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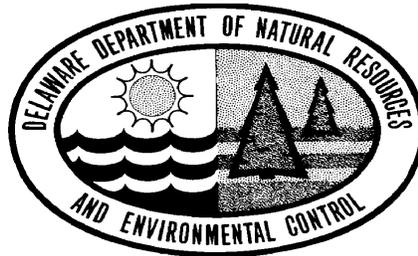
# PROJECT MANUAL

PAPER MILL BRIDGE  
at  
AUBURN HEIGHTS PRESERVE  
Creek Road  
Yorklyn, DE 19736

Department of Natural Resources and Environmental Control

Division of Parks and Recreation  
89 Kings Highway  
Dover, DE 19901

Parks Project Number: NVF-4



Engineer  
Rummel, Klepper & Kahl, LLP  
700 E. Pratt Street, Suite 500  
Baltimore, MD 21202.

June 30, 2017

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**NOT FOR BID**

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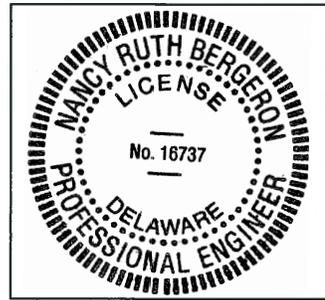
**TECHNICAL SPECIFICATION PACKAGE**

**Technical Specifications by Rummel, Klepper & Kahl, LLP:**

- T-207600 Porous Backfill
- T-208500 Flowable Fill
- T-257600 Channel Bed Fill
- T-401699 Quality Control/ Quality Assurance of Warm-Mix Asphalt
- T-401800 Warm-Mix Asphalt, Superpave
- T-600500 Design-Build for Select Project Elements
- T-600600 Mill Race Deckover Structure
- T-600700 Drilled Micropiles
- T-713600 Dampproofing and Membrane Waterproofing
- T-720600 Steel Tube Rail
- T-720900 Traffic Regulation

**NOT FOR BID**

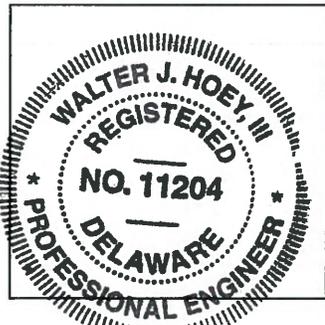
Signature: *Nancy R. Bergeron* Date: 2/28/17 Seal:



**Technical Specifications by Century Engineering:**

- T-132950 Pre-Engineered Timber Connector Bridge

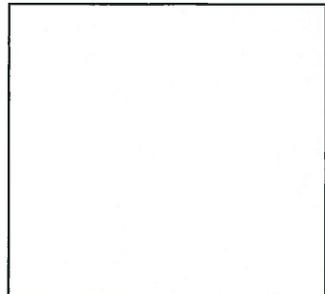
Signature: *Walter J. Hoey* Date: 2/27/2017 Seal:



**Technical Specifications by Department of Natural Resources and Environmental Controls:**

- T-720XXX Railing

Signature: \_\_\_\_\_ Date: \_\_\_\_\_ Seal:



**NOT FOR BID**

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

DOCUMENTS BOUND HEREWITH

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00 61 13.16	PAYMENT BOND	2
00 62 76	APPLICATION OF PAYMENT (SAMPLE AIA G702 & G703)	2
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01 10 00	SUMMARY	5
01 14 00	WORK RESTRICTIONS	2
01 21 00	ALLOWANCES	2
01 22 00	UNIT PRICES	2
01 23 00	ALTERNATES	2
01 24 00	PERMITS	2
01 25 00	CONTRACT MODIFICATION PROCEDURES	2
01 29 00	PAYMENT PROCEDURES	3
01 31 00	PROJECT MANAGEMENT AND COORDINATION	3
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01 42 00	REFERENCE STANDARDS AND DEFINITIONS	4
01 50 00	TEMPORARY FACILITIES AND CONTROLS	4
01 56 00	ENVIRONMENTAL PROTECTION	3

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01 78 23	MAINTENANCE DATA	5
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**DELDOT STANDARD SPECIFICATIONS** (the following Delaware Department of Transportation Standard Specifications for Road and Bridge Construction (Dated August 2001) are included by reference only and are not reprinted in this Project Manual)

[www.deldot.gov/information/pubs\\_forms/manuals/standard\\_specifications/index.shtml](http://www.deldot.gov/information/pubs_forms/manuals/standard_specifications/index.shtml)

### **SECTION 100000**

106 CONTROL OF MATERIAL

### **SECTION 200000**

201 CLEARING AND GRUBBING

202 EXCAVATION AND EMBANKMENT

203 CHANNEL EXCAVATION

205 ROCK EXCAVATION FOR ROADWAY

206 ROCK EXCAVATION FOR STRUCTURES & TRENCHES

207 EXCAVATION AND BACKFILLING FOR STRUCTURES

209 BORROW

211 REMOVAL OF STRUCTURES AND OBSTRUCTIONS

212 UNDERCUT EXCAVATION

250 SEDIMENT REMOVAL

251 SILT FENCE

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266 SANDBAG DIKES/SANDBAG DIVERSIONS

268 STABILIZED CONSTRUCTION ENTRANCE

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401 HOT-MIX, HOT-LAID BITUMINOUS CONCRETE

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603 BAR REINFORCEMENT  
604 BAR REINFORCEMENT, EPOXY COATED  
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608 COARSE AGGREGATE FOR FOUNDATION STABILIZATION AND SUBFOUNDATION  
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712 RIPRAP  
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715 PERFORATED PIPE UNDERDRAINS  
727 FENCES AND GATES  
732 TOPSOIL  
733 TOPSOILING  
734 SEEDING  
735 MULCHING  
748 PAVEMENT MARKING  
758 REMOVAL OF EXISTING PORTLAND CEMENT  
759 FIELD OFFICE  
760 PAVEMENT – MILLING  
762 SAW CUTTING PORTLAND CEMENT AND HOT-MIX, HOT

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801 PORTLAND CEMENT AND BLENDED HYDRAULIC CEMENT  
803 WATER FOR MIXING PORTLAND CEMENT CONCRETE  
805 COARSE AGGREGATE  
808 JOINT SEALS AND SEALANTS  
810 ASPHALT CEMENT  
811 EMULSIFIED ASPHALT  
812 PORTLAND CEMENT CONCRETE  
813 GRADING REQUIREMENTS MINIMUM AND MAXIMUM  
821 GRADED AGGREGATES  
822 FLY ASH  
823 HOT-MIX, HOT-LAID BITUMINOUS CONCRETE  
824 EMBEDDED REINFORCEMENT AND HARDWARE  
826 STRUCTURAL STEEL  
827 GEOTEXTILE

**TECHNICAL SPECIFICATION PACKAGE**

**TECHNICAL SPECIFICATIONS BY RUMMEL, KLEINER & KAHL, LLP:**

T-207600 POROUS BACKFILL  
T-208500 FLOWABLE FILL  
T-257600 CHANNEL BED FILL  
T-401699 QUALITY CONTROL/ QUALITY ASSURANCE OF WARM-MIX ASPHALT  
T-401800 WARM-MIX ASPHALT, SUPERPAVE  
T-600500 DESIGN-BUILD FOR SELECT PROJECT ELEMENTS  
T-600600 MILL RACE DECKOVER STRUCTURE  
T-600700 DRILLED MICROPILES  
T-713600 DAMPPROOFING AND MEMBRANE WATERPROOFING  
T-720600 STEEL TUBE RAILING  
T-720900 TRAFFIC REGULATION

For additional information on Delaware's Flagger Certification Program go to:

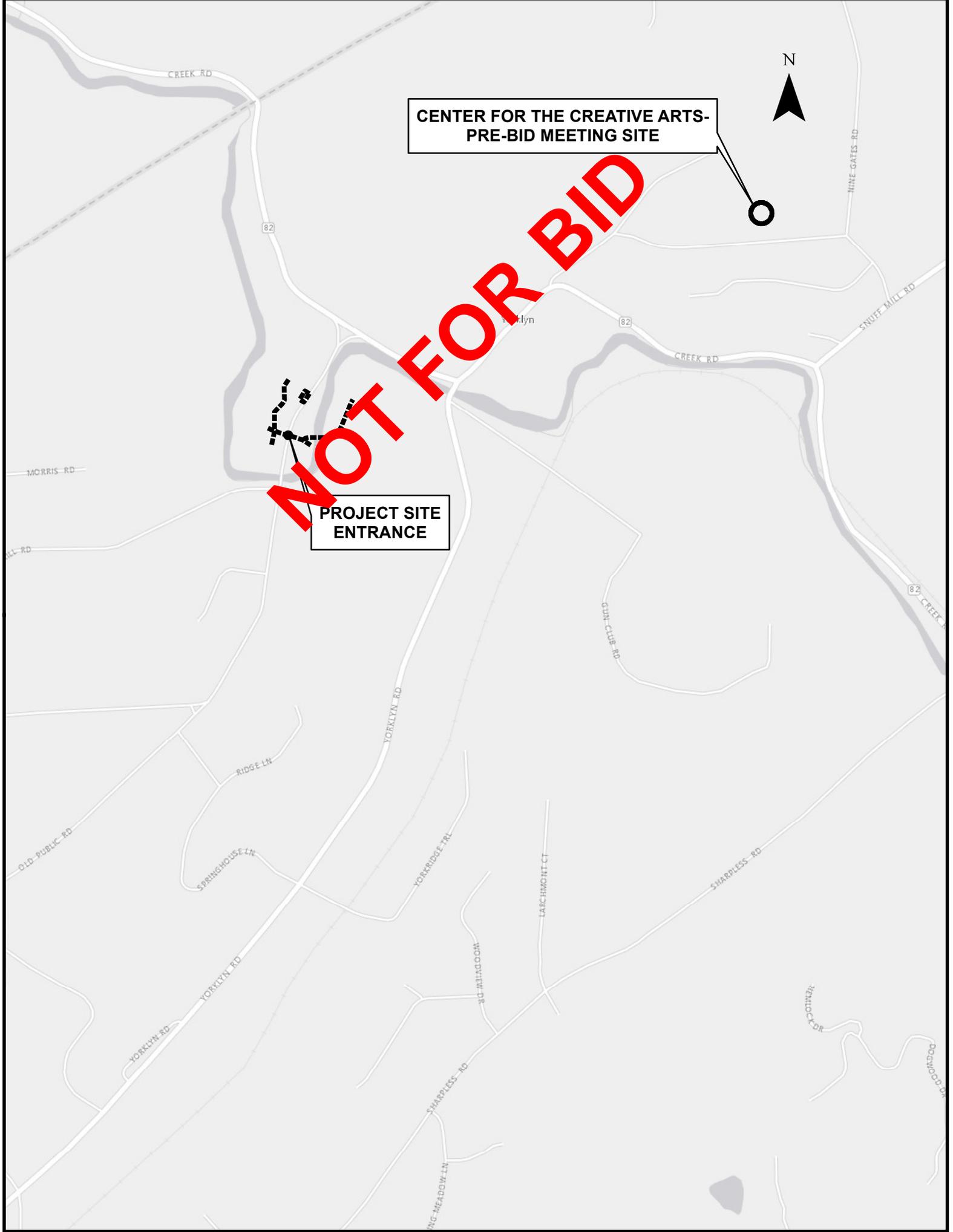
[http://deldot.gov/information/pubs\\_forms/manuals/de\\_mutcd/pdf/acceptableflaggercertification\\_11012016\\_signed.pdf](http://deldot.gov/information/pubs_forms/manuals/de_mutcd/pdf/acceptableflaggercertification_11012016_signed.pdf)

**TECHNICAL SPECIFICATIONS BY CENTURY ENGINEERING:**

T-132950 PRE-ENGINEERED TIMBER CONNECTOR BRIDGE

**TECHNICAL SPECIFICATIONS BY DEPARTMENT OF NATURAL RESOURCES AND ENVIRONMENTAL CONTROLS:**

055213 PIPE AND TUBE RAILING  
099113 EXTERIOR PAINTING



CENTER FOR THE CREATIVE ARTS-  
PRE-BID MEETING SITE

**NOT FOR BID**

PROJECT SITE  
ENTRANCE

N

CREEK RD

82

Yorklyn

82

CREEK RD

NINE-GATES RD

SNUFF MILL RD

MORRIS RD

LL RD

82

SUN-CUP RD

CREEK RD

RIDGE LN

YORKLYN RD

SPRINGHOUSE LN

YORKRIDGE TRL

LARCHMONT CT

SHARPLESS RD

YORKLYN RD

YORKLYN RD

WOODVIEW DR

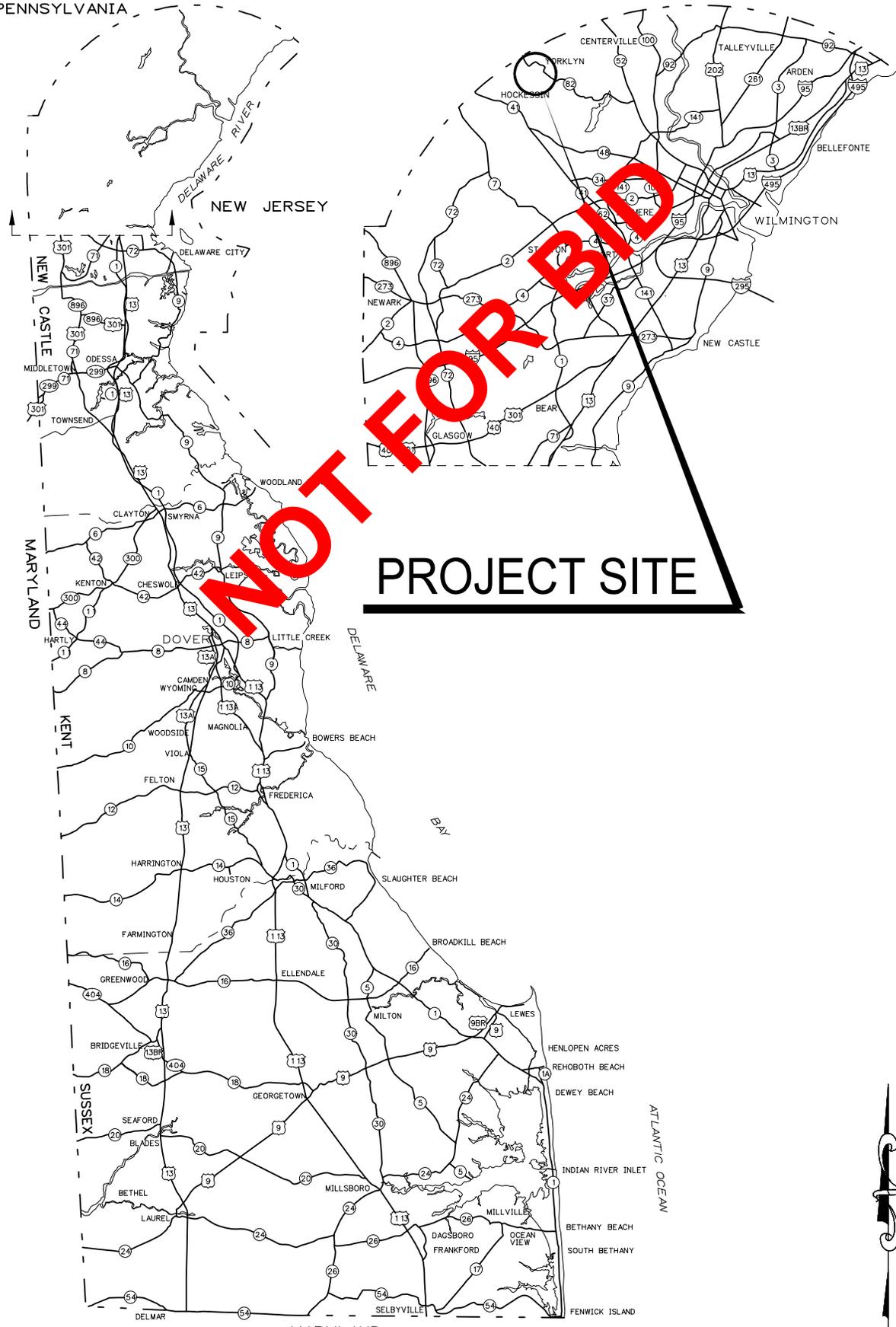
SHARPLESS RD

LONG MEADOW LN

KENTON CT DR

DOUGLASS DR

PENNSYLVANIA



STATE OF DELAWARE

# LOCATION MAP

**SECTION 00 01 15 - LIST OF DRAWINGS**

<u>Sheet No.</u>	<u>Title</u>
O-0	Cover Sheet
C-1	General Notes & Legend
C-2	Horizontal And Vertical Control Plan
C-3	Typical Sections
C-4 TO C-5	Construction Plans
C-6 TO C-8	Profiles
C-9	Farm Lane & Paper Mill Parking Lot Layout Plan
C-10	Museum Drive Parking Lot Layout Plan
C-11	Demolition Plan
C-12	Settling Tank Detail
C-13 TO C-15	Construction Details
C-16 TO C-17	Signing And Striping Plans
C-18 TO C-19	Entrance Plans
C-20	Overall Site Plan
ES-1	Construction Sequencing & Erosion and Sediment Control Notes
ES-2 TO ES-3	Construction Sequencing & Erosion and Sediment Control Plans
ES-4 TO ES-7	Construction Sequencing & Erosion and Sediment Control Details
SN-1	Structural General Notes
S1-1 TO S1-5	Paper Mill Bridge Plans
S2-1 TO S2-2	Mill Race Deckover Structure Plans
SD-1 TO SD-4	Structural Details

**SHEETS PREPARED BY CENTURY ENGINEERING INC.**

<u>Sheet No.</u>	<u>Title</u>
S3-1	Connector Boardwalk Plan, Elevation, Section
S3-2	Connector Boardwalk Alignment, Profile, Schedules
S3-3	Connector Boardwalk Details: Overlook, Railing, Sections

**SHEETS PREPARED BY OWNER.**

<u>Sheet No.</u>	<u>Title</u>
P-1	Benge Road Parking Lot Existing Conditions
P-2	Benge Road Parking Lot Proposed Conditions
P-3	Benge Road Parking Lot Striping Plan
P-4	Railing Details

**END OF SECTION 00 01 15**

**NOT FOR BID**

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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 1:00 p.m. local time on August 17, 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 construction of four new parking lots, Paper Mill Bridge sub-structure, a concrete slab deck-over structure, a new museum access road, and a new connector boardwalk.

A **MANDATORY** Pre-Bid Meeting will be held on August 1, 2017, at 10:00 am. at Center for the Creative Arts at 410 Upper Snuff Mill Row, Yorklyn, Delaware 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. 2015-NVF-100 SEALED BID – 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 full opportunity to submit bids on this contract. Each bid must be accompanied by a bid security equivalent to ten percent of the bid amount and all additive alternates. The successful bidder must post a performance bond and payment bond in a sum equal to 100 percent of the contract price upon execution of the contract. The Owner reserves the right to reject any or all bids and to waive any informalities therein. The Owner may extend the time and place for the opening of the bids from that described in the advertisement, with not less than two calendar days notice by certified delivery, facsimile machine or other electronic means to those bidders receiving plans.

David Small, Secretary

END OF SECTION 00 01 15

**NOT FOR BID**

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**SECTION 00 21 13 - INSTRUCTIONS TO BIDDERS**

**TABLE OF ARTICLES**

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

**NOT FOR BID**

**ARTICLE 1: GENERAL**

1.1 DEFINITIONS

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

1.2 STATE: The State of Delaware.

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

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

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

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

1.7 AGREEMENT: The form of the Agreement shall be AIA Document A101, Standard Form of Agreement between Owner and Contractor where the basis of payment is a STIPULATED SUM. In the case of conflict between the instructions contained therein and the General Requirements herein, these General Requirements shall prevail.

1.8 GENERAL REQUIREMENTS (or CONDITIONS): General Requirements (or conditions) are instructions pertaining to 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 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 amount, if any, stated therein.

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

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

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

#### **3.2 INTERPRETATION OR CORRECTION OF BIDDING DOCUMENTS**

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

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

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

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

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

### 3.3 SUBSTITUTIONS

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

3.3.2 Requests for substitutions shall be made in writing to the Architect at least ten days prior to the date of the Bid Opening. Such requests shall include a complete description of the proposed substitution, drawings, performance and test data, explanation of required installation modifications due the substitution, and any other information necessary for an evaluation. The burden of proof of the merit of the proposed substitution is upon the proposer. The Architect's decision of approval or disapproval shall be final. The Architect is to notify Owner prior to any approvals.

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

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

### 3.4 ADDENDA

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

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

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

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

## ARTICLE 4: BIDDING PROCEDURES

### 4.1 PREPARATION OF BIDS

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

- 4.1.2 Submit the original Bid Form for each bid. Bid Forms may be removed from the project manual for this purpose.
- 4.1.3 Execute all blanks on the Bid Form in a non-erasable medium (typewriter or manually in ink).
- 4.1.4 Where so indicated by the makeup on the Bid Form, express sums in both words and figures, in case of discrepancy between the two, the written amount shall govern.
- 4.1.5 Interlineations, alterations or erasures must be initialed by the signer of the Bid.
- 4.1.6 **BID ALL REQUESTED ALTERNATES AND UNIT PRICES, IF ANY.** If there is no change in the Base Bid for an Alternate, enter "No Change". The Contractor is responsible for verifying that they have received all addenda issued during the bidding period. Work required by Addenda shall automatically become part of the Contract.
- 4.1.7 Make no additional stipulations on the Bid Form and do not qualify the Bid in any other manner.
- 4.1.8 Each copy of the Bid shall include the legal name of the Bidder and a statement whether the Bidder is a sole proprietor, a partnership, a corporation, or any legal entity, and each copy shall be signed by the person or persons legally authorized to bind the Bidder to a contract. A Bid by a corporation shall further give the state of incorporation and have the corporate seal affixed. A Bid submitted by an agent shall have a current Power of Attorney attached, certifying agent's authority to bind the Bidder.
- 4.1.9 Bidder shall complete the Non-Collusion Statement form included with the Bid Forms and include it with their Bid.
- 4.1.10 In the construction of all Public Works projects for the State of Delaware or any agency thereof, preference in employment of laborers, workers or mechanics shall be given to bona fide legal citizens of the State who have established citizenship by residence of at least 90 days in the State.
- 4.1.11 Each bidder shall include in their bid a copy of a valid Delaware Business License.
- 4.1.12 Each bidder shall include 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 aments to which it relates and not to exceed a certain stated sum, if said sum is equal to at least 10% of the bid. The Bid Bond form used shall be the standard OMB form (attached).

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

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

#### 4.3 SUBCONTRACTOR LIST

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

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

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

#### 4.4 EQUALITY OF EMPLOYMENT OPPORTUNITY ON PUBLIC WORKS

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

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

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

#### 4.5 PREVAILING WAGE REQUIREMENT

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

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

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

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

#### 4.6 SUBMISSION OF BIDS

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

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

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

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

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

4.7 MODIFICATION OR WITHDRAW OF BIDS

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

4.7.2 Bidders submitting Bids that are late shall be notified as soon as practicable and the bid shall be returned.

4.7.3 A Bid may not be modified, withdrawn or canceled by the Bidder during a thirty (30) day period following the time and date designated for the receipt and opening of Bids, and Bidder so agree in submitting their Bid. Bids shall be binding for 30 days after the date of the Bid opening.

**ARTICLE 5: CONSIDERATION OF BIDS**

5.1 OPENING/REJECTION OF BIDS

5.1.1 Unless otherwise stated, Bids received on time will be publicly opened and will be read aloud. An abstract of the Bids will be made available to Bidders.

5.1.2 The Agency shall have the right to reject any and all Bids. A Bid not accompanied by a required Bid Security or by other data required by the Bidding Documents, or a Bid which is in any way incomplete or irregular is subject to rejection.

5.1.3 If the Bids are rejected, it will be done within thirty (30) calendar day of the Bid opening.

5.2 COMPARISON OF BIDS

5.2.1 After the Bids have been opened and read, the bid prices will be compared and the result of such comparisons will be made available to the public. Comparisons of the Bids may be based on the Base Bid plus desired Alternates. The Agency shall have the right to accept Alternates in any order or combination.

5.2.2 The Agency reserves the right to waive technicalities, to reject any or all Bids, or any portion thereof, to advertise for new Bids, to proceed to do the Work otherwise, or to abandon the Work, if in the judgment of the Agency or its agent(s), it is in the best interest of the State.

5.2.3 An increase or decrease in the quantity for any item is not sufficient grounds for an increase or decrease in the Unit Price.

5.2.4 The prices quoted are to be those for which the material will be furnished F.O.B. Job Site and include all charges that may be imposed during the period of the Contract.

5.2.5 No qualifying letter or statements in or attached to the Bid, or separate discounts will be considered in determining the low Bid except as may be otherwise herein noted. Cash or separate discounts should be computed and incorporated into the 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 662(c)(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 readvertised, as the Agency may decide.
- 5.4.7 Each bidder shall supply with its bid its taxpayer identification number (i.e., federal employer identification number or social security number) and a copy of its Delaware business license, and should the vendor be awarded a contract, such vendor shall provide to the agency the taxpayer identification license numbers of such subcontractors. Such numbers shall be provided on the later of the date on which such subcontractor is

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

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

#### **ARTICLE 6: POST-BID INFORMATION**

##### **6.1 CONTRACTOR'S QUALIFICATION STATEMENT**

- 6.1.1 Bidders to whom award of a Contract is under consideration shall, if requested by the Agency, submit a properly executed AIA Document A305, Contractor's Qualification Statement, unless such a statement has been previously required and submitted.

##### **6.2 BUSINESS DESIGNATION FORM**

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

#### **ARTICLE 7: PERFORMANCE BOND AND PAYMENT BOND**

##### **7.1 BOND REQUIREMENTS**

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

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

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

##### **7.2 TIME OF DELIVERY AND FORM OF BONDS**

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

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

**ARTICLE 8: FORM OF AGREEMENT BETWEEN AGENCY AND CONTRACTOR**

- 8.1 Unless otherwise required in the Bidding Documents, the agreement for the Work will be written on AIA Document A101, Standard Form of Agreement Between Owner and Contractor Where the Basis of Payment is a Stipulated Sum.

**END OF INSTRUCTIONS TO BIDDERS**

**NOT FOR BID**

AUBURN HEIGHTS PRESERVE  
PAPER MILL BRIDGE  
FARM LANE / YORKLYN  
DIVISION OF PARKS AND RECREATION CONTRACT No. 2015-NVF-100

**BID FORM**

For Bids Due: August 17, 2017 @ 1:00 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:

\$ \_\_\_\_\_  
(\$ \_\_\_\_\_ )

AUBURN HEIGHTS PRESERVE  
PAPER MILL BRIDGE  
FARM LANE / YORKLYN  
DIVISION OF PARKS AND RECREATION CONTRACT No. 2015-NVF-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: Proposed construction to the west of Bengel Road, including the Farm Lane parking lot, Museum Drive, and Museum Drive parking lot.

Add/Deduct: \$ \_\_\_\_\_  
(\$ \_\_\_\_\_ )

No. of Days to Complete Alternate 1: \_\_\_\_\_

AUBURN HEIGHTS PRESERVE  
PAPER MILL BRIDGE  
FARM LANE / YORKLYN  
DIVISION OF PARKS AND RECREATION CONTRACT No. 2015-NVF-100

**BID FORM**

**UNIT PRICES**

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

UNIT PRICE No. 1:	Undercut Excavation	<b>Add or Deduct</b>	\$ _____	/cy
UNIT PRICE No. 2	DelDOT Borrow Type B	<b>Add or Deduct</b>	\$ _____	/cy
UNIT PRICE No. 3	DelDOT Borrow Type A	<b>Add or Deduct</b>	\$ _____	/cy
UNIT PRICE No. 4	Delaware No. 3 Stone	<b>Add or Deduct</b>	\$ _____	/cy
UNIT PRICE No. 5	Geotextile Separation Fabric	<b>Add or Deduct</b>	\$ _____	/sy
UNIT PRICE No. 6	Rock Excavation (non-Structural)	<b>Add or Deduct</b>	\$ _____	/cy
UNIT PRICE No. 7	Silt Fence	<b>Add or Deduct</b>	\$ _____	/lf
UNIT PRICE No. 8	Offsite Soil Disposal	<b>Add or Deduct</b>	\$ _____	/cy

AUBURN HEIGHTS PRESERVE  
PAPER MILL BRIDGE  
FARM LANE / YORKLYN  
DIVISION OF PARKS AND RECREATION CONTRACT No. 2015-NVF-100

**BID FORM**

ALLOWANCES

The following allowances are included in the Base Bid. Allowances conform to applicable project specification sections. Refer to the specifications for a complete description of the following Allowances:

Allowance No. 1: Path connection to the existing office.

Two Hundred Thousand Dollars and Zero Cents  
(\$ 200,000 )

Allowance No. 2: Construction of the Mill Race deck-over structure as described in Sections 600500 and 600600.

Three Hundred Fifty Thousand Dollars and Zero Cents  
(\$ 350,000 )

Allowance No. 3: Mill Race inspection and repair.

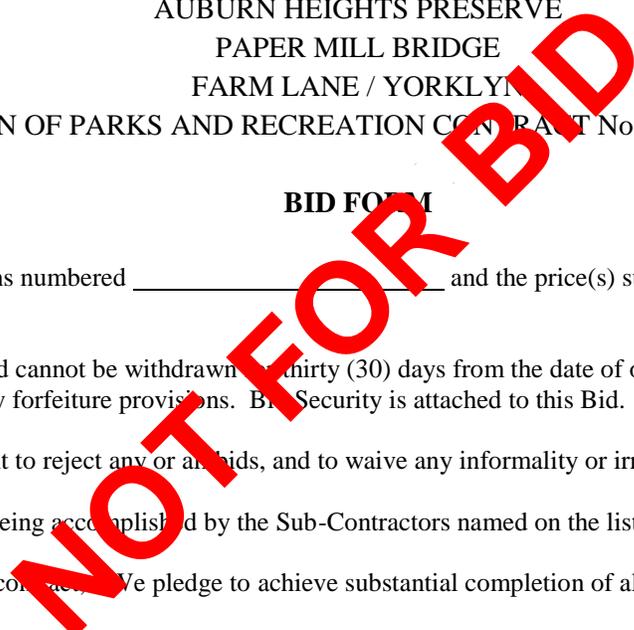
Forty Thousand Dollars and Zero Cents  
(\$ 40,000 )

Allowance No. 4: Removal and replacement of existing fence. (This allowance is warranted if the owner selects Alternate 1.)

Add/Deduct: \$ 150,000  
(\$ 150,000 )

AUBURN HEIGHTS PRESERVE  
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DIVISION OF PARKS AND RECREATION CONTRACT No. 2015-NVF-100

**BID FORM**



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

This bid shall remain valid and cannot be withdrawn 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, we pledge to achieve substantial completion of all the work within \_\_\_\_\_ calendar days of the Notice to Proceed.

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

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

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

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

\_\_\_\_\_  
(State of Corporation)

Business Address: \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

Witness: \_\_\_\_\_

By: \_\_\_\_\_  
(Authorized Signature)

(Seal)

\_\_\_\_\_  
(Title)

Date: \_\_\_\_\_

ATTACHMENTS

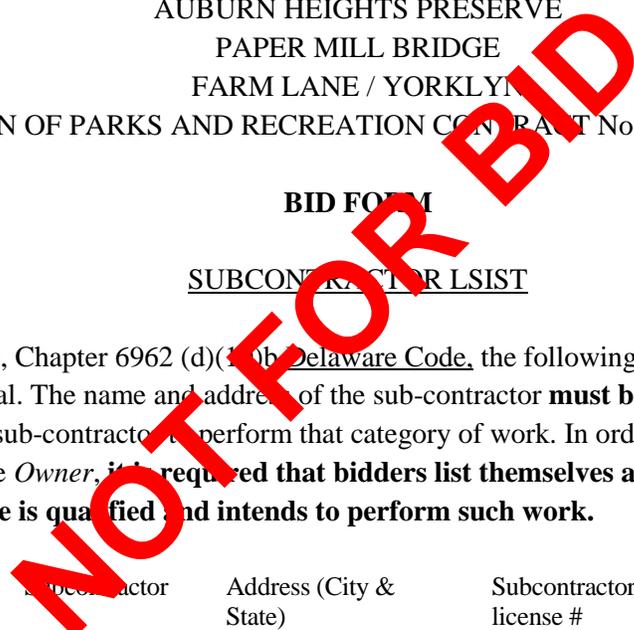
- Sub-Contractor List
- Non-Collusion Statement
- Bid Security
- (Others as Required by Project Manual)

AUBURN HEIGHTS PRESERVE  
 PAPER MILL BRIDGE  
 FARM LANE / YORKLYN  
 DIVISION OF PARKS AND RECREATION CONTRACT No. 2015-NVF-100

**BID FORM**

SUBCONTRACTOR LIST

In accordance with Title 29, Chapter 6962 (d)(1) of 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. Traffic Control	_____	_____	_____
	_____	_____	_____
2. Paving	_____	_____	_____
	_____	_____	_____
3. Micro-Piles	_____	_____	_____
	_____	_____	_____
4. Precast Elements	_____	_____	_____
	_____	_____	_____
5. Structural Concrete	_____	_____	_____
	_____	_____	_____
6. Non-Structural Concrete	_____	_____	_____
	_____	_____	_____
7. Railing	_____	_____	_____
	_____	_____	_____
8. Site Inspection	_____	_____	_____
	_____	_____	_____
9. Design Build	_____	_____	_____
	_____	_____	_____
10. Timber Boardwalk Contractor	_____	_____	_____
	_____	_____	_____
11. Mill Race Inspection	_____	_____	_____
	_____	_____	_____

AUBURN HEIGHTS PRESERVE  
PAPER MILL BRIDGE  
FARM LANE / YORKLIN  
DIVISION OF PARKS AND RECREATION CONTRACT No. 2015-NVF-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 Auburn Heights Preserve –Paper Mill Bridge project 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 BID**

STATE OF DELAWARE  
DEPARTMENT OF NATURAL RESOURCES AND ENVIRONMENTAL CONTROL

**BID BOND**

TO ACCOMPANY PROPOSAL  
(Not necessary if security is used)

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

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

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

SEALED, AND DELIVERED IN THE  
Presence of

\_\_\_\_\_  
Name of Bidder (Organization)

Corporate  
Seal

By:

\_\_\_\_\_  
Authorized Signature

Attest \_\_\_\_\_

\_\_\_\_\_  
Title

\_\_\_\_\_  
Name of Surety

Witness: \_\_\_\_\_

By:

\_\_\_\_\_  
Title

**NOT FOR BID**

**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 BID**

**NOT FOR BID**

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**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**

**NOT FOR BID**

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AUBURN HEIGHTS PRESERVE  
PAPER MILL BRIDGE  
FARM LANE / YORKLYN  
DIVISION OF PARKS AND RECREATION CONTRACT No. 2015-NVF-100

**PERFORMANCE BOND**

Bond Number: \_\_\_\_\_

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

Sealed with our seals and dated this \_\_\_\_\_ day of \_\_\_\_\_, 20\_\_.

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

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

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

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

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

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

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

PRINCIPAL

Name: \_\_\_\_\_

Witness or Attest: Address: \_\_\_\_\_

\_\_\_\_\_  
Name:

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

Name:  
Title:

(Corporate Seal)

SURETY

Name: \_\_\_\_\_

Witness or Attest: Address: \_\_\_\_\_

\_\_\_\_\_  
Name:

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

Name:  
Title:

(Corporate Seal)

AUBURN HEIGHTS PRESERVE  
PAPER MILL BRIDGE  
FARM LANE / YORKLYN  
DIVISION OF PARKS AND RECREATION CONTRACT No. 2015-NVF-100

**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, administrators, successors and assigns, jointly and severally, for and in the whole firmly by these presents.

Sealed with our seals and dated this \_\_\_\_\_ day of \_\_\_\_\_, 20\_\_.

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

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

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

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

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

PRINCIPAL

Name: \_\_\_\_\_

Witness or Attest: Address: \_\_\_\_\_

\_\_\_\_\_  
Name:

(Corporate Seal)

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

Name:

Title:

SURETY

Name: \_\_\_\_\_

Witness or Attest: Address: \_\_\_\_\_

\_\_\_\_\_  
Name:

(Corporate Seal)

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

Name:

Title:

# AIA® Document G702™ - 1992

## Application and Certificate for Payment

**TO OWNER:** PROJECT: BHH  
 APPLICATION NO: 001  
 PERIOD TO: OWNER:   
**FROM:** VIA Bernardon Haber Holloway Architects  
 CONTRACTOR: PC  
 ARCHITECT: Three Mill Road, Suite 211  
 Wilmington, Delaware 19806  
 CONTRACT FOR: General Construction  
 CONTRACT DATE: / /  
 PROJECT NOS: / /  
 DISTRIBUTION TO:  
 ARCHITECT:   
 CONTRACTOR:   
 FIELD:   
 OTHER:

### CONTRACTOR'S APPLICATION FOR PAYMENT

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

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

#### 5. RETAINAGE:

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

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

6. TOTAL EARNED LESS RETAINAGE ..... \$ 0.00  
(Line 4 Less Line 5 Total)

7. LESS PREVIOUS CERTIFICATES FOR PAYMENT ..... \$ 0.00  
(Line 6 from prior Certificate)

8. CURRENT PAYMENT DUE ..... \$ 0.00

9. BALANCE TO FINISH, INCLUDING RETAINAGE  
(Line 3 less Line 6) \$ 0.00

CHANGE ORDER SUMMARY	ADDITIONS	DEDUCTIONS
Total changes approved in previous months by Owner	\$ 0.00	\$ 0.00
Total approved this Month	\$ 0.00	\$ 0.00
<b>TOTALS</b>	<b>\$ 0.00</b>	<b>\$ 0.00</b>
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 completed under this Application for Payment has been completed in accordance with the Contract Documents and that all amounts have been paid by the Contractor for Work for which previous Certificates for Payment were issued and payments received from the Owner, and that current payment shown herein is now due.

CONTRACTOR:

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

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<sup>®</sup> Document G703<sup>™</sup> - 1992

## Continuation Sheet

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

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

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

APPLICATION NO: 001

APPLICATION DATE:

PERIOD TO:

ARCHITECT'S PROJECT NO:

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

NOT FOR BID

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 BID**

**NOT FOR BID**

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**SECTION 007313 - SUPPLEMENTARY GENERAL CONDITIONS A201-2007**

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

TABLE OF ARTICLES

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

## ARTICLE 1: GENERAL PROVISIONS

### 1.1 BASIC DEFINITIONS

#### 1.1.1 THE CONTRACT DOCUMENTS

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

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

Add the following Paragraph:

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

#### 1.2 CORRELATION AND INTENT OF THE CONTRACT DOCUMENTS

Add the following Paragraphs:

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

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

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

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

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

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

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

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

Delete Paragraph 1.5.2 in its entirety.

## **ARTICLE 2: OWNER**

### **2.2 INFORMATION AND SERVICES REQUIRED OF THE OWNER**

To Subparagraph 2.2.3 – Add the following sentence:

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

Delete Subparagraph 2.2.5 in its entirety and substitute the following:

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

## **ARTICLE 3: CONTRACTOR**

### **3.2 REVIEW OF CONTRACT DOCUMENTS AND FIELD CONDITIONS BY CONTRACTOR**

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

Delete the third sentence in Paragraph 3.2.3.

### **3.3 SUPERVISION AND CONSTRUCTION PROCEDURES**

Add the following Paragraphs:

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

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

3.3.5 When any room is used as a shop, store room, 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 Paragraph:

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 Contractor shall provide two (2) prints of the as-built conditions, along with the reproducible drawings themselves, to the Owner and one (1) set to the Architect. In addition, attach one complete set to each of the Operating and Maintenance Instructions/Manuals.

3.13 USE OF SITE

Add the following new subparagraphs:

3.13.1 The Contractor will not load nor permit any part of the structure to be loaded with weight that will endanger the structure.

3.13.2 Storage areas will be defined for the storage of the Contractor's materials and equipment and he shall confine his materials, equipment, and operations of his workmen to such limits as indicated by the Owner. Unless otherwise indicated in the Specifications, the storage areas will be outdoors, and the contractor shall provide whatever shelter is necessary for his storage and fabricating needs. No workmen shall trespass within areas or buildings of the Owner other than those related to the Work of the Contract. The Contractor shall rigidly enforce this regulation. Any materials, equipment or temporary structures belonging to the Contractor shall be moved when so directed by the Owner to permit the execution of the work of others in connection with the Project.

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

**ARTICLE 4: ADMINISTRATION OF THE CONTRACT**

4.2 ADMINISTRATION OF THE CONTRACT

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

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

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

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

Add the following Paragraph:

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

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

## ARTICLE 5: SUBCONTRACTORS

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

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

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

## ARTICLE 6: CONSTRUCTION BY OWNER OR BY SEPARATE CONTRACTORS

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

Delete Paragraph 6.1.4 in its entirety.

### 6.2 MUTUAL RESPONSIBILITY

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

Add the following Paragraph to Article 6:

### 6.4 DEPARTMENT FURNISHED MATERIALS AND EQUIPMENT

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

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

## ARTICLE 7: CHANGES IN THE WORK

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

## ARTICLE 8: TIME

### 8.2 PROGRESS AND COMPLETION

Add the following Paragraphs:

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

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

### 8.3 DELAYS AND EXTENSION OF TIME

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

Add the following Paragraph:

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

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

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

Add the following Paragraph:

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

## ARTICLE 9: PAYMENTS AND COMPLETION

### 9.2 SCHEDULE OF VALUES

Add the following Paragraphs:

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

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

### 9.3 APPLICATIONS FOR PAYMENT

Add the following Paragraph:

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

Add the following Paragraphs:

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

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

### 9.5 DECISIONS TO WITHHOLD CERTIFICATION

Add the following to 9.5.1:

.8 failure to provide a current Progress Schedule;

.9 a lien or attachment is filed;

.10 failure to comply with mandatory requirements for maintaining Record Documents.

### 9.6 PROGRESS PAYMENTS

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

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

9.7 FAILURE OF PAYMENT

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

9.8 SUBSTANTIAL COMPLETION

To Subparagraph 9.8.3 - Add the following sentence:

“If the Architect is required to make more than 2 inspections of the same portion of work, the Contractor shall be responsible for all costs associated with subsequent inspections including but not limited to a portion of 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 a such date 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 “5 days of presentment of the authorized Certificate of Payment at the annual rate of 15% 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**

DELAWARE  
PREVAILING WAGE  
REGULATIONS



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

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

Last Edited: February 2, 2009



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**

January 12, 2017

Mr. Robert Schaffer  
Rummel Klepper Kahl LLP  
81 W Mosher Street  
Baltimore, MD 21217

Re: Contract # 2015-NVF-100 Auburn Heights Preserve Paper Mill Bridge, New Castle County, DE

Dear Mr. Schaffer:

I am responding to your request for a category determination for Contract # 2015-NVF-100 Auburn Heights Preserve Paper Mill Bridge, which is a state funded construction project located in New Castle County, DE. The work consists of Reconstruction and realignment of existing farm lane entrance, construction of a shared use path, a concrete deck over structure, a bridge over Red Clay creek, a new museum access road and three parking lots. You estimate the total cost of construction for this project to be \$2,014,195.00.

Based upon the information you provided the Department of Labor has determined that this project is a Highway 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 15, 2016, prevailing wage rates for Highway Construction to be included in your bid specification. However, please be advised that, in the event that a contract for a project is not executed within one hundred and twenty (120) days from the earliest date the specifications were published, the rates in effect at the time of the execution of the contract shall be the applicable rates for the project.

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

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

Sincerely,

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

RECEIVED

JAN 17 2017

RUMMEL, KLEPPER & KAHL, LLP

STATE OF DELAWARE  
DEPARTMENT OF LABOR  
DIVISION OF INDUSTRIAL AFFAIRS  
OFFICE OF LABOR LAW ENFORCEMENT  
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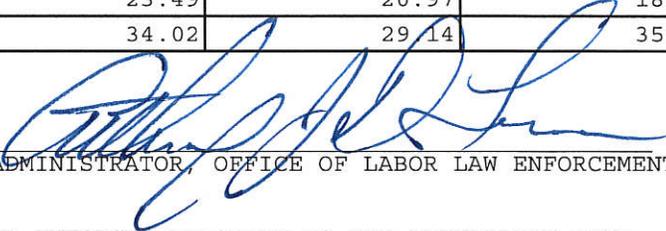
Located at:  
225 CORPORATE BOULEVARD  
SUITE 104  
NEWARK, DE 19702

PREVAILING WAGES FOR HIGHWAY CONSTRUCTION EFFECTIVE MARCH 15, 2016

CLASSIFICATION	NEW CASTLE	KENT	SUSSEX
BRICKLAYERS	50.49	50.49	14.98
CARPENTERS	52.81	52.81	41.97
CEMENT FINISHERS	31.10	30.96	26.79
ELECTRICAL LINE WORKERS	23.23	44.82	21.94
ELECTRICIANS	65.10	65.10	65.10
IRON WORKERS	43.56	24.64	26.17
LABORERS	33.59	39.35	38.63
MILLWRIGHTS	16.63	16.14	13.93
PAINTERS	63.14	63.14	63.14
PILEDRIVERS	68.57	24.52	27.82
POWER EQUIPMENT OPERATORS	41.90	40.89	29.07
SHEET METAL WORKERS	23.49	20.97	18.99
TRUCK DRIVERS	34.02	29.14	35.50

NOT FOR BID

CERTIFIED: 4/12/17

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.

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

**PROJECT:** 2015-NVF-100 Auburn Heights Preserve Paper Mill Bridge, New Castle County

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## **REGULATIONS PREVAILING WAGES**

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

### **I. INTRODUCTION**

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

### **II. ADMINISTRATION**

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

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

### **III. CONCEPTS AND DEFINITIONS**

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

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

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

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

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

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

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

**D. Apprentices and Supportive Service Program Trainees.**

**1. Definitions.** As used in this section:

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

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

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

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

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

**3. Records.**

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

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

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

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

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

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

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

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

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

#### IV. DETERMINING PREVAILING WAGES

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

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

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

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

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

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

## V. THE SURVEY

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

### A. Plan the Survey.

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

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

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

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

**B. Conduct the Survey.**

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

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

**C. Conduct Follow-Up.**

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

**D. Clarify and Analyze Data.**

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

**E. Code and Record Data.**

Survey responses are to be coded as follows:

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

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

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

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

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

**F. Determine Adequacy of Data.**

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

**G. Compute Prevailing Wage Rates.**

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

Laborers / New Castle County / Building Construction

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

The prevailing wage rate = \$17.25

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

Laborers/New Castle County/Building Construction

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

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

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

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

### VI. ISSUING WAGE DETERMINATIONS.

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

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

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

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

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

Public agencies (covered by the provision 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 Wage 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 employee on the site of construction. The log must list (in general terms) the tasks performed by each employee and the amount of time spent performing each task. (examples, "hung drywall", "wired lighting fixtures", etc.);
  - d. Each employee's basic hourly rate of pay (If an employee performs public project work in more than one trade the employer's record must reflect the hourly rate paid for each type of work performed; If an employee performs both prevailing wage work and non-prevailing wage work, the records must reflect the rates paid for each.)
  - e. The number of hours worked in each occupation on the project in the applicable pay schedule, the number of hours worked in each day, and the total number of hours worked each week;
  - f. The amount of wages paid each employee;
  - g. The amount of wages paid each employee as fringe benefit payments;
  - h. The amount of any deductions withheld from each employee's wages; and
  - i. An accurate description of the nature of the deductions withheld from each employee's wages. (Fringe benefit deductions must be supported by a written fringe benefit policy as required by the Wage Payment and Collection Act.)

#### **B. INVESTIGATION**

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

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

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

**NOT FOR BID**

**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, correspondence between the agencies and the parties, all exhibits, documents, 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.

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Harold E. Stafford  
Secretary of Labor

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

Amended: July 1, 1993

Amended: September 15, 1993

Amended: December 28, 1994

Amended: October 15, 1995

Amended: January 9, 1998

Amended: December 12, 2000

Amended: June 14, 2001

Amended: October 13, 2003

**NOT FOR BID**

CLASSIFICATION OF WORKERS  
UNDER  
DELAWARE'S  
PREVAILING WAGE LAW

**NOT FOR BID**



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

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### **ASBESTOS WORKER**

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

### **BOILERMAKER**

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

Assembles boilers, tanks, vats, and pressure vessels according to blueprint specifications, using power tools and handtools: Reads blueprint to determine location and relationship of parts. Connects firetubes to heads or watertubes to drums and heads 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 caulking beams to repair riveted shells and structures, using pneumatic chisel, riveter, and caulking hammer. May cut out defective parts, using acetylene torch.

### **BRICKLAYER**

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

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

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

## **CARPENTER**

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

Plans gypsum drywall installations, erects metal framing and furring channels for fastening drywalls, and installs drywall to cover walls, ceilings, soffits, shafts, and movable partitions in residential, commercial, and industrial buildings: Reads blueprints and other specifications to determine method of installation, work procedures, and material, tool, and work aid requirements. Lays out reference lines and points for use in locating 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 in board for electrical outlets, vents or fixtures, using keyhole saw or other cutting tools. Measures, cuts, assembles and installs metal framing and decorative trim for windows, doorways, and vents. Fits, aligns, and hangs doors and installs hardware, such as locks and kickplates.

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

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

### **CEMENT FINISHER**

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

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

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

### **ELECTRICAL LINE WORKER**

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

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

### **ELECTRICIAN**

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

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

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

### **ELEVATOR CONSTRUCTOR**

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

### **GLAZIER**

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

### **INSULATOR**

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

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

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

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

## **IRONWORKER**

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

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

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

**Hereinafter, "member/s" refers to structural steel, iron or fiber-reinforced polymers or other plastic material.**

## LABORER

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

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

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

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

## MILLWRIGHT

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

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

## PAINTER

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

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

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

## **PILE DRIVER**

Performs work involving pilings or sheeting of wood, concrete, steel or plastic on wharves, piers, docks, bulkheads, jetties, wooden bridges, ferry slips and the 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 by 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 while pile or sheeting is supported by hoisting equipment. Dresses and caps the pilings which have been driven, and prepares them to receive the superstructure. Performs work in connection with shoring systems replacing sheeting (krings system and lagging). Installs tie-backs for the shoring system and tests shoring system.

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

Repairs deteriorated pilings by installing a pile encasement.

## **PLASTERER**

Applies coats of plaster to interior walls, ceilings, and partitions of buildings, to produce finished surface, according to blueprints, architect's drawings, or oral instructions, using handtools and portable power tools: Directs workers to mix plaster to desired consistency and to erect scaffolds. Spreads plaster over lath or masonry base, using trowel, and 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 machine and pipe bending machine. Assembles and installs a variety of metal and nonmetal pipes, tubes, and fittings, including iron, steel, copper, and plastic. Connects pipes, using threaded, caulked, soldered, brazed, fused, or cemented joints and handtools. Secures pipes to structure with brackets, clamps, and hangers, using handtools and power tools. Installs and maintains hydraulic and pneumatic components of machines and equipment, such as pumps and cylinders, using handtools. Installs and maintains refrigeration and air-conditioning systems, including compressors, pumps, meters, pneumatic and hydraulic controls, and piping, using handtools and power tools, and following specifications and blueprints. Increases pressure in pipe system and observes connected pressure gauge to test system for leaks. May weld pipe supports to structural steel members. Performs welds on steel casing for sanitary sewers. May operate machinery to verify repair. May operate machinery to verify repair. May modify programs of automated machinery, such as robots and conveyors, to change motion and speed of machine, using teach pendant, control panel, or keyboard and display screen of robot controller and programmable controller. May be designated Steam Fitter when installing piping systems that must withstand high pressure.

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

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

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

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

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

### **POWER EQUIPMENT OPERATOR**

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

### **ROOFER – COMPOSITION**

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

## **ROOFER – SHINGLE, SLATE AND TILE**

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

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

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

## **SHEET METAL WORKER**

Plans, lays out, fabricates, assembles, installs, and repairs sheet metal parts, equipment, and products, utilizing knowledge of working characteristics of metallic and nonmetallic materials, machining, and layout techniques, using handtools, power tools, machines, and equipment: Reads and interprets blueprints, sketches, or product specifications to determine sequence and methods of fabricating, assembling, and installing sheet metal products. Selects gauge and type of sheet metal, such as galvanized iron, copper, steel, or aluminum, or nonmetallic material, such as plastics or fiberglass, according to product specifications. Lays out and marks dimensions and reference lines on material, using scribes, dividers, squares, and rulers, applying knowledge of shop mathematics and layout techniques to develop and trace patterns of product or parts or using templates. Sets up and operates fabricating machines, such as shears, brakes, presses, forming rolls, and routers, to cut, bend, block and form, or straighten materials. Shapes metal material over anvil, block, or other form, using handtools. Trims, files, grinds, deburrs, buffs, and 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 — refer to definition for Roofer-Composition - installed in conjunction with metal roof systems. Installs aluminum fascia on roofs. Inspects assemblies and installation for conformance to specifications, using measuring instruments, such as calipers, scales, dial indicators, gauges, and micrometers. Repairs and maintains sheet metal products. May operate computer-aided-drafting (CAD) equipment to develop scale drawings of product or system. May operate laser-beam cutter or plasma arc cutter to cut patterns from sheet metal.

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

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

### **SOFT FLOOR LAYER**

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

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

### **SPRINKLER FITTER**

Installs and maintains all fire protection and fire control systems including the unloading, handling by hand, power equipment and installation of all piping, 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 FITTER**

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

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

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

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

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

## **TERRAZZO/MARBLE/TILE FINISHER**

Supplies and mixes construction materials for Marble Setter, applies grout, and cleans installed marble: Moves marble installation materials, tools, machines, and work devices to work areas. Mixes mortar, plaster, and grout, as required, following standard formulas and using manual or machine mixing methods. Moves mixed mortar or plaster to installation area, manually or using wheelbarrow. Selects marble slab for installation following numbered sequence or drawings. Drills holes and chisels channels in edges of marble slabs to install metal wall anchors, using power drill and chisel. Bends wires to form metal anchors, using pliers, inserts anchors into drilled holes of marble slab, and secures anchors in place with wooden stake and plaster. Moves marble slabs to installation site using dolly, hoist, or portable crane. Fills marble joints and surface imperfections with grout, using grouting trowel or spatula, and removes excess grout, using wet sponge. Grinds and polishes marble, using abrasives, chemicals, and manual or machine grinding and polishing techniques. Cleans installed marble surfaces, work and storage areas, installation tools, machinery, and work aids, using water and cleaning agents. Stores marble installation materials, tools, machinery, and related items. May modify mixing, material moving, grouting, polishing, and cleaning methods and procedures, according to type of installation or materials. May repair and fill chipped, cracked, or broken marble pieces, using 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 material. 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, pickups, rubber-tired towing and pushing vehicles, A-frames, agitators or mixers, asphalt distributors, low-boys, semi-trailers, tandems, batch truck, euclid type or similar off-highway equipment, off-highway tandem back-dump, specialized earth moving equipment, twin engine equipment and double-hitched equipment, and equipment similar to above. This classification also includes truck mechanics.

**NOT FOR BID**

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## GENERAL REQUIREMENTS

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## ARTICLE 1: GENERAL

### 1.1 CONTRACT DOCUMENTS

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

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

### 1.2 EQUALITY OF EMPLOYMENT OPPORTUNITY ON PUBLIC WORKS

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

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

## ARTICLE 2: OWNER

(NO ADDITIONAL GENERAL REQUIREMENTS – SEE SUPPLEMENTARY GENERAL CONDITIONS)

## ARTICLE 3: CONTRACTOR

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

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

- 3.11.1 Each Contractor and Subcontractor shall be licensed to do business in the State of Delaware and shall pay all fees and taxes due under State laws. In conformance with Section 2503, Chapter 25, Title 30, Delaware Code, the Contractor shall furnish the Delaware Department of Finance within ten (10) days after entering into any contract with a contractor or subcontractor not a resident of this State, a statement of total value of such contract or contracts together with the names and addresses of the contracting parties.”
- 3.12 The Contractor shall comply with all requirements set forth in Section 6962, Chapter 69, Title 29 of the Delaware Code.
- 3.13 During the contract Work, the Contractor and each 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 materiel or performing labor in the performance of the Contract, of all sums of money due the person for such labor and materiel. (The bond shall also contain the successful bidder’s guarantee to indemnify and save harmless the State and the agency from all costs, damages and expenses growing out of or by reason of the Contract in accordance with the Contract.)

4.1.4 Invoking a Performance Bond – The agency may, when it considers that the interest of the State so require, cause 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 the Contractor. The Owner shall have the right to demand that the proof parties signing the bonds are duly authorized to do so.

#### 4.2 FAILURE TO COMPLY WITH CONTRACT

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

#### 4.3 CONTRACT INSURANCE AND CONTRACT LIABILITY

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

4.3.2 The purchase or nonpurchase of such insurance or the involvement of the successful Bidder in any legal or equitable defense of any action brought against the successful Bidder based upon work performed pursuant to the Contract will not waive any defense which the State, its agencies and their respective officers, employees and agents might otherwise have against such claims, specifically including the defense of sovereign immunity, where applicable, and by the terms of this section, the State and all agencies, officers and employees thereof shall not be financially responsible for the consequences of work performed, pursuant to said contract.

#### 4.4 RIGHT TO AUDIT RECORDS

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

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

## ARTICLE 5: SUBCONTRACTORS

### 5.1 SUBCONTRACTING REQUIREMENTS

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

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

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

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

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

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

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

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

5.2 PENALTY FOR SUBSTITUTION OF SUBCONTRACTORS

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

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

5.3 ASBESTOS ABATEMENT

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

5.4 STANDARDS OF CONSTRUCTION FOR THE PROTECTION OF THE PHYSICALLY HANDICAPPED

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

5.5 CONTRACT PERFORMANCE

5.5.1 Any firm entering into a Public Works Contract that neglects or refuses to perform or fails to comply with its terms, the Agency may terminate the Contract and proceed to

award a new Contract or may require the Surety on the Performance Bond to complete the Contract in accordance with the terms of the Performance Bond.

#### **ARTICLE 6: CONSTRUCTION BY OWNER OR SEPARATE CONTRACTORS**

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

#### **ARTICLE 7: CHANGES IN THE WORK**

- 7.1 The Owner, without invalidating the Contract, may order changes in the Work consisting of Additions, Deletions, Modifications or Substitutions, with the Contract Sum and Contract completion date being adjusted accordingly. Such changes in the Work shall be authorized by written Change Order signed by the Professional, as the duly authorized agent, the Contractor and the Owner.
- 7.2 The Contract Sum and Contract Completion Date shall be adjusted only by a fully executed Change Order.
- 7.3 The additional cost, or credit to the Owner resulting from a change in the Work shall be by mutual agreement of the Owner, Contractor and the Architect. In all cases, this cost or credit shall be based on the 'DPE' wages required and the "invoice price" of the materials/equipment needed.
- 7.3.1 "DPE" shall be defined to mean "direct personnel expense". Direct payroll expense includes direct salary plus customary fringe benefits (prevailing wage rates) and documented statutory costs such as workman's compensation insurance, Social Security/Medicare, and unemployment insurance (a maximum multiplier of 1.35 times DPE).
- 7.3.2 "Invoice price" of materials/equipment shall be defined to mean the actual cost of materials and/or equipment that is paid by the Contractor, (or subcontractor), to a material distributor, direct factory vendor, store, material provider, or equipment leasing entity. Rates for equipment that is leased and/or owned by the Contractor or subcontractor(s) shall not exceed those listed in the latest version of the "Means Building Construction Cost Data" publication.
- 7.3.3 In addition to the above, the General Contractor is allowed a fifteen percent (15%) markup for overhead and profit for additional work performed by the General Contractor's own forces. For additional subcontractor work, the Subcontractor is allowed a fifteen (15) percent overhead and profit on change order work above and beyond the direct costs stated previously. To this amount, the General Contractor will be

allowed a mark-up not exceeding seven and one half percent (7.5%) on the subcontractors work. These mark-ups shall include all costs including, but not limited to: overhead, profit, bonds, insurance, supervisory fees. 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 associated in the Project Manual. By executing the Agreement, the Contractor confirms that the stipulated limits are reasonable, and that the Work will be completed within the anticipated time frame.

8.2 If progress of the Work is delayed at any time by changes ordered by the Owner, by labor disputes, fire, unusual delay in deliveries, abnormal adverse weather conditions, unavoidable casualties or other causes beyond the Contractor's control, the Contract Time shall be extended for such reasonable time as the Owner may determine.

8.3 Any extension of time beyond the date fixed for completion of the construction and acceptance of any part of the Work called for by the Contract, or the occupancy of the building by the Owner, in whole or in part, previous to the completion shall not be deemed a waiver by the Owner of his right to annul or terminate the Contract for abandonment or delay in the matter provided for, nor relieve the Contractor of full responsibility.

#### **8.4 SUSPENSION AND DEBARMENT**

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

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

third offense. The Director shall issue a written decision and shall send a copy to the Contractor and the Agency. Such decision may be appealed to the Superior Court within thirty (30) days for a review on the record.”

## 8.5 RETAINAGE

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

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

## ARTICLE 9: PAYMENTS AND COMPLETION

### 9.1 APPLICATION FOR PAYMENT

9.1.1 Applications for payment shall be made upon AIA Document G702. There will be a five percent (5%) retainage on all Contractor's monthly invoices until completion of the project. This retainage may become payable upon receipt of all required closeout documentation, provided all other requirements of the Contract Documents have been met.

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

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

## 9.2 PARTIAL PAYMENTS

- 9.2.1 Any public works Contract executed by any Agency may provide for partial payments at the option of the Owner with respect to materials placed along or upon the sites or stored at secured locations, which are suitable for use in the performance of the contract.
- 9.2.2 When approved by the agency, partial payment may include the values of tested and acceptable materials of a nonperishable or noncontaminative nature which have been produced or furnished for incorporation as a permanent part of the work yet to be completed, provided acceptable provisions have been made for storage.
- 9.2.2.1 Any allowance made for materials on hand will not exceed the delivered cost of the materials as verified by invoices furnished by the Contractor, nor will it exceed the contract bid price for the material complete in place.
- 9.2.3 If requested by the Agency, receipted bills from all Contractors, Subcontractors, and material men, etc., for the previous payment must accompany each application for payment. Following such a request, no payment will be made until these receipted bills have been received by the Owner.

## 9.3 SUBSTANTIAL COMPLETION

- 9.3.1 When the building has been made suitable for occupancy, but still requires small items of miscellaneous work, the Owner will determine the date when the project has been substantially completed.
- 9.3.2 If, after the Work has been substantially completed, full completion thereof is materially delayed through no fault of the Contractor, and without terminating the Contract, the Owner may make payment of the balance due for the portion of the Work fully completed and accepted. Such payment shall be made under the terms and conditions governing final payment that it shall not constitute a waiver of claims.
- 9.3.3 On projects where commissioning is included, the commissioning work as defined in the specifications must be complete prior to the issuance of substantial completion.

## 9.4 FINAL PAYMENT

- 9.4.1 Final payment, including the five percent (5%) retainage if determined appropriate, shall be made within thirty (30) days after the Work is fully completed and the Contract fully performed and provided that the Contractor has submitted the following closeout documentation (in addition to any other documentation required elsewhere in the Contract Documents):
- 9.4.1.1 Evidence satisfactory to the Owner that all payrolls, material bills, and other indebtedness connected with the work have been paid,
- 9.4.1.2 An acceptable RELEASE OF LIENS,

- 9.4.1.3 Copies of all applicable warranties,
- 9.4.1.4 As-built drawings,
- 9.4.1.5 Operations and Maintenance Manuals,
- 9.4.1.6 Instruction Manuals,
- 9.4.1.7 Consent of Surety to final payment.
- 9.4.1.8 The Owner reserves the right to retain payments, or parts thereof, for its protection until the foregoing conditions have been complied with, defective work corrected and all unsatisfactory conditions remedied.

#### **ARTICLE 10: PROTECTION OF PERSONS AND PROPERTY**

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

(MSDS) provided by the product manufacturer for the materials used in construction, as specified or as provided by the Contractor.

## ARTICLE 11: INSURANCE AND BONDS

- 11.1 The Contractor shall carry all insurance required by law, such as Unemployment Insurance, etc. The Contractor shall carry such insurance coverage as they desire on their own property such as a field office, storage sheds or other structures erected upon the project site that belong to them and for their own use. The Subcontractors involved with this project shall carry whatever insurance protection they consider necessary to cover the loss of any of their personal property, etc.
- 11.2 Upon being awarded the Contract, the Contractor shall obtain a minimum of two (2) copies of all required insurance certificates called for herein, and submit one (1) copy of each certificate, to the Owner, within 20 days of contract award.
- 11.3 Bodily Injury Liability and Property Damage Liability Insurance shall, in addition to the coverage included herein, include coverage for injury to or destruction of any property arising out of the collapse of or structural injury to any building or structure due to demolition work and evidence of these coverages shall be filed with and approved by the Owner.
- 11.4 The Contractor's Property Damage Liability Insurance shall, in addition to the coverage noted herein, include coverage on all real and personal property in their care, custody and control damaged in any way by the Contractor or their Subcontractors during the entire construction period on this project.
- 11.5 Builders Risk (including Standard Extended Coverage Insurance) on the existing building during the entire construction period, shall not be provided by the Contractor under this contract. The Owner shall insure the existing building and all of its contents and all this new alteration work under this contract during entire construction period for the full insurable value of the entire work at the site. Note, however, that the Contractor and their Subcontractors shall be responsible for insuring building materials (installed and stored) and their tools and equipment whenever in use on the project, against fire damage, theft, vandalism, etc.
- 11.6 Certificates of the insurance company or companies stating the amount and type of coverage, terms of policies, etc., shall be furnished to the Owner, within 20 days of contract award.
- 11.7 The Contractor shall, at their own expense, (in addition to the above) carry the following forms of insurance:
- 11.7.1 Contractor's Contractual Liability Insurance

Minimum coverage to be:

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

	\$1,000,000	aggregate
Property Damage	\$500,000	for each occurrence
	\$1,000,000	aggregate
11.7.2	<u>Contractor's Protective Liability Insurance</u>	
	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**

**NOT FOR BID**

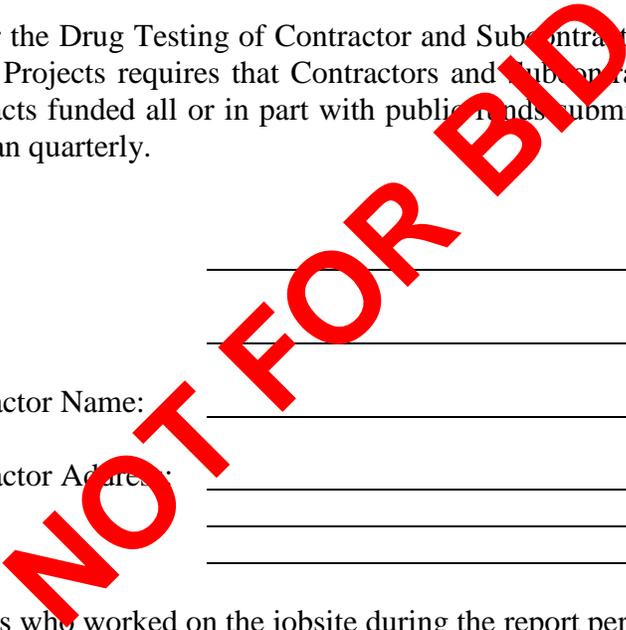
**NOT FOR BID**

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**EMPLOYEE DRUG TESTING REPORT FORM**

**Period Ending:** \_\_\_\_\_

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



Project Number: \_\_\_\_\_

Project Name: \_\_\_\_\_

Contractor/Subcontractor Name: \_\_\_\_\_

Contractor/Subcontractor Address: \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

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

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

Number of Negative Results \_\_\_\_\_ Number of Positive Results \_\_\_\_\_

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

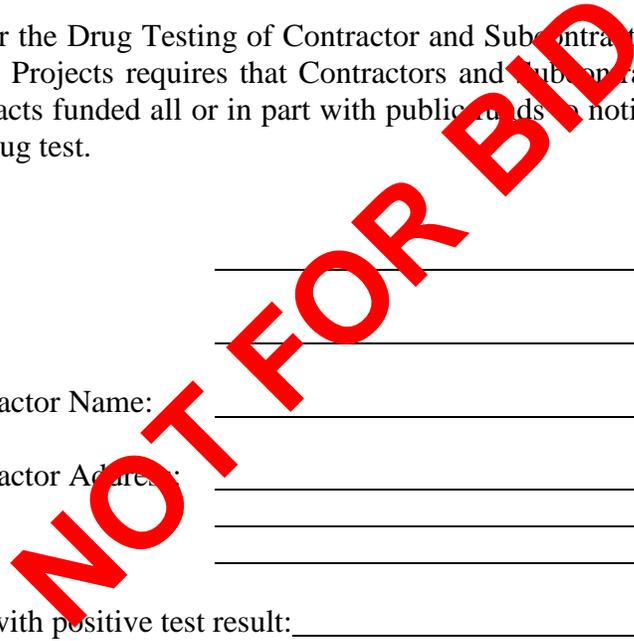
Authorized Representative of Contractor/Subcontractor: \_\_\_\_\_  
(typed or printed)

Authorized Representative of Contractor/Subcontractor: \_\_\_\_\_  
(signature)

Date: \_\_\_\_\_

**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. Unit Prices.
5. Applications for Payment.
6. Owner Supplied Construction Documents.
7. Coordination.
8. Phased construction.
9. Access to site.
10. Coordination with occupants.
11. Work restrictions.
12. Specification and drawing conventions.
13. Field Engineering.
14. References and Standards.
15. 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: Auburn Heights Preserve – Paper Mill Bridge.

1. Project Location: Bengel Road, Yorklyn, DE 19736.

- 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 June 30, 2017, were prepared for this Project by Rummel, Klepper & Kahl, LLP, 700 E. Pratt St., Suite 500 Baltimore, MD 21202.

#### 1.4 WORK COVERED BY CONTRACT DOCUMENTS

- A. The Work of Project is defined by the Contract Documents and consists of the following:
1. Four new parking lots, Paper Mill Bridge sub-structure, a concrete slab deck-over structure, a new museum access road and a new connector boardwalk.
- 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. Assembly and installation of Paper Mill Bridge by others, Not in Contract.
  2. Items noted "NIC" (Not in Contract) will be furnished and installed by others.

#### 1.6 UNIT PRICES

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

#### 1.7 APPLICATIONS FOR PAYMENT

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

## 1.8 OWNER SUPPLIED CONSTRUCTION DOCUMENTS

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

## 1.9 COORDINATION

- A. Coordinate Work of the various sections of Specifications to assure efficient and orderly sequence of installation of construction elements, with provisions for accommodating items installed later.
- B. Verify characteristics of elements of interrelated operating equipment are compatible; coordinate Work of various sections having interdependent responsibilities for installing, connecting to, and placing in service, such equipment.
- C. Coordinate space requirements and installation of 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.

## 1.10 PHASED CONSTRUCTION

- A. The Work shall be conducted in two phases. Each phase shall be substantially complete prior to starting the next phase.
  - 1. Phase One: Construction of Paper Mill Bridge abutments, Paper Mill parking lot over existing settling tank, and Bengé Road parking lot.
  - 2. Phase Two: Construction of Farm Lane Parking Lot, Museum Drive, Museum Drive parking lot, connector boardwalk and Paper Mill Bridge (by others).
- B. Before commencing Work of each phase, submit an updated copy of Contractor's construction schedule showing the sequence, commencement and completion dates for all phases of the Work.

### 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. The surrounding buildings/site are occupied and the Owner's operations shall not be disturbed.
  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 operation.
    - b. Schedule deliveries to minimize space and time requirements for storage of materials and equipment on-site.
  3. The adjacent building areas, site and properties are occupied and shall not be disturbed.
  4. The rear entrance off of Farm Lane to the museum and Auburn Heights properties shall be limited during construction.
  5. Contractor shall maintain access to existing residences at all times.

### 1.12 COORDINATION WITH OCCUPANTS

- A. Full Owner Occupancy: Owner will occupy site, Auburn Heights Preserve during entire construction period. Cooperate with Owner during construction operations to minimize conflicts and facilitate Owner usage. Perform the Work so as not to interfere with Owner's day-to-day operations. Maintain existing exits unless otherwise indicated.
1. Maintain access to existing walkways, entrances, corridors, stairs and other adjacent occupied or used facilities. Do not close or obstruct walkways, entrances, stairs, corridors, or other occupied or used facilities without written permission from Owner and approval of authorities having jurisdiction. Entrances shall be open for the Owner's use at all times.
  2. 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 and/or existing building to normal business working hours of 7:00 a.m. to 5:00 p.m., Monday through Friday, unless otherwise indicated.
1. Weekend Hours: Weekend work shall not be allowed unless preapproved by the Owner.
  2. Early Morning Hours: Early morning hours are not allowed unless required for utility shut downs.
- C. Noise, Vibration, and Odors: Coordinate operations that may result in any level of noise and vibration, odors, or other disruption to the occupancy or use of adjacent occupied areas, the buildings and adjacent properties with the Owner.
1. Notify Architect and Owner not less than seven (7) days in advance of proposed disruptive operations.
  2. Obtain Architect's and/or Owner's written permission before proceeding with disruptive operations.
- D. Nonsmoking Campus and Building: Smoking is prohibited within the boundaries of all state workplaces including all buildings, facilities, indoor and outdoor spaces and all the surrounding grounds owned by the State. This policy also includes but is not limited to parking lots, walkways, State vehicles and private vehicles parked or operated on State workplace property.

#### 1.14 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 a colon (:) is used within a sentence or phrase.
  2. Specification requirements are to be performed by Contractor unless specifically stated otherwise.
- B. Division 01 General Requirements: Requirements of Sections in Division 01 apply to the Work of all Sections in the Specifications.
- C. Drawing Coordination: Requirements for materials and products identified on Drawings are described in detail in the Specifications. One or more of the following are used on Drawings to identify materials and products:
1. Terminology: Materials and products are identified by the typical generic terms used in the individual Specifications Sections.
  2. Abbreviations: Materials and products are identified by abbreviations published as part of the U.S. National CAD Standard and scheduled on Drawings.

3. Keynoting: Materials and products are identified by reference keynotes referencing Specification Section numbers found in this Project Manual.

#### 1.15 FIELD ENGINEERING

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

#### 1.16 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.

#### 1.17 MISCELLANEOUS PROVISIONS

##### A. SCHEDULE

1. The following is the required schedule for this work:
  - a. Bids Due: August 17, 2017 at 1:00 pm.
  - b. Notice of Building Contract Award: Within thirty (30) days of receipt and acceptance of qualified low bid.
  - c. Purchase Order Issuance: The issuance of a State of Delaware purchase order is contingent upon the successful Contractor submitting bonds on State-approved forms, signed contracts and insurance certificates to the State of Delaware within 20 days of Notice of Award. A purchase order will be issued in approximately thirty days after these items have been submitted to the State of Delaware.
  - d. On-Site Mobilization: Upon receipt of State of Delaware purchase order.
  - e. Substantial Completion: The work shall be completed 6 months from on-site start of work.
  - 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**

**NOT FOR BID**

**NOT FOR BID**

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## 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 Specifications 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 and Tenant Occupancy: The surrounding occupied areas, site, buildings, roadways, access into the buildings, etc. immediate to and beyond the work area shall remain accessible to the Owner and tenants. Phasing has been indicated to allow access to building, entrances, driveways, etc. during the construction process.
  3. Parking: Parking is limited during the initial construction and until the first lots are built. Refer to civil drawings for construction layout, office, dumpster and parking locations.
  4. Dumpster: 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: Contractor access is provided via entrances off of Bengé Road.
  6. Storage: Storage structures will be allowed in the construction area. The State is not responsible for theft or vandalism.
  7. 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.
  8. Contractor and subcontractor promotional signage will not be allowed at the project site or within the Park unless approved by the Owner.
- B. Existing Buildings: Repair damage caused by construction operations to existing buildings to remain. Protect buildings and their contents during construction period.

1. The Contractor shall be provided access to the site areas as necessary to complete the work. Access to existing buildings will not be provided to the Contractor unless they are to be demolished.
2. Use of the Owner's telephones will not be allowed.
3. Flammable materials shall be kept away from all buildings, in a flammable liquid/material storage box.
4. Gas powered equipment will not be allowed near windows and intake louvers of occupied structures at any time.
5. Debris shall be removed from and around the sites including the sidewalks, trails and parking areas on a daily basis.
6. At no times shall equipment be left operating in and around the sites after hours or when no one is present.
7. Noisy activities shall take place during the hours defined by the New Castle County and prescheduled with the Owner to avoid disruption of their activities.
8. Access to water will be provided. The Contractor shall be responsible for modifying the water source and extending to the areas where it may be needed.
9. There will be no restroom facilities available during Paper Mill Bridge and Site Improvement. The Contractor shall provide a self-contained toilet unit securely attached to the ground and kept locked after hours.
10. Dogs or other animals shall not be brought onto the property at any time.
11. Children shall not be brought onto the site at any time.
12. The general surrounds of site areas are open to the public and those working at the site shall not use abusive language.
13. Radios or other music-playing devices will not be allowed. Head phones and ear buds will not be allowed.
14. Fire extinguishers shall be kept in the areas under construction near existing buildings at all times.
15. 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.
16. The Project superintendent shall discuss weekly with the DNREC Project Manager to review the activities planned for that week to avoid miscommunication, facilitate the renovation process and to maintain the Owner's operations.

PART 2 - PRODUCTS (Not Used)

PART 3 - EXECUTION (Not Used)

**END OF SECTION 011400**

## SECTION 012100 - ALLOWANCES

### PART 1 - GENERAL

#### 1.1 RELATED DOCUMENTS

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

#### 1.2 SUMMARY

- A. Section includes administrative and procedural requirements governing allowances.
- B. Selected materials and equipment are specified in the Contract Documents by Allowances. In some cases, these Allowances include installation. Allowances have been established in lieu of additional requirements and to defer selection of actual materials and equipment to a later date when additional information is available for evaluation. If necessary, additional requirements will be issued by Proposal Request.
- C. Types of allowances include the following:
  1. Lump-sum allowances.
  2. Unit-cost Allowances.
  3. Contingency Allowances.
- D. Related Requirements:
  1. Section 012200 "Unit Prices" for procedures for using unit prices.

#### 1.3 SELECTION AND PURCHASE

- A. At the earliest practical date after award of the Contract, advise Owner of the date when final selection and purchase of each product or system described by an allowance must be completed to avoid delaying the Work.
- B. At Owner's request, obtain proposals for each allowance for use in making final selections. Include recommendations that are relevant to performing the Work.
- C. Purchase products and systems selected in writing by Owner from the designated supplier.

#### 1.4 ACTION SUBMITTALS

- A. Submit proposals for purchase of products or systems included in allowances, in the form specified for Change Orders.

### 1.5 INFORMATIONAL SUBMITTALS

- A. Submit invoices or delivery slips to show actual quantities of materials delivered to the site for use in fulfillment of each allowance.
- B. Submit time sheets and other documentation to show labor time and cost for installation of allowance items that include installation as part of the allowance.
- C. Coordinate and process submittals for allowance items in same manner as for other portions of the Work.

### 1.6 COORDINATION

- A. Coordinate allowance items with other portions of the Work. Furnish templates as required to coordinate installation.

### 1.7 LUMP-SUM ALLOWANCES

- A. Allowance shall include cost to Contractor of specific products and materials ordered by Owner or selected by Architect under allowance and shall include taxes, freight, and delivery to Project site.
- B. Unless otherwise indicated, Contractor's costs for receiving and handling at Project site, labor, installation, overhead and profit, and similar costs related to products and materials selected by Architect under allowance shall be included as part of the Contract Sum and not part of the allowance.
- C. Unused Materials: Return unused materials purchased under an allowance to manufacturer or supplier for credit to Owner, after installation has been completed and accepted.
  1. If requested by Architect, retain and prepare unused material for storage by Owner. Deliver unused material to Owner's storage space as directed.

### 1.8 ADJUSTMENT OF ALLOWANCES

- A. Allowance Adjustment: To adjust allowance amounts, prepare a Change Order proposal based on the difference between purchase amount and the allowance, multiplied by final measurement of work-in-place where applicable. If applicable, include reasonable allowances for cutting losses, tolerances, mixing wastes, normal product imperfections, and similar margins.
  1. Include installation costs in purchase amount only where indicated as part of the allowance.
  2. If requested, prepare explanation and documentation to substantiate distribution of overhead costs and other margins claimed.

3. Submit substantiation of a change in scope of work, if any, claimed in Change Orders related to unit-cost allowances.
  4. Owner reserves the right to establish the quantity of work-in-place by independent quantity survey, measure, or count.
- B. Submit claims for increased costs because of a change in scope or nature of the allowance described in the Contract Documents, whether for the purchase order amount or Contractor's handling, labor, installation, overhead, and profit.
1. Do not include Contractor's or subcontractor's indirect expense in the Change Order cost amount unless it is clearly shown that the nature or extent of work has changed from what could have been foreseen from information in the Contract Documents.
  2. No change to Contractor's indirect expense is permitted for selection of higher- or lower-priced materials or systems of the same scope and nature as originally indicated.
- 1.9 Contingency Allowances:
- A. Use the Contingency Allowance only as directed for the Owner's purposes and only by Change Orders that indicate amounts to be charged to the Allowance.
  - B. Change Orders authorizing use of funds from the Contingency Allowance, for purchase of products and equipment, will include Contractor's related costs and reasonable overhead and profit margins. These related costs include delivery, installation, taxes, insurance, equipment rental, and similar costs.
  - C. At Project Closeout, credit unused amounts remaining in the Contingency Allowance to the Owner by Change Order.

## PART 2 - PRODUCTS (Not Used)

## PART 3 - EXECUTION

### 3.1 EXAMINATION

- A. Examine products covered by an allowance promptly on delivery for damage or defects. Return damaged or defective products to manufacturer for replacement.

### 3.2 PREPARATION

- A. Coordinate materials and their installation for each allowance with related materials and installations to ensure that each allowance item is completely integrated and interfaced with related work.

### 3.3 SCHEDULE OF ALLOWANCES

- A. Allowance No. 1 - Lump-Sum Allowance: Include the sum of \$200,000 for the path connection to the existing office.
1. This allowance includes material cost, receiving, handling, installation and Contractor overhead and profit and engineering.
- B. Allowance No. 2 - Lump Sum Allowance: Include the sum of \$350,000 for the construction of the Mill Race deck-over structure as described in Sections 600500 and 600600.
1. This allowance includes material cost, receiving, handling, installation and Contractor overhead and profit and engineering.
- C. Allowance No. 3 – Lump Sum Allowance: Include, the sum of \$40,000.00 for inspection of and repairs to the mill race below the deck-over structure according to the Owner's direction.
1. This allowance includes material cost, receiving, handling, installation and Contractor overhead and profit.
- D. Allowance No. 4 – Lump Sum Allowance to Add/Alternate No. 1: Include, the sum of \$150,000.00 for the removal and replacement of existing fence and gates.
1. This allowance includes material cost, receiving, handling, installation and Contractor overhead and profit.

**END OF SECTION 012100**

## SECTION 012200 - UNIT PRICES

### PART 1 - GENERAL

#### 1.1 RELATED DOCUMENTS

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

#### 1.2 SUMMARY

- A. This Section includes administrative and procedural requirements for unit prices.
- B. Related Sections include the following:
  - 1. Division Section "Contract Modification Procedures" for procedures for submitting and handling Change Orders.

#### 1.3 DEFINITIONS

- A. Unit price is an amount proposed by bidders, stated on the Bid Form, as a price per unit of measurement for materials or services added to or deducted from the Contract Sum by appropriate modification, if estimated quantities of Work required by the Contract Documents are increased or decreased.

#### 1.4 PROCEDURES

- A. Unit prices include all necessary material, plus cost for delivery, installation, insurance, applicable taxes, overhead, and profit.
- B. Measurement and Payment: Refer to individual Specification Sections for work that requires establishment of unit prices. Methods of measurement and payment for unit prices are specified in those Sections.
- C. Owner reserves the right to reject Contractor's measurement of work-in-place that involves use of established unit prices and to have this work measured, at Owner's expense, by an independent surveyor acceptable to Contractor.
- D. List of Unit Prices: A list of unit prices is included at the end of this Section. Specification Sections referenced in the schedule contain requirements for materials described under each unit price.

### PART 2 - PRODUCTS (Not Used)

PART 3 - EXECUTION

3.1 LIST OF UNIT PRICES

- NOT FOR BID**
- A. Unit Price No. 1 – Undercut Excavation
1. Description: Excavation of poor subgrade materials as determined by the owner.
  2. Unit of Measurement: Cubic Yard (CY)
  3. Include 200 CY x Unit Price \$\_\_\_\_\_/CY = \$\_\_\_\_\_
- B. Unit Price No. 2 – DelDOT Borrow Type B
1. Description: Backfill material for undercut in wet areas.
  2. Unit of Measurement: Cubic Yard (CY)
  3. Include 200 CY x Unit Price \$\_\_\_\_\_/CY = \$\_\_\_\_\_
- C. Unit Price No. 3 – DelDOT Borrow Type A
1. Description: Backfill material for undercut in all areas other than wet areas.
  2. Unit of Measurement: Cubic Yard (CY)
  3. Include 200 CY x Unit Price \$\_\_\_\_\_/CY = \$\_\_\_\_\_
- D. Unit Price No. 4 – Delaware No. 3 Stone
1. Description: Backfill material for bridging undercut areas.
  2. Unit of Measurement: Cubic Yard (CY)
  3. Include 200 CY x Unit Price \$\_\_\_\_\_/CY = \$\_\_\_\_\_
- E. Unit Price No. 5 – Geotextile Separation Fabric
1. Description: Separation Fabric to be placed under borrow in undercut areas
  2. Unit of Measurement: Square Yard (SY)
  3. Include 500 SY x Unit Price \$\_\_\_\_\_/SY = \$\_\_\_\_\_
- F. Unit Price No. 6 – Rock Excavation (Non-Structural)
1. Description: Excavation of rock material in areas other than the proposed structures.
  2. Unit of Measurement: Cubic Yard (CY)
  3. Include 200 CY x Unit Price \$\_\_\_\_\_/CY = \$\_\_\_\_\_
- G. Unit Price No. 7 – Silt Fence
1. Description: Furnishing, installing and maintenance of silt fence at locations other than those shown on the plans at the direction of the Owner.
  2. Unit of Measurement: Linear Feet (LF)
  3. Include 500 LF x Unit Price \$\_\_\_\_\_/LF = \$\_\_\_\_\_
- H. Unit Price No. 8 – Offsite Soil Disposal
1. Description: Disposal of unused soil from the project site at the direction of the Owner.
  2. Unit of Measurement: Cubic Yard (CY)  
Include 2400 CY x Unit Price \$\_\_\_\_\_/CY = \$\_\_\_\_\_

**END OF SECTION 012200**

## 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: Construction of Farm Lane Parking Lot, Museum Drive and Museum Drive parking lot. Refer to sheet C-10 of the Contract Documents for limits of Base Bid and Add/Alternate No. 1.
1. Base Bid includes construction of Paper Mill Bridge abutments, Paper Mill parking lot over existing settling tank, Benge Road parking lot, connector boardwalk and Paper Mill Bridge (by others).

**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 PENDING PERMITS.

- A. U.S. Army Corps of Engineers –
  - 1. Nationwide Permit received August 31, 2016.
  - 2. Nationwide Permit Reverification letter submitted February 27, 2016
- B. DNREC –
  - 1. Subaqueous Lands Permit – Submitted June 20, 2016.
  - 2. Sediment and Stormwater Management Program – Approved May 23, 2017.
- C. DeIDOT –
  - 1. Entrance Permit – Submitted April 28, 2017.
  - 2. Response due by July 20, 2017.
- D. Architectural Access Board – Accessibility Review
  - 1. Project Approval received July 15, 2016
- E. Rare, Threatened and Endangered Species
  - 1. Letter sent to DNREC Fish and Wildlife Service on March 29, 2016.
  - 2. Response received April 15, 2016.
- F. Fire Marshal Plan Review –
  - 1. Approved July 20, 2016.

**END OF SECTION 012400**



REPLY TO  
ATTENTION OF

CERTIFIED MAIL-RETURN RECEIPT REQUESTED

**DEPARTMENT OF THE ARMY**

PHILADELPHIA DISTRICT CORPS OF ENGINEERS  
WANAMAKER BUILDING, 100 PENN SQUARE EAST  
PHILADELPHIA, PENNSYLVANIA 19107-3399

AUG 31 2016

Regulatory Branch  
Application Section I

SUBJECT: CENAP-OP-R-2016-0357-64 (NWP14)  
Project Name: DDNREC Auburn Heights Farm Lane and Paper Mill Bridges  
Latitude/Longitude: 39.807885°N -75.680612°W

Ms. Cynthia A. Todd, RLA  
Delaware Department of Natural Resources and Environmental Control  
Division of Parks and Recreation  
89 Kings Highway  
Dover, Delaware 19901

Dear Ms. Todd:

This is in regard to your proposal to replace the Farm Lane Bridge, construct the Paper Mill Bridge abutments, construct the Mill Race Bridge, and replace the Mill Race box culvert under Farm Lane. The area of the improvements is within approximately 4.63 acres bounded by Creek Road (Route 82) to the north and Red Clay Creek and Mill Race to the West, East, and South located in Auburn Heights Preserve, a state park located in Yorklyn, New Castle County, Delaware.

Under current Federal regulations, a Department of the Army permit is required for work or structures in navigable waters of the United States and/or the discharge of dredged or fill material into waters of the United States including adjacent and isolated wetlands. Based upon our review of the information you have provided, it has been determined that the proposed work is approved by the existing Department of the Army Nationwide Permit (NWP) described below.

**NATIONWIDE PERMIT 14.**

14. Linear Transportation Projects. Activities required for the construction, expansion, modification, or improvement of linear transportation projects (e.g., roads, highways, railways, trails, airport runways, and taxiways) in waters of the United States. For linear transportation projects in non-tidal waters, the discharge cannot cause the loss of greater than 1/2-acre of waters of the United States. For linear transportation projects in tidal waters, the discharge cannot cause the loss of greater than 1/3-acre of waters of the United States. Any stream channel modification, including bank stabilization, is limited to the minimum necessary to construct or protect the linear transportation project; such modifications must be in the immediate vicinity of the project. This NWP also authorizes temporary structures, fills, and work necessary to construct the linear transportation project. Appropriate measures must be taken to maintain normal downstream flows and minimize flooding to the maximum extent practicable, when temporary structures,

work, and discharges, including cofferdams, are necessary for construction activities, access fills, or dewatering of construction sites. Temporary fills must consist of materials, and be placed in a manner, that will not be eroded by expected high flows. Temporary fills must be removed in their entirety and the affected areas returned to pre-construction elevations. The areas affected by temporary fills must be revegetated, as appropriate. This NWP cannot be used to authorize non-linear features commonly associated with transportation projects such as vehicle maintenance or storage buildings, parking lots, train stations, or aircraft hangars.

Notification: The permittee must submit a pre-construction notification to the district engineer prior to commencing the activity if: (1) the loss of waters of the United States exceeds 1/10-acre; or (2) there is a discharge in a special aquatic site including wetlands. (See general condition 31.) (Sections 10 and 404)

Note: Some discharges for the construction of farm roads or forest roads, or temporary roads for moving mining equipment, may qualify for an exemption under Section 404(f) of the Clean Water Act (see 33 CFR 323.4).

You are advised that this verification of NWP authorization is valid until the Nationwide Permits expire on March 18, 2017, unless the NWP authorization is modified, suspended, or revoked prior to this date. In the event that the NWP authorization is modified during that time period, this expiration date will remain valid, provided the activity complies with any subsequent modification of the NWP authorization.

It is noted that CZM consistency from the State is only required for those activities in or affecting a State's coastal zone. Additionally, some of the NWPs do not involve a discharge of dredged or fill material, and as such, do not require a 401 WQC. If the State has denied the required WQC and/or not concurred with the Corps' CZM consistency determination, the NWP authorization is considered denied without prejudice until an individual project specific WQC and/or CZM approval is obtained. This approval must be obtained in order for the activity to be authorized under the NWP and a copy provided to this office before work begins. Any project specific conditions required by the State for the WQC and/or CZM approval will automatically become part of the NWP authorization.

You should carefully note that this NWP authorization is based upon your agreement to comply with the terms and conditions of this NWP (Enclosure 1) including any and all attached project specific special conditions listed below. Initiation of any authorized work shall constitute your agreement to comply with all of the NWP's conditions. You should also note that the authorized work may be subject to periodic inspections by a representative of this office. The verification of a Nationwide Permit including all general and special conditions is not subject to appeal.

#### PROJECT SPECIFIC SPECIAL CONDITIONS:

1. All work performed in Federally regulated waters, in association with the above noted project, shall be conducted in accordance with the set of project plans prepared by RKK for Auburn Heights Preserve Farm Land and Paper Mill Bridges, sheets P-1 through P-5 (5 sheets), dated April 8, 2016. The project plans provide for: (1) construction of a new bridge to replace the Farm Lane Bridge over Red Clay Creek; (2) construction of the Paper Mill Bridge, located over the mainstem of Red Clay Creek approximately 500 ft downstream of the existing Benge

Road Bridge; (3) Mill Race Bridge is proposed to connect Benge Road with proposed parking and the Hi Parcel Trail; and (4) replacement of the existing box culvert at Farm Lane to accommodate the revised alignment of Farm Lane over the Mill Race; along with (5) other work as necessary for water diversion, stabilization and channel bed fill including dewatering of the mill race, a temporary impact of approximately 60,000 square feet (no loss of waters). The purpose of the project is to perform work associated with the redevelopment of the Auburn Mill Historic District; this is part of the Auburn Valley Master Plan. The planned improvements in this area will provide safe pedestrian travel routes between the proposed parking areas and nearby historic landmarks, and provide access to the nearby trail networks.

2. Construction activities shall not result in the permanent disturbance or alteration of greater than 0.11 acre of waters of the United States. There will be impact to, or loss of wetlands.

3. Any deviation in construction methodology or project design from that shown on the above noted drawings must be approved by this office, in writing, prior to performance of the work if it will result in an increased loss of waters of the U.S. All modifications to the above noted project plans that would involve an additional loss of waters of the U.S. shall be approved, in writing, by this office. No such work shall be performed prior to written approval of this office.

4. This office shall be notified at least 10 days prior to the commencement of authorized work by completing and signing the enclosed Notification/ Certification of Work Commencement Form (Enclosure 2). This office shall also be notified within 10 days of the completion of the authorized work by completing and signing the enclosed Notification/Certification of Work Completion/Compliance Form (Enclosure 3). All notifications required by this condition shall be in writing and shall be transmitted to this office by registered mail. Oral notifications are not acceptable. Similar notification is required each time maintenance work is to be done under the terms of this Corps of Engineers permit.

5. Representatives of the U.S. Army Corps of Engineers shall be permitted to inspect the project during its phase of construction, and to collect any samples, or to conduct any tests deemed necessary.

6. The permittee is responsible for ensuring that the contractor and/or workers executing the activity(s) authorized by this permit have knowledge of the terms and conditions of the authorization and that a copy of the permit document is at the project site throughout the period the work is underway.

7. Appropriate erosion and siltation controls must be used and maintained in effective operating condition during construction, and all exposed soil and other fills must be permanently stabilized at the earliest practicable date

8. This permit does not obviate the permittee from obtaining any State or local approvals required by law for the activity authorized.

9. The permittee is responsible for ensuring that the contractor and/or workers executing the activity(s) authorized by this permit have knowledge of the terms and conditions of the

authorization and that a copy of the permit document is at the project site throughout the period the work is underway.

Also enclosed is a pre-addressed postal card (Enclosure 4) soliciting your comments on the processing of your application. Any comments, positive or otherwise, on the procedures, timeliness, fairness, etc., may be made on this card. If you should have any questions regarding this matter, please contact Michael F. Green at 215-656-6556 by email at [michael.f.green@usace.army.mil](mailto:michael.f.green@usace.army.mil) or write to the above address.

Sincerely,



Edward E. Bonner  
Chief, Regulatory Branch

Enclosures

**NOT FOR BID**

Copies Furnished:

DDNREC, Wetlands and Subaqueous Lands (Dover, DE)

DDNREC, Coastal Zone Management Program (Dover, DE)

USEPA, Region III (Philadelphia, PA)

Agent:

Justin Reel

Rummel Klepper & Kahl, LLP (RK&K)

81 Mosher Street

Baltimore, Maryland 21217

**NOT FOR BID**

**NOT FOR BID**



REPLY TO  
ATTENTION OF

CERTIFIED MAIL- RETURN RECEIPT REQUESTED

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

JUN 21 2017

Regulatory Branch  
Application Section II

SUBJECT: CENAP-OP-R-2016-0357 (NWP 14)  
Project Name: DDNREC Auburn Heights Farm Lane and Paper Mill Bridges  
Latitude/Longitude: 39.807885°N, -75.686012°W

Ms. Cynthia A. Todd, RLA  
Delaware Department of Natural Resources and Environmental Control  
Division of Parks and Recreation  
89 Kings Highway  
Dover, Delaware 19901

Dear Ms. Todd:

This is in regard to your proposal to replace the Farm Lane Bridge, construct the Paper Mill Bridge abutments, construct the Mill Race Bridge, and replace the Mill Race box culvert under Farm Lane located in Auburn Heights Preserve, a state park located in Yorklyn, New Castle County, Delaware. Under current Federal regulations, a Department of the Army permit is required for work or structures in navigable waters of the United States and/or the discharge of dredged or fill material into waters of the United States including wetlands. The stated purpose of the project is to provide for the redevelopment of the Auburn Mill Historic District which will provide safe pedestrian travel routes between the proposed parking areas and nearby historic landmarks, and provide access to the nearby trail networks in accordance to the Auburn Valley Master Plan.

**Based upon our review of the information you have provided, it has been determined that your project is approved by the existing Department of the Army Nationwide Permit 14 (NWP 14) described below provided the work is conducted in compliance with the NWP general conditions, regional conditions, and the project specific special conditions.**

**NWP 14. Linear Transportation Projects.** Activities required for crossings of waters of the United States associated with the construction, expansion, modification, or improvement of linear transportation projects (e.g., roads, highways, railways, trails, airport runways, and taxiways) in waters of the United States. For linear transportation projects in non-tidal waters, the discharge cannot cause the loss of greater than 1/2-acre of waters of the United States. For linear transportation projects in tidal waters, the discharge cannot cause the loss of greater than 1/3-acre of waters of the United States. Any stream channel modification, including bank stabilization, is limited to the minimum necessary to construct or protect the linear transportation project; such modifications must be in the immediate vicinity of the project.

This NWP also authorizes temporary structures, fills, and work, including the use of temporary mats, necessary to construct the linear transportation project. Appropriate measures must be taken to maintain normal downstream flows and minimize flooding to the maximum extent practicable, when temporary structures, work, and discharges, including cofferdams, are necessary for construction activities, access fills, or dewatering of construction sites. Temporary fills must consist of natural materials, and be placed in a manner, that will not be eroded by expected high flows. Temporary fills must be removed in their entirety and the affected areas returned to pre-construction elevations. The areas affected by temporary fills must be revegetated, as appropriate.

This NWP cannot be used to authorize non-linear features commonly associated with transportation projects, such as vehicle maintenance or storage buildings, parking lots, train stations, or aircraft hangars.

**Notification:** The permittee must submit a pre-construction notification to the district engineer prior to commencing the activity if: (1) The loss of waters of the United States exceeds 1/10-acre; or (2) there is a discharge in a special aquatic site, including wetlands. (See general condition 37)

**(Authorities:** Section 10 of the Rivers and Harbors Act of 1899 and section 404 of the Clean Water Act (Sections 10 and 404))

**Note 1:** For linear transportation projects crossing a single waterbody more than one time at separate and distant locations, or multiple waterbodies at separate and distant locations, each crossing is considered a single and complete project for purposes of NWP authorization. Linear transportation projects must comply with 33 CFR 330.6(d).

**Note 2:** Some discharges for the construction of farm roads or forest roads, or temporary roads for moving mining equipment, may qualify for an exemption under section 404(f) of the Clean Water Act (see 33 CFR 323.4).

**Note 3:** For NWP 14 activities that require pre-construction notification, the PCN must include any other NWP(s), regional general permit(s), or individual permit(s) used or intended to be used to authorize any part of the proposed project or any related activity, including other separate and distant crossings that require Department of the Army authorization but do not require pre-construction notification (see paragraph (b) of general condition 32). The district engineer will evaluate the PCN in accordance with Section D, "District Engineer's Decision." The district engineer may require mitigation to ensure that the authorized activity results in no more than minimal individual and cumulative adverse environmental effects (see general condition 23).

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

It is noted that CZM consistency from the State is only required for those activities in or affecting a State's coastal zone. Additionally, some of the NWP's do not involve a discharge of dredged or fill material, and as such, do not require a 401 WQC. If the State has denied the required WQC and/or not concurred with the Corps' CZM consistency determination, the NWP authorization is considered denied without prejudice until an individual project specific WQC and/or CZM approval is obtained.

**The State of Delaware has granted 401 WQC and concurred with the Corps' CZM consistency during the issuance of Philadelphia District's regional conditions for all NWP 14 activities. Therefore, no further action is needed as part of the Federal review of your project provided that you comply with all the terms and conditions of this NWP published on the Philadelphia District Corps of Engineers website at:**

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

The activities authorized by this NWP verification must comply with the general conditions, as applicable, in addition to any regional or case-specific conditions imposed by the division engineer or district engineer. A copy of the Philadelphia District 2017 NWP Regional Permit Conditions for Delaware for which this verification is subject to, can be found at:

[http://www.nap.usace.army.mil/Portals/39/docs/regulatory/publicnotices/2017\\_DE\\_Reg%20Cond\\_Final.pdf](http://www.nap.usace.army.mil/Portals/39/docs/regulatory/publicnotices/2017_DE_Reg%20Cond_Final.pdf)

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

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

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

**PROJECT SPECIFIC SPECIAL CONDITIONS:**

1. All work performed in association with the above noted project shall be conducted in accordance with the attached project plans identified as "AUBURN HEIGHTS PRESERVE FARM LANE and PAPER MILL BRIDGES", 5 sheet(s) labeled as P-1 through P-5, dated 4/8/2016, and prepared by RKK.
2. Construction activities shall not result in the disturbance or alteration of greater than .11 acre of waters of the United States.
3. Any deviation in construction methodology or project design from that shown on the above noted drawings or repair plan must be approved by this office, in writing, prior to performance of the work. All modifications to the above noted project plans shall be approved, in writing, by this office. No work shall be performed prior to written approval of this office.
4. This office shall be notified prior to the commencement of authorized work by completing and signing the enclosed Notification/ Certification of Work Commencement Form (Enclosure 1). This office shall also be notified within 10 days of the completion of the authorized work by completing and signing the enclosed Notification/Certification of Work Completion/Compliance Form (Enclosure 2). All notifications required by this condition shall be in writing. The Notification of Commencement of work may be sent to this office by facsimile or other electronic means; all other notification shall be transmitted to this office by registered mail. Oral notifications are not acceptable. Similar notification is required each time maintenance work is to be done under the terms of this Corps of Engineers permit.

Also enclosed is a pre-addressed postal card (Enclosure 3) soliciting your comments on the processing of your application. Any comments, positive or otherwise, on the procedures, timeliness, fairness, etc., may be made on this card. If you should have any questions regarding this matter, please contact Robert M. Deems at (215) 656-5733 or write to the above address.

Sincerely,



Edward E. Bonner  
Chief, Regulatory Branch

Enclosures



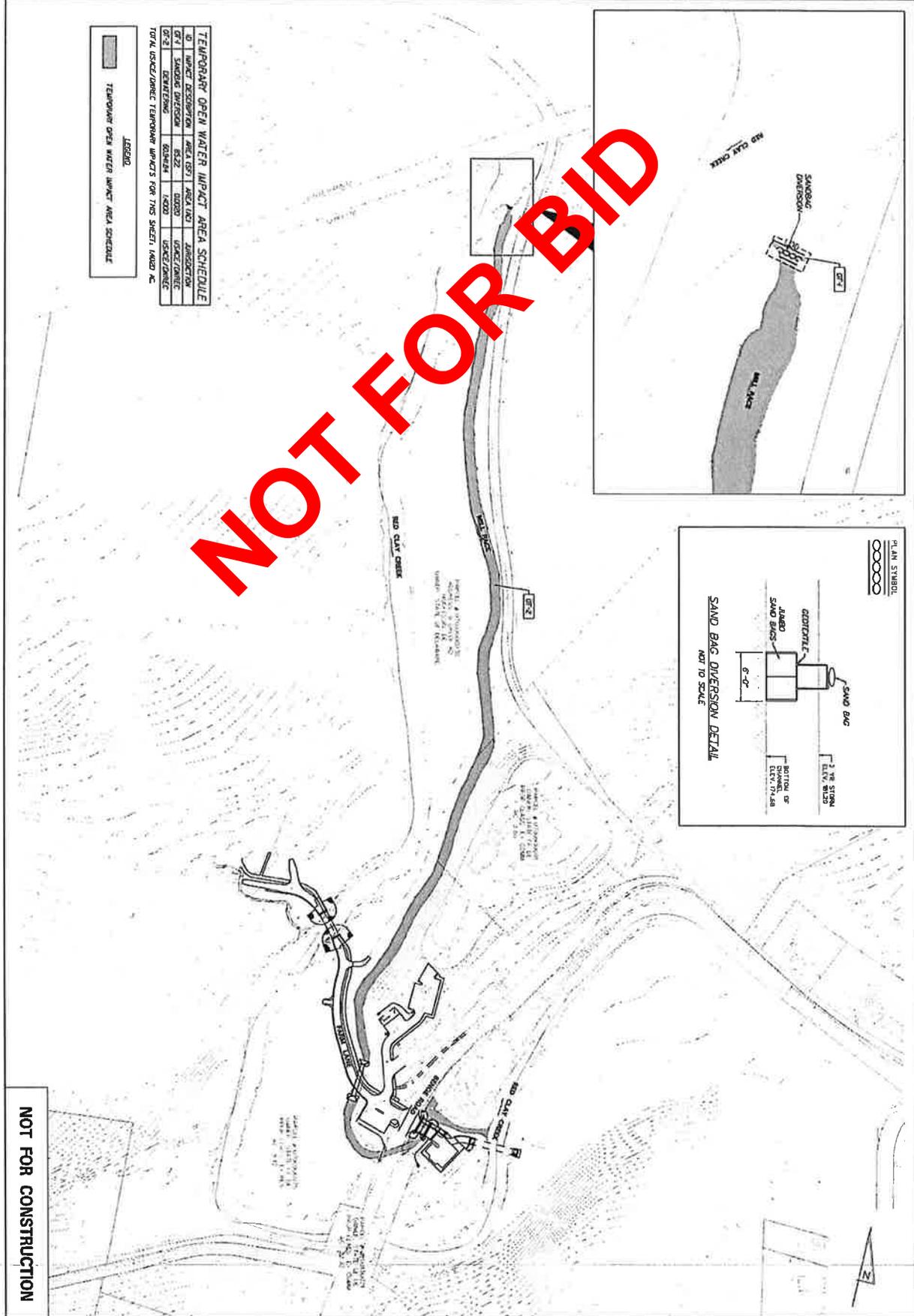
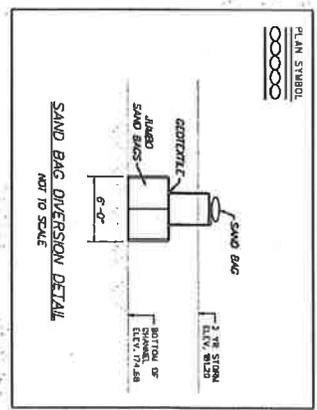
NOT FOR BID

**TEMPORARY OPEN WATER IMPACT AREA SCHEDULE**

DI	IMPACT DESCRIPTION	AREA (SQ)	AREA (SQ)	ASSESSMENT
DI-1	SAND BAG DIVERSION	652	652	UNACCEPTABLE
DI-2	DEWATERING	600	600	UNACCEPTABLE
<b>TOTAL UNACCEPTABLE TEMPORARY IMPACT FOR THIS SHEET:</b>		<b>1252</b>	<b>1252</b>	<b>UNACCEPTABLE</b>

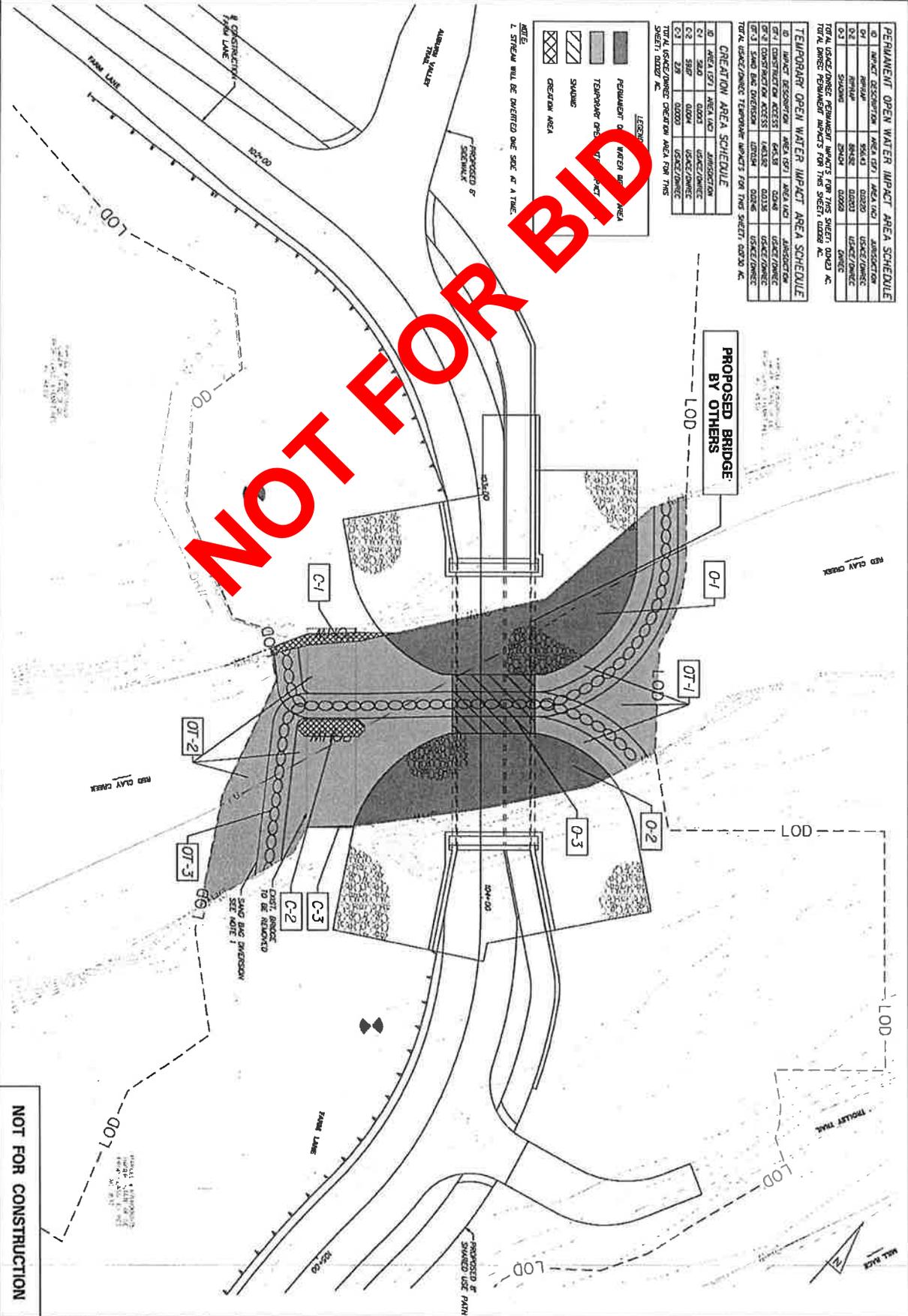
**LEGEND**

TEMPORARY OPEN WATER IMPACT AREA SCHEDULE



NOT FOR CONSTRUCTION

	<b>AUBURN HEIGHTS PRESERVE</b> <b>FARM LANE AND PAPER MILL BRIDGES</b> <b>OPEN WATER IMPACT AREA PLATE</b>	DATE: _____ DESCRIPTION: _____ BY: _____
	DESIGNER: _____ DRAWING NO.: _____ DATE: _____ SCALE: _____ SHEET NO.: <b>P-2</b> PROJECT NO.: _____ CONTRACT NO.: _____	NOT FOR CONSTRUCTION



**NOT FOR CONSTRUCTION**

**AUBURN HEIGHTS PRESERVE  
 FARM LANE AND PAPER MILL BRIDGES  
 OPEN WATER IMPACT AREA PLATE**

DATE: \_\_\_\_\_ DESCRIPTION: \_\_\_\_\_ BY: \_\_\_\_\_

SCALE: 1" = 10'

SHEET NO.: P-3

PROJECT NO.: 100-4

DATE: 4/18/08

DRAWN BY: \_\_\_\_\_

CHECKED BY: \_\_\_\_\_

DESIGNED BY: \_\_\_\_\_

APPROVED BY: \_\_\_\_\_

CONTRACT NO.: 1015-200-100

**LEGEND**

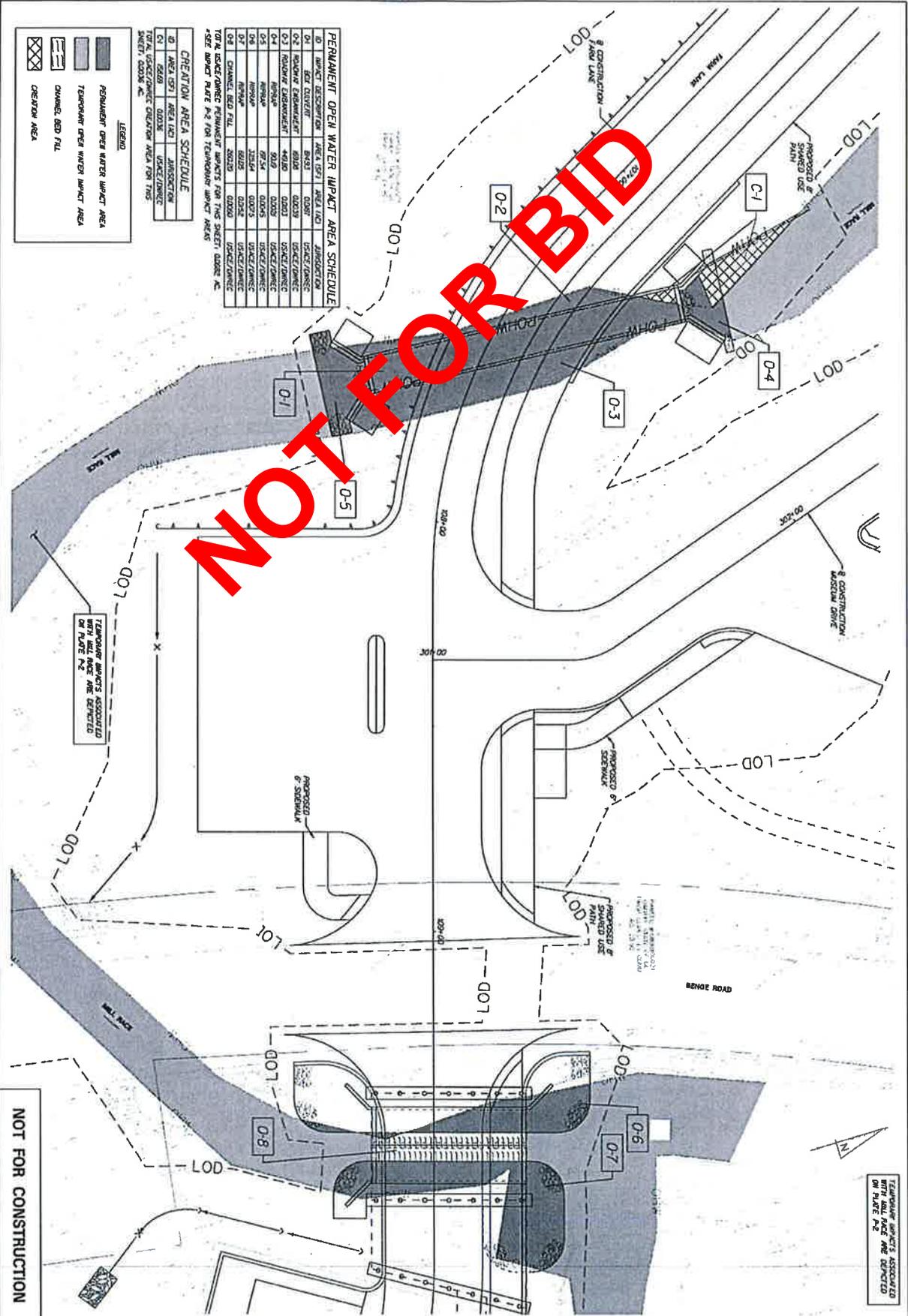
[Hatched Box]	PERMANENT OPEN WATER IMPACT AREA
[Dotted Box]	TEMPORARY OPEN WATER IMPACT AREA
[Cross-hatched Box]	CHANNEL BED FILL
[Cross-hatched Box]	CREATION AREA

**CREATION AREA SCHEDULE**

ID	AREA DESCRIPTION	AREA LIND	ABSORPTION
01	AREA 001	0001	USACE/TOWNS
02	AREA 002	0002	USACE/TOWNS
03	AREA 003	0003	USACE/TOWNS
04	AREA 004	0004	USACE/TOWNS
05	AREA 005	0005	USACE/TOWNS
06	AREA 006	0006	USACE/TOWNS
07	AREA 007	0007	USACE/TOWNS
08	AREA 008	0008	USACE/TOWNS
09	AREA 009	0009	USACE/TOWNS
10	AREA 010	0010	USACE/TOWNS

**PERMANENT OPEN WATER IMPACT AREA SCHEDULE**

ID	IMPACT DESCRIPTION	AREA LIND	ABSORPTION
01	IMPACT 001	0001	USACE/TOWNS
02	IMPACT 002	0002	USACE/TOWNS
03	IMPACT 003	0003	USACE/TOWNS
04	IMPACT 004	0004	USACE/TOWNS
05	IMPACT 005	0005	USACE/TOWNS
06	IMPACT 006	0006	USACE/TOWNS
07	IMPACT 007	0007	USACE/TOWNS
08	IMPACT 008	0008	USACE/TOWNS
09	IMPACT 009	0009	USACE/TOWNS
10	IMPACT 010	0010	USACE/TOWNS



**NOT FOR CONSTRUCTION**

TEMPORARY IMPACTS ASSOCIATED WITH ALL RACE ARE IDENTIFIED IN THIS P.L.

ISSUED PROJECT #	P-4
SHEET NO.	104-102
SCALE	AS SHOWN
DATE	08/15/11
DRAWING NO.	104-102
DESIGNED BY	[unintelligible]
CHECKED BY	[unintelligible]
DATE	08/15/11
CONTRACT #	104-102

**AUBURN HEIGHTS PRESERVE  
 FARM LANE AND PAPER MILL BRIDGES  
 OPEN WATER IMPACT AREA PLATE**

DATE:	DESCRIPTION:	BY:
08/15/11	OPEN WATER IMPACT AREA PLATE	[unintelligible]

PERMANENT OPEN WATER IMPACT AREA SCHEDULE			
ID	IMPACT DESCRIPTION	AREA (SQ. FT.)	AREA (AC)
0-1	IMPACT DESCRIPTION	0000	0.0000
0-2	IMPACT DESCRIPTION	0000	0.0000
TOTAL DIRECT PERMANENT IMPACTS FOR THIS SHEET: 0.00 AC			

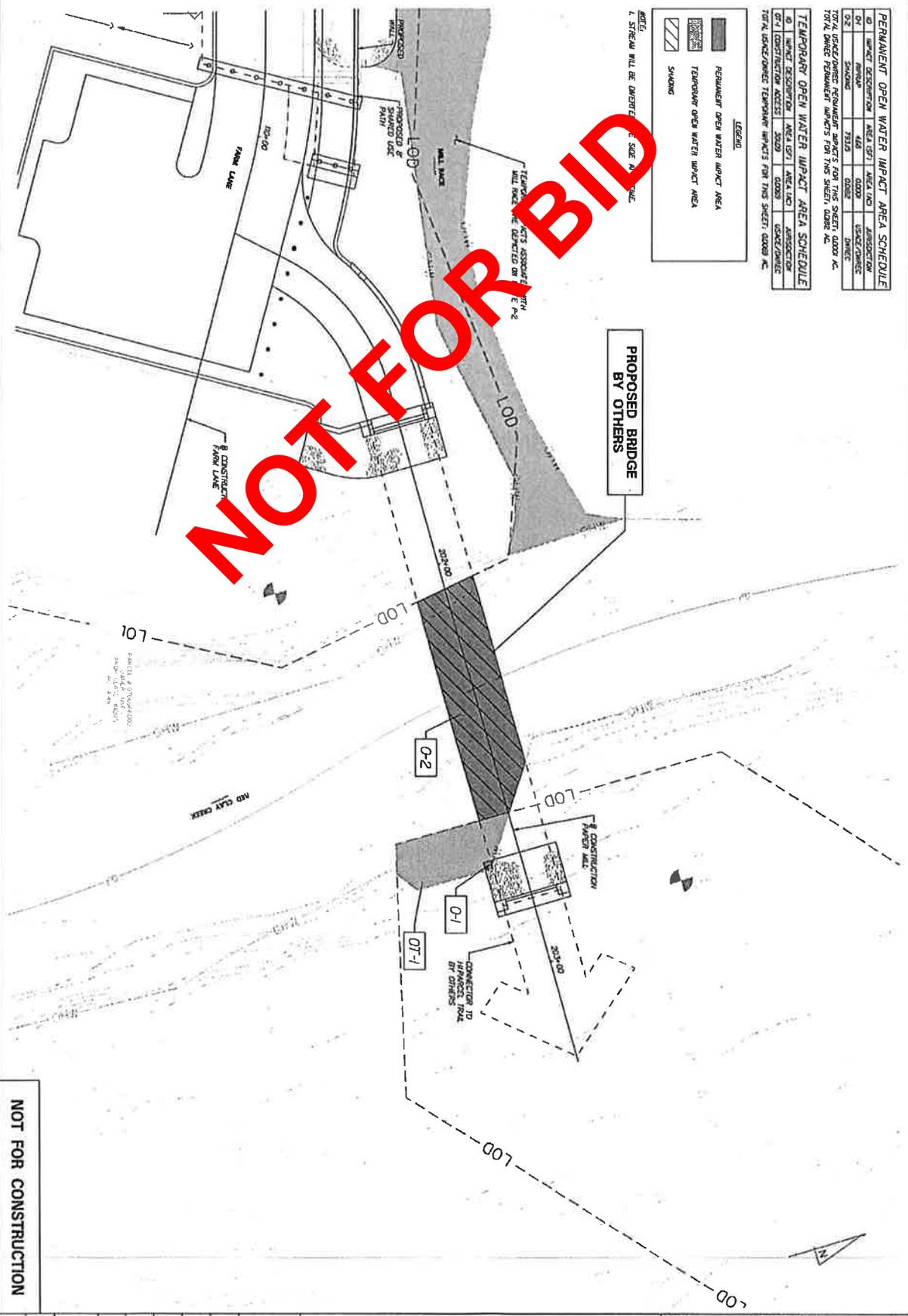
  

TEMPORARY OPEN WATER IMPACT AREA SCHEDULE			
ID	IMPACT DESCRIPTION	AREA (SQ. FT.)	AREA (AC)
0-1	IMPACT DESCRIPTION	0000	0.0000
0-2	IMPACT DESCRIPTION	0000	0.0000
TOTAL DIRECT TEMPORARY IMPACTS FOR THIS SHEET: 0.00 AC			

**LEGEND**

- PERMANENT OPEN WATER IMPACT AREA
- TEMPORARY OPEN WATER IMPACT AREA
- SHADING

**NOTES:**  
 1. STREAM WILL BE DIVERTED TO SIDE CHANNEL.



NOT FOR BID

NOT FOR CONSTRUCTION

PROJECT NO.	P-5
SHEET NO.	101 of 102
DATE	10/10/10
SCALE	AS SHOWN
BUILDING NO.	101
OWNER	MINNAPARC
DESIGNED BY	MINNAPARC
CHECKED BY	MINNAPARC
CONTRACT #	101-102

**AUBURN HEIGHTS PRESERVE  
 FARM LANE AND PAPER MILL BRIDGES**

**OPEN WATER IMPACT AREA PLATE**

DATE:	DESCRIPTION:	BY:

**NOTIFICATION/CERTIFICATION OF WORK COMMENCEMENT FORM**

Permit Number: CENAP-OP-R-2016-0357  
Name of Permittee: Delaware Department of Natural Resources and Environmental Control  
Name of Contractor: \_\_\_\_\_  
Project Name: DDNREC Auburn Heights Farm Lane and Paper Mill Bridges  
County, State: New Castle County, Delaware  
Waterway: Red Clay Creek

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

Department of the Army  
U.S. Army Corps of Engineers, Philadelphia District  
Wanamaker Building - 100 Penn Square East  
Philadelphia, Pennsylvania 19107-1990  
Attention: CENAP-OP-R

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

I herby certify that the work authorized by the above referenced permit shall be completed in accordance with the terms and conditions of the above noted permit.

I have received authorization to: replace the Farm Lane Bridge, construct the Paper Mill Bridge abutments, construct the Mill Race Bridge, and replace the Mill Race box culvert under Farm Lane.

The authorized work shall commence on \_\_\_\_\_.

Compensation/Mitigation Work Required: Yes  No

Dredging authorized: Yes  No

Non-polluting materials required: Yes  No  If yes, see **NOTE** below.

Seasonal restriction required: Yes  No  If yes, see **REGIONAL CONDITIONS** in permit document.

\_\_\_\_\_  
Signature of Contractor

\_\_\_\_\_  
Signature of Permittee

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

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

\_\_\_\_\_  
Telephone Number:

\_\_\_\_\_  
Telephone Number:

***SPECIAL NOTE FOR STRUCTURES:***

*If the above referenced permit authorizes the construction or replacement of structures, the permittee shall submit a bill of lading or contractor receipt testifying to the fact that all constructed, replaced, or relocated docks, piers, pilings or other structures were constructed of non-polluting materials in accordance to the terms and conditions of the permit. The bill of lading or contractor receipt shall be attached to the "WORK COMPLETION/COMPLIANCE FORM" at the completion of the authorized activity.*

**NOTIFICATION/CERTIFICATION OF WORK COMPLETION/COMPLIANCE FORM**

Permit Number: CENAP-OP-R-2016-0357  
Name of Permittee: Delaware Department of Natural Resources and Environmental Control  
Name of Contractor: \_\_\_\_\_  
Project Name: DDNREC Auburn Heights Farm Lane and Paper Mill Bridges  
County, State: New Castle County, Delaware  
Waterway: Red Clay Creek

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

Department of the Army  
U.S. Army Corps of Engineers, Philadelphia District  
Wanamaker Building - 100 Penn Square  
Philadelphia, Pennsylvania 19107-9990  
Attention: CENAP-OP-R

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

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

The authorized work was commenced on \_\_\_\_\_.

The authorized work was completed on \_\_\_\_\_.

Compensation/Mitigation Work Required: Yes  No

Dredging authorized: Yes  No

Non-polluting materials required: Yes  No  If yes, see *NOTE* below.

Seasonal restriction required: Yes  No  If yes, see *REGIONAL CONDITIONS* in permit document.

\_\_\_\_\_  
Signature of Contractor

\_\_\_\_\_  
Signature of Permittee

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

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

\_\_\_\_\_  
Telephone Number:

\_\_\_\_\_  
Telephone Number:

***SPECIAL NOTE FOR STRUCTURES:***

*If the above referenced permit authorized the construction or replacement of structures, the permittee shall submit a bill-of-lading or contractor receipt testifying to the fact that all constructed, replaced, or relocated docks, piers, pilings or other structures were constructed of non-polluting materials in accordance to the terms and conditions of the permit. The bill of lading or contractor receipt shall be attached to the "WORK COMPLETION/COMPLIANCE FORM" upon submittal, as required.*



**US Army Corps  
of Engineers**

Philadelphia District

This card is being sent to solicit your views and comments concerning the recent processing of your permit application. Any input, positive or otherwise, on procedures, timeliness, fairness, etc., would be appreciated.

Please write your comments in the space provided and return the card to the Philadelphia District.

Thank You

**NOT FOR BIDDING**

Department of the Army  
U.S. Army Corps of Engineers  
Philadelphia District  
Wanamaker Building  
100 Penn Square East  
Philadelphia, PA 19107-3390

Place  
Stamp  
Here

U.S. ARMY CORPS OF ENGINEERS  
PHILADELPHIA DISTRICT  
**ATTN: REGULATORY BRANCH**  
WANAMAKER BUILDING  
100 PENN SQUARE EAST  
PHILADELPHIA, PA 19107-3390

FILE NUMBER: CENAP-OP-R-2016-0357-83

COMMENTS: \_\_\_\_\_

\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

**NOT FOR BID**

--DETACH UPPER PORTION OF CARD--

Department of the Army  
U.S. Army Corps of Engineers  
Philadelphia District  
Wanamaker Building  
100 Penn Square East  
Philadelphia, PA 19107-3390



STATE OF DELAWARE  
DEPARTMENT OF NATURAL RESOURCES  
AND ENVIRONMENTAL CONTROL  
DIVISION OF WATERSHED STEWARDSHIP  
89 Kings Highway  
DOVER, DELAWARE 19901

OFFICE OF THE  
DIRECTOR

PHONE: (302) 739-9921  
FAX: (302) 739-6724

**SEDIMENT AND STORMWATER PLAN APPROVAL**

Tracking No.: 2016-119

Issued To: Cynthia Todd  
DNREC, Div. of Parks & Recreation  
89 Kings Hwy  
Dover, DE 19901

May 23, 2017

Dear Ms. Todd,

The Sediment and Stormwater Management Plan for the Auburn Heights Preserve – Paper Mill Bridge project, as submitted by your authorized agent, Ms. Nancy Bergeron, PE, of RK&K Engineers, has been reviewed and evaluated regarding the Sediment and Stormwater Management requirements of this Division and is approved with conditions (see attached).

This plan approval pertains to compliance with the *Delaware Sediment and Stormwater Regulations*, effective April 2016, and accompanying Technical Documents. Please understand that the approval of this plan does not relieve you from complying with any and all federal, state, county, or municipal laws and regulations.

**Approval of a Sediment and Stormwater Plan does not grant or imply a right to discharge stormwater runoff. The owner/developer is responsible for acquiring any and all agreements, easements, etc., necessary to comply with State drainage and other applicable laws.**

**NOTE: Effective July 1, 2004, all State and Federal projects will require inspection services by an approved Certified Construction Reviewer.**

We provide technical assistance, environmental education, and training to those we regulate. If we may be of any assistance to you, regarding the sediment and stormwater specifications of this project, please contact us at the address and number listed above.

Sincerely,

Randell K Greer, P.E.  
Engineer VI

cc: Jamie Rutherford, Program Manager II  
Nancy Bergeron, RK&K Engineers

*Delaware's good nature depends on you!*

## CONDITIONS OF APPROVAL

### NOTIFICATION

1. This approved plan will remain valid for **5 years** from the date of this approval unless specifically extended or renewed by DNREC Sediment and Stormwater Program.
2. Submittal of the Notice of Intent (NOI) for Storm Water Discharges Associated with Construction Activities together with this approval of the detailed Sediment and Stormwater Plan provide this project with Federal permit coverage to be authorized to discharge storm water associated with construction activities. It is the owner's responsibility to ensure that permit coverage remains valid throughout construction by submitting the NOI fee annually as requested.
3. Notify the DNREC Sediment and Stormwater Management Section of your intent to begin construction in writing five (5) days prior to commencing. Failure to do so constitutes a violation of the approved plan.

### CHANGES

4. This project is to be undertaken in accordance with the plans submitted and as approved. If changes are necessary at any time during the completion of the project, submit revised plans, prior to further construction, to the DNREC Sediment and Stormwater Program for review and approval of the revision.
5. Should ownership change during the construction period, a revised plan must be submitted for approval showing the new owner's signature on the owner's certification. In addition, a Transfer of Authorization form must be submitted to DNREC to transfer Federal permit coverage to the new owner.

### CONSTRUCTION AND CLOSEOUT

6. Effective July 1, 2004, all State and Federal projects require construction review services by a Certified Construction Reviewer throughout construction.
7. A pre-construction meeting must take place before any land disturbing activity begins. The meeting may take place on site and be attended by the owner, contractor, design consultant, Certified Construction Reviewer and DNREC Sediment and Stormwater Program Construction Reviewer. The owner or the owner's designee shall contact the DNREC Construction Reviewer to schedule the pre-construction meeting.
8. Keep available on-site, during all phases of construction, a copy of the approved Sediment and Stormwater Management Plan.
9. Any sediment transported off-site to roads or road rights-of-way including ditches shall be removed. Any damage to ditches shall be repaired and stabilized to original condition.
10. Grading shall not impair surface drainage, create an erosion hazard, or create a source of sediment to any adjacent watercourse or property owner.
11. Failure to implement the permanent stormwater management practices as mentioned herein constitutes a violation of the conditions of this plan approval; it may result in the suspension or revocation of building permits or grading permits issued by the local jurisdiction; and it may result in legal action by the DNREC to bring the site into compliance with the approved Sediment and Stormwater Management Plan and the *Delaware Sediment and Stormwater Regulations*.
12. The permanent stormwater management facility or facilities must be constructed and accepted by DNREC Sediment and Stormwater Program prior to final closeout of the project site. Post construction verification documentation of the stormwater management facility or facilities must be completed as soon as construction of the facility or facilities is complete so that any necessary modifications may be made during the construction period.



STATE OF DELAWARE  
Architectural Accessibility Board  
540 S. DuPont Highway, Suite 100  
Dover, Delaware 19901

July 15, 2016

Mr. Julio Seneus  
DNREC  
89 Kings Highway  
Dover, DE 19901

RE: NVF Auburn Heights Trail and Farm Lane Bridge and Paper Mill Bridge  
Case No. 1607

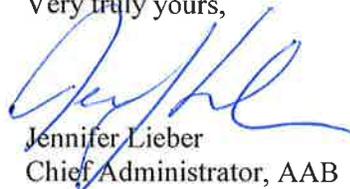
Dear Mr. Seneus:

State of Delaware's Architectural Accessibility Board (AAB) met on Thursday, July 14, 2016, at which time your submission for the above referenced project was reviewed. Based on your plans and drawings, your submission was unanimously approved.

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

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

Very truly yours,



Jennifer Lieber  
Chief Administrator, AAB

cc: Board Members



# OFFICE OF STATE FIRE MARSHAL



2307 MacArthur Road  
 New Castle, DE 19720-2426  
 Phone: 302-323-5365  
 Fax: 302-323-5366

**Technical Services**  
 1537 Chestnut Grove Road  
 Dover, DE 19904-9610  
 Phone: 302-739-4394  
 Fax: 302-739-3696

22705 Park Avenue  
 Georgetown, DE 19947  
 Phone: 302-856-5298  
 Fax: 302-856-5800



## FIRE PROTECTION PLAN REVIEW REPORT

Plan Review Number 2016-02-1004-FIL-01

Tax Parcel Number 0800100021

Review Status APPROVED AS SUBMITTED

Review Date 07/20/2016

### PROJECT

AUBURN HEIGHTS PRESERVE (KAMVF PROPERTY)  
 SITE IMPROVEMENTS; FARM LANE & PAPER MILL BRIDGES  
 Phase# \_\_\_\_\_ Building # \_\_\_\_\_ Unit # \_\_\_\_\_  
 636 BENGE RD  
 YORKLYN, DE 19736

### SCOPE OF PROJECT

Project Type <u>FIL Fire Line</u>	Occupant Load _____
Number of Stories _____	Occupancy Code <u>9625</u>
Square Footage _____	Fire District <u>19</u>
Construction Class _____	

### APPLICANT

### OWNER

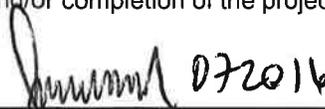
STATE OF DELAWARE D450	STATE OF DELAWARE D450
89 KINGS HWY	89 KINGS HWY
DOVER, DE 19901	DOVER, DE 19901

This office has reviewed the plans and specifications of the above described project for compliance with the Delaware State Fire Prevention Regulations, in effect as of the date of this review.

A Review Status of "Approved as Submitted" or "Not Approved as Submitted" must comply with the provisions of the attached Plan Review Comments.

Any Conditional Approval does not relieve the Applicant, Owner, Engineer, Contractor, nor their representatives from their responsibility to comply with the plan review comments and the applicable provisions of the Delaware State Fire Prevention Regulations in the construction, installation and/or completion of the project as reviewed by this Agency.

This Plan Review Project was prepared by:

  
 \_\_\_\_\_  
 JOHN RUDD, ASST CHIEF, TECHNICAL SERVICES

# FIRE PROTECTION PLAN REVIEW COMMENTS

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**Project Name** AUBURN HEIGHTS PRESERVE (FKA NVF PROPERTY)

**Plan Review Number** 2016-02-1004-FIL-01

**Tax Parcel Number** 0800100021

**Review Status** APPROVED AS SUBMITTED

**Review Date** 07/20/2016

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## PROJECT COMMENTS

1002

This project has been reviewed under the provisions of the Delaware State Fire Prevention Regulations (DSFPR) Effective December 11, 2012. The current Delaware State Fire Prevention Regulations are available on our website at [www.statefiremarshal.delaware.gov](http://www.statefiremarshal.delaware.gov). These plans were not reviewed for compliance with the Americans with Disabilities Act (ADA). These plans were not reviewed for compliance with any Local, Municipal, nor County Building Codes.

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1180

This report reflects site review only. It is the responsibility of the applicant and owner to forward copies of this review to any other agency as required by those agencies.

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1501

If there are any questions about the above referenced comments please feel free to contact the Fire Protection Specialist who reviewed this project. Please have the plan review number available when calling about a specific project. When changes or revisions to the plans occur, plans are required to be submitted, reviewed, and approved.

---

Thomas P. Gordon  
County Executive



DEPARTMENT OF LAND USE

October 31, 2016

Julio Seneus  
State of Delaware  
DNREC  
DE Division of Parks and Recreation  
89 Kings Highway  
Dover, DE 19901

RE: Auburn Heights Preserve  
Paper Mill Bridge and Paper Mill Bridge Extension  
Delaware Division of Parks and Recreation  
NCC Application # 20160071

Dear Mr. Seneus:

New Castle County has reviewed the above referenced project. The project involves the construction of a new vehicular bridge and extension over the Red Clay Creek in New Castle County, DE. This project is exempted by Section 80 of House Bill No. 450 from New Castle County zoning and regulations. However, the project is subject to the minimum standards of the National Flood Insurance Program (NFIP).

The project is within a FEMA floodplain as described in Section 40.10.302 of the UDC. The project is located on Panel 145K and a floodway is established at the project location. Pursuant to the NFIP, for projects within the Special Flood Hazard Area with base flood elevations and a regulatory floodway adopted, no encroachment is permitted within the floodway unless a hydrologic and hydraulic analyses is performed that demonstrates no increase in flood levels in the community. No encroachment is proposed within the regulatory floodway by this project. Consequently, no conditional approval of map change is required.

Pursuant to UDC 40.10.311, New Castle County confirms that the application meets the standards of New Castle County's flood ordinance.

Please contact me at (302) 395-5473 if you have any questions.

Sincerely,

John Gysling, PE, CFM  
Civil Engineer II  
Floodplain Administrator

Cc: Cynthia Todd, RLA



State of Delaware  
Historical and Cultural Affairs

21 The Green  
Dover, DE 19901-3611

Phone: (302) 736.7400

Fax: (302) 739.5660

August 17, 2016

ER: 2016.08.02.02

John P. McCarthy, RPA  
Cultural Preservation Specialist  
DNREC - State Parks and Recreation  
152 S. State Street  
Dover, DE 19901

**Project: Auburn Mills Historic District, Farm Lane and Paper Mill Bridges, Approaches, and Wetland Replacement Area/Auburn Valley Trail and Parking Lots, Yorklyn, New Castle County, Delaware. FHWA Trail Funds and U.S.C.O.E. Permit**

Dear Mr. McCarthy,

Over the past several years, our agencies have consulted on this undertaking with the goal on minimizing the alteration of the historical environment to the historic complex of the Auburn Mills Historic District while providing up to date safe access to visitors. The scope has been modified several times in order to successfully achieve this goal. A creative reuse of historic bridges will augment the importance of this park by featuring the interpretation of bridge engineering history through the nation.

The submitted archaeological report documents the lack of intact cultural deposits within the project area and wetland replacement parcel. In addition, the planned trails will generally follow the historical routes. We find the minimal nature of construction related to the trail and the addition of period appropriate bridges will not diminish the historical characteristics of this landscape. Therefore this undertaking will have a no adverse effect on the Auburn Mills Historic District or other historic properties.

If you have any questions at this time, I can be reached at [craig.lukezic@state.de.us](mailto:craig.lukezic@state.de.us).

Sincerely,

Craig Lukezic, Archaeologist

Cc Gwen Davis, Deputy SHPO, Delaware Division of Historical and Cultural Affairs

## SECTION 012500 - CONTRACT MODIFICATION PROCEDURES

### PART 1 - GENERAL

#### 1.1 RELATED DOCUMENTS

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

#### 1.2 SUMMARY

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

#### 1.3 MINOR CHANGES IN THE WORK

- A. Architect will issue supplemental instructions authorizing Minor Changes in the Work, not involving adjustment to the Contract Sum or the Contract Time, on AIA Document G710, "Architect's Supplemental Instructions."

#### 1.4 PROPOSAL REQUESTS

- A. Owner-Initiated Proposal Requests: Architect will issue a detailed description of proposed changes in the Work that may require adjustment to the Contract Sum or the Contract Time. If necessary, the description will include supplemental or revised Drawings and Specifications.
  - 1. Proposal Requests issued by Architect are for information only. Do not consider them instructions either to stop work in progress or to execute the proposed change.
  - 2. Within time specified in Proposal Request after receipt of Proposal Request, submit a quotation estimating cost adjustments to the Contract Sum and the Contract Time necessary to execute the change.
    - a. Include a list of quantities of products required or eliminated and unit costs, with total amount of purchases and credits to be made. If requested, furnish survey data to substantiate quantities.
    - b. Indicate applicable taxes, delivery charges, equipment rental, and amounts of trade discounts.
    - c. Include an updated Contractor's Construction Schedule that indicates the effect of the change, including, but not limited to, changes in activity duration, start and finish times, and activity relationship. Use available total float before requesting an extension of the Contract Time.

- B. Contractor-Initiated Proposals: If latent or unforeseen conditions require modifications to the Contract, Contractor may propose changes by submitting a request for a change.
1. Include a statement outlining reasons for the change and the effect of the change on the Work. Provide a complete description of the proposed change. Indicate the effect of the proposed change on the Contract Sum and the Contract Time.
  2. Include a list of quantities of products required or eliminated and unit costs, with total amount of purchases and credits to be made. If requested, furnish survey data to substantiate quantities.
  3. Indicate applicable taxes, delivery charges, equipment rental, and amounts of trade discounts.
  4. Include an updated Contractor's Construction Schedule that indicates the effect of the change, including, but not limited to, changes in activity duration, start and finish times, and activity relationships. Use available total float before requesting an extension of the Contract Time.
  5. Comply with requirements in Division 1 Section "Product Requirements" if the proposed change requires substitution of one product or system for product or system specified.

#### 1.5 CHANGE ORDER PROCEDURES

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

#### 1.6 CONSTRUCTION CHANGE DIRECTIVE

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

PART 2 - PRODUCTS (Not Used)

PART 3 - EXECUTION (Not Used)

**END OF SECTION 012500**

## SECTION 012900 - PAYMENT PROCEDURES

### PART 1 - GENERAL

#### 1.1 RELATED DOCUMENTS

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

#### 1.2 SUMMARY

- A. This Section specifies administrative and procedural requirements necessary to prepare and process Applications for Payment.
- B. Related Sections include the following:
  - 1. Division 1 Section "Contract Modification Procedures" for administrative procedures for handling changes to the Contract.
  - 2. Division 1 Section "Construction Progress Documentation" for administrative requirements governing preparation and submittal of Contractor's Construction Schedule.

#### 1.3 DEFINITIONS

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

#### 1.4 SCHEDULE OF VALUES

- A. Coordination: Coordinate preparation of the Schedule of Values with preparation of Contractor's Construction Schedule.
  - 1. Correlate line items in the Schedule of Values with other required administrative forms and schedules, including the following:
    - a. Application for Payment forms with Continuation Sheets.
  - 2. Submit the Schedule of Values to Architect at earliest possible date but no later than seven days before the date scheduled for submittal of initial Applications for Payment.
- B. Format and Content: Use the Project Manual table of contents as a guide to establish line items for the Schedule of Values. Provide at least one line item for each Specification Section.
  - 1. Identification: Include the following Project identification on the Schedule of Values:
    - a. Project name and location.
    - b. Name of Architect.
    - c. Architect's project number.

- d. Contractor's name and address.
  - e. Date of submittal.
2. Arrange the Schedule of Values in tabular form with separate columns to indicate the following for each item listed:
- a. Related Specification Section or Division.
  - b. Description of the Work.
  - c. Change Orders (numbers) that affect value.
  - d. Dollar value.
    - 1) Percentage of the Contract Sum to nearest one-hundredth percent, adjusted to total 100 percent.
3. Provide a breakdown of the Contract Sum in enough detail to facilitate continued evaluation of Applications for Payment and progress reports. Coordinate with the Project Manual table of contents. Provide several line items for principal subcontract amounts, where appropriate.
4. Round all 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. Prepare and execute by a person authorized to sign legal documents on behalf of Contractor. Architect will return incomplete applications without action.
1. Entries shall match data on the Schedule of Values and Contractor's Construction Schedule. Use updated schedules if revisions were made.
  2. Include amounts of Change Orders and Construction Change Directives issued before last day of construction period covered by application.
- E. Transmittal: Submit 3 signed and notarized original copies of each Application for Payment to Architect by a method ensuring receipt within 24 hours. One copy shall include waivers of lien and similar attachments if required.
1. Transmit each copy with a transmittal form listing attachments and recording appropriate information about application.
- F. Initial Application for Payment: Administrative actions and submittals that must precede or coincide with submittal of first Application for Payment include the following:
1. List of subcontractors.
  2. Schedule of Values.
  3. Contractor's Construction Schedule (preliminary if not final).
  4. List of Contractor's staff assignments (Project Superintendent specifically).
  5. Copies of building permits.
  6. Certificates of insurance and insurance policies.
  7. Performance and payment bonds.
- G. Application for Payment at Substantial Completion: After issuing the Certificate of Substantial Completion, submit an Application for Payment showing 100 percent completion for portion of the Work claimed as substantially complete.
1. Include documentation supporting claim that the Work is substantially complete and a statement showing an accounting of changes to the Contract Sum.
- H. Final Payment Application: Submit final Application for Payment with releases and supporting documentation not previously submitted and accepted, including, but not limited, to the following:
1. Updated final statement, accounting for final changes to the Contract Sum.
  2. AIA Document G706, "Contractor's Affidavit of Payment of Debts and Claims."
  3. AIA Document G706A, "Contractor's Affidavit of Release of Liens."
  4. AIA Document G707, "Consent of Surety to Final Payment."

PART 2 - PRODUCTS (Not Used)

PART 3 - EXECUTION (Not Used)

**END OF SECTION 012900**

**NOT FOR BID**

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

PART 2 - PRODUCTS (Not Used)

PART 3 - EXECUTION (Not Used)

**END OF SECTION 013100**

**NOT FOR BID**

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## SECTION 013150 – FIELD ENGINEERING

### PART 1 - GENERAL

#### 1.1 RELATED DOCUMENTS

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

#### 1.2 SUMMARY

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

1. Land Survey Work.
2. Engineering Services.

#### 1.3 SUBMITTALS

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

#### 1.4 QUALITY ASSURANCE

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

#### 1.5 EXAMINATION

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

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

#### 1.6 PERFORMANCE

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

PART 2 - PRODUCTS (Not Used)

PART 3 - EXECUTION (Not Used)

**END OF SECTION 013150**

## SECTION 013200 - CONSTRUCTION PROGRESS DOCUMENTATION

### PART 1 - GENERAL

#### 1.1 RELATED DOCUMENTS

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

#### 1.2 SUMMARY

- A. This Section includes administrative and procedural requirements for documenting the progress of construction during performance of the Work, including the following:
  - 1. Contractor's Construction Schedule.
  - 2. Field construction reports.
  - 3. Special reports.
- B. Related Sections include the following:
  - 1. Division 1 Section "Payment Procedures" for submitting the Schedule of Values.
  - 2. Division 1 Section "Project Management and Coordination" for submitting and distributing meeting and conference minutes.

#### 1.3 DEFINITIONS

- A. Activity: A discrete part of a project that can be identified for planning, scheduling, monitoring, and controlling the construction project. Activities included in a construction schedule consume time and resources.
  - 1. Critical activities are activities on the critical path. They must start and finish on the planned early start and finish times.
- B. CPM: Critical path method, which is a method of planning and scheduling a construction project where activities are arranged based on activity relationships. Network calculations determine when activities can be performed and the critical path of Project.
- C. Critical Path: The longest connected chain of interdependent activities through the network schedule that establishes the minimum overall Project duration and contains no float.
- D. Event: The starting or ending point of an activity.
- E. Major Area: A story of construction, a separate building, or a similar significant construction element.
- F. Milestone: A key or critical point in time for reference or measurement.

#### 1.4 SUBMITTALS

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

#### 1.5 COORDINATION

- A. Coordinate preparation and processing of schedules and reports with performance of construction activities and with scheduling and reporting of separate contractors.
- B. Coordinate Contractor's Construction Schedule with the Schedule of Values, list of subcontracts, Submittals Schedule, progress reports, payment requests, and other required schedules and reports.
  - 1. Secure time commitments for performing critical elements of the Work from parties involved.
  - 2. Coordinate each construction activity in the network with other activities and schedule them in proper sequence.

### PART 2 - PRODUCTS

#### 2.1 CONTRACTOR'S CONSTRUCTION SCHEDULE, GENERAL

- A. Procedures: Comply with procedures contained in AGC's "Construction Planning & Scheduling."
- B. Time Frame: Extend schedule from date established for commencement of the Work to date of Substantial Completion.
  - 1. Contract completion date shall not be changed by submission of a schedule that shows an early completion date, unless specifically authorized by Change Order.
- C. Activities: Treat each separate area as a separate numbered activity for each principal element of the Work. Comply with the following:
  - 1. Activity Duration: Define activities so no activity is longer than 20 days, unless specifically allowed by Architect.
  - 2. Submittal Review Time: Include review and resubmittal times indicated in Division 1 Section "Submittal Procedures" in schedule. Coordinate submittal review times in Contractor's Construction Schedule with Submittals Schedule.

3. Substantial Completion: Indicate completion in advance of date established for Substantial Completion, and allow time for Architect's administrative procedures necessary for certification of Substantial Completion.
- D. Constraints: Include constraints and work restrictions indicated in the Contract Documents and as follows in schedule, and show how the sequence of the Work is affected.
  1. Work Restrictions: Show the effect of the following items on the schedule:
    - a. Coordination with existing construction.
    - b. Use of premises restriction.
    - c. Provisions for future construction.
    - d. Seasonal variations.
    - e. Environmental control.
  2. Work Stages: Indicate important stages of construction for each major portion of the Work, including but not limited to, the following:
    - a. Mockups.
    - b. Fabrication.
    - c. Deliveries.
    - d. Installation.
- E. Milestones: Include milestones indicated in the Contract Documents in schedule, including, but not limited to, the Notice to Proceed, Substantial Completion, and Final Completion.
- F. Contract Modifications: For each proposed contract modification and concurrent with its submission, prepare a time-impact analysis using fragnets to demonstrate the effect of the proposed change on the overall project schedule.

## 2.2 CONSTRUCTION SCHEDULE

- A. Bar-Chart Schedule: Submit horizontal bar-chart-type construction schedule within five days of date established for commencement of the Work.
- B. Preparation: Indicate each significant construction activity separately. Identify first workday of each week with a continuous vertical line. Outline significant construction activities.

## 2.3 REPORTS

- A. Daily Construction Reports: Prepare a daily construction report recording the following information concerning events at Project site:
  1. List of subcontractors at Project site.
  2. List of separate contractors at Project site.
  3. Approximate count of personnel at Project site.
  4. Equipment at Project site.

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

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

#### 2.4 SPECIAL REPORTS

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

### PART 3 - EXECUTION

#### 3.1 CONTRACTOR'S CONSTRUCTION SCHEDULE

- A. Contractor's Construction Schedule Updating: At bi-weekly intervals, update schedule to reflect actual construction progress and activities. Issue schedule at each regularly scheduled progress meeting.
1. Revise schedule immediately after each meeting or other activity where revisions have been recognized or made. Issue updated schedule concurrently with the report of each such meeting.
  2. As the Work progresses, indicate Actual Completion percentage for each activity.
- B. Distribution: Distribute copies of approved schedule to Architect, Owner, separate contractors, and other parties identified by Contractor with a need-to-know schedule responsibility.

**END OF SECTION 013200**

## SECTION 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 a 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 mockup 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 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 consultant 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 Architects waiver of release form before files will be delivered to the contractor.

### PART 2 - PRODUCTS

#### 2.1 ACTION SUBMITTALS

- A. General: Prepare and submit Action Submittals required by individual Specification Sections.
- B. Product Data: Collect information into a single submittal for each element of construction and type of product or equipment.
1. If information must be specially prepared for submittal because standard printed data are not suitable for use, submit as Shop Drawings, not as Product Data.
  2. Mark each copy of each submittal to show which products and options are applicable.
  3. Include the following information, as applicable:
    - a. Manufacturer's written recommendations.
    - b. Manufacturer's product specifications.
    - c. Manufacturer's installation instructions.
    - d. Standard color charts.
    - e. Manufacturer's catalog cuts.
    - f. Wiring diagrams showing factory-installed wiring.
    - g. Printed performance curves.
    - h. Operational range diagrams.
    - i. Mill reports.
    - j. Standard product operation and maintenance manuals.
    - k. Compliance with specified referenced standards.
    - l. Testing by recognized testing agency.
    - m. Application of testing agency labels and seals.
    - n. Notation of coordination requirements.
  4. Submit Product Data before or concurrent with Samples.

5. Number of Copies: Submit six (6) copies of Product Data, unless otherwise indicated. Architect will return three copies. Mark up and retain the returned copy as a Project Record Document.
- C. Shop Drawings: Prepare Project-specific information shown accurately to scale. Do not base Shop Drawings on reproductions of the Contract Documents or standard printed data.
1. Preparation: Fully illustrate requirements in the Contract Documents. Include the following information, as applicable:
    - a. Dimensions.
    - b. Identification of products.
    - c. Fabrication and installation drawings.
    - d. Roughing-in and setting diagrams.
    - e. Wiring diagrams showing field-installed wiring, including power, signal, and control wiring.
    - f. Shop work manufacturing instructions.
    - g. Templates and patterns.
    - h. Schedules.
    - i. Design calculations.
    - j. Compliance with specified standards.
    - k. Notation of coordination requirements.
    - l. Notation of dimensions established by field measurement.
    - m. Relationship to adjoining construction clearly indicated.
    - n. Seal and signature of professional engineer if specified.
    - o. Wiring Diagrams: Differentiate between manufacturer-installed and field-installed wiring.
  2. Sheet Size: Except for templates, patterns, and similar full-size drawings, submit Shop Drawings on sheets at least 8-1/2 by 11 inches (215 by 280 mm) but no larger than 30 by 40 inches (750 by 1000 mm).
  3. Number of Copies: Submit six (6) opaque copies of each submittal, unless copies are required for operation and maintenance manuals. Submit five copies where copies are required for operation and maintenance manuals. Architect will retain three copies; remainder will be returned.
- D. Samples: Submit Samples for review of kind, color, pattern, and texture for a check of these characteristics with other elements and for a comparison of these characteristics between submittal and actual component as delivered and installed.
1. Transmit Samples that contain multiple, related components such as accessories together in one submittal package.
  2. Identification: Attach label on unexposed side of Samples that includes the following:
    - a. Generic description of Sample.
    - b. Product name and name of manufacturer.
    - c. Sample source.
    - d. Number and title of appropriate Specification Section.

3. Disposition: Maintain sets of approved Samples at Project site, available for quality-control comparisons throughout the course of construction activity. Sample sets may be used to determine final acceptance of construction associated with each set.
    - a. Samples that may be incorporated into the Work are indicated in individual Specification Sections. Such Samples must be in an undamaged condition at time of use.
    - b. Samples not incorporated into the Work, or otherwise designated as Owner's property, are the property of Contractor.
  4. Samples for Initial Selection: Submit manufacturer's color charts consisting of units or sections of units showing the full range of colors, textures, and patterns available.
    - a. Number of Samples: Submit one full set(s) of available choices where color, pattern, texture, or similar characteristics are required to be selected from manufacturer's product line. Architect will return submittal with options selected.
  5. Sample 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 product.
  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.

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

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

### PART 3 - EXECUTION

#### 3.1 CONTRACTOR'S REVIEW

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

#### 3.2 ARCHITECT'S ACTION

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

**END OF SECTION 013300**

## SECTION 014000 - QUALITY REQUIREMENTS

### PART 1 - GENERAL

#### 1.1 RELATED DOCUMENTS

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

#### 1.2 SUMMARY

- A. This Section includes administrative and procedural requirements for quality assurance and quality control.
- B. Testing and inspecting services are required to verify compliance with requirements specified or indicated. These services do not relieve Contractor of responsibility for compliance with the Contract Document requirements.
  - 1. Specific quality-assurance and -control requirements for individual construction activities are specified in the Sections that specify those activities. Requirements in those Sections may also cover production of standard products.
  - 2. Specified tests, inspections, and related actions do not limit Contractor's other quality-assurance and -control procedures that facilitate compliance with the Contract Document requirements.
  - 3. Requirements for Contractor to provide quality-assurance and -control services required by Architect, Owner or authorities having jurisdiction are not limited by provisions of this Section.
- C. Related Sections include but are not limited to the following:
  - 1. Division 1 Section "Construction Progress Documentation" for developing a schedule of required tests and inspections.
  - 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, Subcontractor, or Sub-subcontractor, to perform a particular construction operation, including installation, erection, application, and similar operations.
1. Using a term such as "carpentry" does not imply that certain construction activities must be performed by accredited or unionized individuals of a corresponding generic name, such as "carpenter." It also does not imply that requirements specified apply exclusively to trades people of the corresponding generic name.
- K. **Experienced:** When used with an entity, "experienced" means having successfully completed a minimum of five previous projects similar in size and scope to this Project; being familiar with special requirements indicated; and having complied with requirements of authorities having jurisdiction.

#### 1.4 CONFLICTING REQUIREMENTS

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

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

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

## 1.5 SUBMITTALS

- A. Qualification Data: For testing agencies specified in "Quality Assurance" Article to demonstrate their capabilities and experience. Include proof of qualifications in the form of a recent report on the inspection of the testing agency by a recognized authority.
- B. Schedule of Tests and Inspections: Prepare in tabular form and include the following:
1. Specification Section number and title.
  2. Description of test and inspection.
  3. Identification of applicable standards.
  4. Identification of test and inspection methods.
  5. Number of tests and inspections required.
  6. Time schedule or time span for tests and inspections.
  7. Entity responsible for performing tests and inspections.
  8. Requirements for obtaining samples.
  9. Unique characteristics of each quality-control service.
- C. Reports: Prepare and submit certified written reports that include the following:
1. Date of issue.
  2. Project title and number.
  3. Name, address, and telephone number of testing agency.
  4. Dates and locations of samples and tests or inspections.
  5. Names of individuals making tests and inspections.
  6. Description of the Work and test and inspection method.
  7. Identification of product and Specification Section.
  8. Complete test or inspection data.
  9. Test and inspection results and an interpretation of test results.
  10. Record of temperature and weather conditions at time of sample taking and testing and inspecting.
  11. Comments or professional opinion on whether tested or inspected Work complies with the Contract Document requirements.
  12. Name and signature of laboratory inspector.
  13. Recommendations on retesting and reinspecting.
- D. Permits, Licenses, and Certificates: For Owner's records, submit copies of permits, licenses, certifications, inspection reports, releases, jurisdictional settlements, notices, receipts for fee

payments, judgments, correspondence, records, and similar documents, established for compliance with standards and regulations bearing on performance of the Work.

## 1.6 QUALITY ASSURANCE

- NOT FOR BID**
- A. General: Qualifications paragraphs in this Article establish the minimum qualification levels required; individual Specification Sections specify additional requirements.
  - B. Installer Qualifications: A firm or individual experienced in installing, erecting, or assembling work similar in material, design, and extent to that indicated for this Project, whose work has resulted in construction with a record of successful in-service performance.
  - C. Manufacturer Qualifications: A firm experienced in manufacturing products or systems similar to those indicated for this Project and with a record of successful in-service performance, as well as sufficient production capacity to produce required units.
  - D. Fabricator Qualifications: A firm experienced in producing products similar to those indicated for this Project and with a record of successful in-service performance, as well as sufficient production capacity to produce required units.
  - E. Testing Agency Qualifications: An NRTL, an NVLAP, or an independent agency with the experience and capability to conduct testing and inspecting indicated, as documented according to ASTM E 548; and with additional qualifications specified in individual Sections; and where required by authorities having jurisdiction, that is acceptable to authorities.
    - 1. NRTL: A nationally recognized testing laboratory according to 29 CFR 1910.7.
    - 2. NVLAP: A testing agency accredited according to NIST's National Voluntary Laboratory Accreditation Program.
  - F. Factory-Authorized Service Representative Qualifications: An authorized representative of manufacturer who is trained and approved by manufacturer to inspect installation of manufacturer's products that are similar in material, design, and extent to those indicated for this Project.
    - 1. Testing Agency Responsibilities: Submit a certified written report of each test, inspection, and similar quality-assurance service to Architect with copy to Contractor. Interpret tests and inspections and state in each report whether tested and inspected work complies with or deviates from the Contract Documents.
  - G. 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 reinspecting construction that replaces or is necessitated by work that failed to comply with the Contract Documents will be charged to Contractor and the Contract Sum will be adjusted by Change Order.
- B. Tests and inspections not explicitly assigned to Owner are Contractor's responsibility. Unless otherwise indicated, provide quality-control services specified and those required by authorities having jurisdiction. Perform quality-control services required of Contractor by authorities having jurisdiction, whether specified or not.
1. Where services are indicated as Contractor's responsibility, engage a qualified testing agency to perform these quality-control services.
    - a. Contractor shall not employ same entity engaged by Owner, unless agreed to in writing by Owner.
  2. Notify testing agencies at least 24 hours in advance of time when Work that requires testing or inspecting will be performed.
  3. Where quality-control services are indicated as Contractor's responsibility, submit a certified written report, in duplicate, of each quality-control service.
  4. Testing and inspecting requested by Contractor and not required by the Contract Documents are Contractor's responsibility.
  5. Submit additional copies of each written report directly to authorities having jurisdiction, when they so direct.
- C. Manufacturer's Field Services: Where indicated, engage a factory-authorized service representative to inspect field-assembled components and equipment installation, including service connections. Report results in writing as specified in Division 1 Section "Submittal Procedures."
- D. Retesting/Reinspecting: Regardless of whether original tests or inspections were Contractor's responsibility, provide quality-control services, including retesting and reinspecting, for construction that replaced Work that failed to comply with the Contract Documents.

- E. Testing Agency Responsibilities: Cooperate with Architect and Contractor in performance of duties. Provide qualified personnel to perform required tests and inspections.
1. Notify Architect and Contractor promptly of irregularities or deficiencies observed in the Work during performance of its services.
  2. Determine the location from which test samples will be taken and in which in-situ tests are conducted.
  3. Conduct and interpret tests and inspections and state in each report whether tested and inspected work complies with or deviates from requirements.
  4. Submit a certified written report, in duplicate, of each test, inspection, and similar quality-control service through Contractor.
  5. Do not release, revoke, alter, or increase the Contract Document requirements or approve or accept any portion of the Work.
  6. Do not perform any duties of Contractor.
- F. Associated Services: Cooperate with agencies performing required tests, inspections, and similar quality-control services, and provide reasonable auxiliary services as requested. Notify agency sufficiently in advance of operations to permit assignment of personnel. Provide the following:
1. Access to the Work.
  2. Incidental labor and facilities necessary to facilitate tests and inspections.
  3. Adequate quantities of representative samples of materials that require testing and inspecting. Assist agency in obtaining samples.
  4. Facilities for storage and field curing of test samples.
  5. Delivery of samples to testing agencies.
  6. Preliminary design mix proposed for use for material mixes that require control by testing agency.
  7. Security and protection for samples and for testing and inspecting equipment at Project site.
- G. Coordination: Coordinate sequence of activities to accommodate required quality-assurance and -control services with a minimum of delay and to avoid necessity of removing and replacing construction to accommodate testing and inspecting.
1. Schedule times for tests, inspections, obtaining samples, and similar activities.
- H. Schedule of Tests and Inspections: Prepare a schedule of tests, inspections, and similar quality-control services required by the Contract Documents. Submit schedule within 30 days of date established for commencement of the Work.
1. Distribution: Distribute schedule to Owner, Architect testing agencies, and each party involved in performance of portions of the Work where tests and inspections are required.

## 1.8 SPECIAL TESTS AND INSPECTIONS

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

## PART 2 - PRODUCTS (Not Used)

## PART 3 - EXECUTION

### 3.1 TEST AND INSPECTION LOG

- A. Prepare a record of tests and inspections. Include the following:
1. Date test or inspection was conducted.
  2. Description of the Work tested or inspected.
  3. Date test or inspection results were transmitted to Architect.
  4. Identification of testing agency or special inspector conducting test or inspection.
- B. Maintain log at Project site. Post changes and modifications as they occur. Provide access to test and inspection log for Architect's reference during normal working hours.

### 3.2 REPAIR AND PROTECTION

- A. General: On completion of testing, inspecting, sample taking, and similar services, repair damaged construction and restore substrates and finishes.
1. Provide materials and comply with installation requirements specified in other Specification Sections. Restore patched areas and extend restoration into adjoining areas with durable seams that are as invisible as possible.
  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 BID**

## 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 code-union jurisdictional settlements and similar conventions.
- J. "Project site" is the space available to the Contractor for performing construction activities, either exclusive or in conjunction with others performing other work as part of the Project. The extent of the Project site is shown on the Drawings and may or may not be identical with the description of the land on which the Project is to be built.
- K. "Testing Agencies": A testing agency is an independent entity engaged to perform specific inspections or tests, either at the Project site or elsewhere, and to report on and, if required, to interpret results of those inspections or tests.

### 1.3 SPECIFICATION FORMAT AND CONTENT EXPLANATION

- A. Specification Format: These Specifications are organized into Divisions and Sections based on the CSI/CSC's "MasterFormat" numbering system.
- B. Specification Content: These Specifications use certain conventions for the style of language and the intended meaning of certain terms, words, and phrases when used in particular situations. These conventions are as follows:
  1. Abbreviated Language: Language used in the Specifications and other Contract Documents is abbreviated. Words and meanings shall be interpreted as appropriate. Words implied, but not stated, shall be interpolated as the sense requires. Singular words shall be interpreted as plural and plural words interpreted as singular where applicable as the context of the Contract Documents indicates.
  2. Imperative mood and streamlined language are generally used in the Specifications. Requirements expressed in the imperative mood are to be performed by the Contractor. At certain locations in the Section Text, subjective language is used for clarity to describe responsibilities that must be fulfilled indirectly by the Contractor or by others when so noted.
    - a. The words "shall," "shall be," or "shall comply with," depending on the context, are implied where a colon (:) is used within a sentence or phrase.

#### 1.4 INDUSTRY STANDARDS

- NOT FOR BID**
- 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 BID**

## 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 is not available at the site. The contractor will need to provide their own water source.
- C. Electric Power Service: Pay electric-power-service use charges for electricity used by all entities for construction operations.
- D. Telephone Service: Provide temporary 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. Erosion- and Sedimentation-Control Plan: Show compliance with requirements of EPA Construction General Permit or authorities having jurisdiction, whichever is more stringent.
- C. Fire-Safety Program: Show compliance with requirements of NFPA 241 and authorities having jurisdiction. Indicate Contractor personnel responsible for management of fire-prevention program.
- D. 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 sprayed fire-resistive materials, plastering, and terrazzo grinding, and describe plans for dealing with water from these operations. Show procedures for verifying that construction has dried sufficiently to permit installation of finish materials.

## 1.5 QUALITY ASSURANCE

- A. Electric Service: Comply with NFCA, 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 and roofed surfaces, on lawns and landscaped areas.

## 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 2-1/8-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. Polyethylene Sheet: Reinforced, fire-resistant sheet, 10-mil (0.25-mm) minimum thickness, with flame-spread rating of 15 or less per ASTM E 84 and passing NFPA 701 Test Method 2.
- D. Dust-Control Adhesive-Surface Walk-off Mats: Provide mats minimum 36 by 60 inches (914 by 1624 mm).
- E. Insulation: Unfaced mineral fiber blanket, manufactured from glass, slag wool, or rock wool; with maximum flame-spread and smoke-developed indexes of 25 and 50, respectively.
- F. Lumber and Plywood: Pressure-treated dimension lumber and plywood suitable for exterior exposure.
- G. Paint: Exterior latex primer and matching topcoat.

## 2.2 TEMPORARY FACILITIES

- A. Field Offices, General: Prefabricated or mobile units with serviceable finishes, temperature controls, and foundations adequate for normal loading.
- B. Common-Use Field Office: Of sufficient size to accommodate needs of Owner, Architect/Engineer and construction personnel office activities and to accommodate Project meetings specified in other Division 01 Sections. Keep office clean and orderly. Furnish and equip offices as follows:
  - 1. Furniture required for Project-site documents including file cabinets, plan tables, plan racks, and bookcases.
  - 2. Conference room of sufficient size to accommodate meetings of 10 individuals. Provide electrical power service and 120-V ac duplex receptacles, with no fewer than one receptacle on each wall. Furnish room with conference table, chairs, and 4-foot- (1.2-m-) square tack and marker boards.
  - 3. Drinking water and private toilet.
  - 4. Coffee machine and supplies.
  - 5. Heating and cooling equipment necessary to maintain a uniform indoor temperature of 68 to 72 deg F (20 to 22 deg C).
  - 6. Lighting fixtures capable of maintaining average illumination of 20 fc (215 lx) at desk height.
- C. 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.
- B. Heating Equipment: Use of gasoline-burning space heaters, open-flame heaters, or salamander-type heating units is prohibited.

## PART 3 - EXECUTION

### 3.1 INSTALLATION, GENERAL

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

### 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. 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 where applicable.
- E. Electric Power Service: Provide electric power service and distribution system of sufficient size, capacity, and power characteristics required for construction operations.
  - 1. Install electric power service underground unless otherwise indicated.

2. Coordinate with utility companies for power service.
- F. Lighting: Provide temporary lighting with local switching that provides adequate illumination for construction operations, observations, inspections, and safety conditions.
  1. Install and operate temporary lighting that fulfills security and protection requirements without operating entire system.
  2. Install lighting for Project identification.
- G. Telephone Service: Provide temporary telephone service in common-use facilities for use by all construction personnel. Install one telephone line(s) for each field office.
  1. Provide additional telephone lines for the following:
    - a. Provide a dedicated telephone line for each facsimile machine in each field office.
  2. At each telephone, post a list of important telephone numbers.
    - a. Police and fire departments.
    - b. Ambulance service.
    - c. Contractor's home office.
    - d. Contractor's emergency after-hours telephone number.
    - e. Architect's office.
    - f. Engineers' offices.
    - g. Owner's office.
    - h. Principal subcontractors' field and home offices.
  3. Provide superintendent with cellular telephone or portable two-way radio for use when away from field office.

### 3.3 SUPPORT FACILITIES INSTALLATION

- A. General: Comply with the following:
  1. Provide construction for temporary offices, 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 for fire-fighting equipment and access to fire hydrants and control valves.
  3. Provide and maintain uninterrupted vehicular access to site and within to temporary construction facilities and work areas for persons and equipment involved in the construction of Project.
  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 for construction personnel's private vehicles and of Contractor's light-weight vehicles.
- F. Project Signs: Provide Project signs as indicated. Unauthorized signs are not permitted.
1. Temporary Signs: Provide other signs as indicated and as required to inform public and individuals seeking entrance to Project.
    - a. Provide temporary, directional signs for construction personnel and visitors.
  2. Maintain and touchup signs so they are legible at all times.
- G. Waste Disposal Facilities: Comply with requirements specified in Section 017419 "Construction Waste Management and Disposal."
- H. Cleaning During Construction: Control accumulation of waste materials and rubbish. Periodically dispose of legally off site.
- I. 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.
- J. 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.

- NOT FOR BID**
- K. 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.
  - L. Temporary Erosion and Sedimentation Control: Provide measures to prevent soil erosion and discharge of soil-bearing water runoff and airborne dusts to undisturbed areas and to adjacent properties and walkways, according to erosion and sedimentation-control Drawings.
    - 1. Verify that flows of water redirected from construction areas or generated by construction activity do not enter or cross tree- or plant- protection zones.
    - 2. Inspect, repair, and maintain erosion- and sedimentation-control measures during construction until permanent vegetation has been established.
    - 3. Clean, repair, and restore adjoining properties and roads affected by erosion and sedimentation from Project site during the course of Project.
    - 4. Remove erosion and sedimentation controls and restore and stabilize areas disturbed during removal.
  - M. Stormwater Control: Comply with requirements of authorities having jurisdiction. Provide barriers in and around excavations and subgrade construction to prevent flooding by runoff of stormwater from heavy rains.
  - N. 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.
  - O. Security Enclosure and Lockup: Install temporary enclosure around partially completed areas of construction. Provide lockable entrances to prevent unauthorized entrance, vandalism, theft, and similar violations of security. Lock entrances at end of each work day.
  - P. Barricades, Warning Signs, and Lights: Comply with requirements of authorities having jurisdiction for erecting structurally adequate barricades, including warning signs and lighting.
  - Q. Temporary Enclosures: Provide temporary enclosures for protection of construction, in progress and completed, from exposure, foul weather, other construction operations, and similar activities. Provide temporary weathertight enclosure.
  - R. 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.
    - 2. Supervise welding operations, combustion-type temporary heating units, and similar sources of fire ignition according to requirements of authorities having jurisdiction.

3. Develop and supervise an overall fire-prevention and -protection program for personnel at Project site. Review needs with local fire department and establish procedures to be followed. Instruct personnel in methods and procedures. Post warnings and information.

### 3.4 MOISTURE AND MOLD 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.
  5. Keep deck openings covered or dammed.

### 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. Materials and facilities that constitute temporary facilities are property of Contractor. Owner reserves right to take possession of Project identification signs.
  2. Remove temporary roads and paved areas not intended for or acceptable for integration into permanent construction. Where area is intended for landscape development, remove soil and aggregate fill that do not comply with requirements for fill or subsoil. Remove materials contaminated with road oil, asphalt and other petrochemical compounds, and other substances that might impair growth of plant materials or lawns. Repair or replace street paving, curbs, and sidewalks at temporary entrances, as required by authorities having jurisdiction.

3. 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**

**NOT FOR BID**

**NOT FOR BID**

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## SECTION 015600 - ENVIRONMENTAL PROTECTION

### PART 1 - GENERAL

#### 1.1 ENVIRONMENTAL PROTECTION

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

#### 1.2 GENERAL REQUIREMENTS

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

#### 1.3 PROTECTION OF NATURAL RESOURCES

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

#### 1.4 TOXIC SUBSTANCES

- NOT FOR BID**
- 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 of the 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 insulation, 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 may be present in site elements. DNREC will inspect and clear the site of lead paint.
  - F. Asbestos is may be present in site elements. DNREC will inspect and clear the site of asbestos.

#### 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 transit.

PART 2 - PRODUCTS (Not Used)

PART 3 - EXECUTION (Not Used)

**END OF SECTION 01560**

**NOT FOR BID**

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## 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.
  - 2. Section 311000 "Site Clearing" for removing existing trees and shrubs.

#### 1.3 DEFINITIONS

- A. Caliper: Diameter of a 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.

## 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. 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

- NOT FOR BID**
- 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: **DO NOT ENTER. TREE PROTECTION ZONE.**
  2. Lettering: 3-inch- (75-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.

### 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

- NOT FOR BID**
- 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. Posts: Set or drive posts into ground one-third the total height of the fence without concrete footings. Where 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 fewer 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 EXCAVATION

- A. General: Excavate at edge of protection zones and for trenches indicated within protection zones according to requirements in Section 312000 "Earth Moving."
- B. Trenching near Trees: Where utility trenches are required within protection zones, hand excavate under or around tree roots or tunnel under the roots by drilling, auger boring, or pipe jacking. Do not cut main lateral tree roots or taproots; cut only smaller roots that interfere with installation of utilities. Cut roots as required for root pruning.
- C. Redirect roots in backfill areas where possible. If encountering large, main lateral roots, expose roots beyond excavation limits as required to bend and redirect them without breaking. If encountered immediately adjacent to location of new construction and redirection is not practical, cut roots approximately 3 inches (75 mm) back from new construction and as required for root pruning.

- D. Do not allow exposed roots to dry out before placing permanent backfill. Provide temporary earth cover or pack with peat moss and wrap with burlap. Water and maintain in a moist condition. Temporarily support and protect roots from damage until they are permanently relocated and covered with soil.

### 3.5 ROOT PRUNING

- A. Prune roots that are affected by temporary and permanent construction. Prune as follows:
1. Cut roots manually by digging a trench and cutting exposed roots with sharp pruning instruments; do not break, tear, chop, or slant the cuts. Do not use a backhoe or other equipment that rips, tears, or pulls roots.
  2. Cut Ends: Coat cut ends of roots more than 1-1/2 inches (38 mm) in diameter with an emulsified asphalt or other coating formulated for use on damaged plant tissues and that is acceptable to arborist.
  3. Temporarily support and protect roots from damage until they are permanently redirected and covered with soil.
  4. Cover exposed roots with burlap and water regularly.
  5. Backfill as soon as possible according to requirements in Section 312000 "Earth Moving."
- B. Root Pruning at Edge of Protection Zone: Prune roots 6 inches (150 mm) inside of the protection zone, by cleanly cutting all roots to the depth of the required excavation.
- C. Root Pruning within Protection Zone: Clear and excavate by hand to the depth of the required excavation to minimize damage to root systems. Use narrow-tine spading forks, comb soil to expose roots, and cleanly cut roots as close to excavation as possible.

### 3.6 REGRADING

- A. Lowering Grade: Where new finish grade is indicated below existing grade around trees, slope grade beyond the protection zone. Maintain existing grades within the protection zone.
- B. Lowering Grade within Protection Zone: Where new finish grade is indicated below existing grade around trees, slope grade away from trees as recommended by arborist unless otherwise indicated.
1. Root Pruning: Prune tree roots exposed by lowering the grade. Do not cut main lateral roots or taproots; cut only smaller roots. Cut roots as required for root pruning.
- C. Raising Grade: Where new finish grade is indicated above existing grade around trees, slope grade beyond the protection zone. Maintain existing grades within the protection zone.
- D. Minor Fill within Protection Zone: Where existing grade is 2 inches (50 mm) or less below elevation of finish grade, fill with topsoil. Place topsoil in a single uncompacted layer and hand grade to required finish elevations.

### 3.7 REPAIR AND REPLACEMENT

- A. General: Repair or replace trees, shrubs, and other vegetation indicated to remain 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.

### 3.8 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**

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

2. Documentation: Show compliance with requirements for substitutions and the following, as applicable:
    - a. Statement indicating why specified material or product cannot be provided.
    - b. Coordination information, including 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, when applicable or requested.
    - f. List of similar installations for completed projects with project names and addresses and names and addresses of architects and owners.
    - g. Material test reports from a qualified testing agency indicating and interpreting test results to show 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 allowed.

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

## 1.5 QUALITY ASSURANCE

- A. Compatibility of Options: If Contractor is given option of selecting between two or more products for use on Project, product selected shall be compatible with products previously selected, even if previously selected products were also options.
  1. Each contractor is responsible for providing products and construction methods compatible with products and construction methods of other contractors.
  2. If a dispute arises between contractors over concurrently selectable but incompatible products, Architect/Engineer will determine which products shall be used.

## 1.6 PRODUCT DELIVERY, STORAGE, AND HANDLING

- A. Deliver, store, and handle products using means and methods that will prevent damage, deterioration, and loss, including theft. Comply with manufacturer's written instructions.
- B. Delivery and Handling:
  1. Schedule delivery to minimize long-term storage at Project site and to prevent overcrowding of construction spaces.
  2. Coordinate delivery with installation time to ensure minimum holding time for items that are flammable, hazardous, easily damaged, or sensitive to deterioration, theft, and other losses.
  3. Deliver products to Project site in an undamaged condition in manufacturer's original sealed container or other packaging system, complete with labels and instructions for handling, storing, unpacking, protecting, and installing.
  4. Inspect products on delivery to ensure compliance with the Contract Documents and to ensure that products are undamaged and properly protected.
- C. Storage:
  1. Store products to allow for inspection and measurement of quantity or counting of units.
  2. Store materials in a manner that will not endanger Project structure.
  3. Store products that are subject to damage by the elements, under cover in a weathertight enclosure above ground, with ventilation adequate to prevent condensation.
  4. Store cementitious products and materials on elevated platforms.

5. Store foam plastic from exposure to sunlight, except to extent necessary for period of installation and concealment.
6. Comply with product manufacturer's written instructions for temperature, humidity, ventilation, and weather-protection requirements for storage.
7. Protect stored products from damage and liquids from freezing.
8. Provide a secure location and enclosure at project site for storage of materials and equipment by Owner's construction force. Coordinate location with Owner.

## 1.7 PRODUCT WARRANTIES

- A. Warranties specified in other Sections shall be in addition to, and run concurrent with, other warranties required by the Contract Documents. Manufacturer's disclaimers and limitations on product warranties do not relieve Contractor of obligations under requirements of the Contract Documents.
  1. Manufacturer's Warranty: Preprinted written warranty published by individual manufacturer for a particular product and specifically endorsed by manufacturer to Owner.
  2. Special Warranty: Written warranty required by or incorporated into the Contract Documents, either to extend time limit provided by manufacturer's warranty or to provide more rights for Owner.
- B. Special Warranties: Prepare a written document that contains appropriate terms and identification, ready for execution. Submit a draft for approval before final execution.
  1. Manufacturer's Standard Form: Modified to include Project-specific information and properly executed.
  2. Specified Form: When specified forms are included with the Specifications, prepare a written document using appropriate form properly executed.
  3. Refer to Divisions 2 through 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 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 SUBSTITUTION

- A. Timing: Architect will consider requests for substitution if received within **30** days after the Notice to Proceed. Requests received after that time may be considered or rejected at discretion of Architect.
- B. Conditions: Architect/Engineer will consider Contractor's request for substitution when the following conditions are satisfied. If the following conditions are not satisfied, Architect will return requests without action, except to record noncompliance with these requirements:
  1. Requested substitution offers Owner a substantial advantage in cost, time, energy conservation, or other considerations, after deducting additional responsibilities Owner must assume. Owner's additional responsibilities may include compensation to Architect for redesign and evaluation services, increased cost of other construction by Owner, and similar considerations.
  2. Requested substitution does not require extensive revisions to the Contract Documents.
  3. Requested substitution is consistent with the Contract Documents and will produce indicated results.
  4. Substitution request is fully documented and properly submitted.
  5. Requested substitution will not adversely affect Contractor's Construction Schedule.
  6. Requested substitution has received necessary approvals of authorities having jurisdiction.
  7. Requested substitution is compatible with other portions of the Work.
  8. Requested substitution has been coordinated with other portions of the Work.
  9. Requested substitution provides specified warranty.
  10. If requested substitution involves more than one contractor, requested substitution has been coordinated with other portions of the Work, is uniform and consistent, is compatible with other products, and is acceptable to all contractors involved.

## 2.3 COMPARABLE PRODUCTS

- A. Conditions: Architect/Engineer will consider Contractor's request for comparable product when the following conditions are satisfied. If the following conditions are not satisfied, Architect will return requests without action, except to record noncompliance with these requirements:

1. Evidence that the proposed product does not require extensive revisions to the Contract Documents that it is consistent with the Contract Documents and will produce the indicated results, and that it is compatible with other portions of the Work.
2. Detailed comparison of significant qualities of proposed product with those named in the Specifications. Significant qualities include attributes such as performance, weight, size, durability, visual effect, and specific features and requirements indicated.
3. Evidence that proposed product provides specified warranty.
4. List of similar installations for completed projects with project names and addresses and names and addresses of architect and owners, if requested.
5. Samples, if requested.

PART 3 - EXECUTION (Not Used)

**NOT FOR BID**



**SUBSTITUTION  
REQUEST**  
(After the Bidding/Negotiating Phase)

**NOT FOR BID**

Project: \_\_\_\_\_ Substitution Request Number: \_\_\_\_\_

\_\_\_\_\_

To: \_\_\_\_\_ Date: \_\_\_\_\_

\_\_\_\_\_ A/E Project Number: \_\_\_\_\_

Re: \_\_\_\_\_ Contract For: \_\_\_\_\_

Specification Title: \_\_\_\_\_ Description: \_\_\_\_\_

Section: \_\_\_\_\_ Article/Paragraph: \_\_\_\_\_

Proposed Substitution: \_\_\_\_\_

Manufacturer: \_\_\_\_\_ Phone: \_\_\_\_\_

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

Trade Name: \_\_\_\_\_ Model No.: \_\_\_\_\_

Installer: \_\_\_\_\_ Phone: \_\_\_\_\_

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

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

Differences between proposed substitution and specified product:

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

Reason for not providing specified item:

Similar Installation:

Project: \_\_\_\_\_ Architect: \_\_\_\_\_

Address: \_\_\_\_\_ Owner: \_\_\_\_\_

\_\_\_\_\_ Date Installed: \_\_\_\_\_

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

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

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

Supporting Data Attached:  Drawings  Product Data  Samples  Tests  Reports  \_\_\_\_\_

**SUBSTITUTION  
REQUEST**

(After the Building 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 clearance.
- 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 necessary for accepted substitution will be complete in all respects.

Submitted by: \_\_\_\_\_

Signed by: \_\_\_\_\_

Firm: \_\_\_\_\_

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

\_\_\_\_\_

Telephone: \_\_\_\_\_

Attachments:

**NOT FOR BID**

**A/E's REVIEW AND ACTION**

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

Signed by: \_\_\_\_\_ Date: \_\_\_\_\_

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

**END OF SECTION 016000**

## SECTION 017300 - EXECUTION REQUIREMENTS

### PART 1 - GENERAL

#### 1.1 RELATED DOCUMENTS

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

#### 1.2 SUMMARY

- A. This Section includes general procedural requirements governing execution of the Work including, but not limited to, the following:
  - 1. Construction layout.
  - 2. General installation of products.
  - 3. Coordination of Owner-installed products.
  - 4. Progress cleaning.
  - 5. Starting and adjusting.
  - 6. Protection of installed construction.
  - 7. Correction of the Work.
- B. Related Sections include the following:
  - 1. Division 1 Section "Project Management and Coordination" for procedures for coordinating field engineering with other construction activities.
  - 2. Division 1 Section "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 products 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 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 221 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 90 deg F (27 deg C).
  3. Containerize hazardous and unsightly waste materials separately from other waste. Mark containers appropriately and dispose of legally, according to regulations.
- B. Site: Maintain Project site free of waste materials and debris.
- C. Work Areas: Clean areas where work is in progress to the level of cleanliness necessary for proper execution of the Work.
1. Remove liquid spills promptly.
  2. Where dust would impair proper execution of the Work, broom-clean or vacuum the entire work area, as appropriate.
- D. Installed Work: Keep installed work clean. Clean installed surfaces according to written instructions of manufacturer or fabricator of product installed, using only cleaning materials specifically recommended. If specific cleaning materials are not recommended, use cleaning materials that are not hazardous to health or property and that will not damage exposed surfaces.
- E. Concealed Spaces: Remove debris from concealed spaces before enclosing the space.
- F. Exposed Surfaces in Finished Areas: Clean exposed surfaces and protect as necessary to ensure freedom from damage and deterioration at time of Substantial Completion.
- G. Waste Disposal: Burying or burning waste materials on-site will not be permitted. Washing waste materials down sewers or into waterways will not be permitted.
- H. During handling and installation, clean and protect construction in progress and adjoining materials already in place. Apply protective covering where required to ensure protection from damage or deterioration at Substantial Completion.
- I. Clean and provide maintenance on completed construction as frequently as necessary through the remainder of the construction period. Adjust and lubricate operable components to ensure operability without damaging effects.
- J. Limiting Exposures: Supervise construction operations to assure that no part of the construction, completed or in progress, is subject to harmful, dangerous, damaging, or otherwise deleterious exposure during the construction period.

### 3.7 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: 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.
- E. 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 following but are not limited to the following:
  - 1. Division 1 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: Fitting 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.
- C. Patching: Patch construction by filling, repairing, refinishing, closing up, and similar operations following performance of other Work. Patch with durable seams that are as invisible as possible. Provide materials and comply with installation requirements specified in other Sections 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 rehang 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 weather-tight condition.

**END OF SECTION 017329**

## SECTION 017419 - CONSTRUCTION WASTE MANAGEMENT AND DISPOSAL

### PART 1 - GENERAL

#### 1.1 RELATED DOCUMENTS

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

#### 1.2 SUMMARY

- A. Section includes administrative and procedural requirements for the following:
1. Salvaging nonhazardous demolition and construction waste.
  2. Recycling nonhazardous demolition and construction waste.
  3. Disposing of nonhazardous demolition and construction waste.
- B. Related Requirements:
1. Section 024119 "Selective Demolition" for disposition of waste resulting from partial demolition of buildings, structures, and site improvements.
  2. Section 042000 "Unit Masonry" for disposal requirements for masonry waste.

#### 1.3 DEFINITIONS

- A. Construction, Demolition and Land Clearing (CDL) Waste: Includes all non-hazardous solid wastes resulting from construction, remodeling, alterations, repair, demolition and land clearing. Includes material that is recycled, reused, salvaged or disposed as garbage. Construction waste includes packaging.
- B. Disposal: Removal off-site of demolition and construction waste and subsequent sale, recycling, reuse, or deposit in landfill or incinerator acceptable to authorities having jurisdiction.
- C. Recycle: The process of sorting, treating and reconstituting materials for the purpose of using the material in the manufacture of a new product.
- D. Reuse: Making use of a material without altering its form. Materials can be reused on-site or reused on other projects off-site. Examples include, but are not limited to the following: Crushing or grinding of concrete for use as sub-base material. Chipping of land clearing debris for use of mulch.
- E. Salvage: Recovery of demolition or construction waste and subsequent sale, reuse in another facility or sale to a third party.

- F. Salvage and Reuse: Recovery of demolition or construction waste and subsequent incorporation into the Work.
- G. Source-Separated CDL Recycling: The process of separating recyclable materials in separate containers as they are generated on the job-site. The separated materials are hauled directly to a recycling facility or transfer station.
- H. Co-mingled CDL Recycling: The process of collecting mixed recyclable materials in one container on-site. The container is taken to a material recovery facility where materials are separated for recycling.
- I. Approved Recycling Facility: Any of the following:
  - 1. A facility that can legally accept CDL waste materials for the purpose of processing the materials into an altered form for the manufacture of a new product.
  - 2. Material Recovery Facility: A general term used to describe a waste-sorting facility. Mechanical, hand-separation, or a combination of both procedures, are used to recover recyclable materials.

#### 1.4 PERFORMANCE REQUIREMENTS

- A. General: Achieve end-of-Project rates for salvage/recycling of 75 percent CDL waste by weight from the landfill by one or a combination of the following activities:
  - 1. Salvage.
  - 2. Reuse.
  - 3. Source-Separated CDL Recycling.
  - 4. Co-mingled CDL Recycling.
- B. CDL waste materials that can be salvaged, reused or recycled include, but are not limited to, the following:
  - 1. Demolition Waste:
    - a. Asphalt paving.
    - b. Concrete.
    - c. Concrete reinforcing steel.
    - d. Concrete masonry units.
    - e. Doors and frames.
    - f. Door hardware.
    - g. Field office waste including office paper, cans, plastic and office cardboard.
    - h. Gypsum board.
    - i. Insulation.
    - j. Land clearing debris (vegetation, stumpage, dirt, etc.).
    - k. Membrane and built-up Roofing.
    - l. Metals.

- m. Paint (through hazardous waste outlets).
- n. Plastic film (sheeting, shrink wrap and packaging).
- o. Plywood and oriented strand board.
- p. Structural and miscellaneous steel.
- q. Wood.
- r. Equipment.
2. Construction Waste:
- a. Asphalt paving.
- b. Concrete.
- c. Concrete reinforcing steel.
- d. Concrete masonry units.
- e. Doors and frames.
- f. Door hardware.
- g. Field office waste including office paper, cans, plastic and office cardboard.
- h. Cardboard.
- i. Insulation.
- j. Land clearing debris (vegetation, stumpage, dirt, etc.).
- k. Membrane and built-up Roofing.
- l. Metals.
- m. Paint (through hazardous waste outlets).
- n. Plastic film (sheeting, shrink wrap and packaging).
- o. Plywood and oriented strand board.
- p. Structural and miscellaneous steel.
- q. Wood.
- r. Packaging: Regardless of salvage/recycle goal indicated in "General" Paragraph above, salvage or recycle 100 percent of the following uncontaminated packaging materials:
- 1) Paper.
  - 2) Cardboard.
  - 3) Boxes.
  - 4) Plastic sheet and film.
  - 5) Polystyrene packaging.
  - 6) Wood crates.
  - 7) Plastic pails.

#### 1.5 ACTION SUBMITTALS

- A. Waste Management Plan: Submit plan within 30 days of date established for the Notice of Award.
- B. Waste Management Report: Submit report with each application for payment.

## 1.6 INFORMATIONAL SUBMITTALS

- A. Waste Reduction Progress Reports: Concurrent with each Application for Payment, submit report:
1. Material category.
  2. Generation point of waste.
  3. Total quantity of waste in tons (tonnes).
  4. Quantity of waste salvaged, both estimated and actual in tons (tonnes).
  5. Quantity of waste recycled, both estimated and actual in tons (tonnes).
  6. Total quantity of waste recovered (salvaged plus recycled) in tons (tonnes).
  7. Total quantity of waste recovered (salvaged plus recycled) as a percentage of total waste.
- B. Records of Donations: Indicate receipt and acceptance of salvageable waste donated to individuals and organizations. Indicate whether organization is tax exempt.
- C. Records of Sales: Indicate receipt and acceptance of salvageable waste sold to individuals and organizations. Indicate whether organization is tax exempt.
- D. Recycling and Processing Facility Records: Indicate receipt and acceptance of recyclable waste by recycling and processing facilities licensed to accept them. Include manifests, weight tickets, receipts, and invoices.
- E. Landfill and Incinerator Disposal Records: Indicate receipt and acceptance of waste by landfills and incinerator facilities licensed to accept them. Include manifests, weight tickets, receipts, and invoices.
- F. Qualification Data: For refrigerant recovery technician.
- G. Statement of Refrigerant Recovery: Signed by refrigerant recovery technician responsible for recovering refrigerant, stating that all refrigerant that was present was recovered and that recovery was performed according to EPA regulations. Include name and address of technician and date refrigerant was recovered.

## 1.7 QUALITY ASSURANCE

- A. Waste Management Coordinator Qualifications: Experienced firm, with a record of successful waste management coordination of projects with similar requirements, that employs a LEED Accredited Professional, certified by the USGBC as waste management coordinator.
- B. Refrigerant Recovery Technician Qualifications: Certified by EPA-approved certification program.
- C. Regulatory Requirements: Conduct construction waste management activities in accordance with hauling and disposal regulations of all authorities having jurisdiction and all other applicable laws and ordinances.

- D. Waste Management Conference: Conduct conference at Project site to comply with requirements in Section 013100 "Project Management and Coordination." Review methods and procedures related to waste management including, but not limited to, the following:
1. Review and discuss waste management plan including responsibilities of waste management coordinator.
  2. Review requirements for documenting quantities of each type of waste and its disposition.
  3. Review and finalize procedures for materials separation and verify availability of containers and bins needed to avoid delays.
  4. Review procedure for periodic waste collection and transportation to recycling and disposal facilities.
  5. Review waste management requirements for each trade.
  6. Attendees inform the following individuals, whose presence is required, of date and time of meeting.
    - a. Owner.
    - b. Architect/Engineer.
    - c. Contractor's superintendent.
    - d. Major subcontractors.
    - e. Waste Management Coordinator.
    - f. Other concerned parties.
  7. Minutes: Record discussion. Distribute meeting minutes to all participants. Note: If there is an Architectural/Engineering consultant contracted by the State of Delaware, they will perform this role.

## 1.8 WASTE MANAGEMENT PLAN

- A. General: Develop a waste management plan according to ASTM E 1609 and requirements in this Section. Plan shall consist of waste identification, waste reduction work plan, and cost/revenue analysis. Distinguish between demolition and construction waste. Indicate quantities by weight or volume, but use same units of measure throughout waste management plan.
- B. Waste Identification: Indicate anticipated types and quantities of demolition, site-clearing and construction waste generated by the Work. List all assumptions made for the quantities estimates.
- C. Waste Reduction Work Plan: List each type of waste and whether it will be salvaged, recycled, or disposed of in landfill or incinerator. The plan shall include the following information:
1. Types and estimated quantities, by weight, of CDL waste expected to be generated during demolition and construction.
  2. Proposed methods for CDL waste salvage, reuse, recycling and disposal during demolition including, but not limited to, one or more of the following:
    - a. Contracting with a deconstruction specialist to salvage materials generated,

- b. Selective salvage as part of demolition contractor's work,
  - c. Reuse of materials on-site or sale or donation to a third party.
3. Proposed methods for salvage, reuse, recycling and disposal during construction including, but not limited to, one or more of the following:
    - a. Requiring subcontractors to take their CDL waste to a recycling facility;
    - b. Contracting with a recycling hauler to haul recyclable CDL waste to an approved recycling or material recovery facility;
    - c. Processing and reusing material on-site;
    - d. Self-hauling to a recycling or material recovery facility.
  4. Name of recycling or material recovery facility receiving the CDL wastes.
  5. Handling and Transportation Procedures: Include method that will be used for separating recyclable waste including sizes of containers, container labeling, and designated location on project site where materials separation will be located.
- D. Cost/Revenue Analysis: Indicate total cost of waste disposal as if there was no waste management plan and net additional cost or net savings resulting from implementing waste management plan. Include the following:
1. Total quantity of waste.
  2. Estimated cost of disposal (cost per unit). Include hauling and tipping fees and cost of collection containers for each type of waste.
  3. Total cost of disposal (with no waste management).
  4. Revenue from salvaged materials.
  5. Revenue from recycled materials.
  6. Savings in hauling and tipping fees by donating materials.
  7. Savings in hauling and tipping fees that are avoided.
  8. Handling and transportation costs. Including cost of collection containers for each type of waste.
  9. Net additional cost or net savings from waste management plan.

## PART 2 - PRODUCTS (Not Used)

## PART 3 - EXECUTION

### 3.1 CONSTRUCTION WASTE MANAGEMENT, GENERAL

- A. Provide containers for CDL waste that is to be recycled clearly labeled as such with a list of acceptable and unacceptable materials. The list of acceptable materials must be the same as the materials recycled at the receiving material recovery facility or recycling processor.
- B. The collection containers for recyclable CDL waste must contain no more than 10% non-recyclable materials, by volume.

- C. Provide containers for CDL waste that is disposed in a landfill clearly labeled as such.
- D. Use detailed material estimates to reduce risk of unplanned and potentially wasteful cuts.
- E. To the greatest extent possible, include in material purchasing agreements a waste reduction provision requesting that materials and equipment be delivered in packaging made of recyclable material, that they reduce the amount of packaging, that packaging be taken back for reuse or recycling, and to take back all unused products. Insure that subcontractors require the same provisions in their purchase agreements.
- F. Conduct regular visual inspection of dumpsters and recycling bins to remove contaminants.

### 3.2 SOURCE SEPARATION

- A. General: Contractor shall separate recyclable materials from CDL waste to the maximum extent possible. Separate recyclable materials by type.
  - 1. Provide containers, clearly labeled, by type of separated materials or provide other storage method for managing recyclable materials until they are removed from Project site.
  - 2. Stockpile processed materials on-site without intermixing with other materials. Place, grade, and shape stockpiles to drain surface water and to minimize pest attraction. Cover to prevent windblown dust.
  - 3. Stockpile materials away from demolition area. Do not store within drip line of remaining trees.
  - 4. Store components off the ground and protect from weather.

### 3.3 CO-MINGLED RECYCLING

- A. General: Do not put CDL waste that will be disposed in a landfill into a co-mingled CDL waste recycling container.

### 3.4 REMOVAL OF CONSTRUCTION WASTE MATERIALS

- A. Remove CDL waste materials from project site on a regular basis. Do not allow CDL waste to accumulate on-site.
- B. Transport CDL waste materials off Owner's property and legally dispose of them.
- C. Burning of CDL waste is not permitted.

WASTE MANAGEMENT PROGRESS REPORT					
Material Category		Disposed in Municipal Solid Waste landfill	Diverted from Landfill by Recycling, Salvage or Reuse		
			Recycled	Salvaged	Reused
1.	Asphalt				
2.	Concrete				
3.	Concrete reinforcement steel				
4.	Concrete Masonry Units				
5.	Door and Frames				
6.	Door Hardware				
7.	Gypsum Board				
8.	Land Clearing Debris (Vegetation, Stumpage & dirt)				
9.	Metals				
10.	Paint (Through Hazardous Waste Outlets)				
11.	Wood				
12.	Plastic Film (Sheeting, Shrink Wrap & Packaging)				
13.	Window Glass				
14.	Field Office waste (Office Paper, Aluminum Cans, Glass, Plastic and Coffee Cardboard)				
15.	Structural and Misc. Steel				
16.	Plywood				

17.	Insulation				
	Total (In Weight)			(TOTAL OF ALL ABOVE VALUES – IN WEIGHT)	
Percentage of Waste Diverted				(TOTAL WASTE DIVIDED BY TOTAL DIVERTED)	

**END OF SECTION 017419**

**NOT FOR BID**

**NOT FOR BID**

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## 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 33 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 relative 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, floor, 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's reference during normal working hours.
- B. Record Drawings: Maintain and submit one original set of blue- or black-line white prints with two copies of Contract Drawings and Shop Drawings.
  1. Mark Record Prints to show the actual installation where installation varies from that shown originally. Require individual or entity who obtained record data, whether individual or entity is Installer, subcontractor, or similar entity, to prepare the marked-up Record Prints.
    - a. Give particular attention to information on concealed elements that cannot be readily identified and recorded later.
    - b. Accurately record information in an understandable drawing technique.
    - c. Record data as soon as possible after obtaining it. Record and check the markup before enclosing concealed installations.
    - d. Mark Contract Drawings or Shop Drawings, whichever is most capable of showing actual physical conditions, completely and accurately. Where Shop Drawings are marked, show cross-reference on Contract Drawings.
  2. Mark record sets with erasable, red-colored pencil. Use other colors to distinguish between changes for different categories of the Work at the same location.
  3. Mark important additional information that was either shown schematically or omitted from original Drawings.

4. Note Construction Change Directive numbers, Change Order numbers, alternate numbers, and similar identification where applicable.
  5. Identify and date each Record Drawing; include the designation "PROJECT RECORD DRAWING" in a prominent location. Organize into manageable sets; bind each set with durable paper cover sheets. Include identification on cover sheets.
- C. Record Specifications: Submit one copy of Project's Specifications, including addenda and contract modifications. Mark copy to indicate 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 cover 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 manuals 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 33 Sections for specific maintenance manual requirements for the Work in those 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 back 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 separate 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 typewritten 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 Specifications.
  - 3. Record Product Data.
- B. Related Sections include but are not limited to the following:
  - 1. Division 1 Section "Closeout Procedures" for general closeout procedures and maintenance manual requirements.
  - 2. Division 1 Section "Operation and Maintenance Data" for operation and maintenance manual requirements.
  - 3. Divisions 02 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-ink 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, 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 sheet.
  2. Record Transparencies: Organize into unbound sets matching Record Prints. Place transparencies in durable tube-type drawing containers with end caps. Mark end cap of each container with identification. If container does not include a complete set, identify Drawings included.
  3. Record CAD Drawings: Organize CAD information into separate electronic files that correspond to each sheet of the Contract Drawings. Name each file with the sheet identification. Include identification in each CAD file.
  4. Identification: As follows:
    - a. Project name.
    - b. Date.
    - c. Designation "PROJECT RECORD DRAWINGS."
    - d. Name of Architect/Engineer.
    - e. Name of Contractor.

## 2.2 RECORD SPECIFICATIONS

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

## 2.3 RECORD PRODUCT DATA

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

## 2.4 MISCELLANEOUS RECORD SUBMITTALS

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

## PART 3 - EXECUTION

### 3.1 RECORDING AND MAINTENANCE

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

**207600 - POROUS BACKFILL**

**Description:**

Furnish and place porous backfill material, reinforced concrete base, and pipe drains at the rear of abutments, wing walls, retaining walls, and other locations.

**Materials:**

1. Porous Backfill, Size No. 57, Aggregate .....805 & 813
2. Concrete DelDOT Class C .....812
3. Pipe Drains .....Per AASHTO M278
4. Reinforcement Steel .....824
5. Geotextile, Class as specified.

- a. Geotextile Requirements: All geotextiles shall be listed in the National Transportation Product Evaluation Program (NTPEP) for geotextiles. The geotextile shall be manufactured from fibers consisting of long chain synthetic polymers, composed of a minimum 95 percent by weight of polyolefins or polyesters. The fibers shall be formed into a stable network so that the filaments or yarns retain their dimensional stability relative to each other, including selvages. The geotextile shall meet the following:

APPLICATION CLASS		TYPE OF GEOTEXTILE	GRAB STRENGTH lb. D 4632	PUNCTURE STRENGTH lb. D 6241	PERMITTIVITY Sec-1 D 4491	APPARENT OPENING SIZE, max mm D 4751	TRAPEZOID TEAR STRENGTH lb. D 4533
SD	TYPE I	NONWOVEN	160	56	.50	.43	55
	TYPE II	NONWOVEN	160	56	.20	.25	55

Note 1: All property values are based on minimum average roll values in the weakest principle direction, except for apparent opening size.

Note 2: The ultraviolet stability shall be 50 percent after 500 hours of exposure for all classes, except Class F, which shall be 70 percent (D 4355).

Only those geotextiles that have been tested by NTPEP will be considered candidates for use.

- b. Seam and Overlap. D 4884: When geotextiles are joined by sewing, the geotextile seam shall meet the following:
  - i. Seams shall be either “J” or “Butterfly” type and shall utilize a lock stitch.
  - ii. Seams shall meet the tensile strength requirements for the geotextile when tested across the seam.

- iii. The durability of the thread for seaming shall be at least equal to the geotextile itself.
- c. Securing Pins or Staples. Shall be a minimum 10" length and be designed to securely hold the geosynthetic in place during construction.

**Construction:**

Place porous backfill material in layers in contact with the adjacent fill. Any fill material removed for placing the porous backfill material shall be at no additional cost to the DNREC. When a form is used between the porous backfill material and the earth backfill, completely remove the form from the completed fill.

Slope concrete base to drain to points of discharge.

**NOT FOR BID**

## 208500 - FLOWABLE FILL

### Description:

This work consists of furnishing and placing flowable fill material at locations as specified in the Plans and as directed by the Engineer.

### Materials:

Flowable fill shall consist of a combination of the following materials: Portland cement, ground granulated blast furnace slag, fly ash, fine aggregate, water, and chemical admixtures. The exact mixture design, including chemical admixtures, shall be submitted by the Contractor showing the proportions of the above referenced materials that will meet the Specifications.

**Portland Cement** shall meet the requirements of Section 801 of the DeIDOT Standard Specifications.

**Ground Granulated Blast Furnace Slag** shall meet the requirements of AASHTO M302, Grade 100 or Grade 120.

**Fly Ash** shall meet the requirements of Section 822 of the DeIDOT Standard Specifications. The fly ash shall be free of lumps, dirt, debris, and other contamination. Material test data of fly ash representative of the source shall be submitted to the Engineer a minimum of 30 days prior to use. Test data shall include characteristics of the ash leachate as determined by the Toxicity Characteristics Leaching Procedure (TCLP) in accordance with EPA SW-846, with respect to leachate metals

**Fine Aggregates** shall meet the requirements of Section 804 of the DeIDOT Standard Specifications.

**Water** shall meet the requirements of Section 803 of the DeIDOT Standard Specifications.

**Chemical Admixtures** shall meet the requirements and be used according to the manufacturers recommendations.

The sources of all materials and the mix design shall be submitted to the Engineer a minimum of 30 days prior to use, in order to allow testing of the mix design (using representative material samples) by the Engineer. The design shall produce a material with a 28-day compressive strength of 50 to 200 psi. Flowable fill is not intended to be used where a quick strength development is required, although the addition of an accelerator may be allowed where an early gain in strength is desirable.

Compliance with compressive strength requirements shall be tested in accordance with the following AASHTO test methods:

T-22, Compressive Strength of Cylindrical Concrete Specimens.

T-23, Making and Curing Concrete Test Specimens in the Field.

### Construction Methods:

Materials for this item shall be central mixed, truck mixed, or as approved by the Engineer.

Flowable fill shall be transported to the project in ready-mix trucks or as approved by the Engineer. The elapsed time between introduction of water and placement of the fill shall not exceed three hours.

The ambient temperature shall be a minimum of 40 degrees Fahrenheit and rising to begin placement of flowable fill. The temperature of the flowable fill shall be a minimum of 50 degrees Fahrenheit at time of placement. Flowable fill shall not be placed against frozen surfaces and shall be protected from freezing for at least 36 hours using insulation.

Prior to placement, the Contractor shall provide positive containment of the fill material to prevent flow beyond the desired placement location. Flowable backfill shall be discharged at a rate that will allow the material to flow into the placement location, fill all voids, and not dislodge the existing containment or interior items. Relief holes shall be made wherever necessary to ensure that all voids are filled. Any interior items shall be capable of withstanding lateral hydraulic pressures of the flowable fill. Lift thickness shall not exceed 5 feet in depth. Prior to placement of successive lifts or other loadings, fill shall be allowed to cure until it is self-supporting.

Care shall be taken to prevent pipes from floating. Straps, soil anchors, or other approved means of restraint may be required to ensure proper alignment when flowable fill is used as backfill for pipes. Ensuring proper alignment is the sole responsibility of the Contractor.

The backfill shall be placed to the final lines and grades as shown on the Plans. All confining and supporting structures, protective covers, and barriers shall be maintained by the contractor until the backfill is self-supporting. The Contractor should be aware that shrinkage of the flowable fill as it cures may require additional backfill with another material.

Backfill shall be protected from direct contact with vehicular traffic and shall be protected from prolonged exposure to rain and or running water.

**END OF SECTION**

**257600 - CHANNEL BED FILL**

**Description:**

Furnish and place Channel Bed Fill to the limits specified in the construction plan set.

**Materials:**

Provide aggregate material meeting the following requirements:

Provide natural, rounded, unwashed and uncrushed aggregate material meeting the gradation of Table 1 when tested in accordance with AASHTO T-11 and T-27.

- a. Aggregate material meeting this requirement may be located within the excavation area of the project. The contractor may salvage this material at his/her discretion by separating and stockpiling the material meeting the requirements of Table 1 and Notes 1&2.
- b. Angular material and aggregate is unacceptable.
- c. The cost of salvaging and stockpiling existing material and removing excess stockpiled material is incidental to 712531 – Channel Bed Fill.

**Table 1**

Percent Passing	Light <sup>3</sup>	Medium <sup>4</sup>	Heavy
5-inch	100	90-100 <sup>1</sup>	Gradation to be noted on plan sheets
1-inch	100 <sup>1</sup>	0-20 <sup>2</sup>	
3/4-inch	30-70		
3/8-inch	0-10 <sup>2</sup>		

Notes:

<sup>1</sup> Salvaged materials may contain material exceeding this size and be acceptable.

<sup>2</sup> Salvaged materials may contain up to 20% passing the 3/8-inch sieve but not to exceed 10% passing the #200 sieve when tested in accordance with T-11.

<sup>3</sup> Unless noted otherwise on plan sheets, Light gradation shall be used in locations in Sussex County

<sup>4</sup> Unless noted otherwise on plan sheets, Medium gradation shall be used in locations in Kent and New Castle Counties.

**END OF SECTION**

**NOT FOR BID**

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## **401699 - QUALITY CONTROL/QUALITY ASSURANCE OF WARM-MIX ASPHALT**

### **01 Description**

This item shall govern the Quality Control/Quality Assurance Testing for supplying hot-mix asphalt plant materials and constructing hot-mix asphalt pavements.

The Contractor shall be responsible for providing the quality level of materials and construction incorporated into the Contract that will meet the requirements of the Contract. The Contractor shall perform all necessary quality control inspection, sampling, and testing. The Engineer will evaluate all materials and construction for acceptance. The procedures for Quality Control and Acceptance are described in this Section.

### **02 Definitions**

- X **Acceptable Quality Level (AQL):** That level of percent within limits (PWL) to which the Engineer will consider the work completely acceptable.
- X **Acceptance Plan:** Factors that comprise the Engineer's determination of the degree of compliance with contract requirements and value of the product. These factors include the Engineer's sampling, testing, and inspection.
- X **Delaware Asphalt Pavement Association (DAPA):** The organization representing the interests of hot-mix asphalt producers and Contractors. The Engineer has a copy of the DAPA officer's names and point(s) of contact.
- X **Dispute Resolution:** The procedure used to resolve conflicts resulting from discrepancies between the Engineer's and the Contractor's results of sufficient magnitude to impact payment. The testing will take place at a location and time mutually agreeable by both the Engineer and the Contractor.
- X **Full Depth Construction:** Construction of an adequate pavement box on a subgrade and subbase prepared by the contractor
- X **Independent Assurance:** An unbiased and independent verification of the Quality Assurance system used, and the reliability of the test results obtained in regular sampling and testing activities. The results of Independent Assurance are not to be directly used as a basis of material acceptance.
- X **Job Mix Formula (JMF)/Mixture Identification (ID):** The target values for individual aggregate size gradation percentages and the asphalt percentage, the sources of each of the component materials, the proposed proportions of component materials to be used to meet those target values, the asphalt proportion, and the mixing temperature. The Engineer will assign uniquely individual mixture identification for each JMF submitted and approved.
- X **Lower Quality Index (QL):** The index reflecting the statistic related to the lower boundary to which a sample (or sample statistic) may deviate from the target value and still be considered acceptable.
- X **Mean:** A statistical measure of the central tendency of the average value.
- X **Operational Day:** A day in which the Engineer has approved a lane closure for the Contractor to perform work within an approved MOT plan.

- X **Percent Within Limits (PWL):** That amount of material or workmanship that has been determined, by statistical method, to be within the pre-established characteristic boundary(ies).
- X **Qualified Laboratory:** A laboratory mutually agreed upon by both DAPA and the Engineer as having proper test equipment that has been calibrated in accordance to AASHTO.
- X **Qualified Technician:** Personnel mutually agreed upon by both DAPA and the Engineer as having adequate training, experience, and abilities to perform the necessary testing. The minimum qualifications are either a recognized nationally accredited or certified Superpave testing certificate or been working in hot-mix asphalt testing for at least one year.
- X **Quality Assurance (QA):** All those planned and systematic actions necessary to provide adequate confidence that a product or service will satisfy given requirements for quality.
- X **Quality Control (QC):** The sum total of the activities performed by the Contractor in order to assure that a product meets contract requirements.
- X **Quality Control (QC) Plan:** The detailed description of the type and frequency of inspection, sampling, and testing deemed necessary to measure and control the various properties governed by the Specifications. The QC Plan must address the actions needed to keep the process in control, detect when the process is going out of control, and responses to correct the situation(s).
- X **Quality Level Analysis:** A statistical procedure that provides a method for estimating the percentage of each lot or subplot of material, product, item of construction, or completed construction that may be expected to be within specified tolerances.
- X **Standard Deviation:** A term used in statistics to indicate the value calculated from the square root of the difference between the individual measurements in a group and their average. Standard deviation is calculated by taking the square root of the sum of the squares of the differences of each of n values and the mean value, this sum first divided by (n-1).
- X **Target Value:** The acceptable value for a controlling characteristic of a product. The JMF will establish each of these values for the material.
- X **Test Methods:** Shall be AASHTO test methods. Copies of these test methods shall be available at each qualified laboratory.
- X **Upper Quality Index (QU):** The index reflecting the statistic related to the upper boundary to which a sample (or sample statistic) may deviate from the target value and still be considered acceptable.
- X **Volumetric Properties:** Air voids, voids in mineral aggregates (VMA), voids filled with asphalt (VFA), and dust to effective asphalt.

### **03 Equipment**

#### **(a) Material Production Test Equipment.**

The Contractor shall establish, maintain, and operate a qualified testing laboratory at the production plant site of sufficient size and layout that will accommodate the testing operations of both the Contractor and the Engineer. The Contractor shall maintain all the equipment used for handling, preparing, and testing materials in proper operating condition. For any laboratory equipment malfunction, the Contractor shall remedy the situation within one working day or the Engineer may reject production. In the case of an equipment malfunction, and while waiting for repairs to equipment, the Engineer may elect to test the material at either another production facility or the Engineer's laboratory to obtain payment factors.

The following shall be the minimum calibrations for the referenced equipment:

SUPERPAVE<sup>R</sup> Gyratory Compactor: once every year; verified once every month by the Engineer.

Ovens: once every three months, verified once every month.

Vacuum Container and Gauge (Rice Bowls): once every three months, verified once every month.

Balances and Scales: once every year, verified once every month.

Thermometers: once every year; verified once every month.

Gyratory Compactor molds and base plates: once every year

Mechanical Shakers: once every year

Sieve Verifications: once every year

All calibrations shall be documented and on file for review by the Engineer at any time.

#### **(b) Pavement Construction Test Equipment.**

The Contractor shall furnish and use in-place density gauges, or coring equipment, or both, as necessary to meet the requirements of these Specifications.

### **04 Quality Control (QC) Plan.**

#### **(a) Material Production QC.**

##### **(1) Job Mix Formula Material Production.**

The Contractor shall submit for approval to the Engineer the job mix formula (JMF) design of the component materials and target characteristic values for each mixture proposed for use. Once the JMF is submitted to the Engineer, the Engineer will have up to three weeks to review the submitted information. However, a provision for a more timely approval is available to the Contractor; first, the Contractor shall submit the proper documentation on Pinepave mixture design software for the Engineer's approval. After that approval from the Engineer, the Contractor shall produce the new mixture for a non-Department project. The Engineer will test the material, by taking three series per the specifications. If the Engineer's test results are within the specifications, then the mixture will be approved by the Engineer for Department projects.

The component materials design shall include designating the source and the expected proportion (within 1 percent for the aggregate components, and within 0.1 percent for the other components) of each component to be used in order to produce workable hot-mix asphalt having the specified properties. For plant component feed adjustments, RAP can be considered in the same manner as an individual aggregate component. The JMF target characteristic values include the mixing temperature range, core temperature range for gyration, the percentage of the asphalt cement component (both total and virgin), and the percentages of the aggregate amounts retained on the sieves to be addressed by the JMF as shown in Table 1.

The Contractor shall provide an ignition oven correction number for each JMF. The Contractor shall also supply to the Engineer weighed material of each JMF so correction numbers can be established for the Engineer's equipment for Dispute Resolution samples.

Prior to starting production of a new mixture, the Contractor shall submit a JMF. For any mixture that has a 20% or greater failure rate on any combined volumetric criteria, the JMF will not be approved for use on Department contracts. In order to be approved, a re-design of the mixture will have to be completed by the Contractor for review and approval by the Engineer. The Contractor shall uniquely title each JMF. The Contractor shall submit test data with each JMF and tests performed by a Qualified Laboratory on representative materials, verifying the adequacy of the design. Refer to the specifications for each mix type in order to determine the design requirements. The JMF sieve percentage values shall conform to the ranges shown in Table 1.

If there is a change in the source of any of the component materials, other than asphalt, if there is a change in the proportions of the aggregate components or the percent passing for each sieve by more than 5 percent from the submitted JMF, or if there is a change in the percentage of the asphalt cement component by 0.2 percent or more, which causes the volumetrics to change from the originally submitted JMF, a new JMF is required. Also, if the asphalt cement target percentage is lowered, all volumetric criteria must still be achieved.

According to the Contractor's QC Plan, the Contractor shall inform the Engineer of any proposed changes to an existing JMF. The Contractor shall notify the Engineer by electronic mail of the proposed changes. The Engineer will reply to the proposed changes within one operational day and notify the Contractor of the effective date of the changes.

Although a new JMF is not required, the Contractor must notify the Engineer of any change in the proportions of the components. This notification shall include the total change made from the approved JMF proportions, and the effective time of the change.

All submitted JMFs shall correspond to the Pinepave mixture design software. The Engineer, for evaluation of the submitted JMF, will use the first three test samples. These test results acquired during production shall be within the following range compared to the submitted JMF on the Pinepave mixture design software:

G<sub>mm</sub>: +/- 0.030 and G<sub>mb</sub>: +/- 0.040

**Table 1 - Aggregate Gradation - JMF and Control Point Information**

**Sieves to be addressed by JMF/Range values and percentages passing by weight**

Sieve Size MM (inch)	4.75 mm	4.75mm Range	9.5 mm	9.5mm Range	12.5 mm	12.5mm Range	19.0 mm	19.0mm Range	25.0 mm	25.0mm Range
37.5(1.5)	No		No		No		No		Yes	100
25.0(1.0)	No		No		No		Yes	100	Yes	90-100
19.0 (3/4)	No		No		Yes	100	Yes	90-100	Yes	20-90
12.5(1/2)	Yes	100	Yes	100	Yes	90-100	Yes	23-90	Yes	
9.5 (3/8)	Yes	95-100	Yes	90-100	Yes	28-90	Yes		Yes	
4.75(#4)	Yes	90-100	Yes	32-90	Yes		Yes		Yes	
2.36(#8)	Yes		Yes	32-67	Yes	28-58	Yes	23-49	Yes	19-45
(#16)	Yes	30-60	Yes		Yes		Yes		Yes	
(#30)	Yes		Yes		Yes		Yes		Yes	
(#50)	Yes		Yes		Yes		Yes		Yes	
(#100)	Yes		Yes		Yes		Yes		Yes	
.075(#200)	Yes	6-12	Yes	2-10	Yes	2-10	Yes	2-8	Yes	1-7

**(2) Process Control – Material Production.**

The Contractor shall submit in writing (letter or electronic mail) a QC Plan from each proposed production plant to the Engineer; no hot-mix asphalt material will be accepted until the Engineer approves the QC Plan. This plan must be submitted to the Engineer on an annual basis for review and approval prior to material production. The Engineer will send a signed copy back to the Contractor stating that it is approved. The approved QC Plan shall govern contractor operations.

The following are considered significant violations to the Contractor’s QC Plan:

- X Using testing equipment that is knowingly out of calibration or is not working properly.
- X Reporting false information such as test data, JMF information, or any info requested by DelDOT

- X When the Contractor fails to comply with their approved QC Plan in reference to materials testing
- X Substantial deviations to AASHTO or MDOT procedures when running tests, sampling stockpiles, or testing the mix.
- X The use of any material not listed in the JMF.
- X The use of the wrong PG graded asphalt.
- X If samples fall within the Contractor's action points in the QC Plan but the Contractor fails to take the corrective action in the approved QC Plan

If a Contractor is found in violation of any of these items, they will receive a written warning for their first violation. If the Contractor is found in violation a second time on any of the criteria, they will forfeit any bonus from that day's production. If the Contractor is found in violation a third time on any of the criteria, they will receive a five percent (5%) deduction for that day's production. If the Contractor is found in violation a fourth time, the plant will not be approved for production until such time that the Contractor addresses the violation of the QC plan to the satisfaction of the Engineer. If the Engineer approves the changes in advance, the Contractor may make changes to the QC Plan. All changes shall be submitted and approved in writing by the Engineer.

The QC Plan shall include actions that will assure all materials and products will conform to the specifications, whether manufactured or processed by the Contractor, or procured from suppliers, subcontractors, or vendors. The Contractor shall perform the inspection and tests required to substantiate product conformance to contract requirements. The Contractor shall document QC inspections and tests, and provide copies to the Engineer when requested. The Contractor shall maintain records of all inspections and tests for at least one year. The records shall include the date, time, and nature of deficiency or deficiencies found; the quantities of material involved until the deficiency was corrected; and the date, time, and nature of corrective actions taken.

In the QC Plan, the Contractor shall detail the type and frequency of inspection, sampling, and testing deemed necessary to measure and control the various properties of material and construction governed by the Specifications. The QC Plan shall include the following elements as a minimum:

- X Production Plant: make, type, capacity, and location.
- X Production Plant Calibration: components and schedule; address documentation.
- X Personnel: include name and telephone number for the following individuals:
  - X Person responsible for quality control.
  - X Qualified technician(s) responsible for performing the inspection, sampling, and testing.
  - X Person who has the authority to make corrective actions on behalf of the Contractor.

- X Testing Laboratory: state the frequency of accuracy checks and calibrations of the equipment used for testing; address documentation.
- X Locations where samples will be obtained and the sampling techniques for each test
- X Load number of QC samples (1-10 if QA sample is not within trucks 1-10)
- X Tests to be performed and their normal frequency; the following, at a minimum, shall be conducted:
  - X Mixture Temperature: each of the first five trucks, and each load that is sampled for QC or acceptance testing.
  - X Gradation analysis of aggregate (and RAP) stockpiles: one washed gradations per week for each aggregate stockpile; RAP: five gradations and asphalt cement contents for dedicated stockpiles where new material is not being added; one gradation and asphalt cement content test per week for stockpiles where material is continually being added to the stockpile.
  - X Gradation analysis of non-payment sieves
  - X Dust to effective asphalt calculation
  - X Moisture content analysis of aggregates: daily.
  - X Gradation analysis of the combined aggregate cold feed: one per year per mixture.
  - X Bulk specific gravity and absorption of blended material: one per year per mixture.
  - X Ignition Oven calibration: one per year per mixture.
  - X Hot-Bins: one per year per mixture.
  - X Others, as appropriate.
- X Procedures for reporting the results of inspection and tests (include schedule).
- X Procedures for dealing with non-compliant material or work.
- X Presentation of control charts. The Contractor shall plot the results of testing on individual control charts for each characteristic. The control charts shall be updated within one working day as test results for each subplot become available. The control charts shall be easily and readily accessible at the plant laboratory. The following parameters shall be plotted from the testing:
  - X Asphalt cement content.
  - X Volumetrics (air voids, voids in mineral aggregates [VMA])
  - X Gradation values for the following sieves:
    - 4.75 mm (#4).
    - 2.36 mm (#8).
    - 0.075 mm (#200).
- X Operational guidelines (trigger points) to address times when the following actions would be considered:
  - X Increased frequency of sampling and testing.
  - X Plant control/settings/operations change.
  - X JMF adjustment.
  - X JMF change (See Section .04(a)(1)).

- X Change in the source of the component materials.
- X Calibration of material production equipment (asphalt pump, belt feeders, etc.).
- X Rejection of material.

When any point of non-compliance with the QC plan, or material not meeting the Specifications, comes to the attention of either the Contractor or the Engineer, the other party shall be notified immediately, and the Contractor shall take appropriate corrective actions. Failure to take corrective actions immediately shall be cause for rejection of material or work by the Engineer.

**(b) Pavement Construction - Process Control.**

The Contractor shall perform Quality Control of pavement compaction by testing in-place pavement with a density gauge or by testing cores extracted from the pavement. The use of the nuclear density gauge shall conform to ASTM D2950; the use of other density gauges shall be as per the manufacturer's recommendations and approved by the Engineer. The Contractor may use any method to select locations for the Quality Control.

**05 Acceptance Plan.**

**(a) Material Production - Tests and Evaluations.**

The Engineer will conduct acceptance tests. The Engineer will directly base acceptance on the acceptance test results, the asphalt cement quality, the Contractor's QC Plan work, and the comparisons of the acceptance test results to the QC test results. The Engineer may elect to utilize test results of the Contractor in some situations toward judging acceptance. All acceptance tests shall be performed by qualified technicians at qualified laboratories following AASHTO or DelDOT procedures, and shall be evaluated using Quality Level Analysis.

The Contractor shall supply, capture, and mark samples, as directed, from delivery trucks before the trucks leave the production plant. The sample shall represent the material produced by the Contractor, and shall be of sufficient size to allow the Engineer to complete all required acceptance tests. The Engineer will direct the Contractor when to capture these samples, on a statistically random, unbiased basis, established before production begins each day based upon the anticipated production tonnage. The captured sample shall be from the Engineer specified delivery truck; if the Contractor visually observes the specified delivery truck sample and does not want this sample to be sampled and tested for acceptance, that delivery truck will not be sent to a Department project and the next visually acceptable delivery truck to the Contractor shall be sampled for acceptance testing.

Except for the first sample of the production, the Engineer will give the Contractor at least 100 tons, or five trucks, advance notice before each individual sample is required. Unacceptable

samples may be a basis for rejection of material if the QC plan is not followed as approved for sample retrieval. If the Contractor wishes to perform parallel tests with the Engineer, or to capture samples to be retained for possible Dispute Resolution, each of the samples for these purposes shall be obtained at the same time and location as the acceptance test sample. Either splitting a large sample or getting multiple samples that equally represent the material is acceptable.

The Engineer will evaluate and accept the material on a lot basis. All the material within a lot shall have the same JMF (mixture ID). The lot size shall be targeted for 2000 tons or a maximum period of three days, whichever is reached first. If the 2000<sup>th</sup> ton target lot size is achieved during a production day, the lot size shall extend to the end of that production day. The Contractor may interrupt the production of one JMF in order to produce different material; this type of interruption will not alter the determination of the size or limits of material represented by a lot. The Engineer will evaluate each lot on a subplot basis. The size for each subplot shall be 100 to 500 tons and testing for the sub lots will be completed on a daily basis. For each subplot, the Engineer will evaluate one sample.

The target number of sublots within each lot is four equal-sized 500 ton sub lots and will be based upon anticipated production, however, more or fewer sublots, with differing sizes, may result due to the production schedule and conditions. If the actual production is less than anticipated, and it is determined a sample will not be obtained (based upon the anticipated tonnage), a new sample location will be determined on a statistically random, unbiased basis based upon the new actual production. If the actual production is going to be 50 tons or greater over the anticipated sub lot production, a new sample location will be determined on a statistically random, unbiased basis based upon the new actual production. The Engineer will combine the evaluation and test results for all of the applicable sublots in order to evaluate each individual lot.

If the Engineer is present, and the quantity exceeds 25 tons, a statistically random sample may be used for analysis. When the anticipated production is less than 100 tons and greater than 25 tons, and the Engineer is not present, the contractor shall randomly select a sample using the Engineer's random location program. The contractor will perform the testing in accordance with all applicable AASHTO or DeDOT standards as referenced in their approved QC Plan. The test results shall be submitted to the Engineer electronically in the format provided by the Engineer (LB-26). The test results from either the Contractor or Engineer on production that is less than 100 tons will be combined with the two most recently completed Engineer tests with the same Mixture ID and from the same contract to calculate payment for the lot encompassing the single test. If that cannot be accomplished, the same results from the most recently completed lot with the same Mixture ID will be used for analysis and payment. Payment for previously closed lots will not be affected by the analysis. A box sample shall also be obtained by the contractor at the same time and will be used as the Dispute Resolution sample if requested by the Engineer. The contractor shall also obtain one liquid asphalt sample (1 pint) per grade of asphalt used per day and properly label it with all pertinent information.

The Engineer will conduct the following tests in order to characterize the material for the pavement compaction quality, and to judge acceptance and the pay adjustment for the material:

- X AASHTO T312  Preparing a mixture sample using a gyratory compactor.
- X AASHTO T166, Method C (Rapid Method)  Bulk specific gravity of compacted samples.
- X AASHTO T308  Asphalt cement content.
- X AASHTO T30  Aggregate gradations, using samples from the asphalt cement content test.
- X AASHTO T209  Theoretical maximum specific gravity.
- X ASTM Provisional Test Method  Rapid Drying of Compacted and Loose Bituminous Asphalt Specimens using Vacuum Drying Method

**(b) Pavement Construction  Tests and Evaluations.**

The Engineer will directly base acceptance on the compaction acceptance test results, and on the inspection of the construction, the Contractor's QC Plan work, ride smoothness as referenced in the contract documents, lift thickness as referenced in the contract documents, joint quality as referenced in the contract documents, surface texture as referenced in the contract documents, and possibly the comparisons of the acceptance test results to the independent test results. For the compaction acceptance testing, the Engineer will sample the work on a statistically random basis, and will test and evaluate the work using lots.

Prior to paving a road segment, the Contractor shall notify the Engineer of any locations within that road segment that may not be suitable to achieve minimum (93%) compaction due to existing conditions. The Contractor shall schedule and hold a meeting in the field with the Engineer in order to discuss all areas that may potentially be applicable to Table 5a before paving starts. Areas that will be considered for Table 5a will be investigated in accordance to the method described in Appendix B. If this meeting is not held prior to paving, no areas will be considered for Table 5a. Areas of allowable exemptions that will not be cored include the following: partial-depth patch areas, driveway entrances, paving locations of less than 100 tons, areas around manholes and driveway entrances, and areas of paving that are under 400 feet in continuous total length and/or 5 feet in width.

The exempt areas around manholes will be a maximum of 4 feet transversely on either side from the center of the manhole, and 20 feet longitudinally on either side from the center of the manhole. The exempt areas around driveway entrances shall be the entire width of the driveway, and 3 feet from the edge of the longitudinal joint next to the driveway. Areas of exemption that will be cored for informational purposes only shall include: areas where the mat thickness is less than three times the nominal maximum aggregate size as directed by the Engineer, violations of Section 401.08 in the Standard Specifications as directed by the Engineer, and areas shown to contain questionable subgrade properties as proven by substantial

yielding under a fully legally loaded truck. Failure to obtain core samples in these areas will result in zero payment for compaction regardless of the exemption status.

The Engineer will evaluate and accept the compaction work on a daily basis. Payment for the compaction will be calculated by using the material production lots as referenced in **.05 Acceptance Plan (a) Material Production**  **Tests and Evaluation** and analyzing the compaction results over the individual days covered in the material production lot. The compaction results will be combined with the material results to obtain a payment for this item.

The minimum size of a compaction lot shall be 100 tons. If the compaction lot is between 101 and 1000 tons, the Engineer shall randomly determine four compaction acceptance test locations. If the compaction lot is between 1001 and 1500 tons, the Engineer shall randomly determine six compaction acceptance test locations. If the compaction lot is between 1501 and 2000 tons, the Engineer shall randomly determine eight compaction acceptance test locations. If the compaction lot is greater than 2000 tons, the Engineer shall randomly determine two compaction acceptance test locations per 500 tons.

If a randomly selected area falls within an Engineer approved exemption area, the Engineer will select one more randomly generated location to be tested per the requirements of this Specification. If that cannot be accomplished, or if an entire location has been declared exempt, the compaction testing shall be performed as per these Specifications but a note will be added to the results that the location was an Engineer approved exempt location.

Testing locations will be a minimum of 1.5 feet from the newly placed longitudinal joint and 50 feet from a new transverse joint. If the Contractor chooses to cut companion cores, they shall be located within one foot of the Engineers cores along the longitudinal direction and in-line with the Engineers cores in the longitudinal plane.

Exactly at the locations marked by the Engineer, the Contractor shall cut a core, 6 inches in diameter, through the full lift depth. Cores submitted that are not from the location designated by the Engineer will not be tested and will be paid at zero pay.

The Contractor shall notify the Engineer prior to starting paving operations with approximations of the tonnage to be placed. The Contractor is then responsible for notifying the appropriate Engineer test personnel within 12 hours of material placement. The Engineer will then have 24 hours to mark the core locations. After determination of locations, the Contractor shall complete testing within two operational days of the locations being marked. If the cores are not cut within two operational days, the area in question will be paid at zero pay for compaction testing.

The Contractor shall provide any traffic control required for the structural number investigation, sampling, and testing work at no additional cost to the Department.

The Contractor shall cut each core with care in order to prevent damaging the core. The pavement shall have a maximum temperature of 140EF when cores are cut from it. Immediately

upon removal of a core from the roadway, the Contractor shall adequately label it. The Contractor shall protect the core by supplying a 6-inch plastic concrete cylinder mold, or an approved substitute, and placing the core in it. If more than one core is in the same mold, the Contractor shall place paper between them. The Contractor shall attach a completed QC test record for the representative area to the corresponding core. The Engineer will also complete a test record for areas tested for the QA report and provide to Materials & Research. At the end of every production day, the Contractor shall deliver the cores to the Engineer for testing, processing, and report distribution.

The Contractor shall repair the core hole per Appendix A, Repairing Core Holes in Hot-Mix Asphalt Pavements. Core holes shall be filled immediately. Failure to repair core holes at the time of coring will result in zero pay for compaction testing for the area in question.

The Engineer will conduct the following tests on the applicable portion of the cores in order to evaluate their quality:

- X AASHTO T166, Method C (Rapid Method)  to determine the bulk specific gravity of the cores.
- X AASHTO T209  to calculate the theoretical maximum specific gravity and the density of the non-compacted mixtures.
- X ASTM Provisional Test Method  Rapid Drying of Compacted and Loose Bituminous Asphalt Specimens using Vacuum Drying Method.

The Engineer will use the average of the last five test values of the same JMF (mixture ID) material at the production plant in order to calculate the average theoretical maximum specific gravity of the cores. The average will be based on the production days test results and as many test results needed from previous days production to have an average of five samples. If there are less than five values available, the Engineer will use the JMF design value in addition to the available values to calculate the average theoretical maximum specific gravity.

#### **.06 Payment and Pay Adjustment Factors.**

The Contractor shall include the costs for all materials, labor, equipment, tools, and incidentals necessary to meet the requirements of this specification in the bid price per ton for the hot-mix asphalt. Payment to the Contractor for the hot-mix asphalt item(s) will be based on the Contract price per ton and the pay adjustments described in this specification. The Engineer will determine pay adjustments for the hot-mix asphalt item(s) based on the Acceptance Plan. The Engineer will determine both a pay adjustment for the material and a pay adjustment for the pavement construction. Note that the material portion of the total pay adjustment is 70 percent and the pavement construction portion is 30 percent. For replaced material or work, the Engineer will not apply the Pay Adjustment applicable to the material or work replaced; a new Pay Adjustment will be calculated based on the qualities of the new material. Even if one portion of the pay adjustment (material or construction) is not applied, the Engineer may apply

the pay adjustment to the other portion. All adjustments (bonus or penalty) shall be paid under this item number in the contract.

**(a) Material Production  Pay Adjustment.**

The Engineer will determine the material pay adjustment by evaluating the production material based on the following parameters:

- X Gradation of the 2.36 mm (#8) sieve.
- X Gradation of the 0.075 mm (#200) sieve.
- X Asphalt cement content.
- X Air void content

Using the JMF target value, the single test tolerance (from Table 3), and the test values, the Engineer will use the following steps to determine the material pay adjustment factor for each lot of material:

1. For each parameter, calculate the mean value and the standard deviation of the test values for the lot to the nearest 0.1 unit.
2. For each parameter, calculate the Upper Quality Index (QU):  
$$QU = ((JMF \text{ target}) + (\text{single test tolerance}) \times (\text{mean value})) / (\text{standard deviation}).$$
3. For each parameter, calculate the Lower Quality Index (QL):  
$$QL = ((\text{mean value}) - (JMF \text{ target}) + (\text{single test tolerance})) / (\text{standard deviation}).$$
4. For each parameter, locate the values for the Upper Payment Limit (PU) and the Lower Payment Limit (PL) from Table 2  Quality Level Analysis by the Standard Deviation Method. (Use the column for n representing the number of sublots in the lot. Use the closest value on the table when the exact value is not listed).
5. Calculate the PWL for each parameter from the values located in the previous step:  
$$PWL = PU + PL \times 100.$$
6. Calculate each parameter's contribution to the payment adjustment by multiplying its PWL by the weight factor shown in Table 3 for that parameter.
7. Add the calculated adjustments of all the parameters together to determine the Composite PWL for the lot.
8. From Table 4, locate the value of the Pay Adjustment Factor corresponding to the calculated PWL.
9. For each lot, determine the final material price adjustment:

Final Pay Adjustment =

(Lot Quantity) x (Item Bid Price) x (Pay Adjustment Factor) x 70%. This final pay calculation will be paid to the tenth of a percent.

In lieu of being assessed a pay adjustment penalty, the Contractor may choose to remove and replace the material at no additional cost to the Department. If the FWL of any single material characteristic is below 60, the Engineer may require the removal and replacement of the material at no additional cost to the Department.

When a sample is out of the acceptable tolerance for any Materials pay criteria, that sample will be isolated. For payment purposes, the test result of the out of acceptable tolerance sample will be combined with the two previous acceptable samples of the same JMF and analyzed per this specification. The material that is considered out of the acceptable tolerance will include the material from the previous acceptable test result to the material in the following acceptable test result. If the previous acceptable test result is from the previous production day, only the material produced on the second production day will be considered out of tolerance. All future sub lots will not include the isolated test.

If, during production, a sample test result does not meet the acceptable tolerances and the Contractor's QC sample duplicates the QA sample test result, the Contractor can make an appropriate change to the mixture (within the JMF boundaries), and request to have that sample further isolated. If this request is approved, and the Contractor has made a change, the third load after the change will be tested. If that sample test result shows compliance with the specifications, the material that is considered out of the acceptable tolerance will include the material from the previous acceptable test result to the third load after the initially sampled and tested sample. If the sample does not meet the specification requirements, the Engineer will no longer accept material; however, the Engineer reserves the right to possibly allow production to continue depending upon the results of the changes made.

**Table 2 □ Quality Level Analysis by the Standard Deviation Method**

PU or PL	QU and QL for □□□ samples						
	n = 3	n = 4	n = 5	n = 6	n = 7	n = 8	n = 9
100	1.16	1.50	1.79	2.03	2.23	2.39	2.53
99		1.47	1.67	1.80	1.89	1.95	2.00
98	1.15	1.44	1.60	1.70	1.76	1.81	1.84
97		1.41	1.54	1.62	1.67	1.70	1.72
96	1.14	1.38	1.49	1.55	1.59	1.61	1.63
95		1.35	1.44	1.49	1.52	1.54	1.55
94	1.13	1.32	1.39	1.43	1.46	1.47	1.48
93		1.29	1.35	1.38	1.40	1.41	1.42
92	1.12	1.26	1.31	1.33	1.35	1.36	1.36
91	1.11	1.23	1.27	1.29	1.30	1.30	1.31
90	1.10	1.20	1.23	1.24	1.25	1.25	1.26
89	1.09	1.17	1.19	1.20	1.20	1.21	1.21
88	1.07	1.14	1.15	1.16	1.16	1.16	1.17
87	1.06	1.11	1.12	1.12	1.12	1.12	1.12
86	1.04	1.08	1.08	1.08	1.08	1.08	1.08
85	1.03	1.05	1.05	1.04	1.04	1.04	1.04
84	1.01	1.02	1.01	1.01	1.00	1.00	1.00
83	1.00	0.99	0.98	0.97	0.97	0.96	0.96
82	0.97	0.96	0.95	0.94	0.93	0.93	0.93
81	0.96	0.93	0.91	0.90	0.90	0.89	0.89
80	0.93	0.90	0.88	0.87	0.86	0.86	0.86
79	0.91	0.87	0.85	0.84	0.83	0.82	0.82
78	0.89	0.84	0.82	0.80	0.80	0.79	0.79
77	0.87	0.81	0.78	0.77	0.76	0.76	0.76
76	0.84	0.78	0.75	0.74	0.73	0.73	0.72
75	0.82	0.75	0.72	0.71	0.70	0.70	0.69
74	0.79	0.72	0.69	0.68	0.67	0.66	0.66
73	0.75	0.69	0.66	0.65	0.64	0.63	0.63

**Table 2 □ Quality Level Analysis by the Standard Deviation Method**

PU or PL	QU and QL for □ Samples						
	n = 3	n = 4	n = 5	n = 6	n = 7	n = 8	n = 9
72	0.74	0.66	0.63	0.62	0.61	0.60	0.60
71	0.71	0.63	0.60	0.59	0.58	0.57	0.57
70	0.68	0.60	0.57	0.56	0.55	0.55	0.54
69	0.65	0.57	0.54	0.53	0.52	0.52	0.51
68	0.62	0.54	0.51	0.50	0.49	0.49	0.48
67	0.59	0.51	0.47	0.47	0.46	0.46	0.46
66	0.56	0.48	0.45	0.44	0.44	0.43	0.43
65	0.52	0.45	0.43	0.41	0.41	0.40	0.40
64	0.49	0.42	0.40	0.39	0.38	0.38	0.37
63	0.46	0.39	0.37	0.36	0.35	0.35	0.35
62	0.43	0.36	0.34	0.33	0.32	0.32	0.32
61	0.39	0.33	0.31	0.30	0.30	0.29	0.29
60	0.36	0.30	0.28	0.27	0.27	0.27	0.26
59	0.32	0.27	0.25	0.25	0.24	0.24	0.24

**Table 3 - Material Parameter Weight Factors**

Material Parameter	Single Test Tolerance (+/-)	Weight Factor
Asphalt Content	0.4	0.30
#8 Sive (19 mm or >)	7.0	0.30
#8 Sieve (12.5 mm or <)	5.0	0.30
#200 Sieve (0.075 mm) Sieve	2.0	0.30
Air Voids (4.0% Target)	1.5	0.10

<b>Table 4 - PWL Pay Adjustment Factors</b>	
<b>PWL</b>	<b>Pay Adjustment Factor (%)</b>
100	+5
99	+4
98	+3
97	+2
96	+1
95	0
94	(-1)
93	(-2)
92	(-3)
91	(-4)
PWL (when <91)	(PWL - 100)

**(b) Pavement Construction – Pay Adjustments.**

The Engineer will determine the pavement construction pay adjustment by evaluating the construction of the pavement, based on the following parameter:

- X Degree of compaction of the in-place material

Using the test values for the cores, the Engineer will use the following steps to determine the pavement construction pay adjustment for each lot of work. Note that the material portion of the total pay adjustment is 70 percent and the pavement construction portion is 30 percent.

1. Calculate the average density values from the subplot tests values, to the nearest 0.1 unit.
2. Calculate the Degree of Compaction:  
 Degree of Compaction =  

$$\left( \frac{\text{Core Bulk Specific Gravity}}{\text{Theoretical Maximum Specific Gravity}} \right) \times 100\%$$
3. The average compaction for the sublots shall be averaged together for the compaction level of the lot. The lots compaction test level shall be averaged to the whole percent.
4. Locate the value of the Payment Adjustment Factor corresponding to the calculated degree of compaction from Table 5 or Table 5a.
5. Determine the pavement construction price adjustment by using the following formula:  

$$\text{Pay adjustment} = (\text{Lot Quantity}) \times (\text{Bid Price}) \times (\text{Pay Adjustment Factor}) \times 30\%$$

**NOT FOR BID**

<b>Table 5: Compaction Price Adjustment Highway Locations</b>	
<b>Degree of Compaction (%)</b>	<b>Pay Adjustment Factor (%)</b>
>97	-100*
96	0
95	+5
94	+3
93	0
92	-5
91	-15
90	-25
89	-30
88	-100*

\* or remove and replace it at Engineer's discretion

<b>Table 5a: Compaction Price Adjustment Other<sup>1</sup> Locations</b>	
<b>Degree of Compaction (%)</b>	<b>Pay Adjustment Factor (%)</b>
>96	-100*
95	+2
94	+2
93	+2
92	+2
91	+1
90	+1
89	0
88	0
87	-15
86	-25
85	-30
84	-100*

\* or remove and replace at Engineer's discretion

<sup>1</sup> This chart is to be used for areas where the structural value of the area to be paved is less than 1.75 as determined by the Engineer. See Appendix B □ Method for Obtaining

Cores for Determination of Roadway Structure. This chart is applicable to rehabilitation work only; full depth construction will not be considered in Table 5a.

### **.07 Dispute Resolution.**

Disputes or questions about any test result shall be immediately brought to the attention of the Contractor and the Engineer. When there is a significant alleged discrepancy regarding the Engineer's acceptance test results, the Contractor must claim a dispute within two operational days of the test date. The following dispute resolution procedures will be used.

The Engineer and the Contractor will review the sample quality, the test method, the laboratory equipment, and the laboratory technician. If these factors are not the cause of the dispute, a third party dispute resolution will be used.

For third party dispute resolution testing, it can be either at another Contractor's laboratory, the Engineer's laboratory, or an independent accredited laboratory. Unless otherwise mutually agreed upon by DAPA and the Engineer, the Engineer's qualified laboratory in Dover and qualified personnel shall conduct the necessary testing for third party Dispute Resolution after the Engineer has provided reasonable notice to allow the Contractor to witness this testing.

When disputes over production testing occur, the samples used for Dispute Resolution testing will be those samples the Contractor properly captured, labeled, and stored, as described in the second paragraph of the section of these specifications titled **.05 Acceptance Plan, (a) Material Production Tests and Evaluations**. If no samples are available, the original testing results will be used for payment calculations.

Dispute Resolution samples for air void content will be heated by a microwave oven.

If there is a discrepancy between the Engineer's acceptance test result and the Contractor's test result, the Contractor may ask for the Dispute Resolution sample to be tested. If the Dispute Resolution sample substantiates the original acceptance test result, the Contractor, after two such Dispute Resolution samples, will be charged a fee of \$125 for all further Dispute Resolution cores that substantiate the acceptance test result. If the Dispute Resolution sample substantiates the Contractor's test result, the Contractor will not be charged a fee.

When disputes over compaction core test results occur, the Engineer's acceptance core will be used for the dispute resolution sample. The Contractor will be advised on when the testing will occur as referenced above to witness the testing.

The results of the dispute resolution testing shall replace all of the applicable disputed test results for payment purposes.

NE - 11/17/06

## **Appendix A - Repairing Core Holes in Hot-Mix Asphalt Pavement**

### **Description.**

This appendix describes the procedure required to accurately repair core holes in a bituminous concrete pavement.

### **Materials and Equipment.**

The following material shall be available to complete this work:

- X Patch Material  A FeiDO approved High Performance Cold Patch material shall be used.

The following equipment shall be available to complete this work:

- X Sponge or other absorbent material  Used to extract water from the hole.
- X Compaction Hammer  Shall be mechanical, with a flat, circular tamping face smaller than 6 inches in diameter. The tamping head shall be connected to an electrical, pneumatic, or gasoline driven tamping device.

### **Construction Method.**

After core removal from the hole, remove all excess water from within the hole, and prevent water from re-entering the hole.

Place the patch material in lifts no greater than 3 inches. If the hole is deeper than 3 inches, use two lifts of approximately equal depths so that optimum compaction is achieved. Make sure that the patch surface matches the grade of the existing roadway. Make every effort to achieve the greatest possible compaction

### **Performance Requirements.**

The Engineer will judge the patch on the following basis:

- X The patch shall be well compacted
- X The patch surface shall match the grade of the surrounding roadway surface.

### **Appendix B - Method for Obtaining Cores for Determination of Roadway Structure**

The Contractor is responsible for obtaining cores in areas that they propose are eligible for compaction price adjustments according to Table 5a in this specification. Table 5a is not applicable for new full-depth pavement box construction. Cores submitted for this process shall be obtained according to the following process.

1. Contact Materials & Research (M&R) personnel to determine if information about the area is already available. If M&R has already obtained cores in the location that is being investigated, the contractor may opt to use the laboratory information for the investigation and not core the area on their own.
2. If M&R does not have information concerning the section of the roadway, the contractor needs to contact M&R to arrange for verification of coring operations. Arrangements shall be made to allow for an individual from M&R to be on the site when the cores are obtained. Cores will be turned over to M&R for evaluation.
3. The contractor is responsible for providing all traffic control and repairing core holes in accordance to 401699 Appendix A - Repairing Core Holes in Hot-Mix Asphalt Pavements.
4. Cores are to be taken throughout the entire project for the area in question. Cores will be spaced, from the start of the project in increments determined based on field and project specifics. Cores will be evenly distributed throughout the project location. The cores will be taken in the center of the lane in question.
5. Additional cores may be taken at other locations, if surface conditions indicate that there may be a substantial difference in the underlying section. The location of these cores should be documented and submitted to M&R.
6. Cores shall be full depth and include underlying materials. If there is a stone base included in the pavement section, at a minimum 1 core must have information concerning the thickness of the base. This is determined by augering to the subgrade surface.
7. The calculations used to determine the structural capacity of the roadway is as follows. If the contractor finds, upon starting the coring process, that the areas are of greater thickness than applicable to Table 5a, they may terminate the coring process on their own and retract the request.

### Structural Number Calculations

Each pavement box material is assigned a structural coefficient based upon AASHTO design guides. The structural coefficient is used to determine the overall strength of the pavement section.

Materials used in older pavement sections are assigned lower structural coefficients to compensate for aging of the materials. The coefficients used to determine the structural number of an existing pavement are:

Existing Material	Structural Coefficient
HMA	0.32
Asphalt Treated Base	0.26
Soil Cement	0.16
Surface Treatment (Tar & Chip)	0.10
GABC	0.14
Concrete	0 - 0.7*

- \* The Structural Coefficient of Concrete is dependent upon the condition of the concrete. Compressive strengths & ASR analysis are used to determine condition. Contact the Engineer if this situation arises.

Newly placed materials use a different set of structural coefficients. They are as follows:

New Material	Structural Coefficient
HMA	0.40
Asphalt Treated Base (BCBC)	0.32
Soil Cement	0.20
GABC	0.14

**Example:**

Location includes placement of a 1.25" Type C overlay on 2.25" Type B. Existing roadway is cored and is shown to consist of 2" HMA on 7" GABC.

Calculation:

For the Type B lift the calculation would be:

Existing HMA	2 * 0.32	=	0.64	
GABC	7 * 0.14	=	<u>0.98</u>	
				1.62

For the Type C lift the calculation would be:

Newly Placed B	2.25 * 0.4	=	0.90	
Existing HMA	2 * 0.32	=	0.64	
GABC	7 * 0.14	=	<u>0.98</u>	
				2.52

**401801 - WMA, SUPERPAVE, TYPE C, 160 GYRATIONS, PG 64-22 (CARBONATE STONE)**  
**401810 - WMA, SUPERPAVE, TYPE B, 160 GYRATIONS, PG 64-22**

**Description:**

Warm mix asphalt (WMA) is the generic term used to describe the reduction in production, paving, and compaction temperatures achieved through the application of one or more WMA technologies.

WMA may be produced by one or a combination of several technologies involving asphalt foaming processes and equipment or additives that facilitate the reduction of the temperature at which the mix can be placed and satisfactorily compacted, thereby permitting the mix to be produced at reduced temperatures from a comparable mix without the Warm Mix Technology.

The following Subsections of the DelDOT Standard Specifications shall be applicable: 401.01, 401.03 - 401.10, 401.12, and 401.13. All other subsections have been modified herein.

The Contractor shall read and thoroughly understand the requirements of the QA/QC specification as defined in item 401699. It is the responsibility of the Contractor to determine all costs associated with meeting these requirements and to include them in the per ton bids for the various Superpave bituminous concrete items. The Contractor shall also be aware that the pay adjustment factors in item 401699 will be applied to the Superpave item payments to determine the bonus or penalty for the item.

**Materials:**

If the Contractor proposes to use a combination of materials that are not covered by this Specification, the mix design shall be submitted and reviewed by the Engineer 30 calendar days prior to use.

Conform to the requirements of Subsections 823.01, 823.05- 823.17, and 823.25 - 823.28 of the Standard Specifications and the following for bituminous materials:

**Asphalt Binder:**

The asphalt binder shall meet the requirements of Superpave performance-grade asphalt binder, as referenced in the Plans, according to M 320<sup>1</sup>, Table 1 and tested according to AASHTO R29 with the following test ranges:

TEST PROCEDURE	AASHTO REFERENCE	SPECIFICATION LIMITS
Temperature, °C	M 320	Per Grade
Original DSR, G*/sin (δ)	T 315	1.00 - 2.20 kPa
RTFO DSR, G*/sin (δ)	T 315	>= 2.20 kPa
PAV DSR, G* sin (δ)	T 315	<= 5000 kPa
BBR Creep Stiffness, S	T 313	<= 300.0 kPa
BBR m-value	T 313	>= 0.300

Note 1: The exception to M 320 is that the original DSR shall be 1,000 to 2,700 kPa

Substitution of a higher temperature grade will require prior approval by the Engineer.

The highest low temperature grade virgin binder to be used is -22.

Depending on the level of RAP used, the low temperature properties, per T 313, may be different than stated in M 320 or the previous table.

**Recycled Materials:**

The percentage allowance of recycled asphalt pavement shall be controlled through the use of the Materials & Research recycled mixture program available through the Materials & Research Section. The program can be used by the Contractor to determine which materials and combinations of materials can be used to meet the specified material on the contract.

No recycled asphalt shingles shall be used in WMA.

**Mineral Aggregate:**

Conform to Section 805 and the following criteria. These criteria apply to the combined aggregate blend.

DESIGN ESAL'S (MILLIONS)	COARSE AGGREGATE ANGULARITY <sup>1</sup> (% MIN)		FINE AGGREGATE ANGULARITY <sup>2</sup> (% MIN)		CLAY CONTENT <sup>3</sup> (% - MIN)	FLAT AND ELONGATED <sup>4</sup> (% - MAX)
	≤ 100 mm	> 100 mm	≤ 100 mm	> 100 mm		
< 0.3	55/-	-/-	-	-	40	-
0.3 to < 3	75/-	50/-	40	40	40	10
3 to <10	85/80 <sup>5</sup>	60/-	45	40	45	
10 < 30	95/90	80/75	45	40	45	
≤30	100/100	100/100	45	45	50	

<sup>1</sup>Coarse Aggregate Angularity is tested according to D5821.

<sup>2</sup>Fine Aggregate Angularity is tested according to TP33.

<sup>3</sup>Clay Content is tested according to T176.

<sup>4</sup>Flat and Elongated is tested according to D4791 with a 5:1 aspect ratio.

<sup>5</sup> 85/80 denotes that 85% of the coarse aggregate has one fractured face and 80% has two or more fractured faces.

The following source properties apply to the individual aggregates in the aggregate blend for the proposed JMF.

TEST METHOD	SPECIFICATION LIMITS
<b>Toughness, T96</b> Percent Loss, Maximum	40
<b>Soundness, T104</b> Percent Loss, Maximum for five cycles	20
<b>Deleterious Materials, T104</b> Percent, Maximum	10
<b>Moisture Sensitivity, T28.3</b> Percent, Minimum	80

Supply all polish values to the Engineer upon request. The polish value of the composite aggregate blend for any roadway with a minimum average daily traffic volume (ADT) of 8000 vehicles and a posted speed of 35 mph (60 kph) or greater shall be greater than 8.0 when tested according to Maryland State Highway Administration 'MSMT 411 - Laboratory Method of Predicting Frictional Resistance of Polished Aggregates and Pavement Surfaces'. RAP shall be assigned a value of 4.0.

**Mineral Filler:**

Conform to M17.

**Warm Mix Additives:**

For any WMA technology requiring addition of any material by the producer during production, the following information will be submitted with the proposed JMF for review and approval at least 30 calendar days prior to production:

1. WMA technology and/or additive information.
2. WMA technology manufacturer's recommendation for usage.
  3. WMA technology target dosage rate and tolerance envelope. Support tolerance envelope with test data demonstrating acceptable mix production properties conforming to all sections of this specification.
4. WMA technology manufacturer's material safety data sheets (MSDS).
5. Documentation of past WMA technology field application including points of contact.
6. Temperature ranges for mixing and compacting.
  7. Laboratory test data, samples, and sources of all mix components, and asphalt binder viscosity-temperature relationships.

The contractor shall follow the manufacturer's recommendation for incorporating additives and WMA technologies into the mix. The contractor shall also comply with the manufacturer's recommendation regarding receiving, storage, and delivery of additives.

If the producer performs blending of the WMA technology in the plant, a separate Quality Control plan shall be submitted by the producer to the Department for review and approval at least 30 calendar days prior to production.

**Mixture Requirements:**

**Mix Design.** Develop and submit a job mix formula for each mixture according to R35. Each mix design shall be capable of being produced, placed, and compacted as specified. Apply all mix design requirements for Superpave to the development of the WMA mix design.

**Gradation:** The FHWA Superpave 0.45 Power Chart shall be used to define permissible gradations for the specified mixture. Type C shall be either a No.4 (4.75 mm), 3/8" (9.5 mm), or 1/2" (12.5 mm) Nominal Maximum Aggregate Size Hot-Mix. Unless otherwise noted in the Plans, the Type C shall meet the 3/8" (9.5 mm) Nominal Maximum Aggregate Size. Type B Hot-Mix shall be the 3/4" (19.0 mm) Nominal Maximum Aggregate Size and the Bituminous Concrete Base Course (BCBC) shall be the 1" (25.0 mm) Nominal Maximum Aggregate Size. Target values for percent passing each standard sieve for the design aggregate structure shall comply with the Superpave control points and should avoid the restricted zone. Percentages shall be based on the washed gradation of the aggregate according to T11.

Thin WMA, Type C shall be a No. 4 (4.75 mm) Nominal Maximum Aggregate Size Only.

In addition to the results of the material requirements specified above, the following material properties shall be provided by the Contractor: bulk specific gravity  $G_{sb}$ , apparent specific gravity  $G_{sa}$ , and the absorption of the individual aggregate stockpiles to be used, tested according to T84 and T85 and reported to three decimal places along with the specific gravity of the mineral filler to be used, tested according to T100 and reported to three decimal places.

**Superpave Gyratory Compactive (SGC) Effort:**

The Superpave Gyratory Compaction effort employed throughout mixture design, field quality control, or field quality assurance shall be as indicated below. All mixture specimens tested in the SGC shall be compacted to  $N_{MAX}$ . Height data provided by the SGC shall be employed to calculate volumetric properties at  $N_{INITIAL}$ ,  $N_{DESIGN}$ , and  $N_{MAX}$ .

**Superpave Gyratory Compactive (SGC) Effort:**

DESIGN TRAFFIC LEVEL (MILLION ESAL'S)	$N_{INITIAL}$	$N_{DESIGN}$	$N_{MAX}$
0.3 to < 3	7	75	115
3 to < 30	8	100	160
$\geq 30$	9	125	205

**Volumetric Design Parameters.** The design aggregate structure at the target asphalt cement content shall satisfy the volumetric criteria below:

Design ESAL's (Million)	Required Density (% of Theoretical Maximum Specific Gravity)			Voids-in-Mineral Aggregate (% - Minimum)					VOIDS FILLED WITH ASPHALT (% - MINIMUM)
	N <sub>initial</sub>	N <sub>design</sub>	N <sub>max</sub>	25.0	19.0	9.5	12.5	4.75	
0.3 to < 3	≥90.5								65.0 - 78.0
3 to < 10	≥ 89.0	96.0	98.0	12.5	13.5	15.5	14.5	16.5	65.0 - 75.0 <sup>1</sup>
10 < 30									
≥ 30									

Air voids ( $V_a$ ) at  $N_{design}$  shall be 4.0% for all ESAL designs. Air voids ( $V_a$ ) at  $N_{max}$  shall be a minimum of 2.0% for all ESAL designs

The dust to effective binder ratio for the mix having aggregate gradations above the Primary Control Sieve (PCS) Control Points shall be 0.6-1.2. For aggregate gradations below the PCS Control Points, the dust to binder ratio shall be 0.8-1.6. For the No. 4 (4.75 mm) mix, the dust to binder ratio shall be 0.9-2.0 whether above or below the PCS Control Points.

For 3/8" (9.5 mm) Nominal Maximum Aggregate Size mixtures, the specified VFA range shall be 73.0% to 76.0% and for 4.75 mm Nominal Maximum Size mixtures, the range shall be 75 % to 78% for design traffic levels ≥3 million ESALs.

**Gradation Control Points:**

The combined aggregates shall conform to the gradation requirement specified in the following table when tested according to T11 and T27.

<b>Nominal Maximum Aggregates Size Control Points, Percent Passing</b>										
<b>SIEVE SIZE</b>	<b>25.0 mm</b>		<b>19.0 mm</b>		<b>12.5 mm</b>		<b>9.5 mm</b>		<b>4.75 mm</b>	
	<b>MIN</b>	<b>MAX</b>	<b>MIN</b>	<b>MAX</b>	<b>MIN</b>	<b>MAX</b>	<b>MIN</b>	<b>MAX</b>	<b>MIN</b>	<b>MAX</b>
37.5 mm	100	-	-	-	-	-	-	-	-	-
25.0 mm	90	100	100	-	-	-	-	-	-	-
19.0 mm	-	90	90	100	100	-	-	-	-	-
12.5 mm	-	-	-	90	90	100	100	-	100	-
9.5 mm	-	-	-	-	-	90	90	100	95	100
4.75 mm	-	-	-	-	-	-	-	90	90	100
2.36 mm	19	45	23	49	28	58	32	67	-	-
1.18 mm	-	-	-	-	-	-	-	-	30	60
0.075 mm	1	7	2	8	2	10	2	10	6	12

Note: The aggregate gradation for each sieve must fall within the minimum and maximum limits.

**Gradation Classification:**

The Primary Control Sieve (PCS) defines the break point of fine and coarse mixtures. The combined aggregates shall be classified as coarse graded when it passes below the Primary Control Sieve (PCS) control point as defined below. All other gradations shall be classified as fine graded.

<b>PCS CONTROL POINT FOR MIXTURE NOMINAL MAXIMUM AGGREGATES SIZE (% PASSING)</b>					
Nominal maximum Aggregates Size	25.0 mm	19.0 mm	12.5 mm	9.5 mm	4.5 mm
Primary Control Sieve	4.75 mm	4.75 mm	2.36 mm	2.36 mm	1.18 mm
PCS Control Point	40	47	39	47	30-60

**Plant Production Tolerances:**

Volumeric Property	Superpave Criteria
Air Voids ( $V_a$ ) at (%) $N_{max}$	2.0 (min)
Air Voids ( $V_a$ ) at $N_{design}$ (%)	5.5 (max)
Voids in Mineral Aggregate (VMA) at $N_{design}$	
25.0 mm Bituminous Concrete Base Course	-1.2
19.0 mm Type F Hot-Mix	+2.0
12.5 mm Type C Hot-Mix	
9.5 mm Type C Hot-Mix	
4.5 mm Type C Hot-Mix	

**Design Evaluation:**

The contractor shall furnish a Job Mix Formula (JMF) for review and approval. The Engineer may elect to evaluate the proposed JMF and suitability of all materials. All materials requested by the Engineer shall be provided at the contractor's expense to the Central Laboratory in Dover in a timely manner upon request. To verify the complete mixture design and evaluate the suitability of all materials, the following approximate quantities are required:

- 5.25 gal (20 liters) of the asphalt binder;
- 0.13 gal (0.5 liters) sample of liquid heat-stable anti-strip additive;
- 254 lb. (115 kg) of each coarse aggregate;
- 154 lb. (70 kg) of each intermediate and fine aggregate;
- 22 lb. (10 kg) of mineral filler; and
- 254 lb. (115 kg) of RAP, when applicable.

**The proposed JMF shall include the following:**

Plot of the design aggregate structure on the FHWA Superpave 0.45 power chart showing the maximum density line, Superpave control points, and recommended restricted zone.

Plot of the three trial asphalt binder contents at  $\pm 0.5\%$  gyratory compaction curves where the percent of maximum specific gravity (% of  $G_{mm}$ ) is plotted against the log base ten of the number of gyrations (log (N)) showing the applicable criteria for  $N_{initial}$ ,  $N_{design}$ , and  $N_{max}$ .

Plot of the percent asphalt binder by total weight of the mix ( $P_b$ ) versus the following:

% of  $G_{mm}$  at  $N_{design}$ , VMA at  $N_{design}$ , VFA at  $N_{design}$ , Fines to effective asphalt binder ( $P_{be}$ ) ratio, and unit weight (kg/m<sup>3</sup>) at both  $N_{design}$  and  $N_{max}$ .

Summary of the consensus property standards test results for the design aggregate structure, summary of the source property standards test results for the individual aggregates in the design aggregate

structure, target value of the asphalt binder content, and a table of  $G_m$  for the asphalt mixture for the four trial asphalt binder contents determined according to T209.

The JMF shall also include the NCAT Ignition Oven calibration for the specific materials utilized for this mix.

**Construction:**

**Production Plants.** The contractor shall modify and/or operate their production plant as required by the manufacturer to introduce the WMA technology.

**Weather Limitations.** Place mix only on dry, unfrozen surfaces.

The minimum ambient temperature shall be 32 degrees F.

The following table of ambient temperatures for various binder grades and lift thicknesses for placement with the following parameters:

- Minimum surface temperature of 32 degrees F
- Maximum production temperature of 275 degrees F
- Maximum wind speed of 8 miles per hour

Lift Thickness (in)	PG Binder		
	76-22	70-22	64-22
1.50	50F	45F	40F
2.00	40F	38F	35F
3.00	32F	32F	32F

Construction outside of these conditions will be at the discretion of the Engineer.

**Compaction:**

Compaction shall be tested and paid per Item 401699 - Quality Control/Quality Assurance of Bituminous Concrete .05 (b) Pavement Construction - Tests and Evaluations.

**END OF SECTION**

## **T600500 - DESIGN-BUILD FOR SELECTED PROJECT ELEMENTS**

In the interest of reducing the cost of the project, the Contractor shall use a design build process for the following project elements (heretofore referred to as the Design Build Elements)

1. Design and Construction of the Deck Over Structure spanning over the existing mill race and connecting Benge Road to the proposed parking lot constructed on the existing settling tank. The design of the Deck Over structure shall include but is not limited to the design of the precast concrete planks, concrete substructure and the micro piles.

All project elements other than those specifically cited above as Design Build Element(s) shall be constructed in accordance with the provided plans and specifications.

The Contractor shall design and construct the Design Build Element(s) in accordance with the performance specifications, plans, details and design criteria outlined in the contract documents, and shall comply with the latest AASHTO specifications.

The Contractor shall be responsible for reviewing existing site conditions. The provided Geotechnical Reports are for the Contractor's information. The contractor shall be responsible for conducting additional subsurface investigation as the contractor deems necessary with respect to the Design Build Elements. No additional payment shall be made by to the Owner to the Contractor for additional subsurface investigations.

The design effort shall be led by an engineering firm which has successfully completed three projects of similar size and scope in the last five years. This firm is identified in this special provision as the Contractor's Engineer. The Contractor's Engineer shall be a registered Professional Engineer in the State of Delaware and shall be responsible for assembling, signing and sealing the design build package as a whole.

At the time of the bid, the Contractor shall identify and submit qualifications for the Contractor's Engineer in accordance with the requirements outlined in the special provisions. If complete qualifications information is not submitted or if the Contractor's Engineer is deemed by the Owner and/or their representative to be unqualified based on the information submitted, the Contractor's bid may be considered non-responsive and therefore rejected. No substitutions will be allowed after award without written approval of the Owner and/or the Owner's representative.

All design performed by parties other than the Contractor's Engineer (including but not limited to micro piles or precast planks) shall be reviewed and approved by the Contractor's Engineer prior to being submitted for review and approval by the Owner and/or the Owner's representative. Such submittals shall include complete plans and calculations signed and sealed by a Professional Engineer registered in the State of Delaware. The Contractor's Engineer shall stamp each submission as approved prior to forwarding the submission to the Owner and/or the Owner's representative. The contractor's engineer shall assemble, sign and seal the submitted package.

Each element of the Design Build Elements submissions shall be sealed by a Professional Engineer licensed in the State of Delaware.

After Notice to Proceed, the selected Contractor shall submit plans, shop drawings, calculations, reports, working drawings, erection drawings, agency, and utility coordination drawings/procedures; product/material data; and other documentation for the Design Build Elements to the Owner and/or the Owner's representative for review and approval. The Owner and/or their representative will review the submission for compliance with the performance specifications and design requirements. The Owner and/or their representative shall have 10 calendar days to provide comments or approve the submission. If the Owner and/or their representative provides comments, the contractor shall address the comments in writing, modify the submission, and resubmit to the Owner and/or their representative. Multiple submissions and responses to comments may be necessary. After all comments are resolved, the Owner and/or their representative will approve the submission. The Contractor shall not begin construction of the Design Build Element(s) prior to the shop drawings being approved by the Owner or the Owner's representative. The contractor shall take into consideration the review time when scheduling the construction.

Approval of the submission indicates only that the design, to the extent reviewed by the Owner and/or their representative, meets the performance specifications and design requirements and does not relieve the contractor of responsibility and risk for the Design Build Element(s).

The Contractor shall be responsible for obtaining all permits and permit modifications necessary to complete the proposed work related to the Design Build Element(s).

The following design elements shall not be altered by the Contractor's Design:  
Horizontal Alignment  
Vertical Profile  
Typical Section

**END OF SECTION**

## **T-600600 – MILL RACE DECKOVER STRUCTURE**

### **Description:**

Design and construction of the Mill Race Deckover Structure is the responsibility of the Contractor based on the performance requirements in this special provision and the details provided in the plans. The work included under this item shall consist of fully engineering, fabricating, transporting, furnishing, constructing, and erecting the Mill Race Deckover Structure, designated as Structure 2, as described herein.

Design and construction shall include foundations, substructures, superstructures, railings, tie-ins to adjacent existing and proposed conditions, excavation, backfill and grading, seeding, riprap/scour protection and all other components and efforts necessary to produce a completed structure in-place.

Specifications and special provisions referenced in this special provision shall be understood to apply to the Contractor's design, the Contractor's engineer, plans and loads developed by the Contractor's engineer, and the construction to be performed by the Contractor.

The Drawings S2-1 and S2-2 of the Contract Plans represent the nature and type of work to be designed and constructed as part of the project. They do not necessarily reflect the final locations, quantities, or all elements required to complete the design.

### **Design:**

Design for the Mill Race Deckover Structure shall conform to the following requirements:

1. All design shall be in accordance with the current edition of the AASHTO LRFD Bridge Design Specifications, including all interims. Design shall be performed in Customary U.S. units. Only Customary U.S. units shall appear on the plans.
2. Loading shall be in accordance with the current edition of the AASHTO LRFD Bridge Design Specifications, including all interims. Vehicular live load shall be HL-93. The portion of the structure carrying the shared-use path shall be designed for either the vehicular live load or the pedestrian live load, whichever is more conservative.
3. Field survey is required to verify and establish existing elevations and dimensions.
4. Precast planks shall be used for the superstructure. Precast planks shall be per the DelDOT standard specifications Section 623 Prestressed Reinforced Concrete Members, with the exception of 623.11 Design Criteria. Precast planks shall conform to the AASHTO LRFD Bridge Design Specifications including the HL-93 vehicular live load. The minimum compressive strength requirements of 623.11 are retained.
5. In order to increase the strength and stiffness of the planks and improve durability, the planks shall have a reinforced concrete topping. The topping shall be per the DelDOT standard specifications Section 605 Concrete Structures. The concrete topping shall consist of DelDOT Class D concrete.

Placing and finishing concrete shall be per 602.20 Bridge Decks. Surface textures in the clear roadway shall be per 602.20(c); surface texture in the buffer/median and shared-use path shall be a float finish per Section 705 Portland Cement Concrete Sidewalk. Reinforcing steel shall be either ASTM A615 Grade 60 epoxy coated deformed bars per Section 604 Bar Reinforcement, Epoxy Coated or epoxy coated wire mesh per 824 Embedded Reinforcement and Hardware.

6. The structure shall be supported on micropile foundations. Micropiles have been selected due to high rock elevations noted in the borings, the need to penetrate various existing structural elements, and to minimize vibrations and potential impacts to adjacent existing structures. Micropiles shall be per the Drilled Micropiles special provision. The design capacity required for the micropiles shall be developed by the Contractor and reported on the construction drawings.
7. Substructures (Bent Caps No. 1, 2, 3, and 4) shall be reinforced cast-in-place concrete. Cast-in-place concrete has been selected to provide durability, facilitate transportation, channelize the Mill Race flow, and allow for full engagement of the micropiles. Cast-in-place concrete shall be per the DelDOT standard specification Section 602 Concrete Structures and reinforcing steel shall be ASTM A615 Grade 60 epoxy-coated deformed bars per Section 604 Bar Reinforcement, Epoxy Coated
8. The proposed structure shall be structurally independent of any existing structures at the site and shall provide for its own lateral stability.
9. Geometric requirements which shall be met by the design are as follows:
  - a. The superstructure shall span the Mill Race without constricting the existing channel.
  - b. The structure shall extend to the existing concrete settling tank.
  - c. The lowest superstructure element over the Mill Race shall not project below Elevation 188.91 and shall provide 1'-0" of freeboard above the ordinary high water elevation of 187.91. If the water surface elevation at the time of the required survey differs from the ordinary high water elevation by more than 0.25', the Owner and/or Owner's Representative shall be notified and the Contractor shall await further direction.
  - d. The structure shall provide smooth transitions to adjacent construction next to Benge Road and the proposed parking lot.
  - e. The structure shall conform to the geometric layout and deck elevation data provided in the roadway layout plans.
  - f. The structure shall conform to the baseline horizontal alignment and vertical profile provided in the roadway plans.
10. The structure shall maintain the integrity of the Mill Race channel and its ability to convey water.
11. The design shall be in conformance with all environmental permits and documents.
12. The design, construction, and materials shall provide for a design life of 75 years. Timber will not be acceptable in the permanent structure.
13. The railing system shall match the steel tube rail used elsewhere on the project and is modelled after the California Department of Transportation ST-10 rail. Attachment of the required railing to the bridge structure shall be designed by the Contractor and included in the design submittal. The railing attachment shall be consistent with TL-2 crash testing criteria. The design shall allow for drainage

through the parapet.

14. The live load deflection criteria of AASHTO Section 2.5.2.6.2 shall apply with a deflection limit of Span/1000 for vehicular and pedestrian loads.
15. Substructure units adjacent to the Mill Race shall be protected from erosion and scour by riprap consistent with the environmental permit requirements. Riprap shall be placed on geotextile and choked with a 1'-0" layer of channel bed fill.
16. Joints shall be designed by the Contractor and details submitted for approval. Joints shall be per Section 602 Concrete Structures and Section 603 Joint Seals and Sealants. The Contractor has the option of integral construction eliminating joints. Bituminous joint sealers are not allowed.
17. Bearings shall be designed by the Contractor and details submitted for approval. Bearings shall be per Section 623 Prestressed Reinforced Concrete Members.
18. Means shall be provided for draining water from the chamber of the concrete tank below the existing building to be removed.
19. Striping and signing shall be per the roadway plans. Break-away attachment details for the stop sign shown on the structure shall be designed by the Contractor.

#### **Submittals:**

Complete construction drawings prepared in accordance with DeIDOT standards shall be submitted to the Owner and/or Owner's Representative for acceptance prior to ordering any materials, fabricating components, or construction. Submittal drawings shall be unique drawings, prepared to illustrate the specific portion of the work to be done. All relevant design information such as member sizes, reactions, and general notes shall be clearly specified on the drawings. Drawings shall include limits of existing structures to be removed. Drawings shall have cross referenced details and sheet numbers. All drawings shall be signed and sealed by a Professional Engineer registered in the State of Delaware. Drawings shall be submitted to Owner and/or Owner's Representative for approval at the 30% and Released for Construction (RFC) stages of development.

Structural calculations for all components of the design shall be submitted to Owner and/or Owner's Representative for acceptance. Review will confirm that all applicable contract provisions and special provisions requirements have been incorporated. Any non-conformance will be noted to the Contractor for correction. The Contractor will not be released for construction until all non-conformances are resolved. All calculations shall be signed and sealed by a Professional Engineer registered in the State of Delaware. The calculations shall include all design information necessary to determine the structural adequacy and serviceability of the structure.

The Contractor's Engineer shall review and approve all shop and working drawings prior to submitting the drawings to Owner and/or Owner's Representative.

#### **Materials:**

Materials shall be in accordance with the DeIDOT Standard Specifications and the Special Provisions.

Foundations – Refer to the Drilled Micropiles special provision.

Structural Steel – Per the DeIDOT Standard Specifications Section 826

Concrete – Per the DeIDOT Standard Specifications Section 812.

Reinforcing Steel – Per the DeIDOT Standard Specifications Section 824.

**Construction Methods:**

The work shall be performed in accordance with the DeIDOT Standard Specifications and the Special Provisions.

**NOT FOR BID**

**END OF SECTION**

## **600700 – DRILLED MICROPILES**

### **Description:**

- A. This section specifies designing, the furnishing of all labor, equipment and material to furnish and install drilled micropiles, with a design capacity as noted on drawings. This work includes, but is not limited to:
1. Design of micropile foundation.
  2. Furnishing and delivery of all materials.
  3. Pile installation including drilling, grouting, reinforcing, and testing.
  4. Perform a minimum of one pre-construction verification load test at Structure 2 Mill Race Deckover.

### **Submittals:**

- A. Submit personnel list and qualifications as described in Contractor's Qualification at least 45 calendar days prior to mobilization of the micropile installation equipment.
- B. Work shall not be started, nor material ordered without the Owner and/or the Owner's representative's written approval.
- C. Submit working drawings including details, dimensions, quantities, detailed site plan, load test plans, calculations with design assumptions and written design summary at least 14 calendar days prior to mobilization to the site. Clearly state soil parameters, adhesion values, Resistance Factors and micropile dimensions assumed. Design in accordance with *AASHTO LRFD Bridge Design Specification, 2012, Publication LRFDUS-6*. Working drawings shall clearly show all information required for the construction and quality control of the micropiling including unique number for each micropile.
- D. Submit cement grout or concrete design mix, results of cube or cylinder tests performed on design mix, and proposed method and frequency of obtaining samples for testing during pile installation. Submit for review any admixtures to be used in the grout or concrete.
- E. Pile Installation Methodology. Submit descriptions of:
1. Pile design details, including reinforcing steel design and splice details.
  2. Method to install piles, including drilling the holes, advancing the casing, flushing drilled holes, installing reinforcement, and controlling and disposing of water and spoils.
  3. Method and equipment for grouting piles.
  4. Methods and procedures for drilling through and/or removing obstructions.
  5. Certified mill test reports for the reinforcing steel or coupon test results for permanent casing without mill certifications.
- F. Pile Load Test Information: Submit descriptions of:

1. Proposed details of test set-up, including equipment planned.
  2. Design calculations for test pile and reaction system.
  3. Calibration reports for pile load test jacking/recording system.
  4. Load test report for each test completed.
  5. Submit weekly field records of pile installation as described in Records.
- G. Design Calculations stating clearly all assumptions, references, equations and other evaluations to determine the design and tip elevation of the micropiles. All calculations are to be sealed by an engineer licensed in the State of Delaware and experienced in the design of micropiles as described in Contractor's Qualification.
- H. Design calculations stating clearly all assumptions, references, equations and other evaluations to design the micropile to footing connection detail. All calculations are to be sealed by an engineer licensed in the State of Delaware and experienced in the design of micropiles as described in Contractor's Qualification.
- I. Details of pile installation and pile connection to Pile Cap.
- I. As built plans shall be submitted within 30 days of completion of the work.

**Project Conditions:**

- A. Prior to bidding the work, visit site to observe conditions that may affect performance of the work. No claim for additional costs will be allowed because of lack of knowledge of surface conditions discernible from observation at the site.

**Reference Standards:**

- A. ASTM: Specifications of the American Society for Testing and Materials.
- B. AASHTO: American Association of State Highway and Transportation Officials
- C. ACI: American Concrete Institute.
- D. AISC: American Institute of Steel Construction.
- E. API: American Petroleum Institute
- F. FHWA: Federal Highway Administration publication

**Records:**

- A. The Contractor shall provide to the Owner and/or the Owner's representative, within 30 days after installation of all piles, a plan, showing the as-installed location of all piles.
- B. The Contractor shall maintain complete records of pile installations, independent of records made by the Owner and/or the Owner's representative. A complete set of records including a separate log for each micropile shall be submitted to the Owner and/or the Owner's representative within one (1) working day

after completion of the work. The records for each pile installation shall include:

1. Pile designation number and date of installation.
2. Top of pile elevation immediately after installation.
3. Tip elevation as installed.
4. Deviation from specified plan location in inches to the nearest ½ inch.
5. Pile length immediately after installation to the nearest 0.1 foot.
6. Bottom elevation of drill casing upon completion of drilling and bottom elevation of steel core reinforcing.
7. Description of any deviations from the design location and batter or from the approved pile design and installation procedures, and description of any unusual occurrences during drilling, installation and grouting.
8. Grout volumes.
9. Inclinations of the drilled battered pile installed.

**Contractor's Qualifications:**

- A. Contractor shall possess the following qualifications:
  1. Must have completed and shall document having successfully completed in the last three years (design and installation), as a Company, at least five projects totaling at least 100 micropiles of similar or equivalent difficulty. Appropriate written description of the projects completed and references for owners shall be submitted.
  2. Must have in its active employment and shall assign to this project, specialized field and supervisory personnel skilled in performing work of higher or similar characteristics as that requested for this project. The supervisory personnel for this project must have at least five years of supervisory experience in this type of work. Relevant written personnel background biographies shall be submitted.
  3. Must have available and be thoroughly familiar with the specialized type of equipment needed to perform work of this type. A list of the equipment and resources it plans to mobilize for the performance of the project shall be submitted prior to beginning any construction operations.
  4. The micropiles shall be designed by an engineer licensed in the State of Delaware and with experience in the design and construction of at least five successfully completed micropile projects within the last three years.

**Field Quality Control:**

- A. The Contractor shall engage an independent testing agency to test the grout mix used for the drilled micropiles. Cement grout cube specimens or grout cylinders, shall be obtained and tested, with a minimum of one set of three, 2-inch grout test cubes or 3-inch diameter cylinders taken from each 2,000 gallons of grout mixed. The testing agency shall submit a certified copy of the test results to the Owner and/or the

Owner's representative within two working days of completion of the test.

- B. Provide the Owner and/or the Owner's representative free and safe access to the work areas at all times. The Contractor shall furnish the Owner and/or the Owner's representative with unrestricted access as reasonable to observe and document the work.
- C. Notify the Owner and/or the Owner's representative immediately of any damage or deviation that may affect the acceptability of the pile, so that corrective measures, if required, may be carried out with minimum delay.
- D. Piles that are damaged or defective due to defective materials, improper installation procedure, or improper welding of steel reinforcing, or piles that have an installed volume of cement grout placed not exceeding a volume equal to 110% of the theoretical volume of the portion of the drill hole in soil and bedrock, will not be accepted.

**Pile Design:**

- A. Design the micropiles to the design foundation loads calculated by the bridge designer.
- B. Minimum Reinforcing. Design the pile to carry not less than 40 percent of the design compressive load on the reinforcing steel.
- C. The pile design shall provide for a minimum grout cover over the core steel of 1-inch.
- D. Details of the proposed pile section and a description of the proposed installation method shall be prepared by an engineer licensed in the State of Delaware and shall be submitted to the Owner and/or the Owner's representative for approval at least 30 calendar days before starting the work.
- E. Steel casing shall have 1/8-inch deducted from the shell thickness to allow for corrosion.

**Products:**

A. CEMENT GROUT

- 1. The cement grout shall consist of a mixture of Portland cement and water so proportioned and mixed as to provide a fluid grout capable of maintaining the solids in suspension without appreciable bleed. The materials shall be so proportioned as to provide a hardened grout having a minimum ultimate compressive strength of 4,000 psi at 28 days in accordance with ASTM C109.
- 2. Cement shall conform to ASTM C150 Portland Cement Type I / II.
- 3. Mixing water for cement grout shall be clean and potable.
- 4. Admixtures shall conform to ASTM C 494.
- 5. Fine Aggregate: If sand-cement grout is used, sand shall conform to ASTM C 144.

B. REINFORCEMENT

- 1. The reinforcing steel core shall consist of steel pipes, bars or a combination thereof, conforming to the following requirements:
- 2. Deformed steel bars: ASTM A615, Grade 60, 75 or 150.

3. Structural pipe or tubing: ASTM A 501 or API N-80.
  4. When a bearing plate and nut are required to be threaded onto the top end of reinforcing bars for the pile top to footing anchorage, the threading may be continuous spiral formed ribbing provided by the bar deformations (e.g., Dywidag or Williams continuous spiral bars), or may be cut into a reinforcing bar. If threads are cut into a reinforcing bar, the next larger bar number designation from that shown on the Plans shall be provided, at no additional cost.
- C. PERMANENT STEEL CASING
1. Permanent steel casing shall consist of spiral welded or seamless steel casing with equivalent capacity to transfer design loads at the casing joints. Joints between sections may be threaded or welded. As installed, there shall be no joints within three feet of the bottom of the pile cap. Steel casing shall meet the requirements of the ASTM A501, API N-80, or alternative material approved by the Owner and/or the Owner's representative.
  2. For permanent casing/pipe that will be welded, the following material conditions apply:
    - a. The carbon equivalency (CE) as defined in AWS D1.1, Section X15.1, shall not exceed 0.45, as demonstrated by mill certifications
    - b. The sulfur content shall not exceed 0.05%, as demonstrated by mill certifications.
  3. For permanent casing/pipe that will be shop or field welded, the following fabrication or construction conditions apply:
    - a. The steel pipe shall not be joined by welded lap splicing
    - b. Welded seams and splices shall be complete penetration welds
    - c. Partial penetration welds may be restored in conformance with AWS D1.1
    - d. The proposed welding procedure certified by a welding specialist shall be submitted for approval
  4. Threaded casing joints shall develop at least the required nominal resistance used in the design of the micropile.
- D. OTHERS
1. Centralizers and Spacers  
  
Centralizers and spacers shall be fabricated from schedule 40 PVC pipe or tube, steel, or material non-detrimental to the reinforcing steel. Wood shall not be used. Centralizers and spacers shall be securely attached to the reinforcement; sized to position the reinforcement within 1/2-inch of plan location from center of pile; sized to allow grout tremie pipe insertion to the bottom of the drillhole; and sized to allow grout to freely flow up the drillhole and casing and between adjacent reinforcing bars.
- E. REINFORCING BAR CORROSION PROTECTION
1. *Sheathing:* Smooth plastic sheathing, including joints, shall be watertight. Polyvinyl chloride (PVC) sheathing shall conform to ASTM D 1784, Class 13464-B.
  2. *Water:* Water used in the grout mix shall conform to AASHTO T 26 and shall be potable, clean,

and free from substances that may be injurious to cement and steel.

**Execution:**

A. INSTALLATION

1. Drill a cased hole to the proposed depth of the bottom of the pile. Water shall not be used for the drilling operation. Handle and dispose of cuttings in a manner that is approved by the Owner and/or the Owner's representative. The use of bentonite drilling mud will not be permitted.
2. Immediately prior to grouting, flush the hole with clean water to remove all contaminated water and cuttings. The hole shall be flushed through the tremie grout pipe fully extended to the bottom of the hole and the casing fully in place to pile cutoff level. The water shall be pumped at a high velocity until the wash water at the top of the casing is relatively clear. The hole shall be grouted within 1 hour thereafter. In case of delay, the hole shall be re-flushed and re-checked prior to grouting as directed by the Owner and/or the Owner's representative. The core steel shall be lowered into the pile before or after grouting. A positive displacement grout pump shall be used. The grout pump shall be calibrated on site by pumping into an approved container of at least 50 gallons no more than one week prior to installing the piles.
3. The micropile casing shall be extracted to develop a bonded zone only after grout has been placed in the micropile.
4. For a fully cased micropile, immediately after grouting, raise the casing 5-ft above the pile tip. The casing shall then be plunged into the grout to the bottom of the drilled hole to form a bonded zone around the casing.
5. Use centralizers at spacing no greater than 10-ft to install and center the core steel in the drill hole. Provide adequate development length for each bar into the pile cap.
6. Grouting shall continue after installation of reinforcement as necessary until the grout return at the top of the casing is to the same consistency as the grout being pumped into the hole.

B. MICROPILE ALLOWABLE CONSTRUCTION TOLERANCES

1. Centerline of piling shall not be more than 3-inches from indicated plan location.
2. Pile shall be plumb within 2 percent of total-length plan alignment.
3. Top elevation of pile shall be plus 1-inch or minus 2-inches maximum from vertical elevation indicated.
4. Centerline of reinforcing steel shall not be more than 5/8-inch from indicated location.

C. DRILLED MICROPILE VERIFICATION LOAD TEST

1. To use a resistance factor of 0.70 for compression and 0.60 for tension for design of the micropiles, a minimum of one verification tests shall be performed in either compression or tension in each structure. Perform the compression test in accordance with ASTM D-1143 or tension test in accordance with ASTM D-3689. Load tests shall be conducted, the results evaluated, and the method of installation approved by the Owner and/or the Owner's representative, prior to installing the production piles. The test pile shall not be reused as a production pile.

2. Submit to the Owner and/or the Owner's representative the details of the proposed load test set-up and all equipment and measurement systems to be used for the test, and obtain approval from the Owner and/or the Owner's representative before any load tests are made.
3. Apply the load to the pile core by means of a single hydraulic jack. Construct the apparatus for applying the loads to the test pile so that the loads are applied axially to the pile. Calibrate the test load jacking system including the hydraulic jack, and pressure gauge prior to the test so that the load applied is controlled to within 5 percent of the total applied load. Submit calibration reports to the Owner and/or the Owner's representative prior to the start of the pile load test. Calibration tests shall be performed within 90 days of the date of the load test.
4. Provide all necessary materials and labor for construction of a settlement measuring system for each test, as follows:
  - a. Provide an independent reference beam for load test measurement apparatus support. The reference beam must be independently supported with supports firmly embedded in the ground at a distance of at least 8 feet from the test pile and reaction supports. One end of the reference beam must be free to move as the length of the beam changes with temperature variations.
  - b. Mount three dial gauges equidistant from the center of the test pile and at 120-degree intervals around the pile. Attach the dial gauges rigidly to the reference beam. Align gauge stems vertically and provide smooth horizontal bearing surfaces for the gauge stems. Dial gauges shall have at least 2-inch travel and shall read to 0.001 inch.
  - c. Establish a reference point on the test pile and at each end of the center of the reference beam. The reference points shall consist of graduated scales machine-divided into 0.02-inch and attached securely to the pile and reference beam. The reference points shall be monitored using survey equipment during the pile load test.
  - d. Protect the settlement measuring system against rain, wind, frost, and any other disturbances that could affect the reliability of the settlement observations. Provide sunshading for the measuring system for the duration of the test and for a minimum of 1-hour prior to the start of the test.
5. Submit a detailed report including such information as pile location, type, diameter, length, settlement readings, and all other pertinent data as indicated in ASTM D-1143 or ASTM D-3689.
6. Verification Test Loading Schedule.

Test verification piles designated for tension load testing to a maximum test load of 1.8 times the micropile Factored Strength Limit State Load shown on the Working Drawings. The verification pile load tests shall be made by incrementally loading the micropile in accordance with the following cyclic load schedule for tension loading:

AL = Alignment Load		DL = Design Load (Factored Strength Limit State Load)
Cycle	LOAD	HOLD TIME
1	AL (0.05 DL)	2.5 minutes
	0.10 DL	2.5 minutes
	0.20 DL	2.5 minutes
	0.30 DL	2.5 minutes
	AL	1 minute
2	AL	1 minute
	0.10 DL	1 minute
	0.20 DL	1 minute
	0.30 DL	2.5 minutes
	0.40 DL	2.5 minutes
	0.50 DL	2.5 minutes
	0.60 DL	2.5 minutes
	0.70 DL	2.5 minutes
	AL	1 minute
3	AL	1 minute
	0.10 DL	1 minute
	0.70 DL	1 minute
	0.80 DL	2.5 minutes
	0.90 DL	2.5 minutes
	1.00 DL	10 to 60 minutes
	1.10 DL	2.5 minutes
	AL	2.5 minutes
4	AL	1 minute
	0.10 DL	1 minute
	1.10 DL	1 minute
	1.20 DL	1 minute
	1.30 DL	2.5 minutes
	1.40 DL	2.5 minutes
	1.50 DL	2.5 minutes
	1.65 DL	2.5 minutes
	1.80 DL	10 minutes
	1.50 DL	5 minutes
	1.15 DL	5 minutes
	0.70 DL	5 minutes
	0.35 DL	5 minutes
	AL	5 minutes

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The test load shall be applied in increments of 10 percent of the DL load. Each load increment shall be held for a minimum of 2.5 minutes. Pile top movement shall be measured at each load increment. The load-hold period shall start as soon as each test load increment is applied. The verification test pile shall be monitored for creep at the 1.0 Design Load (DL). Pile movement during the creep test shall be measured and recorded at 1, 2, 3, 4, 5, 6, 10, 20, 30, 50 and 60 minutes. The alignment load shall not exceed 5 percent of the DL load. Dial gauges shall be reset to zero after the initial AL is applied.

The acceptance criteria for micropile verification load tests are:

- a. The test pile shall support the design load values with a total pile top displacement of not greater than 0.25-inches. In tension testing, the total displacement shall be measured relative to the pile top position start of initial testing.
- b. At the end of the 1.0 DL creep test load increment, test piles shall have a creep rate not exceeding 1 mm/log cycle time (1 to 10 minutes) or 2 mm/log cycle time (6 to 60 minutes or the last log cycle if held longer). The creep rate shall be linear or decreasing throughout the creep load hold period.
- c. Failure does not occur at the 1.8 DL maximum test load. Failure is defined as load at which attempts to further increase the test load simply result in continued pile movement.

The Owner and/or the Owner's representative will provide the Contractor written confirmation of the micropile design and construction within ten (10) working days after the contractor submits the load test results. This written confirmation will either confirm the capacities and bond lengths specified in the Working Drawings for micropiles or reject the piles based upon the verification test results.

#### 7. Verification Test Pile Rejection.

If a verification tested micropile fails to meet the acceptance criteria, the Contractor shall modify the design, the construction procedure, or both. These modifications may include modifying the installation methods, increasing the bond length, or changing the micropile type. Any modification that necessitates changes to the structure shall require the Owner and/or the Owner's representative's prior review and acceptance. Any modifications of design or construction procedures or cost of additional verification test piles and load testing shall be at the Contractor's expense. At the completion of verification testing, test piles shall be cut at least 2-ft below finished grade or to the elevation specified by the Owner and/or the Owner's representative.

### D. PROOF LOAD TEST

1. Perform proof load tests on the first set of production piles installed at each designated substructure unit prior to the installation of the remaining production piles in that structure. The first set of production piles is the number required to provide the required reaction capacity for the proof tested piles. The number of proof tests to be performed shall be equal to a minimum of two or 5% of the production piles, whichever is more, in each structure. Location of additional proof test piles shall be as designated by the Owner and/or the Owner's representative.
2. Proof Test Loading Schedule.

Test piles designated for compression or tension proof load testing to a maximum test load of 1.25 times the micropile Factored Strength Limit State Load shown on the Plans or Working Drawings. Proof tests shall be made by incrementally loading the micropile in accordance with the following

schedule, to be used for both compression and tension loading:

AL = Alignment Load DL = Design Load (Factored Strength Limit State Load)		
	LOAD	HOLD TIME
1	AL	1 minute
2	0.2 DL	1 minute
3	0.50 DL	1 minute
4	0.75 DL	1 minute
5	1.00 DL	10 or 60 minute Creep Test
6	1.10 DL	1 minute
7	1.25 DL (Maximum Test Load)	1 minute
8	AL	1 minute

Depending on performance, either a 10 minute or 60 minute creep test shall be performed at the 1.00 DL Test Load. Where the pile top movement between 1 and 10 minutes exceeds 1 mm, the Maximum Test Load shall be maintained an additional 50 minutes. Movements shall be recorded at 1, 2, 3, 5, 6, 10, 20, 30, 50, and 60 minutes. The alignment load shall not exceed 5 percent of DL. Dial gauges shall be reset to zero after the initial AL is applied.

The acceptance criteria for micropile proof load tests are:

- a. At the end of the 1.00 DL creep test load increment, test piles shall have a creep rate not exceeding 1 mm/log cycle time (1 to 10 minutes) or 2 mm/log cycle time (6 to 60 minutes). The creep rate shall be linear or decreasing throughout the creep load hold period.
  - b. Failure does not occur at the 1.25 DL maximum test load. Failure is defined as the load at which attempts to further increase the test load simply result in continued pile movement.
3. Proof Test Pile Rejection.

If a proof-tested micropile fails to meet the acceptance criteria, the Contractor shall immediately proof test another micropile within that footing. For failed piles and further construction of other piles, the Contractor shall modify the design, the construction procedure, or both. These modifications may include installing replacement micropiles, incorporating piles at not more than 50% of the maximum load attained, postgrouting, modifying installation methods, increasing the bond length, or changing the micropile type. Any modification that necessitates changes to the structure design shall require the Owner and/or the Owner's representative's prior review and acceptance. Any modifications of design or construction procedures, or cost of additional verification test piles and verification and/or proof load testing, or replacement production micropiles, shall be at the Contractor's expense.

**END OF SECTION**

**713600 - DAMPPROOFING AND MEMBRANE WATERPROOFING**

**Description:**

Furnish and apply dampproofing and waterproofing to concrete surfaces.

**Materials:**

1. Asphaltic materials for dampproofing
  - a. Hot Applied Asphalt: D 449
  - b. Cold Applied Asphalt: Meet the following when tested per Maryland State Highway Administration's MSMT 423, Procedure A. The material shall not contain isocyanide or any derivative of cyanide.

TEST and METHOD	SPECIFICATION LIMITS		
	GRADE I	GRADE II	GRADE III
R and B Softening Point T 53	104 – 143 F	145 – 170 F	172 – 200 F
Penetration, 0.10 mm, T 49	32 F, 200 g, 60 sec	10 min	5 min
	77 F, 100 g, 5 sec	30 – 100	25 – 50
	115 F, 50 g, 5 sec	100 min	130 max
Permeability, g/cm <sup>3</sup> , max, MSMT 423	0.09	0.09	0.09
Flow test, mm, max, MSMT 423	CC	20	15
Flexibility, 60 F, MSMT 423	No peeling or loss of adhesion		
Imperviousness Test, MSMT 423	No pitting or discoloration		
Sat test, MSMT 423	No movement		

Grade I – Suitable for below ground and horizontal applications.

Grade II – Suitable for below ground and above ground where surface temperatures do not exceed 120 F.

Grade III – Suitable for below ground and above ground where surface temperatures exceed 120 F.

- c. Cold Applied Asphalt Emulsion: D1227, Type II, using D2939, modified by MSMT 423, Procedure B.
2. Primer for use with Asphalt for Dampproofing: D 41.

3. Waterproofing Membrane: The adhesive side of the membrane shall be protected with a special release paper that can be easily removed for installation. The membrane shall meet the following requirements:

TEST PROPERTY	TEST METHOD	SPECIFICATON LIMITS
Grab Tensile Strength, lb./in. @ 12 in./minute rate of loading, min.	D 5054	70
Pliability, 180° bend, 1 in. mandrel @ 20 F.	D 46	Unaffected
Resistance to Puncture, lb. min.	E 154 (square mounting frame method)	40
Permeance, perm (kg/Pa · s · m <sup>2</sup> ), max	E 96, Method B	0.1
Weiht, oz/yd <sup>2</sup> min	D 3776	40
Primer	—	As specified by the manufacture.

Roll and sheet waterproofing membrane may be accepted on certification. The manufacturer shall furnish certification with actual test results showing that the material meets these Specifications.

**Construction:**

Apply dampproofing using asphaltic materials and primers; apply waterproofing by the roll or sheet method.

1. Storage: Store waterproofing membranes in a dry protected place. Keep containers of asphalt materials closed when not in use.
2. Surface Preparation: Do not apply dampproofing or membrane waterproofing until curing is complete and surfaces are protected from the cold. Ensure that all surfaces are dry, smooth, and free from projections and holes. When dampproofing and membrane waterproofing are both specified for application, apply the membrane waterproofing first. Do not apply dampproofing or membrane waterproofing when the temperature is less than 40 F.
3. Dampproofing: If asphaltic coatings are used for dampproofing, use two prime coats and one seal coat. Apply dampproofing to the following concrete surfaces that will be in contact with backfill:
  - a. Rear face of abutments and abutment wing wall stems.

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- b. Rear faces of headwalls and wing walls for pipes 36 in. in diameter or larger and for culverts.
  - c. Rear face of retaining wall stems.
  - d. The following areas pertain to reinforced concrete box culverts:
    - i. Top of top slabs when not built to grade.
    - ii. Entire outside surfaces of side walls.
    - iii. Additionally, bottom of bottom slabs of precast units.
  4. Waterproofing: Apply waterproofing to construction joints that are next to backfill above normal water surface when backfill is on one side and atmosphere on the other side. Apply a width of at least 16 in., centered on the joint.
  5. Application of Dampproofing: Confine coatings to the areas to be covered. Prevent coating of parts of the structure exposed to view in the completed structure. Apply dampproofing to the full face of all contraction joints.

Apply the dampproofing according to the manufacturer's recommendations. When no recommendations are provided, apply the dampproofing material to the cured, cleaned, and dry surfaces as follows:

- a. Paint with two coats of primer for absorptive treatment at a rate of 1/8 gal/yd<sup>2</sup> per coat. Do not apply the second coat until the first coat has thoroughly dried. Do not heat this material.
  - b. After the second prime coat has thoroughly dried, apply one seal coat by brush or roller at a rate of 1/8 gal/yd<sup>2</sup>. When necessary, this material may be heated, but not in excess of 150 F.
6. Roll or Sheet Waterproofing Membrane: Apply the rolls or sheets according to the manufacturer's recommendations.
  7. Membrane Care: At the edges of the membrane and at points punctured by appurtenances such as drains or pipes, flash it in an acceptable manner to prevent water from getting between the waterproofing and the waterproofed surface. Repair any damage to the membrane. Extend repairs beyond the outermost damaged portion, and extend the second ply at least 3 in. beyond the first.

## END OF SECTION

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**720600 – STEEL TUBE RAIL**

**Description:**

This section includes specifications for constructing steel railing.

Concrete shall comply with Section 602.

Reinforcement shall comply with Section 603.

Steel shall comply with Section 605.

Submit shop drawings for the railing which include the following:

1. Details for venting and pickup holes in rails and sleeves.
2. Railing layout. Submittal shall include footing and post layout, expansion and contraction splice locations, drainage locations, and treatment at non-typical locations. Non-typical locations include corners, locations where railing crosses existing tank wall, and locations where railing transitions from a roadway base to a wingwall or structure.
3. Complete details for the construction of the work, including construction methods, sequence of shop and field assembly, and installation procedures.

**Materials:**

1. Concrete ..... DelDOT Class A (4500 psi)
2. Reinforcing Steel ..... AASHTO M31 Grade 60
3. Structural Shapes and Plates ..... AASHTO M270/ASTM A709 Grade 50
4. Structural Tubes ..... ASTM A500, Grade B
5. Welded Studs ..... ASTM A449, Type 1
6. Bolts ..... ASTM A325, Type 1
7. Anchor Bolts ..... ASTM A449 Type 1 or ASTM F1554 Grade 105
8. Nuts ..... ASTM A563
9. Washers ..... ASTM F436
  
10. Thread Locking System – select from the list in Table 1.

Each anaerobic thread locking system requires 3 components:

1. CLEANER - to clean lubricant and oils from the threads of the stud and nut.
2. PRIMER - to promote rapid curing of the anaerobic compound and to minimize migration of compound on threads.
3. ANAEROBIC THREAD LOCKING ADHESIVE - to secure nut onto stud by filling the gap between nut and stud threads. Note: Anaerobic thread locking adhesive compounds will set only where no oxygen is available.

All components used in a single thread locking application shall be from one of the systems below and from the same thread locking adhesive manufacturer following the Manufacturer's Application Instructions.

<b>Authorized Anaerobic Thread Locking Systems</b>			
<b>Manufacturer Information</b>	<b>Component</b>	<b>Trade Name</b>	<b>Part No.</b>
<b>Loctite (Industrial Division)</b> 1 Henkel Way Rocky Hill, CT 06067 (800) 562-8483 www.loctite.com	Cleaner	ODC-Free Cleaner & Degreaser	22355
	Primer	Loctite 7649	21348
	Adhesive	Loctite 262	26243
<b>Permabond International</b> 480 South Dean Street Englewood, NJ 07631 (800) 370-9647 www.permabond.com	Cleaner & Primer	Perma-Lok Anaerobic Surface Conditioner	ASC10
	Adhesive	Permabond HH120	HH120
<b>Hernon Manufacturing, Inc.</b> 121 Tech Drive Sanford, FL 32771 (800) 527-0004 www.hernonmfg.com	Cleaner	Hernon Cleaner 62	EF-62
	Primer	Hernon EF Primer 49 or 50	EF-49, EF-50
	Adhesive	Hernon Nuts N' Bolts Anaerobic Adhesive	429
<b>Saf-T-Lok</b> 300 Eisenhower Lane North Lombard, IL 60148 (630) 495-2001 www.saftlok.com	Cleaner & Primer	Primer T	19166
	Adhesive	T77 High Strength Permanent Thread Locker	27741
<b>Pacer Industrial</b> 9420 Santa Anita Avenue Rancho Cucamonga, CA 91730 www.supergluecorp.com/pacer-industrial	Cleaner	Acetone	-
	Primer	Pacer Technology Anaerobic Primer	FG09621
	Adhesive	ANL-77 Anaerobic Adhesive	FG 06150

**Table 1**

Follow manufacturer's instructions for use. Part numbers may vary based on the amount of product purchased.

11. Organic Zinc Rich Primer – Select from the following list:

CARBOLINE CO.  
CARBOZINC 858 DOT  
CARBOZINC 859  
CARBOZINC 585  
[www.carboline.com](http://www.carboline.com)

TNEMEC COMPANY INC.  
TNEMEC ZINC 90-97  
[www.tnemec.com](http://www.tnemec.com)

INTERNATIONAL PAINT CO.  
INTERZINC 51  
[www.international-paint.com](http://www.international-paint.com)

DEVOE COATINGS  
CATHACOAT 315  
[www.devoecoatings.com](http://www.devoecoatings.com)

WASSER HIGH TECH COATINGS  
MC-MIOZINC 2.8  
MC-ZINC 2.8  
MC-ZINC 100  
[www.wassercoatings.com](http://www.wassercoatings.com)

SHERWIN WILLIAMS CO.  
COROTHANE I, GALVAPAC ONE PACK  
ZINC CLAD III HS 100  
[www.sherwin-williams.com](http://www.sherwin-williams.com)

ZRC WORLDWIDE  
ZRC 221  
ZRC Zero-VOC  
(781) 319-0400  
[www.zrcworldwide.com](http://www.zrcworldwide.com)

TRIANGLE COATINGS, INC.  
920Z KOLDGALV  
(510) 895-8000  
[www.tricoat.com](http://www.tricoat.com)

PPG PERFORMANCE AND MARINE  
COATINGS  
AMERCOAT 68 HS VOC

ROVAL USA CORPORATION  
Roval Cold Galvanizing Compound Low  
VOC 22  
[www.roval-usa.com](http://www.roval-usa.com)

Formed steel sections must be uniform in appearance. Stud bolts must comply with the specifications for studs in clause 7 of AWS D1.1.

Ferrous metal parts must be galvanized under per Section 826.07 of the DelDOT Standard Specifications.

Railings must conform to the curvature by means of a series of short chords, from center-to-center of rail posts, except (1) tubing for railings described as conforming to the curvature must be shop bent to fit the curvature and (2) tubing with a horizontal curve radius less than 900 feet must be shop bent or fabricated to fit the curvature. Joints must be match marked.

**Construction:**

Railings must present a smooth, uniform appearance in their final position, conforming closely to the horizontal and vertical lines shown or ordered.

Erect railings carefully and true to line and grade. Posts must be normal to the profile grade. Transverse to the profile grade, railings must be plumb within a tolerance not to exceed 0.02 foot in 10 feet. Adjacent rail elements must align with each other within 1/16 inch.

After installing the rail, paint the exposed bolt threads with 2 applications of organic zinc-rich primer.

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**720900 - TRAFFIC REGULATION**

**PART 1: GENERAL**

**1.1 DESCRIPTION OF WORK**

- A. This section includes the maintenance of traffic, pedestrian and vehicular, throughout the construction of this contract in accordance with the locations, details and notes provided on the Plans.
- B. At the completion of their usage on the project, all traffic control devices shall become the property of the Contractor and shall be removed from the site as part of this item.
- C. The Contractor shall be responsible for all traffic control devices for this contract. The Contractor shall furnish all labor, materials, equipment and services necessary to satisfy the requirements, and intent of this Contract, including supervision and all protective devices.
- D. The safety measures outlined herein shall be considered as basic and not necessarily sufficient in every instance to guarantee the protection of the traveling public. The final responsibility for the installation of adequate safety precautions, for the protection of the traveling public and his own personnel shall rest with the Contractor.
- E. The Contractor shall be required to maintain all traffic protection devices, such maintenance shall include washing sign faces, replacing deficient batteries and lights, aligning lights properly, replacing reflective materials, relocating barriers and plastic drums as directed by the Owner to maintain traffic in a safe and effective manner.
- F. All traffic control devices (rigid and flexible) used at night shall be reflectorized to show the same shape and color as in the daylight conditions. The sign background shall be the color/colors as specified in the MUTCD.

**1.2 RELATED DOCUMENTS**

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions, apply to this section.
- B. State of Delaware Standard Specifications, dated August 2001 - Section 743
- C. The latest edition of the Manual on Uniform Traffic Control Devices (MUTCD), and the Federal Highway Administration's publication on Standard Highway Signs and the latest edition of the Delaware Traffic Controls for Street and Highway Construction, Maintenance, Utility and Emergency Operations.

### 1.3 SUBMITTALS

- A. The Contractor shall submit to the Engineer a detailed Traffic Control Plan for all operations affecting the flow of pedestrian traffic. The Traffic Control Plan shall be submitted to the Owner fourteen days in advance of the proposed work for approval. The plan must show all methods and devices the Contractor proposes for the maintenance of traffic.
- B. The Contractor may submit to the Owner Traffic Control Cases to be utilized as outlined in the latest edition of the Delaware Traffic Controls for Streets and Highway Construction, Maintenance Utility and Emergency Operations.

## PART 2: PRODUCTS

### 2.1 REFLECTIVE SHEETING

- A. Reflective sheeting shall have either a wood or aluminum backing and shall be encapsulated lens type meeting the latest requirements of the Federal Highway Administration's Standard Specifications for Construction for Roads and Bridges.
- B. The color specified shall be matched visually and be within the color tolerance limits shown on the appropriate Highway Color Tolerance Charts issued by the Federal Highway Administration. Certification as to conformance with this requirement will be accepted by the Owner.
- C. Reflective sheeting shall consist of a retroreflective lens system having a smooth outer surface. When adhesive backing is used, the sheeting shall have a pre-coated adhesive on the backside protected by an easily removable liner.
- D. The color specified shall be matched visually and shall be within the color tolerance limits shown on the appropriate Highway Color Tolerance Charts issued by the FHWA utilizing the instruments thereon. Certification as to conformance with this requirement is acceptable.

**TABLE 1**  
 Color Specifications Limits and Reference Standards Type III Sheeting

Color Chromaticity Coordinates (Corner Points)								Reflectance Limits		
	1		2		3		4		Y	
	X	Y	X	Y	X	Y	X	Y	Min	Max
White **	0.303	0.287	0.340	0.353	0.340	0.380	0.274	0.316	27	---
Orange	0.505	0.360	0.600	0.371	0.581	0.418	0.516	0.394	14	30
Reference Standard *** (Munsell Papers)										
White **	5.0 PB 7/1									
Orange	2.5 YR 5.5/1									

- \* The four pairs of chromaticity coordinates determine the acceptable color in terms of the CIE 1931 standard colorimetric system measured with standard illumination source C.
- \*\* Silver White is an acceptable color designation.
- \*\*\* Available from Munsell Color Company; 2441 Calvert Street, Baltimore, Maryland 21218.

E. The reflective sheeting shall have minimum Specific Intensity per unit Area (SIA as shown in Table II expressed as Acandles per footcandle per square foot@ (Cd fx -1) ft -2). Measurement of SIA shall be conducted in accordance with the method detailed in Section 718 of FP-79.

**TABLE 2**  
 Minimum Specific Intensity Per Unit Area (SIA)  
 A - Glass Bead Retroreflective Element Material

Observation Angle	Entrance Angle	White	Red	Orange	Yellow
0.2	- 4	250	45	100	170
0.2	+ 30	150	25	60	100
0.5	- 4	95	15	30	62
0.5	+ 30	65	10	25	45

F. The reflective sheeting shall have an 85 degree specular gloss of less than 50 for III when tested in accordance with ASTM 523.

- G. The sheeting shall permit cutting and color processing with compatible opaque process inks in accordance with the manufacturer's recommendations at temperature of 60 degrees F to 100 degrees F and relative humidity (R.H.) of 20 to 80 percent.
- H. A 9 inch by 9 inch reflective sheeting specimen with liner shall be conditioned a minimum of 1 hour at 72 degrees F and 50 percent R.H. The liner shall be removed and the specimen placed on a flat surface with adhesive side up. Ten minutes after the liner is removed and again after 24 hours, the specimen shall be measured to determine the amount of dimensional change. The reflective sheeting shall not shrink in any dimension more than 1/32 inch in 10 minutes nor more than 1/10 inch in 24 hours.
- I. The sheeting, with liner removed and conditioned for 24 hours at 72 degrees F shall be sufficiently flexible to show no cracking when slowly bent, in one second's time, around 1/8 inch mandrel with adhesive contacting the mandrel. For ease of testing, it is recommended that talcum powder should be spread over the adhesive sticking to the mandrel.
- J. The reflective sheeting shall include a pre-coated pressure sensitive adhesive backing, which may be applied without necessity of additional adhesive coats on either the reflective sheeting, or application surface.

The protective liner attached to the adhesive shall be removed by peeling without soaking in water, or other solvents without breaking, testing, or removing any adhesive from the backing. The protective liner shall be easily removed following accelerated storage for 4 hours at 160 degrees F under a weight of 2.5 pounds per square inch.

The adhesive backing of the reflective sheeting shall produce a bond to support a 1 3/4 pound weight for 5 minutes, without the bond peeling for a distance of more than 1 inch when applied to a smooth aluminum surface and tested as specified in Section 718, FP-79.

- K. Reflective sheeting material, applied according to the manufacturer's recommendations to a cleaned, etched aluminum panel of alloy 6061-T6, 0.04 inch by 3.0 inches by 5.0 inches) and conditioned for 24 hours at 72 degrees F, shall show no cracking when the face of the panel is subjected to an impact of 2 pound weight with 5/8 inch rounded tip dropped from a 100 inch pound setting on a Gardner Variable Impact Tested, IG-11120.

## 2.2 ADVANCED WARNING SIGNS

- A. Materials and construction of all signs shall meet all requirements including reflectorization outlined herein and that of the MUTCD and the Delaware Traffic Controls for Streets and Highway Construction, Maintenance Utility and Emergency Operations.

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- B. Advanced warning signs shall be fabricated and installed in accordance with the Federal Highway Administration's publication on Standard Highway Signs.
  - C. Sign supports shall be constructed and erected as directed by the Engineer. Sign posts shall be 4 inch x 4 inch lumber and of sufficient length to firmly support the sign.
  - D. Signs may be mounted on portable supports for temporary conditions. Portable sign supports shall be self-erecting, able to withstand a wind velocity of 70 MPH and shall be able to maintain themselves within five degrees rotation around their vertical axis.
  - E. All wood sign panel backing shall be 5/8-inch high density overlay exterior plywood. All aluminum sign panel backing shall have a minimum thickness of 0.1 inches. The chromate protective coating for flat sheet blanks shall meet the requirements of ASTM B 449, Class II, and shall be Standard Aluminum Designation 303 Alloy. Blanks shall be free of buckle, warps, dents, burrs, oils, and foreign contaminants prior to application of reflective sheeting.

### 2.3 TYPE 3 BARRICADES

- A. Materials and construction of all Type 3 Barricades shall meet all requirements including reflectorization outlined herein and that of the MUTCD and the Delaware Traffic Controls for Streets and Highway Construction, Maintenance Utility and Emergency Operations.

### 2.4 WARNING LIGHTS, TYPE A AND TYPE B

- A. Materials and construction of all Warning Lights, Type A and Type B shall meet all requirements including reflectorization outlined herein and that of the MUTCD and the Delaware Traffic Controls for Streets and Highway Construction, Maintenance Utility and Emergency Operations.

### 2.5 PLASTIC DRUMS

- A. Materials and construction of all Plastic Drums shall meet all requirements including reflectorization outlined herein and that of the MUTCD and the Delaware Traffic Controls for Streets and Highway Construction, Maintenance Utility and Emergency Operations.

### 2.6 CONSTRUCTION SAFETY FENCE

- A. The Construction Safety Fence shall be 4' high, high density polyethylene, U.V. stabilized, high visibility orange plastic with standard mesh opening size of approximately 1-1/2 inches. The fence post shall be of sufficient length for 18 inches embedment in the ground and be oak wood, a minimum of 2 inches square or steel 1.25 inches x 1.00 inch T-Section. If the fence is to be installed on bituminous and/or concrete pavement, the Contractor shall use the kind of posts which can be anchored by placing sand beds at

their base without damaging pavement. The ties for securing the fence to the post shall be 8 inches self-locking nylon safety ties. The fence materials including the posts shall be approved by the Owner prior to installation.

## 2.7 FLAGGER REQUIREMENTS

- A. Flaggers shall be governed by and familiar with the Manual on Uniform Traffic Control Devices (MUTCD) Part VI latest edition, and updates, and shall conform to the requirements of the latest version of the manual entitled "Delaware Traffic Controls for Street and Highway Construction, Maintenance, Utility and Emergency Operations". Flaggers shall have completed flagger training and testing within the last 3 years as offered by the American Traffic Safety Services Association (ATSSA). The Contractor shall provide appropriate documents showing the flagger certification status throughout the duration of the Contract. The Contractor shall also have available a person certified to flag who will relieve the flagperson for any necessary breaks. Flaggers are required to have their approved flagger card, and a photo identification card, on their person at all times while flagging. Failure to produce an approved card, when requested to do so by anyone authorized by owner, shall be grounds to have that person removed from the flagger job.
- B. Flagger shall be completely covered (clothed) from neck to feet. The minimum clothing requirements for Flagger shall be long pants and a standard T-shirt with sleeves along with appropriate footwear (no open toe shoes). The Flagger shall wear orange colored head gear and a DelDOT approved vest over his/her outer clothing. For nighttime and low visibility conditions, Flagger shall use a vest completely made of high intensity, retroreflective material.
- C. For information on training, testing, and Flagger requirements, the Contractor is referred to "Delaware's Flagger Certification Program" (copies can be obtained from DelDOT's Contract Service Administration).

## PART 3: EXECUTION

### 3.1 GENERAL

- A. Prior to the beginning of all work, the Contractor shall first place traffic control devices so as to effectively restrict the areas within the limit of the contract to the passage of unauthorized vehicles, and to protect the work and personnel until the area is ready for public use.
- B. Signs for the purpose of controlling traffic shall not be obscured at any time. Where operations are performed in stages, only those devices that apply to existing conditions shall be removed or covered with opaque material or turned so as not to be readable by oncoming traffic. The placement of signs shall be in accordance with the detailed dimensions shown in the Contract Plans and/or as shown in the MUTCD and the Delaware

Traffic Controls for Street and Highway Construction, Maintenance, Utility and Emergency Operations.

- C. Since it is not practical for these plans and the MUTCD to prescribe detailed standards of application for all the situations that may conceivably arise, the standards presented are for the most common situations. It is emphasized that they are for normal situations and that additional protection to the traveling public must be provided when special construction complexities occur. In all questions of interpretation, the judgment of the owner shall be final.
- D. Traffic control devices damaged by traffic shall be replaced immediately.
- E. The construction safety fence shall be removed and disposed of when no longer required as determined by the owner. Due to space limitations, the Contractor may be required to move the safety fence and/or reposition it from time to time so that adjacent building activities can be performed as required. No payment shall be made for such relocation and the cost shall be incidental to this item.

### 3.2 CONSTRUCTION CONTROL

- A. The Contractor shall take the precautions to safeguard the traveling public as applicable to this contract. All of the Contractor's vehicles and his suppliers that are parked adjacent to moving lanes shall be equipped and activated with a rotating amber colored beacon.

### 3.3 ACCESS TO AND CONTROL OF WORK AREAS

- A. The Contractor's vehicles shall always move with, and not across or against the flow of traffic on roadways. Vehicles shall enter or leave work areas as applicable to the contract in a manner which will not be hazardous to or interfere with traffic, and then only under the direction of a uniformed flagger stationed for that purpose.
- B. Vehicles shall not park or stop in roadways or shoulders except within designated work areas.
- C. The designated areas used by the Contractor shall be restored to the original condition after completion of the project by him/her at his/her expense.
- D. Under no circumstances will any compressed-air line or other objects be permitted to lie in a roadway, paved area, or shoulder open to traffic. Temporary overhead power lines must be approved by the owner.

### 3.4 AUTHORITY

- A. All traffic enforcement is under the supervision and control of the Delaware State Police. The State Police will enforce regulations under which the Contractor as well as the traveling public are governed.

If the owner, or the State Police, should notify the Contractor or his superintendent, of any hazardous condition or violation of state traffic regulations, all operations shall be summarily discontinued and immediate remedial action shall be taken to the satisfaction of the Owner before work is resumed.

- C. The Owner reserves the right at all times to modify the traffic protective measures whenever such modifications are necessary for the adequate protection of traffic, the work and/or the working personnel.

### 3.5 CONTRACTOR'S RESPONSIBILITY

- A. The safety measures outlined herein and as shown on the Contract Documents shall be considered as basic and not necessarily sufficient in every instance to guarantee the protection of the traveling public. The final responsibility for the installation of adequate safety precautions for the protection of the traveling public and his own personnel shall rest with the Contractor.
- B. The Contractor shall furnish all labor, materials, equipment and services necessary to satisfy the requirements, and intent of this Contract including supervision and all protective devices required but not stated under other items of the contract. The Contractor shall be responsible for all devices being in their correct position and location at all times during periods when an area is closed to traffic, including non-working hours. The Contractor shall have 24-hour service available at all times to correct or replace any traffic control device.
- C. The Contractor shall be required to maintain all traffic protection devices. Such maintenance shall include washing sign faces, replacing deficient batteries and lights, aligning lights properly, replacing reflective materials, relocating barriers and plastic drums as directed by the owner to maintain traffic in a safe and effective manner.

**END OF SECTION**

SECTION 132950 – PRE-ENGINEERED TIMBER CONNECTOR BRIDGE

PART 1 – GENERAL

1.1 SUMMARY

- A. The item shall consist of furnishing, fabricating and erecting a fully engineered, timber bridge in conformance with the requirements and details shown on the plans and/or the approved shop drawings. In addition, the item shall consist of furnishing and installing a timber abutment in accordance with these specifications. All work shall be in reasonably close conformity with the lines, grades and dimensions shown on the plans and/or established in the field.

1.2 SUBMITTALS

- A. Product Data: For each type of product indicated.
- B. Shop Drawings: Include plans, elevations, sections, details, and attachments details.
1. Shop drawings and design computations shall be submitted to the Owner for review and approval prior to fabrication of material. Design drawings shall be signed and sealed by a Professional Engineer registered in the State of Delaware. Schematic drawings and diagrams shall be unique drawings, prepared to illustrate the specific portion of the work to be done.
  2. Structural calculations for the bridge shall be submitted by the bridge manufacturer for review by the Owner. All calculations shall be signed and sealed by a Professional Engineer who is licensed in the state of Delaware. The calculations shall include all design information necessary to determine the structural adequacy of the bridge. The calculations shall include the following:
    - i. Substructure design, including pile analysis for embedment and structural capacity and the design of timber pier bents and abutments.
    - ii. Superstructure design, including all stringers, blocking and bracing.
    - iii. Deck design.
    - iv. All bolted connections.
- C. Material test reports and certificates.
1. Submit material reports and certification for all structural elements.
- D. Warranty
1. The bridge manufacturer shall warrant their structure(s) to be free of design, material and workmanship defects for a period of five (5) years from the date of acceptance.

## 2.1 QUALIFIED SUPPLIERS

- A. The bridge manufacturer shall have been in the business of design and fabrication of bridges for a minimum of ten (10) years and provide a list of five (5) successful bridge projects, of similar size and construction, each of which has been in service at least three years. List the location, bridge size, owner, and contact reference for each bridge.
- B. Acceptable fabricators and suppliers of the timber bridge are as follows:

York Bridge Concepts  
2420 Brunello Terrace  
Lutz, Florida 33558  
(800) 226-4178

Bridge Builders USA, Inc.  
1149 Shope Road  
Otto, NC 28765  
(800) 877-7777

Wheeler  
9330 James Avenue South  
Bloomington, MN 55431  
(800) 328-3986

### Approved Equal

Contractor must submit alternate manufacturer's design information to the DNREC Division of Parks and Recreation, Office of Design and Development no less than two (2) weeks prior to bid opening for review and approval.

## 2.2 PERFORMANCE REQUIREMENTS

- A. **Structural Performance:** The complete timber structure assembly shall be designed using either load factor or working stress methods to provide appropriate safety factors to withstand the combined and total effects of the following loads applied in combinations as shown in the latest AASHTO LRFD Bridge Design Specifications, latest edition and as follows:
1. Maximum uniform pedestrian live load of 90 pounds per square foot applied to the entire deck area in accordance with AASHTO LRFD Guide Specification for Design of Pedestrian Bridges, current edition.
  2. Maximum vehicular load of a 20,000 lb. (H-10) vehicle with no impact factor applied.
- B. Timber bridge shall be a low profile, "simply supported" beam style design supported by pier bents. Bridge railing shall be a continuous steel rail attached to the top of the timber or steel curb as shown on the contract plans. Railing height shall be 42 inches.
- C. Bridge shall be designed and fabricated to meet the requirements of the United States Access Board, Accessibility Standards for Federal Outdoor Developed Areas.

2.3 TIMBER MATERIALS

A. The timber decking shall conform to the following:

1. All decking shall be full thickness, full width planks unless approved otherwise.
2. Decking shall be Southern Yellow Pine, S4S - #1 treated to AWPA standards. Preservative utilized shall be Alkaline Copper Quaternary (ACQ) to a minimum total absorption of .40 pounds of preservative per cubic foot of wood.
5. Decking shall have the following unfactored allowable values shall be used:

Allowable Bending	=	1500 psi, minimum,
Allowable Shear	=	90 psi.
Modulus of Elasticity	=	1,700,000 psi.

B. The solid wood framing shall conform to the following:

1. All solid wood framing shall be Southern Pine graded in accordance with SPIB rules.
2. All pieces shall bear the appropriate grade mark.
3. Members shall have the following minimum structural properties:

	GRADE	Fb	Fv	Fc	E
Cap	#1	1300 psi	165 psi	375 psi	1,500,000 psi
Stringers	#2	975 psi	175 psi	565 psi	1,500,000 psi
Other	#2	(Design values vary by size)			

2.4 TIMBER PILING

A. All piling shall be southern pine timber piling complying with ASTM Standard D25, Standard Specifications for Round Timber Piles.

B. Minimum structural properties shall be as follows, unless noted otherwise:

1. Allowable Bending Stress (Fb): 2,400 psi
2. Modulus of Elasticity (E): 1,500,000 psi
3. Allowable Compressive Stress (Fc): 1,200 psi
4. Allowable Shear Stress (Fv): 110 psi

2.5 TIMBER TREATMENT

A. Members shall be pressure treated with Chromated Copper Arsenate (CCA) Type C, or Alkaline Copper Quaternary (ACQ) to the following retention levels as per AWPA, unless noted otherwise:

1. Piling 0.80 CCA
2. Structure 0.60 CCA
3. Decking 0.40 ACQ

- B. All treatment shall be done in accordance with the latest AWP standards applicable to the type of member being treated. Provide certificate of treatment for all wood materials incorporated into the structure. Materials shall be air dried to a maximum moisture content of 19% after treatment and prior to installation, if practical.

## 2.6 STEEL MATERIALS

- A. The steel members for railings and connections shall conform to the following: Elements which are not to be painted shall be fabricated from high strength, low alloy, atmospheric corrosion resistant ASTM A847, cold-formed welded square and rectangular tubing and/or ASTM A588, or ASTM A242, plates ( $F_y = 42,000$  psi). The minimum corrosion index of atmospheric corrosion resistant steel, as determined in accordance with ASTM G101, shall be 6.0.
1. All members of steel vehicular safety curbs shall be fabricated from square and/or rectangular structural steel tubing as shown.
  2. All structural shapes, plates, tubes and bars shall have a minimum thickness of 5/16".
  3. Minimum thickness of non-structural tubular members shall be 1/4".
  4. Field splices shall be bolted with galvanized ASTM A307 bolts.
  5. All Welding shall be in accordance with the latest edition of AASHTO/AWS D1.5 Bridge Welding Code.
  6. All Welding of structural steel tubular members shall be in accordance with the latest edition on ANSI/AWS D1.1 Structural Welding Code.
  7. Beveled galvanized steel slide plates shall be provided and installed over deck expansion points at the end(s) of the bridge to span any gap between the deck and the abutment.

## 2.7 DESIGN LIMITATIONS

### A. Deflection

1. Vertical and Horizontal Deflection of the bridge due to vehicular and service pedestrian live load shall be in accordance with the AASHTO LRFD Guide Specifications for the Design of Pedestrian Bridged, current edition.

## PART 3 – EXECUTION

### 3.1 TIMBER PILING

- A. Minimum pile capacity shall be 8 tons (16,000 LB) each, minimum butt diameter is 10 inches.

- B. Piles shall be driven to a minimum depth of 8 feet or until refusal in non-disturbed soils.
- C. Piles shall be driven with a vibratory hammer.
- D. Upon encountering dense soil or other similar soil conditions that prevent driving, angoring may be utilized to assist in the installation of the piling.
- E. If refusal is met in less than 8 feet of non-disturbed soils, a concrete footing shall be added to stabilize piling. The size of the footing shall be determined by the bridge manufacturer's Engineer of Record and shall be submitted for review and approval. Concrete footings shall be constructed flush with existing grade.

### 3.2 TIMBER DECK ATTACHMENT

- 1. At time of installation planks are to be placed with a 1/8" gap between boards to allow drainage through the deck.
- 2. Every plank must be attached with at least two fasteners at each end and at all intermediate supports.
- 3. All fasteners shall be hot-dipped galvanized, stainless steel or other approved material to be used with ACQ treated lumber. Power actuated fasteners will not be allowed.

### 3.3 DELIVERY AND ERECTION

- A. The manufacturer will provide an experienced construction team and all necessary equipment necessary to install/erect the timber bridge. The construction team will be familiar with the structure and erection procedures of the manufacture. With the exception of backfill soil, all material, including timber, hardware, etc., shall be furnished by the manufacturer and included in the cost of the bridge.
- B. Field erection shall utilize a "top-down" method of construction. Construction will start at the existing at-grade trail and proceed toward the completed bridge abutment/pier. Piles will be placed for the soldier pile abutment, first pile bent, and stringers set. Work will proceed with equipment utilizing the existing construction as a work platform to construct the subsequent piers and stringers until reaching the bridge abutment.
- C. The bridge manufacturer shall provide written inspection and maintenance procedures to be followed by the bridge owner.

END OF SECTION 132950

**NOT FOR BID**

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