointing mortar for all masonry work.

2. Adjust mixture of mortar materials in order to achieve the ASTM types.

2.3 MIXING OF MORTAR

- A. Mortar ingredients shall be measured carefully and mixed by one (1) workman to insure that proportions are controlled and maintained throughout all the work.
- B. Mortar shall be mixed in an approved type power operated batch mixer. Mixing time shall be such as to produce a homogeneous plastic mortar, but shall not be less than five minutes approximately two minutes of which shall be for mixing the dry materials and not less than three minutes for continuing the mixing after water has been added. A minimum amount of water shall be used to produce a workable consistency for the mortar's intended purpose.
- C. Mortar for pointing and repointing shall be as dry a consistency as will produce a mortar sufficiently plastic to be worked into the joints.
- D. Where mortar or grout is required in small batches or less than a cubic yard and the Agent of the Owner specifically approves, mortar may be mixed by hand in clean wooden or metal boxes prepared for the purpose but not on slabs, sidewalks, etc., provided that the methods of mixing and transferring the mortar are approved by the Agent of the Owner.
- E. After mixing, mortars for pointing or setting shall sit for 20 minutes prior to use to allow for initial shrinkage. Mortar shall be placed in final position within two hours of mixing. Retempering of partially hardened material shall not be permitted.

PART 3 - EXECUTION

3.1 GENERAL

- A. Maintain a field set of drawings describing the types and locations of all pointing.
- B. Protection of Work

1. Temporarily mask surfaces as required to prevent mortar and grout materials from staining masonry units and materials in and adjacent to the area of Work. Immediately rinse with water masonry surfaces and adjacent areas of spilled materials.
2. Cover partially completed work at the end of each working day or when work is not in progress. Carefully cover tops and sides of incomplete areas when construction is discontinued at end of work day, to protect area from precipitation. Protect joints in masonry to make them watertight until they are permanently sealed.
3. Protect masonry surfaces from mortar droppings at all times.

3.2 EXAMINATION

- A. Examine project features, substrates, support and conditions under which the work is to be performed and notify the Agent of the Owner of conditions detrimental to the proper completion of the Work. Do not proceed with work until unsatisfactory conditions are corrected.
 1. Where conditions are uncovered that are not anticipated by the Drawings and Specifications, notify the Agent of the Owner immediately before repairs are initiated.
 2. Where discrepancies occur between anticipated and actual conditions, the Contractor is not to perform the work of this Section until a written evaluation and direction is received from the Agent of the Owner. Proceeding with repairs at these locations without direction from the Agent of the Owner is entirely at the risk and cost of the Contractor.

3.3 RAKING OUT OF MORTAR JOINTS

- A. Rake out existing mortar joints between masonry units to minimum depth of $\frac{3}{4}$ inch or until reaching original sound mortar, whichever is greater.
- B. Use of a grinder is only permitted subject to approval by the Agent of the Owner of each workman who will be using a grinder. A fine grinder blade shall be used so that a thin layer of the existing pointing mortar remains attached to the masonry units on either side of the joint.
- C. Remove remaining mortar using hand tools only.
- D. Do not damage masonry units during joint preparation.

3.4 MIXING MASONRY MORTAR AND GROUT

- A. General
 1. Mix mortar in accordance with ASTM C-270.
 2. Measure materials by volume or equivalent weight as indicated. Do not measure by shovel.
 3. Mix ingredients in a clean mechanical batch mixer or by hand using a clean trowel and bucket. Do not allow fragments of dried mortar to contaminate fresh material.

3.5 POINTING OF MORTAR JOINTS

- A. Brush, vacuum, blow out or flush joints with water to remove dirt and loose debris, working from top to bottom of wall. If washing joints to remove debris, all lower sections of masonry must be pre-

wetted to avoid old lime mortar adhering to the surface of the walls. Remove all dust as any loose dust that is left in the joints will deplete the bond of the mortar to the masonry.

- B. Dampen to control suction of exposed surface of masonry adjacent to joints prior to repointing. Maintain a water sprayer on site at all times during the repointing process. Surface of masonry where mortar is to be placed shall be damp, without visible water on the masonry surface.
- C. Mortar shall be mixed according to manufacturer recommendations. The mortar should be plastic and workable but as stiff as possible. This drier consistency enables the material to be tightly packed into the joint, allows for cleaner work, and prevents shrinkage cracks as the mortar cures.
- D. The mortar should be pushed into the back of the joints in ½” layers, avoiding large volumes of deep filling. Avoid slicking the surface of the mortar. Pushing into the joint is preferable.
- E. Compact each ½” layer thoroughly and allow it to become thumbprint hard before applying the next layer.
- F. Final tooling shall match the extant tooling on the elements that remain in-situ.
- G. Fill joints proud of the adjacent surface or as required to achieve the approved profile. When the final layer of mortar is thumbprint hard the joints shall be finished to match profile of approved sample.
- H. Promptly clean any excess mortar from face of masonry with water and soft brush or damp cloth.

3.6 PROTECTION OF FRESHLY POINTED MORTAR JOINTS

- A. Mist newly pointed masonry joints with water for at least three (3) minutes at the end of the day of initial installation.
- B. Protect newly pointed joints from direct sun and winds for the first 3 days after installation.
- C. Hot Weather Precautions:
 - 1. During hot weather (greater than 70° Fahrenheit) protect freshly pointed areas with burlap or plastic sheeting for the first 24 hours after installation. If plastic sheeting is used, it should never come into direct contact with the mortar during initial curing and until fully set. It shall be hung 3-4" clear of the work.
 - 2. During hot weather (greater than 70 degrees Fahrenheit) thoroughly dampen the masonry with water mist a minimum of two or three times per day for the first 3 days following installation. Care should be exercised on masonry surfaces to avoid water run-off from the face of the masonry, over-saturating the mortar joints.
- D. Do not proceed with water washing activities for at least 28 days following repointing of masonry.

3.7 CLEAN-UP

- A. Upon completion of work, properly dispose of debris and leave work area in broom clean condition.

END OF SECTION

SECTION 040345 - STONE CONSOLIDATION

PART 1 – GENERAL

1.1 DESCRIPTION OF THE WORK

A. This Section describes the application of proprietary consolidant treatments to stabilize disaggregated stone surfaces.

1. The work includes: the chemical consolidation of deteriorated stone surfaces as indicated on the Drawings.

B. Related Sections

1. Drawings and general provisions of the contract, including General and Supplemental Conditions and Division 1 Specification Sections apply to this Section.
2. Section 040310 – Masonry Cleaning
3. Section 040342 – Masonry Restoration
4. Section 040343 – Mortar and Repointing
5. Section 047200 – Cast Stone Repointing

1.2 CODES, REGULATIONS, AND STANDARDS

A. All masonry restoration procedures shall be done in accordance with regulations, safety standards and requirements of all federal, state and local authorities having jurisdiction over the work including but not limited to the applicable standards for protecting the public and control of pollutants and OSHA regulations for the protection of the workers and the public.

B. Comply with relevant ASTM Standards for all materials including but not limited to:

1. ASTM E2187 - 0 (2008) Standard Guide for Selection and Use of Stone Consolidants

C. All work shall comply with the *Code of Ethics and Guidelines for Practice* of the American Institute for Conservation of Historic & Artistic Works (AIC).

D. All work shall comply with the Secretary of the Interior's *Standards for the Treatment of Historic Properties* as interpreted by the Agent of the Owner.

1.3 QUALITY ASSURANCE

A. Use adequate numbers of skilled workmen who are thoroughly trained and experienced in the necessary crafts and who are completely familiar with the specified requirements and the methods needed for a proper performance of the work of this Section.

B. The Contractor shall maintain a steady work crew consisting of skilled craftspeople who are experienced with the materials and methods specified herein and familiar with the design requirements and a full time foreman. The Contractor shall certify that all workmen under his direction fully understand the requirements of the work.

- C. Comply with provisions, references documents, and standards listed in these specifications unless otherwise noted.
- D. The Contractor shall perform all work according to the approved treatment plan and to the approval of the Agent of the Owner. All treatments shall be the best practice and meet the highest standards of the field. All work shall be coordinated and phased with other work on the project and performed so as to minimize risk of damage to the cultural property. No allowance for unskilled work will be made.
- E. Qualification Data: All work shall be performed by a company having a minimum of five (5) years of successful experience in masonry restoration of statuary or historic buildings of a compatible nature to this project and employing individuals skilled in restoration work on historic masonry or statuary.
1. In accepting and rejecting the work, no account shall be taken for incompetence on the part of the workers.
 2. The Contractor shall maintain a steady work crew consisting of skilled craftspeople who are experienced with the materials and methods specified herein and familiar with the design requirements and a full time foreman. The Contractor shall certify that all workmen under his direction fully understand the requirements of the work.
 3. Submit to the Agent of the Owner a list of similar masonry restoration projects performed in the previous five (5) years. For each project, include project address, description of masonry scope of work, list of consolidation materials and systems used, and verifiable Owner contact information.
- F. Project Team Requirements
1. General
 - a. Qualification Requirements: Review of the qualifications of each workman for the work of this section is a requirement of this project. In order to be qualified for this work submit for each team member a resume and list of at least five (5) representative projects showing the experience of each team member as related to this Project.
 - b. Identify each reference project by name and location, provide an outline description of the scope of work, dollar value of the contract, date of completion, a verifiable reference contact, and a description of the worker's responsibility on the project.
 - c. If, in the opinion of the Agent of the Owner, the worker does not meet the requirements for this section, submit alternate workmen with their references for review.
 2. General Qualifications
 - a. Company Qualifications: The Contractor shall be an experienced masonry restoration firm to perform the work of this Section. The firm shall have completed work similar in material, design, and extent to that indicated for this Project with a record of successful in-service performance. The Contractor and all staff directly involved in masonry restoration shall be fully trained, knowledgeable and experienced in all phases of historic masonry restoration. Examples of previous work successfully completed by the contractor shall include performance of masonry restoration techniques similar to those specified herein.
 - b. Field Supervision: Designate an individual with commensurate experience to act as the foreman to oversee masonry restoration through the duration of the project. The foreman shall be on site at all times that masonry consolidation is being performed. The foreman shall participate in the initial mock-up installations. Foremen shall not be changed during the course of the Project except for causes beyond control of the Contractor. Changes in foremen

- during the course of the project may require the Contractor to prepare additional sample installations under the direction of the new foreman to be subject to review and acceptance by the Agent of the Owner. The foreman shall be fluent in English.
- c. Restoration Worker Qualifications: All personnel to be employed for the work of this Section shall be experienced in the specified masonry restoration procedures and are familiar with the use of the specified products. Submit resume and reference projects as described above.
3. Conservator: All work on the column, plinth or base must be completed by a qualified conservator.
 - a. The Conservator shall be of recognized standing in the architectural conservation field with a proven record of satisfactory work and a minimum of ten (10) years proven practical experience using similar restorative techniques. The Conservator shall employ personnel with experience in preservation and maintenance of historic fabric and shall have successfully completed five (5) similar projects in the last ten (10) years and three (3) of these projects in the last five (5) years.
 - b. The lead Conservator of the firm must be a Professional Associate of an accredited professional conservation organization such as AIC for a minimum of five (5) years.
 - c. The lead Conservator shall have a minimum of a Master's Degree in art conservation or architectural conservation from a recognized university or a Master's Degree in a related field with a certification in conservation or architectural conservation from a recognized university. The conservation program of the Master's Degree must include materials in conservation work.
 - d. The site Conservator must be a full-time employee of the conservation firm and shall submit a resume that demonstrates experience and skillfulness in the consolidation of historic features.
 - e. If, in the opinion of the Agent of the Owner, the Conservator does not meet the requirements for this section, submit alternate conservators with their references for review.
 4. Specialty Restoration Products Training: All restoration work must be performed by craftspeople familiar with consolidation of limestone. Where required by product manufacturers, training sessions and mock-ups will be required so as to allow for the certification of workmen who will be performing procedures using specialty products.
 - a. Contractor shall arrange for a minimum of one (1) training session of at least one (1) day duration to be provided by the manufacturers of the specified systems.
 - b. Provide on-site training for each system, using specified materials and methods, and using tools and equipment intended to be used by the workmen performing work.
 - c. Provide additional training if procedures are not yielding consistent results.
 - d. Provide additional training sessions as required for new workmen.
 5. All subcontractors shall meet the same requirements as the Contractor.
- G. Manufacturer Qualifications: Manufacturers supplying products for restoration treatments shall have been regularly engaged and specializing for the past 10 years, in the formulation, manufacture and distribution of the specified products.
 - H. Source of Materials: Obtain materials for masonry restoration from a single source for each type of material required to ensure a match in quality.

- I. The Work of this section shall be carefully coordinated with the masonry cleaning, restoration and repointing work specified in other sections of these specifications.

1.4 SUBMITTALS

- A. Product Data: Product data: Within 15 calendar days after the Contractor has received the Owner's Notice to Proceed, submit the following for the approval of the Agent of the Owner:
 1. Materials 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. Manufacturer's recommendations in the form of current product data sheets, recommendations for installation including relevant limitations, safety and environmental precautions and application rates. Repair materials technical literature shall describe material properties, storage condition and handling precautions, installation procedures, and material testing requirements of manufacturer.
 4. Include manufacturer's recommendations for application and use for proprietary formulations.
 5. Technical literature on stone treatment materials shall describe material properties, storage condition and handling precautions, installation procedures, and material testing requirements of manufacturer.
 6. SDS (Safety Data Sheets) for specified products.
- B. Qualification Data: For Contractor and Restoration Specialists including field supervisors. Submit proof of qualifications, a project list and verifiable references with contacts and phone numbers indicating that the firm has completed 3 projects of similar scope in outdoor architectural stone statuary conservation during the last five years.
- C. Treatment Program: For each phase of the stone treatment process, provide detailed description of materials, methods, equipment, and sequence of operations to be used including access provisions and other general conditions items. Provide a project schedule that details all work phases on all elements. At the Contractor's option, the treatment plan for stone consolidation may be incorporated into a comprehensive treatment plan for the entire project provided the information requirements described herein are met.
 1. No stone consolidation work will occur prior to receipt of written approval of the treatment plan.
 2. If materials and methods proposed for use differ materially from those recommended by the material manufacturer or specified herein, provide a written description and justification, including evidence of successful use on comparable projects, and a testing program to demonstrate their effectiveness for this Project.
- D. Hazardous Materials and Procedures Assessment: Submit a written assessment detailing specific safety and health concerns associated with each material and procedure described in the Treatment Plan. The assessment shall include proposed procedures to protect personnel and the public from the identified hazards and descriptions of all personal and site protection equipment required for each activity listed in the Hazard Assessment. The scope of the assessment shall also address the safe transport, handling and storage of all tools and materials outlined in the Treatment Plan.
- E. Safety Plan: Submit a written safety plan describing the procedures implemented by the Conservator to protect project personnel and the public throughout the work in compliance with OSHA and other

applicable regulatory agencies. The safety plan should include containment provisions for both use and spills for all materials used in the treatment.

- F. Temporary Protection Plan: Provide a temporary protection plan detailing the means and methods to be used to protect all statuary, landscaping, utilities structures and public property during the course of the work. The plan should include protection of the stone statuary during installation of access and scaffolding (if applicable), during all work on the statuary, and after completion of the work as well as plans to protect adjacent materials. Detail the sequence of installation and removal of temporary protection in order to insure that adequate environmental conditions required for the work are maintained.
- G. Documentation of Treatment: Submit written and photographic documentation of the stone consolidation process in accordance with recognized conservation practice and the American Institute for Conservation (AIC) Guidelines for Documentation. Documentation shall include, but is not necessarily limited to, the following:
1. Results from materials testing both before and after treatment as applicable.
 2. Final treatment procedures as implemented on the project including, but not limited to, materials composition, strength, application parameters, curing procedures, etc.
 3. Photographs documenting the appearance of consolidated surfaces before, during and after treatment. Photographs shall be in color and black and white with the color images calibrated to a standard scale.
 4. As-built drawings created on the elevation drawings provided in the Contract Documents. The as-built drawings shall indicate location, type and dates of treatments performed.

1.5 DELIVERY, STORAGE AND HANDLING

- A. Deliver materials to the site in manufacturer's original and unopened containers and packaging, bearing labels indicating type and names of products and manufacturers. Check materials and/or containers upon arrival to inspect for damage. Do not use materials showing evidence of damage or contamination. Remove damaged and contaminated materials from the site.
- B. Store materials off the ground and under waterproof covers in an area removed from construction operations. Do not stack pallets. Comply with manufacturer's recommendations for minimum and maximum temperature requirements for storage. Protect liquid components from freezing.
- C. Keep all containers tightly closed when not in use. Mark any container with the date of first use upon opening.
- D. Dispose of unused product, containers, debris and waste associated with the work of this Section in accordance with local, state and federal regulations. Do not reuse containers.

1.6 PROJECT CONDITIONS

- A. All work shall be performed in strict accordance with the manufacturer's recommendations and these specifications, as approved by the Agent of the Owner. Any measures necessary to comply with local, state, and federal requirements for noise, pollution and environmental control shall be implemented by the Contractor at no additional cost to the Owner.

- B. Examine project features, substrates, support and conditions under which the Work is to be performed and notify the Agent of the Owner of conditions detrimental to the proper completion of the Work. Do not proceed with work until unsatisfactory conditions are corrected.
1. Where conditions are uncovered that are not anticipated by the Drawings and Specifications, notify the Owner and Agent of the Owner immediately before repairs are initiated.
 2. Where discrepancies occur between anticipated and actual conditions, the Contractor is not to perform the work of this Section until a written evaluation and direction is received from the Agent of the Owner. Proceeding with repairs at these locations without direction from the Agent of the Owner is entirely at the risk and cost of the Contractor.
- C. Coordination with Other Work:
1. Treatment of deteriorated limestone surfaces should proceed after removal of deteriorated mortar joints and patches and before installation or patching or pointing mortars and other repairs.
 2. Treatment of deteriorated limestone surfaces should proceed after completion of all scheduled cleaning.
- D. All features on the project site that are designated to remain shall be protected from all forms of damage during the performance of the Work. Extreme care shall be exercised during all work on or near the site not to break, deface, spill, chip, detach, abrade or otherwise damage any site component. The Contractor shall be responsible to restore or replace, at the direction of the Agent of the Owner, any component damaged during the Work to the satisfaction of and at no additional cost to, the Owner.
1. Temporarily mask surfaces in the vicinity of the treatment area as required to prevent treatment materials from staining stone and existing or new materials in and adjacent to the area of Work. Do not allow stone consolidants to stain cast stone and other materials not to be treated.
 2. Protect surrounding surfaces from spillage and overspray at all times. Immediately clean adjacent areas of spilled or sprayed materials. The Contractor is responsible for any over spray, spillage or damage to private property caused by their work.
 3. Protect passing cars and pedestrians from overspray of treatment materials.
- E. Environmental Conditions:
1. Stone consolidation work shall take place only when ambient conditions are suitable to the materials to be used and / or the procedures to be performed.
 - a. Treat stone only when air and surface temperatures are between 50 and 90 deg F and are predicted to remain above 45 deg F for at least 7 days after completion of work. Do not apply treatments when air temperature is at less than 50 deg F or greater than 90 deg F and in accordance with the product manufacturer's directions.
 - b. Do not apply treatments in direct sunlight. Provide temporary shades over work areas to protect treated surfaces.
 - c. Do not apply treatments unless surface temperatures are greater than 5 deg F above the dew point.
 - d. Do not apply coatings during inclement weather such as rain, fog, mist, snow, etc. nor to damp or wet surfaces, or when these conditions are imminent.

- e. Cease exterior applications of treatments when the wind velocity exceeds 10 miles per hour unless provisions are taken to capture overspray. Temporary enclosures may be provided.
- F. Site Safety: The Contractor shall maintain on site all materials and equipment necessary to ensure worker safety and health and to remediate accidental material spills.
- 1. Maintain in the general work area emergency medical equipment and supplies as recommended by the manufacturer of the treatment materials to be used. Such equipment may include, but is not limited to, eyewash stations and emergency showers.
 - 2. Contractor personnel performing treatments shall wear properly fitted and approved respiratory protection with the correct filtering media in accordance with the recommendations of the material manufacturer and OSHA requirements. All personnel shall have medical approval to wear the required respirator protection prior to being issued their own respiratory protection device.
 - 3. Contractor personnel engaged in treatments shall wear all required personnel protective equipment including gloves, eye protection, disposable clothing, etc. when working with and applying the product.
 - 4. Contractor shall provide and maintain on site manufacturer's product data and Safety Data Sheets (SDS) for all treatment materials used on site as required by applicable laws and regulations.

PART 2 – PRODUCTS

2.1 STONE CONSOLIDANT

- A. Consolidation of deteriorated limestone surfaces shall be accomplished using a process consisting of the application of two VOC compliant, waterborne compounds to create a UV and chemically stable, well-adhered hydroxylated conversion layer on the stone surface followed by a consolidation treatment that stabilizes masonry by replacing the natural binding materials lost due to weathering with silicon dioxide.
- 1. Consolidant treatment shall be Conservare HCT and HCT Finishing Rinse followed by Conservare OH100. All as manufactured by ProSoCo, Inc., Lawrence, KS or Agent of the Owner-approved equivalent.
 - a. Product shall be used in concentrate form. Do not dilute or alter any component unless specifically directed by manufacturer's representative.
 - b. Following treatment, do not reuse previously used material.

2.2 EQUIPMENT

- A. Apply consolidation treatment products with soft bristle brush or a low pressure sprayer. Sprayers should be corrosion resistant to avoid discoloration.

PART 3 – EXECUTION

3.1 GENERAL

- A. Document the condition of all stone features and surfaces following the final report records requirements before beginning consolidation work. Prepare and maintain written and photographic records concurrently with all stages of the work.
- B. Coordinate the work of this Section with all other construction activities and conservation treatments included in the project and with the approved Project Schedule.
- C. Surface and air temperatures should be between 50–90°F (10–32°C) during application. Relative humidity shall be greater than 40%.
- D. Do not apply consolidant to wet surfaces, during rain or when there is a chance of rain.

3.2 PREPARATION

- A. Remove all loose surface debris, crusts, paint coatings, bird droppings or other contaminants from the dry stone. Complete all scheduled surface cleaning. Surfaces must be clean, dry and absorbent to assure deep penetration and reaction of the consolidant.
- B. Test and adjust spray equipment pressure and spray pattern to produce a saturating, low-pressure, wet spray without atomizing or vaporizing the material.

3.3 APPLICATION

- A. Using a low pressure spray or brush, apply the first component of the consolidant (HCT) in at least three successive saturating applications.
 - 1. Working from the bottom of the work area to the top, apply the consolidant to the point of rejection.
 - 2. Allow the treatment to be absorbed for a minimum of 30 minutes or until surface is visibly dry and absorbent.
 - 3. Repeat steps 1 and 2 until three saturating applications have been completed.
 - 4. Allow treated surfaces to dry for 30 minutes or until surface is visibly dry before applying the finishing rinse.
 - 5. Protect treated surfaces from rain for 2–4 hours or until surface is dry.
- B. Using a low pressure spray or brush, apply the second component of the consolidant (Finishing Rinse), the finishing rinse, in a single saturating application.
 - 1. Apply the finishing rinse to the point of rejection.
 - 2. Allow treated surfaces to dry for 24 hours before applying additional conservation treatments or surface repairs.
 - 3. Protect treated surfaces from rain for 2–4 hours or until surface is dry.

- C. Using a low pressure spray or brush, apply the third component of the consolidant (OH100) in at least three successive saturating applications.

1. Protect surface to be treated from direct sunlight for several hours prior to beginning application. Excessive surface heating can be prevented by shading with awnings. When possible, initiate treatment when surfaces are shaded. Keep surface temperature relatively cool to prevent too rapid evaporation of OH100 and to ensure proper penetration. Do not apply during rain, to wet surfaces or when there is a chance of rain.
2. Apply by low-pressure spray, brush or dipping. Larger surfaces should be treated using low pressure spray equipment, small areas with spray tanks.
3. Ensure proper penetration and prevent crust formations by applying OH100 in repeated applications referred to as "cycles." A cycle consists of three successive saturating applications at 5–15 minute intervals. Typical treatments involve two or three cycles (6–9 separate applications). Allow 20 to 60 minutes between cycles.
4. Laboratory testing will determine the optimum delay between applications and between cycles. Additional material should be applied until excess material remains visible on the surface for 60 minutes following the last application. Once this degree of saturation is achieved over the entire surface, the first treatment is complete.
5. Immediately flush excess surface materials using industrial grade MEK (methyl ethyl ketone) or mineral spirits.
6. If a second treatment is necessary, allow two to three weeks curing time following first treatment.
7. Clean tools and equipment immediately with mineral spirits, denatured alcohol or an equivalent cleaning solvent. Remove overspray and spills as soon as possible.
8. Protect from rain for 48 hours following application.

3.4 CLEAN UP

- A. The Contractor is responsible for inspecting all completed work, identifying any defects and performing touch-up work where necessary.
- B. Keep premises in clean and orderly condition at all times during the progress of the work. Remove rubbish, barriers, dirt, debris, tools, equipment, and unused materials from the site each day. Remove all coating materials and empty containers from the site each day.
- C. On completion of the work, all equipment, surplus materials, and rubbish shall be removed and the site shall be left in a clean condition. Remove all temporary protection including all tape, polyvinyl sheet, strippable mask, etc.

END OF SECTION

NOT FOR BIDDING

SECTION 047200 - CAST STONE REPLICATION

PART 1 - GENERAL

1.1 DESCRIPTION

A. Work included: Provide unit replacement with cast stone masonry units where shown on the drawings and as needed for a complete and proper job. Work of this Section includes but may not be limited to:

1. Replicate and install eight (8) masonry units of cast stone from two (2) molds, (four (4) units each). The replications are of the mermaid grouping as indicated on the drawings. These units have been laser scanned and a 3d model derived from that scan. The successful contractor will be provided with the computer files of the scan and the digital model to provide to the cast stone manufacturer.
2. Manufacturer shall furnish custom cast stone statuary covered by this specification.
3. Installing contractor shall unload, store, furnish all anchors, and set the cast stone statuary as required.

B. Related work:

1. Documents affecting work of this section include, but are not limited to General Conditions, Supplementary Conditions, and Sections of Division I of these specifications.
2. Section 040310 – Masonry Cleaning
3. Section 040342 – Masonry Restoration
4. Section 040343 – Mortar and Repointing
5. Section 079200 – Sealants

C. Definitions

1. Cast Stone – a refined architectural concrete building unit manufactured to simulate natural cut stone, used in Division 4 masonry applications.
 - a. *Dry Cast* – manufactured from zero slump concrete.
 - *Vibrant Dry Tamp (VDT) casting method*: Vibratory ramming of earth moist, zero-slump concrete against a rigid mold until it is densely compacted.
 - *Machine casting method*: Manufactured from earth moist, zero-slump concrete compacted by machinery using vibration and pressure against a mold until it becomes densely consolidated.
 - b. *Wet Cast* – manufactured from measurable slump concrete.
 - *Wet casting method*: manufactured from measurable slump concrete and vibrated into a mold until it becomes densely consolidated.

1.2 CODES, REGULATIONS AND STANDARDS

A. All cast stone procedures shall be done in accordance with regulations, safety standards and requirements of all federal, state and local authorities having jurisdiction over the work, including, but not limited to the applicable standards for protecting the public and control of pollutants and OSHA regulations for the protection of the workers and the public.

- B. All work shall comply with the *Code of Ethics and Guidelines for Practice* of the American Institute for Conservation of Historic & Artistic Works (AIC).
- C. All work shall comply with the Secretary of the Interior's *Standards for the Treatment of Historic Properties* as interpreted by the Agent of the Owner.
- D. All work shall comply with all pertinent standards, but shall not be limited to those listed below:
1. ACI 318 – Building Code Requirements for Reinforced Concrete.
 2. ASTM A 185 - Standard Specification for Steel Welded Wire Reinforcement, Plain, for Concrete.
 3. ASTM A 615/A 615M - Standard Specification for Deformed and Plain Billet-Steel Bars for Reinforced Concrete.
 4. ASTM C 33 – Standard Specification for Concrete Aggregates.
 5. ASTM C 150 - Standard Specification for Portland Cement.
 6. ASTM C 595 – Blended Cement
 7. ASTM C 1157 – Hydraulic Cement
 8. ASTM C 173 - Standard Test Method for Air Content of Freshly Mixed Concrete by the Volume Method.
 9. ASTM C 231 - Standard Test Method for Air Content of Freshly Mixed Concrete by the Pressure Method.
 10. ASTM C 260 - Standard Specification for Air-Entrained Admixtures for Concrete.
 11. ASTM C 270 - Standard Specification for Mortar for Unit Masonry.
 12. ASTM C 426 – Standard Test Method for Linear Shrinkage of Concrete Masonry Units.
 13. ASTM C 494/C 494M – Standard Specification for Chemical Admixtures for Concrete.
 14. ASTM C 618 – Specification for Coal Fly Ash and Raw or Calcined Natural Pozzolan for Use as a Mineral Admixture in Concrete.
 15. ASTM C 666 – Standard Test Method for Resistance of Concrete to Rapid Freezing and Thawing.
 16. ASTM C 979 - Standard Specification for Coloring Pigments for Integrally Pigmented Concrete.
 17. ASTM C 989 – Standard Specification for Ground Granulated Blast-Furnace Slag for Use in Concrete.
 18. ASTM C 1118 – Standard Specification for Fiber Reinforced Concrete and Shotcrete.
 19. ASTM C 1194 - Standard Test Method for Compressive Strength of Architectural Cast Stone.
 20. ASTM C 1195 - Standard Test Method for Absorption of Architectural Cast Stone.
 21. ASTM C 1364 - Standard Specification for Architectural Cast Stone.
 22. ASTM D 2244 – Standard Test Method for Calculation of Color Differences from Instrumentally Measured Color Coordinates.
 23. Cast Stone Institute Technical Manual (Current Edition)
- E. Testing: Test three specimens per 500 cu. ft. at random from job site or from plant production in accordance with referenced standards.
1. Three (3) field cut cube specimens from each of these samples shall have an average minimum compressive strength of not less than 85% with no single specimen testing less than 75% of design strength as allowed by ACI 318.
 2. Three (3) field cut cube specimens from each of these samples shall have an average maximum cold-water absorption of 6%.
 3. Field specimens shall be tested in accordance with ASTM C 1194 and C 1195.

1.3 QUALITY ASSURANCE

- B. Use adequate numbers of skilled workman who are thoroughly trained and experienced in the necessary crafts and who are completely familiar with the specified requirements and the methods needed for a proper performance of the work of this section.
- C. Qualification Data: All work shall be performed by a company having a minimum of five (5) years of successful experience in cast stone statuary installation and restoration work of a compatible nature to this project and employing individuals skilled in cast stone masonry work.
1. All subcontractors shall meet the same requirements of Contractor.
 2. In accepting and rejecting the work, no account shall be taken for incompetence on the part of the workers.
 3. The Contractor shall maintain a steady work crew consisting of skilled craftspeople who are experienced with the materials and methods specified herein and familiar with the design requirements and a full time foreman. The Contractor shall certify that all workmen under his direction fully understand the requirements of the work.
 4. Submit to the Agent of the Owner a list of similar masonry projects performed in the previous five (5) years. For each project, include project address, description of masonry cleaning scope of work, list of cleaning materials and systems used, and verifiable Owner contact information.
- D. Project Team Requirements
1. General
 - a. Qualification Requirements: Review of the qualifications of each workman for the work of this section is a requirement of this project. In order to be qualified for this work submit for each team member a resume and list of at least five (5) representative projects showing the experience of each team member as related to this Project.
 - b. Identify each reference project by name and location, provide an outline description of the scope of work, dollar value of the contract, date of completion, a verifiable reference contact, and a description of the worker's responsibility on the project.
 - c. If, in the opinion of the Agent of the Owner, the worker does not meet the requirements for this section, submit alternate workmen with their references for review.
 2. General Qualifications
 - a. Company Qualifications: The Contractor shall be an experienced masonry restoration firm skilled in cast stone to perform the work of this Section. The firm shall have completed work similar in material, design, and extent to that indicated for this Project with a record of successful in-service performance. The contractor and all staff directly involved with cast stone shall be fully trained, knowledgeable and experienced in all phases of historic masonry. Examples of previous work successfully completed by the contractor shall include performance of techniques similar to those specified herein.
 - b. Field Supervision: Designate an individual with commensurate experience to act as the foreman to oversee cast stone installation through the duration of the project. The foreman shall be on site at all times that cast stone installation is being performed. The foreman shall participate in the initial mock-up installations. Foremen shall not be changed during the course of the Project except for causes beyond control of the Contractor. Changes in foremen during the course of the project may require the Contractor to prepare additional sample

- installations under the direction of the new foreman to be subject to review and acceptance by the Owner. The foreman shall be fluent in English.
- c. Restoration Worker Qualifications: All personnel to be employed for the work of this Section shall be experienced in the specified cast stone procedures and are familiar with the use of the specified products. Submit resume and reference projects as described above.
- E. Source of Materials: Obtain all materials for cast stone from a single source for each type of material required to ensure a match in quality, color, and texture.
- F. Cast Stone Manufacturer:
1. Manufacturer shall have sufficient plant facilities to produce the quality, shapes, quantities and size of cast stone required in accordance with the project schedule.
 2. Cast stone Manufacturer shall have a minimum of ten (10) years experience manufacturing custom cast stone statuary and / or custom historic replication masonry units.
 3. Manufacturer shall submit a written list of projects similar in scope and at least three (3) years of age, along with owner, Agent of the Owner and contractor references.
- G. Standards: Comply with the requirements of the Cast Stone Institute Technical Manual.
- H. The contractor shall replace all broken, lost and damaged cast stone units resulting from repair, removal, transportation, cleaning or storing at no additional expense to the Owner.

1.4 SUBMITTALS

- A. Product data : Within 15 calendar days after the Contractor has received the Owner's Notice to Proceed, submit the following for the approval of the Agent of the Owner :
1. Materials list of items proposed to be provided under this Section;
 2. Manufacturer specifications and other data needed to prove compliance with the specified requirements.
- B. Shop Drawings :
1. Within 15 calendar days after the Cast Stone Manufacturer has received the Owner's Notice to Proceed, submit complete shop drawings of all cast stone masonry reconstruction Work to the Agent of the Owner for approval. These drawings, when viewed together, shall show all details of bedding, bonding, anchoring and other essential aspects of the work. In addition, the finish dimensions shall be shown on the shop drawings.
 2. Shop drawings shall be developed from the laser scan and 3-D model as provided by the Owner.
 3. Cast Stone Manufacturer shall be responsible for the preparation of setting drawings fully defining the conditions for the installation of the cast stone. The Contractor shall review, approve and countersign all shop drawings prior to their submission to the Agent of the Owner for review and approval.
 4. The Cast Stone Manufacturer shall prepare all shop drawings, fully defining the conditions for fabricating all cast stone.
- C. Samples : Within 15 calendar days after receiving the Owner's Notice to Proceed, submit for the review approval of the Agent of the Owner :

1. Three (3) individual matching samples of each type of cast stone masonry unit proposed to be used for unit replacement, sample shall be a detail of the face. The samples shall show the full range of color, texture and finish proposed for the work. Upon approval by the Agent of the Owner, one (1) sample will be returned to the Contractor for his use as a reference during the execution of the work. The approved sample shall be used as a reference by the Agent of the Owner in accepting and rejecting the work in place.
2. The Cast Stone Manufacturer shall submit as many samples as required to ensure that the color range and texture shall match the cleaned, finished natural stone.
3. Samples shall be minimum of 12-by-12-inch.
4. The Cast Stone Manufacturer shall be responsible for matching existing cast stone masonry units to obtain the approval of the Agent of the Owner.
5. One (1) sample each of all proposed attachments, anchors, inserts and fasteners.

1.5 DELIVERY, STORAGE AND HANDLING

- A. Store all cast stone masonry materials on level platforms which allow air circulation under the stacked materials. Store on dry, cured white pine of similar non-staining planking.
- B. Safeguard all materials against scaling or chipping. Protect edges from damage and all surfaces shall be kept free from dirt, soot, grime, grease or other discoloring matter.
- C. Cover and protect against weathering prior to use.

PART 2 - PRODUCTS

2.1 CAST STONE MASONRY UNITS

- A. Provide new cast stone masonry units to match existing in size, type, dimension, shape, composition, finish, texture and color where unit replacement is required. Before matching any cast stone masonry unit specified in this section, an area of existing cast stone to be matched shall be thoroughly cleaned in order to show the color and texture.
 1. Acceptable manufacturers:
 - a. Essex Works Limited, Brooklyn, NY;
 - b. Corinthian Cast Stone, Wyandanch, NY
 - c. Haddonstone (USA) Ltd, Pueblo, CO; or
 - d. Equal as approved in advance by Agent of the Owner.
- B. If existing Mermaid units are on site and can be mined for samples to match.
- C. No unit shall be ordered until color, texture and finish match has been approved in advance and in writing by the Agent of the Owner.
- D. Color consistency shall fall within the range of samples approved by the Agent of the Owner.
- E. Comply with ASTM C 1364.
- F. Physical properties: Provide the following:

1. Compressive Strength - ASTM C 1194: 6,500 psi minimum for products at 28 days.
2. Absorption - ASTM C 1195: 6% maximum by the cold water method.
3. Air Content – ASTM C 173 or C 231, for wet cast product shall be 4-8% for units exposed to freeze-thaw environments. Air entrainment is not required for VDT products.
4. Freeze-thaw – ASTM C 1364: The CPWL shall be less than 5% after 300 cycles of freezing and thawing.
5. Linear Shrinkage – ASTM C 426: Shrinkage shall not exceed 0.065%.

2.2 RAW MATERIALS

- A. Portland cement – Type I or Type III, white and/or grey, ASTM C 150.
- B. Coarse aggregates - Granite, quartz or limestone, ASTM C 33, except for gradation, and are optional for the VDT casting method.
- C. Fine aggregates - Manufactured or natural sands, ASTM C 33, except for gradation.
- D. Colors - Inorganic iron oxide pigments, ASTM C 979 except that carbon black pigments shall not be used.
- E. Admixtures- Comply with the following:
 1. ASTM C 260 for air-entraining admixtures.
 2. ASTM C 494/C 495M Type A - G for water reducing, retarding, accelerating and high range admixtures.
 3. Other admixtures: inorganic water repellents and other chemicals, for which no ASTM Standard exists, shall be previously established as suitable for use in concrete by proven field performance or through laboratory testing.
 4. ASTM C 618 inorganic admixtures of dark and variable colors shall not be used in surfaces intended to be exposed to view.
 5. ASTM C 979 granulated blast furnace slag may be used to improve physical properties. Tests are required to verify these features.
- F. Water – Potable
- G. Reinforcing bars:
 1. ASTM A 615/A 615M. Grade 40 or 60 steel galvanized or epoxy coated when cover is less than 1.5in
 2. Welded Wire Fabric: ASTM A 185 where applicable for wet cast units.
- H. Fiber reinforcement (optional): ASTM C 1116
- I. All anchors, dowels and other anchoring devices and shims shall be standard building stone anchors commercially available in stainless steel Type 302 or 304.

2.3 MOLD

- A. Mold for cast stone shall be created from a positive model. Provide positive model from the laser scan / 3D model computer files provided by the Owner.

1. Milled model shall be completed in 15# urethane foam sealed with Permalac or similar synthetic sealer.
2. Model shall be tooled to 0.125 inch diameter or smaller.

2.4 COLOR AND FINISH

- A. Match cleaned existing material as designated by the Agent of the Owner.
- B. All surfaces intended to be exposed to view shall have a fine-grained texture similar to natural stone, with no air voids in excess of 1/32 in. and the density of such voids shall be less than 3 occurrences per any 1 in 0.2 and not obvious under direct daylight illumination at a 5 ft distance.
- C. The color of the existing stone is not uniform. The surfaces are mottled from brownish-yellow to yellowish- white. The cast stone elements shall match this change in color.
- D. Units shall exhibit a texture approximately equal to the approved sample when viewed under direct daylight illumination at a 5 ft distance.
 1. ASTM D 2244 permissible variation in color between units of comparable age subjected to similar weathering exposure.
- E. Minor chipping resulting from shipment and delivery shall not be grounds for rejection. Minor chips shall not be obvious under direct daylight illumination from a 5-ft distance.
- F. Remove cement film, if recommended, from exposed surfaces prior to packaging for shipment.

2.5 REINFORCING

- A. Reinforce the units as required by the drawings and for safe handling and structural stress.
- B. Minimum reinforcing shall be 0.25 percent of the cross section area.
- C. Reinforcement shall be noncorrosive where faces exposed to weather are covered with less than 2 in. of concrete material. All reinforcement shall have minimum coverage of twice the diameter of the bars.
- D. Welded wire fabric reinforcing shall not be used in dry cast products.

2.6 CURING

- A. Cure units in a warm curing chamber approximately 100°F at 95 percent relative humidity for approximately 12 hours, or cure in a 95 percent moist environment at a minimum 70°F (21.1°C) for 16 hours after casting. Additional yard curing at 95 percent relative humidity shall be 350 degree-days (i.e. 7 days @ 50°F or 5 days @ 70°F) prior to shipping. Form cured units shall be protected from moisture evaporation with curing blankets or curing compounds after casting.

2.7 MANUFACTURING TOLERANCES

- A. Cross section dimensions shall not deviate by more than $\pm 1/8$ in. (3 mm) from approved dimensions.

- B. Length of units shall not deviate by more than length/ 360 or $\pm 1/8$ in. (3 mm), whichever is greater, not to exceed $\pm 1/4$ in. (6 mm).
 - 1. Maximum length of any unit shall not exceed 15 times the average thickness of such unit unless otherwise agreed by the manufacturer.
- C. Warp, bow or twist of units shall not exceed length/ 360 or $\pm 1/8$ in., whichever is greater.
- D. Location of dowel holes, anchor slots, flashing grooves, false joints and similar features – On formed sides of unit, $1/8$ in., on unformed sides of unit, $3/8$ in. maximum deviation.

2.8 PRODUCTION QUALITY CONTROL

A. Testing:

- 1. Test compressive strength and absorption on specimens selected at random from plant production.
- 2. Samples shall be taken and tested from every 500 cubic feet of product produced.
- 3. Perform tests in accordance ASTM C 1194 and C 1195.
- 4. Have tests performed by an independent testing laboratory every six months.
- 5. New and existing mix designs shall be tested for strength and absorption compliance prior to producing units.
- 6. Retain copies of all test reports for a minimum of two (2) years.

2.9 MORTAR AND SEALANT

- A. Comply with Sections 040343 and 079200

2.10 DELIVERY, STORAGE AND HANDLING

- A. Mark production units with the identification marks as shown on the shop drawings.
- B. Package units and protect them from staining or damage during shipping and storage.
- C. Provide an itemized list of product to support the bill of lading.

2.11 OTHER MATERIALS

- A. Provide other materials, not specifically described, but required for a complete and proper restoration/reconstruction, as selected by the Contractor and approved by the Agent of the Owner.

PART 3 - EXECUTION

3.1 SURFACE CONDITIONS

- A. Examine the areas and conditions under which the work of this section will be performed. Correct conditions detrimental to timely and proper completion of the work. Do not proceed until unsatisfactory conditions are corrected.

3.2 ENVIRONMENTAL CONDITIONS

- A. Do not perform any cast stone masonry reconstruction when air temperature is below 40° F.
- B. Protect all cast stone masonry reconstruction work from direct exposure to wind and sun when erected in ambient air temperature of 99° F in the shade with relative humidity less than 50%.
- C. Protect completed cast stone masonry and adjacent surfaces in the following manner. Temperature ranges indicated apply to mean daily temperatures except for grouted masonry. For grouted masonry the following temperature ranges apply to anticipated minimum night temperatures :
 - 1. 40-32° F :
 - a. Protect masonry from rain or snow for at least 24 hours by covering with weather-resistive membrane.
 - 2. 32-20° F:
 - a. Completely cover masonry with weather-resistive insulating blankets or similar protection for at least 24 hours, 48 hours for grouted masonry.
 - 3. 20° F and below :
 - a. Except as otherwise indicated, maintain masonry temperature above 32° F for 24 hours using enclosure and supplementary heat, electric heating blankets, infrared lamps or other methods proven to be satisfactory. For grouted masonry maintain heated enclosure to 40° F for 48 hours.

3.3 CAST STONE UNIT REPLACEMENT

- A. Preparation
 - 1. Examination - Contractor and Agent of the Owner, together, shall check cast stone materials for fit and finish prior to installation. Do not set unacceptable units.
 - 2. Brace, secure and retain structural integrity of the adjoining masonry and grade areas; and
 - 3. Clean adjoining masonry surfaces of mortar using hand tools only.
- B. Setting
 - 1. All cast stone units shall be laid plumb, level and true to lines;
 - 2. Match coursing in the adjoining work and as indicated on pre-deconstruction photographs;
 - 3. Set stones 1/8 in. or less, within the plane of adjacent units.
 - 4. Joints shall match existing in width and tooling - see Section 040343 of these specifications.
 - 5. Mortar beds shall not exceed 3/8 inch.
 - 6. Mortar joints shall be completely filled with mortar; and
 - 7. Ends of cast stone units shall be buttered with sufficient mortar to completely fill the end joints.
 - 8. Mortar joints shall be sized and tooled to match the existing conditions. All joints shall be compressed and compacted.
 - 9. Drench stones with clear, running water just prior to setting.
 - 10. Fill all dowel holes and anchor slots solid with mortar or non-shrink grout.

11. Set units in full bed of mortar, unless otherwise detailed.
12. Rake mortar joints 3/4 in. in for finished pointing.
13. Remove excess mortar from unit faces immediately after setting.

3.4 POINTING

- A. Comply with Section 040343.
- B. The joints shall match the existing in size, profile, color and texture.

3.5 SEALED JOINTS

- A. Install sealant as shown on the approved shop drawings and in conformance with the manufacturer's printed instructions. Color of sealant shall be selected by the Agent of the Owner.

3.6 REPAIR AND CLEANING

- A. Repair chips with touchup materials furnished by manufacturer.
- B. The cleaning shall be done as directed in Section 040310 Masonry Cleaning.
- C. Saturate units to be cleaned prior to applying an approved masonry cleaner.
- D. Consult with manufacturer for appropriate cleaners.

END OF SECTION

NOT FOR BIDDING

SECTION 055000 - MISCELLANEOUS METALS

PART 1 - GENERAL

1.1 DESCRIPTION

- A. Work included : Provide miscellaneous metal work and metal fastening devices as shown on the drawings as specified herein and as needed for a complete and proper installation.
- B. Related work :
1. Documents affecting work of this section include but are not limited to General Conditions, Supplementary Conditions and sections in Division 1 of these specifications.
 2. Section 040310 – Masonry Cleaning
 3. Section 040342 – Masonry Restoration
 4. Section 040345 – Stone Consolidation
 5. Section 047200 – Cast Stone Reproduction

1.2 CODES, REGULATIONS AND STANDARDS

- A. All work shall comply with *the Code of Ethics and Guidelines for Practice* of the American Institute for Conservation of Historic & Artistic Works (AIC).
- B. All work shall comply with the Secretary of the *Interior's Standards for the Treatment of Historic Properties* as interpreted by the Agent of the Owner.
- C. Comply with relevant ASTM Standards for all materials.

1.3 QUALITY ASSURANCE

- A. Use adequate numbers of skilled workmen who are thoroughly trained and experienced in the necessary crafts and who are completely familiar with the specified requirements and the methods needed for a complete and proper performance of the work of this section.
- B. Perform shop and/or field welding required in connection with the work of this section in strict accordance with pertinent recommendations of the American Welding Society.

1.4 SUBMITTALS

- A. Product data: Within 15 calendar days after the Contractor has received the Owner's Notice to Proceed, submit :
1. Materials 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. Manufacturer's recommended installation procedures which when approved by the Agent of the Owner will become the basis for accepting or rejecting actual installation procedures used for the work;

4. Samples :
 - a. single samples of each item and finish proposed to be provided under this section;
 - b. 12 inch long samples of factory-fabricated products exposed as finish work. Provide complete specified factory finish.

PART 2 - PRODUCTS

2.1 MATERIALS

- A. In fabricating items which will be exposed to view, limit materials to those which are free from surface blemishes, pitting, rolled trade names, and roughness.
- B. Comply with the following standards :
 1. Steel plates, shapes and bars : ASTM A36.
 2. Steel plates to be bent or cold formed : ASTM A283, grade C.
 3. Steel tubing (hot-formed, welded or seamless) : ASTM A501.
 4. Steel bars and bar size shapes : ASTM A306, grade 65 or ASTM A36.
 5. Cold finish steel bars : ASTM A108.
 6. Cold roll carbon steel sheets : ASTM A 336.
 7. Galvanized carbon steel sheets : ASTM A 526 with G90 zinc coating in accordance with ASTM A525.
 8. Stainless steel sheets : ASTM type 302 or 304, 24 gauge with No. 4 finish.
 9. Stainless steel anchor bolts and pins ASTM type 302 or 304.
 10. Gray iron castings : ASTM A48, class 10.
 11. Malleable iron castings : ASTM A47.
 12. Steel pipe : ASTM A53, grade A, schedule 40, black finish.
 13. Concrete inserts :
 - a. Threaded or wedge type galvanized ferrous castings of malleable iron complying with ASTM A27.
 - b. Provide required bolts, shims and washers hot-dipped galvanized in accordance with ASTM A153.
 14. Brass fasteners: Provide brass bolts, screws, washers, nuts and other fasteners as required and complying with ASTM requirements and all other pertinent standards.

2.2 FASTENERS

- A. General:
 1. For exterior use and where built into exterior walls, provide stainless steel type 302 or 304 only.
 2. Provide fasteners of type, grade and class required for particular use.
 3. Expansion bolts, cinch bolts and plugs shall not be permitted in masonry restoration work.
- B. Comply with the following standards:
 1. Bolts and nuts : Provide hexagon-headed regular type complying with ASTM A307, grade A.

2. Lag bolts : Provide square-headed type complying with Fed. Spec. FF-B-561.
3. Machine screws : Provide cadmium plated steel type complying with Fed. Spec. FF-S-111.
4. Washers:
 - a. Plain washers : Comply with Fed. Spec. FF-W-92, round, carbon steel.
 - b. Lock washers : Comply with Fed. Spec. FF-W-84, helical spring type carbon steel.
5. Toggle bolts : provide type, class and style needed but complying with Fed. Spec. FF-B-588.
6. Anchorage devices : Provide expansion shield complying with Fed. Spec. FF-S-325.

2.3 OTHER MATERIALS

- A. Provide other materials, not specifically described but required for a complete and proper installation, as selected by the Contractor subject to the approval of the Agent of the Owner.

2.4 PAINT

- A. Shop Primer: Use lead-free primer as approved by the Agent of the Owner.
- B. Coat dissimilar metals which come in contact with each other with bituminous paint.

PART 3 - EXECUTION

3.1 SURFACE CONDITIONS

- A. Examine the areas and conditions under which work of this section will be performed. Correct conditions detrimental to timely and proper completion of the work. Do not proceed until unsatisfactory conditions are corrected.

3.2 COORDINATION

- A. Coordinate as required with other trades to assure proper and adequate provision in the work of those trades for interrelationship with work of this section.
- B. Verify that the work of this section is compatible with the metal work of others. Trace path of travel of storm water to confirm potential for electrolysis.

3.3 INSTALLATION

- A. General:

1. Set work accurately into position, plumb, level, true and free from rack.
2. Anchor firmly into position.
3. Where field welding is required, comply with AWS recommended procedures of manual-shielded metal-arc welding for appearance and quality of weld and for methods to be used in correcting welding work.
4. Grind exposed welds smooth and touchup shop prime coats.

5. Do not cut, weld or abrade surfaces which have been hot-dip galvanized after fabrication and which are intended for bolted or screwed field connections.
- B. Immediately after erection, clean the field welds, bolted connections and abraded areas of shop priming. Paint the exposed areas with same material used for shop priming.

END OF SECTION

NOT FOR BIDDING

SECTION 079200 - SEALANTS

PART 1 - GENERAL

1.1 DESCRIPTION OF THE WORK

- A. The Section describes the installation of joints sealants in masonry substrates.
- B. Related Sections
 - 1. Drawings and general provisions of this contract, including General and Supplemental Conditions and Division 1 Specification Sections, apply to this Section.
 - 2. Section 040310 – Masonry Cleaning
 - 3. Section 040342 – Masonry Repointing
 - 4. Section 040343 – Mortar and Repointing
 - 5. Section 040345 – Stone Consolidation
 - 6. Section 047200 – Cast Stone Replication
- C. Mortar vs. Joint Sealants
Pointing mortar shall be installed at all joint locations *except* the concrete basin and the basin wall where sealant shall be installed.

1.2 CODES, REGULATIONS AND STANDARDS

- A. All restoration procedures shall be done in accordance with regulations, safety standards and requirements of all federal, state and local authorities having jurisdiction over the work, including, but not limited to the applicable standards for protecting the public and control of pollutants and OSHA regulations for the protection of the workers and the public.
- B. All work shall comply with the *Code of Ethics and Guidelines for Practice* of the American Institute for Conservation of Historic & Artistic Works (AIC).
- C. All work shall comply with the Secretary of the Interior's *Standards for the Treatment of Historic Properties* as interpreted by the Agent of the Owner.
- D. All work shall comply with all pertinent standards, but shall not be limited to those listed below:
 - 1. ASTM C 920 Specification for Elastomeric Joint Sealants.
 - 2. ASTM C 1193 Standard for Use of Joint Sealants
 - 3. ASTM D 1056 Specification for Flexible Cellular Materials - Sponge or Expanded Rubber.

1.3 QUALITY ASSURANCE

- A. Preconstruction Field-Adhesion Testing: Before installing sealants, field test their adhesion to Project joint substrates. Test joint sealants according to Method A, Field-Applied Sealant Joint Hand Pull Tab, in Appendix X1 in ASTM C 1193 or Method A, Tail Procedure, in ASTM C 1521.

- B. Special Installer's Warranty: Manufacturer's standard form in which Installer agrees to repair or replace joint sealants that do not comply with performance and other requirements specified in this Section within specified warranty period.
1. Warranty Period: Five (5) years from date of Substantial Completion.
- C. Special Manufacturer's Warranty: Manufacturer's standard form in which joint-sealant manufacturer agrees to furnish joint sealants to repair or replace those that do not comply with performance and other requirements specified in this Section within specified warranty period.
1. Warranty Period: Five (5) years from date of Substantial Completion.
- D. Use adequate numbers of skilled workman who are thoroughly trained and experienced in the necessary crafts and who are completely familiar with the specified requirements and the methods needed for a proper performance of the work of this section.
- E. Qualification Data: All work shall be performed by a company having a minimum of five (5) years of successful experience in cast stone masonry installation and restoration work of a compatible nature to this project and employing individuals skilled in cast stone masonry work.
1. All subcontractors shall meet the same requirements of Contractor.
 2. In accepting and rejecting the work, no account shall be taken for incompetence on the part of the workers.
 3. The Contractor shall maintain a steady work crew consisting of skilled craftspeople who are experienced with the materials and methods specified herein and familiar with the design requirements and a full time foreman. The Contractor shall certify that all workmen under his direction fully understand the requirements of the work.
 4. Submit to the Agent of the Owner a list of similar masonry projects performed in the previous five (5) years. For each project, include project address, description of scope of work, list of materials and systems used, and verifiable Owner contact information.
- F. Source of Materials: Obtain all materials from a single source for each type of material required to ensure a match in quality, color, and texture.

1.4 SUBMITTALS

- A. Product data: Within 15 calendar days after the Contractor has received the Owner's Notice to Proceed, submit the following for the approval of the Agent of the Owner:
1. Materials 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.
- A. Submit manufacturer's color charts/samples for each type of sealant.
- B. Samples: 6 inch long bead of each kind and color of joint sealant required.
- C. Preconstruction field-adhesion test reports: Submit reports from required pre-construction adhesion tests specified above.

- D. Manufacturer's certification: Provide manufacturer's signed certification that the specified sealant is compatible with the substrates for which it is indicated.

1.5 DELIVERY, STORAGE AND HANDLING

- A. Deliver all products in original packaging, unopened, with manufacturer's name and product identification visible thereon. Store in a protected area within the temperature range recommended by the sealant manufacturer.

1.6 PROJECT / SITE CONDITIONS

- A. Sealant installation shall occur only when the surface and ambient temperature are within the range specified by the manufacturer and in accordance with favorable conditions as defined in ASTM C1193. Do not install sealants when moisture or frost is present on the surface.
- B. The Contractor shall protect adjacent materials during the execution of the work. Excess sealant on adjacent materials to be removed before curing to avoid stains and discoloration.

PART 2 - PRODUCTS

2.1 MATERIALS, GENERAL

- A. Stain-Test-Response Characteristics: All sealants are to be non-staining to porous substrates. Provide products that have undergone testing according to ASTM C 1248 and have not stained porous joint substrates indicated for Project.

2.2 SEALANT MATERIALS

- A. Exterior Grade Sealant for specified joints in masonry shall be a non-sag, gun grade, single or multi-component urethane sealant complying with ASTM C 920, Type M or S, Grade NS, Class 25, use group NT, M, A and C. Agent of the Owner shall select color from manufacturer's full range of colors. Provide one of the following, or approved alternate:
1. "Silaflex 2c NS"; Sika Corp., Lyndhurst, NJ 07071.
 2. "Elastic"; Tremco, Inc., Beachwood, OH 44122.
 3. "NP-1"; Sonneborn/Chemrex, Shakopee, MN.
 4. Equal as approved in advance by the Agent of the Owner.
- B. Backer Rod: Required where depth of joint exceeds 1/2". Backer rod shall be closed cell polyethylene polyurethane foam rod, nonabsorbent to water or gas, of diameter recommended by the manufacturer for the opening width. Product shall comply with ASTM D-1623 and ASTM C-1083. Verify compatibility of backer rod and sealant before installation. Provide one of the following or approved alternate:
1. "Green Rod"; NMC, Inc. Zebulon, NC 27597;
 2. "Expand-o-Foam"; Williams Products, Inc., Troy, MI 48084; or
 3. Equal as approved in advance by the Agent of the Owner.

- C. Bond Breaker Tape: Required where backer rod is not employed. As recommended by the sealant manufacturer.
- D. Joint primer and cleaner shall be as recommended by the sealant manufacturer for joint surfaces. Contractor shall verify with the manufacturer the need for primer and the correct product for type of substrate on which sealant is to be applied. Manufacturer's literature shall not be used as a basis for determining primer requirements.
- E. Masking tape for protection of materials adjacent to joints shall be a non-staining, non-absorbent type compatible with sealant and substrate.

PART 3 - EXECUTION

3.1 PREPARATION

- A. Inspect all joints to receive sealant prior to commencing work for compliance with joint requirements, tolerances and other conditions affecting sealant performance. Notify Agent of the Owner of any unsatisfactory conditions. Do not proceed with sealant installation until corrections or adjustments have been made.
- B. Surface Cleaning of Joints: Clean out joints immediately before installing joint sealants to comply with joint-sealant manufacturer's written instructions.
 - 1. Remove laitance and dust from masonry joints. Vacuum or brush joints using non-ferrous brush and blow dry.
- C. Joint Priming: Prime joint substrates where recommended by joint-sealant manufacturer or prior experience. Apply primer to comply with joint-sealant manufacturer's written instructions. Confine primers to area of joint-sealant bond; do not allow spillage or migration onto adjoining surfaces.
- D. Masking Tape: Use masking tape where required to prevent contact of sealant or primer with adjoining surfaces that otherwise would be permanently stained or damaged by such contact or by cleaning methods required to remove sealant smears. Remove tape immediately after tooling without disturbing joint seal.

3.2 SEALANT INSTALLATION

- A. Install backer rod packed into joint to provide sealant depth recommended by manufacturer. Backer rod shall be selected to allow for a minimum of 30 percent compression of the backing when inserted into the joint.
 - 1. Do not leave gaps between ends of backer rod.
 - 2. Do not stretch, twist, puncture or tear backer rod.
 - 3. Backer rod installation shall absolutely ensure that sealant adheres to the two opposing sides of the joint only.
- B. Where backer rod is not employed, install bond breaker tape to ensure that sealant adheres to the two opposing sides of the joint only.

- C. Install sealants using proven techniques that comply with the following and at the same time backings are installed:
1. Place sealants so they directly contact and fully wet joint substrates.
 2. Completely fill recesses in each joint configuration.
 3. Produce uniform, cross-sectional shapes and depths relative to joint widths that allow optimum sealant movement capability.
- D. Tooling of Nonsag Sealants: Immediately after sealant application and before skinning or curing begins, tool sealants according to requirements specified in subparagraphs below to form smooth, uniform beads of configuration indicated; to eliminate air pockets; and to ensure contact and adhesion of sealant with sides of joint.
1. Remove excess sealant from surfaces adjacent to joints.
 2. Use tooling agents that are approved in writing by sealant manufacturer and that do not discolor sealants or adjacent surfaces.
 3. Provide concave joint profile per Figure 8A in ASTM C 1193, unless otherwise indicated.
- E. Clean all excess sealant off adjacent surfaces immediately after tooling and removal of tape. Do not use any cleaners or agents that will stain the sealant or adjacent surfaces.

END OF SECTION

NOT FOR BIDDING

SECTION 099100 - PAINTING

PART 1 - GENERAL

2.1 DESCRIPTION

- A. Work included : Provide surface preparation and painting of fountain basin as shown on the drawings and as specified herein and as needed for a complete and proper finished appearance.
- B. Related work :
1. Documents affecting work of this Section include but are not limited to General Conditions, Supplementary Conditions and Section in Division 1 of these specifications.
 2. Section 033130 – Concrete Restoration
- C. Work not included:
1. Do not paint over required labels, equipment identification, performance ratings, name or nomenclature plates.
 2. Do not paint moving parts of finish hardware.
- D. Definitions :
1. "Paint" as used herein means coating systems materials including primers, emulsions, epoxy, enamels, sealers, fillers and other applied materials whether as prime, intermediate or finish coats.
 2. Mil thickness refers to Dry Mil Thickness (DMT).

2.2 CODES, REGULATIONS AND STANDARDS

1. All painting procedures shall be done in accordance with regulations, safety standards and requirements of all federal, state and local authorities having jurisdiction over the work including but not limited to the applicable standards for protecting the public and control of pollutants and OSHA regulations for the protection of the workers and the public.
2. All work shall comply with the *Code of Ethics and Guidelines for Practice* of the American Institute for Conservation of Historic & Artistic Works (AIC) as interpreted by the Agent of the Owner.
3. All work shall comply with the Secretary of the Interior's *Standards for the Treatment of Historic Properties* as interpreted by the Agent of the Owner.
4. Comply with relevant ASTM Standards for all materials.

2.3 QUALITY ASSURANCE

- A. Use adequate numbers of skilled workmen who are trained and experienced in the necessary crafts and who are thoroughly familiar with the specified requirements and the methods needed for proper performance of the work of this section.
- B. The Contractor shall perform all work according to the approved treatment plan and to the approval of the Agent of the Owner. All treatments shall be the best practice and meet the highest standards of

the field. All work shall be coordinated and phased with other work on the project and performed so as to minimize risk of damage to the cultural property. No allowance for unskilled work will be made.

- C. Comply with provisions, references documents, and standards listed in these specifications unless otherwise noted.
- D. Qualification Data: All work shall be performed by a company having a minimum of five (5) years of successful experience in restoration of fountain basins of a compatible nature to this project and employing individuals skilled in work on finishes fountain basins.
 - 1. In accepting and rejecting the work, no account shall be taken for incompetence on the part of the workers.
 - 2. The Contractor shall maintain a steady work crew consisting of skilled craftspeople who are experienced with the materials and methods specified herein and familiar with the design requirements and a full time foreman. The Contractor shall certify that all workmen under his direction fully understand the requirements of the work.
 - 3. Submit to the Agent of the Owner a list of similar restoration projects performed in the previous five (5) years. For each project include project address, description of restoration scope of work, list of materials and systems used, and verifiable Owner contact information.

E. Project Team Requirements

1. General

- b. Qualification Requirements: Review of the qualifications of each workman for the work of this section is a requirement of this project. In order to be qualified for this work submit for each team member a resume and list of at least five (5) representative projects showing the experience of each team member as related to this Project.
- c. Identify each reference project by name and location, provide an outline description of the scope of work, dollar value of the contract, date of completion, a verifiable reference contact, and a description of the worker's responsibility on the project.
- d. If, in the opinion of the Agent of the Owner, the worker does not meet the requirements for this section, submit alternate workmen with their references for review.

2. General Qualifications

a. Company Qualifications: The Contractor shall be an experienced painting firm to perform the work of this Section. The firm shall have completed work similar in material, design, and extent to that indicated for this Project with a record of successful in-service performance.

The Contractor and all staff directly involved in painting shall be fully trained, knowledgeable and experienced in all phases of painting. Examples of previous work successfully completed by the Contractor shall include performance of painting techniques similar to those specified herein.

- b. Field Supervision: Designate an individual with commensurate experience to act as the foreman to oversee painting through the duration of the project. The foreman shall be on site at all times that painting is being performed. The foreman shall participate in the initial mock-up installations. Foremen shall not be changed during the course of the Project except for causes beyond control of the Contractor. Changes in foremen during the course of the project may require the Contractor to prepare additional sample installations under the

- direction of the new foreman to be subject to review and acceptance by the Agent of the Owner. The foreman shall be fluent in English.
- c. Restoration Worker Qualifications: All personnel to be employed for the work of this Section shall be experienced in the specified painting procedures and are familiar with the use of the specified products. Submit resume and reference projects as described above.
3. Specialty Restoration Products Training: All restoration work must be performed by craftspeople familiar with specified specialty painting. Where required by product manufacturers, training sessions and mock-ups will be required so as to allow for the certification of workmen who will be performing procedures using specialty products.
 - a. Contractor shall arrange for a minimum of one (1) training session of at least one (1) day duration to be provided by the manufacturers of the specified systems.
 - b. Provide on-site training for each system, using specified materials and methods, and using tools and equipment intended to be used by the workmen performing work.
 - c. Provide additional training if procedures are not yielding consistent results.
 - d. Provide additional training sessions as required for new workmen.
 4. All subcontractors shall meet the same requirements as the Contractor.
- F. Source of Materials : Obtain materials from a single source for each type of material required to ensure a match in quality, color and texture.

2.4 SUBMITTALS

- A. Product data : Within 15 calendar days after the Contractor has received the Owner's Notice to Proceed, submit :
 1. Materials 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. All coatings must conform to all federal, state and local regulations, including VOC rules at the time of application.
- B. Samples :
 1. Submit samples of colors and glosses to the Agent of the Owner for review.
 2. Provide a minimum of 1 sample for the client, 1 sample for the Agent of the Owner and as many as the Contractor needs for approval.

Make samples approximately 8x10 inches.

 - a. Each sample is to be identified by:
 1. Manufacturer.
 2. Product name and product id number.
 3. Sheen/Gloss Level.
 4. Color name/number.
 5. Supplier/distributor.
 6. Contact name and phone number.

4. Revise and resubmit each sample as requested until the required gloss, color and texture is achieved. Such samples, when approved by the Agent of the Owner, will become the standards of color and finish for accepting or rejecting the work of this section.
5. Do not commence finish painting until approved samples are on file at the job site.

C. Mock Ups

1. At an area approved in advance by the Agent of the Owner:
 - a. provide a mock up for each type of material to be used, including each type of gloss;
 - b. make the mock up of an appropriate size to demonstrate the procedures required to achieve the material, color and gloss; and
 - c. follow the manufacturer's written instructions and retain those instructions on site.
2. The painting mock ups may not be incorporated into the finish surface preparation work when the mock-up is approved by the Agent of the Owner.
3. Revise the mock up as required to obtain the approval of the Agent of the Owner.
4. Completely re-work all procedures located in mock up areas.

2.5 PRODUCT HANDLING

- A. Deliver materials to site in manufacturer's original unopened containers and packaging, bearing labels as to manufacturer, type and name of products, grade, batch and production data. Do not use materials in broken packages which show evidence of damage. Damaged or otherwise unsuitable materials shall be removed from the jobsite.
- B. Protect materials during storage and construction. Keep containers tightly closed and away from damage. Protect liquid components from freezing. Comply with manufacturer's recommendations for minimum and maximum temperature requirements for storage.
- C. Store materials on elevated platforms, under cover, and in a dry location.
- D. Dispose of unused product, containers, debris and waste associated with the work of this Section in accordance with local, state and federal regulations. Do not reuse containers.
- E. Do not store materials on the scaffold.

2.6 JOB CONDITIONS

- A. Comply with recommended procedures of the approved manufacturer.
- B. Applications may be continued only within the temperature limits specified by the paint manufacturer as being suitable for use during application and drying periods.
- C. Do not apply paints when the temperature of the surfaces to be painted and the surrounding air temperatures are below 50 degrees F or above 85 degrees F. Do not apply paint if night time temperatures are predicted to be below 50 degrees F.
- D. Concrete must have cured for a minimum of 28 days prior to painting.

- E. Do not apply paint in snow, rain, fog or mist; or when the relative humidity exceeds 75%; or to damp or wet surfaces.

2.7 PREPARED SURFACES

- A. Before proceeding with any application of painting, including application of spot primer or primer coat, call for an inspection of the surface preparation work by the Agent of the Owner.
- B. Obtain the authorization of the Agent of the Owner to proceed with the painting work.
- C. Correct surface preparation work, as directed by the Agent of the Owner, prior to proceeding with the painting.

2.8 EXTRA STOCK

- A. Upon completion of the work of this section, deliver to the Owner an extra stock equaling one (1) full, unopened gallons of each color, type and gloss of paint used in the work, tightly sealing each container and clearly labeling with contents and location used.

PART 2 - PRODUCTS

2.1 PAINT MATERIALS

- A. Provide high solids, two component polyamide epoxy coating that meets or exceed the following characteristics:

1. Vehicle type: epoxy polyamide
2. Components: two part
3. Mix ratio 1:1 by volume (a:b)
4. Curing mechanism: chemical cure
5. Solids (theoretical):
 - a. By weight: 78% min
 - b. By volume: 60% min
6. Viscosity @ 77%: 85 – 95 KU
7. Recommended Thickness:
 - a. Wet: 4.0 – 4.6 mils
 - b. Dry: 2.5 – 2.9 mils

- B. Acceptable products:

1. EP Hi Build Epoxy Premium Pool Paint as manufactured by Ramuc;
2. Rustoleum High Performance Epoxy Pool Paint as manufactured by Rustoleum;
3. INSL-X IG-4000 Epoxy Pool Paint as manufactured by Benjamin Moore; or
4. Equal as approved in advance by the Agent of the Owner.

- C. Undercoats, primers and thinners

1. Provide undercoat paint produced by the same manufacturer as the finish coat.
2. Provide primers as recommended and produced by the same manufacturer as the finish coat.
3. Use only the thinners recommended by the paint manufacturer and use only to the recommended limits.

D. All materials shall comply with the applicable Volatile Organic Compounds regulations.

2.2 APPLICATION EQUIPMENT

- A. Rollers: a good quality lamb's wool or synthetic fiber 3/8" nap roller cover with a plastic or phenolic core used for solvent based paints.
- B. For application of the approved paint, use only such equipment as is recommended by the manufacturer.
- C. Prior to use of applicable equipment, verify that the proposed equipment is compatible with the material to be applied.
- D. The use of air sprayers is strictly prohibited.

2.3 OTHER MATERIALS

- A. Provide other materials not specifically described but required for a complete and proper installation as selected by the Contractor and approved by the Agent of the Owner.

PART 3 - EXECUTION

3.1 SURFACE CONDITIONS

- A. Examine areas and conditions under which work of this section will be performed. Correct conditions detrimental to timely and proper completion of the work. Do not proceed until unsatisfactory conditions are corrected.
- B. Protect all surrounding surfaces including but not limited to limestone basin walls and installed fountain elements.
- C. Any limestone elements negatively affected by the painting of the pool basin shall be repaired based on the Agent of the Owner's recommendations at no additional cost to the Owner.

3.2 SURFACE PREPARATION

- A. Comply with Section 033130 Concrete Restoration.
- B. Allow 28 days after restoration prior to commencing surface preparation.
- C. Preparation:
 1. Thoroughly clean surface with a TSP solution to ensure the surface is clean and free of oil, grease, wax, dust, dirt, mildew, and any other surface contaminants prior to painting.

2. Flush thoroughly with clean water and let dry.
3. Sand with 150 – 180 grit sandpaper or equivalent.
4. Rinse to remove dust.
5. Allow to dry a minimum of 24 hours.

D. When surface appears dry, a minimum of 24 hours after cleaning, complete a condensation test:

1. Apply 12"x12" pieces of transparent plastic to areas at the deepest portion of the basin in several locations.
2. Wait about 4 hours for condensation to appear on the underside of the plastic.
3. If condensation is evident, remove the plastic and wait 24 hours.
4. Repeat these steps until condensation no longer forms. This insures that the surface is dry enough to apply paint.

3.3 MATERIALS PREPARATION

A. Mix and prepare paint in strict accordance with the manufacturer's recommended procedures.

B. Stir materials before application producing mixture of uniform density.

C. Mix components:

1. Mix components in strict accordance with the manufacturer's written instructions.
2. Mix each individual component thoroughly prior to inter-mixing the two.
3. Combine "A" and "B" together (1:1 ratio) and thoroughly mix using a drill mixer at low speed.
4. Allow the mixture to react for a period of 30 minutes.
5. Do not mix paint in containers.
6. Do not mix more material than can be used in 4-6 hours.
7. Do not scrape the sides of the final container when using the last of the catalyzed product as this may introduce partially uncatalyzed product to be applied.

3.4 PAINT APPLICATION

A. General

1. Do not paint in direct rays of the sun. Paint when the sun's rays are very low and follow the sun's path around the basin painting in the shaded areas as much as possible.
2. Environmental conditions
 - a. Only paint when the temperature is between 60 deg F and 85 deg F.
 - b. When overnight temperatures will not drop below 50 deg F.
 - c. The surface temperature is at least 5 deg F above the dew point.
 - d. The relative humidity should not be greater than 75%.
3. Do not paint if rain is expected within 4-6 hours.
4. Prepare painted surfaces adequately.
5. Mask all adjoining surfaces that are not to receive the coating.
6. Application:
 - a. Using rollers, apply two (2) full coats of finish paint.

- b. Apply each coat to a uniform finish within the published coverage rate. Do not apply heavy coats of paint.
 - c. Permit initial coat to dry overnight before applying the second coat.
- B. Allow the coating system to cure a minimum of 7 days prior to filling basin with water.
- C. All surfaces shall receive a minimum of two coats of finish paint to be considered complete.
- D. Clean-Up
- 1. When finished, wash tools and equipment with appropriate thinner or xylene.
 - 2. Clean up drips or spatters immediately with appropriate thinner or xylene.
 - 3. Properly dispose of all soiled rags.

END OF SECTION

NOT FOR BIDDING