

Delaware River & Bay Authority

CONTRACT NO. 33N-24-A

New Box Hangars (33N) - CONSTRUCT BOX HANGAR

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Delaware River & Bay Authority

CONTRACT NO. 33N-24-A

New Box Hangars (33N) - CONSTRUCT BOX HANGAR

Contractor _____

Base Line Items								
Item No.	Unit Code	Description	Unit of Measure	Qty.	Unit Price		Line Total	
					Dollars	Cents	Dollars	Cents
1	33N-24-A-1	C-105-6.1 MOBILIZATION (4% +/- MAXIMUM)	LS	1				
2	33N-24-A-2	C-106-3.1 SAFETY, SECURITY AND MAINTENANCE OF TRAFFIC	LS	1				
3	33N-24-A-3	L-102-4.1a ELECTRIC UTILITY ALLOWANCE (BIDDERS MUST ENTER A UNIT PRICE OF \$40,000 FOR THIS PAY ITEM)	LS	1				
4	33N-24-A-4	L-102-4.1b UTILITY COORDINATION (BIDDERS MUST ENTER A UNIT PRICE OF \$20,000 FOR THIS PAY ITEM)	LS	1				
5	33N-24-A-5	L-108-5.1a NO. 3/0 AWG, 600V, THWN CABLE, INSTALLED IN TRENCH, DUCT BANK OR CONDUIT	LF	300				
6	33N-24-A-6	L-108-5.2b NO. 6 AWG, INSULATED, STRANDED EQUIPMENT BONDING INSTALLED IN DUCT BANK OR CONDUIT	LF	100				
7	33N-24-A-7	L-110-5.1a CONCRETE ENCASED ELECTRICAL DUCT BANK, 2-WAY - 4" PVC CONDUIT, IN PAVEMENT	LF	100				
8	33N-24-A-8	L-110-5.1b CONCRETE ENCASED ELECTRICAL DUCT BANK, 2-WAY, 2" PVC CONDUIT IN PAVEMENT	LF	50				
9	33N-24-A-9	L-110-5.1c NON ENCASED ELECTRICAL DUCT BANK, 2-WAY 2" RGS CONDUIT, IN TURF	LF	50				
10	33N-24-A-10	P-101-5.1 JOINT AND CRACK REPAIR	LF	820				
11	33N-24-A-11	11000-1.6-B-1 BOX HANGAR	LS	1				
Total								

DELAWARE RIVER AND BAY AUTHORITY

DELAWARE AIRPARK

CONTRACT DOCUMENTS

FOR

CONTRACT NO. 33N-24-A

CONSTRUCT BOX HANGAR

FAA AIP PROJECT NO. 3-10-0001-____-2024

November 2023

DELAWARE RIVER AND BAY AUTHORITY

DELAWARE AIRPARK

CONTRACT NO. 33N-24-A

CONSTRUCT BOX HANGAR

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DELAWARE RIVER AND BAY AUTHORITY

DELAWARE AIRPARK

CONTRACT NO. 33N-24-A

CONSTRUCT BOX HANGAR

* * * * *

November 1, 2023

ADVERTISEMENT FOR BIDS

Sealed Bids for the above project will be accepted during normal business hours by the Delaware River and Bay Authority (“DRBA” or the “Authority”) Procurement Department, located at the intersection of I-295 & New Castle Avenue (DE Route 9), Administration Building #6, New Castle, Delaware, 19720, until 11:00 a.m. local time on November 29, 2023, at which time and place said Bids will be opened.

The project is located at Delaware Airpark (33N), 127 Durham Lane, Dover, Delaware. The scope of project work generally includes, but is not limited to, the construction of a new, approximately 11,584 square foot, pre-engineered metal building (“PEMB”) box hangar upon a previously constructed structural concrete pad and columns. The project includes building construction, construction of a firewall, installation of new electrical service to the building, installation of interior and exterior lighting, and new bi-fold electrically operated overhead hangar doors. The existing building foundation was designed for an Erect-A-Tube 4 Unit Model 52-56 building. If the Contractor plans to provide and utilize an equivalent building, any required structural modifications shall be included in the Contractor’s price for the building. No additional payment will be made for any foundation modifications.

All work on the project must be completed within Two Hundred Ten (210) calendar days after the initial “Notice to Proceed” has been authorized by the Authority. The Contract Time of Completion shall begin upon issuance of the Notice to Proceed, and includes shop drawing submittal and review, and lead time on all building and electrical components required for the project. **The Contractor’s construction schedule shall show construction beginning in the spring of 2024. TIME IS OF THE ESSENCE.**

A non-mandatory pre-bid meeting and project site visit will be held on November 16, 2023, at 11:00 a.m. local time at the Delaware Airpark Terminal Building, 127 Durham Lane, Dover, Delaware 19904. All visitors must follow the personal protective equipment requirements in accordance with DRBA policy. Unsupervised access to the project site is prohibited.

Bidders may obtain contract documents from CapEx Manager (“CapEx”), the Authority’s online project management system. A link to CapEx is available at www.drba.net by clicking the “Procurement” link, then the link labeled “See Open Projects”.

All bidding firms, including joint ventures, must register as a vendor and subscribe to this project in CapEx to be eligible to submit a bid. If a bidder has the ability to submit a bid under more than one company name, the company that actually submits the bid must be registered as a bidder in CapEx. Any bid received from any a firm who is not registered as a vendor in CapEx or is not subscribed to this project in CapEx, will be rejected.

ELECTRONIC AND MAILED BIDDING IS STRONGLY ENCOURAGED. Bidders are strongly encouraged to mail any hardcopy bid documents required by the Authority in advance and to use CapEx to submit their numeric bid electronically. Numeric bids that are submitted electronically may be revised, withdrawn and/or resubmitted up until bids are due.

Bid documents may also be delivered in-person at DRBA Administration Building #6, located at the intersection of I-295 & New Castle Avenue (DE Route 9), New Castle, Delaware, 19720, during normal business days from 8:30AM to 4:30PM.

Bidders must either: 1) Submit the numeric portion of the bid electronically via CapEx, or 2) Submit a hard copy of the numeric portion of the bid along with the rest of the required bid forms. All required bid forms (other than the numeric portion of the bid if submitted via CapEx) must be received by the due date/time and be within a sealed envelope. The sealed envelope containing the bid forms must be marked "Bid for Contract No. 33N-24-A, CONSTRUCT BOX HANGAR". If the bidder has submitted its numeric bid via CapEx the envelope shall be marked: "NUMERIC BID SUBMITTED VIA CAPEX".

All Bidders, and any Subcontractor expected to perform twenty percent (20%) or more of the total value of work of the Contract (not including the cost of materials, equipment or supplies incidental to the performance of the subcontract), must complete and submit a "Qualification Questionnaire" form contained herein with the corresponding Bid.

Bids received after the due date and time will not be considered. The DRBA reserves the right to reject any or all bids or portions thereof, or to waive minor irregularities as may be permitted by law.

Each bid must be accompanied by two (2) forms of bid guaranty as follows:

- (i) A cashier's check, made payable to the "Delaware River and Bay Authority", in the sum of not less than one percent (1%) of the Total Price, except that the amount of the check need not exceed \$20,000 and shall not be less than \$2,000; **and**
- (ii) A Bid Bond, on the form furnished by the Authority and included in the Contract Documents, for a sum of not less than ten percent (10%) of the Total Price.

Cashier's checks submitted as bid guaranty will be returned to each non-awarded Bidder as soon as possible following the bid opening.

Together, parts (i) and (ii) below, as modified by any special provision(s) or by documents of any description furnished by the DRBA as part of this project, shall form the "Standard Specifications" and shall govern the execution of the project:

- (i) Division 100 – General Provisions of the *Delaware River and Bay Authority Standard Specifications for Road and Bridge Construction*, dated December 15, 2014; and
- (ii) The most recent version of Divisions 200 through 1000 of the *Delaware Department of Transportation* (“DelDOT”) *Standard Specifications for Road and Bridge Construction*, including the most recent version of DelDOT’s *Standard Items and Special Provisions*, each as published on the [DelDOT website](#) on the date of the Advertisement for Bids (“DelDOT Standard Specifications”).

Registered Bidders who subscribe to this project are provided with, via CapEx, a digital edition of Division 100 – General Provisions of the DRBA’s Standard Specifications. Any applicable provision set forth in the Standard Specifications, as defined above, that is not modified by or in conflict with a Special Provision made thereto shall be understood to remain in full force and effect.

Any questions, clarifications, or requests for revisions to the Contract Documents must be forwarded to the Authority in writing via CapEx no later than six (6) business days prior to the bid opening date and time. The Authority has no obligation to answer any question received after the above-stated time. Questions, answers, and approved modifications, if any, will be included as Contract Addenda and released to all subscribed parties prior to the bid due date.

Prior to submitting a bid, it is the responsibility of each Bidder to carefully review the Authority’s Example Form of Contract and minimum insurance coverages required to be carried by the Contractor and any sub-contractor (See SPECIAL PROVISIONS – PART I, Section 103.10 Insurance). Following the designated Question/Answer period, the act of submitting a bid shall represent that Bidder’s acceptance of the Authority’s Example Form of Contract and insurance requirements, and any subsequent attempt to revise any portion of such will be disregarded and shall be just cause for disqualification.

Bidders are notified that portions of the cost of this project are reimbursable to the DRBA under the U.S Department of Transportation (USDOT) Federal Aviation Administration (FAA) Airport Improvement Program (AIP) and as such, all work of this project shall follow all applicable mandatory FAA standards.

NOTICE OF REQUIREMENT FOR MINIMUM WAGE RATES

Notice is given to Bidders that the DRBA, in the performance of the Grant Agreement and the Assurances for Airport Sponsors incorporated thereto, is required to include in all contracts in excess of \$2,000 for work on any projects funded under the Grant Agreement which involve labor, provisions establishing minimum rates of wages, to be predetermined by the Secretary of Labor under 40 U.S.C. §§ 3141-3144, 3146, and 3147, Public Building, Property, and Works, which all contractors shall pay to skilled and unskilled labor, and such minimum rates shall be stated in the invitation for bids and shall be included in proposals or bids for the work.

See Special Provisions, Part I: 107.19 Minimum Wage Rates (attached herein), Special Provisions Part II.I - FAA General Provisions - Federal Fair Labor Standards Act (Federal Minimum Wage)

and Special Provisions Part II.II - Amendments to FAA General Provisions - DAVIS-BACON REQUIREMENTS.

**NOTICE OF REQUIREMENT FOR AFFIRMATIVE ACTION TO
ENSURE EQUAL EMPLOYMENT OPPORTUNITY**

1. The Offeror's or Bidder's attention is called to the "Equal Opportunity Clause" and the "Standard Federal Equal Employment Opportunity Construction Contract Specifications" set forth herein.

2. The goals and timetables for minority and female participation, expressed in percentage terms for the contractor's aggregate workforce in each trade on all construction work in the covered area, are as follows:

Goals for minority participation for each trade: 14.5% (Kent County)

Goals for female participation in each trade: 6.9% (Nationwide)

These goals are applicable to all of the contractor's construction work (whether or not it is Federal or federally-assisted) performed in the covered area. If the contractor performs construction work in a geographical area located outside of the covered area, it shall apply the goals established for such geographical area where the work is actually performed. With regard to this second area, the Contractor also is subject to the goals for both its federally involved and non-federally involved construction.

The Contractor's compliance with the Executive Order and the regulations in 41 CFR Part 60-4 shall be based on its implementation of the Equal Opportunity Clause, specific affirmative action obligations required by the specifications set forth in 41 CFR 60-4.3(a), and its efforts to meet the goals. The hours of minority and female employment and training must be substantially uniform throughout the length of the contract, and in each trade, and the contractor shall make a good faith effort to employ minorities and women evenly on each of its projects. The transfer of minority or female employees or trainees from contractor to contractor or from project to project for the sole purpose of meeting the Contractor's goals shall be a violation of the contract, the Executive Order and the regulations in 41 CFR Part 60-4. Compliance with the goals will be measured against the total work hours performed.

3. The Contractor shall provide written notification to the Director of the Office of Federal Contract Compliance Programs (OFCCP) within ten (10) working days of award of any construction subcontract in excess of \$10,000 at any tier for construction work under the contract resulting from this solicitation. The notification shall list the name, address, and telephone number of the subcontractor; employer identification number of the subcontractor; estimated dollar amount of the subcontract; estimated starting and completion dates of the subcontract; and the geographical area in which the subcontract is to be performed.

4. As used in this notice and in the Contract resulting from this solicitation, the "covered area" is the State of Delaware, Kent County.

TITLE VI SOLICITATION NOTICE

The Delaware River and Bay Authority, in accordance with the provisions of Title VI of the Civil Rights Act of 1964 (78 Stat. 252, 42 U.S.C. §§ 2000d to 2000d-4) and the Regulations, hereby notifies all Bidders that it will affirmatively ensure that any contract entered into pursuant to this advertisement, disadvantaged business enterprises will be afforded full and fair opportunity to submit bids in response to this invitation and will not be discriminated against on the grounds of race, color, or national origin in consideration for an award.

RACE/GENDER NEUTRAL

The requirements of 49 CFR part 26 apply to this contract. It is the policy of the Delaware River and Bay Authority to practice nondiscrimination based on race, color, sex or national origin in the award or performance of this contract. The Delaware River and Bay Authority encourages participation by all firms qualifying under this solicitation regardless of business size or ownership.

DISADVANTAGED BUSINESS ENTERPRISES

The Disadvantaged Business Enterprise (“DBE”) participation goal for 33N-24-A is 5.1% of the total value of the Contract.

The Authority’s award of this Contract is conditioned upon Bidder satisfying the good faith effort requirements of 49 CFR §26.53.

As a condition of bid responsiveness, the Bidder must submit a “DBE Participation Assurance” on the form provided herein with their bid.

DELAWARE RIVER AND BAY AUTHORITY

By: Samuel E. Lathem, Chairman
Thomas J. Cook, Executive Director

DELAWARE RIVER AND BAY AUTHORITY

DELAWARE AIRPARK

CONTRACT NO. 33N-24-A

CONSTRUCT BOX HANGAR

* * * * *

BID

To: Delaware River and Bay Authority
I-295 & New Castle Avenue
New Castle, Delaware 19720

Sirs:

The undersigned bidder has carefully examined the site and location of the proposed work, the proposed form of Contract to be known as Contract No. 33N-24-A; Division 100 – General Provisions of the *Delaware River and Bay Authority Standard Specifications for Road and Bridge Construction*, dated December 15, 2014; the most recent version of Divisions 200 through 1000 of the *Delaware Department of Transportation (“DelDOT”) Standard Specifications for Road and Bridge Construction*, including the most recent version of DelDOT’s *Standard Items and Special Provisions*, each as published on the [DelDOT website](#) on the date of the Advertisement for Bids (“DelDOT Standard Specifications”); and all DRBA Special Provisions and binds himself on award to him by the Delaware River and Bay Authority (herein called “Authority”) under this Bid, to execute a Contract in accordance with such award, of which Contract this Bid and said Plans, General Provisions and Special Provisions shall be part, and to provide all necessary machinery, tools, labor, and other means of construction, and to do all work and furnish all materials necessary to perform and complete the requirements of said Authority, at the following named unit and/or lump sum prices for the various scheduled items:

ATTENTION: In accordance with General Provision 102.09 ‘Delivery of Bids’, if you have subscribed to a project and wish to submit a Bid, you may submit the numeric portion of your Bid either: 1) online via CapEx; or 2) in hard copy along with all of the other required Bid forms as provided by the Authority. See below instructions:

- 1) If you choose to submit your numeric Bid online, you must complete the Bid pages using CapEx. Once you have selected the project from the ‘Project List’, you will be redirected to the ‘RFB Summary’ page. Near the bottom of the page, under the ‘Bid Detail’ section, click the ‘Take Bidder Role’ button, which will unlock the ‘Bid’ tab at the top of the page. Next, click the ‘Bid’ tab and enter your Bid information under the ‘Line Items Specified’ section. Note, when submitting a numeric Bid online, the envelope containing the additional required Bid Forms in hard copy shall be marked “NUMERIC BID SUBMITTED VIA CAPEX”.

OR

- 2) If you choose to submit a hard copy of your numeric Bid, you must print a copy of the Bid pages from CapEx. Once you have selected the project from the ‘Project List’, you will be redirected to the ‘RFB Summary’ page. Scroll down to the ‘Procurement Detail’ section, and click the link marked ‘Proposal Pages’. This link will open a .pdf of the numeric Bid page(s) for the Bidder to print (one-sided), complete and submit along with all of the other required Bid Forms in hard copy.

Bidders are cautioned to choose only ONE of the numeric Bid submission methods above. Note that in accordance with the General Provisions, *“If the Bidder has submitted the numerical portion of his, her, or its Bid both online and in hard copy format, the hard copy shall supersede the online submission unless the hard copy version has been specifically withdrawn by the Bidder in accordance with Subsection 102.10.”*

[This page will be removed and replaced with the awarded Bidder’s numeric Bid Page in the final set of executable Contract Documents]

ALL PAY ITEM FIELDS MUST BE COMPLETED OR THE BID WILL BE DISQUALIFIED.

Bidders are advised that project award is contingent on the availability of Grant funds authorized by the FAA. Bidders are encouraged to review the [Authority's current Capital Improvement Plan](#) for information regarding our anticipated funding levels for this project.

Unless a bid is rejected pursuant to subsection 102.07, or the bidder is disqualified pursuant to subsection 102.12 of the General Provisions of the *DRBA Standard Specifications for Road and Bridge Construction*, contract award will be made to the responsible bidder who submits the lowest responsive base bid. If, during the tabulation of bids, the price on any bid is found to be incorrectly calculated, the Authority reserves the right to make any such corrections necessary in the extended amounts and prices based on the unit and lump sum prices given and the approximate quantities stated for the scheduled items herein.

Together, parts (i) and (ii) below, as modified by any special provision(s) or by documents of any description furnished by the DRBA as part of this project, shall form the "Standard Specifications" and shall govern the execution of this project:

- (i) Division 100 – General Provisions of the *Delaware River and Bay Authority Standard Specifications for Road and Bridge Construction*, dated December 15, 2014; and
- (ii) The most recent version of Divisions 200 through 1000 of the *Delaware Department of Transportation* ("DelDOT") *Standard Specifications for Road and Bridge Construction*, including the most recent version of DelDOT's *Standard Items and Special Provisions*, each as published on the [DelDOT website](#) on the date of the Advertisement for Bids ("DelDOT Standard Specifications").

Any applicable provision set forth in the Standard Specifications, as defined above, that is not modified by or in conflict with the Special Provisions shall be understood to remain in full force and effect.

Capitalized terms used in these Bid Pages and not otherwise defined shall have the meaning set forth in the Standard Specifications.

The cost of any work performed, materials furnished, services provided, or expenses incurred, which are not specifically delineated in the Contract Documents, but which are necessary or proper for or incidental to the scope, intent, execution, and completion of the Contract, shall be deemed to have been included in the prices bid for the various items scheduled herein.

Each bid must be accompanied by two (2) forms of bid guaranty as follows:

- (i) A cashier's check, made payable to the "Delaware River and Bay Authority", in the sum of not less than one percent (1%) of the Total Price, except that the amount of the check need not exceed \$20,000 and shall not be less than \$2,000; **and**
- (ii) A Bid Bond, on the form furnished by the Authority and included in the Contract Documents, for a sum of not less than ten percent (10%) of the Total Price.

Failure on the part of the successful Bidder to whom the Contract has been awarded to execute and deliver the Contract Agreement and all other documents listed in Subsection 103.06 on the General Provisions, and in the manner and within the time prescribed therein, shall be just cause for the Authority to annul the Award, and, as applicable, to recover under the terms and provisions of the Bid Bond at the discretion of the Chairman, to retain the cashier's check submitted a bid guaranty as Liquidated Damages, and to exclude the Bidder from bidding on subsequent Authority projects for such period as the Authority may deem appropriate.

The provisions of Resolution No. 98-31 Part 2, Subparagraphs (b), (c), (d) and (e) of the Delaware River and Bay Authority govern the procedures for the solicitation and award of this Contract. The above-mentioned Subparagraphs are as follows:

“2. b. All construction management contracts and all construction contracts entered into by the Authority for construction, reconstruction, demolition, alteration, and repair work and maintenance work with any person, partnership, corporation, company association or similar entity or any affiliate thereof, which contract individually exceeds \$50,000, shall be pursuant to a contract entered into by the Authority after competitive bidding. The advertisement for such bids shall be published at least once a week for two consecutive weeks in one newspaper of general circulation in each of the states of Delaware and New Jersey. The advertisement shall indicate the character, quantity, and location of the work, the time and place where the plans and specifications or descriptions may be obtained and where proposals are to be received.

c. Any person proposing to bid on such contract may be required by the Authority to complete a questionnaire and file a financial statement containing a complete statement of that person's financial ability and experience in performing such work. If the Authority is not satisfied with the sufficiency of the answers to the questionnaire or the financial statement, it may refuse to furnish the person submitting such unsatisfactory answers or financial statement any request for proposals or any plans or specifications for the work and the bid of any such person may be disregarded.

d. Any person to whom a construction management contract or construction contract is awarded must be bondable in the full amount of the construction contract and any request for proposals disseminated by the Authority for such a contract shall include a copy of the Authority's form of construction contract which shall be part of the proposal to be reviewed by prospective bidders. In addition, with respect to any construction management contract, the construction manager will be required to obtain at least three bids for each subcontractor category (unless it is determined by the Authority not to be in the best interest of the Authority to so require) and no work shall be awarded to any subcontractor without the prior approval of the Authority.

e. All materiel and supply contracts, non-professional service contracts and all construction management contracts or construction contracts are to be awarded to the lowest responsible bidder unless, in the opinion of the Authority or its delegated representative, the interest of the Authority is better served by awarding the contract to another bidder and, in addition, the Authority reserves the right to reject any or all bids, to advertise for new bids, to proceed to do the work otherwise, or to abandon the work if in the judgment of the Authority its best interest will be promoted thereby. In determining how the interest of the Authority is better served in making an award to other than the lowest responsible bidder, the Authority may take into consideration all

relevant factors, including, but not limited to (i) the unsatisfactory performances on any previously awarded contracts by the bidder being rejected, (ii) lack of relevant experience on similar projects, (iii) lack of adequate manpower or supervisory staff; (iv) poor track record of timely completion within the industry or for the Authority; (v) track record of requesting unreasonable change orders, (vi) bonding capacity, (vii) low or no percentage of DBE, (viii) past claims or current legal problems or (ix) questionable subcontractor list.”

The Bidder acknowledges that portions of the cost of this project are reimbursable to the DRBA under the U.S Department of Transportation (USDOT) Federal Aviation Administration (FAA) Airport Improvement Program (AIP) and as such, all AIP-eligible portions of this project shall follow all applicable mandatory FAA standards. The DRBA shall be the public-agency owning the public use airport (Delaware Airpark), the recipient of the AIP grant, and the sponsor of this project. In the event of any inconsistency between the FAA procurement provisions and the Standard Specifications, to the extent the FAA procurement provisions are required for the Authority’s receipt of federal funds for this project, such FAA procurement provisions shall govern.

Remainder of page intentionally blank

Bidders must acknowledge receipt of all Addenda issued by the DRBA during the solicitation phase by listing each Addendum number and the date issued in the following space. If no Addenda were issued, please write "None":

Acknowledgment is hereby made that the undersigned Bidder has visited the work site, examined the condition of the area to be renovated under the Contract, and correlated personal observations within the requirements of the Contract Documents. Failure to visit the work site will in no way relieve the Bidder of the responsibility of performing the work in strict compliance with the true intent and meaning of the terms, conditions, and specifications of the Contract Documents. The Bidder is responsible for clarifying any ambiguity, conflict, discrepancy, omission, or other errors contained in the Contract Documents prior to bid or it shall be deemed waived.

Firm Name of Bidder: _____

Address of Bidder: _____

By: _____
(Signature)

By: _____
(Print Name)

Title: _____

Phone Number: _____

(If Corporation, add Corporate Seal)

Witness or Attest: _____ Date: _____

(This form must be completed and submitted with the Bid by each Bidder)

DELAWARE RIVER AND BAY AUTHORITY

DELAWARE AIRPARK

CONTRACT NO. 33N-24-A

CONSTRUCT BOX HANGAR

* * * * *

BID BOND

We, the undersigned, _____

as principal (herein called the "Principal"), and _____

a _____ of the State of _____, which is legally authorized to do business in the State of Delaware, where the work is to be performed, as surety (herein called the "Surety"), do hereby agree to be held and bound unto the Delaware River and Bay Authority (herein called the "Authority") for the sum of _____

_____ Dollars and _____ Cents (\$ _____), which sum is to be paid to the Authority for its use and benefit. Further, for such payment well and truly to be made, we do hereby bind ourselves and our heirs, executors, administrators, successors, and assigns, jointly and severally.

NOW THE CONDITION OF THIS OBLIGATION IS SUCH that the obligation hereby undertaken shall not vest and become binding unless the Principal, who has submitted to the Authority a bid to enter into Contract No. 33N-24-A for the performance of certain work for the Authority (herein called the "Contract"), shall be awarded the Contract. If the Contract is so awarded, the obligation hereby undertaken shall be and remain in full force and effect until discharged unless the Principal enters into and executes the Contract and furnishes such surety bond and proof of required insurance coverage as may be required by the terms of the Contract Documents and approved by the Authority, all within ten (10) calendar days after the date of official notice of the award thereof in accordance with the terms of the bid for the Contract.

IN WITNESS WHEREOF, the Principal and Surety have duly executed this Bid Bond as of _____, 20__.

[PRINCIPAL]

Name: _____

Address: _____

Witness or Attest:

By: _____

(Corporate Seal)

Title: _____

[SURETY]

Name: _____

Address: _____

Witness or Attest:

By: _____

(Corporate Seal)

Title: _____

(This form must be completed and submitted by each Bidder)

DELAWARE RIVER AND BAY AUTHORITY

DELAWARE AIRPARK

CONTRACT NO. 33N-24-A

CONSTRUCT BOX HANGAR

* * * * *

CONSENT OF SURETY

Delaware River and Bay Authority:

We have reviewed the Bid of _____
(Name of Contractor)

of _____
(Contractor Address)

for Contract No. 33N-24-A and wish to advise that should this Bid of the Contractor be accepted and the Contract awarded to said Contractor, this company agrees to become the surety on the Contract Bond and Security for Construction Warranty required by the Contract Documents.

We are duly authorized to do business in the state of Delaware:

Surety Company Name/Address:

(Authorized Signature)

ATTEST:

[Attach Power of Attorney]

(This form must be completed and submitted with the Bid by each Bidder)

**CERTIFICATE OF BUY AMERICAN COMPLIANCE
FOR MANUFACTURED PRODUCTS**

As a matter of bid responsiveness, the bidder or offeror must complete, sign, date, and submit this certification statement with their proposal. The bidder or offeror must indicate how they intend to comply with 49 USC § 50101 by selecting one of the following certification statements. These statements are mutually exclusive. Bidder must select one or the other (not both) by inserting a checkmark (✓) or the letter "X".

☐ Bidder or offeror hereby certifies that it will comply with 49 USC § 50101 by:

- a) Only installing steel and manufactured products produced in the United States, or;
- b) Installing manufactured products for which the FAA has issued a waiver as indicated by inclusion on the current FAA Nationwide Buy American Waivers Issued listing, or;
- c) Installing products listed as an Excepted Article, Material or Supply in Federal Acquisition Regulation Subpart 25.108.

By selecting this certification statement, the bidder or offeror agrees:

- 1. To provide to the Authority evidence that documents the source and origin of the steel and manufactured product.
- 2. To faithfully comply with providing US domestic product.
- 3. To furnish US domestic product for any waiver request that the FAA rejects.
- 4. To refrain from seeking a waiver request after establishment of the contract, unless extenuating circumstances emerge that the FAA determines justified.

☐ The bidder or offeror hereby certifies it cannot comply with the 100% Buy American Preferences of 49 USC § 50101(a) but may qualify for either a Type 3 or Type 4 waiver under 49 USC § 50101(b). By selecting this certification statement, the apparent bidder or offeror with the apparent low bid agrees:

- 1. To submit to the Authority within 15 calendar days of the bid opening, a formal waiver request and required documentation that support the type of waiver being requested.
- 2. That failure to submit the required documentation within the specified timeframe is cause for a non-responsive determination and may result in rejection of the proposal.
- 3. To faithfully comply with providing US domestic products at or above the approved US domestic content percentage as approved by the FAA.

4. To refrain from seeking a waiver request after establishment of the contract, unless extenuating circumstances emerge that the FAA determines justified.

Required Documentation

Type 3 Waiver - The cost of the item components and subcomponents produced in the United States is more than 60% of the cost of all components and subcomponents of the “item”. The required documentation for a type 3 waiver is:

- a) Listing of all product components and subcomponents that are not comprised of 100% US domestic content (Excludes products listed on the FAA Nationwide Buy American Waivers Issued listing and products excluded by Federal Acquisition Regulation Subpart 25.108; products of unknown origin must be considered as non-domestic products in their entirety)
- b) Cost of non-domestic components and subcomponents, excluding labor costs associated with final assembly at place of manufacture.
- c) Percentage of non-domestic component and subcomponent cost as compared to total “item” component and subcomponent costs, excluding labor costs associated with final assembly at place of manufacture.

Type 4 Waiver – Total cost of project using US domestic source product exceeds the total project cost using non-domestic product by 25%. The required documentation for a type 4 waiver is:

- a) Detailed cost information for total project using US domestic product
- b) Detailed cost information for total project using non-domestic product

False Statements: Per 49 USC § 47126, this certification concerns a matter within the jurisdiction of the Federal Aviation Administration and the making of a false, fictitious or fraudulent certification may render the maker subject to prosecution under Title 18, United States Code.

Date

Signature

Company Name

Title

(This form must be completed and submitted with the Bid by each Bidder)

DBE PARTICIPATION ASSURANCE

All bidders must make good faith efforts to achieve the targeted minimum level of Disadvantaged Business Enterprise (DBE) participation on Contract 33N-24-A. To be eligible for credit, DBEs must be certified by the bid/proposal due date by any of the following agencies: Delaware Department of Transportation, New Jersey Department of Transportation, New Jersey Transit, Port Authority of New York & New Jersey.

The DBE participation goal for 33N-24-A is 5.1% of the total value of the Contract.

The DBE goal is expressed as a percentage of the final paid amount of the Contract associated with the project. Each Bidder's effort is measured prior to award (i.e., committed DBE participation), during the project, and at the conclusion of the project (i.e., actual DBE utilization). A Bidder may satisfy the DBE requirements in one of two ways:

Option A: Bidder commits to DBE subcontractor utilization sufficient to meet the goal and honors those DBE subcontracts.

Option B: Bidder makes a good faith effort to locate sufficient DBE firms to meet the advertised goal but is unsuccessful. Bidder must provide documented proof of efforts and indicate the percentage of the Contract that they are able to commit to DBE firms. The Authority, in its sole discretion, will determine if Bidder has acted in good faith.

At all times the Bidder bears the burden of proving that its efforts are such that one would reasonably expect a firm to make if it is actively trying to obtain DBE participation.

DBE Credit

The Contractor will receive DBE participation credit for the full paid value of work managed and performed by, or manufactured by, DBEs. The Contractor will receive 60% participation credit for the paid value of materials purchased from certified DBE Suppliers/Regular Dealers. The Authority utilizes the provisions and definitions found in 49 CFR § 26.55 to determine goal-eligible DBE participation.

Reporting Subcontractor Utilization

Within thirty (30) days of receiving each pay estimate, the Contractor shall declare all payments made to all firms delivering work on this project, including DBE firms, via a signed *Subcontractor Utilization Report*, attached hereto as **Attachment C**.

Failure to Abide by the Supplier Diversity Policy Requirements

Failure of a Bidder to abide by these requirements may result in their removal from consideration of award. Failure of the Contractor to abide by these requirements after award and execution of the Contract shall be constituted as a breach of the Contract.

Directions: Bidder must place a check mark next to either Option A or Option B* below. Failure to select one option will result in the default assignment of Option A.

Option A:

☐ Bidder hereby commits to meet the 5.1% DBE goal on this project.

If, and upon being notified by the DRBA with a conditional award of the Contract, in order to remain in consideration, the below signed firm will submit the following to the DRBA Procurement Department within (5) business days:

- a) A *Letter of Intent* (attached herein as **Attachment B**), completed by each participating DBE. Each *Letter of Intent* must be signed by both the DBE principal owner and the Bidder.

Option B:

☐ Bidder is unable to meet the advertised DBE participation goal and hereby commits to a minimum of _____ % of DBE utilization on this project.

Insert number

If, and upon being notified by the DRBA with a conditional award of the Contract, in order to remain in consideration, the below signed firm will submit the following to the DRBA Procurement Department within (5) business days:

- a) Documented evidence to support the claim that the Bidder made good faith efforts to meet the advertised participation goal on this project; and
- b) A *Letter of Intent* (attached herein as **Attachment B**), completed by each participating DBE. Each *Letter of Intent* must be signed by both the DBE principal owner and the Bidder.

* Bidder may choose Option B only after exhausting all other methods to meet the advertised DBE goal. Evidence will be reviewed to determine if the Bidder should remain eligible for this agreement. Failure to indicate a percentage in the space provided above will result in the assignment of Option A by default.

The below signed has read and understands the DBE Participation Assurance and commits to the above as noted:

Name of Bidder: _____

By: _____

Title: _____

(This form must be completed and submitted with the Bid by each Bidder)

CONTRACTOR CERTIFICATIONS

BIDDING FIRM: _____

ADDRESS: _____

TELEPHONE NO.: _____

IRS EMPLOYER IDENTIFICATION NUMBER: _____

NOTICE OF NONSEGREGATED FACILITIES REQUIREMENT

Notice to Prospective Federally Assisted Construction Contractors

1. A Certification of Non-segregated Facilities shall be submitted prior to the award of a federally-assisted construction contract exceeding \$10,000 which is not exempt from the provisions of the Equal Opportunity Clause.
2. Contractors receiving federally-assisted construction contract awards exceeding \$10,000 which are not exempt from the provisions of the Equal Opportunity Clause will be required to provide for the forwarding of the following notice to prospective subcontractors for supplies and construction contracts where the subcontracts exceed \$10,000 and are not exempt from the provisions of the Equal Opportunity Clause.
3. The penalty for making false statements in offers is prescribed in 18 U.S.C. § 1001.

Notice to Prospective Subcontractors of Requirements for Certification of Non-Segregated Facilities

1. A Certification of Non-segregated Facilities shall be submitted prior to the award of a subcontract exceeding \$10,000, which is not exempt from the provisions of the Equal Opportunity Clause.
2. Contractors receiving subcontract awards exceeding \$10,000 which are not exempt from the provisions of the Equal Opportunity Clause will be required to provide for the forwarding of this notice to prospective subcontractors for supplies and construction contracts where the subcontracts exceed \$10,000 and are not exempt from the provisions of the Equal Opportunity Clause.
3. The penalty for making false statements in offers is prescribed in 18 U.S.C. § 1001.

* * * * *

CERTIFICATION OF NON-SEGREGATED FACILITIES

The federally-assisted construction contractor certifies that she or he does not maintain or provide, for his employees, any segregated facilities at any of his establishments and that she or he does not permit his employees to perform their services at any location, under his control, where segregated facilities are maintained. The federally-assisted construction contractor certifies that she or he will

not maintain or provide, for his employees, segregated facilities at any of his establishments and that she or he will not permit his employees to perform their services at any location under his control where segregated facilities are maintained. The federally-assisted construction contractor agrees that a breach of this certification is a violation of the Equal Opportunity Clause in this contract.

As used in this certification, the term "segregated facilities" means any waiting rooms, work areas, restrooms, and washrooms, restaurants and other eating areas, time clocks, locker rooms and other storage or dressing areas, parking lots, drinking fountains, recreation or entertainment areas, transportation, and housing facilities provided for employees which are segregated by explicit directives or are, in fact, segregated on the basis of race, color, religion, or national origin because of habit, local custom, or any other reason. The federally-assisted construction contractor agrees that (except where she or he has obtained identical certifications from proposed subcontractors for specific time periods) she or he will obtain identical certifications from proposed subcontractors prior to the award of subcontracts exceeding \$10,000 which are not exempt from the provisions of the Equal Opportunity Clause and that she or he will retain such certifications in his files.

* * * * *

CERTIFICATION OF OFFEROR/BIDDER REGARDING DEBARMENT AND/OR SUSPENSION

By submitting a bid/proposal under this solicitation, the bidder or offeror certifies that neither it nor its principals are presently debarred or suspended by any Federal department or agency from participation in this transaction.

* * * * *

CERTIFICATION OF LOWER TIER CONTRACTORS REGARDING DEBARMENT

The successful bidder, by administering each lower tier subcontract that exceeds \$25,000 as a "covered transaction", must verify each lower tier participant of a "covered transaction" under the project is not presently debarred or otherwise disqualified from participation in this federally assisted project. The successful bidder will accomplish this by:

1. Checking the System for Award Management at website: <http://www.sam.gov>, or
2. Collecting a certification statement similar to the Certification Of Offeror/Bidder Regarding Debarment and/or Suspension above, or
3. Inserting a clause or condition in the covered transaction with the lower tier contract.

If the FAA later determines that a lower tier participant failed to disclose to a higher tier participant that it was excluded or disqualified at the time it entered the covered transaction, the FAA may pursue any available remedies, including suspension and debarment of the non-compliant participant.

* * * * *

CERTIFICATION REGARDING LOBBYING

The bidder or offeror certifies by signing and submitting this bid or proposal, to the best of his or her knowledge and belief, that:

- (1) No Federal appropriated funds have been paid or will be paid, by or on behalf of the Bidder or Offeror, to any person for influencing or attempting to influence an officer or employee of an agency, a Member of Congress, an officer or employee of Congress, or an employee of a Member of Congress in connection with the awarding of any Federal contract, the making of any Federal grant, the making of any Federal loan, the entering into of any cooperative agreement, and the extension, continuation, renewal, amendment, or modification of any Federal contract, grant, loan, or cooperative agreement.
- (2) If any funds other than Federal appropriated funds have been paid or will be paid to any person for influencing or attempting to influence an officer or employee of any agency, a Member of Congress, an officer or employee of Congress, or an employee of a Member of Congress in connection with this Federal contract, grant, loan, or cooperative agreement, the undersigned shall complete and submit Standard Form-LLL, "Disclosure Form to Report Lobbying," in accordance with its instructions.
- (3) The undersigned shall require that the language of this certification be included in the award documents for all sub-awards at all tiers (including subcontracts, sub-grants, and contracts under grants, loans, and cooperative agreements) and that all sub-recipients shall certify and disclose accordingly.

This certification is a material representation of fact upon which reliance was placed when this transaction was made or entered into. Submission of this certification is a prerequisite for making or entering into this transaction imposed by section 1352, title 31, U.S. Code. Any person who fails to file the required certification shall be subject to a civil penalty of not less than \$10,000 and not more than \$100,000 for each such failure.

* * * * *

CERTIFICATION OF OFFERER/BIDDER REGARDING TAX DELINQUENCY AND FELONY CONVICTIONS

The bidder or offeror must complete each of the following two certification statements. The bidder or offeror must indicate its current status as it relates to tax delinquency and felony conviction by inserting a checkmark in the space following the applicable response. The bidder or offeror agrees that, if awarded a contract resulting from this solicitation, it will incorporate this provision for certification in all lower tier subcontracts.

Certifications

1. The bidder or offeror represents that it is (☐) / is not (☐) a corporation, partnership, or limited liability company that has any unpaid Federal tax liability that has been assessed, for which all judicial and administrative remedies have been exhausted or have lapsed, and that is not being paid in a timely manner pursuant to an agreement with the authority responsible for collecting the tax liability.
2. The bidder or offeror represents that it is (☐) / is not (☐) a corporation, partnership, or limited liability company that was convicted of a criminal violation under any Federal law within the preceding 24 months.

Note: If bidder or offeror responds in the affirmative to either of the above representations, the bidder or offeror is ineligible to receive an award unless the Owner has received notification from the agency suspension and debarment official (SDO) that the SDO has considered suspension or debarment and determined that further action is not required to protect the Government's interests. The bidder or offeror therefore must provide information to the Owner about its tax liability or any conviction to the Owner, who will then notify the FAA Airports District Office, which will then notify the agency's SDO to facilitate completion of the required considerations before award decisions are made.

Term Definitions

Felony conviction: Felony conviction means a conviction within the preceding twenty four (24) months of a felony criminal violation under any Federal law and includes conviction of an offense defined in a section of the U.S. code that specifically classifies the offense as a felony and conviction of an offense that is classified as a felony under 18 U.S.C. § 3559.

Tax Delinquency: A tax delinquency is any unpaid Federal tax liability that has been assessed, for which all judicial and administrative remedies have been exhausted, or have lapsed, and that is not being paid in a timely manner pursuant to an agreement with the authority responsible for collecting the tax liability.

* * * * *

Certification Statement:

I have read all Certifications above and so certify.

I certify that I have answered questions and/or inserted checkmarks as appropriate in the above Certifications as appropriate.

I certify that I will provide any information required by the above Certifications to DRBA or other authorities as applicable prior to the start of construction work, if awarded this Contract, and that I will provide any additional information requested by the DRBA.

Printed Name of Signer

Signature

Title

Date

(This form must be completed and submitted with the Bid by each Bidder)

CONSTRUCTION SAFETY PHASING PLAN (CSPP) CERTIFICATION

Project Location: Delaware Airpark, Dover, Delaware

Project Name: CONSTRUCT BOX HANGAR

Contractor's Official Name: _____

Contact Person: _____ Telephone: _____

Street Address: _____

City: _____ State: _____ Zip: _____

Maximum Construction Vehicle Height Fully Extended: 25'

Certification Statement:

I certify that I have read the Construction Safety and Phasing Plan ("CSPP") included in the Contract Documents and if awarded this Contract, I will abide by its requirements as written.

I certify that I have read the Safety Plan Compliance Document ("SCPD") included in the Contract Documents and if awarded this Contract, I will abide by its requirements as written;

I certify that I will provide the information required in the SCPD prior to the start of construction work, if awarded this Contract, and that I will provide any additional information requested by the DRBA.

Printed Name of Signer

Signature

Title

Date

(This form must be completed and submitted with the Bid by each Bidder)

**CONTRACTOR'S STORM WATER POLLUTION PREVENTION
CERTIFICATION FORM**

Contract No.: 33N-24-A

Project Name: CONSTRUCT BOX HANGAR

Location: Delaware Airpark, Dover, Delaware

Contractor's Official Name: _____

Address: _____

Telephone Number: _____

Contractor shall follow all Best Practices outlined by Occupational Safety and Health Administration regulations and Authority standards and will execute all work under the contract in a manner that eliminates or limits storm water run-off of chemicals or debris through storm drains or ditches.

The Contractor shall be responsible for providing all erosion and sedimentation control measures necessary to comply with the State of Delaware and Kent County regulations.

Contractor shall refrain from dumping or disposing of used oil, grease or fluids onto the ground, and from dumping or disposing of used batteries, oils, antifreeze or other toxic fluids into a storm drain or watercourse. Contractors will dispose of all waste fluids collected during the course of this project in accordance with accepted industry standards and applicable state and federal law.

Contractor must promptly notify the Authority's Project Engineer in the case of all spills and must contain and/or clean-up such spills immediately utilizing dry clean-up methods and must collect and dispose of all waste properly in accordance with accepted industry standards and applicable state and federal law and/or regulations.

Certification Statement:

"I certify under penalty of law that I understand and agree to comply with the terms and conditions of the pollution prevention plan for the construction site identified in this plan as a condition of authorization to discharge storm water and that it is unlawful for any person to cause or contribute to a violation of water quality standards.

Printed Name and Title

Signature/Date

(This form must be completed and submitted with the Bid by each Bidder)

**STOCKHOLDERS AND/OR PARTNERS
OWNING MORE THAN TEN PERCENT OF BIDDING ORGANIZATION**

If Bidder is a Corporation or Partnership, this form must be completed and submitted with the Bid. If no stockholder or partner owns ten percent or more of the Bidding organization, place a checkmark in the following box and skip to the signature line below: ☐

List the name and address of each stockholder owning ten percent (10%) or more of any class of corporate stock of the Bidding organization or each individual partner owning ten percent (10%) or greater interest of the Bidding organization:

		PERCENT OF OWNERSHIP
NAME _____	ADDRESS _____	
	_____	_____
NAME _____	ADDRESS _____	
	_____	_____
NAME _____	ADDRESS _____	
	_____	_____

If any stockholder or partner named above is itself a Corporation or Partnership, list the name and address of each stockholder owning ten percent (10%) or more of any class of corporate stock or ten percent (10%) or greater interest of said Corporation or Partnership. The disclosure shall be continued until names and addresses of every non-corporate stockholder, and individual partner, and member, exceeding the 10 percent ownership criteria established in this act, has been listed, using additional sheets as necessary.

		PERCENT OF OWNERSHIP
NAME _____	ADDRESS _____	
	_____	_____
NAME _____	ADDRESS _____	
	_____	_____
NAME _____	ADDRESS _____	
	_____	_____

I certify that the foregoing information is correct.

Signature

Print Name and Title

of

Name of Bidding Organization

(This form must be completed and submitted with the Bid if Bidder is a Corporation or Partnership.)

CERTIFIED CORPORATE RESOLUTION
(CORPORATE BIDDERS ONLY)

RESOLVED, that _____ be
(Name of Officer)

authorized to sign and submit the bid of this corporation and be authorized to execute a contract and any other instrument of whatever nature entered into by this corporation for the following project:

DRBA CONTRACT NO. 33N-24-A, CONSTRUCT BOX HANGAR.

The foregoing is a true and correct copy of the resolution adopted by _____
_____ Corporation at a meeting of its Board of Directors held
on the _____ day of _____, 20____.

(Secretary)

(Seal)

(If the Bidder is a Corporation, this form must be completed and submitted with the Bid)

DELAWARE RIVER AND BAY AUTHORITY

DELAWARE AIRPARK

CONTRACT NO. 33N-24-A

CONSTRUCT BOX HANGAR

* * * * *

NON-COLLUSION AFFIDAVIT

STATE OF _____

COUNTY OF _____

I, _____ of the City

of _____, County of _____ and State of

_____, being of full age and duly sworn according to law on my oath
dispose and say:

That I, on behalf of _____, submitted and
executed a Bid for Contract No. 33N-24-A to the Delaware River and Bay Authority, with full
authority to do so, and that said Bidder has not, directly or indirectly, entered into any agreement,
participated in any collusion, or otherwise taken any action in restraint of free, competitive bidding
in connection with the said Contract; and that all statements contained in said Bid and in this
Affidavit are true and correct and made with full knowledge that the said Authority relies upon the
truth of the statements contained in said Bid and in this Affidavit in awarding the said Contract. I
further warrant that no person or selling agency has been employed or retained to solicit or secure
the said Contract upon an agreement or understanding for a commission, percentage, brokerage or
contingent fee, except bona fide full-time employees.

By: _____

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

Notary Public

My commission expires _____, 20_____.

(This form must be completed and submitted with the Bid by each Bidder)

DELAWARE RIVER AND BAY AUTHORITY

DELAWARE AIRPARK

CONTRACT NO. 33N-24-A

CONSTRUCT BOX HANGAR

* * * * *

JOINT VENTURE STATEMENT

STATE OF _____

COUNTY OF _____

We, the undersigned, being duly sworn according to law, upon our respective oaths depose and say that:

1. The following named contractors have entered into a Joint Venture for the purpose of carrying out all the provisions of Contract No. 33N-24-A:

(a) _____
☐ An Individual
☐ A Partnership
☐ A Corporation

(b) _____
☐ An Individual
☐ A Partnership
☐ A Corporation

(c) _____
☐ An Individual
☐ A Partnership
☐ A Corporation

2. The contractors, under whose names we have affixed our respective signatures, have duly authorized and empowered us to execute this Joint Venture Statement in the name of and on behalf of such contractors for the purpose hereinabove stated.

3. Under the provisions of such Joint Venture, the assets of each of the contractors named in Paragraph 1 hereof, and in case any contractor so named above is a partnership, the assets of the individual members of such partnership, will be available for the performance of such Joint Venture and liable therefore and for all obligations incurred in connection therewith.

4. The assets and liabilities of the named contractors for whom we respectively execute this Joint Venture Statement are set forth in the financial statement requirement of the "Qualification Questionnaire" for each contractor.

5. This Joint Venture Statement is executed so that the named contractors, as one organization, may under such Joint Venture, bid upon said Contract, and be awarded the Contract if they should become the successful bidder therefor. The principal listed on the Bid Bond must be the same as the nominal Bidder. Notwithstanding, either joint venturer can bind the other to a contract with a third party, and should any bid, bond and agreement relating to said Contract shall be executed by any of the undersigned, and when so executed, shall bind this Joint Venture and each and every contractor named herein, severally and jointly. Simultaneous with the execution of the Contract, the contractors entering into this Joint Venture shall designate and appoint a Project Supervisor to act as their true and lawful agent with full power and authority to do and perform any and all acts of things necessary to carry out the work set forth in said Contract.
6. We bind the contractors for whom we respectively execute this Joint Venture Statement in firm agreement with the Delaware River and Bay Authority that each of the representations herein set forth is true.

Subscribed and sworn to before me,
this _____ day of _____, 20__

(a) _____
Name of Contractor

My commission expires _____

By _____
Print Name:

Notary Public

Subscribed and sworn to before me,
this _____ day of _____, 20__

(b) _____
Name of Contractor

My commission expires _____

By _____
Print Name:

Notary Public

Subscribed and sworn to before me,
this _____ day of _____, 20__

(c) _____
Name of Contractor

My commission expires _____

By _____
Print Name:

Notary Public

(If Bidder is a Joint Venture, this form must be completed and submitted with the Bid)

DELAWARE RIVER AND BAY AUTHORITY

DELAWARE AIRPARK

CONTRACT NO. 33N-24-A

CONSTRUCT BOX HANGAR

* * * * *

QUALIFICATION QUESTIONNAIRE

All Bidders, and any Subcontractor expected to perform twenty percent (20%) or more of the total value of work of the Contract (not including the cost of materials, equipment or supplies incidental to the performance of the subcontract), must complete and submit this form with the corresponding Bid. Use additional sheets as necessary.

Form submitted by _____, an
(Name of Bidder or Subcontractor)

- ☐ Sole Proprietorship (Individual)
- ☐ Partnership
- ☐ Limited Liability Company
- ☐ Corporation of _____ (State).

Principal Office Address and Telephone Number:

1. How many years has your organization been in business as a Contractor under your present business name? _____
2. How many years of experience does your organization have performing the work as shown on the Project Plans?:

as a Contractor? _____ as a Subcontractor? _____
3. On a separate piece of paper and attach to this Questionnaire list any information which would indicate the size and capacity of your organization, such as number of employees, equipment owned by your organization, etc.
4. List below the name, address, contact person and telephone number **for each subcontractor that your organization will use on this Project**, and the percentage (%) of the total dollar value of the Contract that each will perform. Indicate any subcontractors listed that are certified Disadvantaged Business Enterprises (“DBEs”).

-
-
5. List below the requested information concerning projects your organization has completed in the last five (5) years for the type of work required in the Contract. (If additional space is required, the information may be listed on sheets prepared by the Contractor and attached to this Questionnaire.)

Project Title and Location	Contract Amount	Required Completion Date	Actual Completion Date	Name, Address, Contact Person and Phone of Owner

6. List below the requested information concerning projects of all types that your organization will have underway as of the date Bids are to be received on the Contract:

Project Title and Location	Brief Description	Contract Amount	% Complete	% Sublet	Name, Address, Contact Person and Phone of Owner

7. During the previous ten (10) calendar years, has your organization failed to complete any

work (including subcontractor work) awarded to you? _____. If YES, describe the incident(s), date(s) and location of work on a separate piece of paper and attach to this Questionnaire.

8. During the past five (5) calendar years, has your organization defaulted on a contract or been terminated for any reasons, including default? _____. If YES, state name of individual(s), name(s) of the other organization and reason(s) therefor on a separate piece of paper and attach to this Questionnaire.
9. Has any officer or partner of your organization ever been an officer or partner of some other organization that failed to complete a construction contract? _____. If YES, state name of individual(s), name of owner(s) or client(s) and the reason(s) therefor on a separate piece of paper and attach to this Questionnaire.
10. Has any officer or partner of your organization ever failed to complete a construction contract handled in his or her own name? _____. If YES, state the name of the company filing the lien, the amount of the lien, and whether or not the lien was discharged on a separate piece of paper and attach to this Questionnaire.
11. Has any lien been filed in connection with a construction project handled by your organization based on allegations of nonpayment against your organization? _____. If YES, state the name of the company filing the lien, the amount of the lien, and whether or not the lien was discharged on a separate piece of paper and attached to this Questionnaire.
12. In the last five (5) years, have liquidated damages assessed on your organization? _____. If YES, provide information regarding every reason for the liquidated damages and the amount on a separate piece of paper and attach to this Questionnaire.
13. During the previous five (5) calendar years, has your organization been engaged in litigation relating to the performance of a contract? _____. If YES, with respect to each litigation, list the name of every adversary, each party, a description of every contract at issue in the litigation, the status and result(s) of each litigation and the jurisdiction(s), court(s) and docket number(s), on a separate piece of paper and attach to this Questionnaire.
14. During the previous five (5) calendar years, has your organization failed to pay a Subcontractor or supplier for work satisfactorily performed within thirty (30) days of receiving payment from the owner or client for that work? _____. If YES, provide information regarding all payment delays on a separate piece of paper and attach to this Questionnaire.
15. During the previous five (5) calendar years, has your organization incurred a work-related fatality to your workforce? _____. If YES, describe the incident(s), date(s) and location of work-related fatality(s) on a separate piece of paper and attach to this Questionnaire.
16. During the previous five (5) calendar years, has any owner, client, government or other public entity requested or required enforcement of any of its rights under a surety

agreement on the basis of default or in lieu of declaring your organization to be in default? _____ If YES, describe each event on a separate piece of paper and attach to this Questionnaire.

17. Has your organization received any regulatory government agency (i.e. OSHA, EPA, DOT) citations during the previous five (5) calendar years to the present time regardless of the nature of alleged violation and outcome? _____ If YES, list the agency, the total number of citations and the nature of each alleged violation on a on a separate piece of paper and attach to this Questionnaire.
18. Are your organization's field supervisors certified in any accredited safety courses (i.e., OSHA 10-hour Construction Safety, OSHA 30 hour Construction Safety, Asbestos Abatement, First Aid/CPR/AED)? _____ If YES, attach to this Questionnaire a list of all field supervisors by last and first name, title, and a copy of their safety-related certifications received within the past three (3) years.
19. During the previous five (5) calendar years, has your organization been debarred, suspended, proposed for debarment, declared ineligible, voluntarily excluded, or otherwise disqualified from bidding, proposing or contracting by any local, city, state or federal agency or government? _____ If YES, please provide details of each incident on a separate piece of paper and attach to this Questionnaire.
20. During the previous five (5) calendar years, has your organization experienced or been affected in any way that contributed or caused delay to the overall completion of projects that are the same or substantially similar to the Work contemplated in this project? _____ If YES, provide information regarding each delay and identify appropriate mitigation measures implemented on a separate piece of paper and attach it to this Questionnaire.

Remainder of page intentionally blank

Based upon the Contractor's answers to this Qualification Questionnaire, the Authority may reject the Bid on grounds of failure to provide adequate information, insufficient financial ability to perform the Contract, inadequate experience to undertake the project, documented failure to perform on prior contracts, prior judgments for breach of contract, criminal conviction, fraud, inadequate labor supply available to complete the project in a timely manner, previous debarment, previous revocation of a license, or previous bankruptcy proceedings, or other indication that the Contractor may not be capable of performing the work or completing the project to the satisfaction of the Authority.

The Authority reserves the right to inquire further with respect to the Contractor's responses; and the Contractor consents to such further inquiry and agrees to furnish all relevant documents and information as requested by the Authority. With the exception of willful falsification of or failure to report an answer, a response to this form which is or may be construed as unfavorable to the Contractor will not automatically result in a negative finding on the question of the Contractor's responsibility.

As an authorized representative of the Bidder/Subcontractor, the undersigned certifies that the information provided on this Qualification Questionnaire is true and accurate.

Name of Bidder/Subcontractor: _____

By: _____

Title: _____

Witness or Attest

(Corporate Seal)

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

Notary Public

My commission expires _____, 20_____.

Note to Bidders: Below is the standard form of contract approved for use by the DRBA which shall serve as the model contract that the DRBA and the Contractor will enter into. It is the responsibility of the Bidder to carefully review the below standard form of contract before submitting a Bid.

DELAWARE RIVER AND BAY AUTHORITY

DELAWARE AIRPARK

CONTRACT NO. 33N-24-A

CONSTRUCT BOX HANGAR

* * * * *

CONTRACT

This Contract ("Contract") is made and entered into by and between the DELAWARE RIVER AND BAY AUTHORITY, a body politic duly created by Compact and an agency for the State of Delaware and the State of New Jersey, having an address of P.O. Box 71, New Castle, Delaware 19720, (herein called the "Authority"), party of the first part; and **CONTRACTOR**, having an address of **ADDRESS** (herein called the "Contractor"), party of the second part.

WITNESSETH, that the Contractor, for and in consideration of the payments hereinafter specified and agreed to be made by the Authority, hereby covenants and agrees as follows:

ARTICLE ONE. The Contractor shall and will provide and furnish all materials, machinery, implements, appliances and tools and perform all the work and labor required to complete all Pay Items of Contract No. 33N-24-A upon the property within the jurisdiction and control of the Authority, in strict conformity with this Contract, including the executed Contract, Advertisement for Bids, Bid, Consent of Surety, Bid Bond, Non-Collusion Affidavit, Qualification Questionnaire, Joint Venture Statement (if applicable), Contract Bond, Standard Specifications, General and Special Provisions, Plans and any Addenda, Change Orders, Supplemental Agreements and all other documents specifically issued in connection with this Project, all of which are to be treated as one instrument, and are hereby made a part of this Contract as fully and with the same effect as if the same had been set forth at length in the body of this Contract.

ARTICLE TWO. It is understood and agreed by and between the parties hereto that all the work included in this Contract is to be done under the direction of the Executive Director of the Authority and that his decision as to the true and accurate meaning of said Bid, Plans, Standard Specifications and Special Provisions shall be final. It is further understood and agreed by and between the parties hereto that any additional drawings and specifications as may be necessary to detail and illustrate the work to be done are to be furnished by said Executive Director of the Authority, and the parties hereto agree to conform to and abide by the same so far as it may be consistent with the purpose and intent of the original Bid, Plans, Standard Specifications and Special Provisions referred to in Article One. It is further agreed by and between the parties that the Contractor is responsible to perform work which is reasonably inferable from, consistent with the intent of, or incidental to the Specifications, Special Provisions, Plans and Drawings, whether or not such work is explicitly stated.

Note to Bidders: Below is the standard form of contract approved for use by the DRBA which shall serve as the model contract that the DRBA and the Contractor will enter into. It is the responsibility of the Bidder to carefully review the below standard form of contract before submitting a Bid.

ARTICLE THREE. The Contractor agrees to make payment of all proper charges for labor and materials required in the aforementioned work, and to indemnify, defend and save harmless the Authority, its commissioners, officers, agents, employees and servants, and each and every one of them, against and from all suits and costs of every name and description, and from all damages to which the Authority, or any of its commissioners, officers, agents or servants may be subjected by reason of injury to the person or property of others resulting from the performance of said work, or through the negligence of said Contractor or its subcontractors, agents, employees or servants, or through any improper or defective machinery, implements or appliances used by the Contractor in the aforesaid work, or through any act or omission on the part of said Contractor or its agents, employees or servants.

ARTICLE FOUR. If the construction or work to be done under this Contract shall be abandoned, or if this Contract, or any part thereof, shall be sublet without the previous written consent of the Authority, or if the Contract shall be assigned by the Contractor, without the previous written consent of the Authority, or if at any time the Executive Director shall be of the opinion, and shall so certify in writing to the Authority, that the work, or any part thereof, is unnecessarily or unreasonably delayed, or that the Contractor has violated any provision of this Contract, the Authority may notify the Contractor to discontinue all work or any part thereof; and thereupon the Contractor shall discontinue such work or such part thereof as the Authority may designate, and the Authority may thereupon, by a Contract or otherwise, as it may determine, complete the work or part thereof and charge the entire expense of so completing the work or part thereof to the Contractor; and for such completion the Authority for itself or its contractors, may take possession of or use or cause to be used in the completion of the work or any part thereof, any of such machinery, implements, tools, or materials of any description as shall be found upon the line of said work, and thereafter accounting for, or paying to the Contractor a reasonable compensation for the use of said machinery, implements, tools, or materials.

All costs and charges that may be incurred under this Article or any damages, including, but not limited to liquidated, actual and consequential damages, that should be borne by the Contractor shall be withheld or deducted from any monies then due, or to become due to the Contractor, under this Contract, or any part thereof; and in such accounting the Authority shall not be held to obtain the lowest cost for the work of completing the Contract or any part thereof, but all sums actually paid therefor shall be charged to the Contractor. In case the costs and charges incurred are less than the sum which would have been payable under the Contract, if the same had been completed by the Contractor, the Contractor shall be entitled to receive the difference and in case such costs and charges shall exceed the said sum, the Contractor shall pay the amount of excess to the Authority for the completion of the work.

ARTICLE FIVE. The Authority agrees to pay the Contractor for such work, when completed in accordance with this Contract, the total amount of _____ Dollars and _____ Cents (\$ _____). Estimated payments will be made according to the Unit Prices and the lump sum prices (if any) specified in the Contractor's Bid in the manner and upon the conditions set forth in the Standard Specifications and Special Provisions. It is understood and

Note to Bidders: Below is the standard form of contract approved for use by the DRBA which shall serve as the model contract that the DRBA and the Contractor will enter into. It is the responsibility of the Bidder to carefully review the below standard form of contract before submitting a Bid.

agreed that the amount paid shall be the sum of the Lump Sum and Unit Prices named in the Contractor's Bid, each multiplied by the number of corresponding Pay Item Units actually completed by the Contractor and accepted by the Authority, rather than the Total Price named in the Contractor's Bid, which is calculated using an estimated quantity of Pay Item Units.

ARTICLE SIX. It is further mutually agreed between the parties hereto that no estimate given or payment made under this Contract shall be evidence of the performance of this Contract either wholly or in part, and that no payment shall be construed to be an acceptance of defective work or improper materials.

ARTICLE SEVEN. This Contract shall be binding upon the successors of both parties.

ARTICLE EIGHT. This Contract shall be governed by, and construed and enforced in accordance with, the laws of the State of Delaware. The Contractor hereby irrevocably consents, for itself and its heirs, legal representatives, partners, successors and assignees, to the exclusive jurisdiction of the Courts of the State of Delaware and of the United States District Court for the District of Delaware for all purposes in connection with any action or proceeding that arises from or relates to this Contract. The Contractor further waives any rights it may have to personal service of summons, complaint or other process in connection therewith, and agrees that service may be made by registered or certified mail addressed to Contractor at the address set forth in the bid documents.

ARTICLE NINE. Except as otherwise herein provided, any notices under or pursuant to this Contract or any of the documents incorporated herein shall be in writing and shall be delivered by personal delivery, by nationally recognized overnight courier or by certified or registered mail, return receipt requested, using the address set forth in the first paragraph above or at such other address as the party affected shall designate, subsequent to the date of the Contract, by written notice given in the manner hereinabove set forth. Notices shall be deemed given when delivered and receipted for (or upon the date of attempted delivery where delivery is refused), if hand-delivered; or when receipted for (or upon the date of attempted delivery where delivery is refused or a properly addressed and mailed notice is returned as undeliverable or unclaimed), if sent by certified or registered mail.

ARTICLE TEN. Should any part of this Contract be held to be invalid, illegal or unenforceable for any reason whatsoever: (a) the validity, legality and enforceability of the remaining provisions of this Contract (including without limitation, each portion of any Article of this Contract containing any such part held to be invalid, illegal or unenforceable, that is not itself invalid, illegal or unenforceable) shall not in any way be affected or impaired thereby and shall remain enforceable to the fullest extent permitted by law; (b) such part shall be deemed reformed to the extent necessary to conform to applicable law and to give the maximum effect to the intent of the parties hereto; and (c) to the fullest extent possible, the Articles of this Contract (including, without limitation, each portion of any Article of this Contract containing any such part held to be invalid, illegal or unenforceable, that is not itself invalid, illegal or unenforceable) shall be construed so as to give effect to the intent manifested thereby.

Note to Bidders: Below is the standard form of contract approved for use by the DRBA which shall serve as the model contract that the DRBA and the Contractor will enter into. It is the responsibility of the Bidder to carefully review the below standard form of contract before submitting a Bid.

ARTICLE ELEVEN. It is expressly understood and agreed that the Contractor, in performing his, her or its obligations under this Contract, shall be deemed an independent Contractor and not an agent or employee of the Authority. In furtherance of the foregoing, and not in limitation, the Contractor has no authority to enter into any contracts or other agreements with any person or entity on behalf of the Authority or to otherwise bind the Authority. Furthermore, nothing contained in this Contract shall either be construed to mean that the Authority and the Contractor are joint venturers, partners or the like, or to establish any contractual relationship between the Authority and any Subcontractor of the Contractor.

ARTICLE TWELVE. The effective date of this Contract shall be on date the Assistant Secretary of the Authority attests that all parties to this Contract have executed the Contract, as shown on the signature page below.

ARTICLE THIRTEEN. The Contractor shall maintain reasonable technical, organizational, and security measures, including, if applicable, a secure payment platform through which it shall submit its payment applications, to protect the content provided or accessed under this Agreement against accidental or unlawful destruction, alteration, unauthorized disclosure, or access. The Contractor agrees to indemnify, defend and hold harmless the Authority from and against, and shall pay any and all losses sustained or incurred by the Authority, based upon or relating to any claim, suit or proceeding brought by any Third Party against the Authority as a result of any failure by the Contractor, its employees, agents and/or Subcontractors to comply with the security obligations set forth in this Contract relating to protection against fraudulent or other inappropriate or unauthorized use of or access to the systems and/or networks described herein.

Signatures on following page

Note to Bidders: Below is the standard form of contract approved for use by the DRBA which shall serve as the model contract that the DRBA and the Contractor will enter into. It is the responsibility of the Bidder to carefully review the below standard form of contract before submitting a Bid.

IN WITNESS WHEREOF, the undersigned have duly executed this Contract, effective upon the day and year below as attested by the Assistant Secretary of the Authority.

[CONTRACTOR]

By: _____

Name: _____

Title: _____

Date: _____

DELAWARE RIVER AND BAY AUTHORITY

By: _____
Chairman

By: _____
Vice Chairman

By: _____
Executive Director

Attest: _____
Assistant Secretary

Date: _____

Note to Bidders: Unless stated otherwise in the Special Provisions, after the Contractor has received the written notice of Contract Award, and before the Authority will begin its execution process of said Contract, the Contractor must furnish a Contract Bond to the Authority in a sum equal to the cost of the Base Bid plus any Alternate Pay Items (as applicable) that the Authority has elected to include in the Contract. Below is the form approved for use by the DRBA. For additional information see Section 103.05 Contract Performance and Payment Bonds.

DELAWARE RIVER AND BAY AUTHORITY

DELAWARE AIRPARK

CONTRACT NO. 33N-24-A

CONSTRUCT BOX HANGAR

* * * * *

CONTRACT BOND

We, the undersigned, _____

as principal (herein called the "Principal"), and _____

a _____ of the State of _____, which is legally authorized to do business in the State of Delaware, where the work is to be performed, as surety (herein called the "Surety"), do hereby agree to be held and bound unto the Delaware River and Bay Authority

(herein called the "Authority") for the sum of _____

Dollars and _____ Cents (\$_____), which sum is to be paid to the Authority for its use and benefit. Further, for such payment well and truly to be made, we do hereby bind ourselves and our heirs, executors, administrators, successors, and assigns, jointly and severally.

NOW THE CONDITION OF THIS OBLIGATION IS SUCH that if the Principal, to whom the Authority has awarded Contract No. 33N-24-A (herein called the "Contract") for the performance of certain work for the Authority, which Contract is incorporated herein by reference, shall well and truly provide and furnish all the materials, appliances and tools and perform all the work required under and pursuant to the terms and conditions of the Contract and of the Bid, Plans, Standard Specifications, Special Provisions and Technical Specifications contained therein, or any changes or modifications thereto made as therein provided, and shall also indemnify, defend and save harmless the Authority from all costs, damages and expenses growing out of or by reason of the performance of the Contract and shall well and truly pay all and every person furnishing material or performing labor in and about the performance of the work under the Contract, all and every sum or sums of money due him, them or any of them, for all such labor and materials for

Note to Bidders: Unless stated otherwise in the Special Provisions, after the Contractor has received the written notice of Contract Award, and before the Authority will begin its execution process of said Contract, the Contractor must furnish a Contract Bond to the Authority in a sum equal to the cost of the Base Bid plus any Alternate Pay Items (as applicable) that the Authority has elected to include in the Contract. Below is the form approved for use by the DRBA. For additional information see Section 103.05 Contract Performance and Payment Bonds.

which the Principal is liable; then this obligation shall be void; otherwise it shall be and remain in full force and effect.

If for any cause the Principal fails or neglects to so fully perform and complete such work, the Surety, for value received, hereby stipulates and agrees, if requested by the Authority:

(i) to fully perform and complete the work to be performed under the Contract pursuant to the terms, conditions and covenants thereof; or

(ii) to pay to the Authority upon demand amounts necessary to pay all costs incurred by the Authority (including appropriately allocated internal costs of the Authority) to enable the Authority to fully perform and complete the work to be performed under the Contract (but not exceeding the amount set forth in the first paragraph hereof);

If the Authority requests option (i) above, the Surety further agrees to commence such work of completion within twenty (20) calendar days after written notice thereof from the Authority and to complete such work within such reasonable time as the Authority may determine.

The Surety, for value received, for itself and its successors and assigns, hereby stipulates and agrees that the obligation of the 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 the Surety does hereby waive notice of any and all of 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 the Surety as though done or omitted to be done by or in relation to the Principal.

The Surety hereby stipulates and agrees that no modifications, omissions or additions in or to the terms of the Contract, or in or to the Plans, Standard Specifications, Special Provisions and Technical Specifications therefor, shall in any way affect its obligation under this Contract Bond.

Remainder of page intentionally blank

Note to Bidders: Unless stated otherwise in the Special Provisions, after the Contractor has received the written notice of Contract Award, and before the Authority will begin its execution process of said Contract, the Contractor must furnish a Contract Bond to the Authority in a sum equal to the cost of the Base Bid plus any Alternate Pay Items (as applicable) that the Authority has elected to include in the Contract. Below is the form approved for use by the DRBA. For additional information see Section 103.05 Contract Performance and Payment Bonds.

IN WITNESS WHEREOF, the Principal and Surety have duly executed this Contract Bond
as of _____, 20____.

[PRINCIPAL]

Name: _____

Witness or Attest:

Address: _____

By: _____

Title: _____

(Corporate Seal)

[SURETY]

Name: _____

Address: _____

Witness or Attest:

By: _____

Title: _____

(Corporate Seal)

Note to Bidders: Unless stated otherwise in the Special Provisions, at the Conclusion of Work the Authority will not make final payment until the Contractor has furnished the below Security for Construction Warranty to the Authority in a sum equal to five percent (5%) of the final Contract amount. Below is the form approved for use by the DRBA. For additional information see Section 105.20 Project Acceptance; Guaranty Against Defective Work.

DELAWARE RIVER AND BAY AUTHORITY

DELAWARE AIRPARK

CONTRACT NO. 33N-24-A

CONSTRUCT BOX HANGAR

* * * * *

SECURITY FOR CONSTRUCTION WARRANTY

We, the undersigned, _____

as principal (herein called the "Principal"), and _____

a _____ of the State of _____, which is legally authorized to do business in the State of Delaware, where the work has been performed, as surety (herein called the "Surety"), do hereby agree to be held and bound unto the Delaware River and Bay Authority (herein called the "Authority") for the sum of _____

_____ Dollars and _____ Cents

(\$_____), which sum is to be paid to the Authority for its use and benefit.

Further, for such payment well and truly to be made, we do hereby bind ourselves and our heirs, executors, administrators, successors, and assigns, jointly and severally.

WHEREAS the Principal entered into a contract with the Authority known as Contract No. 33N-24-A (herein called the "Contract"), which Contract is incorporated herein by reference; and

WHEREAS the Principal has represented that it has completed the Contract in strict and entire conformity with the Plans and Specifications therefor on file at the office of the Authority;

NOW THEREFORE, THE CONDITION OF THIS OBLIGATION IS SUCH that if, **within two (2) years from the date of final written acceptance of the work by the Authority**, no faulty workmanship shall be disclosed in the performance of the Contract, including any

Note to Bidders: Unless stated otherwise in the Special Provisions, at the Conclusion of Work the Authority will not make final payment until the Contractor has furnished the below Security for Construction Warranty to the Authority in a sum equal to five percent (5%) of the final Contract amount. Below is the form approved for use by the DRBA. For additional information see Section 105.20 Project Acceptance; Guaranty Against Defective Work.

Change Orders or Supplemental Agreements thereto, and if it shall appear that no defective materials were furnished thereunder, and if it shall appear that all work was performed and all materials were furnished thereunder in strict and entire conformity with the terms of the Contract, including any Change Orders or Supplemental Agreements thereto, then this obligation shall be void; otherwise it shall be and remain in full force and effect.

If, within said period of two (2) years, faulty workmanship is disclosed or it appears that defective materials were furnished, or it appears that the work was not performed or the materials were not furnished in strict and entire conformity with the terms of the Contract documents, then the Authority shall so notify the Principal in writing and the Principal shall promptly repair, replace and make good all defective work or materials. In the event that the Principal, after having been so notified, shall refuse or neglect to repair, replace or make good such work or materials within five (5) days from the receipt of such notice (or within such other time as the Executive Director of the Authority may direct), or shall fail to complete such work within the time prescribed by said Executive Director, then the Authority will proceed to have the work done by others, and the Principal and Surety hereunder shall jointly and severally be liable to pay the cost thereof, subject to the monetary limitation first written above. In case of an emergency, as determined by said Executive Director, the Authority reserves the right to immediately effect both temporary and permanent repairs, or to arrange for others to effect such repairs, without immediate notification to the Principal, and the Principal and Surety hereunder shall jointly and severally be liable to pay the cost thereof.

Further, if in the event no faulty workmanship, or defective materials or nonconforming work, is disclosed or discovered within the two-year period, this shall in no way bar, or be used as a defense to the Authority's ability to bring a cause of action for breach, negligence, or other theory, within the term allowed by law, against Contractor and other responsible parties.

Remainder of page intentionally blank

Note to Bidders: Unless stated otherwise in the Special Provisions, at the Conclusion of Work the Authority will not make final payment until the Contractor has furnished the below Security for Construction Warranty to the Authority in a sum equal to five percent (5%) of the final Contract amount. Below is the form approved for use by the DRBA. For additional information see Section 105.20 Project Acceptance; Guaranty Against Defective Work.

IN WITNESS WHEREOF, the Principal and Surety have duly executed this Security for Construction Warranty as of _____, 20____.

[PRINCIPAL]

Name: _____

Witness or Attest:

Address: _____

By: _____

Title: _____

(Corporate Seal)

[SURETY]

Name: _____

Address: _____

Witness or Attest:

By: _____

Title: _____

(Corporate Seal)

Note to Bidders: Unless stated otherwise in the Special Provisions, at the Conclusion of Work the Authority will not make final payment until the Contractor has furnished the Contractor's Release of Liens. Below is the form approved for use by the DRBA. For additional information see Section 109.10 Final Payment.

DELAWARE RIVER AND BAY AUTHORITY

DELAWARE AIRPARK

CONTRACT NO. 33N-24-A

CONSTRUCT BOX HANGAR

* * * * *

CONTRACTOR'S RELEASE OF LIENS

Date: _____

Delaware River and Bay Authority
Post Office Box 71
New Castle, Delaware 19720

Re: Contract No. 33N-24-A
CONSTRUCT BOX HANGAR

Gentlemen:

This is to certify that all just liens, claims and demands for labor, materials and rental of equipment arising out of the prosecution of the work under the above-named contract are fully paid and satisfied and that all of the work is fully released, freed and discharged from all liens, claims and demands, whatsoever, whether just or otherwise of any contractors, subcontractors, materialmen, suppliers, laborers, artisans or architects.

In consideration of the final payment of said contract, we hereby remise, release and forever discharge the Delaware River and Bay Authority, its commissioners, officers, representatives, employees, agents, employees and servants from any and all manner of actions and cause of actions, suits, debts, accounts, bonds, covenants, contracts, agreements, judgments, liens, demands and liability of whatever nature in law and in equity from anything done or furnished or in any manner growing out of the doing of the work under the above-named contract including any and all extra or reduction orders issued thereunder and any agreements supplementary thereto, and anything whether known or unknown, suspected or unsuspected or which we ever had, now have or which our heirs, executors, administrators, successors or assigns shall or may have; and we hereby agree to indemnify, defend and hold harmless the Delaware River and Bay Authority against any and all claims which hereafter may be made or instituted against it by any contractors, subcontractors, materialmen, suppliers, laborers, artisans or architects for the purpose of enforcing a lien, claim or demand arising out of the prosecution of the work under the above-named contract.

Note to Bidders: Unless stated otherwise in the Special Provisions, at the Conclusion of Work the Authority will not make final payment until the Contractor has furnished the Contractor's Release of Liens. Below is the form approved for use by the DRBA. For additional information see Section 109.10 Final Payment.

Compliance with the foregoing, as related to statutory liens, is a matter of administrative convenience. It is the Authority's position that the property of the Authority, as an agency of the States of Delaware and New Jersey, is not subject to the filings of statutory liens as a matter of law.

Contractor: _____

Address: _____

Witness or Attest:

By: _____

Title: _____

(Corporate Seal)

DELAWARE RIVER AND BAY AUTHORITY

DELAWARE AIRPARK

CONTRACT NO. 33N-24-A

CONSTRUCT BOX HANGAR

* * * * *

STANDARD SPECIFICATIONS

Together, parts (i) and (ii) below, as modified by any Special Provisions or by documents of any description furnished by the DRBA as part of the Contract, form the “Standard Specifications” and shall govern the execution of the Contract:

- (i) Division 100 – General Provisions of the *Delaware River and Bay Authority Standard Specifications for Road and Bridge Construction, dated December 15, 2014*; and
- (ii) The most recent version of Divisions 200 through 1000 of the *Delaware Department of Transportation* (“DelDOT”) *Standard Specifications for Road and Bridge Construction*, including the most recent version of DelDOT’s *Standard Items and Special Provisions*, each as published on the [DelDOT website](#) on the date of the Advertisement for Bids (“DelDOT Standard Specifications”).

The Standard Specifications, as defined above, are hereby made a part of the Contract as fully and with the same effect as if set forth at length herein.

DELAWARE RIVER AND BAY AUTHORITY

DELAWARE AIRPARK

CONTRACT NO. 33N-24-A

CONSTRUCT BOX HANGAR

* * * * *

SPECIAL PROVISIONS - PART I

AMENDMENTS TO GENERAL PROVISIONS

The following clauses represent modifications to Division 100 - General Provisions of the *Delaware River and Bay Authority Standard Specifications for Road and Bridge Construction*, dated December 15, 2014 (the "General Provisions").

Any modifications given herein will specifically identify the Section or Subsection of the General Provisions within which the modification is to occur and whether that particular modification is an insertion, deletion or replacement of the original provision.

Any provision set forth in the General Provisions that is not modified by or in conflict with the Special Provisions of this Part I shall be understood to remain in full force and effect.

101.45.2 Maintenance Bond

Add the following after the first sentence:

For purposes of this Contract, the “Maintenance Bond” shall be referred to as the/a “Security for Construction Warranty”.

101.71.1 Security for Construction Warranty

Add the following term and definition:

101.71.1 Security for Construction Warranty. The approved form of security furnished by the Contractor and the Contractor’s Surety or Sureties to guarantee the Contractor’s Work for a specified period of time.

101.73.2 Special Provisions.

Delete all and add the following:

Specific directions, provisions, or requirements particular to the Project under consideration, but not sufficiently covered by the Standard Specifications including:

- Part I – Amendments to General Provisions of the Standard Specifications
- Part II.I – FAA General Provisions
- Part II.II – Amendments to FAA General Provisions
- Part III – Amendments to Technical Specifications
- Part IV – Additional Technical Specifications

101.75.2 Standard Specifications.

Delete the provisions of Subsection 101.75.2 and replace with the following:

Division 100 – General Provisions of the *Delaware River and Bay Authority Standard Specifications for Road and Bridge Construction*, dated December 15, 2014; and the most recent version of Divisions 200 through 1000 of the *Delaware Department of Transportation* (“DelDOT”) *Standard Specifications for Road and Bridge Construction*, including the most recent version of DelDOT’s *Standard Items and Special Provisions*, each as published on the [DelDOT website](#) on the date of the Advertisement for Bids (“DelDOT Standard Specifications”).

101.83.2 Supplemental Specifications (DelDOT Supplemental Specifications).

Delete the provisions of Subsection 101.83.2 and replace with the following:

Approved DelDOT additions or revisions to the most recent version of Divisions 200 through 1000 of the *Delaware Department of Transportation* (“DelDOT”) *Standard Specifications for Road and Bridge Construction*, including the most recent version of DelDOT’s *Standard Items*

and Special Provisions, each as published on the [DelDOT website](#) on the date of the Advertisement for Bids (“DelDOT Standard Specifications”).

102.05 Examination of Plans, Specifications, Contract Documents, and Site of Work.

Insert the following after the last paragraph:

A non-mandatory pre-bid meeting and project site visit will be held on November 16, 2023, at 11:00 a.m. local time at the Delaware Airpark Terminal Building, 127 Durham Lane, Dover, Delaware 19904. All visitors must follow the personal protective equipment requirements in accordance with DRBA policy. Unsupervised access to the project site is prohibited.

103.10 Insurance.

Insert the following prior to all paragraphs of this Subsection:

***BIDDERS: DO NOT BID ON THIS PROJECT UNTIL YOU HAVE REVIEWED THE FOLLOWING PROVISIONS WITH YOUR INSURANCE PROVIDER. AFTER THE BID DUE DATE HAS PASSED, THESE PROVISIONS BECOME NON-NEGOTIABLE. THE AWARDED BIDDER WILL BE REQUIRED TO PROVIDE EVIDENCE OF MEETING THE FOLLOWING INSURANCE PROVISIONS PRIOR TO FINAL EXECUTION OF THE CONTRACT.**

Remove the fourth sentence of the second paragraph and replace with the following:

Notwithstanding the foregoing, the Authority reserves the right to request evidence of insurance, including a copy of the policy(ies) and/or endorsement(s), at such additional intervals as it determines in its sole discretion.

Remove the fifth sentence of the second paragraph and replace with the following:

In the event of cancellation, non-renewal, expiration, termination or alteration (whether by the insurer or the Contractor) of such policy(ies) or in the event the coverage thereof is altered below the limits required by the Contract, Contractor shall provide the Authority with thirty (30) Days prior written notice of such cancellation, non-renewal, expiration, termination or alteration.

Insert the following after the final paragraph of Subsection:

The Contractor is responsible for sub-contractor performance and shall require all sub-contractors to possess adequate insurance coverage. The minimum requirements of insurance to be carried by the Contractor and any sub-contractor shall be as follows:

- A. **Workers’ Compensation and Employer’s Liability Insurance.** The prevailing NCCI policy form which shall be used is WC 00 00 00 C 1-15.

- i. State Act / Employer's Liability: \$1,000,000/\$1,000,000/\$1,000,000 as required by the statutory limits according to the laws of the State of Delaware.

Any deductible shall be the responsibility of the Contractor and shall not be claimed against the Authority.

- B. **Commercial General Liability.** The prevailing ISO policy form which shall be used is CG 00 01 04-13.

Commercial General Liability policy, which shall include Aviation Premises Liability and Products Liability, with limits of not less than One Million Dollars (\$1,000,000) each occurrence, Two Million Dollars (\$2,000,000) products liability/completed operations aggregate and Two Million Dollars (\$2,000,000) general aggregate (applicable per project). After the work has been completed, products liability/completed operations coverage is to remain in effect for a period not less than the Delaware statute of repose. General aggregate to apply per project (ISO Form CG 2503 or equivalent). The policy shall not contain any XCU exclusions or any exclusion for work performed on airport grounds.

- C. **Business Automobile Liability Insurance.** The prevailing ISO policy form which shall be used is CA 00 01 11-20.

Business Automobile Liability to provide the following coverage for all owned, non-owned, hired or borrowed vehicles and registered equipment:

- i. Bodily Injury and Property Damage Liability with a Combined Single Limit of not less than One Million Dollars (\$1,000,000) for all damages because of bodily injury and property damage suffered by one or more persons as the result of any one accident.

- D. **Contractor's Pollution Liability and Clean-up Costs.** A Contractor's Pollution Liability and Clean-up Costs policy with limits of not less than Two Million Dollars (\$2,000,000) each claim and Two Million Dollars (\$2,000,000) aggregate. The policy retro date shall be concurrent with, or prior to, the contract and coverage is to remain in effect for no less than three (3) years after the Work has been completed.

- i. Coverage shall include: Clean-up costs, 3rd party bodily injury/property damage, 3rd party property loss of use, Emergency response costs, Non-Owned Disposal Sites and Pollution Transportation.
- ii. Include the Authority as additional insured.
- iii. Provide primary and non-contributory language for the Authority.
- iv. Provide a 30-day notice of cancellation and waiver of subrogation to the Authority.

- E. **Umbrella or Excess Liability.** An Umbrella or Excess Liability policy with a limit of not less than Ten Million Dollars (\$10,000,000) (applicable per project) in excess of and including the coverage stipulated in the primary policies as stated above under Sections A, B and C. The umbrella policy should include additional insured/primary and non-

contributory provisions for DRBA's benefit. The policy shall not contain any exclusion for work performed on airport grounds.

F. **Builder's Risk Insurance.** During the term of this Contract (and continue without interruption during construction and installation period), the Contractor shall purchase and maintain Builder's Risk Insurance at its own expense. The Builder's Risk Insurance must be in an amount equal to 100% of the Completed Value of the work being performed at the site on a Replacement Cost policy basis. This coverage must include the new building or structure, all materials, equipment and fixtures to be installed in the new building or structure. The policy shall cover all materials, equipment and fixtures while at the construction site, while being transported to or from the site, and while being stored on or off site.

- i. The Delaware River and Bay Authority shall be added as Additional Named Insured and Loss Payee on the policy;
- ii. Covered Cause of Loss: "Special Form"; (see below)
- iii. Shall be written for 100% of the Completed Value (replacement cost basis) at the time of rebuilding or replacement of damaged property;
- iv. The Waiver of Subrogation to apply to the Delaware River and Bay Authority;
- v. The policy is to specifically permit occupancy and/or partial occupancy of the building by the Delaware River and Bay Authority prior to the completion of the contract work; Contractor shall modify or delete any provisions with regard to Occupancy restrictions in the policy;
- vi. No Coinsurance Clause is to apply;
- vii. The policy shall include 60 days' notice of cancellation, and 15 days for non-payment of premium.

The Builders' Risk Coverage shall be on a Special Covered Cause of Loss Form and shall include: all risks of loss, theft, vandalism, malicious mischief, collapse, false-work, temporary buildings and debris removal including demolition, increased cost of construction, flood (including water damage and any resultant mold and/or fungus damage), windstorm, earthquake, and if applicable, all below and above ground structures, piping, foundations including underground water and sewer mains, piling including the ground on which the structure rests and excavation, backfilling, filling, and grading. The Policy must modify or delete any exclusion pertaining to damage to interior of building caused by any perils insured against under the policy. Equipment coverage is to specifically include the equipment during installation and include Hot and Cold testing (as applicable).

The Builders' Risk Policy shall remain in force until final acceptance of the project by the Delaware River and Bay Authority.

G. **Cyber and Privacy Insurance.** The policy shall be in an amount of not less than Five Hundred Thousand Dollars (\$500,000) per occurrence and One Million Dollars (\$1,000,000) in the aggregate, covering all acts, errors or omissions in technology products and services, negligence, infringement of intellectual property (except patent and trade secret) and network and privacy risks (including coverage for first party breach response

costs, cyber extortion and ransomware, business interruption, and contingent business interruption, network and data restoration, computer hardware replacement and bricking, unauthorized access, failure of security, and third party liability resulting from breach of privacy perils, wrongful disclosure of information, as well as notification costs and regulatory defense) in the performance of services for the Authority or on behalf of the Authority hereunder.

- H. **Additional Insured.** With respect to the minimum insurance requirements outlined above, the Contractor and all sub-contractors are to name the Authority as additional insured under Section B on a primary and non-contributory basis using forms #CG 2010, #CG 2037 and #CG 2038. *(Note: Form #CG 2038 may be waived by the DRBA if no subcontractors will be providing Work).* Furthermore, the Authority is to be added as an additional insured under Sections C and D on a primary and non-contributory basis. The Umbrella policy outlined in Section E should be written to follow form of the coverages afforded in Sections A, B and C.

For ALL policies above, the insurer(s) for the Contractor and all subcontractors shall waive, and the Contractor and the subcontractors shall be responsible for confirming that the insurer(s) has waived, any right of subrogation against the Authority to the maximum extent permitted by law.

The Contractor and all sub-contractors agree to indemnify the Authority from any costs or liabilities arising in the Court if the Contractor's insurer fails to waive subrogation as required. Any deductible or self-insured retention shall be the responsibility of the Contractor and shall not be claimed against the Authority.

The Contractor shall maintain reasonable technical, organizational, and security measures, including, if applicable, a secure payment platform through which it shall submit its payment applications, to protect the content provided or accessed under this Agreement against accidental or unlawful destruction, alteration, unauthorized disclosure, or access. The Contractor agrees to indemnify, defend and hold harmless the Authority from and against, and shall pay any and all Losses sustained or incurred by the Authority, based upon or relating to any claim, suit or proceeding brought by any Third Party against the Authority as a result of any failure by the Contractor, its employees, agents and/or Subcontractors to comply with the security obligations set forth in this Agreement relating to protection against fraudulent or other inappropriate or unauthorized use of or access to the systems and/or networks described herein.

If any policy above has a deductible or self-insured retention, the Contractor and any sub-contractor shall not claim against the DRBA for any reimbursement of said deductible or self-insured retention, regardless of the cause of loss. The Insurance Certificate(s) shall indicate all deductibles and/or self- insured retentions.

Duration of Insurance. The insurance policies as required by sections A, B, C, D, E, F and G shall be kept in full force and effect during the performance of this Contract and until the Contractor has fully performed all work hereunder. In addition, under section B after the work is completed/accepted by the Authority, the products/completed operations coverage is to remain in

effect for a period not less than the Delaware statute of repose. Regarding the insurance required by section D above, the coverage is to remain in effect for not less than three (3) years after work has been completed.

105.08 Cooperation Between Contractors.

Add the following before the first paragraph:

The Contractor is advised that work by Authority maintenance and operations personnel will be in progress simultaneously with the work required under the Contract. Contractor is expected to accommodate Authority maintenance and operations personnel while performing its duties under the Contract. In addition, there may be other contractors working at the site and all traffic closures and work associated with the Contract shall be coordinated with other ongoing contracts. Expected work includes a deck overlay test program, steel repairs to structural members, suspender rope replacement, and bridge pin & link replacement. Should Contractor become aware of any problems coordinating with other contractors or Authority personnel, Contractor is required to notify the Authority in writing, immediately, upon becoming aware of the potential for coordination issues or problems. The reasonability of Contractor's notice shall be determined at the sole discretion of the Authority.

105.20 Project Acceptance.

Under the part titled "Guaranty Against Defective Work", replace the first, second and third paragraphs with the following:

Before final payment is made as provided in Subsection 109.10, the Contractor shall furnish a Security for Construction Warranty to the Authority in a sum equal to five percent (5%) of the final Contract price. The Security for Construction Warranty shall be on the form furnished by the Authority and with Surety satisfactory to the Authority. The Security for Construction Warranty shall remain in full force and effect for a period of two (2) years from the date of final acceptance of the Project by the Authority. The Contractor shall also furnish a Contractor's Release of Liens before final payment is made.

Before semifinal payment is made following the suspension of Work as provided in Subsection 104.07 and Subsection 109.07, the Contractor shall furnish a Security for Construction Warranty in a sum equal to five percent (5%) of the estimated value of the Work completed prior to the time the Project was suspended, and the Security for Construction Warranty shall remain in effect for a period of two (2) years from the date of suspension.

The Security for Construction Warranty (in either case) shall provide that the Contractor guarantees to replace for said period of two (2) years all Work performed and Materials furnished that were not performed or furnished according to the terms of the Contract, and make good defects thereof, regardless of cause, which have become apparent before the expiration of said period of two (2) years.

Under the part titled "Guaranty Against Defective Work", replace the ninth paragraph with the following:

If within twenty-four (24) months after final acceptance of the Work there shall appear or be discovered any weakness, any deficiency, any failure, or any breaking down or deterioration caused by a deficiency in design, workmanship, or material furnished by the Contractor, and all other, materials, machinery, or equipment, damage to which was caused by such defective work, materials, machinery or equipment (herein called a “guarantee deficiency”), such guarantee deficiency shall be made good, at the Contractor’s expense, to meet the requirements of the Specifications and of strict conformity with the terms of this Contract.

106.07 Storage and Handling of Materials.

Insert the following after the last paragraph of Subsection 106.07:

Recycling and Processing Facility Records: The Contractor shall provide the Authority with documentation that indicates the receipt and acceptance of recyclable waste by recycling and processing facilities permitted to accept recyclable waste. The Contractor shall provide manifests, weight tickets, receipts, and invoices. All regulated materials sent on a manifest must be signed by a representative of the Authority’s Environmental, Health and Safety (“EHS”) Department.

107.02 Permits, Licenses and Taxes.

Insert the following after the last paragraph of Subsection 107.02:

The Contractor shall submit and obtain a written permit prior to performing “Hot Work” (i.e., welding or cutting) or operating other flame-producing/spark-producing devices, from a representative of the Authority’s Environmental, Health and Safety (“EHS”) Department. The Contractor shall provide at least two 9 kg 20-pound 4A:20 BC-rated extinguishers for normal “Hot Work”. The extinguishers must be current inspection tagged and contain an approved safety pin and tamper-resistant seal. It is also mandatory to have a designated fire watch for any “Hot Work” done at this activity. The fire watch must be trained in accordance with NFPA 51B and must remain on-site for a minimum of one (1) hour after completion of the task or as specified on the “Hot Work” permit.

Before starting work in any Authority facility, the Contractor personnel shall familiarize themselves with the location of the nearest fire alarm boxes and have ready access to the local fire department emergency phone number. THE CONTRACTOR MUST REPORT ANY FIRE, NO MATTER HOW SMALL, TO THE RESPONSIBLE AUTHORITY REPRESENTATIVE IMMEDIATELY.

107.06 Construction Safety, Health, and Sanitary Standards.

Insert the following after the first paragraph of Subsection 107.06:

Prior to beginning Work, the Contractor shall prepare a Health & Safety Plan for the review and approval of the Authority’s Environmental, Health and Safety (“EHS”) Department. The Health & Safety Plan should address the following areas, including but not limited to: hot work, crane

lifts, working at heights, emergency response, hazardous materials management and disposal, respiratory protection and storm water management. The Health & Safety Plan shall be job-specific and shall address any unusual or unique aspects of the project or activity for which it is written. The Health & Safety Plan shall interface with the Contractor's overall safety and health program. Any portion of the Contractor's overall safety and health program that is referenced in the Health & Safety Plan shall be included as appropriate. The Health & Safety Plan must include the following:

1. SIGNATURE SHEET. Title, signature, and phone number of the following:
 - a. Plan preparer (qualified person such as Contractor's safety personnel).
 - b. Plan must be approved, by company/corporate officers authorized to obligate the company (e.g., owner, company president, regional vice president, etc.).
 - c. Plan concurrence (e.g., Chief of Operations, Corporate Chief of Safety, Corporate Industrial Hygienist, project manager or superintendent, project safety professional, project QC).
2. BACKGROUND INFORMATION. List the following:
 - a. Contractor
 - b. Contract number
 - c. Project name
 - d. Brief project description, description of work to be performed, and location (map)
 - e. Contractor accident experience (provide information such as experience modification rate ("EMR"), Occupational Safety and Health Administration ("OSHA") 300 Forms, corporate safety trend analyses, etc.).
3. STATEMENT OF SAFETY AND HEALTH POLICY. Provide a copy of current corporate/company Safety and Health Policy Statement.
4. RESPONSIBILITIES AND LINES OF AUTHORITIES.
 - a. Identification and accountability of personnel responsible for safety - at both corporate and project level. (Contracts specifically requiring safety or industrial hygiene personnel should include a copy of their resume as part of the Qualifications Questionnaire)
 - b. Lines of authority.
5. SUBCONTRACTORS AND SUPPLIERS. Provide the following:
 - a. Identification of subcontractors and suppliers (if known);
 - b. Means for controlling and coordinating subcontractors and suppliers; and
 - c. Safety responsibilities of subcontractors and suppliers.
 - d. Waste haulers must supply their EPA ID number and relevant RCRA/DOT training to the EHS Department.
 - i. Only authorized members of the EHS Department may sign regulated waste manifests.

6. TRAINING.

- a. List subjects to be discussed with employees in safety indoctrination.
- b. List mandatory training and certifications that are applicable to this project (e.g., explosive actuated tools, confined space entry, crane operator, diver, vehicle operator, HAZWOPER training and certification, PPE) and any requirements for periodic retraining/recertification.
- c. Outline requirements (who attends, when given, who will conduct, etc.) for supervisory and employee safety meetings.

7. SAFETY AND HEALTH INSPECTIONS. Provide details on:

- a. Who will conduct safety inspections (e.g., PM, safety professional, QC, supervisors, employees), proof of inspector's training/qualifications, when inspections will be conducted, how the inspections will be recorded, deficiency tracking system, follow-up procedures, etc. The names of competent and/or qualified person(s) and proof of competency/ qualification to meet specific OSHA-competent/qualified person(s) requirements must be attached.
- b. Any external inspections/certifications that may be required.
- c. "Hot work" permits must be signed-off by the EHS Department (template will be provided during pre-construction meeting).
- d. All crane lifts must be reviewed by the EHS Department (template will be provided during pre-construction meeting).

8. SAFETY AND HEALTH EXPECTATIONS AND COMPLIANCE.

- a. The company's written safety program goals, objectives, and accident experience goals for this contract shall be provided.
- b. Policies and procedures regarding noncompliance with safety or environmental requirements (to include disciplinary actions for violation of requirements) shall be identified.
- c. Provide written company procedures for holding managers and supervisors accountable for safety.
- d. Chemicals must be stored appropriately and securely in containers that are in good condition (e.g., no rust, dents, etc.).
- e. 55-gallon drums of flammable liquids are not permitted to be stored at Authority properties.
- f. All containers and equipment must be covered to prevent runoff into the Stormwater system.
- g. Spill response equipment must be readily available in the event of a release.

9. INCIDENT REPORTING. The Contractor shall identify who, how, and when the following will be completed:

- a. Exposure data (man-hours worked);
- b. Incident investigations, reports, and logs;
- c. Immediate notification of major accidents;

- d. Environmental incidents must be reported to the NRC/DNREC/NJDEP within 15 minutes of the release;
 - i. DRBA Project Engineer and EHS Department must be notified immediately after notification to responding agency.
- 10. MEDICAL SUPPORT. Outline on-site medical support and off-site medical arrangements including rescue and medical duties for those employees who are to perform them, and the name(s) of on-site Contractor personnel trained in first aid and CPR. Must also identify which medical facilities will be contacted in the event of an incident.
- 11. PERSONAL PROTECTIVE EQUIPMENT (“PPE”). Outline procedures (who, when, how) for conducting hazard assessments and written certifications for use of PPE. Outline procedures to be followed to assure the proper use, selection, and maintenance of personal protective and lifesaving equipment (e.g., protective footwear, protective gloves, hard hats, safety glasses, hearing protection, body harnesses, lanyards). PPE is governed in all areas by the nature of the work the employee is performing. Use personal hearing protection at all times in designated noise hazardous areas or when performing noise hazardous tasks. Safety glasses must be worn or carried/available on each person. Mandatory PPE includes, but not limited to the following:
 - a. Hard Hat
 - b. Long Pants
 - c. Appropriate Safety Shoes
 - d. Class III Reflective Vests
 - e. Fall protection must be worn within 6 feet of the edge of a building if no railing is present
 - f. Fall protection must be worn in all man lifts (scissor lifts, bucket trucks, etc.)
- 12. FALL PROTECTION PROGRAM:
 - a. Establish a site-specific fall protection and prevention program, for the protection of all employees exposed to fall hazards. Within the program include company policy, identify roles and responsibilities, education and training requirements, fall hazard identification, prevention and control measures, inspection, storage, care and maintenance of fall protection equipment and rescue and evacuation.
 - b. Training: Institute a fall protection training program. As part of the fall protection and prevention plan, provide training for each employee who might be exposed to fall hazards. Provide training by a competent person for fall protection. Document training and practical application of the competent person in accordance with OSHA § 1926.503 (a).
 - c. Fall Protection Equipment and Systems: Enforce use of personal fall protection equipment and systems designated (to include fall arrest, restraint, and positioning) for each specific work activity in the site-specific fall protection and prevention plan at all times when an employee is exposed to a fall hazard. Protect employees from fall hazards.
- 13. CONTRACTOR INFORMATION. The Contractor shall provide information on how they will meet the requirements of applicable items within the plan. As a minimum, excavations,

scaffolding, medical and first-aid requirements, sanitation, PPE, fire prevention, electrical safety, public safety requirements shall be addressed as applicable.

107.07 Public Convenience and Safety.

Insert the following after the first sentence of Subsection 107.07:

The Contractor shall provide emergency contact information at the pre-construction meeting. The information shall include the following and be posted at the job site:

EMERGENCY CONTACT INFORMATION

CONTRACT _____

Contact the following in the event of an emergency or
hazardous condition on this construction project

Contractor Superintendent

Name _____
Cell Phone Number _____
Emergency Contact Number _____

Contractor Information

Firm Name _____
Home Office Address _____
City, State _____
Home Office Phone _____

107.14 Hazardous Material.

Insert the following after the fourth paragraph of Subsection 107.14:

Hazardous Material Use: Each hazardous material must be approved in writing by the Authority's Environmental, Health and Safety ("EHS") Department prior to being brought onto the job site or prior to any other use in connection with this contract. Allow a minimum of ten (10) working days for processing of the request for use of a hazardous material.

Hazardous Material Exclusions: Notwithstanding any other hazardous material used in this contract, radioactive materials or instruments capable of producing ionizing/non-ionizing radiation (with the exception of radioactive material and devices such as nuclear density meters for compaction testing and laboratory equipment with radioactive sources) as well as materials which contain asbestos, mercury or polychlorinated biphenyls ("PCBs"), di-isocyanates, lead-based paint, and hexavalent chromium, are prohibited. The Authority, upon written request by the Contractor, may consider exceptions to the use of any of the above excluded materials. Low-mercury lamps used within fluorescent lighting fixtures are allowed as an exception without further

approval. Notify the EHS Department prior to excepted items of radioactive material and devices being brought on Authority property.

Unforeseen Hazardous Material: Materials such as PCBs, lead paint, and friable and non-friable asbestos and other Occupational Safety and Health Administration (OSHA)-regulated chemicals (i.e., 29 CFR Part 1910.1000). If material(s) that may be hazardous to human health upon disturbance are encountered during construction operations, stop that portion of work and notify the Authority immediately. Within fourteen (14) calendar days the Authority will determine if the material is hazardous. If material is not hazardous or poses no danger, the Authority will direct the Contractor to proceed without change. If material is hazardous and handling of the material is necessary to accomplish the work, the Authority will issue a modification pursuant to Differing Site Conditions as specified in subsection 104.06.

Section 107- Legal Relations and Responsibility to the Public

Insert the following new Subsection after Subsection 107.18:

107.19 Minimum Wage Rates.

The DRBA, in the performance of the Grant Agreement and the Assurances for Airport Sponsors incorporated thereto, is required to include in all contracts in excess of \$2,000 for work on any projects funded under the Grant Agreement which involve labor, provisions establishing minimum rates of wages, to be predetermined by the Secretary of Labor under 40 U.S.C. §§ 3141-3144, 3146, and 3147, Public Building, Property, and Works, which all contractors shall pay to skilled and unskilled labor, and such minimum rates shall be stated in the invitation for bids and shall be included in proposals or bids for the work.

See Special Provisions Part II.I - FAA General Provisions - Federal Fair labor Standards Act (Federal Minimum Wage) and Special Provisions Part II.II - Amendments to FAA General Provisions - DAVIS-BACON REQUIREMENTS.

For each laborer and mechanic providing work on this Project, the Contractor shall utilize the Federal prevailing wage determination, Kent County, Delaware, Building Construction.

A. Federal Prevailing Wage Rates.

- i. To access the current established federal Wage Determinations as determined by the U.S. Department of Labor visit <https://sam.gov/content/wage-determinations>. On the Wage Determinations page, click the “Public Building or Works” box to get wage rates for laborers and mechanics. Once redirected, set the Wage Determination toggle button to “Construction (DBA)”. Next, select “**Delaware**” as the state in which the work will occur, and select “**Kent**” as the County/Independent City. Under these parameters, click on the *DBA Construction Type* dropdown to review the federal prevailing wage rates for Building Construction.

- ii. **Note:** The federal prevailing wage rates shall be those wages and fringe benefits which are in effect on the date of the project Advertisement/Invitation to Bid and such rates shall be the applicable rates for the entirety of the Project. In the event that a contract is not fully executed within one hundred and twenty (120) days after the date of the project Advertisement/Invitation to Bid, the federal prevailing wage rates that are in effect at the time of final contract execution shall be the applicable rate for the entirety of the Project.

B. Termination of Work on Failure to Pay Agreed Wages.

- i. Should the Authority find that any laborer or mechanic employed by the Contractor or any subcontractor directly on the site of the work covered by the Contract has been or is being paid a rate of wages less than the rate of wages required by the Contract to be paid, the Authority, on behalf of the Federal Government, by written notice to the Contractor may terminate the Contractor's right to proceed with the work or the part of the work as to which there has been a failure to pay the required wages. The Authority may have the work completed, by contract or otherwise, and the Contractor and the Contractor's sureties shall be liable to the Authority for any excess costs the Authority incurs.

108.01 Subletting of the Contract.

Delete the third and fourth paragraphs and replace with the following paragraphs:

Except by special written consent of the Authority to do otherwise, the Contractor shall perform Work of a value of no less than thirty percent (30%) (not including the cost of materials, equipment or supplies incidental to the performance of contract) of the awarded Contract with the Contractor's own organization and with the assistance of workers under the Contractor's immediate supervision.

Contract Award shall not be construed to be an approval of any subcontract, supply contract or any associated terms. Each Subcontractor agrees, as a condition of entering into a subcontract on the Project, to make no claim whatsoever against the Authority or its commissioners, officers, servants, agents or employees for any Work performed or thing done by reason of said subcontract or for any other cause whatsoever that may arise by reason of the relationship created between the Contractor and Subcontractor by the subcontract. Prior to the issuance of the Notice to Proceed, the Contractor shall provide to the Authority a complete list of all Subcontractors anticipated to work on Authority property and, for the Contractor and all Subcontractors, a valid copy of the current state business license appropriate to the state in which the work will occur. This list shall also include certified statements that each Subcontractor is acquainted with all the provisions of the Contract and agrees thereto. The Contractor shall be responsible for keeping to-date the Subcontractor list and all associated state business licenses throughout the duration of the Project.

108.02 Notice to Proceed.

Delete all and replace with the following:

Following the Contract execution, the Engineer may schedule a preconstruction meeting. Before

a “Notice to Proceed” date is issued, the Contractor shall submit to the Engineer:

- (a) A list of anticipated Subcontractors.
- (b) For both the Contractor and all Subcontractors, proof of a valid state business license appropriate to the state(s) in which the work will occur per Subsection 108.01; and
- (c) Progress schedule per Subsection 108.04. The Engineer will issue to the Contractor a Notice to Proceed which will stipulate the date on or before which the Contractor is expected to begin Work. The date specified in the Notice to Proceed will be at least ten (10) Calendar Days after the date of issuance of the Notice to Proceed. No Work is to be started before receipt of the Notice to Proceed. The specified Contract Time shall begin on the Day the Work starts or on the date stipulated in the Notice to Proceed, whichever is earlier.

108.04 Progress Schedules.

Add the following before the first sentence:

Within ten (10) calendar days of the execution of the Contract, the Contractor shall furnish to the Authority a progress schedule including all relevant activities, satisfactory to the Authority, shop drawing submittals and long-lead delivery materials and dates. It is the intent of the Authority to issue the Notice to Proceed upon acceptance of the schedule.

The work schedule shall accommodate the time necessary to acquire materials, including potential long lead items and manpower availability, and to complete all work as described in the Contract Documents, taking into account any and all regulatory permit requirements and restrictions and other special requirements. **The Contractor’s schedule shall indicate any “long-lead” materials that must be procured.** Failure to indicate “long-lead” materials and equipment will be interpreted as the Contractor’s assurance that the supply will be readily available for use when needed, without disruptions and delays.

Calendar days shall begin accruing against the allowed Contract Time upon the first day of actual work per the approved progress schedule, or on the date as stipulated in the “Notice to Proceed”, whichever is earlier, regardless of the Contractor’s continued presence on the site. Neither weather delays nor material delivery delays will be considered grounds for extension of the schedule.

108.08 Failure to Complete on Time.

Delete the first sentence of the first paragraph and replace with the following:

All work on the project must be completed within Two Hundred Ten (210) calendar days after the initial “Notice to Proceed” has been authorized by the Authority. The Contract Time of Completion shall begin upon issuance of the Notice to Proceed, and includes shop drawing submittal and review, and lead time on all building and electrical components required for the project. **The Contractor’s construction schedule shall show construction beginning in the spring of 2024. TIME IS OF THE ESSENCE.**

108.09 Schedule of Liquidated Damages.

Delete the first sentence of the first paragraph and replace with the following:

For each day that the Contractor is in default following the passing of the completion dates as stipulated in Subsection 108.08, the Contractor shall pay the Authority Liquidated Damages in accordance with the following Table:

Awarded Contract Value		Amount Charged to Contractor Per Day
For More Than	To and Including	
\$50,000	\$100,000	\$430
\$100,000	\$500,000	\$670
\$500,000	\$1,000,000	\$870
\$1,000,000	\$2,000,000	\$1,220
\$2,000,000	\$5,000,000	\$1,300
\$5,000,000	\$10,000,000	\$1,440
\$10,000,000	\$15,000,000	\$1,610
\$15,000,000	\$20,000,000	\$2,700
\$20,000,000	\$25,000,000+	\$3,750

109.02 Scope of Payment.

Delete the first paragraph and replace with the following:

The Contractor shall receive and accept compensation provided for in the Contract as full payment for furnishing all Materials and for performing Work under the Contract in a complete and acceptable manner and for all risk, loss, damage, or expense of every kind arising out of the nature of the Work or the performance thereof, and for any additional expenses on account of unforeseen difficulties encountered, for all expenses incurred in consequence of the suspension or discontinuance of the Work, for settlement of claims and for replacement of defective Work and Materials for two (2) years after acceptance of the Project by the Authority as provided in Section 105.20 and subject to the provisions of Section 107.13.

[End of Special Provisions - Part I]

DELAWARE RIVER AND BAY AUTHORITY

DELAWARE AIRPARK

CONTRACT NO. 33N-24-A

CONSTRUCT BOX HANGAR

* * * * *

SPECIAL PROVISIONS

PART II.I – FAA GENERAL PROVISIONS

The following clauses represent general provisions which shall be added to Division 100 – General Provisions of the Delaware River and Bay Authority *Standard Specifications for Road and Bridge Construction*, dated December 15, 2014. In a case of conflicting requirements, this Part II.I shall govern over:

- (i) Division 100 – General Provisions of the Delaware River and Bay Authority *Standard Specifications for Road and Bridge Construction*, dated December 15, 2014; and
- (ii) Part I of the Special Provisions provided herein.

Any applicable provision set forth in the Standard Specifications that is not modified by or in conflict with the Special Provisions of Parts I-II.I shall be understood to remain in full force and effect. In any case where there exists an inconsistency among the additional General Provisions and the Standard Specifications, the additional General Provisions of this Part II.I shall govern.

See Exhibit 1 - Located in the CapEx Project File

DELAWARE RIVER AND BAY AUTHORITY

DELAWARE AIRPARK

CONTRACT NO. 33N-24-A

CONSTRUCT BOX HANGAR

* * * * *

SPECIAL PROVISIONS

PART II.II – AMENDMENTS TO FAA GENERAL PROVISIONS

The following clauses represent general provisions which shall be added to Division 100 – General Provisions of the Delaware River and Bay Authority *Standard Specifications for Road and Bridge Construction*, dated December 15, 2014. In a case of conflicting requirements, this Part II.II shall govern over:

- (i) Division 100 – General Provisions of the Delaware River and Bay Authority *Standard Specifications for Road and Bridge Construction*, dated December 15, 2014; and
- (ii) Part I of the Special Provisions provided herein; and
- (iii) Part II.I of the Special Provisions provided herein.

Any applicable provision set forth in the Standard Specifications that is not modified by or in conflict with the Special Provisions of Parts I-II.II shall be understood to remain in full force and effect. In any case where there exists an inconsistency among the additional General Provisions and the Standard Specifications, the additional General Provisions of this Part II.II shall govern.

See Exhibit 2 - Located in the CapEx Project File

DELAWARE RIVER AND BAY AUTHORITY

DELAWARE AIRPARK

CONTRACT NO. 33N-24-A

CONSTRUCT BOX HANGAR

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SPECIAL PROVISIONS - PART III

AMENDMENTS TO STANDARD TECHNICAL SPECIFICATIONS

The following clauses represent amendments to the provisions of the most recent version of Divisions 200 through 1000 of the *Delaware Department of Transportation ("DelDOT") Standard Specifications for Road and Bridge Construction*, including the most recent version of DelDOT's *Standard Items and Special Provisions*, each as published on the [DelDOT website](#) on the date of the Advertisement for Bids ("DelDOT Standard Specifications"), which are to be modified for purposes of the above Contract.

In case of conflicting requirements, this Part III shall govern over:

- (i) The DelDOT Standard Specifications, as defined above; and
- (ii) Division 100 – General Provisions of the Delaware River and Bay Authority *Standard Specifications for Road and Bridge Construction*, dated December 15, 2014; and
- (iii) Part I of the Special Provisions provided herein; and
- (iv) Part II.I of the Special Provisions provided herein; and
- (v) Part II.II of the Special Provisions provided herein.

Any modification given in this Part will specifically identify the Division, Section and Subsection within which the amendment is to occur and whether that modification is an insertion, a deletion, or a replacement for the designated DelDOT Standard Specification.

Any applicable provision set forth in the Standard Specifications that is not modified by or in conflict with the Special Provisions of Parts I-III shall be understood to remain in full force and effect.

THE FOLLOWING ARE BROAD MODIFICATIONS TO BE MADE WITHIN DIVISIONS 200-1000 OF THE DELDOT STANDARD SPECIFICATIONS

Chief Traffic Engineer. The term “Chief Traffic Engineer” shall mean “Engineer” as defined in Division 100 – General Provisions, of the DRBA Standard Specifications.

Delaware MUTCD or DE MUTCD. Any reference to “Delaware MUTCD” or “DE MUTCD” throughout the DelDOT Standard Specifications shall mean “MUTCD” as defined in Division 100 – General Provisions, of the DRBA Standard Specifications.

DelDOT Contact. Any reference to a “DelDOT Contact” throughout the DelDOT Standard Specifications shall mean an “Authority Contact”.

DelDOT Owned. Any reference to “DelDOT Owned” throughout the DelDOT Standard Specifications shall mean “Authority-owned”.

DelDOT Personnel. Any reference to “DelDOT Personnel” throughout the DelDOT Standard Specifications shall mean “Authority Personnel”.

DelDOT Project. Any reference to “DelDOT Project” throughout the DelDOT Standard Specifications shall mean “Authority Project”.

DelDOT Project Resident. Any reference to “DelDOT Project Resident” throughout the DelDOT Standard Specifications shall mean “Engineer”.

DelDOT’s Safety Section. Any reference to “DelDOT’s Safety Section” shall mean the “Authority” as defined in Division 100 – General Provisions, of the DRBA Standard Specifications.

DelDOT Transportation Management Center (TMC). The term “DelDOT Transportation Management Center” or “TMC” shall mean “Authority” as defined in Division 100 – General Provisions, of the DRBA Standard Specifications.

Department. The term “Department” shall mean “Authority” as defined in Division 100 – General Provisions, of the DRBA Standard Specifications.

Department’s District Maintenance Yard. Any reference to the “Department’s District Maintenance Yard” shall mean “Authority” as defined in Division 100 – General Provisions, of the DRBA Standard Specifications.

District Engineer. Any reference to “District Engineer” throughout the DelDOT Standard Specifications shall mean the “Engineer” as defined in Division 100 – General Provisions, of the DRBA Standard Specifications.

District Maintenance Yard. Any reference to the “District Maintenance Yard” shall mean “Authority” as defined in Division 100 – General Provisions, of the DRBA Standard Specifications.

Materials and Research Section. Reference to the “Materials and Research Section” or the “Department’s Materials and Research Section” shall mean “Authority” as defined in Division 100 – General Provisions, of the DRBA Standard Specifications.

Materials and Research Laboratory. Any reference to “Materials and Research Laboratory” throughout the DelDOT Standard Specifications shall mean the “Authority’s Laboratory”.

Storm Water Section. Any reference to “Storm Water Section” shall mean “Authority” as defined in Division 100 – General Provisions, of the DRBA Standard Specifications.

Traffic Safety Section. Any reference to “Traffic Safety Section” shall mean “Authority” as defined in Division 100 – General Provisions, of the DRBA Standard Specifications.

Any reference to **Section 104.08** shall be deleted and revised to **Subsection 104.07, Suspension of Work/Annulment of Contract**

Any reference to **Section 106.08** shall be deleted and revised to indicate **Subsection 106.09, Disposal of Unacceptable Materials**

[End of Special Provisions – Part III]

DELAWARE RIVER AND BAY AUTHORITY

DELAWARE AIRPARK

CONTRACT NO. 33N-24-A

CONSTRUCT BOX HANGAR

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SPECIAL PROVISIONS - PART IV

ADDITIONAL TECHNICAL SPECIFICATIONS

The following clauses represent technical specifications which shall be added to the most recent version of Divisions 200 through 1000 of the *Delaware Department of Transportation* (“DelDOT”) *Standard Specifications for Road and Bridge Construction*, including the most recent version of DelDOT’s *Standard Items and Special Provisions*, each as published on the [DelDOT website](#) on the date of the Advertisement for Bids (“DelDOT Standard Specifications”).

In a case of conflicting requirements, this Part IV shall govern over:

- (i) The DelDOT Standard Specifications, as defined above; and
- (ii) Division 100 – General Provisions of the Delaware River and Bay Authority *Standard Specifications for Road and Bridge Construction, dated December 15, 2014*; and
- (iii) Part I of the Special Provisions provided herein; and
- (iv) Part II.I of the Special Provisions provided herein; and
- (v) Part II.II of the Special Provisions provided herein; and
- (vi) Part III of the Special Provisions provided herein.

Any applicable provision set forth in the Standard Specifications that is not modified by or in conflict with the Special Provisions of Parts I-IV shall be understood to remain in full force and effect.

See Exhibit 3 - Located in the CapEx Project File

DELAWARE RIVER AND BAY AUTHORITY

DELAWARE AIRPARK

CONTRACT NO. 33N-24-A

CONSTRUCT BOX HANGAR

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ATTACHMENT A

FAA ADVISORY CIRCULAR 150/5370-2G

Located in the CapEx Project File

DELAWARE RIVER AND BAY AUTHORITY

DELAWARE AIRPARK

CONTRACT NO. 33N-24-A

CONSTRUCT BOX HANGAR

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ATTACHMENT B

Letter of Intent

Located in the CapEx Project File

DELAWARE RIVER AND BAY AUTHORITY

DELAWARE AIRPARK

CONTRACT NO. 33N-24-A

CONSTRUCT BOX HANGAR

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ATTACHMENT C

Subcontractor Utilization Report

Located in the CapEx Project File

DELAWARE RIVER AND BAY AUTHORITY

DELAWARE AIRPARK

CONTRACT NO. 33N-24-A

CONSTRUCT BOX HANGAR

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Plans/Drawings

Located in the CapEx Project File

DELAWARE RIVER AND BAY AUTHORITY



Standard Specifications for Road and Bridge Construction

DECEMBER 15, 2014

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DIVISION 100

GENERAL PROVISIONS

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101.01.0 General. The titles and headings of the Sections, Subsections, and subparts herein are intended for convenience of reference and shall not be considered as having bearing on the interpretation of these Specifications.

Where a publication is referenced, the reference applies to the most recent date of issue as of the date bids are advertised, including interim publications, unless the reference includes a specified date or year. All references to Federal, State, Society, Institute and Association standards, specifications and codes shall unless otherwise noted, be understood to refer to the issues in effect on the date of the Advertisement for Bids.

Portions of these Specifications are written in the imperative mode. In sentences using imperative mode, the subject “the Contractor” is implied. Also implied in the language are “shall” or “shall be” or similar words and phrases. In all instances where “the Contractor” and “shall” or “shall be” are implied, the actions specified are solely the responsibility of the Contractor. In the referenced material sections, the subject may also be a vendor, fabricator, manufacturer, or combination thereof, who may be supplying the material, products, or equipment for the Project. The word “will” generally applies to decisions or actions of the Authority, Executive Director, or Engineer.

In the Contract as defined in Subsection 101.17.1, the following words: contemplated, required, determined, directed, specified, authorized, ordered, given, designated, indicated, considered necessary, deemed necessary, permitted, reserved, suspended, established, approval, approved, disapproved, acceptable, unacceptable, suitable, satisfactory, unsatisfactory, sufficient, insufficient, rejected, condemned, or words with similar intent; mean by or to the Authority, subject in each case to the determination of the Authority, and subject to further review, as permitted by law or permitted elsewhere in these Specifications.

In the Contract, the words “or equal”, referring to a product, material, or process, mean “equal as determined by the Authority”.

In the Contract, the words “as indicated” or “indicated” mean “as indicated or indicated by the Contract”.

All references in the Standard Specifications to terms defined in this Section 101 in the plural shall also mean the singular and to the singular shall also mean the plural, unless the context otherwise requires.

101.02.1 Abbreviations. Wherever the following abbreviations, terms or pronouns are used in the Contract, the intent and meaning shall be interpreted as follows:

AA	Aluminum Association
AAN	American Association of Nurserymen
AAR	Association of American Railroads
AASHTO	American Association of State Highway and Transportation Officials
ACI	American Concrete Institute
AED	Associated Equipment Distributors
AGC	Associated General Contractors of America

AIA	American Institute of Architects
AISC	American Institute of Steel Construction
AISI	American Iron and Steel Institute
ANSI	American National Standards Institute
ARA	American Railway Association
AREMA (AREA)	American Railway Engineering and Maintenance-of-Way Association
ARTBA	American Road and Transportation Builders Association
ASCE	American Society of Civil Engineers
ASLA	American Society of Landscape Architects
ASME	American Society of Mechanical Engineers
ASTM	American Society of Testing and Materials
AWPA	American Wood Preservers Association
AWS	American Welding Society
AWWA	American Water Works Association
CFR	Code of Federal Regulations
COMDTPUB	Coast Guard Commandant Publication
DRBA	Delaware River and Bay Authority
FHWA	Federal Highway Administration
FSS	Federal Specifications and Standards
MIL	Military Specifications
MUTCD	Manual on Uniform Traffic Control Devices (For Streets and Highways)
NEC	National Electrical Code
NIST	National Institute of Standards and Technology
NLRB	National Labor Relations Board
OSHA	Occupational Safety and Health Administration
PCA	Portland Cement Association
PCI	Prestressed Concrete Institute
PTI	Post Tensioning Institute
SAE	Society of Automotive Engineers
SSPC	Steel Structures Painting Council
UL	Underwriters Laboratory, Incorporated

101.02.2 Alternate Pay Items. Additional or alternative Pay Items included in the Schedule of Items. The amount bid for an Alternate Pay Item is not included in the value of the Base Bid but is included in the value of the Total Price. The Bidder is notified at the time of Award of the Authority's decision to include or exclude an Alternate Pay Item. No additional compensation is to be made for the deletion of an alternative from the Contract and the Pay Item bid for such work shall be deleted from the Total Price.

101.03.0 Addendum. Contract revisions issued after advertisement of the Contract Documents and before bid opening.

101.04.0 Additional Work. Work for which a Contract item is already provided by the Contract.

101.05.0 Adjustment (or Contract Adjustment). A revision to the Project cost or time provided in accordance with Subsections 108.07 and 109.04.

101.06.1 Advertisement for Bids (or Advertisement). The public announcement stating that the Authority is inviting Bids for the work to be performed under the Contract and providing the time and place for the submission of the Bid.

101.06.2 Authority. The Delaware River and Bay Authority and shall include its authorized representative, the Executive Director.

101.07.1 Award. The Authority's acceptance of a Bid.

101.07.2 Awarded Contract Value. Base Bid plus the value of any Alternate Pay Items included in the Contract by the Authority.

101.08.1 Base Bid. The Total Price bid less the cost of the Alternate Pay Items.

101.08.2 Bid. The prepared Bid Forms furnished by the Authority, properly filled out and executed by a Bidder and submitted as his, her or its bid for the performance of the Project.

101.08.3 Bid Bond. The portion of the Bid Guaranty furnished in the form of a surety bond.

101.08.4 Bidder. An individual or legal entity acting directly or through a duly authorized representative, legally submitting a Bid.

101.09.0 Bid Documentation. All writings, working papers, computer printouts, charts, and data compilations that contain or reflect information, data, or calculations used by the Bidder to prepare the Bid submitted, including but not limited to material relating to the determination and application of:

- A. Equipment rates
- B. Overhead rates and related time schedules
- C. Labor rates
- D. Efficiency or productivity factors
- E. Arithmetic extensions
- F. Subcontractor and material supplier quotations

Any manuals standard to the industry used by the Bidder in determining the Bid are also considered bid documentation. These manuals may be included in the Bid Documentation by reference and shall show the name and date of the publication and the publisher.

The term "Bid Documentation" does not include documents provided by the Authority for the Bidder's use in the preparation of the Bid.

101.10.0 Bid Forms. The approved forms on which the Authority requires formal bids to be prepared and submitted for the work, generally including but not limited to: Bid Pages, Consent of Surety, Non-Collusion Affidavit, Qualification Questionnaire, Joint Venture, and Bid Bond.

101.11.1 Bid Guaranty. The security furnished with a Bid to ensure that the Bidder will enter into the Contract if the Contract is awarded.

101.11.2 Bid Pages. The bid sheets furnished by the Authority to be completed by the Bidder.

101.11.3 Blue Book. The Rental Rate Blue Book published by Machinery Information Division of K-III Directory Corporation, 1735 Technology Drive, Suite 410, San Jose, CA 95110.

101.12.0 Bridge. A structure, including supports, erected over a depression or an obstruction, such as water, highway, or railway and having a track or passageway for carrying traffic or other moving loads and having a length measured along the center of the roadway of more than 20' (6.096 m) between undercopings of abutments or extreme ends of openings for multiple boxes.

101.13.1 Calendar Day. Each and every day shown on the calendar, beginning and ending at midnight.

101.13.2 Chairperson. The Chairperson of the Authority, acting either directly or through a duly authorized representative.

101.14.0 Change Order. A written order issued by the Authority to the Contractor for a change to the Contract. Changes to the Contract are extra work, increases or decreases in Contract item quantities, or alterations to the Contract, and are within the scope of the Contract. A change order also establishes the basis and amount of payment for the change to the Contract and provides for any time extension necessitated by the change to the Contract.

101.15.1 Channel. A natural or artificial water course.

101.15.2 Chief Operating Officer. The Chief Operating Officer of the Authority acting either directly or through a duly authorized representative.

101.16.1 Completion. Completion of the Project occurs when the Work has been satisfactorily concluded under the Contract and the Contractor has satisfactorily executed and delivered to the Authority all documents, certificates, and proofs of compliance required by the Contract.

101.16.2 Consent of Surety. A form of agreement included in the Contract Documents pursuant to which a Surety agrees to provide certain bonds required under the Contract.

101.17.1 Contract.

The Contract shall include the Bid along with the fully executed Contract Agreement and Contract Bond, also generally including but not limited to the following: Advertisement for Bids, Specifications, Plans and any Addenda, Change Orders, Supplemental Agreements and other documents specifically issued in connection with the Project, all of which are to be treated as one instrument.

The Contract shall not be modified, altered, or otherwise changed by any oral promise, statement, or representation made either by the Authority or Contractor, unless such modification, alteration, or change is reduced to writing in accordance with the Contract.

101.17.2 Contract Agreement. The written Agreement between the Authority and the Contractor setting forth the obligation of the parties for the performance of the Work.

101.17.3 Contract Bond (Contract Payment and Performance Bond). The approved form of security furnished by the Contractor and the Contractor's Surety or Sureties to guarantee payment and performance of all obligations incurred by the Contractor on the Contract.

101.18.0 Contract Documents. The documents and forms, provided to the Contractor for bidding, as applicable to the specific Project, generally including but not limited to: Advertisement for Bids, Bid Pages, Consent of Surety, Non-Collusion Affidavit, Qualification Questionnaire, Joint Venture, Bid Bond, Contract Agreement, Contract Bond, Maintenance Bond, Contractor's Release of Liens, Specifications, Plans, State of Delaware prevailing wages, Federal prevailing wages (if applicable) and reference drawings.

101.19.0 Contract Item (Pay Item). A specifically described item of work for which a price is provided in the Contract.

101.20.0 Contract Time. The number of Days allowed for the completion of the Contract. When a calendar date of completion is specified, the work shall be completed on or before that specified completion date. Calendar day contracts shall be completed on or before the day indicated even when that date is a Saturday, Sunday, or holiday.

101.21.1 Contractor. The individual or legal entity named as such in the Contract, acting directly or through agents or employees and primarily liable for the acceptable performance of the Project and for the payment of all debts pertaining to the Project.

101.21.2 Contractor's Release of Lien. A form of agreement included in the Contract pursuant to which the Contractor certifies prior to final payment that all liens, claims and other demand arising in connection with the Work have been fully satisfied.

101.22.0 County. The county in which the work is to be performed.

101.23.0 Culvert. Any structure which provides an opening under any roadway, but is not classified as a bridge.

101.24.1 Days. Unless otherwise specified, Days as used in the Contract means Calendar Days.

101.24.2 DBE. A Disadvantaged Business Enterprise as defined by 49 CFR Part 26, certified by the Delaware Department of Transportation (DeIDOT) DBE Program, New Jersey Department of Transportation (NJDOT) DBE Program, New Jersey Transit DBE Program, and/or Port Authority of New York/New Jersey DBE Program.

101.24.3 DeIDOT. The Delaware Department of Transportation.

101.24.4 DeIDOT Supplemental Specifications. See Supplemental Specifications.

101.25.0 Department. Any reference to Department throughout the specifications shall mean Authority.

101.26.1 Differing Site Conditions. Subsurface or latent physical conditions encountered at the site that 1) differ materially from those indicated in the Contract, or 2) are unknown physical conditions of an unusual nature, differing materially from those conditions ordinarily encountered and generally recognized as inherent in the work provided for in the Contract.

101.26.2 Dispute. For purposes of Subsection 105.17, any claim, dispute or other matter in question.

101.26.3 Director. See Executive Director

101.27.0 District. Any reference to the District shall be the Authority.

101.28.0 District Engineer. Any reference to the District Engineer of the Authority shall mean the Engineer.

101.29.0 Easement. A right acquired by the Authority to use or control property for a designated purpose.

101.30.0 Embankment. A structure constructed of material as described in Standard Specifications Section 202, between the existing ground and sub-grade.

101.31.0 Engineer. The Chief Engineer of the Authority acting either directly or through a duly authorized representative.

101.32.1 Equipment. All machinery, tools, and apparatus, together with necessary supplies for upkeep and maintenance necessary for the construction and completion of the Project.

101.32.2 Executive Director (or Director). The Executive Director of the Authority, acting either directly or through a duly authorized representative.

101.33.0 Extra Work. Work not included in the Contract, but within the scope of the Contract and desired by the Authority for the satisfactory completion of the Project.

101.34.0 Falsework. Any temporary construction work used to support the weight of a permanent structural element until it becomes self-supporting. Falsework would include steel or timber beams, girders, columns, piles and foundations, and any proprietary equipment including modular shoring frames, post shores, and adjustable horizontal shoring.

101.35.0 Final Inspection. The inspection, conducted by the Engineer, to determine if the Project, or any substantial portion thereof, has been satisfactorily completed, in accordance with Contract requirements.

101.36.0 Force Account. Prescribed work paid on the basis of actual costs and appropriate additives.

101.37.0 Formwork. A temporary structure or mold used to retain the plastic or fluid concrete in its designated shape until it hardens. Formwork must have enough strength to resist the fluid

pressure exerted by plastic concrete and any additional fluid pressure effects generated by vibration.

101.38.1 General Notices. Federal and State regulations contained in the Contract Documents which govern Contract operations.

101.38.2 General Provisions. The Authority's Section 100 that is part of the Standard Specifications and replaces Section 100 of the most current edition of DelDOT Standard Specifications for Road and Bridge Construction.

101.39.0 Holidays. If any holiday falls on Sunday, the Monday following shall be the holiday. If any holiday falls on Saturday, the Friday preceding shall be the holiday.

The following days shall be recognized as holidays:

- New Year's Day
- Martin Luther King Jr. Day
- President's Day
- Good Friday
- Memorial Day
- Independence Day
- Labor Day
- Veteran's Day
- Thanksgiving Day
- Friday after Thanksgiving Day
- Christmas Day

The holidays defined in this Article of the Standard Specifications are intended for use only in connection with normal work scheduling (Monday to Friday) and traffic protection requirements during this period.

101.40.0 Inspector. The authorized representative of the Authority assigned to perform inspection of work and materials.

101.41.1 Joint Venture Statement. A statement to be executed and signed by Contractors submitting a Bid where the Bidder is a joint venture between or among such Contractors.

101.42.0 Laboratory. A firm or individual selected by the Authority for the inspection and testing of the materials to be used in the Project.

101.43.0 Limits of Construction. An area with established boundaries, identified within the Right-of-Way or Easements, where the construction is permitted. When not specifically identified, limits of construction shall be the Right-of-Way and easement.

101.44.0 Liquidated Damages. An amount due and payable to the Authority by the Contractor for additional costs incurred by the Authority resulting from either the Bidder's failure to execute the Contract in accordance with Subsection 103.07, the Contractor's failure to complete the specified work within the Contract Time or as otherwise specified in the Contract Documents.

101.45.1 Lump Sum. The single price submittal by a Contractor as a single amount for a complete Contract item.

101.45.2 Maintenance Bond. The approved form of security furnished by the Contractor and the Contractor's Surety or Sureties to guarantee the Contractor's Work for a specified period of time.

101.46.1 Major Items and Minor Items. Any scheduled Pay Item of the Bid which amounts to more than fifteen percent (15%) of the Awarded Contract Value, based on the original quantity of that item multiplied by the unit price bid, is considered a Major Item. All other original Contract Items are considered Minor Items.

101.46.2 Manuals. The current manual entitled "Manual of Uniform Traffic Control Devices for Street and Highways" issued by the FHWA and the current "Traffic Control Manual for Streets and Highway Construction" published by DelDOT.

101.47.0 Materials. Any substances, other than equipment, used in the construction of the Project.

101.48.1 MBE. A Minority-owned Business Enterprise certified by the Delaware Office of Management and Budget, Office of Supplier Diversity or the New Jersey Department of the Treasury.

101.48.2 Median. The portion of a divided highway separating the traveled ways for traffic in opposite directions.

101.48.3 Non-Collusion Affidavit. A form of affidavit disclaiming any collusion or other restraint on free, competitive bidding included in the Contract Documents.

101.49.0 Notice of Award. A written notice to the selected Bidder stating that the Bid has been accepted by the Authority and that the selected Bidder is required to execute the Contract Agreement and furnish bonds required by the Contract along with proof of insurance satisfactory to the Authority.

101.50.0 (Intentionally Omitted)

101.51.0 Notice to Proceed. Written notice to the Contractor to begin the Work. When applicable, the notice will include the starting date of Contract Time.

101.52.0 Pavement Structure. The combination of sub-base, base course, and surface course placed on a sub-grade to support the traffic load.

1. Base Course. The layer or layers of specified or selected material of designated thickness placed on a sub-base or a sub-grade to support a surface course.
2. Sub-base. One or more layers of specified material thickness placed on a sub-grade to support a base course (or in the case of rigid pavement, the Portland cement concrete slab).
3. Sub-grade. The top surface of the roadbed upon which the pavement structure is constructed.
4. Sub-grade Treatment. Modification of roadbed material by stabilization.

5. **Surface Course.** Layer(s) of a pavement structure designed to accommodate the traffic load, the top layer of which resists skidding, traffic abrasion, and the disintegrating effects of climate. The top layer is sometimes called the “Wearing Course”.

101.53.0 Pay Item - See Contract Item.

101.54.0 Plans. The official plans, profiles, cross sections and any supplemental drawings or exact reproductions thereof furnished by the Authority, which show the location, character, dimensions and details of the work to be done.

101.55.0 Profile Grade. The trace of a vertical plane intersecting the top surface, usually along the longitudinal centerline of the surface course. Profile grade means elevation of such trace.

101.56.0 Project. The entire work to be performed under the Contract.

101.57.0 Project Resident. The field representative of the Engineer having direct supervision of the administration of the Contract.

101.58.0 Qualification Questionnaire. An Authority-approved form submitted as part of a Bid, on which various questions are asked by the Authority, the answers of which being used to determine the responsibility of a Bidder.

101.59.0 (Intentionally Omitted)

101.60.0 Responsive Bid. A Bid that complies with all terms, conditions, and requirements of the Contract Documents.

101.61.0 Responsible Bidder. A Bidder, as determined by the Authority, who possesses the financial, managerial, technical, and ethical capacity to perform successfully under the terms and conditions of a proposed Contract. In making Responsible Bidder determinations, the Authority may also consider all relevant factors, including but not limited to, a Bidder's past performance, experience, manpower, record of timely completion of projects, bonding capacity, record of M/W/DBE commitment achievement, past or current legal issues, or use of questionable subcontractors.

101.62.0 Right-of-Way. That property which is secured for, acquired by or possessed by the Authority for the Project.

101.63.0 Roadbed. The graded portion of a highway within top and side slopes, prepared as a foundation for the pavement structure and shoulders.

101.64.0 Roadside. The areas between the outside edges of the Shoulders and the Right-of-Way boundaries. Unpaved Median areas between inside Shoulders of divided highways and infield areas of interchange are included.

101.65.0 Roadside Development. Those items necessary for the preservation or replacement of landscape materials and features that may include suitable plantings and other improvements or ground cover to preserve and enhance the appearance and stability of the highway Right-of-Way or acquired easements for scenic improvements.

101.66.0 Roadway. The portion of a highway, including shoulders, for vehicular use. A divided highway has two or more Roadways.

101.67.0 Scaffolding. An elevated work platform used to support workers, materials, and equipment, but not intended to support the structure.

101.68.0 Schedule of Items. The list of Contract Items of Work in the Contract Documents on which Bidders submit their bid prices.

101.69.0 Schedule of Work. The approved base line schedule submitted by the Contractor containing dates of commencement and completion of the various items of Work within the Contract Time.

101.70.0 (Intentionally Omitted)

101.71.0 Section. When referring to the Specifications, a numbered article or group of related articles forming a part of the Specifications.

101.72.0 Shoulder. The portion of the Right-of-Way adjacent to the Traveled Way for accommodation of stopped vehicles for emergency use, and for lateral support of the pavement structure.

101.73.1 Sidewalk. That portion of the road primarily constructed for the use of pedestrians.

101.73.2 Special Provisions. Specific directions, provisions, or requirements particular to the Project under consideration, but not sufficiently covered by the Standard Specifications including:

Part I – Amendments to General Provisions of the Standard Specifications

Part II – Additional Specific Terms and Conditions (Additional General Provisions)

Part III – Amendments to Technical Specifications

Part IV - Additional Technical Specifications

Additional Parts – Additional Project Specific Specifications not covered above (as needed)

101.74.0 Specifications. The compilation of provisions and requirements for the performance of the prescribed work:

1. Standard Specifications.
2. Special Provisions.

101.75.1 Standard Construction Details (DeIDOT Standard Construction Details). Drawings of standard construction details which have been adopted by the Delaware Department of Transportation, current as of the date of the advertisement, for miscellaneous items of work and which are a part of the Contract Documents.

101.75.2 Standard Specifications. The Authority's General Provisions - Section 100 and Sections 200 through 800 of the Standard Specifications for Road and Bridge Construction, current edition, prepared by the Delaware Department of Transportation (DeIDOT Standard Specifications) along with the DeIDOT Supplemental Specifications for Division 200 through Division 800, current as of the date of the Advertisement for Bids, as published on the Delaware Department of Transportation's website.

101.76.0 State. Where reference is made to the State it shall be taken as the Authority.

101.77.0 Structures. Bridges, culverts, storm sewer appurtenances, slope and retaining walls, sign support structures, and other similar items.

101.78.0 Subcontractor. An individual or legal entity contracting with the Contractor, with the approval of the Authority, to perform any part of an item of work of the Contractor's Contract with the Authority.

Exceptions to this definition are suppliers limited to delivering and depositing, but not incorporating material, suppliers of services that transport material, and persons or entities performing work which does not advance the completion of the Contract and is not considered as an item of Work.

All references to Subcontractors in the Contract shall apply equally to all subcontractors at any tier.

101.79.0 (Intentionally Omitted)

101.80.0 Substructure, Bridge. All of the structure below the bearings of simple and continuous spans, skewbacks of arches, and tops of footings of rigid frames, including backwalls, and wingwalls.

101.81.0 Superintendent. The Contractor's authorized representative in responsible charge of the Work.

101.82.0 Superstructure, Bridge. Approach slabs and the entire structure except the Substructure.

101.83.1 Supplemental Agreement. A written agreement made and entered into by and between the Contractor and the Authority, covering work not otherwise provided for, or revisions in or amendments to the original terms of the Contract.

101.83.2 Supplemental Specifications (DelDOT Supplemental Specifications). Approved DelDOT additions and revisions to Sections 200 through 800 of the Standard Specifications for Road and Bridge Construction, current edition, prepared by the Delaware Department of Transportation (DelDOT Standard Specifications), which are current as of the date of the Advertisement for Bids and which are part of the Contract Documents.

101.83.3 Supplier. Any individual, firm or corporation who contracts with the Contractor to manufacture, supply or sell Materials, or Equipment for the Contract, for or on behalf of the Contractor.

101.84.0 Surety. When applying to the Bid Guaranty, it refers to the corporate body which engages to be responsible in the execution of a satisfactory Contract by the Bidder. When applying to the Contract Bond, it refers to the corporate body which is bound with and for the Contractor and which contracts responsibility for the Contractor's acceptable performance of the Project and for the payment of all obligations pertaining thereto.

101.85.1 (Intentionally Omitted)

101.85.2 Total Price. The total amount bid, including Alternate Pay Items, if any, for any project.

101.86.1 Traveled Way. The portion of the Right-of-Way designated for the movement of vehicles, exclusive of shoulders and auxiliary lanes.

101.86.2 TWIC. Transportation Worker Information Credentials

101.87.0 Unbalanced Bid, Materially. A Bid that generates a reasonable doubt that award to the Bidder submitting a mathematically unbalanced bid will result in the lowest ultimate cost to the Authority.

101.88.0 Unbalanced Bid, Mathematically. A Bid containing Contract Items that do not reflect reasonable actual costs plus a reasonable proportionate share of the Bidder's anticipated profit, overhead costs, and other indirect costs.

101.89.1 Unit Price. The price provided by the Contractor in the Bid for one (1) unit of a Contract Item.

101.89.2 VEP. Value Engineering Proposal.

101.89.3 Vice-Chairperson. The Vice-Chairperson of the Authority, acting either directly or through a duly authorized representative.

101.89.4 WBE. A Woman-owned Business Enterprise certified by the Delaware Office of Management and Budget, Office of Supplier Diversity; or the New Jersey Department of the Treasury.

101.90.0 Work. The furnishing of all labor, Materials, Equipment, and other incidentals necessary to complete the Contract.

101.91.0 (Intentionally Omitted)

101.92 Working Drawings. Stress sheets, shop drawings, erection plans, false-work plans, framework plans, cofferdam plans, bending diagrams for reinforcing steel, or any other supplementary plans or similar data which the Contractor is required to submit to the Engineer for approval.

Section 102 - Bidding Requirements and Conditions

102.01 Qualification of Bidders

102.02 Contents of Bid

102.03 Advertisement for Bid

102.04 Interpretation of Quantities in Bid Forms

102.05 Examination of Plans, Specifications, Contract Documents, and Site of Work

102.06 Preparation of Bid

102.07 Irregular Bids

102.08 Bid Guaranty

102.09 Delivery of Bids

102.10 Withdrawal of Bids

102.11 Opening of Bids

102.12 Disqualification of Bidders

102.13 Rejection of Bid

102.14 Materials Guaranty

102.15 Non-Collusion Certification

102.16 Online System Failure

102.01 Qualification of Bidders. Each Bidder will be required to complete and execute the Qualification Questionnaire included with the Contract Documents attesting to his, her or its financial ability, adequacy of Equipment, organization, prior experience and other matters. Other pertinent data relating to the Bidder's qualifications may also be attached to the Qualification Questionnaire to supplement the information given thereon. Failure to submit the executed Qualification Questionnaire together with the Contract Documents at the time of bidding shall be just cause for rejection of the Bid.

If a group of contractors submit a single bid for a Contract, acting under the terms of a joint venture, each such contractor shall complete and execute a separate Qualification Questionnaire and shall also execute their portion of a Joint Venture Statement. If a Joint Venture Statement form is not included with the Contract Documents issued by the Authority, Bidders wishing to enter into a joint venture for the Project shall secure a copy of this form from the Authority for execution and attachment to the Bid. Failure of joint Bidders to include the executed statement with their Bid shall also be just cause for rejection of the Bid.

102.02 Contents of Bid. The Bid will state the location and description of the contemplated construction, show the estimate of the various Pay Item quantities, and show the kinds of Work to be performed and/or Materials to be furnished. A schedule of items for which Unit Prices are invited will be included along with the specified time in which the Work must be completed, amount of the Bid Guaranty, and the date, time, and place of the opening of Bids. If the method of Bid comparison to be utilized by the Authority is to be something other than comparing the Base Bids of all Bidders, an alternative Bid comparison basis will be defined in the Contract Documents. The Contract Documents will also include or designate any Special Provisions and any other specifications or requirements that vary from or are not contained in the Standard Specifications.

All papers bound with, attached to or otherwise submitted with the Bid are considered as part of the Bid. The Plans, Specifications, and other documents designated in the Contract Documents will be considered a part of the Bid whether attached or not.

102.03 Advertisement for Bid. The Authority reserves the right to refuse to accept a Bid from a Bidder for any of the reasons stated in Subsection 102.12.

In accordance with the Advertisement for Bids, Bids are invited to be submitted for the performance of the Project, the designation of which is stated in the Advertisement for Bids.

The Authority will consider only those Bids received from parties who have obtained Contract Documents directly from the Authority. Contract Documents are not transferable to other parties for bidding purposes. Bids received from firms whose names are not recorded by the Authority as having secured Contract Documents for this Contract will be rejected.

Bids are requested on the items stated in the Contract Documents for the Project. The prices bid shall cover all costs of any nature, incidental to and growing out of the Work, including labor, Material, Equipment, transportation and all else necessary to perform and complete the Project in the manner and within the time required, all incidental expenses in connection therewith, all costs of account of loss by damage or destruction of the Project and any additional expenses for unforeseen difficulties encountered, for settlement of damages and for replacement of defective Work and Materials. No separate or additional payment will be made for any Materials furnished, Work performed, services provided or other expense incurred in complying with the requirements of the Standard Specifications and any Special Provisions unless otherwise specifically provided.

102.04 Interpretation of Quantities in Bid Forms. The quantities appearing in the Bid Forms are estimates used for the bid comparison. Payment to the Contractor will only be made for the actual quantities of authorized Work performed and accepted, or for Materials furnished in accordance with the Contract.

102.05 Examination of Plans, Specifications, Contract Documents, and Site of Work. It shall be the responsibility of the Bidder to examine the work site to assure himself, herself or itself of the degree of work to be completed, the conditions, including subsurface conditions, of the site and all Work required by the Contract. The Bidder warrants that, before submitting his, her or its Bid, the Bidder is familiar with the Plans and Specifications and other documents that form part of the Contract, that the Bidder investigated in detail the site of the Project and the available means of access and that the Bidder made such examination thereof as necessary to satisfy himself, herself or itself, in regard to the character and amount of Work involved. The Bidder also warrants that he, she or it can secure the necessary labor and Equipment and that the Materials he, she or it proposes to use will conform to the requirements therefor and can be obtained by he, she or it in the quantities and at the times required. The submission of a Bid shall be considered conclusive evidence that the Bidder has made examination of the aforementioned conditions.

It is the obligation of the Bidder to ascertain all the facts concerning conditions to be found at the location of the Project including all physical characteristics above, on and below the surface of the ground, to fully examine the Plans and Specifications, to consider fully these and all other matters which can in any way affect the Work under the Contract, and to make the necessary investigations relating thereto, and to agree to this obligation in the signing of the Contract. In ascertaining the conditions of the Work preparatory to submitting Bids, Bidders shall also familiarize themselves with the conditions of the site as well as its effect on maintenance of traffic and control of Work, and any other pertinent characteristics of the site or operation that may affect their Work. The Authority assumes no responsibility whatsoever with respect to ascertaining for the Contractor such facts concerning physical characteristics at the site of the Project. The Contractor agrees that he, she or it will make no claim for additional payment or extension of time for completion of the Work or any other concession because of any misinterpretation or misunderstanding of the Contract, on his, her or its part, or of any failure to fully acquaint himself, herself or itself with all conditions relating to the Work.

Bidders must make a request, in writing, to the Authority for any interpretation or any item designated in the Contract Documents or correction of any apparent ambiguity, inconsistency or error that may be found in the Contract Documents, no less than six (6) business days prior to the Bid opening date. Interpretations or explanations made by the Authority in response to such requests will be issued as an Addendum and shall become part of the Contract Documents and will be provided to all prospective Bidders in writing before the time set for opening of the Bids. Only the interpretation or correction issued by the Authority by Addendum shall be binding. Prospective Bidders are advised that no other source is authorized to give information concerning or to explain or interpret the Contract Documents. If a Bidder, prior to the submission of his, her or its Bid, fails to call the Authority's attention to the existence of an apparent ambiguity, inconsistency or error in the Contract Documents, that Bidder's Bid will be conclusively presumed to have been based upon the interpretation of such ambiguity or inconsistency or directions correcting such error which may subsequently be given by the Authority.

Before submitting his, her or its Bid, the Bidder shall ascertain from the Authority the status of Right-of-Way acquisitions, if any, and shall ascertain the provisions of agreements between the

Authority and property owners that may relate to the Bidder's Bid or to the Work to be performed. The Contractor shall also confer with the Authority on the above-mentioned matter immediately after award of the Contract and at such other times thereafter as may be necessary or advisable. The Contractor shall be governed by the provisions of the above-mentioned Right-of-Way agreements.

It is the obligation of the Bidder to make his, her or its own investigation of subsurface conditions prior to submitting a Bid. Borings, test excavations and other subsurface investigations, if any, made prior to the construction of the Project, the records of which will be made available to Bidders, are intended for use as a guide for design. Said borings, test excavations and other subsurface investigations are provided for informational purposes only and are not warranted to show the actual subsurface conditions. The Contractor agrees that he, she or it will make no claims against the Authority if in carrying out the Project the Contractor finds that the actual conditions encountered do not conform to those indicated by said borings, test excavations and other subsurface investigations.

Any estimate or estimates of quantities shown on the Plans or in the Bid Forms, based on said borings, test excavations and other subsurface investigations, are in no way warranted to indicate the true quantities. The Contractor agrees that they will make no claims against the Authority, if the actual quantity or quantities do not conform to the estimated quantity or quantities, except when compensation therefor is justified in accordance with Subsection 104.05.

The Authority will not be bound by any statement or representation concerning conditions or descriptions of the Work unless they are included or designated in the Contract Documents. Oral explanations or instructions given before the bid of the Contract by Authority employees or agents will not be binding.

102.06 Preparation of Bid. Bids shall be submitted on the Bid Forms furnished by the Authority, properly filled out in ink and shall be duly executed. The Bidder shall state in the Bid the price per unit of measure or lump sum price for each scheduled item of work for which the Bidder will agree to carry out the Work. Unless expressly stated otherwise by the Authority, prices shall be given by the Bidder for all scheduled items of work listed on the Bid Forms. The Bidder shall also state the Base Bid and the Total Price Bid (if applicable) for the performance of the Project, as determined by multiplying each estimated quantity by the price per unit of measure bid therefor and adding together the resulting amounts and any lump sum prices required. For the purpose of comparison of bids received, the Base Bid, correctly computed, stated in the Bid will be considered to be the amount bid for the Project and shall serve as the basis of Bid comparison for award.

Where there is a discrepancy in any item between the unit or lump sum price written in figures and that written in words, the written words will govern.

If, during the tabulation of bids, the price on any Bid is found to be incorrectly computed, the Authority reserves the right to make such changes as are necessary in the extended amounts and price on the basis of the unit and lump sum prices given and the approximate quantities stated for the scheduled items therein.

When the Bid is made by an individual, his post office address shall be stated and the individual shall sign the Bid; when made by a legal entity, its full legal name and post office address shall be stated and the Bid shall be signed by a duly authorized representative of such legal entity, with corporate seal affixed and signatures notarized in all cases. Before the Contract will be executed

with a successful Bidder not a resident of the State or one of the States in which the work is to be done, such Bidder shall designate a proper agent(s) in the non-residing state or states on whom service of process can be made in the event of litigation.

As stated in Subsection 102.01, any group of Bidders wishing to submit a single Bid as part of a joint venture will be required to complete and execute the joint venture statement included with the Contract Documents.

Any Bidder submitting a Bid for a contract must also submit Bids for each portion of the Work.

102.07 Irregular Bids. Bids shall be considered irregular and may be rejected for the following reasons:

- (a) If the Contract Documents furnished by the Authority are not used or are altered.
- (b) If there are unauthorized additions, omissions, limitations, provisos, alterations, conditions, alternate bids not called for, or irregularities of any kind which may tend to make the Bid incomplete, indefinite or ambiguous as to its meaning.
- (c) If the prices contained in the Bid are obviously unbalanced, either in excess of or below the reasonable cost analysis values.
- (d) If the Bid fails to contain a unit or lump sum price for every Pay Item indicated except in the case of authorized optional Alternate Pay Items.
- (e) If any documents necessary for bidding purposes are not completed, are improperly executed or are missing (including both forms of the Bid Guaranty) or if the Bid is submitted by Bidders whose names are not recorded by the Authority as having secured Contract Documents for the Contract.
- (f) If the Authority, in its sole discretion, deems it advisable to do so in its best interest.
- (g) If specific MBE/WBE/DBE information regarding the good-faith effort documentation and written assurances that the MBE/WBE/DBE goals set forth in the Contract Documents will be met is required, but is not provided at the time of bid.

The Authority reserves the right to waive any or all irregularities and technicalities in the submission of Bids, including the Bid Guaranty.

102.08 Bid Guaranty. The Bid, when submitted, unless otherwise noted in the Special Provisions, shall be accompanied by two forms of Bid Guaranty as follows:

- (a) A cashier's check, made payable to "The Delaware River and Bay Authority", in the sum of not less than one percent (1%) of the Total Price, except that the amount of the check need not exceed \$20,000 and shall not be less than \$2,000; and
- (b) A Bid Bond, on the form to be furnished by the Authority and included in the Contract Documents, for a sum of not less than ten percent (10%) of the Total Price.

Cashier's checks submitted as part of the bid guaranty will be returned to all unsuccessful Bidders within fourteen (14) Days following the bid opening.

102.09 Delivery of Bids. Bidders may submit the numerical portion of the Bid electronically using the Authority's online project management system or may incorporate a hard copy of the numerical portion of the Bid, along with all of the other required forms as provided by the Authority. In addition to the numerical portion of the Bid (whether submitted electronically or via hard copy), all Bidders must submit Bids upon complete forms as provided by the Authority, including the signed Bid, Consent of Surety, Non-Collusion Affidavit, Joint Venture Statement (if applicable) and Bid Bond.

Each Bidder must also complete and execute a Qualification Questionnaire, included with the Contract Documents, in which he, she or it shall give information relating to his, her or its prior experience and performance records and the size and capacity of the organization. Subcontractors performing twenty percent (20%) or more of the total value of the Work must also submit a Qualification Questionnaire on the approved Authority form. Bids will be accepted at the place and until the time stated in the Advertisement for Bids. Mailed Bids shall be sent according to the directions stated in the Contract Documents and must be received by the Authority prior to the time set for opening Bids, if they are to be considered.

The Consent of Surety shall assure that satisfactory arrangements have been made between the Surety and the Bidder by which the Surety agrees to furnish the Bidder with a Contract Bond (Performance and Payment) and a Maintenance Bond in the form required. A Maintenance Bond shall be furnished at the conclusion of the Work. The Consent of Surety shall be executed by an approved surety company authorized to do business in the States of Delaware and/or New Jersey, as the location of the work dictates.

Bidders must submit their complete Bid (other than their numerical bid if submitted on-line) in a sealed envelope. The Bid must be printed as one-sided documents. Two-sided documents shall not be permitted. The envelope containing the Bid must bear the name and address of the Bidder along with the designation of the Project as named in the Contract Documents.

If the Bidder has submitted its numerical bid via the Authority's on-line procurement system the envelope shall also be marked: "NUMERICAL BID SUBMITTED ONLINE." If the Bidder has submitted the numerical portion of his, her or its Bid both online and in hard copy format, the hard copy shall supersede the online submission unless the hard copy version has been specifically withdrawn by the Bidder in accordance with Subsection 102.10.

102.10 Withdrawal of Bids. A Bid, after having been submitted, may be withdrawn by the Bidder prior to the opening of any bid on that Project upon immediate execution by such Bidder of the appropriate withdrawal form furnished by the Authority.

102.11 Opening of Bids. Bids will be opened and read at the place designated by the Authority on the date and hour set in the Contract Documents and is open to all who wish to attend in person. Bids received after the time set for the Opening of Bids will not be considered to be a Responsive Bid.

102.12 Disqualification of Bidders. Any one or more of the following causes shall be considered as sufficient for the disqualification of a Bidder and the rejection of a Bid or Bids.

- (a) The Bidder is not properly qualified, in the sole opinion of the Authority, to undertake the Project, based on the information given in the Qualification Questionnaire and/or

any other information available to the Authority relative to the qualifications of the Bidder.

- (b) More than one Bid for the same work from an individual or legal entity under the same or different names.
- (c) Evidence of collusion among Bidders. Participants in such collusion will not be considered for future Bids until re-qualified by the Authority.
- (d) Unsatisfactory performance record as shown by past work for the Authority, judged from the standpoint of workmanship and progress.
- (e) Uncompleted work which, in the judgment of the Authority, might hinder or prevent the prompt completion of additional work if awarded.
- (f) Failure to pay or satisfactorily settle all bills due for labor and material on former contracts in force at the time of letting.
- (g) The Bidder has failed to execute a contract following Award as set forth in Subsection 103.07 or has defaulted on previous contract(s).

102.13 Rejection of Bid. Refer to Subsections 102.07 and 102.12.

102.14 Materials Guaranty. Before the Contract is awarded, the successful Bidder may be required, upon specific request by the Authority, to furnish a complete statement of the origin, composition and manufacture of any or all of the Materials to be used in the Contract, together with such samples as may be requested by the Authority for the purpose of advance testing.

102.15 Non-Collusion Certification. Every Bid submitted to the Authority shall contain a fully executed Delaware River and Bay Authority Non-Collusion Affidavit as provided in the Contract Documents.

102.16 Online System Failure. In the event that that the Authority's online project management system experiences a system failure up to one hour before the scheduled opening of Bids as referenced in Subsection 102.11, the Authority, in its' sole discretion reserves the right to postpone and reschedule the opening of Bids. This Subsection shall not apply to computer or other electronic system failures or other technical issues produced or caused by a Bidder's equipment, software or hardware.

Section 103 - Award and Execution of Contract

103.01 Consideration of Bids

103.02 Award of Contract

103.03 Cancellation of Award

103.04 Return of Bid Guaranty

103.05 Contract Performance and
Payment Bonds

103.06 Execution and Approval of Contract

103.07 Failure to Execute Contract

103.08 Escrow of Bid Documentation

103.09 Withdrawal of Bid

103.10 Insurance

103.01 Consideration of Bids. After the Bids are opened and read, the Authority will compare the Bids on the basis of the summation of the products of the quantities and the Unit Prices unless otherwise defined in the Contract Documents. The tabulation of bids received and the decision of Award, if made, will be available to the public. In the event of a discrepancy between Unit Prices and extensions, the Unit Price shall govern. The Authority reserves the right to reject any or all Bids, waive irregularities on technicalities, proceed to do the work otherwise, abandon the work or advertise for new Bids, if in the judgment of the Authority its best interests be will promoted thereby. Unit Prices may also be affected by maximum price provisions noted elsewhere in these Specifications.

103.02 Award of Contract. The Contract will be awarded or all bids rejected within one hundred twenty (120) Calendar Days from the date of opening Bids. By mutual consent, the Authority and the lowest Responsible Bidder can agree to extend the time within which the Authority may make an Award.

Unless the Bid is rejected pursuant to Subsection 102.07 or the Bidder is disqualified pursuant to Subsection 102.12, Award will be to the Responsible Bidder who submits the lowest Responsive Bid. The award will be made to the Responsible Bidder with the lowest Base Bid.

The Award shall not be binding upon the Authority until the Contract has been executed by the Chairperson, Vice-Chairperson and Executive Director, nor shall any Work be performed on account of the proposed Contract until such execution.

103.03 Cancellation of Award. The Authority reserves the right to cancel the Award of any contract before final execution without liability.

103.04 Return of Bid Guaranty. The Bid Guaranties of all but the Responsible Bidder submitting the lowest Responsive Bid will be returned within fourteen (14) Days of the Bid opening. The Bid Guaranty of the Responsible Bidder submitting the lowest Responsive Bid will be returned when the Contract has been executed by the Authority, or, if not executed, when other disposition of the matter shall have been made by the Authority, except that in the event the award of Contract is annulled because the Bidder to whom the award is made fails to execute and have delivered on time the Contract and other prescribed documents, the cashier's check of such Bidder shall be forfeited and his, her or its Bid Bond shall become operative, as provided in Subsection 103.07.

103.05 Contract Performance and Payment Bonds. Within ten (10) Days of the date of official notice of Award of the Contract, the Bidder to whom the Contract is awarded shall furnish and deliver a Contract Bond, on the form furnished by the Authority, in the sum not less than the cost of the Base Bid for the Project plus any Alternate Pay Items that the Authority elects to include in the Contract.

The Surety shall be acceptable to the Authority and legally authorized to do business in the States of Delaware and/or New Jersey, as the location of the work dictates. In the event of insolvency of the Surety, the Contractor shall forthwith furnish and maintain another Surety satisfactory to the Authority.

In the event it is necessary for more than one Surety to underwrite the total required amount of the Contract Bond, the bond form shall be amended to indicate to what maximum amount each Surety is liable, and to state that in the event the Authority must proceed against the Sureties for

the completion of the work, each Surety will be liable for an amount proportionate to his, her or its maximum liability.

The Contract Bond shall be maintained in effect by the Contractor and Surety until the Project is finally accepted by the Authority and the final payment to the Contractor is made.

103.06 Execution and Approval of Contract. Within ten (10) Days of the date of official notice of Award of the Contract, the Bidder to whom the Contract is awarded shall deliver the following documents to the Authority:

- (a) The executed Contract Agreement;
- (b) The Contract Bond, as prescribed in Subsection 103.05;
- (c) Proof satisfactory to the Authority, of the authority of the person or persons executing the Contract Agreement and Contract Bond on behalf of the Contractor; and
- (d) Satisfactory evidence of all insurance coverage, as prescribed in Subsection 103.10 and the Special Provisions.

Each of the documents listed above shall be furnished in the number of copies requested by the Authority.

The Contract will not be considered effective until it has been fully executed by all parties to the Contract.

103.07 Failure to Execute Contract. Failure upon the part of the Bidder to whom the Contract has been awarded to execute and deliver the Contract Agreement and all other documents listed in Subsection 103.06 in the manner and within the time prescribed therein shall be just cause for annulment of the Award and for the exclusion of the Bidder from bidding on subsequent projects for such period as the Authority may deem appropriate.

It is understood and agreed by said Bidder that if the Award is annulled for the above reasons, the Bid Guaranty, as described in Subsection 102.08, shall become the property of the Authority, not as a penalty but as Liquidated Damages and that the Authority may proceed to recover under the terms and provisions of the Bid Bond, at the discretion of the Chairperson.

103.08 Escrow of Bid Documentation. For the Award of a Project equal to or greater than Twenty Million Dollars (\$20,000,000) in value, or if required by the Specifications, the Contractor shall submit to the Authority legible copies of the Bid Documentation.

Scope and Purpose. The purpose of escrowing the Bid Documentation is to preserve the Contractor's bid documents for use by the Contractor and the Authority in the resolution of any disputes, claims, arbitration proceeding, or litigation arising from the Contract. The submitted Bid Documentation shall be placed in escrow with a banking institution or other bonded document storage facility selected by the Authority and preserved by that institution as specified in the following subparts:

A. **Submittal and Return of Bid Documentation.** Within twenty-four (24) hours of the execution of the Contract, the Contractor shall submit the Bid Documentation in a sealed container as per the custody agreement form. The container shall be clearly marked "Bid Documentation" and shall show on the face of the container the Contractor's name and address, the date of submittal, the Contract number, and the Project designation.

B. **Affidavit.** In addition to the Bid Documentation, the Contractor shall submit an affidavit, signed under oath by a representative of the Contractor authorized to execute Bids, listing each bid document submitted by author, date, nature, and subject matter. The affidavit shall attest that 1) the affiant has personally examined the Bid Documentation, 2) the affidavit lists all of the documents relied upon by the Contractor in preparing its Bid for the Project, and 3) all such Bid Documentation is included in the sealed container submitted to the Authority.

C. **Duration and Use.** The Authority and the Contractor will jointly deliver the sealed container and affidavit to a banking institution or other bonded document storage facility selected by the Authority for placement in a safety deposit box, vault or other secure accommodation. The document depository agreement shall reflect that the Bid Documentation and affidavit will remain in escrow during the life of the Contract or until the Contractor and the Authority jointly agree to remove such Bid Documentation, or the Contractor notifies the Authority of its intention to initiate a claim against the Authority related to the Contract. Notification of the Contractor's intention to initiate a claim against the Authority will be sufficient grounds for the Authority to obtain the release and custody of the Bid Documentation. If the Bid Documentation is not removed from escrow, upon completion of the Contract and provided that the Contractor has signed the final standard release form, the Authority will instruct the document depository to release the sealed container to the Contractor. In accordance with the Contractor's representation that the sealed container placed in escrow contains all of the materials relied upon in preparing its Bid, the Contractor agrees to waive the right to use any bid documentation other than that placed in escrow to resolve all disputes arising out of the Contract.

D. **Refusal or Failure to Provide Bid Documentation.** Failure to provide Bid Documentation will render the Bid non-responsive, and the Bid Guaranty will be forfeited in accordance with Subsection 103.07.

E. **Confidentiality of Bid Documentation.** The Bid Documentation and affidavit in escrow are, and will remain, the property of the Contractor. The Authority has no interest in, or right to, the Bid Documentation unless mutually agreed by the Contractor and the Authority or upon notification of the intention to file claim is received between the Authority and Contractor. In the event of such notification, the Bid Documentation and affidavit shall become the property of the Authority until complete resolution of the claim is achieved. These materials, and all copies made by the Authority, shall be returned to the Contractor upon execution of a final release. The Authority shall make every reasonable effort to ensure that the Bid Documentation it has gained access to will remain confidential within the Authority and will not be made available to anyone outside the Authority or used by a former Authority employee.

F. **Cost and Escrow Instructions.** The cost of the storage of the Bid Documentation will be borne by the Authority. The Authority will provide escrow instructions to the document depository consistent with this clause.

G. **Payment.** There will be no separate payment for the cost of compilation of data, the sealed container, or verification of the Bid Documentation. All costs shall be included in the Bid price.

103.09 Withdrawal of Bid. If, at any time, after the acceptance of bids by the Authority and before full execution of the Contract the Responsible Bidder with the lowest Responsive Bid determines a need to withdraw his, her or its bid, he, she or it shall put the request in writing to the Authority representative stating the reason(s) for such withdrawal. The Authority reserves the right to accept or reject the Bidder's request to withdraw upon review of the merits. The Authority reserves the right to retain the Bid Guaranty in full or in part as Liquidated Damages.

The Authority may then proceed to the next lowest Responsive Bid, or reject all Bids and re-advertise for new Bids.

103.10 Insurance. The Bidder to whom the Contract is awarded will be required to provide insurance of the prescribed types and minimum amounts as set forth in the Special Provisions of the Contract Documents to provide adequate protection for the various parties involved in the Contract. To the extent permitted by law, all policies are to have a waiver of subrogation in favor of the Authority.

Within ten (10) Days after the date of official notice of Award of the Contract, the Contractor shall furnish to the Authority insurance certificates for all the insurance required under the Contract and subrogation waivers related thereto. Thereafter, renewal certificates of insurance shall be deposited with the Authority not less than ten (10) Days before the expiration dates of the related policies. The Contractor also agrees to provide the Authority with current certificates of insurance every six (6) months during the term of the Contract. Notwithstanding the foregoing, the Authority reserves the right to request evidence of insurance at such additional intervals as it determines in its sole discretion. In the event of cancellation or termination (whether by the insurer or the Contractor) of such policy(ies) or in the event the coverage thereof is altered below the limits required by the Contract, Contractor shall provide the Authority with ten (10) Days prior written notice of such expiration, termination or alteration. In addition, the Contractor shall procure new or additional insurance, as applicable, satisfying the requirements set forth in the Special Provisions and shall supply the Authority with certificates of insurance for such new or additional insurance not less than five (5) Business Days before the expiration, termination or alteration of the prior policy(ies).

All required insurance shall be maintained with insurance carriers licensed or approved to do business in the states of New Jersey or Delaware, as required by the location of the Project, or as otherwise approved by the Authority. All companies are to be rated by Best's at least A-VIII, unless otherwise approved by the Authority.

Neither approval by the Authority nor a failure to disapprove insurance certificates furnished by the Contractor shall release the Contractor from full responsibility for all liability as set forth in the indemnification clause stated in Subsection 107.10.

The Contractor is responsible for any loss or damage to the Work from any cause whatsoever, until final acceptance by the Authority. If the Contractor has any property insurance covering the Work, the policy is to include a waiver of subrogation in favor of the Authority, and the Authority is to be named loss payee. The Contractor is responsible for any deductible, and holds the Authority harmless for any deductible. If the Contractor is self-insured, the Contractor will not claim against the Authority for any loss or damage.

If Coverage is on a "claims made" form, the retro date must be prior to or concurrent with the date of execution of the Contract; and certification must continue for at least one year after termination or expiration of the Contract.

Section 104 - Scope of Work

- 104.01** Intent of Contract
- 104.02** Signs
- 104.03** Bus Stops
- 104.04** Accident Notification
- 104.05** Changes in the Character of Work
- 104.06** Differing Site Conditions
- 104.07** Suspension of Work/Annulment of Contract
- 104.08** Notification of Differing Site Conditions and Extra Work
- 104.09** Maintenance and Protection of Traffic
- 104.10** Rights In and Use of Materials Found on the Work
- 104.11** Restoration of Surfaces Opened by Approval
- 104.12** Value Engineering Proposals (VEP) by the Contractor
- 104.13** Final Cleaning of Project Site
- 104.14** Contractor's Responsibility for Work

104.01 Intent of Contract. The Work required of the Contractor comprises the performance and completion of the Project, including the furnishing of all Materials, Equipment, transportation, labor and all else necessary therefor and incidental thereto, final cleaning up as provided in Subsection 104.13, the payment of all due obligations as provided in Subsection 109.10 and the replacement of defective Work and Materials as provided in Subsection 105.20, all in accordance with the Contract or as ordered by the Authority.

The Plans forming a part of the Contract Documents show the location, general character, limits, dimensions and details of the Work to be performed under the Contract.

The title sheet of the Plans for each Contract bears the designation "Delaware River and Bay Authority," the Contract number and the title of the Project.

The Plans and Specifications for each Contract are intended to fully prescribe the Work to be done, the Materials to be furnished, the manner of accomplishing the Work, the time within which the Work is to be completed and the means of payment to the Contractor.

The Plans and Specifications are further intended to complement and supplement each other. Any Work required by either one shall be performed. Should any Work be required which is not denoted in the Specifications or on the Plans but which is nevertheless necessary for the proper performance of the Project, such Work shall be performed as fully as if it were described and delineated.

If any discrepancy is found on the Plans between a figured dimension and a scaled dimension, the figured dimension shall govern. The Authority shall have the right to correct apparent errors or omissions in the Plans and Specifications and to make such interpretations as deemed necessary for the proper fulfillment of the intent of the Contract.

Within ten (10) Days after the execution of the Contract, the Authority will furnish to the Contractor, without charge, five (5) copies of the Special Provisions and five (5) sets of prints of the Plans.

At least one (1) complete set of the Plans and Specifications (including Standard Specifications) shall be kept at all times at the site of the Project by the Contractor.

104.02 Signs. The Contractor shall, with the Authority, inventory all signs (e.g., traffic, bus stops, street names, etc.) within the limits of the Contract. Necessary bus stops and traffic signs shall be maintained in operation during construction, and all other signs shall be properly stored. The Contractor is responsible for any loss or damage to signs.

104.03 Bus Stops. Bus stops shall be maintained as close as possible to the original location by use of temporary roadway materials during construction activity.

104.04 Accident Notification. The Contractor shall immediately notify the Authority Police of any accident at (302) 571-6342 or (302) 571-6343. Subsequent to notification of the Authority police, the Contractor shall notify the Chief Engineer.

104.05 Changes in the Character of Work. The Authority reserves the right to, at any time prior to the completion of the Contract, issue plan revisions, make adjustments in Contract

Item quantities, or make such other alterations considered necessary to satisfactorily complete the Contract. This change shall be accomplished by a written Change Order, and will not require the Authority's notice to the Surety. The Contractor will be required to comply with such changes upon receipt of the Change Order. If the Contractor should refuse to accept such Change Order, the Contractor may be declared in default as provided in Subsection 108.10.

Such changes do not invalidate the Contract or release the Surety.

If, as a result of such changes, the Contractor requires additional time to complete the Contract, adjustments in the Contract Time will be made under Subsection 108.07.

Payment for changes will be made as provided in Subsections 109.03 or 109.04. Payment shall exclude any amount for loss of anticipated profits, or consequential losses alleged to result from the change.

When such changes result in increases or decreases in the quantities of Contract items scheduled in the Bid, payment for the revised quantities of work actually done will be made solely at the established Unit Prices for such items, except as provided below:

- (a) When such change results in an increase or decrease of twenty-five percent (25%) in the actual Project cost compared to the Awarded Contract Value of the Project, only the price for those individual Pay Items whose quantities have increased or decreased by more than twenty five percent (25%) will be eligible for price negotiation. If the total cost of the Project is increased twenty-five percent (25%) or more, for each Pay Item whose quantity has increased by more than twenty-five percent (25%), only the quantity in excess of one hundred twenty-five percent (125%) of the original Bid quantity will be subject to the negotiated price. If the total cost of the Project is decreased twenty-five percent (25%) or more, each Pay Item whose quantity has decreased by twenty-five percent (25%) or more, the entire actual Pay Item quantity will be subject to the negotiated price.
- (b) When any such change results in an increase or decrease of more than 25% in the actual quantity of any Major Item, as defined in Subsection 101.46.1 of the General Provisions, then the Contract price for the Major Item will be eligible for price negotiation. If the change is an increase, only the quantity of that Major Item in excess of 125% of the original Bid quantity will be subject to the negotiated price. If the change is a decrease, the entire actual quantity of that Major Item will be subject to the negotiated price.

Supplemental Agreements between the Authority and the Contractor will be required to cover the mutually agreed upon terms of all such price negotiations.

When changes involve the addition of Work of a different character than that prescribed under any of the original items scheduled in the Contract or involve Work of a similar character but under conditions substantially different than those contemplated for the original items, payment for such additional Work will be made on the basis of a negotiated price or prices and the mutually agreed upon terms of such negotiations shall be included in a Supplemental Agreement.

Change Orders and/or Supplemental Agreements may also include appropriate changes in the terms of the Contract such as extensions of time, if authorized. Supplemental Agreements may also include all necessary specifications and/or drawings that may be necessary to cover the additional work.

If negotiation proves unsuccessful and payment for the Work cannot be agreed upon by the Contractor and the Authority prior to starting such Work, the Authority may direct the Contractor to perform the Work under the Force Account provisions of Subsection 109.04. The Contractor will proceed immediately with the Work. Such direction shall neither invalidate the Contract nor release the Surety, but Work shall go forward and shall not be held up, or delayed, as a result of such price negotiations.

The elimination of any Minor Item will not be considered as a basis for a claim for additional payment for anticipated profits, except for such actual Work as may have been done and Materials actually purchased with the permission of the Authority prior to notification of the elimination of the item. The omission of any Major Item will be subject to the conditions of negotiation as outlined above.

Unless otherwise set forth herein, Work shall not proceed on any portion of the Project affected by a proposed change by the Authority, after the Contractor is advised of such change, until a Change Order is issued by the Authority. If the change is to be accompanied by a Supplemental Agreement, the Supplemental Agreement shall be executed by both parties and the Surety notified of the change before the affected Work shall proceed. The requirements of this paragraph may be waived if, in the opinion of the Authority, the circumstances are of such emergency or other critical nature that it would be impractical or more expensive to delay action until formal approval by the Authority; in such event, the Authority may authorize the change verbally, subject to subsequent written confirmation by a Change Order and, if necessary, a Supplemental Agreement at a later date.

Changes in the extent of Work shall not operate as a waiver of any conditions of the Contract not specifically stated in the Change Order and/or Supplemental Agreement.

If, in the opinion of the Authority, the proposed increases in or additions to the original scope of Work are of such magnitude as to warrant an extension in time or times of completion, such extension of time will be authorized by the Authority in accordance with the provisions of Subsection 108.07. This will be the exclusive remedy to the Contractor, and there shall be no right to anticipated profits or consequential damages.

104.06 Differing Site Conditions. If differing site conditions are encountered at the Work site, the Contractor shall promptly notify the Authority as specified in Subsection 104.08. No further disturbance of the site or performance of the affected Work is to be done after the alleged differing site conditions are noted unless the Contractor is directed to do so, in writing by the Authority.

Upon written notification, the Authority will investigate the conditions and determine if they differ materially as defined in Subsection 101.26.1. If so, and the conditions cause an increase or decrease in the cost or time required for the Contractor to perform the Work, an adjustment, excluding loss of anticipated profits, will be made and the Contract modified in writing accordingly. The Authority will notify the Contractor of its determination, whether or not an adjustment of the Contract is warranted.

No Contract adjustment resulting in a benefit to the Contractor will be allowed unless the Contractor has provided the required written notice as specified in Subsection 104.08.

Adjustments in the Contract price will be made under Subsection 109.04, and adjustments in Contract Time will be made under Subsection 108.07.

104.07 Suspension of Work / Annulment of Contract. The Authority may suspend the Work in whole or in part by written order to the Contractor, for any reason or condition which would be in the best interest of the Authority.

The Authority may also suspend the Work when the Contractor fails to perform any provisions of the Contract. The Contractor shall immediately comply with the written order of the Authority to suspend the Work wholly or in part. The Work shall be resumed when conditions are favorable as determined by the Authority or when methods are corrected as approved in writing by the Authority.

If the Contractor considers the delay resulting from the written suspension order unreasonable, the Contractor shall submit a written request to the Authority providing the reasons and justification for any Contract adjustment considered necessary as a result of the suspension. The justification for a time extension shall follow the notification and documentation procedures defined in Subsection 108.07. The written request for the Contract adjustment must be submitted to the Authority in writing seven (7) Calendar Days following receipt of the Authority's notice to resume Work. An adjustment will not be considered unless the request has been submitted within the prescribed time.

There will be no adjustment under the provisions of this Subsection if the Work performance would have been suspended or delayed by any other cause, under any other terms or conditions of the Contract, or under applicable law.

The request for an adjustment will be reviewed by the Authority. If there is agreement that 1) there has been an increase in the Contract performance cost or time as a result of the suspension, and 2) the suspension was caused by conditions beyond the control and not the fault of the Contractor or those parties for whom the Contractor is responsible, adjustments in the Contract price, excluding profit and/or consequential losses, will be made according to Subsection 109.04. Any adjustments to Contract Time will be made according to Subsection 108.07.

When Work is suspended as above provided, payments for the completed parts of the Work will be made as provided in Subsection 109.07 and a suitable extension of time for completing the suspended Work will be granted. No other compensation or allowance will be made on account of such suspension, unless such suspension shall be for more than ten (10) Calendar Days. Should the suspension be for more than ten (10) Calendar Days and should the Contractor be put to additional expense on account thereof, the Contractor shall have the right to file with the Authority a statement showing the character and amount of such additional expense, excluding profit and consequential losses, and if the Authority deems it a proper charge, the Contractor will be reimbursed therefor. However, the Contractor shall have no claim for additional expense for the first ten (10) Calendar Days of said suspension and any claim allowance as above provided shall be filed, in writing with the Authority, before the expiration of the first ten (10) Calendar Days of suspension. No payment will be made for Work done by the Contractor on suspended Work.

If the suspension extends for one (1) year and the value of the suspended Work, based on bid prices and estimated quantities, exceeds twenty-five (25) percent of the Awarded Contract Value, the Authority will, at the Contractor's request, annul the Contract as provided below. When said value is twenty-five (25) percent or less and the suspension extends for one (1) year, the Authority will, at the Contractor's request, by Change Order as provided in Subsection 104.05, omit the suspended Work from the Contract.

If, in the event of a national or state-wide emergency, construction is stopped, either directly or indirectly, by a Federal or State agency or when the Executive Director deems it advisable in the interest of the Authority, the Executive Director may annul the Contract, without liability, on thirty (30) Calendar Days' prior written notice to the Contractor.

If the Contractor is not in default, payments will be made for completed Work as provided in Subsection 109.10 for all Work done under the terms and conditions of the Contract, except that payments will be made in such amounts as the Authority may consider just and proper for such parts of the Work that are not fully completed and for that reason not susceptible to classification under the bid prices and for expenditures in connection with the preparing for and moving Equipment to and from the Work for which the Contractor is not otherwise compensated. It is understood and agreed, however, that no payments shall be made for any claim for loss of anticipated profits.

When the Contract is annulled as above provided, the Contractor shall, if so required by the Authority, remove promptly any or all of his, her or its Equipment and supplies from the site of the Project or other property of the Authority, failing which the Authority may remove such Equipment and supplies at the expense of the Contractor.

104.08 Notification of Differing Site Conditions and Extra Work. The Contractor shall immediately notify the Authority of alleged changes to the Contract due to differing site conditions, extra work, altered work beyond the scope of the Contract, or action(s) or lack of action(s) taken by the Authority that have allegedly changed the Contract terms and conditions.

A. No further Work is to be performed or Contract costs incurred on the change after the date the change occurs unless directed otherwise by the Authority.

B. Within seven (7) Days of the initial notification, the Contractor shall provide the following applicable information to the Authority in writing:

1. The date of occurrence and the nature and circumstances of the occurrence that constituted the alleged change.
2. Name, title, and activity of each Authority representative knowledgeable of the alleged change.
3. Identify any documents and the substance of any oral communications involved in the alleged change.
4. Basis for an allegation of accelerated schedule performance, if applicable.
5. Basis for an allegation that the work is not required by the Contract, if applicable.
6. Particular elements of Contract performance for which additional compensation may be sought under this Subsection including:

- a. Contract Item(s) that have been or may be affected by the alleged change.
- b. Labor or materials, or both, that will be added, deleted, or wasted by the alleged change and what equipment will be idled or required.
- c. Delay and disruption to the manner and sequence of performance that has been or will be caused by the alleged change.
- d. Estimated adjustments to Contract price(s), delivery schedule(s), staging, and Contract Time necessary due to the alleged change.
- e. Estimate of the time within which the Authority must respond to the notice to minimize cost, delay, or disruption of performance.

The failure of the Contractor to provide required notice in accordance with this Subsection shall constitute a waiver of any and all entitlement to adjustments in the Contract price or Contract Time as a result of the alleged change.

C. Within ten (10) Days after the receipt of notice, the Authority will respond in writing to the Contractor to:

1. Confirm that a change occurred and, when necessary, direct the method and manner of further performance;
2. Deny that a change occurred and, when necessary, direct the method and manner of further performance; or
3. Advise the Contractor that additional time is required to evaluate the allegation or adequate information has not been submitted to decide whether this Subsection 104.08 C1 and/or C2 above applies, and indicate the needed information and date it is to be received by the Authority for further review.

Any adjustments made to the Contract shall not include increased costs or time extensions for delays resulting from the Contractor's failure to provide requested additional information in accordance with this Subsection.

104.09 Maintenance and Protection of Traffic.

Highway Traffic. Except where the Plans or Specifications specifically permit the closing of a portion or all of an existing Roadway normally open to traffic, the Work shall be so planned as to maintain a continuous flow of traffic at all times along all existing Roadways within and adjacent to the Project limits, with the absolute minimum amount of interruption of or interference with such traffic. Roadways or portions of Roadways to remain open to traffic shall be completely free from obstructions, including spillages from trucks, and shall be in a smooth riding condition. The Contractor shall provide for allaying dust as specified in Subsection 107.07.

Pedestrian traffic shall be protected at all times. Temporary walkways shall be provided where necessary or directed in order to maintain routes of access.

Within ten (10) Calendar Days after execution of the Contract, the Contractor shall submit, in writing, for the approval of the Authority, a plan of the methods, facilities and devices proposed to be used for the maintenance and protection of traffic.

The Contractor shall erect or place and maintain in good condition barricades, temporary warning and directional signs, lights, flares, approved electric flasher units, traffic cones and other warning and danger signals and devices, appropriate and adequate for the specific needs and subject to the Authority's approval, at working sites, closed roads, intersections, open excavations, and locations of Material storage, standing Equipment and other obstructions, at points where the usable traffic width of the road is reduced, at points where traffic is deflected from its normal courses or lanes, and at other places of danger to vehicular or pedestrian traffic or to completed Work.

The Contractor shall provide all necessary illumination, floodlighting and additional traffic protection measures as necessary for the orderly performance of Work at night.

The cost for premium pay for night work, illumination, additional traffic protection and incidentals in connection therewith shall be deemed to have been included in the Contractor's Unit Prices bid for the various items listed in the Contract Documents.

The Contractor shall furnish, erect and maintain traffic control devices in conformance with the current Manuals, and in accordance with the provisions shown on the Plans or as ordered by the Authority and as directed by the Authority's Police. Maintenance and protection of traffic shall be considered as an integral part of this Subsection.

Signs, barricades, traffic cones, guide posts, flares and electric flasher units shall be established, relocated, repaired and replaced in such manner and at such times and places as may be necessary for adequate protection of vehicular and pedestrian traffic, subject to approval of the Authority.

The Contractor shall provide Certified Traffic Control Supervisor(s) and shall take all other precautions, including any which may be ordered by the Authority that may be necessary for the safety of the public and protection of the Work. The Certified Traffic Control Supervisor(s) shall patrol hourly and replace missing or damaged flares and other lighting units or devices.

The Contractor shall not perform any construction work over vehicular or pedestrian traffic unless there is an explicit provision therefor in the Specifications, or a specific written permission by the Authority. Subject to such provision or permission, the Contractor shall provide the necessary devices and means to protect such traffic from falling construction Materials and other objects and from painting operations during the time that construction work is carried on above traffic.

When the Contract provides for the construction of a temporary detour road, the Contractor shall construct the detour in accordance with the requirements given for the corresponding operations of permanent construction, and payment therefor will be made under the usual items for such construction operations unless otherwise specified in the Specifications. The Contractor shall furnish and erect all necessary signs and other traffic protective devices for such detour and provide Certified Traffic Control Supervisor(s) as may be required. The Contractor shall be responsible for maintaining the pavement and devices in good condition throughout the period the detour is in use, except when the Specifications specifically require that the detour is to remain in service following the termination of the Contract, in which case the Contractor shall leave all protective devices in place and the Contractor's responsibility for maintaining the devices and payment will terminate with the Contract. Otherwise, the detour road and all devices shall be removed when no longer needed and the site occupied thereby restored to its original condition.

When the Contractor wishes to temporarily reroute traffic along existing Roadways or along detour roads not specifically required to be constructed under the Contract, the Contractor shall first obtain approval therefor from the Authority and consent of the appropriate parties having jurisdiction. The route shall be properly signed and delineated. The cost of all such work shall be borne by the Contractor.

All traffic protective devices shall at all times remain the property of the Contractor and shall be removed from the site when no longer needed, except when the Contract specifically states that the devices are to remain in place and become the property of the Authority.

Existing roads and streets that are proposed to be dead-ended or abandoned shall not be closed to traffic until so authorized by the Authority.

Work which closes or alters the use of existing roads and streets shall not be undertaken until adequate temporary or permanent provisions for traffic have been provided or arranged for by the Contractor and such provisions have been approved by the Authority.

Railroad Traffic. Where the Project includes Work across, over, under or adjacent to railroad tracks or railroad rights-of-way, the Contractor shall safeguard the traffic, tracks and appurtenances and other property of the railroad affected by the Work. The Contractor shall comply with the regulations of the railroad company relating to the Work, shall keep the tracks clear of obstruction, shall provide barricades, warning signs, lights, flares and other danger signals and means of protection and shall arrange with the railroad company for the furnishing of watchmen and flagmen and other protective services that may be required by the railroad company. The Contractor shall arrange with the railroad company for direct payment to the company for watchmen, flagmen and other protective service which it may require.

When so specified in the Special Provisions, the Contractor shall provide railroad protective liability insurance in the prescribed limits to cover the Work to be performed on, over, under or adjacent to railroad property.

Marine Traffic. For all operations to be performed in the Delaware River and Delaware Bay, the Contractor shall comply with all governmental regulations and permitting requirements pertaining to the Work and shall secure all permits necessary for the performance of such Work.

All Work shall be conducted so that the free navigation of the waterway shall not be unreasonably interfered with and the present navigable depths shall not be impaired. The channel shall be promptly cleared of all pilings or other temporary or movable obstructions placed therein or caused by the operations of the Contractor when, in the opinion of the District Engineer of the Department of the Army, there is no further need for such obstructions or their presence creates a hazard to marine traffic.

Under no circumstances shall excavated material be dumped into the Delaware River, Delaware Bay or waters of the United States.

Any Work of a temporary nature required by the Department of the Army, the United States Coast Guard and/or any other agency having jurisdiction, including but not limited to the placement of lights, signals, buoys, etc., to protect navigation during construction operations, shall be provided by the Contractor at his, her or its own expense.

104.10 Rights In and Use of Materials Found on the Work. The Authority may authorize the Contractor's use of Materials found in the excavation. Payment will be made to the Contractor for the excavation of such Materials at the corresponding Contract Unit Price.

The removed Material shall be replaced if necessary with acceptable Material at no cost to the Authority. The Contractor shall not excavate or remove any Material from within the highway location that is not within grading limits without written authorization from the Authority.

104.11 Restoration of Surfaces Opened by Approval. The right to construct or reconstruct any utility service or to grant approval to construct or reconstruct is, at any time during construction, hereby expressly reserved by the Authority. The Contractor shall not be entitled to any damages for unauthorized digging or any delay occasioned thereby.

Any individual, firm, or corporation wishing to make an opening must secure approval from the Authority. The Contractor shall allow parties bearing such approval, and only those parties, to make openings. When ordered, the Contractor shall make all necessary repairs due to such openings and such necessary work will be subject to the same Contract conditions as the original Work performed.

104.12 Value Engineering Proposals ("VEP") by the Contractor. Any cost savings generated to the Contract as a result of VEP offered by the Contractor and approved by the Authority will be shared by the Contractor and the Authority on a 50-50 basis.

Bid prices shall not be based on the anticipated approval of a VEP. If the VEP is rejected, the Contract is to be completed at the Contract bid prices.

If the Authority determines that the time for response indicated in the submittal under 104.12 subpart B below is insufficient for review, the Contractor will be promptly notified. Based on the additional time needed by the Authority for review and the effect on the Contractor's schedule occasioned by the added time, the Authority will evaluate the need for a time extension to the Contract. The Contractor shall have no claim against the Authority for delays to the Contract based on the failure to respond within the time indicated in 104.12 subpart B below if additional information is needed to complete the review. Until the proposal is accepted by the Authority, the Contractor shall remain obligated to the terms and conditions of the existing Contract.

A. **General.** VEP contemplated are those that could produce a savings to the Authority without impairing essential functions and characteristics of the facility, including but not limited to, service life, economy of operation, ease of maintenance, desired appearance, and safety.

B. **Submittal of VEP.** If the Contractor intends to submit a VEP, the subsequent steps shall be followed:

1. Submit a conceptual proposal that includes a description of the difference between the existing Contract and the proposed changes, and the cooperative advantages and disadvantages of each, including effects on Contract schedule, service life, economy of operations, and ease of maintenance, desired appearance, and safety.

If the VEP was previously submitted on another project, indicate the Contract number and the action taken by the Authority.

2. Upon approval of the concept by the Authority, submit for review and approval a complete set of Plans and Specifications showing the proposed revisions relative to the original Contract features and requirements.

Provide a statement detailing the effect the VEP will have on the time for completing the Contract.

Submit a complete analysis indicating the final estimated costs and quantities to be replaced by the VEP compared to the new costs and quantities generated by the VEP.

Provide a statement specifying the date by which a Change Order adopting the VEP must be executed to obtain the maximum cost reduction during the remainder of the Contract.

C. Conditions. A VEP will be considered only when all of the following requirements are met:

1. A VEP, approved or not approved by the Authority, applies only to the ongoing Contract(s) referenced in the VEP and becomes the property of the Authority. The VEP shall contain no restrictions imposed by the Contractor on its use or disclosure. The Authority shall have the right to use, duplicate, and disclose in whole or in part any data necessary for the use of the VEP. The Authority retains the right to use any VEP or part thereof on other projects without obligation to the Contractor. This provision is not intended to deny rights provided by law with respect to patented materials or processes.
2. If the Authority is already considering certain revisions to the Contract or has approved certain changes in the Contract for general use that are subsequently incorporated in a VEP, the Authority will reject the VEP and may proceed without obligation to the Contractor.
3. The Contractor shall have no claim against the Authority for costs or delays due to the Authority's rejection of a VEP, including but not limited to development costs, loss of anticipated profits, and increased material or labor costs.
4. The Authority will be the sole judge as to whether a VEP qualifies for consideration and evaluation. The Authority may reject any VEP that requires excessive time or costs to review, evaluate, or investigate, or that is not consistent with the Authority's design policies and criteria for the Project.
5. The Authority will reject all or any portion of Work performed under an approved VEP if unsatisfactory results are obtained. The Authority may direct the removal of such rejected Work and require the Contractor to proceed in accordance with the original Contract requirements without reimbursement for Work performed under the proposal, or for its removal. Where modifications to the VEP are approved to adjust to field or other conditions, reimbursement will be limited to the total amount payable for the Work at the Contract bid prices as if it were constructed under the original Contract requirements. The rejection or limitation of reimbursement shall not constitute the basis of any claim against the Authority for delay or for other costs.
6. The proposed Work shall not contain experimental features but shall be proven features that have been used under similar or acceptable conditions on other projects or locations acceptable to the Authority.

7. A VEP will not be considered if equivalent options are already provided in the Contract. The VEP must be sufficient to warrant a review and processing.
8. Additional information needed to evaluate a VEP will be provided in a timely manner. Untimely submittal of additional information will result in rejection of the VEP. Where design changes are proposed, the additional information could include results of field investigations and surveys, design computations, and field change sheets.

D. **Payment.** If the VEP is approved, the changes and payment will be authorized by a Change Order. Reimbursement will be made as follows:

1. The changes will be incorporated into the Contract by changes in quantities of unit bid items and/or new agreed price items, as appropriate, under the Contract.
2. The cost of the Value Engineering Work as determined from the changes will be paid directly. In addition, the Authority will pay the Contractor fifty percent (50%) of the savings to the Authority as reflected by the difference between the cost of the revised Work and the cost of the related construction required by the original Contract computed at Contract bid prices.
3. The Contractor's costs for development, design, and implementation of the VEP are not eligible for reimbursement.
4. The Contractor may submit a VEP for an approved Subcontractor. Subcontractors may not submit a VEP except through the Contractor.

104.13 Final Cleaning of Project Site. Before the final acceptance of the Project by the Authority, the Contractor shall remove from the site all Equipment, temporary work, unused and useless Materials, rubbish and temporary buildings; shall repair or replace, in an acceptable manner, fences or other private or public property which may have been damaged or destroyed on account of the prosecution of the Work; shall fill all depressions and water pockets on public and private property caused by the Contractor's operations; shall remove all obstructions from waterways caused by their Work; shall clean all drains and ditches within and adjacent to the site of the Project which have been obstructed by his, her or its operations and shall leave the site of the Project and adjacent public and private property in a neat and presentable condition wherever the Contractor's operations have disturbed conditions existing at the time of starting Work.

The Contractor shall procure and submit to the Authority signed statements from property owners affected that he, she or it has fulfilled his, her or its obligations in the matters enumerated above with regard to their respective properties.

104.14 Contractor's Responsibility for Work. In case of the suspension of Work the Contractor shall be responsible for the Project and shall take such precautions as may be necessary to prevent damage to the Project, provide for normal drainage and normal traffic operations, and erect any necessary temporary structures, signs, or other facilities. During such period of suspension of Work, the Contractor shall properly and continuously maintain in an acceptable growing condition all living material in newly established plantings, seedings and soddings furnished under the Contract, and shall take adequate precautions to protect new tree growth and other vegetative growth against injury.

Before starting any Work that will change the loadings on an existing or proposed structure, the Contractor shall inform the Authority of the proposed loadings (e.g., axle spacing, axial

loads, stock-piling and Equipment locations) including quantity of and type of construction Equipment and vehicles it proposes to use. The loading that the Contractor's Equipment will apply to the structure shall be evaluated and certified by a professional engineer, obtained by the Contractor, showing that the proposed loadings will not adversely affect the structure. Any proposed loading shall be subject to the approval of the Authority. The Authority's approval does not relieve the Contractor of its responsibility for the safe performance of the Work or for carrying out the Work in full accordance with the Plans and the requirements of the Specifications. If at any time the Contractor's upcoming operations would result in a change to the loading and/or the location of the loading on a structure, the Contractor shall submit the proposed loadings for approval by the Authority prior to changing the loading. No Work shall be done that will change the loadings on any structure within the Contract limits until the Authority's approval has been obtained.

The Contractor assumes full responsibility for Materials and Equipment employed in the construction of the Project and agrees to make no claim against the Authority for damages to such Materials and Equipment from any cause whatsoever, whether arising from the execution or non-execution of the Work. Until final acceptance of the Work, the Contractor shall be responsible for damage to or destruction of the Project, or to any part thereof, due to any cause except as otherwise hereinafter specified, shall rebuild, repair, restore or compensate for injuries and/or damages to any portion of the Work occasioned by any of the above causes before its completion and acceptance and shall bear the expense thereof or it shall be deducted from monies due him, her or it or to become due him, her or it under the Contract.

The Authority will remove snow, when and to the extent necessary, from Roadways open to traffic and within its jurisdiction. The state and local governing agencies will remove snow from other Roadways open to traffic. The Contractor will not be responsible for damage to the Project caused by the operation of snow plows or other snow removal or de-icing operations carried on by or under the supervision or direction of others. The Contractor will be responsible for removing snow from other areas within the Project limits as may be necessary for the proper prosecution of his, her or its Work.

Section 105 - Control of Work

- 105.00** Authority of the Executive Director
- 105.01** Authority of the Engineer
- 105.02** Authority and Duties of Inspectors
- 105.03** Inspection of Work
- 105.04** Plans and Working Drawings
- 105.05** Conformity with Plans and Specifications
- 105.06** Coordination of the Plans, General Provisions, Standard Specifications, Supplemental Specifications, and Special Provisions
- 105.07** Cooperation by the Contractor
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- 105.09** Utilities
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- 105.16** Executive Director's Decision
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- 105.19** Claims
- 105.20** Project Acceptance
- 105.21** Claims for Delay Damages
- 105.22** Contractor's Responsibilities

105.00 Authority of the Executive Director. The Executive Director shall serve as a non-binding mediator in an effort to resolve any claim or dispute brought by the Contractor on any and all questions arising out of or in any way relating to the Contract or the performance or breach thereof, including, without limitation, any questions concerning the interpretation of Plans and Specifications, the acceptability, quality and quantity of Materials or machinery furnished and Work performed, the classification of Materials, the execution of the Work and the determination of payment due or to become due.

105.01 Authority of the Engineer. The Engineer is the administrator of the Contract and not a supervisor of the Work. All Work shall be performed to the satisfaction of the Engineer, but in no case shall the Contractor be relieved of complete responsibility for the Work. The Engineer will decide all questions which may arise as to the quality and acceptability of Materials furnished and Work performed and as to the manner of performance and rate of progress of the Work. At the preconstruction meeting the Engineer will communicate to the Contractor the chain of command and the extent to which various Authority personnel have authority.

The Engineer has the authority to suspend the Work, wholly or in part, due to the failure of the Contractor to correct conditions unsafe for the general public; for failure to carry out provisions of the Contract; for failure to carry out orders; for such periods as may be deemed necessary due to conditions the Engineer considers unsuitable for the prosecution of the Work; or for any other condition or reason deemed to be in the public interest.

The Engineer's authority to impose any Contract sanction, including suspension of the Work, withholding payments, or the like, will not relieve the Contractor of sole and absolute responsibility for the Project, performance of the Work, and the safety of workers and the general public. The Contractor holds the Authority harmless pursuant to Subsection 107.10 for any violation, breach, or omission of this Subsection 105.01.

105.02 Authority and Duties of Inspectors. Inspectors, acting under the authority of the Engineer, are administrators of the Contract and not supervisors of the Work. Inspectors employed by or designated by the Authority are authorized to inspect all Work done and all Material furnished. Such inspection may extend to all or any part of the Work and to the preparation, fabrication, or manufacture of the Materials to be used. The Inspector is not authorized to revoke, alter, or waive any requirements of the Plans or Specifications. The Inspector may call the attention of the Contractor to any failure of the Work or Materials to conform to the requirements of the Contract and shall have the authority to reject Materials or suspend the Work until any questions at issue can be referred to and decided by the Authority. Such inspection will not relieve the Contractor from the obligation to perform the Work in accordance with the requirements of the Contract.

The Inspector shall in no case act as foreman or perform other duties for the Contractor, nor interfere with the management of the Work by the latter. Any advice which the Inspector may give the Contractor shall in no way be construed as binding the Authority in any way or releasing the Contractor from fulfilling all of the terms of the Contract.

If the Contractor refuses to suspend operations on verbal order, a written order giving the reason for shutting down the Work shall be issued. After placing the order in the hands of the Contractor's representative(s) in charge, the Inspector shall immediately leave the job, and in such cases Work done during the absence of the Inspector will not be paid for and may not be accepted.

105.03 Inspection of Work. All Materials and each part or detail of the Work shall be subject at all times to inspection by the Engineer. Such inspection may include mill, plant, or shop inspection, and any Material furnished under these Specifications is subject to such inspection. The Engineer will be allowed access to all parts of the Work and shall be furnished with such information and assistance by the Contractor as is required to make a complete and detailed inspection.

- (a) If a portion of the Work is covered contrary to the Authority's request or to requirements specifically expressed in the Contract, it must, if required in writing by the Authority, be uncovered for the Authority's observation and be replaced at the Contractor's expense without change in the project schedule.
- (b) Any Work done or Materials used without supervision or inspection by the Authority representative may be ordered removed and replaced at the Contractor's expense.
- (c) It is the Contractor's responsibility to obtain authorization from the Authority prior to covering any Work.

When any unit of government or political subdivision or any railroad corporation is to pay a portion of the cost of the Work covered by this Contract, its respective representatives shall have the right to inspect the Work. Such inspection shall not make any unit of government or political subdivision or any railroad corporation a party to this Contract, and shall in no way interfere with the rights of either party hereunder.

105.04 Plans and Working Drawings. Plans consisting of general drawings and showing such details as are necessary to give a comprehensive understanding of the Work specified will be furnished by the Authority. The Contractor shall furnish working drawings as may be required by the Engineer. Working drawings shall not incorporate any changes from the requirements of the Contract unless the changes are specifically denoted, together with justification, and are approved in writing by the Engineer. Any change from the requirements of the Contract shall be signed and sealed by a professional engineer registered in the State of Delaware and/or New Jersey, as applicable, based on the location of the Work. Working drawings and submittals shall be identified by the Contract number. Items or component Materials shall be identified by the specific Contract Item number and Specification reference in the Contract.

The Contractor is responsible for the preparation of all working drawings.

Detailed shop or working drawings will be reviewed and returned for correction, as promptly as the conditions will permit. The Contractor shall order no Materials and do no Work relating to said drawings before completion of the Authority's review, with no exceptions taken. The carrying out of the Work or the ordering of the Materials before completion of the review may constitute a cause for rejection of such Work or Materials. No deviations from final reviewed working drawings shall be made without the written approval of the Authority.

By submitting shop or working drawings, product data, samples and similar submittals, the Contractor represents that the Contractor has determined and verified Materials, field measurements and field construction criteria related thereto or will do so and has checked and coordinated the information contained within such submittals with the requirements of the Work and of the Contract Documents.

Working drawings for steel structures shall consist of shop, erection and other drawings, showing details, dimensions, sizes and other information necessary for the complete fabrication and erection of the metalwork. Working drawings for concrete structures shall consist of any additional detailed drawings, sketches and data sheets as may be required for the prosecution of the Work, such as reinforcing bar lists, bending diagrams, drawings of falsework, bracing, centering and formwork, cofferdams, supports for deck slab finishing machines and masonry layout diagrams. The Contractor shall check completely the details of reinforcement steel shown on the Plans and shall submit complete working drawings for the reinforcement steel to the Engineer for review. The Contractor shall also prepare drawings showing screed elevations for bridge deck slabs.

Working drawings for electrical and mechanical equipment and other systems shall consist of the manufacturer's catalog cuts, drawings, wiring diagrams, etc., and shall be submitted to the Engineer for review.

After all items of a particular system have been reviewed, the Contractor shall submit an "Operations and Maintenance Manual" specifically for the system. The "Operation and Maintenance Manual" shall contain an equipment list, a complete description of the equipment, the sequence of operation including inter-locking and protective features, the use of by-pass switches, and a detailed description of all wiring circuits. The manual shall also contain a recommended spare parts list, renewal parts bulletins, and instruction bulletins for the equipment furnished. Diagrams and drawings shall be of reduced size suitable for binding. A proper index listing all items shall be included. All diagrams and drawings shall be properly fastened and bound in a suitable leather or heavy plastic cover with a title clearly shown.

The Contractor shall not be relieved of responsibility for deviations from requirements of the Contract by the Authority's review of shop or working drawings, product data, samples or similar submittals unless the Contractor has specifically informed the Authority in writing that such deviation at the time of submittal and the Authority has given written concurrence with the specific deviation. The Contractor shall not be relieved of responsibility for errors and omissions in shop or working drawings, product data, samples or similar submittals by the Authority's review.

The Contractor shall direct specific attention in writing or on resubmitted shop drawings, product data, samples or similar submittals to revisions, including those requested by the Authority on previous submittals.

Prior to final inspection, five (5) copies of the "Operations and Maintenance Manual" shall be supplied to the Engineer. The manual must be available during the period when electrical and mechanical systems are being connected and energized, and the final bound copies must reflect any changes or adjustments made during this period.

Work shall not be performed or Materials ordered prior to completion of the Authority's review, with no exceptions taken. Working drawings marked with any suggested modifications or comments will be returned to the Contractor. The other sets will be retained by the Authority.

If the Contractor agrees with all Authority comments, the comments shall be incorporated, and the Contractor does not need to resubmit the drawings. If the Contractor does not agree with any Authority comments, then the Contractor shall state this in writing and submit this to the Authority within ten (10) Working Days after receipt of the comments.

The Authority does not review every detail of every working drawing or other submittal made by the Contractor. As a consequence, responsibility for the completeness, accuracy, and conformance to Contract requirements of all submittals rests with the Contractor. The Authority accepts no responsibility for the completeness and accuracy of reviewed submittals or the failure of reviewed submittals to conform to the requirements of the Contract.

Reviewed working drawings, submittals, or resubmittals will be transmitted to the Contractor within forty-five (45) Days from the date of receipt by the Authority. If a railroad, the U.S. Coast Guard, municipality, or other entity as specified in the Contract is required to review the working drawings, the reviewed working drawings will be returned within sixty (60) Days from the date of receipt by the Authority. If the working drawings are not returned by the time specified, no additional compensation will be allowed except that an extension of time in accordance with Subsection 108.07 will be considered, provided that it can be agreed that the schedule is directly affected. Upon completion of the Work, the original drawings of structural steel work shall be supplied to the Authority.

The Contractor shall furnish the Engineer with three (3) copies of the working drawings for review, after which one copy will be returned with corrections, if any. Any drawings returned for correction shall be resubmitted in triplicate. When accepted, seven (7) copies of each drawing shall be submitted to the Engineer.

Upon completion of the Project, the working drawings shall be furnished to the Engineer in PDF format. When specifically permitted by the Engineer, smaller details may be drawn on sheets 8½" x 11" in overall dimension.

The PDF file resolution shall be acceptable to the Engineer and appropriate for printing on 11" x 17" paper as well as 22" x 36" paper. At 22" x 36", the left margin shall be 1 ½" with ½" remaining margins.

A record set of "As-Built Drawings" shall be maintained by the Contractor. Prior to final acceptance of the Project, the "As-Built Drawings", in PDF format, shall be submitted to the Authority.

105.05 Conformity with Plans and Specifications. All Work performed and all Materials furnished shall be in reasonably close conformity with the lines, grades, cross-sections, dimensions, and Material requirements, including tolerances, shown on the Plans or indicated in the Specifications.

In the event the Engineer finds the Materials or the finished products in which the Materials are used are not within reasonably close conformity with the Plans and Specifications, but that reasonably acceptable Work has been produced, the Engineer will then make a determination if the Work shall be accepted and remain in place. In this event, the Engineer will document the basis of acceptance, which will provide for an appropriate adjustment in the Contract price for such Work or Materials if deemed necessary.

In the event the Engineer finds the Materials or the finished product in which the Materials are used or the Work performed are not in reasonably close conformity with the Plans and Specifications, and the result is an inferior or unsatisfactory product, the Work or Materials shall be removed and replaced or otherwise corrected by and at the expense of the Contractor. If there are provisions in the Contract for the acceptance of Materials or Work that are not in

full compliance with the minimum requirements stated, pay adjustment factors reflecting the payment to be made for the Work or Materials will be included in the applicable Sections.

105.06 Coordination of the Plans, General Provisions, Standard Specifications, Supplemental Specifications, and Special Provisions. The General Provisions, Standard Specifications, Supplemental Specifications, Plans, Special Provisions, and all supplementary documents are essential parts of the Contract and a requirement occurring in one is binding as though occurring in all. They are intended to be complementary and to describe and provide for a complete Contract. In case of a discrepancy between these Contract components for Authority-funded Projects, the governing ranking will be:

1. Addenda (Including Pre-bid meeting minutes & Pre-bid Questions and Answers)
2. Pay Units in Bid Forms
3. Plans
4. Cross sections (When included as part of the Contract Documents)
5. Special Provisions
6. Supplemental Specifications
7. General Provisions
8. Standard Specifications (other than the General Provisions and Supplemental Specifications)

In case of a discrepancy between these Contract components for Projects that are not completely financed with Authority funds the governing ranking will be established by the requirements of the funding source which may be set forth in the Special Provisions.

The Contractor shall not take advantage of any apparent error or omission in the Contract. If the Contractor discovers an error or omission, the Engineer shall be promptly notified. The Engineer will make corrections and interpretations as necessary to fulfill the intent of the Contract. Scaled measurements shall not be used when the dimensions on the Plans are given or can be computed.

105.07 Cooperation by the Contractor. One copy of the Plans and Contract shall be kept at the Project site at all times. The Contractor shall give the Work constant attention necessary to facilitate progress and cooperate with the Engineer in every way possible.

The Contractor shall have on the Project site at all times a competent superintendent capable of reading and understanding the Contract and experienced in the type of Work being performed. The superintendent shall receive instructions, be authorized to act for the Contractor, and have full authority to execute orders or the directions of the Engineer without delay.

The Contractor shall furnish the Authority with every reasonable facility for ascertaining whether or not the Work is being done in accordance with the Contract.

The Contractor shall provide the Inspectors with adequate means of transportation across waterways and marshlands to and from the work sites as may be necessary for the inspection of the Work.

The Contractor shall also furnish, construct and maintain whatever may be necessary of walkways, platforms, ladders, stairways and other facilities of usual and suitable character and

adequate strength to provide properly for all operations of construction and inspection of Work under the Contract.

The Contractor is particularly advised of the Contractor's responsibilities in coordinating Work and storage of Materials within the Project site.

All Materials removed as part of the Work under this Contract shall, upon their removal, become the Contractor's property and shall be removed and legally disposed of by the Contractor away from Authority property unless stated otherwise in this Contract or on the Contract drawings.

By submission of the Bid and execution of the Contract, the Contractor accepts the relationship of trust and confidence established with the Authority pursuant hereto, and covenants with the Authority to furnish its best skill and judgment and to cooperate with the Authority and all design professionals, consultants, engineers, architects, contractors, suppliers, accountants, attorneys and other persons or entities retained by the Authority in connection with the Project. Contractor shall perform all such duties by the best and soundest means and methods and in the most expeditious and economical manner consistent with the interests of the Authority. The Contractor represents that its services shall be performed in accordance with best recognized professional standards.

The working force, Equipment and working site provided by the Contractor for the Project shall at all times be adequate and sufficient to insure the completion of the Project within the time stipulated therefor. When, in the opinion of the Authority, either the working force, the Equipment or the working site, or any or all of them are inadequate or insufficient to insure completion within said time, the Authority may order the Contractor to correct the deficiency and the Contractor shall comply with such order.

The Contractor and their Subcontractors shall not engage, on a full or part-time or other basis during the period of the Contract, any of the professional or technical personnel of the Authority or of any agency of any state, county or municipality, who are or have been at any time during the period of the Contract or for thirty (30) Days prior to the Award of the Contract, in the employ of such public agencies, except regularly retired employees, without the written consent of the public employer of such personnel.

The Contractor shall attend to the Work personally or through a competent, English-speaking superintendent of the Work authorized to receive and carry out instructions. The workmen shall be competent and shall perform their Work in a neat and workmanlike manner. Any workman not properly qualified for the Work or who is doing it in an unsatisfactory manner or contrary to the Specifications or the Authority's instructions, or who is disorderly, shall be discharged if so requested by the Authority and shall not be employed again on the Project except with the approval of the Authority. The superintendence and the number of workmen shall be sufficient, in the opinion of the Authority, to insure the completion of the Project within the time stipulated therefor.

The Contractor shall employ only competent and efficient laborers, mechanics or artisans. Whenever, in the opinion of the Authority, any employee is careless or incompetent, obstructs the progress of the Work, acts contrary to instructions or conducts himself or herself improperly, the Contractor shall, upon the request of the Authority, discharge the employee from the Work and shall not again employ the subject employee on the Project except with the written consent of the Authority.

Employment preference shall be given, other conditions being equal, to honorably discharged members of the Armed Services of the United States, but no other preference or discrimination among citizens of the United States shall be made.

105.08 Cooperation Between Contractors. The right is reserved by the Authority to do Work with its own employees or by other contractors and to permit public utility companies and others to do Work during the progress and within the limits of or adjacent to the Project and the Contractor shall conduct his, her or its Work and cooperate with such contractors, utility companies and others so as to cause as little interference as possible with their work. The Contractor shall allow other contractors, utility companies and their agents access to his, her or its work within the site of the Project. The Contractor shall and hereby does agree to make no claims against the Authority for additional payment due to delays or other conditions created by the operations of such other parties. If there be a difference of opinion as to the respective rights of the Contractor and others doing work within the limits of or adjacent to the Project, the Executive Director will decide as to the respective rights of the various parties involved in order to secure the completion of the Authority's work in general harmony and in a satisfactory manner. The Executive Director's decision shall be final and binding on and shall not be cause for claims by the Contractor.

Each Contractor will be held responsible for any damage done or caused by his, her or its Work or work forces and shall repair or make good any such damage in a manner satisfactory to the Authority and without cost to the Authority.

It will be the obligation of each Bidder to examine the Work site and make inquiries concerning the current construction schedules of contracts in progress, so as to ascertain the status and intended rate of progress of other contracts which may affect the Work under the Contract. The price Bid shall be considered to have reflected the effect the work of other contractors may have on the Work related to the construction required under the Contract.

105.09 Utilities. Bidders are hereby notified that within the limits of the work under this Contract, several utility lines may be encountered. The location of all utilities shown on the Plans or mentioned herein are approximate locations only.

Utilities, as referred to in this Subsection, shall be understood to mean utilities owned by the Authority as well as public utilities and other privately owned utilities.

Except as otherwise specifically provided, the Contractor shall be responsible for the safety, protection, maintenance and final restoration to as useful, safe and durable a condition as existed prior to construction, of all surface and subsurface utilities (together with all parts and appurtenances thereof), facilities, streets, waterways, structures and other properties at or near the site.

The Contractor shall not proceed with any Work until the Contractor has made diligent inquiry at the offices of the Engineer, the utility companies and municipal authorities or other owners to determine the exact utility location of any utilities on the Work site. The Contractor shall notify, in writing, the utility companies and municipalities or other owners involved of the nature and scope of the Project and of the operations that may affect their facilities or property.

Before the Contractor begins any Work or operations in the vicinity of subsurface structures, the Contractor shall carefully locate such structures and conduct his, her or its operations so as to avoid any damage to them.

The Contractor shall notify the owners of utilities or other properties well in advance of the time he, she or it proposes to perform any Work which would endanger their facilities or property and shall cooperate with the owners in protecting their facilities and property during construction operations.

The Contractor shall permit the owners of utilities and personnel engaged by he, she or its access to the site of the Work at all times in order to protect or relocate their facilities and the Contractor shall cooperate with them in performing this Work.

Unless otherwise specifically stated in the Supplemental Specifications or the Special Provisions, the Contractor shall be responsible for the continuity of service of all overhead, surface and subsurface utilities affected by their operations and shall maintain them in a safe and satisfactory operating condition.

The Contractor shall carry out the Work carefully and skillfully and shall support and secure utility structures so as to avoid damage to them. Flow-in drains and sewers shall be satisfactorily maintained. The Contractor shall not move any utility structures without the owner's written consent and at the completion of the Work, the condition of the utilities shall be as safe and permanent as before the completion of the Work.

The Contractor shall at his, her or its own expense make good any direct or indirect damage that may be done in the course of construction to any utility structure or property through or by reason of the prosecution of the Work. The liability of the Contractor under this covenant is absolute and is not dependent upon any questions of negligence on his, her or its part or on the part of his, her or its agent, servants, employees, Subcontractors or Suppliers and the neglect of the Authority to direct the Contractor to take any particular precaution or to refrain from doing any particular thing shall not excuse the Contractor of any such damage in any case.

When utility structures, facilities or equipment are damaged by the Contractor, the Contractor shall notify the owner(s) of the utilities, who may cause the damage to be repaired at the Contractor's expense. If the cost thereof is not paid by the Contractor within thirty (30) Days after repairs have been completed, the Authority may retain an amount sufficient to cover the cost from any monies due or that may become due the Contractor under the Contract.

It is understood and agreed that the Contractor has considered in his, her or its bid all of the permanent and temporary utility appurtenances in their present or relocated positions and that no additional compensation will be allowed for normal delays, inconvenience or damage sustained by the Contractor due to any interference from the said utility appurtenances or the operation of moving them.

105.10 Construction Stakes, Lines, and Grades. The Engineer will establish the following control points to enable the Contractor to properly reference and locate the Work:

- (a) For road work on land, the Authority will provide sufficient vertical and horizontal control to permit the contractor to lay out the Work.

- (b) For structures on land, both centerlines of each structure and a temporary benchmark adjacent to each structure.
- (c) For structures in waterways, sufficient triangulation from points on land to locate the centerlines of each structure and a centerline of the bridge roadway, as well as control benchmarks (land-based) for determining the elevations for each structure and bridge roadway.

The Contractor shall, at his, her, its own expense:

- (a) Establish with his, her or its own engineering force all lines and grades from the control points established by the Engineer, as may be necessary to perform his, her or its Work.
- (b) Furnish all stakes, templates and other Materials necessary to perform the engineering work required.
- (c) Maintain and protect all stakes and benchmarks provided by the Engineer.
- (d) Replace all stakes and benchmarks established by the Engineer which may be disturbed or destroyed by the Contractor.
- (e) Furnish such assistance to the Engineer as he, she or it may require in checking the layout of the Work and conformance to prescribed lines and grades.

The Contractor shall be solely responsible for all parts of the Work being in their exact positions with reference to the control points established by the Engineer.

105.11 Removal of Defective and Unauthorized Work. The Contractor shall use no Materials in the Work before they have been accepted, shall perform no Work before the lines, grades and benchmarks have been set and established and shall perform no Work not provided for in the Contract unless a Change Order or Supplemental Agreement therefor has been issued. Work performed and Materials furnished which do not conform to the requirements therefor will be rejected and shall be removed, replaced or repaired as the Authority may order and in a manner satisfactory to the Authority, at the Contractor's expense. Materials which have been rejected, the defects of which have been subsequently removed or corrected, shall not be used unless accepted by the Authority.

Failure of the Contractor to remove and properly dispose of rejected Work immediately after receiving formal notice to do so may be sufficient cause for annulment of the Contract, in which case the Authority may purchase Materials, tools and Equipment from, employ labor from, or contract with any other individual, firm or corporation to perform the Work. All costs and expenses incurred thereby shall be charged against the defaulting Contractor and the amount thereof deducted from any monies due or which may become due the Contractor, or shall be charged against the Contract Bond.

105.12 Load Restrictions. The Contractor shall comply with all legal and contractual load restrictions in the hauling of Materials or Equipment on public roads. A hauling permit or other special permit will not relieve the Contractor of liability for damage to public or private property which may result from the movement of such loads or Equipment.

105.13 Maintenance During Construction. The Contractor shall maintain the Work during construction and until the Project is accepted. This maintenance shall be performed continuously every day, and with adequate Equipment and workmen to keep the Roadway and structures in a satisfactory condition.

The Engineer will notify the Contractor if there is a failure to comply with these provisions. If the Contractor fails to remedy unsatisfactory maintenance within twenty-four (24) hours after receipt of the notice, the Engineer may proceed to maintain the Project. The entire cost of this maintenance will be deducted from monies due or to become due the Contractor.

If the Contract involves the placement of Material on or the use of a previously constructed subgrade, base course, pavement or structure, the previously constructed Work shall be maintained by the Contractor during construction operations.

The cost of maintenance work during construction and before the Project is accepted shall be incidental to the Contract.

In the event that the Contractor's Work is suspended for failure to comply with the provisions of the Contract, the Contractor shall maintain traffic, protect and maintain the roadway and structures, and provide ingress and egress for local residents as may be necessary during the period of suspended Work or until the Contract has been declared in default.

The Contractor shall mow all grass and weeds within the limits of the Contract, as directed by the Engineer and in compliance with Subsection 107.01.

105.14 Opening Sections of the Project to Traffic. The Engineer may order certain sections of Work to be opened to traffic or other use prior to completion or acceptance of the Work. Opening these sections shall not constitute acceptance of Work or waiver of any Contract provisions.

On those sections opened, the cost of establishing maintenance and protection of traffic, maintaining the Roadway or other work to accommodate traffic or other use, and repairing damage to the work that occurs after opening will be determined as follows:

- A. If the Contract provided for total road closure, and the opening is not due to the fault or inactivity of the Contractor, the added costs will be at the Authority's expense. Compensation for these added costs will be in accordance with Subsection 109.04.
- B. If the opening was designated as part of the Contract in "phased" or "staged" construction (only when defined as such in the Contract), then the added Work will be performed at the Authority's expense unless damage was reimbursed by Contractor's insurance. Compensation for this added Work will be in accordance with Subsection 109.04. This does not apply to Contracts that do not have defined "phased" or "staged" construction.
- C. If the opening was due to the fault or inactivity of the Contractor, then the Work will be performed at no additional expense to the Authority. If the Contractor is dilatory in completing features of the Work according to the Contract or progress schedule, the Engineer will give written notification establishing a time period for completing these features. If the Contractor fails to complete or make a reasonable effort to complete the Work according to the written notification, the Engineer may order all or a portion of the Project opened to traffic. The Contractor shall not be relieved of liability or responsibility for maintaining the Work and shall

conduct the remaining construction operations, with minimum interference to traffic, at no additional expense to the Authority for any added cost of the Work.

105.15 Claims for Adjustment and Disputes. In any case (i) where the Contractor believes that extra compensation is due for Work or Material not clearly covered in the Contract or not ordered by the Authority as an extra, the Contractor feels that it has encountered unusual and unforeseen conditions beyond its control, as defined herein, not discoverable by reasonable inspection and diligence on the Contractor's behalf or any other claim, dispute or other matter in question between the Authority and the Contractor arising out of or in any way relating to the Contract or the performance or breach thereof, and (ii) where all other Contract provisions have been complied with, the Contractor shall notify the Engineer in writing of its intention to make claim within seven (7) Calendar Days following the date the Contractor begins the Work on which the claim is based. If written notification is not given within such period and the Engineer is not afforded proper facilities by the Contractor for keeping strict account of actual costs as required, then the Contractor waives his, her or its claim.

A. Contractor Written Notification. The written notification to the Engineer shall include:

1. The date of occurrence and the nature and circumstances of the occurrence that give rise to the claim;
2. The name and title of Authority representatives knowledgeable of the claim; and
3. If applicable, the particular elements of Contract performance for which additional compensation may be sought under this Subsection.

Such notice by the Contractor, and the fact that the Engineer has kept account of the cost as aforesaid, shall not in any way be construed as proving the validity of the claim. Nothing contained in this Subsection shall be construed as establishing any claim contrary to the terms of Subsection 104.05 or any other provision of the Specifications.

B. Engineer Response. Within ten (10) Calendar Days after receipt of notice, the Engineer will respond in writing to the Contractor to:

1. Confirm that a change in Work occurred and that it shall be paid as an extra as provided herein; or
2. Direct the Contractor to follow the claims submittal procedure as outlined; or
3. Advise the Contractor that adequate information has not been submitted to decide whether above subparts B.1. or B.2. shall apply, and indicate the need for more information for further review. The Authority will respond to such additional information within ten (10) Calendar Days of receipt from the Contractor.

Any adjustments made to the Contract shall not include increased costs or time extensions for delay resulting from the Contractor's failure to provide requested additional information in accordance with this clause.

C. Claim Submittal. The Contractor must submit a formal claim in writing within sixty (60) Calendar Days after the Work giving rise to the claim has been completed. The Contractor can only recover, and the formal claim shall only consist of those items allowed under Subsection 105.19 and the claim shall contain:

1. The precise nature and basis for the claim;
2. Each fact upon which the Contractor relies to support the claim;

3. The precise reason the Contractor believes the claim should be granted;
4. The language in the Contract upon which the Contractor relies in support of the claim;
5. The amount of money or nature and extent of relief to which the Contractor believes it is entitled; and
6. Any other factors which the Contractor believes support the claim.

The Contractor agrees to follow the procedure described in this Subsection and that any claimed dollar amount and/or relief sought, not made pursuant to this Subsection within the time limits prescribed, shall be forever waived and not raised at any subsequent meeting or hearing dealing with the claim.

Claims and disputes submitted in accordance with this Subsection will be first reviewed fully at the Engineer's level. Within thirty (30) Calendar Days after receiving the claim submittal, the Engineer will respond, in writing, with the Authority's decision. If additional time is required by the Authority to review the claim, the Engineer will notify the Contractor.

Rejection of the claim or dispute by the Engineer may be appealed to the Chief Operating Officer for review. The Contractor shall give notice of the appeal, in writing, within ten (10) Calendar Days of the rejection by the Engineer. The Chief Operating Officer will conduct a claim review meeting attended by representatives of the Contractor and the Authority. The Chief Operating Officer will conduct the claims review meeting within forty-five (45) Calendar Days after receiving the Contractor's notice of appeal.

The Contractor may appeal the Chief Operating Officer's decision by requesting, in writing, within ten (10) Days of such decision, non-binding mediation with the Executive Director. If the mediation is unsuccessful, either party may proceed with the dispute resolution process as outlined in Subsection 105.17. The Executive Director shall issue a written report as to the results of the mediation, regardless of outcome.

105.16 Executive Director's Decision. After receiving the written notification from the Contractor requesting mediation, the Executive Director will notify the Contractor, in writing, within thirty (30) Calendar Days of the receipt of the request and promptly schedule mediation. The Executive Director shall issue a written report as to the results of the mediation, regardless of the outcome, within sixty (60) Calendar Days after notification to the Contractor of the Executive Director's receipt of the request for mediation.

105.17 Dispute Resolution. (a) If any claim is properly presented by the Contractor pursuant to Subsection 105.15, processed through the claims procedure and the mediation process with the Executive Director pursuant to Subsection 105.16, and the Contractor and the Authority fail to agree as to the resolution thereof, then upon the demand of either party delivered in writing to the other within thirty (30) Calendar Days from the date of the written report of the Executive Director as provided in Subsection 105.16, the claim shall be decided by exclusive, final and binding arbitration in accordance with the Construction Industry Arbitration Rules of the American Arbitration Association then in effect, except as otherwise modified by these Specifications. Such arbitration proceeding may involve presentation of facts or such portions thereof as have previously been presented at the prior administrative proceedings held pursuant to Subsections 105.15 or 105.16 herein or may be based entirely upon the record, as established therein. The record established at the prior administrative proceedings pursuant to Subsections 105.15 or 105.16 shall be specifically admissible at such arbitration proceedings and such facts as have been established shall be specifically binding upon the parties, with the

exclusion of opinions and conclusions thereon. Such arbitration shall be specifically based upon the claim(s) presented at prior administrative proceedings, and no material, information, fact and/or claim not presented at such proceedings held pursuant to Subsections 105.15 or 105.16 shall be admissible at any arbitration conducted pursuant to this Subsection 105.17. The arbitrators, in their final ruling on the claim, shall include a summary of the evidence, findings of fact based upon the evidence, conclusions of law and a concise statement of the relief awarded.

(b) Except as and to the extent the Authority may otherwise determine, any Disputes arising out of or in any way related to the Contract or the performance or breach thereof that are raised by the Authority and therefore not subject to the claim submittal process outlined in Subsection 105.15 and non-binding mediation in Subsection 105.16, shall be subject to exclusive, final and binding arbitration in accordance with the Construction Industry Arbitration Rules of the American Arbitration Association then in effect, except as otherwise modified by these Specifications.

(c) These provisions for dispute resolution are intended as a binding agreement to arbitrate under the Delaware Uniform Arbitration Act, 10 Del. C. §§ 5701 et seq., and shall be specifically enforceable. Any award rendered in any such dispute resolution procedure shall be final and judgment may be entered upon it by a court of competent jurisdiction in accordance with applicable law.

(d) If a Dispute shall arise under any Contract in connection with payments to be made to the Contractor hereunder, or otherwise in connection with the performance or alleged non-performance by any party of its obligations hereunder, the Contractor shall continue during the pendency of such Dispute to perform its services hereunder as if no Dispute shall have arisen. During the pendency of any such Dispute, the Contractor shall be entitled to receive payments from the Authority only for non-disputed items and payments for disputed items shall be deferred until final resolution of the Dispute.

(e) In all events, no claim, action or proceeding shall lie or be maintained by the Contractor, its successors or assigns, or by any Subcontractor or anyone else claiming under or through the Contractor, against the Authority upon any claim based upon or arising out of this Contract or out of anything done in connection with the Contract unless such action or proceeding shall be commenced within one (1) year after the earlier to occur of (i) the date of final completion of the Work or (ii) the termination of the Contract. This subparagraph shall not be deemed or construed to modify any other provision hereof relating to waivers of claims by the Contractor or to extend any period of limitations otherwise provided by law.

105.18 Subcontractor/Materialmen Payments. Payments received by the Contractor from the Authority that represent payments for Work completed or Materials supplied by Subcontractors or materialmen shall constitute a trust fund for the benefit of such Subcontractors and materialmen. These payments shall not be in any way co-mingled with any other project funds of the Contractor and shall be disbursed solely for the benefit of Subcontractors and materialmen with respect to the Project within thirty (30) Calendar Days of receipt of funds from the Authority. The Authority, acting in its sole and absolute discretion, may at any time direct that amounts be disbursed to Subcontractors and materialmen on a co-pay basis or by direct payment from the Authority to such Subcontractor and materialmen, and upon the Authority giving notice to Contractor of such direction, Contractor shall cooperate and take all steps necessary or appropriate to effect compliance with such direction; provided

further that upon the Authority giving notice of such direction, any term of this Contract that is not consistent with such direction shall be of no force and effect.

105.19 Claims. All claims made by the Contractor shall be submitted according to the procedure established in Subsection 105.15. Such claims shall also provide in the written notification a brief statement of the reason and basis for the claim. Within sixty (60) Calendar Days after that portion of the Work upon which the claim is based is completed, the Contractor shall submit a formal claim and if additional compensation is being claimed, such claim shall include an itemized list of labor, Equipment, and Materials used and such other costs as specifically allowed pursuant to this Subsection.

The Contractor shall not be entitled to recover any costs other than those contained and allowed herein. As described below, Subparts A. through G. shall cover all direct and indirect costs allowed and Subsection H. identifies all non-allowable costs.

- A. Labor. In accordance with 109.04 subpart D.1.
- B. Bond, Insurance, and Tax. In accordance with 109.04 subpart D.2.
- C. Materials. In accordance with 109.04 subpart D.3.
- D. Equipment. In accordance with 109.04 subpart D.4.
- E. Percentage Markups. In accordance with 109.04 subparts D.6. and D.7.
- F. Subcontractor Claims. Any claim submitted by the Contractor on behalf of one of its Subcontractors shall be submitted according to Subsection 105.15 and shall be solely limited to the list of all direct or indirect costs permitted by subparts A. through D. above. For Work approved by the Authority, the Subcontractor will be allowed a percentage markup as permitted by 109.04 subparts D.6. and D.7. The Contractor will be allowed an additional percentage markup as permitted by 109.04 subpart D.8., to be computed on the final sum total of such Subcontractor cost claimed under subparts A. through D. above for portions of Subcontractor Work approved by the Authority.
- G. Waiver of Liquidated Damages. A claim, not for additional costs, but for a waiver by the Authority of an assessment of Liquidated Damages, in whole or in part, may also be made by the Contractor as part of this Subsection.
- H. Non-allowable Damages or Expenses. The expenses listed above in subparts A. through G. shall constitute the sole cost(s) and expense(s) to which the Contractor shall be entitled on any claim submitted for additional compensation or settlement of any claim made under these Specifications, except as further provided in Subsection 105.21. The parties agree that the Authority will have no liability for the following items of damage or expense:
 - 1. Profit in excess of that provided herein,
 - 2. Loss of profit,
 - 3. Labor and Equipment inefficiencies,
 - 4. Home office overhead in excess of that provided herein,
 - 5. Consequential damages, including but not limited to loss of bonding capacity, loss of bidding opportunities and insolvency,
 - 6. Indirect costs or expenses of any nature,

7. Attorneys' fees, claim preparation expenses or costs of any dispute resolution proceedings, and
8. Interest on any claimed amounts.

I. Any claim submitted shall not affect in any manner the imposition or waiver of Liquidated Damages, except that any Liquidated Damages shall be waived for any delay for which a time extension is granted in accordance with Subsection 108.07.

J. The Contractor agrees to make its accounting records and cost information available at the time of submission of the claim, as well as all such other records as the Authority may require to determine the validity and amount of each item claimed. Such records shall be open to inspection or audit by representatives of the Authority during the life of the Contract and for a period of not less than three (3) years after the Contractor's acceptance of final payment as set forth in Subsection 109.10, and the Contractor shall retain such records for that period. Where payment for Materials, Equipment, or labor is based on the cost of forces other than the Contractor's, the Contractor shall make every reasonable effort to ensure that the cost records of such other forces are open to inspection and audit by representatives of the Authority on the same terms and conditions as the cost records of the Contractor. Payment for the cost of such forces may be deleted if the records of such third parties are not made available to the Authority's representatives. If an audit is to be commenced, the Contractor is to be provided with reasonable notice of the time when such audit is to begin. In case all or a part of such records are not made available, the Contractor understands and agrees that any items not supported by reason of such unavailability of the records will not be allowed, or if payment therefor has already been made, the Contractor shall refund to the Authority the amount so disallowed.

105.20 Project Acceptance. When, in the opinion of the Contractor, the Project has been completed, the Contractor shall so notify the Authority, in writing and the Authority will arrange for inspection. If the inspection is not found acceptable, the Authority will advise the Contractor as to the particular defects to be remedied before final acceptance will be made. Payment made to the Contractor before the final acceptance does not commit the Authority to acceptance of the Project. The Final Inspection will be made by the Authority and upon a satisfactory report, final acceptance of the Project will be made by the Chairperson of the Authority.

Partial Project acceptance of a unit of the Project may be made at the discretion of the Authority. When a unit or portion of the Project, such as a structure, interchange, or section of road or pavement is completed, the Contractor may request Final Inspection of that unit or portion. If the unit or portion has been completed in accordance with the Contract, the Authority may accept it as completed. Partial acceptance will not void or alter any of the terms of the Contract.

The Authority shall not be precluded or estopped by any measurement, estimate, certificate or approval of Work performed or Materials furnished made either before or after the Completion and acceptance of the Project and payment therefor, if such measurement, estimate or certificate be found to be in error or untrue, from showing the true amount and character of the Work performed and Materials furnished by the Contractor or from showing that any such measurement, estimate, certificate or approval is incorrectly made or untrue, that the Work or Materials do not conform in fact to the requirements of the Contract, or that said Work was

performed in a defective, unworkmanlike manner. The Authority shall not be precluded or estopped, notwithstanding any such measurement, estimate or certificate and payment made in accordance therewith, from recovering from the Contractor and his, her or its Surety such damages as it may sustain by reasons of the Contractor's failure to comply or to have complied with the terms of the Contract.

Neither the final acceptance by the Authority or any acceptance by any representative of the Authority, nor any payment made for the whole or any part of the Project, nor any extension of time granted the Contractor, nor any possession taken by the Authority, shall operate as a waiver of any portion of the Contract or of any power herein reserved, or any right to damages herein provided. A waiver of any breach of the Contract shall not be held to be a waiver of any other or subsequent breach.

Guaranty Against Defective Work.

Before final payment is made as provided in Subsection 109.10, the Contractor shall furnish a Maintenance Bond to the Authority in a sum equal to five percent (5%) of the final Contract price. The Maintenance Bond shall be on the form furnished by the Authority and with Surety satisfactory to the Authority. The Maintenance Bond shall remain in full force and effect for a period of one (1) year from the date of final acceptance of the Project by the Authority. The Contractor shall also furnish a Contractor's Release of Liens before final payment is made.

Before semifinal payment is made following the suspension of Work as provided in Subsection 104.07 and Subsection 109.07, the Contractor shall furnish a Maintenance Bond in a sum equal to five percent (5%) of the estimated value of the Work completed prior to the time the Project was suspended, and the Maintenance Bond shall remain in effect for a period of one (1) year from the date of suspension.

The Maintenance Bond (in either case) shall provide that the Contractor guarantees to replace for said period of one (1) year all Work performed and Materials furnished that were not performed or furnished according to the terms of the Contract, and make good defects thereof, regardless of cause, which have become apparent before the expiration of said period of one (1) year.

If, in the judgment of the Authority, any part of the Project need be replaced, repaired or made good during the specified guaranty period for the reasons stated above, the Authority will so notify the Contractor in writing. If the Contractor refuses or neglects to start such Work within five (5) Calendar Days from the date of service of such notice or at such other time as the Authority may designate, or if the Contractor fails to complete such Work within the time prescribed by the Authority, then the Authority will have the Work done by others and the cost thereof shall be paid by the Contractor or the Surety.

Before the Surety is released from its Maintenance Bond, the Authority shall certify, in writing, that the foregoing obligations have been duly performed.

In an emergency, as determined by the Authority, the Authority reserves the right to immediately effect both temporary and permanent repairs, or arrange for others to effect such repairs, at the expense of the Contractor, and the Contractor agrees that in such event, the Authority will be reimbursed for such costs by the Contractor or by the Surety.

The obligations of the Contractor and Surety under the Maintenance Bond specified hereinabove shall not be construed as limiting, diminishing or in any way affecting the liability and obligations

of the Contractor and Surety under the terms of the Contract Bond, it being understood that the Maintenance Bond prescribed in this Subsection is solely intended to cover defective Work of a nature that would otherwise be repaired or replaced by maintenance forces.

The Contractor shall make good all damage to the Work which is the result of the use of materials (other than Authority-furnished materials), equipment or workmanship which are inferior, defective, or not in accordance with the terms of the Contract and shall restore all disturbed work resulting from the same.

If within twelve (12) months after final acceptance of the Work there shall appear or be discovered any weakness, any deficiency, any failure, or any breaking down or deterioration caused by a deficiency in design, workmanship, or material furnished by the Contractor, and all other, materials, machinery, or equipment, damage to which was caused by such defective work, materials, machinery or equipment (herein called a "guarantee deficiency"), such guarantee deficiency shall be made good, at the Contractor's expense, to meet the requirements of the Specifications and this Contract.

Any work required to be performed pursuant to the provisions of this Subsection shall be carried out, if practicable and at the Authority's option, by the Contractor, or his, her or its subcontractor, if approved by the Authority. The Authority may however, have such work performed by another repair facility and in that event the Contractor shall be liable to the Authority for the cost thereof at the straight time commercial repair rate then-prevailing. The Contractor shall not be responsible for the work performed by such repair facility or the consequences thereof, nor shall the Contractor be responsible to again perform or correct, or again pay for, the performance or correction of such guarantee deficiency.

The Authority shall notify the Contractor in writing of any guarantee deficiency and damage, if any, to Material, machinery or Equipment for which the Contractor is liable pursuant to this Subsection within thirty (30) Days after its discovery, setting out in such notification the specific defect to the extent discovered, and shall request that it be corrected. Failure of the Authority to give timely notice to the Contractor of a guarantee deficiency after its discovery will not of itself constitute a waiver of the Authority's rights in respect of such guarantee deficiency; except that in no event shall Contractor have any liability under this Contract for a guarantee deficiency known or discovered by the Authority at any time during the guarantee period unless written notice of such guarantee deficiency is given the Contractor no later than thirty (30) Days after the end of the guarantee period.

Whenever practical, the Contractor shall be given an opportunity to inspect the guarantee deficiency and damage, if any, to the Material, machinery or Equipment within fifteen (15) Days after notification of the Contractor and before it is remedied.

This Subsection 105.20 shall survive termination of the Contract.

105.21 Claims for Delay Damages. The Authority may grant time extensions in the performance of Work for delays caused by acts of God, acts of the public enemy, fires, floods, epidemics, quarantine restrictions, strikes, freight embargoes, or other causes, only when these delays are not the fault or responsibility of the Contractor, are beyond the Contractor's control, and could not have been anticipated by the Contractor. For such delays that are also beyond the control and not the fault of the Authority, the Contractor shall be entitled to a time extension, but shall not be entitled to recover any damages resulting from such delays.

Unless otherwise noted, the Contractor shall not be entitled to any increase in the Awarded Contract Value or any payment or compensation of any kind from the Authority for direct, indirect, or consequential damages, including but not limited to costs of acceleration, loss of revenue, or overhead or profit, arising because of hindrance or delay, from any cause whatsoever, whether such hindrance or delay be reasonable or unreasonable, foreseeable or unforeseeable, or avoidable or unavoidable. Instead, as its sole right and remedy with respect to such hindrance or delay, the Contractor shall be entitled only to an extension to the Contract Time.

All direct and indirect costs allowed are covered in subpart A. below. Subpart B. below identifies all non-allowable costs. Compensation provided by subpart A. below shall not be duplicative of compensation already provided as part of Subsection 105.19 or Subsection 109.04:

A. Allowable Direct and Indirect Expenses. Only the additional costs associated with the following items will be recoverable by the Contractor for delay compensation:

1. Extended Field Overhead. Field overhead costs necessary for the prosecution of the Work during the delay period, as follows:
 - a. General Field Supervision. Such costs include but are not limited to general field supervision, assistants, watchmen, clerical and other field support staff. Compute these labor costs in accordance with Subsection 109.04, subpart D.1. For salaried personnel, calculate the rate of wage (or scale) actually paid by dividing the weekly salary by seven (7) days per week.
 - b. Field Office Facilities and Supplies. Such costs include but are not limited to field office trailers, tool trailers, office Equipment rental, temporary toilets, and other incidental facilities and supplies. Compute these costs on the basis of the actual added costs incurred by the Contractor to provide these services as a result of the delay.
 - c. Maintenance of Field Operations. Such costs include but are not limited to telephone, electric, water, and other similar expenses. Compute these costs on the basis of the actual added costs incurred to maintain these services as a result of the delay. These extended field overhead costs are not duplicative of those compensated in Subsection 109.04, subpart D.7.
2. Labor. For all necessary, non-salaried, idle labor that must remain on the Project during such periods of delay due to collective bargaining contracts or other reasons approved by the Engineer, compute the labor costs in accordance with Subsection 109.04, subpart D.1.
3. Bond, Insurance, and Tax. In accordance with Subsection 109.04, subpart D.2.
4. Equipment. For any idle Equipment other than small tools that must remain on the Project site during delays, the Contractor is to receive compensation at the rate calculated in Subsection 109.04, subpart D.4. Should it not be necessary for machinery or Equipment to remain on the Project during delays, the Contractor is to receive transportation costs to remove the machinery or Equipment and return it to the Project at the end of the delay period.
5. Materials. Costs for Material escalation due to the delay or the cost of storage of Materials due to the delay are recoverable. Obtain the Engineer's approval prior to storing any Material due to a delay.

6. **Percentage Markups.** An additional ten percent (10%) markup of the total of subparts A.1., A.2., A.3., and A.4. above will provide full compensation for home office overhead and any other costs attributed to the delay for which no specific allowance is herein provided. Payment under this Subsection constitutes full compensation for all items of expense related to such delay. No profit is allowed under this Subsection. The markup is not duplicative of those provided in Subsection 105.19, subpart E., Subsection 109.04, subpart D.6., and Subsection 109.04, subpart D.7.
7. **Records.** Payment will not be made for delays until the Contractor has furnished the Engineer with duplicate itemized statements of the cost as hereinabove specified and detailed as follows:
 - a. Name, classification, date, daily hours, total hours, rate, and extension for each worker and foreman.
 - b. Designation, dates, daily hours, total hours, rental rate, and extension for each unit of machinery and Equipment.
 - c. Transportation costs.
 - d. Cost of bonds, property damage, liability, and workers compensation insurance premiums; unemployment insurance contributions; and social security taxes.

The Engineer will compare the Authority's records with those furnished by the Contractor and make any necessary adjustments. When these records are agreed upon and signed by both parties, said records become the basis of payment for the expenses incurred, but do not preclude subsequent adjustment based on a later audit by the Authority.

The Contractor's cost records pertaining to expenses under this subpart shall be open to inspection or audit by representatives of the Authority as provided in Subsection 105.19, subpart J.

- B. **Non-Allowable Damages or Expenses.** The expenses listed in subpart A. above shall constitute the sole cost(s) and expense(s) to which the Contractor shall be entitled on any delay claim submitted for additional compensation or settlement of any claim made under these Specifications. The parties agree that the Authority will have no liability for the items listed in Subsection 105.19, subparts H.1 through H.8.

105.22 Contractor's Responsibilities. The Contractor shall be responsible for reporting to the Authority any material omission or failure on the part of the Contractor, any Subcontractor or any Supplier to meet its schedule for completion or to perform its duties or responsibilities in connection with the Project, promptly as the same are observed by or otherwise become known to the Contractor. The Contractor shall also advise the Authority of any potential delays that may affect the ultimate completion of the Project on schedule, and shall make recommendations to the Authority, if necessary, as to the action to be taken to alleviate any potential delays.

There will be no change in the supervisory personnel assigned to the Project or in their time commitments to the Project without the prior written consent of the Authority. The Authority, in its sole discretion, shall have the right to require substitution of personnel assigned to the Project.

In addition to or in expansion of or elaboration on the Contractor's responsibilities as set forth in this Contract, it is agreed between the parties that the Contractor's responsibilities shall include:

- (a) Notifying the Authority of installation, testing and/or operational start-up times for such types or pieces of Equipment as may hereafter be specified by the Authority;
- (b) Furnishing the Authority with detailed documentation of the total cost of the Work at the completion of the project, separated into appropriate categories, classifications and codes and otherwise in a form approved by the Authority;
- (c) Preparing or obtaining from Subcontractor's brochures, guarantees, warranties, certificates of compliance and other agreements and instruments customarily prepared or obtained by a general contractor and/or the Contractor in connection with similarly situated projects; reviewing and commenting on the form of the foregoing and advising the Authority of any known discrepancies and deficiencies (the Contractor to cause any such discrepancies and deficiencies to be corrected); each guarantee, warranty or other similar instrument furnished shall name the Authority as direct beneficiary of the provisions thereof and the Authority shall have the right to enforce the same;
- (d) Maintaining at the Project site on a current basis all Contract Documents, including all Change Orders, Addenda, written interpretations and other modifications, as well as copies of all correspondence relating to the Project and a current marked-up set of the drawings, schedules, diagrams and Specifications (all of which documentation shall at all times be available for inspection by the Authority); and providing, following the completion of construction, a set of record drawings showing the Project "as built" both in full-size hard copy and on disks in PDF format; and
- (e) Training of Authority personnel as required or necessary for systems as supplied under the Contract.

The Contractor shall keep full and detailed accounts and exercise such controls as may be necessary for proper financial management of the Project, all of which shall be satisfactory to the Authority. The Authority and the Authority's representatives shall be afforded access to the Contractor's records, books, correspondence, instructions, drawings, receipts, subcontracts, purchase orders, vouchers, memoranda and other data relating to the project, and the Contractor shall preserve these for a period of three (3) years after final payment, or for such longer period as may be required by law.

Section 106 - Control of Material

106.01 Source of Supply and Quality Requirements

106.02 Samples, Tests, and Referenced Specifications

106.03 Certification of Compliance

106.04 Manufacturing Plant Inspection

106.05 (Intentionally Omitted)

106.06 (Intentionally Omitted)

106.07 Storage and Handling of Materials

106.08 Unacceptable Materials

106.09 Disposal of Unacceptable Materials

106.10 Authority Furnished Material

106.01 Source of Supply and Quality Requirements. All Materials used shall meet the requirements of the Contract. All Materials for the Project shall be new materials furnished by the Contractor, unless otherwise specifically provided, and shall be subject to the approval of the Engineer.

The provisions of Subsection 102.14 notwithstanding, the Contractor shall, within ten (10) Calendar Days after the date of execution of the Contract by the Authority, inform the Engineer in writing from whom and where he proposes to obtain the Materials required for the first six (6) months of construction of the Project and thereafter advise the Engineer of proposed changes. The source of supply of each of the Materials to be incorporated into the Project shall be approved by the Engineer, preferably before the Material is ordered by the Contractor and at the very latest before delivery of such Material is started. The approval of the Engineer may be withdrawn at any time when it appears to the Engineer that the Materials no longer conform to Contract requirements after giving such approval. Subsequent to the submission of this initial list of sources of supply, for the duration of the Contract the Contractor shall notify the Engineer of new sources of supply at least thirty (30) Calendar Days in advance of the proposed shipment of Materials for such new sources.

Materials shall not be shipped to the site until inspected by the Engineer at their source and approved by the Engineer. Approval by samples alone may be permitted by the Engineer only so long as the Material conforms to the samples approved and it can be furnished at the time and in the quantity required by a producer equipped to furnish it in uniform quality and composition. Approval for a specific case or use does not imply approval for other cases or uses. Approved Materials which appear defective when received or which may have become damaged in any manner shall not be used until retested and reapproved.

All Materials proposed to be used may be inspected or tested at any time during their preparation and use. If, after inspection or testing, it is found that sources of supply which have been approved do not furnish a uniform product or if the product from any source proves unacceptable at any time, the Contractor shall furnish approved Material from other approved sources. No Material which, after approval, has in any way become unfit for use shall be used in the Work.

Orders for Materials shall give detailed description of them and their intended use, manner of shipment, and proposed delivery date, and shall state the official designation of the Project on which they are to be used. Duplicates of orders shall be furnished to the Engineer at the time the order is placed. Material delivery slips shall show such information as may be prescribed by the Engineer.

In any item of construction, the sources, brands or types of Materials shall not be changed without the consent of the Authority. The Contractor's request for such changes shall be filed with the Engineer fifteen (15) Days in advance of such changes. The Contractor's notice shall state the name and address of the owner, the location of the proposed source, the method of shipment and the intended use of the Material. The Contractor shall also furnish this information for all Materials whenever placing an order therefor.

Wherever, on the Plans or in the Specifications, a particular brand or make of Material or a particular device or Equipment is shown or specified, such Material, device or Equipment is to be regarded only as a standard of acceptability. In such cases, other makes or brands of equal grade, suitability, availability and finish may be offered as an alternate by the Contractor for the Engineer's approval and utilized only if approved by the Engineer.

The foregoing provisions shall apply also with regard to requests by Subcontractors for the sources of the Materials they propose to use, such requests to be submitted through the Contractor.

Where the use of foreign Materials (i.e., materials mined, manufactured or produced outside the territorial limits of the United States of America) are not prohibited by the Supplemental Specifications or the Special Provisions, the Contractor may elect to utilize foreign Materials following notification to the Authority of the Contractor's intent to use such Materials, and if such Materials are furnished in accordance with the following requirements:

- (a) Materials manufactured, produced or mined outside the United States shall be delivered to approved locations within fifty (50) miles of the job site unless otherwise permitted, where they shall be retained until sampling and testing can be completed. Such sampling and testing shall be performed by testing organizations employed by the Authority.
- (b) Each lot of foreign Material shall be accompanied by a certificate of compliance, in accordance with Subsection 106.03. In addition, certified mill test reports shall be attached to the certificate of compliance for those Materials for which mill test reports are required and shall clearly identify the lot to which they apply. Mill test reports will be accepted only from those foreign manufacturers who have previously established the adequacy of their in-plant quality control to assure delivery of uniform Material. Adequacy of quality control shall be established, at the option of the Authority, by either submission of detailed written proof of adequate control or through an in-plant inspection by the Engineer. Travel and subsistence costs incurred by the Authority's representative for the performance of such in-plant inspection shall be reimbursed by the Contractor.
- (c) Foreign Materials will not be accepted which cannot be identified with mill test reports, certificates of compliance, and verified by the Authority's in-plant inspection and testing, as applicable.

106.02 Samples, Tests, and Referenced Specifications. All Materials furnished by the Contractor, Subcontractors and Suppliers for use in connection with the Project, are subject to test, at the Contractor's expense, or visual inspection, if testing is not required, for verification as to conformance to Contract requirements.

In general and unless otherwise provided, representative samples of Materials to be tested or inspected by the Authority will be selected at random by the Authority's Inspector from sources or supplies provided by the Contractor. The Contractor shall provide samples at no cost to the Authority and shall furnish all necessary assistance to the Inspector in selecting the samples. The Authority reserves the right to order that representative samples of certain Materials be selected by the Contractor and delivered to the Inspector or to an Authority approved Laboratory.

Samples required to be furnished or made available by the Contractor shall also be furnished or made available by the Contractor's Suppliers of Materials whenever tests and inspections are made at plants, quarries, mills, foundries, warehouses, shops or other points of manufacture, treatment, fabrication, assembly or storage.

Samples of Materials, units of manufactured items and prototypes shall be furnished in such quantities and numbers as may be required for establishing quality, classification, suitability, verification or performance and mix formulations.

Manufacturers furnishing pipe under the Specifications shall furnish all facilities necessary to carry out the tests required by the Specifications, at their own expense.

Methods of test shall be those prescribed or referred to in the Specifications for the various Materials. If no methods of test are provided for in the Specifications for a particular Material, that Material shall be tested in accordance with an appropriate AASHTO method or, if there be no appropriate AASHTO method of test, such Material shall be tested in accordance with an appropriate ASTM method of test.

Results of tests made with the Laboratory's apparatus, conforming to the requirements specified in the prescribed methods of tests, shall be official.

Vehicles and receptacles used for shipping and transporting Materials shall be strong, tight, clean and in good repair or Materials therein may be rejected. Receptacles shall be plainly marked with the name of the producer, kind of Material contained therein, net weight and grade. If the Material contained in the receptacle has been inspected at the point of production before shipment, the container shall be marked also with the lot number of the approved Material from which the content is taken, the date of approval and other pertinent information.

The sampling and testing of soils shall conform to the general requirements for sampling and testing Materials as specified above and to the requirements given below provided, however, that the following requirements shall govern in the event of any conflict or inconsistency.

Sampling requirements referred to herein for soils shall apply also to gravel or stone base courses or other granular Materials subject to compaction in road construction.

The Contractor shall determine, initially by means of proper sampling and laboratory tests, that soil materials from proposed sources will conform to the Specification requirements. Written notice of the proposed sources of the above-named materials shall be given to the Engineer by the Contractor after initial determination as specified above and not less than ten (10) Days prior to the time of their intended use. Then, before approving or disapproving a source, the Engineer will sample and test materials representative of that portion of the source which the Contractor intends to use.

Approval by the Engineer of a proposed source of soil materials shall not constitute approval of Materials delivered to the site of the Work from that source but shall be deemed as permission for the Contractor to select and use materials from that source only so long as they conform to the Specifications. The Contractor shall progressively determine, by proper sampling and laboratory tests, while the sources are in use, that Materials selected from approved sources will conform to the Specifications.

The final and governing determination of conformance or non-conformance with Specifications shall be based on sampling and testing of the Materials by the Engineer after they have been placed and compacted in the Work as specified or, if compaction is not specified, when they have been placed in accordance with the Plans and Specifications. All Materials in place in the Work which do not conform to the Specifications shall be removed and replaced with Materials which do conform thereto or their deficiencies shall be corrected.

The Contractor shall excavate test pits and provide such facilities as he, she or it may require in order to properly sample the source and shall, if the source be approved, remove any overburden which would contaminate the Material intended for use on the Project. If soil materials are obtained by dredging, the Contractor shall provide safe and adequate water transportation for the Engineer to and from the dredges or other boats and shall cooperate with the Engineer in every reasonable way to expedite inspection and sampling of the Materials.

106.03 Certification of Compliance. The Contract or the Authority will designate Materials that can be incorporated in the Work if accompanied by certificates of compliance from the manufacturer. The certificates of compliance shall state that the Materials or assemblies provided fully comply with the specification requirements of the Contract, and shall be signed by the manufacturer. Each lot of certified Materials or assemblies delivered to the Project must be accompanied by a certificate of compliance clearly identifying the Materials delivered and the specification requirement(s) satisfied.

Materials or assemblies used on the basis of certification of compliance may be sampled and tested by the Authority and, if determined not to be in conformance with Contract requirements, will be rejected in accordance with Subsection 105.03. The cost of such sampling and testing, regardless of outcome, shall be reimbursed by the Contractor.

106.04 Manufacturing Plant Inspection. The Engineer may inspect Materials at the acquisition or manufacturing source. Manufacturing plants may be inspected for compliance with specified manufacturing methods. Material samples will be obtained for testing for compliance with Material quality requirements.

In the event plant inspection is undertaken, the following conditions shall be met:

- A. The Engineer will have the cooperation and assistance of the Contractor and producer of the Materials;
- B. The Engineer will have full access at any time to all parts of the plant concerning the manufacture or production of the Materials being furnished;
- C. The Contractor shall arrange for an approved space for the use of the Inspector, with such space to be located conveniently near the plant;
- D. Provide and maintain adequate safety measures; and
- E. It is understood that the Authority reserves the right to retest all Materials which have been tested and accepted at the source of supply after the same have been delivered and to reject all Materials which, when retested, do not meet the requirements of these Specifications.

106.05 (Intentionally Omitted).

106.06 (Intentionally Omitted).

106.07 Storage and Handling of Materials. The Contractor, upon consultation with the Authority, shall arrange for delivery and storage, protection and security for all Materials, systems and Equipment which are a part of the Project, until such items are incorporated into the Project, including Authority-furnished Materials, systems and Equipment.

Materials shall be stored or stockpiled so as to insure preservation of their quality and fitness for the Work. Materials liable to damage or change in quality by the elements shall be stored in proper structures or in such other manner as may be necessary to protect them from damage. Materials shall be kept clean and free from foreign matter of any kind before, while and after being placed in the finished Work.

Metalwork shall be stored on dunnage or otherwise placed above ground and protected against contact with rising water or mud.

Unless otherwise directed, granular Materials shall be stockpiled on hard, clean surfaces, shall be placed in stockpiles in horizontal layers not exceeding three feet in depth and when so required, shall be suitably covered.

The locations for and methods of storing Materials shall at all times meet with the approval of the Engineer. Any Materials improperly stored will not be approved for use.

An approved portion of the Right-of-Way may be used for the storage of Materials and the Contractor's Equipment. Additional storage space required shall be provided at the Contractor's expense and option. Private property shall not be used for storage purposes without written permission of the owner or lessee. If requested, copies of such written permission shall be furnished to the Engineer.

Storage sites shall be restored to their original condition by and at the Contractor's expense.

106.08 Unacceptable Materials. Materials not conforming to the requirements of the Contract will be rejected and removed immediately from the Project unless the defects have been corrected and approved by the Engineer.

106.09 Disposal of Unacceptable Materials. All waste materials removed by earthwork operations shall become the property of the Contractor and shall be removed from the Project or otherwise disposed of as specified, unless otherwise explicitly stated in the Contract. Unless specific disposal sites are designated on the Plans, the Contractor shall procure disposal sites. Such disposal sites shall be submitted to and approved by the Engineer. No areas that are designated as wetlands will be permitted for use as disposal sites. The submittal shall include a plan of the disposal area, proposed sediment and erosion control devices, existing and proposed final contours, and proposed security measures. All permit requirements, such as those required by the Department of Natural Resources and Environmental Control (DNREC) and the U.S. Army Corps of Engineers, shall be met by the Contractor when preparing and utilizing off-site disposal areas. The Contractor shall submit a similar proposal for use of designated disposal sites if such detail is not included in the Contract Documents. Costs for preparing these plans are incidental to Section 201 of the Standard Specifications. For disposal sites designated in the Plans, payment will be made separately under applicable bid items for all necessary erosion and sediment controls, seeding, and mulching. For Contractor-procured disposal sites, such costs are incidental to Section 201 of the Standard Specifications. The Authority will not consider any delays or monetary claims of any nature resulting from the Contractor's failure or difficulty in finding the necessary disposal sites.

106.10 Authority-Furnished Material. Material furnished by the Authority will be delivered or made available to the Contractor at locations specified in the Contract.

The cost of handling and placing Authority furnished Materials after they are delivered to the Contractor shall be included in the Contract price for the item in which they are used. Deductions will be made from any monies due for any shortages, deficiencies, and damage that may occur to the Material after delivery. Demurrage charges resulting from the Contractor's failure to accept the Materials at the designated time and location of delivery will also be deducted from monies due the Contractor.

Section 107 - Legal Relations and Responsibility to the Public

- 107.01** Laws, Ordinances and Regulations
- 107.02** Permits, Licenses and Taxes
- 107.03** Patented Devices, Materials, and Processes
- 107.04** Contractor's Responsibility for Utility Property and Services
- 107.05** Federal Aid Participation
- 107.06** Construction Safety, Health, and Sanitary Standards
- 107.07** Public Convenience and Safety
- 107.08** Use of Explosives
- 107.09** Protection and Restoration of Property
- 107.10** Responsibility for Damage Claims
- 107.11** Furnishing Right-of-Way
- 107.12** No Personal Liability
- 107.13** No Waiver of Legal Rights
- 107.14** Hazardous Material
- 107.15** Ownership and Use of Documents; Confidentiality
- 107.16** Equal Employment
- 107.17** Labor Relations
- 107.18** Security

107.01 Laws, Ordinances and Regulations. The Contractor shall observe and comply with and cause the Work to be performed in accordance with all applicable governmental laws, rules, codes, regulations and requirements, including, without limitation, federal, state and local environmental and safety laws and regulations which are required of the Authority.

107.02 Permits, Licenses and Taxes. Except as otherwise hereinafter provided, the Contractor shall procure all required permits and licenses, pay all charges and fees therefor and shall give all notices necessary and incident to the due and lawful prosecution of the Project.

Before the Contractor performs dredging or excavation within tidal waterways for the procurement of Materials or performs therein other work of his, her or its own, when such work is not part of the permanent Work provided for in the Contract, he, she or it shall advise the Engineer, U.S. Army Corps of Engineers and any other Federal or State agency having jurisdiction. The Contractor shall procure all necessary permits for such work from the above-named agencies and shall comply with the rules and regulations in the performance of the above-mentioned work.

For all permanent construction prescribed in the Contract, the necessary official permits and consents from the proper agencies will be procured and all charges therefor will be paid by the Authority. However, the Contractor shall advise such agencies of their proposed operations and obtain their cooperation and such supplemental permission as may be necessary.

Passes will not be issued to the Contractor, their subcontractors or suppliers for the toll-free use of any existing toll facility operated by the Authority. The Contractor shall include the cost of all such expenses in the prices bid for the various items scheduled in the Contract Documents.

Under date of February 27, 1967, the purchasing agent of the Authority issued the following notice that the Authority is exempt from New Jersey sales taxes on purchases from New Jersey merchants:

TO ALL VENDORS FURNISHING MATERIALS OR SERVICES OR BOTH TO
THE DELAWARE RIVER AND BAY AUTHORITY, CAPE MAY-LEWES FERRY
OR DELAWARE MEMORIAL BRIDGE

The Delaware River and Bay Authority, formed by a compact between the State of Delaware and the State of New Jersey to operate the Delaware Memorial Bridge and the Cape May-Lewes Ferry, is exempt from the payment of New Jersey Sales Tax on purchases from New Jersey merchants.

The following are pertinent excerpts from the General Information Bulletin - New Jersey Sales and Use Tax Act -Chapter 30, Laws 1966:

Page 9 - Item 8a:

“The State of New Jersey or any of its agencies, instrumentalities, public authorities, public corporations (including those created pursuant to agreement or compact with another state) or political sub-divisions, when it is the purchaser, user or consumer or when it sells services or property of a kind not ordinarily sold by private persons.”

Page 11 - Item 5:

“Organizations described in Section 8a need only furnish purchase orders on their letterhead to claim exemption.”

107.03 Patented Devices, Materials, and Processes. The Contractor and the Surety shall hold and save harmless the Authority, its commissioners, officers, agents and employees, in accordance with the terms of these Specifications, from any and all claims because of the use of any patented design, device, Material, or process in connection with the Work agreed to be performed under this Contract. The foregoing indemnification shall survive termination of the Contract. Any patent agreement between patentee and the Contractor shall be furnished to the Authority.

107.04 Contractor's Responsibility for Utility Property and Services. At points where the Contractor's operations are adjacent to properties of railway, telegraph, telephone, power companies, or other utilities, or are adjacent to other properties, facilities, or appurtenances, damage to which might result in considerable expense, loss, or inconvenience, Work shall not be commenced until all arrangements necessary for the protection thereof have been made.

In the event of interruption to water or utility services as a result of accidental breakage, or as a result of being exposed or unsupported, the Contractor shall promptly notify the proper authority. The Contractor shall cooperate with said authority in the restoration of service as promptly as possible. No Work shall be undertaken around fire hydrants until appropriate plans for continued service have been approved by the local fire authority.

Fire hydrants on or adjacent to the highway shall be kept accessible to fire apparatus at all times and no Material or obstruction shall be placed within fifteen feet (15') of any such hydrant. Work shall be left entirely accessible at all points to fire apparatus at all times. Whenever any Work is done in the area of a fire hydrant or whenever a fire hydrant is relocated or installed, the center of the hose outlet shall be a minimum of eighteen inches (18 in.) above the final grade directly beneath the hose outlet. The breakaway flange at the bottom of the hydrant shall be set zero inches to four inches above the ground.

107.05 Federal Aid Participation. When the United States Government pays all or any portion of the cost of a Project, the Federal laws authorizing such participation and the rules and regulations made pursuant to such laws must be observed by the Contractor, and the Work shall be subject to the inspection of the appropriate Federal agency.

Such inspection shall not make the Federal Government a party to this Contract and will in no way interfere with the rights of either party hereunder.

107.06 Construction Safety, Health, and Sanitary Standards. It is a condition of all contracts, and shall be made a condition of each subcontract entered into pursuant to the prime contract, that the Contractor, and any Subcontractor, shall not require any person employed in performance of the Contract to work in surroundings or under working conditions which are unsanitary, hazardous, or dangerous to such person's health or safety.

The Contractor shall provide and maintain in a neat and sanitary condition, properly secluded, such accommodations for himself and his employees as may be necessary to comply with the regulations of the State Departments of Health and other bodies having jurisdiction. Necessary conveniences, properly secluded, shall be provided and maintained for the use of and to the satisfaction of the Authority and sanitary authorities. No public nuisance will be tolerated.

The Contractor's personnel will not be permitted to use the sanitary provisions within any Administrative Complex of the Authority or any other Authority property.

107.07 Public Convenience and Safety. The Contractor shall maintain a safe work site at all times and be prepared to make repairs as needed after normal working hours in the case of an emergency. If the Authority is unable to contact the Contractor to make these repairs then Authority maintenance forces or a third party contractor may be used to make such repairs. The cost for this work shall be calculated according to Subsection 109.04 subpart (D) for all Authority personnel involved or third party contractor, including vehicles, equipment and materials needed. This cost will be deducted from money due the Contractor under the Contract.

The Contractor shall conduct his, her or its Work with the least possible obstruction to the traveling public. The convenience of the public and of the residents adjacent to the Project and the protection of persons and property are of first importance and shall be provided for by the Contractor in an adequate and satisfactory manner. The Contractor shall provide and maintain ingress and egress for all residences and places of business located within the construction limits. Adequate temporary crossings shall be constructed and maintained where access to adjacent property is desired, whether for convenience or fire protection. All fire hydrants shall be kept accessible at all times.

Trucks hauling materials shall have tight tail gates and shall be loaded with adequate freeboard of not less than three inches, without precarious cones or piles of material.

The Contractor shall provide for prompt removal from existing Roadways of all dirt and other materials that have been spilled, washed, tracked or otherwise deposited thereon by hauling and other operations whenever the accumulation is sufficient to cause the formation of mud, interfere with drainage, obstruct or clog drainage systems, damage pavements or create a traffic hazard.

The Contractor shall employ construction methods and means that will keep flying dust to the minimum. The Contractor shall provide for the allaying of dust on the Project and on roads, streets and other areas immediately adjacent to the Project limits, wherever traffic or buildings that are occupied or in use are affected by such dust caused by hauling or other operations. The materials and methods used for dust allaying shall be subject to the approval of the Engineer.

Precaution shall be exercised at all times for the protection of persons and property. The safety provisions of applicable laws, building and construction codes, and the rules and regulations of the Delaware and New Jersey Departments of Labor, as applicable, shall be observed. Machinery, Equipment and other hazards of whatsoever character shall be guarded in accordance with the safety provisions of the AGC, to the extent that such provisions are not inconsistent with applicable Federal, state and local laws and regulations.

If any operation, practice or condition during the course of the Work is deemed by the Authority to be unsafe, the Contractor shall take corrective action when notified in writing by the Authority. However, where in the opinion of the Authority, any operation, practice or condition endangers persons or property, it shall be discontinued and adequate remedial action taken before the affected part of the Work is resumed.

107.08 Use of Explosives. Explosives shall not be brought within the Project limits or onto property under the jurisdiction of the Authority without the prior written approval of the Executive Director.

When permission is granted to bring explosives thereon, they shall be stored safely under lock and key. The storage places shall be marked conspicuously "DANGEROUS EXPLOSIVES" and be in the care of a competent watchman at all times. The storing and handling of explosives and highly inflammable Materials shall conform to state and local regulations relating thereto. Proper means shall be used to avoid blasting damage to public and private property. Flagmen shall be provided, when directed, in order to warn and keep traffic from the danger area and all persons within the danger area shall be warned and given time to withdraw.

When the use of explosives is necessary for the prosecution of the Work, the Contractor shall exercise the utmost care not to endanger life or property, including new Work. The Contractor shall be responsible for all damage resulting from the use of explosives.

All explosives shall be stored in a secure manner in compliance with all laws and ordinances, and all such storage places shall be clearly marked. Where no local laws or ordinances apply, storage shall be provided satisfactory to the Engineer and not closer than one thousand feet (1000') from the road or from any building or camping area or place of human occupancy.

The Contractor shall notify each public utility company having structures in proximity to the site of the Work of its intention to use explosives.

The use of explosives will not be permitted within two hundred feet (200') of any existing, newly finished, or partly finished structure on a Project unless authorized in writing by the Engineer. No explosives shall be stored overnight on the Project.

107.09 Protection and Restoration of Property. The Contractor shall be responsible for the preservation of all public and private property, trees, monuments, etc., along and adjacent to the Project, which are not designated on the Plans for repair, removal or reconstruction. The Contractor shall exercise the precaution necessary to prevent damage to underground structures and shall protect carefully from disturbance or damage all land monuments and property markers until an authorized representative of the Authority has witnessed or otherwise referenced their location and shall not remove them until so directed. Any disturbed land monument and/or property marker shall be located and reset by registered land surveyors, at the Contractor's expense.

The Contractor shall not injure or destroy trees or shrubs outside the limits of the graded Roadway Subsection, nor remove or cut them without proper authority.

Where any direct or indirect damage is done to public or private property on account of any act, omission, neglect or misconduct in the execution of the Work or in consequence of the non-execution thereof on the part of the Contractor, such property shall be restored by the Contractor, at the Contractor's expense, to a condition similar or equal to that existing before such damage.

In case of the failure on the part of the Contractor to restore such property or make good such damage, the Authority may, upon forty-eight (48) hours' notice, proceed to repair, rebuild or otherwise restore such property as may be deemed necessary and the cost thereof will be deducted from any monies due or which may become due the Contractor under the Contract.

107.10 Responsibility for Damage Claims. The Contractor hereby assumes entire responsibility and liability for any and all damage or injury of any kind or nature whatever (including death resulting therefrom) to all persons, whether employees of the Contractor or otherwise, and to all property caused by, resulting from, arising out of or occurring in connection with the execution of the Work; and if any claims for such damage or injury (including death resulting therefrom) be made or asserted, whether or not such claims are based upon the Authority's alleged active or passive negligence or participation in the wrong or upon any alleged breach of any statutory duty or obligation on the part of the Authority, the Contractor agrees to indemnify and save harmless the Authority, its commissioners, officers, agents, servants and employees from and against any and all such claims and further from and against any and all loss, costs, expense, liability, damage or injury, including legal fees and disbursements, that the Authority, its commissioners, officers, agents, servants or employees may directly or indirectly sustain, suffer or incur as a result thereof and the Contractor agrees to and does hereby assume, on behalf of the Authority, its commissioners, officers, agents, servants and employees, the defense of any action at law or in equity which may be brought against the Authority, its commissioners, officers, agents, servants or employees upon or by reason of such claims and to pay on behalf of the Authority, its commissioners, officers, agents, servants and employees, upon its demand, the amount of any judgment that may be entered against the Authority, its commissioners, officers, agents, servants or employees in any such action.

The Contractor also hereby assumes entire responsibility and liability for and shall, to the same extent as specified above, further indemnify and save harmless the Authority, its commissioners, officers, agents and servants from all suits, claims and actions of any kind or character whatsoever which may be brought or instituted by any Subcontractor, materialman or laborer who has performed Work or furnished Materials in or about the Project or by, or on account of, any claims or amount recovered for any infringement of patent, trademark or copyright, or for any violation of such laws, ordinances, regulations, orders or decrees, whether by the Contractor himself, herself or itself or by any of his employees, Subcontractors or Suppliers, whether or not such suit action, claims or amounts recovered are based upon the Authority's active or passive negligence or participation in the wrong or upon any alleged breach of any statutory duty or obligation on the part of the Authority. In the event that any such claims, loss, costs, expense, liability, damage or injury arise or are made, asserted or threatened against the Authority, its commissioners, officers, agents, servants or employees, the Authority shall have the right to withhold from any payments due or may become due to the Contractor an amount sufficient in its judgment to protect and indemnify it and its commissioners, officers, agents, servants and employees from and against any and all such claims, loss, costs, expense, liability, damage or injury, including legal fees and disbursements or the Authority, in its discretion, may require the Contractor to furnish a security bond satisfactory to the Authority guaranteeing such protection, which bond shall be furnished by the Contractor within five (5) Days after written demand has been made therefor.

The forgoing indemnification provision shall survive termination of the Contract.

107.11 Furnishing Right-of-Way. The Authority will be responsible for securing all necessary Rights-Of-Way in advance of construction. Any exceptions will be indicated in the Contract. If work is to be performed on, over, under or adjacent to railroad property, the Contractor may be required to indemnify and save harmless the railroad company in connection with such work. The Contractor shall be responsible for acquainting himself, herself or itself, prior to bidding, with all requirements that the railroad company may impose.

107.12 No Personal Liability. In carrying out the provisions of this Contract or in exercising any power or authority granted them by their position, there shall be no liability upon the Commissioners of the Authority, the Executive Director, the Engineer, any Authority employees or any consulting engineers that may be engaged for the Project by the Authority and their authorized representatives either personally or as officials of the Authority, it being understood that in such matters, they act as agents and representatives of the Authority.

107.13 No Waiver of Legal Rights. Upon completion of the Work, the Authority will expeditiously make Final Inspection and notify the Contractor of acceptance. Such final acceptance, however, shall not preclude or stop the Authority from correcting any measurement, estimate, or certificate made before or after completion of the Work, nor shall the Authority be precluded or estopped from recovering from the Contractor or its Surety, or both, such overpayment as it may sustain, or from recovering the cost of the failure on the part of the Contractor to fulfill its obligations under the Contract. A waiver on the part of the Authority of any breach of any part of the Contract shall not be held to be a waiver of any other or subsequent breach.

The Contractor, without prejudice to the terms of the Contract, shall be liable to the Authority for latent defects, fraud, or such gross mistakes as may amount to fraud, or as regards the Authority's rights under any warranty or guaranty.

107.14 Hazardous Material. If any abnormal condition is encountered or exposed that indicates the presence of a hazardous material or toxic waste, construction operations shall be immediately suspended in the area and the Engineer notified. Work shall be continued in other areas of the Project where such abnormal conditions have not been encountered or exposed, unless otherwise directed by the Engineer.

Abnormal conditions include but are not limited to the following: presence of barrels or drums, chemical or noxious odors, stained or contaminated soil, sheen or contamination of or on surface or ground water, excessively hot earth, smoke, or any other condition that indicates a hazardous material or toxic waste. Such conditions shall be treated with extreme caution.

Disposition of the hazardous material or toxic waste shall be made under the requirements and regulations of the applicable State and Federal agencies.

Contractor shall be responsible for abnormal conditions created with any materials brought to the Site by Contractor, Subcontractors, Suppliers, or anyone else for whom Contractor is responsible.

To the fullest extent permitted by laws and regulations, Contractor shall indemnify and hold harmless the Authority and Engineer, and the officers, directors, partners, employees, agents, consultants, and subcontractors of each and any of them from and against all claims, costs, losses, and damages (including but not limited to all fees and charges of engineers, architects, attorneys, and other professionals and all court or arbitration or other dispute resolution costs) arising out of or relating to abnormal conditions created by Contractor or by anyone for whom Contractor is responsible or for any exacerbation by Contractor or anyone Contractor is responsible for of an existing abnormal condition shown on technical data, drawings, or specifications, or in Contract Documents. Nothing in this Paragraph shall obligate Contractor to indemnify any individual or entity from and against the consequences of that individual's or entity's own negligence. The foregoing indemnification shall survive termination of the Contract.

107.15 Ownership and Use of Documents; Confidentiality. Drawings prepared by the Contractor (and all models, plans, calculations, specifications and other work product of the Contractor in connection with the Project and all related computer disks and electronic data) are and shall remain the property of the Authority, whether the Project is fully executed or not.

The Contractor agrees that all drawings, specifications, plans, designs, technical information, forecasts and other materials received by the Contractor from the Authority in connection with this Contract shall be accepted and treated as proprietary information that has a substantial commercial value to the Authority, and that the Contractor will not use or disclose any such information in any manner except to the extent that such use or disclosure may be necessary for the performance of services or the Work under this Contract. Upon completion of the Project, or at any time requested by the Authority, the Contractor shall return to the Authority all such information, including any copies made thereof by the Contractor (provided, however, that the Contractor, and each Subcontractor holding a subcontract with the Contractor, may retain one file copy of all drawings, Specifications, Addenda, Change Orders, Supplemental Agreements and like items relevant to their portion of the Work).

The term "Confidential Information" as used herein means information, data and experience of the Authority relating to the Project, whether of a technical, engineering, security, operational or economic nature, supplied to or developed or obtained by the Contractor, in writing, orally, or by observation (and, without limitation, includes all materials and information referenced above), except information that becomes known to the public at large through general publication by the Authority. The Contractor agrees:

(a) To make no use whatsoever of the Confidential Information except for the direct benefit of the Authority and accordingly, without limiting the generality of the foregoing, not to use such Confidential Information in connection with any other work performed by the Contractor either for itself or for any other person or entity;

(b) Not to reveal any Confidential Information to third parties (excepting disclosures to Subcontractor to the extent necessary for the performance of work under this Contract), and accordingly, without limiting the generality of the foregoing, not to supply any such Confidential Information to any prospective customer of the Contractor;

(c) To keep all such Confidential Information strictly secret and confidential and to that end, without limiting the generality of the foregoing, to cause all written material relating to or containing such Confidential Information, including all sketches, drawings, reports and notes, and all copies, reproductions, reprints and translations, to be plainly marked to indicate the secret and confidential nature thereof and to prevent unauthorized use or reproduction;

(d) To take reasonable precautions in order that the secrecy of such Confidential Information is preserved among the Contractor's employees having access to any portion of such Confidential Information, and to assume the responsibility that such employees will preserve the secrecy of such Confidential Information with respect to third parties; and

(e) Except as otherwise provided herein, to return all written material of the type described within this Subsection to the Authority.

The Authority specifically prohibits the photographing of any portion of the Work by the Contractor for publicity or advertising or for any other purpose without the written consent of the Authority.

The Contractor shall not release information on the Project or the subject matter of this Contract to the public without the written consent of the Authority. The Contractor shall not use the name or marks of the Authority without express written authorization by the Authority.

107.16 Equal Employment. The Contractor and all Subcontractors of any tier shall maintain employment policies as follows: the Contractor and all Subcontractors shall not discriminate against any employee or applicant for employment because of race, religion, color, sex, national origin, disability or age. The Contractor and all Subcontractors shall take affirmative action to ensure that applicants are employed, and that employees are treated during employment, without regard to their race, religion, color, sex, national origin, disability or age. Such policies shall be applicable to employment, upgrading, demotion or transfer, recruitment or recruitment advertisement, layoff or termination, rates of pay or other forms of compensation, and selection for training, including apprenticeship. The Contractor and each Subcontractor shall post in conspicuous places, available to employees and applicants for employment, notices setting forth its policies on non-discrimination. The Contractor and all Subcontractors shall, in all solicitations or advertisements for employees placed by them, or on their behalf, state that all qualified applications will receive consideration for employment without regard to race, religion, color, sex, national origin, disability or age.

107.17 Labor Relations. The Contractor shall perform the Work, whether at the Project site or elsewhere, at all times with a sufficient work force to carry out the Contractor's obligations in full force, in an efficient and timely manner, and in accordance with the agreed upon Project schedule. The Contractor shall only permit the Work to be performed by fully competent, skilled and responsible workers, all of whom shall work in harmony with other workers performing labor or services at the Project. The Contractor shall use its best efforts not to employ or permit the employment of any labor or sublet any portion of the Work to any Subcontractor if such employment or allocation is likely to cause strikes, work stoppages, delays, suspension of work or other interference with the smooth progress of the Work under the Contract Documents or other Work being performed on the Project by union or non-union labor. Should a labor dispute occur, the Authority shall have the right to initiate and maintain proceedings with any appropriate agency or administrative body or in any court of competent jurisdiction or to direct the Contractor to promptly take all such action as may be necessary or appropriate as a consequence of the labor dispute. If delay occurs as a result of such labor dispute, then the Contractor, to the fullest extent permitted by law, shall indemnify, defend and hold harmless the Authority from all claims, damages, losses and expenses (including reasonable attorneys' fees and disbursements) arising out of or resulting from the concerned labor dispute.

Further, upon the occurrence of a labor dispute which threatens adversely to affect the progress or cost of the Work, the Authority reserves the right (i) to suspend the Work of the Contractor or to direct the suspension of the Work of any Subcontractor of any tier or (ii) in the Authority's sole discretion and without prejudice to any other remedies it may have to terminate the Contract, or (iii) to direct the Contractor to terminate any subcontract, upon forty-eight (48) hours prior written notice to the Contractor. Such suspension or termination shall be deemed (i) in the case of any Subcontractor of any tier, to be for "cause" (whether or not the particular Subcontractor is directly involved in the concerned labor dispute) and (ii) in the case of the Contractor, to be for "cause" if the Contractor shall not have used reasonable care to avoid, terminate or control the labor dispute or is otherwise in default of its obligations hereunder. The Contractor shall cause the provisions of this subparagraph to be inserted in substantially the same form in all subcontracts to the end that the Authority and the Contractor shall have the rights herein set forth with respect to each Subcontractor of any tier.

107.18 Security. The Contractor will be required, at no cost to the Authority, to comply with current Authority Contractor Personnel and Vehicle Identification Card issuance/wear/display/turn-in policies. All Contractor personnel, including Subcontractors and materialmen, will be required to wear Authority-issued picture Contractor identification cards in a visible manner while working on Authority premises. In addition, Contractor's vehicles will be required to display in a visible and approved manner an Authority issued vehicle permit. At the conclusion of services rendered, all Authority-issued Contractor identification cards and vehicle permits must be turned back in to designated Authority personnel before final contract payment can be made. Liquidated damages of five hundred dollars (\$500.00) per Identification Card will be assessed for every Identification Card not turned in to the Authority upon request. All Contractor personnel and equipment are subject to search at any time while on the Authority's premises. The Contractor may be required to conduct security and background checks on its employees, Subcontractors and materialman if requested by the Authority.

The Contractor may be required, at no cost to the Authority, to comply with all of the Transportation Worker Identification Credential (TWIC) requirements pursuant to COMDTPUB 16700.40 Navigation and Vessel Inspection Circular 03-07 at all times while work is progressing on this Contract.

If TWIC regulations are applicable to the Project, the Authority will not be providing any TWIC escort services for work on the Contract. The Contractor will be required to submit a TWIC plan at the same time as the proposed project schedule is submitted. The TWIC plan must identify the total number of workers who will be performing work on this Contract and the number of TWIC card holders that will be required to maintain the appropriate TWIC ratio for the Contractor to perform its duties under the Contract unescorted. The Contractor will be required to submit a photocopy of the front side of the TWIC card for every person who will be required to have one while the Work is in progress. The Contractor will not be provided with the Notice to Proceed until the TWIC requirements have been received and approved by the Project Engineer.

The Contractor will be responsible for any and all fines incurred due to any and all violation(s) of the TWIC regulations by any and all of the Contractor's employees, agents or Subcontractors performing Work under this Contract.

Section 108 - Prosecution and Progress

- 108.01** Subletting of Contract
- 108.02** Notice to Proceed
- 108.03** Performance and Progress
- 108.04** Progress Schedules
- 108.05** Traffic Requirements and Contractor's Operations
- 108.06** Character of Workers and Equipment
- 108.07** Extension of Contract Time
- 108.08** Failure to Complete on Time
- 108.09** Schedule of Liquidated Damages
- 108.10** Default of Contract
- 108.11** Termination of Contract
- 108.12** Termination of Contractor's Responsibility

108.01 Subletting of Contract. Only the Awarded Contract Value and the value of subcontracted Work approved by the Authority will be used to compute the percentage of subcontracted Work.

The Contractor shall at all times and in all respects be the party primarily responsible to the Authority for the performance of the Contract. The Contractor shall not sell, transfer, assign or otherwise dispose of to anyone, his, her or its obligations to the Authority.

Except by special written consent of the Authority to do otherwise, the Contractor shall perform with his, her or its own organization and with the assistance of workmen under his, her or its immediate supervision, Work of a value of not less than thirty percent (30%) of the Awarded Contract Value for the Contract.

A Contract Award shall not be construed to be an approval of any subcontract, supply contract or any associated terms. The Subcontractor agrees, as a condition of entering into a subcontract on the Project, that he, she or it shall make no claim whatsoever against the Authority or its commissioners, officers, servants, agents or employees for any Work performed or thing done by reason of said subcontract or for any other cause whatsoever that may arise by reason of the relationship created between the Contractor and Subcontractor by the subcontract. The Authority will not consent to the making of any subcontract unless the proposed Subcontractor furnishes a statement to the effect that said Subcontractor is acquainted with all the provisions of the Contract and agrees thereto.

The Contractor shall, in all events, be responsible for all acts or omissions of any Subcontractor and shall be liable for all damage caused by the acts or omissions of any Subcontractor.

108.02 Notice to Proceed. Following the Contract execution, the Engineer may schedule a preconstruction meeting. Prior to the preconstruction meeting, the Contractor shall submit the progress schedule per Subsection 108.04. The Engineer will issue to the Contractor a Notice to Proceed which will stipulate the date on or before which the Contractor is expected to begin Work. The date specified in the Notice to Proceed will be at least ten (10) Calendar Days subsequent to the date of issuance of the Notice to Proceed. No Work is to be started before receipt of the Notice to Proceed. The specified Contract Time shall begin on the Day the Work actually starts or on the date stipulated in the Notice to Proceed, whichever is earlier.

108.03 Performance and Progress. The Contractor shall begin Work no later than the date stipulated in the Notice to Proceed.

Contract Time will begin as specified in Subsection 108.02 and continue each and every day shown on the calendar until the final acceptance by the Authority. Work shall be accomplished during the standard five (5) day work week, Monday through Friday, excluding Holidays, unless otherwise approved by the Engineer. Contractor shall submit a written request to the Engineer for approval to work on Saturdays, Sundays and/or Holidays. Such request shall be made at least three (3) weekdays prior to the Saturday, Sunday or Holiday for which permission to work is requested.

The Contractor shall be required to mobilize his, her or its forces and Equipment and schedule his, her or its work such that Work will be prosecuted on a full-time basis. If the Contractor is approved to work at night, then he, she or it shall supply lighting at no additional cost to the

Authority. The level of noise at night shall not exceed forty (40) decibels at the Authority's property line.

The Contractor's work schedule shall include all multiple shifts or weekend operations necessary to complete the Work on time. The schedule shall be submitted to the Authority for approval. If the Authority finds the schedule in conflict with operations or safety, the Contractor shall modify the schedule to concur with the Authority's directives.

The Contractor shall prosecute the Work with such forces, Materials and Equipment as the Authority considers necessary in order to complete the Work within the prescribed Contract Time. Whenever either the working force or the Equipment is, in the opinion of the Authority, inadequate or insufficient to insure completion within said Contract Time, the Authority may order the Contractor to correct the deficiency and the Contractor shall comply with such order.

The Work shall proceed to completion without interruption, except as provided in Subsection 104.07.

The Contractor shall be responsible for promptly reporting to the Authority any material omission or failure on the part of the Contractor, any Subcontractor or any supplier to meet its schedule for completion or to perform its duties or responsibilities in connection with the Project, as the same are observed by or otherwise become known to the Contractor. The Contractor shall also advise the Authority of any potential delays that may affect the ultimate completion of the Project on schedule, and shall make recommendations to the Authority, if necessary, as to the action to be taken to alleviate any potential delays.

108.04 Progress Schedules. The Contractor shall provide a Critical Path Method ("CPM") schedule (developed on scheduling software, such as Gantt, Primavera or other Authority approved scheduling software) showing the bar chart and the critical path for each of the individual items of the Contract. The CPM schedule shall show all major activities of Work and their relationships to each other. The CPM schedule shall be submitted to the Engineer within ten (10) Days of receipt of the fully executed Contract and a minimum of two (2) weeks before Work commences. The schedule shall show that the Work can be completed within the time allotted. If the schedule is rejected or needs to be revised, the Contractor shall have seven (7) Days to complete/submit a new schedule. A Notice to Proceed will not be issued until the Contractor's baseline CPM schedule is approved by the Engineer. The Contractor shall adhere to the schedule unless written approval is given by the Engineer.

The Contractor will be required to have a representative attend the Authority's weekly progress meetings to report on progress with respect to the schedule, including the Work completed and the Work remaining for the Contract. At these meetings, Work will be forecasted three weeks in advance.

For payment, an updated CPM schedule will be required on a monthly basis. Payment for the Contractor's Work will be predicated upon receipt of the updated schedule.

The Contract duration, prepared by the Authority, accounts for adverse weather days. The Contractor shall take into account adverse weather days as part of his, her or its CPM schedule(s) submission. The number of adverse weather days shall be clearly indicated in the Contractor's CPM schedule. No consideration for time extension shall be given for adverse weather.

An adverse weather day is defined as daily precipitation equal to or exceeding ¼ inch and/or maximum daily temperature not exceeding 32°F as reported by the New Castle Airport.

It is the Contractor's responsibility to provide the manpower, Materials and Equipment necessary to complete the Work in the prescribed time frame as directed in this Contract.

The Contractor's schedule shall reflect the Authority's concern regarding the duration of lane closure time for all areas. The Engineer's decision regarding the duration of each lane closure is final.

If the Contractor fails to submit his, her or its schedule on the dates set forth or does not adhere to the schedule (except for inclement weather or changes approved by the Engineer), the Authority will hire a consultant to produce a schedule as specified above and will deduct the cost from the monies due to the Contractor.

108.05 Traffic Requirements and Contractor's Operations. The Contractor shall conduct Work at all times in such a manner and in such sequence as will ensure the least interference with traffic. The Contractor shall give due regard to the location of detours and to the provisions for handling traffic. The Contractor shall not open up Work to the prejudice or detriment of Work already started, and the Engineer may require the Contractor to finish a section on which the Work is in progress before Work is started on any additional sections.

108.06 Character of Workers and Equipment. The Contractor shall employ only competent and efficient persons. Whenever, in the opinion of the Engineer, any employee is careless or incompetent, obstructs the progress of the Work, acts contrary to instructions of the superintendent or foreman, or conducts him or herself improperly, the Contractor shall, upon the request of the Engineer, discharge the employee from the Work and shall not again employ that person on the Contract or any other contract for the Authority, except with the written consent of the Engineer.

All machinery and Equipment owned or controlled by the Contractor that is proposed to be used by the Contractor on the Work shall be of sufficient size and capacity and such mechanical condition as to meet the requirements of the Work and to produce a satisfactory quality of Work. Equipment used on any portion of the Project shall be such that no injury to the Roadway, adjacent property or other highways results from its use.

Only equipment in good and proper working condition shall be used on the Project. Sufficient and adequate equipment shall be used to produce a satisfactory quality of work and to insure the completion of the Project within the time specified. The measure of the capacity and efficiency of machinery and Equipment shall be its actual performance on the Work. The Equipment shall be operated so as not to damage public or private property. When a specific type or character of Equipment is called for, it shall be provided and used. All Equipment shall be subject to the approval of the Authority.

If the Contractor or his, hers or its Subcontractors do not own all or part of the equipment required, a written statement shall be submitted by the Contractor or his, hers or its Subcontractors, respectively, containing the name and address of the owner or owners, stating that an agreement has been made to lease or loan the equipment and that in event of default, as set forth in Subsection 108.10, the Authority has the right to take over and use such equipment or cause it to be used for completing the Project.

When methods and/or Equipment to be used by the Contractor in accomplishing the construction are not prescribed in the Contract, the Contractor is free to use any methods and/or Equipment that it demonstrates to the satisfaction of the Engineer will accomplish the Contract Work in conformity with the requirements of the Contract.

When the Contract specifies that the construction be performed by the use of certain methods and/or Equipment, such methods and/or Equipment shall be used unless others are authorized by the Engineer. If the Contractor desires to use a method and/or type of Equipment other than those specified in the Contract, the Contractor may request authority from the Engineer to do so. The request shall be in writing and shall include a full explanation of the reasons for desiring to make the change. If approval is given, it will be on the condition that the Contractor will be fully responsible for producing construction Work in conformity with Contract requirements. If, after trial use of the substituted methods and/or Equipment, the Engineer determines that the Work produced does not meet the Contract requirements, the Contractor shall discontinue the use of the substitute method and/or Equipment and shall complete the remaining construction with the specified methods and/or Equipment.

The Contractor shall remove the deficient Work and replace it with Work of specified quality, or take such other corrective action as the Engineer may direct. No change will be made to the Unit Price for the Contract Items involved, or in Contract Time, as the result of authorizing a change in methods and/or Equipment under these provisions unless it is as a credit or a VEP.

All Equipment shall be subject to the approval of the Authority.

108.07 Extension of Contract Time. Extension of time(s) stipulated in the Contract for completion of the Project or portions thereof will be made if and as the Authority may deem proper, when such an extension of time is granted under the terms of a Change Order or Supplemental Agreement, when the Work is suspended as provided in Subsection 104.07, or when the Work of the Contractor is delayed on account of conditions, other than daily weather conditions, which in the opinion of the Authority warrant such extension; provided, however, that no extension on account of delay will be granted unless notice of such delay and of the Contractor's intention to claim an extension of time be given to the Authority, in writing, within seven (7) Calendar Days after the beginning of such delay, said notice giving complete information of the nature, cause and probable extent of the delay.

Extensions of time shall be binding only when issued in writing by the Authority.

No extension of time will be granted by reason of labor disputes to the extent that such disputes could reasonably have been avoided by appropriate scheduling of Subcontractors, trades or the like at the Project site, appropriate action for the establishment of multiple gating at the Project site, recourse to the NLRB or appropriate judicial action to restrain labor disturbances, or other control procedures normally employed by construction managers or Contractors in the management of "merit shop" projects in the state of Delaware.

No consideration for time extension shall be given for adverse weather.

108.08 Failure to Complete on Time. All work under the Contract shall be completed within the duration prescribed in the Special Provisions. In addition, interim completion requirements may also be given for various portions of the Work. The Contractor shall arrange to provide sufficient workmen, Equipment and Materials and to prosecute the Work in such sequence as

will insure completion thereof within the duration(s) stated. For each Calendar Day that Work remains uncompleted after the Contract Time has expired or beyond the completion date established by the Contract, the sum specified in Subsection 108.09 will be deducted from any money due the Contractor. This sum shall not be considered and treated as a penalty but as Liquidated Damages due the Authority by reason of inconvenience to the public, added cost of engineering and supervision, and other extra expenditures of public funds due to the Contractor's failure to complete the Work on time. Any adjustment of the Contract Time for completion of the Work granted under Subsection 108.07 will be considered in the assessment of Liquidated Damages. Each and every consecutive Calendar Day, including Saturdays, Sundays, and Holidays, shall be included in the computations for the assessment of Liquidated Damages.

The Contractor shall become liable for Liquidated Damages for delays commencing from the date on which the Contract Time, as adjusted by Subsection 108.07, shall expire.

Permission for the Contractor or Surety to continue and finish Work after the Contract Time and approved extensions have elapsed shall not waive the Authority's rights under the Contract.

The Authority may waive such portions of the Liquidated Damages as may accrue after the Work is substantially complete and is in a condition for safe and convenient use by the traveling public.

Payment of Liquidated Damages will be deducted from payments otherwise due the Contractor or be made by direct payment by the Contractor in the event the total Liquidated Damages due exceed said deductions.

The Contractor shall arrange to provide sufficient workmen, Equipment and Materials and to prosecute the Work in such sequence as will insure completion thereof within the time or times stated.

108.09 Schedule of Liquidated Damages. Liquidated Damages will be as defined in the contract Supplemental Specifications and/or the Special Provisions. In addition, Liquidated Damages of Five Hundred Dollars (\$500.00) per Identification Card will be assessed for every Authority issued Identification Card lost or not turned in to the Authority upon request or Contract closeout.

108.10 Default of Contract. The Contractor may be declared in default if, in the opinion of the Authority, any one or more of the following conditions is found to exist:

- A. The Contractor fails to begin the Work within the time specified in the Notice to Proceed.
- B. The Contractor fails to perform the Work at a satisfactory rate of progress or with sufficient labor, Equipment, and Material resources to ensure the prompt completion of the Work in accordance with the approved Schedule of Work.
- C. The Contractor's Work is unacceptable, or if the Contractor refuses to remove Materials or perform any such Work as shall be determined by the Engineer to be defective or otherwise unacceptable Work, or if the Contractor is willfully violating any of the covenants of the Contract.
- D. The Contractor discontinues the prosecution of the Work or fails to resume the Work which has been discontinued.

E. The Contractor becomes insolvent, declares bankruptcy, commits any acts of bankruptcy or insolvency, or allows any final judgment to stand unsatisfied for a period of more than forty-eight (48) hours.

F. The Contractor makes an assignment for the benefit of creditors without authorization by the Authority.

G. For any other cause whatsoever, fails to carry on the Work in a manner acceptable to the Authority.

In such event, the Executive Director will so certify to the Chairperson and the Chairperson may provide written notification to the Contractor and Surety declaring the Contractor in default on the Contract and notify the Contractor to discontinue the Project. The Chairperson may then call on the Surety to complete the Project or may complete it by other means as the Chairperson may elect. The Authority may take over any working site procured by the Contractor and may use Materials and Equipment at the site of the Project and other Equipment used elsewhere for the Project at the time of the default and may procure other Materials, Equipment and all else necessary for the completion of the Project. The Authority will recover the cost of finishing the Work of the original Contract, over and above the cost thereof at the original bid prices, by deducting the amount thereof from any monies due or which may become due the Contractor under the Contract and, when such monies are insufficient to pay said cost, the amount of said cost in excess of such monies shall be paid by the Contractor or the Surety.

108.11 Termination of Contract. The Authority may, by written order to the Contractor, terminate the Contract or any portion of the Contract when such termination would be in the best interest of the Authority. In the event such termination occurs without fault and for reasons beyond the control of the Contractor, all completed items as of the date of termination will be paid for at the applicable Unit Price. Payment for partially completed and eliminated Work will be paid for as provided in Subsection 109.06.

Acceptable Materials obtained by the Contractor for the Work but which have not been incorporated therein may, at the option of the Authority, be purchased from the Contractor at actual cost delivered to a prescribed location, or otherwise disposed of as mutually agreed.

After receipt of notice of termination from the Authority, the Contractor shall submit, within sixty (60) Days of the effective termination date, its claim for additional damages or costs not covered above or elsewhere in these Specifications. Such claim may include such cost items as reasonable idle equipment time, mobilization efforts, uncompensated bidding and project investigation costs, overhead expenses attributable to the Project terminated, legal and accounting charges involved in claim preparation, Subcontractor costs not otherwise paid for, actual idle labor costs if work is stopped in advance of the termination date, guaranteed payments for private land usage as part of the original Contract, and any other cost or damage item for which the Contractor feels reimbursement should be made. The intent of negotiating this claim would be that an adjusted figure be reached with the Contractor. In no event, however, will loss of anticipated profits be considered as part of any settlement.

The Contractor agrees to make its cost records available to the extent necessary to determine the validity and amount of each item claimed.

Termination of the Contract or any portion thereof shall not relieve the Contractor of its contractual responsibilities for the Work completed, nor shall it relieve the Surety of its obligation for and concerning any just claim arising out of the Work performed.

108.12 Termination of Contractor's Responsibility. When all of the Work included in the Contract has been finally accepted by the Authority, the Contractor shall be released from all further obligations and responsibility except as set forth and provided in Subsection 105.20, Subsection 107.03, Subsection 107.10, Subsection 107.14, Subsection 109.09 and any applicable provisions in the Special Provisions.

Section 109 - Measurement and Payment

109.01 Measurement of Quantities

109.02 Scope of Payment

109.03 Compensation for Altered
Quantities

109.04 Payment for Differing Site
Conditions, Major Changes, Extra
Work and Force Account

109.05 Basis of Payment for Fixed
Quantity Items

109.06 Eliminated Items

109.07 Partial Payment

109.08 Payment for Material

109.09 Retainage of Funds

109.10 Final Payment

109.11 Source of Supply and Carrier Rates
on Construction Materials

109.12 (Intentionally Omitted)

109.13 (Intentionally Omitted)

109.01 Measurement of Quantities. Work completed under the Contract will be measured by the Engineer according to the United States customary units (English units).

Unless stated otherwise, all Material that is to be measured by weight shall be measured as follows:

- A. The weight of each load shall be determined by weighing each loaded truck or other approved hauling equipment and then deducting the tare weight of the truck or hauling equipment. The tare weight shall be checked once daily, or as often as directed by the Engineer. Appropriate adjustments shall be made in the use of the tare weight as directed by the Engineer. Weight tickets shall be computer generated.
- B. The scale platform shall be of such length and width that it will conveniently accommodate all trucks and other approved hauling equipment. The entire vehicle, including its load, must rest on the scale platform and be weighed as one unit.
- C. Scales will be certified by the State sealer of weights and measures.
- D. Weight tickets showing a net weight of each load of Material delivered to the Project will be signed by an Inspector.

A station when used as a definition or term of measurement will be one hundred (100) linear feet.

Areas of Work shall be measured in the field based on the Work actually completed. No payment will be made for Work beyond the Limits of Construction or limits of disturbance as prescribed in the Contract. All longitudinal measurements for area of pavement will be made along the actual surface of pavement and not horizontally, unless otherwise specified.

Unless otherwise specified, when measuring areas no deductions will be made for individual fixtures (such as manholes, utility poles, etc.) having an area of nine (9) square feet or less.

Structures shall be measured according to neat lines shown in the Contract.

In computing volumes of excavation or embankment, the average end area method will be used.

For items measured by linear foot, such as pipe, culverts, guardrails, underdrains, etc., take measurements parallel to the base or foundation upon which such structures are placed.

The term "ton" means the short ton consisting of 2000 pounds avoirdupois. The Contractor shall weigh all Material measured by weight or proportioned by weight on accurate, approved scales using competent, qualified personnel at locations designated by the Engineer. If Materials are shipped by rail, the car weight may be

accepted, provided that only the actual weight of Materials is paid for. However, car weights will not be acceptable for Material to be passed through mixing plants. Trucks used to haul Material being paid for by weight shall be weighed empty daily at such times as the Engineer directs, and each truck shall bear a plainly legible identification mark.

When requested by the Contractor and approved by the Engineer in writing, Material specified to be measured by the cubic yard may be weighed and such weights will be converted to cubic yards for payment purposes. Factors for conversion from weight measurement to volume measurement will be determined by the Engineer and shall be agreed to by the Contractor before such method of measurement of pay quantities is used.

Bituminous materials will be measured by the gallon.

Volumes will be measured at 60°F or will be corrected to the volume at 60°F using ASTM D 1250 for asphalt or ASTM D 633 for tars.

When bituminous materials are shipped by truck or transport, net certified weights or volume subject to correction for loss or foaming may be used for computing quantities.

Cement will be measured by the pound.

Unless otherwise specified, timber will be measured by the actual thousand feet board measure (MFBM) incorporated into the structure.

When a complete structure or structural unit (in effect, "Lump Sum" Work) is specified as the unit of measurement, the unit will be construed to include all necessary fittings and accessories.

When standard manufactured items are specified such as fence, wire, plates, rolled shapes, pipe conduit, etc., and these items are identified by unit weight, section dimensions, etc., such identification will be considered to be nominal weights or dimensions. Unless more stringently controlled by tolerances in cited specifications, manufacturing tolerances established by the industries involved will be accepted.

In computing tonnage, certified freight weigh-bills or certified weigh-slips will be used.

Measurement of other quantities not covered by the above requirements will be determined by the Engineer in accordance with recognized engineering practice.

When the Project is completed, the authorized quantities of the various items scheduled in the Contract and placed in the Project will be measured. When these quantities are greater or less than the corresponding estimated quantities stated in the Bid, Change Orders will be issued by the Authority to cover the difference between estimated and actual quantities and no payment will be made for work done in excess of the quantities stated in the Bid until such Change Orders have been issued and approved.

109.02 Scope of Payment. The Contractor shall receive and accept compensation provided for in the Contract as full payment for furnishing all Materials and for performing Work under the Contract in a complete and acceptable manner and for all risk, loss, damage, or expense of every kind arising out of the nature of the Work or the performance thereof, and for any additional expenses on account of unforeseen difficulties encountered, for all expenses incurred in consequence of the suspension or discontinuance of the Work, for settlement of claims and for replacement of defective Work and Materials for one (1) year after acceptance of the Project by the Authority as provided in Subsection 105.20 and subject to the provisions of Subsection 107.13.

If the "Basis of Payment" clause relating to any Unit Price in the Contract requires that the Unit Price cover and be considered compensation for certain Work or Materials essential to a Contract Item, this same Work or Material will not be measured or paid for under any other Pay Item appearing in the Contract.

Under any section or item included in the Contract, the Contractor shall be aware that when requirements, responsibilities, and furnishing of Materials are outlined in the details and notes on the Plans and in the paragraphs preceding the "Basis of Payment" paragraph in these Specifications, no interpretation shall be made that there is an exclusion from payment because reiteration is not made in the "Basis of Payment" paragraph.

The Contractor shall execute Contractor's Release of Liens and a Maintenance Bond and submit executed documents before final payment is made.

109.03 Compensation for Altered Quantities. When the accepted quantities of Work vary from the quantities in the Contract, the Contractor shall accept payment at the original Contract Unit Prices for the accepted quantities of Work done. No allowance will be made for any increased cost, except as provided in Subsections 104.05, 104.06, 104.07, and 108.11.

109.04 Payment for Differing Site Conditions, Major Changes, Extra Work, and Force Account. Differing site conditions, changes, and extra Work performed under Section 104 will be paid for using the following methods as appropriate:

- A. Contract Unit Prices.
- B. Unit Prices agreed upon in the Change Order authorizing the Work.
- C. A lump sum amount agreed upon in the Change Order authorizing the Work.
- D. If directed by the Authority, Work performed on a Force Account basis is to be compensated in the following manner, except as further provided in Subsection 105.21:

- 1. Labor. For all necessary labor and foremen in direct charge of the specific operations, whether the employer is the Contractor, Subcontractor, or another entity, the Contractor shall receive the rate of wage (or scale) actually paid as shown in its certified payrolls for each and every hour that said labor and foremen are actually engaged in

such Work, but excluding wages and salaries paid to other personnel engaged in superintendence of the Work.

The Contractor shall receive the actual costs paid to, or on behalf of, workers by reason of health and welfare benefits or other benefits, when such amounts are required by collective bargaining agreements or other employment contracts generally applicable to the classes of labor employed in the Work.

2. Bond, Insurance, and Tax. For bond premiums, property damage, liability, and workers compensation insurance premiums, unemployment insurance contributions, and social security taxes on the Force Account Work, the Contractor shall receive the actual incremental cost thereof, necessarily and directly resulting from the Force Account Work. The Contractor shall furnish satisfactory evidence of the rate or rates paid for such bond, insurance, and tax.
3. Materials. The Authority reserves the right to furnish such Materials as it deems advisable, and the Contractor shall have no claims for costs and markup on such Materials.

Only Materials furnished by the Contractor and necessarily used in the performance of the Work will be paid for. The cost of such Materials shall be the cost to the purchaser, whether Contractor, Subcontractor, or other forces from the supplier thereof, together with transportation charges actually paid by the purchaser, except as the following are applicable:

- a. If a cash or trade discount by the actual supplier is offered or available to the purchaser, it shall be credited to the Authority notwithstanding the fact that such discount may not have been taken.
- b. If Materials are procured by the purchaser by any method which is not a direct purchase from a direct billing by the actual supplier to such purchaser, the cost of such Materials is the price paid to the actual supplier as determined by the Engineer plus the actual costs, if any, incurred in the handling of such Materials.
- c. If the Materials are obtained from a supply or source owned wholly or in part by the purchaser, the cost of such Materials shall not exceed the price paid by the purchaser for similar Materials furnished from said source on items or the current wholesale price for such Materials delivered to the job site, whichever price is lower.
- d. If the cost of such Materials is, in the opinion of the Engineer, excessive, then the cost of such material is deemed to be the lowest current wholesale price at which such Materials are available in the quantities concerned delivered to the Project site, less any discounts as provided in subpart D.3.a. above.

e. If the Contractor does not furnish satisfactory evidence of the cost of such Materials from the actual Supplier thereof, the cost will be determined in accordance with subpart D.3.d. above.

f. For all Materials not incorporated into the permanent construction but necessarily involved in the performance of the Work, the Contractor shall receive an amount equal to the actual cost of such Materials, less a reasonable allowance for the salvage value of such Materials when they are no longer required for the performance of the Work. (Fuels and lubricants consumed by Equipment shall be included in the Rental Value and Rental Costs described below.)

4. Equipment and Plant.

a. Contractor-Owned Equipment and Plant. The hourly rates for Contractor-owned Equipment and plant will be determined from the applicable volume of the Blue Book.

The Blue Book will be used in the following manner:

1. The hourly rate will be determined by dividing the monthly rate by 176. The weekly, hourly, and daily rates will not be used.
2. The number of hours to be paid will be the number of hours that the Equipment or plant is actually used on a specific Force Account activity.
3. The current revisions will be used in establishing rates. The current revision applicable to specific Force Account Work is as of the first day of Work performed on that Force Account Work, and such rate applies throughout the period the Force Account Work is being performed.
4. An area adjustment will be made. Equipment life adjustment will be made in accordance with the rate adjustment tables. Overtime shall be charged at the same rate indicated in (1) above.
5. The estimated operating costs per hour will be used for each hour that the Equipment or plant is in operation on the Force Account Work. Such costs do not apply to idle time regardless of the cause of the idleness.
6. Idle time for Equipment will not be paid for, except where the Equipment has been held on the Project site on a standby basis at the request of the Engineer and, but for this request, would have left the Project site. Such payment will be made at one-half the rate established in subparts D.1. and D.4. above.

7. The rates established above include the cost of fuel, oil, lubrication, supplies, small tools, necessary attachments, repairs, overhaul and maintenance of any kind, depreciation, storage, overhead, profits, insurance, and all incidentals.
8. Operator costs are not included in this hourly rate for the Equipment.

All Equipment shall, in the opinion of the Engineer, be in good operating condition. Equipment used by the Contractor shall be specifically described and be of suitable size and suitable capacity required for the Work to be performed. In the event the Contractor elects to use Equipment of a higher rental value than that suitable for the Work, payment will be made at the rate applicable to the suitable Equipment. The Engineer will determine the suitability of the Equipment. If there is a differential in the rate of pay of the operator of oversize or higher rate Equipment, the rate paid for the operator is to be that for the suitable Equipment.

In the event that a rate is not established in the Blue Book for a particular piece of Equipment or plant, the Engineer will establish a rate for that piece of Equipment or plant that is consistent with its cost and use in the industry.

The above provisions apply to the Equipment and plant owned directly by the Contractor or by entities which are divisions, affiliates, subsidiaries, or in any other way related to the Contractor or its parent company.

- b. Rented Equipment and Plant. In the event that the Contractor does not own a specific type of Equipment and must obtain it by rental, the Contractor shall inform the Engineer of the need to rent the Equipment and of the rental rate for that Equipment prior to using it on the Work. The Contractor will be paid the actual rental rate for the Equipment for the time that the Equipment is actually used to accomplish the Work, provided that rate is reasonable, plus the cost of moving the Equipment on to and away from the job. The Contractor shall provide a copy of the paid receipt or canceled check for the rental expense incurred.
5. Miscellaneous. No allowance will be made for general superintendence, the use of small tools, or other costs for which no specific allowance is herein provided.

6. Profit. Profit shall be computed at five percent (5%) of the following:
 - a. Total Material cost (bare cost not including shipping or freight charges).
 - b. Total direct labor cost (actual hours worked multiplied by regular hourly rate and benefits), as provided by Subsection 109.04 subpart D.1.
7. Overhead. Overhead is defined to include the following:
 - a. All salaries and expenses of executive officers, supervising officers, or supervising employees and all home office expenses;
 - b. All salaries of clerical or stenographic employees;
 - c. All charges for minor Equipment, such as small tools, including shovels, picks, axes, saws, bars, sledges, lanterns, jacks, cables, pails, wrenches, and other miscellaneous supplies and services; and
 - d. All drafting room accessories such as paper, tracing cloth, and blueprinting.

Overhead costs for Force Account Work shall be computed at ten percent (10%) of the following:

- e. Total Material cost (bare cost not including shipping or freight charges).
 - f. Total direct labor cost (actual hours worked multiplied by the regular hourly rate) and benefits as provided by Subsection 109.04 subpart D.1.
 - g. Total Equipment cost.
 - h. Specific extraordinary overhead expenses, such as the hiring of additional supervisory personnel or the use of special types of minor Equipment (as defined above), which the Contractor has to purchase specifically for the Force Account, may be allowed. In such instances, the Contractor will be paid only the reasonable costs of such extraordinary overhead expenses, provided the Engineer has agreed to such costs prior to their being incurred.
8. Subcontracting. For administration costs in connection with approved subcontract Work, the Contractor shall receive an amount equal to five percent (5%) of the total of such Work completed as set forth in subparts D.1. through D.4. above.
 9. Records. The Contractor shall maintain Force Account records in such a manner as to provide a clear distinction between the direct

costs of Work paid for on a Force Account basis and the costs of other operations.

From the above records, the Contractor shall furnish the Engineer completed daily Force Account Work reports for each day's Work to be paid for on a Force Account basis. Said daily Force Account Work reports shall be signed by the Contractor and submitted daily. The daily Force Account Work reports shall be detailed as follows:

- a. Name, classification, date, daily hours, total hours, rate, and extension for each laborer and foreman.
 - b. Designation, dates, daily hours, total hours, rental rate (including a copy of the Blue Book pages used), and extension for each unit of machinery and Equipment.
 - c. Quantities of Materials, prices, and extensions.
 - d. Transportation of Materials.
 - e. Cost of property damage, liability, and workers compensation insurance premiums; unemployment insurance contributions; bonds; and social security tax.
10. Welfare and Pension Fund (if any). The actual additional amount of contributions paid by the Contractor for the welfare and pension fund of his, her or its employees.
11. Tolls. The actual cost of tolls paid for the Contractor's vehicles necessarily employed in the performance of the Work. Tolls for employees' personal vehicles will not be reimbursed.

Material charges shall be substantiated by valid copies of Supplier invoices. Such invoices shall be submitted with the daily Force Account Work reports or, if not available, they shall be submitted with subsequent daily Force Account Work reports. Should said Supplier invoices not be submitted within sixty (60) Days after the date of delivery of the Material, or within fifteen (15) Days after the completion of the Work, whichever occurs first, the Authority reserves the right to establish the cost of such Materials at the lowest current wholesale prices at which said Materials are available in the quantities concerned and delivered to the location of the Work, less any discounts provided in Subsection 109.04 subpart D.3.a.

The Engineer will compare its records with the completed daily Force Account Work reports furnished by the Contractor and make any necessary adjustments. When these daily Force Account Work reports are agreed upon and signed by both parties, said reports become the basis of payment for the Work performed, but do not preclude subsequent adjustment based on a later audit by the Authority.

The Contractor's cost records pertaining to Work paid for on a Force Account basis

shall be open to inspection or audit by representatives of the Authority as provided in Subsection 105.19 subpart J.

109.05 Basis of Payment for Fixed Quantity Items. When indicated on the Plans or in the Supplemental Specifications or Special Provisions, certain items will be paid for on an estimated fixed quantity item basis. Where this occurs, the method of measurement and basis of payment indicated in these Specifications for such items are deleted.

When estimated fixed quantities are indicated, the only quantities for which payment will be made are the estimated quantities as shown in the Bid at the Unit Prices bid.

The Bidder should check the estimates and make its own appraisal of the amount of labor, Equipment, or Material required to complete the Work in accordance with the Plans and Specifications. No allowance will be made or claims considered for any quantities used in completing the Work in excess of those given in the Bid unless changes due to conditions encountered during construction become necessary and are authorized in writing by the Engineer. In such cases additions or deductions will be made to or from the Bid quantities for the actual volume or amounts charged, with payment adjusted in accordance with the Unit Price of the Contract Item.

If estimated fixed quantity items are deleted completely, no payment will be made.

In cases where a fixed quantity is contested by the Contractor, it shall be the responsibility of the Contractor to provide necessary measurements and computations to support a change in the quantity. If the change is verified and approved by the Engineer, payment will be adjusted in accordance with this Subsection.

In cases where it can be shown that the quantities indicated in the Bid are in error by more than five percent (5%), additions or deductions will be made in excess of or deficient of the five percent (5%), with payment adjusted in accordance with the Unit Price of the item.

109.06 Eliminated Items. Should any items contained in the Contract be found unnecessary for the completion of the Work, the Engineer may, upon written order to the Contractor, eliminate the items from the Contract. The elimination of these items shall not invalidate the Contract. When the Contractor is notified of the elimination of items, the Contractor will be reimbursed for the actual Work done and all actual costs incurred. Reimbursement of Materials actually purchased prior to notification of the elimination of items will be paid for at the actual cost of the Materials plus fifteen percent (15%). Such Materials shall become the property of the Authority. In no event will reimbursement for an eliminated item exceed the extended amount of the Contract Item. Also, in no case will the Contractor be reimbursed for the loss of anticipated profit.

109.07 Partial Payment. Once in each month, the Authority will prepare a certificate showing the approximate quantities of Work done and all Materials furnished but not

incorporated in the Work, up to the date of such certificates and the value of such Work and such Materials. The Authority will retain ten percent (10%) of the value of such Work and twenty percent (20%) of the value of such Materials as security for the fulfillment of the Contract by the Contractor until the completion of the Contract and the Authority will pay monthly to the Contractor while carrying on the Work, the balance not retained as aforesaid after deducting therefrom all previous payments. Provided that the Work is proceeding satisfactorily on the basis of approved construction schedules, the total amount retained in connection with the Work done shall not exceed five percent (5%) of the total value of the Contract; the amount retained in connection with Materials furnished but not incorporated in the Work shall in all cases be twenty percent (20%) of the value of such Materials.

The value of Materials furnished but not incorporated in the Work shall be as determined by the Authority and such value will be included in the monthly certificates only if the Materials have been delivered at or near the site of the Work or in a location approved by the Authority, are properly stored and protected, and have been inspected and approved, and the Contractor has furnished the Authority with satisfactory releases of liens for said Materials.

If it becomes evident, on the basis of approved progress schedules or otherwise, that the completion date for the Contract will not be met, the Authority reserves the right to retain ten percent (10%) of the value of the Work done throughout the entire Contract period and to make additional retention in the amount of the Liquidated Damages which have apparently accumulated.

When the Work of the Contract is being satisfactorily carried to completion within the prescribed time and is substantially completed, the Authority may, in its discretion, reduce the retainage below the amounts set forth above.

The Authority shall have the right to retain out of monies due or to become due the Contractor any amounts claimed by the Authority to be due the Authority from the Contractor, which retainage shall be in addition to any retainage set forth elsewhere.

In the event of any conflicting claim or claims about the right to receive payments which may be or become due from the Authority under the terms of the Contract, the Authority may withhold any or all payments until such dispute or disputes be finally resolved in accordance with Subsection 105.17.

The Authority shall have the right to withhold from monies due or to become due the Contractor an amount sufficient to completely indemnify the Authority against liability resulting from any claims against the Contractor or any Contract claim filed with the Authority.

When the Work is suspended as provided in Subsection 104.07, a semi-final certificate may be made at the discretion of the Engineer. This certificate will show the cost of the Work completed and the estimated cost to complete the Work, based on the Unit Prices bid and the quantities scheduled in the Bid as amended by Change Orders, if any, except that for such parts of the Work that are not fully completed at the time of

suspension of the Work and for that reason are not susceptible to any estimate of cost as above provided, the estimated cost to complete will be determined by the Engineer. When the semi-final certificate is approved, payment will be made to the Contractor in the sum of the cost of the Work completed, after deduction of previous monthly payments on account and deduction of twenty-five percent (25%) of the estimated cost to complete the Work determined, provided, however, that before said payment is made, the following requirements shall be satisfied:

- (a) There shall be no outstanding claims against the Contractor filed with the Authority;
- (b) The Contractor shall have paid all due obligations and shall have furnished, when directed by the Authority, receipted bills or other satisfactory evidence that all obligations incurred by him, her or it and by his, her or its Subcontractors in carrying out the Project have been satisfied;
- (c) The Contractor shall have delivered a bond as specified in Subsection 105.20; and
- (d) The Contractor shall execute and deliver a release substantially in the following form:

“In consideration of the above payment, (I) (we) hereby release The Delaware River and Bay Authority and its officers, agents and employees from all claims, demands and liability of whatsoever nature for anything done or furnished or in any manner growing out of the performance of the Project, except that it is understood that credit will be given in the final certificate for the amount covering twenty-five percent (25%) of the estimated cost to complete the Work, which has been deducted in the semi-final certificate.”

The acceptance by the Contractor of payment of any semi-final certificate shall operate as and shall be a release to the Authority and its agents from all claims of, or liability to, the Contractor for anything done or furnished for or relating to the Project or any act or neglect of the Authority or any person relating thereto, except for the credits specified in the release form hereinabove set forth and except that the Contractor has the right and is obligated to continue and complete the Project when notice to resume has been received by him, her or it.

109.08 Payment for Material. When approved by the Authority, partial estimates may include an allowance for the value of tested and acceptable Materials of a non-perishable or non-contaminative nature which have been produced or furnished in a condition ready for incorporation as a permanent part of Work yet to be completed, provided the following terms and conditions are met:

A. Request. The request for payment allowance for properly stored Materials must be in writing, accompanied by an itemized inventory statement, written consent of the Surety, and an invoice or purchase order on the Supplier's letterhead documenting the cost of the Materials.

B. Materials. An allowance of eighty percent (80%) of the cost to the Contractor for Materials may be made when such material is delivered and stockpiled or stored in accordance with the requirements specified herein.

Prior to such allowance, all such Material shall have been tested and found acceptable to the Engineer.

Payment shall not be allowed in excess of the quantity required for the Contract. The required quantity shall be based on the Contract bid quantities and approved revisions.

C. Excluded Materials. No allowance shall be made for fuels, form lumber, false-work, temporary structures, or for other Materials of any kind which will not become an integral part of the finished construction.

No allowance shall be made for cement, aggregate, sand, seed, plants, fertilizer, or other perishable or contaminative items, nor for Materials which, in the opinion of the Engineer, have an unacceptable shelf life, environmental, or safety restriction.

D. Storage. All Materials shall be stored in an approved manner and in areas where damage is not likely to occur. The Material stored shall be dedicated to the Project.

When it is determined impractical to store Materials within the limits of the Project, the Engineer may approve the storage of Materials on private property or, for structural members, in the manufacturer's or fabricator's yard. Requests for payment for such Material stored outside the limits of the Project shall be accompanied by a release from the owner and/or tenant of such property or yard agreeing to permit the removal of the Materials from the property without cost to the Authority.

E. Materials Inventory. Materials shall be available for inspection and inventory at the storage site by the Engineer at all times.

F. Materials Measurement and Payment. The method of measurement for Materials shall be in units which are easily inventoried and acceptable to the Engineer. Payment allowance for Materials shall be included in the progress estimate as a new and separate item and shall be subject to retainage provisions. Submit proof of payment to the Engineer prior to processing the next progress estimate in the form of a paid invoice from the Material Supplier. Failure to submit proof of payment prior to the processing of the progress payment will result in the deduction of the applicable Material payment, in its entirety, from progress payments until such time as the proof of payment is received by the Engineer. As the Materials are incorporated in the Project and paid for in place, an equal percentage shall be deducted from progress estimates until one hundred percent (100%) of the allowance has been deducted. At the conclusion of the Work for which the Materials are required, the cost of Materials remaining in storage for which payment allowance has been made will be deducted from the progress estimate.

109.09 Retainage of Funds. Whenever Liquidated Damages are assessable, such damages shall be deducted from the monthly and final estimates. The payment of

any current or final estimate or of any retained percentage shall in no way affect the obligation of the Contractor to repair or renew any defective parts of the construction and to be responsible for all damage due to such defects.

If at any time there is evidence of any lien or claim for which, if established, the Authority might become liable and which is chargeable to the Contractor, the Authority shall have the right to retain out of any payment then due or to become due an amount sufficient to completely indemnify the Authority against such lien or claim. If there should prove to be any such claim after all payments are made, the Contractor shall refund to the Authority all monies that the Authority may be compelled to pay in discharging any lien made obligatory in consequence of the Contractor's neglect or default.

No provision contained in these Specifications shall be construed as creating any debt, liability or obligation on the part of the Authority to any Subcontractor, Supplier, or materialman.

109.10 Final Payment. When all Work required under the Contract has been completed and, in the opinion of the Engineer, is ready for final acceptance by the Authority, a final certificate of cost of the Project will be made by the Authority, based on the actual as-built quantities of authorized Work done under each item scheduled in the Contract (as may have been amended by Change Orders and Supplemental Agreements, if any) at the Unit Price or prices stipulated therein.

When this final certificate is approved, the money due the Contractor for the performance of the Project as determined by said final certificate, after deduction of previous payments on account, will be paid the Contractor, provided however, that before such final payment is made, the following requirements shall be satisfied:

- (a) There shall be no outstanding claims against the Contractor filed with the Authority;
- (b) The Contractor shall have paid all due obligations and shall have furnished, when directed by the Authority, receipted bills or other satisfactory evidence that all obligations incurred by the Contractor and by their Subcontractors in carrying out the Project have been satisfied;
- (c) The Contractor shall have delivered a bond as specified in Subsection 105.20; and
- (d) The Contractor shall execute and deliver a final release substantially in the following form:

"This is to certify that all just liens, claims and demands for labor, Materials and rental of Equipment arising out of the prosecution of the Work under the above-named Contract are fully paid and satisfied and that all of the Work is fully released, freed and discharged from all liens, claims and demands whatsoever, whether just or otherwise of any contractors, subcontractors, materialmen, suppliers, laborers, artisans or architects.

In consideration of the final payment of said Contract, we hereby remise, release and forever discharge The Delaware River and Bay Authority, its commissioners, officers, representatives, employees, agents and servants from all and all manner of actions and cause of actions, suits, debts, accounts, bonds, covenants, contracts, agreements, judgments, liens, demands and liability of whatever nature in law and in equity from anything done or furnished or in any manner growing out of the doing of the Work under this contract, including any and all extra or reduction orders issued thereunder and any agreements supplementary thereto, and anything whether known or unknown, suspected or unsuspected or which we ever had, now have or which our heirs, executors, administrators, successors or assigns shall or may have; and we hereby agree to indemnify and hold harmless The Delaware River and Bay Authority against any and all claims which hereafter may be made or instituted against it by any contractors, subcontractors, materialmen, suppliers, laborers, artisans or architects for the purpose of enforcing a lien, claim or demand arising out of the prosecution of the Work under the above-named contract.”

- (e) The Contractor shall provide the Authority with a list of Subcontractors, materialmen, Suppliers, laborers, artisans or architects who have provided labor, material or services on the credit of the job and as a condition of final payment shall provide the Authority with a sworn, notarized statement by an authorized officer of each Subcontractor, laborer, artisan or architect attesting and certifying that it has been paid all monies due and owing from the contractor and does remise, release and forever discharge the Authority from any and all manner of action, suits, proceedings, deeds, dues, contracts, judgments, damages, claims and demands whatsoever in law and equity arising from said Contract and specifically any right to file a statutory mechanics’ lien. In the case of any person who has filed a mechanics’ lien, the Contractor shall be required to provide a “Discharge of Construction Lien Claim” executed and sworn to and acknowledged under oath by the lien claimant prior to receiving final payment. A form of “Release of Mechanics’ Lien” and a form of “Discharge of Construction Lien Claim” will be provided by the Authority to the Contractor at the time final payment is requested by the Contractor.

Compliance with the provisions of this subparagraph (e) is a matter of administrative convenience. It is the Authority’s position that the property of the Authority, as an agency of the States of Delaware and New Jersey, is not subject to the filing of statutory mechanics’ liens.

The acceptance by the Contractor of payment of the final certificate shall operate as and shall be a release to the Authority and its agents from all claims of or liability to the Contractor for anything done or furnished or omitted to be done, or furnished for or relating to, the Project or any act or neglect of the Authority or any person relating thereto.

109.11 Source of Supply and Carrier Rates on Construction Materials. Bidders must fully inform themselves as to the source of supply of acceptable Materials needed for the Work and in regard to the carrier rates and transportation facilities for these Materials before submitting Bids.

Inability to secure satisfactory Materials from the source upon which the Bid was based, or changes in carrier, or the alteration of transportation facilities for these Materials during the life of the Contract, shall not constitute cause for a claim for extra compensation.

109.12 (Intentionally Omitted)

109.13 (Intentionally Omitted)

DELAWARE RIVER AND BAY AUTHORITY

DELAWARE AIRPARK

CONTRACT NO. 33N-24-A

CONSTRUCT BOX HANGAR

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SPECIAL PROVISIONS

PART II.I –FAA GENERAL PROVISIONS

The following clauses represent general provisions which shall be added to Division 100 – General Provisions of the Delaware River and Bay Authority Standard Specifications for Road and Bridge Construction, December 15, 2014. In a case of conflicting requirements, this Part II.II shall govern over:

- (i) Division 100 – General Provisions of the Delaware River and Bay Authority Standard Specifications for Road and Bridge Construction, dated December 15, 2014; and
- (ii) Part I of the Special Provisions provided herein; and

Any applicable provision set forth in the Delaware River and Bay Authority Standard Specifications for Road and Bridge Construction, Division 100, not modified by or in conflict with the Special Provisions of Parts I-II.II, shall be understood to remain in full force and effect.

Located in the CapEx Project File

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Part 1 – General Contract Provisions

Section 10 Definition of Terms

When the following terms are used in these specifications, in the contract, or in any documents or other instruments pertaining to construction where these specifications govern, the intent and meaning shall be defined as follows:

Paragraph Number	Term	Definition
10-01	AASHTO	The American Association of State Highway and Transportation Officials.
10-02	Access Road	The right-of-way, the roadway and all improvements constructed thereon connecting the airport to a public roadway.
10-03	Advertisement	A public announcement, as required by local law, inviting bids for work to be performed and materials to be furnished.
10-04	Airport	Airport means an area of land or water which is used or intended to be used for the landing and takeoff of aircraft; an appurtenant area used or intended to be used for airport buildings or other airport facilities or rights of way; airport buildings and facilities located in any of these areas, and a heliport.
10-05	Airport Improvement Program (AIP)	A grant-in-aid program, administered by the Federal Aviation Administration (FAA).
10-06	Air Operations Area (AOA)	The term air operations area (AOA) shall mean any area of the airport used or intended to be used for the landing, takeoff, or surface maneuvering of aircraft. An air operation area shall include such paved or unpaved areas that are used or intended to be used for the unobstructed movement of aircraft in addition to its associated runway, taxiway, or apron.
10-07	Apron	Area where aircraft are parked, unloaded or loaded, fueled and/or serviced.
10-08	ASTM International (ASTM)	Formerly known as the American Society for Testing and Materials (ASTM).
10-09	Award	The Owner's notice to the successful bidder of the acceptance of the submitted bid.
10-10	Bidder	Any individual, partnership, firm, or corporation, acting directly or through a duly authorized representative, who submits a proposal for the work contemplated.

Paragraph Number	Term	Definition
10-11	Building Area	An area on the airport to be used, considered, or intended to be used for airport buildings or other airport facilities or rights-of-way together with all airport buildings and facilities located thereon.
10-12	Calendar Day	Every day shown on the calendar.
10-13	Certificate of Analysis (COA)	The COA is the manufacturer's Certificate of Compliance (COC) including all applicable test results required by the specifications.
10-14	Certificate of Compliance (COC)	The manufacturer's certification stating that materials or assemblies furnished fully comply with the requirements of the contract. The certificate shall be signed by the manufacturer's authorized representative.
10-15	Change Order	A written order to the Contractor covering changes in the plans, specifications, or proposal quantities and establishing the basis of payment and contract time adjustment, if any, for work within the scope of the contract and necessary to complete the project.
10-16	Contract	<p>A written agreement between the Owner and the Contractor that establishes the obligations of the parties including but not limited to performance of work, furnishing of labor, equipment and materials and the basis of payment.</p> <p>The awarded contract includes but may not be limited to: Advertisement, Contract form, Proposal, Performance bond, payment bond, General provisions, certifications and representations, Technical Specifications, Plans, Supplemental Provisions, standards incorporated by reference and issued addenda.</p>
10-17	Contract Item (Pay Item)	A specific unit of work for which a price is provided in the contract.
10-18	Contract Time	The number of calendar days or working days, stated in the proposal, allowed for completion of the contract, including authorized time extensions. If a calendar date of completion is stated in the proposal, in lieu of a number of calendar or working days, the contract shall be completed by that date.
10-19	Contractor	The individual, partnership, firm, or corporation primarily liable for the acceptable performance of the work contracted and for the payment of all legal debts pertaining to the work who acts directly or through lawful agents or employees to complete the contract work.
10-20	Contractors Quality Control (QC) Facilities	The Contractor's QC facilities in accordance with the Contractor Quality Control Program (CQCP).

Paragraph Number	Term	Definition
10-21	Contractor Quality Control Program (CQCP)	Details the methods and procedures that will be taken to assure that all materials and completed construction required by the contract conform to contract plans, technical specifications and other requirements, whether manufactured by the Contractor, or procured from subcontractors or vendors.
10-22	Control Strip	A demonstration by the Contractor that the materials, equipment, and construction processes results in a product meeting the requirements of the specification.
10-23	Construction Safety and Phasing Plan (CSPP)	The overall plan for safety and phasing of a construction project developed by the airport operator, or developed by the airport operator's consultant and approved by the airport operator. It is included in the invitation for bids and becomes part of the project specifications.
10-24	Drainage System	The system of pipes, ditches, and structures by which surface or subsurface waters are collected and conducted from the airport area.
10-25	Engineer	The individual, partnership, firm, or corporation duly authorized by the Owner to be responsible for engineering, of the contract work and acting directly or through an authorized representative.
10-26	Equipment	All machinery, together with the necessary supplies for upkeep and maintenance; and all tools and apparatus necessary for the proper construction and acceptable completion of the work.
10-27	Extra Work	An item of work not provided for in the awarded contract as previously modified by change order or supplemental agreement, but which is found by the Owner's Engineer or Resident Project Representative (RPR) to be necessary to complete the work within the intended scope of the contract as previously modified.
10-28	FAA	The Federal Aviation Administration. When used to designate a person, FAA shall mean the Administrator or their duly authorized representative.
10-29	Federal Specifications	The federal specifications and standards, commercial item descriptions, and supplements, amendments, and indices prepared and issued by the General Services Administration.

Paragraph Number	Term	Definition
10-30	Force Account	<p>a. Contract Force Account - A method of payment that addresses extra work performed by the Contractor on a time and material basis.</p> <p>b. Owner Force Account - Work performed for the project by the Owner's employees.</p>
10-31	Intention of Terms	<p>Whenever, in these specifications or on the plans, the words “directed,” “required,” “permitted,” “ordered,” “designated,” “prescribed,” or words of like import are used, it shall be understood that the direction, requirement, permission, order, designation, or prescription of the Engineer and/or Resident Project Representative (RPR) is intended; and similarly, the words “approved,” “acceptable,” “satisfactory,” or words of like import, shall mean approved by, or acceptable to, or satisfactory to the Engineer and/or RPR, subject in each case to the final determination of the Owner.</p> <p>Any reference to a specific requirement of a numbered paragraph of the contract specifications or a cited standard shall be interpreted to include all general requirements of the entire section, specification item, or cited standard that may be pertinent to such specific reference.</p>
10-32	Lighting	A system of fixtures providing or controlling the light sources used on or near the airport or within the airport buildings. The field lighting includes all luminous signals, markers, floodlights, and illuminating devices used on or near the airport or to aid in the operation of aircraft landing at, taking off from, or taxiing on the airport surface.
10-33	Major and Minor Contract Items	A major contract item shall be any item that is listed in the proposal, the total cost of which is equal to or greater than 20% of the total amount of the award contract. All other items shall be considered minor contract items.
10-34	Materials	Any substance specified for use in the construction of the contract work.
10-35	Modification of Standards (MOS)	Any deviation from standard specifications applicable to material and construction methods in accordance with FAA Order 5300.1.
10-36	Notice to Proceed (NTP)	A written notice to the Contractor to begin the actual contract work on a previously agreed to date. If applicable, the Notice to Proceed shall state the date on which the contract time begins.
10-37	Owner	The term “Owner” shall mean the party of the first part or the contracting agency signatory to the contract. Where the term “Owner” is capitalized in this document, it shall mean airport Sponsor only. The Owner for this project is the Delaware River and Bay Authority (DRBA)

Paragraph Number	Term	Definition
10-38	Passenger Facility Charge (PFC)	Per 14 Code of Federal Regulations (CFR) Part 158 and 49 United States Code (USC) § 40117, a PFC is a charge imposed by a public agency on passengers enplaned at a commercial service airport it controls.
10-39	Pavement Structure	The combined surface course, base course(s), and subbase course(s), if any, considered as a single unit.
10-40	Payment bond	The approved form of security furnished by the Contractor and their own surety as a guaranty that the Contractor will pay in full all bills and accounts for materials and labor used in the construction of the work.
10-41	Performance bond	The approved form of security furnished by the Contractor and their own surety as a guaranty that the Contractor will complete the work in accordance with the terms of the contract.
10-42	Plans	The official drawings or exact reproductions which show the location, character, dimensions and details of the airport and the work to be done and which are to be considered as a part of the contract, supplementary to the specifications. Plans may also be referred to as 'contract drawings.'
10-43	Project	The agreed scope of work for accomplishing specific airport development with respect to a particular airport.
10-44	Proposal	The written offer of the bidder (when submitted on the approved proposal form) to perform the contemplated work and furnish the necessary materials in accordance with the provisions of the plans and specifications.
10-45	Proposal guaranty	The security furnished with a proposal to guarantee that the bidder will enter into a contract if their own proposal is accepted by the Owner.
10-46	Quality Assurance (QA)	Owner's responsibility to assure that construction work completed complies with specifications for payment.
10-47	Quality Control (QC)	Contractor's responsibility to control material(s) and construction processes to complete construction in accordance with project specifications.
10-48	Quality Assurance (QA) Inspector	An authorized representative of the Engineer and/or Resident Project Representative (RPR) assigned to make all necessary inspections, observations, tests, and/or observation of tests of the work performed or being performed, or of the materials furnished or being furnished by the Contractor.

Paragraph Number	Term	Definition
10-49	Quality Assurance (QA) Laboratory	The official quality assurance testing laboratories of the Owner or such other laboratories as may be designated by the Engineer or RPR. May also be referred to as Engineer's, Owner's, or QA Laboratory.
10-50	Resident Project Representative (RPR)	The individual, partnership, firm, or corporation duly authorized by the Owner to be responsible for all necessary inspections, observations, tests, and/or observations of tests of the contract work performed or being performed, or of the materials furnished or being furnished by the Contractor, and acting directly or through an authorized representative.
10-51	Runway	The area on the airport prepared for the landing and takeoff of aircraft.
10-52	Runway Safety Area (RSA)	A defined surface surrounding the runway prepared or suitable for reducing the risk of damage to aircraft. See the construction safety and phasing plan (CSPP) for limits of the RSA.
10-53	Safety Plan Compliance Document (SPCD)	Details how the Contractor will comply with the CSPP.
10-54	Specifications	A part of the contract containing the written directions and requirements for completing the contract work. Standards for specifying materials or testing which are cited in the contract specifications by reference shall have the same force and effect as if included in the contract physically.
10-55	Sponsor	A Sponsor is defined in 49 USC § 47102(24) as a public agency that submits to the FAA for an AIP grant; or a private Owner of a public-use airport that submits to the FAA an application for an AIP grant for the airport.
10-56	Structures	Airport facilities such as bridges; culverts; catch basins, inlets, retaining walls, cribbing; storm and sanitary sewer lines; water lines; underdrains; electrical ducts, manholes, handholes, lighting fixtures and bases; transformers; navigational aids; buildings; vaults; and, other manmade features of the airport that may be encountered in the work and not otherwise classified herein.
10-57	Subgrade	The soil that forms the pavement foundation.
10-58	Superintendent	The Contractor's executive representative who is present on the work during progress, authorized to receive and fulfill instructions from the RPR, and who shall supervise and direct the construction.

Paragraph Number	Term	Definition
10-59	Supplemental Agreement	A written agreement between the Contractor and the Owner that establishes the basis of payment and contract time adjustment, if any, for the work affected by the supplemental agreement. A supplemental agreement is required if: (1) in scope work would increase or decrease the total amount of the awarded contract by more than 25%; (2) in scope work would increase or decrease the total of any major contract item by more than 25%; (3) work that is not within the scope of the originally awarded contract; or (4) adding or deleting of a major contract item.
10-60	Surety	The corporation, partnership, or individual, other than the Contractor, executing payment or performance bonds that are furnished to the Owner by the Contractor.
10-61	Taxilane	A taxiway designed for low speed movement of aircraft between aircraft parking areas and terminal areas.
10-62	Taxiway	The portion of the air operations area of an airport that has been designated by competent airport authority for movement of aircraft to and from the airport's runways, aircraft parking areas, and terminal areas.
10-63	Taxiway/Taxilane Safety Area (TSA)	A defined surface alongside the taxiway prepared or suitable for reducing the risk of damage to an aircraft. See the construction safety and phasing plan (CSPP) for limits of the TSA.
10-64	Work	The furnishing of all labor, materials, tools, equipment, and incidentals necessary or convenient to the Contractor's performance of all duties and obligations imposed by the contract, plans, and specifications.
10-65	Working day	A working day shall be any day other than a legal holiday, Saturday, or Sunday on which the normal working forces of the Contractor may proceed with regular work for at least six (6) hours toward completion of the contract. When work is suspended for causes beyond the Contractor's control, it will not be counted as a working day. Saturdays, Sundays and holidays on which the Contractor's forces engage in regular work will be considered as working days.
10-66	Owner Defined terms	The following terms are included in this contract:
	Contract Drawings	Plans.
	Subcontractor	The subcontractor refers any individual, firm, or corporation to whom the contractor, with approval of the Owner, sublets any part of work.

Paragraph Number	Term	Definition
	Time and Materials Work	An item or items of work not provided for in the awarded contract as previously modified by change order or supplemental agreement, but which is found by the Engineer to be necessary to complete the work within the intended scope of the contract as previously modified and an agreed price cannot be agreed upon. The Contractor shall perform this work and the Owner agrees to pay the Contractor based upon the work performed by the Contractor's employees and subcontractors, and for materials and equipment used in the construction (along with the Contractor's allowed overhead and profit).

END OF SECTION 10

Section 20 Proposal Requirements and Conditions

20-01 Advertisement (Notice to Bidders). See the Advertisement located in the front of these Contract Documents.

20-02 Qualification of bidders. Each bidder shall submit evidence of competency and evidence of financial responsibility to perform the work to the Owner at the time of bid opening.

Evidence of competency, unless otherwise specified, shall consist of statements covering the bidder's past experience on similar work, and a list of equipment and a list of key personnel that would be available for the work.

Each bidder shall furnish the Owner satisfactory evidence of their financial responsibility. Evidence of financial responsibility, unless otherwise specified, shall consist of a confidential statement or report of the bidder's financial resources and liabilities as of the last calendar year or the bidder's last fiscal year. Such statements or reports shall be certified by a public accountant. At the time of submitting such financial statements or reports, the bidder shall further certify whether their financial responsibility is approximately the same as stated or reported by the public accountant. If the bidder's financial responsibility has changed, the bidder shall qualify the public accountant's statement or report to reflect the bidder's true financial condition at the time such qualified statement or report is submitted to the Owner.

In addition, each bidder who receives a written request shall furnish the following to the Owner:

- a. A list of the categories of work to be performed by the bidder's work force and a list of work to be subcontracted out (See Section 80-01).
- b. A list of construction projects completed in the past five years. The list shall include the project name, completion date, total contract value, value of bidder's portion of the work, engineer and owner contact information (names and phone numbers).
- c. A list of construction projects in progress and under contract including the project name, percent complete, estimated completion date, total contract value, value of bidder's portion of the work, engineer and owner contact information (names and phone numbers).
- d. A Schedule of Values showing the following information:
 1. For each lump sum bid item: Provide a breakdown of values for major products, assemblies or operations, indicating separate amounts for (a) purchased materials, (b) labor, and (c) construction equipment, which total to the lump sum price bid for each item.
 2. For each unit price bid item: Provide a breakdown of values for the unit price allocated to (a) purchased materials, (b) labor, and (c) construction equipment which total to the unit price bid for each item.

The Schedule of Values will be reviewed by the Engineer. Any additional detail or justification for cost distribution shall be provided by the apparent low bidder upon request. The Schedule of Values shall serve as a basis for computing progress payments

during construction for installed portions of lump sum items, and to assist the Engineer in determining if change order costs are reasonable.

Unless otherwise specified, a bidder may submit evidence that they are prequalified with the State Highway Division and are on the current “bidder’s list” of the state in which the proposed work is located. Evidence of State Highway Division prequalification may be submitted as evidence of financial responsibility in lieu of the certified statements or reports specified above.

20-03 Contents of proposal forms. The Owner's proposal forms state the location and description of the proposed construction; the place, date, and time of opening of the proposals; and the estimated quantities of the various items of work to be performed and materials to be furnished for which unit bid prices are asked. The proposal form states the time in which the work must be completed, and the amount of the proposal guaranty that must accompany the proposal. The Owner will accept only those Proposals properly executed on physical forms or electronic forms provided by the Owner. Bidder actions that may cause the Owner to deem a proposal irregular are given in paragraph 20-09 *Irregular proposals*.

Mobilization, if included in this proposal, is specified in Item C-105.

A prebid conference is required on this project to discuss as a minimum, the following items: material requirements; submittals; Quality Control/Quality Assurance requirements; the construction safety and phasing plan including airport access and staging areas; and unique airfield paving construction requirements. The location, date and time are stated in the Advertisement.

20-04 Issuance of proposal forms. The Owner reserves the right to refuse to issue a proposal form to a prospective bidder if the bidder is in default for any of the following reasons:

- a. Failure to comply with any prequalification regulations of the Owner, if such regulations are cited, or otherwise included, in the proposal as a requirement for bidding.
- b. Failure to pay, or satisfactorily settle, all bills due for labor and materials on former contracts in force with the Owner at the time the Owner issues the proposal to a prospective bidder.
- c. Documented record of Contractor default under previous contracts with the Owner.
- d. Documented record of unsatisfactory work on previous contracts with the Owner.

20-05 Interpretation of estimated proposal quantities. An estimate of quantities of work to be done and materials to be furnished under these specifications is given in the proposal. It is the result of careful calculations and is believed to be correct. It is given only as a basis for comparison of proposals and the award of the contract. The Owner does not expressly, or by implication, agree that the actual quantities involved will correspond exactly therewith; nor shall the bidder plead misunderstanding or deception because of such estimates of quantities, or of the character, location, or other conditions pertaining to the work. Payment to the Contractor will be made only for the actual quantities of work performed or materials furnished in accordance with the plans and specifications. It is understood that the quantities may be increased or decreased as provided in the Section 40, paragraph 40-02, Alteration of Work and Quantities, without in any way invalidating the unit bid prices.

20-06 Examination of plans, specifications, and site. The bidder is expected to carefully examine the site of the proposed work, the proposal, plans, specifications, and contract forms. Bidders shall satisfy themselves to the character, quality, and quantities of work to be performed, materials to be furnished, and to the requirements of the proposed contract. The submission of a proposal shall be prima facie evidence that the bidder has made such examination and is satisfied to the conditions to be encountered in performing the work and the requirements of the proposed contract, plans, and specifications.

Boring logs and other records of subsurface investigations and tests are available for inspection of bidders. It is understood and agreed that such subsurface information, whether included in the plans, specifications, or otherwise made available to the bidder, was obtained and is intended for the Owner's design and estimating purposes only. Such information has been made available for the convenience of all bidders. It is further understood and agreed that each bidder is solely responsible for all assumptions, deductions, or conclusions which the bidder may make or obtain from their own examination of the boring logs and other records of subsurface investigations and tests that are furnished by the Owner.

20-07 Preparation of proposal. The bidder shall submit their proposal on the forms furnished by the Owner. All blank spaces in the proposal forms, unless explicitly stated otherwise, must be correctly filled in where indicated for each and every item for which a quantity is given. The bidder shall state the price (written in ink or typed) both in words and numerals which they propose for each pay item furnished in the proposal. In case of conflict between words and numerals, the words, unless obviously incorrect, shall govern.

Prices should be written in whole dollars and cents. The extended total amount of each item should not be rounded.

The bidder shall correctly sign the proposal in ink. If the proposal is made by an individual, their name and post office address must be shown. If made by a partnership, the name and post office address of each member of the partnership must be shown. If made by a corporation, the person signing the proposal shall give the name of the state where the corporation was chartered and the name, titles, and business address of the president, secretary, and the treasurer. Anyone signing a proposal as an agent shall file evidence of their authority to do so and that the signature is binding upon the firm or corporation.

20-08 Responsive and responsible bidder. A responsive bid conforms to all significant terms and conditions contained in the Owner's invitation for bid. It is the Owner's responsibility to decide if the exceptions taken by a bidder to the solicitation are material or not and the extent of deviation it is willing to accept.

A responsible bidder has the ability to perform successfully under the terms and conditions of a proposed procurement, as defined in 2 CFR § 200.318(h). This includes such matters as Contractor integrity, compliance with public policy, record of past performance, and financial and technical resources.

20-09 Irregular proposals. Proposals shall be considered irregular for the following reasons:

- a. If the proposal is on a form other than that furnished by the Owner, or if the Owner's form is altered, or if any part of the proposal form is detached.
- b. If there are unauthorized additions, conditional or alternate pay items, or irregularities of any kind that make the proposal incomplete, indefinite, or otherwise ambiguous.
- c. If the proposal does not contain a unit price for each pay item listed in the proposal, except in the case of authorized alternate pay items, for which the bidder is not required to furnish a unit price.
- d. If the proposal contains unit prices that are obviously unbalanced.
- e. If the proposal is not accompanied by the proposal guaranty specified by the Owner.
- f. If the applicable Disadvantaged Business Enterprise information is incomplete.

The Owner reserves the right to reject any irregular proposal and the right to waive technicalities if such waiver is in the best interest of the Owner and conforms to local laws and ordinances pertaining to the letting of construction contracts.

20-10 Bid guarantee. Each separate proposal shall be accompanied by a bid bond, certified check, or other specified acceptable collateral, in the amount specified in the proposal form. Such bond, check, or collateral, shall be made payable to the Owner.

20-11 Delivery of proposal. Each proposal submitted shall be placed in a sealed envelope plainly marked with the project number, location of airport, and name and business address of the bidder on the outside. When sent by mail, preferably registered, the sealed proposal, marked as indicated above, should be enclosed in an additional envelope. No proposal will be considered unless received at the place specified in the advertisement or as modified by Addendum before the time specified for opening all bids. Proposals received after the bid opening time shall be returned to the bidder unopened. No faxed or emailed proposals will be accepted. The official time shall be kept locally by the Owner.

20-12 Withdrawal or revision of proposals. A bidder may withdraw or revise (by withdrawal of one proposal and submission of another) a proposal provided that the bidder's request for withdrawal is received by the Owner in writing or by fax or by email before the time specified for opening bids. Revised proposals must be received at the place specified in the advertisement before the time specified for opening all bids.

20-13 Public opening of proposals. Proposals shall be opened, and read, publicly at the time and place specified in the advertisement. Bidders, their authorized agents, and other interested persons are invited to attend. Proposals that have been withdrawn (by written or telegraphic request) or received after the time specified for opening bids shall be returned to the bidder unopened.

20-14 Disqualification of bidders. A bidder shall be considered disqualified for any of the following reasons:

a. Submitting more than one proposal from the same partnership, firm, or corporation under the same or different name.

b. Evidence of collusion among bidders. Bidders participating in such collusion shall be disqualified as bidders for any future work of the Owner until any such participating bidder has been reinstated by the Owner as a qualified bidder.

c. If the bidder is considered to be in "default" for any reason specified in paragraph 20-04, *Issuance of Proposal Forms*, of this section.

20-15 Discrepancies and Omissions. A Bidder who discovers discrepancies or omissions with the project bid documents shall immediately notify the Owner's Engineer of the matter. A bidder that has doubt as to the true meaning of a project requirement may submit to the Owner's Engineer a written request for interpretation no later than seven (7) calendar days prior to bid opening.

Any interpretation of the project bid documents by the Owner's Engineer will be by written addendum issued by the Owner. The Owner will not consider any instructions, clarifications or interpretations of the bidding documents in any manner other than written addendum.

END OF SECTION 20

Section 30 Award and Execution of Contract

30-01 Consideration of proposals. After the proposals are publicly opened and read, they will be compared on the basis of the summation of the products obtained by multiplying the estimated quantities shown in the proposal by the unit bid prices. If a bidder's proposal contains a discrepancy between unit bid prices written in words and unit bid prices written in numbers, the unit bid price written in words shall govern. Where discrepancies in the summation of the products occur, the Owner will make the necessary corrections and the corrected values will be used in the Owner's consideration of proposals.

Until the award of a contract is made, the Owner reserves the right to reject a bidder's proposal for any of the following reasons:

- a. If the proposal is irregular as specified in Section 20, paragraph 20-09, *Irregular Proposals*.
- b. If the bidder is disqualified for any of the reasons specified Section 20, paragraph 20-14, *Disqualification of Bidders*.

In addition, until the award of a contract is made, the Owner reserves the right to reject any or all proposals, waive technicalities, if such waiver is in the best interest of the Owner and is in conformance with applicable state and local laws or regulations pertaining to the letting of construction contracts; advertise for new proposals; or proceed with the work otherwise. All such actions shall promote the Owner's best interests.

30-02 Award of contract. The award of a contract, if it is to be awarded, shall be made within calendar days of the date specified for publicly opening proposals, unless otherwise specified herein.

If the Owner elects to proceed with an award of contract, the Owner will make award to the responsible bidder whose bid, conforming with all the material terms and conditions of the bid documents, is the lowest in price.

The Owner reserves the right to award only the Base Bid, to award any Alternate Bid (if Alternates are an option), or to award either the Base Bid or the Alternate Bid plus Add-On Bids (if Add-On bids are an option). Where discrepancies occur that affect the bid total(s) as described in the subsection titled CONSIDERATION OF PROPOSALS, the contract amount awarded will reflect the corrected values.

Where alternate bids and/or add-on bids are included in the proposal, the lowest qualified bidder will be determined by comparison of the combination of Base Bid, or Alternate Bid, plus Add-On bids which are chosen by the Owner.

The Owner, based on their operational needs, has established the following order for evaluation of bids to determine the apparent low bidder:

Base Bid only; No Add-Ons

30-03 Cancellation of award. The Owner reserves the right to cancel the award without liability to the bidder, except return of proposal guaranty, at any time before a contract has been fully executed by all parties and is approved by the Owner in accordance with paragraph 30-07 *Approval of Contract*.

30-04 Return of proposal guaranty. All proposal guaranties, except those of the two lowest bidders, will be returned immediately after the Owner has made a comparison of bids as specified in the paragraph 30-01, *Consideration of Proposals*. Proposal guaranties of the two lowest bidders will be retained by the Owner until such time as an award is made, at which time, the unsuccessful bidder's proposal guaranty

will be returned. The successful bidder's proposal guaranty will be returned as soon as the Owner receives the contract bonds as specified in paragraph 30-05, *Requirements of Contract Bonds*.

30-05 Requirements of contract bonds. At the time of the execution of the contract, the successful bidder shall furnish the Owner a surety bond or bonds that have been fully executed by the bidder and the surety guaranteeing the performance of the work and the payment of all legal debts that may be incurred by reason of the Contractor's performance of the work. The surety and the form of the bond or bonds shall be acceptable to the Owner. Unless otherwise specified in this subsection, the surety bond or bonds shall be in a sum equal to the full amount of the contract.

The successful bidder shall submit in triplicate, a "Performance Bond" guaranteeing the performance of the work equal to one hundred percent (100%) of the amount of the Contract awarded, and a "Labor and Material Payment Bond" guaranteeing the payment of all legal debts that may be incurred by reason of the Contractor's performance of the work equal to one hundred percent (100%) of the amount of the Contract awarded.

30-06 Execution of contract. The successful bidder shall sign (execute) the necessary agreements for entering into the contract and return the signed contract to the Owner, along with the fully executed surety bond or bonds specified in paragraph 30-05, *Requirements of Contract Bonds*, of this section, within **15** calendar days from the date mailed or otherwise delivered to the successful bidder.

The Contractor shall also furnish the required insurance certificates in accordance with the subsection titled RESPONSIBILITY FOR DAMAGE CLAIMS of Sections 70 and 200. The successful bidder shall recognize that the proposal included in the contract for execution may differ from the proposal which was submitted with their bid. The proposal included in the contract for execution will include corrections to discrepancies which were discovered during the Owners consideration of proposals, and will contain only the pages from the successful bidder's proposal which cover the bids which were awarded. As a result, the proposal pages in the contract to be executed may contain pages which are not consecutively numbered due to the intentional omission of those proposal pages which cover bids that were not awarded.

49 CFR Part 26 provides that each contract the owner signs with a contractor (and each subcontract the prime contractor signs with a subcontractor) shall include the following assurance:

"The contractor, sub-recipient or subcontractor shall not discriminate on the basis of race, color, national origin, or sex in the performance of this contract. The contractor shall carry out applicable requirements of 49 CFR Part 26 in the award and administration of Department of Transportation (DOT) assisted contracts. Failure by the contractor to carry out these requirements is a material breach of this contract, which may result in the termination of this contract or such other remedy as the recipient deems appropriate."

30-07 Approval of contract. Upon receipt of the contract and contract bond or bonds that have been executed by the successful bidder, the Owner shall complete the execution of the contract in accordance with local laws or ordinances and return the fully executed contract to the Contractor. Delivery of the fully executed contract to the Contractor shall constitute the Owner's approval to be bound by the successful bidder's proposal and the terms of the contract.

30-08 Failure to execute contract. Failure of the successful bidder to execute the contract and furnish an acceptable surety bond or bonds within the period specified in paragraph 30-06, *Execution of Contract*, of this section shall be just cause for cancellation of the award and forfeiture of the proposal guaranty, not as a penalty, but as liquidated damages to the Owner.

END OF SECTION 30

Section 40 Scope of Work

40-01 Intent of contract. The intent of the contract is to provide for construction and completion, in every detail, of the work described. It is further intended that the Contractor shall furnish all labor, materials, equipment, tools, transportation, and supplies required to complete the work in accordance with the plans, specifications, and terms of the contract.

40-02 Alteration of work and quantities. The Owner reserves the right to make such changes in quantities and work as may be necessary or desirable to complete, in a satisfactory manner, the original intended work. Unless otherwise specified in the Contract, the Owner's Engineer or Resident Project Representative (RPR) shall be and is hereby authorized to make, in writing, such in-scope alterations in the work and variation of quantities as may be necessary to complete the work, provided such action does not represent a significant change in the character of the work.

For purpose of this section, a significant change in character of work means: any change that is outside the current contract scope of work; any change (increase or decrease) in the total contract cost by more than 25%; or any change in the total cost of a major contract item by more than 25%.

Work alterations and quantity variances that do not meet the definition of significant change in character of work shall not invalidate the contract nor release the surety. Contractor agrees to accept payment for such work alterations and quantity variances in accordance with Section 90, paragraph 90-03, *Compensation for Altered Quantities*.

Should the value of altered work or quantity variance meet the criteria for significant change in character of work, such altered work and quantity variance shall be covered by a supplemental agreement. Supplemental agreements shall also require consent of the Contractor's surety and separate performance and payment bonds. If the Owner and the Contractor are unable to agree on a unit adjustment for any contract item that requires a supplemental agreement, the Owner reserves the right to terminate the contract with respect to the item and make other arrangements for its completion.

However, if the Contractor elects to waive the limitations on work that increase or decrease the originally awarded contract or any major contract item by more than 25 percent, the supplemental agreement shall be subject to the same wage determination as was included in the originally awarded contract.

All supplemental agreements shall require consent of the Contractor's surety and separate performance and payment bonds.

40-03 Omitted items. The Owner, the Owner's Engineer or the RPR may provide written notice to the Contractor to omit from the work any contract item that does not meet the definition of major contract item. Major contract items may be omitted by a supplemental agreement. Such omission of contract items shall not invalidate any other contract provision or requirement.

Should a contract item be omitted or otherwise ordered to be non-performed, the Contractor shall be paid for all work performed toward completion of such item prior to the date of the order to omit such item. Payment for work performed shall be in accordance with Section 90, paragraph 90-04, *Payment for Omitted Items*.

40-04 Extra work. Should acceptable completion of the contract require the Contractor to perform an item of work not provided for in the awarded contract as previously modified by change order or supplemental agreement, Owner may issue a Change Order to cover the necessary extra work. Change orders for extra work shall contain agreed unit prices for performing the change order work in accordance

with the requirements specified in the order, and shall contain any adjustment to the contract time that, in the RPR's opinion, is necessary for completion of the extra work.

When determined by the RPR to be in the Owner's best interest, the RPR may order the Contractor to proceed with extra work as provided in Section 90, paragraph 90-05, *Payment for Extra Work*. Extra work that is necessary for acceptable completion of the project, but is not within the general scope of the work covered by the original contract shall be covered by a supplemental agreement as defined in Section 10, paragraph 10-59, *Supplemental Agreement*.

If extra work is essential to maintaining the project critical path, RPR may order the Contractor to commence the extra work under a Time and Material contract method. Once sufficient detail is available to establish the level of effort necessary for the extra work, the Owner shall initiate a change order or supplemental agreement to cover the extra work.

Any claim for payment of extra work that is not covered by written agreement (change order or supplemental agreement) shall be rejected by the Owner.

40-05 Maintenance of traffic. It is the explicit intention of the contract that the safety of aircraft, as well as the Contractor's equipment and personnel, is the most important consideration. The Contractor shall maintain traffic in the manner detailed in the Construction Safety and Phasing Plan (CSPP).

a. It is understood and agreed that the Contractor shall provide for the free and unobstructed movement of aircraft in the air operations areas (AOAs) of the airport with respect to their own operations and the operations of all subcontractors as specified in Section 80, paragraph 80-04, *Limitation of Operations*. It is further understood and agreed that the Contractor shall provide for the uninterrupted operation of visual and electronic signals (including power supplies thereto) used in the guidance of aircraft while operating to, from, and upon the airport as specified in Section 70, paragraph 70-15, *Contractor's Responsibility for Utility Service and Facilities of Others*.

b. With respect to their own operations and the operations of all subcontractors, the Contractor shall provide marking, lighting, and other acceptable means of identifying personnel, equipment, vehicles, storage areas, and any work area or condition that may be hazardous to the operation of aircraft, fire-rescue equipment, or maintenance vehicles at the airport in accordance with the construction safety and phasing plan (CSPP) and the safety plan compliance document (SPCD).

c. When the contract requires the maintenance of an existing road, street, or highway during the Contractor's performance of work that is otherwise provided for in the contract, plans, and specifications, the Contractor shall keep the road, street, or highway open to all traffic and shall provide maintenance as may be required to accommodate traffic. The Contractor, at their expense, shall be responsible for the repair to equal or better than preconstruction conditions of any damage caused by the Contractor's equipment and personnel. The Contractor shall furnish, erect, and maintain barricades, warning signs, flag person, and other traffic control devices in reasonable conformity with the Manual on Uniform Traffic Control Devices (MUTCD) (<http://mutcd.fhwa.dot.gov/>), unless otherwise specified. The Contractor shall also construct and maintain in a safe condition any temporary connections necessary for ingress to and egress from abutting property or intersecting roads, streets or highways. Unless otherwise specified herein, the Contractor will not be required to furnish snow removal for such existing road, street, or highway.

40-06 Removal of existing structures. All existing structures encountered within the established lines, grades, or grading sections shall be removed by the Contractor, unless such existing structures are otherwise specified to be relocated, adjusted up or down, salvaged, abandoned in place, reused in the work or to remain in place. The cost of removing such existing structures shall not be measured or paid for directly, but shall be included in the various contract items.

Should the Contractor encounter an existing structure (above or below ground) in the work for which the disposition is not indicated on the plans, the Resident Project Representative (RPR) shall be notified prior to disturbing such structure. The disposition of existing structures so encountered shall be immediately determined by the RPR in accordance with the provisions of the contract.

Except as provided in Section 40, paragraph 40-07, *Rights in and Use of Materials Found in the Work*, it is intended that all existing materials or structures that may be encountered (within the lines, grades, or grading sections established for completion of the work) shall be used in the work as otherwise provided for in the contract and shall remain the property of the Owner when so used in the work.

40-07 Rights in and use of materials found in the work. Should the Contractor encounter any material such as (but not restricted to) sand, stone, gravel, slag, or concrete slabs within the established lines, grades, or grading sections, the use of which is intended by the terms of the contract to be embankment, the Contractor may at their own option either:

- a. Use such material in another contract item, providing such use is approved by the RPR and is in conformance with the contract specifications applicable to such use; or,
- b. Remove such material from the site, upon written approval of the RPR; or
- c. Use such material for the Contractor's own temporary construction on site; or,
- d. Use such material as intended by the terms of the contract.

Should the Contractor wish to exercise option a., b., or c., the Contractor shall request the RPR's approval in advance of such use.

Should the RPR approve the Contractor's request to exercise option a., b., or c., the Contractor shall be paid for the excavation or removal of such material at the applicable contract price. The Contractor shall replace, at their expense, such removed or excavated material with an agreed equal volume of material that is acceptable for use in constructing embankment, backfills, or otherwise to the extent that such replacement material is needed to complete the contract work. The Contractor shall not be charged for use of such material used in the work or removed from the site.

Should the RPR approve the Contractor's exercise of option a., the Contractor shall be paid, at the applicable contract price, for furnishing and installing such material in accordance with requirements of the contract item in which the material is used.

It is understood and agreed that the Contractor shall make no claim for delays by reason of their own exercise of option a., b., or c.

The Contractor shall not excavate, remove, or otherwise disturb any material, structure, or part of a structure which is located outside the lines, grades, or grading sections established for the work, except where such excavation or removal is provided for in the contract, plans, or specifications.

40-08 Final cleanup. Upon completion of the work and before acceptance and final payment will be made, the Contractor shall remove from the site all machinery, equipment, surplus and discarded materials, rubbish, temporary structures, and stumps or portions of trees. The Contractor shall cut all brush and woods within the limits indicated and shall leave the site in a neat and presentable condition. Material cleared from the site and deposited on adjacent property will not be considered as having been disposed of satisfactorily, unless the Contractor has obtained the written permission of the property Owner.

Contractor shall leave the premises broom-clean and everything in perfect order and repair. Upon neglect or refusal of Contractor to keep the premises clean, the RPR shall have the authority to have such work performed, and the cost of the same shall be charged to the Contractor in default and collected from any monies which have or may become due on this Contract. The RPR shall issue no certificates of payment on the Contract until premises are clean, in good order, and all claims properly resolved.

END OF SECTION 40

Section 50 Control of Work

50-01 Authority of the Resident Project Representative (RPR). The RPR has final authority regarding the interpretation of project specification requirements. The RPR shall determine acceptability of the quality of materials furnished, method of performance of work performed, and the manner and rate of performance of the work. The RPR does not have the authority to accept work that does not conform to specification requirements.

50-02 Conformity with plans and specifications. All work and all materials furnished shall be in reasonably close conformity with the lines, grades, grading sections, cross-sections, dimensions, material requirements, and testing requirements that are specified (including specified tolerances) in the contract, plans, or specifications.

If the RPR finds the materials furnished, work performed, or the finished product not within reasonably close conformity with the plans and specifications, but that the portion of the work affected will, in their opinion, result in a finished product having a level of safety, economy, durability, and workmanship acceptable to the Owner, the RPR will advise the Owner of their determination that the affected work be accepted and remain in place. The RPR will document the determination and recommend to the Owner a basis of acceptance that will provide for an adjustment in the contract price for the affected portion of the work. Changes in the contract price must be covered by contract change order or supplemental agreement as applicable.

If the RPR finds the materials furnished, work performed, or the finished product are not in reasonably close conformity with the plans and specifications and have resulted in an unacceptable finished product, the affected work or materials shall be removed and replaced or otherwise corrected by and at the expense of the Contractor in accordance with the RPR's written orders.

The term "reasonably close conformity" shall not be construed as waiving the Contractor's responsibility to complete the work in accordance with the contract, plans, and specifications. The term shall not be construed as waiving the RPR's responsibility to insist on strict compliance with the requirements of the contract, plans, and specifications during the Contractor's execution of the work, when, in the RPR's opinion, such compliance is essential to provide an acceptable finished portion of the work.

The term "reasonably close conformity" is also intended to provide the RPR with the authority, after consultation with the Sponsor and FAA, to use sound engineering judgment in their determinations to accept work that is not in strict conformity, but will provide a finished product equal to or better than that required by the requirements of the contract, plans and specifications.

The RPR will not be responsible for the Contractor's means, methods, techniques, sequences, or procedures of construction or the safety precautions incident thereto.

50-03 Coordination of contract, plans, and specifications. The contract, plans, specifications, and all referenced standards cited are essential parts of the contract requirements. If electronic files are provided and used on the project and there is a conflict between the electronic files and hard copy plans, the hard copy plans shall govern. A requirement occurring in one is as binding as though occurring in all. They are intended to be complementary and to describe and provide for a complete work. In case of discrepancy, calculated dimensions will govern over scaled dimensions; contract technical specifications shall govern over contract general provisions, plans, cited standards for materials or testing, and cited advisory circulars (ACs); contract general provisions shall govern over plans, cited standards for materials or testing, and cited ACs; plans shall govern over cited standards for materials or testing and cited ACs. If

any paragraphs contained in the Special Provisions conflict with General Provisions or Technical Specifications, the Special Provisions shall govern.

From time to time, discrepancies within cited testing standards occur due to the timing of the change, edits, and/or replacement of the standards. If the Contractor discovers any apparent discrepancy within standard test methods, the Contractor shall immediately ask the RPR for an interpretation and decision, and such decision shall be final.

The Contractor shall not take advantage of any apparent error or omission on the plans or specifications. In the event the Contractor discovers any apparent error or discrepancy, Contractor shall immediately notify the Owner or the designated representative in writing requesting their written interpretation and decision.

50-04 List of Special Provisions. See Special Provisions section to the General Provisions.

50-05 Cooperation of Contractor. The Contractor shall be supplied with an electronic PDF of the plans and specifications. The Contractor shall have available on the construction site at all times one hardcopy each of the plans and specifications. Additional hard copies of plans and specifications may be obtained by the Contractor for the cost of reproduction.

The Contractor shall give constant attention to the work to facilitate the progress thereof, and shall cooperate with the RPR and their inspectors and with other Contractors in every way possible. The Contractor shall have a competent superintendent on the work at all times who is fully authorized as their agent on the work. The superintendent shall be capable of reading and thoroughly understanding the plans and specifications and shall receive and fulfill instructions from the RPR or their authorized representative.

50-06 Cooperation between Contractors. The Owner reserves the right to contract for and perform other or additional work on or near the work covered by this contract.

When separate contracts are let within the limits of any one project, each Contractor shall conduct the work not to interfere with or hinder the progress of completion of the work being performed by other Contractors. Contractors working on the same project shall cooperate with each other as directed.

Each Contractor involved shall assume all liability, financial or otherwise, in connection with their own contract and shall protect and hold harmless the Owner from any and all damages or claims that may arise because of inconvenience, delays, or loss experienced because of the presence and operations of other Contractors working within the limits of the same project.

The Contractor shall arrange their work and shall place and dispose of the materials being used to not interfere with the operations of the other Contractors within the limits of the same project. The Contractor shall join their work with that of the others in an acceptable manner and shall perform it in proper sequence to that of the others.

50-07 Construction layout and stakes. The Engineer/RPR shall establish necessary horizontal and vertical control. The establishment of Survey Control and/or reestablishment of survey control shall be by a State Licensed Land Surveyor. Contractor is responsible for preserving integrity of horizontal and vertical controls established by Engineer/RPR. In case of negligence on the part of the Contractor or their employees, resulting in the destruction of any horizontal and vertical control, the resulting costs will be deducted as a liquidated damage against the Contractor.

Prior to the start of construction, the Contractor will check all control points for horizontal and vertical accuracy and certify in writing to the RPR that the Contractor concurs with survey control established for the project. All lines, grades and measurements from control points necessary for the proper execution and control of the work on this project will be provided to the RPR. The Contractor is responsible to establish all layout required for the construction of the project.

Copies of survey notes will be provided to the RPR for each area of construction and for each placement of material as specified to allow the RPR to make periodic checks for conformance with plan grades, alignments and grade tolerances required by the applicable material specifications. Surveys will be provided to the RPR prior to commencing work items that cover or disturb the survey staking. Survey(s) and notes shall be provided in the following format(s): five (5) full size copies of signed and sealed surveys, five (5) copies of the notes as well as pdf copies of both.

Laser, GPS, String line, or other automatic control shall be checked with temporary control as necessary. In the case of error, on the part of the Contractor, their surveyor, employees or subcontractors, resulting in established grades, alignment or grade tolerances that do not concur with those specified or shown on the plans, the Contractor is solely responsible for correction, removal, replacement and all associated costs at no additional cost to the Owner.

No direct payment will be made, unless otherwise specified in contract documents, for this labor, materials, or other expenses. The cost shall be included in the price of the bid for the various items of the Contract.

50-08 Authority and duties of Quality Assurance (QA) inspectors. QA inspectors shall be authorized to inspect all work done and all material furnished. Such QA inspection may extend to all or any part of the work and to the preparation, fabrication, or manufacture of the materials to be used. QA inspectors are not authorized to revoke, alter, or waive any provision of the contract. QA inspectors are not authorized to issue instructions contrary to the plans and specifications or to act as foreman for the Contractor.

QA Inspectors are authorized to notify the Contractor or their representatives of any failure of the work or materials to conform to the requirements of the contract, plans, or specifications and to reject such nonconforming materials in question until such issues can be referred to the RPR for a decision.

50-09 Inspection of the work. All materials and each part or detail of the work shall be subject to inspection. The RPR shall be allowed access to all parts of the work and shall be furnished with such information and assistance by the Contractor as is required to make a complete and detailed inspection.

If the RPR requests it, the Contractor, at any time before acceptance of the work, shall remove or uncover such portions of the finished work as may be directed. After examination, the Contractor shall restore said portions of the work to the standard required by the specifications. Should the work thus exposed or examined prove acceptable, the uncovering, or removing, and the replacing of the covering or making good of the parts removed will be paid for as extra work; but should the work so exposed or examined prove unacceptable, the uncovering, or removing, and the replacing of the covering or making good of the parts removed will be at the Contractor's expense.

Provide advance written notice to the RPR of work the Contractor plans to perform each week and each day. Any work done or materials used without written notice and allowing opportunity for inspection by the RPR may be ordered removed and replaced at the Contractor's expense.

Should the contract work include relocation, adjustment, or any other modification to existing facilities, not the property of the (contract) Owner, authorized representatives of the Owners of such facilities shall have the right to inspect such work. Such inspection shall in no sense make any facility owner a party to the contract, and shall in no way interfere with the rights of the parties to this contract.

50-10 Removal of unacceptable and unauthorized work. All work that does not conform to the requirements of the contract, plans, and specifications will be considered unacceptable, unless otherwise determined acceptable by the RPR as provided in paragraph 50-02, *Conformity with Plans and Specifications*.

Unacceptable work, whether the result of poor workmanship, use of defective materials, damage through carelessness, or any other cause found to exist prior to the final acceptance of the work, shall be removed immediately and replaced in an acceptable manner in accordance with the provisions of Section 70, paragraph 70-14, *Contractor's Responsibility for Work*.

No removal work made under provision of this paragraph shall be done without lines and grades having been established by the RPR. Work done contrary to the instructions of the RPR, work done beyond the lines shown on the plans or as established by the RPR, except as herein specified, or any extra work done without authority, will be considered as unauthorized and will not be paid for under the provisions of the contract. Work so done may be ordered removed or replaced at the Contractor's expense.

Upon failure on the part of the Contractor to comply with any order of the RPR made under the provisions of this subsection, the RPR will have authority to cause unacceptable work to be remedied or removed and replaced; and unauthorized work to be removed and recover the resulting costs as a liquidated damage against the Contractor.

50-11 Load restrictions. The Contractor shall comply with all legal load restrictions in the hauling of materials on public roads beyond the limits of the work. A special permit will not relieve the Contractor of liability for damage that may result from the moving of material or equipment.

The operation of equipment of such weight or so loaded as to cause damage to structures or to any other type of construction will not be permitted. Hauling of materials over the base course or surface course under construction shall be limited as directed. No loads will be permitted on a concrete pavement, base, or structure before the expiration of the curing period. The Contractor, at their own expense, shall be responsible for the repair to equal or better than preconstruction conditions of any damage caused by the Contractor's equipment and personnel.

50-12 Maintenance during construction. The Contractor shall maintain the work during construction and until the work is accepted. Maintenance shall constitute continuous and effective work prosecuted day by day, with adequate equipment and forces so that the work is maintained in satisfactory condition at all times.

In the case of a contract for the placing of a course upon a course or subgrade previously constructed, the Contractor shall maintain the previous course or subgrade during all construction operations.

All costs of maintenance work during construction and before the project is accepted shall be included in the unit prices bid on the various contract items, and the Contractor will not be paid an additional amount for such work.

50-13 Failure to maintain the work. Should the Contractor at any time fail to maintain the work as provided in paragraph 50-12, *Maintenance during Construction*, the RPR shall immediately notify the Contractor of such noncompliance. Such notification shall specify a reasonable time within which the Contractor shall be required to remedy such unsatisfactory maintenance condition. The time specified will give due consideration to the exigency that exists.

Should the Contractor fail to respond to the RPR's notification, the Owner may suspend any work necessary for the Owner to correct such unsatisfactory maintenance condition, depending on the exigency that exists. Any maintenance cost incurred by the Owner, shall be recovered as a liquidated damage against the Contractor.

50-14 Partial acceptance. If at any time during the execution of the project the Contractor substantially completes a usable unit or portion of the work, the occupancy of which will benefit the Owner, the Contractor may request the RPR to make final inspection of that unit. If the RPR finds upon inspection that the unit has been satisfactorily completed in compliance with the contract, the RPR may accept it as being complete, and the Contractor may be relieved of further responsibility for that unit. Such partial acceptance and beneficial occupancy by the Owner shall not void or alter any provision of the contract.

50-15 Final acceptance. Upon due notice from the Contractor of presumptive completion of the entire project, the RPR and Owner will make an inspection. If all construction provided for and contemplated by the contract is found to be complete in accordance with the contract, plans, and specifications, such inspection shall constitute the final inspection. The RPR shall notify the Contractor in writing of final acceptance as of the date of the final inspection.

If, however, the inspection discloses any work, in whole or in part, as being unsatisfactory, the RPR will notify the Contractor and the Contractor shall correct the unsatisfactory work. Upon correction of the work, another inspection will be made which shall constitute the final inspection, provided the work has been satisfactorily completed. In such event, the RPR will make the final acceptance and notify the Contractor in writing of this acceptance as of the date of final inspection.

50-16 Claims for adjustment and disputes. If for any reason the Contractor deems that additional compensation is due for work or materials not clearly provided for in the contract, plans, or specifications or previously authorized as extra work, the Contractor shall notify the RPR in writing of their intention to claim such additional compensation before the Contractor begins the work on which the Contractor bases the claim. If such notification is not given or the RPR is not afforded proper opportunity by the Contractor for keeping strict account of actual cost as required, then the Contractor hereby agrees to waive any claim for such additional compensation. Such notice by the Contractor and the fact that the RPR has kept account of the cost of the work shall not in any way be construed as proving or substantiating the validity of the claim. When the work on which the claim for additional compensation is based has been completed, the Contractor shall, within 10 calendar days, submit a written claim to the RPR who will present it to the Owner for consideration in accordance with local laws or ordinances.

Nothing in this subsection shall be construed as a waiver of the Contractor's right to dispute final payment based on differences in measurements or computations.

- A. In accordance with Public Contract Code sections 20104 et seq. and other applicable law, public works claims of \$375,000 or less which arise between the Contractor and the Owner shall be resolved under the following the statutory procedure unless the Owner has elected to resolve the dispute pursuant to Public Contract Code section 10240 et seq.
- B. All Claims: All claims shall be submitted in writing and accompanied by substantiating documentation. Claims must be filed on or before the date of final payment unless other notice requirements are provided in the contract. "Claim" means a separate demand by the claimant for (1) a time extension, (2) payment of money or damages arising from work done by or on behalf of the claimant and payment of which is not otherwise expressly provided for or to which the claimant is not otherwise entitled, or (3) an amount the payment of which is disputed by the Owner.
- C. Claims Under \$50,000. The Owner shall respond in writing to the claim within 45 days of receipt of the claim, or, the Owner may request, in writing, within 30 days of receipt of the claim, any additional documentation supporting the claim or relating to defenses or claims the Owner may have. If additional information is needed thereafter, it shall be provided promptly upon written request by the Owner. The Owner's written response shall be submitted 15 days after receiving the additional documentation, or within the same period of time taken by the claimant to produce the additional information, whichever is greater.
- D. Claims over \$50,000 but less than or equal to \$375,000. The Owner shall respond in writing within 60 Days of receipt, or, may request in writing within 30 Days of receipt of the claim, any additional documents supporting the claim or relating to defenses or claims the Owner may have against the claimant. If additional information is needed thereafter, it shall be provided upon request. The Owner's response shall be submitted within 30 Days after receipt of the

further documents, or within the same period of time taken by the claimant to produce the additional information or documents, whichever is greater. The Contractor shall make these records and documents available at all reasonable times, without any direct charge.

- E. The Contractor will submit all claims in the following format.
 - a. Summary of claim merit and price, reference Contract Document provisions pursuant to which the claim is made.
 - b. List of documents relating to claim
 - i. Specifications.
 - ii. Drawings
 - iii. Clarifications (Requests for Information)
 - iv. Schedules
 - v. Other.
 - c. Chronology of events and correspondence.
 - d. Analysis of claim merit.
 - e. Analysis of claim cost.
 - f. Analysis of time impact in CPM format.
 - g. Cover letter and Contractor's certification of the claim, including claims from subcontractors of any tier, in accordance with Government Code sections 12650 et seq.
- F. If the claimant disputes the Owner's response, or if the Owner fails to respond within the statutory time period(s), the claimant may so notify the Owner within 15 Days of the receipt of the response or the failure to respond, and demand an informal conference to meet and confer for settlement. Upon such demand, the Owner shall schedule a meet and confer conference within 30 Days.
- G. If following the meet and confer conference, the claim or any portion thereof remains in dispute, the claimant may file a claim pursuant to Government Code sections 900 et seq. and Government Code sections 910 et seq. For purposes of those provisions, the time within which a claim must be filed shall be tolled from the time the claimant submits the written claim until the time the claim is denied, including any time utilized for the meet and confer conference.
- H. Submission of a claim, properly certified, with all required supporting documentation, and written rejection or denial of all or part of the claim by Owner, is a condition precedent to any action, proceeding, litigation, suit, or demand for arbitration by Contractor.

END OF SECTION 50

Section 60 Control of Materials

60-01 Source of supply and quality requirements. The materials used in the work shall conform to the requirements of the contract, plans, and specifications. Unless otherwise specified, such materials that are manufactured or processed shall be new (as compared to used or reprocessed).

In order to expedite the inspection and testing of materials, the Contractor shall furnish documentation to the Resident Project Representative (RPR) as to the origin, composition, and manufacture of all materials to be used in the work. Documentation shall be furnished promptly after execution of the contract but, in all cases, prior to delivery of such materials.

At the RPR's option, materials may be approved at the source of supply before delivery. If it is found after trial that sources of supply for previously approved materials do not produce specified products, the Contractor shall furnish materials from other sources.

The Contractor shall furnish airport lighting equipment that meets the requirements of the specifications; and is listed in AC 150/5345-53, *Airport Lighting Equipment Certification Program and Addendum*, that is in effect on the date of advertisement.

All other equipment and materials covered by other referenced specifications shall be subject to acceptance through manufacturer's certification of compliance with the applicable specification.

60-02 Samples, tests, and cited specifications. All materials used in the work shall be inspected, tested, and approved by the RPR before incorporation in the work unless otherwise designated. Any work in which untested materials are used without approval or written permission of the RPR shall be performed at the Contractor's risk. Materials found to be unacceptable and unauthorized will not be paid for and, if directed by the RPR, shall be removed at the Contractor's expense.

Unless otherwise designated, quality assurance tests will be made by and at the expense of the Owner in accordance with the cited standard methods of ASTM, American Association of State Highway and Transportation Officials (AASHTO), federal specifications, Commercial Item Descriptions, and all other cited methods, which are current on the date of advertisement for bids.

The testing organizations performing on-site quality assurance field tests shall have copies of all referenced standards on the construction site for use by all technicians and other personnel. Unless otherwise designated, samples for quality assurance will be taken by a qualified representative of the RPR. All materials being used are subject to inspection, test, or rejection at any time prior to or during incorporation into the work. Copies of all tests will be furnished to the Contractor's representative at their request after review and approval of the RPR.

A copy of all Contractor QC test data shall be provided to the RPR daily, along with printed reports, in an approved format, on a weekly basis. After completion of the project, and prior to final payment, the Contractor shall submit a final report to the RPR showing all test data reports, plus an analysis of all results showing ranges, averages, and corrective action taken on all failing tests.

The Contractor shall employ a Quality Control (QC) testing organization to perform all Contractor required QC tests in accordance with Item C-100 Contractor Quality Control Program (CQCP).

60-03 Certification of compliance/analysis (COC/COA). The RPR may permit the use, prior to sampling and testing, of certain materials or assemblies when accompanied by manufacturer's COC stating that such materials or assemblies fully comply with the requirements of the contract. The certificate shall be signed by the manufacturer. Each lot of such materials or assemblies delivered to the work must be accompanied by a certificate of compliance in which the lot is clearly identified. The COA is the manufacturer's COC and includes all applicable test results.

Manufacturer's certificates of compliance shall not relieve the Contractor of their responsibility to provide materials in accordance with these specifications and acceptable to the RPR. Materials supplied and/or installed that do not materially comply with these specifications shall be removed, when directed by the RPR, and replaced with materials, which do comply with these specifications, at the sole cost of the Contractor.

Materials or assemblies used on the basis of certificates of compliance may be sampled and tested at any time and if found not to be in conformity with contract requirements will be subject to rejection whether in place or not.

The form and distribution of certificates of compliance shall be as approved by the RPR.

When a material or assembly is specified by "brand name or equal" and the Contractor elects to furnish the specified "or equal," the Contractor shall be required to furnish the manufacturer's certificate of compliance for each lot of such material or assembly delivered to the work. Such certificate of compliance shall clearly identify each lot delivered and shall certify as to:

- a. Conformance to the specified performance, testing, quality or dimensional requirements; and,
- b. Suitability of the material or assembly for the use intended in the contract work.

The RPR shall be the sole judge as to whether the proposed "or equal" is suitable for use in the work.

The RPR reserves the right to refuse permission for use of materials or assemblies on the basis of certificates of compliance.

60-04 Plant inspection. The RPR or their authorized representative may inspect, at its source, any specified material or assembly to be used in the work. Manufacturing plants may be inspected from time to time for the purpose of determining compliance with specified manufacturing methods or materials to be used in the work and to obtain samples required for acceptance of the material or assembly.

Should the RPR conduct plant inspections, the following conditions shall exist:

- a. The RPR shall have the cooperation and assistance of the Contractor and the producer with whom the Contractor has contracted for materials.
- b. The RPR shall have full entry at all reasonable times to such parts of the plant that concern the manufacture or production of the materials being furnished.
- c. If required by the RPR, the Contractor shall arrange for adequate office or working space that may be reasonably needed for conducting plant inspections. Place office or working space in a convenient location with respect to the plant.

It is understood and agreed that the Owner shall have the right to retest any material that has been tested and approved at the source of supply after it has been delivered to the site. The RPR shall have the right to reject only material which, when retested, does not meet the requirements of the contract, plans, or specifications.

60-05 Engineer/ Resident Project Representative (RPR) field office. The Engineer/RPR field office, if required, shall be as indicated in C-105, Mobilization.

60-06 Storage of materials. Materials shall be stored to assure the preservation of their quality and fitness for the work. Stored materials, even though approved before storage, may again be inspected prior to their use in the work. Stored materials shall be located to facilitate their prompt inspection. The Contractor shall coordinate the storage of all materials with the RPR. Materials to be stored on airport property shall not create an obstruction to air navigation nor shall they interfere with the free and unobstructed movement of aircraft. Unless otherwise shown on the plans and/or CSPP, the storage of materials and the location of the Contractor's plant and parked equipment or vehicles shall be as directed by the RPR. Private property shall not be used for storage purposes without written permission of the Owner or lessee of such property. The Contractor shall make all arrangements and bear all expenses for the storage of materials on private property. Upon request, the Contractor shall furnish the RPR a copy of the property Owner's permission.

All storage sites on private or airport property shall be restored to their original condition by the Contractor at their expense, except as otherwise agreed to (in writing) by the Owner or lessee of the property.

60-07 Unacceptable materials. Any material or assembly that does not conform to the requirements of the contract, plans, or specifications shall be considered unacceptable and shall be rejected. The Contractor shall remove any rejected material or assembly from the site of the work, unless otherwise instructed by the RPR.

Rejected material or assembly, the defects of which have been corrected by the Contractor, shall not be returned to the site of the work until such time as the RPR has approved its use in the work.

60-08 Owner furnished materials. The Contractor shall furnish all materials required to complete the work, except those specified, if any, to be furnished by the Owner. Owner-furnished materials shall be made available to the Contractor at the location specified.

All costs of handling, transportation from the specified location to the site of work, storage, and installing Owner-furnished materials shall be included in the unit price bid for the contract item in which such Owner-furnished material is used.

After any Owner-furnished material has been delivered to the location specified, the Contractor shall be responsible for any demurrage, damage, loss, or other deficiencies that may occur during the Contractor's handling, storage, or use of such Owner-furnished material. The Owner will deduct from any monies due or to become due the Contractor any cost incurred by the Owner in making good such loss due to the Contractor's handling, storage, or use of Owner-furnished materials.

END OF SECTION 60

Section 70 Legal Regulations and Responsibility to Public

70-01 Laws to be observed. The Contractor shall keep fully informed of all federal and state laws, all local laws, ordinances, and regulations and all orders and decrees of bodies or tribunals having any jurisdiction or authority, which in any manner affect those engaged or employed on the work, or which in any way affect the conduct of the work. The Contractor shall at all times observe and comply with all such laws, ordinances, regulations, orders, and decrees; and shall protect and indemnify the Owner, the Engineer, the Resident Project Representative (RPR) and all their officers, agents, or servants against any claim or liability arising from or based on the violation of any such law, ordinance, regulation, order, or decree, whether by the Contractor or the Contractor's employees.

70-02 Permits, licenses, and taxes. The Contractor shall procure all permits and licenses, pay all charges, fees, and taxes, and give all notices necessary and incidental to the due and lawful execution of the work.

70-03 Patented devices, materials, and processes. If the Contractor is required or desires to use any design, device, material, or process covered by letters of patent or copyright, the Contractor shall provide for such use by suitable legal agreement with the Patentee or Owner. The Contractor and the surety shall indemnify and hold harmless the Owner, the Engineer, the RPR, any third party, or political subdivision from any and all claims for infringement by reason of the use of any such patented design, device, material or process, or any trademark or copyright, and shall indemnify the Owner for any costs, expenses, and damages which it may be obliged to pay by reason of an infringement, at any time during the execution or after the completion of the work.

70-04 Restoration of surfaces disturbed by others. The Owner reserves the right to authorize the construction, reconstruction, or maintenance of any public or private utility service, FAA or National Oceanic and Atmospheric Administration (NOAA) facility, or a utility service of another government agency at any time during the progress of the work. To the extent that such construction, reconstruction, or maintenance has been coordinated with the Owner, such authorized work (by others) must be shown on the plans and is indicated as follows:

<u>Utility</u>	<u>Location (Sheet No.)</u>	<u>Person to Contact</u>	<u>Phone No.</u>
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“Not Applicable”

Except as listed above, the Contractor shall not permit any individual, firm, or corporation to excavate or otherwise disturb such utility services or facilities located within the limits of the work without the written permission of the RPR.

Should the Owner of public or private utility service, FAA, or NOAA facility, or a utility service of another government agency be authorized to construct, reconstruct, or maintain such utility service or facility during the progress of the work, the Contractor shall cooperate with such Owners by arranging and performing the work in this contract to facilitate such construction, reconstruction or maintenance by others whether or not such work by others is listed above. When ordered as extra work by the RPR, the Contractor shall make all necessary repairs to the work which are due to such authorized work by others,

unless otherwise provided for in the contract, plans, or specifications. It is understood and agreed that the Contractor shall not be entitled to make any claim for damages due to such authorized work by others or for any delay to the work resulting from such authorized work.

70-05 Federal Participation. The United States Government has agreed to reimburse the Owner for some portion of the contract costs. The contract work is subject to the inspection and approval of duly authorized representatives of the FAA Administrator. No requirement of this contract shall be construed as making the United States a party to the contract nor will any such requirement interfere, in any way, with the rights of either party to the contract.

70-06 Sanitary, health, and safety provisions. The Contractor's worksite and facilities shall comply with applicable federal, state, and local requirements for health, safety and sanitary provisions.

70-07 Public convenience and safety. The Contractor shall control their operations and those of their subcontractors and all suppliers, to assure the least inconvenience to the traveling public. Under all circumstances, safety shall be the most important consideration.

The Contractor shall maintain the free and unobstructed movement of aircraft and vehicular traffic with respect to their own operations and those of their own subcontractors and all suppliers in accordance with Section 40, paragraph 40-05, *Maintenance of Traffic*, and shall limit such operations for the convenience and safety of the traveling public as specified in Section 80, paragraph 80-04, *Limitation of Operations*.

The Contractor shall remove or control debris and rubbish resulting from its work operations at frequent intervals, and upon the order of the RPR. If the RPR determines the existence of Contractor debris in the work site represents a hazard to airport operations and the Contractor is unable to respond in a prompt and reasonable manner, the RPR reserves the right to assign the task of debris removal to a third party and recover the resulting costs as a liquidated damage against the Contractor.

70-08 Construction Safety and Phasing Plan (CSPP). The Contractor shall complete the work in accordance with the approved Construction Safety and Phasing Plan (CSPP) developed in accordance with AC 150/5370-2, Operational Safety on Airports During Construction. The CSPP is described in the Construction Safety and Phasing Plan, Appendix A to Section 70.

During the work of this Contract, the Owner will make such arrangements to coordinate aircraft movements and Airport operations as necessary to conform to the construction procedures outlined in the Construction Safety and Phasing Plan, and as shown on the Contract Drawings. The Contractor shall give adequate notice to the RPR, to afford time to coordinate construction with the Owner.

70-09 Use of explosives. The use of explosives is not permitted on this project.

70-10 Protection and restoration of property and landscape. The Contractor shall be responsible for the preservation of all public and private property, and shall protect carefully from disturbance or damage all land monuments and property markers until the Engineer/RPR has witnessed or otherwise referenced their location and shall not move them until directed.

The Contractor shall be responsible for all damage or injury to property of any character, during the execution of the work, resulting from any act, omission, neglect, or misconduct in manner or method of executing the work, or at any time due to defective work or materials, and said responsibility shall not be released until the project has been completed and accepted.

When or where any direct or indirect damage or injury is done to public or private property by or on account of any act, omission, neglect, or misconduct in the execution of the work, or in consequence of the non-execution thereof by the Contractor, the Contractor shall restore, at their expense, such property to a condition similar or equal to that existing before such damage or injury was done, by repairing, or otherwise restoring as may be directed, or the Contractor shall make good such damage or injury in an acceptable manner.

The Contractor shall indemnify the Owner for any and all costs for the repair or replacement of the Owner's property including, but not limited to, buildings and roads, which arise from or in any manner grow out of any act or neglect on or about the Project site by the Contractor and anyone for whom the Contractor is legally liable.

70-11 Responsibility for damage claims. The Contractor shall indemnify, and hold harmless the Engineer/RPR and the Owner and their, officers, agents, and employees from all suits, actions, damages, costs, expenses or claims, of any character, brought because of any injuries or damage received or sustained by any person, persons, or property on account of the operations of the Contractor; or on account of or in consequence of any neglect in safeguarding the work; or through use of unacceptable materials in constructing the work; or because of any act or omission, neglect, or misconduct of said Contractor; or because of any claims or amounts recovered from any infringements of patent, trademark, or copyright; or from any claims or amounts arising or recovered under the "Workmen's Compensation Act," or any other law, ordinance, order, or decree. Money due the Contractor under and by virtue of their own contract considered necessary by the Owner for such purpose may be retained for the use of the Owner or, in case no money is due, their own surety may be held until such suits, actions, or claims for injuries or damages shall have been settled and suitable evidence to that effect furnished to the Owner, except that money due the Contractor will not be withheld when the Contractor produces satisfactory evidence that he or she is adequately protected by public liability and property damage insurance.

70-12 Third party beneficiary clause. It is specifically agreed between the parties executing the contract that it is not intended by any of the provisions of any part of the contract to create for the public or any member thereof, a third-party beneficiary or to authorize anyone not a party to the contract to maintain a suit for personal injuries or property damage pursuant to the terms or provisions of the contract.

70-13 Opening sections of the work to traffic. If it is necessary for the Contractor to complete portions of the contract work for the beneficial occupancy of the Owner prior to completion of the entire contract, such "phasing" of the work must be specified below and indicated on the approved Construction Safety and Phasing Plan (CSPP) and the project plans. When so specified, the Contractor shall complete such portions of the work on or before the date specified or as otherwise specified.

Opening sections of work to traffic shall be as described in the CSPP.

Upon completion of any portion of work listed above, such portion shall be accepted by the Owner in accordance with Section 50, paragraph 50-14, *Partial Acceptance*.

No portion of the work may be opened by the Contractor until directed by the Owner in writing. Should it become necessary to open a portion of the work to traffic on a temporary or intermittent basis, such openings shall be made when, in the opinion of the RPR, such portion of the work is in an acceptable condition to support the intended traffic. Temporary or intermittent openings are considered to be inherent in the work and shall not constitute either acceptance of the portion of the work so opened or a waiver of

any provision of the contract. Any damage to the portion of the work so opened that is not attributable to traffic which is permitted by the Owner shall be repaired by the Contractor at their expense.

The Contractor shall make their own estimate of the inherent difficulties involved in completing the work under the conditions herein described and shall not claim any added compensation by reason of delay or increased cost due to opening a portion of the contract work.

The Contractor must conform to safety standards contained AC 150/5370-2 and the approved CSPP.

Contractor shall refer to the plans, specifications, and the approved CSPP to identify barricade requirements, temporary and/or permanent markings, airfield lighting, guidance signs and other safety requirements prior to opening up sections of work to traffic.

70-14 Contractor's responsibility for work. Until the RPR's final written acceptance of the entire completed work, excepting only those portions of the work accepted in accordance with Section 50, paragraph 50-14, *Partial Acceptance*, the Contractor shall have the charge and care thereof and shall take every precaution against injury or damage to any part due to the action of the elements or from any other cause, whether arising from the execution or from the non-execution of the work. The Contractor shall rebuild, repair, restore, and make good all injuries or damages to any portion of the work occasioned by any of the above causes before final acceptance and shall bear the expense thereof except damage to the work due to unforeseeable causes beyond the control of and without the fault or negligence of the Contractor, including but not restricted to acts of God such as earthquake, tidal wave, tornado, hurricane or other cataclysmic phenomenon of nature, or acts of the public enemy or of government authorities.

If the work is suspended for any cause whatever, the Contractor shall be responsible for the work and shall take such precautions necessary to prevent damage to the work. The Contractor shall provide for normal drainage and shall erect necessary temporary structures, signs, or other facilities at their own expense. During such period of suspension of work, the Contractor shall properly and continuously maintain in an acceptable growing condition all living material in newly established planting, seeding, and sodding furnished under the contract, and shall take adequate precautions to protect new tree growth and other important vegetative growth against injury.

70-15 Contractor's responsibility for utility service and facilities of others. As provided in paragraph 70-04, *Restoration of Surfaces Disturbed by Others*, the Contractor shall cooperate with the owner of any public or private utility service, FAA or NOAA, or a utility service of another government agency that may be authorized by the Owner to construct, reconstruct or maintain such utility services or facilities during the progress of the work. In addition, the Contractor shall control their operations to prevent the unscheduled interruption of such utility services and facilities.

To the extent that such public or private utility services, FAA, or NOAA facilities, or utility services of another governmental agency are known to exist within the limits of the contract work, the approximate locations have been indicated on the plans and/or in the contract documents.

<u>Utility Service or Facility</u>	<u>Person to Contract</u>	<u>Telephone No.</u>
Airfield Lighting System	DRBA/Tom Berry	609-886-1755
	DRBA/John Cross	
Electric Service		
Telephone Service	Verizon	800-837-9366

Communications Service	Comcast	856-694-6016
Gas Service		
Sanitary Sewer & Water	Dept. of Water & Wastewater	302-736-7025

It is understood and agreed that the Owner does not guarantee the accuracy or the completeness of the location information relating to existing utility services, facilities, or structures that may be shown on the plans or encountered in the work. Any inaccuracy or omission in such information shall not relieve the Contractor of the responsibility to protect such existing features from damage or unscheduled interruption of service.

It is further understood and agreed that the Contractor shall, upon execution of the contract, notify the Owners of all utility services or other facilities of their plan of operations. Such notification shall be in writing addressed to "The Person to Contact" as provided in this paragraph and paragraph 70-04, *Restoration of Surfaces Disturbed By Others*. A copy of each notification shall be given to the RPR.

In addition to the general written notification provided, it shall be the responsibility of the Contractor to keep such individual Owners advised of changes in their plan of operations that would affect such Owners.

Prior to beginning the work in the general vicinity of an existing utility service or facility, the Contractor shall again notify each such Owner of their plan of operation. If, in the Contractor's opinion, the Owner's assistance is needed to locate the utility service or facility or the presence of a representative of the Owner is desirable to observe the work, such advice should be included in the notification. Such notification shall be given by the most expeditious means to reach the utility owner's "Person to Contact" no later than two normal business days prior to the Contractor's commencement of operations in such general vicinity. The Contractor shall furnish a written summary of the notification to the RPR.

The Contractor's failure to give the two days' notice shall be cause for the Owner to suspend the Contractor's operations in the general vicinity of a utility service or facility.

Where the outside limits of an underground utility service have been located and staked on the ground, the Contractor shall be required to use hand excavation methods within 3 feet (1 m) of such outside limits at such points as may be required to ensure protection from damage due to the Contractor's operations.

Should the Contractor damage or interrupt the operation of a utility service or facility by accident or otherwise, the Contractor shall immediately notify the proper authority and the RPR and shall take all reasonable measures to prevent further damage or interruption of service. The Contractor, in such events, shall cooperate with the utility service or facility owner and the RPR continuously until such damage has been repaired and service restored to the satisfaction of the utility or facility owner.

The Contractor shall bear all costs of damage and restoration of service to any utility service or facility due to their operations whether due to negligence or accident. The Owner reserves the right to deduct such costs from any monies due or which may become due the Contractor, or their own surety.

70-15.1 FAA facilities and cable runs. The Contractor is hereby advised that the construction limits of the project include existing facilities and buried cable runs that are owned, operated and maintained by the FAA. The Contractor, during the execution of the project work, shall comply with the following:

a. The Contractor shall permit FAA maintenance personnel the right of access to the project work site for purposes of inspecting and maintaining all existing FAA owned facilities.

b. The Contractor shall provide notice to the FAA Air Traffic Organization (ATO)/Technical Operations/System Support Center (SSC) Point-of-Contact through the airport Owner and RPR a minimum of seven (7) calendar days prior to commencement of construction activities in order to permit sufficient time to locate and mark existing buried cables and to schedule any required facility outages.

c. If execution of the project work requires a facility outage, the Contractor shall contact the FAA Point-of-Contact a minimum of 72 hours prior to the time of the required outage.

d. Any damage to FAA cables, access roads, or FAA facilities during construction caused by the Contractor's equipment or personnel whether by negligence or accident will require the Contractor to repair or replace the damaged cables, access road, or FAA facilities to FAA requirements. The Contractor shall not bear the cost to repair damage to underground facilities or utilities improperly located by the FAA.

70-16 Furnishing rights-of-way. The Owner will be responsible for furnishing all rights-of-way upon which the work is to be constructed in advance of the Contractor's operations.

70-17 Personal liability of public officials. In carrying out any of the contract provisions or in exercising any power or authority granted by this contract, there shall be no liability upon the Engineer, RPR, their authorized representatives, or any officials of the Owner either personally or as an official of the Owner. It is understood that in such matters they act solely as agents and representatives of the Owner.

70-18 No waiver of legal rights. Upon completion of the work, the Owner will expeditiously make final inspection and notify the Contractor of final acceptance. Such final acceptance, however, shall not preclude or stop the Owner from correcting any measurement, estimate, or certificate made before or after completion of the work, nor shall the Owner be precluded or stopped from recovering from the Contractor or their surety, or both, such overpayment as may be sustained, or by failure on the part of the Contractor to fulfill their obligations under the contract. A waiver on the part of the Owner of any breach of any part of the contract shall not be held to be a waiver of any other or subsequent breach.

The Contractor, without prejudice to the terms of the contract, shall be liable to the Owner for latent defects, fraud, or such gross mistakes as may amount to fraud, or as regards the Owner's rights under any warranty or guaranty.

70-19 Environmental protection. The Contractor shall comply with all federal, state, and local laws and regulations controlling pollution of the environment. The Contractor shall take necessary precautions to prevent pollution of streams, lakes, ponds, and reservoirs with fuels, oils, asphalts, chemicals, or other harmful materials and to prevent pollution of the atmosphere from particulate and gaseous matter.

The Contractor shall perform all testing, removal of contaminated material, transportation, treatment, remediation, and disposal of contaminated materials which are the result of a spill or release caused by the Contractor, and he shall provide and properly place materials to restore the property to its original condition, all to the Owner's satisfaction and at the Contractor's expense. Refer to the subsection 70-10 titled PROTECTION AND RESTORATION OF PROPERTY AND LANDSCAPE of this section.

A. Air Pollution

1. No burning of combustible waste shall be permitted.
2. Alternatives to Burning Land Cleared Material.

- a. All spoil material from clearing and grubbing operations shall be disposed of in accordance with the Technical Specifications, unless otherwise directed.
 - b. Wood may be salvaged for firewood or commercial use or it may be chipped and disposed of for use as mulch.
 - c. Logs, brush, etc. may be removed to an authorized disposal area or disposed of to the general public without charge.
3. Dust Control.
- a. Common construction operations which may cause excessive dust include:
 - 1) Quarry, drilling and rock crushing.
 - 2) Clearing, grubbing and stripping.
 - 3) Excavation and placement of embankment.
 - 4) Cement and aggregate handling.
 - 5) Cement or lime stabilization.
 - 6) Blasting.
 - 7) Use of haul roads.
 - 8) Sandblasting or grinding.
 - b. Other construction operations which may cause air pollution are:
 - 1) Volatiles escaping from asphalt and cut back materials.
 - 2) Use of herbicides or fertilizers.
 - 3) Smoke from asphalt plants or heater/planers.
 - c. Control of Dust and Other Air Pollutants shall be the responsibility of the Contractor and may include the following control methods:
 - 1) Drilling apparatus equipped with water or chemical dust controlling systems.
 - 2) Exposing the minimum area of land.
 - 3) Applying temporary mulch with or without seeding.
 - 4) Use of water sprinkling trucks.
 - 5) Use of covered haul trucks.
 - 6) Use of stabilizing agents in solution.
 - 7) Use of dust palliative and penetration asphalt on temporary roads.
 - 8) Use of wood chips in traffic or work areas.
 - 9) Use of vacuum equipped sandblasting systems.
 - 10) Use of plastic sheet coverings.
 - 11) Restricting the application rate of herbicides to recommended dosage. Materials should be covered and protected from the elements. Application, equipment and empty containers shall not be rinsed and discharged to a stream, etc. or allowed to enter the groundwater.

- 12) Use dust control measures at bituminous mixing plants, and quarry operations.
- 13) Delay operations until climate or wind conditions dissipate or inhibit the potential pollutants in a manner satisfactory to the RPR.

B. Water Pollution

1. The Contractor shall use suitable precautions to minimize water pollution during the progress of the work. Erosion control devices or methods may consist of berms, dikes, dams, drains, sediment basins, fiber mats, woven plastic filter cloths, gravel, mulches, quick growing grasses, sod, bituminous spray or other control devices.
2. The amount of surface area of erodible earth at any one time shall not exceed the area allowed by permit.
3. Pollutants such as fuels, lubricants, bitumens, raw sewage and other harmful materials shall not be discharged into or near rivers, streams, and impoundments or into natural or man-made channels leading thereto. Wash water or waste from concrete mixing and curing operations should not be allowed to enter streams, etc.

In the event of conflict between these requirements and pollution control laws, rules or regulations or other Federal, State or local agencies, the more restrictive laws, rules, or regulations shall apply.

70-20 Archaeological and historical findings. Unless otherwise specified in this subsection, the Contractor is advised that the site of the work is not within any property, district, or site, and does not contain any building, structure, or object listed in the current National Register of Historic Places published by the United States Department of Interior.

Should the Contractor encounter, during their operations, any building, part of a building, structure, or object that is incongruous with its surroundings, the Contractor shall immediately cease operations in that location and notify the RPR. The RPR will immediately investigate the Contractor's finding and the Owner will direct the Contractor to either resume operations or to suspend operations as directed.

Should the Owner order suspension of the Contractor's operations in order to protect an archaeological or historical finding, or order the Contractor to perform extra work, such shall be covered by an appropriate contract change order or supplemental agreement as provided in Section 40, paragraph 40-04, *Extra Work*, and Section 90, paragraph 90-05, *Payment for Extra Work*. If appropriate, the contract change order or supplemental agreement shall include an extension of contract time in accordance with Section 80, paragraph 80-07, *Determination and Extension of Contract Time*.

70-21 Insurance Requirements.

The Contractor shall align with Special Provisions – Part I, Division 103.10 Insurance. The Certificate Holder shall be the Delaware River and Bay Authority, New Castle Ave. & Rt. 295, New Castle, DE 19720 and C&S Engineers, Inc., 499 Col Eileen Collins Blvd., Syracuse, NY 13212. The following shall be named as Additional Insureds: Delaware River and Bay Authority; C&S Engineers, Inc. the Federal Aviation Administration.

END OF SECTION 70

ATTACHMENT “A”

TO

SECTION 70-08

**CONSTRUCTION SAFETY AND
PHASING PLAN (CSPP)**

FOR THE CONSTRUCTION OF

BOX HANGAR CONSTRUCTION

AT

DELAWARE AIRPARK (33N)

FAA AIP NO.: 3-10-0001-____-2024

DRBA NO.: 33N-24-A

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 - b. Restrictions

APPENDICES:

APPENDIX 1 – General Plan and Construction Safety Drawings

APPENDIX 2 – Construction Project Daily Safety Inspection Checklist

APPENDIX 3 – Contractor’s Safety Plan Compliance Document (SPCD)

APPENDIX 4 – Spoil Deposition Release Form

APPENDIX 5 – Safety Plan Compliance Document (SPCD) Certification

CONSTRUCTION SAFETY AND PHASING PLAN (CSPP)

1.0 PURPOSE.

Aviation safety is the primary consideration at airports, especially during construction. The Airport Owner's Construction Safety and Phasing Plan (CSPP) and the Contractor's Safety Plan Compliance Document (SPCD) are the primary tools to ensure safety compliance when coordinating construction activities with airport operations. These documents identify all aspects of the construction project that pose a potential safety hazard to airport operations and outline respective mitigation procedures for each hazard.

The CSPP sets forth benchmarks and requirements for the project to help ensure the highest levels of safety, security and efficiency at the airport at the time of construction. Requirements for this CSPP were developed from FAA Advisory Circular (AC) 150/5370-2 Operational Safety on Airports During Construction, latest edition.

The CSPP is a standalone document, written to correspond with the safety and security requirements set forth in the AC, the airport safety and security requirements, and local codes and requirements. The CSPP is to be used by all personnel involved in the project. The CSPP covers the actions of not only the construction personnel and equipment, but also the action of inspection personnel and airport staff.

This document has been developed in order to minimize interruptions to airport operations, reduce construction costs, and maximize the performance and safety of construction activity. Strict adherence to the provisions of the CSPP by all personnel assigned to or visiting the construction site is mandatory.

The Contractor shall submit a Safety Plan Compliance Document (SPCD) to the Airport Owner describing how the Contractor will comply with the requirements set forth in this CSPP. The SPCD must be submitted to the Airport Owner prior to issuance of Notice to Proceed.

In the event the Contractor's activities are found in non-compliance with the provisions of the CSPP or the SPCD, the Airport Owner's Representative will direct the Contractor, in writing, to immediately cease those operations in violation. In addition, a safety meeting will be conducted for the purpose of reviewing those provisions in the CSPP/SPCD which were violated. The Contractor will not be allowed to resume any construction operations until conclusion of the safety meeting and all corrective actions have been implemented.

2.0 SCOPE OF PROJECT AND CSPP.

The proposed project generally includes the construction of a new, approximately 11,584 square foot, pre-engineered metal building (PEMB) box hangar, to be constructed on a previously constructed structural concrete pad and columns. The project includes building construction, construction of a firewall, new electrical service to the building, interior and exterior lighting, and new bi-fold electrically operated overhead hangar doors. The existing building foundation was designed for an Erec-A-Tube 4 Unit Model 52-56 building. If the Contractor utilizes a or equal building any required structural modifications shall be included in the Contractor's price for the building. No additional payment will be made for any foundation modifications. The construction contract time of completion for this project is 210 calendar days from the date issued on the Notice to Proceed. The contract time of completion shall begin upon issuance of the Notice to Proceed, and includes shop drawing submittal and review, and lead time for all building and electrical components required for the project.

Safety, maintaining aircraft operations, and construction costs are all interrelated. Since safety must not be compromised, the Airport Owner must strike a balance between maintaining aircraft operations and construction costs. This balance will vary widely depending on the operational needs and resources of the airport and will require early coordination with airport users and the FAA. As the project design progresses, the necessary construction locations, activities and associated costs will be identified. As they are identified, their impact to airport operations

must be assessed. Adjustments are made to the proposed construction activities, often by phasing the project and/or to airport operations in order to maintain operational safety. This planning effort will ultimately result in a project CSPP. The development of the CSPP takes place through the following five steps:

- a. Identify Affected Areas
- b. Describe Current Operations
- c. Allow for Temporary Changes to Operations
- d. Take Required Measures to Revise Operations
- e. Manage Safety Risk

3.0 PLAN REQUIREMENTS.

3.1 COORDINATION. The following items shall be coordinated as required:

- a. **Pre-construction Meeting.** A preconstruction meeting will be conducted to discuss operational safety, testing, quality control, quality acceptance, security, safety, labor requirements, environmental factors, and other issues. All parties affected by the construction will be asked to attend including, but not limited to, the Airport Owner, tenants, contractor, subcontractors and Resident Project Representative (RPR).

At the preconstruction meeting, the Contractor shall submit a plan of operation and schedule of work to the RPR for approval. The Contractor's plan of operation shall indicate, in detail, the amount of construction planned and the number of shifts and/or overtime operations proposed for the project. The schedule of work shall clearly indicate the sequence of work to be performed. The Contractor shall conform, at all times, to the requirements of these provisions and with current safety practices, rules, regulations and security requirements of Airport Owner. The preconstruction meeting will be held prior to issuance of a Notice to Proceed.

- b. **Contractor Progress Meetings.** A minimum of one progress meeting to discuss scheduling and coordination shall be held each week unless otherwise directed by the Airport Owner, throughout the duration of the Contract, between the Airport Owner, Contractor, RPR and any other interested parties at a time and place to be designated by the RPR. These meetings shall include a detailed discussion of construction phasing and safety with regard to the Contractor's compliance with the requirements stipulated in the Contract Documents.

In attendance at these meetings shall be a Contractor's representative with the authority to make decisions concerning the scheduling and coordination of work. Progress meetings shall be facilitated by the RPR. Operational safety shall be a standing agenda item during progress meetings throughout the construction project.

- c. **Scope or Schedule Changes.** Changes in the Scope of Work or Project Schedule shall be governed by Section 40 and Section 80 of the Contract Documents. Any proposed change that results in a deviation from the established CSPP as expressed by the Contract Documents must be submitted to the FAA and Airport Owner for review and approval. FAA review and approval can be expected to take sixty business days.
- d. **FAA ATO Coordination.** Early coordination with Federal Aviation Administration (FAA) Air Traffic Organization (ATO) required for scheduling Technical Operations shutdowns prior to construction. Coordination is critical to restarts of NAVAID services and to the establishment of any special procedures for the movement of aircraft. All relocation or adjustments to NAVAIDs, or changes to final grades in critical areas, should be coordinated with FAA ATO and may require an FAA flight inspection prior to restarting the facility. Flight inspections must be coordinated and scheduled well in advance of the intended facility restart.

No adjustments to NAVAID, encroachment on facility critical areas, or facility shutdowns are anticipated during construction, so ATO coordination will not be necessary.

- e. **Pre-Paving Meeting.** If paving is included in this project, a pre-paving meeting will be held to discuss the status of preliminary submittals, the RPR's inspection of the plant and laboratory, test section requirements, paving plan requirements, and production requirements.
- f. **Payment.** The cost of complying with the requirements of this section, including but not limited to scheduling; providing flag people; construction, maintenance and removal of staging areas; providing, placing, relocating, maintaining and removing temporary barricades; protection of aircraft and vehicular traffic; maintenance of airport lighting circuits; installation, maintenance, and removal of temporary wiring and airfield lighting facilities; cleaning of paved surfaces; restoration of surfaces disturbed as a result of the Contractor's operations; providing, maintaining, and removing warning signs, hazard markings, barricade lights; and all security requirements shall be included under Technical Specification Item C-106, Safety, Security and Maintenance of Traffic.

3.2 PHASING.

a. Phase Elements (Work Areas)

1. **Work Area Descriptions:** The work of the project will be completed in one (1) work area in order to coordinate construction in a way that will minimize interference with Airport operations:

Work Area "A": Includes all labor, equipment and materials required to construct the new box hangar on an existing structural concrete slab. Work Area A includes development of the Contractor's Staging Area and Employee Parking Area, construction of the pre-engineered metal building (PEMB) box hangar, new electrical service including a new transformer and underground electrical conductors and grounding system.

2. **Construction Safety Requirements**

The Contractor shall obtain approval from the RPR prior to beginning any work in all areas of the airport. No work is expected on runways or taxiways during this project. No active runway or taxiway shall be crossed, entered, or obstructed at any time. The Contractor shall plan and coordinate his/her work in such a manner as to insure safety and a minimum of hindrance to airport operations. All Contractor equipment and material stockpiles shall be stored at locations determined during construction or as shown on the Construction Safety Drawings (Appendix 1). No equipment will be allowed to park within the approach area of an active runway at any time.

During the work under this Contract, the Airport Owner will make such arrangements to coordinate aircraft movements and Airport operations as necessary to conform to the construction procedures as outlined below and as shown on the Contract Drawings. The Contractor shall give adequate notice to the RPR, so as to afford time to coordinate construction with the Airport Owner. No work shall proceed in any area without prior approval.

The Contractor shall always confine construction operations to the Contractor work area and designated haul routes. Contractor personnel, equipment, stored materials, subcontractors and suppliers will not be allowed on any other area within the Air Operations Area and within the Airport boundaries without prior approval of the Airport Owner or RPR.

The RPR will perform a visual site assessment before the Contractor occupies the Contractor work area. The Contractor shall be held responsible for all repairs and cleanup costs incurred as a result of the Contractor's construction operations. Restoration shall be the complete return of all work areas to the original conditions.

Prior to the start of construction operations, the Contractor shall perform the following:

- Coordinate issuing Notices to Airmen (NOTAM) with the Airport Owner and RPR for the construction activities involved at least 48 hours in advance of the work.

At the conclusion of construction operations, the Contractor shall perform the following:

- Remove barricades as indicated on the Construction Safety Drawings.
- Clean all paved surfaces in accordance with Item C-106, Safety, Security and Maintenance of Traffic.
- Coordinate cancellation of the NOTAMs with the Airport Owner and RPR.

Work Area "A": Work in area A shall be started first. During work in this area, the east-west taxilane that connects the main aircraft parking apron and terminal to Taxiway A and the t-hangars and proposed box hangar will be closed just west of the north – south portion of Taxiway A. The southern east-west taxilane that also connects the terminal area to the t-hangars, will be closed just west of the two t-hangars. Contractor access to the project site shall be via the west airport entrance road leading from Route 42, 7 Hickories Road to the two t-hangars, and then a left turn to the employee parking area and Contractor's staging area.

At the start of work in Area A, the Contractor shall perform the following:

- Verify with the Airport Owner that a NOTAM has been issued closing the two taxilanes.
- Provide temporary barricades across the northern and southern east-west taxilanes.
- Place construction traffic warning signs on 7 Hickories Road, 500' on either side of the intersection of 7 Hickories Road with the west airport entrance road.

3.3 AREAS AND OPERATIONS AFFECTED BY THE CONSTRUCTION ACTIVITY.

Contractor, subcontractor, and supplier employees or any other unauthorized persons shall be restricted from entering an active airport operating area without previous permission from the Airport Owner.

In an emergency situation, the Airport Owner or other designated airport representative may order the Contractor to suspend operations; move personnel, equipment, and materials to a safe location; and stand by until aircraft use is completed.

The Contractor shall cooperate with the airport users through the RPR, in coordination with airport operations, in scheduling the operations to provide adequate clearance for safe aircraft parking, fueling, maintenance, loading or unloading, maneuvering, taxing operations, or other aircraft operations.

a. Identification of Affected Areas

The following is a summary of impacts to the Airport Operations Areas resulting from the proposed construction safety and work phasing requirements: No Impacts to Airport Operations.

b. Mitigation of effects.

This CSPP has established specific requirements and operational procedures necessary to maintain the safety and efficiency of airport operations during the construction of this project.

All coordination pertaining to airport operations during construction will go through the Airport Owner's Representative and the Airport Operations Manager. Any required NOTAM's to be issued will be sent through the Airport Owner's Representative and issued by Airport Operations.

- 1. Temporary Changes to runway and/or taxiway operations:** N/A. No impacts to runway or taxiway operations.
- 2. Detours for ARFF and other airport vehicles:** N/A. No impacts to ARFF (no based ARFF at this airport) or airport vehicles, due to project location.
- 3. Maintenance of essential utilities:** Special attention shall be given to preventing unscheduled interruption of utility services and facilities. Where required due to construction purposes, the Airport Owner shall locate all of their underground utilities. It is the Contractor's responsibility to have the locations of cabling and other underground utilities marked prior to beginning excavation. Any locations provided by the Airport Owner are approximate locations and the Contractor shall verify all locations prior to beginning excavations. When an underground cable or utility is damaged due to the Contractor's negligence the Contractor shall immediately repair the affected cable or utility at his/her own expense. Full coordination between airport staff, field inspectors, and construction personnel will be exercised to ensure that all airport power and control cables are fully protected prior to any excavation.
- 4. Temporary Changes to air traffic control procedures:** N/A. No Changes to air traffic control procedures are required from this project.

3.4 NAVIGATION AID (NAVAID) PROTECTION. N/A. No NAVAIDS Impacted from this Project.

3.5 CONTRACTOR ACCESS.

This section of the CSPP details the areas to which the Contractor must have access, and how Contractor personnel will access those project work areas.

a. Location of stockpiled construction materials.

The Contractor shall store material and equipment and schedule his operations for work to be done so that no unauthorized interference to normal Airport operations will result there from. Construction operations shall not be conducted in a manner to cause interference with Airport Operations. Stockpiled materials and equipment storage are not permitted within the Runway Safety Area/ Taxiway Safety Area (RSA/TSA), Obstacle Free Zone (OFZ) or Object Free Area (OFA) of an operational runway or taxiway. Stockpiled construction materials must be located inside the Contractor staging area as shown on the Construction Safety Drawings (Appendix 1) unless otherwise approved by the RPR.

Stockpiled material shall be constrained in a manner to prevent movement resulting from either aircraft jet blast or wind conditions in excess of ten miles per hour. In addition, stockpiled material shall have silt fence located around the material to prevent Foreign Object Debris (FOD) from moving onto the airfield pavements or polluting watercourses.

Open trenches exceeding 3 inches in depth and 5 inches in width or stockpiled material are not permitted within the limits of safety areas of operational runways or taxiways. Stockpiled material shall not be

permitted within the protected areas of the runways, or allowed to penetrate into any of the protected airspace.

- b. **Spoil and Disposal Areas.** Spoil shall be disposed of offsite by the Contractor unless otherwise shown or specified. The Contractor shall submit the "Spoils Deposition Release Form" for any spoils which are transported from the project site. A copy of the form can be found in Appendix 4. No direct payment will be made for spoiling and disposal operations. The cost of spoiling material on site, or of spoiling material off-site, shall be considered incidental to this Contract and the costs shall be included in the various pay items involved.
- c. **Vehicle and pedestrian operations. Vehicle and pedestrian access routes for airport construction projects must be controlled to prevent inadvertent or unauthorized entry of persons, vehicles, or animals onto the Air Operations Area (AOA).**

The Airport Owner will coordinate requirements for vehicle operations with the affected airport tenants. Specific vehicle and pedestrian requirements for this project are as follows:

All construction vehicles and personnel shall be restricted to the immediate work area specified by the contract for this project. The work area includes the haul route into the work area, the designated Contractor staging area, Contractor employee parking area, and the box hangar under construction. Use of alternate haul routes or staging areas by the Contractor shall not be permitted without prior notification and approval by the Airport Owner's Representative.

1. Construction Site Parking:

The Contractor's personal vehicle parking area shall be adjacent to the Contractor's staging area, as shown on the Construction Safety Drawings (Appendix 1). Contractor personal vehicles will not be allowed inside the airport fence Air Operations Area (AOA) or secured area.

A staging area, as indicated on the Contract Drawings, will be provided where the Contractor may set up a field office and store equipment and materials. The Contractor shall make his own arrangements for, and bear all costs of required utilities. The Contractor shall use and maintain the site in accordance with requirements of the Airport Owner. Upon completion of work, the Contractor's staging area shall be removed and the area cleaned and restored to original or better condition.

2. Construction Equipment Parking:

The Contractor's equipment storage area shall be in the Contractor staging area as shown on the Construction Safety Drawings (Appendix 1). The Contractor's equipment and construction vehicles shall be restricted to the construction site or storage areas during construction and parked in the equipment storage area during non-working periods. Maximum allowable equipment height in the staging area shall be 50 feet. Maximum allowable equipment height in the work areas shall be 50 feet.

Contractor must service all construction vehicles within the limits of the project work area or the Contractor's Staging Area. Parked construction vehicles must be outside the OFA and never in the safety area of an active runway or taxiway. Inactive equipment must not be parked on closed taxiways or runways. If it is necessary to leave specialized equipment on a closed taxiway or runway at night, the equipment must be well lighted. Employees shall also park construction vehicles outside the OFA when not in use by construction personnel (for example, overnight, on weekends, or during other periods when construction is not active). Parking areas must not obstruct the clear line of sight by the ATCT, as applicable, to any taxiways or runways under air traffic control nor obstruct any runway visual aids, signs, or navigation aids.

3. Access and Haul Roads:

The Contractor shall clear, construct and maintain haul routes as required for the prosecution of the work. The haul routes and access points shall only be in the locations approved by the RPR and the Airport Owner or as shown on the Construction Safety Drawings (Appendix 1).

Access or haul routes used by Contractor vehicles must be clearly marked to prevent inadvertent entry to areas open to airport operations. Construction traffic must remain on the designated haul routes, never straying from the approved paths. Signage and marking placement shall be reviewed and approved by the RPR and Airport Owner prior to being put into service. The Contractor shall fully describe the appropriate access routes to all his/her employees, subcontractors and material delivery personnel.

The Contractor shall be responsible for maintaining existing haul routes. At the completion of the project, these areas shall be returned to their original lines and grades and shall be restored to a condition equal to or better than original. All non-paved areas that are disturbed by Contractor's haul roads, staging area, etc., located outside of the seeding limits shown on the plans shall be re-seeded and restored to their original or better condition by the Contractor at no additional cost to the Airport Owner.

The Contractor shall coordinate haul routes, closures and schedules with other projects which may be underway during the same time period as this contract.

The Contractor shall control and coordinate the material (supplies) that are hauled to and from work area. Delivery of equipment and materials to the area of work shall be by way of the access route shown on the Construction Safety Drawings (Appendix 1) or designated by the Airport Owner or RPR. The Contractor shall maintain all haul routes and work areas in a dust free condition at all times. The Contractor shall control dust from the construction operations by vacuum type sweeping, watering or other methods as approved by the RPR. Contractor shall have equipment (in operating condition) on site, at all times, to control dust. If the Contractor fails to comply with this requirement, construction will be suspended until a plan for controlling the dust is approved by the RPR. Landside haul routes, boulevards and drives shall be kept clean by use of a vacuum sweeper on a daily basis as required. Application of water on dirt or gravel haul routes must be provided as often as necessary. Haul roads in any airport traffic areas must be especially monitored for dust and debris to prevent any potential Foreign Object Debris (FOD) situations.

Existing airport perimeter roads, taxiways and taxilanes shall remain open and accessible for airport personnel at all times. Special attention must be given to ensure that if construction traffic is to share or cross any Airport Rescue and Fire Fighting (ARFF) routes that ARFF right of way is not impeded at any time, and that construction traffic on haul roads do not interfere with NAVAIDs or approach surfaces of operational runways.

Portions of the project area(s) shall be bounded by the low profile barricades identifying Contractor personnel and vehicle area operation limits. The locations of any barricaded project limits, haul routes, Contractor Staging Areas, and associated safety and security details are also provided graphically in the attached exhibits.

4. Marking and Lighting of Vehicles:

When any vehicle or piece of equipment, other than one that has prior approval from the Airport Owner, must operate on an airport, it shall be escorted and properly identified.

The Contractor shall limit access within the airport security fence to authorized vehicles. All authorized vehicles shall have a vehicle dash board placard permit issued by the Airport Owner or an identification sign on both sides of the vehicle containing the Contractor's company name. Private vehicles of the Contractor's personnel must be parked outside the airport security fence and will not be allowed within the airport security fence at any time.

All vehicles operating on the airport and in the general vicinity of the safety area or in aircraft movement areas must be marked with flashing yellow/amber beacons or orange and white flags during daylight hours. During hours of darkness or low visibility they shall be marked with at least flashing yellow/amber beacons.

Beacons and flags must be maintained to standards and in good working and operational condition. Beacons must be located on the uppermost part of the vehicle structure, visible from any direction, and flash 75 +/- 15 flashes per minute. Flags shall be 3' by 3' with alternating 1' by 1' international orange and white squares, and shall be replaced by the Contractor if they become faded, discolored, or ragged as determined by Airport Operations or the Airport Owner's Representative.

5. Description of Proper Vehicle Operations:

The Contractor shall be required to follow guidance on the additional identification and control of construction equipment per the Airport's Security Plan. No Contractor's vehicle or pedestrian crossing of active runways or taxiways will be allowed at any time during the work of this Contract, unless otherwise specified. No deviation from the pedestrian and vehicle routes to and from the Project Areas will be allowed unless specific permission has been granted by the Airport Owner.

The ground movement of aircraft shall have the right-of-way at all times, and the Contractor's vehicles and equipment shall yield to aircraft at all times.

6. Required Escorts: N/A. Section Not Used.

7. Training Requirements for Vehicle Drivers:

Any employees the Contractor would request to be given permission by Airport Operations to drive on the AOA shall complete airport training per the Airport's requirements.

8. Situational Awareness:

Aircraft traffic will continue to use existing runways, aprons, and taxiways of the Airport during the time that work under a contract is being performed. The Contractor shall, at all time, conduct the work as to create no hindrance, hazard, or obstacle to aircraft using the Airport.

Vehicle drivers must confirm by personnel observation that no aircraft is approaching their position (either in the air or on the ground) when given clearance to cross a runway, taxiway, or any other area open to airport operations. In addition, it is the responsibility of the escort vehicle driver to verify the movement/position of all escorted vehicles at any given time.

9. Two-way Radio Communication Procedures:

Two-way radio communications are required between Contractors and Airport Aeronautical Advisory Stations (UNICOM/CTAF). Vehicular traffic located in or crossing an active movement area shall have a working two-way radio or be directed by a flag person in radio contact with and monitoring Airport Aeronautical advisory Stations (UNICOM/CTAF) frequency 123.075 Mhz. Prior to proceeding into the

active movement area, all drivers shall confirm through personal observation that no aircraft is approaching the vehicle position. Construction personnel may operate in movement areas without two-way radio communication provided a NOTAM is issued closing the area, and provided that the area is properly marked to prevent incursions.

10. Maintenance of the Secured Area of the Airport.

Airport Owner and contractors must also maintain a high level of security during construction when access points are created in the security fencing to permit construction vehicle access. Temporary gates shall be equipped and/or manned by construction personnel to prevent unauthorized access by vehicles, animals or people. Procedures conforming to Airport security protocols should be in place to ensure that only authorized persons and vehicles have access to the AOA and to prohibit “piggybacking” behind another person or vehicle. Access shall be made available at all times to all airport emergency vehicles traveling to operations areas within the proximity of the construction work zone.

c. Security.

Project foreman and alternates as well as additional workers proposed by the Contractor and approved by the Airport shall go through badging and training processes. The Contractor shall take this time into account for a half day of training prior to construction for those needing a badge. Cards shall be returned at the end of the project. In general, security in the construction area is the responsibility of the Contractor.

The Contractor shall be responsible for maintaining security at all access gates used during the project and will be held liable by the Airport Owner for any breach of security. No gate shall be left open. The Airport Owner and Contractors must take care to maintain security during construction when access points are created in the security fencing to permit the passage of construction vehicles or personnel. Any time a gate is open for Construction, it is the Contractor’s sole responsibility to have a gate guard at the gate until the gate is locked. Gates shall be equipped so they can be securely closed and locked to prevent access by animals and unauthorized people. Procedures should be in place to ensure that only authorized persons and vehicles have access to the AOA and to prohibit “piggybacking” behind another person or vehicle.

The Contractor shall be required to maintain security and comply with the Airport Security Plan and the Transportation Security Administration Security Rules and Regulations throughout the duration of the project. The Contractor and the Surety shall indemnify and save harmless the Airport Owner, Engineer, RPR and third party or political subdivision from any and all breaches of security and shall indemnify the Airport Owner for any fines, expenses and damages which it may be obliged to pay by reason of any breach of security resulting from the Contractor's actions at any time during the prosecution of the work. Such breaches of security are subject to fines by the Transportation Security Administration of up to ten thousand dollars (\$10,000) per incident.

3.6 WILDLIFE MANAGEMENT.

Construction contractors must carefully control and continuously remove waste or loose materials that might attract wildlife. Contractor personnel must be aware of and avoid construction activities that can create wildlife hazards on airports.

- a. Trash.** Food scraps from construction personnel activity must be collected and disposed of at a proper facility.

- b. **Standing water.** Water shall not be allowed to collect and pool for more than any single 24-hour period. Temporary grading may be required to promote drainage during daily operations as well as between work phases.
- c. **Tall grass and seeds.** The use of millet seed in turfing and seeding operations shall not be permitted.
- d. **Poorly maintained fencing and gates.** The Contractor shall maintain a constant secure perimeter to the airfield, including continuous security perimeter fencing and gates (if applicable).
- e. **Disruption of existing wildlife habitat.** Not applicable to this project.

Contractor shall take immediate remedial action to remove wildlife attractants should any occurrence be noted. Contractor shall immediately report to the RPR and Airport Owner should any wildlife congregation be noted, and in particular if mammals enter the airport through the construction gate.

3.7 FOREIGN OBJECT DEBRIS (FOD) MANAGEMENT.

Special care and measures shall be taken to prevent Foreign Object Debris (FOD) damage when working in an airport environment. Waste and loose materials, commonly referred to as FOD, are capable of causing damage to aircraft landing gears, propellers, and jet engines. The Contractor shall be responsible for implementing an approved FOD Management Plan prior to the start of construction activities. The FOD Management Plan will have procedures for prevention, regular cleanup, and containment of construction material and debris. The Contractor will ensure all vehicles related to the construction project using paved surfaces in the AOA shall be free of any debris that could create a FOD hazard. Special attention will be given to the cleaning of cracks and pavement joints. All taxiways, aprons, and runways must remain clean. Waste containers with attached lids shall be required on construction sites.

Special attention should be given to securing lightweight construction material (concrete insulating blankets, tarps, insulation, etc.). Specific securing procedures and/or chainlink enclosures may be required.

Contractors will provide their own equipment for vehicle and equipment washing and clean up.

Immediate access to a power sweeper is required when construction occurs on any pavement area inside the AOA, unless an appropriate alternative has been approved by the Airport Owner's Representative and Airport Operations Manager.

3.8 HAZARDOUS MATERIALS (HAZMAT) MANAGEMENT.

Contractors operating construction vehicles and equipment on the airport must be prepared to expeditiously contain and clean-up spills resulting from fuel, hydraulic fluid, or other chemical fluid leaks. Transport and handling of other hazardous materials on an airport also requires special procedures. To that end, the Contractor is required to develop a spill prevention plan and response procedures for vehicle operations prior to the start of construction activities. This includes maintenance of appropriate MSDS data and appropriate prevention and response equipment on-site.

Fueling Procedures and Spill Recovery Procedures shall be in accordance with the State of Delaware Fire Code, latest edition, and the National Fire Protection Association standard procedures for spill response, latest edition. If fueling is to take place in the staging area, it must be away from catch basins. Contractor must have spill containment kits on site.

In the event of a fuel spill or the spill of other hazardous materials, the Contractor shall immediately notify the Airport Owner and the RPR, the Delaware Department of Natural Resources and Environmental Control, the Environmental Protection Agency (US EPA), the Airport Owner and the RPR.

Contractor shall abide by the specific requirements contained in the Technical Specifications of this contract.

3.9 NOTIFICATION OF CONSTRUCTION ACTIVITY.

The following is information and procedures for immediate notification of airport users and the FAA of any conditions adversely affecting the operational safety of the airport.

- a. **Maintenance of a list of Responsible Representatives/ Point of contact.** A list of responsible representatives and points of contact shall be created by the RPR, the Airport and the Contractor prior to the start of construction. This list shall be compiled as part of the project pre-construction meeting agenda. Procedures will be established to contact all parties, including after regular work hours. Updates will be made to the list throughout the project duration by the RPR. Contractor points of contact shall be incorporated into the contractor's SPCD.
- b. **Notices to Airman (NOTAM).** Only the Airport Owner may initiate or cancel NOTAMs on airport conditions, and is the only entity that can close or open a runway or taxiway. The Airport Owner must coordinate the issuance, maintenance, and cancellation of NOTAMs about airport conditions resulting from construction activities with tenants and the local air traffic facility (control tower, approach control, or air traffic control center), and must provide information on closed or hazardous conditions on airport movement areas to the FAA Flight Service Station (FSS) so it can issue a NOTAM. The Airport Owner must file and maintain a list of authorized representatives with the FSS. Only the FAA may issue or cancel NOTAMs on shutdown or irregular operation of FAA owned facilities. Any person having reason to believe that a NOTAM is missing, incomplete, or inaccurate must notify the Airport Owner. See Section 3.14 regarding issuing NOTAMs for partially closed runways versus runways with displaced thresholds.

Any NOTAMs for planned airfield closures for this project must be coordinated through the airport manager and the airports duly appointed construction management representative. Reference Section 3.2 for planned closures for this project, which require issuance of a NOTAM.

- c. **Emergency Notification Procedures.** In the event of an aircraft emergency, severe weather conditions, or any issue as determined by the Airport that may affect aircraft operations, the Contractor's personnel and/or equipment may be required to immediately vacate the area(s) affected. Points of contact for the various parties involved with the project shall be identified and shared at the pre-construction meeting among the various parties. Emergency points of contact shall be incorporated into the contractor's SPCD.
- d. **Accidents.** The Contractor shall provide at the site such equipment and medical facilities as are necessary to supply first aid service to anyone who may be injured in connection with the work. The Contractor must promptly report in writing to the RPR all accidents whatsoever arising out of, or in connection with, the performance for the work, whether on or adjacent to the site which caused death, personal injury or property damages, giving full details and statements of witnesses. In addition, if death or serious injuries or serious damages are caused, the accident shall be reported immediately by telephone or messenger to both the RPR and the Airport Owner.

If any claim is made by anyone against the Contractor or any Subcontractor on account of any accident, the Contractor shall promptly report the facts in writing to the RPR giving full details of the claims.

- e. **Coordination with ARFF Personnel.** The Contractor shall coordinate, through the duly appointed airport representative, with ARFF personnel, mutual aid providers and other emergency services if construction requires the following:

- The deactivation and subsequent reactivation of water lines or fire hydrants, or
- The re-routing, blocking and restoration of emergency access routes, or
- The use of hazardous materials on the airfield.

Procedures and methods for addressing any planned or emergency response actions on the airfield concerning this project shall be established and implemented prior to the start of construction.

f. **Notification to the FAA.**

1. **Part 77.** Any person proposing construction or alteration of objects that affect navigable airspace, as defined in Part 77, must notify the FAA. This includes construction equipment and proposed parking areas for this equipment (i.e. cranes, graders, other equipment) on airports. FAA Form 7460-1, Notice of Proposed Construction or Alteration, is used for this purpose and submitted to the appropriated FAA Airports Regional or District Office. A 7460-1 form for this project has been prepared by the Engineer and submitted to the FAA for using equipment with a maximum height of **50 feet**. A new 7460-1 form must be submitted to the FAA for review and comment for any equipment that the Contractor will use which is taller than the equipment used in the above 7460-1 submission. The Contractor will be responsible for submitting the new 7460-1 form to the FAA. To that end, the Contractor shall identify the equipment in his SPCD, including the maximum height it will be extended to during construction, the area(s) in which the equipment will be used, and the duration the equipment will be used. **Please note that the 7460-1 process is completed online and approval can take up to 90 calendar days to complete, the Contractor shall take that into consideration in their schedule and plan ahead as no equipment higher than the approved height of 50 feet shall be used until the FAA approval is received. Regardless on height, if the Contractor utilizes a crane, the FAA requires a crane plan to be submitted as described above with the 90 calendar day review. Any delays in construction are solely the Contractor's responsibility.**
2. **Part 157.** It is not anticipated that Part 157 notifications will be required for this project.
3. **NAVAIDS.** For emergency (short-notice) notification about impacts to both airport owned and FAA owned NAVAIDS, contact: 866-432-2622.
 - i. **Airport owned/FAA maintained.** If construction operations require a shutdown of more than 24 hours, or more than 4 hours daily on consecutive days, of a NAVAID owned by the airport but maintained by the FAA, provide a 45-day minimum notice to FAA ATO/Technical Operations prior to facility shutdown.
 - ii. **FAA owned.** The Airport Owner must notify the appropriate FAA ATO Service Area Planning and Requirements (P&R) Group a minimum of 45 days prior to implementing an event that causes impacts to NAVAIDS. (Impacts to FAA equipment covered by a Reimbursable Agreement (RA) do not have to be reported by the Airport Owner). Coordinate work for an FAA owned NAVAID shutdown with the local FAA ATO/Technical Operations office, through the RPR, including any necessary reimbursable agreements and flight checks. Detail procedures that address unanticipated utility outages and cable cuts that could impact FAA NAVAIDS. In addition, provide seven days' notice to schedule the actual shutdown.

3.10 INSPECTION REQUIREMENTS.

- a. **Daily (or more frequent) inspections.** Inspections shall be conducted by the Contractor at least daily, but more frequently if necessary, to ensure conformance with the CSPP. A sample checklist is provided in Appendix 2 of this document. In addition to Contractor's required inspections, airport operations will inspect the construction site three (3) times a day to ensure compliance with the CSPP and the SPCD. The Airport Owner's Representative will have full-time inspectors monitoring activity throughout construction. Promptly take all actions necessary to prevent or remedy any unsafe or potentially unsafe conditions as soon as they are discovered.
- b. **Final inspections.** A final inspection with the Airport Owner's Representative, Airport and Contractor will take place prior to allowing airport operations.

3.11 UNDERGROUND UTILITIES.

Special attention shall be given to preventing unscheduled interruption of utility services and facilities. Where required due to construction purposes, the FAA shall locate all of their underground cables. The Contractor shall locate and/or arrange for the location of all the underground cables. When an underground cable is damaged due to the Contractor's negligence the Contractor shall immediately repair the cable affected at his/her own expense. Full coordination between airport staff, field inspectors, and construction personnel will be exercised to ensure that all airport power and control cables are fully protected prior to any excavation. Locations of cabling will be marked prior to beginning excavation.

Prior to opening an excavation, effort shall be made to determine whether underground installation: i.e., sewer, water, fuel, electric lines, etc., will be encountered, and if so, where such underground installations are located. When the excavation approaches the approximate locations of such an installation, the exact locations shall be determined by careful hand probing or hand digging, and/or use of a vacuum truck, and when it is uncovered, adequate protection shall be provided for the existing installation. All known owners of underground facilities in the area concerned shall be advised of proposed work at least 48 hours prior to the start of actual excavation.

The information concerning underground utilities was compiled from information and sketches furnished by or obtained from utility companies and the Airport. The Airport Owner and the RPR do not guarantee their accuracy. The Contractor is advised to determine the exact locations from the available sources of information or provide his own means of detection. The only case in which the RPR will consider redesign or relocation of a proposed facility in the project is when an existing utility is located within the construction limits. In this case, the RPR will work with the Airport Owner to determine the appropriate action to resolve the conflict. If such relocation is impossible, the RPR will consider re-design or relocation of the proposed facilities. In both cases, Contractor shall be responsible for all underground utilities and shall not be separately compensated for delays or extra cost.

Note that most utility location services do not include locating FAA and Airport Owner facilities..

3.12 PENALTIES.

Failure on the part of the Contractor to adhere to prescribed requirements may have consequences that jeopardize the health, safety or lives of customers and employees at the airport. The Airport may issue warnings on the first offense based upon the circumstances of the incident. Individuals involved in non-compliance violations may be required to surrender their Airport ID badges and/or be prohibited from working at the airport, pending an investigation of the matter.

Penalties for violations related to airport safety and security procedures will be established by the Airport.

Note: project shutdown or misdemeanor citations may be issued on a first offense. When construction operations are suspended, activity shall not resume until all deficiencies are rectified.

3.13 SPECIAL CONDITIONS.

In the event of an aircraft emergency, the Contractor's personnel and/or equipment may be required to immediately vacate the area. The Contractor will receive notification from airport operations when special conditions require the construction site to be vacated. In any event, extreme care should be exercised should construction personnel identify any ARFF (Airport Rescue and Fire-Fighting) or other emergency or rescue vehicle moving toward the Runway with emergency lights displayed. This will generally mean that an emergency situation is imminent.

Special conditions that could require suspension of the construction work include the following: aircraft in distress, aircraft accident, security breach, VIP operation, vehicle/pedestrian deviation, severe weather, or failing to abide by this Construction Safety and Phasing Plan and/or the Safety Plan Compliance Document.

3.14 RUNWAY AND TAXIWAY VISUAL AIDS.

This topic includes marking, lighting, signs, and visual NAVAIDs. Those areas where aircraft will be operating shall be clearly and visibly separated from construction areas, including closed runways. Throughout the duration of the construction project, the Contractor shall inspect and verify that these areas remain clearly marked and visible at all times and that marking, lighting, signs and visual NAVAIDs remain in place and operational.

- a. **General.** Airport markings, lighting, signs, and visual NAVAIDs must be clearly visible to pilots, not misleading, confusing, or deceptive. All must be secured in place to prevent movement by prop wash, jet blast, wing vortices, or other wind currents and constructed of materials that would minimize damage to an aircraft in the event of inadvertent contact.

Marking and lighting for a temporary threshold is not required.

- b. **Markings.** Markings must be in compliance with the standards of AC 150/5340-1, Standards for Airport Markings, current edition, and the drawings and technical specifications of this project.
- c. **Lighting and visual NAVAIDs.** All taxiway or taxilane edge lights in those sections of taxiways or taxilanes closed to aircraft traffic will be either deenergized or blacked out by use of an appropriately cut length of PVC pipe.
- d. **Signs.** Signs must be in conformance with AC 150/5345-44, Specification for Runway and Taxiway Signs and AC 150/5340-18, Standard for Airport Sign Systems, current edition.
- e. **Testing of Airport Lighting Circuits.** The Contractor shall furnish all necessary equipment and appliances for testing the airport electrical systems and underground cable circuits before and after installation. The Contractor shall perform all tests in the presence of the RPR. The Contractor shall demonstrate the electrical characteristics to the satisfaction of the RPR. All costs for testing are incidental to the respective item being tested. For phased projects, the tests must be completed by phase. The Contractor shall provide such temporary lights and cables as required to maintain use of existing airfield lighting circuits. Temporary above ground lighting cables, if approved, shall be installed in conduit, and delineated with stakes and flagging. The test equipment for insulation resistance shall be an insulation resistance tester (1,000V megger) with a digital readout. The

instrument shall provide a 500 volt test for insulation resistance with a meter range of 0 to 500 megohms.

Earth resistance testing methods shall be submitted to the RPR for approval. Earth resistance testing results shall be recorded on an approved form and testing shall be performed in the presence of the RPR. All such testing shall be at the sole expense of the Contractor.

Should the counterpoise or ground grid conductors be damaged or suspected of being damaged by construction activities the Contractor shall test the conductors for continuity with a low resistance ohmmeter. The conductors shall be isolated such that no parallel path exists and tested for continuity. The RPR shall approve of the test method selected. All such testing shall be at the sole expense of the Contractor.

Test Requirements Prior to Construction.

- i. Test all circuits within the work area for continuity and insulation resistance to ground, at the electrical building, in the presence of the RPR.
- ii. Provide a copy of the test results to the RPR.
- iii. Check that all circuits are properly connected in accordance with applicable wiring diagrams.

Test Requirements During Construction. Circuit testing during construction shall be as directed and witnessed by the RPR when the Contractor is working on existing circuitry or excavating adjacent to or near existing circuitry. Circuit testing during construction will not be required during the times when the Contractor's operations do not effect existing airfield lighting circuitry. It is the intent of this section to ensure that airfield lighting circuitry remains operational throughout the duration of the Contract.

- i. Test all circuits within the work area for continuity and insulation resistance to ground at the electrical building, prior to energizing any circuit.
- ii. Insure that all circuits within the work area are operational, prior to the Contractor leaving the project at the end of the work day. Specific times for circuit checks will be determined by the RPR relative to the Contractor's work hours each day.
- iii. Segment test new non-grounded series circuits during installation. Length of cable segment tested shall not have more than five (5) splices, light units and/or electrical equipment between the ends being tested. Insulation resistance to ground shall be not less than 500 megohms.
- iv. Insure that the insulation resistance to ground of each segment of new non-grounded conductors of multiple conductor circuits is not less than 500 megohms.
- v. That the impedance to ground of each ground rod does not exceed 25 ohms prior to establishing connections to other ground electrodes or equipment. The fall-of-potential ground impedance test shall be utilized, as described by ANSI/IEEE Standard 81, to verify this requirement. Ground rods testing higher than 25 ohms shall have a minimum extension of two feet of ground rod added, driven to the proper elevation and re-tested. Extensions shall be attached by exothermic methods and re-testing performed until the tests show 25 ohms resistance or less. Tests shall not be performed within 72 hours after a rain storm has ended or when standing water is present around the ground rod.

- vi. Insure that all circuits are properly connected in accordance with applicable wiring diagrams.
- vii. The Contractor shall test all circuits within the work area for continuity after backfilling cable trenches. The reading shall be logged and provided to the RPR prior to payment of cable items.
- viii. Provide a copy of all test results to the RPR on a daily basis.

After installation, the Contractor shall test and demonstrate to the satisfaction of the RPR the following:

- i. That all affected lighting power and control circuits (existing and new) are continuous and free from short circuits.
- ii. That all affected circuits (existing and new) are free from unspecified grounds.
- iii. That the insulation resistance to ground of all new non-grounded high voltage series circuits or cable segments is not less than 50 megohms. Verify continuity of all series airfield lighting circuits prior to energization. The Contractor shall be responsible for maintaining an insulation resistance of 50 megohms minimum, with isolation transformers connected, in new circuits and new segments of existing circuits through the end of the contract warranty period.
- iv. That the insulation resistance to ground of all new non-grounded conductors of new multiple circuits or circuit segments is not less than 100 megohms.
- v. That all affected circuits (existing and new) are properly connected per applicable wiring diagrams.
- vi. That all affected circuits (existing and new) are operable. Tests shall be conducted that include operating each control not less than 10 times and the continuous operation of each lighting and power circuit for not less than 1/2 hour.
- vii. That all original lighting power and control circuits are continuous and insulation resistance to ground is not lower than before construction.
- viii. That the impedance to ground of each ground rod does not exceed 25 ohms prior to establishing connections to other ground electrodes. The fall-of-potential ground impedance test shall be used, as described by American National Standards Institute/Institute of Electrical and Electronic Engineers (ANSI/IEEE) Standard 81, to verify this requirement. As an alternate, clamp-on style ground impedance test meters may be used to satisfy the impedance testing requirement. Test equipment and its calibration sheets shall be submitted for review and approval by the RPR prior to performing the testing.

Two copies of tabulated results of all cable tests performed shall be supplied by the Contractor to the RPR. Where connecting new cable to existing cable, insulation resistance tests shall be performed on the new cable prior to connection to the existing circuit.

There are no approved "repair" procedures for items that have failed testing other than complete replacement.

3.15 MARKING AND SIGNS FOR ACCESS ROUTES.

Location of haul routes on the airport site shall be as specified in the project drawing set and as provided graphically in the attached exhibits, reference Appendix 1. It shall be the Contractor's responsibility to coordinate off-site haul routes with the appropriate owner who has jurisdiction over the affected route. The haul routes, to the extent possible, shall be marked and signed in accordance with FAA airfield signage requirements, the Federal Highway Administration Manual on Uniform Traffic Control Devices (MUTCD) and/or state highway specifications, as applicable.

3.16 HAZARD MARKING, LIGHTING AND SIGNING.

a. Purpose.

Hazard marking and lighting prevents pilots from entering areas closed to aircraft, and prevents construction personnel from entering areas open to aircraft. To that end, comprehensible warning indicators for any area affected by construction that is normally accessible to aircraft, personnel, or vehicles shall be installed and maintained by the Contractor for the duration of construction operations.

- b. Equipment.** Low Profile Barricades of the type detailed in the project drawings with red omnidirectional flashing lights shall be placed outside the safety area of intersecting taxiways at the edge of the closed airfield surfaces and the project work limits. Layout locations for this equipment are as shown on the Construction Safety Drawings and attached exhibits, reference Appendix 1.

Plastic Drum Type Barricades of the type detailed in the project drawings with omnidirectional flashing lights shall be placed. Layout locations for this equipment are as shown on the Construction Safety Drawings and attached exhibits, reference Appendix 1.

The Contractor shall have a person on call 24 hours a day for emergency maintenance of airport hazard lighting and barricades. The Contractor must file the contact person's information with the Airport Owner. Lighting should be checked for proper operation at least once per day, preferably at dusk.

- 3.17** The Owner and the ATCT shall approve the location of and aiming of lighting equipment before it is used.

3.17 PROTECTION OF AIRFIELD AREAS.

Safety area encroachments, improper ground vehicle operations and unmarked or uncovered holes and trenches in the vicinity of aircraft operation surfaces and construction areas are the three most recurring threats to safety during construction. Protection of runway and taxiway safety areas, object free areas, obstacle free zones, and approach/departure surfaces shall be a standing requirement for the duration of construction operations.

- a. Runway Safety Area (RSA).** A runway safety area is the defined surface surrounding the runway prepared or suitable for reducing the risk of damage to airplanes in the event of an undershoot, overshoot, or excursion from the runway by aircraft.

Runway	Aircraft Design Group	RSA Distance from		RSA Width	RSA Length from End of Runway
		Centerline RSA	Holdline		
9-27	B-II	75 ft.	250 ft.	150 ft.	300 ft.

No construction may occur within the existing RSA while the runway is open. Any construction between RSA and Holdline must be approved with Airport Operations prior to starting work.

The Airport Owner must coordinate any adjustment of RSA dimensions, to meet the above requirement, with the appropriate FAA Airports Regional or District Office and the local FAA air traffic manager and issue a NOTAM.

Open trenches or excavations are not permitted within the RSA while the runway is open. The Contractor must backfill trenches before the runway is opened. Coverings are not allowed in runway safety areas. There shall be no stockpiled materials or equipment stored within the limits of the RSA.

After the Runway has been closed, Contractors must prominently mark open trenches and excavations at the construction site with red or orange flags, as approved by the Airport Owner, and light them with red lights during hours of restricted visibility or darkness.

Soil erosion must be controlled to maintain RSA standards, that is, the RSA must be cleared and graded and have no potentially hazardous ruts, humps, depressions, or other surface variations, and capable, under dry conditions, of supporting snow removal equipment, aircraft rescue and firefighting equipment, and the occasional passage of aircraft without causing structural damage to the aircraft.

- b. Runway Object Free Area (ROFA).** Construction, including excavations, may be permitted in the ROFA. However, equipment must be removed from the ROFA when not in use, and material should not be stockpiled in the ROFA if not necessary. Stockpiling material in the OFA requires submittal of a 7460-1 form and justification provided to the appropriate FAA Airports Regional or District Office for approval.

Runway	Aircraft Design Group	ROFA Distance from Centerline	ROFA Width	ROFA Length from End of Runway
9-27	B-II	250 ft.	500 ft.	300 ft.

- c. Taxiway Safety Area (TSA).** The taxiway safety area is a defined surface alongside the taxiway prepared or suitable for reducing the risk of damage to an airplane unintentionally departing the taxiway. No construction may occur within the TSA while the taxiway is open for aircraft operations.

Taxiway	Aircraft Design Group	TSA Distance from Centerline	TSA Width
Taxiways	II	39.5 ft.	79 ft.
Taxilanes	I	24.5 ft.	49 ft.

Open trenches or excavations are not permitted within the TSA while the taxiway is open. The Contractor must backfill trenches before the taxiway is opened. Coverings are not allowed in taxiway safety areas.

The Airport Owner must coordinate any adjustment of TSA dimensions, to meet the above requirement, with the appropriate FAA Airports Regional or District Office and the local FAA air traffic manager and issue a NOTAM.

After the Taxiway has been closed, Contractors must prominently mark open trenches and excavations at the construction site with red or orange flags, as approved by the Airport Owner, and light them with red lights during hours of restricted visibility or darkness.

Soil erosion must be controlled to maintain TSA standards, that is, the TSA must be cleared and graded and have no potentially hazardous ruts, humps, depressions, or other surface variations, and capable, under dry conditions, of supporting snow removal equipment, aircraft rescue and firefighting equipment, and the occasional passage of aircraft without causing structural damage to the aircraft.

- d. Taxiway Object Free Area (TOFA).** Unlike the Runway Object Free Area, aircraft wings regularly penetrate the taxiway/taxilane object free area during normal operations. Thus the restrictions are more stringent. No construction equipment may be parked within the TOFA while the taxiway/taxilane is open for aircraft operations.

Construction activity may be accomplished without adjusting the width of the taxiway object free area, subject to the following restrictions:

1. Appropriate NOTAMs are issued.
2. Marking and lighting meeting the provisions above are implemented.
3. Five-foot clearance is maintained between equipment and materials and any part of an aircraft (includes wingtip overhang). If such clearance can only be maintained if an aircraft does not have full use of the entire taxiway width (with its main landing gear at the edge of the pavement), then it will be necessary to move personnel and equipment for the passage of that aircraft.

Taxiway	Aircraft Design Group	TOFA Distance from Centerline	TOFA Width
All	II	65.5 ft.	131 ft.

Taxilane	Aircraft Design Group	TLOFA Distance from Centerline	TLOFA Width
All	I	39.5 ft.	79 ft.

- e. **Obstacle Free Zone (OFZ).** Construction personnel, material, and/or equipment may not penetrate the OFZ while the runway is open for aircraft operations. The OFZ is a defined volume of airspace centered about and above the runway centerline.
- f. **Runway approach/departure surfaces.** All personnel, materials, and/or equipment must remain clear of the applicable threshold siting surfaces. Objects that do not penetrate these surfaces may still be obstructions to air navigation and may affect standard instrument approach procedures. Coordinate with the FAA through the appropriate FAA Airports Regional or District Office.

Construction activity in a runway approach/departure area may result in the need to partially close a runway or displace the existing runway threshold. Partial runway closure, displacement of the runway threshold, as well as closure of the complete runway and other portions of the movement area also require coordination through the Airport Owner with the appropriate FAA air traffic manager (FSS if non-towered) and ATO/Technical Operations (for affected NAVAIDS) and airport users.

Runway End	Aircraft Approach Category	Airplane Design Group	Minimum Safety Area Behind Threshold	Minimum Unobstructed Approach Slope
9 & 27	B	II	300 feet	20:1 to 200 feet behind threshold

3.19 OTHER LIMITATIONS ON CONSTRUCTION.

- a. **Prohibitions.** The following prohibitions are in effect for the duration of this project:
 1. No use of tall equipment (cranes, concrete pumps, and so on) unless a 7460-1 determination letter is issued for such equipment.
 2. No use of open flame welding or torches unless fire safety precautions are provided and the Airport Owner has approved their use.
 3. No use of electrical blasting caps or explosives of any kind on or within 1,000 ft (300 m) of the airport property.

b. Restrictions.

1. Construction suspension required during specific airport operations: Not Applicable
2. Areas that cannot be worked on simultaneously: Not Applicable
3. Day or night construction restrictions: The Contractor will normally be permitted to work between the hours of 7:00 AM and 5:00 PM, Monday – Friday. The Contractor may request to work outside of these hours if requested to the Airport Owner a minimum of seven (7) days in advance and approved by the Airport Owner.
4. Seasonal Construction Restrictions: Not Applicable
5. Temporary signs not approved by the airport operator.

APPENDIX 1

LOCATION MAP

(Sheet GI 001 of the Contract Drawings)

GENERAL PLAN

(Sheet GC 101 of the Contract Drawings)

CONSTRUCTION SAFETY DRAWINGS

(Sheets GC 102 & GC 103 of the Contract Drawings)

CONSTRUCTION SAFETY DETAILS

(Sheet GC 501 of the Contract Drawings)

APPENDIX 2

CONSTRUCTION PROJECT DAILY SAFETY INSPECTION CHECKLIST

Construction Project Daily Safety Inspection Checklist

The situations identified below are potentially hazardous conditions that may occur during airport construction projects. Safety Area encroachments, unauthorized and improper ground vehicle operations, and unmarked or uncovers holes and trenches near aircraft operating surfaces pose the most prevalent threats to airport operational safety during airport construction projects. The list below is one tool that the Contractor may use to aid in identifying and correcting potentially hazardous conditions.

Potentially Hazardous Conditions

Item	Action Required	or	None
Excavation adjacent to runways, taxiways, and aprons improperly backfilled.			<input type="checkbox"/>
Mounds of earth, construction materials, temporary structures, and other obstacles near any open runway, taxiway, or taxi lane; in the related Object Free area and aircraft approach or departure areas/zones; or obstructing any sign or marking.			<input type="checkbox"/>
Runway resurfacing projects resulting in lips exceeding 3 inches from pavement edges and ends.			<input type="checkbox"/>
Heavy equipment (stationary or mobile) operating or idle near AOA, in runway approaches and departures areas, or in OFZ.			<input type="checkbox"/>
Equipment or material near NAVAIDs that may degrade or impair radiated signals and/or the monitoring of navigation and visual aids. Unauthorized or improper vehicle operations in localizer or glide slope critical areas, resulting in electronic interference and/or facility shutdown.			<input type="checkbox"/>
Tall and especially relatively low visibility units (that is, equipment with slim profiles) –cranes, drills, and similar objects—located in critical areas, such as OFZ and approach zones.			<input type="checkbox"/>
Improperly positioned or malfunctioning lights or unlighted airport hazards, such as holes or excavations, on an apron, open taxiway, or open taxi lane or in related safety, approach, or departure area.			<input type="checkbox"/>

Item	Action Required	or	None
Obstacles, loose pavement, trash, and other debris on or near AOA. Construction debris (gravel, sand, mud, paving materials) on airport pavements may result in aircraft propeller, turbine engine, or tire damage. Also, loose materials may blow about, potentially causing personal injury or equipment damage.			<input type="checkbox"/>
Inappropriate or poorly maintained fencing during construction intended to deter human and animal intrusions into the AOA. Fencing and other markings that are inadequate to separate construction areas from open AOA create aviation hazards.			<input type="checkbox"/>
Improper or inadequate marking or lighting of runways (especially thresholds that have been displaced or runways that have been closed) and taxiways that could cause pilot confusion and provide a potential for a runway incursion. Inadequate or improper methods of marking, barricading, and lighting of temporarily closed portions of AOA create aviation hazards.			<input type="checkbox"/>
Wildlife attractants — such as trash (food scraps not collected from construction personnel activity), grass seeds, tall grass, or standing water — on or near airports.			
Obliterated or faded temporary markings on active operational areas.			<input type="checkbox"/>
Misleading or malfunctioning obstruction lights. Unlighted or unmarked obstructions in the approach to any open runway pose aviation hazards.			<input type="checkbox"/>
Failure to issue, update, or cancel NOTAMs about airport or runway closures or other construction related airport conditions.			<input type="checkbox"/>
Failure to mark and identify utilities or power cables. Damage to utilities and power cables during construction activity can result in the loss of runway / taxiway lighting; loss of navigation, visual, or approach aids; disruption of weather reporting services; and/or loss of communications.			<input type="checkbox"/>
Restrictions on ARFF access from fire stations to the runway / taxiway system or airport buildings.			

Item	Action Required	or	None
Lack of radio communications with construction vehicles in airport movement areas.			<input type="checkbox"/>
Objects, regardless of whether they are marked or flagged, or activities anywhere on or near an airport that could be distracting, confusing, or alarming to pilots during aircraft operations.			<input type="checkbox"/>
Water, snow, dirt, debris, or other contaminants that temporarily obscure or derogate the visibility of runway/taxiway marking, lighting, and pavement edges. Any condition or factor that obscures or diminishes the visibility of areas under construction.			<input type="checkbox"/>
Spillage from vehicles (gasoline, diesel fuel, oil) on active pavement areas, such as runways, taxiways, aprons, and airport roadways.			<input type="checkbox"/>
Failure to maintain drainage system integrity during construction (for example, no temporary drainage provided when working on a drainage system).			
Failure to provide for proper electrical lockout and tagging procedures. At larger airports with multiple maintenance shifts/workers, construction contractors should make provisions for coordinating work on circuits.			<input type="checkbox"/>
Failure to control dust. Consider limiting the amount of area from which the Contractor is allowed to strip turf.			<input type="checkbox"/>
Exposed wiring that creates an electrocution or fire ignition hazard. Identify and secure wiring, and place it in conduit or bury it.			<input type="checkbox"/>
Site burning, which can cause possible obscuration.			<input type="checkbox"/>
Construction work taking place outside of designated work areas and out of phase.			<input type="checkbox"/>

APPENDIX 3

CONTRACTORS SAFETY PLAN COMPLIANCE DOCUMENT (SPCD)

(The SPCD Certification is located in the Proposal Section)

SAFETY PLAN COMPLIANCE DOCUMENT (SPCD)

Project Location: Delaware Airpark (33N), Dover, Delaware

Project Name: 33N Box Hangar

General Statement:

The Construction Safety and Phasing Plan (CSPP), identified as Attachment “A” to Section 70-08, has been prepared in accordance with FAA Advisory Circular 150/5370-2G, *Operational Safety on Airports During Construction and the requirements of the Airport Owner*. The CSPP has been submitted to the FAA for review and comment. Any comments from the FAA which were received prior to bid opening have been incorporated into the CSPP.

In the event that the FAA transmits comments which require that the CSPP be revised after bid opening, I understand that I am obligated to abide by the conditions and statements contained in the revised CSPP. I further understand that I will be given the opportunity to evaluate the revised CSPP as it relates to my contract and request appropriate compensation in accordance with the provisions of the contract.

Supplemental Information:

Where the CSPP covers a subject and no additional information is needed, the statement below reads, “No supplemental information required”. Where additional information is required by the Contractor, the information shall be provided in the spaces below.

The section numbers below correspond with the section numbers in the CSPP.

3.1 Coordination

Statement: [Explain how you will distribute information and details of meetings to employees and subcontractors.]

3.2 Phasing

Statement: [List the number of days each Work Area will take. State the time day work will start and finish for each work area.]

3.3 Areas and operations affected by the construction activity

Statement: Information is provided in the CSPP. No supplemental information is required.

3.4 Protection of NAVAIDs

Statement: Information is provided in the CSPP. No supplemental information is required.

3.5 Contractor Access

Security Statement: [Explain how you will maintain integrity of the airport security fence at the access gate, e.g.: Gate guards, closed and locked gates, temporary fencing, etc.]

Training Statement: [List individuals who will receive driver training (for certificated airports and as requested.)]

Communication Statement: [Identify types of radios, if any, you will use to communicate with drivers and personnel. Identify who will be monitoring radios. Identify a contact person and phone number if ATCT cannot reach the contractor's designated person by radio.]

Escort Statement: [Identify who will escort material delivery vehicles.]

3.6 Wildlife Management

Statement: [Identify who will be monitoring wildlife in the construction area. Identify who will be monitoring wildlife at the construction gate.]

3.7 Foreign Object Debris (FOD) Management

Statement: [Identify who will be preparing a FOD Management Plan. (Plan must be approved prior to the start of construction activities.)]

3.8 Hazardous material (HAZMAT) management

Statement: [Identify who will be preparing a Spill Prevention Plan. (Plan must be approved prior to the start of construction activities.)]

3.9 Notification of construction activities. Provide the following:

Key Personnel Statement: [Identify your key personnel points of contact with phone numbers.]

Emergency Contacts Statement: [Identify your emergency contacts with 24 hour phone numbers.]

Equipment Statement: [Part 77: Identify equipment you will be using that is taller than feet, including on-site batch plants. Identify the maximum height it will be extended to during construction for each Work Area and the expected duration. Identify when during the day it will be used.]

3.10 Inspection requirements.

Statement: [Identify the person who will be responsible for daily inspections to ensure conformance with the CSPP. Describe additional inspections you will employ, if any, to ensure conformance.]

3.11 Underground utilities.

Statement: [Discuss proposed methods of identifying and protecting underground utilities.]

3.12 Penalties

Statement: Information is provided in the CSPP. No supplemental information is required.

3.13 Special conditions.

Statement: [Identify who will be responsible for moving equipment and personnel from the work area and vacating the area in the event of a special condition listed in the CSPP.]

3.14 Runway and taxiway visual aids. Including marking, lighting, signs, and visual NAVAIDs.

Statement: Information is provided in the CSPP. No supplemental information is required.

3.15 Marking and signs for access routes. Discuss proposed methods of demarcating access routes for vehicle drivers.

Statement: Information is provided in the CSPP. No supplemental information is required.

3.16 Hazard marking and lighting.

Statement: [Identify who will be responsible for maintaining hazard marking and lighting. Include a 24 hour phone number.]

3.17 Protection of taxiway and runway safety areas. Include object free areas, obstacle free zones, approach/departure surfaces and safety areas as required. Discuss proposed methods of identifying, demarcating, and protecting airport surfaces including:

Equipment and methods for maintaining Taxiway/Taxilane Safety Area standards.

Statement: Information is provided in the CSPP. No supplemental information is required.

Equipment and methods for separation of construction operations from aircraft operations, including details of barricades.

Statement: Information is provided in the CSPP. No supplemental information is required.

3.18 Other limitations on construction.

Other limitations are identified in the CSPP and do not require an entry in this document.

APPENDIX 4

SPOIL DEPOSITION RELEASE FORM

SPOILS DEPOSITION RELEASE FORM

To: Delaware River and Bay Authority (DRBA) (AIRPORT OWNER), and

C&S Engineers, Inc., (RPR).

Project: 33N Box Hangar

This SPOILS DEPOSITION RELEASE FORM is being forwarded to the above referenced AIRPORT OWNER and RPR to satisfy the Contract Documents governing the above referenced project. Pursuant to the Contract Documents, LANDOWNER has granted permission to CONTRACTOR to deposit spoils at LANDOWNER'S property located at _____ (give specific location).

Further, CONTRACTOR hereby agrees to the greatest extent of the law, to release, indemnify, hold harmless, and defend the AIRPORT OWNER and RPR from any and all damage, liability, or cost (including reasonable attorney's fees and cost of defense) to the extent caused by or arising out of the deposition of the spoils on LANDOWNER'S property.

CONTRACTOR:

LANDOWNER:

Signature

Signature

Written Name & Title

Written Name & Title

Company Name

Company Name

Mailing Address (Street Name and Number)

Mailing Address (Street Name and Number)

City, State, Zip Code

City, State, Zip Code

Daytime Phone Number (Include Area Code)

Daytime Phone Number (Include Area Code)

Date

Date

APPENDIX 5

SAFETY PLAN COMPLIANCE DOCUMENT (SPCD) CERTIFICATION

SAFETY PLAN COMPLIANCE DOCUMENT (SPCD) CERTIFICATION

Project Location: _____

Project Name: _____

Contractor's Official Name: _____

Contact Person: _____ Telephone: _____

Street Address: _____

City: _____ State: _____ Zip: _____

Certification Statement:

I certify that I have read the Construction Safety and Phasing Plan (CSPP) included in the Contract Documents and if awarded this Contract, I will abide by its requirements as written.

I certify that I have read the Safety Plan Compliance Document (SCPD) included in the Contract Documents and if awarded this Contract, I will abide by its requirements as written;

I certify that I will provide the information required in the SCPD prior to the start of construction work, if awarded this Contract, and that I will provide any additional information requested by the Airport Owner.

Printed Name of Signer

Signature

Title

Date

Section 80 Execution and Progress

80-01 Subletting of contract. The Owner will not recognize any subcontractor on the work. The Contractor shall at all times when work is in progress be represented either in person, by a qualified superintendent, or by other designated, qualified representative who is duly authorized to receive and execute orders of the Resident Project Representative (RPR).

The Contractor shall perform, with his organization, an amount of work equal to at least 30 percent of the total contract cost.

Should the Contractor elect to assign their contract, said assignment shall be concurred in by the surety, shall be presented for the consideration and approval of the Owner, and shall be consummated only on the written approval of the Owner.

The Contractor shall provide copies of all subcontracts to the Owner and RPR 14 days prior to being utilized on the project. As a minimum, the information shall include the following:

- Subcontractor's legal company name.
- Subcontractor's legal company address, including County name.
- Principal contact person's name, telephone and fax number.
- Complete narrative description, and dollar value of the work to be performed by the subcontractor.
- Copies of required insurance certificates in accordance with the specifications.
- Minority/ non-minority status.

80-02 Notice to proceed (NTP). The Owners notice to proceed will state the date on which contract time commences. The Contractor is expected to commence project operations within one day of the NTP date. The Contractor shall notify the RPR at least 24 hours in advance of the time contract operations begins. The Contractor shall not commence any actual operations prior to the date on which the notice to proceed is issued by the Owner.

80-03 Execution and progress. Unless otherwise specified, the Contractor shall submit their coordinated construction schedule showing all work activities for the RPR's review and acceptance at least 10 days prior to the start of work. The Contractor's progress schedule, once accepted by the RPR, will represent the Contractor's baseline plan to accomplish the project in accordance with the terms and conditions of the Contract. The RPR will compare actual Contractor progress against the baseline schedule to determine that status of the Contractor's performance. The Contractor shall provide sufficient materials, equipment, and labor to guarantee the completion of the project in accordance with the plans and specifications within the time set forth in the proposal.

If the Contractor falls significantly behind the submitted schedule, the Contractor shall, upon the RPR's request, submit a revised schedule for completion of the work within the contract time and modify their operations to provide such additional materials, equipment, and labor necessary to meet the revised schedule. Should the execution of the work be discontinued for any reason, the Contractor shall notify the RPR at least 24 hours in advance of resuming operations.

The Contractor shall not commence any actual construction prior to the date on which the NTP is issued by the Owner.

The project schedule shall be prepared as a network diagram in Critical Path Method (CPM), Program Evaluation and Review Technique (PERT), or other format, or as otherwise specified. It shall include information on the sequence of work activities, milestone dates, and activity duration. The schedule shall show all work items identified in the project proposal for each work area and shall include the project start date and end date.

80-03.1 Requirements.

- A.** Nomenclature and Definitions
- B.** Schedule Personnel
- C.** Software Compatibility Requirements
- D.** Preconstruction Schedule Meeting
- E.** Baseline Schedule Development
- F.** Progress Schedule Update
- G.** Schedule for Submittals

80-03.1.A Nomenclature and Definitions

Actual Start date- At the task level, the Actual Start date represents the point in time that meaningful work actually started on a task.

Actual Finish date - At the task level, the Actual Finish date represents the point in time that work actually ended on a task.; At the Project level, the Actual Finish date represents the point in time that the Contractor completes all Work in accordance with the time standards described in the CSPP.

Baseline Progress Schedule - The Progress Schedule submitted by the Contractor and accepted by the RPR that shows the plan to complete the construction contract work. The Baseline Schedule represents the Contractor's plan at the time of Contract Award for completing the Project.

Bid Date – The date that bids will be publicly opened and read aloud.

Constraint - A schedule restriction imposed on the Start or Finish date(s) of a task that modifies or overrides a task's relationships.

Critical Task – A task on the critical path.

Critical Path – In the Progress Schedule, the critical path shall be those tasks being on the longest path. In a project network diagram, the series of tasks determines the earliest completion of the project.

Critical Delay - An event, action, or other factor that delays the critical path of the Progress Schedule and extends the time needed for completion of the construction project.

Critical Path Method (CPM) – A network analysis technique used to predict Project duration by analyzing which sequence of tasks (which path) has the least amount of scheduling flexibility (the least amount of float or slack). A scheduling technique utilizing tasks, durations, and interrelationships/dependencies (logic), such that all tasks are interrelated with logic ties from the beginning of the project to the completion of the project. Early dates are calculated by means of a forward pass using a specified start date. Late dates are calculated by means of a backward pass starting from a specified completion date (usually the forward pass's calculated project early finish date).

Duration, Original - The original estimated number of Working Days (not including holidays or other nonworking periods) in which the work task associated with the task is expected to be performed. (The number of calendar days may be different based on the calendar assigned to the task.) For certain tasks such as concrete curing, or others approved by the RPR, the calendar shall reflect no non-working days.

Duration, Remaining - The estimated time, expressed in Working Days (not including holidays or other nonworking periods), needed to complete a task that has started but has not finished

Early Dates – The earliest date a task can start or finish based upon logic and durations. They are calculated by the software application when scheduling the project. Progress Schedules.

Final Baseline Progress Schedule @ Award - The original plan against which the Contractor's progress is measured. The Final Baseline Progress Schedule @ Award represents the original plan at the award of the Contract, of what is expected to happen. Once the Final Baseline Progress Schedule @ Award is accepted by the RPR it is saved and used as a basis to compare against Progress Schedules Updates. (See also Section 80-3 of the FAA's General Provisions.)

Fragnet – A subdivision of a project network diagram usually representing some portion of the project.

Late Dates – The latest a task can start or finish without delaying the time standards contained in the CSPP.

Longest Path - The sequence of tasks through the Progress Schedule network that establishes the Milestones contained in the CSPP.

Look-Ahead Schedule – Commonly a one- or two-week time segment generated from the accepted Progress Schedule that forecasts the work planned for the one or two week period following the Status Date, and includes any major materials to be delivered and anticipated shifts in Work Areas.

Milestone – A task with zero duration that typically represents a significant event, usually the beginning and end of the project, milestones set forth in the contract proposal, construction stages, a major work package, or the contract interim time-related clauses.

Notice to Proceed– The actual date the Contractor starts fieldwork of a contract pay item, which is entered as a Start milestone task in the schedule. Contractually no work may start until after the Contract is awarded by the Owner, and the Contractor has received a written Notice to Proceed.

Open End - The condition that exists when a task has either no predecessor or no successor, or when a task's only predecessor relationship is a finish-to-finish relationship or only successor relationship is a start-to-start relationship.

Predecessor – A task that is defined by Schedule logic to precede another task. A predecessor may control the Start Date or Finish Date of its successor.

Progress Schedule –Also referred to as the Project's Schedule.

Progress Schedule Update – Changes to the Progress Schedule that reflect the status of tasks that have commenced or have been completed, including the following items: (a) Actual Start date and or Actual Finish date as appropriate; (b) Remaining Duration for tasks commenced and not complete; and (c) Suspend or Resume dates for tasks commenced and not complete.

Progress Schedule Revision – Revisions to the Progress Schedule ensures it accurately reflects the current means and methods of how the Project is anticipated to progress, including modifications

made to any of the following items: (a) changes in logic connections between tasks; (b) changes in constraints; (c) changes to task descriptions; (d) task additions or deletions; (e) changes in calendar assignments.

Project Scheduler – The person that is responsible for developing and maintaining the Progress Schedule.

Recovery Schedule – A schedule depicting the plan for recovery of significant time lost on the project. This separate CPM schedule submission shall provide the resolution and include appropriate changes in network logic, task and calendar adjustments.

Relationships - The interdependence among tasks relationships link a task to its predecessors and successors. Relationships are defined as:

- **Finish to Start** - The successor task can start only when the current task finishes.
- **Finish to Finish** – The finish of the successor task depends on the finish of the current task.
- **Start to Start** – The start of the successor task depends on the start of the current task.
- **Start to Finish** – The successor task cannot finish until the current task starts.

Slack (Float), Free - The amount a task can slip without delaying the immediate successor task. Free Float is the property of a task and not the network path. The Owner owns the Project's Free Slack (Float).

Slack (Float) Suppression - Utilization of zero free slack (float) constraints which allows a task to start as late as possible by using all of its' available free slack (float). This technique allows tasks to appear more critical than if the task's total float was based on early dates. Assigning zero free float prevents true sharing of total float between the Owner and the Contractor. Utilization of overly generous task durations and overly restrictive calendar non-working periods are also considered to cause slack (float) suppression.

Slack (Float), Total - The amount of time a task (or chain of tasks) can be delayed from its early start without delaying the contract completion date. Float is a mathematical calculation and can change as the project progresses and changes are made to the project plan. Total Slack (Float) is calculated and reported for each task in a network, however, Total Float is an attribute of a network path and not associated with any one specific task along that path. The Owner owns the Project's Total Slack (Float).

Status Date – The date used to update a project. The Status Date is used as the starting point to calculate the schedule.

Task- A discrete, identifiable task or event that usually has an expected duration, has a definable Start Date and/or Finish Date, and can be used to plan, schedule, and monitor a project.

Work Breakdown Structure (WBS) - A deliverable-oriented grouping of project elements, which organizes and defines the total scope of the project. Each descending level represents an increasingly detailed definition of project components or work packages.

Work Package - A deliverable that is a group of related tasks within a project at the lowest level of the work breakdown structure.

Work Day - A calendar day scheduled for active prosecution of contract work by the Contractor or the Contractor's representative. (See Section 10-65 of the FAA's General Provisions.)

80-03.1.B Scheduling Personnel. The Contractor shall designate a Project scheduler to have all scheduling responsibilities for the Work. The Project scheduler must have had previous scheduling responsibilities on similar projects of similar size and complexities.

80-03-1.C Software Compatibility Requirements. The Owner uses Microsoft Project 2016 to schedule and monitor its construction program. All schedules submitted shall be in a format compatible with this program and version.

80-03.1.D Preconstruction Schedule Coordination. The Contractor shall contact the RPR after notification they are the low bidder, but no later than two (2) Work Days following Contract award to coordinate schedule development. The purpose of this will be to discuss essential matters pertaining to the satisfactory scheduling of project tasks, and to resolve any known questions regarding interpretation of the contract requirements for this work. The Project Scheduler shall be prepared to discuss the following:

- The proposed hierarchical Work Breakdown Structure (WBS) for the Progress Schedules.
- The proposed Project calendars.
- The factors that the Contractor determines to control the completion of the project and any milestone task completion dates contained therein.
- File naming Procedures for submissions.

80-03.1.E Baseline Schedule Development. The Contractor shall prepare, furnish, and maintain a computer-generated Progress Schedule using the Critical Path Method on Microsoft Project scheduling software. The Contractor and the Owner shall use the Progress Schedule to manage the Work. No Work other than installation of the Engineer's Field Office, mobilization, procurement and administrative tasks, will be permitted to start until the RPR in writing has approved the Baseline Progress Schedule.

The purpose of the Progress Schedule, and scheduling provisions in the Contract, shall be to:

- Ensure that the Contractor and the Owner have a detailed plan to complete the Project in accordance with time standards contained in the CSPP;
- Provide a means of monitoring the progress of Work;
- Aid in communication and coordination of tasks among all affected parties;
- Analyze the effect of changed conditions on the time standards contained in the CSPP;
- Analyze the impact of proposed Contract Amendments.
- Establish a standard methodology for time adjustment analysis based on the principles of the Critical Path Method of scheduling, to analyze delays and resolve construction disputes concerning time;
- Determine appropriate extensions or reductions of Contract Time.

In scheduling and executing the work, the Contractor shall:

- Sequence the Work to commensurate with the Contractor's abilities, resources and the Contract Documents. The scheduling of tasks is the responsibility of the Contractor.
- Ensure that Progress Schedules prepared by the Project Scheduler for submission to the Owner are in compliance with the Contract. The intent should be that Schedule submissions are timely, complete, accurate, and in compliance with the Contract.
- Communicate all Contract changes, and decisions or actions taken by the Contractor and all subcontractors, fabricators, etc., that effect the Progress Schedule to the Project Scheduler in a

timely manner to allow appropriate development, maintenance, and update of the Progress Schedule.

- Include all Work contained in the Contract and all Work directed in writing by the RPR. Work tasks directed by the RPR to be added to the Contract shall be included in the next Monthly Progress Schedule submission.
- Assure that Progress Schedule Updates reflect the actual dates that work tasks started and were completed in the field.
- Break a schedule task into multiple tasks to reflect a discontinuity in the work if a work task is suspended in the field and restarted at a later date, and the break between when the Work was suspended to when it was resumed is significant compared to the original task duration.
- Ensure the Progress Schedule contains all Work constraints and Milestones defined in the Contract including the CSPP.
- Schedule the Work using such procedures and staging or phasing as required by the Contract. Work designated as part of separate stages may be performed concurrently with other stages where allowed by the Contract or where approved by the RPR. Failure by the Contractor to include any element of Work required by the Contract in the accepted Progress Schedule does not relieve the Contractor from its responsibility to perform such Work.

The schedule shall be developed utilizing the following elements:

- **Work Breakdown Structure (WBS)** - A multi-level hierarchal WBS shall be incorporated that provides a deliverable-oriented grouping of tasks and defines the total scope of the project. The Contractor shall develop a detailed project specific WBS for the RPR's review and approval prior to the development of the Baseline Schedule. The RPR shall make the final determination on the number of levels of the WBS, and how the tasks shall be grouped to represent the deliverables of the project. A minimum WBS shall consist of the following Levels (X)
 - PRECONSTRUCTION (1)
 - GENERAL(2)
 - SHOP DRAWING AND SUBMITTALS (2)
 - PROCUREMENT/FABRICATION/DELIVERY(2)
 - CONSTRUCTION (1)
 - WORK PHASE (2)
 - CONSTRUCTION COMPONENT (3) (earthwork, drainage, paving, etc.)
 - POST CONSTRUCTION(1)
 - PUNCHLIST (2)
 - DEMOBILIZATION (2)
 - PROJECT DOCUMENTATION (2)
- **Task ID** - Include a unique identification number for each task. Task ID numbers shall not be changed, or reassigned for the duration of the contract.
- **Task** - Clearly and uniquely define each task with a description of the work that is readily identifiable to inspection staff and the progress of each task can be measured.

- **Milestone Tasks** – To the extent not specifically addressed in the CSPP, this term include tasks for all Contract milestones that define significant contractual events such as Contract Award, Notice to Proceed, Contractor Start Work, Substantial Completion, Contract Completion, and coordination points with outside entities such as utilities, the FAA, Time-Related Contract Provisions, etc.
- **Task Durations** – Define the Original Duration of each task in units of whole work days. With the exception of submittal/procurement tasks, durations shall not exceed 15 work days unless approved by the RPR. Durations for RPR submittal reviews shall meet the requirements set forth in the contract documents. If requested by the RPR, the Contractor shall justify the reasonableness of planned task time durations.
- **Relationships** - Clearly assign predecessors and successors relationships to each task, and assign appropriate logic ties between tasks (Finish to Start, Start to Start, Finish to Finish, etc.). Open-ended tasks are not permitted, with the exception of the first and last tasks in the schedule. Do not include inappropriate logic ties with Milestone Tasks (For a finish milestone task: a predecessor shall only be assigned a Finish to Finish logic tie, a successor shall only be assigned a Finish to Start or Finish to Finish logic tie. For a start milestone: a predecessor shall only be assigned a Finish to Start or Start to Start logic tie, a successor shall only be assigned with a Start to Start logic tie). Lag time may not exceed 10 days. The Contractor shall assign the “Contract Award Date” task as a predecessor to all Review and Approval type tasks to be performed by the RPR.
- **Task Constraint Dates** – The Contractor shall not have any constrained tasks, with the exception of contractual dates, unless the RPR accepts such constraints in writing.
- **Task Dates** – With the exception of contract Milestone dates, “Actual Start” and “Actual Finish” dates and “Start” and “Finish” dates, task dates shall be calculated by the Project scheduler tool within the scheduling software.
- **Calendars** – Notwithstanding the Contractor’s assigned risk for delays due to weather (See Section Nos. 80-6 and 80-7 of the FAA’s General Provisions), use clearly defined calendars that account for expected seasonal weather conditions (including winter shutdown periods) and environmental permit requirements, for the planning and scheduling of tasks. Do not incorporate a task with a description of “Winter Shutdown” that requires constraints rather utilize non-working periods utilizing a Base Calendar.

80-03-1.F Progress Schedule Update

In addition to the detailed schedule requirements for the submission of the Baseline Progress Schedule, the Contractor shall complete the following additional requirements for Monthly Progress Schedule submissions:

Durations – The Original Duration shall not be changed without prior written justification by the Contractor, and written approval by the RPR. The Contractor shall edit the Remaining Duration to reflect progress made on work tasks, and shall not use Duration percentage. If a proposed change to Original Duration is due to additional or changed work to the Contract, the Contractor shall instead add a task to reflect this additional work. The Contractor shall not use zero durations for Task Dependent tasks.

Started and Finished dates – For each task where work was begun during the Monthly reporting period, the Contractor shall check the box adjacent to Started and enter the date the work began. For each task where work was completed during the Monthly reporting period.

If the Contractor fails to submit the required Progress Schedule updates and revisions, the Contractor

waives its rights to adjustments of time and related compensation for delays that accrue during the period in which the progress schedule has not been submitted in accordance with the detailed CPM scheduling requirements.

The Owner will have no liability for any subsequent Contractor time related disputes which occurred during the period of time in which the Contractor failed to submit monthly progress schedule updates and revisions in a timely manner.

80-03.1.G Schedule for Submittals.

Progress Schedule submissions will only be considered complete when all documents and data have been provided to the RPR. When preparing a formal submission of the Progress Schedule, the Contractor shall make a pdf of the current Progress Schedule and name it according to the file naming convention determined at the Preconstruction Scheduling Meeting.

- A.** Submittals shall be uploaded to a designated location on the Project FTP Site as directed by the RPR with sufficient time to allow for review.
- B.** Allow five (5) calendar days for review and turnaround of Progress Schedule submittals.
- C.** Monthly submission of updated Progress Schedule shall be completed prior to processing of monthly pay requisition.
- D.** Immediate Rejection of Progress Schedule submissions. The following deficiencies in a Contractor's Progress Schedule submission shall be grounds for the immediate rejection by the RPR, without further review, analysis and/or comments.
 - Failure of the Project Scheduler to "schedule" the Project, as of the status date.
 - Any tasks without predecessors or tasks without successors, appearing in the Schedule with the exception of the first and last task in the schedule.
 - Any task constraints appearing in the Schedule that have not been approved in writing by the RPR, or that are not specifically allowed by this specification.
 - Any Tasks with Actual Dates > Status Date
 - Any Milestone Tasks with invalid relationships
 - Failure to have a clearly defined Critical Path from the Status Date to the last task in the schedule, using the Longest Path method. This would reflect logic errors in the project schedule.
 - If any of these deficiencies are found, the Contractor's submission shall be considered deficient, and RPR will notify the Contractor immediately.

No direct payment will be made for the coordinated construction schedule. The cost of creating, revising, maintaining, updating, etc. the coordinated construction schedule shall be included in the price of the bid for the various items of the Contract.

The Contractor shall maintain the work schedule and provide an update and analysis of the progress schedule on a monthly basis, or as otherwise specified in the contract. Submission of the work schedule shall not relieve the Contractor of overall responsibility for scheduling, sequencing, and coordinating all work to comply with the requirements of the contract.

80-04 Limitation of operations. The Contractor shall control their operations and the operations of their subcontractors and all suppliers to provide for the free and unobstructed movement of aircraft in the air operations areas (AOA) of the airport.

When the work requires the Contractor to conduct their operations within an AOA of the airport, the work shall be coordinated with airport operations (through the RPR) at least 48 hours prior to commencement of such work. The Contractor shall not close an AOA until so authorized by the RPR and until the necessary temporary marking, signage and associated lighting is in place as provided in Section 70, paragraph 70-08, *Construction Safety and Phasing Plan (CSPP)*.

When the contract work requires the Contractor to work within an AOA of the airport on an intermittent basis (intermittent opening and closing of the AOA), the Contractor shall maintain constant communications as specified; immediately obey all instructions to vacate the AOA; and immediately obey all instructions to resume work in such AOA. Failure to maintain the specified communications or to obey instructions shall be cause for suspension of the Contractor's operations in the AOA until satisfactory conditions are provided. The areas of the AOA identified in the Construction Safety Phasing Plan (CSPP) and as listed below, cannot be closed to operating aircraft to permit the Contractor's operations on a continuous basis and will therefore be closed to aircraft operations intermittently as follows:

See Attachment "1" to Section 70-08 - Construction Safety and Phasing Plan (CSPP) at the end of Section 70.

The Contractor shall be required to conform to safety standards contained in AC 150/5370-2, Operational Safety on Airports During Construction and the approved CSPP.

80-04.1 Operational safety on airport during construction. All Contractors' operations shall be conducted in accordance with the approved project Construction Safety and Phasing Plan (CSPP) and the Safety Plan Compliance Document (SPCD) and the provisions set forth within the current version of AC 150/5370-2, Operational Safety on Airports During Construction. The CSPP included within the contract documents conveys minimum requirements for operational safety on the airport during construction activities. The Contractor shall prepare and submit a SPCD that details how it proposes to comply with the requirements presented within the CSPP.

The Contractor shall implement all necessary safety plan measures prior to commencement of any work activity. The Contractor shall conduct routine checks to assure compliance with the safety plan measures.

The Contractor is responsible to the Owner for the conduct of all subcontractors it employs on the project. The Contractor shall assure that all subcontractors are made aware of the requirements of the CSPP and SPCD and that they implement and maintain all necessary measures.

No deviation or modifications may be made to the approved CSPP and SPCD unless approved in writing by the Owner. The necessary coordination actions to review Contractor proposed modifications to an approved CSPP or approved SPCD can require a significant amount of time.

80-05 Character of workers, methods, and equipment. The Contractor shall, at all times, employ sufficient labor and equipment for prosecuting the work to full completion in the manner and time required by the contract, plans, and specifications.

All workers shall have sufficient skill and experience to perform properly the work assigned to them. Workers engaged in special work or skilled work shall have sufficient experience in such work and in the operation of the equipment required to perform the work satisfactorily.

Any person employed by the Contractor or by any subcontractor who violates any operational regulations or operational safety requirements and, in the opinion of the RPR, does not perform his work in a proper and skillful manner or is intemperate or disorderly shall, at the written request of the RPR, be removed immediately by the Contractor or subcontractor employing such person, and shall not be employed again in any portion of the work without approval of the RPR.

Should the Contractor fail to remove such person or persons, or fail to furnish suitable and sufficient personnel for the proper execution of the work, the RPR may suspend the work by written notice until compliance with such orders.

All equipment that is proposed to be used on the work shall be of sufficient size and in such mechanical condition as to meet requirements of the work and to produce a satisfactory quality of work. Equipment used on any portion of the work shall not cause injury to previously completed work, adjacent property, or existing airport facilities due to its use.

When the methods and equipment to be used by the Contractor in accomplishing the work are not prescribed in the contract, the Contractor is free to use any methods or equipment that will accomplish the work in conformity with the requirements of the contract, plans, and specifications.

When the contract specifies the use of certain methods and equipment, such methods and equipment shall be used unless otherwise authorized by the RPR. If the Contractor desires to use a method or type of equipment other than specified in the contract, the Contractor may request authority from the RPR to do so. The request shall be in writing and shall include a full description of the methods and equipment proposed and of the reasons for desiring to make the change. If approval is given, it will be on the condition that the Contractor will be fully responsible for producing work in conformity with contract requirements. If, after trial use of the substituted methods or equipment, the RPR determines that the work produced does not meet contract requirements, the Contractor shall discontinue the use of the substitute method or equipment and shall complete the remaining work with the specified methods and equipment. The Contractor shall remove any deficient work and replace it with work of specified quality, or take such other corrective action as the RPR may direct. No change will be made in basis of payment for the contract items involved nor in contract time as a result of authorizing a change in methods or equipment under this paragraph.

80-06 Temporary suspension of the work. The Owner shall have the authority to suspend the work wholly, or in part, for such period or periods the Owner may deem necessary, due to unsuitable weather, or other conditions considered unfavorable for the execution of the work, or for such time necessary due to the failure on the part of the Contractor to carry out orders given or perform any or all provisions of the contract.

In the event that the Contractor is ordered by the Owner, in writing, to suspend work for some unforeseen cause not otherwise provided for in the contract and over which the Contractor has no control, the Contractor may be reimbursed for actual money expended on the work during the period of shutdown. No allowance will be made for anticipated profits. The period of shutdown shall be computed from the effective date of the written order to suspend work to the effective date of the written order to resume the work. Claims for such compensation shall be filed with the RPR within the time period stated in the RPR's order to resume work. The Contractor shall submit with their own claim information substantiating the amount shown on the claim. The RPR will forward the Contractor's claim to the Owner for consideration in accordance with local laws or ordinances. No provision of this article shall be construed as entitling the Contractor to compensation for delays due to inclement weather or for any other delay provided for in the contract, plans, or specifications.

If it becomes necessary to suspend work for an indefinite period, the Contractor shall store all materials in such manner that they will not become an obstruction nor become damaged in any way. The Contractor shall take every precaution to prevent damage or deterioration of the work performed and provide for normal drainage of the work. The Contractor shall erect temporary structures where necessary to provide for traffic on, to, or from the airport.

80-07 Determination and extension of contract time. The **number of calendar days** shall be stated in the proposal and contract and shall be known as the Contract Time.

If the contract time requires extension for reasons beyond the Contractor's control, it shall be adjusted as follows:

80-07.1 Contract time based on calendar days. Contract Time based on calendar days shall consist of the number of calendar days stated in the contract counting from the effective date of the Notice to Proceed and including all Saturdays, Sundays, holidays, and non-work days. All calendar days elapsing between the effective dates of the Owner's orders to suspend and resume all work, due to causes not the fault of the Contractor, shall be excluded.

At the time of final payment, the contract time shall be increased in the same proportion as the cost of the actually completed quantities bears to the cost of the originally estimated quantities in the proposal. Such increase in the contract time shall not consider either cost of work or the extension of contract time that has been covered by a change order or supplemental agreement. Charges against the contract time will cease as of the date of final acceptance.

Contract time based on calendar days. Contract Time based on calendar days shall consist of the number of calendar days stated in the contract for each work area, counting from the effective date of the Notice to Proceed and including all Saturdays, Sundays, holidays, and non-work days. All calendar days elapsing between the effective dates of the Owner's orders to suspend and resume all work, due to causes not the fault of the Contractor, shall be excluded.

Time charged against the first work area shall begin on the date stated in the written Notice to Proceed. Time charged against subsequent work areas shall begin on the date and time stated in the NOTAMS issued for closure of the affected Work Area, at which time the Contractor may begin to place barricades, temporary jumpers, etc. for that Work Area.

Time charged against an individual Work Area shall end when the Engineer deems that work is substantially complete. Substantial completion of work in an individual Work Area is defined as the Work Area being fully operational and open to aircraft traffic, all barricades affecting the Work Area are removed, all temporary jumpers affecting the Work Area are removed, all pavements in the Work Area are cleaned, and NOTAMS affecting the completed Work Area are cancelled.

At the time of final payment, the contract time shall be increased in the same proportion as the cost of the actually completed quantities bears to the cost of the originally estimated quantities in the proposal. Such increase in the contract time shall not consider either cost of work or the extension of contract time that has been covered by a change order or supplemental agreement. Charges against the contract time will cease as of the date of final acceptance.

80-08 Failure to complete on time. For each calendar day specified in the contract, that any work remains uncompleted after the contract time (including all extensions and adjustments as provided in paragraph 80-07, *Determination and Extension of Contract Time*) the sum specified in the contract and proposal as liquidated damages (LD) will be deducted from any money due or to become due the Contractor or their own surety. Such deducted sums shall not be deducted as a penalty but shall be considered as liquidation of a reasonable portion of damages including but not limited to additional engineering services that will be incurred by the Owner should the Contractor fail to complete the work in the time provided in their contract.

Schedule	Liquidated Damages Cost	Allowed Construction Time
Total Contract	\$2,500.00	210 Calendar Days
Work Area A	\$2,500.00	210 Calendar Days

The construction contract time of completion for this project is 210 calendar days from the date issued on the Notice to Proceed. The contract time of completion shall begin upon issuance of the Notice to

Proceed, and includes shop drawing submittal and review, and lead time for all building and electrical components required for the project.

Permitting the Contractor to continue and finish the work or any part of it after the time fixed for its completion, or after the date to which the time for completion may have been extended, will in no way operate as a waiver on the part of the Owner of any of its rights under the contract.

80-09 Default and termination of contract. The Contractor shall be considered in default of their contract and such default will be considered as cause for the Owner to terminate the contract for any of the following reasons, if the Contractor:

- a. Fails to begin the work under the contract within the time specified in the Notice to Proceed, or
- b. Fails to perform the work or fails to provide sufficient workers, equipment and/or materials to assure completion of work in accordance with the terms of the contract, or
- c. Performs the work unsuitably or neglects or refuses to remove materials or to perform anew such work as may be rejected as unacceptable and unsuitable, or
- d. Discontinues the execution of the work, or
- e. Fails to resume work which has been discontinued within a reasonable time after notice to do so, or
- f. Becomes insolvent or is declared bankrupt, or commits any act of bankruptcy or insolvency, or
- g. Allows any final judgment to stand against the Contractor unsatisfied for a period of 10 days, or
- h. Makes an assignment for the benefit of creditors, or
- i. For any other cause whatsoever, fails to carry on the work in an acceptable manner.

Should the Owner consider the Contractor in default of the contract for any reason above, the Owner shall immediately give written notice to the Contractor and the Contractor's surety as to the reasons for considering the Contractor in default and the Owner's intentions to terminate the contract.

If the Contractor or surety, within a period of 10 days after such notice, does not proceed in accordance therewith, then the Owner will, upon written notification from the RPR of the facts of such delay, neglect, or default and the Contractor's failure to comply with such notice, have full power and authority without violating the contract, to take the execution of the work out of the hands of the Contractor. The Owner may appropriate or use any or all materials and equipment that have been mobilized for use in the work and are acceptable and may enter into an agreement for the completion of said contract according to the terms and provisions thereof, or use such other methods as in the opinion of the RPR will be required for the completion of said contract in an acceptable manner.

All costs and charges incurred by the Owner, together with the cost of completing the work under contract, will be deducted from any monies due or which may become due the Contractor. If such expense exceeds the sum which would have been payable under the contract, then the Contractor and the surety shall be liable and shall pay to the Owner the amount of such excess.

80-10 Termination for national emergencies. The Owner shall terminate the contract or portion thereof by written notice when the Contractor is prevented from proceeding with the construction contract as a direct result of an Executive Order of the President with respect to the execution of war or in the interest of national defense.

When the contract, or any portion thereof, is terminated before completion of all items of work in the contract, payment will be made for the actual number of units or items of work completed at the contract

price or as mutually agreed for items of work partially completed or not started. No claims or loss of anticipated profits shall be considered.

Reimbursement for organization of the work, and other overhead expenses, (when not otherwise included in the contract) and moving equipment and materials to and from the job will be considered, the intent being that an equitable settlement will be made with the Contractor.

Acceptable materials obtained or ordered by the Contractor for the work and that are not incorporated in the work shall, at the option of the Contractor, be purchased from the Contractor at actual cost as shown by receipted bills and actual cost records at such points of delivery as may be designated by the RPR.

Termination of the contract or a portion thereof shall neither relieve the Contractor of their responsibilities for the completed work nor shall it relieve their surety of its obligation for and concerning any just claim arising out of the work performed.

80-11 Work area, storage area and sequence of operations. The Contractor shall obtain approval from the RPR prior to beginning any work in all areas of the airport. No operating runway, taxiway, or air operations area (AOA) shall be crossed, entered, or obstructed while it is operational. The Contractor shall plan and coordinate work in accordance with the approved CSPP and SPCD.

END OF SECTION 80

Section 90 Measurement and Payment

90-01 Measurement of quantities. All work completed under the contract will be measured by the RPR, or their authorized representatives, using United States Customary Units of Measurement.

The method of measurement and computations to be used in determination of quantities of material furnished and of work performed under the contract will be those methods generally recognized as conforming to good engineering practice.

Unless otherwise specified, longitudinal measurements for area computations will be made horizontally, and no deductions will be made for individual fixtures (or leave-outs) having an area of 9 square feet (0.8 square meters) or less. Unless otherwise specified, transverse measurements for area computations will be the neat dimensions shown on the plans or ordered in writing by the RPR.

Unless otherwise specified, all contract items which are measured by the linear foot such as electrical ducts, conduits, pipe culverts, underdrains, and similar items shall be measured parallel to the base or foundation upon which such items are placed.

The term “lump sum” when used as an item of payment will mean complete payment for the work described in the contract. When a complete structure or structural unit (in effect, “lump sum” work) is specified as the unit of measurement, the unit will be construed to include all necessary fittings and accessories.

When requested by the Contractor and approved by the RPR in writing, material specified to be measured by the cubic yard (cubic meter) may be weighed, and such weights will be converted to cubic yards (cubic meters) for payment purposes. Factors for conversion from weight measurement to volume measurement will be determined by the RPR and shall be agreed to by the Contractor before such method of measurement of pay quantities is used.

Measurement and Payment Terms

Term	Description
Excavation and Embankment Volume	In computing volumes of excavation, the average end area method will be used unless otherwise specified.
Measurement and Proportion by Weight	The term “ton” will mean the short ton consisting of 2,000 pounds (907 kg) avoirdupois. All materials that are measured or proportioned by weights shall be weighed on accurate, independently certified scales by competent, qualified personnel at locations designated by the RPR. If material is shipped by rail, the car weight may be accepted provided that only the actual weight of material is paid for. However, car weights will not be acceptable for material to be passed through mixing plants. Trucks used to haul material being paid for by weight shall be weighed empty daily at such times as the RPR directs, and each truck shall bear a plainly legible identification mark.
Measurement by Volume	Materials to be measured by volume in the hauling vehicle shall be hauled in approved vehicles and measured therein at the point of delivery. Vehicles for this purpose may be of any size or type acceptable for the materials hauled, provided that the body is of such shape that the actual contents may be readily and accurately determined. All vehicles

Term	Description
	shall be loaded to at least their water level capacity, and all loads shall be leveled when the vehicles arrive at the point of delivery.
Asphalt Material	Asphalt materials will be measured by the gallon (liter) or ton (kg). When measured by volume, such volumes will be measured at 60°F (16°C) or will be corrected to the volume at 60°F (16°C) using ASTM D1250 for asphalts. Net certified scale weights or weights based on certified volumes in the case of rail shipments will be used as a basis of measurement, subject to correction when asphalt material has been lost from the car or the distributor, wasted, or otherwise not incorporated in the work. When asphalt materials are shipped by truck or transport, net certified weights by volume, subject to correction for loss or foaming, will be used for computing quantities.
Cement	Cement will be measured by the ton (kg) or hundredweight (km).
Structure	Structures will be measured according to neat lines shown on the plans or as altered to fit field conditions.
Timber	Timber will be measured by the thousand feet board measure (MFBM) actually incorporated in the structure. Measurement will be based on nominal widths and thicknesses and the extreme length of each piece.
Plates and Sheets	The thickness of plates and galvanized sheet used in the manufacture of corrugated metal pipe, metal plate pipe culverts and arches, and metal cribbing will be specified and measured in decimal fraction of inch.
Miscellaneous Items	When standard manufactured items are specified such as fence, wire, plates, rolled shapes, pipe conduit, etc., and these items are identified by gauge, unit weight, section dimensions, etc., such identification will be considered to be nominal weights or dimensions. Unless more stringently controlled by tolerances in cited specifications, manufacturing tolerances established by the industries involved will be accepted.
Scales	<p>Scales must be tested for accuracy and serviced before use. Scales for weighing materials which are required to be proportioned or measured and paid for by weight shall be furnished, erected, and maintained by the Contractor, or be certified permanently installed commercial scales. Platform scales shall be installed and maintained with the platform level and rigid bulkheads at each end.</p> <p>Scales shall be accurate within 0.5% of the correct weight throughout the range of use. The Contractor shall have the scales checked under the observation of the RPR before beginning work and at such other times as requested. The intervals shall be uniform in spacing throughout the graduated or marked length of the beam or dial and shall not exceed 0.1% of the nominal rated capacity of the scale, but not less than one pound (454 grams). The use of spring balances will not be permitted.</p> <p>In the event inspection reveals the scales have been “overweighing” (indicating more than correct weight) they will be immediately adjusted. All materials received subsequent to the last previous correct weighting-accuracy test will be reduced by the percentage of error in excess of 0.5%.</p> <p>In the event inspection reveals the scales have been under-weighing (indicating less than correct weight), they shall be immediately adjusted. No additional payment to the Contractor will be allowed for materials previously weighed and recorded.</p> <p>Beams, dials, platforms, and other scale equipment shall be so arranged that the operator and the RPR can safely and conveniently view them.</p>

Term	Description
	<p>Scale installations shall have available ten standard 50-pound (2.3 km) weights for testing the weighing equipment or suitable weights and devices for other approved equipment.</p> <p>All costs in connection with furnishing, installing, certifying, testing, and maintaining scales; for furnishing check weights and scale house; and for all other items specified in this subsection, for the weighing of materials for proportioning or payment, shall be included in the unit contract prices for the various items of the project.</p>
Rental Equipment	<p>Rental of equipment will be measured by time in hours of actual working time and necessary traveling time of the equipment within the limits of the work. Special equipment ordered in connection with extra work will be measured as agreed in the change order or supplemental agreement authorizing such work as provided in paragraph 90-05 <i>Payment for Extra Work</i>.</p>
Pay Quantities	<p>When the estimated quantities for a specific portion of the work are designated as the pay quantities in the contract, they shall be the final quantities for which payment for such specific portion of the work will be made, unless the dimensions of said portions of the work shown on the plans are revised by the RPR. If revised dimensions result in an increase or decrease in the quantities of such work, the final quantities for payment will be revised in the amount represented by the authorized changes in the dimensions.</p>

90-02 Scope of payment. The Contractor shall receive and accept compensation provided for in the contract as full payment for furnishing all materials, for performing all work under the contract in a complete and acceptable manner, and for all risk, loss, damage, or expense of whatever character arising out of the nature of the work or the execution thereof, subject to the provisions of Section 70, paragraph 70-18, *No Waiver of Legal Rights*.

When the “basis of payment” subsection of a technical specification requires that the contract price (price bid) include compensation for certain work or material essential to the item, this same work or material will not also be measured for payment under any other contract item which may appear elsewhere in the contract, plans, or specifications.

90-03 Compensation for altered quantities. When the accepted quantities of work vary from the quantities in the proposal, the Contractor shall accept as payment in full, so far as contract items are concerned, payment at the original contract price for the accepted quantities of work actually completed and accepted. No allowance, except as provided for in Section 40, paragraph 40-02, *Alteration of Work and Quantities*, will be made for any increased expense, loss of expected reimbursement, or loss of anticipated profits suffered or claimed by the Contractor which results directly from such alterations or indirectly from their own unbalanced allocation of overhead and profit among the contract items, or from any other cause.

90-04 Payment for omitted items. As specified in Section 40, paragraph 40-03, *Omitted Items*, the RPR shall have the right to omit from the work (order nonperformance) any contract item, except major contract items, in the best interest of the Owner.

Should the RPR omit or order nonperformance of a contract item or portion of such item from the work, the Contractor shall accept payment in full at the contract prices for any work actually completed and acceptable prior to the RPR’s order to omit or non-perform such contract item.

Acceptable materials ordered by the Contractor or delivered on the work prior to the date of the RPR’s order will be paid for at the actual cost to the Contractor and shall thereupon become the property of the Owner.

In addition to the reimbursement hereinbefore provided, the Contractor shall be reimbursed for all actual costs incurred for the purpose of performing the omitted contract item prior to the date of the RPR's order. Such additional costs incurred by the Contractor must be directly related to the deleted contract item and shall be supported by certified statements by the Contractor as to the nature the amount of such costs.

90-05 Payment for extra work. Extra work, performed in accordance with Section 40, paragraph 40-04, *Extra Work*, will be paid for at the contract prices or agreed prices specified in the change order or supplemental agreement authorizing the extra work.

90-06 Partial payments. Partial payments will be made to the Contractor at least once each month as the work progresses. Said payments will be based upon estimates, prepared by the RPR, of the value of the work performed and materials complete and in place, in accordance with the contract, plans, and specifications. Such partial payments may also include the delivered actual cost of those materials stockpiled and stored in accordance with paragraph 90-07, *Payment for Materials on Hand*. No partial payment will be made when the amount due to the Contractor since the last estimate amounts to less than five hundred dollars.

a. From the total of the amount determined to be payable on a partial payment 10 percent of such total amount (not to exceed 5% of the total contract) will be deducted and retained by the Owner for protection of the Owner's interests. Unless otherwise instructed by the Owner, the amount retained by the Owner will be in effect until the final payment is made except as follows:

(1) Contractor may request release of retainage on work that has been partially accepted by the Owner in accordance with Section 50-03. Contractor must provide a certified invoice to the RPR that supports the value of retainage held by the Owner for partially accepted work.

(2) In lieu of retainage, the Contractor may exercise at its option the establishment of an escrow account per paragraph 90-08.

b. The Contractor is required to pay all subcontractors for satisfactory performance of their contracts no later than 10 days after the Contractor has received a partial payment. Contractor must provide the Owner evidence of prompt and full payment of retainage held by the prime Contractor to the subcontractor within 10 days after the subcontractor's work is satisfactorily completed. A subcontractor's work is satisfactorily completed when all the tasks called for in the subcontract have been accomplished and documented as required by the Owner. When the Owner has made an incremental acceptance of a portion of a prime contract, the work of a subcontractor covered by that acceptance is deemed to be satisfactorily completed.

c. When at least 95% of the work has been completed to the satisfaction of the RPR, the RPR shall, at the Owner's discretion and with the consent of the surety, prepare estimates of both the contract value and the cost of the remaining work to be done. The Owner may retain an amount not less than twice the contract value or estimated cost, whichever is greater, of the work remaining to be done. The remainder, less all previous payments and deductions, will then be certified for payment to the Contractor.

It is understood and agreed that the Contractor shall not be entitled to demand or receive partial payment based on quantities of work in excess of those provided in the proposal or covered by approved change orders or supplemental agreements, except when such excess quantities have been determined by the RPR to be a part of the final quantity for the item of work in question.

No partial payment shall bind the Owner to the acceptance of any materials or work in place as to quality or quantity. All partial payments are subject to correction at the time of final payment as provided in paragraph 90-09, *Acceptance and Final Payment*.

The Contractor shall deliver to the Owner a complete release of all claims for labor and material arising out of this contract before the final payment is made. If any subcontractor or supplier fails to furnish such

a release in full, the Contractor may furnish a bond or other collateral satisfactory to the Owner to indemnify the Owner against any potential lien or other such claim. The bond or collateral shall include all costs, expenses, and attorney fees the Owner may be compelled to pay in discharging any such lien or claim.

90-07 Payment for materials on hand. Partial payments may be made to the extent of the delivered cost of materials to be incorporated in the work, provided that such materials meet the requirements of the contract, plans, and specifications and are delivered to acceptable sites on the airport property or at other sites in the vicinity that are acceptable to the Owner. Such delivered costs of stored or stockpiled materials may be included in the next partial payment after the following conditions are met:

- a. The material has been stored or stockpiled in a manner acceptable to the RPR at or on an approved site.
- b. The Contractor has furnished the RPR with acceptable evidence of the quantity and quality of such stored or stockpiled materials.
- c. The Contractor has furnished the RPR with satisfactory evidence that the material and transportation costs have been paid.
- d. The Contractor has furnished the Owner legal title (free of liens or encumbrances of any kind) to the material stored or stockpiled.
- e. The Contractor has furnished the Owner evidence that the material stored or stockpiled is insured against loss by damage to or disappearance of such materials at any time prior to use in the work.

It is understood and agreed that the transfer of title and the Owner's payment for such stored or stockpiled materials shall in no way relieve the Contractor of their responsibility for furnishing and placing such materials in accordance with the requirements of the contract, plans, and specifications.

In no case will the amount of partial payments for materials on hand exceed the contract price for such materials or the contract price for the contract item in which the material is intended to be used.

No partial payment will be made for stored or stockpiled living or perishable plant materials.

The Contractor shall bear all costs associated with the partial payment of stored or stockpiled materials in accordance with the provisions of this paragraph.

90-08 Payment of withheld funds. At the Contractor's option, if an Owner withholds retainage in accordance with the methods described in paragraph 90-06 *Partial Payments*, the Contractor may request that the Owner deposit the retainage into an escrow account. The Owner's deposit of retainage into an escrow account is subject to the following conditions:

- a. The Contractor shall bear all expenses of establishing and maintaining an escrow account and escrow agreement acceptable to the Owner.
- b. The Contractor shall deposit to and maintain in such escrow only those securities or bank certificates of deposit as are acceptable to the Owner and having a value not less than the retainage that would otherwise be withheld from partial payment.
- c. The Contractor shall enter into an escrow agreement satisfactory to the Owner.
- d. The Contractor shall obtain the written consent of the surety to such agreement.

90-09 Acceptance and final payment. When the contract work has been accepted in accordance with the requirements of Section 50, paragraph 50-15, *Final Acceptance*, the RPR will prepare the final estimate of the items of work actually performed. The Contractor shall approve the RPR's final estimate or advise the RPR of the Contractor's objections to the final estimate which are based on disputes in measurements or computations of the final quantities to be paid under the contract as amended by change order or

supplemental agreement. The Contractor and the RPR shall resolve all disputes (if any) in the measurement and computation of final quantities to be paid within 30 calendar days of the Contractor's receipt of the RPR's final estimate. If, after such 30-day period, a dispute still exists, the Contractor may approve the RPR's estimate under protest of the quantities in dispute, and such disputed quantities shall be considered by the Owner as a claim in accordance with Section 50, paragraph 50-16, *Claims for Adjustment and Disputes*.

After the Contractor has approved, or approved under protest, the RPR's final estimate, and after the RPR's receipt of the project closeout documentation required in paragraph 90-11, *Contractor Final Project Documentation*, final payment will be processed based on the entire sum, or the undisputed sum in case of approval under protest, determined to be due the Contractor less all previous payments and all amounts to be deducted under the provisions of the contract. All prior partial estimates and payments shall be subject to correction in the final estimate and payment.

If the Contractor has filed a claim for additional compensation under the provisions of Section 50, paragraph 50-16, *Claims for Adjustments and Disputes*, or under the provisions of this paragraph, such claims will be considered by the Owner in accordance with local laws or ordinances. Upon final adjudication of such claims, any additional payment determined to be due the Contractor will be paid pursuant to a supplemental final estimate.

90-10 Construction warranty.

a. In addition to any other warranties in this contract, the Contractor warrants that work performed under this contract conforms to the contract requirements and is free of any defect in equipment, material, workmanship, or design furnished, or performed by the Contractor or any subcontractor or supplier at any tier.

b. This warranty shall continue for a period of one year from the date of final acceptance of the work, except as noted. If the Owner takes possession of any part of the work before final acceptance, this warranty shall continue for a period of one year from the date the Owner takes possession. However, this will not relieve the Contractor from corrective items required by the final acceptance of the project work. Light Emitting Diode emitting diode (LED) light fixtures except for obstruction lighting, must be warranted by the manufacturer for a minimum of four (4) years after date of installation inclusive of all electronics.

c. The Contractor shall remedy at the Contractor's expense any failure to conform, or any defect. In addition, the Contractor shall remedy at the Contractor's expense any damage to Owner real or personal property, when that damage is the result of the Contractor's failure to conform to contract requirements; or any defect of equipment, material, workmanship, or design furnished by the Contractor.

d. The Contractor shall restore any work damaged in fulfilling the terms and conditions of this clause. The Contractor's warranty with respect to work repaired or replaced will run for one year from the date of repair or replacement.

e. The Owner will notify the Contractor, in writing, within seven (7) days after the discovery of any failure, defect, or damage.

f. If the Contractor fails to remedy any failure, defect, or damage within 14 days after receipt of notice, the Owner shall have the right to replace, repair, or otherwise remedy the failure, defect, or damage at the Contractor's expense.

g. With respect to all warranties, express or implied, from subcontractors, manufacturers, or suppliers for work performed and materials furnished under this contract, the Contractor shall: (1) Obtain all warranties that would be given in normal commercial practice; (2) Require all warranties to be executed, in writing, for the benefit of the Owner, as directed by the Owner, and (3) Enforce all warranties for the benefit of the Owner.

h. This warranty shall not limit the Owner's rights with respect to latent defects, gross mistakes, or fraud.

i. The Owner and Engineer will perform a warranty inspection with the Contractor approximately three (3) months before the end of the one-year warranty period.

90-11 Contractor Final Project Documentation. Approval of final payment to the Contractor is contingent upon completion and submittal of the items listed below. The final payment will not be approved until the RPR approves the Contractor's final submittal. The Contractor shall:

a. Provide two (2) copies of all manufacturer's warranties specified for materials, equipment, and installations.

b. Provide weekly payroll records (not previously received) from the general Contractor and all subcontractors.

c. Complete final cleanup in accordance with Section 40, paragraph 40-08, *Final Cleanup*.

d. Complete all punch list items identified during the Final Inspection.

e. Provide complete release of all claims for labor and material arising out of the Contract.

f. Provide a certified statement signed by the subcontractors, indicating actual amounts paid to the Disadvantaged Business Enterprise (DBE) subcontractors and/or suppliers associated with the project.

g. When applicable per state requirements, return copies of sales tax completion forms.

h. Manufacturer's certifications for all items incorporated in the work.

i. All required record drawings, as-built drawings or as-constructed drawings.

j. Project Operation and Maintenance (O&M) Manual(s). The Contractor shall prepare a project O&M Manual for the Owner. The O&M Manual shall consist of approved certification submittals, approved shop and setting drawing submittals, approved catalogue data submittals, circuit test results in accordance with Item L-108, and O&M Manuals for equipment installed that have operating procedures and/or maintenance requirements associated with them. The O&M manual shall be neatly bound in a properly sized 3-ring binder and tabbed by specification section. The O&M Manual shall be submitted to the Engineer prior to final payment to facilitate project closeout.

k. Security for Construction Warranty.

l. Equipment commissioning documentation submitted, if required.

m. Contractor's Affidavit of Payment of Debts and Claims (AIA Document G706) from the Prime Contractor.

n. Contractor's Affidavit of Release of Liens (AIA Document G706A) from the Prime Contractor.

o. Contractor's Affidavit of Payment of Debts and Claims (AIA Document G706) from each subcontractor.

p. Contractor's Affidavit of Release of Liens (AIA Document G706A) from each subcontractor.

q. Consent of Surety to Final Payment (AIA Document G707) from the Prime Contractor.

END OF SECTION 90

Amendments to Special Provisions to the FAA General Provisions

Amendments to Special Provisions Part II.I, Section 20.

SP 20-02. The following shall be added after the third paragraph:

“In addition, each bidder shall furnish the Owner with the following:

- a. A list of the categories of work to be performed by the bidder’s work force and a list of work to be subcontracted out (See Section 80-01).
- b. A list of construction projects completed in the past five years. The list shall include the project name, completion date, total contract value, value of bidder’s portion of the work, engineer and owner contact information (names and phone numbers).
- c. A list of construction projects in progress and under contract including the project name, percent complete, estimated completion date, total contract value, value of bidder’s portion of the work, engineer and owner contact information (names and phone numbers)."
- d. A Schedule of Values with the minimum items shown at the end of the Special Provisions shall be submitted within 10 working days from request of the apparent low bidder from the Sponsor. The file will be sent in excel form and the Contractor can add as much information as they would like.

SP 20-17 Sales tax exemption. The Owner is exempt from payment of Sales and Compensating Use Taxes of the State of Delaware and of cities and counties on all materials and supplies sold to the Owner pursuant to the provisions of this Contract. These taxes are not to be included in bids. This exemption does not, however, apply to tools, machinery, equipment or other property leased by or to the Contractor or a Subcontractor to materials and supplies of any kind which will not be incorporated into the completed project, and the Contractor and his Subcontractors shall be responsible for and pay any and all applicable taxes including Sales and Compensating Use Taxes on such leased tools, machinery, equipment or other property or on such unincorporated materials and supplies, and the provisions set forth below will not be applicable to such tools, machinery, equipment, property and unincorporated materials and supplies.

The Contractor agrees to sell, free of encumbrances, and the Owner agrees to purchase all of the materials and supplies (except as above set forth) required, necessary or proper for or incidental to the construction of the Project covered by this agreement. Title to all materials and supplies to be sold by the Contractor to the Owner, pursuant to the provisions of the Contract, shall immediately vest in and become the sole property of the Owner upon delivery of such materials and supplies to the Project site. The Contractor shall mark or otherwise identify all such materials and supplies as the property of the Owner. The Contractor, at the request of the Owner, shall furnish to the Owner such confirmatory bills of sale and other instruments as may be required by it, properly executed, acknowledged and delivered, confirming to the Owner, title to such materials and supplies free of encumbrances.

In the event that after title has passed to the Owner any of such materials and supplies are rejected as being defective or otherwise unsatisfactory, title to all such materials and supplies shall upon such rejection revert in the Contractor.

The sum paid under this Agreement shall be deemed to be in full consideration for the performance by the Contractor of all his duties and obligations under this Agreement in connection with said sale.

The Contractor agrees to construct the Project and to furnish and perform all work and labor required, necessary or proper for or incidental thereto, except that the materials and supplies sold to the Owner under the preceding paragraph shall be furnished by the Owner to the Contractor for use in the performance of said work and labor, and the sum paid pursuant to this Agreement shall be deemed to be in full consideration for the performances by the Contractor of all his duties and obligations under this Agreement in connection with said work and labor.

The purchase by Subcontractors of materials and supplies to be sold hereunder will also be a purchase or procurement for resale to the Contractor (either directly or through other Subcontractors), and ultimately to the Owner, and therefore not subject to the aforesaid Sales and Compensating Use Taxes, provided that the Subcontract Agreements provide for the resale of such materials and supplies prior to and separate and apart from the incorporation of such materials and supplies into the permanent construction and that such Subcontract Agreements are in a form similar to this Contract with respect to the separation of the sale of materials and supplies from the work and labor to be provided.

If as a result of such sale of materials and supplies (1) any claim is made against the Contractor or any Subcontractor by the State of Delaware or any city or county for Sales or Compensating Use Taxes on the aforementioned materials and supplies or (2) any claim is made against the Contractor or any Subcontractor by a materialman or a Subcontractor on account of a claim against such materialman or Subcontractor by the State of Delaware or any city or county for Sales or Compensation Use Taxes on the aforementioned materials and supplies, then, if the Contractor and Subcontractor have complied with the provisions of this Contract relating thereto, the Owner will reimburse the Contractor or any Subcontractor, as the case may be, for an amount equal to the amount of such tax required to be paid in accordance with the requirements of law, provided that:

- A. 1. The Subcontract Agreements in connection with this Contract, provide for the resale of such materials and supplies, prior to and separate and apart from the incorporation of such materials and supplies into the permanent construction.
2. Such Subcontract Agreements are in a form similar to this Contract with respect to the separation of the sale of materials and supplies from the other work and labor to be provided, and
3. Such separation is actually followed in practice, including the separation of payments for materials and supplies from the payments for other work and labor, and
- B. The Contractor and his Subcontractors and materialmen complete a Delaware State Sales Tax Form ST-13. (Contractor Exemption Purchase Certificate), and furnish such certificate to all persons, firms or corporations from which they purchase materials and supplies for the performance of the work covered by this Contract, and
- C. The Contractor and all Subcontractors maintain and keep, for a period of six (6) years after the date of final payment for the sale, or, if a claim for Sales or Compensating Use Tax is pending or threatened at the end of such six (6) year period, until such claim is finally settled, records, which in the judgment of the Department of Taxation and Finance, adequately show (1) all materials and supplies purchased by them for resale, pursuant to the provisions of this Contract and (2) all materials and supplies sold to the Owner pursuant to the provisions of this Contract, and
- D. The Owner is afforded the opportunity, before any payment of tax is made, to contest said claim in the manner and to the extent that the Owner may choose and to settle or satisfy said claims, and such attorney as the Owner may designate is authorized to act for the purpose of contesting, settling and satisfying said claim, and

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- E. The Contractor and Subcontractor give immediate notice to the Owner of any such claim, cooperate with the Owner and its designated attorney in contesting said claim and furnish promptly to the Owner and said attorney all information and documents necessary or convenient for contesting said claim, said information and documents to be preserved for six (6) years after date of final payment for the sale, or if such a claim is pending or threatened at the end of such six (6) years, until such claim is finally settled. If the Owner elects to contest any such claim, it will bear the expense of such contest.

Nothing in this Article is intended or shall be construed as relieving the Contractor from his obligations under this Agreement and the Contractor shall have the full continuing responsibility to install the materials and supplies purchased in accordance with the provisions of this Contract, to protect the same, to maintain them in proper condition and to forthwith repair, replace and make good any damage thereto without cost to the Owner until such time as the work covered by the Contract is fully accepted by the Owner.

Amendments to Special Provisions Part II.I, Section 40.

SP 40-09 Debris. Contractor shall leave the premises broom-clean and everything in perfect order and repair. Upon neglect or refusal of Contractor to keep the premises clean, the RPR shall have the authority to have such work performed, and the cost of the same shall be charged to the Contractor in default and collected from any monies which have or may become due on this Contract. The RPR shall issue no certificates of payment on the Contract until premises are clean, in good order, and all claims properly resolved.

The Contractor shall remove all debris and rubbish resulting from his work at frequent intervals, and upon the order of the RPR. Upon completion, Contractor shall leave the premises broom-clean and everything in perfect order and repair. Upon neglect or refusal of Contractor to keep the premises clean, the RPR shall have the authority to have such work performed, and the cost of the same shall be charged to the Contractor in default and collected from any monies which have or may become due on this Contract; and the RPR shall issue no certificates of payment on the Contract until premises are clean, in good order, and all claims created properly adjusted.

Amendments to Special Provisions Part II.I, Section 50.

SP 50-07.1 Additional Survey Requirements.

A. This work shall consist of providing all necessary survey work to establish, spatially position, and verify the locations of existing and proposed features and measure quantities of items in accordance with the contract documents or as directed by the RPR. This work includes but is not limited to the establishment, reestablishment or localization of primary and secondary control, the stakeout or layout of proposed features, the initialization, calibration and navigation of automated equipment operations, the location or verification of existing or of constructed features, the verification of geospatial data for proposed construction work and the coordination and sharing of survey data with the RPR.

The Contractor shall be responsible for trimming trees, brush and other objects from survey lines in advance of all survey work to permit accurate and unimpeded work by the survey crews.

B. Survey Reference Points.

1. Existing horizontal and vertical control points for the Project are those designated on drawings or as determined from investigation of the existing conditions.

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2. Locate and protect control points prior to starting Site Work and preserve permanent reference points during construction.
 - a. Make no changes or relocations without prior approval of the RPR.
 - b. Report to RPR when reference point is lost, destroyed or requires relocation because of necessary changes in grades or locations.
 - c. Replace Project control points, which may be lost or destroyed. Airport control points shall be replaced in accordance with their requirements.
 - d. Existing property corners, markers, stakes, iron pins, and survey monuments defining property lines which have a high probability of being disturbed during construction shall be properly tied into fixed reference points before being disturbed. If disturbed, they shall be accurately reset in their proper position upon completion of the work.

C. Project Layout Requirements.

1. Establish a sufficient number of permanent benchmarks on Site, as may be required, referenced to data established by survey control points. Record locations of benchmarks with horizontal and vertical data on Project Record Documents.
2. From established control points, layout all Work by establishing all lines and grades at Site necessary to control Work. Contractor shall be responsible for all measurements that may be required for execution of Work to location and limit marks prescribed in appropriate Specification Sections or on Contract Drawings.
3. Furnish, at contractor expense, all such stakes, steel pins, equipment, tools and material and labor that may be required in laying out Work control points.
4. Establish lines and levels. Locate and layout by instrumentation and similar appropriate means:
 - a. Verify property, grades, lines, levels and dimensions indicated.
 - b. Site Improvements
 - 1) Provide stakes for grading, fill and topsoil placement.
 - 2) Layout utility slopes and invert elevations.
 - 3) Layout limits of pavement demolition and proposed pavement.
4. Verify and coordinate in field all existing and proposed underground components including civil, structural, utilities and other components prior to initiation of the Work. Advise RPR and/or FAA of any conflicts or discrepancies.

D. Documents.

1. Submit name, address and contact information of Surveyor to RPR.
2. On request of the RPR, submit documentation to certify accuracy of construction survey and stakeout work and compliance with Contract Documents.
3. Submit certificate signed by licensed surveyor certifying that elevations and locations of improvements are in conformance with Contract Documents. Should any work be in non-conformance with Contract Documents, Contractor shall identify all such non-conformance in the certificate.
4. Standards and Availability: Data and other measurements shall be recorded in accordance with standard and approved methods. All field notes, sketches, recordings, and computations in establishing above horizontal and vertical control points shall be available at all times during progress of Work for ready examination by RPR.

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5. Maintain complete and accurate record data on underground utilities and obstructions, new and existing, encountered in execution of Work. Record data on Project Record Documents.
 6. On completion of major site improvements, prepare certified survey showing dimensions, locations, angles, and elevations of construction.

E. GPS Inspection Unit. Section not used.

F. Computer Aided Drafting & Design (CADD). This project was not developed using three-dimensional design software. After award and upon request, the successful bidder will be provided CADD files developed from AutoCAD for use. A single CADD file will be provided as well, including 2D information.

The following 2D CADD files will be provided:

<u>FILE</u>	<u>DESCRIPTION</u>
Existing Base Map	Existing topographic features, limits of pavement, physical features, existing contours, equipment, structures, lights, signs, known utilities, fence, pipes, and conduits, buildings, etc.
Proposed	Proposed work including alignments, survey data, work phasing limits, limits of demolition, limits of pavement, physical features, proposed contours, equipment, structures, pavement marking, lights, signs, utilities, fence, pipes, and conduits, and buildings.

Unless otherwise shown on the Plans, the Contractor shall assume that the origin of proposed CAD symbols is at the center of the location of the feature. CAD symbols which are not at the center of origin include the following:

<u>Symbol</u>	<u>Origin</u>
N/A	

The files were developed for the design and depiction of various 2D features (existing and proposed).

The Owner allows use of the CADD in the performance of its work and services on the project with the following terms and conditions:

1. That the Owner does not warrant or guarantee the information and data in the CADD files and any accompanying documentation as a substitute for the sound judgment of the Contractor.
2. That the Contractor desires to make use of the CADD files in conjunction with the Work to be provided to the Owner for the subject project.
3. That the Contractor has no rights to the information and data contained in the CADD files or any translated or converted form of these files. The transfer shall not be considered to convey any proprietary interest in the information and data in the CADD files or any translated or converted form of these files or subsequent version thereof.
4. That the information and data contained in the CADD files or in any translated or converted form of these files shall not be used by the Contractor on any other project.
5. That the Contractor may not copy, distribute, sell, rent, sublicense or lease the CADD files or any translated or converted form of these files or any accompanying documentation.
6. That no information or data contained in the CADD files or any translated or converted form of these files shall be transferred in any electronic form without written permission of the Owner.

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7. That after completion of the Work by the Contractor as part of this project, the Contractor shall remove the information and data contained in the CADD files, or any translated or converted form of these files, from all of its electronic data processing systems. No electronic copies of the information and data contained in the CADD files or any translated or converted form of these files shall be retained by the Contractor.
 8. That the Contractor shall take all steps reasonably necessary to protect the CADD files, or any translated or converted form of these files, from theft or use in a manner inconsistent with these terms and conditions.
 9. That the Owner may terminate these terms and conditions at any time and the Contractor shall immediately remove the CADD files, or any translated or converted form of these files, from their electronic data processing systems upon demand of the Owner.
 10. That the Owner retains all rights not expressly granted. Nothing in these terms and conditions constitutes a waiver of the Owner's rights under any federal or state law.
 11. That the Owner excludes any and all implied warranties, including warranties of merchantability and fitness for a particular purpose, and limits the Contractor's remedy to return of the CADD files and documentation to the Owner for replacement.
 12. That the Owner makes no warranty or representation, either express or implied, with respect to the CADD files or accompanying documentation, including their quality, performance, merchantability, or fitness for a particular purpose. The CADD files and documentation are provided "as is" and the Contractor assumes the entire risk as to their quality and performance.
 13. That the Owner shall not be liable for any direct, indirect, special, incidental, or consequential damages arising out of the use of, inability to use, or any defect in the CADD files or any translated or converted form of these files or any accompanying documentation.
 14. That the Contractor shall indemnify and hold harmless the Owner, its officials and employees, and the RPR for any injury to the person or property of third parties arising out of the use of or any defect in the CADD files or any translated or converted form of these files or any accompanying documentation.
 15. That the Contractor shall indemnify and hold harmless the Owner, its officials and employees, and the RPR for any injury arising out of any infringement of the copyright law.
 16. That the warranty and remedies set forth in these terms and conditions are exclusive and in lieu of all others, oral or written, express or implied.
 17. That nothing contained in these terms and conditions shall be construed to represent or warrant that the Contractor has the right to reproduce or copy any or converted form of these files and the Contractor acknowledges that it has no right to reproduce and include copyright or trade secret notices, or patent rights on any copies, in whole or in part, in any form. All copies of each CADD and surface file remain the property of the Owner and any rights involving the copyright law as modified in 17 U.S.C. §101 et. seq. remain with the Owner.

G. Equipment.

1. Surveying Equipment. Upon request, the Contractor shall make available to the RPR, a rod, level, and tripod. The rod shall be telescoping rod, 15 feet in length with hundredth of a foot graduations. The level shall be self-leveling and have documentation demonstrating it has been calibrated within twelve months of the project's commencement.
2. Materials. Stakes used for construction layout shall be sound hardwood stakes having minimum dimensions of 1 inch by 1 inch by 4 feet in length.
3. GPS Inspection Units.

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- a. GPS units provided for a single contract shall be of the same model and manufacturer; and shall include, and be licensed to operate, the same versions of GPS planning software, data collection software, navigation software, stakeout software and post processing software. All software provided (including firmware) shall be the most current available from the manufacturer at the time of delivery of the GPS units. GPS inspection units should be of the same manufacturer as those used by the Contractor. GPS units shall not be more than 2 years old from the date of manufacturing to the time of delivery. To verify the age of the GPS units, the Contractor shall provide a dated copy of the manufacturer's receipt(s) for the purchase, lease or rental of the units.
 - b. GPS units shall include both standard USB cable and Bluetooth wireless technology for data transfer.
 - c. Data shall be capable of being copied onto or from a removable industry standard data storage card (e.g.: secure digital SD Card). Each GPS Unit shall include 2 data storage cards, each with a minimum capacity of 4 GB each.
 - d. GPS units shall include the ability to import/export and display point and alignment data which is in XML format, and also import graphics files which are in DGN or DXF format.
 - e. GPS units shall have an internal, or modular, rechargeable battery system capable of operating a minimum of 8 hours (may include interchangeable batteries), and shall include a battery charger.
 - f. GPS units shall include a hard or soft shell carry case, and all appropriate operation manuals.

4. Survey Grade GPS Inspection Units. **Section Not Used.**

H. Traditional Survey Stakeout. The Contractor shall field locate all features to be constructed from survey control points which are identified on the Plans. Any error, apparent discrepancy or absence in the data shown or required to appropriately accomplish the stakeout survey shall be referred to the RPR immediately for interpretation when such is observed or required.

The Contractor shall place two offset stakes or references points along the center line at maximum intervals of 50 feet and at such intermediate locations as required to determine location and direction. From computations and measurements made by the Contractor, these stakes shall be clearly and legibly marked with the center line station number, offset and cut or fill from which the establishment of the centerline location and elevation can be determined. If markings become illegible for any reason the markings shall be restored by the Contractor. The Contractor shall locate and place all cut, fill, slope, fine grade, or other stakes and points for the proper progress of the work with a maximum station spacing of 50 feet. All control points shall be properly protected and flagged for easy identification.

The Contractor shall be responsible for the accuracy of the work and shall maintain all applicable reference points, stakes, etc. Damaged or destroyed reference points or bench marks made inaccessible by the progress of the construction shall be replaced or transferred by the Contractor. All control points shall be referenced by ties (4 minimum) to specific points on acceptable objects and recorded. Any alterations or revisions in the ties shall be so noted and the information furnished to the RPR. All stakeout survey work related to control shall be referenced to the control line shown in the contract documents. Computations and survey notes necessary to establish the position of the work from control points, shall be made and maintained in a neat, legible and acceptable format by the Contractor. Computations, survey notes and other survey information shall be made available to the RPR within 3 work days from the request. The RPR may check all or any portion of the stakeout survey work or notes made by the Contractor. Such checking by the RPR shall not relieve the Contractor of any responsibilities for the accuracy or completeness of the work.

I. Automated Stakeout and Automated Machine Guidance Operations. Section Not Used.

SP 50-17 Removal of water. The Contractor shall at all times during construction, provide and maintain proper and satisfactory means and devices for the removal of all water entering the excavations, and shall remove all such water as fast as it may collect, in such manner as shall not interfere with the prosecution of the work or the proper placing of materials or other work.

Removal of water includes the construction and removal of cofferdams, sheeting and bracing, the furnishing of materials and labor necessary therefore, the excavation and maintenance of ditches and sluiceways and the furnishing and operation of pumps, wellpoints and appliances needed to maintain thorough drainage of the work in a satisfactory manner.

Water shall not be allowed to rise over or come in contact with any masonry, concrete or mortar, until at least twenty-four (24) hours after placement and no stream of water shall be allowed to flow over such work until such time as the RPR may permit.

Unless otherwise specified, all excavations which extend down to or below the static groundwater elevations at the sites of structures shall be dewatered by lowering and maintaining the groundwater beneath such excavations at an elevation not less than that specified herein at all times when work thereon is in progress, during subgrade preparation and the placing of the structure or other materials thereon.

Where the presence of fine granular subsurface materials and a high groundwater table may cause the upward flow of water into the excavation with a resulting quick condition, the Contractor shall install and operate a suitable dewatering system to prevent the upward flow of water during construction.

When the water table is within the capillary rise of silt/clay subsurface material, the Contractor shall select and operate his equipment in a manner to prevent the deterioration of the working surface due to the upward flow of water during construction.

The effluent pumped from the dewatering system shall be examined periodically by qualified personnel to determine if the system is operating satisfactorily without the removal of fines.

Unless otherwise directed by the RPR or shown on the Contract Documents, the water level shall not be permitted to rise until construction in the immediate area is completed and the excavation backfilled to the original grade or proposed grade.

Where well points are used, the groundwater shall be lowered and maintained continuously (day and night) at a level not less than two (2) feet below the bottom of the excavation. Excavation will not be permitted at a level lower than two (2) feet above the water level as indicated by the observation wells.

The wellpoint system shall be designed or installed by or under the supervision of an organization whose principal business is wellpointing and has at least five (5) consecutive years of similar experience and can furnish a representative list of satisfactory similar operations. Wellpoint headers, points and other pertinent equipment shall not be placed within the limits of the excavation in such a manner or location as to interfere with the laying of pipe or trenching operations or with the excavation for and/or construction of other structures. Standby gasoline or diesel powered equipment shall be provided so that in the event of failure of the operating equipment, the standby equipment can be readily connected to the dewatering system. The standby equipment shall be maintained in good order and actuated regularly not less than twice a week when directed.

Wellpoints shall be installed in the center of a sand wick drain which shall be placed by means of a sanding shell or other approved means to provide a sand core not less than ten (10) inches in diameter.

Detached observation wells of similar construction to the wellpoints shall be installed at intervals of not less than fifty (50) feet along the opposite side of the trench from the header pipe and line of wellpoints, or around the excavation for a structure or as shown on the Contract Drawings, to a depth of at least five (5) feet below the proposed excavation. In addition, one wellpoint in every fifty (50) feet shall be fitted with a tee, plug and valve so that the wellpoint can be converted for use as an observation well. Observation wells shall be not less than one and one-half (12) inch in diameter.

Water pumped or drained from excavations, or any sewers, drains, or water courses encountered in the work, shall be disposed of in a suitable manner without injury to adjacent property, the work under construction, or to pavements, roads and drives. No water shall be discharged to sanitary sewers. Sanitary sewage shall be pumped to sanitary sewers or shall be disposed of by an approved method.

Any damage caused by improper handling of water shall be repaired by the Contractor at his/her own expense.

SP 50-18 Sheeting and bracing. The Contractor shall furnish, place and maintain such sheeting, bracing and shoring as required to support the sides and ends of excavations in such a manner as to prevent any movement which would in any way damage the pipe, sewers, masonry or other work, diminish the width necessary, otherwise damage or delay the work, or endanger existing structures, pipes or pavements, or to occasion a hazard to persons engaged on the project or to the general public.

Sheeting and bracing or other trench protection shall be utilized as required for the safety of employees exposed to the hazard of falling or sliding material from any trench or excavation in conformance with the provisions of Industrial Code Rule 23 as amended, and OSHA. Sheeting and bracing must be designed by, signed and stamped by a Professional Engineer licensed to practice in the State in which the project is located.

The Contractor shall be responsible for the adequacy of all trench support systems used and for all damage to persons or property resulting from improper quality, strength, placing, maintenance and removal.

All material used for sheeting and bracing shall be sound and free from defects which might impair its strength or effectiveness.

All timber sheeting and bracing shall be sound and straight, free from cracks, shakes and large or loose knots.

All steel sheeting and bracing shall be sound and straight, free from bends, twists or splits, having square and undamaged ends.

Sheeting shall be driven vertically from the original ground surface as the excavation progresses. Sufficient toe support shall be sustained so as to maintain pressure against the original ground at all times.

Timber sheeting shall be driven so that edges are tight together and steel sheeting driven with the individual members interlocking. All bracing shall be of such design and strength as to maintain the sheeting in its proper position.

The Contractor shall be solely responsible for the adequacy of all sheeting and bracing.

In general, all sheeting and bracing, whether of steel, timber or other material, used to support the sides of trenches or other open excavations, shall be withdrawn as the trenches or other open excavations are being refilled. That portion of the sheeting extending below the top of a pipe, sewer or structure shall be

withdrawn, unless otherwise directed, before more than 6 inches of earth is placed above the top of the pipe, sewer or structure and before any bracing is removed. The voids left by the sheeting shall be carefully refilled with selected material and rammed tight with tools especially adapted for the purpose or otherwise as may be approved.

The Contractor shall be responsible for the adequate shoring and/or bracing of any existing utilities encountered during the excavation. Such utilities shall be braced or shored in a manner acceptable to the local jurisdictional agency having authority over the utility encountered. It shall be the responsibility of the Contractor to prevent damage to or displacement of utilities, and to work with and request the concurrence of the utility's company representative in this matter.

Amendments to Special Provisions Part II.I, Section 60.

SP 60-01. The following shall be added after the fourth paragraph:

“All other equipment and materials covered by other referenced specifications shall be subject to acceptance through manufacturer's certification of compliance with the applicable specification.

The Contractor shall prepare a project Operations and Maintenance (O&M) Manual for the Owner. The O&M Manual shall consist of approved certification submittals, approved shop and setting drawing submittals, approved catalogue data submittals, and Operations & Maintenance Manuals for equipment installed that have operating procedures and/or maintenance requirements associated with them. The O&M manual shall be neatly bound in a properly sized 3-ring binder and tabbed by specification section. The O&M Manual shall be submitted to the Engineer prior to final payment to facilitate project closeout.”

SP 60-02. The following shall be added after the second paragraph:

“The cost of all failing tests shall be borne by the Contractor.”

SP 60-03. The following shall be added after the first paragraph:

“Manufacturer's certificates of compliance shall not relieve the Contractor of their responsibility to provide materials in accordance with these specifications and acceptable to the RPR. Materials supplied and/or installed that do not materially comply with these specifications shall be removed, when directed by the RPR, and replaced with materials, which do comply with these specifications, at the sole cost of the Contractor.”

SP 60-09 Shop and setting drawings and catalogue data. All materials and equipment used in the work shall be submitted to the RPR, unless otherwise directed. The RPR will forward the submittals to Engineer for their review and approval prior to ordering the equipment. All information required for the Engineer's review of each particular pay item shall be sent as one submittal. In addition, if the pay item interfaces with other pay items (as in the case of electrical equipment), then the submittals covering the interfacing pay items shall be sent at the same time. Submittals consisting of marked catalog sheets or shop drawings shall be provided. Submittal data shall be presented in a clear, precise and thorough manner. Original catalog sheets are preferred. Photocopies are acceptable provided they are as good a quality as the original. Clearly and boldly mark each copy to identify pertinent products or models applicable to this project. Indicate all optional equipment and delete non-pertinent data. Submittals for components of electrical equipment and systems shall identify the equipment for which they apply on each submittal sheet. Markings shall be boldly and clearly made with arrows or circles (highlighting is not acceptable). Drawings and data shall be submitted sufficiently in advance of the work to permit proper review, including time for necessary revisions and re-submittals. The Contractor is solely responsible for delays in the project accruing directly or indirectly from late submissions or resubmissions of submittals.

Shop and setting drawings shall present complete and accurate information relative to all working dimensions, equipment weight assembly and sectional view, all the necessary details, pertaining to coordinating the work of the Contract, lists of materials and finishes, parts lists and the description thereof, lists of spare parts and tools where such parts or tools are required, no-scale control diagrams for control wiring and control piping, and any other items of information that are required to demonstrate detail compliance with the Plans and Specifications. Each drawing shall be dated and shall show the name of the Project, Contract Number and the name of the manufacturer of the equipment covered by the drawing or drawings. The Engineer will not review any drawings that are not properly identified or that do not contain complete data on the work or that have not been checked, stamped and signed by the Contractor for compliance with the Contract Documents.

The Engineer's review of the Contractor's Shop Drawings signifies only that such drawings appear to be in substantial conformity with the Contract Drawings and Contract Documents. Such review does not indicate approval of every detail of the drawings nor of the work methods of the Contractor which are indicated thereon. Regardless of the corrections made in or made of such drawings by the Engineer, the Contractor will nevertheless be responsible for the accuracy of such drawings, for their conformity to the Plans and Specifications and for the proper fitting and construction of the work.

No work covered by shop and setting drawings shall be done until the drawings have been reviewed and found acceptable by the Engineer. No payment shall be made on any item for which submittals are not received and found acceptable by the Engineer.

SP 60-10 Electrical shop drawings. Drawings for electrical equipment shall show physical dimensions and installation details and shall include elementary and connection diagrams for each control assembly and the interconnection diagrams for all equipment. The drawings shall show clearly the coordination of control work, shall identify the components external to electrical equipment and shall define the contact arrangement and control action of the primary and final control elements.

Where standard electrical control equipment having complex internal wiring is required, such as control panels, generator transfer panels, electric or electronic instruments and similar items, the detail shop wiring diagrams for such equipment will not be required, and, if submitted, will in general not be reviewed. The submittal for each such item of equipment shall, however, include an elementary diagram of the input and output elements which require connections to external equipment, and/or a complete step by step description of the control action of the equipment being submitted. In the event that any questions arise as to the type of information to be presented on the submittal, the supplier shall direct inquiries to the RPR through the Prime Contractor in advance of the preparation of his/her submittal.

SP 60-11 Substitute items. If in the Engineer's sole judgment an item of material or equipment proposed by the Contractor does not qualify as an "or-equal" item, it will be considered a substitute item. The Contractor shall submit sufficient information as provided below to allow the Engineer to determine that the item of material or equipment proposed is essentially equivalent to that named and an acceptable substitute therefore. The procedure for review by the Engineer will include the following and as the Engineer may decide is appropriate under the circumstances. Requests for review of substitute items of material or equipment will not be accepted by the Engineer from anyone other than the Contractor. If the Contractor wishes to furnish or use a substitute item of material or equipment, the Contractor shall first make a written application through the RPR to the Engineer for acceptance thereof, certifying that the substitute will perform adequately the functions and achieve the results called for by the general design, be similar in substance to that specified and be suited to the same use as that specified. The application will state the extent, if any, to which the evaluation and acceptance of the substitute will prejudice the Contractor's achievement of completion on time, whether or not acceptance of the substitute for use in the Work will require a change in any of the Contract Documents or Contract Drawings (or in the provisions

of any other direct contract with the Owner for work on the Project) to adapt the design to the substitute and whether or not incorporation or use of the substitute in connection with the work is subject to payment of any license fee or royalty. If the substitute item requires modifications to any existing features or to any proposed work, the application shall also include details of proposed modifications necessary to accommodate the substitute item. Such details shall include scaled layouts, dimensions and other pertinent information to enable the Engineer to accurately assess the entire application. If the substitute item and proposed modifications are approved, the Contractor, at no additional cost to the Owner, shall do all work necessary to make such modifications and absorb all costs of any related changes imposed on other Contractor's. All variations of the substitute from that specified will be identified in the application and available maintenance, repair and replacement service will be indicated. The application will also contain an itemized estimate of all costs or credits that will result directly or indirectly from acceptance of such substitute, including costs of redesign and claims of other contractors affected by the resulting change, all of which will be considered by the Engineer in evaluating the substitute. The Engineer may require the Contractor to furnish additional data about the substitute. **All items deviating in any way from the specifications shall state on the transmittal cover sheet in bolded letters no small than 16 size font, "SUBSTITUTE ITEM", if this is not displayed any approval given is null and void and any costs for supplying the specified item shall be borne solely on the Contractor.**

- A. Engineer's Evaluation.** The Engineer will be the sole judge of acceptability. No substitute will be ordered, installed or utilized without the Engineer's prior written acceptance which will be evidenced by either a Change Order or an approved Shop Drawing. The Engineer will record time required by the Engineer and the Engineer's Consultants in evaluating substitutes proposed or submitted by the Contractor and in making changes in the Contract Documents or Contract Drawings (or in the provisions of any other direct contract with Owner for work on the Project) occasioned thereby. The Engineer's charges shall be at the same rates the Engineer charges for such services to the Owner.
- B. Contractor's Expense.** All data to be provided by the Contractor in support of any substitute item will be at the Contractor's expense. In order to aid the Engineer in determining the equality of an or substitute item (when compared to the item actually specified), the Contractor shall arrange for the performance of any tests requested by the Engineer. The Engineer shall determine the nature, extent, tester and degree of supervision of such tests. Certified test results shall be mailed directly to the Engineer for all tests requested. All costs of such tests, including engineering costs, shall be borne by the Contractor. The Owner may require the Contractor to furnish at the Contractor's expense a special performance guarantee or other surety with respect to any substitute. Whether or not the Engineer accepts a substitute item so proposed or submitted by the Contractor, the Contractor shall reimburse the Owner for the charges of the Engineer and the Engineer's Consultants for evaluating each such substitute item. The costs for evaluating substitute items shall be deducted from the Owner's payment to the Contractor.

SP 60-12 Submittal procedure. The following procedure has been established for the submittal and processing of shop and setting drawings, working drawings, and catalogue data. Departures from this procedure may result in delay and misunderstandings.

- A.** All information required for the Engineer's review of each particular pay item shall be sent as one submittal to the RPR with an attached submittal cover sheet. In addition, if the pay item interfaces with other pay items (as in the case of electrical equipment), then the submittals covering the interfacing pay items shall be sent at the same time.
- B.** In submitting certifications, drawings, catalog data, and similar items for review, one (1) electronic copy shall be submitted to DocExpress. Access to DocExpress will be provided by the RPR upon award of the Contract. The submittal will be reviewed by the Engineer, stamped and signed. The

submittal bearing the reviewed stamp and signature will be reloaded back to DocExpress by the Engineer. It will be the Contractor's responsibility to check DocExpress for updated submittals.

The Contractor shall provide one (1) hard copy of each of the stamped and signed submittals for inclusion in the O&M Manual prior to contract closeout.

The RPR shall be responsible for printing sufficient copies of each submittal for their own records. The Contractor shall be responsible for printing sufficient copies of each submittal for their own records and distributing to each of the other prime or subcontractors whose work is to be correlated with such submittals.

C. Submittals will be stamped by the Engineer as follows:

1. "Approved", if no change or rejection is made.
2. "Approved as Noted", if minor changes or additions are made, but re-submittal is not considered necessary. All copies will bear the corrective marks.
3. "Revise and Resubmit", if the changes requested are extensive. In this case, re-submittal after correction is necessary and the same number of copies shall be included in the re-submittal as in the first submittal.
4. "Rejected", if it is considered that the data submitted cannot with reasonable revision meet the requirements of the Plans and Specifications.
5. "Submit Specified Item", if the data submitted is not clear, complete, or for other reasons cannot be examined by the Engineer to establish compliance with the Plans and Specifications.

D. Unless otherwise approved in specific cases, all submittals must be transmitted by the Prime Contractor, not by the Subcontractors or vendors.

Any changes in re-submittals, other than those indicated as requested, must be specifically brought to the attention of the RPR. Changes or additions shall not be made in, or to, any fabricated item, part or material without having a re-review.

Submittal Cover Sheet *

Date:	_____	
From:	_____	Attn: _____
Company:	_____	Company: _____
Phone #:	_____	Phone #: _____
Email:	_____	Email: _____
Project Name:	_____	
Project No.:	_____	
Reference:	Tech. Spec.: _____	Pay Item: _____
	Other: _____	
Description:	_____ _____	
Supplier:	_____	
Manufacturer:	_____	
Item Type:	_____ Catalog Data _____ Manufacturer Certification	
	_____ Shop Drawings _____ Samples	
	_____ Other: _____	

Contractor's Review: _____ Reviewed for general compliance of specifications. _____ This submittal is a substitute to the specified product. _____ For Architects / Engineers Approval This is our _____ submittal for this item. We are submitting _____ copies. Submitted by: _____ Date: _____	Engineers' Review: <input type="checkbox"/> (A) Approved <input type="checkbox"/> (A/N) Approved As Noted <input type="checkbox"/> (RR) Revise and Resubmit <input type="checkbox"/> (REJ) Rejected <input type="checkbox"/> (SUB) Submit Specified Item <small>Checking is only for general compliance with the design concept of the project and general compliance with the information given in the contract documents. Any action shown is subject to the requirements of the plans and specifications. Contractor is responsible for dimensions which shall be confirmed and correlated at the jobsite; fabrication processes and techniques of construction; coordination of his work with that of all other trades; and the satisfactory performance of his work.</small> Reviewed by: _____ Date: _____
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* Note: Provide one cover sheet for each copy of the submittal.

Amendments to Special Provisions Part II.I, Section 70.

SP 70-01. The following shall be added to the second sentence of the first paragraph after “and shall protect and indemnify the Owner”:

“, the Engineer, the RPR ”

SP 70-03. The following shall be added to the second sentence of the first paragraph after “and the surety shall indemnify and hold harmless the Owner,”:

“ the Engineer, the RPR, ”

SP 70-10. The following shall be added after the third paragraph:

“The Contractor shall indemnify the Owner for any and all costs for the repair or replacement of the Owner’s property including, but not limited to, buildings and roads, which arise from or in any manner grow out of any act or neglect on or about the Project site by the Contractor and anyone for whom the Contractor is legally liable. ”

SP 70-11. The following shall be added to the first sentence of the first paragraph after “The Contractor shall indemnify”:

“, defend ”

SP 70-11. The following shall be added to the first sentence of the first paragraph after “hold harmless the Engineer/RPR and the Owner and their”:

“respective representatives, directors, ”

SP 70-11. The following shall be added to the first sentence of the first paragraph after “employees from all suits, actions,”:

“damages, costs, expenses ”

SP 70-11. The following shall be added to the first sentence of the first paragraph after “claims, of any character, ”:

“(including attorney’s fees), and liability (including statutory liability) ”

SP 70-11. The following shall be added to the first sentence of the first paragraph after “or because of any act or omission, neglect, or misconduct ”:

“or arising out of or related to any negligence of the Contractor or anyone for whom the Contractor is legally liable in performing or safeguarding the work; or through use of unacceptable materials in constructing the work; or because of any and all environmental impairment; or because of any act or omission, neglect, or misconduct of said Contractor or anyone for whom the Contractor is legally liable ”

SP 70-11. The following shall be added after the first paragraph:

“As a material part of the consideration to be rendered by the Owner, the Contractor hereby waives all claims against the Owner for damages to the goods, wares, and merchandise in, upon, or about the Project, and the Contractor will hold the Owner exempt and harmless from any damage and injury to any

such person or to the goods, wares, or merchandise of any such person, arising from the use of the Project site by the Contractor or from failure of the Contractor to keep the Project site in good condition and repair as provided in this Section.”

SP 70-22 Federal Contract Provisions for procurement and contracting under AIP.

The Contractor is required to insert these contract provision in each lower tier contract (e.g. subcontract or sub-agreement).

The Contractor is required (including all subcontractors) to incorporate these contract provisions by reference for work done under any purchase orders, rental agreements and other agreements for supplies or services.

The Contractor shall be responsible for compliance with these contract provisions by any subcontractor, lower-tier subcontractor or service provider.

ACCESS TO RECORDS AND REPORTS

SOURCE: 2 CFR § 200.333
2 CFR § 200.336
FAA Order 5100.38

ACCESS TO RECORDS AND REPORTS

The Contractor must maintain an acceptable cost accounting system. The Contractor agrees to provide the Owner, the Federal Aviation Administration and the Comptroller General of the United States or any of their duly authorized representatives access to any books, documents, papers and records of the Contractor which are directly pertinent to the specific contract for the purpose of making audit, examination, excerpts and transcriptions. The Contractor agrees to maintain all books, records and reports required under this contract for a period of not less than three years after final payment is made and all pending matters are closed.

* * * * *

AFFIRMATIVE ACTION REQUIREMENT

SOURCE: 41 CFR Part 60-4
Executive Order 11246

AFFIRMATIVE ACTION REQUIREMENT

**NOTICE OF REQUIREMENT FOR AFFIRMATIVE ACTION TO
ENSURE EQUAL EMPLOYMENT OPPORTUNITY**

1. The Offeror’s or Bidder’s attention is called to the “Equal Opportunity Clause” and the “Standard Federal Equal Employment Opportunity Construction Contract Specifications” set forth herein.
2. The goals and timetables for minority and female participation, expressed in percentage terms for the Contractor’s aggregate workforce in each trade on all construction work in the covered area, are as follows:

Timetables

Goals for minority participation for each trade:	14.5%
Goals for female participation in each trade:	6.9%

These goals are applicable to all of the Contractor's construction work (whether or not it is Federal or federally assisted) performed in the covered area. If the Contractor performs construction work in a geographical area located outside of the covered area, it shall apply the goals established for such geographical area where the work is actually performed. With regard to this second area, the Contractor also is subject to the goals for both its federally involved and nonfederally involved construction.

The Contractor's compliance with the Executive Order and the regulations in 41 CFR Part 60-4 shall be based on its implementation of the Equal Opportunity Clause, specific affirmative action obligations required by the specifications set forth in 41 CFR 60-4.3(a) and its efforts to meet the goals. The hours of minority and female employment and training must be substantially uniform throughout the length of the contract, and in each trade, and the Contractor shall make a good faith effort to employ minorities and women evenly on each of its projects. The transfer of minority or female employees or trainees from Contractor to Contractor or from project to project for the sole purpose of meeting the Contractor's goals shall be a violation of the contract, the Executive Order and the regulations in 41 CFR Part 60-4. Compliance with the goals will be measured against the total work hours performed.

3. The Contractor shall provide written notification to the Director of the Office of Federal Contract Compliance Programs (OFCCP) within 10 working days of award of any construction subcontract in excess of \$10,000 at any tier for construction work under the contract resulting from this solicitation. The notification shall list the name, address, and telephone number of the subcontractor; employer identification number of the subcontractor; estimated dollar amount of the subcontract; estimated starting and completion dates of the subcontract; and the geographical area in which the subcontract is to be performed.

4. As used in this notice and in the contract resulting from this solicitation, the "covered area" is Cheswold, Kent County, Delaware.

* * * * *

BREACH OF CONTRACT TERMS

SOURCE: 2 CFR § 200 Appendix II(A)

BREACH OF CONTRACT TERMS

Any violation or breach of terms of this contract on the part of the Contractor or its subcontractors may result in the suspension or termination of this contract or such other action that may be necessary to enforce the rights of the parties of this agreement.

Owner will provide Contractor written notice that describes the nature of the breach and corrective actions the Contractor must undertake in order to avoid termination of the contract. Owner reserves the right to withhold payments to Contractor until such time the Contractor corrects the breach or the Owner elects to terminate the contract. The Owner's notice will identify a specific date by which the Contractor must correct the breach. Owner may proceed with termination of the contract if the Contractor fails to correct the breach by the deadline indicated in the Owner's notice.

The duties and obligations imposed by the Contract Documents and the rights and remedies available thereunder are in addition to, and not a limitation of, any duties, obligations, rights and remedies otherwise imposed or available by law.

* * * * *

BUY AMERICAN PREFERENCE

SOURCE: Title 49 USC § 50101
Executive Order 14005, *Ensuring the Future is Made in All of America by All of America's Workers*
Bipartisan Infrastructure Law (Pub. L. No. 117-58), Build America, Buy America (BABA)

BUY AMERICAN PREFERENCE

The Contractor certifies that its bid/offer is in compliance with 49 USC § 50101, BABA and other related Made in America Laws, U.S. statutes, guidance, and FAA policies, which provide that Federal funds may not be obligated unless all iron, steel and manufactured goods used in AIP funded projects are produced in the United States, unless the Federal Aviation Administration has issued a waiver for the product; the product is listed as an Excepted Article, Material Or Supply in Federal Acquisition Regulation subpart 25.108; or is included in the FAA Nationwide Buy American Waivers Issued list.

The bidder or offeror must complete and submit the certification of compliance with FAA's Buy American Preference, BABA and Made in America laws included herein with their bid or offer. The Airport Sponsor/Owner will reject as nonresponsive any bid or offer that does not include a completed certification of compliance with FAA's Buy American Preference and BABA.

The bidder or offeror certifies that all constructions materials, defined to mean an article, material, or supply other than an item of primarily iron or steel; a manufactured product; cement and cementitious materials; aggregates such as stone, sand, or gravel; or aggregate binding agents or additives that are or consist primarily of: non-ferrous metals; plastic and polymer-based products (including polyvinylchloride, composite building materials, and polymers used in fiber optic cables); glass (including optic glass); lumber; or drywall used in the project are manufactured in the U.S.

* * * * *

CIVIL RIGHTS - GENERAL

SOURCE: 49 USC § 47123

GENERAL CIVIL RIGHTS PROVISIONS

In all its activities within the scope of its airport program, the Contractor agrees to comply with pertinent statutes, Executive Orders, and such rules as identified in Title VI List of Pertinent Nondiscrimination Acts and Authorities to ensure that no person shall, on the grounds of race, color, national origin (including limited English proficiency), creed, sex (including sexual orientation and gender identity), age, or disability be excluded from participating in any activity conducted with or benefiting from Federal assistance.

This provision is in addition to that required by Title VI of the Civil Rights Act of 1964.

The above provision binds the Contractor and subcontractors from the bid solicitation period through the completion of the contract.

* * * * *

CIVIL RIGHTS - TITLE VI ASSURANCES

SOURCE: 49 USC § 47123
FAA Order 1400.11

TITLE VI SOLICITATION NOTICE

Title VI Solicitation Notice:

The Sponsor, in accordance with the provisions of Title VI of the Civil Rights Act of 1964 (78 Stat. 252, 42 USC §§ 2000d to 2000d-4) and the Regulations, hereby notifies all bidders or offerors that it will affirmatively ensure that for any contract entered into pursuant to this advertisement, select businesses, or disadvantaged business enterprises will be afforded full and fair opportunity to submit bids in response to this invitation and no businesses will be discriminated against on the grounds of race, color, national origin (including limited English proficiency), creed, sex (including sexual orientation and gender identity), age, or disability in consideration for an award.

TITLE VI LIST OF PERTINENT NON DISCRIMINATION ACTS AND AUTHORITIES

During the performance of this contract, the Contractor, for itself, its assignees, and successors in interest (hereinafter referred to as the “Contractor”) agrees to comply with the following non-discrimination statutes and authorities; including but not limited to:

- Title VI of the Civil Rights Act of 1964 (42 USC § 2000d et seq., 78 stat. 252) (prohibits discrimination on the basis of race, color, national origin);
- 49 CFR part 21 (Non-discrimination in Federally-Assisted programs of the Department of Transportation—Effectuation of Title VI of the Civil Rights Act of 1964);
- The Uniform Relocation Assistance and Real Property Acquisition Policies Act of 1970, (42 USC § 4601) (prohibits unfair treatment of persons displaced or whose property has been acquired because of Federal or Federal-aid programs and projects);
- Section 504 of the Rehabilitation Act of 1973 (29 USC § 794 et seq.), as amended (prohibits discrimination on the basis of disability); and 49 CFR part 27 (Nondiscrimination on the Basis of Disability in Programs or Activities Receiving Federal Financial Assistance);
- The Age Discrimination Act of 1975, as amended (42 USC § 6101 et seq.) (prohibits discrimination on the basis of age);
- Airport and Airway Improvement Act of 1982 (49 USC § 47123), as amended (prohibits discrimination based on race, creed, color, national origin, or sex);
- The Civil Rights Restoration Act of 1987 (PL 100-259) (broadened the scope, coverage and applicability of Title VI of the Civil Rights Act of 1964, the Age Discrimination Act of 1975 and Section 504 of the Rehabilitation Act of 1973, by expanding the definition of the terms “programs or activities” to include all of the programs or activities of the Federal-aid recipients, sub-recipients and contractors, whether such programs or activities are Federally funded or not);
- Titles II and III of the Americans with Disabilities Act of 1990 (42 USC § 12101, et seq) (prohibit discrimination on the basis of disability in the operation of public entities, public and private transportation systems, places of public accommodation, and certain testing entities) as implemented by U.S. Department of Transportation regulations at 49 CFR parts 37 and 38;
- The Federal Aviation Administration’s Nondiscrimination statute (49 USC § 47123) (prohibits discrimination on the basis of race, color, national origin, and sex);
- Executive Order 12898, Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations (ensures nondiscrimination against minority populations by discouraging programs, policies, and activities with disproportionately high and adverse human health or environmental effects on minority and low-income populations);
- Executive Order 13166, Improving Access to Services for Persons with Limited English Proficiency, and resulting agency guidance, national origin discrimination includes discrimination because of limited English proficiency (LEP). To ensure compliance with Title VI, you must take reasonable steps to ensure that LEP persons have meaningful access to your programs [70 Fed. Reg. 74087 (2005)];

-
- Title IX of the Education Amendments of 1972, as amended, which prohibits you from discriminating because of sex in education programs or activities (20 USC § 1681, et seq).

TITLE VI COMPLIANCE WITH NONDISCRIMINATION REQUIREMENTS

During the performance of this contract, the contractor, for itself, its assignees, and successors in interest (hereinafter referred to as the “contractor”) agrees as follows:

1. **Compliance with Regulations:** The contractor (hereinafter includes consultants) will comply with the Title VI List of Pertinent Nondiscrimination Acts And Authorities, as they may be amended from time to time, which are herein incorporated by reference and made a part of this contract.
2. **Non-discrimination:** The contractor, with regard to the work performed by it during the contract, will not discriminate on the grounds of race, color, or national origin in the selection and retention of subcontractors, including procurements of materials and leases of equipment. The contractor will not participate directly or indirectly in the discrimination prohibited by the Nondiscrimination Acts and Authorities, including employment practices when the contract covers any activity, project, or program set forth in Appendix B of 49 CFR part 21.
3. **Solicitations for Subcontracts, Including Procurements of Materials and Equipment:** In all solicitations, either by competitive bidding, or negotiation made by the contractor for work to be performed under a subcontract, including procurements of materials, or leases of equipment, each potential subcontractor or supplier will be notified by the contractor of the contractor’s obligations under this contract and the Nondiscrimination Acts And Authorities on the grounds of race, color, or national origin.
4. **Information and Reports:** The contractor will provide all information and reports required by the Acts, the Regulations, and directives issued pursuant thereto and will permit access to its books, records, accounts, other sources of information, and its facilities as may be determined by the sponsor or the Federal Aviation Administration to be pertinent to ascertain compliance with such Nondiscrimination Acts And Authorities and instructions. Where any information required of a contractor is in the exclusive possession of another who fails or refuses to furnish the information, the contractor will so certify to the sponsor or the Federal Aviation Administration, as appropriate, and will set forth what efforts it has made to obtain the information.
5. **Sanctions for Noncompliance:** In the event of a contractor’s noncompliance with the Non-discrimination provisions of this contract, the sponsor will impose such contract sanctions as it or the Federal Aviation Administration may determine to be appropriate, including, but not limited to:
 - a. Withholding payments to the contractor under the contract until the contractor complies; and/or
 - b. Cancelling, terminating, or suspending a contract, in whole or in part.
6. **Incorporation of Provisions:** The contractor will include the provisions of paragraphs one through six in every subcontract, including procurements of materials and leases of equipment, unless exempt by the Acts, the Regulations and directives issued pursuant thereto. The contractor will take action with respect to any subcontract or procurement as the sponsor or the Federal Aviation Administration may direct as a means of enforcing such provisions including sanctions for noncompliance. Provided, that if the contractor becomes involved in, or is threatened with litigation by a subcontractor, or supplier because of such direction, the contractor may request the sponsor to enter into any litigation to protect the interests of the sponsor. In addition, the contractor may request the United States to enter into the litigation to protect the interests of the United States.

* * * * *

CLEAN AIR AND WATER POLLUTION CONTROL

SOURCE: 2 CFR § 200, Appendix II(G)
42 USC § 7401, et seq
33 USC § 1251, et seq

CLEAN AIR AND WATER POLLUTION CONTROL

Contractor agrees to comply with all applicable standards, orders, and regulations issued pursuant to the Clean Air Act (42 U.S.C. § 740-7671q) and the Federal Water Pollution Control Act as amended (33 U.S.C. § 1251-1387). The Contractor agrees to report any violation to the Owner immediately upon discovery. The Owner assumes responsibility for notifying the Environmental Protection Agency (EPA) and the Federal Aviation Administration.

Contractor must include this requirement in all subcontracts that exceeds \$150,000.

* * * * *

CONTRACT WORKHOURS AND SAFETY STANDARDS ACT

SOURCE: 2 CFR § 200, Appendix II(E)
2 CFR § 5.5(b)
40 USC § 3702
40 USC § 3704

CONTRACT WORKHOURS AND SAFETY STANDARDS ACT REQUIREMENTS

1. Overtime Requirements.

No contractor or subcontractor contracting for any part of the contract work which may require or involve the employment of laborers or mechanics shall require or permit any such laborer or mechanic, including watchmen and guards, in any workweek in which he or she is employed on such work to work in excess of forty hours in such workweek unless such laborer or mechanic receives compensation at a rate not less than one and one-half times the basic rate of pay for all hours worked in excess of forty hours in such workweek.

2. Violation; Liability for Unpaid Wages; Liquidated Damages.

In the event of any violation of the clause set forth in paragraph (1) of this clause, the contractor and any subcontractor responsible therefor shall be liable for the unpaid wages. In addition, such contractor and subcontractor shall be liable to the United States (in the case of work done under contract for the District of Columbia or a territory, to such District or to such territory), for liquidated damages. Such liquidated damages shall be computed with respect to each individual laborer or mechanic, including watchmen and guards, employed in violation of the clause set forth in paragraph (1) of this clause, in the sum of \$10 for each calendar day on which such individual was required or permitted to work in excess of the standard workweek of forty hours without payment of the overtime wages required by the clause set forth in paragraph (1) of this clause.

3. Withholding for Unpaid Wages and Liquidated Damages.

The Federal Aviation Administration (FAA) or the Owner shall upon its own action or upon written request of an authorized representative of the Department of Labor withhold or cause to be withheld, from any moneys payable on account of work performed by the contractor or subcontractor under any such contract or any other Federal contract with the same prime contractor, or any other Federally-assisted contract subject to the Contract Work Hours and Safety Standards Act, which is held by the same prime contractor, such sums as may be determined to be necessary to satisfy any liabilities of such contractor or subcontractor for unpaid wages and liquidated damages as provided in the clause set forth in paragraph 2 of this clause.

4. Subcontractors.

The contractor or subcontractor shall insert in any subcontracts the clauses set forth in paragraphs (1) through (4) and also a clause requiring the subcontractor to include these clauses in any lower tier subcontracts. The prime contractor shall be responsible for compliance by any subcontractor or lower tier subcontractor with the clauses set forth in paragraphs (1) through (4) of this clause.

* * * * *

COPELAND “ANTI-KICKBACK” ACT

SOURCE: 2 CFR § 200, Appendix II(D)
29 CFR Parts 3 & 5

COPELAND “ANTI-KICKBACK” ACT

Contractor must comply with the requirements of the Copeland “Anti-Kickback” Act (18 U.S.C. 874 and 40 U.S.C. 3145), as supplemented by Department of Labor regulation 29 CFR part 3. Contractor and subcontractors are prohibited from inducing, by any means, any person employed on the project to give up any part of the compensation to which the employee is entitled. The Contractor and each Subcontractor must submit to the Owner, a weekly statement on the wages paid to each employee performing on covered work during the prior week. Owner must report any violations of the Act to the Federal Aviation Administration.

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DAVIS-BACON REQUIREMENTS

SOURCE: 2 CFR § 200, Appendix II(D)
29 CFR Part 5
49 USC § 47112(b)
40 USC §§ 3141-3144, 3146, and 3147

DAVIS-BACON REQUIREMENTS

1. Minimum Wages

(i) All laborers and mechanics employed or working upon the site of the work will be paid unconditionally and not less often than once a week, and without subsequent deduction or rebate on any account (except such payroll deductions as are permitted by the Secretary of Labor under the Copeland Act (29 CFR Part 3)), the full amount of wages and bona fide fringe benefits (or cash equivalent thereof) due at time of payment computed at rates not less than those contained in the wage determination of the Secretary of Labor which is attached hereto and made a part hereof, regardless of any contractual relationship which may be alleged to exist between the contractor and such laborers and mechanics.

Contributions made or costs reasonably anticipated for bona fide fringe benefits under section 1(b)(2) of the Davis-Bacon Act on behalf of laborers or mechanics are considered wages paid to such laborers or mechanics, subject to the provisions of paragraph (1)(iv) of this section; also, regular contributions made or costs incurred for more than a weekly period (but not less often than quarterly) under plans, funds, or programs which cover the particular weekly period, are deemed to be constructively made or incurred during such weekly period. Such laborers and mechanics shall be paid the appropriate wage rate and fringe benefits on the wage determination for the classification of work actually performed, without regard to skill, except as provided in 29 CFR Part 5.5(a)(4). Laborers or mechanics performing work in more than one classification may be compensated at the rate specified for each classification for the time actually worked therein: *Provided*, that the employer's payroll records accurately set forth the time spent in each classification in which work is performed. The wage determination (including any additional classification and wage rates conformed under (1)(ii) of this section) and the Davis-Bacon poster (WH-1321) shall be posted at all times by the contractor and its subcontractors at the site of the work in a prominent and accessible place where it can easily be seen by the workers.

(ii)(A) The contracting officer shall require that any class of laborers or mechanics, including helpers, which is not listed in the wage determination and which is to be employed under the contract shall be classified in conformance with the wage determination. The contracting officer shall approve an additional classification and wage rate and fringe benefits therefore only when the following criteria have been met:

- (1) The work to be performed by the classification requested is not performed by a classification in the wage determination; and
- (2) The classification is utilized in the area by the construction industry; and
- (3) The proposed wage rate, including any bona fide fringe benefits, bears a reasonable relationship to the wage rates contained in the wage determination.

(B) If the contractor and the laborers and mechanics to be employed in the classification (if known), or their representatives, and the contracting officer agree on the classification and wage rate (including the amount designated for fringe benefits where appropriate), a report of the action taken shall be sent by the contracting officer to the Administrator of the Wage and Hour Division, Employment Standards Administration, U.S. Department of Labor, Washington, D.C. 20210. The Administrator, or an authorized representative, will approve, modify, or disapprove every additional classification action within 30 days of receipt and so advise the contracting officer or will notify the contracting officer within the 30-day period that additional time is necessary.

(C) In the event the contractor, the laborers or mechanics to be employed in the classification or their representatives, and the contracting officer do not agree on the proposed classification and wage rate (including the amount designated for fringe benefits where appropriate), the contracting officer shall refer the questions, including the views of all interested parties and the recommendation of the contracting officer, to the Administrator for determination. The Administrator, or an authorized representative, will issue a determination within 30 days of receipt and so advise the contracting officer or will notify the contracting officer within the 30-day period that additional time is necessary.

(D) The wage rate (including fringe benefits where appropriate) determined pursuant to subparagraphs (1)(ii) (B) or (C) of this paragraph, shall be paid to all workers performing work in the classification under this contract from the first day on which work is performed in the classification.

(iii) Whenever the minimum wage rate prescribed in the contract for a class of laborers or mechanics includes a fringe benefit which is not expressed as an hourly rate, the contractor shall either pay the benefit

as stated in the wage determination or shall pay another bona fide fringe benefit or an hourly cash equivalent thereof.

(iv) If the contractor does not make payments to a trustee or other third person, the contractor may consider as part of the wages of any laborer or mechanic the amount of any costs reasonably anticipated in providing bona fide fringe benefits under a plan or program, *Provided*, That the Secretary of Labor has found, upon the written request of the contractor, that the applicable standards of the Davis-Bacon Act have been met. The Secretary of Labor may require the contractor to set aside in a separate account assets for the meeting of obligations under the plan or program.

2. Withholding.

The Federal Aviation Administration or the sponsor shall upon its own action or upon written request of an authorized representative of the Department of Labor withhold or cause to be withheld from the contractor under this contract or any other Federal contract with the same prime contractor, or any other Federally-assisted contract subject to Davis-Bacon prevailing wage requirements, which is held by the same prime contractor, so much of the accrued payments or advances as may be considered necessary to pay laborers and mechanics, including apprentices, trainees, and helpers, employed by the contractor or any subcontractor the full amount of wages required by the contract. In the event of failure to pay any laborer or mechanic, including any apprentice, trainee, or helper, employed or working on the site of work, all or part of the wages required by the contract, the Federal Aviation Administration may, after written notice to the contractor, sponsor, applicant, or owner, take such action as may be necessary to cause the suspension of any further payment, advance, or guarantee of funds until such violations have ceased.

3. Payrolls and basic records.

(i) Payrolls and basic records relating thereto shall be maintained by the contractor during the course of the work and preserved for a period of three years thereafter for all laborers and mechanics working at the site of the work. Such records shall contain the name, address, and social security number of each such worker, his or her correct classification, hourly rates of wages paid (including rates of contributions or costs anticipated for bona fide fringe benefits or cash equivalents thereof of the types described in 1(b)(2)(B) of the Davis-Bacon Act), daily and weekly number of hours worked, deductions made and actual wages paid. Whenever the Secretary of Labor has found under 29 CFR 5.5(a)(1)(iv) that the wages of any laborer or mechanic include the amount of any costs reasonably anticipated in providing benefits under a plan or program described in section 1(b)(2)(B) of the Davis-Bacon Act, the contractor shall maintain records which show that the commitment to provide such benefits is enforceable, that the plan or program is financially responsible, and that the plan or program has been communicated in writing to the laborers or mechanics affected, and records which show the costs anticipated or the actual costs incurred in providing such benefits. Contractors employing apprentices or trainees under approved programs shall maintain written evidence of the registration of apprenticeship programs and certification of trainee programs, the registration of the apprentices and trainees, and the ratios and wage rates prescribed in the applicable programs.

(ii)(A) The contractor shall submit weekly for each week in which any contract work is performed a copy of all payrolls to the Federal Aviation Administration if the agency is a party to the contract, but if the agency is not such a party, the contractor will submit the payrolls to the applicant, sponsor, or owner, as the case may be, for transmission to the Federal Aviation Administration. The payrolls submitted shall set out accurately and completely all of the information required to be maintained under 29 CFR 5.5(a)(3)(i), except that full social security numbers and home addresses shall not be included on weekly transmittals. Instead the payrolls shall only need to include an individually identifying number for each employee (*e.g.*, the last four digits of the employee's social security number). The required weekly payroll information may be submitted in any form desired. Optional Form WH-347 is available for this purpose from the Wage and

Hour Division Web site at <https://www.dol.gov/agencies/whd/government-contracts/construction/payroll-certification> or its successor site. The prime contractor is responsible for the submission of copies of payrolls by all subcontractors. Contractors and subcontractors shall maintain the full social security number and current address of each covered worker, and shall provide them upon request to the Federal Aviation Administration if the agency is a party to the contract, but if the agency is not such a party, the contractor will submit them to the applicant, sponsor, or owner, as the case may be, for transmission to the Federal Aviation Administration, the contractor, or the Wage and Hour Division of the Department of Labor for purposes of an investigation or audit of compliance with prevailing wage requirements. It is not a violation of this section for a prime contractor to require a subcontractor to provide addresses and social security numbers to the prime contractor for its own records, without weekly submission to the sponsoring government agency (or the applicant, sponsor, or owner).

(B) Each payroll submitted shall be accompanied by a “Statement of Compliance” signed by the contractor or subcontractor or his or her agent who pays or supervises the payment of the persons employed under the contract and shall certify the following:

(1) That the payroll for the payroll period contains the information required to be provided under 29 CFR § 5.5(a)(3)(ii), the appropriate information is being maintained under 29 CFR § 5.5 (a)(3)(i) and that such information is correct and complete;

(2) That each laborer and mechanic (including each helper, apprentice and trainee) employed on the contract during the payroll period has been paid the full weekly wages earned, without rebate, either directly or indirectly, and that no deductions have been made either directly or indirectly from the full wages earned, other than permissible deductions as set forth in Regulations 29 CFR Part 3;

(3) That each laborer or mechanic has been paid not less than the applicable wage rates and fringe benefits or cash equivalents for the classification of work performed, as specified in the applicable wage determination incorporated into the contract.

(C) The weekly submission of a properly executed certification set forth on the reverse side of Optional Form WH-347 shall satisfy the requirement for submission of the “Statement of Compliance” required by paragraph (3)(ii)(B) of this section.

(D) The falsification of any of the above certifications may subject the contractor or subcontractor to civil or criminal prosecution under Section 1001 of Title 18 and Section 231 of Title 31 of the United States Code.

(iii) The contractor or subcontractor shall make the records required under paragraph (3)(i) of this section available for inspection, copying or transcription by authorized representatives of the sponsor, the Federal Aviation Administration or the Department of Labor, and shall permit such representatives to interview employees during working hours on the job. If the contractor or subcontractor fails to submit the required records or to make them available, the Federal agency may, after written notice to the contractor, sponsor, applicant or owner, take such action as may be necessary to cause the suspension of any further payment, advance, or guarantee of funds. Furthermore, failure to submit the required records upon request or to make such records available may be grounds for debarment action pursuant to 29 CFR 5.12.

4. Apprentices and Trainees.

(i) Apprentices. Apprentices will be permitted to work at less than the predetermined rate for the work they performed when they are employed pursuant to and individually registered in a bona fide apprenticeship program registered with the U.S. Department of Labor, Employment and Training Administration, Bureau of Apprenticeship and Training, or with a State Apprenticeship Agency recognized by the Bureau, or if a

person is employed in his or her first 90 days of probationary employment as an apprentice in such an apprenticeship program, who is not individually registered in the program, but who has been certified by the Bureau of Apprenticeship and Training or a State Apprenticeship Agency (where appropriate) to be eligible for probationary employment as an apprentice. The allowable ratio of apprentices to journeymen on the job site in any craft classification shall not be greater than the ratio permitted to the contractor as to the entire work force under the registered program. Any worker listed on a payroll at an apprentice wage rate, who is not registered or otherwise employed as stated above, shall be paid not less than the applicable wage rate on the wage determination for the classification of work actually performed. In addition, any apprentice performing work on the job site in excess of the ratio permitted under the registered program shall be paid not less than the applicable wage rate on the wage determination for the work actually performed. Where a contractor is performing construction on a project in a locality other than that in which its program is registered, the ratios and wage rates (expressed in percentages of the journeyman's hourly rate) specified in the contractor's or subcontractor's registered program shall be observed. Every apprentice must be paid at not less than the rate specified in the registered program for the apprentice's level of progress, expressed as a percentage of the journeymen hourly rate specified in the applicable wage determination. Apprentices shall be paid fringe benefits in accordance with the provisions of the apprenticeship program. If the apprenticeship program does not specify fringe benefits, apprentices must be paid the full amount of fringe benefits listed on the wage determination for the applicable classification. If the Administrator determines that a different practice prevails for the applicable apprentice classification, fringes shall be paid in accordance with that determination. In the event the Bureau of Apprenticeship and Training, or a State Apprenticeship Agency recognized by the Bureau, withdraws approval of an apprenticeship program, the contractor will no longer be permitted to utilize apprentices at less than the applicable predetermined rate for the work performed until an acceptable program is approved.

(ii) Trainees. Except as provided in 29 CFR 5.16, trainees will not be permitted to work at less than the predetermined rate for the work performed unless they are employed pursuant to and individually registered in a program which has received prior approval, evidenced by formal certification by the U.S. Department of Labor, Employment and Training Administration. The ratio of trainees to journeymen on the job site shall not be greater than permitted under the plan approved by the Employment and Training Administration. Every trainee must be paid at not less than the rate specified in the approved program for the trainee's level of progress, expressed as a percentage of the journeyman hourly rate specified in the applicable wage determination. Trainees shall be paid fringe benefits in accordance with the provisions of the trainee program. If the trainee program does not mention fringe benefits, trainees shall be paid the full amount of fringe benefits listed on the wage determination unless the Administrator of the Wage and Hour Division determines that there is an apprenticeship program associated with the corresponding journeyman wage rate on the wage determination which provides for less than full fringe benefits for apprentices. Any employee listed on the payroll at a trainee rate that is not registered and participating in a training plan approved by the Employment and Training Administration shall be paid not less than the applicable wage rate on the wage determination for the classification of work actually performed. In addition, any trainee performing work on the job site in excess of the ratio permitted under the registered program shall be paid not less than the applicable wage rate on the wage determination for the work actually performed. In the event the Employment and Training Administration withdraws approval of a training program, the contractor will no longer be permitted to utilize trainees at less than the applicable predetermined rate for the work performed until an acceptable program is approved.

(iii) Equal Employment Opportunity. The utilization of apprentices, trainees and journeymen under this part shall be in conformity with the equal employment opportunity requirements of Executive Order 11246, as amended, and 29 CFR Part 30.

5. Compliance with Copeland Act Requirements.

The contractor shall comply with the requirements of 29 CFR Part 3, which are incorporated by reference in this contract.

6. Subcontracts.

The contractor or subcontractor shall insert in any subcontracts the clauses contained in 29 CFR Part 5.5(a)(1) through (10) and such other clauses as the Federal Aviation Administration may by appropriate instructions require, and also a clause requiring the subcontractors to include these clauses in any lower tier subcontracts. The prime contractor shall be responsible for the compliance by any subcontractor or lower tier subcontractor with all the contract clauses in 29 CFR Part 5.5.

7. Contract Termination: Debarment.

A breach of the contract clauses in paragraph 1 through 10 of this section may be grounds for termination of the contract, and for debarment as a contractor and a subcontractor as provided in 29 CFR 5.12.

8. Compliance with Davis-Bacon and Related Act Requirements.

All rulings and interpretations of the Davis-Bacon and Related Acts contained in 29 CFR Parts 1, 3, and 5 are herein incorporated by reference in this contract.

9. Disputes Concerning Labor Standards.

Disputes arising out of the labor standards provisions of this contract shall not be subject to the general disputes clause of this contract. Such disputes shall be resolved in accordance with the procedures of the Department of Labor set forth in 29 CFR Parts 5, 6 and 7. Disputes within the meaning of this clause include disputes between the contractor (or any of its subcontractors) and the contracting agency, the U.S. Department of Labor, or the employees or their representatives.

10. Certification of Eligibility.

(i) By entering into this contract, the contractor certifies that neither it (nor he or she) nor any person or firm who has an interest in the contractor's firm is a person or firm ineligible to be awarded Government contracts by virtue of section 3(a) of the Davis-Bacon Act or 29 CFR 5.12(a)(1).

(ii) No part of this contract shall be subcontracted to any person or firm ineligible for award of a Government contract by virtue of section 3(a) of the Davis-Bacon Act or 29 CFR 5.12(a)(1).

(iii) The penalty for making false statements is prescribed in the U.S. Criminal Code, 18 U.S.C. 1001.

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DEBARMENT AND SUSPENSION

SOURCE: 2 CFR Part 180 (Subpart B)
2 CFR Part 200, Appendix II(H)
2 CFR Part 1200
DOT Order 4200.5
Executive Orders 12549 and 12689

CERTIFICATION OF OFFEROR/BIDDER REGARDING DEBARMENT

By submitting a bid/proposal under this solicitation, the bidder or offeror certifies that neither it nor its principals are presently debarred or suspended by any Federal department or agency from participation in this transaction.

CERTIFICATION OF LOWER TIER CONTRACTORS REGARDING DEBARMENT

The successful bidder, by administering each lower tier subcontract that exceeds \$25,000 as a “covered transaction”, must confirm each lower tier participant of a “covered transaction” under the project is not presently debarred or otherwise disqualified from participation in this federally-assisted project. The successful bidder will accomplish this by:

1. Checking the System for Award Management at website: <http://www.sam.gov>.
2. Collecting a certification statement similar to the Certification of Offeror /Bidder Regarding Debarment, above.
3. Inserting a clause or condition in the covered transaction with the lower tier contract.

If the Federal Aviation Administration later determines that a lower tier participant failed to disclose to a higher tier participant that it was excluded or disqualified at the time it entered the covered transaction, the FAA may pursue any available remedies, including suspension and debarment of the non-compliant participant.

* * * * *

DISADVANTAGED BUSINESS ENTERPRISE
SOURCE: 49 CFR part 26

DISADVANTAGED BUSINESS ENTERPRISE

Solicitation Language (Race/Gender Neutral Means)

The requirements of 49 CFR part 26 apply to this contract. It is the policy of the Delaware River and Bay Authority to practice nondiscrimination based on race, color, sex, or national origin in the award or performance of this contract. The Owner encourages participation by all firms qualifying under this solicitation regardless of business size or ownership.

Contract Assurance (49 CFR § 26.13; mandatory text provided) –

The Contractor, subrecipient or subcontractor shall not discriminate on the basis of race, color, national origin, or sex in the performance of this contract. The Contractor shall carry out applicable requirements of 49 CFR part 26 in the award and administration of DOT-assisted contracts. Failure by the Contractor to carry out these requirements is a material breach of this contract, which may result in the termination of this contract or such other remedy as the recipient deems appropriate, which may include, but is not limited to:

- 1) Withholding monthly progress payments;
- 2) Assessing sanctions;
- 3) Liquidated damages; and/or
- 4) Disqualifying the Contractor from future bidding as non-responsible.

Prompt Payment (49 CFR § 26.29; acceptable/sample text provided) –

The prime contractor agrees to pay each subcontractor under this prime contract for satisfactory performance of its contract no later than 14 days from the receipt of each payment the prime contractor receives from Delaware River and Bay Authority. The prime contractor agrees further to return retainage payments to each subcontractor within 14 after the subcontractor’s work is satisfactorily completed. Any delay or postponement of payment from the above referenced time frame may occur only for good cause

following written approval of the Delaware River and Bay Authority. This clause applies to both DBE and non-DBE subcontractors.

Termination of DBE Subcontracts (49 CFR § 26.53(f); acceptable/sample text provided) –

The prime contractor must not terminate a DBE subcontractor listed in response to include Solicitation paragraph number where paragraph 12.3.1, Solicitation Language appears (or an approved substitute DBE firm) without prior written consent of Delaware River and Bay Authority. This includes, but is not limited to, instances in which the prime contractor seeks to perform work originally designated for a DBE subcontractor with its own forces or those of an affiliate, a non-DBE firm, or with another DBE firm.

The prime contractor shall utilize the specific DBEs listed to perform the work and supply the materials for which each is listed unless the contractor obtains written consent Delaware River and Bay Authority. Unless Delaware River and Bay Authority consent is provided, the prime contractor shall not be entitled to any payment for work or material unless it is performed or supplied by the listed DBE.

Delaware River and Bay Authority may provide such written consent only if Delaware River and Bay Authority agrees, for reasons stated in the concurrence document, that the prime contractor has good cause to terminate the DBE firm. For purposes of this paragraph, good cause includes the circumstances listed in 49 CFR §26.53.

Before transmitting to Delaware River and Bay Authority its request to terminate and/or substitute a DBE subcontractor, the prime contractor must give notice in writing to the DBE subcontractor, with a copy to Delaware River and Bay Authority, of its intent to request to terminate and/or substitute, and the reason for the request.

The prime contractor must give the DBE five days to respond to the prime contractor's notice and advise Delaware River and Bay Authority and the contractor of the reasons, if any, why it objects to the proposed termination of its subcontract and why Delaware River and Bay Authority should not approve the prime contractor's action. If required in a particular case as a matter of public necessity (e.g., safety), Delaware River and Bay Authority may provide a response period shorter than five days.

In addition to post-award terminations, the provisions of this section apply to preaward deletions of or substitutions for DBE firms put forward by offerors in negotiated procurements.

* * * * *

DISTRACTED DRIVING

SOURCE: Executive Order 13513
DOT Order 3902.10

TEXTING WHEN DRIVING

In accordance with Executive Order 13513, “Federal Leadership on Reducing Text Messaging While Driving” (10/1/2009) and DOT Order 3902.10 “Text Messaging While Driving” (12/30/2009), the FAA encourages recipients of Federal grant funds to adopt and enforce safety policies that decrease crashes by distracted drivers, including policies to ban text messaging while driving when performing work related to a grant or sub-grant.

In support of this initiative, the Owner encourages the Contractor to promote policies and initiatives for its employees and other work personnel that decrease crashes by distracted drivers, including policies that ban text messaging while driving motor vehicles while performing work activities associated with the project.

The Contractor must include the substance of this clause in all sub-tier contracts exceeding \$3,500 and involve driving a motor vehicle in performance of work activities associated with the project.

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PROHIBITION ON CERTAIN TELECOMMUNICATIONS AND VIDEO SURVEILLANCE SERVICES OR EQUIPMENT

SOURCE: 2 CFR § 200, Appendix II(K)
2 CFR § 200.216

PROHIBITION ON CERTAIN TELECOMMUNICATIONS AND VIDEO SURVEILLANCE SERVICES OR EQUIPMENT

Contractor and Subcontractor agree to comply with mandatory standards and policies relating to use and procurement of certain telecommunications and video surveillance services or equipment in compliance with the National Defense Authorization Act [Public Law 115-232 § 889(f)(1)].

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EQUAL EMPLOYMENT OPPORTUNITY (E.E.O.)

SOURCE: 2 CFR 200, Appendix II(C)
41 CFR § 60-1.4
41 CFR § 60-4.3
Executive Order 11246

EQUAL OPPORTUNITY CLAUSE

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

(1) The contractor will not discriminate against any employee or applicant for employment because of race, color, religion, sex, or national origin. The contractor will take affirmative action to ensure that applicants are employed, and that employees are treated during employment without regard to their race, color, religion, sex, sexual orientation, gender identify 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 setting forth the provisions of 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 considerations for employment without regard to race, color, religion, sex, or national origin.

(3) The contractor will send to each labor union or representative of workers with which he has a collective bargaining agreement or other contract or understanding, a notice to be provided advising the said labor union or workers' representatives of the contractor's commitments under this section, and shall post copies of the notice in conspicuous places available to employees and applicants for employment.

(4) The contractor will comply with all provisions of Executive Order 11246 of September 24, 1965, and of the rules, regulations, and relevant orders of the Secretary of Labor.

(5) The contractor will furnish all information and reports required by Executive Order 11246 of September 24, 1965, and by rules, regulations, and orders of the Secretary of Labor, or pursuant thereto, and will permit access to his books, records, and accounts by the administering agency and the Secretary of Labor for purposes of investigation to ascertain compliance with such rules, regulations, and orders.

(6) In the event of the contractor's noncompliance with the nondiscrimination clauses of this contract or with any of the said rules, regulations, or orders, this contract may be canceled, terminated, or suspended in whole or in part and the contractor may be declared ineligible for further Government contracts or federally assisted construction contracts in accordance with procedures authorized in Executive Order 11246 of September 24, 1965, and such other sanctions may be imposed and remedies invoked as provided in Executive Order 11246 of September 24, 1965, or by rule, regulation, or order of the Secretary of Labor, or as otherwise provided by law.

(7) The contractor will include the portion of the sentence immediately preceding paragraph (1) and the provisions of paragraphs (1) through (7) in every subcontract or purchase order unless exempted by rules, regulations, or orders of the Secretary of Labor issued pursuant to section 204 of Executive Order 11246 of September 24, 1965, so that such provisions will be binding upon each subcontractor or vendor. The contractor will take such action with respect to any subcontract or purchase order as the administering agency may direct as a means of enforcing such provisions, including sanctions for noncompliance: *Provided, however,* That in the event a contractor becomes involved in, or is threatened with, litigation with a subcontractor or vendor as a result of such direction by the administering agency the contractor may request the United States to enter into such litigation to protect the interests of the United States.

STANDARD FEDERAL EQUAL EMPLOYMENT OPPORTUNITY
CONSTRUCTION CONTRACT SPECIFICATIONS

1. As used in these specifications:

- a. "Covered area" means the geographical area described in the solicitation from which this contract resulted;
- b. "Director" means Director, Office of Federal Contract Compliance Programs (OFCCP), U.S. Department of Labor, or any person to whom the Director delegates authority;
- c. "Employer identification number" means the Federal social security number used on the Employer's Quarterly Federal Tax Return, U.S. Treasury Department Form 941;
- d. "Minority" includes:
 - (1) Black (all) persons having origins in any of the Black African racial groups not of Hispanic origin);
 - (2) Hispanic (all persons of Mexican, Puerto Rican, Cuban, Central or South American, or other Spanish culture or origin regardless of race);
 - (3) Asian and Pacific Islander (all persons having origins in any of the original peoples of the Far East, Southeast Asia, the Indian Subcontinent, or the Pacific Islands); and
 - (4) American Indian or Alaskan native (all persons having origins in any of the original peoples of North America and maintaining identifiable tribal affiliations through membership and participation or community identification).

2. Whenever the contractor, or any subcontractor at any tier, subcontracts a portion of the work involving any construction trade, it shall physically include in each subcontract in excess of \$10,000 the provisions of these specifications and the Notice which contains the applicable goals for minority and female participation and which is set forth in the solicitations from which this contract resulted.

3. If the contractor is participating (pursuant to 41 CFR 60-4.5) in a Hometown Plan approved by the U.S. Department of Labor in the covered area either individually or through an association, its affirmative action obligations on all work in the Plan area (including goals and timetables) shall be in accordance with that Plan for those trades which have unions participating in the Plan. Contractors shall be able to demonstrate their participation in and compliance with the provisions of any such Hometown Plan. Each contractor or subcontractor participating in an approved plan is individually required to comply with its obligations under the EEO clause and to make a good faith effort to achieve each goal under the Plan in each trade in which it has employees. The overall good faith performance by other contractors or subcontractors toward a goal in an approved Plan does not excuse any covered contractor's or subcontractor's failure to take good faith efforts to achieve the Plan goals and timetables.

4. The contractor shall implement the specific affirmative action standards provided in paragraphs 7a through 7p of these specifications. The goals set forth in the solicitation from which this contract resulted are expressed as percentages of the total hours of employment and training of minority and female utilization the contractor should reasonably be able to achieve in each construction trade in which it has employees in the covered area. Covered construction contractors performing construction work in a geographical area where they do not have a Federal or federally assisted construction contract shall apply the minority and female goals established for the geographical area where the work is being performed. Goals are published periodically in the Federal Register in notice form, and such notices may be obtained from any Office of Federal Contract Compliance Programs office or from Federal procurement contracting officers. The contractor is expected to make substantially uniform progress in meeting its goals in each craft during the period specified.

5. Neither the provisions of any collective bargaining agreement nor the failure by a union with whom the contractor has a collective bargaining agreement to refer either minorities or women shall excuse the contractor's obligations under these specifications, Executive Order 11246 or the regulations promulgated pursuant thereto.

6. In order for the non-working training hours of apprentices and trainees to be counted in meeting the goals, such apprentices and trainees shall be employed by the contractor during the training period and the contractor shall have made a commitment to employ the apprentices and trainees at the completion of their training, subject to the availability of employment opportunities. Trainees shall be trained pursuant to training programs approved by the U.S. Department of Labor.

7. The contractor shall take specific affirmative actions to ensure equal employment opportunity. The evaluation of the contractor's compliance with these specifications shall be based upon its effort to achieve maximum results from its actions. The contractor shall document these efforts fully and shall implement affirmative action steps at least as extensive as the following:

a. Ensure and maintain a working environment free of harassment, intimidation, and coercion at all sites, and in all facilities at which the contractor's employees are assigned to work. The contractor, where possible, will assign two or more women to each construction project. The contractor shall specifically ensure that all foremen, superintendents, and other onsite supervisory personnel are aware of and carry out the contractor's obligation to maintain such a working environment, with specific attention to minority or female individuals working at such sites or in such facilities.

b. Establish and maintain a current list of minority and female recruitment sources, provide written notification to minority and female recruitment sources and to community organizations when the contractor or its unions have employment opportunities available, and maintain a record of the organizations' responses.

c. Maintain a current file of the names, addresses, and telephone numbers of each minority and female off-the-street applicant and minority or female referral from a union, a recruitment source, or community organization and of what action was taken with respect to each such individual. If such individual was sent to the union hiring hall for referral and was not referred back to the contractor by the union or, if referred, not employed by the contractor, this shall be documented in the file with the reason therefore along with whatever additional actions the contractor may have taken.

d. Provide immediate written notification to the Director when the union or unions with which the contractor has a collective bargaining agreement has not referred to the contractor a minority person or female sent by the contractor, or when the contractor has other information that the union referral process has impeded the contractor's efforts to meet its obligations.

e. Develop on-the-job training opportunities and/or participate in training programs for the area which expressly include minorities and women, including upgrading programs and apprenticeship and trainee programs relevant to the contractor's employment needs, especially those programs funded or approved by the Department of Labor. The contractor shall provide notice of these programs to the sources compiled under 7b above.

f. Disseminate the contractor's EEO policy by providing notice of the policy to unions and training programs and requesting their cooperation in assisting the contractor in meeting its EEO obligations; by including it in any policy manual and collective bargaining agreement; by publicizing it in the company newspaper, annual report, etc.; by specific review of the policy with all management personnel and with all minority and female employees at least once a year; and by posting the company EEO policy on bulletin boards accessible to all employees at each location where construction work is performed.

g. Review, at least annually, the company's EEO policy and affirmative action obligations under these specifications with all employees having any responsibility for hiring, assignment, layoff, termination, or other employment decisions including specific review of these items with onsite supervisory personnel such as superintendents, general foremen, etc., prior to the initiation of construction work at any job site. A written record shall be made and maintained identifying the time and place of these meetings, persons attending, subject matter discussed, and disposition of the subject matter.

h. Disseminate the contractor's EEO policy externally by including it in any advertising in the news media, specifically including minority and female news media, and providing written notification to and discussing the contractor's EEO policy with other contractors and subcontractors with whom the contractor does or anticipates doing business.

i. Direct its recruitment efforts, both oral and written, to minority, female, and community organizations, to schools with minority and female students; and to minority and female recruitment and training organizations serving the contractor's recruitment area and employment needs. Not later than one month prior to the date for the acceptance of applications for apprenticeship or other training by any recruitment source, the contractor shall send written notification to organizations, such as the above, describing the openings, screening procedures, and tests to be used in the selection process.

j. Encourage present minority and female employees to recruit other minority persons and women and, where reasonable, provide after school, summer, and vacation employment to minority and female youth both on the site and in other areas of a contractor's workforce.

k. Validate all tests and other selection requirements where there is an obligation to do so under 41 CFR Part 60-3.

l. Conduct, at least annually, an inventory and evaluation at least of all minority and female personnel, for promotional opportunities and encourage these employees to seek or to prepare for, through appropriate training, etc., such opportunities.

m. Ensure that seniority practices, job classifications, work assignments, and other personnel practices do not have a discriminatory effect by continually monitoring all personnel and employment related activities to ensure that the EEO policy and the contractor's obligations under these specifications are being carried out.

n. Ensure that all facilities and company activities are non-segregated except that separate or single user toilet and necessary changing facilities shall be provided to assure privacy between the sexes.

o. Document and maintain a record of all solicitations of offers for subcontracts from minority and female construction contractors and suppliers, including circulation of solicitations to minority and female contractor associations and other business associations.

p. Conduct a review, at least annually, of all supervisor's adherence to and performance under the contractor's EEO policies and affirmative action obligations.

8. Contractors are encouraged to participate in voluntary associations, which assist in fulfilling one or more of their affirmative action obligations (7a through 7p). The efforts of a contractor association, joint contractor union, contractor community, or other similar groups of which the contractor is a member and participant, may be asserted as fulfilling any one or more of its obligations under 7a through 7p of these specifications provided that the contractor actively participates in the group, makes every effort to assure that the group has a positive impact on the employment of minorities and women in the industry, ensures that the concrete benefits of the program are reflected in the contractor's minority and female workforce participation, makes a good faith effort to meet its individual goals and timetables, and can provide access to documentation which demonstrates the effectiveness of actions taken on behalf of the contractor. The obligation to comply, however, is the contractor's and failure of such a group to fulfill an obligation shall not be a defense for the contractor's noncompliance.

9. A single goal for minorities and a separate single goal for women have been established. The contractor, however, is required to provide equal employment opportunity and to take affirmative action for all minority groups, both male and female, and all women, both minority and non-minority. Consequently, if the particular group is employed in a substantially disparate manner (for example, even though the contractor has achieved its goals for women generally,) the contractor may be in violation of the Executive Order if a specific minority group of women is underutilized.

10. The contractor shall not use the goals and timetables or affirmative action standards to discriminate against any person because of race, color, religion, sex, or national origin.

11. The contractor shall not enter into any subcontract with any person or firm debarred from Government contracts pursuant to Executive Order 11246.

12. The contractor shall carry out such sanctions and penalties for violation of these specifications and of the Equal Opportunity Clause, including suspension, termination, and cancellation of existing subcontracts as may be imposed or ordered pursuant to Executive Order 11246, as amended, and its implementing regulations, by the Office of Federal Contract Compliance Programs. Any contractor who fails to carry out such sanctions and penalties shall be in violation of these specifications and Executive Order 11246, as amended.

13. The contractor, in fulfilling its obligations under these specifications, shall implement specific affirmative action steps, at least as extensive as those standards prescribed in paragraph 7 of these specifications, so as to achieve maximum results from its efforts to ensure equal employment opportunity. If the contractor fails to comply with the requirements of the Executive Order, the implementing regulations, or these specifications, the Director shall proceed in accordance with 41 CFR 60-4.8.

14. The contractor shall designate a responsible official to monitor all employment related activity to ensure that the company EEO policy is being carried out, to submit reports relating to the provisions hereof as may be required by the Government, and to keep records. Records shall at least include for each employee, the name, address, telephone number, construction trade, union affiliation if any, employee identification number when assigned, social security number, race, sex, status (e.g., mechanic, apprentice, trainee, helper, or laborer), dates of changes in status, hours worked per week in the indicated trade, rate of pay, and locations at which the work was performed. Records shall be maintained in an easily understandable and retrievable form; however, to the degree that existing records satisfy this requirement, contractors shall not be required to maintain separate records.

15. Nothing herein provided shall be construed as a limitation upon the application of other laws which establish different standards of compliance or upon the application of requirements for the hiring of local or other area residents (e.g., those under the Public Works Employment Act of 1977 and the Community Development Block Grant Program).

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FEDERAL FAIR LABOR STANDARDS ACT (FEDERAL MINIMUM WAGE)

SOURCE: 29 U.S.C. § 201, et seq

FAIR LABOR STANDARDS ACT

All contracts and subcontracts that result from this solicitation incorporate by reference the provisions of 29 CFR part 201, the Federal Fair Labor Standards Act (FLSA), with the same force and effect as if given in full text. The FLSA sets minimum wage, overtime pay, recordkeeping, and child labor standards for full and part time workers.

The contractor has full responsibility to monitor compliance to the referenced statute or regulation. The contractor must address any claims or disputes that arise from this requirement directly with the U.S. Department of Labor – Wage and Hour Division.

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LOBBYING AND INFLUENCING FEDERAL EMPLOYEES

SOURCE: 31 USC § 1352 – Byrd Anti-Lobbying Amendment
2 CFR Part 200, Appendix II(I)
49 CFR Part 20, Appendix A

CERTIFICATION REGARDING LOBBYING

The Bidder or Offeror certifies by signing and submitting this bid or proposal, to the best of his or her knowledge and belief, that:

- (1) No Federal appropriated funds have been paid or will be paid, by or on behalf of the Bidder or Offeror, to any person for influencing or attempting to influence an officer or employee of an agency, a Member of Congress, an officer or employee of Congress, or an employee of a

Member of Congress in connection with the awarding of any Federal contract, the making of any Federal grant, the making of any Federal loan, the entering into of any cooperative agreement, and the extension, continuation, renewal, amendment, or modification of any Federal contract, grant, loan, or cooperative agreement.

- (2) If any funds other than Federal appropriated funds have been paid or will be paid to any person for influencing or attempting to influence an officer or employee of any agency, a Member of Congress, an officer or employee of Congress, or an employee of a Member of Congress in connection with this Federal contract, grant, loan, or cooperative agreement, the undersigned shall complete and submit Standard Form-LLL, "Disclosure Form to Report Lobbying," in accordance with its instructions.
- (3) The undersigned shall require that the language of this certification be included in the award documents for all sub-awards at all tiers (including subcontracts, subgrants, and contracts under grants, loans, and cooperative agreements) and that all sub-recipients shall certify and disclose accordingly.

This certification is a material representation of fact upon which reliance was placed when this transaction was made or entered into. Submission of this certification is a prerequisite for making or entering into this transaction imposed by section 1352, title 31, U.S. Code. Any person who fails to file the required certification shall be subject to a civil penalty of not less than \$10,000 and not more than \$100,000 for each such failure.

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PROHIBITION OF SEGREGATED FACILITIES

SOURCE: 2 CFR Part 200, Appendix II(C)
41 CFR § 60

PROHIBITION OF SEGREGATED FACILITIES

(a) The Contractor agrees that it does not and will not maintain or provide for its employees any segregated facilities at any of its establishments, and that it does not and will not permit its employees to perform their services at any location under its control where segregated facilities are maintained. The Contractor agrees that a breach of this clause is a violation of the Equal Opportunity clause in this contract.

(b) "Segregated facilities", as used in this clause, means any waiting rooms, work areas, rest rooms and wash rooms, restaurants and other eating areas, time clocks, locker rooms and other storage or dressing areas, parking lots, drinking fountains, recreation or entertainment areas, transportation, and housing facilities provided for employees, that are segregated by explicit directive or are in fact segregated on the basis of race, color, religion, sex, or national origin because of written or oral policies or employee custom. The term does not include separate or single-user rest rooms or necessary dressing or sleeping areas provided to assure privacy between the sexes.

(c) The Contractor shall include this clause in every subcontract and purchase order that is subject to the Equal Opportunity clause of this contract.

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OCCUPATIONAL SAFETY AND HEALTH ACT

SOURCE: 20 CFR part 1910

OCCUPATIONAL SAFETY AND HEALTH ACT OF 1970

All contracts and subcontracts that result from this solicitation incorporate by reference the requirements of 29 CFR Part 1910 with the same force and effect as if given in full text. Contractor must provide a work environment that is free from recognized hazards that may cause death or serious physical harm to the employee. The Contractor retains full responsibility to monitor its compliance and their subcontractor's compliance with the applicable requirements of the Occupational Safety and Health Act of 1970 (29 CFR Part 1910). Contractor must address any claims or disputes that pertain to a referenced requirement directly with the U.S. Department of Labor – Occupational Safety and Health Administration.

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PROCUREMENT OF RECOVERED MATERIALS

SOURCE: 2 CFR § 200.323
2 CFR Part 200, Appendix II(J)
40 CFR Part 247
42 USC § 6901, et seq (Resource Conservation and Recovery Act (RCRA))

PROCUREMENT OF RECOVERED MATERIALS

Contractor and subcontractor agree to comply with Section 6002 of the Solid Waste Disposal Act, as amended by the Resource Conservation and Recovery Act, and the regulatory provisions of 40 CFR Part 247. In the performance of this contract and to the extent practicable, the Contractor and subcontractors are to use of products containing the highest percentage of recovered materials for items designated by the Environmental Protection Agency (EPA) under 40 CFR Part 247 whenever:

- a) The contract requires procurement of \$10,000 or more of a designated item during the fiscal year; or,
- b) The contractor has procured \$10,000 or more of a designated item using Federal funding during the previous fiscal year.

The list of EPA-designated items is available at:

www.epa.gov/epawaste/conservetools/cpg/products/.

Section 6002(c) establishes exceptions to the preference for recovery of EPA-designated products if the contractor can demonstrate the item is:

- a) Not reasonably available within a timeframe providing for compliance with the contract performance schedule;
- b) Fails to meet reasonable contract performance requirements; or
- c) Is only available at an unreasonable price.

* * * * *

RIGHT TO INVENTIONS

SOURCE: 2 CFR Part 200, Appendix II(F)
37 CFR Part 401

RIGHT TO INVENTIONS

Contracts or agreements that include the performance of experimental, developmental, or research work must provide for the rights of the Federal Government and the Owner in any resulting invention as established by 37 CFR part 401, Rights to Inventions Made by Non-profit Organizations and Small Business Firms under Government Grants, Contracts, and Cooperative Agreements. This contract incorporates by reference the patent and inventions rights as specified within 37 CFR § 401.14. Contractor

must include this requirement in all sub-tier contracts involving experimental, developmental, or research work.

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SEISMIC SAFETY

SOURCE: 49 CFR Part 41

SEISMIC SAFETY

The Contractor agrees to ensure that all work performed under this contract, including work performed by subcontractors, conforms to a building code standard that provides a level of seismic safety substantially equivalent to standards established by the National Earthquake Hazards Reduction Program (NEHRP). Local building codes that model their code after the current version of the International Building Code (IBC) meet the NEHRP equivalency level for seismic safety.

* * * * *

TAX DELINQUENCY AND FELONY CONVICTIONS

SOURCE: Section 8113 of the Consolidated Appropriations Act, 2022 (Public Law 117-103) and similar provisions in subsequent appropriations acts.
DOT Order 4200.6 – Appropriations Act Requirements for Procurement and Non-Procurement Regarding Tax Delinquency and Felony Convictions

CERTIFICATION OF OFFEROR/BIDDER REGARDING TAX DELINQUENCY AND FELONY CONVICTIONS

The applicant must complete the following two certification statements. The applicant must indicate its current status as it relates to tax delinquency and felony conviction by inserting a checkmark (✓) in the space following the applicable response. The applicant agrees that, if awarded a contract resulting from this solicitation, it will incorporate this provision for certification in all lower tier subcontracts.

Certifications

- 1) The applicant represents that it is (✓) is not (✓) a corporation that has any unpaid Federal tax liability that has been assessed, for which all judicial and administrative remedies have been exhausted or have lapsed, and that is not being paid in a timely manner pursuant to an agreement with the authority responsible for collecting the tax liability.
- 2) The applicant represents that it is (✓) is not (✓) a corporation that was convicted of a criminal violation under any Federal law within the preceding 24 months.

Note

If an applicant responds in the affirmative to either of the above representations, the applicant is ineligible to receive an award unless the Sponsor has received notification from the agency suspension and debarment official (SDO) that the SDO has considered suspension or debarment and determined that further action is not required to protect the Government's interests. The applicant therefore must provide information to the owner about its tax liability or conviction to the Owner, who will then notify the FAA Airports District Office, which will then notify the agency's SDO to facilitate completion of the required considerations before award decisions are made.

Term Definitions

Felony conviction: Felony conviction means a conviction within the preceding twenty four (24) months of a felony criminal violation under any Federal law and includes conviction of an offense defined in a section of the U.S. Code that specifically classifies the offense as a felony and conviction of an offense that is classified as a felony under 18 USC § 3559.

Tax Delinquency: A tax delinquency is any unpaid Federal tax liability that has been assessed, for which all judicial and administrative remedies have been exhausted, or have lapsed, and that is not being paid in a timely manner pursuant to an agreement with the authority responsible for collecting the tax liability.

* * * * *

TERMINATION OF CONTRACT

SOURCE: 2 CFR § 200 Appendix II(B)
FAA Advisory Circular 150/5370-10, Section 80-09

TERMINATION FOR CONVENIENCE **(CONSTRUCTION & EQUIPMENT CONTRACTS)**

The Owner may terminate this contract in whole or in part at any time by providing written notice to the Contractor. Such action may be without cause and without prejudice to any other right or remedy of Owner. Upon receipt of a written notice of termination, except as explicitly directed by the Owner, the Contractor shall immediately proceed with the following obligations regardless of any delay in determining or adjusting amounts due under this clause:

1. Contractor must immediately discontinue work as specified in the written notice.
2. Terminate all subcontracts to the extent they relate to the work terminated under the notice.
3. Discontinue orders for materials and services except as directed by the written notice.
4. Deliver to the owner all fabricated and partially fabricated parts, completed and partially completed work, supplies, equipment and materials acquired prior to termination of the work and as directed in the written notice.
5. Complete performance of the work not terminated by the notice.
6. Take action as directed by the owner to protect and preserve property and work related to this contract that Owner will take possession.

Owner agrees to pay Contractor for:

1. Completed and acceptable work executed in accordance with the contract documents prior to the effective date of termination;
2. Documented expenses sustained prior to the effective date of termination in performing work and furnishing labor, materials, or equipment as required by the contract documents in connection with uncompleted work;
3. Reasonable and substantiated claims, costs, and damages incurred in settlement of terminated contracts with Subcontractors and Suppliers; and
4. Reasonable and substantiated expenses to the Contractor directly attributable to Owner's termination action.

Owner will not pay Contractor for loss of anticipated profits or revenue or other economic loss arising out of or resulting from the Owner's termination action.

The rights and remedies this clause provides are in addition to any other rights and remedies provided by law or under this contract.

TERMINATION FOR CAUSE
(CONSTRUCTION)

Section 80-09 of FAA Advisory Circular 150/5370-10 establishes standard language for conditions, rights, and remedies associated with Owner termination of this contract for cause due to default of the Contractor.

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TRADE RESTRICTION CERTIFICATION

SOURCE: 49 USC § 50104
49 CFR part 30

TRADE RESTRICTION CERTIFICATION

By submission of an offer, the Offeror certifies that with respect to this solicitation and any resultant contract, the Offeror –

1. is not owned or controlled by one or more citizens of a foreign country included in the list of countries that discriminate against U.S. firms as published by the Office of the United States Trade Representative (U.S.T.R.);
2. has not knowingly entered into any contract or subcontract for this project with a person that is a citizen or national of a foreign country included on the list of countries that discriminate against U.S. firms as published by the U.S.T.R.; and
3. has not entered into any subcontract for any product to be used on the Federal on the project that is produced in a foreign country included on the list of countries that discriminate against U.S. firms published by the U.S.T.R.

This certification concerns a matter within the jurisdiction of an agency of the United States of America and the making of a false, fictitious, or fraudulent certification may render the maker subject to prosecution under Title 18, United States Code, Section 1001.

The Offeror/Contractor must provide immediate written notice to the Owner if the Offeror/Contractor learns that its certification or that of a subcontractor was erroneous when submitted or has become erroneous by reason of changed circumstances. The Contractor must require subcontractors provide immediate written notice to the Contractor if at any time it learns that its certification was erroneous by reason of changed circumstances.

Unless the restrictions of this clause are waived by the Secretary of Transportation in accordance with 49 CFR 30.17, no contract shall be awarded to an Offeror or subcontractor:

- (1) who is owned or controlled by one or more citizens or nationals of a foreign country included on the list of countries that discriminate against U.S. firms published by the U.S.T.R: or
- (2) whose subcontractors are owned or controlled by one or more citizens or nationals of a foreign country on such U.S.T.R. list: or
- (3) who incorporates in the public works project any product of a foreign country on such U.S.T.R. list.

Nothing contained in the foregoing shall be construed to require establishment of a system of records in order to render, in good faith, the certification required by this provision. The knowledge and information of a contractor is not required to exceed that which is normally possessed by a prudent person in the ordinary course of business dealings.

The Offeror agrees that, if awarded a contract resulting from this solicitation, it will incorporate this provision for certification without modification in all lower tier subcontracts. The contractor may rely on the certification of a prospective subcontractor that it is not a firm from a foreign country included on the list of countries that discriminate against U.S. firms as published by U.S.T.R, unless the Offeror has knowledge that the certification is erroneous.

This certification is a material representation of fact upon which reliance was placed when making an award. If it is later determined that the Contractor or subcontractor knowingly rendered an erroneous certification, the Federal Aviation Administration may direct through the Owner cancellation of the contract or subcontract for default at no cost to the Owner or the FAA.

* * * * *

VETERAN'S PREFERENCE

SOURCE: 49 USC § 47112(c)

VETERAN'S PREFERENCE

In the employment of labor (excluding executive, administrative, and supervisory positions), the contractor and all sub-tier contractors must give preference to covered veterans as defined within Title 49 United States Code Section 47112. Covered veterans include Vietnam-era veterans, Persian Gulf veterans, Afghanistan-Iraq war veterans, disabled veterans, and small business concerns (as defined by 15 U.S.C. 632) owned and controlled by disabled veterans. This preference only applies when there are covered veterans readily available and qualified to perform the work to which the employment relates.

* * * * *

DOMESTIC PREFERENCES FOR PROCUREMENTS

SOURCE: 2 CFR § 200.322
2 CFR Part 200, Appendix II(L)

CERTIFICATION REGARDING DOMESTIC PREFERENCES FOR PROCUREMENTS

The Bidder or Offeror certifies by signing and submitting this bid or proposal that, to the greatest extent practicable, the Bidder or Offeror has provided a preference for the purchase, acquisition, or use of goods, products, or materials produced in the United States (including, but not limited to, iron, aluminum, steel, cement, and other manufactured products) in compliance with 2 CFR § 200.322.

* * * * *

Amendments to Special Provisions Part II.I, Section 80.

SP 80-04.1. The following shall be added after the fourth paragraph:

“If the Contractor requests changes to the CSPP and the requested changes are acceptable to the Owner, the Engineer, and the RPR, the Engineer will request a modification to the CSPP from the FAA. The Contractor shall plan on a minimum of 90 days for this process to be completed. No deviation to the original CSPP shall be made without FAA approval.”

Amendments to Special Provisions Part II.I, Section 90.

SP 90-05. The following shall be added after the first paragraph;

“Payment for extra work for “agreed prices” and for “time and materials” work shall be based on the following:

- 1. Agreed Price/Time and Materials Work.** All agreed price and time and materials work shall be approved by the Owner and the FAA prior to proceeding with the work. The RPR and Contractor shall be responsible for tracking the number of employees, number of hours and classification of each employee, numbers of hours that equipment is utilized and materials utilized for the extra work that is paid utilizing time and materials work.
 - a. Miscellaneous.** No additional allowance will be made for general superintendence, the use of small tools, or other costs for which no specific allowance is herein provided.
 - b. Comparison of Record.** The Contractor and the RPR shall compare records of the cost of agreed price/time and materials work at the end of each day. Agreement shall be indicated by signature of the Contractor and the RPR or their duly authorized representatives.
 - c. Statement.** No payment will be made for work performed on an agreed price/time and materials basis until the Contractor has furnished the RPR with duplicate itemized statements of the cost of such agreed price/time and materials work detailed as follows:
 - (1)** Name, classification, date, daily hours, total hours, rate and extension for each laborer and foreman.
 - (2)** Designation, dates, daily hours, total hours, rental rate, and extension for each unit of machinery and equipment.
 - (a)** Contractor Owned Equipment Trucks and Plant.- Contractor shall be reimbursed for its ownership costs and for its operating costs for self owned equipment at the rates listed in the Rental Rate Blue Book published by Dataquest, Inc. applied in the following manner as modified by the “Rate Adjustment Table”:
 - (i)** Ownership Costs -- It is mutually understood that the rates for ownership costs reimburse the Contractor for all non-operating costs of owning the equipment, truck or plant including depreciation on the original purchase, insurance, applicable taxes, interest on investment, storage, overhead, repairs, moving the equipment onto and away from the project or work site, and profit. Reimbursement will be made for the hours of actual use as described below.
 - (ii)** Less than 8 hours of actual use, the product of the actual number of hours used or fraction thereof multiplied by the hourly rate, or the daily rate, whichever is less.
 - (iii)** Between 8 hours and 40 hours of actual use, the product of the actual number of hours used divided by 8 multiplied by the daily rate, or the weekly rate, whichever is less.
 - (iv)** Between 40 and 176 hours of actual use, the product of the actual number of hours used divided by 40 multiplied by the weekly rate, or the monthly rate, whichever is less.
 - (v)** Over 176 hours of actual use, the product of the actual number of hours used divided by 176 multiplied by the monthly rate.
 - (vi)** Operating Costs -- The rate for operating costs includes fuel, lubricants, other operating expendables, and preventative and field maintenance. Operating cost does not include the operator’s wages. The Contractor shall be reimbursed the product of the number of hours of actual use multiplied by the Estimated Operating Cost/Hour.

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- (vii) The rates used shall be those in effect at the time the agreed price/time and materials work is done as reflected in the then current publication of the Rental Rate Blue Book. When agreed price/time and materials type analysis are used to establish agreed prices in accordance with paragraph A above, the rates used shall be those in effect when the agreed price is developed by the Contractor.
 - (viii) In the event that a rate is not established in the Rental Rate Blue Book for a particular piece of equipment, truck or plant, the RPR shall establish rates for ownership costs and operating costs for that piece of equipment, truck or plant that is consistent with its cost and expected life.

(b) Rented Equipment, Trucks and Plant –

- (i) In the event that the Contractor does not own a specific type of equipment and must obtain it by rental, it shall be paid the actual rental rate for the equipment for the time that the equipment is used to accomplish the work or is required by the RPR to be present, not to exceed the adjusted rental rate in the Rental Rate Blue Book, plus the reasonable cost of moving the equipment onto and away from the project site.
 - (ii) The Contractor shall also be reimbursed for the operating cost of the equipment unless reflected in the rental price. Such operating cost shall be determined in the same manner as specified for Contractor Owned Equipment above.
 - (iii) In the event that area practice dictates the rental of equipment with an operator or fully fueled and maintained equipment, truck or plants, payment will be made on the basis of an invoice for the rental of the equipment with an operator, fully fueled and/or maintained equipment, trucks or plants including all costs incidental to its use, including costs of moving to and from the site, provided the rated is substantiated by area practice.
- (c) Maximum Amount Payable -- The maximum amount of reimbursement for the ownership costs of Contractor owned or the rental cost of rented equipment, trucks or plant is limited to the original purchase price of the equipment, truck or plant for any agreed price/time and materials work as listed in the Green Guide for Construction Equipment published by the Dataquest, Inc. In the specific event when the ownership or rental reimbursement is limited by the original purchase price, the Contractor shall, nevertheless, be reimbursed for the operating Cost/Hour for each hour of actual use.

(3) Quantities of materials, prices, and extensions.

(4) Transportation of materials.

(5) Overhead and Profit. Shall be in accordance with DRBA standards.

SP 90-05. The following shall be added after the ninth paragraph;

“No partial payments will be made for work items lacking approved submittals, or lacking acceptable manufacturer’s material certifications.

Any delay or postponement of payment from the above referenced time frame may occur only for good cause following written approval of the Airport Sponsor. This clause applies to both DBE and non-DBE subcontractors.

Contractors shall include in their subcontracts language providing that Contractors and subcontractors will use appropriate alternative dispute resolution mechanisms to resolve payment disputes.

The Contractor will not be reimbursed for work performed by subcontractors unless and until the Contractor ensures that the subcontractors are promptly paid for the work they have performed.

The same requirement for prompt payment shall be applied to all tier subcontractors.”

SP 90-12 Security for construction warranty. The Contractor shall upon final acceptance of the work, furnish a bond to the Owner in a penal sum equal to five percent (5%) of the amount of the Contract price, executed by a surety company authorized by the Department of Insurance of the State of Delaware to execute such a bond in this State, and which bond shall be approved as to form and manner of execution by the Owner's attorney. This bond shall be conditioned for the faithful performance by the said Contractor of the conditions and stipulations of the subsection titled ACCEPTANCE AND FINAL PAYMENT of this section, thereof relating to maintenance and repair, for a period of one (1) year from the date of the final acceptance of the work. In default of the filing of such bond, a sum of money equal to said five percent (5%) may be retained out of any monies due to the Contractor and be held for one (1) year, or until the bond above described is filed.

For Contractors who have elected to set up an escrow account, they may elect to maintain the escrow account for a period of one (1) year from the date of final acceptance of the work in lieu of providing a bond for security of guarantee as described above.

PROJECT NAME: 33N - Box Hangar

SCHEDULE OF VALUES

CONTRACTOR'S NAME:

DATE: _____

ITEM	QTY	UNIT	MATERIAL		LABOR		TOTAL COST
			P/UNIT	TOTAL	P/UNIT	TOTAL	
Trade: Structural							
Foundation Modifications (if Required)		CY	\$1.00	\$0	\$1.00	\$0.00	\$0.00
PEMB (Structural Members)		SF	\$1.00	\$0	\$1.00	\$0.00	\$0.00
	Sub-total						\$0.00
Trade Architectural							
Interior Formed Metal Wall Panels		SF	\$1.00	\$0	\$1.00	\$0.00	\$0.00
Batt Insulation ext. walls and roof		SF	\$1.00	\$0	\$1.00	\$0.00	\$0.00
Metal Flashing and Trim		LF	\$1.00	\$0	\$1.00	\$0.00	\$0.00
Joint Sealants		LF	\$1.00	\$0	\$1.00	\$0.00	\$0.00
Bi-Fold Door 56'-0" X 15'-6" (no cladding)		EA	\$1.00	\$0	\$1.00	\$0.00	\$0.00
Bi-Fold Door 56'-0" X 15'-6" w/ Man Door 3'-0" X 6'-8" (no cladding)		EA	\$1.00	\$0	\$1.00	\$0.00	\$0.00
Door Cladding		SF	\$1.00	\$0	\$1.00	\$0.00	\$0.00
Hollow Metal Door & Hardware - Allowance per Door		EA	\$1.00	\$0	\$1.00	\$0.00	\$0.00
Exit Signage		EA	\$1.00	\$0	\$1.00	\$0.00	\$0.00
Epoxy Floor Coating		SF	\$1.00	\$0	\$1.00	\$0.00	\$0.00
Fire Extinguishers		EA	\$1.00	\$0	\$1.00	\$0.00	\$0.00
	Sub-total						\$0.00
Trade: Electrical							
Panels - 200A MCB, 120/240V		EA	\$1.00	\$0.00	\$1.00	\$0.00	\$0.00
Panels - 100A MLO, 120/240V		EA	\$1.00	\$0.00	\$1.00	\$0.00	\$0.00
Service disconnect		EA	\$1.00	\$0.00	\$1.00	\$0.00	\$0.00
Receptacles - GFCI, NEMA 5-20		EA	\$1.00	\$0.00	\$1.00	\$0.00	\$0.00
Equipment disconnects - 30A NONFUSED		EA	\$1.00	\$0.00	\$1.00	\$0.00	\$0.00
Conductors - Feeders (2#6 AWG)		CLF	\$1.00	\$0.00	\$1.00	\$0.00	\$0.00
Conductors - Feeders (1#10 AWG)		CLF	\$1.00	\$0.00	\$1.00	\$0.00	\$0.00
Conductors - Branch Circuits (3#12 AWG)		CLF	\$1.00	\$0.00	\$1.00	\$0.00	\$0.00
Conductors - Branch Circuits (3#12 AWG)		CLF	\$1.00	\$0.00	\$1.00	\$0.00	\$0.00
Conductors - Ground Rods (3/4"x10')		EA	\$1.00	\$0.00	\$1.00	\$0.00	\$0.00
Conduits - 3/4" EMT		LF	\$1.00	\$0.00	\$1.00	\$0.00	\$0.00
Conduits - 1" EMT		LF	\$1.00	\$0.00	\$1.00	\$0.00	\$0.00
Light Switches - Toggle, 20A		EA	\$1.00	\$0.00	\$1.00	\$0.00	\$0.00
Lighting - Interior LED		LS	\$1.00	\$0.00	\$1.00	\$0.00	\$0.00
Lighting - Exterior LED		LS	\$1.00	\$0.00	\$1.00	\$0.00	\$0.00
	Sub-total						\$0.00
	TOTAL						\$0.00

END OF SPECIAL PROVISIONS

PROJECT NAME: 33N - Box Hangar

SCHEDULE OF VALUES

CONTRACTOR'S NAME:

DATE: _____

ITEM	QTY	UNIT	MATERIAL		LABOR		TOTAL COST
			P/UNIT	TOTAL	P/UNIT	TOTAL	
Trade: Structural							
Foundation Modifications (if Required)		CY	\$1.00	\$0	\$1.00	\$0.00	\$0.00
PEMB (Structural Members)		SF	\$1.00	\$0	\$1.00	\$0.00	\$0.00
	Sub-total						\$0.00
Trade Architectural							
Interior Formed Metal Wall Panels		SF	\$1.00	\$0	\$1.00	\$0.00	\$0.00
Batt Insulation ext. walls and roof		SF	\$1.00	\$0	\$1.00	\$0.00	\$0.00
Metal Flashing and Trim		LF	\$1.00	\$0	\$1.00	\$0.00	\$0.00
Joint Sealants		LF	\$1.00	\$0	\$1.00	\$0.00	\$0.00
Bi-Fold Door 56'-0" X 15'-6" (no cladding)		EA	\$1.00	\$0	\$1.00	\$0.00	\$0.00
Bi-Fold Door 56'-0" X 15'-6" w/ Man Door 3'-0" X 6'-8" (no cladding)		EA	\$1.00	\$0	\$1.00	\$0.00	\$0.00
Door Cladding		SF	\$1.00	\$0	\$1.00	\$0.00	\$0.00
Hollow Metal Door & Hardware - Allowance per Door		EA	\$1.00	\$0	\$1.00	\$0.00	\$0.00
Exit Signage		EA	\$1.00	\$0	\$1.00	\$0.00	\$0.00
Epoxy Floor Coating		SF	\$1.00	\$0	\$1.00	\$0.00	\$0.00
Fire Extinguishers		EA	\$1.00	\$0	\$1.00	\$0.00	\$0.00
	Sub-total						\$0.00
Trade: Electrical							
Panels - 200A MCB, 120/240V		EA	\$1.00	\$0.00	\$1.00	\$0.00	\$0.00
Panels - 100A MLO, 120/240V		EA	\$1.00	\$0.00	\$1.00	\$0.00	\$0.00
Service disconnect		EA	\$1.00	\$0.00	\$1.00	\$0.00	\$0.00
Receptacles - GFCI, NEMA 5-20		EA	\$1.00	\$0.00	\$1.00	\$0.00	\$0.00
Equipment disconnects - 30A NONFUSED		EA	\$1.00	\$0.00	\$1.00	\$0.00	\$0.00
Conductors - Feeders (2#6 AWG)		CLF	\$1.00	\$0.00	\$1.00	\$0.00	\$0.00
Conductors - Feeders (1#10 AWG)		CLF	\$1.00	\$0.00	\$1.00	\$0.00	\$0.00
Conductors - Branch Circuits (3#12 AWG)		CLF	\$1.00	\$0.00	\$1.00	\$0.00	\$0.00
Conductors - Branch Circuits (3#12 AWG)		CLF	\$1.00	\$0.00	\$1.00	\$0.00	\$0.00
Conductors - Ground Rods (3/4"x10')		EA	\$1.00	\$0.00	\$1.00	\$0.00	\$0.00
Conduits - 3/4" EMT		LF	\$1.00	\$0.00	\$1.00	\$0.00	\$0.00
Conduits - 1" EMT		LF	\$1.00	\$0.00	\$1.00	\$0.00	\$0.00
Light Switches - Toggle, 20A		EA	\$1.00	\$0.00	\$1.00	\$0.00	\$0.00
Lighting - Interior LED		LS	\$1.00	\$0.00	\$1.00	\$0.00	\$0.00
Lighting - Exterior LED		LS	\$1.00	\$0.00	\$1.00	\$0.00	\$0.00
	Sub-total						\$0.00
	TOTAL						\$0.00

DELAWARE RIVER AND BAY AUTHORITY

DELAWARE AIRPARK

CONTRACT NO. 33N-24-A

CONSTRUCT BOX HANGAR

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SPECIAL PROVISIONS

PART II.II – AMENDMENTS TO FAA GENERAL PROVISIONS

The following clauses represent general provisions which shall be added to Division 100 – General Provisions of the Delaware River and Bay Authority Standard Specifications for Road and Bridge Construction, December 15, 2014. In a case of conflicting requirements, this Part II.II shall govern over:

- (i) Division 100 – General Provisions of the Delaware River and Bay Authority Standard Specifications for Road and Bridge Construction, dated December 15, 2014; and
- (ii) Part I of the Special Provisions provided herein; and
- (iii) Part II.I of the Special Provisions provided herein.

Any applicable provision set forth in the Delaware River and Bay Authority Standard Specifications for Road and Bridge Construction, Division 100, not modified by or in conflict with the Special Provisions of Parts I-II.II, shall be understood to remain in full force and effect.

Located in the CapEx Project File

Amendments to Special Provisions to the FAA General Provisions

Amendments to Special Provisions Part II.I, Section 20.

SP 20-02. The following shall be added after the third paragraph:

“In addition, each bidder shall furnish the Owner with the following:

- a. A list of the categories of work to be performed by the bidder’s work force and a list of work to be subcontracted out (See Section 80-01).
- b. A list of construction projects completed in the past five years. The list shall include the project name, completion date, total contract value, value of bidder’s portion of the work, engineer and owner contact information (names and phone numbers).
- c. A list of construction projects in progress and under contract including the project name, percent complete, estimated completion date, total contract value, value of bidder’s portion of the work, engineer and owner contact information (names and phone numbers)."
- d. A Schedule of Values with the minimum items shown at the end of the Special Provisions shall be submitted within 10 working days from request of the apparent low bidder from the Sponsor. The file will be sent in excel form and the Contractor can add as much information as they would like.

SP 20-17 Sales tax exemption. The Owner is exempt from payment of Sales and Compensating Use Taxes of the State of Delaware and of cities and counties on all materials and supplies sold to the Owner pursuant to the provisions of this Contract. These taxes are not to be included in bids. This exemption does not, however, apply to tools, machinery, equipment or other property leased by or to the Contractor or a Subcontractor to materials and supplies of any kind which will not be incorporated into the completed project, and the Contractor and his Subcontractors shall be responsible for and pay any and all applicable taxes including Sales and Compensating Use Taxes on such leased tools, machinery, equipment or other property or on such unincorporated materials and supplies, and the provisions set forth below will not be applicable to such tools, machinery, equipment, property and unincorporated materials and supplies.

The Contractor agrees to sell, free of encumbrances, and the Owner agrees to purchase all of the materials and supplies (except as above set forth) required, necessary or proper for or incidental to the construction of the Project covered by this agreement. Title to all materials and supplies to be sold by the Contractor to the Owner, pursuant to the provisions of the Contract, shall immediately vest in and become the sole property of the Owner upon delivery of such materials and supplies to the Project site. The Contractor shall mark or otherwise identify all such materials and supplies as the property of the Owner. The Contractor, at the request of the Owner, shall furnish to the Owner such confirmatory bills of sale and other instruments as may be required by it, properly executed, acknowledged and delivered, confirming to the Owner, title to such materials and supplies free of encumbrances.

In the event that after title has passed to the Owner any of such materials and supplies are rejected as being defective or otherwise unsatisfactory, title to all such materials and supplies shall upon such rejection revert in the Contractor.

The sum paid under this Agreement shall be deemed to be in full consideration for the performance by the Contractor of all his duties and obligations under this Agreement in connection with said sale.

The Contractor agrees to construct the Project and to furnish and perform all work and labor required, necessary or proper for or incidental thereto, except that the materials and supplies sold to the Owner under the preceding paragraph shall be furnished by the Owner to the Contractor for use in the performance of said work and labor, and the sum paid pursuant to this Agreement shall be deemed to be in full consideration for the performances by the Contractor of all his duties and obligations under this Agreement in connection with said work and labor.

The purchase by Subcontractors of materials and supplies to be sold hereunder will also be a purchase or procurement for resale to the Contractor (either directly or through other Subcontractors), and ultimately to the Owner, and therefore not subject to the aforesaid Sales and Compensating Use Taxes, provided that the Subcontract Agreements provide for the resale of such materials and supplies prior to and separate and apart from the incorporation of such materials and supplies into the permanent construction and that such Subcontract Agreements are in a form similar to this Contract with respect to the separation of the sale of materials and supplies from the work and labor to be provided.

If as a result of such sale of materials and supplies (1) any claim is made against the Contractor or any Subcontractor by the State of Delaware or any city or county for Sales or Compensating Use Taxes on the aforementioned materials and supplies or (2) any claim is made against the Contractor or any Subcontractor by a materialman or a Subcontractor on account of a claim against such materialman or Subcontractor by the State of Delaware or any city or county for Sales or Compensation Use Taxes on the aforementioned materials and supplies, then, if the Contractor and Subcontractor have complied with the provisions of this Contract relating thereto, the Owner will reimburse the Contractor or any Subcontractor, as the case may be, for an amount equal to the amount of such tax required to be paid in accordance with the requirements of law, provided that:

- A. 1. The Subcontract Agreements in connection with this Contract, provide for the resale of such materials and supplies, prior to and separate and apart from the incorporation of such materials and supplies into the permanent construction.
2. Such Subcontract Agreements are in a form similar to this Contract with respect to the separation of the sale of materials and supplies from the other work and labor to be provided, and
3. Such separation is actually followed in practice, including the separation of payments for materials and supplies from the payments for other work and labor, and
- B. The Contractor and his Subcontractors and materialmen complete a Delaware State Sales Tax Form ST-13. (Contractor Exemption Purchase Certificate), and furnish such certificate to all persons, firms or corporations from which they purchase materials and supplies for the performance of the work covered by this Contract, and
- C. The Contractor and all Subcontractors maintain and keep, for a period of six (6) years after the date of final payment for the sale, or, if a claim for Sales or Compensating Use Tax is pending or threatened at the end of such six (6) year period, until such claim is finally settled, records, which in the judgment of the Department of Taxation and Finance, adequately show (1) all materials and supplies purchased by them for resale, pursuant to the provisions of this Contract and (2) all materials and supplies sold to the Owner pursuant to the provisions of this Contract, and
- D. The Owner is afforded the opportunity, before any payment of tax is made, to contest said claim in the manner and to the extent that the Owner may choose and to settle or satisfy said claims, and such attorney as the Owner may designate is authorized to act for the purpose of contesting, settling and satisfying said claim, and

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- E. The Contractor and Subcontractor give immediate notice to the Owner of any such claim, cooperate with the Owner and its designated attorney in contesting said claim and furnish promptly to the Owner and said attorney all information and documents necessary or convenient for contesting said claim, said information and documents to be preserved for six (6) years after date of final payment for the sale, or if such a claim is pending or threatened at the end of such six (6) years, until such claim is finally settled. If the Owner elects to contest any such claim, it will bear the expense of such contest.

Nothing in this Article is intended or shall be construed as relieving the Contractor from his obligations under this Agreement and the Contractor shall have the full continuing responsibility to install the materials and supplies purchased in accordance with the provisions of this Contract, to protect the same, to maintain them in proper condition and to forthwith repair, replace and make good any damage thereto without cost to the Owner until such time as the work covered by the Contract is fully accepted by the Owner.

Amendments to Special Provisions Part II.I, Section 40.

SP 40-09 Debris. Contractor shall leave the premises broom-clean and everything in perfect order and repair. Upon neglect or refusal of Contractor to keep the premises clean, the RPR shall have the authority to have such work performed, and the cost of the same shall be charged to the Contractor in default and collected from any monies which have or may become due on this Contract. The RPR shall issue no certificates of payment on the Contract until premises are clean, in good order, and all claims properly resolved.

The Contractor shall remove all debris and rubbish resulting from his work at frequent intervals, and upon the order of the RPR. Upon completion, Contractor shall leave the premises broom-clean and everything in perfect order and repair. Upon neglect or refusal of Contractor to keep the premises clean, the RPR shall have the authority to have such work performed, and the cost of the same shall be charged to the Contractor in default and collected from any monies which have or may become due on this Contract; and the RPR shall issue no certificates of payment on the Contract until premises are clean, in good order, and all claims created properly adjusted.

Amendments to Special Provisions Part II.I, Section 50.

SP 50-07.1 Additional Survey Requirements.

A. This work shall consist of providing all necessary survey work to establish, spatially position, and verify the locations of existing and proposed features and measure quantities of items in accordance with the contract documents or as directed by the RPR. This work includes but is not limited to the establishment, reestablishment or localization of primary and secondary control, the stakeout or layout of proposed features, the initialization, calibration and navigation of automated equipment operations, the location or verification of existing or of constructed features, the verification of geospatial data for proposed construction work and the coordination and sharing of survey data with the RPR.

The Contractor shall be responsible for trimming trees, brush and other objects from survey lines in advance of all survey work to permit accurate and unimpeded work by the survey crews.

B. Survey Reference Points.

1. Existing horizontal and vertical control points for the Project are those designated on drawings or as determined from investigation of the existing conditions.

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2. Locate and protect control points prior to starting Site Work and preserve permanent reference points during construction.
 - a. Make no changes or relocations without prior approval of the RPR.
 - b. Report to RPR when reference point is lost, destroyed or requires relocation because of necessary changes in grades or locations.
 - c. Replace Project control points, which may be lost or destroyed. Airport control points shall be replaced in accordance with their requirements.
 - d. Existing property corners, markers, stakes, iron pins, and survey monuments defining property lines which have a high probability of being disturbed during construction shall be properly tied into fixed reference points before being disturbed. If disturbed, they shall be accurately reset in their proper position upon completion of the work.

C. Project Layout Requirements.

1. Establish a sufficient number of permanent benchmarks on Site, as may be required, referenced to data established by survey control points. Record locations of benchmarks with horizontal and vertical data on Project Record Documents.
2. From established control points, layout all Work by establishing all lines and grades at Site necessary to control Work. Contractor shall be responsible for all measurements that may be required for execution of Work to location and limit marks prescribed in appropriate Specification Sections or on Contract Drawings.
3. Furnish, at contractor expense, all such stakes, steel pins, equipment, tools and material and labor that may be required in laying out Work control points.
4. Establish lines and levels. Locate and layout by instrumentation and similar appropriate means:
 - a. Verify property, grades, lines, levels and dimensions indicated.
 - b. Site Improvements
 - 1) Provide stakes for grading, fill and topsoil placement.
 - 2) Layout utility slopes and invert elevations.
 - 3) Layout limits of pavement demolition and proposed pavement.
4. Verify and coordinate in field all existing and proposed underground components including civil, structural, utilities and other components prior to initiation of the Work. Advise RPR and/or FAA of any conflicts or discrepancies.

D. Documents.

1. Submit name, address and contact information of Surveyor to RPR.
2. On request of the RPR, submit documentation to certify accuracy of construction survey and stakeout work and compliance with Contract Documents.
3. Submit certificate signed by licensed surveyor certifying that elevations and locations of improvements are in conformance with Contract Documents. Should any work be in non-conformance with Contract Documents, Contractor shall identify all such non-conformance in the certificate.
4. Standards and Availability: Data and other measurements shall be recorded in accordance with standard and approved methods. All field notes, sketches, recordings, and computations in establishing above horizontal and vertical control points shall be available at all times during progress of Work for ready examination by RPR.

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5. Maintain complete and accurate record data on underground utilities and obstructions, new and existing, encountered in execution of Work. Record data on Project Record Documents.
 6. On completion of major site improvements, prepare certified survey showing dimensions, locations, angles, and elevations of construction.

E. GPS Inspection Unit. Section not used.

F. Computer Aided Drafting & Design (CADD). This project was not developed using three-dimensional design software. After award and upon request, the successful bidder will be provided CADD files developed from AutoCAD for use. A single CADD file will be provided as well, including 2D information.

The following 2D CADD files will be provided:

<u>FILE</u>	<u>DESCRIPTION</u>
Existing Base Map	Existing topographic features, limits of pavement, physical features, existing contours, equipment, structures, lights, signs, known utilities, fence, pipes, and conduits, buildings, etc.
Proposed	Proposed work including alignments, survey data, work phasing limits, limits of demolition, limits of pavement, physical features, proposed contours, equipment, structures, pavement marking, lights, signs, utilities, fence, pipes, and conduits, and buildings.

Unless otherwise shown on the Plans, the Contractor shall assume that the origin of proposed CAD symbols is at the center of the location of the feature. CAD symbols which are not at the center of origin include the following:

<u>Symbol</u>	<u>Origin</u>
N/A	

The files were developed for the design and depiction of various 2D features (existing and proposed).

The Owner allows use of the CADD in the performance of its work and services on the project with the following terms and conditions:

1. That the Owner does not warrant or guarantee the information and data in the CADD files and any accompanying documentation as a substitute for the sound judgment of the Contractor.
2. That the Contractor desires to make use of the CADD files in conjunction with the Work to be provided to the Owner for the subject project.
3. That the Contractor has no rights to the information and data contained in the CADD files or any translated or converted form of these files. The transfer shall not be considered to convey any proprietary interest in the information and data in the CADD files or any translated or converted form of these files or subsequent version thereof.
4. That the information and data contained in the CADD files or in any translated or converted form of these files shall not be used by the Contractor on any other project.
5. That the Contractor may not copy, distribute, sell, rent, sublicense or lease the CADD files or any translated or converted form of these files or any accompanying documentation.
6. That no information or data contained in the CADD files or any translated or converted form of these files shall be transferred in any electronic form without written permission of the Owner.

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7. That after completion of the Work by the Contractor as part of this project, the Contractor shall remove the information and data contained in the CADD files, or any translated or converted form of these files, from all of its electronic data processing systems. No electronic copies of the information and data contained in the CADD files or any translated or converted form of these files shall be retained by the Contractor.
 8. That the Contractor shall take all steps reasonably necessary to protect the CADD files, or any translated or converted form of these files, from theft or use in a manner inconsistent with these terms and conditions.
 9. That the Owner may terminate these terms and conditions at any time and the Contractor shall immediately remove the CADD files, or any translated or converted form of these files, from their electronic data processing systems upon demand of the Owner.
 10. That the Owner retains all rights not expressly granted. Nothing in these terms and conditions constitutes a waiver of the Owner's rights under any federal or state law.
 11. That the Owner excludes any and all implied warranties, including warranties of merchantability and fitness for a particular purpose, and limits the Contractor's remedy to return of the CADD files and documentation to the Owner for replacement.
 12. That the Owner makes no warranty or representation, either express or implied, with respect to the CADD files or accompanying documentation, including their quality, performance, merchantability, or fitness for a particular purpose. The CADD files and documentation are provided "as is" and the Contractor assumes the entire risk as to their quality and performance.
 13. That the Owner shall not be liable for any direct, indirect, special, incidental, or consequential damages arising out of the use of, inability to use, or any defect in the CADD files or any translated or converted form of these files or any accompanying documentation.
 14. That the Contractor shall indemnify and hold harmless the Owner, its officials and employees, and the RPR for any injury to the person or property of third parties arising out of the use of or any defect in the CADD files or any translated or converted form of these files or any accompanying documentation.
 15. That the Contractor shall indemnify and hold harmless the Owner, its officials and employees, and the RPR for any injury arising out of any infringement of the copyright law.
 16. That the warranty and remedies set forth in these terms and conditions are exclusive and in lieu of all others, oral or written, express or implied.
 17. That nothing contained in these terms and conditions shall be construed to represent or warrant that the Contractor has the right to reproduce or copy any or converted form of these files and the Contractor acknowledges that it has no right to reproduce and include copyright or trade secret notices, or patent rights on any copies, in whole or in part, in any form. All copies of each CADD and surface file remain the property of the Owner and any rights involving the copyright law as modified in 17 U.S.C. §101 et. seq. remain with the Owner.

G. Equipment.

1. Surveying Equipment. Upon request, the Contractor shall make available to the RPR, a rod, level, and tripod. The rod shall be telescoping rod, 15 feet in length with hundredth of a foot graduations. The level shall be self-leveling and have documentation demonstrating it has been calibrated within twelve months of the project's commencement.
2. Materials. Stakes used for construction layout shall be sound hardwood stakes having minimum dimensions of 1 inch by 1 inch by 4 feet in length.
3. GPS Inspection Units.

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- a. GPS units provided for a single contract shall be of the same model and manufacturer; and shall include, and be licensed to operate, the same versions of GPS planning software, data collection software, navigation software, stakeout software and post processing software. All software provided (including firmware) shall be the most current available from the manufacturer at the time of delivery of the GPS units. GPS inspection units should be of the same manufacturer as those used by the Contractor. GPS units shall not be more than 2 years old from the date of manufacturing to the time of delivery. To verify the age of the GPS units, the Contractor shall provide a dated copy of the manufacturer's receipt(s) for the purchase, lease or rental of the units.
 - b. GPS units shall include both standard USB cable and Bluetooth wireless technology for data transfer.
 - c. Data shall be capable of being copied onto or from a removable industry standard data storage card (e.g.: secure digital SD Card). Each GPS Unit shall include 2 data storage cards, each with a minimum capacity of 4 GB each.
 - d. GPS units shall include the ability to import/export and display point and alignment data which is in XML format, and also import graphics files which are in DGN or DXF format.
 - e. GPS units shall have an internal, or modular, rechargeable battery system capable of operating a minimum of 8 hours (may include interchangeable batteries), and shall include a battery charger.
 - f. GPS units shall include a hard or soft shell carry case, and all appropriate operation manuals.

4. Survey Grade GPS Inspection Units. **Section Not Used.**

H. Traditional Survey Stakeout. The Contractor shall field locate all features to be constructed from survey control points which are identified on the Plans. Any error, apparent discrepancy or absence in the data shown or required to appropriately accomplish the stakeout survey shall be referred to the RPR immediately for interpretation when such is observed or required.

The Contractor shall place two offset stakes or references points along the center line at maximum intervals of 50 feet and at such intermediate locations as required to determine location and direction. From computations and measurements made by the Contractor, these stakes shall be clearly and legibly marked with the center line station number, offset and cut or fill from which the establishment of the centerline location and elevation can be determined. If markings become illegible for any reason the markings shall be restored by the Contractor. The Contractor shall locate and place all cut, fill, slope, fine grade, or other stakes and points for the proper progress of the work with a maximum station spacing of 50 feet. All control points shall be properly protected and flagged for easy identification.

The Contractor shall be responsible for the accuracy of the work and shall maintain all applicable reference points, stakes, etc. Damaged or destroyed reference points or bench marks made inaccessible by the progress of the construction shall be replaced or transferred by the Contractor. All control points shall be referenced by ties (4 minimum) to specific points on acceptable objects and recorded. Any alterations or revisions in the ties shall be so noted and the information furnished to the RPR. All stakeout survey work related to control shall be referenced to the control line shown in the contract documents. Computations and survey notes necessary to establish the position of the work from control points, shall be made and maintained in a neat, legible and acceptable format by the Contractor. Computations, survey notes and other survey information shall be made available to the RPR within 3 work days from the request. The RPR may check all or any portion of the stakeout survey work or notes made by the Contractor. Such checking by the RPR shall not relieve the Contractor of any responsibilities for the accuracy or completeness of the work.

I. Automated Stakeout and Automated Machine Guidance Operations. Section Not Used.

SP 50-17 Removal of water. The Contractor shall at all times during construction, provide and maintain proper and satisfactory means and devices for the removal of all water entering the excavations, and shall remove all such water as fast as it may collect, in such manner as shall not interfere with the prosecution of the work or the proper placing of materials or other work.

Removal of water includes the construction and removal of cofferdams, sheeting and bracing, the furnishing of materials and labor necessary therefore, the excavation and maintenance of ditches and sluiceways and the furnishing and operation of pumps, wellpoints and appliances needed to maintain thorough drainage of the work in a satisfactory manner.

Water shall not be allowed to rise over or come in contact with any masonry, concrete or mortar, until at least twenty-four (24) hours after placement and no stream of water shall be allowed to flow over such work until such time as the RPR may permit.

Unless otherwise specified, all excavations which extend down to or below the static groundwater elevations at the sites of structures shall be dewatered by lowering and maintaining the groundwater beneath such excavations at an elevation not less than that specified herein at all times when work thereon is in progress, during subgrade preparation and the placing of the structure or other materials thereon.

Where the presence of fine granular subsurface materials and a high groundwater table may cause the upward flow of water into the excavation with a resulting quick condition, the Contractor shall install and operate a suitable dewatering system to prevent the upward flow of water during construction.

When the water table is within the capillary rise of silt/clay subsurface material, the Contractor shall select and operate his equipment in a manner to prevent the deterioration of the working surface due to the upward flow of water during construction.

The effluent pumped from the dewatering system shall be examined periodically by qualified personnel to determine if the system is operating satisfactorily without the removal of fines.

Unless otherwise directed by the RPR or shown on the Contract Documents, the water level shall not be permitted to rise until construction in the immediate area is completed and the excavation backfilled to the original grade or proposed grade.

Where well points are used, the groundwater shall be lowered and maintained continuously (day and night) at a level not less than two (2) feet below the bottom of the excavation. Excavation will not be permitted at a level lower than two (2) feet above the water level as indicated by the observation wells.

The wellpoint system shall be designed or installed by or under the supervision of an organization whose principal business is wellpointing and has at least five (5) consecutive years of similar experience and can furnish a representative list of satisfactory similar operations. Wellpoint headers, points and other pertinent equipment shall not be placed within the limits of the excavation in such a manner or location as to interfere with the laying of pipe or trenching operations or with the excavation for and/or construction of other structures. Standby gasoline or diesel powered equipment shall be provided so that in the event of failure of the operating equipment, the standby equipment can be readily connected to the dewatering system. The standby equipment shall be maintained in good order and actuated regularly not less than twice a week when directed.

Wellpoints shall be installed in the center of a sand wick drain which shall be placed by means of a sanding shell or other approved means to provide a sand core not less than ten (10) inches in diameter.

Detached observation wells of similar construction to the wellpoints shall be installed at intervals of not less than fifty (50) feet along the opposite side of the trench from the header pipe and line of wellpoints, or around the excavation for a structure or as shown on the Contract Drawings, to a depth of at least five (5) feet below the proposed excavation. In addition, one wellpoint in every fifty (50) feet shall be fitted with a tee, plug and valve so that the wellpoint can be converted for use as an observation well. Observation wells shall be not less than one and one-half (12) inch in diameter.

Water pumped or drained from excavations, or any sewers, drains, or water courses encountered in the work, shall be disposed of in a suitable manner without injury to adjacent property, the work under construction, or to pavements, roads and drives. No water shall be discharged to sanitary sewers. Sanitary sewage shall be pumped to sanitary sewers or shall be disposed of by an approved method.

Any damage caused by improper handling of water shall be repaired by the Contractor at his/her own expense.

SP 50-18 Sheeting and bracing. The Contractor shall furnish, place and maintain such sheeting, bracing and shoring as required to support the sides and ends of excavations in such a manner as to prevent any movement which would in any way damage the pipe, sewers, masonry or other work, diminish the width necessary, otherwise damage or delay the work, or endanger existing structures, pipes or pavements, or to occasion a hazard to persons engaged on the project or to the general public.

Sheeting and bracing or other trench protection shall be utilized as required for the safety of employees exposed to the hazard of falling or sliding material from any trench or excavation in conformance with the provisions of Industrial Code Rule 23 as amended, and OSHA. Sheeting and bracing must be designed by, signed and stamped by a Professional Engineer licensed to practice in the State in which the project is located.

The Contractor shall be responsible for the adequacy of all trench support systems used and for all damage to persons or property resulting from improper quality, strength, placing, maintenance and removal.

All material used for sheeting and bracing shall be sound and free from defects which might impair its strength or effectiveness.

All timber sheeting and bracing shall be sound and straight, free from cracks, shakes and large or loose knots.

All steel sheeting and bracing shall be sound and straight, free from bends, twists or splits, having square and undamaged ends.

Sheeting shall be driven vertically from the original ground surface as the excavation progresses. Sufficient toe support shall be sustained so as to maintain pressure against the original ground at all times.

Timber sheeting shall be driven so that edges are tight together and steel sheeting driven with the individual members interlocking. All bracing shall be of such design and strength as to maintain the sheeting in its proper position.

The Contractor shall be solely responsible for the adequacy of all sheeting and bracing.

In general, all sheeting and bracing, whether of steel, timber or other material, used to support the sides of trenches or other open excavations, shall be withdrawn as the trenches or other open excavations are being refilled. That portion of the sheeting extending below the top of a pipe, sewer or structure shall be

withdrawn, unless otherwise directed, before more than 6 inches of earth is placed above the top of the pipe, sewer or structure and before any bracing is removed. The voids left by the sheeting shall be carefully refilled with selected material and rammed tight with tools especially adapted for the purpose or otherwise as may be approved.

The Contractor shall be responsible for the adequate shoring and/or bracing of any existing utilities encountered during the excavation. Such utilities shall be braced or shored in a manner acceptable to the local jurisdictional agency having authority over the utility encountered. It shall be the responsibility of the Contractor to prevent damage to or displacement of utilities, and to work with and request the concurrence of the utility's company representative in this matter.

Amendments to Special Provisions Part II.I, Section 60.

SP 60-01. The following shall be added after the fourth paragraph:

“All other equipment and materials covered by other referenced specifications shall be subject to acceptance through manufacturer's certification of compliance with the applicable specification.

The Contractor shall prepare a project Operations and Maintenance (O&M) Manual for the Owner. The O&M Manual shall consist of approved certification submittals, approved shop and setting drawing submittals, approved catalogue data submittals, and Operations & Maintenance Manuals for equipment installed that have operating procedures and/or maintenance requirements associated with them. The O&M manual shall be neatly bound in a properly sized 3-ring binder and tabbed by specification section. The O&M Manual shall be submitted to the Engineer prior to final payment to facilitate project closeout.”

SP 60-02. The following shall be added after the second paragraph:

“The cost of all failing tests shall be borne by the Contractor.”

SP 60-03. The following shall be added after the first paragraph:

“Manufacturer's certificates of compliance shall not relieve the Contractor of their responsibility to provide materials in accordance with these specifications and acceptable to the RPR. Materials supplied and/or installed that do not materially comply with these specifications shall be removed, when directed by the RPR, and replaced with materials, which do comply with these specifications, at the sole cost of the Contractor.”

SP 60-09 Shop and setting drawings and catalogue data. All materials and equipment used in the work shall be submitted to the RPR, unless otherwise directed. The RPR will forward the submittals to Engineer for their review and approval prior to ordering the equipment. All information required for the Engineer's review of each particular pay item shall be sent as one submittal. In addition, if the pay item interfaces with other pay items (as in the case of electrical equipment), then the submittals covering the interfacing pay items shall be sent at the same time. Submittals consisting of marked catalog sheets or shop drawings shall be provided. Submittal data shall be presented in a clear, precise and thorough manner. Original catalog sheets are preferred. Photocopies are acceptable provided they are as good a quality as the original. Clearly and boldly mark each copy to identify pertinent products or models applicable to this project. Indicate all optional equipment and delete non-pertinent data. Submittals for components of electrical equipment and systems shall identify the equipment for which they apply on each submittal sheet. Markings shall be boldly and clearly made with arrows or circles (highlighting is not acceptable). Drawings and data shall be submitted sufficiently in advance of the work to permit proper review, including time for necessary revisions and re-submittals. The Contractor is solely responsible for delays in the project accruing directly or indirectly from late submissions or resubmissions of submittals.

Shop and setting drawings shall present complete and accurate information relative to all working dimensions, equipment weight assembly and sectional view, all the necessary details, pertaining to coordinating the work of the Contract, lists of materials and finishes, parts lists and the description thereof, lists of spare parts and tools where such parts or tools are required, no-scale control diagrams for control wiring and control piping, and any other items of information that are required to demonstrate detail compliance with the Plans and Specifications. Each drawing shall be dated and shall show the name of the Project, Contract Number and the name of the manufacturer of the equipment covered by the drawing or drawings. The Engineer will not review any drawings that are not properly identified or that do not contain complete data on the work or that have not been checked, stamped and signed by the Contractor for compliance with the Contract Documents.

The Engineer's review of the Contractor's Shop Drawings signifies only that such drawings appear to be in substantial conformity with the Contract Drawings and Contract Documents. Such review does not indicate approval of every detail of the drawings nor of the work methods of the Contractor which are indicated thereon. Regardless of the corrections made in or made of such drawings by the Engineer, the Contractor will nevertheless be responsible for the accuracy of such drawings, for their conformity to the Plans and Specifications and for the proper fitting and construction of the work.

No work covered by shop and setting drawings shall be done until the drawings have been reviewed and found acceptable by the Engineer. No payment shall be made on any item for which submittals are not received and found acceptable by the Engineer.

SP 60-10 Electrical shop drawings. Drawings for electrical equipment shall show physical dimensions and installation details and shall include elementary and connection diagrams for each control assembly and the interconnection diagrams for all equipment. The drawings shall show clearly the coordination of control work, shall identify the components external to electrical equipment and shall define the contact arrangement and control action of the primary and final control elements.

Where standard electrical control equipment having complex internal wiring is required, such as control panels, generator transfer panels, electric or electronic instruments and similar items, the detail shop wiring diagrams for such equipment will not be required, and, if submitted, will in general not be reviewed. The submittal for each such item of equipment shall, however, include an elementary diagram of the input and output elements which require connections to external equipment, and/or a complete step by step description of the control action of the equipment being submitted. In the event that any questions arise as to the type of information to be presented on the submittal, the supplier shall direct inquiries to the RPR through the Prime Contractor in advance of the preparation of his/her submittal.

SP 60-11 Substitute items. If in the Engineer's sole judgment an item of material or equipment proposed by the Contractor does not qualify as an "or-equal" item, it will be considered a substitute item. The Contractor shall submit sufficient information as provided below to allow the Engineer to determine that the item of material or equipment proposed is essentially equivalent to that named and an acceptable substitute therefore. The procedure for review by the Engineer will include the following and as the Engineer may decide is appropriate under the circumstances. Requests for review of substitute items of material or equipment will not be accepted by the Engineer from anyone other than the Contractor. If the Contractor wishes to furnish or use a substitute item of material or equipment, the Contractor shall first make a written application through the RPR to the Engineer for acceptance thereof, certifying that the substitute will perform adequately the functions and achieve the results called for by the general design, be similar in substance to that specified and be suited to the same use as that specified. The application will state the extent, if any, to which the evaluation and acceptance of the substitute will prejudice the Contractor's achievement of completion on time, whether or not acceptance of the substitute for use in the Work will require a change in any of the Contract Documents or Contract Drawings (or in the provisions

of any other direct contract with the Owner for work on the Project) to adapt the design to the substitute and whether or not incorporation or use of the substitute in connection with the work is subject to payment of any license fee or royalty. If the substitute item requires modifications to any existing features or to any proposed work, the application shall also include details of proposed modifications necessary to accommodate the substitute item. Such details shall include scaled layouts, dimensions and other pertinent information to enable the Engineer to accurately assess the entire application. If the substitute item and proposed modifications are approved, the Contractor, at no additional cost to the Owner, shall do all work necessary to make such modifications and absorb all costs of any related changes imposed on other Contractor's. All variations of the substitute from that specified will be identified in the application and available maintenance, repair and replacement service will be indicated. The application will also contain an itemized estimate of all costs or credits that will result directly or indirectly from acceptance of such substitute, including costs of redesign and claims of other contractors affected by the resulting change, all of which will be considered by the Engineer in evaluating the substitute. The Engineer may require the Contractor to furnish additional data about the substitute. **All items deviating in any way from the specifications shall state on the transmittal cover sheet in bolded letters no small than 16 size font, "SUBSTITUTE ITEM", if this is not displayed any approval given is null and void and any costs for supplying the specified item shall be borne solely on the Contractor.**

- A. Engineer's Evaluation.** The Engineer will be the sole judge of acceptability. No substitute will be ordered, installed or utilized without the Engineer's prior written acceptance which will be evidenced by either a Change Order or an approved Shop Drawing. The Engineer will record time required by the Engineer and the Engineer's Consultants in evaluating substitutes proposed or submitted by the Contractor and in making changes in the Contract Documents or Contract Drawings (or in the provisions of any other direct contract with Owner for work on the Project) occasioned thereby. The Engineer's charges shall be at the same rates the Engineer charges for such services to the Owner.
- B. Contractor's Expense.** All data to be provided by the Contractor in support of any substitute item will be at the Contractor's expense. In order to aid the Engineer in determining the equality of an or substitute item (when compared to the item actually specified), the Contractor shall arrange for the performance of any tests requested by the Engineer. The Engineer shall determine the nature, extent, tester and degree of supervision of such tests. Certified test results shall be mailed directly to the Engineer for all tests requested. All costs of such tests, including engineering costs, shall be borne by the Contractor. The Owner may require the Contractor to furnish at the Contractor's expense a special performance guarantee or other surety with respect to any substitute. Whether or not the Engineer accepts a substitute item so proposed or submitted by the Contractor, the Contractor shall reimburse the Owner for the charges of the Engineer and the Engineer's Consultants for evaluating each such substitute item. The costs for evaluating substitute items shall be deducted from the Owner's payment to the Contractor.

SP 60-12 Submittal procedure. The following procedure has been established for the submittal and processing of shop and setting drawings, working drawings, and catalogue data. Departures from this procedure may result in delay and misunderstandings.

- A.** All information required for the Engineer's review of each particular pay item shall be sent as one submittal to the RPR with an attached submittal cover sheet. In addition, if the pay item interfaces with other pay items (as in the case of electrical equipment), then the submittals covering the interfacing pay items shall be sent at the same time.
- B.** In submitting certifications, drawings, catalog data, and similar items for review, one (1) electronic copy shall be submitted to DocExpress. Access to DocExpress will be provided by the RPR upon award of the Contract. The submittal will be reviewed by the Engineer, stamped and signed. The

submittal bearing the reviewed stamp and signature will be reloaded back to DocExpress by the Engineer. It will be the Contractor's responsibility to check DocExpress for updated submittals.

The Contractor shall provide one (1) hard copy of each of the stamped and signed submittals for inclusion in the O&M Manual prior to contract closeout.

The RPR shall be responsible for printing sufficient copies of each submittal for their own records. The Contractor shall be responsible for printing sufficient copies of each submittal for their own records and distributing to each of the other prime or subcontractors whose work is to be correlated with such submittals.

C. Submittals will be stamped by the Engineer as follows:

1. "Approved", if no change or rejection is made.
2. "Approved as Noted", if minor changes or additions are made, but re-submittal is not considered necessary. All copies will bear the corrective marks.
3. "Revise and Resubmit", if the changes requested are extensive. In this case, re-submittal after correction is necessary and the same number of copies shall be included in the re-submittal as in the first submittal.
4. "Rejected", if it is considered that the data submitted cannot with reasonable revision meet the requirements of the Plans and Specifications.
5. "Submit Specified Item", if the data submitted is not clear, complete, or for other reasons cannot be examined by the Engineer to establish compliance with the Plans and Specifications.

D. Unless otherwise approved in specific cases, all submittals must be transmitted by the Prime Contractor, not by the Subcontractors or vendors.

Any changes in re-submittals, other than those indicated as requested, must be specifically brought to the attention of the RPR. Changes or additions shall not be made in, or to, any fabricated item, part or material without having a re-review.

Submittal Cover Sheet *

Date:	_____	
From:	_____	Attn: _____
Company:	_____	Company: _____
Phone #:	_____	Phone #: _____
Email:	_____	Email: _____
Project Name:	_____	
Project No.:	_____	
Reference:	Tech. Spec.: _____	Pay Item: _____
	Other: _____	
Description:	_____ _____	
Supplier:	_____	
Manufacturer:	_____	
Item Type:	_____ Catalog Data _____ Manufacturer Certification _____ Shop Drawings _____ Samples _____ Other: _____	

Contractor's Review: ____ Reviewed for general compliance of specifications. ____ This submittal is a substitute to the specified product. ____ For Architects / Engineers Approval This is our _____ submittal for this item. We are submitting _____ copies. Submitted by: _____ Date: _____	Engineers' Review: <input type="checkbox"/> (A) Approved <input type="checkbox"/> (A/N) Approved As Noted <input type="checkbox"/> (RR) Revise and Resubmit <input type="checkbox"/> (REJ) Rejected <input type="checkbox"/> (SUB) Submit Specified Item <small>Checking is only for general compliance with the design concept of the project and general compliance with the information given in the contract documents. Any action shown is subject to the requirements of the plans and specifications. Contractor is responsible for dimensions which shall be confirmed and correlated at the jobsite; fabrication processes and techniques of construction; coordination of his work with that of all other trades; and the satisfactory performance of his work.</small> Reviewed by: _____ Date: _____
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* Note: Provide one cover sheet for each copy of the submittal.

Amendments to Special Provisions Part II.I, Section 70.

SP 70-01. The following shall be added to the second sentence of the first paragraph after “and shall protect and indemnify the Owner”:

“, the Engineer, the RPR ”

SP 70-03. The following shall be added to the second sentence of the first paragraph after “and the surety shall indemnify and hold harmless the Owner,”:

“ the Engineer, the RPR, ”

SP 70-10. The following shall be added after the third paragraph:

“The Contractor shall indemnify the Owner for any and all costs for the repair or replacement of the Owner’s property including, but not limited to, buildings and roads, which arise from or in any manner grow out of any act or neglect on or about the Project site by the Contractor and anyone for whom the Contractor is legally liable. ”

SP 70-11. The following shall be added to the first sentence of the first paragraph after “The Contractor shall indemnify”:

“, defend ”

SP 70-11. The following shall be added to the first sentence of the first paragraph after “hold harmless the Engineer/RPR and the Owner and their”:

“respective representatives, directors, ”

SP 70-11. The following shall be added to the first sentence of the first paragraph after “employees from all suits, actions,”:

“damages, costs, expenses ”

SP 70-11. The following shall be added to the first sentence of the first paragraph after “claims, of any character, ”:

“(including attorney’s fees), and liability (including statutory liability) ”

SP 70-11. The following shall be added to the first sentence of the first paragraph after “or because of any act or omission, neglect, or misconduct ”:

“or arising out of or related to any negligence of the Contractor or anyone for whom the Contractor is legally liable in performing or safeguarding the work; or through use of unacceptable materials in constructing the work; or because of any and all environmental impairment; or because of any act or omission, neglect, or misconduct of said Contractor or anyone for whom the Contractor is legally liable ”

SP 70-11. The following shall be added after the first paragraph:

“As a material part of the consideration to be rendered by the Owner, the Contractor hereby waives all claims against the Owner for damages to the goods, wares, and merchandise in, upon, or about the Project, and the Contractor will hold the Owner exempt and harmless from any damage and injury to any

such person or to the goods, wares, or merchandise of any such person, arising from the use of the Project site by the Contractor or from failure of the Contractor to keep the Project site in good condition and repair as provided in this Section.”

SP 70-22 Federal Contract Provisions for procurement and contracting under AIP.

The Contractor is required to insert these contract provision in each lower tier contract (e.g. subcontract or sub-agreement).

The Contractor is required (including all subcontractors) to incorporate these contract provisions by reference for work done under any purchase orders, rental agreements and other agreements for supplies or services.

The Contractor shall be responsible for compliance with these contract provisions by any subcontractor, lower-tier subcontractor or service provider.

ACCESS TO RECORDS AND REPORTS

SOURCE: 2 CFR § 200.333
2 CFR § 200.336
FAA Order 5100.38

ACCESS TO RECORDS AND REPORTS

The Contractor must maintain an acceptable cost accounting system. The Contractor agrees to provide the Owner, the Federal Aviation Administration and the Comptroller General of the United States or any of their duly authorized representatives access to any books, documents, papers and records of the Contractor which are directly pertinent to the specific contract for the purpose of making audit, examination, excerpts and transcriptions. The Contractor agrees to maintain all books, records and reports required under this contract for a period of not less than three years after final payment is made and all pending matters are closed.

* * * * *

AFFIRMATIVE ACTION REQUIREMENT

SOURCE: 41 CFR Part 60-4
Executive Order 11246

AFFIRMATIVE ACTION REQUIREMENT

**NOTICE OF REQUIREMENT FOR AFFIRMATIVE ACTION TO
ENSURE EQUAL EMPLOYMENT OPPORTUNITY**

1. The Offeror’s or Bidder’s attention is called to the “Equal Opportunity Clause” and the “Standard Federal Equal Employment Opportunity Construction Contract Specifications” set forth herein.
2. The goals and timetables for minority and female participation, expressed in percentage terms for the Contractor’s aggregate workforce in each trade on all construction work in the covered area, are as follows:

Timetables

Goals for minority participation for each trade:	14.5%
Goals for female participation in each trade:	6.9%

These goals are applicable to all of the Contractor's construction work (whether or not it is Federal or federally assisted) performed in the covered area. If the Contractor performs construction work in a geographical area located outside of the covered area, it shall apply the goals established for such geographical area where the work is actually performed. With regard to this second area, the Contractor also is subject to the goals for both its federally involved and nonfederally involved construction.

The Contractor's compliance with the Executive Order and the regulations in 41 CFR Part 60-4 shall be based on its implementation of the Equal Opportunity Clause, specific affirmative action obligations required by the specifications set forth in 41 CFR 60-4.3(a) and its efforts to meet the goals. The hours of minority and female employment and training must be substantially uniform throughout the length of the contract, and in each trade, and the Contractor shall make a good faith effort to employ minorities and women evenly on each of its projects. The transfer of minority or female employees or trainees from Contractor to Contractor or from project to project for the sole purpose of meeting the Contractor's goals shall be a violation of the contract, the Executive Order and the regulations in 41 CFR Part 60-4. Compliance with the goals will be measured against the total work hours performed.

3. The Contractor shall provide written notification to the Director of the Office of Federal Contract Compliance Programs (OFCCP) within 10 working days of award of any construction subcontract in excess of \$10,000 at any tier for construction work under the contract resulting from this solicitation. The notification shall list the name, address, and telephone number of the subcontractor; employer identification number of the subcontractor; estimated dollar amount of the subcontract; estimated starting and completion dates of the subcontract; and the geographical area in which the subcontract is to be performed.

4. As used in this notice and in the contract resulting from this solicitation, the "covered area" is Cheswold, Kent County, Delaware.

* * * * *

BREACH OF CONTRACT TERMS

SOURCE: 2 CFR § 200 Appendix II(A)

BREACH OF CONTRACT TERMS

Any violation or breach of terms of this contract on the part of the Contractor or its subcontractors may result in the suspension or termination of this contract or such other action that may be necessary to enforce the rights of the parties of this agreement.

Owner will provide Contractor written notice that describes the nature of the breach and corrective actions the Contractor must undertake in order to avoid termination of the contract. Owner reserves the right to withhold payments to Contractor until such time the Contractor corrects the breach or the Owner elects to terminate the contract. The Owner's notice will identify a specific date by which the Contractor must correct the breach. Owner may proceed with termination of the contract if the Contractor fails to correct the breach by the deadline indicated in the Owner's notice.

The duties and obligations imposed by the Contract Documents and the rights and remedies available thereunder are in addition to, and not a limitation of, any duties, obligations, rights and remedies otherwise imposed or available by law.

* * * * *

BUY AMERICAN PREFERENCE

SOURCE: Title 49 USC § 50101
Executive Order 14005, *Ensuring the Future is Made in All of America by All of America's Workers*
Bipartisan Infrastructure Law (Pub. L. No. 117-58), Build America, Buy America (BABA)

BUY AMERICAN PREFERENCE

The Contractor certifies that its bid/offer is in compliance with 49 USC § 50101, BABA and other related Made in America Laws, U.S. statutes, guidance, and FAA policies, which provide that Federal funds may not be obligated unless all iron, steel and manufactured goods used in AIP funded projects are produced in the United States, unless the Federal Aviation Administration has issued a waiver for the product; the product is listed as an Excepted Article, Material Or Supply in Federal Acquisition Regulation subpart 25.108; or is included in the FAA Nationwide Buy American Waivers Issued list.

The bidder or offeror must complete and submit the certification of compliance with FAA's Buy American Preference, BABA and Made in America laws included herein with their bid or offer. The Airport Sponsor/Owner will reject as nonresponsive any bid or offer that does not include a completed certification of compliance with FAA's Buy American Preference and BABA.

The bidder or offeror certifies that all constructions materials, defined to mean an article, material, or supply other than an item of primarily iron or steel; a manufactured product; cement and cementitious materials; aggregates such as stone, sand, or gravel; or aggregate binding agents or additives that are or consist primarily of: non-ferrous metals; plastic and polymer-based products (including polyvinylchloride, composite building materials, and polymers used in fiber optic cables); glass (including optic glass); lumber; or drywall used in the project are manufactured in the U.S.

* * * * *

CIVIL RIGHTS - GENERAL

SOURCE: 49 USC § 47123

GENERAL CIVIL RIGHTS PROVISIONS

In all its activities within the scope of its airport program, the Contractor agrees to comply with pertinent statutes, Executive Orders, and such rules as identified in Title VI List of Pertinent Nondiscrimination Acts and Authorities to ensure that no person shall, on the grounds of race, color, national origin (including limited English proficiency), creed, sex (including sexual orientation and gender identity), age, or disability be excluded from participating in any activity conducted with or benefiting from Federal assistance.

This provision is in addition to that required by Title VI of the Civil Rights Act of 1964.

The above provision binds the Contractor and subcontractors from the bid solicitation period through the completion of the contract.

* * * * *

CIVIL RIGHTS - TITLE VI ASSURANCES

SOURCE: 49 USC § 47123
FAA Order 1400.11

TITLE VI SOLICITATION NOTICE

Title VI Solicitation Notice:

The Sponsor, in accordance with the provisions of Title VI of the Civil Rights Act of 1964 (78 Stat. 252, 42 USC §§ 2000d to 2000d-4) and the Regulations, hereby notifies all bidders or offerors that it will affirmatively ensure that for any contract entered into pursuant to this advertisement, select businesses, or disadvantaged business enterprises will be afforded full and fair opportunity to submit bids in response to this invitation and no businesses will be discriminated against on the grounds of race, color, national origin (including limited English proficiency), creed, sex (including sexual orientation and gender identity), age, or disability in consideration for an award.

TITLE VI LIST OF PERTINENT NON DISCRIMINATION ACTS AND AUTHORITIES

During the performance of this contract, the Contractor, for itself, its assignees, and successors in interest (hereinafter referred to as the “Contractor”) agrees to comply with the following non-discrimination statutes and authorities; including but not limited to:

- Title VI of the Civil Rights Act of 1964 (42 USC § 2000d et seq., 78 stat. 252) (prohibits discrimination on the basis of race, color, national origin);
- 49 CFR part 21 (Non-discrimination in Federally-Assisted programs of the Department of Transportation—Effectuation of Title VI of the Civil Rights Act of 1964);
- The Uniform Relocation Assistance and Real Property Acquisition Policies Act of 1970, (42 USC § 4601) (prohibits unfair treatment of persons displaced or whose property has been acquired because of Federal or Federal-aid programs and projects);
- Section 504 of the Rehabilitation Act of 1973 (29 USC § 794 et seq.), as amended (prohibits discrimination on the basis of disability); and 49 CFR part 27 (Nondiscrimination on the Basis of Disability in Programs or Activities Receiving Federal Financial Assistance);
- The Age Discrimination Act of 1975, as amended (42 USC § 6101 et seq.) (prohibits discrimination on the basis of age);
- Airport and Airway Improvement Act of 1982 (49 USC § 47123), as amended (prohibits discrimination based on race, creed, color, national origin, or sex);
- The Civil Rights Restoration Act of 1987 (PL 100-259) (broadened the scope, coverage and applicability of Title VI of the Civil Rights Act of 1964, the Age Discrimination Act of 1975 and Section 504 of the Rehabilitation Act of 1973, by expanding the definition of the terms “programs or activities” to include all of the programs or activities of the Federal-aid recipients, sub-recipients and contractors, whether such programs or activities are Federally funded or not);
- Titles II and III of the Americans with Disabilities Act of 1990 (42 USC § 12101, et seq) (prohibit discrimination on the basis of disability in the operation of public entities, public and private transportation systems, places of public accommodation, and certain testing entities) as implemented by U.S. Department of Transportation regulations at 49 CFR parts 37 and 38;
- The Federal Aviation Administration’s Nondiscrimination statute (49 USC § 47123) (prohibits discrimination on the basis of race, color, national origin, and sex);
- Executive Order 12898, Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations (ensures nondiscrimination against minority populations by discouraging programs, policies, and activities with disproportionately high and adverse human health or environmental effects on minority and low-income populations);
- Executive Order 13166, Improving Access to Services for Persons with Limited English Proficiency, and resulting agency guidance, national origin discrimination includes discrimination because of limited English proficiency (LEP). To ensure compliance with Title VI, you must take reasonable steps to ensure that LEP persons have meaningful access to your programs [70 Fed. Reg. 74087 (2005)];

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- Title IX of the Education Amendments of 1972, as amended, which prohibits you from discriminating because of sex in education programs or activities (20 USC § 1681, et seq).

TITLE VI COMPLIANCE WITH NONDISCRIMINATION REQUIREMENTS

During the performance of this contract, the contractor, for itself, its assignees, and successors in interest (hereinafter referred to as the “contractor”) agrees as follows:

1. **Compliance with Regulations:** The contractor (hereinafter includes consultants) will comply with the Title VI List of Pertinent Nondiscrimination Acts And Authorities, as they may be amended from time to time, which are herein incorporated by reference and made a part of this contract.
2. **Non-discrimination:** The contractor, with regard to the work performed by it during the contract, will not discriminate on the grounds of race, color, or national origin in the selection and retention of subcontractors, including procurements of materials and leases of equipment. The contractor will not participate directly or indirectly in the discrimination prohibited by the Nondiscrimination Acts and Authorities, including employment practices when the contract covers any activity, project, or program set forth in Appendix B of 49 CFR part 21.
3. **Solicitations for Subcontracts, Including Procurements of Materials and Equipment:** In all solicitations, either by competitive bidding, or negotiation made by the contractor for work to be performed under a subcontract, including procurements of materials, or leases of equipment, each potential subcontractor or supplier will be notified by the contractor of the contractor’s obligations under this contract and the Nondiscrimination Acts And Authorities on the grounds of race, color, or national origin.
4. **Information and Reports:** The contractor will provide all information and reports required by the Acts, the Regulations, and directives issued pursuant thereto and will permit access to its books, records, accounts, other sources of information, and its facilities as may be determined by the sponsor or the Federal Aviation Administration to be pertinent to ascertain compliance with such Nondiscrimination Acts And Authorities and instructions. Where any information required of a contractor is in the exclusive possession of another who fails or refuses to furnish the information, the contractor will so certify to the sponsor or the Federal Aviation Administration, as appropriate, and will set forth what efforts it has made to obtain the information.
5. **Sanctions for Noncompliance:** In the event of a contractor’s noncompliance with the Non-discrimination provisions of this contract, the sponsor will impose such contract sanctions as it or the Federal Aviation Administration may determine to be appropriate, including, but not limited to:
 - a. Withholding payments to the contractor under the contract until the contractor complies; and/or
 - b. Cancelling, terminating, or suspending a contract, in whole or in part.
6. **Incorporation of Provisions:** The contractor will include the provisions of paragraphs one through six in every subcontract, including procurements of materials and leases of equipment, unless exempt by the Acts, the Regulations and directives issued pursuant thereto. The contractor will take action with respect to any subcontract or procurement as the sponsor or the Federal Aviation Administration may direct as a means of enforcing such provisions including sanctions for noncompliance. Provided, that if the contractor becomes involved in, or is threatened with litigation by a subcontractor, or supplier because of such direction, the contractor may request the sponsor to enter into any litigation to protect the interests of the sponsor. In addition, the contractor may request the United States to enter into the litigation to protect the interests of the United States.

* * * * *

CLEAN AIR AND WATER POLLUTION CONTROL

SOURCE: 2 CFR § 200, Appendix II(G)
42 USC § 7401, et seq
33 USC § 1251, et seq

CLEAN AIR AND WATER POLLUTION CONTROL

Contractor agrees to comply with all applicable standards, orders, and regulations issued pursuant to the Clean Air Act (42 U.S.C. § 740-7671q) and the Federal Water Pollution Control Act as amended (33 U.S.C. § 1251-1387). The Contractor agrees to report any violation to the Owner immediately upon discovery. The Owner assumes responsibility for notifying the Environmental Protection Agency (EPA) and the Federal Aviation Administration.

Contractor must include this requirement in all subcontracts that exceeds \$150,000.

* * * * *

CONTRACT WORKHOURS AND SAFETY STANDARDS ACT

SOURCE: 2 CFR § 200, Appendix II(E)
2 CFR § 5.5(b)
40 USC § 3702
40 USC § 3704

CONTRACT WORKHOURS AND SAFETY STANDARDS ACT REQUIREMENTS

1. Overtime Requirements.

No contractor or subcontractor contracting for any part of the contract work which may require or involve the employment of laborers or mechanics shall require or permit any such laborer or mechanic, including watchmen and guards, in any workweek in which he or she is employed on such work to work in excess of forty hours in such workweek unless such laborer or mechanic receives compensation at a rate not less than one and one-half times the basic rate of pay for all hours worked in excess of forty hours in such workweek.

2. Violation; Liability for Unpaid Wages; Liquidated Damages.

In the event of any violation of the clause set forth in paragraph (1) of this clause, the contractor and any subcontractor responsible therefor shall be liable for the unpaid wages. In addition, such contractor and subcontractor shall be liable to the United States (in the case of work done under contract for the District of Columbia or a territory, to such District or to such territory), for liquidated damages. Such liquidated damages shall be computed with respect to each individual laborer or mechanic, including watchmen and guards, employed in violation of the clause set forth in paragraph (1) of this clause, in the sum of \$10 for each calendar day on which such individual was required or permitted to work in excess of the standard workweek of forty hours without payment of the overtime wages required by the clause set forth in paragraph (1) of this clause.

3. Withholding for Unpaid Wages and Liquidated Damages.

The Federal Aviation Administration (FAA) or the Owner shall upon its own action or upon written request of an authorized representative of the Department of Labor withhold or cause to be withheld, from any moneys payable on account of work performed by the contractor or subcontractor under any such contract or any other Federal contract with the same prime contractor, or any other Federally-assisted contract subject to the Contract Work Hours and Safety Standards Act, which is held by the same prime contractor, such sums as may be determined to be necessary to satisfy any liabilities of such contractor or subcontractor for unpaid wages and liquidated damages as provided in the clause set forth in paragraph 2 of this clause.

4. Subcontractors.

The contractor or subcontractor shall insert in any subcontracts the clauses set forth in paragraphs (1) through (4) and also a clause requiring the subcontractor to include these clauses in any lower tier subcontracts. The prime contractor shall be responsible for compliance by any subcontractor or lower tier subcontractor with the clauses set forth in paragraphs (1) through (4) of this clause.

* * * * *

COPELAND “ANTI-KICKBACK” ACT

SOURCE: 2 CFR § 200, Appendix II(D)
29 CFR Parts 3 & 5

COPELAND “ANTI-KICKBACK” ACT

Contractor must comply with the requirements of the Copeland “Anti-Kickback” Act (18 U.S.C. 874 and 40 U.S.C. 3145), as supplemented by Department of Labor regulation 29 CFR part 3. Contractor and subcontractors are prohibited from inducing, by any means, any person employed on the project to give up any part of the compensation to which the employee is entitled. The Contractor and each Subcontractor must submit to the Owner, a weekly statement on the wages paid to each employee performing on covered work during the prior week. Owner must report any violations of the Act to the Federal Aviation Administration.

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DAVIS-BACON REQUIREMENTS

SOURCE: 2 CFR § 200, Appendix II(D)
29 CFR Part 5
49 USC § 47112(b)
40 USC §§ 3141-3144, 3146, and 3147

DAVIS-BACON REQUIREMENTS

1. Minimum Wages

(i) All laborers and mechanics employed or working upon the site of the work will be paid unconditionally and not less often than once a week, and without subsequent deduction or rebate on any account (except such payroll deductions as are permitted by the Secretary of Labor under the Copeland Act (29 CFR Part 3)), the full amount of wages and bona fide fringe benefits (or cash equivalent thereof) due at time of payment computed at rates not less than those contained in the wage determination of the Secretary of Labor which is attached hereto and made a part hereof, regardless of any contractual relationship which may be alleged to exist between the contractor and such laborers and mechanics.

Contributions made or costs reasonably anticipated for bona fide fringe benefits under section 1(b)(2) of the Davis-Bacon Act on behalf of laborers or mechanics are considered wages paid to such laborers or mechanics, subject to the provisions of paragraph (1)(iv) of this section; also, regular contributions made or costs incurred for more than a weekly period (but not less often than quarterly) under plans, funds, or programs which cover the particular weekly period, are deemed to be constructively made or incurred during such weekly period. Such laborers and mechanics shall be paid the appropriate wage rate and fringe benefits on the wage determination for the classification of work actually performed, without regard to skill, except as provided in 29 CFR Part 5.5(a)(4). Laborers or mechanics performing work in more than one classification may be compensated at the rate specified for each classification for the time actually worked therein: *Provided*, that the employer's payroll records accurately set forth the time spent in each classification in which work is performed. The wage determination (including any additional classification and wage rates conformed under (1)(ii) of this section) and the Davis-Bacon poster (WH-1321) shall be posted at all times by the contractor and its subcontractors at the site of the work in a prominent and accessible place where it can easily be seen by the workers.

(ii)(A) The contracting officer shall require that any class of laborers or mechanics, including helpers, which is not listed in the wage determination and which is to be employed under the contract shall be classified in conformance with the wage determination. The contracting officer shall approve an additional classification and wage rate and fringe benefits therefore only when the following criteria have been met:

- (1) The work to be performed by the classification requested is not performed by a classification in the wage determination; and
- (2) The classification is utilized in the area by the construction industry; and
- (3) The proposed wage rate, including any bona fide fringe benefits, bears a reasonable relationship to the wage rates contained in the wage determination.

(B) If the contractor and the laborers and mechanics to be employed in the classification (if known), or their representatives, and the contracting officer agree on the classification and wage rate (including the amount designated for fringe benefits where appropriate), a report of the action taken shall be sent by the contracting officer to the Administrator of the Wage and Hour Division, Employment Standards Administration, U.S. Department of Labor, Washington, D.C. 20210. The Administrator, or an authorized representative, will approve, modify, or disapprove every additional classification action within 30 days of receipt and so advise the contracting officer or will notify the contracting officer within the 30-day period that additional time is necessary.

(C) In the event the contractor, the laborers or mechanics to be employed in the classification or their representatives, and the contracting officer do not agree on the proposed classification and wage rate (including the amount designated for fringe benefits where appropriate), the contracting officer shall refer the questions, including the views of all interested parties and the recommendation of the contracting officer, to the Administrator for determination. The Administrator, or an authorized representative, will issue a determination within 30 days of receipt and so advise the contracting officer or will notify the contracting officer within the 30-day period that additional time is necessary.

(D) The wage rate (including fringe benefits where appropriate) determined pursuant to subparagraphs (1)(ii) (B) or (C) of this paragraph, shall be paid to all workers performing work in the classification under this contract from the first day on which work is performed in the classification.

(iii) Whenever the minimum wage rate prescribed in the contract for a class of laborers or mechanics includes a fringe benefit which is not expressed as an hourly rate, the contractor shall either pay the benefit

as stated in the wage determination or shall pay another bona fide fringe benefit or an hourly cash equivalent thereof.

(iv) If the contractor does not make payments to a trustee or other third person, the contractor may consider as part of the wages of any laborer or mechanic the amount of any costs reasonably anticipated in providing bona fide fringe benefits under a plan or program, *Provided*, That the Secretary of Labor has found, upon the written request of the contractor, that the applicable standards of the Davis-Bacon Act have been met. The Secretary of Labor may require the contractor to set aside in a separate account assets for the meeting of obligations under the plan or program.

2. Withholding.

The Federal Aviation Administration or the sponsor shall upon its own action or upon written request of an authorized representative of the Department of Labor withhold or cause to be withheld from the contractor under this contract or any other Federal contract with the same prime contractor, or any other Federally-assisted contract subject to Davis-Bacon prevailing wage requirements, which is held by the same prime contractor, so much of the accrued payments or advances as may be considered necessary to pay laborers and mechanics, including apprentices, trainees, and helpers, employed by the contractor or any subcontractor the full amount of wages required by the contract. In the event of failure to pay any laborer or mechanic, including any apprentice, trainee, or helper, employed or working on the site of work, all or part of the wages required by the contract, the Federal Aviation Administration may, after written notice to the contractor, sponsor, applicant, or owner, take such action as may be necessary to cause the suspension of any further payment, advance, or guarantee of funds until such violations have ceased.

3. Payrolls and basic records.

(i) Payrolls and basic records relating thereto shall be maintained by the contractor during the course of the work and preserved for a period of three years thereafter for all laborers and mechanics working at the site of the work. Such records shall contain the name, address, and social security number of each such worker, his or her correct classification, hourly rates of wages paid (including rates of contributions or costs anticipated for bona fide fringe benefits or cash equivalents thereof of the types described in 1(b)(2)(B) of the Davis-Bacon Act), daily and weekly number of hours worked, deductions made and actual wages paid. Whenever the Secretary of Labor has found under 29 CFR 5.5(a)(1)(iv) that the wages of any laborer or mechanic include the amount of any costs reasonably anticipated in providing benefits under a plan or program described in section 1(b)(2)(B) of the Davis-Bacon Act, the contractor shall maintain records which show that the commitment to provide such benefits is enforceable, that the plan or program is financially responsible, and that the plan or program has been communicated in writing to the laborers or mechanics affected, and records which show the costs anticipated or the actual costs incurred in providing such benefits. Contractors employing apprentices or trainees under approved programs shall maintain written evidence of the registration of apprenticeship programs and certification of trainee programs, the registration of the apprentices and trainees, and the ratios and wage rates prescribed in the applicable programs.

(ii)(A) The contractor shall submit weekly for each week in which any contract work is performed a copy of all payrolls to the Federal Aviation Administration if the agency is a party to the contract, but if the agency is not such a party, the contractor will submit the payrolls to the applicant, sponsor, or owner, as the case may be, for transmission to the Federal Aviation Administration. The payrolls submitted shall set out accurately and completely all of the information required to be maintained under 29 CFR 5.5(a)(3)(i), except that full social security numbers and home addresses shall not be included on weekly transmittals. Instead the payrolls shall only need to include an individually identifying number for each employee (*e.g.*, the last four digits of the employee's social security number). The required weekly payroll information may be submitted in any form desired. Optional Form WH-347 is available for this purpose from the Wage and

Hour Division Web site at <https://www.dol.gov/agencies/whd/government-contracts/construction/payroll-certification> or its successor site. The prime contractor is responsible for the submission of copies of payrolls by all subcontractors. Contractors and subcontractors shall maintain the full social security number and current address of each covered worker, and shall provide them upon request to the Federal Aviation Administration if the agency is a party to the contract, but if the agency is not such a party, the contractor will submit them to the applicant, sponsor, or owner, as the case may be, for transmission to the Federal Aviation Administration, the contractor, or the Wage and Hour Division of the Department of Labor for purposes of an investigation or audit of compliance with prevailing wage requirements. It is not a violation of this section for a prime contractor to require a subcontractor to provide addresses and social security numbers to the prime contractor for its own records, without weekly submission to the sponsoring government agency (or the applicant, sponsor, or owner).

(B) Each payroll submitted shall be accompanied by a “Statement of Compliance” signed by the contractor or subcontractor or his or her agent who pays or supervises the payment of the persons employed under the contract and shall certify the following:

(1) That the payroll for the payroll period contains the information required to be provided under 29 CFR § 5.5(a)(3)(ii), the appropriate information is being maintained under 29 CFR § 5.5 (a)(3)(i) and that such information is correct and complete;

(2) That each laborer and mechanic (including each helper, apprentice and trainee) employed on the contract during the payroll period has been paid the full weekly wages earned, without rebate, either directly or indirectly, and that no deductions have been made either directly or indirectly from the full wages earned, other than permissible deductions as set forth in Regulations 29 CFR Part 3;

(3) That each laborer or mechanic has been paid not less than the applicable wage rates and fringe benefits or cash equivalents for the classification of work performed, as specified in the applicable wage determination incorporated into the contract.

(C) The weekly submission of a properly executed certification set forth on the reverse side of Optional Form WH-347 shall satisfy the requirement for submission of the “Statement of Compliance” required by paragraph (3)(ii)(B) of this section.

(D) The falsification of any of the above certifications may subject the contractor or subcontractor to civil or criminal prosecution under Section 1001 of Title 18 and Section 231 of Title 31 of the United States Code.

(iii) The contractor or subcontractor shall make the records required under paragraph (3)(i) of this section available for inspection, copying or transcription by authorized representatives of the sponsor, the Federal Aviation Administration or the Department of Labor, and shall permit such representatives to interview employees during working hours on the job. If the contractor or subcontractor fails to submit the required records or to make them available, the Federal agency may, after written notice to the contractor, sponsor, applicant or owner, take such action as may be necessary to cause the suspension of any further payment, advance, or guarantee of funds. Furthermore, failure to submit the required records upon request or to make such records available may be grounds for debarment action pursuant to 29 CFR 5.12.

4. Apprentices and Trainees.

(i) Apprentices. Apprentices will be permitted to work at less than the predetermined rate for the work they performed when they are employed pursuant to and individually registered in a bona fide apprenticeship program registered with the U.S. Department of Labor, Employment and Training Administration, Bureau of Apprenticeship and Training, or with a State Apprenticeship Agency recognized by the Bureau, or if a

person is employed in his or her first 90 days of probationary employment as an apprentice in such an apprenticeship program, who is not individually registered in the program, but who has been certified by the Bureau of Apprenticeship and Training or a State Apprenticeship Agency (where appropriate) to be eligible for probationary employment as an apprentice. The allowable ratio of apprentices to journeymen on the job site in any craft classification shall not be greater than the ratio permitted to the contractor as to the entire work force under the registered program. Any worker listed on a payroll at an apprentice wage rate, who is not registered or otherwise employed as stated above, shall be paid not less than the applicable wage rate on the wage determination for the classification of work actually performed. In addition, any apprentice performing work on the job site in excess of the ratio permitted under the registered program shall be paid not less than the applicable wage rate on the wage determination for the work actually performed. Where a contractor is performing construction on a project in a locality other than that in which its program is registered, the ratios and wage rates (expressed in percentages of the journeyman's hourly rate) specified in the contractor's or subcontractor's registered program shall be observed. Every apprentice must be paid at not less than the rate specified in the registered program for the apprentice's level of progress, expressed as a percentage of the journeymen hourly rate specified in the applicable wage determination. Apprentices shall be paid fringe benefits in accordance with the provisions of the apprenticeship program. If the apprenticeship program does not specify fringe benefits, apprentices must be paid the full amount of fringe benefits listed on the wage determination for the applicable classification. If the Administrator determines that a different practice prevails for the applicable apprentice classification, fringes shall be paid in accordance with that determination. In the event the Bureau of Apprenticeship and Training, or a State Apprenticeship Agency recognized by the Bureau, withdraws approval of an apprenticeship program, the contractor will no longer be permitted to utilize apprentices at less than the applicable predetermined rate for the work performed until an acceptable program is approved.

(ii) Trainees. Except as provided in 29 CFR 5.16, trainees will not be permitted to work at less than the predetermined rate for the work performed unless they are employed pursuant to and individually registered in a program which has received prior approval, evidenced by formal certification by the U.S. Department of Labor, Employment and Training Administration. The ratio of trainees to journeymen on the job site shall not be greater than permitted under the plan approved by the Employment and Training Administration. Every trainee must be paid at not less than the rate specified in the approved program for the trainee's level of progress, expressed as a percentage of the journeyman hourly rate specified in the applicable wage determination. Trainees shall be paid fringe benefits in accordance with the provisions of the trainee program. If the trainee program does not mention fringe benefits, trainees shall be paid the full amount of fringe benefits listed on the wage determination unless the Administrator of the Wage and Hour Division determines that there is an apprenticeship program associated with the corresponding journeyman wage rate on the wage determination which provides for less than full fringe benefits for apprentices. Any employee listed on the payroll at a trainee rate that is not registered and participating in a training plan approved by the Employment and Training Administration shall be paid not less than the applicable wage rate on the wage determination for the classification of work actually performed. In addition, any trainee performing work on the job site in excess of the ratio permitted under the registered program shall be paid not less than the applicable wage rate on the wage determination for the work actually performed. In the event the Employment and Training Administration withdraws approval of a training program, the contractor will no longer be permitted to utilize trainees at less than the applicable predetermined rate for the work performed until an acceptable program is approved.

(iii) Equal Employment Opportunity. The utilization of apprentices, trainees and journeymen under this part shall be in conformity with the equal employment opportunity requirements of Executive Order 11246, as amended, and 29 CFR Part 30.

5. Compliance with Copeland Act Requirements.

The contractor shall comply with the requirements of 29 CFR Part 3, which are incorporated by reference in this contract.

6. Subcontracts.

The contractor or subcontractor shall insert in any subcontracts the clauses contained in 29 CFR Part 5.5(a)(1) through (10) and such other clauses as the Federal Aviation Administration may by appropriate instructions require, and also a clause requiring the subcontractors to include these clauses in any lower tier subcontracts. The prime contractor shall be responsible for the compliance by any subcontractor or lower tier subcontractor with all the contract clauses in 29 CFR Part 5.5.

7. Contract Termination: Debarment.

A breach of the contract clauses in paragraph 1 through 10 of this section may be grounds for termination of the contract, and for debarment as a contractor and a subcontractor as provided in 29 CFR 5.12.

8. Compliance with Davis-Bacon and Related Act Requirements.

All rulings and interpretations of the Davis-Bacon and Related Acts contained in 29 CFR Parts 1, 3, and 5 are herein incorporated by reference in this contract.

9. Disputes Concerning Labor Standards.

Disputes arising out of the labor standards provisions of this contract shall not be subject to the general disputes clause of this contract. Such disputes shall be resolved in accordance with the procedures of the Department of Labor set forth in 29 CFR Parts 5, 6 and 7. Disputes within the meaning of this clause include disputes between the contractor (or any of its subcontractors) and the contracting agency, the U.S. Department of Labor, or the employees or their representatives.

10. Certification of Eligibility.

(i) By entering into this contract, the contractor certifies that neither it (nor he or she) nor any person or firm who has an interest in the contractor's firm is a person or firm ineligible to be awarded Government contracts by virtue of section 3(a) of the Davis-Bacon Act or 29 CFR 5.12(a)(1).

(ii) No part of this contract shall be subcontracted to any person or firm ineligible for award of a Government contract by virtue of section 3(a) of the Davis-Bacon Act or 29 CFR 5.12(a)(1).

(iii) The penalty for making false statements is prescribed in the U.S. Criminal Code, 18 U.S.C. 1001.

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DEBARMENT AND SUSPENSION

SOURCE: 2 CFR Part 180 (Subpart B)
2 CFR Part 200, Appendix II(H)
2 CFR Part 1200
DOT Order 4200.5
Executive Orders 12549 and 12689

CERTIFICATION OF OFFEROR/BIDDER REGARDING DEBARMENT

By submitting a bid/proposal under this solicitation, the bidder or offeror certifies that neither it nor its principals are presently debarred or suspended by any Federal department or agency from participation in this transaction.

CERTIFICATION OF LOWER TIER CONTRACTORS REGARDING DEBARMENT

The successful bidder, by administering each lower tier subcontract that exceeds \$25,000 as a “covered transaction”, must confirm each lower tier participant of a “covered transaction” under the project is not presently debarred or otherwise disqualified from participation in this federally-assisted project. The successful bidder will accomplish this by:

1. Checking the System for Award Management at website: <http://www.sam.gov>.
2. Collecting a certification statement similar to the Certification of Offeror /Bidder Regarding Debarment, above.
3. Inserting a clause or condition in the covered transaction with the lower tier contract.

If the Federal Aviation Administration later determines that a lower tier participant failed to disclose to a higher tier participant that it was excluded or disqualified at the time it entered the covered transaction, the FAA may pursue any available remedies, including suspension and debarment of the non-compliant participant.

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DISADVANTAGED BUSINESS ENTERPRISE
SOURCE: 49 CFR part 26

DISADVANTAGED BUSINESS ENTERPRISE

Solicitation Language (Race/Gender Neutral Means)

The requirements of 49 CFR part 26 apply to this contract. It is the policy of the Delaware River and Bay Authority to practice nondiscrimination based on race, color, sex, or national origin in the award or performance of this contract. The Owner encourages participation by all firms qualifying under this solicitation regardless of business size or ownership.

Contract Assurance (49 CFR § 26.13; mandatory text provided) –

The Contractor, subrecipient or subcontractor shall not discriminate on the basis of race, color, national origin, or sex in the performance of this contract. The Contractor shall carry out applicable requirements of 49 CFR part 26 in the award and administration of DOT-assisted contracts. Failure by the Contractor to carry out these requirements is a material breach of this contract, which may result in the termination of this contract or such other remedy as the recipient deems appropriate, which may include, but is not limited to:

- 1) Withholding monthly progress payments;
- 2) Assessing sanctions;
- 3) Liquidated damages; and/or
- 4) Disqualifying the Contractor from future bidding as non-responsible.

Prompt Payment (49 CFR § 26.29; acceptable/sample text provided) –

The prime contractor agrees to pay each subcontractor under this prime contract for satisfactory performance of its contract no later than 14 days from the receipt of each payment the prime contractor receives from Delaware River and Bay Authority. The prime contractor agrees further to return retainage payments to each subcontractor within 14 after the subcontractor’s work is satisfactorily completed. Any delay or postponement of payment from the above referenced time frame may occur only for good cause

following written approval of the Delaware River and Bay Authority. This clause applies to both DBE and non-DBE subcontractors.

Termination of DBE Subcontracts (49 CFR § 26.53(f); acceptable/sample text provided) –

The prime contractor must not terminate a DBE subcontractor listed in response to include Solicitation paragraph number where paragraph 12.3.1, Solicitation Language appears (or an approved substitute DBE firm) without prior written consent of Delaware River and Bay Authority. This includes, but is not limited to, instances in which the prime contractor seeks to perform work originally designated for a DBE subcontractor with its own forces or those of an affiliate, a non-DBE firm, or with another DBE firm.

The prime contractor shall utilize the specific DBEs listed to perform the work and supply the materials for which each is listed unless the contractor obtains written consent Delaware River and Bay Authority. Unless Delaware River and Bay Authority consent is provided, the prime contractor shall not be entitled to any payment for work or material unless it is performed or supplied by the listed DBE.

Delaware River and Bay Authority may provide such written consent only if Delaware River and Bay Authority agrees, for reasons stated in the concurrence document, that the prime contractor has good cause to terminate the DBE firm. For purposes of this paragraph, good cause includes the circumstances listed in 49 CFR §26.53.

Before transmitting to Delaware River and Bay Authority its request to terminate and/or substitute a DBE subcontractor, the prime contractor must give notice in writing to the DBE subcontractor, with a copy to Delaware River and Bay Authority, of its intent to request to terminate and/or substitute, and the reason for the request.

The prime contractor must give the DBE five days to respond to the prime contractor's notice and advise Delaware River and Bay Authority and the contractor of the reasons, if any, why it objects to the proposed termination of its subcontract and why Delaware River and Bay Authority should not approve the prime contractor's action. If required in a particular case as a matter of public necessity (e.g., safety), Delaware River and Bay Authority may provide a response period shorter than five days.

In addition to post-award terminations, the provisions of this section apply to preaward deletions of or substitutions for DBE firms put forward by offerors in negotiated procurements.

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DISTRACTED DRIVING

SOURCE: Executive Order 13513
DOT Order 3902.10

TEXTING WHEN DRIVING

In accordance with Executive Order 13513, “Federal Leadership on Reducing Text Messaging While Driving” (10/1/2009) and DOT Order 3902.10 “Text Messaging While Driving” (12/30/2009), the FAA encourages recipients of Federal grant funds to adopt and enforce safety policies that decrease crashes by distracted drivers, including policies to ban text messaging while driving when performing work related to a grant or sub-grant.

In support of this initiative, the Owner encourages the Contractor to promote policies and initiatives for its employees and other work personnel that decrease crashes by distracted drivers, including policies that ban text messaging while driving motor vehicles while performing work activities associated with the project.

The Contractor must include the substance of this clause in all sub-tier contracts exceeding \$3,500 and involve driving a motor vehicle in performance of work activities associated with the project.

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PROHIBITION ON CERTAIN TELECOMMUNICATIONS AND VIDEO SURVEILLANCE
SERVICES OR EQUIPMENT

SOURCE: 2 CFR § 200, Appendix II(K)
2 CFR § 200.216

**PROHIBITION ON CERTAIN TELECOMMUNICATIONS AND VIDEO SURVEILLANCE
SERVICES OR EQUIPMENT**

Contractor and Subcontractor agree to comply with mandatory standards and policies relating to use and procurement of certain telecommunications and video surveillance services or equipment in compliance with the National Defense Authorization Act [Public Law 115-232 § 889(f)(1)].

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EQUAL EMPLOYMENT OPPORTUNITY (E.E.O.)

SOURCE: 2 CFR 200, Appendix II(C)
41 CFR § 60-1.4
41 CFR § 60-4.3
Executive Order 11246

EQUAL OPPORTUNITY CLAUSE

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

(1) The contractor will not discriminate against any employee or applicant for employment because of race, color, religion, sex, or national origin. The contractor will take affirmative action to ensure that applicants are employed, and that employees are treated during employment without regard to their race, color, religion, sex, sexual orientation, gender identify 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 setting forth the provisions of 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 considerations for employment without regard to race, color, religion, sex, or national origin.

(3) The contractor will send to each labor union or representative of workers with which he has a collective bargaining agreement or other contract or understanding, a notice to be provided advising the said labor union or workers' representatives of the contractor's commitments under this section, and shall post copies of the notice in conspicuous places available to employees and applicants for employment.

(4) The contractor will comply with all provisions of Executive Order 11246 of September 24, 1965, and of the rules, regulations, and relevant orders of the Secretary of Labor.

(5) The contractor will furnish all information and reports required by Executive Order 11246 of September 24, 1965, and by rules, regulations, and orders of the Secretary of Labor, or pursuant thereto, and will permit access to his books, records, and accounts by the administering agency and the Secretary of Labor for purposes of investigation to ascertain compliance with such rules, regulations, and orders.

(6) In the event of the contractor's noncompliance with the nondiscrimination clauses of this contract or with any of the said rules, regulations, or orders, this contract may be canceled, terminated, or suspended in whole or in part and the contractor may be declared ineligible for further Government contracts or federally assisted construction contracts in accordance with procedures authorized in Executive Order 11246 of September 24, 1965, and such other sanctions may be imposed and remedies invoked as provided in Executive Order 11246 of September 24, 1965, or by rule, regulation, or order of the Secretary of Labor, or as otherwise provided by law.

(7) The contractor will include the portion of the sentence immediately preceding paragraph (1) and the provisions of paragraphs (1) through (7) in every subcontract or purchase order unless exempted by rules, regulations, or orders of the Secretary of Labor issued pursuant to section 204 of Executive Order 11246 of September 24, 1965, so that such provisions will be binding upon each subcontractor or vendor. The contractor will take such action with respect to any subcontract or purchase order as the administering agency may direct as a means of enforcing such provisions, including sanctions for noncompliance: *Provided, however,* That in the event a contractor becomes involved in, or is threatened with, litigation with a subcontractor or vendor as a result of such direction by the administering agency the contractor may request the United States to enter into such litigation to protect the interests of the United States.

STANDARD FEDERAL EQUAL EMPLOYMENT OPPORTUNITY
CONSTRUCTION CONTRACT SPECIFICATIONS

1. As used in these specifications:

- a. "Covered area" means the geographical area described in the solicitation from which this contract resulted;
- b. "Director" means Director, Office of Federal Contract Compliance Programs (OFCCP), U.S. Department of Labor, or any person to whom the Director delegates authority;
- c. "Employer identification number" means the Federal social security number used on the Employer's Quarterly Federal Tax Return, U.S. Treasury Department Form 941;
- d. "Minority" includes:
 - (1) Black (all) persons having origins in any of the Black African racial groups not of Hispanic origin);
 - (2) Hispanic (all persons of Mexican, Puerto Rican, Cuban, Central or South American, or other Spanish culture or origin regardless of race);
 - (3) Asian and Pacific Islander (all persons having origins in any of the original peoples of the Far East, Southeast Asia, the Indian Subcontinent, or the Pacific Islands); and
 - (4) American Indian or Alaskan native (all persons having origins in any of the original peoples of North America and maintaining identifiable tribal affiliations through membership and participation or community identification).

2. Whenever the contractor, or any subcontractor at any tier, subcontracts a portion of the work involving any construction trade, it shall physically include in each subcontract in excess of \$10,000 the provisions of these specifications and the Notice which contains the applicable goals for minority and female participation and which is set forth in the solicitations from which this contract resulted.

3. If the contractor is participating (pursuant to 41 CFR 60-4.5) in a Hometown Plan approved by the U.S. Department of Labor in the covered area either individually or through an association, its affirmative action obligations on all work in the Plan area (including goals and timetables) shall be in accordance with that Plan for those trades which have unions participating in the Plan. Contractors shall be able to demonstrate their participation in and compliance with the provisions of any such Hometown Plan. Each contractor or subcontractor participating in an approved plan is individually required to comply with its obligations under the EEO clause and to make a good faith effort to achieve each goal under the Plan in each trade in which it has employees. The overall good faith performance by other contractors or subcontractors toward a goal in an approved Plan does not excuse any covered contractor's or subcontractor's failure to take good faith efforts to achieve the Plan goals and timetables.

4. The contractor shall implement the specific affirmative action standards provided in paragraphs 7a through 7p of these specifications. The goals set forth in the solicitation from which this contract resulted are expressed as percentages of the total hours of employment and training of minority and female utilization the contractor should reasonably be able to achieve in each construction trade in which it has employees in the covered area. Covered construction contractors performing construction work in a geographical area where they do not have a Federal or federally assisted construction contract shall apply the minority and female goals established for the geographical area where the work is being performed. Goals are published periodically in the Federal Register in notice form, and such notices may be obtained from any Office of Federal Contract Compliance Programs office or from Federal procurement contracting officers. The contractor is expected to make substantially uniform progress in meeting its goals in each craft during the period specified.

5. Neither the provisions of any collective bargaining agreement nor the failure by a union with whom the contractor has a collective bargaining agreement to refer either minorities or women shall excuse the contractor's obligations under these specifications, Executive Order 11246 or the regulations promulgated pursuant thereto.

6. In order for the non-working training hours of apprentices and trainees to be counted in meeting the goals, such apprentices and trainees shall be employed by the contractor during the training period and the contractor shall have made a commitment to employ the apprentices and trainees at the completion of their training, subject to the availability of employment opportunities. Trainees shall be trained pursuant to training programs approved by the U.S. Department of Labor.

7. The contractor shall take specific affirmative actions to ensure equal employment opportunity. The evaluation of the contractor's compliance with these specifications shall be based upon its effort to achieve maximum results from its actions. The contractor shall document these efforts fully and shall implement affirmative action steps at least as extensive as the following:

a. Ensure and maintain a working environment free of harassment, intimidation, and coercion at all sites, and in all facilities at which the contractor's employees are assigned to work. The contractor, where possible, will assign two or more women to each construction project. The contractor shall specifically ensure that all foremen, superintendents, and other onsite supervisory personnel are aware of and carry out the contractor's obligation to maintain such a working environment, with specific attention to minority or female individuals working at such sites or in such facilities.

b. Establish and maintain a current list of minority and female recruitment sources, provide written notification to minority and female recruitment sources and to community organizations when the contractor or its unions have employment opportunities available, and maintain a record of the organizations' responses.

c. Maintain a current file of the names, addresses, and telephone numbers of each minority and female off-the-street applicant and minority or female referral from a union, a recruitment source, or community organization and of what action was taken with respect to each such individual. If such individual was sent to the union hiring hall for referral and was not referred back to the contractor by the union or, if referred, not employed by the contractor, this shall be documented in the file with the reason therefore along with whatever additional actions the contractor may have taken.

d. Provide immediate written notification to the Director when the union or unions with which the contractor has a collective bargaining agreement has not referred to the contractor a minority person or female sent by the contractor, or when the contractor has other information that the union referral process has impeded the contractor's efforts to meet its obligations.

e. Develop on-the-job training opportunities and/or participate in training programs for the area which expressly include minorities and women, including upgrading programs and apprenticeship and trainee programs relevant to the contractor's employment needs, especially those programs funded or approved by the Department of Labor. The contractor shall provide notice of these programs to the sources compiled under 7b above.

f. Disseminate the contractor's EEO policy by providing notice of the policy to unions and training programs and requesting their cooperation in assisting the contractor in meeting its EEO obligations; by including it in any policy manual and collective bargaining agreement; by publicizing it in the company newspaper, annual report, etc.; by specific review of the policy with all management personnel and with all minority and female employees at least once a year; and by posting the company EEO policy on bulletin boards accessible to all employees at each location where construction work is performed.

g. Review, at least annually, the company's EEO policy and affirmative action obligations under these specifications with all employees having any responsibility for hiring, assignment, layoff, termination, or other employment decisions including specific review of these items with onsite supervisory personnel such as superintendents, general foremen, etc., prior to the initiation of construction work at any job site. A written record shall be made and maintained identifying the time and place of these meetings, persons attending, subject matter discussed, and disposition of the subject matter.

h. Disseminate the contractor's EEO policy externally by including it in any advertising in the news media, specifically including minority and female news media, and providing written notification to and discussing the contractor's EEO policy with other contractors and subcontractors with whom the contractor does or anticipates doing business.

i. Direct its recruitment efforts, both oral and written, to minority, female, and community organizations, to schools with minority and female students; and to minority and female recruitment and training organizations serving the contractor's recruitment area and employment needs. Not later than one month prior to the date for the acceptance of applications for apprenticeship or other training by any recruitment source, the contractor shall send written notification to organizations, such as the above, describing the openings, screening procedures, and tests to be used in the selection process.

j. Encourage present minority and female employees to recruit other minority persons and women and, where reasonable, provide after school, summer, and vacation employment to minority and female youth both on the site and in other areas of a contractor's workforce.

k. Validate all tests and other selection requirements where there is an obligation to do so under 41 CFR Part 60-3.

l. Conduct, at least annually, an inventory and evaluation at least of all minority and female personnel, for promotional opportunities and encourage these employees to seek or to prepare for, through appropriate training, etc., such opportunities.

m. Ensure that seniority practices, job classifications, work assignments, and other personnel practices do not have a discriminatory effect by continually monitoring all personnel and employment related activities to ensure that the EEO policy and the contractor's obligations under these specifications are being carried out.

n. Ensure that all facilities and company activities are non-segregated except that separate or single user toilet and necessary changing facilities shall be provided to assure privacy between the sexes.

o. Document and maintain a record of all solicitations of offers for subcontracts from minority and female construction contractors and suppliers, including circulation of solicitations to minority and female contractor associations and other business associations.

p. Conduct a review, at least annually, of all supervisor's adherence to and performance under the contractor's EEO policies and affirmative action obligations.

8. Contractors are encouraged to participate in voluntary associations, which assist in fulfilling one or more of their affirmative action obligations (7a through 7p). The efforts of a contractor association, joint contractor union, contractor community, or other similar groups of which the contractor is a member and participant, may be asserted as fulfilling any one or more of its obligations under 7a through 7p of these specifications provided that the contractor actively participates in the group, makes every effort to assure that the group has a positive impact on the employment of minorities and women in the industry, ensures that the concrete benefits of the program are reflected in the contractor's minority and female workforce participation, makes a good faith effort to meet its individual goals and timetables, and can provide access to documentation which demonstrates the effectiveness of actions taken on behalf of the contractor. The obligation to comply, however, is the contractor's and failure of such a group to fulfill an obligation shall not be a defense for the contractor's noncompliance.

9. A single goal for minorities and a separate single goal for women have been established. The contractor, however, is required to provide equal employment opportunity and to take affirmative action for all minority groups, both male and female, and all women, both minority and non-minority. Consequently, if the particular group is employed in a substantially disparate manner (for example, even though the contractor has achieved its goals for women generally,) the contractor may be in violation of the Executive Order if a specific minority group of women is underutilized.

10. The contractor shall not use the goals and timetables or affirmative action standards to discriminate against any person because of race, color, religion, sex, or national origin.

11. The contractor shall not enter into any subcontract with any person or firm debarred from Government contracts pursuant to Executive Order 11246.

12. The contractor shall carry out such sanctions and penalties for violation of these specifications and of the Equal Opportunity Clause, including suspension, termination, and cancellation of existing subcontracts as may be imposed or ordered pursuant to Executive Order 11246, as amended, and its implementing regulations, by the Office of Federal Contract Compliance Programs. Any contractor who fails to carry out such sanctions and penalties shall be in violation of these specifications and Executive Order 11246, as amended.

13. The contractor, in fulfilling its obligations under these specifications, shall implement specific affirmative action steps, at least as extensive as those standards prescribed in paragraph 7 of these specifications, so as to achieve maximum results from its efforts to ensure equal employment opportunity. If the contractor fails to comply with the requirements of the Executive Order, the implementing regulations, or these specifications, the Director shall proceed in accordance with 41 CFR 60-4.8.

14. The contractor shall designate a responsible official to monitor all employment related activity to ensure that the company EEO policy is being carried out, to submit reports relating to the provisions hereof as may be required by the Government, and to keep records. Records shall at least include for each employee, the name, address, telephone number, construction trade, union affiliation if any, employee identification number when assigned, social security number, race, sex, status (e.g., mechanic, apprentice, trainee, helper, or laborer), dates of changes in status, hours worked per week in the indicated trade, rate of pay, and locations at which the work was performed. Records shall be maintained in an easily understandable and retrievable form; however, to the degree that existing records satisfy this requirement, contractors shall not be required to maintain separate records.

15. Nothing herein provided shall be construed as a limitation upon the application of other laws which establish different standards of compliance or upon the application of requirements for the hiring of local or other area residents (e.g., those under the Public Works Employment Act of 1977 and the Community Development Block Grant Program).

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FEDERAL FAIR LABOR STANDARDS ACT (FEDERAL MINIMUM WAGE)

SOURCE: 29 U.S.C. § 201, et seq

FAIR LABOR STANDARDS ACT

All contracts and subcontracts that result from this solicitation incorporate by reference the provisions of 29 CFR part 201, the Federal Fair Labor Standards Act (FLSA), with the same force and effect as if given in full text. The FLSA sets minimum wage, overtime pay, recordkeeping, and child labor standards for full and part time workers.

The contractor has full responsibility to monitor compliance to the referenced statute or regulation. The contractor must address any claims or disputes that arise from this requirement directly with the U.S. Department of Labor – Wage and Hour Division.

* * * * *

LOBBYING AND INFLUENCING FEDERAL EMPLOYEES

SOURCE: 31 USC § 1352 – Byrd Anti-Lobbying Amendment
2 CFR Part 200, Appendix II(I)
49 CFR Part 20, Appendix A

CERTIFICATION REGARDING LOBBYING

The Bidder or Offeror certifies by signing and submitting this bid or proposal, to the best of his or her knowledge and belief, that:

- (1) No Federal appropriated funds have been paid or will be paid, by or on behalf of the Bidder or Offeror, to any person for influencing or attempting to influence an officer or employee of an agency, a Member of Congress, an officer or employee of Congress, or an employee of a

Member of Congress in connection with the awarding of any Federal contract, the making of any Federal grant, the making of any Federal loan, the entering into of any cooperative agreement, and the extension, continuation, renewal, amendment, or modification of any Federal contract, grant, loan, or cooperative agreement.

- (2) If any funds other than Federal appropriated funds have been paid or will be paid to any person for influencing or attempting to influence an officer or employee of any agency, a Member of Congress, an officer or employee of Congress, or an employee of a Member of Congress in connection with this Federal contract, grant, loan, or cooperative agreement, the undersigned shall complete and submit Standard Form-LLL, "Disclosure Form to Report Lobbying," in accordance with its instructions.
- (3) The undersigned shall require that the language of this certification be included in the award documents for all sub-awards at all tiers (including subcontracts, subgrants, and contracts under grants, loans, and cooperative agreements) and that all sub-recipients shall certify and disclose accordingly.

This certification is a material representation of fact upon which reliance was placed when this transaction was made or entered into. Submission of this certification is a prerequisite for making or entering into this transaction imposed by section 1352, title 31, U.S. Code. Any person who fails to file the required certification shall be subject to a civil penalty of not less than \$10,000 and not more than \$100,000 for each such failure.

* * * * *

PROHIBITION OF SEGREGATED FACILITIES

SOURCE: 2 CFR Part 200, Appendix II(C)
41 CFR § 60

PROHIBITION OF SEGREGATED FACILITIES

(a) The Contractor agrees that it does not and will not maintain or provide for its employees any segregated facilities at any of its establishments, and that it does not and will not permit its employees to perform their services at any location under its control where segregated facilities are maintained. The Contractor agrees that a breach of this clause is a violation of the Equal Opportunity clause in this contract.

(b) "Segregated facilities", as used in this clause, means any waiting rooms, work areas, rest rooms and wash rooms, restaurants and other eating areas, time clocks, locker rooms and other storage or dressing areas, parking lots, drinking fountains, recreation or entertainment areas, transportation, and housing facilities provided for employees, that are segregated by explicit directive or are in fact segregated on the basis of race, color, religion, sex, or national origin because of written or oral policies or employee custom. The term does not include separate or single-user rest rooms or necessary dressing or sleeping areas provided to assure privacy between the sexes.

(c) The Contractor shall include this clause in every subcontract and purchase order that is subject to the Equal Opportunity clause of this contract.

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OCCUPATIONAL SAFETY AND HEALTH ACT

SOURCE: 20 CFR part 1910

OCCUPATIONAL SAFETY AND HEALTH ACT OF 1970

All contracts and subcontracts that result from this solicitation incorporate by reference the requirements of 29 CFR Part 1910 with the same force and effect as if given in full text. Contractor must provide a work environment that is free from recognized hazards that may cause death or serious physical harm to the employee. The Contractor retains full responsibility to monitor its compliance and their subcontractor's compliance with the applicable requirements of the Occupational Safety and Health Act of 1970 (29 CFR Part 1910). Contractor must address any claims or disputes that pertain to a referenced requirement directly with the U.S. Department of Labor – Occupational Safety and Health Administration.

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PROCUREMENT OF RECOVERED MATERIALS

SOURCE: 2 CFR § 200.323
2 CFR Part 200, Appendix II(J)
40 CFR Part 247
42 USC § 6901, et seq (Resource Conservation and Recovery Act (RCRA))

PROCUREMENT OF RECOVERED MATERIALS

Contractor and subcontractor agree to comply with Section 6002 of the Solid Waste Disposal Act, as amended by the Resource Conservation and Recovery Act, and the regulatory provisions of 40 CFR Part 247. In the performance of this contract and to the extent practicable, the Contractor and subcontractors are to use of products containing the highest percentage of recovered materials for items designated by the Environmental Protection Agency (EPA) under 40 CFR Part 247 whenever:

- a) The contract requires procurement of \$10,000 or more of a designated item during the fiscal year; or,
- b) The contractor has procured \$10,000 or more of a designated item using Federal funding during the previous fiscal year.

The list of EPA-designated items is available at:

www.epa.gov/epawaste/conservation/tools/cpg/products/.

Section 6002(c) establishes exceptions to the preference for recovery of EPA-designated products if the contractor can demonstrate the item is:

- a) Not reasonably available within a timeframe providing for compliance with the contract performance schedule;
- b) Fails to meet reasonable contract performance requirements; or
- c) Is only available at an unreasonable price.

* * * * *

RIGHT TO INVENTIONS

SOURCE: 2 CFR Part 200, Appendix II(F)
37 CFR Part 401

RIGHT TO INVENTIONS

Contracts or agreements that include the performance of experimental, developmental, or research work must provide for the rights of the Federal Government and the Owner in any resulting invention as established by 37 CFR part 401, Rights to Inventions Made by Non-profit Organizations and Small Business Firms under Government Grants, Contracts, and Cooperative Agreements. This contract incorporates by reference the patent and inventions rights as specified within 37 CFR § 401.14. Contractor

must include this requirement in all sub-tier contracts involving experimental, developmental, or research work.

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SEISMIC SAFETY

SOURCE: 49 CFR Part 41

SEISMIC SAFETY

The Contractor agrees to ensure that all work performed under this contract, including work performed by subcontractors, conforms to a building code standard that provides a level of seismic safety substantially equivalent to standards established by the National Earthquake Hazards Reduction Program (NEHRP). Local building codes that model their code after the current version of the International Building Code (IBC) meet the NEHRP equivalency level for seismic safety.

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TAX DELINQUENCY AND FELONY CONVICTIONS

SOURCE: Section 8113 of the Consolidated Appropriations Act, 2022 (Public Law 117-103) and similar provisions in subsequent appropriations acts.

DOT Order 4200.6 – Appropriations Act Requirements for Procurement and Non-Procurement Regarding Tax Delinquency and Felony Convictions

CERTIFICATION OF OFFEROR/BIDDER REGARDING TAX DELINQUENCY AND FELONY CONVICTIONS

The applicant must complete the following two certification statements. The applicant must indicate its current status as it relates to tax delinquency and felony conviction by inserting a checkmark (✓) in the space following the applicable response. The applicant agrees that, if awarded a contract resulting from this solicitation, it will incorporate this provision for certification in all lower tier subcontracts.

Certifications

- 1) The applicant represents that it is (✓) is not (✓) a corporation that has any unpaid Federal tax liability that has been assessed, for which all judicial and administrative remedies have been exhausted or have lapsed, and that is not being paid in a timely manner pursuant to an agreement with the authority responsible for collecting the tax liability.
- 2) The applicant represents that it is (✓) is not (✓) a corporation that was convicted of a criminal violation under any Federal law within the preceding 24 months.

Note

If an applicant responds in the affirmative to either of the above representations, the applicant is ineligible to receive an award unless the Sponsor has received notification from the agency suspension and debarment official (SDO) that the SDO has considered suspension or debarment and determined that further action is not required to protect the Government's interests. The applicant therefore must provide information to the owner about its tax liability or conviction to the Owner, who will then notify the FAA Airports District Office, which will then notify the agency's SDO to facilitate completion of the required considerations before award decisions are made.

Term Definitions

Felony conviction: Felony conviction means a conviction within the preceding twenty four (24) months of a felony criminal violation under any Federal law and includes conviction of an offense defined in a section of the U.S. Code that specifically classifies the offense as a felony and conviction of an offense that is classified as a felony under 18 USC § 3559.

Tax Delinquency: A tax delinquency is any unpaid Federal tax liability that has been assessed, for which all judicial and administrative remedies have been exhausted, or have lapsed, and that is not being paid in a timely manner pursuant to an agreement with the authority responsible for collecting the tax liability.

* * * * *

TERMINATION OF CONTRACT

SOURCE: 2 CFR § 200 Appendix II(B)
FAA Advisory Circular 150/5370-10, Section 80-09

TERMINATION FOR CONVENIENCE **(CONSTRUCTION & EQUIPMENT CONTRACTS)**

The Owner may terminate this contract in whole or in part at any time by providing written notice to the Contractor. Such action may be without cause and without prejudice to any other right or remedy of Owner. Upon receipt of a written notice of termination, except as explicitly directed by the Owner, the Contractor shall immediately proceed with the following obligations regardless of any delay in determining or adjusting amounts due under this clause:

1. Contractor must immediately discontinue work as specified in the written notice.
2. Terminate all subcontracts to the extent they relate to the work terminated under the notice.
3. Discontinue orders for materials and services except as directed by the written notice.
4. Deliver to the owner all fabricated and partially fabricated parts, completed and partially completed work, supplies, equipment and materials acquired prior to termination of the work and as directed in the written notice.
5. Complete performance of the work not terminated by the notice.
6. Take action as directed by the owner to protect and preserve property and work related to this contract that Owner will take possession.

Owner agrees to pay Contractor for:

1. Completed and acceptable work executed in accordance with the contract documents prior to the effective date of termination;
2. Documented expenses sustained prior to the effective date of termination in performing work and furnishing labor, materials, or equipment as required by the contract documents in connection with uncompleted work;
3. Reasonable and substantiated claims, costs, and damages incurred in settlement of terminated contracts with Subcontractors and Suppliers; and
4. Reasonable and substantiated expenses to the Contractor directly attributable to Owner's termination action.

Owner will not pay Contractor for loss of anticipated profits or revenue or other economic loss arising out of or resulting from the Owner's termination action.

The rights and remedies this clause provides are in addition to any other rights and remedies provided by law or under this contract.

TERMINATION FOR CAUSE
(CONSTRUCTION)

Section 80-09 of FAA Advisory Circular 150/5370-10 establishes standard language for conditions, rights, and remedies associated with Owner termination of this contract for cause due to default of the Contractor.

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TRADE RESTRICTION CERTIFICATION

SOURCE: 49 USC § 50104
49 CFR part 30

TRADE RESTRICTION CERTIFICATION

By submission of an offer, the Offeror certifies that with respect to this solicitation and any resultant contract, the Offeror –

1. is not owned or controlled by one or more citizens of a foreign country included in the list of countries that discriminate against U.S. firms as published by the Office of the United States Trade Representative (U.S.T.R.);
2. has not knowingly entered into any contract or subcontract for this project with a person that is a citizen or national of a foreign country included on the list of countries that discriminate against U.S. firms as published by the U.S.T.R.; and
3. has not entered into any subcontract for any product to be used on the Federal on the project that is produced in a foreign country included on the list of countries that discriminate against U.S. firms published by the U.S.T.R.

This certification concerns a matter within the jurisdiction of an agency of the United States of America and the making of a false, fictitious, or fraudulent certification may render the maker subject to prosecution under Title 18, United States Code, Section 1001.

The Offeror/Contractor must provide immediate written notice to the Owner if the Offeror/Contractor learns that its certification or that of a subcontractor was erroneous when submitted or has become erroneous by reason of changed circumstances. The Contractor must require subcontractors provide immediate written notice to the Contractor if at any time it learns that its certification was erroneous by reason of changed circumstances.

Unless the restrictions of this clause are waived by the Secretary of Transportation in accordance with 49 CFR 30.17, no contract shall be awarded to an Offeror or subcontractor:

- (1) who is owned or controlled by one or more citizens or nationals of a foreign country included on the list of countries that discriminate against U.S. firms published by the U.S.T.R: or
- (2) whose subcontractors are owned or controlled by one or more citizens or nationals of a foreign country on such U.S.T.R. list: or
- (3) who incorporates in the public works project any product of a foreign country on such U.S.T.R. list.

Nothing contained in the foregoing shall be construed to require establishment of a system of records in order to render, in good faith, the certification required by this provision. The knowledge and information of a contractor is not required to exceed that which is normally possessed by a prudent person in the ordinary course of business dealings.

The Offeror agrees that, if awarded a contract resulting from this solicitation, it will incorporate this provision for certification without modification in all lower tier subcontracts. The contractor may rely on the certification of a prospective subcontractor that it is not a firm from a foreign country included on the list of countries that discriminate against U.S. firms as published by U.S.T.R, unless the Offeror has knowledge that the certification is erroneous.

This certification is a material representation of fact upon which reliance was placed when making an award. If it is later determined that the Contractor or subcontractor knowingly rendered an erroneous certification, the Federal Aviation Administration may direct through the Owner cancellation of the contract or subcontract for default at no cost to the Owner or the FAA.

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VETERAN'S PREFERENCE

SOURCE: 49 USC § 47112(c)

VETERAN'S PREFERENCE

In the employment of labor (excluding executive, administrative, and supervisory positions), the contractor and all sub-tier contractors must give preference to covered veterans as defined within Title 49 United States Code Section 47112. Covered veterans include Vietnam-era veterans, Persian Gulf veterans, Afghanistan-Iraq war veterans, disabled veterans, and small business concerns (as defined by 15 U.S.C. 632) owned and controlled by disabled veterans. This preference only applies when there are covered veterans readily available and qualified to perform the work to which the employment relates.

* * * * *

DOMESTIC PREFERENCES FOR PROCUREMENTS

SOURCE: 2 CFR § 200.322
2 CFR Part 200, Appendix II(L)

CERTIFICATION REGARDING DOMESTIC PREFERENCES FOR PROCUREMENTS

The Bidder or Offeror certifies by signing and submitting this bid or proposal that, to the greatest extent practicable, the Bidder or Offeror has provided a preference for the purchase, acquisition, or use of goods, products, or materials produced in the United States (including, but not limited to, iron, aluminum, steel, cement, and other manufactured products) in compliance with 2 CFR § 200.322.

* * * * *

Amendments to Special Provisions Part II.I, Section 80.

SP 80-04.1. The following shall be added after the fourth paragraph:

“If the Contractor requests changes to the CSPP and the requested changes are acceptable to the Owner, the Engineer, and the RPR, the Engineer will request a modification to the CSPP from the FAA. The Contractor shall plan on a minimum of 90 days for this process to be completed. No deviation to the original CSPP shall be made without FAA approval.”

Amendments to Special Provisions Part II.I, Section 90.

SP 90-05. The following shall be added after the first paragraph;

“Payment for extra work for “agreed prices” and for “time and materials” work shall be based on the following:

- 1. Agreed Price/Time and Materials Work.** All agreed price and time and materials work shall be approved by the Owner and the FAA prior to proceeding with the work. The RPR and Contractor shall be responsible for tracking the number of employees, number of hours and classification of each employee, numbers of hours that equipment is utilized and materials utilized for the extra work that is paid utilizing time and materials work.
 - a. Miscellaneous.** No additional allowance will be made for general superintendence, the use of small tools, or other costs for which no specific allowance is herein provided.
 - b. Comparison of Record.** The Contractor and the RPR shall compare records of the cost of agreed price/time and materials work at the end of each day. Agreement shall be indicated by signature of the Contractor and the RPR or their duly authorized representatives.
 - c. Statement.** No payment will be made for work performed on an agreed price/time and materials basis until the Contractor has furnished the RPR with duplicate itemized statements of the cost of such agreed price/time and materials work detailed as follows:
 - (1)** Name, classification, date, daily hours, total hours, rate and extension for each laborer and foreman.
 - (2)** Designation, dates, daily hours, total hours, rental rate, and extension for each unit of machinery and equipment.
 - (a)** Contractor Owned Equipment Trucks and Plant.- Contractor shall be reimbursed for its ownership costs and for its operating costs for self owned equipment at the rates listed in the Rental Rate Blue Book published by Dataquest, Inc. applied in the following manner as modified by the “Rate Adjustment Table”:
 - (i)** Ownership Costs -- It is mutually understood that the rates for ownership costs reimburse the Contractor for all non-operating costs of owning the equipment, truck or plant including depreciation on the original purchase, insurance, applicable taxes, interest on investment, storage, overhead, repairs, moving the equipment onto and away from the project or work site, and profit. Reimbursement will be made for the hours of actual use as described below.
 - (ii)** Less than 8 hours of actual use, the product of the actual number of hours used or fraction thereof multiplied by the hourly rate, or the daily rate, whichever is less.
 - (iii)** Between 8 hours and 40 hours of actual use, the product of the actual number of hours used divided by 8 multiplied by the daily rate, or the weekly rate, whichever is less.
 - (iv)** Between 40 and 176 hours of actual use, the product of the actual number of hours used divided by 40 multiplied by the weekly rate, or the monthly rate, whichever is less.
 - (v)** Over 176 hours of actual use, the product of the actual number of hours used divided by 176 multiplied by the monthly rate.
 - (vi)** Operating Costs -- The rate for operating costs includes fuel, lubricants, other operating expendables, and preventative and field maintenance. Operating cost does not include the operator’s wages. The Contractor shall be reimbursed the product of the number of hours of actual use multiplied by the Estimated Operating Cost/Hour.

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- (vii) The rates used shall be those in effect at the time the agreed price/time and materials work is done as reflected in the then current publication of the Rental Rate Blue Book. When agreed price/time and materials type analysis are used to establish agreed prices in accordance with paragraph A above, the rates used shall be those in effect when the agreed price is developed by the Contractor.
 - (viii) In the event that a rate is not established in the Rental Rate Blue Book for a particular piece of equipment, truck or plant, the RPR shall establish rates for ownership costs and operating costs for that piece of equipment, truck or plant that is consistent with its cost and expected life.

(b) Rented Equipment, Trucks and Plant –

- (i) In the event that the Contractor does not own a specific type of equipment and must obtain it by rental, it shall be paid the actual rental rate for the equipment for the time that the equipment is used to accomplish the work or is required by the RPR to be present, not to exceed the adjusted rental rate in the Rental Rate Blue Book, plus the reasonable cost of moving the equipment onto and away from the project site.
 - (ii) The Contractor shall also be reimbursed for the operating cost of the equipment unless reflected in the rental price. Such operating cost shall be determined in the same manner as specified for Contractor Owned Equipment above.
 - (iii) In the event that area practice dictates the rental of equipment with an operator or fully fueled and maintained equipment, truck or plants, payment will be made on the basis of an invoice for the rental of the equipment with an operator, fully fueled and/or maintained equipment, trucks or plants including all costs incidental to its use, including costs of moving to and from the site, provided the rated is substantiated by area practice.
- (c) Maximum Amount Payable -- The maximum amount of reimbursement for the ownership costs of Contractor owned or the rental cost of rented equipment, trucks or plant is limited to the original purchase price of the equipment, truck or plant for any agreed price/time and materials work as listed in the Green Guide for Construction Equipment published by the Dataquest, Inc. In the specific event when the ownership or rental reimbursement is limited by the original purchase price, the Contractor shall, nevertheless, be reimbursed for the operating Cost/Hour for each hour of actual use.

(3) Quantities of materials, prices, and extensions.

(4) Transportation of materials.

(5) Overhead and Profit. Shall be in accordance with DRBA standards.

SP 90-05. The following shall be added after the ninth paragraph;

“No partial payments will be made for work items lacking approved submittals, or lacking acceptable manufacturer’s material certifications.

Any delay or postponement of payment from the above referenced time frame may occur only for good cause following written approval of the Airport Sponsor. This clause applies to both DBE and non-DBE subcontractors.

Contractors shall include in their subcontracts language providing that Contractors and subcontractors will use appropriate alternative dispute resolution mechanisms to resolve payment disputes.

The Contractor will not be reimbursed for work performed by subcontractors unless and until the Contractor ensures that the subcontractors are promptly paid for the work they have performed.

The same requirement for prompt payment shall be applied to all tier subcontractors.”

SP 90-12 Security for construction warranty. The Contractor shall upon final acceptance of the work, furnish a bond to the Owner in a penal sum equal to five percent (5%) of the amount of the Contract price, executed by a surety company authorized by the Department of Insurance of the State of Delaware to execute such a bond in this State, and which bond shall be approved as to form and manner of execution by the Owner's attorney. This bond shall be conditioned for the faithful performance by the said Contractor of the conditions and stipulations of the subsection titled ACCEPTANCE AND FINAL PAYMENT of this section, thereof relating to maintenance and repair, for a period of one (1) year from the date of the final acceptance of the work. In default of the filing of such bond, a sum of money equal to said five percent (5%) may be retained out of any monies due to the Contractor and be held for one (1) year, or until the bond above described is filed.

For Contractors who have elected to set up an escrow account, they may elect to maintain the escrow account for a period of one (1) year from the date of final acceptance of the work in lieu of providing a bond for security of guarantee as described above.

PROJECT NAME: 33N - Box Hangar

SCHEDULE OF VALUES

CONTRACTOR'S NAME:

DATE: _____

ITEM	QTY	UNIT	MATERIAL		LABOR		TOTAL COST
			P/UNIT	TOTAL	P/UNIT	TOTAL	
Trade: Structural							
Foundation Modifications (if Required)		CY	\$1.00	\$0	\$1.00	\$0.00	\$0.00
PEMB (Structural Members)		SF	\$1.00	\$0	\$1.00	\$0.00	\$0.00
	Sub-total						\$0.00
Trade Architectural							
Interior Formed Metal Wall Panels		SF	\$1.00	\$0	\$1.00	\$0.00	\$0.00
Batt Insulation ext. walls and roof		SF	\$1.00	\$0	\$1.00	\$0.00	\$0.00
Metal Flashing and Trim		LF	\$1.00	\$0	\$1.00	\$0.00	\$0.00
Joint Sealants		LF	\$1.00	\$0	\$1.00	\$0.00	\$0.00
Bi-Fold Door 56'-0" X 15'-6" (no cladding)		EA	\$1.00	\$0	\$1.00	\$0.00	\$0.00
Bi-Fold Door 56'-0" X 15'-6" w/ Man Door 3'-0" X 6'-8" (no cladding)		EA	\$1.00	\$0	\$1.00	\$0.00	\$0.00
Door Cladding		SF	\$1.00	\$0	\$1.00	\$0.00	\$0.00
Hollow Metal Door & Hardware - Allowance per Door		EA	\$1.00	\$0	\$1.00	\$0.00	\$0.00
Exit Signage		EA	\$1.00	\$0	\$1.00	\$0.00	\$0.00
Epoxy Floor Coating		SF	\$1.00	\$0	\$1.00	\$0.00	\$0.00
Fire Extinguishers		EA	\$1.00	\$0	\$1.00	\$0.00	\$0.00
	Sub-total						\$0.00
Trade: Electrical							
Panels - 200A MCB, 120/240V		EA	\$1.00	\$0.00	\$1.00	\$0.00	\$0.00
Panels - 100A MLO, 120/240V		EA	\$1.00	\$0.00	\$1.00	\$0.00	\$0.00
Service disconnect		EA	\$1.00	\$0.00	\$1.00	\$0.00	\$0.00
Receptacles - GFCI, NEMA 5-20		EA	\$1.00	\$0.00	\$1.00	\$0.00	\$0.00
Equipment disconnects - 30A NONFUSED		EA	\$1.00	\$0.00	\$1.00	\$0.00	\$0.00
Conductors - Feeders (2#6 AWG)		CLF	\$1.00	\$0.00	\$1.00	\$0.00	\$0.00
Conductors - Feeders (1#10 AWG)		CLF	\$1.00	\$0.00	\$1.00	\$0.00	\$0.00
Conductors - Branch Circuits (3#12 AWG)		CLF	\$1.00	\$0.00	\$1.00	\$0.00	\$0.00
Conductors - Branch Circuits (3#12 AWG)		CLF	\$1.00	\$0.00	\$1.00	\$0.00	\$0.00
Conductors - Ground Rods (3/4"x10')		EA	\$1.00	\$0.00	\$1.00	\$0.00	\$0.00
Conduits - 3/4" EMT		LF	\$1.00	\$0.00	\$1.00	\$0.00	\$0.00
Conduits - 1" EMT		LF	\$1.00	\$0.00	\$1.00	\$0.00	\$0.00
Light Switches - Toggle, 20A		EA	\$1.00	\$0.00	\$1.00	\$0.00	\$0.00
Lighting - Interior LED		LS	\$1.00	\$0.00	\$1.00	\$0.00	\$0.00
Lighting - Exterior LED		LS	\$1.00	\$0.00	\$1.00	\$0.00	\$0.00
	Sub-total						\$0.00
	TOTAL						\$0.00

END OF SPECIAL PROVISIONS

DELAWARE RIVER AND BAY AUTHORITY

DELAWARE AIRPARK

CONTRACT NO. 33N-24-A

CONSTRUCT BOX HANGAR

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SPECIAL PROVISIONS

PART IV – ADDITIONAL TECHNICAL SPECIFICATIONS

The following clauses represent technical specifications which shall be added to Divisions 200 through 1000 of the Delaware Department of Transportation (“DelDOT”) Standard Specifications for Road and Bridge Construction, dated August 2016, including any Supplemental Specifications, Additions or Revisions issued prior to the date of the Advertisement for Bids, as published on the DelDOT website (“DelDOT Standard Specifications”).

In a case of conflicting requirements, this Part IV shall govern over:

- (i) The DelDOT Standard Specifications, as defined above; and
- (ii) Division 100 – General Provisions of the Delaware River and Bay Authority Standard Specifications for Road and Bridge Construction, dated December 15, 2014; and
- (iii) Part I of the Special Provisions provided herein; and
- (iv) Part II.I of the Special Provisions provided herein; and
- (v) Part II.II of the Special Provisions provided herein; and
- (vi) Part III of the Special Provisions provided herein.

Any applicable provision set forth in the Standard Specifications that is not modified by or in conflict with the Special Provisions of Parts I-IV shall be understood to remain in full force and effect.

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Not used

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Not used

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Not used

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Not used

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Not used

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DRAWINGS

See Drawing List on G-001

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 Contracts
 - 4. Contractor's use of site and premises.
 - 5. Coordination with occupants.
 - 6. Work restrictions.
 - 7. Specification and Drawing conventions.
 - 8. Miscellaneous provisions.

1.3 PROJECT INFORMATION

- A. Project Identification: Delaware Airpark (33N) Box Hangar
 - 1. Project Location: 127 Durham Lane, Dover DE 19904
- B. Owner: Delaware River and Bay Authority (DRBA)
 - 1. Owner's Representative: Brian Lutes, Brian.Lutes@drba.net
- C. Engineer: C&S Engineers, Inc., 1500 Market Street, Suite W2410, Philadelphia PA 19102
 - 1. Engineer's Representative: Richard N. McLaughlin, P.E., nmclaughlin@cscos.com,
Phone (215) 709-4340.
- D. Engineering Consultant: Engineer has retained the following design professionals, who have prepared designated portions of the Contract Documents:
 - 1. Airport Design Consultants, Inc. (ADCI)
 - a. Representative: Mike Pizza, (717) 571-1721 MPizza@adci-corp.com
- E. Other Owner Consultants: Owner has retained the following design professionals who have prepared designated portions of the Contract Documents:

1. Not applicable.
- F. Contractor: Not applicable.
- G. Web-Based Project Software: Project software will be used for purposes of managing communication and documents during the construction stage.
 1. See Section 013100 "Project Management and Coordination." for requirements for using web-based Project software.

1.4 WORK COVERED BY CONTRACT DOCUMENTS

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

Construction of a new, approximately 11,584 square foot, pre-engineered metal building (PEMB) box hangar, to be constructed on a previously – constructed concrete pad and columns. The new four – bay box hangar will be constructed at Delaware Airpark (33N). The project will include construction of the hangar including firewall, with new electrical service, interior and exterior lighting and bi-fold electrically operated overhead doors.

- B. The construction contract time of completion for this project is 210 calendar days from the date issued on the Notice to Proceed. The contract time of completion shall begin upon issuance of the Notice to Proceed, and includes shop drawing submittal and review, and lead time for all building and electrical components required for the project.
 1. General construction work includes all work shown on “G” and “S” sheets, unless otherwise noted.
 2. Electrical construction work includes all work shown on “EL” sheets, unless otherwise noted.
- C. Type of Contract:
 1. Project will be constructed under a single 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.

1.6 CONTRACTOR'S USE OF SITE AND PREMISES

- A. Limits on Use of Site: Limit use of Project site to Work in indicated. Do not disturb portions of Project site beyond areas in which the Work is indicated.
 1. Limits on Use of Site: Confine construction operations to areas on drawings. All work will be approved before commencing.

2. Driveways, Walkways, and Entrances: Keep driveways, loading areas, and entrances serving premises clear and available to Owner, Owner's employees, and emergency vehicles at all times. Do not use these areas for parking or for storage of materials.
- B. Condition of Existing Building: N/A. No existing building is included in the work of this contract.
- C. Condition of Existing Grounds: Maintain portions of existing grounds, existing concrete slab, landscaping, and hardscaping affected by construction operations throughout construction period. Repair damage caused by construction operations.

1.7 COORDINATION WITH OCCUPANTS

- A. Cooperate with Owner during construction operations to minimize conflicts with aircraft utilizing adjacent hangars and taxilanes and facilitate usage of those areas by limiting construction operations on and adjacent to the neighboring hangars and aircraft taxilanes. Perform the Work so as not to interfere with Owner's day-to-day operations. Maintain aircraft access to and from these areas unless otherwise indicated.

1.8 WORK RESTRICTIONS

- A. Comply with restrictions on construction operations.
 1. Comply with limitations on use of public streets, work on public streets, rights of way, and other requirements of authorities having jurisdiction.
- B. On-Site Work Hours: Limit work to normal business working hours of 7:00 a.m. to 5:00 p.m., Monday through Friday, unless otherwise indicated. Work hours may be modified to meet Project requirements if approved by Owner and authorities having jurisdiction.
- C. Existing Utility Interruptions: Do not interrupt utilities serving facilities occupied by Owner or others unless permitted under the following conditions and then only after providing temporary utility services according to requirements indicated:
 1. Notify Owner and/or Construction Manager not less than two days in advance of proposed utility interruptions.
 2. Obtain Owner's and/or Construction Manager's written permission before proceeding with utility interruptions.
- D. Noise, Vibration, Dust, and Odors: Coordinate operations that may result in high levels of noise and vibration, dust, odors, or other disruption to Owner occupancy with Owner.
 1. Notify Construction Manager not less than two days in advance of proposed disruptive operations.
 2. Obtain Construction Manager's written permission before proceeding with disruptive operations.
- E. Smoking and Controlled Substance Restrictions: Use of tobacco products, alcoholic beverages, and other controlled substances on Owner's property is not permitted.

- F. Employee Identification: Owner will provide identification tags for Contractor personnel working on Project site. Require personnel to always use/display identification tags.
- G. Employee Screening: Comply with Owner's requirements for background screening of Contractor personnel working on Project site.
 - 1. Maintain list of approved screened personnel with Owner's representative.

1.9 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. Text Color: Text used in the Specifications, including units of measure, manufacturer and product names, and other text may appear in multiple colors or underlined as part of a hyperlink; no emphasis is implied by text with these characteristics.
 - 3. Hypertext: Text used in the Specifications may contain hyperlinks. Hyperlinks may allow for access to linked information that is not residing in the Specifications. Unless otherwise indicated, linked information is not part of the Contract Documents.
 - 4. 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.

2.0 MISCELLANEOUS PROVISIONS

- A. Not applicable.

PART 2 - PRODUCTS (Not Used)

PART 3 - EXECUTION (Not Used)

PART 4 – METHOD OF MEASUREMENT

- 4.1 Measurement for payment will be made on a lump sum basis, for all equipment, materials and work required to furnish and erect a complete structure acceptable to the Owner and Engineer.

PART 5 – BASIS OF PAYMENT

- 5.1 The lump sum price bid for “SUMMARY” shall include all equipment, materials and work necessary to furnish and erect a complete structure acceptable to the Owner and Engineer.

Payment will be made under:

Item 11000-1.6 B-1 Box Hangar – per lump sum

END OF SECTION 011000

SECTION 012500 - SUBSTITUTION PROCEDURES

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

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

1.2 SUMMARY

- A. Section includes administrative and procedural requirements for substitutions.
- B. Related Requirements:
 - 1. Section 016000 "Product Requirements" for requirements for submitting comparable product submittals for products by listed manufacturers.

1.3 METHOD OF MEASUREMENT AND BASIS OF PAYMENT

- A. Method of Measurement:
 - 1. All work described in this specification shall have no separate measurement and shall be included within the lump sum cost of Section 011000.
- B. Basis of Payment
 - 1. All work described in this specification shall have no separate payment and shall be included within the lump sum cost of Section 011000.

1.4 DEFINITIONS

- A. Substitutions: Changes in products, materials, equipment, and methods of construction from those required by the Contract Documents.
 - 1. Substitutions for Cause: Changes proposed by Contractor that are required due to changed Project conditions, such as unavailability of product, regulatory changes, or unavailability of required warranty terms.
 - 2. Substitutions for Convenience: Changes proposed by Contractor or Owner that are not required to meet other Project requirements but may offer advantage to Contractor or Owner.

1.5 ACTION SUBMITTALS

- A. Substitution Requests: Submit documentation identifying 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 form acceptable to Engineer.
 2. Documentation: Show compliance with requirements for substitutions and the following, as applicable:
 - a. Statement indicating why specified product or fabrication or installation method cannot be provided, if applicable.
 - b. Coordination of information, including a list of changes or revisions needed to other parts of the Work and to construction performed by Owner and separate contractors that will be necessary to accommodate proposed substitution.
 - c. Detailed comparison of significant qualities of proposed substitutions with those of the Work specified. Include annotated copy of applicable Specification Section. Significant qualities may include attributes, such as performance, weight, size, durability, visual effect, sustainable design characteristics, warranties, and specific features and requirements indicated. Indicate deviations, if any, from the Work specified.
 - d. Product Data, including drawings and descriptions of products and fabrication and installation procedures.
 - e. Samples, where applicable or requested.
 - f. Certificates and qualification data, where applicable or requested.
 - g. List of similar installations for completed projects, with project names and addresses as well as names and addresses of architects and owners.
 - h. Material test reports from a qualified testing agency, indicating and interpreting test results for compliance with requirements indicated.
 - i. Research reports evidencing compliance with building code in effect for Project.
 - j. Detailed comparison of Contractor's construction schedule using proposed substitutions with products specified for the Work, including effect on the overall Contract Time. If specified product or method of construction cannot be provided within the Contract Time, include letter from manufacturer, on manufacturer's letterhead, stating date of receipt of purchase order, lack of availability, or delays in delivery.
 - k. Cost information, including a proposal of change, if any, in the Contract Sum.
 - l. Contractor's certification that proposed substitution complies with requirements in the Contract Documents, except as indicated in substitution request, is compatible with related materials and is appropriate for applications indicated.
 - m. Contractor's waiver of rights to additional payment or time that may subsequently become necessary because of failure of proposed substitution to produce indicated results.
 3. Architect's Action: If necessary, Architect will request additional information or documentation for evaluation within seven days of receipt of a request for substitution. Architect will notify Contractor through Construction Manager of acceptance or rejection of proposed substitution within 15 days of receipt of request, or seven days of receipt of additional information or documentation, whichever is later.

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

1.6 QUALITY ASSURANCE

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

1.7 PROCEDURES

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

1.8 SUBSTITUTIONS

- A. Substitutions for Cause: Submit requests for substitution immediately on discovery of need for change, but not later than 15 days prior to time required for preparation and review of related submittals.
 - 1. Conditions: Architect will consider Contractor's request for substitution when the following conditions are satisfied. If the following conditions are not satisfied, Architect will return requests without action, except to record noncompliance with these requirements:
 - a. Requested substitution is consistent with the Contract Documents and will produce indicated results.
 - b. Substitution request is fully documented and properly submitted.
 - c. Requested substitution will not adversely affect Contractor's construction schedule.
 - d. Requested substitution has received necessary approvals of authorities having jurisdiction.
 - e. Requested substitution is compatible with other portions of the Work.
 - f. Requested substitution has been coordinated with other portions of the Work.
 - g. Requested substitution provides specified warranty.
 - h. 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.
- B. Substitutions for Convenience: Not allowed.

PART 2 - PRODUCTS (Not Used)

PART 3 - EXECUTION (Not Used)

END OF SECTION 012500

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 01 Specification Sections, apply to this Section.

1.2 SUMMARY

- A. Section includes administrative provisions for coordinating construction operations on Project, including, but not limited to, the following:
 - 1. General coordination procedures.
 - 2. Coordination drawings.
 - 3. RFIs.
 - 4. Digital project management procedures.
 - 5. Web-based Project management software package.
 - 6. Project meetings.
 - 7. Schedule of Values
- B. Each contractor shall participate in coordination requirements. Certain areas of responsibility are assigned to a specific contractor.
- C. Related Requirements:
 - 1. Section 017300 "Execution" for procedures for coordinating general installation and field-engineering services, including establishment of benchmarks and control points.
 - 2. Section 017700 "Closeout Procedures" for coordinating closeout of the Contract.

1.3 METHOD OF MEASUREMENT AND BASIS OF PAYMENT

- A. Method of Measurement:
 - 1. All work described in this specification shall have no separate measurement and shall be included within the lump sum cost of Section 011000.
- B. Basis of Payment
 - 1. All work described in this specification shall have no separate payment and shall be included within the lump sum cost of Section 011000.

1.4 DEFINITIONS

- A. BIM: Building Information Modeling.

- B. RFI: Request for Information. Request from Owner, Construction Manager, Architect, or Contractor seeking information required by or clarifications of the Contract Documents.

1.5 INFORMATIONAL SUBMITTALS

- A. 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, telephone number, and email address of entity performing subcontract or supplying products.
 - 2. Number and title of related Specification Section(s) covered by subcontract.
 - 3. Drawing number and detail references, as appropriate, covered by subcontract.
- B. Key Personnel Names: Within 15 days of starting construction operations, submit a list of key personnel assignments, including superintendent and other personnel in attendance at Project site. Identify individuals and their duties and responsibilities, list addresses, cellular telephone numbers, and e-mail addresses. Provide names, addresses, and telephone numbers of individuals assigned as alternates in the absence of individuals assigned to Project.
 - 1. Post copies of list in Project meeting room, in temporary field office, and in prominent location in the facility. Keep list current at all times.

1.6 GENERAL COORDINATION PROCEDURES

- A. Coordination: Coordinate construction operations included in different Sections of the Specifications to ensure efficient and orderly installation of each part of the Work. Coordinate construction operations included in different Sections that depend on each other for proper installation, connection, and operation.
 - 1. Schedule construction operations in sequence required to obtain the best results, where installation of one part of the Work depends on installation of other components, before or after its own installation.
 - 2. Coordinate installation of different components to ensure maximum performance and accessibility for required maintenance, service, and repair.
 - 3. Make adequate provisions to accommodate items scheduled for later installation.
- B. Coordination of Multiple Contracts: Not applicable.
- C. Prepare memoranda for distribution to each party involved, outlining special procedures required for coordination. Include such items as required notices, reports, and list of attendees at meetings.
 - 1. Prepare similar memoranda for Owner and separate contractors if coordination of their Work is required.
- D. Administrative Procedures: Coordinate scheduling and timing of required administrative procedures with other construction activities 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.
8. Startup and adjustment of systems.

1.7 COORDINATION DRAWINGS

- A. Coordination Drawings, General: Prepare coordination drawings according to requirements in individual Sections, and additionally where installation is not completely indicated on Shop Drawings, where limited space availability necessitates coordination, or if coordination is required to facilitate integration of products and materials fabricated or installed by more than one entity.

1. Content: Project-specific information, drawn accurately to a scale large enough to indicate and resolve conflicts. Do not base coordination drawings on standard printed data. Include the following information, as applicable:
 - a. Use applicable Drawings as a basis for preparation of coordination drawings. Prepare sections, elevations, and details as needed to describe relationship of various systems and components.
 - b. Coordinate the addition of trade-specific information to coordination drawings in a sequence that best provides for coordination of the information and resolution of conflicts between installed components before submitting for review.
 - c. Indicate functional and spatial relationships of components of architectural, structural, civil, mechanical, and electrical systems.
 - d. Indicate space requirements for routine maintenance and for anticipated replacement of components during the life of the installation.
 - e. Show location and size of access doors required for access to concealed dampers, valves, and other controls.
 - f. Indicate required installation sequences.
 - g. Indicate dimensions shown on Drawings. Specifically note dimensions that appear to be in conflict with submitted equipment and minimum clearance requirements. Provide alternative sketches to Architect indicating proposed resolution of such conflicts. Minor dimension changes and difficult installations will not be considered changes to the Contract.

1.8 REQUEST FOR INFORMATION (RFI)

- A. General: Immediately on discovery of the need for additional information, clarification, or interpretation of the Contract Documents, Contractor shall prepare and submit an RFI in the form specified.
1. Architect will return without response those RFIs submitted to Architect by other entities controlled by Contractor.

2. Coordinate and submit RFIs in a prompt manner to avoid delays in Contractor's work or work of subcontractors.
- B. Content of the RFI: Include a detailed, legible description of item needing information or interpretation and the following:
1. Project name.
 2. Owner name.
 3. Owner's Project number.
 4. Name of Architect and Construction Manager.
 5. Architect's Project number.
 6. Date.
 7. Name of Contractor.
 8. RFI number, numbered sequentially.
 9. RFI subject.
 10. Specification Section number and title and related paragraphs, as appropriate.
 11. Drawing number and detail references, as appropriate.
 12. Field dimensions and conditions, as appropriate.
 13. Contractor's suggested resolution. If Contractor's suggested resolution impacts the Contract Time or the Contract Sum, Contractor shall state impact in the RFI.
 14. Contractor's signature.
 15. Attachments: Include sketches, descriptions, measurements, photos, Product Data, Shop Drawings, coordination drawings, and other information necessary to fully describe items needing interpretation.
 - a. Include dimensions, thicknesses, structural grid references, and details of affected materials, assemblies, and attachments on attached sketches.
- C. RFI Forms: AIA Document G716.
1. Attachments shall be electronic files in PDF format.
- D. Architect's and Construction Manager's Action: Architect and Construction Manager will review each RFI, determine action required, and respond. Allow seven days for Architect's response for each RFI. RFIs received by Architect or Construction Manager after 1:00 p.m. will be considered as received the following working day.
1. The following Contractor-generated RFIs will be returned without action:
 - a. Requests for approval of submittals.
 - b. Requests for approval of substitutions.
 - c. Requests for approval of Contractor's means and methods.
 - d. Requests for coordination information already indicated in the Contract Documents.
 - e. Requests for adjustments in the Contract Time or the Contract Sum.
 - f. Requests for interpretation of Architect's actions on submittals.
 - g. Incomplete RFIs or inaccurately prepared RFIs.
 2. Architect's action may include a request for additional information, in which case Architect's time for response will date from time of receipt by Architect or Construction Manager of additional information.

3. Architect's action on RFIs that may result in a change to the Contract Time or the Contract Sum may be eligible for Contractor to submit Change Proposal according to Section 012600 "Contract Modification Procedures."
 - a. If Contractor believes the RFI response warrants change in the Contract Time or the Contract Sum, notify Architect and Construction Manager in writing within 5 days of receipt of the RFI response.
- E. RFI Log: Prepare, maintain, and submit a tabular log of RFIs organized by the RFI number. Submit log weekly. Include the following:
 1. Project name.
 2. Name and address of Contractor.
 3. Name and address of Architect and Construction Manager.
 4. RFI number, including RFIs that were returned without action or withdrawn.
 5. RFI description.
 6. Date the RFI was submitted.
 7. Date Architect's and Construction Manager's response was received.
 8. Identification of related Minor Change in the Work, Construction Change Directive, and Proposal Request, as appropriate.
 9. Identification of related Field Order, Work Change Directive, and Proposal Request, as appropriate.
- F. On receipt of Architect's and Construction Manager's action, update the RFI log and immediately distribute the RFI response to affected parties. Review response and notify Architect and Construction Manager within seven days if Contractor disagrees with response.

1.9 DIGITAL PROJECT MANAGEMENT PROCEDURES

- A. Architect's Data Files Not Available: Architect will not provide Architect's CAD drawing digital data files for Contractor's use during construction.

1.10 PROJECT MEETINGS

- A. General: Schedule and conduct meetings and conferences at Project site unless otherwise indicated.
 1. Attendees: Inform participants and others involved, and individuals whose presence is required, of date and time of each meeting. Notify Owner and Architect of scheduled meeting dates and times a minimum of seven days prior to meeting.
 2. Agenda: Prepare the meeting agenda. Distribute the agenda to all invited attendees.
 3. Minutes: Entity responsible for conducting meeting will record significant discussions and agreements achieved. Distribute the meeting minutes to everyone concerned, including Owner, Construction Manager, and Architect, within three days of the meeting.
- B. Preconstruction Conference: Owner will schedule and conduct a preconstruction conference before starting construction, at a time convenient to Owner and Architect, but no later than 15 days after execution of the Agreement.

1. Attendees: Authorized representatives of Owner, Construction Manager, Engineer, Architect, and their consultants; Contractor and its superintendent; major subcontractors; suppliers; and other concerned parties shall attend the conference. Participants at the conference shall be familiar with Project and authorized to conclude matters relating to the Work.
 2. Agenda: Discuss items of significance that could affect progress, including the following:
 - a. Responsibilities and personnel assignments.
 - b. Tentative construction schedule.
 - c. Phasing.
 - d. Critical work sequencing and long lead items.
 - e. Designation of key personnel and their duties.
 - f. Lines of communications.
 - g. Use of web-based Project software.
 - h. Procedures for processing field decisions and Change Orders.
 - i. Procedures for RFIs.
 - j. Procedures for testing and inspecting.
 - k. Procedures for processing Applications for Payment shall be aligned with the DRBA standards.
 - l. Distribution of the Contract Documents.
 - m. Submittal procedures.
 - n. Sustainable design requirements.
 - o. Preparation of Record Documents.
 - p. Use of the premises and existing building.
 - q. Work restrictions.
 - r. Working hours.
 - s. Owner's occupancy requirements.
 - t. Responsibility for temporary facilities and controls.
 - u. Procedures for moisture and mold control.
 - v. Procedures for disruptions and shutdowns.
 - w. Construction waste management and recycling.
 - x. Parking availability.
 - y. Office, work, and storage areas.
 - z. Equipment deliveries and priorities.
 - aa. First aid.
 - bb. Security.
 - cc. Progress cleaning.
 3. Minutes: Entity responsible for conducting meeting will record and distribute meeting minutes.
- C. Preinstallation Conferences: Conduct a preinstallation conference at Project site before each construction activity when required by other Sections and when required for coordination with other construction.
1. Attendees: Installer and representatives of manufacturers and fabricators involved in or affected by the installation and its coordination or integration with other materials and installations that have preceded or will follow, shall attend the meeting. Advise Architect, Construction Manager, and Owner of scheduled meeting dates.
 2. Agenda: Review progress of other construction activities and preparations for the particular activity under consideration, including requirements for the following:

- a. Contract Documents.
 - b. Options.
 - c. Related RFIs.
 - d. Related Change Orders.
 - e. Purchases.
 - f. Deliveries.
 - g. Submittals.
 - h. Sustainable design requirements.
 - i. Review of mockups.
 - j. Possible conflicts.
 - k. Compatibility requirements.
 - l. Time schedules.
 - m. Weather limitations.
 - n. Manufacturer's written instructions.
 - o. Warranty requirements.
 - p. Compatibility of materials.
 - q. Acceptability of substrates.
 - r. Temporary facilities and controls.
 - s. Space and access limitations.
 - t. Regulations of authorities having jurisdiction.
 - u. Testing and inspecting requirements.
 - v. Installation procedures.
 - w. Coordination with other work.
 - x. Required performance results.
 - y. Protection of adjacent work.
 - z. Protection of construction and personnel.
- 3. Record significant conference discussions, agreements, and disagreements, including required corrective measures and actions.
 - 4. Reporting: Distribute minutes of the meeting to each party present and to other parties requiring information.
 - 5. Do not proceed with installation if the conference cannot be successfully concluded. Initiate whatever actions are necessary to resolve impediments to performance of the Work and reconvene the conference at earliest feasible date.
- D. Project Closeout Conference: Construction Manager will schedule and conduct a project closeout conference, at a time convenient to Owner and Architect, but no later than 30 days prior to the scheduled date of Substantial Completion.
- 1. Conduct the conference to review requirements and responsibilities related to Project closeout.
 - 2. Attendees: Authorized representatives of Owner, Construction Manager, Architect, and their consultants; Contractor and its superintendent; major subcontractors; suppliers; and other concerned parties shall attend the meeting. Participants at the meeting shall be familiar with Project and authorized to conclude matters relating to the Work.
 - 3. Agenda: Discuss items of significance that could affect or delay Project closeout, including the following:
 - a. Preparation of Record Documents.
 - b. Procedures required prior to inspection for Substantial Completion and for final inspection for acceptance.

- c. Procedures for completing and archiving web-based Project software site data files.
 - d. Submittal of written warranties.
 - e. Requirements for completing sustainable design documentation.
 - f. Requirements for preparing operations and maintenance data.
 - g. Requirements for delivery of material samples, attic stock, and spare parts.
 - h. Requirements for demonstration and training.
 - i. Preparation of Contractor's punch list.
 - j. Procedures for processing Applications for Payment at Substantial Completion and for final payment shall be aligned with the DRBA standards.
 - k. Submittal procedures.
 - l. Coordination of separate contracts.
 - m. Owner's partial occupancy requirements.
 - n. Installation of Owner's furniture, fixtures, and equipment.
 - o. Responsibility for removing temporary facilities and controls.
4. Minutes: Entity conducting meeting will record and distribute meeting minutes.
- E. Progress Meetings: Conduct progress meetings at weekly intervals.
- 1. Coordinate dates of meetings with preparation of payment requests, which shall be aligned with the DRBA standards.
 - 2. Attendees: In addition to representatives of Owner, Construction Manager, 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 meeting shall be familiar with Project and authorized to conclude matters relating to the Work.
 - 3. Agenda: Review and correct or approve minutes of previous progress meeting. Review other items of significance that could affect progress. Include topics for discussion as appropriate to status of Project.
 - a. Contractor's Construction Schedule: Review progress since the last meeting. Determine whether each activity is on time, ahead of schedule, or behind schedule, in relation to Contractor's construction schedule. Determine how construction behind schedule will be expedited; secure commitments from parties involved to do so. Discuss whether schedule revisions are required to ensure that current and subsequent activities will be completed within the Contract Time.
 - 1) Review schedule for next period.
 - b. Review present and future needs of each entity present, including the following:
 - 1) Interface requirements.
 - 2) Sequence of operations.
 - 3) Resolution of BIM component conflicts.
 - 4) Status of submittals.
 - 5) Status of sustainable design documentation.
 - 6) Deliveries.
 - 7) Off-site fabrication.
 - 8) Access.
 - 9) Site use.

- 10) Temporary facilities and controls.
 - 11) Progress cleaning.
 - 12) Quality and work standards.
 - 13) Status of correction of deficient items.
 - 14) Field observations.
 - 15) Status of RFIs.
 - 16) Status of Proposal Requests.
 - 17) Pending changes.
 - 18) Status of Change Orders.
 - 19) Pending claims and disputes.
 - 20) Documentation of information for payment requests shall be aligned with the DRBA standards.
4. Minutes: Entity responsible for conducting the meeting will record and distribute the meeting minutes to each party present and to parties requiring information.
 - a. Schedule Updating: Revise Contractor's construction schedule after each progress meeting, where revisions to the schedule have been made or recognized. Issue revised schedule concurrently with the report of each meeting.
- F. Coordination Meetings: Conduct Project coordination meetings at regular intervals. Project coordination meetings are in addition to specific meetings held for other purposes, such as progress meetings and preinstallation conferences.
1. Attendees: In addition to representatives of Owner, Construction Manager, 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 meetings shall be familiar with Project and authorized to conclude matters relating to the Work.
 2. Agenda: Review and correct or approve minutes of the previous coordination meeting. Review other items of significance that could affect progress. Include topics for discussion as appropriate to status of Project.
 - a. Combined Contractor's Construction Schedule: Review progress since the last coordination meeting. Determine whether each contract is on time, ahead of schedule, or behind schedule, in relation to combined 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. Schedule Updating: Revise combined Contractor's construction schedule after each coordination meeting, where revisions to the schedule have been made or recognized. Issue revised schedule concurrently with report of each meeting.
 - c. Review present and future needs of each contractor present, including the following:
 - 1) Interface requirements.
 - 2) Sequence of operations.
 - 3) Resolution of BIM component conflicts.
 - 4) Status of submittals.
 - 5) Deliveries.

- 6) Off-site fabrication.
 - 7) Access.
 - 8) Site use.
 - 9) Temporary facilities and controls.
 - 10) Work hours.
 - 11) Hazards and risks.
 - 12) Progress cleaning.
 - 13) Quality and work standards.
 - 14) Status of RFIs.
 - 15) Proposal Requests.
 - 16) Change Orders.
 - 17) Pending changes.
3. Reporting: Record meeting results and distribute copies to everyone in attendance and to others affected by decisions or actions resulting from each meeting.

1.11 SCHEDULE OF VALUES

- A. Coordination: Coordinate preparation of the schedule of values with preparation of Contractor's construction schedule.
 1. Coordinate line items in the schedule of values with other required administrative forms and schedules, including the following:
 - a. Detailed cost breakout by trade of all significant items (value greater than \$500) and provide at least one line item for each specification section.
 - b. Submittal schedule.
 - c. Items required to be indicated as separate activities in Contractor's construction schedule.
 2. Submit the schedule of values to Engineer within 10 days of the Notice of Award.
- B. Format and Content: Use 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 Engineer.
 - c. Engineer's project number.
 - d. Contractor's name and address.
 - e. Date of submittal.
 2. Arrange schedule of values consistent with format of AIA Document G703.

3. 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. Name of subcontractor.
 - d. Name of manufacturer or fabricator.
 - e. Name of supplier.
 - f. Change Orders (numbers) that affect value.
 - g. Dollar value of the following, as a percentage of the Contract Sum to nearest one-hundredth percent, adjusted to total 100 percent.
 1. Labor.
 2. Materials.
 3. Equipment.
4. Provide a breakdown of the Contract Sum in enough detail to facilitate continued evaluation of Applications for Payment and progress reports. Coordinate with Project Manual table of contents.
5. Round amounts to nearest whole dollar; total shall equal the Contract Sum.
6. Provide a separate line item in the schedule of values for each part of the Work where Applications for Payment may include materials or equipment purchased or fabricated and stored, but not yet installed.
 - a. Differentiate between items stored on-site and items stored off-site. If required, include evidence of insurance.
7. 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.
8. Allowances: Provide a separate line item in the schedule of values for each allowance. Show line-item value of unit-cost allowances, as a product of the unit cost, multiplied by measured quantity. Use information indicated in the Contract Documents to determine quantities.
9. 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.

4. Schedule Updating: Update and resubmit the schedule of values before each Payment cycle when Change Orders or Construction Change Directives result in a change in the Contract Sum.

PART 2 - PRODUCTS (Not Used)

PART 3 - EXECUTION (Not Used)

END OF SECTION 013100

SECTION 013200 - CONSTRUCTION PROGRESS DOCUMENTATION

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including 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 documenting the progress of construction during performance of the Work, including the following:
 - 1. Startup construction schedule.
 - 2. Contractor's Construction Schedule.
 - 3. Construction schedule updating reports.
 - 4. Daily construction reports.
 - 5. Material location reports.
 - 6. Site condition reports.
 - 7. Unusual event reports.
- B. Related Requirements:
 - 1. Section 014000 "Quality Requirements" for schedule of tests and inspections.

1.3 METHOD OF MEASUREMENT AND BASIS OF PAYMENT

- A. Method of Measurement:
 - 1. All work described in this specification shall have no separate measurement and shall be included within the lump sum cost of Section 011000.
- B. Basis of Payment
 - 1. All work described in this specification shall have no separate payment and shall be included within the lump sum cost of Section 011000.

1.4 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 Activity: An activity on the critical path that must start and finish on the planned early start and finish times.

2. Predecessor Activity: An activity that precedes another activity in the network.
 3. Successor Activity: An activity that follows another activity in the network.
- B. Cost Loading: The allocation of the schedule of values for completing an activity as scheduled. The sum of costs for all activities must equal the total Contract Sum.
- C. 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 the critical path of Project and when activities can be performed.
- D. Critical Path: The longest connected chain of interdependent activities through the network schedule that establishes the minimum overall Project duration and contains no float.
- E. Event: The starting or ending point of an activity.
- F. Float: The measure of leeway in starting and completing an activity.
1. Float time belongs to Owner.
 2. Free float is the amount of time an activity can be delayed without adversely affecting the early start of the successor activity.
 3. Total float is the measure of leeway in starting or completing an activity without adversely affecting the planned Project completion date.
- G. Resource Loading: The allocation of manpower and equipment necessary for completing an activity as scheduled.

1.5 INFORMATIONAL SUBMITTALS

- A. Format for Submittals: Submit required submittals in the following format:
1. Working electronic copy of schedule file.
 2. PDF file.
 3. Two paper copies, of sufficient size to display entire period or schedule, as required.
- B. Startup construction schedule.
1. Submittal of cost-loaded startup construction schedule will not constitute approval of schedule of values for cost-loaded activities.
- C. Startup Network Diagram: Of size required to display entire network for entire construction period. Show logic ties for activities.
- D. Contractor's Construction Schedule: Initial schedule, of size required to display entire schedule for entire construction period.
1. Submit a working digital copy of schedule, using software indicated, and labeled to comply with requirements for submittals.
- E. CPM Reports: Concurrent with CPM schedule, submit each of the following reports. Format for each activity in reports shall contain activity number, activity description, cost and resource

loading, original duration, remaining duration, early start date, early finish date, late start date, late finish date, and total float in calendar days.

1. Activity Report: List of activities sorted by activity number and then early start date, or actual start date if known.
 2. Logic Report: List of preceding and succeeding activities for each activity, sorted in ascending order by activity number and then by early start date, or actual start date if known.
 3. Total Float Report: List of activities sorted in ascending order of total float.
 4. Earnings Report: Compilation of Contractor's total earnings from the Notice to Proceed until most recent Application for Payment.
- F. Construction Schedule Updating Reports: Submit with Applications for Payment.
- G. Daily Construction Reports: Submit at weekly intervals.
- H. Material Location Reports: Submit at weekly intervals.
- I. Site Condition Reports: Submit at time of discovery of differing conditions.
- J. Unusual Event Reports: Submit at time of unusual event.
- K. Qualification Data: For scheduling consultant.

1.6 QUALITY ASSURANCE

- A. Scheduling Consultant Qualifications: An experienced specialist in CPM scheduling and reporting, with capability of producing CPM reports and diagrams within 24 hours of Architect's request.
- B. Prescheduling Conference: Conduct conference at Project site to comply with requirements in Section 013100 "Project Management and Coordination." Review methods and procedures related to the preliminary construction schedule and Contractor's Construction Schedule, including, but not limited to, the following:
1. Review software limitations and content and format for reports.
 2. Verify availability of qualified personnel needed to develop and update schedule.
 3. Discuss constraints, including phasing, area separations and partial Owner occupancy.
 4. Review delivery dates for Owner-furnished products.
 5. Review schedule for work of Owner's separate contracts.
 6. Review submittal requirements and procedures.
 7. Review time required for review of submittals and resubmittals.
 8. Review requirements for tests and inspections by independent testing and inspecting agencies.
 9. Review time required for Project closeout and Owner startup procedures, including commissioning activities.
 10. Review and finalize list of construction activities to be included in schedule.
 11. Review procedures for updating schedule.

1.7 COORDINATION

- A. Coordinate Contractor's Construction Schedule with the schedule of values, submittal schedule, progress reports, payment requests, and other required schedules and reports.
 - 1. Secure time commitments for performing critical elements of the Work from entities involved.
 - 2. Coordinate each construction activity in the network with other activities, and schedule them in proper sequence.

1.8 CONTRACTOR'S CONSTRUCTION SCHEDULE

- A. Computer Scheduling Software: Prepare schedules using current version of a program that has been developed specifically to manage construction schedules.
 - 1. Use scheduling component of Project management software package specified in Section 013100 "Project Management and Coordination," for current Windows operating system.
- B. Scheduling Consultant: Engage a consultant to provide planning, evaluation, and reporting, using CPM scheduling.
 - 1. In-House Option: Owner may waive requirement to retain a consultant if Contractor employs skilled personnel with experience in CPM scheduling and reporting techniques. Submit qualifications.
 - 2. Meetings: Scheduling consultant shall attend all meetings related to Project progress, alleged delays, and time impact.
- C. Time Frame: Extend schedule from date established for the Notice to Proceed 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.
- D. Activities: Treat each floor or separate area as a separate numbered activity for each main 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. Temporary Facilities: Indicate start and completion dates for the following as applicable:
 - a. Securing of approvals and permits required for performance of the Work.
 - b. Temporary facilities.
 - c. Construction of mock-ups, prototypes and samples.
 - d. Owner interfaces and furnishing of items.
 - e. Interfaces with Separate Contracts.
 - f. Regulatory agency approvals.
 - g. Punch list.

3. Procurement Activities: Include procurement process activities for the following long lead-time items and major items, requiring a cycle of more than 60 days, as separate activities in schedule. Procurement cycle activities include, but are not limited to, submittals, approvals, purchasing, fabrication, and delivery.
 - a. Roof-top units.
 - b. Structural steel.
 4. Submittal Review Time: Include review and resubmittal times indicated in Section 013300 "Submittal Procedures" in schedule. Coordinate submittal review times in Contractor's Construction Schedule with submittal schedule.
 5. Startup and Testing Time: Include no fewer than 15 days for startup and testing.
 6. Commissioning Time: Include no fewer than 15 days for commissioning.
 7. Substantial Completion: Indicate completion in advance of date established for Substantial Completion, and allow time for Architect's and Construction Manager's administrative procedures necessary for certification of Substantial Completion.
 8. Punch List and Final Completion: Include not more than 30 days for completion of punch list items and Final Completion.
- E. 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. Phasing: Arrange list of activities on schedule by phase.
 2. Work under More Than One Contract: Include a separate activity for each contract.
 3. Work by Owner: Include a separate activity for each portion of the Work performed by Owner.
 4. Products Ordered in Advance: Include a separate activity for each product. Include delivery date indicated in Section 011000 "Summary." Delivery dates indicated stipulate the earliest possible delivery date.
 5. Owner-Furnished Products: Include a separate activity for each product. Include delivery date indicated in Section 011000 "Summary." Delivery dates indicated stipulate the earliest possible delivery date.
 6. Work Restrictions: Show the effect of the following items on the schedule:
 - a. Coordination with existing construction.
 - b. Limitations of continued occupancies.
 - c. Uninterruptible services.
 - d. Partial occupancy before Substantial Completion.
 - e. Use-of-premises restrictions.
 - f. Provisions for future construction.
 - g. Seasonal variations.
 - h. Environmental control.
 7. Work Stages: Indicate important stages of construction for each major portion of the Work, including, but not limited to, the following:
 - a. Subcontract awards.
 - b. Submittals.
 - c. Purchases.
 - d. Mockups.

- e. Fabrication.
 - f. Sample testing.
 - g. Deliveries.
 - h. Installation.
 - i. Tests and inspections.
 - j. Adjusting.
 - k. Curing.
 - l. Building flush-out.
 - m. Startup and placement into final use and operation.
 - n. Commissioning.
8. Construction Areas: Identify each major area of construction for each major portion of the Work. Indicate where each construction activity within a major area must be sequenced or integrated with other construction activities to provide for the following:
- a. Structural completion.
 - b. Temporary enclosure and space conditioning.
 - c. Permanent space enclosure.
 - d. Completion of mechanical installation.
 - e. Completion of electrical installation.
 - f. Substantial Completion.
9. Other Constraints: Aviation activities.
- F. Milestones: Include milestones indicated in the Contract Documents in schedule, including, but not limited to, the Notice to Proceed, Substantial Completion, and Final Completion, and the following interim milestones:
- 1. Removal of (2) existing hangars.
 - 2. Substantial completion of the proposed multi-purpose building.
- G. Cost Correlation: Superimpose a cost correlation timeline, indicating planned and actual costs. On the line, show planned and actual dollar volume of the Work performed as of planned and actual dates used for preparation of payment requests.
- H. Upcoming Work Summary: Prepare summary report indicating activities scheduled to occur or commence prior to submittal of next schedule update. Summarize the following issues:
- 1. Unresolved issues.
 - 2. Unanswered Requests for Information.
 - 3. Rejected or unreturned submittals.
 - 4. Notations on returned submittals.
 - 5. Pending modifications affecting the Work and the Contract Time.
- I. Contractor's Construction Schedule Updating: At monthly intervals, update schedule to reflect actual construction progress and activities. Issue schedule one week before each regularly scheduled progress meeting.

1. Revise schedule immediately after each meeting or other activity where revisions have been recognized or made. Issue updated schedule concurrently with the report of each such meeting.
 2. Include a report with updated schedule that indicates every change, including, but not limited to, changes in logic, durations, actual starts and finishes, and activity durations.
 3. As the Work progresses, indicate Final Completion percentage for each activity.
- J. Recovery Schedule: When periodic update indicates the Work is 14 or more calendar days behind the current approved schedule, submit a separate recovery schedule indicating means by which Contractor intends to regain compliance with the schedule. Indicate changes to working hours, working days, crew sizes, equipment required to achieve compliance, and date by which recovery will be accomplished.
- K. Distribution: Distribute copies of approved schedule to Architect, Construction Manager, Owner, separate contractors, testing and inspecting agencies, and other parties identified by Contractor with a need-to-know schedule responsibility.
1. Post copies in Project meeting rooms and temporary field offices.
 2. When revisions are made, distribute updated schedules to the same parties and post in the same locations. Delete parties from distribution when they have completed their assigned portion of the Work and are no longer involved in performance of construction activities.

1.9 STARTUP CONSTRUCTION SCHEDULE

- A. Not used.

1.10 GANTT-CHART SCHEDULE REQUIREMENTS

- A. Gantt-Chart Schedule: Submit a comprehensive, fully developed, horizontal, Gantt-chart-type, Contractor's Construction Schedule within 30 days of date established for the Notice to Proceed. The Contractor shall update the overall schedule monthly prior to progress payment and shall provide a 3-week look ahead schedule for every progress meeting.
1. Base schedule on the startup construction schedule and additional information received since the start of Project.
- B. Preparation: Indicate each significant construction activity separately. Identify first workday of each week with a continuous vertical line.
1. For construction activities that require three months or longer to complete, indicate an estimated completion percentage in 10 percent increments within time bar.

1.11 CPM SCHEDULE REQUIREMENTS

- A. Not used.

1.12 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, including presence of rain or snow.
 7. Testing and inspection.
 8. Accidents.
 9. Meetings and significant decisions.
 10. Unusual events.
 11. Stoppages, delays, shortages, and losses.
 12. Meter readings and similar recordings.
 13. Emergency procedures.
 14. Orders and requests of authorities having jurisdiction.
 15. Change Orders received and implemented.
 16. Construction Change Directives received and implemented.
 17. Services connected and disconnected.
 18. Equipment or system tests and startups.
 19. Partial completions and occupancies.
 20. Substantial Completions authorized.
- B. Unusual Event Reports: 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, responses by Contractor's personnel, evaluation of results or effects, and similar pertinent information. Advise Owner in advance when these events are known or predictable.
1. Submit unusual event reports directly to Owner within one day(s) of an occurrence. Distribute copies of report to parties affected by the occurrence.

PART 2 - PRODUCTS (Not Used)

PART 3 - EXECUTION (Not Used)

END OF SECTION 013200

SECTION 013300 - SUBMITTAL PROCEDURES

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

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

1.2 SUMMARY

- A. Section Includes:
 - 1. Submittal schedule requirements.
 - 2. Administrative and procedural requirements for submittals.

1.3 METHOD OF MEASUREMENT AND BASIS OF PAYMENT

- A. Method of Measurement:
 - 1. All work described in this specification shall have no separate measurement and shall be included within the lump sum cost of Section 011000.
- B. Basis of Payment
 - 1. All work described in this specification shall have no separate payment and shall be included within the lump sum cost of Section 011000.

1.4 DEFINITIONS

- A. Action Submittals: Written and graphic information and physical samples that require Architect's and Construction Manager's responsive action. Action submittals are those submittals indicated in individual Specification Sections as "action submittals."
- B. Informational Submittals: Written and graphic information and physical samples that do not require Architect's and Construction Manager's responsive action. Submittals may be rejected for not complying with requirements. Informational submittals are those submittals indicated in individual Specification Sections as "informational submittals."

1.5 SUBMITTAL SCHEDULE

- A. Submittal Schedule: Submit, as an action submittal, a list of submittals, arranged in chronological order by dates required by construction schedule. Include time required for review, ordering, manufacturing, fabrication, and delivery when establishing dates. Include

additional time required for making corrections or revisions to submittals noted by Architect and Construction Manager and additional time for handling and reviewing submittals required by those corrections.

1. Coordinate submittal schedule with list of subcontracts, the schedule of values, and Contractor's construction schedule.
2. Final Submittal Schedule: Submit concurrently with the first complete submittal of Contractor's construction schedule.
 - a. Submit revised submittal schedule as required to reflect changes in current status and timing for submittals.
3. Format: Arrange the following information in a tabular format:
 - a. Scheduled date for first submittal.
 - b. Specification Section number and title.
 - c. Submittal Category: Action; informational.
 - d. Name of subcontractor.
 - e. Description of the Work covered.
 - f. Scheduled date for Architect's and Construction Manager's final release or approval.

1.6 SUBMITTAL FORMATS

A. Submittal Information: Include the following information in each submittal:

1. Project name.
2. Date.
3. Name of Architect.
4. Name of Construction Manager.
5. Name of Contractor.
6. Name of firm or entity that prepared submittal.
7. Names of subcontractor, manufacturer, and supplier.
8. Unique submittal number, including revision identifier. Include Specification Section number with sequential alphanumeric identifier and alphanumeric suffix for resubmittals.
9. Category and type of submittal.
10. Submittal purpose and description.
11. Number and title of Specification Section, with paragraph number and generic name for each of multiple items.
12. Drawing number and detail references, as appropriate.
13. Indication of full or partial submittal.
14. Location(s) where product is to be installed, as appropriate.
15. Other necessary identification.
16. Remarks.
17. Signature of transmitter.

B. Options: Identify options requiring selection by Architect.

C. Deviations and Additional Information: On each submittal, clearly indicate deviations from requirements in the Contract Documents, including minor variations and limitations; include

relevant additional information and revisions, other than those requested by Architect and Construction Manager on previous submittals. Indicate by highlighting on each submittal or noting on attached separate sheet.

D. Paper Submittals:

1. Not used.

E. Electronic Submittals: Prepare submittals as PDF package, incorporating complete information into each PDF file. Name PDF file with submittal number.

1.7 SUBMITTAL PROCEDURES

A. Prepare and submit submittals required by individual Specification Sections. Types of submittals are indicated in individual Specification Sections.

1. Email: Prepare submittals as PDF package and transmit to Architect by sending via email. Include PDF transmittal form. Include information in email subject line as requested by Architect.
 - a. Architect, through Construction Manager, will return annotated file. Annotate and retain one copy of file as a digital Project Record Document file.

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. Submit all submittal items required for each Specification Section concurrently unless partial submittals for portions of the Work are indicated on approved submittal schedule.
3. Submit action submittals and informational submittals required by the same Specification Section as separate packages under separate transmittals.

C. Processing Time: Allow 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 7 days for initial review of each submittal. Allow additional time if coordination with subsequent submittals is required. Architect or Construction Manager 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 7 days for review of each resubmittal.

D. 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 with approval notation from Architect's and Construction Manager's action stamp.
- E. 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.
- F. Use for Construction: Retain complete copies of submittals on Project site. Use only final action submittals that are marked with approval notation from Architect's and Construction Manager's action stamp.

1.8 SUBMITTAL REQUIREMENTS

- A. 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 published data are unsuitable 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 catalog cuts.
 - b. Manufacturer's product specifications.
 - c. Standard color charts.
 - d. Statement of compliance with specified referenced standards.
 - e. Testing by recognized testing agency.
 - f. Application of testing agency labels and seals.
 - g. Notation of coordination requirements.
 - h. Availability and delivery time information.
 4. For equipment, include the following in addition to the above, as applicable:
 - a. Wiring diagrams that show factory-installed wiring.
 - b. Printed performance curves.
 - c. Operational range diagrams.
 - d. Clearances required to other construction, if not indicated on accompanying Shop Drawings.
 5. Submit Product Data before Shop Drawings, and before or concurrently with Samples.
- B. Shop Drawings: Prepare Project-specific information, drawn accurately to scale. Do not base Shop Drawings on reproductions of the Contract Documents or standard printed data.
1. Preparation: Fully illustrate requirements in the Contract Documents. Include the following information, as applicable:
 - a. Identification of products.
 - b. Schedules.

- c. Compliance with specified standards.
 - d. Notation of coordination requirements.
 - e. Notation of dimensions established by field measurement.
 - f. Relationship and attachment to adjoining construction clearly indicated.
 - g. Seal and signature of professional engineer if specified.
- C. Samples: Prepare and submit color samples for building exterior, trim and any interior colors required by the Owner.
- D. Product Schedule: 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 indicated in the Contract Documents or assigned by Contractor if none is indicated.
 - 2. Manufacturer and product name, and model number if applicable.
 - 3. Number and name of room or space.
 - 4. Location within room or space.
- E. Qualification Data: Prepare written information that demonstrates capabilities and experience of firm or person. Include lists of completed projects with project names and addresses, contact information of architects and owners, and other information specified.
- F. Design Data: Prepare and submit written and graphic information indicating compliance with indicated performance and design criteria in individual Specification Sections. Include list of assumptions and summary of loads. Include load diagrams if applicable. Provide name and version of software, if any, used for calculations. Number each page of submittal.
- G. Certificates:
 - 1. Certificates and Certifications Submittals: Submit a 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. Provide a notarized signature where indicated.
 - 2. Installer Certificates: Submit 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.
 - 3. Manufacturer Certificates: Submit written statements on manufacturer's letterhead, certifying that manufacturer complies with requirements in the Contract Documents. Include evidence of manufacturing experience where required.
 - 4. Material Certificates: Submit written statements on manufacturer's letterhead, certifying that material complies with requirements in the Contract Documents.
 - 5. Product Certificates: Submit written statements on manufacturer's letterhead, certifying that product complies with requirements in the Contract Documents.
 - 6. Welding Certificates: Prepare written certification that welding procedures and personnel comply with requirements in the Contract Documents. Submit record of AWS B2.1/B2.1M on AWS forms. Include names of firms and personnel certified.
- H. Test and Research Reports:

1. Compatibility Test Reports: Submit 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 substrate preparation and primers required.
2. Field Test Reports: Submit written reports indicating and interpreting results of field tests performed either during installation of product or after product is installed in its final location, for compliance with requirements in the Contract Documents.
3. Material Test Reports: Submit 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.
4. Preconstruction Test Reports: Submit 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.
5. Product Test Reports: Submit written reports indicating that 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.
6. Research Reports: Submit 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:
 - a. Name of evaluation organization.
 - b. Date of evaluation.
 - c. Time period when report is in effect.
 - d. Product and manufacturers' names.
 - e. Description of product.
 - f. Test procedures and results.
 - g. Limitations of use.

1.9 DELEGATED-DESIGN SERVICES

- A. Performance and Design Criteria: Where professional design services, calculations, or certifications by a design professional are specifically required of Contractor by Contract Documents, provide products and systems complying with specific performance and design criteria indicated.
 1. If criteria indicated are not sufficient to perform services or certification required, submit a written request for additional information to Architect.
- B. Delegated-Design Services Certification: In addition to Shop Drawings, Product Data, and other required submittals, submit digitally signed PDF electronic file prior to submission for a building permit, calculations or certificate, signed and sealed by the responsible design professional, for each product and system specifically assigned to Contractor to be designed or certified by a design professional.
 1. Indicate that products and systems comply with performance and design criteria in the Contract Documents. Include list of codes, loads, and other factors used in performing these services.

1.10 CONTRACTOR'S REVIEW

- A. Action Submittals and Informational Submittals: 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 and Construction Manager.
- B. Contractor's Approval: Indicate Contractor's approval for each submittal with a uniform approval stamp. Include 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.
 - 1. Architect and Construction Manager will not review submittals received from Contractor that do not have Contractor's review and approval.

1.11 ARCHITECT'S AND CONSTRUCTION MANAGER'S REVIEW

- A. Action Submittals: Architect and Construction Manager will review each submittal, indicate corrections or revisions required, and return.
 - 1. PDF Submittals: Architect and Construction Manager will indicate, via markup on each submittal, the appropriate action.
- B. Informational Submittals: Architect and Construction Manager will review each submittal and will not return it, or will return it if it does not comply with requirements. Architect and Construction Manager will forward each submittal to appropriate party.
- C. Partial submittals prepared for a portion of the Work will be reviewed when use of partial submittals has received prior approval from Architect and Construction Manager.
- D. Incomplete submittals are unacceptable, will be considered nonresponsive, and will be returned for resubmittal without review.
- E. Architect and Construction Manager will discard submittals received from sources other than Contractor.
- F. Submittals not required by the Contract Documents will be returned by Architect without action.

PART 2 - PRODUCTS (Not Used)

PART 3 - EXECUTION (Not Used)

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 01 Specification Sections, apply to this Section.

1.2 SUMMARY

- A. Quality control services include inspections, tests, and related actions including reports. Quality-control services are further specified in other Sections of these Specifications and shall be performed by independent testing agencies provided by the Owner, as specified.
- B. Owner is responsible for scheduling and payment of all quality control inspections and tests unless specifically identified to be performed by the Contractor.
- C. Retesting: Contractor shall pay for retesting where results of inspections and tests prove unsatisfactory and indicate non-compliance with requirements.

1.3 METHOD OF MEASUREMENT AND BASIS OF PAYMENT

- A. Method of Measurement:
 - 1. All work described in this specification shall have no separate measurement and shall be included within the lump sum cost of Section 011000.
- B. Basis of Payment
 - 1. All work described in this specification shall have no separate payment and shall be included within the lump sum cost of Section 011000.

1.4 AUXILIARY SERVICES

- A. Cooperate with agencies performing inspections and tests. Provide auxiliary services as requested. Notify agency in advance of operations requiring tests or inspections, to permit assignment of personnel. Auxiliary services include the following:
 - 1. Access to the Work.
 - 2. Incidental labor and facilities to assist inspections and tests.
 - 3. Adequate quantities of materials that require testing, and assisting in taking samples.
 - 4. Facilities for storage and curing of test samples.
 - 5. Security and protection of samples and test equipment.

1.5 DUTIES OF TESTING AGENCY

- A. Testing Agency shall cooperate with Architect and Contractor in performing its duties. Agency shall provide qualified personnel to perform inspections and tests.
 - 1. Agency shall promptly notify Architect and Contractor of irregularities or deficiencies observed in the Work during performance of its services.
 - 2. Agency shall not release, revoke, alter or enlarge requirements of the Contract Documents or approve or accept any portion of the Work.
 - 3. Agency shall not perform duties of the Contractor.

1.6 SUBMITTALS

- A. Testing Agency shall submit a certified written report of each inspection and test to the following:
 - 1. Owner.
 - 2. Engineer.
 - 3. Contractor.
 - 4. Structural Engineer.
 - 5. Authorities having jurisdiction, when authorities so direct.

1.7 REPORT DATA

- A. Reports of each inspection, test, or similar service shall include at least the following:
 - 1. Name, address and telephone number of testing agency.
 - 2. Project title and testing agency's project number.
 - 3. Designation (number) and date of report.
 - 4. Dates and locations where samples were taken or inspections and field tests made.
 - 5. Names of individuals taking the sample or making the inspection or test.
 - 6. Designation of the project and test method.
 - 7. Complete inspection or test data including an interpretation of test results.
 - 8. Ambient conditions at the time of sample taking and testing.
 - 9. Comments or professional opinion on whether inspected or tested work complies with requirements.
 - 10. Recommendation on retesting or reinspection.
 - 11. Name and signature of laboratory inspector.

1.8 TESTING AGENCY QUALIFICATIONS

- A. Engage inspection and testing agencies that are pre-qualified as complying with the American Council of Independent Laboratories' "Quality Assurance Manual" and that specialize in the types of inspections and tests to be performed.
 - 1. Each testing agency shall be authorized by authorities having jurisdiction to operate in the state where the Project is located.

1.9 METHOD OF MEASUREMENT AND PAYMENT

- A. No measurement for direct payment will be made for any portion of the work described in this section, as this work is considered a necessary and incidental obligation for the completion of the work of the project and all costs shall be included in the various items of work on this project.

PART 2 - PRODUCTS (Not Used)

PART 3 - EXECUTION (Not Used)

END OF SECTION 014000

SECTION 014200 – REFERENCES

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 DEFINITIONS

- A. General: Basic Contract definitions are included in the Conditions of the Contract.
- B. "Approved": When used to convey Architect's action on Contractor's submittals, applications, and requests, "approved" is limited to Architect's duties and responsibilities as stated in the Conditions of the Contract.
- C. "Directed": A command or instruction by Architect. Other terms including "requested," "authorized," "selected," "required," and "permitted" have the same meaning as "directed."
- D. "Indicated": Requirements expressed by graphic representations or in written form on Drawings, in Specifications, and in other Contract Documents. Other terms including "shown," "noted," "scheduled," and "specified" have the same meaning as "indicated."
- E. "Regulations": Laws, ordinances, statutes, and lawful orders issued by authorities having jurisdiction, and rules, conventions, and agreements within the construction industry that control performance of the Work.
- F. "Furnish": Supply and deliver to Project site, ready for unloading, unpacking, assembly, installation, and similar operations.
- G. "Install": Unload, temporarily store, unpack, assemble, erect, place, anchor, apply, work to dimension, finish, cure, protect, clean, and similar operations at Project site.
- H. "Provide": Furnish and install, complete and ready for the intended use.
- I. "Project Site": Space available for performing construction activities. The extent of Project site is shown on Drawings and may or may not be identical with the description of the land on which Project is to be built.

1.3 INDUSTRY STANDARDS

- A. Applicability of Standards: Unless the Contract Documents include more stringent requirements, applicable construction industry standards have the same force and effect as if bound or copied directly into the Contract Documents to the extent referenced. Such standards are made a part of the Contract Documents by reference.

- B. Publication Dates: Comply with standards in effect as of date of the Contract Documents unless otherwise indicated.
1. For standards referenced by applicable building codes, comply with dates of standards as listed in building codes.

1.4 ABBREVIATIONS AND ACRONYMS

- A. Industry Organizations: Where abbreviations and acronyms are used in Specifications or other Contract Documents, they shall mean the recognized name of the entities indicated in Gale's "Encyclopedia of Associations: National Organizations of the U.S." or in Columbia Books' "National Trade & Professional Associations of the United States."

1. AABC - Associated Air Balance Council; www.aabc.com.
2. AAMA - American Architectural Manufacturers Association; www.aamanet.org.
3. AAPFCO - Association of American Plant Food Control Officials; www.aapfco.org.
4. AASHTO - American Association of State Highway and Transportation Officials; www.transportation.org.
5. AATCC - American Association of Textile Chemists and Colorists; www.aatcc.org.
6. ABMA - American Bearing Manufacturers Association; www.americanbearings.org.
7. ABMA - American Boiler Manufacturers Association; www.abma.com.
8. ACI - American Concrete Institute; (Formerly: ACI International); www.concrete.org.
9. ACPA - American Concrete Pipe Association; www.concrete-pipe.org.
10. AEIC - Association of Edison Illuminating Companies, Inc. (The); www.aeic.org.
11. AF&PA - American Forest & Paper Association; www.afandpa.org.
12. AGA - American Gas Association; www.aga.org.
13. AHAM - Association of Home Appliance Manufacturers; www.aham.org.
14. AHRI - Air-Conditioning, Heating, and Refrigeration Institute (The); www.ahrinet.org.
15. AI - Asphalt Institute; www.asphaltinstitute.org.
16. AIA - American Institute of Architects (The); www.aia.org.
17. AISC - American Institute of Steel Construction; www.aisc.org.
18. AISI - American Iron and Steel Institute; www.steel.org.
19. AITC - American Institute of Timber Construction; www.aitc-glulam.org.
20. AMCA - Air Movement and Control Association International, Inc.; www.amca.org.
21. ANSI - American National Standards Institute; www.ansi.org.
22. AOSA - Association of Official Seed Analysts, Inc.; www.aosaseed.com.
23. APA - APA - The Engineered Wood Association; www.apawood.org.
24. APA - Architectural Precast Association; www.archprecast.org.
25. API - American Petroleum Institute; www.api.org.
26. ARI - Air-Conditioning & Refrigeration Institute; (See AHRI).
27. ARI - American Refrigeration Institute; (See AHRI).
28. ARMA - Asphalt Roofing Manufacturers Association; www.asphaltroofing.org.
29. ASCE - American Society of Civil Engineers; www.asce.org.
30. ASCE/SEI - American Society of Civil Engineers/Structural Engineering Institute; (See ASCE).
31. ASHRAE - American Society of Heating, Refrigerating and Air-Conditioning Engineers; www.ashrae.org.
32. ASME - ASME International; (American Society of Mechanical Engineers); www.asme.org.
33. ASSE - American Society of Sanitary Engineering; www.asse-plumbing.org.

34. ASSP - American Society of Safety Professionals (The); www.assp.org.
35. ASTM - ASTM International; www.astm.org.
36. ATIS - Alliance for Telecommunications Industry Solutions; www.atis.org.
37. AVIXA - Audiovisual and Integrated Experience Association; (Formerly: Infocomm International); www.soundandcommunications.com.
38. AWEA - American Wind Energy Association; www.awea.org.
39. AWI - Architectural Woodwork Institute; www.awinet.org.
40. AWMAC - Architectural Woodwork Manufacturers Association of Canada; www.awmac.com.
41. AWWPA - American Wood Protection Association; www.awpa.com.
42. AWS - American Welding Society; www.aws.org.
43. AWWA - American Water Works Association; www.awwa.org.
44. BHMA - Builders Hardware Manufacturers Association; www.buildershardware.com.
45. BIA - Brick Industry Association (The); www.gobrick.com.
46. BICSI - BICSI, Inc.; www.bicsi.org.
47. BIFMA - BIFMA International; (Business and Institutional Furniture Manufacturer's Association); www.bifma.org.
48. BISSC - Baking Industry Sanitation Standards Committee; www.bissc.org.
49. BWF - Badminton World Federation; (Formerly: International Badminton Federation); www.bissc.org.
50. CDA - Copper Development Association; www.copper.org.
51. CE - Conformance Européenne; <http://ec.europa.eu/growth/single-market/ce-marking/>.
52. CEA - Canadian Electricity Association; www.electricity.ca.
53. CFFA - Chemical Fabrics and Film Association, Inc.; www.chemicalfabricsandfilm.com.
54. CFSEI - Cold-Formed Steel Engineers Institute; www.cfsei.org.
55. CGA - Compressed Gas Association; www.cganet.com.
56. CIMA - Cellulose Insulation Manufacturers Association; www.cellulose.org.
57. CISCA - Ceilings & Interior Systems Construction Association; www.cisca.org.
58. CISPI - Cast Iron Soil Pipe Institute; www.cispi.org.
59. CLFMI - Chain Link Fence Manufacturers Institute; www.chainlinkinfo.org.
60. CPA - Composite Panel Association; www.compositepanel.org.
61. CRI - Carpet and Rug Institute (The); www.carpet-rug.org.
62. CRRC - Cool Roof Rating Council; www.coolroofs.org.
63. CRSI - Concrete Reinforcing Steel Institute; www.crsi.org.
64. CSA - CSA Group; www.csa-group.org.
65. CSI - Construction Specifications Institute (The); www.csiresources.org.
66. CSSB - Cedar Shake & Shingle Bureau; www.cedarbureau.org.
67. CTA - Consumer Technology Association; www.cta.tech.
68. CTI - Cooling Technology Institute; (Formerly: Cooling Tower Institute); www.coolingtechnology.org.
69. CWC - Composite Wood Council; (See CPA).
70. DASMA - Door and Access Systems Manufacturers Association; www.dasma.com.
71. DHA - Decorative Hardwoods Association; (Formerly: Hardwood Plywood & Veneer Association); www.decorativehardwoods.org.
72. DHI - Door and Hardware Institute; www.dhi.org.
73. ECA - Electronic Components Association; (See ECIA).
74. ECAMA - Electronic Components Assemblies & Materials Association; (See ECIA).
75. ECIA - Electronic Components Industry Association; www.eciaonline.org.
76. EIA - Electronic Industries Alliance; (See TIA).
77. EIMA - EIFS Industry Members Association; www.eima.com.
78. EJMA - Expansion Joint Manufacturers Association, Inc.; www.ejma.org.

79. EOS/ESD Association; (Electrostatic Discharge Association); www.esda.org.
80. ESTA - Entertainment Services and Technology Association; (See PLASA).
81. ETL - Intertek (See Intertek); www.intertek.com.
82. EVO - Efficiency Valuation Organization; www.evo-world.org.
83. FCI - Fluid Controls Institute; www.fluidcontrolsintstitute.org.
84. FIBA - Federation Internationale de Basketball; (The International Basketball Federation); www.fiba.com.
85. FIVB - Federation Internationale de Volleyball; (The International Volleyball Federation); www.fivb.org.
86. FM Approvals - FM Approvals LLC; www.fmglobal.com.
87. FM Global - FM Global; (Formerly: FMG - FM Global); www.fmglobal.com.
88. FRSA - Florida Roofing, Sheet Metal Contractors Association, Inc.; www.floridarooft.com.
89. FSA - Fluid Sealing Association; www.fluidsealing.com.
90. FSC - Forest Stewardship Council U.S.; www.fscus.org.
91. GA - Gypsum Association; www.gypsum.org.
92. GANA - Glass Association of North America; (See NGA).
93. GS - Green Seal; www.greenseal.org.
94. HI - Hydraulic Institute; www.pumps.org.
95. HI/GAMA - Hydronics Institute/Gas Appliance Manufacturers Association; (See AHRI).
96. HMMA - Hollow Metal Manufacturers Association; (See NAAMM).
97. HPVA - Hardwood Plywood & Veneer Association; (See DHA).
98. HPW - H. P. White Laboratory, Inc.; www.hpwhite.com.
99. IAPSC - International Association of Professional Security Consultants; www.iapsc.org.
100. IAS - International Accreditation Service; www.iasonline.org.
101. ICBO - International Conference of Building Officials; (See ICC).
102. ICC - International Code Council; www.iccsafe.org.
103. ICEA - Insulated Cable Engineers Association, Inc.; www.icea.net.
104. ICPA - International Cast Polymer Alliance; www.icpa-hq.org.
105. ICRI - International Concrete Repair Institute, Inc.; www.icri.org.
106. IEC - International Electrotechnical Commission; www.iec.ch.
107. IEEE - Institute of Electrical and Electronics Engineers, Inc. (The); www.ieee.org.
108. IES - Illuminating Engineering Society; (Formerly: Illuminating Engineering Society of North America); www.ies.org.
109. IESNA - Illuminating Engineering Society of North America; (See IES).
110. IEST - Institute of Environmental Sciences and Technology; www.iest.org.
111. IGMA - Insulating Glass Manufacturers Alliance; www.igmaonline.org.
112. IGSHPA - International Ground Source Heat Pump Association; www.igshpa.org.
113. II - Infocomm International; (See AVIXA).
114. ILI - Indiana Limestone Institute of America, Inc.; www.iliai.com.
115. Intertek - Intertek Group; (Formerly: ETL SEMCO; Intertek Testing Service NA); www.intertek.com.
116. ISA - International Society of Automation (The); (Formerly: Instrumentation, Systems, and Automation Society); www.isa.org.
117. ISAS - Instrumentation, Systems, and Automation Society (The); (See ISA).
118. ISFA - International Surface Fabricators Association; (Formerly: International Solid Surface Fabricators Association); www.isfanow.org.
119. ISO - International Organization for Standardization; www.iso.org.
120. ISSFA - International Solid Surface Fabricators Association; (See ISFA).
121. ITU - International Telecommunication Union; www.itu.int/home.
122. KCMA - Kitchen Cabinet Manufacturers Association; www.kcma.org.

123. LMA - Laminating Materials Association; (See CPA).
124. LPI - Lightning Protection Institute; www.lightning.org.
125. MBMA - Metal Building Manufacturers Association; www.mbma.com.
126. MCA - Metal Construction Association; www.metalconstruction.org.
127. MFMA - Maple Flooring Manufacturers Association, Inc.; www.maplefloor.org.
128. MFMA - Metal Framing Manufacturers Association, Inc.; www.metalframingmfg.org.
129. MHIA - Material Handling Industry of America; www.mhia.org.
130. MIA - Marble Institute of America; (See NSI).
131. MMPA - Moulding & Millwork Producers Association; www.wmmpa.com.
132. MPI - Master Painters Institute; www.paintinfo.com.
133. MSS - Manufacturers Standardization Society of The Valve and Fittings Industry Inc.; www.mss-hq.org.
134. NAAMM - National Association of Architectural Metal Manufacturers; www.naamm.org.
135. NACE - NACE International; (National Association of Corrosion Engineers International); www.nace.org.
136. NADCA - National Air Duct Cleaners Association; www.nadca.com.
137. NAIMA - North American Insulation Manufacturers Association; www.naima.org.
138. NALP - National Association of Landscape Professionals; www.landscapeprofessionals.org.
139. NBGQA - National Building Granite Quarries Association, Inc.; www.nbgqa.com.
140. NBI - New Buildings Institute; www.newbuildings.org.
141. NCAA - National Collegiate Athletic Association (The); www.ncaa.org.
142. NCMA - National Concrete Masonry Association; www.ncma.org.
143. NEBB - National Environmental Balancing Bureau; www.nebb.org.
144. NECA - National Electrical Contractors Association; www.necanet.org.
145. NeLMA - Northeastern Lumber Manufacturers Association; www.nelma.org.
146. NEMA - National Electrical Manufacturers Association; www.nema.org.
147. NETA - InterNational Electrical Testing Association; www.netaworld.org.
148. NFHS - National Federation of State High School Associations; www.nfhs.org.
149. NFPA - National Fire Protection Association; www.nfpa.org.
150. NFPA - NFPA International; (See NFPA).
151. NFRC - National Fenestration Rating Council; www.nfrc.org.
152. NGA - National Glass Association (The); (Formerly: Glass Association of North America); www.glass.org.
153. NHLA - National Hardwood Lumber Association; www.nhla.com.
154. NLGA - National Lumber Grades Authority; www.nlga.org.
155. NOFMA - National Oak Flooring Manufacturers Association; (See NWFA).
156. NOMMA - National Ornamental & Miscellaneous Metals Association; www.nomma.org.
157. NRCA - National Roofing Contractors Association; www.nrca.net.
158. NRMCA - National Ready Mixed Concrete Association; www.nrmca.org.
159. NSF - NSF International; www.nsf.org.
160. NSI - National Stone Institute; (Formerly: Marble Institute of America); www.naturalstoneinstitute.org.
161. NSPE - National Society of Professional Engineers; www.nspe.org.
162. NSSGA - National Stone, Sand & Gravel Association; www.nssga.org.
163. NTMA - National Terrazzo & Mosaic Association, Inc. (The); www.ntma.com.
164. NWFA - National Wood Flooring Association; www.nwfa.org.
165. PCI - Precast/Prestressed Concrete Institute; www.pci.org.
166. PDI - Plumbing & Drainage Institute; www.pdionline.org.

167. PLASA - PLASA; (Formerly: ESTA - Entertainment Services and Technology Association); www.plasa.org.
168. RCSC - Research Council on Structural Connections; www.boltcouncil.org.
169. RFCI - Resilient Floor Covering Institute; www.rfci.com.
170. RIS - Redwood Inspection Service; www.redwoodinspection.com.
171. SAE - SAE International; www.sae.org.
172. SCTE - Society of Cable Telecommunications Engineers; www.scte.org.
173. SDI - Steel Deck Institute; www.sdi.org.
174. SDI - Steel Door Institute; www.steeldoor.org.
175. SEFA - Scientific Equipment and Furniture Association (The); www.sefalabs.com.
176. SEI/ASCE - Structural Engineering Institute/American Society of Civil Engineers; (See ASCE).
177. SIA - Security Industry Association; www.siaonline.org.
178. SJI - Steel Joist Institute; www.steeljoist.org.
179. SMA - Screen Manufacturers Association; www.smainfo.org.
180. SMACNA - Sheet Metal and Air Conditioning Contractors' National Association; www.smacna.org.
181. SMPTE - Society of Motion Picture and Television Engineers; www.smpte.org.
182. SPFA - Spray Polyurethane Foam Alliance; www.sprayfoam.org.
183. SPIB - Southern Pine Inspection Bureau; www.spib.org.
184. SPRI - Single Ply Roofing Industry; www.spri.org.
185. SRCC - Solar Rating & Certification Corporation; www.solar-rating.org.
186. SSINA - Specialty Steel Industry of North America; www.ssina.com.
187. SSPC - SSPC: The Society for Protective Coatings; www.sspc.org.
188. STI - Steel Tank Institute; www.steeltank.com.
189. SWI - Steel Window Institute; www.steelwindows.com.
190. SWPA - Submersible Wastewater Pump Association; www.swpa.org.
191. TCA - Tilt-Up Concrete Association; www.tilt-up.org.
192. TCNA - Tile Council of North America, Inc.; www.tileusa.com.
193. TEMA - Tubular Exchanger Manufacturers Association, Inc.; www.tema.org.
194. TIA - Telecommunications Industry Association (The); (Formerly: TIA/EIA - Telecommunications Industry Association/Electronic Industries Alliance); www.tiaonline.org.
195. TIA/EIA - Telecommunications Industry Association/Electronic Industries Alliance; (See TIA).
196. TMS - The Masonry Society; www.masonrysociety.org.
197. TPI - Truss Plate Institute; www.tpinst.org.
198. TPI - Turfgrass Producers International; www.turfgrasssod.org.
199. TRI - Tile Roofing Institute; www.tilerroofing.org.
200. UL - Underwriters Laboratories Inc.; www.ul.com.
201. UNI - Uni-Bell PVC Pipe Association; www.uni-bell.org.
202. USAV - USA Volleyball; www.usavolleyball.org.
203. USGBC - U.S. Green Building Council; www.usgbc.org.
204. USITT - United States Institute for Theatre Technology, Inc.; www.usitt.org.
205. WA - Wallcoverings Association; www.wallcoverings.org.
206. WASTEC - Waste Equipment Technology Association; www.wastec.org.
207. WCLIB - West Coast Lumber Inspection Bureau; www.wclib.org.
208. WCMA - Window Covering Manufacturers Association; www.wcmanet.org.
209. WDMA - Window & Door Manufacturers Association; www.wdma.com.
210. WI - Woodwork Institute; www.wicnet.org.
211. WSRCA - Western States Roofing Contractors Association; www.wsrca.com.

- B. Code Agencies: Where abbreviations and acronyms are used in Specifications or other Contract Documents, they shall mean the recognized name of the entities in the following list. This information is believed to be accurate as of the date of the Contract Documents.
1. IAPMO - International Association of Plumbing and Mechanical Officials; www.iapmo.org.
 2. ICC - International Code Council; www.iccsafe.org.
 3. ICC-ES - ICC Evaluation Service, LLC; www.icc-es.org.
- C. Federal Government Agencies: Where abbreviations and acronyms are used in Specifications or other Contract Documents, they shall mean the recognized name of the entities in the following list. Information is subject to change and is up to date as of the date of the Contract Documents.
1. COE - Army Corps of Engineers; www.usace.army.mil.
 2. CPSC - Consumer Product Safety Commission; www.cpsc.gov.
 3. DOC - Department of Commerce; National Institute of Standards and Technology; www.nist.gov.
 4. DOD - Department of Defense; www.quicksearch.dla.mil.
 5. DOE - Department of Energy; www.energy.gov.
 6. EPA - Environmental Protection Agency; www.epa.gov.
 7. FAA - Federal Aviation Administration; www.faa.gov.
 8. FG - Federal Government Publications; www.gpo.gov/fdsys.
 9. GSA - General Services Administration; www.gsa.gov.
 10. HUD - Department of Housing and Urban Development; www.hud.gov.
 11. LBL - Lawrence Berkeley National Laboratory; Environmental Energy Technologies Division; www.eetd.lbl.gov.
 12. OSHA - Occupational Safety & Health Administration; www.osha.gov.
 13. SD - Department of State; www.state.gov.
 14. TRB - Transportation Research Board; National Cooperative Highway Research Program; The National Academies; www.trb.org.
 15. USDA - Department of Agriculture; Agriculture Research Service; U.S. Salinity Laboratory; www.ars.usda.gov.
 16. USDA - Department of Agriculture; Rural Utilities Service; www.usda.gov.
 17. USDOJ - Department of Justice; Office of Justice Programs; National Institute of Justice; www.ojp.usdoj.gov.
 18. USP - U.S. Pharmacopeial Convention; www.usp.org.
 19. USPS - United States Postal Service; www.usps.com.
- D. Standards and Regulations: Where abbreviations and acronyms are used in Specifications or other Contract Documents, they shall mean the recognized name of the standards and regulations in the following list. This information is subject to change and is believed to be accurate as of the date of the Contract Documents.
1. CFR - Code of Federal Regulations; Available from Government Printing Office; www.govinfo.gov.
 2. DOD - Department of Defense; Military Specifications and Standards; Available from DLA Document Services; www.quicksearch.dla.mil.
 3. DSCC - Defense Supply Center Columbus; (See FS).
 4. FED-STD - Federal Standard; (See FS).
 5. FS - Federal Specification; Available from DLA Document Services; www.quicksearch.dla.mil.

- a. Available from Defense Standardization Program; www.dsp.dla.mil.
 - b. Available from General Services Administration; www.gsa.gov.
 - c. Available from National Institute of Building Sciences/Whole Building Design Guide; www.wbdg.org.
 6. MILSPEC - Military Specification and Standards; (See DOD).
 7. USAB - United States Access Board; www.access-board.gov.
 8. USATBCB - U.S. Architectural & Transportation Barriers Compliance Board; (See USAB).
- E. State Government Agencies: Where abbreviations and acronyms are used in Specifications or other Contract Documents, they shall mean the recognized name of the entities in the following list. This information is subject to change and is believed to be accurate as of the date of the Contract Documents.
1. OSFM; State of Delaware Fire Marshall;
 2. DPI; Dover Delaware Department of Planning & Inspection
 3. DelDOT; Delaware Department of Transportation.
 4. KC; Kent County
 5. DNREC; Delaware Department of Natural Resources and Environmental Control

PART 2 - PRODUCTS (Not Used)

PART 3 - EXECUTION (Not Used)

END OF SECTION 014200

SECTION 015000 - TEMPORARY FACILITIES AND CONTROLS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

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

1.2 SUMMARY

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

1.3 METHOD OF MEASUREMENT AND BASIS OF PAYMENT

- A. Method of Measurement:

- 1. All work described in this specification shall have no separate measurement and shall be included within the lump sum cost of Section 011000.

- B. Basis of Payment

- 1. All work described in this specification shall have no separate payment and shall be included within the lump sum cost of Section 011000.

1.4 GENERAL DESCRIPTION

- A. Provide all items in this section, which are not specifically assigned to another Contractor. Contractor shall provide all construction facilities and temporary controls needed for the safe and proper execution of its work which is not provided for in his section.
- B. Contractor is required to provide construction facilities and temporary controls and shall keep them operational for a period of time fifteen minutes before the established starting time of that trade which starts work earliest in the morning to fifteen minutes after the established quitting time of that trade which stops work latest in the evening, Monday through Friday inclusive.
- C. Contractor is required to provide construction facilities and temporary controls and shall install them as soon after award of the Contract as necessary to enable the Work to proceed in accordance with the Progress Schedule. The construction facilities and temporary controls shall be extended as required to keep up with the job progress and maintained until completion of the project unless otherwise directed in writing by the Engineer.

- D. Contractor who requires extensions to the construction facilities and temporary controls specified to be provided by another Contractor, or requires them at times other than those specified, shall provide and maintain them at their own cost.
- E. Contractor shall provide temporary storage facilities to store equipment which is impacted as the result of the demolition and construction activities. Facilities shall have adequate climate control to protect items to be stored.

1.5 USE CHARGES

- A. General: Installation and removal of temporary facilities shall be included in the Contract Sum unless otherwise indicated. Allow other entities to use temporary services and facilities without cost, including, but not limited to Engineer, Construction Manager, testing agencies, and authorities having jurisdiction.
- B. Water Service from Existing System: Water from Owner's existing water system is available for use without metering and without payment of use charges. Provide connections and extensions of services as required for construction operations.
- C. Electric Power Service and Data from Existing System: Electric power and Data from Owner's existing system is available for use without metering and without payment of use charges. Provide connections and extensions of services as required for construction operations.
- D. Natural Gas Service from Existing System: Natural gas from Owner's existing system is:
 - 1. Available for use without metering and without payment of use charges for maintaining required interior temperatures in existing terminal areas being renovated providing all openings are enclosed with insulated temporary walls.
 - 2. Available for use without metering and without payment of use charges for maintaining required interior temperatures of closed in areas. Provide connections and extensions of services as required for construction. The use of natural gas for temporary heat of open construction areas shall not be allowed. Propane or other fuel source shall be utilized to maintain temperatures of uncompleted construction areas.

1.6 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 wet construction has dried sufficiently to permit installation of finish materials.
- E. Dust- and HVAC-Control Plan: Submit coordination drawing and narrative that indicates the dust- and HVAC-control measures proposed for use, proposed locations, and proposed time frame for their operation. Identify further options if proposed measures are later determined to be inadequate. Include the following:
1. Locations of dust-control partitions at each phase of work.
 2. Waste handling procedures.
 3. Other dust-control measures.

1.7 QUALITY ASSURANCE

- A. Electric Service: Comply with NECA, NEMA, and UL standards and regulations for temporary electric service. Install service to comply with NFPA 70.
- B. Tests and Inspections: Arrange for authorities having jurisdiction to test and inspect each temporary utility before use. Obtain required certifications and permits.
- C. Accessible Temporary Egress: Comply with applicable provisions in the U.S. Engineer Rural & Transportation Barriers Compliance Board's ADA-ABA Accessibility Guidelines and ICC/ANSI A117.1.

1.8 PROJECT CONDITIONS

- A. Temporary Use of Permanent Facilities: Engage Installer of each permanent service to assume responsibility for operation, of each permanent service during its use as a construction facility before Owner's acceptance, regardless of previously assigned responsibilities.

1.9 TEMPORARY LIGHT AND POWER

- A. Contractor shall provide, within 20 days from the Notice to Proceed, temporary power to the work area as follows:
 1. Provide temporary electric power for the construction sites: as required by all Contractors. Submit a distribution diagram for site coverage to the Engineer for review. Provide for multiple panel locations.
 2. Minimum 100A, 120/240V, single phase service, per site.

3. Minimum eight (8) GFCI protected 20A rated receptacles available at the temporary pole and sub-poles. Provide connections for office trailers. Provide additional GFCI protected 20A rated receptacles at other areas as required for the particular site.
4. Energize and utilize permanent power equipment and distribution for temporary requirements as soon as construction activities permit. Terminate temporary power facilities as soon as possible after permanent facilities are utilized for the temporary electric. Maintain and transfer temporary power for office trailers as required to completion of all work.
5. Contractor shall pay for all materials, equipment, connection fees, and utility charges for installing and retiring the temporary services.
6. Verify with the Construction Manager where to set up the various temporary electrical systems for temporary electric for the construction activity sites.

B. Contractor shall:

1. Provide and maintain temporary extensions and equipment, required for work.
2. Provide larger lamps required for work, but do not exceed rated capacity of any circuit or feeder.
3. Provide flashlights or electric lanterns not requiring use of temporary light system for own employees in building after regular working hours.
4. Provide new materials for temporary light and power, except that transformers need not be new if they are in satisfactory operating condition.
5. Provide ground-fault protection (such as portable plug-in type ground-fault circuit-interrupters) on single phase 15 and 20 ampere receptacle outlets which are used by own personnel.
6. Provide receptacle outlets, portable cord connectors and attachment plugs with standard NEMA configurations.
7. Install all temporary light and power materials in accordance with National Electric Code.
8. Upon completion of the project remove all temporary electric light and power work and restore all affected finishes and connections.

1.9 TEMPORARY HEATING AND VENTILATING

- A. Contractor shall provide and pay for temporary heat and ventilation to maintain the approved Progress Schedule and to protect the various materials and assemblies from damage throughout the duration of the project.

- B. Temporary Heat and/or Ventilation shall be provided from systems other than the permanent equipment and as approved by the Engineer.
- C. Provide and pay for heating devices and heat as needed to maintain specified conditions for construction operations.
- D. Prior to operation of permanent equipment for temporary heating purposes, verify installation is approved for operation, equipment is lubricated and filters are in place. Provide and pay for operation, maintenance, and regular replacement of filters and worn or consumed parts.
- E. Maintain minimum ambient temperature of 40 degrees F in areas where construction is in progress, unless indicated otherwise in product sections.
- F. Ventilate enclosed areas to achieve curing of materials, to dissipate humidity, and to prevent accumulation of dust, fumes, vapors, or gases.

1.10 TEMPORARY WATER

- A. Contractor shall install the temporary water service to the work areas within 5 days of the request of the Construction Manager. This service shall be taken from a location in the existing structure subject to the approval of the Engineer and shall be complete with a back-flow prevention device, and shall be positioned and prepared to be used as the temporary water for use by all trades for the project. Contractor shall be responsible for the costs of all material, labor, and shall reposition and re-pipe the service as the system changes to the permanent installation. Contractor shall be responsible for protection from damage and vandalism for all equipment until final acceptance of the project.

1.11 TEMPORARY FIRST AID FACILITIES

- A. Contractor shall:
 - 1. Provide at the site and make available to all workers medical supplies and equipment necessary to render first aid.
 - 2. Post at Contractor's job site telephone the emergency telephone numbers for doctor, hospital, ambulance service, police and fire fighting services.

1.12 TEMPORARY FIRE PROTECTION

- A. Contractor shall:
 - 1. Take all precautions necessary to prevent fires, coordinate with airport and local Fire Department.
 - 2. Fuel for cutting and heating torches shall be contained in Underwriters Laboratory approved containers.
 - 3. Furnish and maintain a 20 pound capacity, dry chemical type fire extinguisher in the immediate vicinity where welding tools or torches of any type are in use.

4. Flammable liquids other than those specified shall not be used within a building without the written approval of the Engineer.
5. Tarpaulins shall be flameproof and shall be securely anchored when attached to scaffolding or when used to enclose any portion of a building.

1.13 PROTECTION OF PROPERTY

A. Contractor shall:

1. Protect existing construction and finishes during performance of the work.
2. Maintain the building in a watertight condition during performance of the work.

1.14 SECURITY OF CONTRACTOR MATERIALS AND EQUIPMENT

A. Contractor shall:

1. Remove all tools and materials from work areas when the work areas are not attended by workers and at the end of each day's work. Store tools in a locked tool box or cabinet. Store materials where directed by the Construction Manager.
2. Be responsible to secure stored and installed materials to prevent theft and vandalism.

1.15 FIRE WATCH

A. System Impairment Notes:

1. Prior to removing any life safety system from service the contractor shall notify the Owner's representative, local fire department, and Code Enforcement Official in writing a minimum of 72 hours beforehand that the system is to be removed from service. The notification shall include the date and time the system will be removed from service and the projected date and time the system will be restored.
2. During any life safety system impairments, the building shall be provided with a fire watch as required by the International Fire Code with current New York State supplements. The sole responsibility of the individual assigned to the watch shall be to perform constant patrols of the impaired area to keep watch for fires. The fire watch shall be provided with an approved means of notification for the fire department. If the building is protected by multiple fire protection systems only the impaired area of the building shall be required to be patrolled by the fire watch.
3. The Contractor, at their expense, shall provide all fire watches.
4. The system impairment for the renovation shall be conducted as a pre-planned impairment. To minimize the impairment time all necessary tools and materials shall be assembled onsite prior to removing the system from service.
5. Within 24 hours of restoring any life safety system to service the Contractor shall provide in writing to the Owner's representative, local Fire Department, and

Code Enforcement Official certification that the following has been implemented:

- a. All inspections and test have been completed to insure the affected system is operational.
 - b. The Owner and or occupant have been instructed on the operation of the system.
 - c. The third party monitoring company has been advised that the system is in service.
6. The Contractor shall upon start of the project, submit to the Owner's representative, an impairment plan that addresses how any scheduled or emergency impairment will be conducted and shall indicate who the competent responsible individuals will be.

1.18 CONSTRUCTION SAFETY (UNIFORM SAFETY STANDARDS)

A. Any occupied portion of the Building shall always comply with the minimum requirements necessary to maintain a certificate of occupancy.

1. General safety and security standards for construction projects:
 - a. All construction materials shall be stored in a safe and secure manner.
 - b. Fences around construction supplies or debris shall be maintained.
 - c. Gates shall always be locked unless a worker is in attendance to prevent unauthorized entry.
 - d. During demolition work, overhead protection shall be provided for any sidewalks or areas immediately beneath the work site or such areas shall be fenced off and provided with warning signs to prevent entry.
 - e. There are security requirements for workers within the airport secure area which include but are not limited to fingerprinting, background checks and photo id badges, all for which there is a Contractor fee associated with. Refer to Section 80 and Section 200 for detailed requirements.
3. Separation of construction areas from occupied spaces: **N/A** – Section Not Used. No occupied spaces are included in this contract.

1.19 ACCESS ROADS AND PARKING AREAS

A. Contractor:

1. Store materials and perform the work so that pedestrian and vehicular traffic is not obstructed.
2. Keep designated access routes and parking areas clear of dirt and debris resulting from its work.

1.20 PROGRESS CLEANING AND WASTE REMOVAL

- A. Maintain areas free of waste materials, debris, and rubbish. Maintain site in clean and orderly condition.
- B. Remove debris and rubbish from the site continuously and as ordered by the RPR.
- C. Broom and vacuum clean all areas prior to start of surface finishing, and continue cleaning to eliminate dust.
- D. Collect and remove waste materials, debris, and rubbish from site periodically and dispose off-site.
- E. **CONTRACTOR WILL BE BACK CHARGED FOR NOT PARTICIPATING IN THE PROJECT CLEAN UP PROCESS.**

PART 2 - PRODUCTS

2.1 MATERIALS

- A. Portable Chain-Link Fencing: Mini-mesh type as approved by the Transportation Security Administration. Provide concrete bases for supporting posts or as detailed on the contract drawings.
- B. Polyethylene Sheet: Reinforced, fire-resistive 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.
- C. Dust-Control Adhesive-Surface Walk-off Mats: Provide mats minimum 36 by 60 inches (914 by 1624 mm).
- D. 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.

END OF SECTION 015000

SECTION 016000 - PRODUCT REQUIREMENTS

PART 1 - GENERAL

1.1 SUMMARY

- A. 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; and comparable products.
- B. Related Requirements:
 - 1. Section 012500 "Substitution Procedures" for requests for substitutions.

1.2 METHOD OF MEASUREMENT AND BASIS OF PAYMENT

- A. Method of Measurement:
 - 1. All work described in this specification shall have no separate measurement and shall be included within the lump sum cost of Section 011000.
- B. Basis of Payment
 - 1. All work described in this specification shall have no separate payment and shall be included within the lump sum cost of Section 011000.

1.3 DEFINITIONS

- A. Products: Items obtained 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. Salvaged items or items reused from other projects are not considered new products. Items that are manufactured or fabricated to include recycled content materials are considered new products, unless indicated otherwise.
 - 3. Comparable Product: Product by named manufacturer that is demonstrated and approved through the comparable product submittal process described in Part 2 "Comparable Products" Article, 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. Basis-of-Design Product Specification: A specification in which a single manufacturer's product is named and accompanied by the words "basis-of-design product," including make or model number or other designation. Published attributes and characteristics of basis-of-design product establish salient characteristics of products.
 - 1. Evaluation of Comparable Products: In addition to the basis-of-design product description, product attributes and characteristics may be listed to establish the significant qualities related to type, function, in-service performance and physical properties, weight, dimension, durability, visual characteristics, and other special features and requirements for purposes of evaluating comparable products of additional manufacturers named in the specification.
- C. Subject to Compliance with Requirements: Where the phrase "Subject to compliance with requirements" introduces a product selection procedure in an individual Specification Section, provide products qualified under the specified product procedure. In the event that a named product or product by a named manufacturer does not meet the other requirements of the specifications, select another named product or product from another named manufacturer that does meet the requirements of the specifications; submit a comparable product request or substitution request, if applicable.
- D. Comparable Product Request Submittal: An action submittal requesting consideration of a comparable product, including the following information:
 - 1. Identification of basis-of-design product or fabrication or installation method to be replaced, including Specification Section number and title and Drawing numbers and titles.
 - 2. Data indicating compliance with the requirements specified in Part 2 "Comparable Products" Article.
- E. Basis-of-Design Product Specification Submittal: An action submittal complying with requirements in Section 013300 "Submittal Procedures."
- F. Substitution: Refer to Section 012500 "Substitution Procedures" for definition and limitations on substitutions.

1.4 QUALITY ASSURANCE

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

1.5 PRODUCT DELIVERY, STORAGE, AND HANDLING

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

1.6 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: Written standard warranty form furnished by individual manufacturer for a particular product and issued in the name of the Owner or endorsed by manufacturer to Owner.
 - 2. Special Warranty: Written warranty required by the Contract Documents to provide specific rights for Owner and issued in the name of the Owner or endorsed by manufacturer to Owner.
- B. Special Warranties: Prepare a written document that contains appropriate terms and identification, ready for execution.
 - 1. Manufacturer's Standard Form: Modified to include Project-specific information and properly executed.
 - 2. Specified Form: When specified forms are included in the Project Manual, prepare a written document, using indicated form properly executed.
 - 3. See other Sections for specific content requirements and particular requirements for submitting special warranties.

PART 2 - PRODUCTS

2.1 PRODUCT SELECTION PROCEDURES

- A. General Product Requirements: Provide products that comply with the Contract Documents, are undamaged and, unless otherwise indicated, 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 meeting requirements of the Contract Documents.
 - 4. Where products are accompanied by the term "as selected," Architect will make selection.
 - 5. Descriptive, performance, and reference standard requirements in the Specifications establish salient characteristics of products.
- B. Product Selection Procedures:
 - 1. Sole Product: Where Specifications name a single manufacturer and product, provide the named product that complies with requirements. Comparable products or substitutions for Contractor's convenience will not be considered.

- a. Sole product may be indicated by the phrase "Subject to compliance with requirements, provide the following."
2. Sole Manufacturer/Source: Where Specifications name a single manufacturer or source, provide a product by the named manufacturer or source that complies with requirements. Comparable products or substitutions for Contractor's convenience will not be considered.
 - a. Sole manufacturer/source may be indicated by the phrase "Subject to compliance with requirements, provide products by the following."
3. Limited List of Products: Where Specifications include a list of names of both manufacturers and products, provide one of the products listed that complies with requirements. Comparable products or substitutions for Contractor's convenience will not be considered unless otherwise indicated.
 - a. Limited list of products may be indicated by the phrase "Subject to compliance with requirements, provide one of the following."
4. Non-Limited List of Products: Where Specifications include a list of names of both available manufacturers and products, provide one of the products listed or an unnamed product that complies with requirements.
 - a. Non-limited list of products is indicated by the phrase "Subject to compliance with requirements, available products that may be incorporated in the Work include, but are not limited to, the following."
 - b. Provision of an unnamed product is not considered a substitution, if the product complies with requirements.
5. Limited List of Manufacturers: Where Specifications include a list of manufacturers' names, provide a product by one of the manufacturers listed that complies with requirements. Comparable products or substitutions for Contractor's convenience will not be considered unless otherwise indicated.
 - a. Limited list of manufacturers is indicated by the phrase "Subject to compliance with requirements, provide products by one of the following."
6. Non-Limited List of Manufacturers: Where Specifications include a list of available manufacturers, provide a product by one of the manufacturers listed or a product by an unnamed manufacturer that complies with requirements.
 - a. Non-limited list of manufacturers is indicated by the phrase "Subject to compliance with requirements, available manufacturers whose products may be incorporated in the Work include, but are not limited to, the following."
 - b. Provision of products of an unnamed manufacturer is not considered a substitution, if the product complies with requirements.
7. Basis-of-Design Product: Where Specifications name a product, or refer to a product indicated on Drawings, and include a list of manufacturers, provide the specified or indicated product or a comparable product by one of the other named manufacturers. Drawings and Specifications may additionally indicate sizes, profiles, dimensions, and

other characteristics that are based on the product named. Comply with requirements in "Comparable Products" Article for consideration of an unnamed product by one of the other named manufacturers.

- a. For approval of products by unnamed manufacturers, comply with requirements in Section 012500 "Substitution Procedures" for substitutions for convenience.
- C. Visual Matching Specification: Where Specifications require the phrase "match Architect's sample," provide a product that complies with requirements and matches Architect's sample. Architect's decision will be final on whether a proposed product matches.
1. If no product available within specified category matches and complies with other specified requirements, comply with requirements in Section 012500 "Substitution Procedures" for proposal of product.
- D. Visual Selection Specification: Where Specifications include the phrase "as selected by Architect from manufacturer's full range" or a similar phrase, select a product that complies with requirements. Architect will select color, gloss, pattern, density, or texture from manufacturer's product line that includes both standard and premium items.
- E. Sustainable Product Selection: Where Specifications require product to meet sustainable product characteristics, select products complying with indicated requirements. Comply with requirements in Division 01 sustainability requirements Section and individual Specification Sections.
1. Select products for which sustainable design documentation submittals are available from manufacturer.

2.2 COMPARABLE PRODUCTS

- A. Conditions for Consideration of Comparable Products: Architect will consider Contractor's request for comparable product when the following conditions are satisfied. If the following conditions are not satisfied, Architect may return requests without action, except to record noncompliance with the following requirements:
1. Evidence that proposed product does not require revisions to the Contract Documents, is consistent with the Contract Documents, will produce the indicated results, and is compatible with other portions of the Work.
 2. Detailed comparison of significant qualities of proposed product with those of the named basis-of-design product. Significant product qualities include attributes, such as type, function, in-service performance and physical properties, weight, dimension, durability, visual characteristics, and other specific features and requirements.
 3. Evidence that proposed product provides specified warranty.
 4. List of similar installations for completed projects, with project names and addresses and names and addresses of architects and owners, if requested.
 5. Samples, if requested.
- B. Architect's Action on Comparable Products Submittal: If necessary, Architect will request additional information or documentation for evaluation, as specified in Section 013300 "Submittal Procedures."

1. Form of Approval of Submittal: As specified in Section 013300 "Submittal Procedures."
 2. Use product specified if Architect does not issue a decision on use of a comparable product request within time allocated.
- C. Submittal Requirements, Two-Step Process: Approval by the Architect of Contractor's request for use of comparable product is not intended to satisfy other submittal requirements. Comply with specified submittal requirements.
- D. Submittal Requirements, Single-Step Process: When acceptable to Architect, incorporate specified submittal requirements of individual Specification Section in combined submittal for comparable products. Approval by the Architect of Contractor's request for use of comparable product and of individual submittal requirements will also satisfy other submittal requirements.

PART 3 - EXECUTION (Not Used)

END OF SECTION 016000

SECTION 017300 – EXECUTION

PART 1 - GENERAL

1.1 SUMMARY

- A. Section includes general administrative and procedural requirements governing execution of the Work, including, but not limited to, the following:
 - 1. Construction layout.
 - 2. Field engineering and surveying.
 - 3. Installation of the Work.
 - 4. Cutting and patching.
 - 5. Coordination of Owner's portion of the Work.
 - 6. Coordination of Owner-installed products.
 - 7. Progress cleaning.
 - 8. Starting and adjusting.
 - 9. Protection of installed construction.

1.2 METHOD OF MEASUREMENT AND BASIS OF PAYMENT

- A. Method of Measurement:
 - 1. All work described in this specification shall have no separate measurement and shall be included within the lump sum cost of Section 011000.
- B. Basis of Payment
 - 1. All work described in this specification shall have no separate payment and shall be included within the lump sum cost of Section 011000.

1.3 DEFINITIONS

- A. Cutting: Removal of in-place construction necessary to permit installation or performance of subsequent work.
- B. Patching: Fitting and repair work required to restore construction to original conditions after installation of subsequent work.

1.4 QUALITY ASSURANCE

- A. Cutting and Patching: Comply with requirements for and limitations on cutting and patching of construction elements.

1. Structural Elements: When cutting and patching structural elements, or when encountering the need for cutting and patching of elements whose structural function is not known, notify Architect of locations and details of cutting and await directions from Architect before proceeding. Shore, brace, and support structural elements during cutting and patching. Do not cut and patch structural elements in a manner that could change their load-carrying capacity or increase deflection.
 2. Operational Elements: Do not cut and patch operating elements and related components in a manner that results in reducing their capacity to perform as intended or that results in increased maintenance or decreased operational life or safety.
 3. Other Construction Elements: Do not cut and patch other construction elements or components in a manner that could change their load-carrying capacity, that results in reducing their capacity to perform as intended, or that results in increased maintenance or decreased operational life or safety.
 4. Visual Elements: Do not cut and patch construction in a manner that results in visual evidence of cutting and patching. Do not cut and patch exposed construction 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.
- B. Manufacturer's Installation Instructions: Obtain and maintain on-site manufacturer's written recommendations and instructions for installation of specified products and equipment.

PART 2 - PRODUCTS

2.1 MATERIALS

- A. Comply with requirements specified in other Sections.
- B. In-Place Materials: Use materials for patching identical to in-place materials. For exposed surfaces, use materials that visually match in-place adjacent surfaces to the fullest extent possible.
1. If identical materials are unavailable or cannot be used, use materials that, when installed, will provide a match acceptable to Architect for the visual and functional performance of in-place materials. Use materials that are not considered hazardous.
- C. 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.
1. Use cleaning products that comply with Green Seal's GS-37, or if GS-37 is not applicable, use products that comply with the California Code of Regulations maximum allowable VOC levels.

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Existing Conditions: 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 electrical systems, and other construction affecting the Work.
 - 1. Before construction, verify the location and invert elevation at points of connection of sanitary sewer, storm sewer, gas service piping, and water-service piping; underground electrical services; and other utilities.
 - 2. Furnish location data for work related to Project that must be performed by public utilities serving Project site.
- B. Examination and Acceptance of Conditions: Before proceeding with each component of the Work, examine substrates, areas, and conditions, with Installer or Applicator present where indicated, for compliance with requirements for installation tolerances and other conditions affecting performance. Record observations.
 - 1. Examine roughing-in for mechanical and electrical systems to verify actual locations of connections before equipment and fixture installation.
 - 2. Examine walls, floors, and roofs for suitable conditions where products and systems are to be installed.
 - 3. Verify compatibility with and suitability of substrates, including compatibility with existing finishes or primers.
- C. Proceed with installation only after unsatisfactory conditions have been corrected. Proceeding with the Work indicates acceptance of surfaces and conditions.

3.2 PREPARATION

- A. Existing Utility Information: Furnish information to local utility that is necessary to adjust, move, or relocate existing utility structures, utility poles, lines, services, or other utility appurtenances located in or affected by construction. Coordinate with authorities having jurisdiction.
- B. Field Measurements: Take field measurements as required to fit the Work properly. Recheck measurements before installing each product. Where portions of the Work are indicated to fit to other construction, verify dimensions of other construction by field measurements before fabrication. Coordinate fabrication schedule with construction progress to avoid delaying the Work.
- C. Space Requirements: Verify space requirements and dimensions of items shown diagrammatically on Drawings.
- D. Review of Contract Documents and Field Conditions: Immediately on discovery of the need for clarification of the Contract Documents, submit a request for information to Architect through

Construction Manager in accordance with requirements in Section 013100 "Project Management and Coordination."

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 and existing conditions. If discrepancies are discovered, notify Architect and Construction Manager promptly.
- B. Engage a land surveyor experienced in laying out the Work, using the following accepted surveying practices:
 - 1. Establish benchmarks and control points to set lines and levels at each story of construction and elsewhere as needed to locate each element of Project.
 - 2. Establish limits on use of Project site.
 - 3. Establish dimensions within tolerances indicated. Do not scale Drawings to obtain required dimensions.
 - 4. Inform installers of lines and levels to which they must comply.
 - 5. Check the location, level and plumb, of every major element as the Work progresses.
 - 6. Notify Architect and Construction Manager when deviations from required lines and levels exceed allowable tolerances.
 - 7. Close site surveys with an error of closure equal to or less than the standard established by authorities having jurisdiction.
- C. Site Improvements: Locate and lay out site improvements, including pavements, grading, fill and topsoil placement, utility slopes, and rim and invert elevations.
- D. Building Lines and Levels: Locate and lay out control lines and levels for structures, building foundations, column grids, and floor levels, including those required for mechanical and electrical work. Transfer survey markings and elevations for use with control lines and levels. Level foundations and piers from two or more locations.
- E. Record Log: Maintain a log of layout control work. Record deviations from required lines and levels. Include beginning and ending dates and times of surveys, weather conditions, name and duty of each survey party member, and types of instruments and tapes used. Make the log available for reference by Architect and Construction Manager.

3.4 FIELD ENGINEERING

- A. Identification: Owner will identify existing benchmarks, control points, and property corners.
- B. Reference Points: Locate existing permanent benchmarks, control points, and similar reference points before beginning the Work. Preserve and protect permanent benchmarks and control points during construction operations.
 - 1. Do not change or relocate existing benchmarks or control points without prior written approval of Architect or Construction Manager. Report lost or destroyed permanent benchmarks or control points promptly. Report the need to relocate permanent benchmarks or control points to Architect and Construction Manager before proceeding.

2. Replace lost or destroyed permanent benchmarks and control points promptly. Base replacements on the original survey control points.

3.5 INSTALLATION

- A. 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 96 inches (2440 mm) in occupied spaces and 90 inches (2300 mm) in unoccupied spaces, unless otherwise indicated on Drawings.
- 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 satisfactory results as judged by Architect. 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 of type expected for Project.
- E. Sequence the Work and allow adequate clearances to accommodate movement of construction items on-site and placement in permanent locations.
- F. Tools and Equipment: Select tools or equipment that minimize production of excessive noise levels.
- G. Templates: Obtain and distribute to the parties involved templates for Work specified to be factory prepared and field installed. Check Shop Drawings of other portions of the Work to confirm that adequate provisions are made for locating and installing products to comply with indicated requirements.
- H. Attachment: Provide blocking and attachment plates and anchors and fasteners of adequate size and number to securely anchor each component in place, accurately located and aligned with other portions of the Work. Where size and type of attachments are not indicated, verify size and type required for load conditions with manufacturer.
 1. Mounting Heights: Where mounting heights are not indicated, mount components at heights directed by Architect.
 2. Allow for building movement, including thermal expansion and contraction.
 3. Coordinate installation of anchorages. Furnish setting drawings, templates, and directions for installing anchorages, including sleeves, concrete inserts, anchor bolts, and items with integral anchors, that are to be embedded in concrete or masonry. Deliver such items to Project site in time for installation.

- I. Joints: Make joints of uniform width. Where joint locations in exposed Work are not indicated, arrange joints for the best visual effect, as judged by Architect. Fit exposed connections together to form hairline joints.
- J. Repair or remove and replace damaged, defective, or nonconforming Work.
 - 1. Comply with Section 017700 "Closeout Procedures" for repairing or removing and replacing defective Work.

3.6 CUTTING AND PATCHING

- A. General: Employ skilled workers to perform cutting and patching. Proceed with cutting and patching at the earliest feasible time, and complete without delay.
 - 1. Cut in-place construction to provide for installation of other components or performance of other construction, and subsequently patch as required to restore surfaces to their original condition.
- B. Existing Warranties: Remove, replace, patch, and repair materials and surfaces cut or damaged during installation or cutting and patching operations, by methods and with materials so as not to void existing warranties.
- C. Temporary Support: Provide temporary support of Work to be cut.
- D. Protection: Protect in-place construction during cutting and patching to prevent damage. Provide protection from adverse weather conditions for portions of Project that might be exposed during cutting and patching operations.
- E. Adjacent Occupied Areas: Where interference with use of adjoining areas or interruption of free passage to adjoining areas is unavoidable, coordinate cutting and patching in accordance with requirements in Section 011000 "Summary."
- F. Existing Utility Services and Mechanical/Electrical Systems: Where existing services/systems are required to be removed, relocated, or abandoned, bypass such services/systems before cutting to prevent interruption to occupied areas.
- G. Cutting: Cut in-place construction by sawing, drilling, breaking, chipping, grinding, and similar operations, including excavation, using methods least likely to damage elements retained or adjoining construction. If possible, review proposed procedures with original Installer; comply with original Installer's written recommendations.
 - 1. In general, use hand or small power tools designed for sawing and grinding, not hammering and chopping. Cut holes and slots neatly to minimum size required, and with minimum disturbance of adjacent surfaces. Temporarily cover openings when not in use.
 - 2. Finished Surfaces: Cut or drill from the exposed or finished side into concealed surfaces.
 - 3. Concrete and Masonry: Cut using a cutting machine, such as an abrasive saw or a diamond-core drill.
 - 4. Excavating and Backfilling: Comply with requirements in applicable Sections where required by cutting and patching operations.

5. Mechanical and Electrical Services: Cut off pipe or conduit in walls or partitions to be removed. Cap, valve, or plug and seal remaining portion of pipe or conduit to prevent entrance of moisture or other foreign matter after cutting.
 6. Proceed with patching after construction operations requiring cutting are complete.
- H. 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 practicable, as judged by Architect. Provide materials and comply with installation requirements specified in other Sections, where applicable.
1. Inspection: Where feasible, test and inspect patched areas after completion to demonstrate physical integrity of installation.
 2. Exposed Finishes: Restore exposed finishes of patched areas and extend finish restoration into retained adjoining construction in a manner that will eliminate evidence of patching and refinishing.
 - a. Clean piping, conduit, and similar features before applying paint or other finishing materials.
 - b. Restore damaged pipe covering to its original condition.
 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 in-place 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, prepare substrate and apply primer and intermediate paint coats appropriate for substrate over the patch, and apply final paint coat over entire unbroken surface containing the patch, corner to corner of wall and edge to edge of ceiling. Provide additional coats until patch blends with adjacent surfaces.
 4. Ceilings: Patch, repair, or rehang in-place ceilings as necessary to provide an even-plane surface of uniform appearance.
 5. Exterior Building Enclosure: Patch components in a manner that restores enclosure to a weathertight condition and ensures thermal and moisture integrity of building enclosure.
- I. Cleaning: Clean areas and spaces where cutting and patching are performed. Remove paint, mortar, oils, putty, and similar materials from adjacent finished surfaces.

3.7 PROGRESS CLEANING

- A. Clean Project site and work areas daily, including common areas. Enforce requirements strictly. Dispose of materials lawfully.
1. Comply with requirements in NFPA 241 for removal of combustible waste materials and debris.
 2. Do not hold waste materials more than seven days during normal weather or three days if the temperature is expected to rise above 80 deg F (27 deg C).

3. Containerize hazardous and unsanitary waste materials separately from other waste. Mark containers appropriately and dispose of legally, according to regulations.
 - a. Use containers intended for holding waste materials of type to be stored.
 4. Coordinate progress cleaning for joint-use areas where Contractor and other contractors are working concurrently.
- 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: Clean exposed surfaces and protect as necessary to ensure freedom from damage and deterioration at time of Substantial Completion.
- G. Waste Disposal: Do not bury or burn waste materials on-site. Do not wash waste materials down sewers or into waterways. Comply with waste disposal requirements in Section 017419 "Construction Waste Management and Disposal."
- 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 ensure that no part of the construction, completed or in progress, is subject to harmful, dangerous, damaging, or otherwise deleterious exposure during the construction period.

3.8 STARTING AND ADJUSTING

- A. Start equipment and operating components to confirm proper operation. Remove malfunctioning units, replace with new units, and retest.
- B. Adjust equipment for proper operation. Adjust operating components for proper operation without binding.

- 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: Comply with qualification requirements in Section 014000 "Quality Requirements."

3.9 PROTECTION AND REPAIR 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. Repair Work previously completed and subsequently damaged during construction period. Repair to like-new condition.
- C. Protection of Existing Items: Provide protection and ensure that existing items to remain undisturbed by construction are maintained in condition that existed at commencement of the Work.
- D. Comply with manufacturer's written instructions for temperature and relative humidity.

END OF SECTION 017300

SECTION 017419 - CONSTRUCTION WASTE MANAGEMENT AND DISPOSAL

PART 1 - GENERAL

1.1 SUMMARY

- A. Section includes administrative and procedural requirements for the following:
 - 1. Salvaging nonhazardous demolition, removals, and construction waste.
 - 2. Recycling nonhazardous demolition, removals, and construction waste.
 - 3. Disposing of nonhazardous demolition, removals, and construction waste.

1.2 METHOD OF MEASUREMENT AND BASIS OF PAYMENT

- A. Method of Measurement:
 - 1. All work described in this specification shall have no separate measurement and shall be included within the lump sum cost of Section 011000.
- B. Basis of Payment
 - 1. All work described in this specification shall have no separate payment and shall be included within the lump sum cost of Section 011000.

1.3 DEFINITIONS

- A. Construction Waste: Building, structure, and site improvement materials and other solid waste resulting from construction, remodeling, renovation, or repair operations. Construction waste includes packaging.
- B. Demolition Waste: Building, structure, and site improvement materials resulting from demolition operations.
- C. Disposal: Removal of demolition or construction waste and subsequent salvage, sale, recycling, or deposit in landfill, incinerator acceptable to authorities having jurisdiction, or designated spoil areas on Owner's property.
- D. Recycle: Recovery of demolition or construction waste for subsequent processing in preparation for reuse.
- E. Salvage: Recovery of demolition or construction waste and subsequent sale or reuse in another facility.
- F. Salvage and Reuse: Recovery of demolition or construction waste and subsequent incorporation into the Work.

1.4 ACTION SUBMITTALS

- A. Waste Management Plan: Submit plan within 30 days of date established for the Notice to Proceed.

1.5 INFORMATIONAL SUBMITTALS

- A. Records of Donations: Indicate receipt and acceptance of salvageable waste donated to individuals and organizations. Indicate whether organization is tax exempt.
- B. Records of Sales: Indicate receipt and acceptance of salvageable waste sold to individuals and organizations. Indicate whether organization is tax exempt.
- C. 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.
- D. 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.

1.6 QUALITY ASSURANCE

- A. Waste Management Conference(s): Conduct conference(s) at Project site to comply with requirements in Section 013100 "Project Management and Coordination."

1.7 WASTE MANAGEMENT PLAN

- A. General: Develop a waste management plan according to requirements in this Section. Plan shall consist of waste identification and waste disposal. Distinguish between demolition, removals, 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, removals, site-clearing, and construction waste generated by the Work. Include estimated quantities and assumptions for estimates.

PART 2 - PRODUCTS

2.1 PERFORMANCE REQUIREMENTS

- A. General: Not used.

PART 3 - EXECUTION

3.1 PLAN IMPLEMENTATION

- A. General: Implement approved waste management plan. Provide handling, containers, storage, signage, transportation, and other items as required to implement waste management plan during the entire duration of the Contract.
- B. Training: Train workers, subcontractors, and suppliers on proper waste management procedures, as appropriate for the Work.

3.2 SALVAGING DEMOLITION WASTE

- A. Salvaged Items for Reuse in the Work:
 - 1. Clean salvaged items.
 - 2. Pack or crate items after cleaning. Identify contents of containers with label indicating elements, date of removal, quantity, and location where removed.
 - 3. Store items in a secure area until installation.
 - 4. Protect items from damage during transport and storage.
 - 5. Install salvaged items to comply with installation requirements for new materials and equipment. Provide connections, supports, and miscellaneous materials necessary to make items functional for use indicated.

3.3 RECYCLING DEMOLITION, REMOVALS, AND CONSTRUCTION WASTE, GENERAL

- A. General: Recycle paper and beverage containers used by on-site workers.
- B. Recycling Incentives: Revenues, savings, rebates, tax credits, and other incentives received for recycling waste materials shall accrue to Contractor.
- C. Preparation of Waste: Prepare and maintain recyclable waste materials according to recycling or reuse facility requirements. Maintain materials free of dirt, adhesives, solvents, petroleum contamination, and other substances deleterious to the recycling process.

3.4 RECYCLING DEMOLITION AND REMOVALS WASTE

- A. Metals: Separate metals by type.
- B. Piping: Reduce piping to straight lengths and store by material and size. Separate supports, hangers, valves, sprinklers, and other components by material and size.
- C. Conduit: Reduce conduit to straight lengths and store by material and size.

3.5 RECYCLING CONSTRUCTION WASTE

- A. Packaging:

1. Cardboard and Boxes: Break down packaging into flat sheets. Bundle and store in a dry location.
2. Polystyrene Packaging: Separate and bag materials.
3. Pallets: As much as possible, require deliveries using pallets to remove pallets from Project site. For pallets that remain on-site, break down pallets into component wood pieces and comply with requirements for recycling wood.
4. Crates: Break down crates into component wood pieces and comply with requirements for recycling wood.

B. Wood Materials:

1. Clean Cut-Offs of Lumber: Grind or chip into small pieces.
2. Clean Sawdust: Bag sawdust that does not contain painted or treated wood.

C. Paint: Seal containers and store by type.

3.6 DISPOSAL OF WASTE

A. General: Except for items or materials to be salvaged or recycled, remove waste materials from Project site and legally dispose of them in a landfill or incinerator acceptable to authorities having jurisdiction.

1. Except as otherwise specified, do not allow waste materials that are to be disposed of accumulate on-site.
2. Remove and transport debris in a manner that will prevent spillage on adjacent surfaces and areas.

B. General: Except for items or materials to be salvaged or recycled, remove waste materials and legally dispose of at designated spoil areas on Owner's property.

C. Burning: Do not burn waste materials.

END OF SECTION 017419

SECTION 017700 - CLOSEOUT PROCEDURES

PART 1 - GENERAL

1.1 SUMMARY

- A. Any closeout procedures that differ from Delaware River and Bay Authority (DRBA) standards shall revert to the DRBA standard specifications. Section includes administrative and procedural requirements for Contract closeout, including, but not limited to, the following:
 - 1. Substantial Completion procedures.
 - 2. Final completion procedures.
 - 3. Warranties.
 - 4. Final cleaning.
- B. Related Requirements:
 - 1. Section 017823 "Operation and Maintenance Data" for additional operation and maintenance manual requirements.
 - 2. Section 017839 "Project Record Documents" for submitting Record Drawings, Record Specifications, and Record Product Data.
 - 3. Section 017900 "Demonstration and Training" for requirements to train the Owner's maintenance personnel to adjust, operate, and maintain products, equipment, and systems.

1.2 METHOD OF MEASUREMENT AND BASIS OF PAYMENT

- A. Method of Measurement:
 - 1. All work described in this specification shall have no separate measurement and shall be included within the lump sum cost of Section 011000.
- B. Basis of Payment
 - 1. All work described in this specification shall have no separate payment and shall be included within the lump sum cost of Section 011000.

1.3 ACTION SUBMITTALS

- A. Contractor's List of Incomplete Items: Initial submittal at Substantial Completion.
- B. Certified List of Incomplete Items: Final submittal at Final Completion.

1.4 CLOSEOUT SUBMITTALS

- A. Certificates of Release: From authorities having jurisdiction.

1.5 SUBSTANTIAL COMPLETION PROCEDURES

- A. Contractor's List of Incomplete Items: Prepare and submit a list of items to be completed and corrected (Contractor's "punch list"), indicating the value of each item on the list and reasons why the Work is incomplete.
- B. Submittals Prior to Substantial Completion: Complete the following a minimum of 10 days prior to requesting inspection for determining date of Substantial Completion. List items below that are incomplete at time of request.
 - 1. Certificates of Release: Obtain and submit releases from authorities having jurisdiction, permitting Owner unrestricted use of the Work and access to services and utilities. Include occupancy permits, operating certificates, and similar releases.
 - 2. Submit closeout submittals specified in other Division 01 Sections, including Project Record Documents, operation and maintenance manuals, damage or settlement surveys, property surveys, and similar final record information.
 - 3. Submit closeout submittals specified in individual Sections, including specific warranties, workmanship bonds, maintenance service agreements, final certifications, and similar documents.
 - 4. Submit maintenance material submittals specified in individual Sections, including tools, spare parts, extra materials, and similar items, and deliver to location designated by Architect or Construction Manager. Label with manufacturer's name and model number.
 - 5. Submit testing, adjusting, and balancing records.
 - 6. Submit changeover information related to Owner's occupancy, use, operation, and maintenance.
- C. Procedures Prior to Substantial Completion: Complete the following a minimum of 10 days prior to requesting inspection for determining date of Substantial Completion. List items below that are incomplete at time of request.
 - 1. Advise Owner of pending insurance changeover requirements.
 - 2. Make final changeover of permanent locks and deliver keys to Owner. Advise Owner's personnel of changeover in security provisions.
 - 3. Complete startup and testing of systems and equipment.
 - 4. Perform preventive maintenance on equipment used prior to Substantial Completion.
 - 5. Instruct Owner's personnel in operation, adjustment, and maintenance of products, equipment, and systems. Submit demonstration and training video recordings specified in Section 017900 "Demonstration and Training."
 - 6. Advise Owner of changeover in utility services.
 - 7. Participate with Owner in conducting inspection and walkthrough with local emergency responders.
 - 8. Terminate and remove temporary facilities from Project site, along with mockups, construction tools, and similar elements.
 - 9. Complete final cleaning requirements.
 - 10. Touch up paint and otherwise repair and restore marred exposed finishes to eliminate visual defects.

- D. Inspection: Submit a written request for inspection to determine Substantial Completion a minimum of 10 days prior to date the Work will be completed and ready for final inspection and tests. On receipt of request, Architect and Construction Manager will either proceed with inspection or notify Contractor of unfulfilled requirements. Architect will prepare the Certificate of Substantial Completion after inspection or will notify Contractor of items, either on Contractor's list or additional items identified by Architect, that must be completed or corrected before certificate will be issued.

1.6 FINAL COMPLETION PROCEDURES

- A. Submittals Prior to Final Completion: Before requesting final inspection for determining Final Completion, complete the following:
 - 1. Submit a final Application for Payment in accordance with Section 012900 "Payment Procedures."
 - 2. Certified List of Incomplete Items: Submit certified copy of Architect's Substantial Completion inspection list of items to be completed or corrected (punch list), endorsed and dated by Architect. Certified copy of the list shall state that each item has been completed or otherwise resolved for acceptance.
 - 3. Certificate of Insurance: Submit evidence of final, continuing insurance coverage complying with insurance requirements.
 - 4. Submit pest-control final inspection report.
- B. Inspection: Submit a written request for final inspection to determine acceptance a minimum of 10 days prior to date the Work will be completed and ready for final inspection and tests. On receipt of request, Architect and Construction Manager 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.

1.7 LIST OF INCOMPLETE ITEMS

- A. Organization 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. Submit list of incomplete items in the following format:
 - a. MS Excel Electronic File: Architect, through Construction Manager, will return annotated file.

1.8 SUBMITTAL OF PROJECT WARRANTIES

- A. Time of Submittal: Submit written warranties on request of Architect for designated portions of the Work where warranties are indicated to commence on dates other than date of Substantial Completion, or when delay in submittal of warranties might limit Owner's rights under warranty.

- B. Organize warranty documents into an orderly sequence based on the table of contents of Project Manual.
- C. Warranty Electronic File: Provide warranties and bonds in PDF format. Assemble complete warranty and bond submittal package into a single electronic PDF file with bookmarks enabling navigation to each item. Provide bookmarked table of contents at beginning of document.
 - 1. Submit on digital media acceptable to Architect.
- D. Warranties in Paper Form:
 - 1. Bind warranties and bonds in heavy-duty, three-ring, vinyl-covered, loose-leaf binders, thickness as necessary to accommodate contents, and sized to receive 8-1/2-by-11-inch (215-by-280-mm) paper.
- E. Provide additional copies of each warranty to include in operation and maintenance manuals.

PART 2 - PRODUCTS

2.1 MATERIALS

PART 3 - EXECUTION

3.1 FINAL CLEANING

- A. Perform 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 designated portion of Project:
 - a. Clean Project site of rubbish, waste material, litter, and other foreign substances.
 - b. 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.
 - c. Remove debris and surface dust from limited-access spaces, including roofs, plenums, shafts, trenches, equipment vaults, manholes, attics, and similar spaces.
 - d. Clean flooring, removing debris, dirt, and staining; clean according to manufacturer's recommendations.
 - e. Vacuum and mop concrete.
 - f. Vacuum carpet and similar soft surfaces, removing debris and excess nap; clean according to manufacturer's recommendations if visible soil or stains remain.

- g. Clean transparent materials, including mirrors and glass in doors and windows. Remove glazing compounds and other noticeable, vision-obscuring materials. Polish mirrors and glass, taking care not to scratch surfaces.
 - h. Remove labels that are not permanent.
 - i. Wipe surfaces of mechanical and electrical equipment and similar equipment. Remove excess lubrication, paint and mortar droppings, and other foreign substances.
 - j. Clean plumbing fixtures to a sanitary condition, free of stains, including stains resulting from water exposure.
 - k. Replace disposable air filters and clean permanent air filters. Clean exposed surfaces of diffusers, registers, and grills.
 - l. Clean luminaires, lamps, globes, and reflectors to function with full efficiency.
 - m. Clean strainers.
 - n. Leave Project clean and ready for occupancy.
- C. Pest Control: Comply with pest control requirements in Section 015000 "Temporary Facilities and Controls." Prepare written report.
- D. Construction Waste Disposal: Comply with waste-disposal requirements in Section 017419 "Construction Waste Management and Disposal."

3.2 REPAIR OF THE WORK

- A. Complete repair and restoration operations required by Section 017300 "Execution" before requesting inspection for determination of Substantial Completion.

END OF SECTION 017700

SECTION 017823 - OPERATION AND MAINTENANCE DATA

PART 1 - GENERAL

1.1 SUMMARY

- A. Section includes administrative and procedural requirements for preparing operation and maintenance manuals, including the following:
 - 1. Operation and maintenance documentation directory manuals.
 - 2. Emergency manuals.
 - 3. Systems and equipment operation manuals.
 - 4. Systems and equipment maintenance manuals.
 - 5. Product maintenance manuals.

1.2 METHOD OF MEASUREMENT AND BASIS OF PAYMENT

- A. Method of Measurement:
 - 1. All work described in this specification shall have no separate measurement and shall be included within the lump sum cost of Section 011000.
- B. Basis of Payment
 - 1. All work described in this specification shall have no separate payment and shall be included within the lump sum cost of Section 011000.

1.3 CLOSEOUT SUBMITTALS

- A. Submit operation and maintenance manuals indicated. Provide content for each manual as specified in individual Specification Sections, and as reviewed and approved at the time of Section submittals. Submit reviewed manual content formatted and organized as required by this Section.
 - 1. Architect will comment on whether content of operation and maintenance submittals is acceptable.
 - 2. Where applicable, clarify and update reviewed manual content to correspond to revisions and field conditions.
- B. Format: Submit operation and maintenance manuals in the following format:
 - 1. Submit on digital media acceptable to Architect. Enable reviewer comments on draft submittals.

- C. Final Manual Submittal: Submit each manual in final form prior to requesting inspection for Substantial Completion and at least 15 days before commencing demonstration and training. Architect will return copy with comments.
 - 1. Correct or revise each manual to comply with Architect's comments. Submit copies of each corrected manual within 15 days of receipt of Architect's comments and prior to commencing demonstration and training.
- D. Comply with Section 017700 "Closeout Procedures" for schedule for submitting operation and maintenance documentation.

1.4 FORMAT OF OPERATION AND MAINTENANCE MANUALS

- A. Manuals, Electronic Files: Submit manuals in the form of a multiple file composite electronic PDF file for each manual type required.
 - 1. Electronic Files: Use electronic files prepared by manufacturer where available. Where scanning of paper documents is required, configure scanned file for minimum readable file size.
 - 2. File Names and Bookmarks: Bookmark individual documents based on file names. Name document files to correspond to system, subsystem, and equipment names used in manual directory and table of contents. Group documents for each system and subsystem into individual composite bookmarked files, then create composite manual, so that resulting bookmarks reflect the system, subsystem, and equipment names in a readily navigated file tree. Configure electronic manual to display bookmark panel on opening file.
- B. Manuals, Paper Copy: Submit manuals in the form of hard-copy, bound and labeled volumes.
 - 1. Binders: Heavy-duty, three-ring, vinyl-covered, loose-leaf binders, in thickness necessary to accommodate contents, sized to hold 8-1/2-by-11-inch (215-by-280-mm) paper; with clear plastic sleeve on spine to hold label describing contents and with pockets inside covers to hold folded oversize sheets.
 - 2. Drawings: Attach reinforced, punched binder tabs on drawings and bind with text.

1.5 REQUIREMENTS FOR EMERGENCY, OPERATION, AND MAINTENANCE MANUALS

- A. Organization of Manuals: 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: 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 and contact information for Contractor.
 6. Name and contact information for Construction Manager.
 7. Name and contact information for Architect.
 8. Name and contact information for Commissioning Authority.
 9. Names and contact information for major consultants to the Architect that designed the systems contained in the manuals.
 10. Cross-reference to related systems in other operation and maintenance manuals.
- 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.
- 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.
- E. Identification: In the documentation directory and in each operation and maintenance manual, identify each system, subsystem, and piece of equipment with same designation used in the Contract Documents. If no designation exists, assign a designation according to ASHRAE Guideline 4, "Preparation of Operating and Maintenance Documentation for Building Systems."

1.6 EMERGENCY MANUALS

- A. Emergency Manual: Assemble a complete set of emergency information indicating procedures for use by emergency personnel and by Owner's operating personnel for types of emergencies indicated.
- B. Content: Organize manual into a separate section for each of the following:
1. Type of emergency.
 2. Emergency instructions.
 3. Emergency procedures.
- C. Type of Emergency: Where applicable for each type of emergency indicated below, include instructions and procedures for each system, subsystem, piece of equipment, and component:
1. Fire.
 2. Flood.
 3. Gas leak.
 4. Water leak.
 5. Power failure.
 6. Water outage.
 7. System, subsystem, or equipment failure.
 8. Chemical release or spill.
- D. Emergency Instructions: Describe and explain warnings, trouble indications, error messages, and similar codes and signals. Include responsibilities of Owner's operating personnel for notification of Installer, supplier, and manufacturer to maintain warranties.

E. Emergency Procedures: Include the following, as applicable:

1. Instructions on stopping.
2. Shutdown instructions for each type of emergency.
3. Operating instructions for conditions outside normal operating limits.
4. Required sequences for electric or electronic systems.
5. Special operating instructions and procedures.

1.7 SYSTEMS AND EQUIPMENT OPERATION MANUALS

A. Systems and Equipment Operation Manual: Assemble a complete set of data indicating operation of each system, subsystem, and piece of equipment not part of a system. Include information required for daily operation and management, operating standards, and routine and special operating procedures.

B. Content: In addition to requirements in this Section, include operation data required in individual Specification Sections and the following information:

1. System, subsystem, and equipment descriptions. Use designations for systems and equipment indicated on Contract Documents.
2. Performance and design criteria if Contractor has delegated design responsibility.
3. Operating standards.
4. Operating procedures.
5. Operating logs.
6. Wiring diagrams.
7. Control diagrams.
8. Piped system diagrams.
9. Precautions against improper use.
10. License requirements including inspection and renewal dates.

C. Descriptions: Include the following:

1. Product name and model number. Use designations for products indicated on Contract Documents.
2. Manufacturer's name.
3. Equipment identification with serial number of each component.
4. Equipment function.
5. Operating characteristics.
6. Limiting conditions.
7. Performance curves.
8. Engineering data and tests.
9. Complete nomenclature and number of replacement parts.

D. Operating Procedures: Include the following, as applicable:

1. Startup procedures.
2. Equipment or system break-in procedures.
3. Routine and normal operating instructions.
4. Regulation and control procedures.
5. Instructions on stopping.

6. Normal shutdown instructions.
 7. Seasonal and weekend operating instructions.
 8. Required sequences for electric or electronic systems.
 9. Special operating instructions and procedures.
- E. Systems and Equipment Controls: Describe the sequence of operation, and diagram controls as installed.
- F. Piped Systems: Diagram piping as installed, and identify color coding where required for identification.

1.8 SYSTEMS AND EQUIPMENT MAINTENANCE MANUALS

- A. Systems and Equipment Maintenance Manuals: Assemble a complete set of data indicating maintenance of each system, subsystem, and piece of equipment not part of a system. Include manufacturers' maintenance documentation, preventive maintenance procedures and frequency, repair procedures, wiring and systems diagrams, lists of spare parts, and warranty information.
- B. Content: For each system, subsystem, and piece of equipment not part of a system, include source information, manufacturers' maintenance documentation, maintenance procedures, maintenance and service schedules, spare parts list and source information, maintenance service contracts, and warranties and bonds, as described below.
- C. Manufacturers' Maintenance Documentation: Include the following information for each component part or piece of equipment:
1. Standard maintenance instructions and bulletins; 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.
 - a. 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.
 2. Drawings, diagrams, and instructions required for maintenance, including disassembly and component removal, replacement, and assembly.
 3. Identification and nomenclature of parts and components.
 4. List of items recommended to be stocked as spare parts.
- D. Maintenance Procedures: Include the following information and items that detail essential maintenance procedures:
1. Test and inspection instructions.
 2. Troubleshooting guide.
 3. Precautions against improper maintenance.
 4. Disassembly; component removal, repair, and replacement; and reassembly instructions.
 5. Aligning, adjusting, and checking instructions.
 6. Demonstration and training video recording, if available.

- E. Maintenance and Service Schedules: Include service and lubrication requirements, list of required lubricants for equipment, and separate schedules for preventive and routine maintenance and service with standard time allotment.
- F. Spare Parts List and Source Information: Include lists of replacement and repair parts, with parts identified and cross-referenced to manufacturers' maintenance documentation and local sources of maintenance materials and related services.
- G. 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.
- H. 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.

1.9 PRODUCT MAINTENANCE MANUALS

- A. Product Maintenance Manual: Assemble a complete set of maintenance data indicating care and maintenance of each product, material, and finish incorporated into the Work.
- B. 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.
- 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 2 - PRODUCTS (Not Used)

PART 3 - EXECUTION (Not Used)

END OF SECTION 017823

SECTION 017839 - PROJECT RECORD DOCUMENTS

PART 1 - GENERAL

1.1 SUMMARY

- A. 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 Requirements:
 - 1. Section 017823 "Operation and Maintenance Data" for operation and maintenance manual requirements.

1.2 METHOD OF MEASUREMENT AND BASIS OF PAYMENT

- A. Method of Measurement:
 - 1. All work described in this specification shall have no separate measurement and shall be included within the lump sum cost of Section 011000.
- B. Basis of Payment
 - 1. All work described in this specification shall have no separate payment and shall be included within the lump sum cost of Section 011000.

1.3 CLOSEOUT SUBMITTALS

- A. Record Drawings: Comply with the following:
 - 1. Number of Copies: Submit one set of marked-up record prints.

1.4 RECORD DRAWINGS

- A. Record Prints: Maintain one set of marked-up paper copies of the Contract Drawings and Shop Drawings, incorporating new and revised drawings as modifications are issued.
 - 1. Preparation: Mark record prints to show the actual installation, where installation varies from that shown originally. Require individual or entity who obtained record data, whether individual or entity is Installer, subcontractor, or similar entity, to provide information for preparation of corresponding 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 acceptable drawing technique.
 - c. Record data as soon as possible after obtaining it.
 - d. Record and check the markup before enclosing concealed installations.
 - e. Cross-reference record prints to corresponding photographic documentation.
- 2. Content: Types of items requiring marking include, but are not limited to, the following:
 - a. Dimensional changes to Drawings.
 - b. Revisions to details shown on Drawings.
 - c. Depths of foundations.
 - d. Locations and depths of underground utilities.
 - e. Revisions to routing of piping and conduits.
 - f. Revisions to 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 and Shop Drawings completely and accurately. Use personnel proficient at recording graphic information in production of marked-up record prints.
- 4. Mark record prints with erasable, red-colored pencil. Use other colors to distinguish between changes for different categories of the Work at same location.
- 5. Mark important additional information that was either shown schematically or omitted from original Drawings.
- 6. Note Construction Change Directive numbers, alternate numbers, Change Order numbers, and similar identification, where applicable.

1.5 RECORD SPECIFICATIONS

- A. Not used.

1.6 RECORD PRODUCT DATA

- A. Not used.

1.7 MAINTENANCE OF RECORD DOCUMENTS

- A. Not used.

PART 2 - PRODUCTS (Not Used)

PART 3 - EXECUTION (Not Used)

END OF SECTION 017839

SECTION 017900 - DEMONSTRATION AND TRAINING

PART 1 - GENERAL

1.1 SUMMARY

- A. Section includes administrative and procedural requirements for instructing Owner's personnel, including the following:
 - 1. Instruction in operation and maintenance of systems, subsystems, and equipment.
 - 2. Demonstration and training video recordings.

1.2 METHOD OF MEASUREMENT AND BASIS OF PAYMENT

- A. Method of Measurement:
 - 1. All work described in this specification shall have no separate measurement and shall be included within the lump sum cost of Section 011000.
- B. Basis of Payment
 - 1. All work described in this specification shall have no separate payment and shall be included within the lump sum cost of Section 011000.

1.3 INFORMATIONAL SUBMITTALS

- A. Instruction Program: Submit outline of instructional program for demonstration and training, including a list of training modules and a schedule of proposed dates, times, length of instruction time, and instructors' names for each training module. Include learning objective and outline for each training module.
 - 1. Indicate proposed training modules using manufacturer-produced demonstration and training video recordings for systems, equipment, and products in lieu of video recording of live instructional module.

1.4 CLOSEOUT SUBMITTALS

- A. Demonstration and Training Video Recordings: Submit two copies within seven days of end of each training module.
 - 1. At completion of training, submit complete training manual(s) for Owner's use prepared in same PDF file format required for operation and maintenance manuals specified in Section 017823 "Operation and Maintenance Data."

1.5 QUALITY ASSURANCE

- A. Facilitator Qualifications: A firm or individual experienced in training or educating maintenance personnel in a training program similar in content and extent to that indicated for this Project, and whose work has resulted in training or education with a record of successful learning performance.
- B. Instructor Qualifications: A factory-authorized service representative, complying with requirements in Section 014000 "Quality Requirements," experienced in operation and maintenance procedures and training.
- C. Pre-instruction Conference: Conduct conference at Project site to comply with requirements in Section 013100 "Project Management and Coordination."

1.6 COORDINATION

- A. Coordinate instruction schedule with Owner's operations. Adjust schedule as required to minimize disrupting Owner's operations and to ensure availability of Owner's personnel.
- B. Coordinate instructors, including providing notification of dates, times, length of instruction time, and course content.
- C. Coordinate content of training modules with content of approved emergency, operation, and maintenance manuals. Do not submit instruction program until operation and maintenance data have been reviewed and approved by Architect.

1.7 INSTRUCTION PROGRAM

- A. Program Structure: Develop an instruction program that includes individual training modules for each system and for equipment not part of a system, as required by individual Specification Sections.
- B. Training Modules: Develop a learning objective and teaching outline for each module. Include a description of specific skills and knowledge that participant is expected to master. For each module, include instruction for the following as applicable to the system, equipment, or component:
 - 1. Basis of System Design, Operational Requirements, and Criteria: Include the following:
 - a. System, subsystem, and equipment descriptions.
 - b. Performance and design criteria if Contractor is delegated design responsibility.
 - c. Operating standards.
 - d. Regulatory requirements.
 - e. Equipment function.
 - f. Operating characteristics.
 - g. Limiting conditions.
 - h. Performance curves.
 - 2. Documentation: Review the following items in detail:

- a. Emergency manuals.
 - b. Systems and equipment operation manuals.
 - c. Systems and equipment maintenance manuals.
 - d. Product maintenance manuals.
 - e. Project Record Documents.
 - f. Identification systems.
 - g. Warranties and bonds.
 - h. Maintenance service agreements and similar continuing commitments.
3. Emergencies: Include the following, as applicable:
- a. Instructions on meaning of warnings, trouble indications, and error messages.
 - b. Instructions on stopping.
 - c. Shutdown instructions for each type of emergency.
 - d. Operating instructions for conditions outside of normal operating limits.
 - e. Sequences for electric or electronic systems.
 - f. Special operating instructions and procedures.
4. Operations: Include the following, as applicable:
- a. Startup procedures.
 - b. Equipment or system break-in procedures.
 - c. Routine and normal operating instructions.
 - d. Regulation and control procedures.
 - e. Control sequences.
 - f. Safety procedures.
 - g. Instructions on stopping.
 - h. Normal shutdown instructions.
 - i. Operating procedures for emergencies.
 - j. Operating procedures for system, subsystem, or equipment failure.
 - k. Seasonal and weekend operating instructions.
 - l. Required sequences for electric or electronic systems.
 - m. Special operating instructions and procedures.
5. Adjustments: Include the following:
- a. Alignments.
 - b. Checking adjustments.
 - c. Noise and vibration adjustments.
 - d. Economy and efficiency adjustments.
6. Troubleshooting: Include the following:
- a. Diagnostic instructions.
 - b. Test and inspection procedures.
7. Maintenance: Include the following:
- a. Inspection procedures.
 - b. Types of cleaning agents to be used and methods of cleaning.
 - c. List of cleaning agents and methods of cleaning detrimental to product.

- d. Procedures for routine cleaning.
 - e. Procedures for preventive maintenance.
 - f. Procedures for routine maintenance.
 - g. Instruction on use of special tools.
8. Repairs: Include the following:
- a. Diagnosis instructions.
 - b. Repair instructions.
 - c. Disassembly; component removal, repair, and replacement; and reassembly instructions.
 - d. Instructions for identifying parts and components.
 - e. Review of spare parts needed for operation and maintenance.

1.8 PREPARATION

- A. Assemble educational materials necessary for instruction, including documentation and training module. Assemble training modules into a training manual organized in coordination with requirements in Section 017823 "Operation and Maintenance Data."
- B. Set up instructional equipment at instruction location.

1.9 INSTRUCTION

- A. Facilitator: Engage a qualified facilitator to prepare instruction program and training modules, to coordinate instructors, and to coordinate between Contractor and Owner for number of participants, instruction times, and location.
- B. Engage qualified instructors to instruct Owner's personnel to adjust, operate, and maintain systems, subsystems, and equipment not part of a system.
- C. Scheduling: Provide instruction at mutually agreed-on times. For equipment that requires seasonal operation, provide similar instruction at start of each season.
 - 1. Schedule training with Owner, through Construction Manager, with at least seven days' advance notice.
- D. Training Location and Reference Material: Conduct training on-site in the completed and fully operational facility using the actual equipment in-place. Conduct training using final operation and maintenance data submittals.
- E. Evaluation: At conclusion of each training module, assess and document each participant's mastery of module by use of an oral performance-based test.
- F. Cleanup: Collect used and leftover educational materials and give to Owner. Remove instructional equipment. Restore systems and equipment to condition existing before initial training use.

1.10 DEMONSTRATION AND TRAINING VIDEO RECORDINGS

- A. General: Engage a qualified commercial videographer to record demonstration and training video recordings. Record each training module separately. Include classroom instructions and demonstrations, board diagrams, and other visual aids, but not student practice.
 - 1. At beginning of each training module, record each chart containing learning objective and lesson outline.
- B. Digital Video Recordings: Provide high-resolution, digital video in MPEG format, produced by a digital camera with minimum sensor resolution of 12 megapixels and capable of recording in full HD mode.
 - 1. Submit video recordings by uploading to web-based Project software site.
- C. Recording: Mount camera on tripod before starting recording, unless otherwise necessary to adequately cover area of demonstration and training. Display continuous running time.
- D. Light Levels: Verify light levels are adequate to properly light equipment. Verify equipment markings are clearly visible prior to recording.
- E. Preproduced Video Recordings: Provide video recordings used as a component of training modules in same format as recordings of live training.

PART 2 - PRODUCTS

PART 3 - EXECUTION

END OF SECTION 017900

SECTION 019113 - GENERAL COMMISSIONING REQUIREMENTS

PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes:

1. General requirements for coordinating and scheduling commissioning activities.
2. Commissioning meetings.
3. Commissioning reports.
4. Use of commissioning process test equipment, instrumentation, and tools.
5. Construction checklists, including, but not limited to, installation checks, startup, performance tests, and performance test demonstration.
6. Commissioning tests and commissioning test demonstration.
7. Adjusting, verifying, and documenting identified systems and assemblies.

1.2 METHOD OF MEASUREMENT AND BASIS OF PAYMENT

A. Method of Measurement:

1. All work described in this specification shall have no separate measurement and shall be included within the lump sum cost of Section 011000.

B. Basis of Payment

1. All work described in this specification shall have no separate payment and shall be included within the lump sum cost of Section 011000.

1.3 DEFINITIONS

- A. Acceptance Criteria: Threshold of acceptable work quality or performance specified for a commissioning activity, including, but not limited to, construction checklists, performance tests, performance test demonstrations, commissioning tests, and commissioning test demonstrations.
- B. Basis-of-Design Document: A document prepared by Architect that records concepts, calculations, decisions, and product selections used to comply with Owner's Project Requirements and to suit applicable regulatory requirements, standards, and guidelines.
- C. Commissioning Authority: An entity engaged by Owner, and identified in Section 011000 "Summary," to evaluate Commissioning-Process Work.
- D. Commissioning Plan: A document, prepared by Commissioning Authority, that outlines the organization, schedule, allocation of resources, and documentation of commissioning requirements.

- E. Commissioning: A quality-focused process for verifying and documenting that the facility and all of its systems and assemblies are planned, designed, installed, and tested to comply with Owner's Project Requirements. The requirements specified here are limited to the construction phase commissioning activities. The scope of the commissioning process is defined in Section 011000 "Summary."
- F. Construction-Phase Commissioning-Process Completion: The stage of completion and acceptance of commissioning process when resolution of deficient conditions and issues discovered during commissioning process and retesting until acceptable results are obtained has been accomplished. Owner will establish in writing the date construction-phase commissioning-process completion is achieved. See Section 017700 "Closeout Procedures" for Certificate of Construction-Phase Commissioning Process Completion submittal requirements.
 - 1. Commissioning process is complete when the Work specified of this Section and related Sections has been completed and accepted, including, but not limited to, the following:
 - a. Completion of tests and acceptance of test results.
 - b. Resolution of issues, as verified by retests performed and documented with acceptance of retest results.
 - c. Comply with requirements in Section 017900 "Demonstration and Training."
 - d. Completion and acceptance of submittals and reports.
- G. Owner's Project Requirements: A document that details the functional requirements of a project and the expectations of how it will be used and operated, including Project goals, measurable performance criteria, cost considerations, benchmarks, success criteria, and supporting information. This document is prepared either by the Owner or for the Owner by the Architect or Commissioning Authority.
- H. Owner's Witness: Commissioning Authority, Owner's Project Manager, or Architect-designated witness authorized to authenticate test demonstration data and to sign completed test data forms.
- I. "Systems," "Assemblies," "Subsystems," "Equipment," and "Components": Where these terms are used together or separately, they shall mean "as-built" systems, assemblies, subsystems, equipment, and components.
- J. Test: Performance tests, performance test demonstrations, commissioning tests, and commissioning test demonstrations.
- K. Sampling Procedures and Tables for Inspection by Attributes: As defined in ASQ Z1.4.

1.4 INFORMATIONAL SUBMITTALS

- A. Comply with requirements in Section 013300 "Submittal Procedures" for submittal procedure general requirements for commissioning process.
- B. Commissioning Plan Information:
 - 1. List of Contractor-appointed commissioning team members to include specific personnel and subcontractors performing the various commissioning requirements.

2. Schedule of commissioning activities, integrated with the Construction Schedule. Comply with requirements in Section 013200 "Construction Progress Documentation" for the Construction Schedule general requirements for commissioning process.
 3. Contractor personnel and subcontractors participating in each test.
 4. List of instrumentation required for each test to include identification of parties that will provide instrumentation for each test.
- C. Commissioning schedule.
- D. Two-week look-ahead schedules.
- E. List test instrumentation, equipment, and monitoring devices. Include the following information:
1. Make, model, serial number, and application for each instrument, equipment, and monitoring device.
 2. Brief description of intended use.
 3. Calibration record showing the following:
 - a. Calibration agency, including name and contact information.
 - b. Last date of calibration.
 - c. Range of values for which calibration is valid.
 - d. Certification of accuracy.
 - e. Certification for calibration equipment traceable to NIST.
 - f. Due date of the next calibration.
- F. Test Reports:
1. Pre-Startup Report: Prior to startup of equipment or a system, submit signed, completed construction checklists.
 2. Test Data Reports: At the end of each day in which tests are conducted, submit test data for tests performed.
 3. Commissioning Issue Reports: Daily, at the end of each day in which tests are conducted, submit commissioning issue reports for tests for which acceptable results were not achieved.
 4. Weekly Progress Report: Weekly, at the end of each week in which tests are conducted, submit a progress report.
 5. Data Trend Logs: Submit data trend logs at the end of the trend log period.
 6. System Alarm Logs: Daily, at the start of days following a day in which tests were performed, submit printout of log of alarms that occurred since the last log was printed.
- G. Construction Checklists:
1. Material checks.
 2. Installation checks.
 3. Startup procedures, where required.

1.5 CLOSEOUT SUBMITTALS

- A. Commissioning Report:

1. At Construction-Phase Commissioning Completion, include the following:
 - a. Pre-startup reports.
 - b. Approved test procedures
 - c. Test data forms, completed and signed.
 - d. Progress reports.
 - e. Commissioning issue report log.
 - f. Commissioning issue reports showing resolution of issues.
 - g. Correspondence or other documents related to resolution of issues.
 - h. Other reports required by commissioning process.
 - i. List unresolved issues and reasons they remain unresolved and should be exempted from the requirements for Construction-Phase Commissioning Completion.
 - j. Report shall include commissioning work of Contractor.
- B. Request for Certificate of Construction-Phase Commissioning Process Completion.
- C. Operation and maintenance data.

PART 2 - PRODUCTS

2.1 TEST EQUIPMENT, INSTRUMENTATION, AND TOOLS

- A. Test equipment and instrumentation required to perform the commissioning process shall remain the property of Contractor unless otherwise indicated.
- B. Test equipment and instrumentation required to perform commissioning process shall comply with the following criteria:
 1. Be manufactured for the purpose of testing and measuring tests for which they are being used and have an accuracy to test and measure system performance within the tolerances required to determine acceptable performance.
 2. Calibrated and certified.
 - a. Calibration performed and documented by a qualified calibration agency according to national standards applicable to the tools and instrumentation being calibrated. Calibration shall be current according to national standards or within test equipment and instrumentation manufacturer's recommended intervals, whichever is more frequent, but not less than within six months of initial use on Project. Calibration tags shall be permanently affixed.
 - b. Repair and recalibrate test equipment and instrumentation if dismantled, dropped, or damaged since last calibrated.
 3. Maintain test equipment and instrumentation.
 4. Use test equipment and instrumentation only for testing or monitoring Work for which they are designed.

2.2 PROPRIETARY TEST EQUIPMENT, INSTRUMENTATION, AND TOOLS

- A. Proprietary test equipment, instrumentation, and tools are those manufactured or prescribed by tested equipment manufacturer and required for work on its equipment as a condition of equipment warranty, or as otherwise required to service, repair, adjust, calibrate, or perform work on its equipment.
 - 1. Identify proprietary test equipment, instrumentation, and tools required in the test equipment identification list submittal.
 - 2. Proprietary test equipment, instrumentation, and tools shall become the property of Owner at Substantial Completion.

2.3 REPORT FORMAT AND ORGANIZATION

- A. General Format and Organization:
 - 1. Electronic Data: Portable document format (PDF); a single file with outline-organized bookmarks for major and minor tabs and tab contents itemized for specific reports.
- B. Commissioning Report:
 - 1. Include a table of contents and an index to each test.
 - 2. Include major tabs for each Specification Section.
 - 3. Include minor tabs for each test.
 - 4. Within each minor tab, include the following:
 - a. Test specification.
 - b. Pre-startup reports.
 - c. Approved test procedures.
 - d. Test data forms, completed and signed.
 - e. Commissioning issue reports, showing resolution of issues, and documentation related to resolution of issues pertaining to a single test. Group data forms, commissioning issue reports showing resolution of issues, and documentation related to resolution of issues for each test repetition together within the minor tab, in reverse chronological order (most recent on top).

PART 3 - EXECUTION

3.1 PREPARATION

- A. Review preliminary construction checklists and preliminary test procedures and data forms.

3.2 CONSTRUCTION CHECKLISTS

- A. Construction checklists cannot modify or conflict with the Contract Documents.
- B. Create construction checklists based on actual systems and equipment to be included in Project.

- C. **Material Checks:** Compare specified characteristics and approved submittals with materials as received. Include factory tests and other evaluations, adjustments, and tests performed prior to shipment if applicable.
1. Service connection requirements, including configuration, size, location, and other pertinent characteristics.
 2. Included optional features.
 3. **Delivery Receipt Check:** Inspect and record physical condition of materials and equipment on delivery to Project site, including agreement with approved submittals, cleanliness, and lack of damage.
 4. **Installation Checks:**
 - a. Location according to Drawings and approved Shop Drawings.
 - b. Configuration.
 - c. Compliance with manufacturers' written installation instructions.
 - d. Attachment to structure.
 - e. Access clearance to allow for maintenance, service, repair, removal, and replacement without the need to disassemble or remove other equipment or building elements. Access coordinated with other building elements and equipment, including, but not limited to, ceiling and wall access panels, in a manner consistent with OSHA fall-protection regulations and safe work practices.
 - f. Utility connections are of the correct characteristics, as applicable.
 - g. Correct labeling and identification.
 - h. **Startup Checks:** Verify readiness of equipment to be energized. Include manufacturer's standard startup procedures and forms.
- D. **Startup:** Perform and document initial operation of equipment to prove that it is installed properly and operates as intended according to manufacturer's standard startup procedures, at minimum.
- E. **Performance Tests:**
1. **Static Tests:** As specified elsewhere, including, but not limited to, duct and pipe leakage tests, insulation-resistance tests, and water-penetration tests.
 2. **Component Performance Tests:** Tests evaluate the performance of an input or output of components under a full range of operating conditions.
 3. **Equipment and Assembly Performance Tests:** Test and evaluate performance of equipment and assemblies under a full range of operating conditions and loads.
 4. **System Performance Tests:** Test and evaluate performance of systems under a full range of operating conditions and loads.
 5. **Intersystem Performance Tests:** Test and evaluate the interface of different systems under a full range of operating conditions and loads.
- F. **Deferred Construction Checklists:** Obtain Owner approval of proposed deferral of construction checklists, including proposed schedule of completion of each deferred construction checklist, before submitting request for Certificate of Construction-Phase Commissioning Process Completion. When approved, deferred construction checklists may be completed after date of Construction-Phase Commissioning Completion. Include the following in a request for Certificate of Construction-Phase Commissioning Process Completion:
1. Identify deferred construction checklists by number and title.

2. Provide a target schedule for completion of deferred construction checklists.
 3. Written approval of proposed deferred construction checklists, including approved schedule of completion of each deferred construction checklist.
- G. Delayed Construction Checklists: Obtain Owner approval of proposed delayed construction checklists, including proposed schedule of completion of each delayed construction checklist, before submitting request for Certificate of Construction-Phase Commissioning Process Completion. When approved, delayed construction checklists may be completed after date of Construction-Phase Commissioning Completion. Include the following in a request for Certificate of Construction-Phase Commissioning Process Completion:
1. Identify delayed construction checklist by construction checklist number and title.
 2. Provide a target schedule for completion of delayed construction checklists.
 3. Written approval of proposed delayed construction checklists, including approved schedule of completion of each delayed construction checklist.

3.3 GENERAL EXECUTION REQUIREMENTS

- A. Schedule and coordinate commissioning process with the Construction Schedule.
- B. Perform activities identified in construction checklists, including tests, and document results of actions as construction proceeds.
- C. Perform test demonstrations for Owner's witness. Unless otherwise indicated, demonstrate tests for 100 percent of work to which the test applies.
- D. Report test data and commissioning issue resolutions.
- E. Schedule personnel to participate in and perform Commissioning-Process Work.
- F. Installing contractors' commissioning responsibilities include, but are not limited to, the following:
 1. Operating the equipment and systems they install during tests.
 2. In addition, installing contractors may be required to assist in tests of equipment and systems with which their work interfaces.

3.4 CONTRACTOR'S RESPONSIBILITIES

- A. Management and Coordination: Manage, schedule, and coordinate commissioning process, including, but not limited to, the following:
 1. Coordinate with subcontractors on their commissioning responsibilities and activities.
 2. Obtain, assemble, and submit commissioning documentation.
 3. Attend periodic on-site commissioning meetings. Comply with requirements in Section 013100 "Project Management and Coordination."
 4. Develop and maintain the commissioning schedule. Integrate commissioning schedule into the Construction Schedule. Update Construction Schedule at specified intervals.
 5. Review and comment on preliminary test procedures and data forms.

6. Report inconsistencies and issues in system operations.
7. Verify that tests have been completed and results comply with acceptance criteria, and that equipment and systems are ready before scheduling test demonstrations.
8. Direct and coordinate test demonstrations.
9. Coordinate witnessing of test demonstrations by Owner's witness.
10. Coordinate and manage training. Be present during training sessions to direct video recording, present training, and direct the training presentations of others. Comply with requirements in Section 017900 "Demonstration and Training."
11. Prepare and submit specified commissioning reports.
12. Track commissioning issues until resolution and retesting is successfully completed.
13. Retain original records of Commissioning-Process Work, organized as required for the commissioning report. Provide Owner's representative access to these records on request.
14. Assemble and submit commissioning report.

3.5 COMMISSIONING TESTING

- A. Quality Control: Construction checklists, including tests, are quality-control tools designed to improve the functional quality of Project. Test demonstrations evaluate the effectiveness of Contractor's quality-control process.
- B. Owner's witness will be present to witness commissioning work requiring the signature of an owner's witness, including, but not limited to, test demonstrations. Owner's project manager will coordinate attendance by Owner's witness with Contractor's published Commissioning Schedule. Owner's witness will provide no labor or materials in the commissioning work. The only function of Owner's witness will be to observe and comment on the progress and results of commissioning process.
- C. Construction Checklists:
 1. Complete construction checklists as Work is completed.
 2. Distribute construction checklists to installing contractors before they start work.
 3. Installers:
 - a. Verify installation using approved construction checklists as Work proceeds.
 4. Provide Commissioning Authority access to construction checklists.
- D. Installation Compliance Issues: Record as an installation compliance issue Work found to be incomplete, inaccessible, at variance with the Contract Documents, nonfunctional, or that does not comply with construction checklists. Record installation compliance issues on the construction checklist at the time they are identified. Record corrective action and how future Work should be modified before signing off the construction checklist.
- E. Pre-Startup Audit: Prior to executing startup procedures, review completed installation checks to determine readiness for startup and operation. Report conditions, which, if left uncorrected, adversely impact the ability of systems or equipment to operate satisfactorily or to comply with acceptance criteria. Prepare pre-startup report for each system.
- F. Test Procedures and Test Data Forms:

1. Test procedures shall define the step-by-step procedures to be used to execute tests and test demonstrations.
2. Test procedures shall be specific to the make, model, and application of the equipment and systems being tested.
3. Completed test data forms are the official records of the test results.
4. Commissioning Authority will provide to Contractor preliminary test procedures and test data forms for performance tests and commissioning tests after approval of Product Data, Shop Drawings, and preliminary operation and maintenance manual.
5. Review preliminary test procedures and test data forms, and provide comments within 14 days of receipt from Commissioning Authority. Review shall address the following:
 - a. Equipment protection and warranty issues, including, but not limited to, manufacturers' installation and startup recommendations, and operation and maintenance instructions.
 - b. Applicability of the procedure to the specific software, equipment, and systems approved for installation.
6. After Contractor has reviewed and commented on the preliminary test procedures and test data forms, Commissioning Authority will revise and reissue the approved revised test procedures and test data forms marked "Approved for Testing."
7. Use only approved test procedures and test data forms marked "Approved for Testing" to perform and document tests and test demonstrations.

G. Performance of Tests:

1. The sampling rate for tests is 100 percent. The sampling rate for test demonstrations is 100 percent unless otherwise indicated.
2. Perform and complete each step of the approved test procedures in the order listed.
3. Record data observed during performance of tests on approved data forms at the time of test performance and when the results are observed.
4. Record test results that are not within the range of acceptable results on commissioning issue report forms in addition to recording the results on approved test procedures and data forms according to the "Commissioning Compliance Issues" Paragraph in this Article.
5. On completion of a test, sign the completed test procedure and data form. Tests for which test procedures and data forms are incomplete, not signed, or which indicate performance that does not comply with acceptance criteria will be rejected. Tests for which test procedures and data forms are rejected shall be repeated and results resubmitted.

H. Performance of Test Demonstration:

1. Perform test demonstrations on a sample of tests after test data submittals are approved. The sampling rate for test demonstrations shall be 100 percent unless otherwise indicated in the individual test specification.
2. Notify Owner's witness at least two days in advance of each test demonstration.
3. Perform and complete each step of the approved test procedures in the order listed.
4. Record data observed during performance of test demonstrations on approved data forms at the time of demonstration and when the results are observed.
5. Provide full access to Owner's witness to directly observe the performance of all aspects of system response during the test demonstration. On completion of a test demonstration,

sign the completed data form and obtain signature of Owner's witness at the time of the test to authenticate the reported results.

6. Test demonstration data forms not signed by Contractor and Owner's witness at the time of the completion of the procedure will be rejected. Test demonstrations for which data forms are rejected shall be repeated and results shall be resubmitted.
 - a. Exception for Failure of Owner's Witness to Attend: Failure of Owner's witness to be present for agreed-on schedule of test demonstration shall not delay Contractor. If Owner's witness fails to attend a scheduled test, Contractor shall proceed with the scheduled test. On completion, Contractor shall sign the data form for Contractor and for Owner's witness, and shall note the absence of Owner's witness at the scheduled time and place.
7. False load test requirements are specified in related sections.
 - a. Where false load testing is specified, provide temporary equipment, power, controls, wiring, piping, valves, and other necessary equipment and connections required to apply the specified load to the system. False load system shall be capable of steady-state operation and modulation at the level of load specified. Equipment and systems permanently installed in this work shall not be used to create the false load without Architect's written approval.

I. Deferred Tests:

1. Deferred Test List: Identify, in the request for Certificate of Construction-Phase Commissioning Process Completion, proposed deferred tests or other tests approved for deferral until specified seasonal or other conditions are available. When approved, deferred tests may be completed after the date of Construction-Phase Commissioning Completion. Identify proposed deferred tests in the request for Certificate of Construction-Phase Commissioning Process Completion as follows:
 - a. Identify deferred tests by number and title.
 - b. Provide a target schedule for completion of deferred tests.
2. Schedule and coordinate deferred tests. Schedule deferred tests when specified conditions are available. Notify Architect and Commissioning Authority at least two working days (minimum) in advance of tests.
3. Where deferred tests are specified, coordinate participation of necessary personnel and of Architect, Commissioning Authority, and Owner's witness. Schedule deferred tests to minimize occupant and facility impact. Obtain Architect's approval of the proposed schedule.

J. Delayed Tests:

1. Delayed Test List: Identify, in the request for Certificate of Construction-Phase Commissioning Process Completion, proposed delayed tests. Obtain Owner approval of proposed delayed tests, including proposed schedule of completion of each delayed test, before submitting request for Certificate of Construction-Phase Commissioning Process Completion. Include the following in the request for Certificate of Construction-Phase Commissioning Process Completion:

- a. Identify delayed tests by test number and title.
 - b. Written approval of proposed delayed tests, including approved schedule of completion of delayed tests.
- 2. Schedule and coordinate delayed tests. Schedule delayed tests when conditions that caused the delay have been rectified. Notify Architect and Commissioning Authority at least two working days (minimum) in advance of tests.
- 3. Where delayed tests are approved, coordinate participation of necessary personnel and of Architect, Commissioning Authority, and Owner's witness. Schedule delayed tests to minimize occupant and facility impact. Obtain Architect's approval of the proposed schedule.

K. Commissioning Compliance Issues:

- 1. Test results that are not within the range of acceptable results are commissioning compliance issues.
- 2. Track and report commissioning compliance issues until resolution and retesting are successfully completed.
- 3. If a test demonstration fails, determine the cause of failure. Direct timely resolution of issue and then repeat the demonstration. If a test demonstration must be repeated due to failure caused by Contractor work or materials, reimburse Owner for billed costs for the participation in the repeated demonstration.
- 4. Test Results: If a test demonstration fails to meet the acceptance criteria, perform the following:
 - a. Complete a commissioning compliance issue report form promptly on discovery of test results that do not comply with acceptance criteria.
 - b. Submit commissioning compliance issue report form within 24 hours of the test.
 - c. Determine the cause of the failure.
 - d. Establish responsibility for corrective action if the failure is due to conditions found to be Contractor's responsibility.
- 5. Commissioning Compliance Issue Report: Provide a commissioning compliance issue report for each issue. Do not report multiple issues on the same commissioning compliance issue report.
 - a. Exception: If an entire class of devices is determined to exhibit the identical issue, they may be reported on a single commissioning compliance issue report. (For example, if all return-air damper actuators that are specified to fail to the open position are found to fail to the closed position, they may be reported on a single commissioning issue report. If a single commissioning issue report is used for multiple commissioning compliance issues, each device shall be identified in the report, and the total number of devices at issue shall be identified.
 - b. Complete and submit Part 1 of the commissioning compliance issue report immediately when the condition is observed.
 - c. Record the commissioning compliance issue report number and describe the deficient condition on the data form.
 - d. Resolve commissioning compliance issues promptly. Complete and submit Part 2 of the commissioning compliance issue report when issues are resolved.
- 6. Diagnose and correct failed test demonstrations as follows:

- a. Perform diagnostic tests and activities required to determine the fundamental cause of issues observed.
 - b. Record each step of the diagnostic procedure prior to performing the procedure. Update written procedure as changes become necessary.
 - c. Record the results of each step of the diagnostic procedure.
 - d. Record the conclusion of the diagnostic procedure on the fundamental cause of the issue.
 - e. Determine and record corrective measures.
 - f. Include diagnosis of fundamental cause of issues in commissioning compliance issue report.
7. Retest:
- a. Schedule and repeat the complete test procedure for each test demonstration for which acceptable results are not achieved. Obtain signature of Owner's witness on retest data forms. Repeat test demonstration until acceptable results are achieved. Except for issues that are determined to result from design errors or omissions, or other conditions beyond Contractor's responsibility, compensate Owner for direct costs incurred as the result of repeated test demonstrations to achieve acceptable results.
 - b. For each repeated test demonstration, submit a new test data form, marked "Retest."
8. Do not correct commissioning compliance issues during test demonstrations.
- a. Exceptions will be allowed if the cause of the issue is obvious and resolution can be completed in less than five minutes. If corrections are made under this exception, note the deficient conditions on the test data form and issue a commissioning compliance issue report. A new test data form, marked "Retest," shall be initiated after the resolution has been completed.

3.6 SEQUENCING

- A. Sequencing of Commissioning Verification Activities: For a particular material, item of equipment, assembly, or system, perform the following in the order listed unless otherwise indicated:
- 1. Construction Checklists:
 - a. Material checks.
 - b. Installation checks.
 - c. Startup, as appropriate. Some startup may depend on component performance. Such startup may follow component performance tests on which the startup depends.
 - d. Performance Tests:
 - 1) Static tests, as appropriate.
 - 2) Component performance tests. Some component performance tests may depend on completion of startup. Such component performance tests may follow startup.

- 3) Equipment and assembly performance tests.
- 4) System performance tests.
- 5) Intersystem performance tests.

2. Commissioning tests.

- B. Before performing commissioning tests, verify that materials, equipment, assemblies, and systems are delivered, installed, started, and adjusted to perform according to construction checklists.
- C. Verify readiness of materials, equipment, assemblies, and systems by performing tests prior to performing test demonstrations. Notify Architect if acceptable results cannot be achieved due to conditions beyond Contractor's control or responsibility.
- D. Commence tests as soon as installation checks for materials, equipment, assemblies, or systems are satisfactorily completed. Tests of a particular system may proceed prior to completion of other systems, provided the incomplete work does not interfere with successful execution of test.

3.7 SCHEDULING

- A. Commence commissioning process as early in the construction period as possible.
- B. Commissioning Schedule: Integrate commissioning activities into Construction Schedule.
 1. Include detailed commissioning activities in monthly updated Construction Schedule and short-interval schedule submittals.
 2. Schedule the start date and duration for the following commissioning activities:
 - a. Submittals.
 - b. Preliminary operation and maintenance manual submittals.
 - c. Installation checks.
 - d. Startup, where required.
 - e. Performance tests.
 - f. Performance test demonstrations.
 - g. Commissioning tests.
 - h. Commissioning test demonstrations.
 3. Schedule shall include a line item for each installation check, startup, and test activity specific to the equipment or systems involved.
 4. Determine milestones and prerequisites for commissioning process. Show commissioning milestones, prerequisites, and dependencies in monthly updated critical-path-method construction schedule and short-interval schedule submittals.
- C. Two-Week Look-Ahead Commissioning Schedule:
 1. Two weeks prior to the beginning of tests, submit a detailed two-week look-ahead schedule. Thereafter, submit updated two-week look-ahead schedules weekly for the duration of commissioning process.

2. Two-week look-ahead schedules shall identify the date, time, beginning location, Contractor personnel required, and anticipated duration for each startup or test activity.
3. Use two-week look-ahead schedules to notify and coordinate participation of Owner's witnesses.

D. Owner's Witness Coordination:

1. Coordinate Owner's witness participation via Construction Manager.

3.8 COMMISSIONING REPORTS

A. Test Reports:

1. Pre-startup reports include observations of the conditions of installation, organized into the following sections:
 - a. Equipment Model Verification: Compare contract requirements, approved submittals, and provided equipment. Note inconsistencies.
 - b. Preinstallation Physical Condition Checks: Observe physical condition of equipment prior to installation. Note conditions including, but not limited to, physical damage, corrosion, water damage, or other contamination or dirt.
 - c. Preinstallation Component Verification Checks: Verify components supplied with the equipment, preinstalled or field installed, are correctly installed and functional. Verify external components required for proper operation of equipment correctly installed and functional. Note missing, improperly configured, improperly installed, or nonfunctional components.
 - d. Summary of Installation Compliance Issues and Corrective Actions: Identify installation compliance issues and the corrective actions for each. Verify that issues noted have been corrected.
 - e. Evaluation of System Readiness for Startup: For each item of equipment for each system for which startup is anticipated, document in summary form acceptable to Owner completion of equipment model verification, preinstallation physical condition checks, preinstallation component verification checks, and completion of corrective actions for installation compliance issues.
2. Test data reports include the following:
 - a. "As-tested" system configuration. Complete record of conditions under which the test was performed, including, but not limited to, the status of equipment, systems, and assemblies; temporary adjustments and settings; and ambient conditions.
 - b. Data and observations, including, but not limited to, data trend logs, recorded during the tests.
 - c. Signatures of individuals performing and witnessing tests.
 - d. Data trend logs accumulated overnight from the previous day of testing.
3. Commissioning Compliance Issue Reports: Report as commissioning compliance issues results of tests and test demonstrations that do not comply with acceptance criteria. Report only one issue per commissioning compliance issue report. Use sequentially numbered facsimiles of commissioning compliance issue report form included in this

Section, or other form approved by Owner. Distribute commissioning compliance issue reports to parties responsible for taking corrective action. Identify the following:

- a. Commissioning compliance issue report number. Assign unique, sequential numbers to individual commissioning compliance issue reports when they are created, to be used for tracking.
 - b. Action distribution list.
 - c. Report date.
 - d. Test number and description.
 - e. Equipment identification and location.
 - f. Briefly describe observations about the performance associated with failure to achieve acceptable results. Identify the cause of failure if apparent.
 - g. Diagnostic procedure or plan to determine the cause (include in initial submittal)
 - h. Diagnosis of fundamental cause of issues as specified below (include in resubmittal).
 - i. Fundamental cause of unacceptable performance as determined by diagnostic tests and activities.
 - j. When issues have been resolved, update and resubmit the commissioning issue report forms by completing Part 2. Identify resolution taken and the dates and initials of the persons making the entries.
 - k. Schedule for retesting.
4. Weekly progress reports include information for tests conducted since the preceding report and the following:
- a. Completed data forms.
 - b. Equipment or system tested, including test number, system or equipment tag number and location, and notation about the apparent acceptability of results.
 - c. Activities scheduled but not conducted per schedule.
 - d. Commissioning compliance issue report log.
 - e. Schedule changes for remaining Commissioning-Process Work, if any.
5. Data trend logs shall be initiated and running prior to the time scheduled for the test demonstration.
- a. Trend log data format shall be multiple data series graphs. Where multiple data series are trend logged concurrently, present the data on a common horizontal time axis. Individual data series may be presented on a segmented vertical axis to avoid interference of one data series with another, and to accommodate different axis scale values. Graphs shall be sufficiently clear to interpret data within the accuracy required by the acceptance criteria.
 - b. Attach to the data form printed trend log data collected during the test or test demonstration.
 - c. Record, print out, and attach to the data form operator activity during the time the trend log is running. During the time the trend log is running, operator intervention not directed by the test procedure invalidates the test results.
6. System Alarm Logs: Record and print out a log of alarms that occurred since the last log was printed. Evaluate alarms to determine if the previous day's work resulted in any conditions that are not considered "normal operation."

- a. Conditions that are not considered "normal operation" shall be reported on a commissioning issue report attached to the alarm log. Resolve as necessary. The intent of this requirement is to discover control system points or sequences left in manual or disabled conditions, equipment left disconnected, set points left with abnormal values, or similar conditions that may have resulted from failure to fully restore systems to normal, automatic control after test completion.

3.9 CERTIFICATE OF CONSTRUCTION-PHASE COMMISSIONING PROCESS COMPLETION

- A. When Contractor considers that construction-phase commissioning process, or a portion thereof which Owner agrees to accept separately, is complete, Contractor shall prepare and submit to Owner and Commissioning Authority through Architect a comprehensive list of items to be completed or corrected. Failure to include an item on such list does not alter Contractor's responsibility to complete commissioning process.
- B. On receipt of Contractor's list, Commissioning Authority will make an inspection to determine whether the construction-phase commissioning process or designated portion thereof is complete. If Commissioning Authority's inspection discloses items, whether included on Contractor's list, which is not sufficiently complete as defined in "Construction-Phase Commissioning Process Completion" Paragraph in the "Definitions" Article, Contractor shall, before issuance of the Certificate of Construction-Phase Commissioning Process Completion, complete or correct such items on notification by Commissioning Authority. In such case, Contractor shall then submit a request for another inspection by Commissioning Authority to determine construction-phase commissioning process completion.
- C. Contractor shall promptly correct deficient conditions and issues discovered during commissioning process. Costs of correcting such deficient conditions and issues, including additional testing and inspections, the cost of uncovering and replacement, and compensation for Architect's and Commissioning Authority's services and expenses made necessary thereby, shall be at Contractor's expense.
- D. When construction-phase commissioning process or designated portion is complete, Commissioning Authority will prepare a Certificate of Construction-Phase Commissioning Process Completion that shall establish the date of completion of construction-phase commissioning process. Certificate of Construction-Phase Commissioning Process Completion shall be submitted prior to requesting inspection for determining date of Substantial Completion.

END OF SECTION 019113

SECTION 042200 - CONCRETE UNIT MASONRY

PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes:

1. Concrete masonry units.
2. Steel reinforcing bars.

1.2 METHOD OF MEASUREMENT

- A. No direct measurement for payment will be made for this item. All costs associated with the work of this item shall be included within the lump sum cost of Section 011000.

1.3 BASIS OF PAYMENT

- A. No direct payment will be made for this item. All costs associated with the work of this item shall be included within the lump sum cost of Section 011000.

1.4 DEFINITIONS

- A. CMU(s): Concrete masonry unit(s).
- B. Reinforced Masonry: Masonry containing reinforcing steel in grouted cells.

1.5 ACTION SUBMITTALS

- A. Product Data: For each type of product.
- B. Shop Drawings: For reinforcing steel. Detail bending, lap lengths, and placement of unit masonry reinforcing bars. Comply with ACI 315.

1.6 INFORMATIONAL SUBMITTALS

- A. Material Certificates: For each type and size of product. For masonry units, include material test reports substantiating compliance with requirements.
- B. Mix Designs: For each type of mortar and grout. Include description of type and proportions of ingredients.
1. Include test reports, in accordance with ASTM C1019, for grout mixes required to comply with compressive strength requirement.

1.7 FIELD CONDITIONS

- A. Cold-Weather Requirements: Do not use frozen materials or materials mixed or coated with ice or frost. Do not build on frozen substrates. Remove and replace unit masonry damaged by frost or by freezing conditions. Comply with cold-weather construction requirements contained in TMS 602/ACI 530.1/ASCE 6.
- B. Hot-Weather Requirements: Comply with hot-weather construction requirements contained in TMS 602/ACI 530.1/ASCE 6.

PART 2 - PRODUCTS

2.1 UNIT MASONRY, GENERAL

- A. Masonry Standard: Comply with TMS 602/ACI 530.1/ASCE 6, except as modified by requirements in the Contract Documents.
- B. Defective Units: Referenced masonry unit standards may allow a certain percentage of units to contain chips, cracks, or other defects exceeding limits stated. Do not use units where such defects are exposed in the completed Work.
- C. Fire-Resistance Ratings: Comply with requirements for fire-resistance-rated assembly designs indicated.
 - 1. Where fire-resistance-rated construction is indicated, units are listed and labeled by a qualified testing agency acceptable to authorities having jurisdiction.

2.2 CONCRETE MASONRY UNITS

- A. Shapes: Provide shapes indicated and as follows, with exposed surfaces matching exposed faces of adjacent units unless otherwise indicated.
 - 1. Provide special shapes for lintels, corners, jambs, sashes, movement joints, headers, bonding, and other special conditions.
- B. Integral Water Repellent: Provide units made with integral water repellent for exposed units and where indicated.
- C. CMUs: ASTM C90.
 - 1. Unit Compressive Strength: Provide units with minimum average net-area compressive strength of 1900 psi.
 - 2. Density Classification: Medium weight.

2.3 MORTAR AND GROUT MATERIALS

- A. Portland Cement: ASTM C150/C150M, Type I or II, except Type III may be used for cold-weather construction. Provide natural color or white cement as required to produce mortar color indicated.
- B. Hydrated Lime: ASTM C207, Type S.
- C. Portland Cement-Lime Mix: Packaged blend of portland cement and hydrated lime containing no other ingredients.
- D. Aggregate for Mortar: ASTM C144.
- E. Aggregate for Grout: ASTM C404.
- F. Cold-Weather Admixture: Nonchloride, noncorrosive, accelerating admixture complying with ASTM C494/C494M, Type C, and recommended by manufacturer for use in masonry mortar of composition indicated.
- G. Water-Repellent Admixture: Liquid water-repellent mortar admixture intended for use with CMUs containing integral water repellent from same manufacturer.
- H. Water: Potable.

2.4 REINFORCEMENT

- A. Uncoated-Steel Reinforcing Bars: ASTM A615/A615M or ASTM A996/A996M, Grade 60.
- B. Reinforcing Bar Positioners: Wire units designed to fit into mortar bed joints spanning masonry unit cells and to hold reinforcing bars in center of cells. Units are formed from 0.148-inch steel wire, hot-dip galvanized after fabrication. Provide units designed for number of bars indicated.
- C. Masonry-Joint Reinforcement, General: ASTM A951/A951M.
 - 1. Interior Walls: Mill-galvanized, carbon steel.
 - 2. Exterior Walls: Hot-dip galvanized carbon Stainless steel.
 - 3. Wire Size for Side Rods: 0.148-inch diameter.
 - 4. Wire Size for Cross Rods: 0.148-inch diameter.
 - 5. Spacing of Cross Rods: Not more than 16 inches o.c.
 - 6. Provide in lengths of not less than 10 feet, with prefabricated corner and tee units.

2.5 TIES AND ANCHORS

- A. Materials: Provide ties and anchors specified in this article that are made from materials that comply with the following unless otherwise indicated:
 - 1. Hot-Dip Galvanized, Carbon-Steel Wire: ASTM A82/A82M, with ASTM A153/A153M, Class B-2 coating.
 - 2. Steel Sheet, Galvanized after Fabrication: ASTM A1008/A1008M, Commercial Steel, with ASTM A153/A153M, Class B coating.

3. Steel Plates, Shapes, and Bars: ASTM A36/A36M.
- B. Rigid Anchors: Fabricate from steel bars 1-1/2 inches wide by 1/4 inch thick by 24 inches long, with ends turned up 2 inches or with cross pins unless otherwise indicated.
 1. Corrosion Protection: Hot-dip galvanized to comply with ASTM A153/A153M.

2.6 EMBEDDED FLASHING MATERIALS

- A. Metal Flashing: Provide metal flashing complying with SMACNA's "Architectural Sheet Metal Manual" and as follows:
 1. Stainless Steel: ASTM A240/A240M or ASTM A666, Type 304, 0.016 inch thick.
 2. Fabricate continuous flashings in sections 96 inches long minimum, but not exceeding 12 feet. Provide splice plates at joints of formed, smooth metal flashing.
 3. Fabricate metal drip edges from stainless steel. Extend at least 3 inches into wall and 1/2 inch out from wall, with outer edge bent down 30 degrees and hemmed.
 4. Fabricate metal sealant stops from stainless steel. Extend at least 3 inches into wall and out to exterior face of wall. At exterior face of wall, bend metal back on itself for 3/4 inch and down into joint 1/4 inch to form a stop for retaining sealant backer rod.
 5. Fabricate metal expansion-joint strips from stainless steel to shapes indicated.
- B. Solder and Sealants for Sheet Metal Flashings: As specified in Section 076200 "Sheet Metal Flashing and Trim."
- C. Adhesives, Primers, and Seam Tapes for Flashings: Flashing manufacturer's standard products or products recommended by flashing manufacturer for bonding flashing sheets to each other and to substrates.

2.7 MISCELLANEOUS MASONRY ACCESSORIES

- A. Compressible Filler: Premolded filler strips complying with ASTM D1056, Grade 2A1; compressible up to 35 percent; of width and thickness indicated; formulated from neoprene urethane or PVC.
- B. Preformed Control-Joint Gaskets: Made from styrene-butadiene-rubber compound, complying with ASTM D2000, Designation M2AA-805 or PVC, complying with ASTM D2287, Type PVC-65406 and designed to fit standard sash block and to maintain lateral stability in masonry wall; size and configuration as indicated.
- C. Bond-Breaker Strips: Asphalt-saturated felt complying with ASTM D226/D226M, Type I (No. 15 asphalt felt).

2.8 MORTAR AND GROUT MIXES

- A. General: Do not use admixtures, including pigments, air-entraining agents, accelerators, retarders, water-repellent agents, antifreeze compounds, or other admixtures unless otherwise indicated.

1. Do not use calcium chloride in mortar or grout.
 2. Use portland cement-lime mortar unless otherwise indicated.
 3. Add cold-weather admixture (if used) at same rate for all mortar that will be exposed to view, regardless of weather conditions, to ensure that mortar color is consistent.
- B. Mortar for Unit Masonry: Comply with ASTM C270, Proportion Specification. Provide the following types of mortar for applications stated unless another type is indicated.
1. For reinforced masonry, use Type S.
 2. For mortar parge coats, use Type S.
- C. Grout for Unit Masonry: Comply with ASTM C476.
1. Use grout of type indicated or, if not otherwise indicated, of type (fine or coarse) that will comply with TMS 602/ACI 530.1/ASCE 6 for dimensions of grout spaces and pour height.
 2. Proportion grout in accordance with ASTM C476, paragraph 4.2.2 for specified 28-day compressive strength indicated, but not less than 2000 psi.
 3. Provide grout with a slump of 8 to 11 inches as measured in accordance with ASTM C143/C143M.

PART 3 - EXECUTION

3.1 INSTALLATION, GENERAL

- A. Use full-size units without cutting if possible. If cutting is required to provide a continuous pattern or to fit adjoining construction, cut units with motor-driven saws; provide clean, sharp, unchipped edges. Allow units to dry before laying unless wetting of units is specified. Install cut units with cut surfaces and, where possible, cut edges concealed.

3.2 TOLERANCES

A. Dimensions and Locations of Elements:

1. For dimensions in cross section or elevation, do not vary by more than plus 1/2 inch or minus 1/4 inch.
2. For location of elements in plan, do not vary from that indicated by more than plus or minus 1/2 inch.
3. For location of elements in elevation, do not vary from that indicated by more than plus or minus 1/4 inch in a story height or 1/2 inch total.

B. Lines and Levels:

1. For bed joints and top surfaces of bearing walls, do not vary from level by more than 1/4 inch in 10 feet, or 1/2-inch maximum.
2. For conspicuous horizontal lines, such as lintels, sills, parapets, and reveals, do not vary from level by more than 1/8 inch in 10 feet, 1/4 inch in 20 feet, or 1/2-inch maximum.

3. For vertical lines and surfaces, do not vary from plumb by more than 1/4 inch in 10 feet, 3/8 inch in 20 feet, or 1/2-inch maximum.
4. For conspicuous vertical lines, such as external corners, door jambs, reveals, and expansion and control joints, do not vary from plumb by more than 1/8 inch in 10 feet, 1/4 inch in 20 feet, or 1/2-inch maximum.
5. For lines and surfaces, do not vary from straight by more than 1/4 inch in 10 feet, 3/8 inch in 20 feet, or 1/2-inch maximum.

C. Joints:

1. For bed joints, do not vary from thickness indicated by more than plus or minus 1/8 inch, with a maximum thickness limited to 1/2 inch.
2. For head and collar joints, do not vary from thickness indicated by more than plus 3/8 inch or minus 1/4 inch.
3. For exposed head joints, do not vary from thickness indicated by more than plus or minus 1/8 inch.

3.3 LAYING MASONRY WALLS

- A. Lay out walls in advance for accurate spacing of surface bond patterns with uniform joint thicknesses and for accurate location of openings, movement-type joints, returns, and offsets. Avoid using less-than-half-size units, particularly at corners, jambs, and, where possible, at other locations.
- B. Bond Pattern for Exposed Masonry: Unless otherwise indicated, lay exposed masonry in running bond; do not use units with less-than-nominal 4-inch horizontal face dimensions at corners or jambs.
- C. Built-in Work: As construction progresses, build in items specified in this and other Sections. Fill in solidly with masonry around built-in items.
- D. Fill space between steel frames and masonry solidly with mortar unless otherwise indicated.
- E. Where built-in items are to be embedded in cores of hollow masonry units, place a layer of metal lath, wire mesh, or plastic mesh in the joint below, and rod mortar or grout into core.
- F. Fill cores in hollow CMUs with grout 24 inches under bearing plates, beams, lintels, posts, and similar items unless otherwise indicated.

3.4 MORTAR BEDDING AND JOINTING

- A. Lay hollow CMUs as follows:
 1. Bed face shells in mortar and make head joints of depth equal to bed joints.
 2. Bed webs in mortar in all courses of piers, columns, and pilasters.
 3. Bed webs in mortar in grouted masonry, including starting course on footings.
 4. Fully bed entire units, including areas under cells, at starting course on footings where cells are not grouted.

- B. Tool exposed joints slightly concave when thumbprint hard, using a jointer larger than joint thickness unless otherwise indicated.
- C. Cut joints flush for masonry walls to receive plaster or other direct-applied finishes (other than paint) unless otherwise indicated.

3.5 MASONRY-JOINT REINFORCEMENT

- A. General: Install entire length of longitudinal side rods in mortar with a minimum cover of 5/8 inch on exterior side of walls, 1/2 inch elsewhere. Lap reinforcement a minimum of 6 inches.
 - 1. Space reinforcement not more than 16 inches o.c.
 - 2. Space reinforcement not more than 8 inches o.c. in foundation walls and parapet walls.
 - 3. Provide reinforcement not more than 8 inches above and below wall openings and extending 12 inches beyond openings.
- B. Interrupt joint reinforcement at control and expansion joints unless otherwise indicated.
- C. Provide continuity at wall intersections by using prefabricated T-shaped units.
- D. Provide continuity at corners by using prefabricated L-shaped units.

3.6 FLASHING

- A. General: Install embedded flashing at ledges and other obstructions to downward flow of water in wall where indicated.
- B. Install flashing as follows unless otherwise indicated:
 - 1. Prepare masonry surfaces so they are smooth and free from projections that could puncture flashing. Where flashing is within mortar joint, place through-wall flashing on sloping bed of mortar and cover with mortar. Before covering with mortar, seal penetrations in flashing with adhesive, sealant, or tape.
 - 2. At lintels, extend flashing a minimum of 6 inches into masonry at each end. At heads and sills, extend flashing 6 inches at ends and turn up not less than 2 inches to form end dams.
 - 3. Install metal drip edges beneath flexible flashing at exterior face of wall. Stop flexible flashing 1/2 inch back from outside face of wall, and adhere flexible flashing to top of metal drip edge.
 - 4. Install metal flashing termination beneath flexible flashing at exterior face of wall. Stop flexible flashing 1/2 inch back from outside face of wall, and adhere flexible flashing to top of metal flashing termination.

3.7 REINFORCED UNIT MASONRY

- A. Temporary Formwork and Shores: Construct formwork and shores as needed to support reinforced masonry elements during construction.
 - 1. Construct formwork to provide shape, line, and dimensions of completed masonry as indicated. Make forms sufficiently tight to prevent leakage of mortar and grout. Brace,

- tie, and support forms to maintain position and shape during construction and curing of reinforced masonry.
 - 2. Do not remove forms and shores until reinforced masonry members have hardened sufficiently to carry their own weight and that of other loads that may be placed on them during construction.
- B. Placing Reinforcement: Comply with requirements in TMS 602/ACI 530.1/ASCE 6.
 - C. Grouting: Do not place grout until entire height of masonry to be grouted has attained enough strength to resist grout pressure.
 - 1. Comply with requirements in TMS 602/ACI 530.1/ASCE 6 for cleanouts and for grout placement, including minimum grout space and maximum pour height.
 - 2. Limit height of vertical grout pours to not more than 60 inches.

3.8 FIELD QUALITY CONTROL

- A. Testing and Inspecting: Engage special inspectors to perform tests and inspections and prepare reports. Allow inspectors access to scaffolding and work areas as needed to perform tests and inspections. Retesting of materials that fail to comply with specified requirements is done at Contractor's expense.
- B. Inspections: Special inspections in accordance with Level B in TMS 402/ACI 530/ASCE 5.
 - 1. Begin masonry construction only after inspectors have verified proportions of site-prepared mortar.
 - 2. Place grout only after inspectors have verified compliance of grout spaces and of grades, sizes, and locations of reinforcement.
 - 3. Place grout only after inspectors have verified proportions of site-prepared grout.
- C. Testing Prior to Construction: One set of tests.
- D. Testing Frequency: One set of tests for each 5000 sq. ft. of wall area or portion thereof.
- E. Concrete Masonry Unit Test: For each type of unit provided, in accordance with ASTM C140 for compressive strength.
- F. Mortar Aggregate Ratio Test (Proportion Specification): For each mix provided, in accordance with ASTM C780.
- G. Grout Test (Compressive Strength): For each mix provided, in accordance with ASTM C1019.

3.9 PARGING

- A. Parge exterior faces of below-grade masonry walls, where indicated, in two uniform coats to a total thickness of 3/4 inch. Dampen wall before applying first coat, and scarify first coat to ensure full bond to subsequent coat.
- B. Use a steel-trowel finish to produce a smooth, flat, dense surface with a maximum surface variation of 1/8 inch per foot. Form a wash at top of parging and a cove at bottom.

- C. Damp-cure parging for at least 24 hours and protect parging until cured.

3.10 REPAIRING, POINTING, AND CLEANING

- A. In-Progress Cleaning: Clean unit masonry as work progresses by dry brushing to remove mortar fins and smears before tooling joints.
- B. Final Cleaning: After mortar is thoroughly set and cured, clean exposed masonry as follows:
 - 1. Test cleaning methods on sample wall panel; leave one-half of panel uncleaned for comparison purposes.
 - 2. Clean concrete masonry by applicable cleaning methods indicated in NCMA TEK 8-4A.

3.11 MASONRY WASTE DISPOSAL

- A. Excess Masonry Waste: Remove excess masonry waste, and legally dispose of off Owner's property.

END OF SECTION 042200

SECTION 078413 - PENETRATION FIRESTOPPING

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

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

1.2 SUMMARY

- A. Section Includes:
 - 1. Penetrations in fire-resistance-rated walls.
 - 2. Penetrations in horizontal assemblies.

1.3 METHOD OF MEASUREMENT

- A. No direct measurement for payment will be made for this item. All costs associated with the work of this item shall be included within the lump sum cost of Section 011000.

1.4 BASIS OF PAYMENT

- A. No direct payment will be made for this item. All costs associated with the work of this item shall be included within the lump sum cost of Section 011000.

1.5 ACTION SUBMITTALS

- A. Product Data: For each type of product.
- B. Product Schedule: For each penetration firestopping system. Include location, illustration of firestopping system, and design designation of qualified testing and inspecting agency.

1.6 INFORMATIONAL SUBMITTALS

- A. Qualification Data: For Installer.
- B. Product Test Reports: For each penetration firestopping system, for tests performed by a qualified testing agency.

1.7 CLOSEOUT SUBMITTALS

- A. Installer Certificates: From Installer indicating that penetration firestopping systems have been installed in compliance with requirements and manufacturer's written instructions.

1.8 QUALITY ASSURANCE

- A. Installer Qualifications: A firm that has been approved by FM Global according to FM Global 4991, "Approval of Firestop Contractors," or been evaluated by UL and found to comply with its "Qualified Firestop Contractor Program Requirements."

1.9 PROJECT CONDITIONS

- A. Environmental Limitations: Do not install penetration firestopping system when ambient or substrate temperatures are outside limits permitted by penetration firestopping system manufacturers or when substrates are wet because of rain, frost, condensation, or other causes.
- B. Install and cure penetration firestopping materials per manufacturer's written instructions using natural means of ventilations or, where this is inadequate, forced-air circulation.

1.10 COORDINATION

- A. Coordinate construction of openings and penetrating items to ensure that penetration firestopping systems can be installed according to specified firestopping system design.
- B. Coordinate sizing of sleeves, openings, core-drilled holes, or cut openings to accommodate penetration firestopping systems.

PART 2 - PRODUCTS

2.1 PERFORMANCE REQUIREMENTS

- A. Fire-Test-Response Characteristics:
 - 1. Perform penetration firestopping system tests by a qualified testing agency acceptable to authorities having jurisdiction.
 - 2. Test per testing standards referenced in "Penetration Firestopping Systems" Article. Provide rated systems complying with the following requirements:
 - a. Penetration firestopping systems shall bear classification marking of a qualified testing agency.
 - 1) UL in its "Fire Resistance Directory."
 - 2) Intertek Group in its "Directory of Listed Building Products."
 - 3) FM Global in its "Building Materials Approval Guide."

2.2 PENETRATION FIRESTOPPING SYSTEMS

- A. Penetration Firestopping Systems: Systems that resist spread of fire, passage of smoke and other gases, and maintain original fire-resistance rating of construction penetrated. Penetration firestopping systems shall be compatible with one another, with the substrates forming openings, and with penetrating items if any.
- B. Penetrations in Fire-Resistance-Rated Walls: Penetration firestopping systems with ratings determined per ASTM E 814 or UL 1479, based on testing at a positive pressure differential of **0.01-inch wg (2.49 Pa)**.
 - 1. F-Rating: Not less than the fire-resistance rating of constructions penetrated.
- C. Penetrations in Horizontal Assemblies: Penetration firestopping systems with ratings determined per ASTM E 814 or UL 1479, based on testing at a positive pressure differential of **0.01-inch wg (2.49 Pa)**.
 - 1. F-Rating: At least one hour, but not less than the fire-resistance rating of constructions penetrated.
 - 2. T-Rating: At least one hour, but not less than the fire-resistance rating of constructions penetrated except for floor penetrations within the cavity of a wall.
- D. Exposed Penetration Firestopping Systems: Flame-spread and smoke-developed indexes of less than 25 and 450, respectively, per ASTM E 84.
- E. Accessories: Provide components for each penetration firestopping system that are needed to install fill materials and to maintain ratings required. Use only those components specified by penetration firestopping system manufacturer and approved by qualified testing and inspecting agency for conditions indicated.
 - 1. Permanent forming/damming/backing materials.
 - 2. Substrate primers.
 - 3. Collars.
 - 4. Steel sleeves.

2.3 FILL MATERIALS

- A. Cast-in-Place Firestop Devices: Factory-assembled devices for use in cast-in-place concrete floors and consisting of an outer sleeve lined with an intumescent strip, a flange attached to one end of the sleeve for fastening to concrete formwork, and a neoprene gasket.
- B. Latex Sealants: Single-component latex formulations that do not re-emulsify after cure during exposure to moisture.
- C. Firestop Devices: Factory-assembled collars formed from galvanized steel and lined with intumescent material sized to fit specific diameter of penetrant.
- D. Pillows/Bags: Reusable heat-expanding pillows/bags consisting of glass-fiber cloth cases filled with a combination of mineral-fiber, water-insoluble expansion agents, and fire-retardant

additives. Where exposed, cover openings with steel-reinforcing wire mesh to protect pillows/bags from being easily removed.

- E. Silicone Foams: Multicomponent, silicone-based liquid elastomers that, when mixed, expand and cure in place to produce a flexible, nonshrinking foam.
- F. Silicone Sealants: Single-component, silicone-based, neutral-curing elastomeric sealants.

2.4 MIXING

- A. Penetration Firestopping Materials: For those products requiring mixing before application, comply with penetration firestopping system manufacturer's written instructions for accurate proportioning of materials, water (if required), type of mixing equipment, selection of mixer speeds, mixing containers, mixing time, and other items or procedures needed to produce products of uniform quality with optimum performance characteristics for application indicated.

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Examine substrates and conditions, with Installer present, for compliance with requirements for opening configurations, penetrating items, substrates, and other conditions affecting performance of the Work.
- B. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 PREPARATION

- A. Surface Cleaning: Before installing penetration firestopping systems, clean out openings immediately to comply with manufacturer's written instructions and with the following requirements:
 - 1. Remove from surfaces of opening substrates and from penetrating items foreign materials that could interfere with adhesion of penetration firestopping materials.
 - 2. Clean opening substrates and penetrating items to produce clean, sound surfaces capable of developing optimum bond with penetration firestopping materials. Remove loose particles remaining from cleaning operation.
 - 3. Remove laitance and form-release agents from concrete.
- B. Prime substrates where recommended in writing by manufacturer using that manufacturer's recommended products and methods. Confine primers to areas of bond; do not allow spillage and migration onto exposed surfaces.

3.3 INSTALLATION

- A. General: Install penetration firestopping systems to comply with manufacturer's written installation instructions and published drawings for products and applications.

- B. Install forming materials and other accessories of types required to support fill materials during their application and in the position needed to produce cross-sectional shapes and depths required to achieve fire ratings.
 - 1. After installing fill materials and allowing them to fully cure, remove combustible forming materials and other accessories not forming permanent components of firestopping.
- C. Install fill materials by proven techniques to produce the following results:
 - 1. Fill voids and cavities formed by openings, forming materials, accessories and penetrating items to achieve required fire-resistance ratings.
 - 2. Apply materials so they contact and adhere to substrates formed by openings and penetrating items.
 - 3. For fill materials that will remain exposed after completing the Work, finish to produce smooth, uniform surfaces that are flush with adjoining finishes.

3.4 FIELD QUALITY CONTROL

- A. Owner will engage a qualified testing agency to perform tests and inspections according to ASTM E 2174.
- B. Where deficiencies are found or penetration firestopping system is damaged or removed because of testing, repair or replace penetration firestopping system to comply with requirements.
- C. Proceed with enclosing penetration firestopping systems with other construction only after inspection reports are issued and installations comply with requirements.

3.5 CLEANING AND PROTECTION

- A. Clean off excess fill materials adjacent to openings as the Work progresses by methods and with cleaning materials that are approved in writing by penetration firestopping system manufacturers and that do not damage materials in which openings occur.
- B. Provide final protection and maintain conditions during and after installation that ensure that penetration firestopping systems are without damage or deterioration at time of Substantial Completion. If, despite such protection, damage or deterioration occurs, immediately cut out and remove damaged or deteriorated penetration firestopping material and install new materials to produce systems complying with specified requirements.

END OF SECTION 078413

SECTION 079200 - JOINT SEALANTS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, Division 1 Specification Sections, apply to this Section.

1.2 SUMMARY

- A. Section Includes:
 - 1. Silicone joint sealants.
 - 2. Urethane joint sealants.
 - 3. Latex joint sealants.
 - 4. Acoustical joint sealants.

1.3 METHOD OF MEASUREMENT

- A. No direct measurement for payment will be made for this item. All costs associated with the work of this item shall be included within the lump sum cost of Section 011000.

1.4 BASIS OF PAYMENT

- A. No direct payment will be made for this item. All costs associated with the work of this item shall be included within the lump sum cost of Section 011000.

1.5 PRECONSTRUCTION TESTING

- A. Testing will not be required if joint-sealant manufacturers submit joint preparation data that are based on previous testing, not older than 24 months, of sealant products for adhesion to, and compatibility with, joint substrates and other materials matching those submitted. All sealants for exterior façade system are to undergo Field-Adhesion Testing.
- B. Preconstruction Field-Adhesion Testing: Before installing sealants, field test their adhesion to Project joint substrates as follows:
 - 1. Conduct 2 field tests for each substrate at each kind of sealant joint. Prep area and use technique and procedure to complete work.
 - 2. Locate test joints as directed by Architect.
 - a. Notify Architect seven days in advance of dates and times when test joints will be erected.

3. Arrange for tests to take place with joint-sealant manufacturer's technical representative present.
 - a. Test Method: Test joint sealants according to Method A, Field-Applied Sealant Joint Hand Pull Tab, in Appendix X1 in ASTM C 1193
 - 1) For joints with dissimilar substrates, verify adhesion to each substrate separately; extend cut along one side, verifying adhesion to opposite side. Repeat procedure for opposite side.
4. Report whether sealant failed to adhere to joint substrates or tore cohesively. Include data on pull distance used to test each kind of product and joint substrate. For sealants that fail adhesively, retest until satisfactory adhesion is obtained.
5. Evaluation of Preconstruction Field-Adhesion-Test Results: Sealants not evidencing adhesive failure from testing, in absence of other indications of noncompliance with requirements, will be considered satisfactory. Do not use sealants that fail to adhere to joint substrates during testing.

1.6 SUBMITTALS

- A. Product Data: For each joint-sealant product indicated.
- B. Samples for Initial Selection: Manufacturer's color charts consisting of strips of cured sealants showing the full range of colors available for each product exposed to view.
- C. Joint-Sealant Schedule: Include the following information:
 1. Joint-sealant application, joint location, and designation.
 2. Joint-sealant manufacturer and product name.
 3. Joint-sealant formulation.
 4. Joint-sealant color.
- D. Qualification Data: For qualified Installer and testing agency.
- E. Product Certificates: For each kind of joint sealant and accessory, from manufacturer.
- F. Sealant, Waterproofing, and Restoration Institute (SWRI) Validation Certificate: For each sealant specified to be validated by SWRI's Sealant Validation Program.
- G. Product Test Reports: Based on evaluation of comprehensive tests performed by a qualified testing agency, indicating that sealants comply with requirements.
- H. Preconstruction Compatibility and Adhesion Test Reports: From sealant manufacturer, indicating the following:
 1. Materials forming joint substrates and joint-sealant backings have been tested for compatibility and adhesion with joint sealants.
 2. Interpretation of test results and written recommendations for primers and substrate preparation needed for adhesion.

- I. Preconstruction Field-Adhesion Test Reports: Indicate which sealants and joint preparation methods resulted in optimum adhesion to joint substrates based on testing specified in "Preconstruction Testing" Article.
- J. Field-Adhesion Test Reports: For each sealant application tested.
- K. Warranties: Sample of special warranties.

1.7 QUALITY ASSURANCE

- A. Installer Qualifications: Manufacturer's authorized representative who is trained and approved for installation of units required for this Project.
- B. Source Limitations: Obtain each kind of joint sealant from single source from single manufacturer.
- C. Product Testing: Test joint sealants using a qualified testing agency.
 - 1. Testing Agency Qualifications: An independent testing agency qualified according to ASTM C 1021 to conduct the testing indicated.
 - 2. Test according to SWRI's Sealant Validation Program for compliance with requirements specified by reference to ASTM C 920 for adhesion and cohesion under cyclic movement, adhesion-in-peel, and indentation hardness.

1.8 PROJECT CONDITIONS

- A. Do not proceed with installation of joint sealants under the following conditions:
 - 1. When ambient and substrate temperature conditions are outside limits permitted by joint-sealant manufacturer.
 - 2. When joint substrates are wet.
 - 3. Where joint widths are less than those allowed by joint-sealant manufacturer for applications indicated.
 - 4. Where contaminants capable of interfering with adhesion have not yet been removed from joint substrates.

1.9 WARRANTY

- A. Special Installer's Warranty: Manufacturer's standard form in which Installer agrees to repair or replace joint sealants that do not comply with performance and other requirements specified in this Section within specified warranty period.
 - 1. Warranty Period: Five years from date of Substantial Completion.
- B. Special Manufacturer's Warranty: Manufacturer's standard form in which joint-sealant manufacturer agrees to furnish joint sealants to repair or replace those that do not comply with performance and other requirements specified in this Section within specified warranty period.
 - 1. Warranty Period: Five years from date of Substantial Completion.

- C. Special warranties specified in this article exclude deterioration or failure of joint sealants from the following:
1. Movement of the structure caused by structural settlement or errors attributable to design or construction resulting in stresses on the sealant exceeding sealant manufacturer's written specifications for sealant elongation and compression.
 2. Disintegration of joint substrates from natural causes exceeding design specifications.
 3. Mechanical damage caused by individuals, tools, or other outside agents.

PART 2 - PRODUCTS

2.1 MATERIALS, GENERAL

- A. Compatibility: Provide joint sealants, backings, and other related materials that are compatible with one another and with joint substrates under conditions of service and application, as demonstrated by joint-sealant manufacturer, based on testing and field experience.
- B. Liquid-Applied Joint Sealants: Comply with ASTM C 920 and other requirements indicated for each liquid-applied joint sealant specified, including those referencing ASTM C 920 classifications for type, grade, class, and uses related to exposure and joint substrates.
- C. Stain-Test-Response Characteristics: Where sealants are specified to be nonstaining to porous substrates, provide products that have undergone testing according to ASTM C 1248 and have not stained porous joint substrates indicated for Project.
- D. Suitability for Contact with Food: Where sealants are indicated for joints that will come in repeated contact with food, provide products that comply with 21 CFR 177.2600.
- E. Colors of Exposed Joint Sealants: As selected by Architect from manufacturer's full range.

2.2 SILICONE JOINT SEALANTS

- A. Single-Component, Nonsag, Neutral-Curing Silicone Joint Sealant: ASTM C 920, Type S, Grade NS, Class 100/50, for Use NT.
1. Products: Subject to compliance with requirements, provide one of the following:
 - a. GE Advanced Materials - Silicones; SilPruf LM SCS2700.
 - b. Pecora Corporation; 301 NS 311 NS .
 - c. Sika Corporation, Construction Products Division; SikaSil-C990.
 - d. Tremco Incorporated; Spectrem 1.
- B. Single-Component, Pourable, Traffic-Grade, Neutral-Curing Silicone Joint Sealant: ASTM C 920, Type S, Grade P, Class 100/50, for Use T.
1. Products: Subject to compliance with requirements, provide one of the following:
 - a. Dow Corning Corporation; 890-SL.
 - b. May National Associates, Inc.; Bondaflex Sil 728 SG.

- c. Pecora Corporation; 300 SL.
 - d. Tremco Incorporated; Spectrem 900 SL.
- C. Multicomponent, Pourable, Traffic-Grade, Neutral-Curing Silicone Joint Sealant: ASTM C 920, Type M, Grade P, Class 100/50, for Use T.
 - 1. Products: Subject to compliance with requirements, provide one of the following:
 - a. Dow Corning Corporation; FC Parking Structure Sealant.
 - b. May National Associates, Inc.; Bondaflex Sil 728 RCS.
 - c. Or Approved Equal.
- D. Mildew-Resistant, Single-Component, Nonsag, Neutral-Curing Silicone Joint Sealant: ASTM C 920, Type S, Grade NS, Class 25, for Use NT.
 - 1. Products: Subject to compliance with requirements, provide one of the following:
 - a. Pecora Corporation; 898.
 - b. Or Approved Equal

2.3 URETHANE JOINT SEALANTS

- A. Single-Component, Nonsag, Urethane Joint Sealant: ASTM C 920, Type S, Grade NS, Class 100/50, for Use NT.
 - 1. Products: Subject to compliance with requirements, provide one of the following:
 - a. Sika Corporation, Construction Products Division; Sikaflex - 15LM.
 - b. Tremco Incorporated; Vulkem 921.
 - c. Or Approved Equal
- B. Single-Component, Pourable, Traffic-Grade, Urethane Joint Sealant: ASTM C 920, Type S, Grade P, Class 25, for Use T.
 - 1. Products: Subject to compliance with requirements, provide one of the following:
 - a. BASF Building Systems; Sonolastic SL 1.
 - b. Pecora Corporation; Urexpan NR-201.
 - c. Sika Corporation. Construction Products Division; Sikaflex - 1CSL.
 - d. Tremco Incorporated; Vulkem 45.
- C. Multicomponent, Nonsag, Traffic-Grade, Urethane Joint Sealant: ASTM C 920, Type M, Grade NS, Class 50, for Use T.
 - 1. Products: Subject to compliance with requirements, provide one of the following:
 - a. Polymeric Systems, Inc.; PSI-270.
 - b. Tremco Incorporated; Dymeric 240 FC.
 - c. Or Approved Equal.

2.4 LATEX JOINT SEALANTS

- A. Latex Joint Sealant: Acrylic latex or siliconized acrylic latex, ASTM C 834, Type OP, Grade NF.
 - 1. Products: Subject to compliance with requirements, provide one of the following:
 - a. BASF Building Systems; Sonolac.
 - b. Pecora Corporation; AC-20+.
 - c. Tremco Incorporated; Tremflex 834.

2.5 ACOUSTICAL JOINT SEALANTS

- A. Acoustical Joint Sealant: Manufacturer's standard nonsag, paintable, nonstaining latex sealant complying with ASTM C 834. Product effectively reduces airborne sound transmission through perimeter joints and openings in building construction as demonstrated by testing representative assemblies according to ASTM E 90.
 - 1. Products: Subject to compliance with requirements, provide one of the following:
 - a. Pecora Corporation; AC-20 FTR.
 - b. USG Corporation; SHEETROCK Acoustical Sealant.
 - c. Or Approved Equal.

2.6 JOINT SEALANT BACKING

- A. General: Provide sealant backings of material that are nonstaining; are compatible with joint substrates, sealants, primers, and other joint fillers; and are approved for applications indicated by sealant manufacturer based on field experience and laboratory testing.
- B. Cylindrical Sealant Backings: ASTM C 1330, Type C (closed-cell material with a surface skin) or any standard type, as approved in writing by joint-sealant manufacturer for joint application indicated, and of size and density to control sealant depth and otherwise contribute to producing optimum sealant performance.

2.7 MISCELLANEOUS MATERIALS

- A. Primer: Material recommended by joint-sealant manufacturer where required for adhesion of sealant to joint substrates indicated, as determined from preconstruction joint-sealant-substrate tests and field tests.
- B. Cleaners for Nonporous Surfaces: Chemical cleaners acceptable to manufacturers of sealants and sealant backing materials, free of oily residues or other substances capable of staining or harming joint substrates and adjacent nonporous surfaces in any way, and formulated to promote optimum adhesion of sealants to joint substrates.
- C. Masking Tape: Nonstaining, nonabsorbent material compatible with joint sealants and surfaces adjacent to joints.

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Examine joints indicated to receive joint sealants, with Installer present, for compliance with requirements for joint configuration, installation tolerances, and other conditions affecting joint-sealant performance.
- B. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 PREPARATION

- A. Surface Cleaning of Joints: Clean out joints immediately before installing joint sealants to comply with joint-sealant manufacturer's written instructions and the following requirements:
 - 1. Remove all foreign material from joint substrates that could interfere with adhesion of joint sealant, including dust, paints (except for permanent, protective coatings tested and approved for sealant adhesion and compatibility by sealant manufacturer), old joint sealants, oil, grease, waterproofing, water repellents, water, surface dirt, and frost.
 - 2. Clean porous joint substrate surfaces by brushing, grinding, mechanical abrading, or a combination of these methods to produce a clean, sound substrate capable of developing optimum bond with joint sealants. Remove loose particles remaining after cleaning operations above by vacuuming or blowing out joints with oil-free compressed air. Porous joint substrates include the following:
 - a. Concrete.
 - b. Masonry.
 - c. Unglazed surfaces of ceramic tile.
 - d. Exterior insulation and finish systems.
 - e. Marble
 - f. Granite
 - g. Limestone
 - 3. Remove laitance and form-release agents from concrete.
 - 4. Clean nonporous joint substrate surfaces with chemical cleaners or other means that do not stain, harm substrates, or leave residues capable of interfering with adhesion of joint sealants. Nonporous joint substrates include the following:
 - a. Metal.
 - b. Glass.
 - c. Porcelain enamel.
 - d. Glazed surfaces of ceramic tile.
- B. Joint Priming: Prime joint substrates where recommended by joint-sealant manufacturer or as indicated by preconstruction joint-sealant-substrate tests or prior experience. Apply primer to comply with joint-sealant manufacturer's written instructions. Confine primers to areas of joint-sealant bond; do not allow spillage or migration onto adjoining surfaces.

- C. Masking Tape: Use masking tape where required to prevent contact of sealant or primer with adjoining surfaces that otherwise would be permanently stained or damaged by such contact or by cleaning methods required to remove sealant smears. Remove tape immediately after tooling without disturbing joint seal.

3.3 INSTALLATION OF JOINT SEALANTS

- A. General: Comply with joint-sealant manufacturer's written installation instructions for products and applications indicated, unless more stringent requirements apply.
- B. Sealant Installation Standard: Comply with recommendations in ASTM C 1193 for use of joint sealants as applicable to materials, applications, and conditions indicated.
- C. Install sealant backings of kind indicated to support sealants during application and at position required to produce cross-sectional shapes and depths of installed sealants relative to joint widths that allow optimum sealant movement capability.
 - 1. Do not leave gaps between ends of sealant backings.
 - 2. Do not stretch, twist, puncture, or tear sealant backings.
 - 3. Remove absorbent sealant backings that have become wet before sealant application and replace them with dry materials.
- D. Install sealants using proven techniques that comply with the following and at the same time backings are installed:
 - 1. Place sealants so they directly contact and fully wet joint substrates.
 - 2. Completely fill recesses in each joint configuration.
 - 3. Produce uniform, cross-sectional shapes and depths relative to joint widths that allow optimum sealant movement capability.
- E. Tooling of Nonsag Sealants: Immediately after sealant application and before skinning or curing begins, tool sealants according to requirements specified in subparagraphs below to form smooth, uniform beads of configuration indicated; to eliminate air pockets; and to ensure contact and adhesion of sealant with sides of joint.
 - 1. Remove excess sealant from surfaces adjacent to joints.
 - 2. Use tooling agents that are approved in writing by sealant manufacturer and that do not discolor sealants or adjacent surfaces.
 - 3. Provide concave joint profile per Figure 8A in ASTM C 1193, unless otherwise indicated.
- F. Acoustical Sealant Installation: At sound-rated assemblies and elsewhere as indicated, seal construction at perimeters, behind control joints, and at openings and penetrations with a continuous bead of acoustical sealant. Install acoustical sealant at both faces of partitions at perimeters and through penetrations. Comply with ASTM C 919 and with manufacturer's written recommendations.

3.4 FIELD QUALITY CONTROL

A. Field-Adhesion Testing: Field test joint-sealant adhesion to joint substrates as follows:

1. Extent of Testing: Test completed and cured sealant joints as follows:
 - a. Perform 10 tests for the first 1000 feet of joint length for each kind of sealant and joint substrate.
2. Test Method: Test joint sealants according to Method A, Field-Applied Sealant Joint Hand Pull Tab, in Appendix X1 in ASTM C 1193
 - a. For joints with dissimilar substrates, verify adhesion to each substrate separately; extend cut along one side, verifying adhesion to opposite side. Repeat procedure for opposite side.
3. Inspect tested joints and report on the following:
 - a. Whether sealants filled joint cavities and are free of voids.
 - b. Whether sealant dimensions and configurations comply with specified requirements.
 - c. Whether sealants in joints connected to pulled-out portion failed to adhere to joint substrates or tore cohesively. Include data on pull distance used to test each kind of product and joint substrate. Compare these results to determine if adhesion passes sealant manufacturer's field-adhesion hand-pull test criteria.
4. Record test results in a field-adhesion-test log. Include dates when sealants were installed, names of persons who installed sealants, test dates, test locations, whether joints were primed, adhesion results and percent elongations, sealant fill, sealant configuration, and sealant dimensions.
5. Repair sealants pulled from test area by applying new sealants following same procedures used originally to seal joints. Ensure that original sealant surfaces are clean and that new sealant contacts original sealant.

B. Evaluation of Field-Adhesion Test Results: Sealants not evidencing adhesive failure from testing or noncompliance with other indicated requirements will be considered satisfactory. Remove sealants that fail to adhere to joint substrates during testing or to comply with other requirements. Retest failed applications until test results prove sealants comply with indicated requirements.

3.5 CLEANING

A. Clean off excess sealant or sealant smears adjacent to joints as the Work progresses by methods and with cleaning materials approved in writing by manufacturers of joint sealants and of products in which joints occur.

3.6 PROTECTION

- A. Protect joint sealants during and after curing period from contact with contaminating substances and from damage resulting from construction operations or other causes so sealants are without deterioration or damage at time of Substantial Completion. If, despite such protection, damage or deterioration occurs, cut out and remove damaged or deteriorated joint sealants immediately so installations with repaired areas are indistinguishable from original work.

3.7 JOINT-SEALANT SCHEDULE

- A. Joint-Sealant Application: Exterior joints in horizontal traffic surfaces <JS-#1>.

- 1. Joint Locations:

- a. Control and expansion joints in pavers.
- b. Isolation and contraction joints in cast-in-place concrete slabs.
- c. Joints between plant-precast architectural concrete paving units.
- d. Joints in stone paving units, including steps.
- e. Tile control and expansion joints.
- f. Joints between different materials listed above.
- g. Other joints as indicated.

- 2. Silicone Joint Sealant: Multicomponent, pourable, traffic grade, neutral curing.
- 3. Urethane Joint Sealant: Multicomponent, nonsag, traffic grade, Class 50.
- 4. Joint-Sealant Color: As selected by Architect from manufacturer's full range of colors.

- B. Joint-Sealant Application: Exterior joints in vertical surfaces and horizontal nontraffic surfaces <JS-#2>.

- 1. Joint Locations:

- a. Construction joints in cast-in-place concrete.
- b. Joints between plant-precast architectural concrete units.
- c. Control and expansion joints in unit masonry.
- d. Joints in dimension stone cladding.
- e. Joints in glass unit masonry assemblies.
- f. Joints in exterior insulation and finish systems.
- g. Joints between metal panels.
- h. Joints between different materials listed above.
- i. Perimeter joints between materials listed above and frames of doors, windows and louvers.
- j. Control and expansion joints in ceilings and other overhead surfaces.
- k. Other joints as indicated.

- 2. Silicone Joint Sealant: Single component, nonsag, neutral curing, Class 100/50 .
- 3. Urethane Joint Sealant: Single component, nonsag, Class 100/50 .
- 4. Joint-Sealant Color: As selected by Architect from manufacturer's full range of colors.

- C. Joint-Sealant Application: Interior joints in horizontal traffic surfaces <JS-#3>.

1. Joint Locations:
 - a. Isolation joints in cast-in-place concrete slabs.
 - b. Control and expansion joints in stone flooring.
 - c. Control and expansion joints in tile flooring.
 - d. Other joints as indicated.
 2. Silicone Joint Sealant: Single component, pourable, traffic grade, neutral curing.
 3. Urethane Joint Sealant: Single component, pourable, traffic grade .
 4. Joint-Sealant Color: As selected by Architect from manufacturer's full range of colors.
- D. Joint-Sealant Application: Interior joints in vertical surfaces and horizontal nontraffic surfaces <JS-#4>.
1. Joint Locations:
 - a. Control and expansion joints on exposed interior surfaces of exterior walls.
 - b. Perimeter joints of exterior openings where indicated.
 - c. Tile control and expansion joints.
 - d. Vertical joints on exposed surfaces of interior unit masonry concrete walls and partitions.
 - e. Joints on underside of plant-precast structural concrete beams and planks.
 - f. Perimeter joints between interior wall surfaces and frames of interior doors windows and elevator entrances.
 - g. Other joints as indicated.
 2. Joint Sealant: Latex
 3. Joint-Sealant Color: As selected by Architect from manufacturer's full range of colors.
- E. Joint-Sealant Application: Mildew-resistant interior joints in vertical surfaces and horizontal nontraffic surfaces <JS-#5>.
1. Joint Sealant Location:
 - a. Joints between plumbing fixtures and adjoining walls, floors, and counters.
 - b. Tile control and expansion joints where indicated.
 - c. Other joints as indicated.
 2. Joint Sealant: Mildew resistant, single component, nonsag, neutral curing, Silicone .
 3. Joint-Sealant Color: As selected by Architect from manufacturer's full range of colors.
- F. Joint-Sealant Application: Interior acoustical joints in vertical surfaces and horizontal nontraffic surfaces JS-#6>.
1. Joint Location:
 - a. Acoustical joints where indicated.
 - b. Other joints as indicated.
 2. Joint Sealant: Acoustical.
 3. Joint-Sealant Color: As selected by Architect from manufacturer's full range.

SECTION 081113 - HOLLOW METAL DOORS AND FRAMES

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

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

1.2 SUMMARY

- A. Section includes hollow-metal work.
- B. Related Requirements:
 - 1. Section 087100 "Door Hardware" for door hardware for hollow-metal doors.
 - 2. Section 081113 "Exterior Painting" for painting of hollow-metal doors.

1.3 METHOD OF MEASUREMENT

- A. No direct measurement for payment will be made for this item. All costs associated with the work of this item shall be included within the lump sum cost of Section 011000.

1.4 BASIS OF PAYMENT

- A. No direct payment will be made for this item. All costs associated with the work of this item shall be included within the lump sum cost of Section 011000.

1.5 DEFINITIONS

- A. Minimum Thickness: Minimum thickness of base metal without coatings according to NAAMM-HMMA 803 or SDI A250.8.

1.6 COORDINATION

- A. Coordinate anchorage installation for hollow-metal frames. Furnish setting drawings, templates, and directions for installing anchorages, including sleeves, concrete inserts, anchor bolts, and items with integral anchors. Deliver such items to Project site in time for installation.

1.7 ACTION SUBMITTALS

- A. Product Data: For each type of product.

1. Include construction details, material descriptions, core descriptions, fire-resistance ratings and finishes.
- B. Shop Drawings: Include the following:
1. Elevations of each door type.
 2. Details of doors, including vertical- and horizontal-edge details and metal thicknesses.
 3. Frame details for each frame type, including dimensioned profiles and metal thicknesses.
 4. Locations of reinforcement and preparations for hardware.
 5. Details of each different wall opening condition.
 6. Details of anchorages, joints, field splices, and connections.
 7. Details of accessories.
 8. Details of removable frames.
- C. Schedule: Provide a schedule of hollow-metal work prepared by or under the supervision of supplier, using same reference numbers for details and openings as those on Drawings. Coordinate with final Door Hardware Schedule.

1.8 INFORMATIONAL SUBMITTALS

- A. Product Test Reports: For each type of frame assembly, for tests performed by a qualified testing agency.
- B. Oversize Construction Certification: For assemblies required to be fire rated and exceeding limitations of labeled assemblies.

1.9 DELIVERY, STORAGE, AND HANDLING

- A. Deliver hollow-metal work palletized, packaged, or crated to provide protection during transit and Project-site storage. Do not use non-vented plastic.
1. Provide additional protection to prevent damage to factory-finished units.
- B. Deliver welded frames with two removable spreader bars across bottom of frames, tack welded to jambs and mullions.
- C. Store hollow-metal work vertically under cover at Project site with head up. Place on minimum 4-inch-high wood blocking. Provide minimum 1/4-inch space between each stacked door to permit air circulation.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

- A. Manufacturers: Subject to compliance with requirements, available manufacturers offering products that may be incorporated into the Work include, but are not limited to, the following:
1. Amweld International, LLC.

2. Ceco Door Products; an Assa Abloy Group company.
3. Curries Company; an Assa Abloy Group company.
4. Custom Metal Products.
5. Daybar.
6. Pioneer Industries, Inc.
7. Steelcraft; an Ingersoll-Rand company.

- B. Source Limitations: Obtain hollow-metal work from single source from single manufacturer.

2.2 EXTERIOR HOLLOW-METAL DOORS AND FRAMES

- A. Construct exterior doors and frames to comply with the standards indicated for materials, fabrication, hardware locations, hardware reinforcement, tolerances, and clearances, and as specified.
- B. Heavy-Duty Doors and Frames: SDI A250.8, Level 2..
1. Physical Performance: Level B according to SDI A250.4.
 2. Doors:
 - a. Type: As indicated in the Door and Frame Schedule.
 - b. Thickness: 1-3/4 inches
 - c. Face: Metallic-coated steel sheet, minimum thickness of 0.042 inch, with minimum A40 coating.
 - a. Core: Manufacturer's standard polyurethane, polyisocyanurate, mineral-board, or vertical steel-stiffener core at manufacturer's discretion unless indicated otherwise.
 3. Frames:
 - a. Materials: Metallic-coated steel sheet, minimum thickness of 0.053 inch, with minimum A40 coating.
 - b. Construction: Full profile welded.
 4. Exposed Finish: Prime.

2.3 FRAME ANCHORS

- A. Jamb Anchors:
1. Masonry Type: Adjustable strap-and-stirrup or T-shaped anchors to suit frame size, not less than 0.042 inch thick, with corrugated or perforated straps not less than 2 inches wide by 10 inches long; or wire anchors not less than 0.177 inch thick.
- B. Post-Installed Expansion Type for In-Place Concrete or Masonry: Minimum 3/8-inch-diameter bolts with expansion shields or inserts. Provide pipe spacer from frame to wall, with throat reinforcement plate, welded to frame at each anchor location.
- C. Floor Anchors: Formed from same material as frames, minimum thickness of 0.042 inch, and as follows:

1. Monolithic Concrete Slabs: Clip-type anchors, with two holes to receive fasteners.

2.4 MATERIALS

- A. Cold-Rolled Steel Sheet: ASTM A 1008/A 1008M, Commercial Steel (CS), Type B; suitable for exposed applications.
- B. Hot-Rolled Steel Sheet: ASTM A 1011/A 1011M, Commercial Steel (CS), Type B; free of scale, pitting, or surface defects; pickled and oiled.
- C. Metallic-Coated Steel Sheet: ASTM A 653/A 653M, Commercial Steel (CS), Type B.
- D. Frame Anchors: ASTM A 879/A 879M, Commercial Steel (CS), 04Z coating designation; mill phosphatized.
 1. For anchors built into exterior walls, steel sheet complying with ASTM A 1008/A 1008M or ASTM A 1011/A 1011M, hot-dip galvanized according to ASTM A 153/A 153M, Class B.
- E. Inserts, Bolts, and Fasteners: Hot-dip galvanized according to ASTM A 153/A 153M.
- F. Power-Actuated Fasteners in Concrete: Fastener system of type suitable for application indicated, fabricated from corrosion-resistant materials, with clips or other accessory devices for attaching hollow-metal frames of type indicated.
- G. Grout: ASTM C 476, except with a maximum slump of 4 inches, as measured according to ASTM C 143/C 143M.

2.5 FABRICATION

- A. Fabricate hollow-metal work to be rigid and free of defects, warp, or buckle. Accurately form metal to required sizes and profiles, with minimum radius for metal thickness. Where practical, fit and assemble units in manufacturer's plant. To ensure proper assembly at Project site, clearly identify work that cannot be permanently factory assembled before shipment.
- B. Hollow-Metal Doors:
 1. Vertical Edges for Single-Acting Doors: Provide beveled or square edges at manufacturer's discretion.
- C. Hollow-Metal Frames: Where frames are fabricated in sections due to shipping or handling limitations, provide alignment plates or angles at each joint, fabricated of same thickness metal as frames.
 1. Provide countersunk, flat- or oval-head exposed screws and bolts for exposed fasteners unless otherwise indicated.
 2. Grout Guards: Weld guards to frame at back of hardware mortises in frames to be grouted.

3. Floor Anchors: Weld anchors to bottoms of jambs with at least four spot welds per anchor; however, for slip-on drywall frames, provide anchor clips or countersunk holes at bottoms of jambs.
4. Jamb Anchors: Provide number and spacing of anchors as follows:
 - a. Masonry Type: Locate anchors not more than 16 inches from top and bottom of frame. Space anchors not more than 32 inches o.c., to match coursing, and as follows:
 - 1) Two anchors per jamb up to 60 inches high.
 - 2) Three anchors per jamb from 60 to 90 inches high.
 - 3) Four anchors per jamb from 90 to 120 inches high.
 - 4) Four anchors per jamb plus one additional anchor per jamb for each 24 inches or fraction thereof above 120 inches high.
 - b. Stud-Wall Type: Locate anchors not more than 18 inches from top and bottom of frame. Space anchors not more than 32 inches o.c. and as follows:
 - 1) Three anchors per jamb up to 60 inches high.
 - 2) Four anchors per jamb from 60 to 90 inches high.
 - 3) Five anchors per jamb from 90 to 96 inches high.
 - 4) Five anchors per jamb plus one additional anchor per jamb for each 24 inches or fraction thereof above 96 inches high.
 - c. Compression Type: Not less than two anchors in each frame.
 - d. Post installed Expansion Type: Locate anchors not more than 6 inches from top and bottom of frame. Space anchors not more than 26 inches o.c.
- D. Fabricate concealed stiffeners and edge channels from either cold- or hot-rolled steel sheet.
- E. Hardware Preparation: Factory prepare hollow-metal work to receive templated mortised hardware; include cutouts, reinforcement, mortising, drilling, and tapping according to SDI A250.6, the Door Hardware Schedule, and templates.
 1. Reinforce doors and frames to receive non-templated, mortised, and surface-mounted door hardware.
 2. Comply with applicable requirements in SDI A250.6 and BHMA A156.115 for preparation of hollow-metal work for hardware.

2.6 STEEL FINISHES

- A. Prime Finish: Clean, pretreat, and apply manufacturer's standard primer.
 1. Shop Primer: Manufacturer's standard, fast-curing, lead- and chromate-free primer complying with SDI A250.10; recommended by primer manufacturer for substrate; compatible with substrate and field-applied coatings despite prolonged exposure.

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Examine substrates, areas, and conditions, with Installer present, for compliance with requirements for installation tolerances and other conditions affecting performance of the Work.
- B. Examine roughing-in for embedded and built-in anchors to verify actual locations before frame installation.
- C. Prepare written report, endorsed by Installer, listing conditions detrimental to performance of the Work.
- D. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 PREPARATION

- A. Remove welded-in shipping spreaders installed at factory. Restore exposed finish by grinding, filling, and dressing, as required to make repaired area smooth, flush, and invisible on exposed faces.
- B. Drill and tap doors and frames to receive nontemplated, mortised, and surface-mounted door hardware.

3.3 INSTALLATION

- A. General: Install hollow-metal work plumb, rigid, properly aligned, and securely fastened in place. Comply with Drawings and manufacturer's written instructions.
- B. Hollow-Metal Frames: Install hollow-metal frames of size and profile indicated. Comply with SDI A250.11 or NAAMM-HMMA 840 as required by standards specified.
 - 1. Set frames accurately in position; plumbed, aligned, and braced securely until permanent anchors are set. After wall construction is complete, remove temporary braces, leaving surfaces smooth and undamaged.
 - a. At fire-rated openings, install frames according to NFPA 80.
 - b. Where frames are fabricated in sections because of shipping or handling limitations, field splice at approved locations by welding face joint continuously; grind, fill, dress, and make splice smooth, flush, and invisible on exposed faces.
 - c. Install frames with removable stops located on secure side of opening.
 - d. Remove temporary braces necessary for installation only after frames have been properly set and secured.
 - e. Check plumb, square, and twist of frames as walls are constructed. Shim as necessary to comply with installation tolerances.
 - 2. Floor Anchors: Provide floor anchors for each jamb and mullion that extends to floor, and secure with post installed expansion anchors.

- a. Floor anchors may be set with power-actuated fasteners instead of post installed expansion anchors if so indicated and approved on Shop Drawings.
- 3. In-Place Concrete or Masonry Construction: Secure frames in place with post installed expansion anchors. Countersink anchors, and fill and make smooth, flush, and invisible on exposed faces.
- 4. Installation Tolerances: Adjust hollow-metal door frames for squareness, alignment, twist, and plumb to the following tolerances:
 - a. Squareness: Plus or minus 1/16 inch, measured at door rabbet on a line 90 degrees from jamb perpendicular to frame head.
 - b. Alignment: Plus or minus 1/16 inch, measured at jambs on a horizontal line parallel to plane of wall.
 - c. Twist: Plus or minus 1/16 inch, measured at opposite face corners of jambs on parallel lines, and perpendicular to plane of wall.
 - d. Plumbness: Plus or minus 1/16 inch, measured at jambs at floor.
- C. Hollow-Metal Doors: Fit hollow-metal doors accurately in frames, within clearances specified below. Shim as necessary.
 - 1. Non-Fire-Rated Steel Doors:
 - a. Between Door and Frame Jambs and Head: 1/8 inch plus or minus 1/32 inch.
 - b. Between Edges of Pairs of Doors: 1/8 inch to 1/4 inch plus or minus 1/32 inch.
 - c. At Bottom of Door: 5/8 inch plus or minus 1/32 inch.
 - d. Between Door Face and Stop: 1/16 inch to 1/8 inch plus or minus 1/32 inch.

3.4 ADJUSTING AND CLEANING

- A. Final Adjustments: Check and readjust operating hardware items immediately before final inspection. Leave work in complete and proper operating condition. Remove and replace defective work, including hollow-metal work that is warped, bowed, or otherwise unacceptable.
- B. Remove grout and other bonding material from hollow-metal work immediately after installation.
- C. Prime-Coat Touchup: Immediately after erection, sand smooth rusted or damaged areas of prime coat and apply touchup of compatible air-drying, rust-inhibitive primer.

END OF SECTION 081113

SECTION 08 71 00 - DOOR HARDWARE

PART 1 - GENERAL

1.1 SUMMARY

- A. Section Includes:
- B. Related Requirements:
 - 1. Section 081113 "Hollow Metal Doors and Frames" .

1.2 METHOD OF MEASUREMENT

- A. No direct measurement for payment will be made for this item. All costs associated with the work of this item shall be included withing the lump sum cost of Section 011000.

1.3 BASIS OF PAYMENT

- A. No direct payment will be made for this item. All costs associated with the work of this item shall be included within the lump sum cost of Section 011000.

1.4 ACTION SUBMITTALS

- A. Product Data Submittals: For each product.
- B. Samples: For each exposed product in each finish specified, in manufacturer's standard size.
 - 1. Tag Samples with full product description to coordinate Samples with door hardware schedule.
- C. Samples for Initial Selection: For each type of exposed finish.
- D. Samples for Verification: For each type of exposed product, in each finish specified.
 - 1. Sample Size: Full-size units or minimum 2-by-4-inch Samples for sheet and 4-inch long Samples for other products.
 - a. Full-size Samples will be returned to Contractor. Units that are acceptable and remain undamaged through submittal, review, and field comparison process may, after final check of operation, be incorporated into the Work, within limitations of keying requirements.
 - 2. Tag Samples with full product description to coordinate Samples with door hardware schedule.
- E. Door Hardware Schedule: Prepared by or under the supervision of Installer's

Architectural Hardware Consultant. Coordinate door hardware schedule with doors, frames, and related work to ensure proper size, thickness, hand, function, and finish of door hardware.

1. Submittal Sequence: Submit door hardware schedule concurrent with submissions of product data, Samples, and Shop Drawings. Coordinate submission of door hardware schedule with scheduling requirements of other work to facilitate the fabrication of other work that is critical in Project construction schedule.
2. Format: Use same scheduling sequence and format and use same door numbers as in door hardware schedule in the Contract Documents.
3. Content: Include the following information:
 - a. Identification number, location, hand, fire rating, size, and material of each door and frame.
 - b. Locations of each door hardware set, cross-referenced to Drawings on floor plans and to door and frame schedule.
 - c. Complete designations, including name and manufacturer, type, style, function, size, quantity, function, and finish of each door hardware product.
 - d. Description of electrified door hardware sequences of operation and interfaces with other building control systems.
 - e. Fastenings and other installation information.
 - f. Explanation of abbreviations, symbols, and designations contained in door hardware schedule.
 - g. Mounting locations for door hardware.
 - h. List of related door devices specified in other Sections for each door and frame.

- F. Keying Schedule: Prepared by or under the supervision of Installer's Architectural Hardware Consultant, detailing Owner's final keying instructions for locks. Include schematic keying diagram and index each key set to unique door designations that are coordinated with the Contract Documents.

1.5 INFORMATIONAL SUBMITTALS

- A. Product Test Reports: For compliance with accessibility requirements, for tests performed by manufacturer and witnessed by a qualified testing agency, for door hardware on doors located in accessible routes.
- B. Sample Warranty: For special warranty.

1.6 CLOSEOUT SUBMITTALS

- A. Maintenance Data: For each type of door hardware to include in maintenance manuals.

1.7 QUALITY ASSURANCE

- A. Installer Qualifications: Supplier of products and an employer of workers trained and approved by product manufacturers and of an Architectural Hardware Consultant who is

available during the course of the Work to consult Contractor, Architect, and Owner about door hardware and keying.

1. Warehousing Facilities: In Project's vicinity.
2. Scheduling Responsibility: Preparation of door hardware and keying schedule.
3. Engineering Responsibility: Preparation of data for electrified door hardware, including Shop Drawings, based on testing and engineering analysis of manufacturer's standard units in assemblies similar to those indicated for this Project.

1.8 DELIVERY, STORAGE, AND HANDLING

- A. Inventory door hardware on receipt and provide secure lockup for door hardware delivered to Project site.
- B. Tag each item or package separately with identification coordinated with the final door hardware schedule, and include installation instructions, templates, and necessary fasteners with each item or package.
- C. Deliver keys to manufacturer of key control system for subsequent delivery to Owner.

1.9 WARRANTY

- A. Special Warranty: Manufacturer agrees to repair or replace components of door hardware that fail in materials or workmanship within specified warranty period.
 1. Failures include, but are not limited to, the following:
 - a. Structural failures, including excessive deflection, cracking, or breakage.
 - b. Faulty operation of doors and door hardware.
 - c. Deterioration of metals, metal finishes, and other materials beyond normal weathering and use.
 2. Warranty Period: 10 years from date of Substantial Completion unless otherwise indicated below:
 - a. Manual Closers: **10** years from date of Substantial Completion.

PART 2 - PRODUCTS

2.1 SOURCE LIMITATIONS

- A. Obtain each type of door hardware from single manufacturer.
 1. Provide electrified door hardware from same manufacturer as mechanical door hardware unless otherwise indicated. Manufacturers that perform electrical modifications and that are listed by a testing and inspecting agency acceptable to authorities having jurisdiction are acceptable.

2.2 PERFORMANCE REQUIREMENTS

- A. Means of Egress Doors: Latches do not require more than 15 lbf to release the latch. Locks do not require use of a key, tool, or special knowledge for operation.
- B. Accessibility Requirements: For door hardware on doors in an accessible route, comply with the USDOJ's "2010 ADA Standards for Accessible Design".
 - 1. Provide operating devices that do not require tight grasping, pinching, or twisting of the wrist and that operate with a force of not more than 5 lbf.
 - 2. Comply with the following maximum opening-force requirements:
 - a. Interior, Non-Fire-Rated Hinged Doors: 5 lbf applied perpendicular to door.
 - b. Sliding or Folding Doors: 5 lbf applied parallel to door at latch.
 - c. Fire Doors: Minimum opening force allowable by authorities having jurisdiction.
 - 3. Bevel raised thresholds with a slope of not more than 1:2. Provide thresholds not more than 1/2 inch high.
 - 4. Adjust door closer sweep periods so that, from an open position of 90 degrees, the door will take at least 5 seconds to move to a position of 12 degrees from the latch.
 - 5. Adjust spring hinges so that, from an open position of 70 degrees, the door will take at least 1.5 seconds to move to the closed position.

2.3 KEYING

- A. Keying System: Factory registered, complying with guidelines in ANSI/BHMA A156.28, appendix. Provide one extra key blank for each lock. Keying shall be in accordance with DRBA standards.
 - 1. No Master Key System: Only change keys operate cylinders.
 - a. Provide three cylinder change keys.
 - 2. Master Key System: Change keys and a master key operate cylinders.
 - a. Provide three cylinder change keys and five master keys.
 - 3. Grand Master Key System: Change keys, a master key, and a grand master key operate cylinders.
 - a. Provide three cylinder change keys and five each of master and grand master keys.
 - 4. Great-Grand Master Key System: Change keys, a master key, a grand master key, and a great-grand master key operate cylinders.
 - a. Provide three cylinder change keys and five each of master, grand master, and great-grand master keys.
 - 5. Keyed Alike: Key all cylinders to same change key.
- B. Keys: Brass.

1. Stamping: Permanently inscribe each key with a visual key control number and include the following notation:
 - a. Notation: Information to be furnished by Owner.

2.4 ACCESSORIES FOR PAIRS OF DOORS

- A. Astragals: ANSI/BHMA A156.22.

2.5 FABRICATION

- A. Manufacturer's Nameplate: Do not provide products that have manufacturer's name or trade name displayed in a visible location except in conjunction with required fire-rating labels and as otherwise approved by Architect.
 1. Manufacturer's identification is permitted on rim of lock cylinders only.
- B. Base Metals: Produce door hardware units of base metal indicated, fabricated by forming method indicated, using manufacturer's standard metal alloy, composition, temper, and hardness. Furnish metals of a quality equal to or greater than that of specified door hardware units and ANSI/BHMA A156.18.
- C. Fasteners: Provide door hardware manufactured to comply with published templates prepared for machine, wood, and sheet metal screws. Provide screws that comply with commercially recognized industry standards for application intended; however, aluminum fasteners are not permitted. Provide Phillips flat-head screws with finished heads to match surface of door hardware unless otherwise indicated.
 1. Concealed Fasteners: For door hardware units that are exposed when door is closed, except for units already specified with concealed fasteners. Do not use through bolts for installation where bolt head or nut on opposite face is exposed unless it is the only means of securely attaching the door hardware. Where through bolts are used on hollow door and frame construction, provide sleeves for each through bolt.
 2. Spacers or Sex Bolts: For through bolting of hollow-metal doors.
 3. Gasketing Fasteners: Provide noncorrosive fasteners for exterior applications and elsewhere as indicated.

2.6 FINISHES

- A. Provide finishes complying with ANSI/BHMA A156.18 as indicated in door hardware schedule.
- B. Protect mechanical finishes on exposed surfaces from damage by applying a strippable, temporary protective covering before shipping.
- C. Appearance of Finished Work: Variations in appearance of abutting or adjacent pieces are acceptable if they are within one-half of the range of approved Samples. Noticeable variations in the same piece are not acceptable. Variations in appearance of other components are acceptable if they are within the range of approved Samples and are

assembled or installed to minimize contrast.

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Examine doors and frames, with Installer present, for compliance with requirements for installation tolerances, labeled fire-rated door assembly construction, wall and floor construction, and other conditions affecting performance of the Work.
- B. Examine roughing-in for electrical power systems to verify actual locations of wiring connections before electrified door hardware installation.
- C. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 PREPARATION

- A. Steel Doors and Frames: For surface-applied door hardware, drill and tap doors and frames in accordance with ANSI/SDI A250.6.
- B. Wood Doors: Comply with door and hardware manufacturers' written instructions.

3.3 INSTALLATION

- A. Mounting Heights: Mount door hardware units at heights indicated on Drawings and to comply with the following unless otherwise indicated or required to comply with governing regulations.
 - 1. Standard Steel Doors and Frames: ANSI/SDI A250.8.
 - 2. Custom Steel Doors and Frames: HMMA 831.
 - 3. Wood Doors: DHI's "Recommended Locations for Architectural Hardware for Wood Flush Doors."
- B. Install each door hardware item to comply with manufacturer's written instructions. Where cutting and fitting are required to install door hardware onto or into surfaces that are later to be painted or finished in another way, coordinate removal, storage, and reinstallation of surface protective trim units with finishing work. Do not install surface-mounted items until finishes have been completed on substrates involved.
 - 1. Set units level, plumb, and true to line and location. Adjust and reinforce attachment substrates as necessary for proper installation and operation.
 - 2. Drill and countersink units that are not factory prepared for anchorage fasteners. Space fasteners and anchors in accordance with industry standards.
- C. Hinges: Install types and in quantities indicated in door hardware schedule, but not fewer than the number recommended by manufacturer for application indicated or one hinge for every 30 inches of door height, whichever is more stringent, unless other equivalent means of support for door, such as spring hinges or pivots, are provided.

- D. Intermediate Offset Pivots: Where offset pivots are indicated, provide intermediate offset pivots in quantities indicated in door hardware schedule, but not fewer than one intermediate offset pivot per door and one additional intermediate offset pivot for every 30 inches of door height greater than 90 inches.
- E. Lock Cylinders: Install construction cores to secure building and areas during construction period.
 - 1. Replace construction cores with permanent cores as directed by Owner.
 - 2. Furnish permanent cores to Owner for installation.
- F. Thresholds: Set thresholds for exterior doors and other doors indicated in full bed of sealant complying with requirements specified in Section 079200 "Joint Sealants."
- G. Stops: Provide floor stops for doors unless wall or other type stops are indicated in door hardware schedule. Do not mount floor stops where they will impede traffic.
- H. Perimeter Gasketing: Apply to head and jamb, forming seal between door and frame.
 - 1. Do not notch perimeter gasketing to install other surface-applied hardware.
- I. Meeting Stile Gasketing: Fasten to meeting stiles, forming seal when doors are closed.
- J. Door Bottoms: Apply to bottom of door, forming seal with threshold when door is closed.

3.4 FIELD QUALITY CONTROL

- A. Independent Architectural Hardware Consultant: **Owner will engage** a qualified independent Architectural Hardware Consultant to perform inspections and to prepare inspection reports.
 - 1. Independent Architectural Hardware Consultant will inspect door hardware and state in each report whether installed work complies with or deviates from requirements, including whether door hardware is properly installed and adjusted.

3.5 ADJUSTING

- A. Initial Adjustment: Adjust and check each operating item of door hardware and each door to ensure proper operation or function of every unit. Replace units that cannot be adjusted to operate as intended. Adjust door control devices to compensate for final operation of heating and ventilating equipment and to comply with referenced accessibility requirements.
 - 1. Door Closers: Adjust sweep period to comply with accessibility requirements and requirements of authorities having jurisdiction.
 - 2. Spring Hinges: Adjust to achieve positive latching when door is allowed to close freely from an open position of 70 degrees and so that closing time complies with accessibility requirements of authorities having jurisdiction.
 - 3. Electric Strikes: Adjust horizontal and vertical alignment of keeper to properly

engage lock bolt.

- B. Occupancy Adjustment: Approximately six months after date of Substantial Completion, Installer's Architectural Hardware Consultant is to examine and readjust each item of door hardware, including adjusting operating forces, as necessary to ensure function of doors, door hardware, and electrified door hardware.

3.6 CLEANING AND PROTECTION

- A. Clean adjacent surfaces soiled by door hardware installation.
- B. Clean operating items as necessary to restore proper function and finish.
- C. Provide final protection and maintain conditions that ensure that door hardware is without damage or deterioration at time of Substantial Completion.

3.7 MAINTENANCE SERVICE

- A. Maintenance Tools and Instructions: Furnish a complete set of specialized tools and maintenance instructions for Owner's continued adjustment, maintenance, and removal and replacement of door hardware.

3.8 DEMONSTRATION

- A. Owner's maintenance personnel to adjust, operate, and maintain door hardware.

3.9 DOOR HARDWARE SCHEDULE

- A. Hardware Set 1: Each door to have the following:

Qty.	Item
3	Hinges; A156.1; A5111
1	Lock Set; A156.13; Grade 1, Function 04
1	Closer; A156.4; C02021
1	Weather-stripping
1	Door Sweep
1	Kick Plate
1	Threshold; BHMA A156.21; J36190
3	Silencers

END OF SECTION 08 71 00

SECTION 133419 - METAL BUILDING SYSTEMS

PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes:

1. Structural-steel framing.
2. Metal roof panels.
3. Metal soffit panels.
4. Thermal insulation.
5. Accessories.

1.2 PREINSTALLATION MEETINGS

- A. Preinstallation Conference: Conduct conference at Project site.

1.3 ACTION SUBMITTALS

- A. Product Data: For each type of metal building system component.
- B. Shop Drawings: Indicate components by others. Include full building plan, elevations, sections, details and attachments to other work.
- C. Samples: For units with factory-applied finishes.
- D. Delegated Design Submittals: For metal building systems.
1. Include analysis data indicating compliance with performance requirements and design data signed and sealed by the qualified professional engineer responsible for their preparation.

1.4 INFORMATIONAL SUBMITTALS

- A. Welding certificates.
- B. Letter of Design Certification: Signed and sealed by a qualified professional engineer. Include the following:
1. Name and location of Project.
 2. Order number.
 3. Name of manufacturer.
 4. Name of Contractor.
 5. Building dimensions including width, length, height, and roof slope.
 6. Indicate compliance with AISC standards for hot-rolled steel and AISI standards for cold-

- rolled steel, including edition dates of each standard.
- 7. Governing building code and year of edition.
- 8. Design Loads: Include dead load, roof live load, collateral loads, roof snow load, deflection, wind loads/speeds and exposure, seismic design category or effective peak velocity-related acceleration/peak acceleration, and auxiliary loads (cranes).
- 9. Load Combinations: Indicate that loads were applied acting simultaneously with concentrated loads, according to governing building code.
- 10. Building-Use Category: Indicate category of building use and its effect on load importance factors.

C. Material test reports.

D. Source quality-control reports.

E. Field quality-control reports.

F. Sample warranties.

1.5 CLOSEOUT SUBMITTALS

A. Maintenance data.

1.6 QUALITY ASSURANCE

A. Manufacturer Qualifications: A qualified manufacturer.

- 1. Accreditation: Manufacturer's facility accredited according to IAS AC472, "Accreditation Criteria for Inspection Programs for Manufacturers of Metal Building Systems."
- 2. Engineering Responsibility: Preparation of comprehensive engineering analysis and Shop Drawings by a professional engineer who is legally qualified to practice in jurisdiction where Project is located.

B. Erector Qualifications: An experienced erector who specializes in erecting and installing work similar in material, design, and extent to that indicated for this Project and who is acceptable to manufacturer.

C. Welding Qualifications: Qualify procedures and personnel according to the following:

- 1. AWS D1.1/D1.1M, "Structural Welding Code - Steel."
- 2. AWS D1.3, "Structural Welding Code - Sheet Steel."

1.7 WARRANTY

A. Special Warranty on Metal Panel Finishes: Manufacturer agrees to repair finish or replace metal panels that show evidence of deterioration of factory-applied finishes within specified warranty period.

- 1. Finish Warranty Period: 10 years from date of Substantial Completion.

- B. Special Weathertightness Warranty for Standing-Seam Metal Roof Panels: Manufacturer agrees to repair or replace standing-seam metal roof panel assemblies that leak or otherwise fail to remain weathertight within specified warranty period.

- 1. Warranty Period: 20 years from date of Substantial Completion.

1.8 METHOD OF MEASUREMENT AND BASIS OF PAYMENT

A. Method of Measurement:

- 1. All work within 5' of the building shall have no separate measurement and shall be included within the lump sum cost of Item 011000-1.6-B-1 Box Hangars.

B. Basis of Payment:

- 1. All work within 5' of the building shall have no separate payment and shall be included within the lump sum cost of Item 011000-1.6-B-1 Box Hangars.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

- A. Basis-of-Design Product: Subject to compliance with requirements, Erect-a-tube, Inc. 4 unit Model 52-56. A comparable product is acceptable, however any required modifications to the foundation for an alternate building shall be included in the Contractor's cost. Comparable products by one of the following:
 - 1. Kirk Airport Solutions, Inc.
 - 2. Nucor Building Systems
 - 3. Butler Manufacturing Company; a division of BlueScope Buildings North America, Inc.

2.2 PERFORMANCE REQUIREMENTS

- A. Delegated Design: Engage a qualified professional engineer, as defined in Section 014000 "Quality Requirements," to design metal building system.
- B. Structural Performance: Metal building systems to withstand the effects of gravity loads and the following loads and stresses within limits and under conditions indicated according to procedures in MBMA's "Metal Building Systems Manual."
 - 1. Design Loads: As indicated on Drawings.
 - 2. Deflection and Drift Limits:
 - a. Design metal building system assemblies to withstand serviceability design loads without exceeding deflections and drift limits recommended in AISC Steel Design

Guide No. 3 "Serviceability Design Considerations for Steel Buildings."

- C. Seismic Performance: Metal building system to withstand the effects of earthquake motions determined according to ASCE/SEI 7.
- D. Thermal Movements: Allow for thermal movements from ambient and surface temperature changes by preventing buckling, opening of joints, overstressing of components, failure of joint sealants, failure of connections, and other detrimental effects. Base calculations on surface temperatures of materials due to both solar heat gain and nighttime-sky heat loss.
 - 1. Temperature Change: 120 deg F, ambient; 180 deg F, material surfaces.
- E. Fire-Resistance Ratings: Where assemblies are indicated to have a fire-resistance rating, provide metal panel assemblies identical to those of assemblies tested for fire resistance per ASTM E119 or ASTM E108 by a qualified testing agency. Identify products with appropriate markings of applicable testing agency.
 - 1. Indicate design designations from UL's "Fire Resistance Directory," FM Global's "Approval Guide," or from the listings of another qualified testing agency.
- F. Fire-Rated Door Assemblies: Assemblies complying with NFPA 80 that are listed and labeled by a qualified testing agency, for fire-protection ratings indicated, based on testing at positive pressure according to NFPA 252 or UL 10C.
 - 1. Oversize Fire-Rated Door Assemblies: For units exceeding sizes of tested assemblies, provide certification by a qualified testing agency that doors comply with standard construction requirements for tested and labeled fire-rated door assemblies except for size.
- G. Structural Performance for Metal Roof and Wall Panels: Provide metal panel systems capable of withstanding the effects of the following loads, based on testing according to ASTM E1592:
 - 1. Wind Loads: As indicated on Drawings.
- H. Air Infiltration for Metal Roof Panels: Air leakage of not more than 0.06 cfm/sq. ft. when tested according to ASTM E1680 at the following test-pressure difference:
 - 1. Test-Pressure Difference: 1.57 lbf/sq. ft..
- I. Air Infiltration for Metal Wall Panels: Air leakage of not more than 0.06 cfm/sq. ft. when tested according to ASTM E283 at the following test-pressure difference:
 - 1. Test-Pressure Difference: 1.57 lbf/sq. ft..
- J. Water Penetration for Metal Roof Panels: No water penetration when tested according to ASTM E1646 at the following test-pressure difference:
 - 1. Test-Pressure Difference: 2.86 lbf/sq. ft..
- K. Water Penetration for Metal Wall Panels: No water penetration when tested according to ASTM E331 at the following test-pressure difference:

1. Test-Pressure Difference: 2.86 lbf/sq. ft..
- L. Wind-Uplift Resistance: Provide metal roof panel assemblies that comply with UL 580 for wind-uplift-resistance class indicated.
 1. Uplift Rating: UL 90.
- M. Thermal Performance for Opaque Elements: Provide the following maximum U-factors and minimum R-values when tested according to ASTM C1363 or ASTM C518:
 1. Roof:
 - a. U-Factor: U-0.035
 - b. R-Value: R-19 + R-11 LS
 2. Walls:
 - a. U-Factor: U-0.079
 - b. R-Value: R-19 + R-13 ci

2.3 STRUCTURAL-STEEL FRAMING

- A. Structural Steel: Comply with AISC 360, "Specification for Structural Steel Buildings."
- B. Bolted Connections: Comply with RCSC's "Specification for Structural Joints Using High-Strength Bolts."
- C. Cold-Formed Steel: Comply with AISI's "North American Specification for the Design of Cold-Formed Steel Structural Members" for design requirements and allowable stresses.
- D. Primary Framing: Manufacturer's standard primary-framing system, designed to withstand required loads and specified requirements. Primary framing includes transverse and lean-to frames; rafters and rake beams; sidewall, intermediate, end-wall, and corner columns; and wind bracing.
 1. General: Provide frames with attachment plates, bearing plates, and splice members. Factory drill for field-bolted assembly. Provide frame span and spacing indicated.
 - a. Slight variations in span and spacing may be acceptable if necessary to comply with manufacturer's standard, as approved by Engineer/Architect.
 2. Frame Configuration: Single gable.
 3. Exterior Column: Uniform depth or Tapered.
 4. Rafter: Uniform depth or Tapered.
- E. End-Wall Framing: Manufacturer's standard primary end-wall framing fabricated for field-bolted assembly to comply with the following:
- F. Secondary Framing: Manufacturer's standard secondary framing, including purlins, girts, eave struts, flange bracing, base members, gable angles, clips, headers, jambs, and other miscellaneous structural members. Unless otherwise indicated, fabricate framing from either

cold-formed, structural-steel sheet or roll-formed, metallic-coated steel sheet, prepainted with coil coating, to comply with the following:

- G. Anchor Rods: Headed anchor rods as indicated in Anchor Rod Plan for attachment of metal building to foundation.

2.4 METAL ROOF PANELS

- A. Standing-Seam, Trapezoidal-Rib, Metal Roof Panels: Formed with interlocking ribs at panel edges and intermediate stiffening ribs symmetrically spaced between ribs; designed for sequential installation by mechanically attaching panels to supports using concealed clips located under one side of panels and engaging opposite edge of adjacent panels.
 - 1. Material: Zinc-coated (galvanized) or aluminum-zinc alloy-coated steel sheet, 0.024-inch nominal uncoated steel thickness. Pre-painted by the coil-coating process to comply with ASTM A755/A755M.
 - a. Exterior Finish: Two-coat fluoropolymer [Siliconized polyester].
 - b. Color: As selected by Architect from manufacturer's standard range.
 - 2. Clips: One-piece fixed to accommodate thermal movement.
 - 3. Joint Type: Mechanically seamed.
 - 4. Panel Coverage: 24 inches.
 - 5. Panel Height: 3 inches.

2.5 METAL SOFFIT PANELS

- A. General: Provide factory-formed metal soffit panels designed to be installed by lapping and interconnecting side edges of adjacent panels and mechanically attaching through panel to supports using concealed fasteners and factory-applied sealant in side laps. Include accessories required for weathertight installation.
- B. Metal Soffit Panels: Match profile and material of metal wall panels.
 - 1. Finish: Match finish of metal wall panels.
 - 2. Color: As selected by Architect from manufacturer's full range.

2.6 THERMAL INSULATION

- A. Faced Metal Building Insulation: ASTM C991, Type II, glass-fiber-blanket insulation; 0.5-lb/cu. ft. density; 2-inch-wide, continuous, vapor-tight edge tabs; with a flame-spread index of 25 or less.
- B. Retainer Strips: For securing insulation between supports, 0.025-inch nominal-thickness, formed, metallic-coated steel or PVC retainer clips colored to match insulation facing.
- C. Vapor-Retarder Facing: ASTM C1136, with permeance not greater than 0.02 perm when tested according to ASTM E96/E96M, Desiccant Method.

2.7 ACCESSORIES

- A. General: Provide accessories as standard with metal building system manufacturer and as specified. Fabricate and finish accessories at the factory to greatest extent possible, by manufacturer's standard procedures and processes. Comply with indicated profiles and with dimensional and structural requirements.
 - 1. Form exposed sheet metal accessories that are without excessive oil-canning, buckling, and tool marks and that are true to line and levels indicated, with exposed edges folded back to form hems.
- B. Roof Panel Accessories: Provide components required for a complete metal roof panel assembly including copings, fasciae, corner units, ridge closures, clips, sealants, gaskets, fillers, closure strips, and similar items. Match material and finish of metal roof panels unless otherwise indicated.
- C. Wall Panel Accessories: Provide components required for a complete metal wall panel assembly including copings, fasciae, mullions, sills, corner units, clips, sealants, gaskets, fillers, closure strips, and similar items. Match material and finish of metal wall panels unless otherwise indicated.
- D. Flashing and Trim: Zinc-coated (galvanized) or aluminum-zinc alloy-coated steel sheet, 0.018-inch nominal uncoated steel thickness, pre-painted with coil coating; finished to match adjacent metal panels.
- E. Gutters: Zinc-coated (galvanized) or aluminum-zinc alloy-coated steel sheet, 0.018-inch nominal uncoated steel thickness, pre-painted with coil coating; finished to match roof fascia and rake trim. Match profile of gable trim, complete with end pieces, outlet tubes, and other special pieces as required. Fabricate in minimum 96-inch-long sections, sized according to SMACNA's "Architectural Sheet Metal Manual."
 - 1. Gutter Supports: Fabricated from same material and finish as gutters.
 - 2. Strainers: Bronze, copper, or aluminum wire ball type at outlets.
- F. Downspouts: Zinc-coated (galvanized) or aluminum-zinc alloy-coated steel sheet, 0.018-inch nominal uncoated steel thickness, pre-painted with coil coating; finished to match metal wall panels. Fabricate in minimum 10-foot-long sections, complete with formed elbows and offsets.
 - 1. Mounting Straps: Fabricated from same material and finish as gutters.
- G. Pipe Flashing: Pre-molded, EPDM pipe collar with flexible aluminum ring bonded to base.

2.8 FABRICATION

- A. General: Design components and field connections required for erection to permit easy assembly.
 - 1. Mark each piece and part of the assembly to correspond with previously prepared erection drawings, diagrams, and instruction manuals.
 - 2. Fabricate structural framing to produce clean, smooth cuts and bends. Punch holes of

proper size, shape, and location. Members to be free of cracks, tears, and ruptures.

- B. Tolerances: Comply with MBMA's "Metal Building Systems Manual" for fabrication and erection tolerances.
- C. Primary Framing: Shop fabricate framing components to indicated size and section, with baseplates, bearing plates, stiffeners, and other items required for erection welded into place. Cut, form, punch, drill, and weld framing for bolted field assembly.
- D. Secondary Framing: Shop fabricate framing components to indicated size and section by roll forming or break forming, with baseplates, bearing plates, stiffeners, and other plates required for erection welded into place. Cut, form, punch, drill, and weld secondary framing for bolted field connections to primary framing.
- E. Metal Panels: Fabricate and finish metal panels at the factory to greatest extent possible, by manufacturer's standard procedures and processes, as necessary to fulfill indicated performance requirements. Comply with indicated profiles and with dimensional and structural requirements.
 - 1. Provide panel profile, including major ribs and intermediate stiffening ribs, if any, for full length of metal panel.

2.9 SOURCE QUALITY CONTROL

- A. Special Inspection: Contractor shall engage a qualified special inspector to perform source quality control inspections and to submit reports.
 - 1. Accredited Manufacturers: Special inspections will not be required if fabrication is performed by an IAS AC472-accredited manufacturer approved by authorities having jurisdiction to perform such Work without special inspection.
- B. Product will be considered defective if it does not pass tests and inspections.
- C. Prepare test and inspection reports.

PART 3 - EXECUTION

3.1 ERECTION OF STRUCTURAL FRAMING

- A. Erect metal building system according to manufacturer's written instructions and drawings.
- B. Do not field cut, drill, or alter structural members without written approval from metal building system manufacturer's professional engineer.
- C. Set structural framing accurately in locations and to elevations indicated, according to AISC specifications referenced in this Section. Maintain structural stability of frame during erection.
- D. Base and Bearing Plates: Clean concrete- and masonry-bearing surfaces of bond-reducing materials, and roughen surfaces prior to setting plates. Clean bottom surface of plates.

1. Set plates for structural members on wedges, shims, or setting nuts as required.
 2. Tighten anchor rods after supported members have been positioned and plumbed. Do not remove wedges or shims but, if protruding, cut off flush with edge of plate before packing with grout.
 3. Promptly pack grout solidly between bearing surfaces and plates so no voids remain. Neatly finish exposed surfaces; protect grout and allow to cure. Comply with manufacturer's written installation instructions for shrinkage-resistant grouts.
- E. Align and adjust structural framing before permanently fastening. Before assembly, clean bearing surfaces and other surfaces that will be in permanent contact with framing. Perform necessary adjustments to compensate for discrepancies in elevations and alignment.
1. Level and plumb individual members of structure.
 2. Make allowances for difference between temperature at time of erection and mean temperature when structure will be completed and in service.
- F. Primary Framing and End Walls: Erect framing level, plumb, rigid, secure, and true to line. Level baseplates to a true even plane with full bearing to supporting structures, set with double-nutted anchor bolts. Use grout to obtain uniform bearing and to maintain a level base-line elevation. Moist-cure grout for not less than seven days after placement.
1. Make field connections using high-strength bolts installed according to RCSC's "Specification for Structural Joints Using High-Strength Bolts" for bolt type and joint type specified.
 - a. Joint Type: Snug tightened or pretensioned as required by manufacturer.
- G. Secondary Framing: Erect framing level, plumb, rigid, secure, and true to line. Field bolt secondary framing to clips attached to primary framing.
1. Provide rake or gable purlins with tight-fitting closure channels and fasciae.
 2. Locate and space wall girts to suit openings such as doors and windows.
 3. Provide supplemental framing at entire perimeter of openings, including doors, windows, ventilators, and other penetrations of roof and walls.
- H. Steel Joists: Install joists and accessories plumb, square, and true to line; securely fasten to supporting construction according to SJI's "Standard Specifications and Load Tables for Steel Joists and Joist Girders," joist manufacturer's written instructions, and requirements in this Section.
1. Before installation, splice joists delivered to Project site in more than one piece.
 2. Space, adjust, and align joists accurately in location before permanently fastening.
 3. Install temporary bracing and erection bridging, connections, and anchors to ensure that joists are stabilized during construction.
 4. Joist Installation:
 - a. Bolt joists to supporting steel framework using high-strength structural bolts unless otherwise indicated. Comply with RCSC's "Specification for Structural Joints Using High-Strength Bolts" for high-strength structural bolt installation and tightening requirements.

5. Install and connect bridging concurrently with joist erection, before construction loads are applied. Anchor ends of bridging lines at top and bottom chords if terminating at walls or beams.
- I. Bracing: Install bracing in roof and sidewalls where indicated on erection drawings.
 1. Tighten rod and cable bracing to avoid sag.
 2. Locate interior end-bay bracing only where indicated.
- J. Framing for Openings: Provide shapes of proper design and size to reinforce openings and to carry loads and vibrations imposed, including equipment furnished under mechanical and electrical work. Securely attach to structural framing.
- K. Erection Tolerances: Maintain erection tolerances of structural framing within AISC 303.

3.2 METAL PANEL INSTALLATION, GENERAL

- A. General: Anchor metal panels and other components of the Work securely in place, with provisions for thermal and structural movement.
 1. Field cut metal panels as required for doors, windows, and other openings. Cut openings as small as possible, neatly to size required, and without damage to adjacent metal panel finishes.
 - a. Field cutting of metal panels by torch is not permitted unless approved in writing by manufacturer.
 2. Install metal panels perpendicular to structural supports unless otherwise indicated.
 3. Flash and seal metal panels with weather closures at perimeter of openings and similar elements. Fasten with self-tapping screws.
 4. Locate and space fastenings in uniform vertical and horizontal alignment.
 5. Locate metal panel splices over structural supports with end laps in alignment.
 6. Lap metal flashing over metal panels to allow moisture to run over and off the material.
- B. Lap-Seam Metal Panels: Install screw fasteners using power tools with controlled torque adjusted to compress EPDM washers tightly without damage to washers, screw threads, or metal panels. Install screws in predrilled holes.
 1. Arrange and nest side-lap joints so prevailing winds blow over, not into, lapped joints. Lap ribbed or fluted sheets one full rib corrugation. Apply metal panels and associated items for neat and weathertight enclosure. Avoid "panel creep" or application not true to line.
- C. Metal Protection: Where dissimilar metals contact each other or corrosive substrates, protect against galvanic action by painting contact surfaces with corrosion-resistant coating, by applying rubberized-asphalt underlayment to each contact surface, or by other permanent separation as recommended by metal roof panel manufacturer.
- D. Joint Sealers: Install gaskets, joint fillers, and sealants where indicated and where required for weatherproof performance of metal panel assemblies. Provide types of gaskets, fillers, and

sealants indicated; or, if not indicated, provide types recommended by metal panel manufacturer.

1. Seal metal panel end laps with double beads of tape or sealant the full width of panel. Seal side joints where recommended by metal panel manufacturer.
2. Prepare joints and apply sealants to comply with requirements in Section 079200 "Joint Sealants."

3.3 METAL ROOF PANEL INSTALLATION

- A. General: Provide metal roof panels of full length from eave to ridge unless otherwise indicated or restricted by shipping limitations.
 1. Install ridge caps as metal roof panel work proceeds.
 2. Flash and seal metal roof panels with weather closures at eaves and rakes. Fasten with self-tapping screws.
- B. Standing-Seam Metal Roof Panels: Fasten metal roof panels to supports with concealed clips at each standing-seam joint, at location and spacing and with fasteners recommended by manufacturer.
 1. Install clips to supports with self-drilling or self-tapping fasteners.
 2. Install pressure plates at locations indicated in manufacturer's written installation instructions.
 3. Seamed Joint: Crimp standing seams with manufacturer-approved motorized seamer tool so that clip, metal roof panel, and factory-applied sealant are completely engaged.
 4. Rigidly fasten eave end of metal roof panels and allow ridge end free movement for thermal expansion and contraction. Predrill panels for fasteners.
 5. Provide metal closures at peaks rake edges rake walls and each side of ridge caps.
- C. Lap-Seam Metal Roof Panels: Fasten metal roof panels to supports with exposed fasteners at each lapped joint, at location and spacing recommended by manufacturer.
 1. Provide metal-backed sealing washers under heads of exposed fasteners bearing on weather side of metal roof panels.
 2. Provide sealant tape at lapped joints of metal roof panels and between panels and protruding equipment, vents, and accessories.
 3. Apply a continuous ribbon of sealant tape to weather-side surface of fastenings on end laps and on side laps of nesting-type metal panels, on side laps of ribbed or fluted metal panels, and elsewhere as needed to make metal panels weatherproof to driving rains.
 4. At metal panel splices, nest panels with minimum 6-inch end lap, sealed with butyl-rubber sealant and fastened together by interlocking clamping plates.
- D. Metal Fascia Panels: Align bottom of metal panels and fasten with blind rivets, bolts, or self-drilling or self-tapping screws. Flash and seal metal panels with weather closures where fasciae meet soffits, along lower panel edges, and at perimeter of all openings.

3.4 METAL WALL PANEL INSTALLATION

- A. General: Install metal wall panels in orientation, sizes, and locations indicated on Drawings. Install panels perpendicular to girts, extending full height of building, unless otherwise indicated. Anchor metal wall panels and other components of the Work securely in place, with provisions for thermal and structural movement.
1. Unless otherwise indicated, begin metal panel installation at corners with center of rib lined up with line of framing.
 2. Shim or otherwise plumb substrates receiving metal wall panels.
 3. When two rows of metal panels are required, lap panels 4 inches minimum.
 4. When building height requires two rows of metal panels at gable ends, align lap of gable panels over metal wall panels at eave height.
 5. Rigidly fasten base end of metal wall panels and allow eave end free movement for thermal expansion and contraction. Predrill panels.
 6. Flash and seal metal wall panels with weather closures at eaves and rakes, and at perimeter of all openings. Fasten with self-tapping screws.
 7. Install screw fasteners in predrilled holes.
 8. Install flashing and trim as metal wall panel work proceeds.
 9. Apply elastomeric sealant continuously between metal base channel (sill angle) and concrete, and elsewhere as indicated on Drawings; if not indicated, as necessary for waterproofing.
 10. Align bottom of metal wall panels and fasten with blind rivets, bolts, or self-drilling or self-tapping screws.
 11. Provide weatherproof escutcheons for pipe and conduit penetrating exterior walls.
- B. Metal Wall Panels: Install metal wall panels on exterior side of girts. Attach metal wall panels to supports with fasteners as recommended by manufacturer.

3.5 METAL SOFFIT PANEL INSTALLATION

- A. Provide metal soffit panels the full width of soffits. Install panels perpendicular to support framing.
- B. Flash and seal metal soffit panels with weather closures where panels meet walls and at perimeter of all openings.

3.6 THERMAL INSULATION INSTALLATION

- A. General: Install insulation concurrently with metal panel installation, in thickness indicated to cover entire surface, according to manufacturer's written instructions.
1. Set vapor-retarder-faced units with vapor retarder toward warm side of construction unless otherwise indicated. Do not obstruct ventilation spaces except for firestopping.
 2. Tape joints and ruptures in vapor retarder, and seal each continuous area of insulation to the surrounding construction to ensure airtight installation.
 3. Install factory-laminated, vapor-retarder-faced blankets straight and true in one-piece lengths, with both sets of facing tabs sealed, to provide a complete vapor retarder.

- B. Blanket Roof Insulation: Comply with the following installation method:
1. Over-Purlin-with-Spacer-Block Installation: Extend insulation and vapor retarder over and perpendicular to top flange of secondary framing. Install layer of filler insulation over first layer to fill space formed by metal roof panel standoffs. Hold in place by panels fastened to standoffs.
 - a. Thermal Spacer Blocks: Where metal roof panels attach directly to purlins, install thermal spacer blocks.
 2. Retainer Strips: Install retainer strips at each longitudinal insulation joint, straight and taut, nesting with secondary framing to hold insulation in place.
- C. Blanket Wall Insulation: Extend insulation and vapor retarder over and perpendicular to top flange of secondary framing. Hold in place by metal wall panels fastened to secondary framing.
1. Retainer Strips: Install retainer strips at each longitudinal insulation joint, straight and taut, nesting with secondary framing to hold insulation in place.

3.7 ACCESSORY INSTALLATION

- A. General: Install accessories with positive anchorage to building and weathertight mounting, and provide for thermal expansion. Coordinate installation with flashings and other components.
1. Install components required for a complete metal roof panel assembly, including trim, copings, ridge closures, seam covers, flashings, sealants, gaskets, fillers, closure strips, and similar items.
 2. Install components for a complete metal wall panel assembly, including trim, copings, corners, seam covers, flashings, sealants, gaskets, fillers, closure strips, and similar items.
 3. Where dissimilar metals contact each other or corrosive substrates, protect against galvanic action by painting contact surfaces with corrosion-resistant coating, by applying rubberized-asphalt underlayment to each contact surface, or by other permanent separation as recommended by manufacturer.
- B. Flashing and Trim: Comply with performance requirements, manufacturer's written installation instructions, and SMACNA's "Architectural Sheet Metal Manual." Provide concealed fasteners where possible, and set units true to line and level. Install work with laps, joints, and seams that will be permanently watertight and weather resistant.
1. Install exposed flashing and trim that is without excessive oil-canning, buckling, and tool marks and that is true to line and levels indicated, with exposed edges folded back to form hems. Install sheet metal flashing and trim to fit substrates and to result in waterproof and weather-resistant performance.
 2. Expansion Provisions: Provide for thermal expansion of exposed flashing and trim. Space movement joints at a maximum of 10 feet with no joints allowed within 24 inches of corner or intersection. Where lapped or bayonet-type expansion provisions cannot be used or would not be sufficiently weather resistant and waterproof, form expansion joints of intermeshing hooked flanges, not less than 1 inch deep, filled with mastic sealant (concealed within joints).

- C. Gutters: Join sections with riveted-and-soldered or lapped-and-sealed joints. Attach gutters to eave with gutter hangers spaced as required for gutter size, but not more than 36 inches o.c. using manufacturer's standard fasteners. Provide end closures and seal watertight with sealant. Provide for thermal expansion.
- D. Downspouts: Join sections with 1-1/2-inch telescoping joints. Provide fasteners designed to hold downspouts securely 1 inch away from walls; locate fasteners at top and bottom and at approximately 60 inches o.c. in between.
 - 1. Tie downspouts to underground drainage system indicated.
- E. Pipe Flashing: Form flashing around pipe penetration and metal roof panels. Fasten and seal to panel as recommended by manufacturer.

3.8 FIELD QUALITY CONTROL

- A. Special Inspections: Owner will engage a qualified special inspector to perform field quality control special inspections and to submit reports.
- B. Product will be considered defective if it does not pass tests and inspections.
- C. Prepare test and inspection reports.

END OF SECTION 133419

SECTION 260519 - LOW-VOLTAGE ELECTRICAL POWER CONDUCTORS AND CABLES

PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes:

1. Copper building wire rated 600 V or less.
2. Connectors, splices, and terminations rated 600 V and less.

1.2 ACTION SUBMITTALS

A. Product Data: For each type of product.

B. Product Schedule: Indicate type, use, location, and termination locations.

1.3 INFORMATIONAL SUBMITTALS

A. Field quality-control reports.

1.4 METHOD OF MEASUREMENT AND BASIS OF PAYMENT

A. Method of Measurement:

1. All work within 5' of the building shall have no separate measurement and shall be included within the lump sum cost of Section 011000.

B. Basis of Payment

1. All work within 5' of the building shall have no separate payment and shall be included within the lump sum cost of Section 011000.

PART 2 - PRODUCTS

2.1 COPPER BUILDING WIRE

A. Description: Flexible, insulated and uninsulated, drawn copper current-carrying conductor with an overall insulation layer or jacket, or both, rated 600 V or less.

B. Standards:

1. Listed and labeled as defined in NFPA 70, by a qualified testing agency, and marked for intended location and use.

2. RoHS compliant.
 3. Conductor and Cable Marking: Comply with wire and cable marking according to UL's "Wire and Cable Marking and Application Guide."
- C. Conductors: Copper, complying with ASTM B3 for bare annealed copper and with ASTM B8 for stranded conductors.
- D. Conductor Insulation:
1. Type NM: Comply with UL 83 and UL 719.
 2. Type SE: Comply with UL 854.
 3. Type THHN and Type THWN-2: Comply with UL 83.
 4. Type XHHW-2: Comply with UL 44.

2.2 CONNECTORS AND SPLICES

- A. Description: Factory-fabricated connectors, splices, and lugs of size, ampacity rating, material, type, and class for application and service indicated; listed and labeled as defined in NFPA 70, by a qualified testing agency, and marked for intended location and use.
- B. Jacketed Cable Connectors: For steel and aluminum jacketed cables, zinc die-cast with set screws, designed to connect conductors specified in this Section.
- C. Lugs: One piece, seamless, designed to terminate conductors specified in this Section.
1. Material: Copper.
 2. Type: One hole with standard barrels.
 3. Termination: Crimp.

PART 3 - EXECUTION

3.1 CONDUCTOR MATERIAL APPLICATIONS

- A. Feeders:
1. Copper; solid for No. 10 AWG and smaller; stranded for No. 8 AWG and larger.
 2. Copper for feeders smaller than No. 4 AWG; copper or aluminum for feeders No. 4 AWG and larger. Conductors shall be solid for No. 10 AWG and smaller; stranded for No. 8 AWG and larger.
- B. Branch Circuits:
1. Copper, Solid for No. 10 AWG and smaller; stranded for No. 8 AWG and larger.
 2. Copper, Solid for No. 12 AWG and smaller; stranded for No. 10 AWG and larger.
- C. Power-Limited Fire Alarm and Control: Solid for No. 12 AWG and smaller.

3.2 CONDUCTOR INSULATION AND MULTICONDUCTOR CABLE APPLICATIONS AND WIRING METHODS

- A. Service Entrance: Type THHN/THWN-2, single conductors in raceway.
- B. Exposed Feeders: Type THHN/THWN-2, single conductors in raceway.
- C. Feeders Concealed in Concrete, below Slabs-on-Grade, and Underground: Type THHN/THWN-2, single conductors in raceway.
- D. Branch Circuits Concealed in Concrete, below Slabs-on-Grade, and Underground: Type THHN/THWN-2, single conductors in raceway.

3.3 INSTALLATION OF CONDUCTORS AND CABLES

- A. Complete raceway installation between conductor and cable termination points according to Section 260533 "Raceways and Boxes for Electrical Systems" prior to pulling conductors and cables.
- B. Use manufacturer-approved pulling compound or lubricant where necessary; compound used must not deteriorate conductor or insulation. Do not exceed manufacturer's recommended maximum pulling tensions and sidewall pressure values.
- C. Use pulling means, including fish tape, cable, rope, and basket-weave wire/cable grips, that will not damage cables or raceway.
- D. Install exposed cables parallel and perpendicular to surfaces of exposed structural members, and follow surface contours where possible.
- E. Support cables according to Section 260529 "Hangers and Supports for Electrical Systems."

3.4 CONNECTIONS

- A. Tighten electrical connectors and terminals according to manufacturer's published torque-tightening values. If manufacturer's torque values are not indicated, use those specified in UL 486A-486B.
- B. Make splices, terminations, and taps that are compatible with conductor material and that possess equivalent or better mechanical strength and insulation ratings than unspliced conductors.
 - 1. Use oxide inhibitor in each splice, termination, and tap for aluminum conductors.
- C. Wiring at Outlets: Install conductor at each outlet, with at least 6 inches (150 mm) of slack.

3.5 IDENTIFICATION

- A. Identify and color-code conductors and cables according to Section 260553 "Identification for Electrical Systems."

- B. Identify each spare conductor at each end with identity number and location of other end of conductor, and identify as spare conductor.

3.6 SLEEVE AND SLEEVE-SEAL INSTALLATION FOR ELECTRICAL PENETRATIONS

- A. Install sleeves and sleeve seals at penetrations of exterior floor and wall assemblies. Comply with requirements in Section 260544 "Sleeves and Sleeve Seals for Electrical Raceways and Cabling."

3.7 FIRESTOPPING

- A. Apply firestopping to electrical penetrations of fire-rated floor and wall assemblies to restore original fire-resistance rating of assembly according to Section 078413 "Penetration Firestopping."

END OF SECTION 260519

SECTION 260526 - GROUNDING AND BONDING FOR ELECTRICAL SYSTEMS

PART 1 - GENERAL

1.1 SUMMARY

- A. Section includes grounding and bonding systems and equipment.
- B. Section includes grounding and bonding systems and equipment, plus the following special applications:
 - 1. Underground distribution grounding.
 - 2. Foundation steel electrodes.

1.2 ACTION SUBMITTALS

- A. Product Data: For each type of product.

1.3 INFORMATIONAL SUBMITTALS

- A. Coordination Drawings: Plans showing dimensioned as-built locations of grounding features specified in "Field Quality Control" Article.
- B. Qualification Data: For testing agency and testing agency's field supervisor.
- C. Field quality-control reports.

1.4 CLOSEOUT SUBMITTALS

- A. Operation and maintenance data.
 - 1. Plans showing as-built, dimensioned locations of system described in "Field Quality Control" Article, including the following:
 - a. Test wells.
 - b. Ground rods.
 - c. Ground rings.
 - d. Grounding arrangements and connections for separately derived systems.
 - 2. Instructions for periodic testing and inspection of grounding features at ground rings based on NFPA 70B.
 - a. Tests shall determine if ground-resistance or impedance values remain within specified maximums, and instructions shall recommend corrective action if values do not.
 - b. Include recommended testing intervals.

1.5 QUALITY ASSURANCE

- A. Testing Agency Qualifications: Certified by NETA.

1.6 METHOD OF MEASUREMENT AND BASIS OF PAYMENT

- A. No measurement will be made for direct payment of grounding and bonding shall be considered a subsidiary obligation in completing the various items involved.
- B. No payment will be made separately or directly for this item on any part of the work unless otherwise listed in the various payment items. All grounding and bonding will be considered a necessary and incidental part of the work and its cost shall be considered by the Contractor and included in the contract price for the pay items of work involved.

PART 2 - PRODUCTS

2.1 SYSTEM DESCRIPTION

- A. Electrical Components, Devices, and Accessories: Listed and labeled as defined in NFPA 70, by a qualified testing agency, and marked for intended location and application.
- B. Comply with UL 467 for grounding and bonding materials and equipment.

2.2 CONDUCTORS

- A. Insulated Conductors: Copper wire or cable insulated for 600 V unless otherwise required by applicable Code or authorities having jurisdiction.
- B. Bare Copper Conductors:
 - 1. Solid Conductors: ASTM B3.
 - 2. Stranded Conductors: ASTM B8.
 - 3. Tinned Conductors: ASTM B33.
 - 4. Bonding Cable: 28 kcmil, 14 strands of No. 17 AWG conductor, 1/4 inch (6 mm) in diameter.
 - 5. Bonding Conductor: No. 4 or No. 6 AWG, stranded conductor.
 - 6. Bonding Jumper: Copper tape, braided conductors terminated with copper ferrules; 1-5/8 inches (41 mm) wide and 1/16 inch (1.6 mm) thick.
 - 7. Tinned Bonding Jumper: Tinned-copper tape, braided conductors terminated with copper ferrules; 1-5/8 inches (41 mm) wide and 1/16 inch (1.6 mm) thick.
- C. Grounding Bus: Predrilled rectangular bars of annealed copper, 1/4 by 4 inches (6.3 by 100 mm) in cross section, with 9/32-inch (7.14-mm) holes spaced 1-1/8 inches (28 mm) apart. Stand-off insulators for mounting shall comply with UL 891 for use in switchboards, 600 V and shall be Lexan or PVC, impulse tested at 5000 V.

2.3 CONNECTORS

- A. Listed and labeled by an NRTL acceptable to authorities having jurisdiction for applications in which used and for specific types, sizes, and combinations of conductors and other items connected.
- B. Welded Connectors: Exothermic-welding kits of types recommended by kit manufacturer for materials being joined and installation conditions.
- C. Bus-Bar Connectors: Mechanical type, cast silicon bronze, solderless exothermic-type wire terminals, and long-barrel, two-bolt connection to ground bus bar.
- D. Beam Clamps: Mechanical type, terminal, ground wire access from four directions, with dual, tin-plated or silicon bronze bolts.
- E. Cable-to-Cable Connectors: Compression type, copper or copper alloy.
- F. Conduit Hubs: Mechanical type, terminal with threaded hub.
- G. Ground Rod Clamps: Mechanical type, copper or copper alloy, terminal with hex head bolt.
- H. Lay-in Lug Connector: Mechanical type, copper rated for direct burial terminal with set screw.
- I. Service Post Connectors: Mechanical type, bronze alloy terminal, in short- and long-stud lengths, capable of single and double conductor connections.
- J. Signal Reference Grid Clamp: Mechanical type, stamped-steel terminal with hex head screw.
- K. Straps: Solid copper, copper lugs. Rated for 600 A.
- L. Tower Ground Clamps: Mechanical type, copper or copper alloy, terminal one-piece clamp.
- M. U-Bolt Clamps: Mechanical type, copper or copper alloy, terminal listed for direct burial.

2.4 GROUNDING ELECTRODES

- A. Ground Rods: Copper-clad steel; 3/4 inch by 10 feet (19 mm by 3 m).
- B. Ground Plates: 1/4 inch (6 mm) thick, hot-dip galvanized.

PART 3 - EXECUTION

3.1 APPLICATIONS

- A. Conductors: Install solid conductor for No. 8 AWG and smaller, and stranded conductors for No. 6 AWG and larger unless otherwise indicated.
- B. Grounding Bus: Install in electrical equipment rooms, in rooms housing service equipment, and elsewhere as indicated.

1. Install bus horizontally, on insulated spacers 2 inches (50 mm) minimum from wall, 6 inches (150 mm) above finished floor unless otherwise indicated.
2. Where indicated on both sides of doorways, route bus up to top of door frame, across top of doorway, and down; connect to horizontal bus.

C. Conductor Terminations and Connections:

1. Pipe and Equipment Grounding Conductor Terminations: Bolted connectors.
2. Underground Connections: Welded connectors except at test wells and as otherwise indicated.
3. Connections to Ground Rods at Test Wells: Bolted connectors.
4. Connections to Structural Steel: Welded connectors.

3.2 GROUNDING AT THE SERVICE

- A. Equipment grounding conductors and grounding electrode conductors shall be connected to the ground bus. Install a main bonding jumper between the neutral and ground buses.

3.3 GROUNDING UNDERGROUND DISTRIBUTION SYSTEM COMPONENTS

- A. Comply with IEEE C2 grounding requirements.

3.4 EQUIPMENT GROUNDING

- A. Install insulated equipment grounding conductors with all feeders and branch circuits.
- B. Install insulated equipment grounding conductors with the following items, in addition to those required by NFPA 70:
1. Feeders and branch circuits.
 2. Lighting circuits.
 3. Receptacle circuits.
 4. Single-phase motor and appliance branch circuits.
 5. Three-phase motor and appliance branch circuits.
 6. Flexible raceway runs.
 7. Busway Supply Circuits: Install insulated equipment grounding conductor from grounding bus in the switchgear, switchboard, or distribution panel to equipment grounding bar terminal on busway.

3.5 INSTALLATION

- A. Grounding Conductors: Route along shortest and straightest paths possible unless otherwise indicated or required by Code. Avoid obstructing access or placing conductors where they may be subjected to strain, impact, or damage.
- B. Ground Rods: Drive rods until tops are 2 inches (50 mm) below finished floor or final grade unless otherwise indicated.

1. Interconnect ground rods with grounding electrode conductor below grade and as otherwise indicated. Make connections without exposing steel or damaging coating if any.
- C. Bonding Straps and Jumpers: Install in locations accessible for inspection and maintenance except where routed through short lengths of conduit.
 1. Bonding to Structure: Bond straps directly to basic structure, taking care not to penetrate any adjacent parts.
 2. Bonding to Equipment Mounted on Vibration Isolation Hangers and Supports: Install bonding so vibration is not transmitted to rigidly mounted equipment.
 3. Use exothermic-welded connectors for outdoor locations; if a disconnect-type connection is required, use a bolted clamp.

3.6 FIELD QUALITY CONTROL

- A. Perform tests and inspections.
- B. Tests and Inspections:
 1. After installing grounding system but before permanent electrical circuits have been energized, test for compliance with requirements.
 2. Inspect physical and mechanical condition. Verify tightness of accessible, bolted, electrical connections with a calibrated torque wrench according to manufacturer's written instructions.
 3. Test completed grounding system at each location where a maximum ground-resistance level is specified, at service disconnect enclosure grounding terminal, and at individual ground rods. Make tests at ground rods before any conductors are connected.
 - a. Measure ground resistance no fewer than two full days after last trace of precipitation and without soil being moistened by any means other than natural drainage or seepage and without chemical treatment or other artificial means of reducing natural ground resistance.
 - b. Perform tests by fall-of-potential method according to IEEE 81.
 4. Prepare dimensioned Drawings locating each test well, ground rod and ground-rod assembly, and other grounding electrodes. Identify each by letter in alphabetical order, and key to the record of tests and observations. Include the number of rods driven and their depth at each location, and include observations of weather and other phenomena that may affect test results. Describe measures taken to improve test results.
- C. Grounding system will be considered defective if it does not pass tests and inspections.
- D. Prepare test and inspection reports.
- E. Report measured ground resistances that exceed the following values:
 1. Power and Lighting Equipment or System with Capacity of 500 kVA and Less: 10 ohms.
 2. Substations and Pad-Mounted Equipment: 5 ohms.

- F. Excessive Ground Resistance: If resistance to ground exceeds specified values, notify Architect promptly and include recommendations to reduce ground resistance.

END OF SECTION 260526

SECTION 260529 - HANGERS AND SUPPORTS FOR ELECTRICAL SYSTEMS

PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes:

1. Steel slotted support systems.
2. Conduit and cable support devices.
3. Support for conductors in vertical conduit.
4. Structural steel for fabricated supports and restraints.
5. Mounting, anchoring, and attachment components, including powder-actuated fasteners, mechanical expansion anchors, concrete inserts, clamps, through bolts, toggle bolts, and hanger rods.
6. Fabricated metal equipment support assemblies.

B. Related Requirements:

1. Section 260548.16 "Seismic Controls for Electrical Systems" for products and installation requirements necessary for compliance with seismic criteria.

1.2 ACTION SUBMITTALS

A. Product Data: For each type of product.

B. Shop Drawings: For fabrication and installation details for electrical hangers and support systems.

1. Hangers. Include product data for components.
2. Slotted support systems.
3. Equipment supports.
4. Vibration Isolation Base Details: Detail fabrication including anchorages and attachments to structure and to supported equipment. Include adjustable motor bases, rails, and frames for equipment mounting.

1.3 INFORMATIONAL SUBMITTALS

A. Coordination Drawings: Reflected ceiling plan(s) and other details, drawn to scale, and coordinated with each other, using input from installers of the items involved.

B. Seismic Qualification Data: Certificates, for hangers and supports for electrical equipment and systems, accessories, and components, from manufacturer.

C. Welding certificates.

1.4 QUALITY ASSURANCE

- A. Welding Qualifications: Qualify procedures and personnel according to the following:
 - 1. AWS D1.1/D1.1M.
 - 2. AWS D1.2/D1.2M.

1.5 METHOD OF MEASUREMENT AND BASIS OF PAYMENT

- B. No measurement will be made for direct payment of grounding and bonding shall be considered a subsidiary obligation in completing the various items involved.
- C. No payment will be made separately or directly for this item on any part of the work unless otherwise listed in the various payment items. All grounding and bonding will be considered a necessary and incidental part of the work and its cost shall be considered by the Contractor and included in the contract price for the pay items of work involved.

PART 2 - PRODUCTS

- A. Surface-Burning Characteristics: Comply with ASTM E84; testing by a qualified testing agency. Identify products with appropriate markings of applicable testing agency.
 - 1. Flame Rating: Class 1.
 - 2. Self-extinguishing according to ASTM D635.

2.2 SUPPORT, ANCHORAGE, AND ATTACHMENT COMPONENTS

- A. Steel Slotted Support Systems: Preformed steel channels and angles with minimum 13/32-inch- (10-mm-) diameter holes at a maximum of 8 inches (200 mm) o.c. in at least one surface.
 - 1. Standard: Comply with MFMA-4 factory-fabricated components for field assembly.
 - 2. Material for Channel, Fittings, and Accessories: Galvanized steel.
 - 3. Channel Width: Selected for applicable load criteria.
 - 4. Metallic Coatings: Hot-dip galvanized after fabrication and applied according to MFMA-4.
 - 5. Nonmetallic Coatings: Manufacturer's standard PVC, polyurethane, or polyester coating applied according to MFMA-4.
 - 6. Painted Coatings: Manufacturer's standard painted coating applied according to MFMA-4.
 - 7. Protect finishes on exposed surfaces from damage by applying a strippable, temporary protective covering before shipping.
- B. Conduit and Cable Support Devices: Steel hangers, clamps, and associated fittings, designed for types and sizes of raceway or cable to be supported.
- C. Support for Conductors in Vertical Conduit: Factory-fabricated assembly consisting of threaded body and insulating wedging plug or plugs for nonarmored electrical conductors or cables in riser conduits. Plugs shall have number, size, and shape of conductor gripping pieces as

required to suit individual conductors or cables supported. Body shall be made of malleable iron.

- D. Structural Steel for Fabricated Supports and Restraints: ASTM A36/A36M steel plates, shapes, and bars; black and galvanized.
- E. Mounting, Anchoring, and Attachment Components: Items for fastening electrical items or their supports to building surfaces include the following:
 - 1. Powder-Actuated Fasteners: Threaded-steel stud, for use in hardened portland cement concrete, steel, or wood, with tension, shear, and pullout capacities appropriate for supported loads and building materials where used.
 - 2. Mechanical-Expansion Anchors: Insert-wedge-type, stainless steel, for use in hardened portland cement concrete, with tension, shear, and pullout capacities appropriate for supported loads and building materials where used.
 - 3. Concrete Inserts: Steel or malleable-iron, slotted support system units are similar to MSS Type 18 units and comply with MFMA-4 or MSS SP-58.
 - 4. Clamps for Attachment to Steel Structural Elements: MSS SP-58 units are suitable for attached structural element.
 - 5. Through Bolts: Structural type, hex head, and high strength. Comply with ASTM F3125/F3125M, Grade A325 (Grade A325M).
 - 6. Toggle Bolts: Stainless-steel springhead type.
 - 7. Hanger Rods: Threaded steel.

2.3 FABRICATED METAL EQUIPMENT SUPPORT ASSEMBLIES

- A. Description: Welded or bolted structural-steel shapes, shop or field fabricated to fit dimensions of supported equipment.
- B. Materials: Comply with requirements in Section 055000 "Metal Fabrications" for steel shapes and plates.

PART 3 - EXECUTION

3.1 APPLICATION

- A. Comply with the following standards for application and installation requirements of hangers and supports, except where requirements on Drawings or in this Section are stricter:
 - 1. NECA 1.
 - 2. NECA 101
 - 3. NECA 102.
 - 4. NECA 105.
 - 5. NECA 111.
- B. Comply with requirements in Section 078413 "Penetration Firestopping" for firestopping materials and installation for penetrations through fire-rated walls, ceilings, and assemblies.

- C. Comply with requirements for raceways and boxes specified in Section 260533 "Raceways and Boxes for Electrical Systems."
- D. Maximum Support Spacing and Minimum Hanger Rod Size for Raceways: Space supports for EMT, IMC, and RMC as required by NFPA 70. Minimum rod size shall be 1/4 inch (6 mm) in diameter.
- E. Multiple Raceways or Cables: Install trapeze-type supports fabricated with steel slotted support system, sized so capacity can be increased by at least 25 percent in future without exceeding specified design load limits.
 - 1. Secure raceways and cables to these supports with single-bolt conduit clamps.
- F. Spring-steel clamps designed for supporting single conduits without bolts may be used for 1-1/2-inch (38-mm) and smaller raceways serving branch circuits and communication systems above suspended ceilings, and for fastening raceways to trapeze supports.

3.2 SUPPORT INSTALLATION

- A. Comply with NECA 1 and NECA 101 for installation requirements except as specified in this article.
- B. Raceway Support Methods: In addition to methods described in NECA 1, EMT may be supported by openings through structure members, according to NFPA 70.
- C. Strength of Support Assemblies: Where not indicated, select sizes of components so strength will be adequate to carry present and future static loads within specified loading limits. Minimum static design load used for strength determination shall be weight of supported components plus 200 lb (90 kg).
- D. Mounting and Anchorage of Surface-Mounted Equipment and Components: Anchor and fasten electrical items and their supports to building structural elements by the following methods unless otherwise indicated by code:
 - 1. To New Concrete: Bolt to concrete inserts.
 - 2. To Masonry: Approved toggle-type bolts on hollow masonry units and expansion anchor fasteners on solid masonry units.
 - 3. To Existing Concrete: Expansion anchor fasteners.
 - 4. Instead of expansion anchors, powder-actuated driven threaded studs provided with lock washers and nuts may be used in existing standard-weight concrete 4 inches (100 mm) thick or greater. Do not use for anchorage to lightweight-aggregate concrete or for slabs less than 4 inches (100 mm) thick.
 - 5. To Steel: Beam clamps (MSS SP-58, Type 19, 21, 23, 25, or 27), complying with MSS SP-69.
 - 6. To Light Steel: Sheet metal screws.
 - 7. Items Mounted on Hollow Walls and Nonstructural Building Surfaces: Mount cabinets, panelboards, disconnect switches, control enclosures, pull and junction boxes, transformers, and other devices on slotted-channel racks attached to substrate by means that comply with seismic-restraint strength and anchorage requirements.

- E. Drill holes for expansion anchors in concrete at locations and to depths that avoid the need for reinforcing bars.

3.3 INSTALLATION OF FABRICATED METAL SUPPORTS

- A. Comply with installation requirements in Section 055000 "Metal Fabrications" for site-fabricated metal supports.
- B. Cut, fit, and place miscellaneous metal supports accurately in location, alignment, and elevation to support and anchor electrical materials and equipment.
- C. Field Welding: Comply with AWS D1.1/D1.1M.

END OF SECTION 260529

SECTION 260533 - RACEWAYS AND BOXES FOR ELECTRICAL SYSTEMS

PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes:

1. Metal conduits and fittings.
2. Nonmetallic conduits and fittings.
3. Metal wireways and auxiliary gutters.
4. Nonmetal wireways and auxiliary gutters.
5. Surface raceways.
6. Boxes, enclosures, and cabinets.

1.2 ACTION SUBMITTALS

A. Product Data: For each type of product.

B. Shop Drawings: For custom enclosures and cabinets. Include plans, elevations, sections, and attachment details.

1.3 INFORMATIONAL SUBMITTALS

A. Coordination Drawings: Conduit routing plans, drawn to scale, on which the following items are shown and coordinated with each other, using input from installers of items involved:

1. Structural members in paths of conduit groups with common supports.
2. HVAC and plumbing items and architectural features in paths of conduit groups with common supports.

B. Seismic Qualification Data: Certificates, for enclosures, cabinets, and conduit racks and their mounting provisions, including those for internal components, from manufacturer.

1.4 METHOD OF MEASUREMENT AND BASIS OF PAYMENT

A. Method of Measurement:

1. All work within 5' of the building shall have no separate measurement and shall be included within the lump sum cost of Section 011000.

B. Basis of Payment

1. All work within 5' of the building shall have no separate payment and shall be included within the lump sum cost of Section 011000.

PART 2 - PRODUCTS

2.1 METAL CONDUITS AND FITTINGS

A. Metal Conduit:

1. Listing and Labeling: Metal conduits, tubing, and fittings shall be listed and labeled as defined in NFPA 70, by a qualified testing agency, and marked for intended location and application.
2. GRC: Comply with ANSI C80.1 and UL 6.
3. ARC: Comply with ANSI C80.5 and UL 6A.
4. IMC: Comply with ANSI C80.6 and UL 1242.
5. EMT: Comply with ANSI C80.3 and UL 797.
6. FMC: Comply with UL 1; aluminum.
7. LFMC: Flexible steel conduit with PVC jacket and complying with UL 360.

B. Metal Fittings: Comply with NEMA FB 1 and UL 514B.

1. Listing and Labeling: Listed and labeled as defined in NFPA 70, by a qualified testing agency, and marked for intended location and application.
2. Fittings, General: Listed and labeled for type of conduit, location, and use.
3. Conduit Fittings for Hazardous (Classified) Locations: Comply with UL 1203 and NFPA 70.
4. Fittings for EMT:
 - a. Material: Steel.
 - b. Type: Setscrew.
5. Expansion Fittings: PVC or steel to match conduit type, complying with UL 651, rated for environmental conditions where installed, and including flexible external bonding jumper.
6. Coating for Fittings for PVC-Coated Conduit: Minimum thickness of 0.040 inch (1 mm), with overlapping sleeves protecting threaded joints.

C. Joint Compound for IMC, GRC, or ARC: Approved, as defined in NFPA 70, by authorities having jurisdiction for use in conduit assemblies, and compounded for use to lubricate and protect threaded conduit joints from corrosion and to enhance their conductivity.

2.2 NONMETALLIC CONDUITS AND FITTINGS

A. Listing and Labeling: Listed and labeled as defined in NFPA 70, by a qualified testing agency, and marked for intended location and application.

1. ENT: Comply with NEMA TC 13 and UL 1653.
2. RNC: Type EPC-40-PVC, complying with NEMA TC 2 and UL 651 unless otherwise indicated.
3. LFNC: Comply with UL 1660.

B. Nonmetallic Fittings:

1. Fittings, General: Listed and labeled for type of conduit, location, and use.
2. Fittings for ENT and RNC: Comply with NEMA TC 3; match to conduit or tubing type and material.
3. Fittings for LFNC: Comply with UL 514B.
4. Solvents and Adhesives: As recommended by conduit manufacturer.

2.3 METAL WIREWAYS AND AUXILIARY GUTTERS

- A. Description: Sheet metal, complying with UL 870 and NEMA 250, Type 1 unless otherwise indicated, and sized according to NFPA 70.
 1. Metal wireways installed outdoors shall be listed and labeled as defined in NFPA 70, by a qualified testing agency, and marked for intended location and application.
- B. Fittings and Accessories: Include covers, couplings, offsets, elbows, expansion joints, adapters, hold-down straps, end caps, and other fittings to match and mate with wireways as required for complete system.

2.4 NONMETALLIC WIREWAYS AND AUXILIARY GUTTERS

- A. Listing and Labeling: Nonmetallic wireways and auxiliary gutters shall be listed and labeled as defined in NFPA 70, by a qualified testing agency, and marked for intended location and application.
- B. Description: PVC, extruded and fabricated to required size and shape, and having snap-on cover, mechanically coupled connections, and plastic fasteners.
- C. Fittings and Accessories: Couplings, offsets, elbows, expansion joints, adapters, hold-down straps, end caps, and other fittings shall match and mate with wireways as required for complete system.

2.5 BOXES, ENCLOSURES, AND CABINETS

- A. General Requirements for Boxes, Enclosures, and Cabinets: Boxes, enclosures, and cabinets installed in wet locations shall be listed for use in wet locations.
- B. Sheet Metal Outlet and Device Boxes: Comply with NEMA OS 1 and UL 514A.
- C. Cast-Metal Outlet and Device Boxes: Comply with NEMA FB 1, aluminum, Type FD, with gasketed cover.
- D. Nonmetallic Outlet and Device Boxes: Comply with NEMA OS 2 and UL 514C.
- E. Luminaire Outlet Boxes: Nonadjustable, designed for attachment of luminaire weighing 50 lb (23 kg). Outlet boxes designed for attachment of luminaires weighing more than 50 lb (23 kg) shall be listed and marked for the maximum allowable weight.
- F. Small Sheet Metal Pull and Junction Boxes: NEMA OS 1.

- G. Cast-Metal Access, Pull, and Junction Boxes: Comply with NEMA FB 1 and UL 1773, cast aluminum with gasketed cover.
- H. Box extensions used to accommodate new building finishes shall be of same material as recessed box.
- I. Device Box Dimensions: 4 inches square by 2-1/8 inches deep (100 mm square by 60 mm deep).
- J. Gangable boxes are prohibited.
- K. Hinged-Cover Enclosures: Comply with UL 50 and NEMA 250, Type 1 with continuous-hinge cover with flush latch unless otherwise indicated.
 - 1. Metal Enclosures: Steel, finished inside and out with manufacturer's standard enamel.
 - 2. Nonmetallic Enclosures: Plastic.
 - 3. Interior Panels: Steel; all sides finished with manufacturer's standard enamel.
- L. Cabinets:
 - 1. NEMA 250, Type 1 galvanized-steel box with removable interior panel and removable front, finished inside and out with manufacturer's standard enamel.
 - 2. Hinged door in front cover with flush latch and concealed hinge.
 - 3. Key latch to match panelboards.
 - 4. Metal barriers to separate wiring of different systems and voltage.
 - 5. Accessory feet where required for freestanding equipment.
 - 6. Nonmetallic cabinets shall be listed and labeled as defined in NFPA 70, by a qualified testing agency, and marked for intended location and application.

PART 3 - EXECUTION

3.1 RACEWAY APPLICATION

- A. Outdoors: Apply raceway products as specified below unless otherwise indicated:
 - 1. Exposed Conduit: GRC.
 - 2. Concealed Conduit, Aboveground: GRC.
 - 3. Underground Conduit: RNC, Type EPC-40-PVC, direct buried.
 - 4. Connection to Vibrating Equipment (Including Transformers and Hydraulic, Pneumatic, Electric Solenoid, or Motor-Driven Equipment): LFMC.
 - 5. Boxes and Enclosures, Aboveground: NEMA 250, Type 3R.
- B. Indoors: Apply raceway products as specified below unless otherwise indicated.
 - 1. Exposed, Not Subject to Physical Damage: EMT.
 - 2. Exposed, Not Subject to Severe Physical Damage: EMT.
 - 3. Exposed and Subject to Severe Physical Damage: GRC.

4. Connection to Vibrating Equipment (Including Transformers and Hydraulic, Pneumatic, Electric Solenoid, or Motor-Driven Equipment): FMC, except use LFMC in damp or wet locations.
 5. Damp or Wet Locations: GRC.
 6. Boxes and Enclosures: NEMA 250, Type 1.
- C. Minimum Raceway Size: 3/4-inch (21-mm) trade size.
- D. Raceway Fittings: Compatible with raceways and suitable for use and location.
1. Rigid and Intermediate Steel Conduit: Use threaded rigid steel conduit fittings unless otherwise indicated. Comply with NEMA FB 2.10.
 2. .
 3. EMT: Use setscrew, steel fittings. Comply with NEMA FB 2.10.
 4. Flexible Conduit: Use only fittings listed for use with flexible conduit. Comply with NEMA FB 2.20.
- E. Do not install aluminum conduits, boxes, or fittings in contact with concrete or earth.
- F. Install surface raceways only where indicated on Drawings.
- G. Do not install nonmetallic conduit where ambient temperature exceeds 120 deg F (49 deg C).
- H. Comply with requirements in Section 260529 "Hangers and Supports for Electrical Systems" for hangers and supports.
- I. Comply with NECA 1 and NECA 101 for installation requirements except where requirements on Drawings or in this article are stricter. Comply with NECA 102 for aluminum conduits. Comply with NFPA 70 limitations for types of raceways allowed in specific occupancies and number of floors.
- J. Do not fasten conduits onto the bottom side of a metal deck roof.
- K. Comply with requirements in Section 260529 "Hangers and Supports for Electrical Systems" for hangers and supports.
- L. Arrange stub-ups so curved portions of bends are not visible above finished slab.
- M. Install no more than the equivalent of three 90-degree bends in any conduit run except for control wiring conduits, for which fewer bends are allowed. Support within 12 inches (300 mm) of changes in direction.
- N. Make bends in raceway using large-radius preformed ells. Field bending shall be according to NFPA 70 minimum radii requirements. Use only equipment specifically designed for material and size involved.
- O. Conceal conduit and EMT within finished walls, ceilings, and floors unless otherwise indicated. Install conduits parallel or perpendicular to building lines.
- P. Support conduit within 12 inches (300 mm) of enclosures to which attached.
- Q. Raceways Embedded in Slabs:

1. Run conduit larger than 1-inch (27-mm) trade size, parallel or at right angles to main reinforcement. Where at right angles to reinforcement, place conduit close to slab support. Secure raceways to reinforcement at maximum 10-foot (3-m) intervals.
 2. Arrange raceways to cross building expansion joints at right angles with expansion fittings.
 3. Arrange raceways to keep a minimum of 2 inches (50 mm) of concrete cover in all directions.
 4. Do not embed threadless fittings in concrete unless specifically approved by Architect for each specific location.
 5. Change from ENT to GRC before rising above floor.
- R. Threaded Conduit Joints, Exposed to Wet, Damp, Corrosive, or Outdoor Conditions: Apply listed compound to threads of raceway and fittings before making up joints. Follow compound manufacturer's written instructions.
- S. Raceway Terminations at Locations Subject to Moisture or Vibration: Use insulating bushings to protect conductors including conductors smaller than No. 4 AWG.
- T. Terminate threaded conduits into threaded hubs or with locknuts on inside and outside of boxes or cabinets. Install bushings on conduits up to 1-1/4-inch (35-mm) trade size and insulated throat metal bushings on 1-1/2-inch (41-mm) trade size and larger conduits terminated with locknuts. Install insulated throat metal grounding bushings on service conduits.
- U. Install pull wires in empty raceways. Use polypropylene or monofilament plastic line with not less than 200-lb (90-kg) tensile strength. Leave at least 12 inches (300 mm) of slack at each end of pull wire. Cap underground raceways designated as spare above grade alongside raceways in use.
- V. Surface Raceways:
1. Install surface raceway with a minimum 2-inch (50-mm) radius control at bend points.
 2. Secure surface raceway with screws or other anchor-type devices at intervals not exceeding 48 inches (1200 mm) and with no less than two supports per straight raceway section. Support surface raceway according to manufacturer's written instructions. Tape and glue are not acceptable support methods.
- W. Install raceway sealing fittings at accessible locations according to NFPA 70 and fill them with listed sealing compound. For concealed raceways, install each fitting in a flush steel box with a blank cover plate having a finish similar to that of adjacent plates or surfaces.
- X. Install devices to seal raceway interiors at accessible locations. Locate seals so no fittings or boxes are between the seal and the following changes of environments. Seal the interior of all raceways at the following points:
1. Where conduits pass from warm to cold locations, such as boundaries of refrigerated spaces.
 2. Where an underground service raceway enters a building or structure.
 3. Conduit extending from interior to exterior of building.
 4. Conduit extending into pressurized duct and equipment.
 5. Conduit extending into pressurized zones that are automatically controlled to maintain different pressure set points.

6. Where otherwise required by NFPA 70.

Y. Expansion-Joint Fittings:

1. Install in each run of aboveground RNC that is located where environmental temperature change may exceed 30 deg F (17 deg C) and that has straight-run length that exceeds 25 feet (7.6 m).
2. Install type and quantity of fittings that accommodate temperature change listed for each of the following locations:
 - a. Outdoor Locations Not Exposed to Direct Sunlight: 125 deg F (70 deg C) temperature change.
 - b. Outdoor Locations Exposed to Direct Sunlight: 155 deg F (86 deg C) temperature change.
 - c. Indoor Spaces Connected with Outdoors without Physical Separation: 125 deg F (70 deg C) temperature change.
3. Install fitting(s) that provide expansion and contraction for at least 0.00041 inch per foot of length of straight run per degree F (0.06 mm per meter of length of straight run per degree C) of temperature change for PVC conduits.
4. Install expansion fittings at all locations where conduits cross building or structure expansion joints.
5. Install each expansion-joint fitting with position, mounting, and piston setting selected according to manufacturer's written instructions for conditions at specific location at time of installation. Install conduit supports to allow for expansion movement.

Z. Flexible Conduit Connections: Comply with NEMA RV 3. Use a maximum of 36 inches (915 mm) of flexible conduit for equipment subject to vibration, noise transmission, or movement; and for transformers and motors.

1. Use LFMC in damp or wet locations subject to severe physical damage.
2. Use LFMC or LFNC in damp or wet locations not subject to severe physical damage.

AA. Mount boxes at heights indicated on Drawings. If mounting heights of boxes are not individually indicated, give priority to ADA requirements. Install boxes with height measured to center of box unless otherwise indicated.

BB. Recessed Boxes in Masonry Walls: Saw-cut opening for box in center of cell of masonry block, and install box flush with surface of wall. Prepare block surfaces to provide a flat surface for a raintight connection between the box and cover plate or the supported equipment and box.

CC. Horizontally separate boxes mounted on opposite sides of walls so they are not in the same vertical channel.

DD. Locate boxes so that cover or plate will not span different building finishes.

EE. Support boxes of three gangs or more from more than one side by spanning two framing members or mounting on brackets specifically designed for the purpose.

- FF. Fasten junction and pull boxes to or support from building structure. Do not support boxes by conduits.

3.2 INSTALLATION OF UNDERGROUND CONDUIT

A. Direct-Buried Conduit:

1. Excavate trench bottom to provide firm and uniform support for conduit. Prepare trench bottom as specified in Section 312000 "Earth Moving" for pipe less than 6 inches (150 mm) in nominal diameter.
2. Install backfill as specified in Section 312000 "Earth Moving."
3. After installing conduit, backfill and compact. Start at tie-in point, and work toward end of conduit run, leaving conduit at end of run free to move with expansion and contraction as temperature changes during this process. Firmly hand tamp backfill around conduit to provide maximum supporting strength. After placing controlled backfill to within 12 inches (300 mm) of finished grade, make final conduit connection at end of run and complete backfilling with normal compaction as specified in Section 312000 "Earth Moving."
4. Install manufactured duct elbows for stub-up at poles and equipment and at building entrances through floor unless otherwise indicated. Encase elbows for stub-up ducts throughout length of elbow.
5. Install manufactured rigid steel conduit elbows for stub-ups at poles and equipment and at building entrances through floor.
 - a. Couple steel conduits to ducts with adapters designed for this purpose, and encase coupling with 3 inches (75 mm) of concrete for a minimum of 12 inches (300 mm) on each side of the coupling.
 - b. For stub-ups at equipment mounted on outdoor concrete bases and where conduits penetrate building foundations, extend steel conduit horizontally a minimum of 60 inches (1500 mm) from edge of foundation or equipment base. Install insulated grounding bushings on terminations at equipment.
6. Underground Warning Tape: Comply with requirements in Section 260553 "Identification for Electrical Systems."

3.3 SLEEVE AND SLEEVE-SEAL INSTALLATION FOR ELECTRICAL PENETRATIONS

- A. Install sleeves and sleeve seals at penetrations of exterior floor and wall assemblies. Comply with requirements in Section 260544 "Sleeves and Sleeve Seals for Electrical Raceways and Cabling."

3.4 FIRESTOPPING

- A. Install firestopping at penetrations of fire-rated floor and wall assemblies. Comply with requirements in Section 078413 "Penetration Firestopping."

3.5 PROTECTION

- A. Protect coatings, finishes, and cabinets from damage and deterioration.
 - 1. Repair damage to galvanized finishes with zinc-rich paint recommended by manufacturer.
 - 2. Repair damage to PVC coatings or paint finishes with matching touchup coating recommended by manufacturer.

END OF SECTION 260533

SECTION 260544 - SLEEVES AND SLEEVE SEALS FOR ELECTRICAL RACEWAYS AND CABLING

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

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

1.2 SUMMARY

- A. Section Includes:
 - 1. Round sleeves.
 - 2. Rectangular sleeves.
 - 3. Sleeve seal systems.
 - 4. Grout.
 - 5. Pourable sealants.
 - 6. Foam sealants.

1.3 ACTION SUBMITTALS

- A. Product Data: For each type of product.

1.4 METHOD OF MEASUREMENT AND BASIS OF PAYMENT

- A. No measurement will be made for direct payment of grounding and bonding shall be considered a subsidiary obligation in completing the various items involved.
- B. No payment will be made separately or directly for this item on any part of the work unless otherwise listed in the various payment items. All grounding and bonding will be considered a necessary and incidental part of the work and its cost shall be considered by the Contractor and included in the contract price for the pay items of work involved.

PART 2 - PRODUCTS

2.1 ROUND SLEEVES

- A. Wall Sleeves, Steel:
 - 1. Description: ASTM A53/A53M, Type E, Grade B, Schedule 40, zinc coated, plain ends and integral waterstop.

B. Pipe Sleeves, PVC:

1. Description: ASTM D1785, Schedule 40.

C. Sheet Metal Sleeves, Galvanized Steel, Round:

1. Description: Galvanized-steel sheet; thickness not less than 0.0239-inch (0.6-mm); round tube closed with welded longitudinal joint, with tabs for screw-fastening the sleeve to the board.

2.2 RECTANGULAR SLEEVES

A. Sheet Metal Sleeves, Galvanized Steel, Rectangular:

1. Description:
 - a. Material: Galvanized sheet steel.
 - b. Minimum Metal Thickness:
 - 1) For sleeve cross-section rectangle perimeter less than 50 inches (1270 mm) and with no side larger than 16 inches (400 mm), thickness must be 0.052 inch (1.3 mm).
 - 2) For sleeve cross-section rectangle perimeter not less than 50 inches (1270 mm) or with one or more sides larger than 16 inches (400 mm), thickness must be 0.138 inch (3.5 mm).

2.3 SLEEVE SEAL SYSTEMS

A. Description: Modular sealing device, designed for field assembly, to fill annular space between sleeve and raceway or cable or between raceway and cable.

1. Sealing Elements: EPDM rubber interlocking links shaped to fit surface of pipe. Include type and number required for pipe material and size of pipe.
2. Pressure Plates: Stainless steel.
3. Connecting Bolts and Nuts: Stainless steel of length required to secure pressure plates to sealing elements.

2.4 GROUT

A. Description: Nonshrink; recommended for interior and exterior sealing openings in non-fire-rated walls or floors.

1. Standard: ASTM C1107/C1107M, Grade B, post-hardening and volume-adjusting, dry, hydraulic-cement grout.
2. Design Mix: 5000-psi (34.5-MPa), 28-day compressive strength.
3. Packaging: Premixed and factory packaged.

2.5 POURABLE SEALANTS

- A. Description: Single-component, neutral-curing elastomeric sealants of grade indicated below.
 - 1. Grade: Pourable (self-leveling) formulation for openings in floors and other horizontal surfaces that are not fire rated.

2.6 FOAM SEALANTS

- A. Description: Multicomponent, liquid elastomers that, when mixed, expand and cure in place to produce a flexible, nonshrinking foam. Foam expansion must not damage cables or crack penetrated structure.

PART 3 - EXECUTION

3.1 INSTALLATION OF SLEEVES FOR NON-FIRE-RATED ELECTRICAL PENETRATIONS

- A. Comply with NECA 1.
- B. Sleeves for Conduits Penetrating Above-Grade, Non-Fire-Rated, Concrete and Masonry-Unit Floors and Walls:
 - 1. Interior Penetrations of Non-Fire-Rated Walls and Floors:
 - a. Seal space outside of sleeves with mortar or grout. Pack sealing material solidly between sleeve and wall or floor so no voids remain. Tool exposed surfaces smooth; protect material while curing.
 - b. Seal annular space between sleeve and raceway or cable, using joint sealant appropriate for size, depth, and location of joint. Comply with requirements in Section 079200 "Joint Sealants."
 - 2. Use pipe sleeves unless penetration arrangement requires rectangular sleeved opening.
 - 3. Size pipe sleeves to provide 1/4-inch (6.4-mm) annular clear space between sleeve and raceway or cable, unless sleeve seal system is to be installed.
 - 4. Install sleeves for wall penetrations unless core-drilled holes or formed openings are used. Install sleeves during erection of walls. Cut sleeves to length for mounting flush with both surfaces of walls. Deburr after cutting.
 - 5. Install sleeves for floor penetrations. Extend sleeves installed in floors 2 inches (50 mm) above finished floor level. Install sleeves during erection of floors.
- C. Sleeves for Conduits Penetrating Non-Fire-Rated Wall Assemblies:
 - 1. Use circular metal sleeves unless penetration arrangement requires rectangular sleeved opening.
 - 2. Seal space outside of sleeves with approved joint compound for wall assemblies.

- D. Roof-Penetration Sleeves: Seal penetration of individual raceways and cables with flexible boot-type flashing units applied in coordination with roofing work.
- E. Aboveground, Exterior-Wall Penetrations: Seal penetrations using steel pipe sleeves and mechanical sleeve seal systems. Size sleeves to allow for 1-inch (25-mm) annular clear space between pipe and sleeve for installing mechanical sleeve seals.
- F. Underground, Exterior-Wall and Floor Penetrations:
 - 1. Install steel pipe sleeves with integral waterstops. Size sleeves to allow for 1-inch (25-mm) annular clear space between raceway or cable and sleeve for installing sleeve seal system. Install sleeve during construction of floor or wall.
 - 2. Install steel pipe sleeves. Size sleeves to allow for 1-inch (25-mm) annular clear space between raceway or cable and sleeve for installing sleeve seal system. Grout sleeve into wall or floor opening.

3.2 INSTALLATION OF RECTANGULAR SLEEVES AND SLEEVE SEALS

- A. Install sleeves in existing walls without compromising structural integrity of walls. Do not cut structural elements without reinforcing the wall to maintain the designed weight bearing and wall stiffness.
- B. Install conduits and cable with no crossings within the sleeve.
- C. Fill opening around conduits and cables with expanding foam without leaving voids.
- D. Provide metal sheet covering at both wall surfaces and finish to match surrounding surfaces. Metal sheet must be same material as sleeve.

3.3 INSTALLATION OF SLEEVE SEAL SYSTEMS

- A. Install sleeve seal systems in sleeves in exterior concrete walls and slabs-on-grade at raceway entries into building.
- B. Install type and number of sealing elements recommended by manufacturer for raceway or cable material and size. Position raceway or cable in center of sleeve. Assemble mechanical sleeve seals and install in annular space between raceway or cable and sleeve. Tighten bolts against pressure plates that cause sealing elements to expand and make watertight seal.

END OF SECTION 260544

SECTION 260553 - IDENTIFICATION FOR ELECTRICAL SYSTEMS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

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

1.2 SUMMARY

- A. Section Includes:

1. Color and legend requirements for raceways, conductors, and warning labels and signs.
2. Labels.
3. Bands and tubes.
4. Tapes and stencils.
5. Tags.
6. Signs.
7. Cable ties.
8. Paint for identification.
9. Fasteners for labels and signs.

1.3 ACTION SUBMITTALS

- A. Product Data: For each type of product.
- B. Samples: For each type of label and sign to illustrate composition, size, colors, lettering style, mounting provisions, and graphic features of identification products.

1.4 METHOD OF MEASUREMENT AND BASIS OF PAYMENT

- A. No measurement will be made for direct payment of grounding and bonding shall be considered a subsidiary obligation in completing the various items involved.
- B. No payment will be made separately or directly for this item on any part of the work unless otherwise listed in the various payment items. All grounding and bonding will be considered a necessary and incidental part of the work and its cost shall be considered by the Contractor and included in the contract price for the pay items of work involved.

PART 2 - PRODUCTS

2.1 PERFORMANCE REQUIREMENTS

- A. Comply with ASME A13.1.

- B. Comply with NFPA 70.
- C. Comply with 29 CFR 1910.144 and 29 CFR 1910.145.
- D. Comply with ANSI Z535.4 for safety signs and labels.
- E. Adhesive-attached labeling materials, including label stocks, laminating adhesives, and inks used by label printers, shall comply with UL 969.
- F. Thermal Movements: Allow for thermal movements from ambient and surface temperature changes.
 - 1. Temperature Change: 120 deg F (67 deg C), ambient; 180 deg F (100 deg C), material surfaces.

2.2 COLOR AND LEGEND REQUIREMENTS

- A. Raceways and Cables Carrying Circuits at 600 V or Less:
 - 1. Black letters on an orange field.
 - 2. Legend: Indicate voltage and system or service type.
- B. Color-Coding for Phase-and Voltage-Level Identification, 600 V or Less: Use colors listed below for ungrounded service conductors.
 - 1. Color shall be factory applied.
 - 2. Colors for 208/120-V Circuits:
 - a. Phase A: Black.
 - b. Phase B: Red.
 - c. Phase C: Blue.
 - 3. Colors for 240-V Circuits:
 - a. Phase A: Black.
 - b. Phase B: Red.
 - 4. Colors for 480/277-V Circuits:
 - a. Phase A: Brown.
 - b. Phase B: Orange.
 - c. Phase C: Yellow.
 - 5. Color for Neutral: White.
 - 6. Color for Equipment Grounds: Bare copper.
 - 7. Colors for Isolated Grounds: Green two or more yellow stripes.
- C. Warning Label Colors:
 - 1. Identify system voltage with black letters on an orange background.

- D. Warning labels and signs shall include, but are not limited to, the following legends:
1. Multiple Power Source Warning: "DANGER - ELECTRICAL SHOCK HAZARD - EQUIPMENT HAS MULTIPLE POWER SOURCES."
 2. Workspace Clearance Warning: "WARNING - OSHA REGULATION - AREA IN FRONT OF ELECTRICAL EQUIPMENT MUST BE KEPT CLEAR FOR 36 INCHES (915 MM)."
- E. Equipment Identification Labels:
1. Black letters on a white field.

2.3 LABELS

- A. Self-Adhesive Wraparound Labels: Preprinted, 3-mil- (0.08-mm-) thick, vinyl flexible label with acrylic pressure-sensitive adhesive.
1. Self-Lamination: Clear; UV-, weather- and chemical-resistant; self-laminating, protective shield over the legend. Labels sized such that the clear shield overlaps the entire printed legend.
 2. Marker for Labels: Permanent, waterproof, black ink marker recommended by tag manufacturer.
 3. Marker for Labels: Machine-printed, permanent, waterproof, black ink recommended by printer manufacturer.

2.4 BANDS AND TUBES

- A. Snap-around, Color-Coding Bands: Slit, pretensioned, flexible, solid-colored acrylic sleeves, 2 inches (50 mm) long, with diameters sized to suit diameter and that stay in place by gripping action.

2.5 TAPES AND STENCILS

- A. Marker Tapes: Vinyl or vinyl-cloth, self-adhesive wraparound type, with circuit identification legend machine printed by thermal transfer or equivalent process.
- B. Self-Adhesive Vinyl Tape: Colored, heavy duty, waterproof, fade resistant; not less than 3 mils (0.08 mm) thick by 1 to 2 inches (25 to 50 mm) wide; compounded for outdoor use.
- C. Tape and Stencil: 4-inch- (100-mm-) wide black stripes on 10-inch (250-mm) centers placed diagonally over orange background and is 12 inches (300 mm) wide. Stop stripes at legends.
- D. Underground-Line Warning Tape:
1. Tape:
 - a. Recommended by manufacturer for the method of installation and suitable to identify and locate underground electrical and communications utility lines.
 - b. Printing on tape shall be permanent and shall not be damaged by burial operations.

- c. Tape material and ink shall be chemically inert and not subject to degradation when exposed to acids, alkalis, and other destructive substances commonly found in soils.
 - 2. Color and Printing:
 - a. Comply with ANSI Z535.1, ANSI Z535.2, ANSI Z535.3, ANSI Z535.4, and ANSI Z535.5.
 - b. Inscriptions for Red-Colored Tapes: "ELECTRIC LINE, HIGH VOLTAGE".
 - c. Inscriptions for Orange-Colored Tapes: "TELEPHONE CABLE, CATV CABLE, COMMUNICATIONS CABLE, OPTICAL FIBER CABLE".
 - 3. Tag:
 - a. Pigmented polyolefin, bright colored, compounded for direct-burial service.
 - b. Width: 3 inches (75 mm).
 - c. Thickness: 4 mils (0.1 mm).
 - d. Weight: 18.5 lb/1000 sq. ft. (9.0 kg/100 sq. m).
 - e. Tensile according to ASTM D882: 30 lbf (133.4 N) and 2500 psi (17.2 MPa).
 - E. Stenciled Legend: In nonfading, waterproof, black ink or paint. Minimum letter height shall be 1 inch (25 mm).
- 2.6 TAGS
- A. Write-on Tags:
 - 1. Polyester Tags: 0.010 inch (0.25 mm) thick, with corrosion-resistant grommet and cable tie for attachment.
 - 2. Marker for Tags: Machine-printed, permanent, waterproof, black ink marker recommended by printer manufacturer.
- 2.7 SIGNS
- A. Laminated Acrylic or Melamine Plastic Signs:
 - 1. Engraved legend.
 - 2. Thickness:
 - a. For signs up to 20 sq. in. (129 sq. cm), minimum 1/16 inch (1.6 mm) thick.
 - b. For signs larger than 20 sq. in. (129 sq. cm), 1/8 inch (3.2 mm) thick.
 - c. Engraved legend with black letters on white face>.
 - d. Self-adhesive.
 - e. Framed with mitered acrylic molding and arranged for attachment at applicable equipment.

2.8 CABLE TIES

- A. General-Purpose Cable Ties: Fungus inert, self-extinguishing, one piece, self-locking, and Type 6/6 nylon.
 - 1. Minimum Width: 3/16 inch (5 mm).
 - 2. Tensile Strength at 73 Deg F (23 Deg C) according to ASTM D638: 12,000 psi (82.7 MPa).
 - 3. Temperature Range: Minus 40 to plus 185 deg F (Minus 40 to plus 85 deg C).
 - 4. Color: Black, except where used for color-coding.
- B. UV-Stabilized Cable Ties: Fungus inert, designed for continuous exposure to exterior sunlight, self-extinguishing, one piece, self-locking, and Type 6/6 nylon.
 - 1. Minimum Width: 3/16 inch (5 mm).
 - 2. Tensile Strength at 73 Deg F (23 Deg C) according to ASTM D638: 12,000 psi (82.7 MPa).
 - 3. Temperature Range: Minus 40 to plus 185 deg F (Minus 40 to plus 85 deg C).
 - 4. Color: Black.

2.9 MISCELLANEOUS IDENTIFICATION PRODUCTS

- A. Paint: Comply with requirements in painting Sections for paint materials and application requirements. Retain paint system applicable for surface material and location (exterior or interior).
- B. Fasteners for Labels and Signs: Self-tapping, stainless-steel screws or stainless-steel machine screws with nuts and flat and lock washers.

PART 3 - EXECUTION

3.1 INSTALLATION

- A. Verify and coordinate identification names, abbreviations, colors, and other features with requirements in other Sections requiring identification applications, Drawings, Shop Drawings, manufacturer's wiring diagrams, and operation and maintenance manual. Use consistent designations throughout Project.
- B. Install identifying devices before installing acoustical ceilings and similar concealment.
- C. Verify identity of each item before installing identification products.
- D. Coordinate identification with Project Drawings, manufacturer's wiring diagrams, and operation and maintenance manual.
- E. Apply identification devices to surfaces that require finish after completing finish work.
- F. Install signs with approved legend to facilitate proper identification, operation, and maintenance of electrical systems and connected items.

- G. Self-Adhesive Identification Products: Before applying electrical identification products, clean substrates of substances that could impair bond, using materials and methods recommended by manufacturer of identification product.
- H. System Identification for Raceways and Cables under 600 V: Identification shall completely encircle cable or conduit. Place identification of two-color markings in contact, side by side.
 - 1. Secure tight to surface of conductor, cable, or raceway.
- I. System Identification for Raceways and Cables over 600 V: Identification shall completely encircle cable or conduit. Place adjacent identification of two-color markings in contact, side by side.
 - 1. Secure tight to surface of conductor, cable, or raceway.
- J. Auxiliary Electrical Systems Conductor Identification: Identify field-installed alarm, control, and signal connections.
- K. Elevated Components: Increase sizes of labels, signs, and letters to those appropriate for viewing from the floor.
- L. Accessible Fittings for Raceways: Identify the covers of each junction and pull box of the following systems with the wiring system legend and system voltage. System legends shall be as follows:
 - 1. "POWER."
- M. Snap-around Labels: Secure tight to surface at a location with high visibility and accessibility.
- N. Self-Adhesive Wraparound Labels: Secure tight to surface of raceway or cable at a location with high visibility and accessibility.
- O. Self-Adhesive Labels:
 - 1. On each unit of equipment, install unique designation label that is consistent with wiring diagrams, schedules, and operation and maintenance manual.
 - 2. Unless otherwise indicated, provide a single line of text with 1/2-inch- (13-mm-) high letters on 1-1/2-inch- (38-mm-) high label; where two lines of text are required, use labels 2 inches (50 mm) high.
- P. Snap-around Color-Coding Bands: Secure tight to surface at a location with high visibility and accessibility.
- Q. Self-Adhesive Vinyl Tape: Secure tight to surface at a location with high visibility and accessibility.
 - 1. Field-Applied, Color-Coding Conductor Tape: Apply in half-lapped turns for a minimum distance of 6 inches (150 mm) where splices or taps are made. Apply last two turns of tape with no tension to prevent possible unwinding.
- R. Tape and Stencil: Comply with requirements in painting Sections for surface preparation and paint application.

S. Underground Line Warning Tape:

1. During backfilling of trenches, install continuous underground-line warning tape directly above cable or raceway at 6 to 8 inches (150 to 200 mm) below finished grade. Use multiple tapes where width of multiple lines installed in a common trench or concrete envelope exceeds 16 inches (400 mm) overall.
2. Limit use of underground-line warning tape to direct-buried cables.
3. Install underground-line warning tape for direct-buried cables and cables in raceways.

T. Write-on Tags:

1. Place in a location with high visibility and accessibility.
2. Secure using [general-purpose] [UV-stabilized] [plenum-rated] cable ties.

U. Laminated Acrylic or Melamine Plastic Signs:

1. Attach signs and plastic labels that are not self-adhesive type with mechanical fasteners appropriate to the location and substrate.
2. Unless otherwise indicated, provide a single line of text with 1/2-inch- (13-mm-) high letters on minimum 1-1/2-inch- (38-mm-) high sign; where two lines of text are required, use signs minimum 2 inches (50 mm) high.

V. Cable Ties: General purpose, for attaching tags, except as listed below:

1. Outdoors: UV-stabilized nylon.
2. In Spaces Handling Environmental Air: Plenum rated.

3.2 IDENTIFICATION SCHEDULE

- A. Install identification materials and devices at locations for most convenient viewing without interference with operation and maintenance of equipment. Install access doors or panels to provide view of identifying devices.
- B. Identify conductors, cables, and terminals in enclosures and at junctions, terminals, pull points, and locations of high visibility. Identify by system and circuit designation.
- C. Accessible Raceways, 600 V or Less, for Service, Feeder, and Branch Circuits, More Than 30A and 120V to Ground: Identify with self-adhesive raceway.
1. Locate identification at changes in direction, at penetrations of walls and floors, at 50-foot (15-m) maximum intervals in straight runs, and at 25-foot (7.6-m) maximum intervals in congested areas.
- D. Accessible Fittings for Raceways and Cables within Buildings: Identify the covers of each junction and pull box of the following systems with self-adhesive labels containing the wiring system legend and system voltage. System legends shall be as follows:
1. "POWER."
- E. Power-Circuit Conductor Identification, 600 V or Less: For conductors in vaults, pull and junction boxes use self-adhesive wraparound labels to identify the phase.

1. Locate identification at changes in direction, at penetrations of walls and floors, at 50-foot (15-m) maximum intervals in straight runs, and at 25-foot (7.6-m) maximum intervals in congested areas.
- F. Control-Circuit Conductor Identification: For conductors and cables in pull and junction boxes use self-adhesive wraparound labels with the conductor or cable designation, origin, and destination.
- G. Control-Circuit Conductor Termination Identification: For identification at terminations, provide self-adhesive wraparound labels with the conductor designation.
- H. Locations of Underground Lines: Underground-line warning tape for power, lighting, communication, and control wiring and optical-fiber cable.
- I. Instructional Signs: Self-adhesive labels, including the color code for grounded and ungrounded conductors.
- J. Warning Labels for Indoor Cabinets, Boxes, and Enclosures for Power and Lighting: Self-adhesive equipment labels.
1. Apply to exterior of door, cover, or other access.
 2. For equipment with multiple power or control sources, apply to door or cover of equipment, including, but not limited to, the following:
 - a. Controls with external control power connections.
- K. Operating Instruction Signs: Self-adhesive labels.
- L. Equipment Identification Labels:
1. Indoor Equipment: Self-adhesive label.
 2. Outdoor Equipment: Laminated acrylic or melamine sign.

END OF SECTION 260553

SECTION 260923 - LIGHTING CONTROL DEVICES

PART 1 - GENERAL

1.1 SUMMARY

- A. Section Includes:
 - 1. Switchbox-mounted occupancy and vacancy sensors

1.2 ACTION SUBMITTALS

- A. Product Data: For each type of product.
- B. Shop Drawings:
 - 1. Show installation details for the following:
 - a. Occupancy sensors.
 - b. Vacancy sensors.
 - 2. Interconnection diagrams showing field-installed wiring.
 - 3. Include diagrams for power, signal, and control wiring.

1.3 INFORMATIONAL SUBMITTALS

- A. Coordination Drawings: Reflected ceiling plan(s) and elevations, drawn to scale and coordinated with each other, using input from installers of the items involved.
- B. Field quality-control reports.
- C. Sample warranty.

1.4 CLOSEOUT SUBMITTALS

- A. Operation and maintenance data.

1.5 WARRANTY

- A. Manufacturer's Warranty: Manufacturer and Installer agree to repair or replace lighting control devices that fail(s) in materials or workmanship within specified warranty period.
 - 1. Warranty Period: Two year(s) from date of Substantial Completion.

1.6 METHOD OF MEASUREMENT AND BASIS OF PAYMENT

A. Method of Measurement:

1. All work within 5' of the building shall have no separate measurement and shall be included within the lump sum cost of Section 011000.

B. Basis of Payment

1. All work within 5' of the building shall have no separate payment and shall be included within the lump sum cost of Section 011000.

PART 2 - PRODUCTS

2.1 SWITCHBOX-MOUNTED OCCUPANCY SENSORS

A. General Requirements for Sensors: Automatic-wall-switch occupancy sensor with manual on-off switch, suitable for mounting in a single gang switchbox using hardwired connection.

1. Listed and labeled as defined in NFPA 70, by a qualified testing agency, and marked for intended location and application.
2. Occupancy Sensor Operation: Unless otherwise indicated, turn lights on when coverage area is occupied, and turn lights off when unoccupied; with a time delay for turning lights off, adjustable over a minimum range of 1 to 15 minutes.
3. Operating Ambient Conditions: Dry interior conditions, 32 to 120 deg F (0 to 49 deg C).
4. Switch Rating: Not less than 800-VA LED load at 120 V, 1200-VA LED load at 277 V, and 800-W incandescent.

B. Wall-Switch Sensor Tag WS2:

1. Standard Range: 210-degree field of view, with a minimum coverage area of 900 sq. ft. (84 sq. m).
2. Sensing Technology: Dual-technology.
3. Switch Type: SP, field-selectable automatic "on," or manual "on," automatic "off."
4. Capable of controlling load in three-way application.
5. Voltage: Match the circuit voltage.
6. Ambient-Light Override: Concealed, field-adjustable, light-level sensor from 10 to 150 fc (108 to 1600 lux). The switch prevents the lights from turning on when the light level is higher than the set point of the sensor.
7. Concealed, field-adjustable, "off" time-delay selector at up to 30 minutes.
8. Concealed, "off" time-delay selector at 30 seconds and 5, 10, and 20 minutes.
9. Adaptive Technology: Self-adjusting circuitry detects and memorizes usage patterns of the space and helps eliminate false "off" switching.
10. Color: White.
11. Faceplate: Color matched to switch.

2.2 CONDUCTORS AND CABLES

- A. Power Wiring to Supply Side of Remote-Control Power Sources: Not smaller than No. 12 AWG. Comply with requirements in Section 260519 "Low-Voltage Electrical Power Conductors and Cables."

PART 3 - EXECUTION

3.1 INSTALLATION

- A. Comply with NECA 1.
- B. Examine lighting control devices before installation. Reject lighting control devices that are wet, moisture damaged, or mold damaged.
- C. Install and aim sensors in locations to achieve not less than 90-percent coverage of areas indicated. Do not exceed coverage limits specified in manufacturer's written instructions.

3.2 WIRING INSTALLATION

- A. Wiring Method: Comply with Section 260519 "Low-Voltage Electrical Power Conductors and Cables." Minimum conduit size is 1/2 inch (13 mm).
- B. Wiring within Enclosures: Separate power-limited and nonpower-limited conductors in accordance with conductor manufacturer's written instructions.
- C. Size conductors in accordance with lighting control device manufacturer's written instructions unless otherwise indicated.
- D. Splices, Taps, and Terminations: Make connections only on numbered terminal strips in junction, pull, and outlet boxes; terminal cabinets; and equipment enclosures.

3.3 IDENTIFICATION

- A. Identify components and power and control wiring in accordance with Section 260553 "Identification for Electrical Systems."

3.4 FIELD QUALITY CONTROL

- A. Perform the following tests and inspections:
 - 1. Operational Test: After installing time switches and sensors, and after electrical circuitry has been energized, start units to confirm proper unit operation.
 - 2. Test and adjust controls and safeties. Replace damaged and malfunctioning controls and equipment.
- B. Lighting control devices will be considered defective if they do not pass tests and inspections.

- C. Prepare test and inspection reports.

3.5 ADJUSTING

- A. Occupancy Adjustments: When requested within 12 months from date of Substantial Completion, provide on-site assistance in adjusting lighting control devices to suit actual occupied conditions. Provide up to two> visits to Project during other-than-normal occupancy hours for this purpose.
 - 1. For occupancy and motion sensors, verify operation at outer limits of detector range. Set time delay to suit Owner's operations.

3.6 DEMONSTRATION

- A. Train Owner's maintenance personnel to adjust, operate, and maintain lighting control devices.

END OF SECTION 260923

SECTION 262416 - PANELBOARDS

PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes:

1. Lighting and appliance branch-circuit panelboards.

1.2 DEFINITIONS

- A. MCCB: Molded-case circuit breaker.
- B. SPD: Surge protective device.

1.3 ACTION SUBMITTALS

- A. Product Data: For each type of panelboard.
- B. Shop Drawings: For each panelboard and related equipment.
1. Include dimensioned plans, elevations, sections, and details.
 2. Detail enclosure types including mounting and anchorage, environmental protection, knockouts, corner treatments, covers and doors, gaskets, hinges, and locks.
 3. Detail bus configuration, current, and voltage ratings.
 4. Short-circuit current rating of panelboards and overcurrent protective devices.
 5. Include evidence of NRTL listing for series rating of installed devices.
 6. Include evidence of NRTL listing for SPD as installed in panelboard.
 7. Detail features, characteristics, ratings, and factory settings of individual overcurrent protective devices and auxiliary components.
 8. Include wiring diagrams for power, signal, and control wiring.
 9. Key interlock scheme drawing and sequence of operations.
 10. Include time-current coordination curves for each type and rating of overcurrent protective device included in panelboards.

1.4 INFORMATIONAL SUBMITTALS

- A. Panelboard schedules for installation in panelboards.

1.5 CLOSEOUT SUBMITTALS

- A. Operation and maintenance data.

1.6 FIELD CONDITIONS

A. Service Conditions: NEMA PB 1, usual service conditions, as follows:

1. Ambient temperatures within limits specified.
2. Altitude not exceeding 6600 feet (2000 m).

1.7 WARRANTY

A. Manufacturer's Warranty: Manufacturer agrees to repair or replace panelboards that fail in materials or workmanship within specified warranty period.

1. Panelboard Warranty Period: 18 months from date of Substantial Completion.

1.8 METHOD OF MEASUREMENT AND BASIS OF PAYMENT

A. Method of Measurement:

1. All work within 5' of the building shall have no separate measurement and shall be included within the lump sum cost of Section 011000.

B. Basis of Payment

1. All work within 5' of the building shall have no separate payment and shall be included within the lump sum cost of Section 011000.

PART 2 - PRODUCTS

2.1 PANELBOARDS COMMON REQUIREMENTS

A. Electrical Components, Devices, and Accessories: Listed and labeled as defined in NFPA 70, by a qualified testing agency, and marked for intended location and application.

B. Comply with NEMA PB 1.

C. Comply with NFPA 70.

D. Enclosures: Surface-mounted, dead-front cabinets.

1. Rated for environmental conditions at installed location.
 - a. Indoor Dry and Clean Locations: NEMA 250, Type 1.
 - b. Outdoor Locations: NEMA 250, Type 3R.
 - c. Other Wet or Damp Indoor Locations: NEMA 250, Type 4.
 - d. Indoor Locations Subject to Dust, Falling Dirt, and Dripping Noncorrosive Liquids: NEMA 250, Type 12.

2. Height: 84 inches (2.13 m) maximum.
 3. Front: Secured to box with concealed trim clamps. For surface-mounted fronts, match box dimensions; for flush-mounted fronts, overlap box. Trims shall cover all live parts and shall have no exposed hardware.
 4. Hinged Front Cover: Entire front trim hinged to box and with standard door within hinged trim cover. Trims shall cover all live parts and shall have no exposed hardware.
- E. Incoming Mains Location: Convertible between top and bottom.
- F. Phase, Neutral, and Ground Buses: Hard-drawn copper, 98 percent conductivity.
- G. Conductor Connectors: Suitable for use with conductor material and sizes.
1. Material: Hard-drawn copper, 98 percent conductivity.
 2. Main and Neutral Lugs: Mechanical type, with a lug on the neutral bar for each pole in the panelboard.
 3. Ground Lugs and Bus-Configured Terminators: Mechanical type, with a lug on the bar for each pole in the panelboard.
 4. Feed-Through Lugs: Mechanical type, suitable for use with conductor material. Locate at opposite end of bus from incoming lugs or main device.
- H. Future Devices: Panelboards shall have mounting brackets, bus connections, filler plates, and necessary appurtenances required for future installation of devices.
- I. Panelboard Short-Circuit Current Rating: Fully rated to interrupt symmetrical short-circuit current available at terminals.

2.2 PERFORMANCE REQUIREMENTS

- A. Seismic Performance: Panelboards shall withstand the effects of earthquake motions determined according to ASCE/SEI 7.
1. The term "withstand" means "the unit will remain in place without separation of any parts from the device when subjected to the seismic forces specified."

2.3 LIGHTING AND APPLIANCE BRANCH-CIRCUIT PANELBOARDS

- A. Panelboards: NEMA PB 1, lighting and appliance branch-circuit type.
- B. Mains: Circuit breaker.
- C. Branch Overcurrent Protective Devices: Plug-in circuit breakers, replaceable without disturbing adjacent units.
- D. Doors: Concealed hinges; secured with flush latch with tumbler lock; keyed alike.

2.4 IDENTIFICATION

- A. Panelboard Label: Manufacturer's name and trademark, voltage, amperage, number of phases, and number of poles shall be located on the interior of the panelboard door.
- B. Breaker Labels: Faceplate shall list current rating, UL and IEC certification standards, and AIC rating.
- C. Circuit Directory: Directory card inside panelboard door, mounted in transparent card holder.

2.5 ACCESSORY COMPONENTS AND FEATURES

- A. Portable Test Set: For testing functions of solid-state trip devices without removing from panelboard. Include relay and meter test plugs suitable for testing panelboard meters and switchboard class relays.

PART 3 - EXECUTION

3.1 INSTALLATION

- A. Comply with NECA 1.
- B. Install panelboards and accessories according to NEMA PB 1.1.
- C. Mount top of trim 90 inches (2286 mm) above finished floor unless otherwise indicated.
- D. Mount panelboard cabinet plumb and rigid without distortion of box.
- E. Mount recessed panelboards with fronts uniformly flush with wall finish and mating with back box.
- F. Install overcurrent protective devices and controllers not already factory installed.
 - 1. Set field-adjustable, circuit-breaker trip ranges.
- G. Make grounding connections and bond neutral for services and separately derived systems to ground. Make connections to grounding electrodes, separate grounds for isolated ground bars, and connections to separate ground bars.
- H. Install filler plates in unused spaces.
- I. Stub four 1-inch (27-EMT) empty conduits from panelboard into accessible ceiling space or space designated to be ceiling space in the future. Stub four 1-inch (27-EMT) empty conduits into raised floor space or below slab not on grade.
- J. Arrange conductors in gutters into groups and bundle and wrap with wire ties.

3.2 IDENTIFICATION

- A. Identify field-installed conductors, interconnecting wiring, and components; install warning signs complying with requirements in Section 260553 "Identification for Electrical Systems."
- B. Create a directory to indicate installed circuit loads; incorporate Owner's final room designations. Obtain approval before installing. Handwritten directories are not acceptable. Install directory inside panelboard door.
- C. Panelboard Nameplates: Label each panelboard with a nameplate complying with requirements for identification specified in Section 260553 "Identification for Electrical Systems."
- D. Device Nameplates: Label each branch circuit device in power panelboards with a nameplate complying with requirements for identification specified in Section 260553 "Identification for Electrical Systems."
- E. Install warning signs complying with requirements in Section 260553 "Identification for Electrical Systems" identifying source of remote circuit.

3.3 FIELD QUALITY CONTROL

- A. Perform tests and inspections.
- B. Acceptance Testing Preparation:
 - 1. Test insulation resistance for each panelboard bus, component, connecting supply, feeder, and control circuit.
 - 2. Test continuity of each circuit.
- C. Tests and Inspections:
 - 1. Perform each visual and mechanical inspection and electrical test for low-voltage air circuit breakers stated in NETA ATS. Certify compliance with test parameters.
 - 2. Correct malfunctioning units on-site, where possible, and retest to demonstrate compliance; otherwise, replace with new units and retest.
- D. Panelboards will be considered defective if they do not pass tests and inspections.
- E. Prepare test and inspection reports, including a certified report that identifies panelboards included and that describes scanning results, with comparisons of the two scans. Include notation of deficiencies detected, remedial action taken, and observations after remedial action.

END OF SECTION 262416

SECTION 262726 - WIRING DEVICES

PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes:

1. GFCI receptacles, 125 V, 20 A.
2. Toggle switches, 120/277 V, 20 A.
3. Wall plates.

1.2 ACTION SUBMITTALS

A. Product Data: For each type of product.

1.3 INFORMATIONAL SUBMITTALS

A. Field quality-control reports.

1.4 METHOD OF MEASUREMENT AND BASIS OF PAYMENT

A. Method of Measurement:

1. All work within 5' of the building shall have no separate measurement and shall be included within the lump sum cost of Section 011000.

B. Basis of Payment

1. All work within 5' of the building shall have no separate payment and shall be included within the lump sum cost of Section 011000.

PART 2 - PRODUCTS

2.1 GENERAL WIRING-DEVICE REQUIREMENTS

- A. Wiring Devices, Components, and Accessories: Listed and labeled as defined in NFPA 70, by a qualified testing agency, and marked for intended location and use.
- B. Comply with NFPA 70.
- C. RoHS compliant.

- D. Comply with NEMA WD 1.
- E. Device Color:
 - 1. Wiring Devices Connected to Normal Power System: White unless otherwise indicated or required by NFPA 70 or device listing.
 - 2. Isolated-Ground Receptacles: Orange.
- F. Wall Plate Color: For plastic covers, match device color.
- G. Source Limitations: Obtain each type of wiring device and associated wall plate from single source from single manufacturer.

2.2 GFCI RECEPTACLES, 125 V, 20 A

- A. Duplex GFCI Receptacles, 125 V, 20 A:
 - 1. Description: Integral GFCI with "Test" and "Reset" buttons and LED indicator light. Two pole, three wire, and self-grounding.
 - 2. Configuration: NEMA WD 6, Configuration 5-20R.
 - 3. Type: Non-feed through.
 - 4. Standards: Comply with UL 498, UL 943 Class A, and FS W-C-596.
- B. Tamper- and Weather-Resistant, GFCI Duplex Receptacles, 125 V, 20A:
 - 1. Description: Integral GFCI with "Test" and "Reset" buttons and LED indicator light. Two pole, three wire, and self-grounding. Integral shutters that operate only when a plug is inserted in the receptacle. Square face.
 - 2. Configuration: NEMA WD 6, Configuration 5-15R.
 - 3. Type: Non-feed through.
 - 4. Standards: Comply with UL 498 and UL 943 Class A.
 - 5. Marking: Listed and labeled as complying with NFPA 70, "Tamper-Resistant Receptacles" and "Receptacles in Damp or Wet Locations" articles.

2.3 TOGGLE SWITCHES, 120/277 V, 20 A

- A. Single-Pole Switches, 120/277 V, 20 A:
 - 1. Standards: Comply with UL 20 and FS W-S-896.

2.4 WALL PLATES

- A. Single Source: Obtain wall plates from same manufacturer of wiring devices.
- B. Single and combination types shall match corresponding wiring devices.
 - 1. Plate-Securing Screws: Metal with head color to match plate finish.
 - 2. Material for Finished Spaces: Smooth, high-impact thermoplastic.
 - 3. Material for Unfinished Spaces: Galvanized steel.
 - 4. Material for Damp Locations: Cast aluminum with spring-loaded lift cover, and listed and labeled for use in wet and damp locations.

- C. Wet-Location, Weatherproof Cover Plates: NEMA 250, complying with Type 3R, weather-resistant, die-cast aluminum with lockable cover.

PART 3 - EXECUTION

3.1 INSTALLATION

- A. Comply with NECA 1, including mounting heights listed in that standard, unless otherwise indicated.
- B. Coordination with Other Trades:
 - 1. Keep outlet boxes free of plaster, drywall joint compound, mortar, cement, concrete, dust, paint, and other material that may contaminate the raceway system, conductors, and cables.
 - 2. Install device boxes in brick or block walls so that the cover plate does not cross a joint unless the joint is troweled flush with the face of the wall.
 - 3. Install wiring devices after all wall preparation, including painting, is complete.
- C. Device Installation:
 - 1. Connect devices to branch circuits using pigtails that are not less than 6 inches (152 mm) in length.
 - 2. When mounting into metal boxes, remove the fiber or plastic washers used to hold device-mounting screws in yokes, allowing metal-to-metal contact.
- D. Receptacle Orientation:
 - 1. Install ground pin of vertically mounted receptacles up, and on horizontally mounted receptacles to the right.
 - 2. Install hospital-grade receptacles in patient-care areas with the ground pin or neutral blade at the top.
- E. Device Plates: Do not use oversized or extra-deep plates. Repair wall finishes and remount outlet boxes when standard device plates do not fit flush or do not cover rough wall opening.
- F. Arrangement of Devices: Unless otherwise indicated, mount flush, with long dimension vertical and with grounding terminal of receptacles on top. Group adjacent switches under single, multigang wall plates.
- G. Adjust locations of floor service outlets and service poles to suit arrangement of partitions and furnishings.

3.2 FIELD QUALITY CONTROL

- A. Perform the following tests and inspections:
 - 1. In healthcare facilities, prepare reports that comply with NFPA 99.
 - 2. Test Instruments: Use instruments that comply with UL 1436.

3. Test Instrument for Receptacles: Digital wiring analyzer with digital readout or illuminated digital-display indicators of measurement.
- B. Tests for Receptacles:
1. Line Voltage: Acceptable range is 105 to 132 V.
 2. Percent Voltage Drop under 15-A Load: A value of 6 percent or higher is unacceptable.
 3. Ground Impedance: Values of up to 2 ohms are acceptable.
 4. GFCI Trip: Test for tripping values specified in UL 1436 and UL 943.
 5. Using the test plug, verify that the device and its outlet box are securely mounted.
- C. Wiring device will be considered defective if it does not pass tests and inspections.
- D. Prepare test and inspection reports.

END OF SECTION 262726

SECTION 262816 - ENCLOSED SWITCHES AND CIRCUIT BREAKERS

PART 1 - GENERAL

1.1 SUMMARY

- A. Section Includes:
 - 1. Nonfusible switches.
 - 2. Enclosures.

1.2 ACTION SUBMITTALS

- A. Product Data: For each type of enclosed switch, circuit breaker, accessory, and component indicated. Include nameplate ratings, dimensioned elevations, sections, weights, and manufacturers' technical data on features, performance, electrical characteristics, ratings, accessories, and finishes.
- B. Shop Drawings: For enclosed switches and circuit breakers.
 - 1. Include plans, elevations, sections, details, and attachments to other work.
 - 2. Include wiring diagrams for power, signal, and control wiring.

1.3 INFORMATIONAL SUBMITTALS

- A. Qualification Data: For qualified testing agency.
- B. Field quality-control reports.

1.4 CLOSEOUT SUBMITTALS

- A. Operation and maintenance data.

1.5 QUALITY ASSURANCE

- A. Testing Agency Qualifications: Accredited by NETA.
 - 1. Testing Agency's Field Supervisor: Currently certified by NETA to supervise on-site testing.

1.6 WARRANTY

- A. Manufacturer's Warranty: Manufacturer and Installer agree to repair or replace components that fail in materials or workmanship within specified warranty period.

1. Warranty Period: One year(s) from date of Substantial Completion.

1.7 METHOD OF MEASUREMENT AND BASIS OF PAYMENT

A. Method of Measurement:

1. All work within 5' of the building shall have no separate measurement and shall be included within the lump sum cost of Section 011000.

B. Basis of Payment

1. All work within 5' of the building shall have no separate payment and shall be included within the lump sum cost of Section 011000.

PART 2 - PRODUCTS

2.1 GENERAL REQUIREMENTS

- A. Source Limitations: Obtain enclosed switches and circuit breakers, overcurrent protective devices, components, and accessories, within same product category, from single manufacturer.
- B. Product Selection for Restricted Space: Drawings indicate maximum dimensions for enclosed switches and circuit breakers, including clearances between enclosures, and adjacent surfaces and other items. Comply with indicated maximum dimensions.
- C. Electrical Components, Devices, and Accessories: Listed and labeled as defined in NFPA 70, by an NRTL, and marked for intended location and application.
- D. Comply with NFPA 70.

2.2 NONFUSIBLE SWITCHES

- A. Type GD, General Duty, Three Pole, Single Throw, 240-V ac, 600 A and Smaller: UL 98 and NEMA KS 1, horsepower rated, lockable handle with capability to accept two padlocks, and interlocked with cover in closed position.
- B. Type HD, Heavy Duty, Three Pole, Single Throw, 240-V ac, 1200 A and Smaller: UL 98 and NEMA KS 1, horsepower rated, lockable handle with capability to accept three padlocks, and interlocked with cover in closed position.
- C. Type HD, Heavy Duty, Six Pole, Single Throw, 240-V ac, 200 A and Smaller: UL 98 and NEMA KS 1, horsepower rated, lockable handle with capability to accept three padlocks, and interlocked with cover in closed position.
- D. Type HD, Heavy Duty, Three Pole, Double Throw, 240-V ac, 1200 A and Smaller: UL 98 and NEMA KS 1, horsepower rated, lockable handle with capability to accept three padlocks, and interlocked with cover in closed position.

E. Accessories:

1. Equipment Ground Kit: Internally mounted and labeled for copper and aluminum ground conductors.
2. Neutral Kit: Internally mounted; insulated, capable of being grounded and bonded; labeled for copper and aluminum neutral conductors.
3. Isolated Ground Kit: Internally mounted; insulated, labeled for copper and aluminum neutral conductors.

2.3 ENCLOSURES

- A. Enclosed Switches and Circuit Breakers: UL 489, NEMA KS 1, NEMA 250, and UL 50, to comply with environmental conditions at installed location.
- B. Enclosure Finish: The enclosure shall be gray baked enamel paint, electrodeposited on cleaned, phosphatized steel (NEMA 250 Type 1).
- C. Operating Mechanism: The circuit-breaker operating handle shall be directly operable through the front cover of the enclosure (NEMA 250 Type 1). The cover interlock mechanism shall have an externally operated override. The override shall not permanently disable the interlock mechanism, which shall return to the locked position once the override is released. The tool used to override the cover interlock mechanism shall not be required to enter the enclosure in order to override the interlock.

PART 3 - EXECUTION

3.1 ENCLOSURE ENVIRONMENTAL RATING APPLICATIONS

- A. Enclosed Switches and Circuit Breakers: Provide enclosures at installed locations with the following environmental ratings.
 1. Indoor, Dry and Clean Locations: NEMA 250, Type 1.
 2. Outdoor Locations: NEMA 250, Type 3R.
 3. Other Wet or Damp, Indoor Locations: NEMA 250, Type 4.
 4. Indoor Locations Subject to Dust, Falling Dirt, and Dripping Noncorrosive Liquids: NEMA 250, Type 12.

3.2 INSTALLATION

- A. Interruption of Existing Electric Service: Do not interrupt electric service to facilities occupied by Owner or others unless permitted under the following conditions and then only after arranging to provide temporary electric service according to requirements indicated:
 1. Notify Owner no fewer than seven days in advance of proposed interruption of electric service.
 2. Indicate method of providing temporary electric service.
 3. Do not proceed with interruption of electric service without Owner's written permission.
 4. Comply with NFPA 70E.

- B. Coordinate layout and installation of switches, circuit breakers, and components with equipment served and adjacent surfaces. Maintain required workspace clearances and required clearances for equipment access doors and panels.
- C. Install individual wall-mounted switches and circuit breakers with tops at uniform height unless otherwise indicated.
- D. Temporary Lifting Provisions: Remove temporary lifting of eyes, channels, and brackets and temporary blocking of moving parts from enclosures and components.
- E. Comply with NFPA 70 and NECA 1.

3.3 IDENTIFICATION

- A. Comply with requirements in Section 260553 "Identification for Electrical Systems."
 - 1. Identify field-installed conductors, interconnecting wiring, and components; provide warning signs.
 - 2. Label each enclosure with engraved metal or laminated-plastic nameplate.

3.4 FIELD QUALITY CONTROL

- A. Testing Agency: Owner will engage a qualified testing agency to perform tests and inspections.
- B. Testing Agency: Engage a qualified testing agency to perform tests and inspections.
- C. Perform tests and inspections.
- D. Tests and Inspections for Switches:
 - 1. Visual and Mechanical Inspection:
 - a. Inspect physical and mechanical condition.
 - b. Inspect anchorage, alignment, grounding, and clearances.
 - c. Verify that the unit is clean.
 - d. Verify blade alignment, blade penetration, travel stops, and mechanical operation.
 - e. Verify that fuse sizes and types match the Specifications and Drawings.
 - f. Verify that each fuse has adequate mechanical support and contact integrity.
 - g. Inspect bolted electrical connections for high resistance using one of the two following methods:
 - 1) Use a low-resistance ohmmeter.
 - a) Compare bolted connection resistance values to values of similar connections. Investigate values that deviate from those of similar bolted connections by more than 50 percent of the lowest value.
 - 2) Verify tightness of accessible bolted electrical connections by calibrated torque-wrench method in accordance with manufacturer's published data or NETA ATS Table 100.12.

- a) Bolt-torque levels shall be in accordance with manufacturer's published data. In the absence of manufacturer's published data, use NETA ATS Table 100.12.
 - h. Verify that operation and sequencing of interlocking systems is as described in the Specifications and shown on the Drawings.
 - i. Verify correct phase barrier installation.
 - j. Verify lubrication of moving current-carrying parts and moving and sliding surfaces.
- 2. Electrical Tests:
 - a. Perform resistance measurements through bolted connections with a low-resistance ohmmeter. Compare bolted connection resistance values to values of similar connections. Investigate values that deviate from adjacent poles or similar switches by more than 50 percent of the lowest value.
 - b. Measure contact resistance across each switchblade fuseholder. Drop values shall not exceed the high level of the manufacturer's published data. If manufacturer's published data are not available, investigate values that deviate from adjacent poles or similar switches by more than 50 percent of the lowest value.
 - c. Perform insulation-resistance tests for one minute on each pole, phase-to-phase and phase-to-ground with switch closed, and across each open pole. Apply voltage in accordance with manufacturer's published data. In the absence of manufacturer's published data, use Table 100.1 from the NETA ATS. Investigate values of insulation resistance less than those published in Table 100.1 or as recommended in manufacturer's published data.
 - d. Measure fuse resistance. Investigate fuse-resistance values that deviate from each other by more than 15 percent.
 - e. Perform ground fault test according to NETA ATS 7.14 "Ground Fault Protection Systems, Low-Voltage."

E. Tests and Inspections for Molded Case Circuit Breakers:

- 1. Visual and Mechanical Inspection:
 - a. Verify that equipment nameplate data are as described in the Specifications and shown on the Drawings.
 - b. Inspect physical and mechanical condition.
 - c. Inspect anchorage, alignment, grounding, and clearances.
 - d. Verify that the unit is clean.
 - e. Operate the circuit breaker to ensure smooth operation.
 - f. Inspect bolted electrical connections for high resistance using one of the two following methods:
 - 1) Use a low-resistance ohmmeter.
 - a) Compare bolted connection resistance values to values of similar connections. Investigate values that deviate from those of similar bolted connections by more than 50 percent of the lowest value.

- 2) Verify tightness of accessible bolted electrical connections by calibrated torque-wrench method in accordance with manufacturer's published data or NETA ATS Table 100.12.
 - a) Bolt-torque levels shall be in accordance with manufacturer's published data. In the absence of manufacturer's published data, use NETA ATS Table 100.12.
- g. Inspect operating mechanism, contacts, and chutes in unsealed units.
- h. Perform adjustments for final protective device settings in accordance with the coordination study.

2. Electrical Tests:

- a. Perform resistance measurements through bolted connections with a low-resistance ohmmeter. Compare bolted connection resistance values to values of similar connections. Investigate values that deviate from adjacent poles or similar switches by more than 50 percent of the lowest value.
- b. Perform insulation-resistance tests for one minute on each pole, phase-to-phase and phase-to-ground with circuit breaker closed, and across each open pole. Apply voltage in accordance with manufacturer's published data. In the absence of manufacturer's published data, use Table 100.1 from the NETA ATS. Investigate values of insulation resistance less than those published in Table 100.1 or as recommended in manufacturer's published data.
- c. Perform a contact/pole resistance test. Drop values shall not exceed the high level of the manufacturer's published data. If manufacturer's published data are not available, investigate values that deviate from adjacent poles or similar switches by more than 50 percent of the lowest value.
- d. Perform insulation resistance tests on all control wiring with respect to ground. Applied potential shall be 500-V dc for 300-V rated cable and 1000-V dc for 600-V rated cable. Test duration shall be one minute. For units with solid state components, follow manufacturer's recommendation. Insulation resistance values shall be no less than two megohms.
- e. Determine the following by primary current injection:
 - 1) Long-time pickup and delay. Pickup values shall be as specified. Trip characteristics shall not exceed manufacturer's published time-current characteristic tolerance band, including adjustment factors.
 - 2) Short-time pickup and delay. Short-time pickup values shall be as specified. Trip characteristics shall not exceed manufacturer's published time-current characteristic tolerance band, including adjustment factors.
 - 3) Ground-fault pickup and time delay. Ground-fault pickup values shall be as specified. Trip characteristics shall not exceed manufacturer's published time-current characteristic tolerance band, including adjustment factors.
 - 4) Instantaneous pickup. Instantaneous pickup values shall be as specified and within manufacturer's published tolerances.
- f. Test functionality of the trip unit by means of primary current injection. Pickup values and trip characteristics shall be as specified and within manufacturer's published tolerances.

- g. Perform minimum pickup voltage tests on shunt trip and close coils in accordance with manufacturer's published data. Minimum pickup voltage of the shunt trip and close coils shall be as indicated by manufacturer.
 - h. Verify correct operation of auxiliary features such as trip and pickup indicators; zone interlocking; electrical close and trip operation; trip-free, anti-pump function; and trip unit battery condition. Reset all trip logs and indicators. Investigate units that do not function as designed.
 - i. Verify operation of charging mechanism. Investigate units that do not function as designed.
- 3. Correct malfunctioning units on-site, where possible, and retest to demonstrate compliance; otherwise, replace with new units and retest.
- 4. Test and adjust controls, remote monitoring, and safeties. Replace damaged and malfunctioning controls and equipment.
- F. Enclosed switches and circuit breakers will be considered defective if they do not pass tests and inspections.
- G. Prepare test and inspection reports.
 - 1. Test procedures used.
 - 2. Include identification of each enclosed switch and circuit breaker tested and describe test results.
 - 3. List deficiencies detected, remedial action taken, and observations after remedial action.

END OF SECTION 262816

SECTION 265119 - LED INTERIOR LIGHTING

PART 1 - GENERAL

1.1 SUMMARY

- A. Section includes the following types of LED luminaires:
 - 1. Linear industrial.

1.2 ACTION SUBMITTALS

- A. Product Data: For each type of product.
 - 1. Manufacturers' Certified Data: Photometric data certified by manufacturer's laboratory with a current accreditation under the National Voluntary Laboratory Accreditation Program for Energy Efficient Lighting Products.
 - 2. Testing Agency Certified Data: For indicated luminaires, photometric data certified by a qualified independent testing agency. Photometric data for remaining luminaires shall be certified by manufacturer.
- B. Shop Drawings: For nonstandard or custom luminaires.
 - 1. Include plans, elevations, sections, and mounting and attachment details.
 - 2. Include details of luminaire assemblies. Indicate dimensions, weights, loads, required clearances, method of field assembly, components, and location and size of each field connection.
 - 3. Include diagrams for power, signal, and control wiring.

1.3 INFORMATIONAL SUBMITTALS

- A. Coordination Drawings: Reflected ceiling plan(s) and other details, drawn to scale and coordinated with each other, using input from installers of the items involved.
- B. Seismic Qualification Data: For luminaires, accessories, and components, from manufacturer.
- C. Product Certificates: For each type of luminaire.
- D. Product test reports.
- E. Sample warranty.

1.4 CLOSEOUT SUBMITTALS

- A. Operation and maintenance data.

1.5 QUALITY ASSURANCE

- A. Luminaire Photometric Data Testing Laboratory Qualifications: Luminaire manufacturer's laboratory that is accredited under the NVLAP for Energy Efficient Lighting Products.
- B. Luminaire Photometric Data Testing Laboratory Qualifications: Provided by an independent agency, with the experience and capability to conduct the testing indicated, that is an NRTL as defined by OSHA in 29 CFR 1910.7, accredited under the NVLAP for Energy Efficient Lighting Products, and complying with the applicable IES testing standards.
- C. Provide luminaires from a single manufacturer for each luminaire type.
- D. Each luminaire type shall be binned within a three-step MacAdam Ellipse to ensure color consistency among luminaires.

1.6 WARRANTY

- A. Warranty: Manufacturer and Installer agree to repair or replace components of luminaires that fail in materials or workmanship within specified warranty period.
- B. Warranty Period: Five year(s) from date of Substantial Completion.

1.7 METHOD OF MEASUREMENT AND BASIS OF PAYMENT

- A. Method of Measurement:
 - 1. All work within 5' of the building shall have no separate measurement and shall be included within the lump sum cost of Section 011000.
- B. Basis of Payment
 - 1. All work within 5' of the building shall have no separate payment and shall be included within the lump sum cost of Section 011000.

PART 2 - PRODUCTS

2.1 PERFORMANCE REQUIREMENTS

- A. Seismic Performance: Luminaires shall withstand the effects of earthquake motions determined in accordance with ASCE/SEI 7.
- B. Seismic Performance: Luminaires and lamps shall be labeled vibration and shock resistant.
 - 1. The term "withstand" means "the luminaire will remain in place without separation of any parts when subjected to the seismic forces specified and the luminaire will be fully operational during and after the seismic event."
- C. Ambient Temperature: 5 to 104 deg F (Minus 15 to plus 40 deg C)

1. Relative Humidity: Zero to 95 percent.
- D. Altitude: Sea level to 1000 feet (300 m).

2.2 LUMINAIRE REQUIREMENTS

- A. Electrical Components, Devices, and Accessories: Listed and labeled as defined in NFPA 70, by a qualified testing agency, and marked for intended location and application.
- B. Factory-Applied Labels: Comply with UL 1598. Include recommended lamps. Locate labels where they will be readily visible to service personnel, but not seen from normal viewing angles when lamps are in place.
1. Label shall include the following lamp characteristics:
 - a. "USE ONLY" and include specific lamp type.
 - b. Lamp diameter, shape, size, wattage, and coating.
 - c. CCT and CRI.
- C. Recessed luminaires shall comply with NEMA LE 4.

2.3 LINEAR INDUSTRIAL

- A. Lamp:
1. Minimum 5,000 lm.
 2. Minimum allowable efficacy of 80 lm/W.
 3. CRI of minimum 80. CCT of 4000 K.
 4. Rated lamp life of 50,000 hours to L70.
 5. Internal driver.
 6. Lens Thickness: At least 0.125-inch (3.175-mm) minimum unless otherwise indicated.
- B. Housings:
1. Extruded-aluminum housing and heat sink.
- C. Doors, Frames, and Other Internal Access: Smooth operating, free of light leakage under operating conditions, and designed to permit relamping without use of tools. Components are designed to prevent doors, frames, lenses, diffusers, and other components from falling accidentally during relamping and when secured in operating position.
- D. Diffusers and Globes:
1. Prismatic acrylic.
 2. Acrylic Diffusers: One hundred percent virgin acrylic plastic, with high resistance to yellowing and other changes due to aging, exposure to heat, and UV radiation.
 3. Lens Thickness: At least 0.125-inch (3.175-mm) minimum unless otherwise indicated.
- E. With integral mounting provisions.

F. Standards:

1. ENERGY STAR certified.
2. RoHS compliant.

2.4 MATERIALS

A. Metal Parts:

1. Free of burrs and sharp corners and edges.
2. Sheet metal components shall be steel unless otherwise indicated.
3. Form and support to prevent warping and sagging.

B. Steel:

1. ASTM A36/A36M for carbon structural steel.
2. ASTM A568/A568M for sheet steel.

C. Stainless Steel:

1. 1. Manufacturer's standard grade.
2. 2. Manufacturer's standard type, ASTM A240/240M.

D. Galvanized Steel: ASTM A653/A653M.

E. Aluminum: ASTM B209.

2.5 METAL FINISHES

- A. Variations in finishes are unacceptable in the same piece. Variations in finishes of adjoining components are acceptable if they are within the range of approved Samples and if they can be and are assembled or installed to minimize contrast.

2.6 LUMINAIRE SUPPORT

- A. Comply with requirements in Section 260529 "Hangers and Supports for Electrical Systems" for channel and angle iron supports and nonmetallic channel and angle supports.
- B. Single-Stem Hangers: 1/2-inch (13-mm) steel tubing with swivel ball fittings and ceiling canopy. Finish same as luminaire.
- C. Wires: ASTM A641/A641M, Class 3, soft temper, zinc-coated steel, 12 gage (2.68 mm).
- D. Rod Hangers: 3/16-inch (5-mm) minimum diameter, cadmium-plated, threaded steel rod.
- E. Hook Hangers: Integrated assembly matched to luminaire, line voltage, and equipment with threaded attachment, cord, and locking-type plug.

PART 3 - EXECUTION

3.1 INSTALLATION

- A. Comply with NECA 1.
- B. Install luminaires level, plumb, and square with ceilings and walls unless otherwise indicated.
- C. Install lamps in each luminaire.
- D. Supports:
 - 1. Sized and rated for luminaire weight.
 - 2. Able to maintain luminaire position after cleaning and relamping.
 - 3. Provide support for luminaire without causing deflection of ceiling or wall.
 - 4. Luminaire-mounting devices shall be capable of supporting a horizontal force of 100 percent of luminaire weight and a vertical force of 400 percent of luminaire weight.
- E. Comply with requirements in Section 260519 "Low-Voltage Electrical Power Conductors and Cables" for wiring connections.

3.2 IDENTIFICATION

- A. Identify system components, wiring, cabling, and terminals. Comply with requirements for identification specified in Section 260553 "Identification for Electrical Systems."

3.3 FIELD QUALITY CONTROL

- A. Perform the following tests and inspections:
 - 1. Operational Test: After installing luminaires, switches, and accessories, and after electrical circuitry has been energized, test units to confirm proper operation.
 - 2. Test for Emergency Lighting: Interrupt power supply to demonstrate proper operation. Verify transfer from normal power to battery power and retransfer to normal.
- B. Luminaire will be considered defective if it does not pass operation tests and inspections.
- C. Prepare test and inspection reports.

END OF SECTION 265119

SECTION 265213 - EMERGENCY AND EXIT LIGHTING

PART 1 - GENERAL

1.1 SUMMARY

- A. Section Includes:
 - 1. Exit signs.
 - 2. Luminaire supports.

1.2 DEFINITIONS

- A. CCT: Correlated color temperature.
- B. CRI: Color Rendering Index.
- C. Emergency Lighting Unit: A lighting unit with integral or remote emergency battery powered supply and the means for controlling and charging the battery and unit operation.
- D. Fixture: See "Luminaire" Paragraph.
- E. Lumen: Measured output of lamp and luminaire, or both.
- F. Luminaire: Complete lighting unit, including lamp, reflector, and housing.

1.3 ACTION SUBMITTALS

- A. Product Data: For each type of emergency lighting unit, exit sign, and emergency lighting support, arranged by designation.
- B. Shop Drawings: For nonstandard or custom luminaires.
 - 1. Include plans, elevations, sections, and mounting and attachment details.
 - 2. Include details of equipment assemblies. Indicate dimensions, weights, loads, required clearances, method of field assembly, components, and location and size of each field connection.
 - 3. Include diagrams for power, signal, and control wiring.

1.4 INFORMATIONAL SUBMITTALS

- A. Coordination Drawings: Reflected ceiling plan(s) and other details, drawn to scale, coordinated with each other, using input from installers of the items involved:
- B. Product Certificates: For each type of luminaire.
- C. Sample Warranty.

1.5 CLOSEOUT SUBMITTALS

- A. Operation and maintenance data.

1.6 WARRANTY

- A. Warranty: Manufacturer and Installer agree to repair or replace components of luminaires that fail in materials or workmanship within specified warranty period.

- 1. Warranty Period: Two year(s) from date of Substantial Completion.

- B. Special Warranty for Emergency Lighting Batteries: Manufacturer's standard form in which manufacturer of battery-powered emergency lighting unit agrees to repair or replace components of rechargeable batteries that fail in materials or workmanship within specified warranty period.

1.7 METHOD OF MEASUREMENT AND BASIS OF PAYMENT

- A. Method of Measurement:

- 1. All work within 5' of the building shall have no separate measurement and shall be included within the lump sum cost of Section 011000.

- B. Basis of Payment

- 1. All work within 5' of the building shall have no separate payment and shall be included within the lump sum cost of Section 011000.

PART 2 - PRODUCTS

2.1 EXIT SIGNS

- A. Internally Lighted Signs:

- 1. Operating at nominal voltage of 120 V ac.
 - 2. Lamps for AC Operation: Fluorescent, two for each fixture; 20,000 hours of rated lamp life.
 - 3. Lamps for AC Operation: LEDs; 50,000 hours minimum rated lamp life.
 - 4. Self-Powered Exit Signs (Battery Type): Internal emergency power unit (90 minutes).

2.2 MATERIALS

- A. Metal Parts:

- 1. Free of burrs and sharp corners and edges.
 - 2. Sheet metal components shall be steel unless otherwise indicated.
 - 3. Form and support to prevent warping and sagging.

B. Doors, Frames, and Other Internal Access:

1. Smooth operating, free of light leakage under operating conditions.
2. Designed to permit relamping without use of tools.
3. Designed to prevent doors, frames, lenses, diffusers, and other components from falling accidentally during relamping and when secured in operating position.

C. Diffusers and Globes:

1. Prismatic acrylic.
2. Glass: Annealed crystal glass unless otherwise indicated.
3. Acrylic: 100 percent virgin acrylic plastic, with high resistance to yellowing and other changes due to aging, exposure to heat, and UV radiation.
4. Lens Thickness: At least 0.125 inch (3.175 mm) minimum unless otherwise indicated.

D. Housings:

1. Extruded aluminum.

E. Conduit: Electrical metallic tubing, minimum 3/4 inch (21 mm) in diameter.

2.3 METAL FINISHES

- A. Appearance of Finished Work: Noticeable variations in same piece are not acceptable. Variations in appearance of adjoining components are acceptable if they are within the range of approved Samples and are assembled or installed to minimize contrast.

2.4 LUMINAIRE SUPPORT COMPONENTS

- A. Comply with requirements in Section 260529 "Hangers and Supports for Electrical Systems" for channel and angle iron supports and nonmetallic channel and angle supports.

PART 3 - EXECUTION

3.1 INSTALLATION

- A. Comply with NECA 1.
- B. Install luminaires level, plumb, and square with ceilings and walls unless otherwise indicated.
- C. Install lamps in each luminaire.
- D. Supports:
1. Sized and rated for luminaire weight.
 2. Able to maintain luminaire position when testing emergency power unit.
 3. Provide support for luminaire and emergency power unit without causing deflection of ceiling or wall.

4. Luminaire-mounting devices shall be capable of supporting a horizontal force of 100 percent of luminaire and emergency power unit weight and vertical force of 400 percent of fixture weight.

E. Wall-Mounted Luminaire Support:

1. Attached to a minimum 20-gage backing plate attached to wall structural members.
2. Do not attach fixtures directly to gypsum board.

F. Identify system components, wiring, cabling, and terminals. Comply with requirements for identification specified in Section 260553 "Identification for Electrical Systems."

3.2 FIELD QUALITY CONTROL

A. Perform the following tests and inspections:

1. Test for Emergency Lighting: Interrupt power supply to demonstrate proper operation. Verify transfer from normal power to battery power and retransfer to normal.

B. Luminaire will be considered defective if it does not pass operation tests and inspections.

C. Prepare test and inspection reports.

END OF SECTION 265213

SECTION 265619 - LED EXTERIOR LIGHTING

PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes:

1. Exterior solid-state luminaires that are designed for and exclusively use LED lamp technology.
2. Luminaire supports.
3. Luminaire-mounted photoelectric relays.

1.2 DEFINITIONS

- A. CCT: Correlated color temperature.
- B. CRI: Color rendering index.
- C. Fixture: See "Luminaire."
- D. IP: International Protection or Ingress Protection Rating.
- E. Lumen: Measured output of lamp and luminaire, or both.
- F. Luminaire: Complete lighting unit, including lamp, reflector, and housing.

1.3 ACTION SUBMITTALS

- A. Product Data: For each type of luminaire.
- B. Shop Drawings: For nonstandard or custom luminaires.
1. Include plans, elevations, sections, and mounting and attachment details.
 2. Include details of luminaire assemblies. Indicate dimensions, weights, loads, required clearances, method of field assembly, components, and location and size of each field connection.
 3. Include diagrams for power, signal, and control wiring.
 4. Include design calculations for luminaire supports.

1.4 INFORMATIONAL SUBMITTALS

- A. Coordination Drawings: Plans, drawn to scale and coordinated.
- B. Seismic Qualification Data: For luminaires, accessories, and components, from manufacturer.

C. Product Certificates: For each type of the following:

1. Luminaire.
2. Photoelectric relay.

D. Sample warranty.

1.5 CLOSEOUT SUBMITTALS

A. Operation and maintenance data.

1. Provide a list of all lamp types used on Project. Use ANSI and manufacturers' codes.
2. Provide a list of all photoelectric relay types used on Project; use manufacturers' codes.

1.6 FIELD CONDITIONS

A. Mark locations of exterior luminaires for approval by Architect prior to the start of luminaire installation.

1.7 WARRANTY

A. Warranty: Manufacturer and Installer agree to repair or replace components of luminaires that fail in materials or workmanship within specified warranty period.

1. Warranty Period: 2 year(s) from date of Substantial Completion.

1.8 METHOD OF MEASUREMENT AND BASIS OF PAYMENT

A. Method of Measurement:

1. All work within 5' of the building shall have no separate measurement and shall be included within the lump sum cost of Section 011000.

B. Basis of Payment

1. All work within 5' of the building shall have no separate payment and shall be included within the lump sum cost of Section 011000.

PART 2 - PRODUCTS

2.1 LUMINAIRE REQUIREMENTS

A. Electrical Components, Devices, and Accessories: Listed and labeled as defined in NFPA 70, by a qualified testing agency, and marked for intended location and application.

- B. UL Compliance: Comply with UL 1598 and listed for wet location.
- C. CRI of minimum 70. CCT of 4000 K.
- D. L70 lamp life of 50,000 hours.
- E. Lamps dimmable from 100 percent to 0 percent of maximum light output.
- F. Nominal Operating Voltage: 120 V ac.
- G. Lamp Rating: Lamp marked for outdoor use.
- H. Source Limitations:
 - 1. Obtain luminaires from single source from a single manufacturer.
 - 2. For luminaires, obtain each color, grade, finish, type, and variety of luminaire from single source with resources to provide products of consistent quality in appearance and physical properties.

2.2 MATERIALS

- A. Metal Parts: Free of burrs and sharp corners and edges.
- B. Sheet Metal Components: Corrosion-resistant aluminum. Form and support to prevent warping and sagging.
- C. Doors, Frames, and Other Internal Access: Smooth operating, free of light leakage under operating conditions, and designed to permit relamping without use of tools. Designed to prevent doors, frames, lenses, diffusers, and other components from falling accidentally during relamping and when secured in operating position. Doors shall be removable for cleaning or replacing lenses.
- D. Diffusers and Globes:
 - 1. Acrylic Diffusers: 100 percent virgin acrylic plastic, with high resistance to yellowing and other changes due to aging, exposure to heat, and UV radiation.
 - 2. Glass: Annealed crystal glass unless otherwise indicated.
 - 3. Lens Thickness: At least 0.125 inch (3.175 mm) minimum unless otherwise indicated.
- E. Lens and Refractor Gaskets: Use heat- and aging-resistant resilient gaskets to seal and cushion lenses and refractors in luminaire doors.
- F. Reflecting surfaces shall have minimum reflectance as follows unless otherwise indicated:
 - 1. White Surfaces: 85 percent.
 - 2. Specular Surfaces: 83 percent.
 - 3. Diffusing Specular Surfaces: 75 percent.
- G. Housings:

1. Rigidly formed, weather- and light-tight enclosure that will not warp, sag, or deform in use.
2. Provide filter/breather for enclosed luminaires.

2.3 FINISHES

- A. Variations in Finishes: Noticeable variations in same piece are unacceptable. Variations in appearance of adjoining components are acceptable if they are within the range of approved Samples and are assembled or installed to minimize contrast.
- B. Luminaire Finish: Manufacturer's standard paint applied to factory-assembled and -tested luminaire before shipping. Where indicated, match finish process and color of pole or support materials.
- C. Factory-Applied Finish for Aluminum Luminaires: Comply with NAAMM's "Metal Finishes Manual for Architectural and Metal Products" for recommendations for applying and designating finishes.
 1. Finish designations prefixed by AA comply with the system established by the Aluminum Association for designating aluminum finishes.
 2. Natural Satin Finish: Provide fine, directional, medium satin polish (AA-M32); buff complying with AA-M20 requirements; and seal aluminum surfaces with clear, hard-coat wax.
 3. Class I, Clear-Anodic Finish: AA-M32C22A41 (Mechanical Finish: Medium satin; Chemical Finish: Etched, medium matte; Anodic Coating: Architectural Class I, clear coating 0.018 mm or thicker) complying with AAMA 611.
 4. Class I, Color-Anodic Finish: AA-M32C22A42/A44 (Mechanical Finish: Medium satin; Chemical Finish: Etched, medium matte; Anodic Coating: Architectural Class I, integrally colored or electrolytically deposited color coating 0.018 mm or thicker), complying with AAMA 611.
 - a. Color: Dark bronze.

2.4 LUMINAIRE SUPPORT COMPONENTS

- A. Comply with requirements in Section 260529 "Hangers and Supports for Electrical Systems" for channel and angle iron supports and nonmetallic channel and angle supports.

PART 3 - EXECUTION

3.1 GENERAL INSTALLATION REQUIREMENTS

- A. Comply with NECA 1.
- B. Use fastening methods and materials selected to resist seismic forces defined for the application and approved by manufacturer.
- C. Install lamps in each luminaire.

- D. Fasten luminaire to structural support.
- E. Supports:
 - 1. Sized and rated for luminaire weight.
 - 2. Able to maintain luminaire position after cleaning and relamping.
 - 3. Support luminaires without causing deflection of finished surface.
 - 4. Luminaire-mounting devices shall be capable of supporting a horizontal force of 100 percent of luminaire weight and a vertical force of 400 percent of luminaire weight.
- F. Wall-Mounted Luminaire Support:
 - 1. Attached to a minimum 1/8 inch (3 mm) backing plate attached to wall structural members.
- G. Wiring Method: Install cables in raceways. Conceal raceways and cables.
- H. Install luminaires at height and aiming angle as indicated on Drawings.
- I. Coordinate layout and installation of luminaires with other construction.
- J. Adjust luminaires that require field adjustment or aiming. Include adjustment of photoelectric device to prevent false operation of relay by artificial light sources, favoring a north orientation.
- K. Comply with requirements in Section 260519 "Low-Voltage Electrical Power Conductors and Cables" and Section 260533 "Raceways and Boxes for Electrical Systems" for wiring connections and wiring methods.

3.2 CORROSION PREVENTION

- A. Aluminum: Do not use in contact with earth or concrete. When in direct contact with a dissimilar metal, protect aluminum by insulating fittings or treatment.
- B. Steel Conduits: Comply with Section 260533 "Raceways and Boxes for Electrical Systems." In concrete foundations, wrap conduit with 0.010-inch- (0.254-mm-) thick, pipe-wrapping plastic tape applied with a 50 percent overlap.

3.3 IDENTIFICATION

- A. Identify system components, wiring, cabling, and terminals. Comply with requirements for identification specified in Section 260553 "Identification for Electrical Systems."

3.4 FIELD QUALITY CONTROL

- A. Inspect each installed luminaire for damage. Replace damaged luminaires and components.
- B. Perform the following tests and inspections:

1. Operational Test: After installing luminaires, switches, and accessories, and after electrical circuitry has been energized, test units to confirm proper operation.
2. Verify operation of photoelectric controls.

C. Illumination Tests:

1. Measure light intensities at night. Use photometers with calibration referenced to NIST standards. Comply with the following IES testing guide(s):
 - a. IES LM-5.
 - b. IES LM-50.
 - c. IES LM-52.
 - d. IES LM-64.
 - e. IES LM-72.
2. Operational Test: After installing luminaires, switches, and accessories, and after electrical circuitry has been energized, test units to confirm proper operation.

D. Luminaire will be considered defective if it does not pass tests and inspections.

E. Prepare a written report of tests, inspections, observations, and verifications indicating and interpreting results. If adjustments are made to lighting system, retest to demonstrate compliance with standards.

3.5 DEMONSTRATION

- A. Train Owner's maintenance personnel to adjust, operate, and maintain luminaires and photocell relays.

END OF SECTION 265619

Item C-102 Temporary Air and Water Pollution, Soil Erosion, and Siltation Control

DESCRIPTION

102-1. This item shall consist of temporary control measures as shown on the plans or as ordered by the Resident Project Representative (RPR) during the life of a contract to control pollution of air and water, soil erosion, and siltation through the use of silt fences, berms, dikes, dams, sediment basins, fiber mats, gravel, mulches, grasses, slope drains, and other erosion control devices or methods

Temporary erosion control shall be in accordance with the approved erosion control plan; the approved Construction Safety and Phasing Plan (CSPP) and AC 150/5370-2, *Operational Safety on Airports During Construction*. The temporary erosion control measures contained herein shall be coordinated with the permanent erosion control measures specified as part of this contract to the extent practical to assure economical, effective, and continuous erosion control throughout the construction period.

Temporary control may include work outside the construction limits such as borrow pit operations, equipment and material storage sites, waste areas, and temporary plant sites.

Temporary control measures shall be designed, installed and maintained to minimize the creation of wildlife attractants that have the potential to attract hazardous wildlife on or near public-use airports.

MATERIALS

102-2.1 Grass. Grass that will not compete with the grasses sown later for permanent shall be a quick-growing species (such as ryegrass, Italian ryegrass, or cereal grasses) suitable to the area providing a temporary cover. Selected grass species shall not create a wildlife attractant. Proposed grass seed shall be submitted to the RPR for review prior to ordering and utilization by the Contractor.

102-2.2 Mulches. Mulches may be hay, straw, fiber mats, netting, bark, wood chips, or other suitable material reasonably clean and free of noxious weeds and deleterious materials. Mulches shall not create a wildlife attractant.

102-2.3 Fertilizer. Fertilizer shall be a standard commercial grade and shall conform to all federal and state regulations and to the standards of the Association of Official Agricultural Chemists.

102-2.4 Slope drains. Slope drains may be constructed of pipe, fiber mats, rubble, concrete, asphalt, or other materials that will adequately control erosion.

102-2.5 Silt fence. Silt fence shall consist of polymeric filaments which are formed into a stable network such that filaments retain their relative positions. Synthetic filter fabric shall contain ultraviolet ray inhibitors and stabilizers to provide a minimum of six months of expected usable construction life. Silt fence shall meet the requirements of ASTM D6461.

Wood posts shall be of sound quality hardwood with minimum dimensions of 1.2 inches by 1.2 inches by 36 inches long. Supported silt fence shall have a maximum post spacing of 4 feet. Unsupported silt fence with elongation $\geq 50\%$ shall have a maximum post spacing of 4 feet. Unsupported silt fence with elongation $< 50\%$ shall have a maximum post spacing of 2 feet.

Wire fence shall be 14 gauge minimum with maximum 6 inch mesh opening.

102-2.6 Other. All other materials shall meet commercial grade standards and shall be approved by the RPR before being incorporated into the project.

CONSTRUCTION REQUIREMENTS

102-3.1 General. In the event of conflict between these requirements and pollution control laws, rules, or regulations of other federal, state, or local agencies, the more restrictive laws, rules, or regulations shall apply.

The RPR shall be responsible for assuring compliance to the extent that construction practices, construction operations, and construction work are involved.

102-3.2 Schedule. Prior to the start of construction, the Contractor shall submit schedules in accordance with the approved Construction Safety and Phasing Plan (CSPP) and the plans for accomplishment of temporary and permanent erosion control work for clearing and grubbing; grading; construction; paving; and structures at watercourses. The Contractor shall also submit a proposed method of erosion and dust control on haul roads and borrow pits and a plan for disposal of waste materials. Work shall not be started until the erosion control schedules and methods of operation for the applicable construction have been accepted by the RPR.

102-3.3 Construction details. The Contractor will be required to incorporate all permanent erosion control features into the project at the earliest practicable time as outlined in the plans and approved CSPP. Except where future construction operations will damage slopes, the Contractor shall perform the permanent seeding and mulching and other specified slope protection work in stages, as soon as substantial areas of exposed slopes can be made available. Temporary erosion and pollution control measures will be used to correct conditions that develop during construction that were not foreseen during the design stage; that are needed prior to installation of permanent control features; or that are needed temporarily to control erosion that develops during normal construction practices, but are not associated with permanent control features on the project.

Where erosion may be a problem, schedule and perform clearing and grubbing operations so that grading operations and permanent erosion control features can follow immediately if project conditions permit. Temporary erosion control measures are required if permanent measures cannot immediately follow grading operations. The RPR shall limit the area of clearing and grubbing, excavation, borrow, and embankment operations in progress, commensurate with the Contractor's capability and progress in keeping the finish grading, mulching, seeding, and other such permanent control measures current with the accepted schedule. If seasonal limitations make such coordination unrealistic, temporary erosion control measures shall be taken immediately to the extent feasible and justified as directed by the RPR.

The Contractor shall provide immediate permanent or temporary pollution control measures to minimize contamination of adjacent streams or other watercourses, lakes, ponds, or other areas of water impoundment as directed by the RPR. If temporary erosion and pollution control measures are required due to the Contractor's negligence, carelessness, or failure to install permanent controls as a part of the work as scheduled or directed by the RPR, the work shall be performed by the Contractor and the cost shall be incidental to this item.

The RPR may increase or decrease the area of erodible earth material that can be exposed at any time based on an analysis of project conditions.

The erosion control features installed by the Contractor shall be maintained by the Contractor during the construction period.

Provide temporary structures whenever construction equipment must cross watercourses at frequent intervals. Pollutants such as fuels, lubricants, bitumen, raw sewage, wash water from concrete mixing

operations, and other harmful materials shall not be discharged into any waterways, impoundments or into natural or manmade channels.

102-3.4 Installation, maintenance and removal of silt fence. Silt fences shall extend a minimum of 16 inches (41 cm) and a maximum of 34 inches (86 cm) above the ground surface. Posts shall be set no more than 10 feet (3 m) on center. Filter fabric shall be cut from a continuous roll to the length required minimizing joints where possible. When joints are necessary, the fabric shall be spliced at a support post with a minimum 12-inch (300-mm) overlap and securely sealed. A trench shall be excavated approximately 4 inches (100 mm) deep by 4 inches (100 mm) wide on the upslope side of the silt fence. The trench shall be backfilled and the soil compacted over the silt fence fabric. The Contractor shall remove and dispose of silt that accumulates during construction and prior to establishment of permanent erosion control. The fence shall be maintained in good working condition until permanent erosion control is established. Silt fence shall be removed upon approval of the RPR.

METHOD OF MEASUREMENT

102-4.1 No separate measurement for payment will be made for this item. All work associated with Temporary Air and Water Pollution, Soil Erosion, and Siltation Control work shall be included in other items for bid.

BASIS OF PAYMENT

102-5.1 No separate payment will be made for this item. All work associated with Temporary Air and Water Pollution, Soil Erosion, and Siltation Control work shall be included in other items for bid.

REFERENCES

The publications listed below form a part of this specification to the extent referenced. The publications are referred to within the text by the basic designation only.

Advisory Circulars (AC)

AC 150/5200-33 *Hazardous Wildlife Attractants on or Near Airports*

AC 150/5370-2 *Operational Safety on Airports During Construction*

ASTM International (ASTM)

ASTM D6461 *Standard Specification for Silt Fence Materials*

United States Department of Agriculture (USDA)

FAA/USDA Wildlife Hazard Management at Airports, A Manual for Airport Personnel

END OF ITEM C-102

Item C-105 Mobilization

105-1 Description. This item of work shall consist of, but is not limited to, work and operations necessary for the movement of personnel, equipment, material and supplies to and from the project site for work on the project except as provided in the contract as separate pay items.

105-2 Mobilization limit. Mobilization shall be limited to 10 percent of the total project cost.

105-3 Posted notices. Prior to commencement of construction activities, the Contractor must post the following documents in a prominent and accessible place where they may be easily viewed by all employees of the prime Contractor and by all employees of subcontractors engaged by the prime Contractor: Equal Employment Opportunity (EEO) Poster “Equal Employment Opportunity is the Law” in accordance with the Office of Federal Contract Compliance Programs Executive Order 11246, as amended; Davis Bacon Wage Poster (WH 1321) - DOL “Notice to All Employees” Poster; and Applicable Davis-Bacon Wage Rate Determination. These notices must remain posted until final acceptance of the work by the Owner.

105-4 Engineer/RPR field office and equipment. Section Not Used. No Field Office or Equipment is Required on this Contract.

METHOD OF MEASUREMENT

105-5 .1 Measurement for payment of mobilization will be made on a lump sum basis. Measurement for partial payment of mobilization will be made based percentage of work completed in accordance with the schedule shown in Section 6.1.

BASIS OF PAYMENT

105-6.1 Payment for mobilization will be made on a lump sum basis. Based upon the contract lump sum price for “Mobilization” partial payments will be allowed as follows:

- a. With first pay request, 25%.
- b. When 25% or more of the original contract is earned, an additional 25%.
- c. When 50% or more of the original contract is earned, an additional 40%.

d. After Final Inspection, Staging area clean-up and delivery of all Project Closeout materials as required by Section 90, paragraph 90-11, *Contractor Final Project Documentation*, the final 10%.

Payment will be made under:

Item C-105-6.1 Mobilization (10% max.) – per lump sum

REFERENCES

The publications listed below form a part of this specification to the extent referenced. The publications are referred to within the text by the basic designation only.

Office of Federal Contract Compliance Programs (OFCCP)

Executive Order 11246, as amended

EEOC-P/E-1 – Equal Employment Opportunity is the Law Poster
United States Department of Labor, Wage and Hour Division (WHD)
WH 1321 – Employee Rights under the Davis-Bacon Act Poster

END OF ITEM C-105

Item C-106 Safety, Security and Maintenance of Traffic

DESCRIPTION

106-1.1 General. This work shall consist of maintaining aircraft and vehicular traffic, protecting the public from damage to person and property within the limits of and for the duration of the Contract, silt fence sediment and erosion control measures in staging areas and at material stockpile locations, and as specified in the Construction Safety and Phasing Plan, Appendix A to Section 70.

Contractor is responsible for maintenance and repair of these items, regardless of cause of damage, until the project is accepted.

The following items are specifically included without limiting the generality implied by these Specifications and the Contract Drawings. Contractor is responsible for maintenance and repair of these items, regardless of cause of damage, until the project is accepted.

- Restoration of all surfaces disturbed as a result of the Contractor's Operations which are not otherwise paid for.
- Installation, maintenance, repair and removal of temporary barricades, barricade lights, barricade flags, warning signs and hazard markings.
- Installation, maintenance, repair and removal of temporary closed taxiway markers.
- Cleaning and maintenance of all paved areas.
- Security requirements, including driver training.
- Installation, maintenance and repair of silt fence and sediment and erosion control measures at staging areas and material stockpile locations, and as ordered by the Resident Project Representative (RPR). All silt fence and sediment and erosion control measures shall be in accordance with the specification for Item C-102, Temporary Air and Water Pollution, Soil Erosion, and Siltation Control.
- The Contractor is responsible for all required construction permits for the project from prior to construction through issuance Certificate of Occupancy, this shall include but is not limited to coordination of getting all permits, and all fees for all building construction permits required for this project. The Contractor shall request hard copy plans for permitting from the design engineer (the bid set of plans) a minimum of 10 business days prior to needing these and the Engineer will send these to the Contractor via UPS.

The Owner will be responsible for moving parked aircraft which interfere with the work of this Contract. Contractor shall give the Owner adequate notice of the intended work schedule to allow the Owner time to accommodate the schedule.

METHOD OF MEASUREMENT

106-2.1 Measurement for payment of safety, security and maintenance of traffic will be made on a lump sum basis. Measurements for partial payment may be made at the discretion of the RPR as the work progresses based on contract time or percent of work completed.

BASIS OF PAYMENT

106-3.1 The lump sum price bid for safety, security and maintenance of traffic shall include all equipment, materials, labor and incidentals necessary to adequately and safely maintain and protect traffic.

In the event the contract completion date is extended, no additional payment will be made for safety, security and maintenance of traffic.

Partial payments of the lump sum price bid may be made for this item at the discretion of the RPR as the work progresses based on contract time or work completed, less any deductions for unsatisfactory safety, security and maintenance of traffic.

No payment will be made under safety, security and maintenance of traffic for each calendar day during which there are substantial deficiencies in compliance with the Specification requirements of any subsection of this Section as determined by the RPR.

The amount of such calendar day non-payment will be determined by dividing the lump sum amount bid for safety, security and maintenance of traffic by the number of calendar days between the date the Contractor commences work and the date of completion as designated in this proposal, without regard to any extension of time.

If the Contractor fails to maintain and protect traffic adequately and safely for a period of 24 hours, the Owner shall correct the adverse conditions by any means it deems appropriate and shall deduct the cost of the corrective work from any monies due the Contractor. The cost of this work shall be in addition to the liquidated damages and non-payment for safety, security and maintenance of traffic listed above.

However, where major nonconformance with the requirements of this Specification is noted by the RPR and prompt Contractor compliance is deemed not to be obtainable, all contract work may be stopped by direct order of the RPR regardless of whether corrections are made by the Owner as stated in the paragraph above.

Payment will be made under:

C-106-3.1 Safety, Security and Maintenance of Traffic - per lump

END OF ITEM C-106

Item L-102 Utility Coordination

DESCRIPTION

102-1.1 This item shall include the relocation and installation of electrical services necessary for the Project including permits, inspections, cable and trenching, transformers, switches, junction boxes, conduit, and utility poles and removals and all incidentals as required by the utility companies including payment of all utility fees.

This item shall also include the coordination performed by the Contractor for the relocation of the utilities with the utility companies.

INSTALLATION OF EQUIPMENT

102-2.1 Electric utility work. The Contractor shall coordinate electric utility work with DELMARVA to have associated new electrical transformers, conduits, cable and appurtenances installed, and existing electrical manholes, transformers, power poles, conduits, cable and appurtenances removed. The Contractor shall engage in an agreement with utility to have utility perform this work. The cost of all work shall be paid for by the Contractor under this Contract.

102-2.2 Natural gas utility work. Not used.

102-2.3 Telephone utility relocation. Not used.

102-2.4 Utility allowance. A construction allowance for each utility relocation is shown below:

<u>Utility</u>	<u>Allowance</u>
Electric	\$40,000

These costs have been included with this work as the utility companies have not been able to determine exact costs at this time. Costs will only be paid for upon receipt of invoices submitted from the utility company after work is performed.

These allowances cover only the utilities listed above.

102-2.5 Utility coordination. The Contractor shall coordinate electric utility work with the respective utility companies to perform the work indicated on the plans. All anticipated expenses of coordinating the work with the utility companies shall be included.

<u>Utility</u>	<u>Allowance</u>
Electric	\$20,000

METHOD OF MEASUREMENT

102-3.1 The utility allowance cost for each utility shall be measured on a lump sum basis. The lump sum amount will be based upon receipt of invoices submitted from the utility company after work is performed.

102-3.2 The utility coordination shall be measured on a lump sum basis.

BASIS OF PAYMENT

102-4.1 Payment will be made at the lump sum cost based upon invoices received for each utility allowance. The unit cost for each utility allowance will be adjusted based upon the total of invoices received for each pay item.

Interim payments may be made at the discretion of the RPR based on invoices received during the course of construction.

102-4.2 Payment will be made on a lump sum basis for utility coordination. This price shall include the cost of all labor, materials, and incidentals necessary to coordinate the work of the utility companies.

Payment will be made under:

Item L-102-4.1a Electric Utility Allowance - Lump Sum

Item L-102-4.1b Utility Coordination - Lump Sum

END OF ITEM L-102

Item L-108 Underground Power Cable for Airports

DESCRIPTION

108-1.1 This item shall consist of furnishing and installing power cables that are direct buried and furnishing and/or installing power cables within conduit or duct banks per these specifications at the locations shown on the plans. It includes excavation and backfill of trench for direct-buried cables only. Also included are the installation of ground wires, ground rods and connections, cable splicing, cable marking, cable testing, and all incidentals necessary to place the cable in operating condition as a completed unit to the satisfaction of the RPR. This item shall not include the installation of duct banks or conduit, trenching and backfilling for duct banks or conduit, or furnishing or installation of cable for FAA owned/operated facilities.

EQUIPMENT AND MATERIALS

108-2.1 General.

a. Airport lighting equipment and materials covered by advisory circulars (AC) shall be approved under the Airport Lighting Equipment Certification Program per AC 150/5345-53, current version.

b. All other equipment and materials covered by other referenced specifications shall be subject to acceptance through manufacturer's certification of compliance with the applicable specification, when requested by the RPR.

c. Manufacturer's certifications shall not relieve the Contractor of the responsibility to provide materials per these specifications. Materials supplied and/or installed that do not comply with these specifications shall be removed (when directed by the RPR) and replaced with materials that comply with these specifications at the Contractor's cost.

d. All materials and equipment used to construct this item shall be submitted to the RPR for approval prior to ordering the equipment. Submittals consisting of marked catalog sheets or shop drawings shall be provided. Submittal data shall be presented in a clear, precise and thorough manner. Original catalog sheets are preferred. Photocopies are acceptable provided they are as good a quality as the original. Clearly and boldly mark each copy to identify products or models applicable to this project. Indicate all optional equipment and delete any non-pertinent data. Submittals for components of electrical equipment and systems shall identify the equipment to which they apply on each submittal sheet. Markings shall be made bold and clear with arrows or circles (highlighting is not acceptable). The Contractor is solely responsible for delays in the project that may accrue directly or indirectly from late submissions or resubmissions of submittals.

e. The data submitted shall be sufficient, in the opinion of the RPR, to determine compliance with the plans and specifications. The Contractor's submittals shall electronically submitted in PDF format. The RPR reserves the right to reject any and all equipment, materials, or procedures that do not meet the system design and the standards and codes, specified in this document.

f. All equipment and materials furnished and installed under this section shall be guaranteed against defects in materials and workmanship for at least twelve (12) months from the date of final acceptance by the Owner. The defective materials and/or equipment shall be repaired or replaced, at the Owner's discretion, with no additional cost to the Owner. The Contractor shall maintain a minimum insulation

resistance in accordance with paragraph 108-3.10e with isolation transformers connected in new circuits and new segments of existing circuits through the end of the contract warranty period when tested in accordance with AC 150/5340-26, *Maintenance Airport Visual Aid Facilities*, paragraph 5.1.3.1, Insulation Resistance Test.

108-2.2 Cable.

Wire for electrical circuits up to 600 volts shall comply with Specification L-824 and/or Commercial Item Description A-A-59544A and shall be type THWN-2, 75°C for installation in conduit and RHW-2, 75°C for direct burial installations. Conductors for parallel (voltage) circuits shall be type and size and installed in accordance with NFPA-70, National Electrical Code.

Unless noted otherwise, all 600-volt and less non-airfield lighting conductor sizes are based on a 75°C, THWN-2, 600-volt insulation, copper conductors, not more than three single insulated conductors, in raceway, in free air. The conduit/duct sizes are based on the use of THWN-2, 600-volt insulated conductors. The Contractor shall make the necessary increase in conduit/duct sizes for other types of wire insulation. In no case shall the conduit/duct size be reduced. The minimum power circuit wire size shall be #12 AWG.

Conductor sizes may have been adjusted due to voltage drop or other engineering considerations. Equipment provided by the Contractor shall be capable of accepting the quantity and sizes of conductors shown in the Contract Documents. All conductors, pigtails, cable step-down adapters, cable step-up adapters, terminal blocks and splicing materials necessary to complete the cable termination/splice shall be considered incidental to the respective pay items provided.

Cable type, size, number of conductors, strand and service voltage shall be as specified in the Contract Document.

108-2.3 Bare copper wire (bare copper wire ground and ground rods).

Wire for internal grounding bond wire for electrical systems shall be green insulated No. 6 AWG stranded copper wire per ASTM B8, unless otherwise noted.

Ground rods shall be copper-clad steel. The ground rods shall be of the length and diameter specified on the plans, but in no case be less than 10 feet (2.54 m) long and 3/4 inch (19 mm) in diameter.

108-2.4 Cable connections. In-line connections or splices of underground primary cables shall be of the type called for on the plans, and shall be one of the types listed below. No separate payment will be made for cable connections.

a. The cast splice. A cast splice, employing a plastic mold and using epoxy resin equivalent to that manufactured by 3M™ Company, "Scotchcast" Kit No. 82-B, or an approved equivalent, used for potting the splice is acceptable.

b. The field-attached plug-in splice. Field attached plug-in splices shall be installed as shown on the plans. The Contractor shall determine the outside diameter of the cable to be spliced and furnish appropriately sized connector kits and/or adapters. Tape or heat shrink tubing with integral sealant shall be in accordance with the manufacturer's requirements. Primary Connector Kits manufactured by Amerace, "Super Kit", Integro "Complete Kit", or approved equal is acceptable. Heat-shrink tubing shall be used where the field attached plug-in splice is connected to the cable insulation jacket.

c. The factory-molded plug-in splice. Specification for L-823 Connectors, Factory-Molded to Individual Conductors, is acceptable.

d. The taped or heat-shrink splice. Taped splices employing field-applied rubber, or synthetic rubber tape covered with plastic tape is acceptable. The rubber tape should meet the requirements of ASTM D4388 and the plastic tape should comply with Military Specification MIL-I-24391 or

Commercial Item Description A-A-55809. Heat shrinkable tubing shall be heavy-wall, self-sealing tubing rated for the voltage of the wire being spliced and suitable for direct-buried installations. The tubing shall be factory coated with a thermoplastic adhesive-sealant that will adhere to the insulation of the wire being spliced forming a moisture- and dirt-proof seal. Additionally, heat shrinkable tubing for multi-conductor cables, shielded cables, and armored cables shall be factory kits that are designed for the application. Heat shrinkable tubing and tubing kits shall be manufactured by Tyco Electronics/ Raychem Corporation, Energy Division, or approved equivalent.

In all the above cases, connections of cable conductors shall be made using crimp connectors using a crimping tool designed to make a complete crimp before the tool can be removed. All L-823/L-824 splices and terminations shall be made per the manufacturer's recommendations and listings.

All connections of grounding conductors and ground rods shall be made by the exothermic process or approved equivalent. All exothermic connections shall be made per the manufacturer's recommendations and listings.

108-2.5 Splicer qualifications. Not used.

108-2.6 Concrete. Concrete foundations shall be proportioned, placed, and cured per state department of transportation structural concrete with minimum 25% Type F fly ash, and a minimum allowable compressive strength of 4,000 psi (28 MPa).

108-2.7 Flowable backfill. Not used.

108-2.8 Cable identification tags. Cable identification tags shall be made from a non-corrosive material with the circuit identification stamped or etched onto the tag. The tags shall be of the type as detailed on the plans.

108-2.9 Tape. Electrical tapes shall be Scotch™ Electrical Tapes –Scotch™ 88 (1-1/2 inch (38 mm) wide) and Scotch™ 130C® linerless rubber splicing tape (2-inch (50 mm) wide), as manufactured by the Minnesota Mining and Manufacturing Company (3M™), or an approved equivalent.

108-2.10 Electrical coating. Electrical coating shall be Scotchkote™ as manufactured by 3M™, or an approved equivalent.

108-2.11 Existing circuits. Not used.

108-2.12 Detectable warning tape. Plastic, detectable, American Public Works Association (APWA) Red (electrical power lines, cables, conduit and lighting cable) with continuous legend tape shall be polyethylene film with a metalized foil core and shall be 3-6 inches (75-150 mm) wide. Detectable tape is incidental to the respective bid item. Detectable warning tape for communication cables shall be orange. Detectable warning tape color code shall comply with the APWA Uniform Color Code.

CONSTRUCTION METHODS

108-3.1 General. The Contractor shall install the specified cable at the approximate locations indicated on the plans. Unless otherwise shown on the plans, all cable required to cross under pavements expected to carry aircraft loads shall be installed in concrete encased duct banks. Cable shall be run without splices, from fixture to fixture.

108-3.2 Installation in duct banks or conduits. This item includes the installation of the cable in duct banks or conduit per the following paragraphs. The maximum number and voltage ratings of cables installed in each single duct or conduit, and the current-carrying capacity of each cable shall be per the latest version of the National Electric Code, or the code of the local agency or authority having jurisdiction.

The Contractor shall make no connections or splices of any kind in cables installed in conduits or duct banks.

Unless otherwise designated in the plans, where ducts are in tiers, use the lowest ducts to receive the cable first, with spare ducts left in the upper levels. Check duct routes prior to construction to obtain assurance that the shortest routes are selected and that any potential interference is avoided.

Duct banks or conduits shall be installed as a separate item per Item L-110, Airport Underground Electrical Duct Banks and Conduit. The Contractor shall run a mandrel through duct banks or conduit prior to installation of cable to ensure that the duct bank or conduit is open, continuous and clear of debris. The mandrel size shall be compatible with the conduit size. The Contractor shall swab out all conduits/ducts and clean manholes, etc., interiors immediately prior to pulling cable. Cleaning of ducts, manholes, etc., is incidental to the pay item of the item being cleaned. All raceway systems left open, after initial cleaning, for any reason shall be re-cleaned at the Contractor's expense. The Contractor shall verify existing ducts proposed for use in this project as clear and open. The Contractor shall notify the RPR of any blockage in the existing ducts.

The cable shall be installed in a manner that prevents harmful stretching of the conductor, damage to the insulation, or damage to the outer protective covering. The ends of all cables shall be sealed with moisture-seal tape providing moisture-tight mechanical protection with minimum bulk, or alternately, heat shrinkable tubing before pulling into the conduit and it shall be left sealed until connections are made. Where more than one cable is to be installed in a conduit, all cable shall be pulled in the conduit at the same time. The pulling of a cable through duct banks or conduits may be accomplished by hand winch or power winch with the use of cable grips or pulling eyes. Maximum pulling tensions shall not exceed the cable manufacturer's recommendations. A non-hardening cable-pulling lubricant recommended for the type of cable being installed shall be used where required.

The Contractor shall submit the recommended pulling tension values to the RPR prior to any cable installation. If required by the RPR, pulling tension values for cable pulls shall be monitored by a dynamometer in the presence of the RPR. Cable pull tensions shall be recorded by the Contractor and reviewed by the RPR. Cables exceeding the maximum allowable pulling tension values shall be removed and replaced by the Contractor at the Contractor's expense.

The manufacturer's minimum bend radius or NEC requirements (whichever is more restrictive) shall apply. Cable installation, handling and storage shall be per manufacturer's recommendations. During cold weather, particular attention shall be paid to the manufacturer's minimum installation temperature. Cable shall not be installed when the temperature is at or below the manufacturer's minimum installation temperature. At the Contractor's option, the Contractor may submit a plan, for review by the RPR, for heated storage of the cable and maintenance of an acceptable cable temperature during installation when temperatures are below the manufacturer's minimum cable installation temperature.

Cable shall not be dragged across base can or manhole edges, pavement or earth. When cable must be coiled, lay cable out on a canvas tarp or use other appropriate means to prevent abrasion to the cable jacket.

108-3.3 Installation of direct-buried cable in trenches. Not used.

108-3.4 Cable markers for direct-buried cable. Not used.

108-3.5 Splicing. Connections of the type shown on the plans shall be made by experienced personnel regularly engaged in this type of work and shall be made as follows:

a. Cast splices. These shall be made by using crimp connectors for jointing conductors. Molds shall be assembled, and the compound shall be mixed and poured per the manufacturer's instructions and to the satisfaction of the RPR.

b. Field-attached plug-in splices. These shall be assembled per the manufacturer's instructions. These splices shall be made by plugging directly into mating connectors. The joint where the connectors come together shall be finished by one of the following methods: (1) wrapped with at least one layer of rubber or synthetic rubber tape and one layer of plastic tape, one-half lapped, extending at least 1-1/2 inches (38 mm) on each side of the joint (2) Covered with heat shrinkable tubing with integral sealant extending at least 1-1/2 inches (38 mm) on each side of the joint or (3) On connector kits equipped with water seal flap; roll-over water seal flap to sealing position on mating connector. Heat-shrink tubing shall be used where the field attached plug-in splice is connected to the cable insulation jacket.

c. Factory-molded plug-in splices. These shall be made by plugging directly into mating connectors. The joint where the connectors come together shall be finished by one of the following methods: (1) Wrapped with at least one layer of rubber or synthetic rubber tape and one layer of plastic tape, one-half lapped, extending at least 1-1/2 inches (38 mm) on each side of the joint. (2) Covered with heat shrinkable tubing with integral sealant extending at least 1-1/2 inches (38 mm) on each side of the joint. or (3) On connector kits so equipped with water seal flap; roll-over water seal flap to sealing position on mating connector.

d. Taped or heat-shrink splices. A taped splice shall be made in the following manner:

Bring the cables to their final position and cut so that the conductors will butt. Remove insulation and jacket allowing for bare conductor of proper length to fit compression sleeve connector with 1/4 inch (6 mm) of bare conductor on each side of the connector. Prior to splicing, the two ends of the cable insulation shall be penciled using a tool designed specifically for this purpose and for cable size and type. Do not use emery paper on splicing operation since it contains metallic particles. The copper conductors shall be thoroughly cleaned. Join the conductors by inserting them equidistant into the compression connection sleeve. Crimp conductors firmly in place with crimping tool that requires a complete crimp before tool can be removed. Test the crimped connection by pulling on the cable. Scrape the insulation to assure that the entire surface over which the tape will be applied (plus 3 inches (75 mm) on each end) is clean. After scraping, wipe the entire area with a clean lint-free cloth. Do not use solvents.

Apply high-voltage rubber tape one-half lapped over bare conductor. This tape should be tensioned as recommended by the manufacturer. Voids in the connector area may be eliminated by highly elongating the tape, stretching it just short of its breaking point. The manufacturer's recommendation for stretching tape during splicing shall be followed. Always attempt to exactly half-lap to produce a uniform buildup. Continue buildup to 1-1/2 times cable diameter over the body of the splice with ends tapered a distance of approximately one inch (25 mm) over the original jacket. Cover rubber tape with two layers of vinyl pressure-sensitive tape one-half lapped. Do not use glyptol or lacquer over vinyl tape as they react as solvents to the tape. No further cable covering or splice boxes are required.

Heat shrinkable tubing shall be installed following manufacturer's instructions. Direct flame heating shall not be permitted unless recommended by the manufacturer. Cable surfaces within the limits of the heat-shrink application shall be clean and free of contaminants prior to application.

e. Assembly. Surfaces of equipment or conductors being terminated or connected shall be prepared in accordance with industry standard practice and manufacturer's recommendations. All surfaces to be connected shall be thoroughly cleaned to remove all dirt, grease, oxides, nonconductive films, or other foreign material. Paints and other nonconductive coatings shall be removed to expose base metal. Clean all surfaces at least 1/4 inch (6.4 mm) beyond all sides of the larger bonded area on all mating surfaces. Use a joint compound suitable for the materials used in the connection. Repair painted/coated surface to original condition after completing the connection.

108-3.6 Bare counterpoise wire installation for lightning protection and grounding. Not used.

108-3.7 Counterpoise installation above multiple conduits and duct banks. Not used.

108-3.8 Counterpoise installation at existing duct banks. Not used.

108-3.9 Exothermic bonding. Bonding of grounding wire shall be by the exothermic welding process or equivalent method accepted by the RPR. Only personnel experienced in and regularly engaged in this type of work shall make these connections.

Contractor shall demonstrate to the satisfaction of the RPR, the welding kits, materials and procedures to be used for welded connections prior to any installations in the field. The installations shall comply with the manufacturer's recommendations and the following:

- a. All slag shall be removed from welds.
- b. If called for in the plans, all buried copper and weld material at weld connections shall be thoroughly coated with 6 mm of 3M™ Scotchkote™, or approved equivalent, or coated with coal tar Bitumastic® material to prevent surface exposure to corrosive soil or moisture.

108-3.10 Testing. The Contractor shall furnish all necessary equipment and appliances for testing the airport electrical systems and underground cable circuits before and after installation. The Contractor shall perform all tests in the presence of the RPR. The Contractor shall demonstrate the electrical characteristics to the satisfaction of the RPR. All costs for testing are incidental to the respective item being tested. For phased projects, the tests must be completed by phase. The Contractor must maintain the test results throughout the entire project as well as during the warranty period that meet the following:

- a. Earth resistance testing methods shall be submitted to the RPR for approval. Earth resistance testing results shall be recorded on an approved form and testing shall be performed in the presence of the RPR. All such testing shall be at the sole expense of the Contractor.
- b. Should any existing or new counterpoise or ground grid conductors be damaged or suspected of being damaged by construction activities the Contractor shall test the conductors for continuity with a low resistance ohmmeter. The conductors shall be isolated such that no parallel path exists and tested for continuity. The RPR shall approve of the test method selected. All such testing shall be at the sole expense of the Contractor.

After installation, the Contractor shall test and demonstrate to the satisfaction of the RPR the following:

- c. That all affected lighting power and control circuits (existing and new) are continuous and free from short circuits.
- d. That all affected circuits (existing and new) are free from unspecified grounds.
- e. That the insulation resistance to ground of all new non-grounded high voltage series circuits or cable segments is not less than 50 megohms. Verify continuity of all series airfield lighting circuits prior to energization.
- f. That the insulation resistance to ground of all new non-grounded conductors of new multiple circuits or circuit segments is not less than 100 megohms.
- g. That all affected circuits (existing and new) are properly connected per applicable wiring diagrams.
- h. That all affected circuits (existing and new) are operable. Tests shall be conducted that include operating each control not less than 10 times and the continuous operation of each lighting and power circuit for not less than 1/2 hour.
- i. That the impedance to ground of each ground rod does not exceed 25 ohms prior to establishing connections to other ground electrodes. The fall-of-potential ground impedance test shall be used, as described by American National Standards Institute/Institute of Electrical and Electronic Engineers (ANSI/IEEE) Standard 81, to verify this requirement. As an alternate, clamp-on style ground impedance test meters may be used to satisfy the impedance testing requirement. Test

equipment and its calibration sheets shall be submitted for review and approval by the RPR prior to performing the testing.

Two copies of tabulated results of all cable tests performed shall be supplied by the Contractor to the RPR. Where connecting new cable to existing cable, insulation resistance tests shall be performed on the new cable prior to connection to the existing circuit.

There are no approved "repair" procedures for items that have failed testing other than complete replacement.

108-3.10 Testing. The Contractor shall furnish all necessary equipment and appliances for testing the airport electrical systems and underground cable circuits before and after installation. The Contractor shall perform all tests in the presence of the RPR. The Contractor shall demonstrate the electrical characteristics to the satisfaction of the RPR. All costs for testing are incidental to the respective item being tested. For phased projects, the tests must be completed by phase. The Contractor shall provide such temporary lights and cables as required to maintain use of existing airfield lighting circuits. Temporary above ground lighting cables, if approved, shall be installed in conduit, and delineated with stakes and flagging. The test equipment for insulation resistance shall be an insulation resistance tester (1,000V megger) with a digital readout. The instrument shall provide a 500 volt test for insulation resistance with a meter range of 0 to 500 megohms.

Earth resistance testing methods shall be submitted to the RPR for approval. Earth resistance testing results shall be recorded on an approved form and testing shall be performed in the presence of the RPR. All such testing shall be at the sole expense of the Contractor.

Should the existing or new counterpoise or ground grid conductors be damaged or suspected of being damaged by construction activities the Contractor shall test the conductors for continuity with a low resistance ohmmeter. The conductors shall be isolated such that no parallel path exists and tested for continuity. The RPR shall approve of the test method selected. All such testing shall be at the sole expense of the Contractor.

Test Requirements Prior to Construction.

- i. Test all circuits within the work area for continuity and insulation resistance to ground, at the electrical building, in the presence of the RPR.
- ii. Provide a copy of the test results to the RPR.
- iii. Check that all circuits are properly connected in accordance with applicable wiring diagrams.

Test Requirements During Construction. Circuit testing during construction shall be as directed and witnessed by the RPR when the Contractor is working on existing circuitry or excavating adjacent to or near existing circuitry. Circuit testing during construction will not be required during the times when the Contractor's operations do not effect existing airfield lighting circuitry. It is the intent of this section to ensure that airfield lighting circuitry remains operational throughout the duration of the Contract.

- i. Test all circuits within the work area for continuity and insulation resistance to ground at the electrical building, prior to energizing any circuit.
- ii. Insure that all circuits within the work area are operational, prior to the Contractor leaving the project at the end of the work day. Specific times for circuit checks will be determined by the RPR relative to the Contractor's work hours each day.
- iii. Segment test new non-grounded series circuits during installation. Length of cable segment tested shall not have more than five (5) splices, light units and/or electrical equipment between the ends being tested. Insulation resistance to ground shall be not less than 500 megohms.

- iv.** Insure that the insulation resistance to ground of each segment of new non-grounded conductors of multiple conductor circuits is not less than 500 megohms.
- v.** That the impedance to ground of each ground rod does not exceed 25 ohms prior to establishing connections to other ground electrodes or equipment. The fall-of-potential ground impedance test shall be utilized, as described by ANSI/IEEE Standard 81, to verify this requirement. Ground rods testing higher than 25 ohms shall have a minimum extension of two feet of ground rod added, driven to the proper elevation and re-tested. Extensions shall be attached by exothermic methods and re-testing performed until the tests show 25 ohms resistance or less. Tests shall not be performed within 72 hours after a rain storm has ended or when standing water is present around the ground rod.
- vi.** Insure that all circuits are properly connected in accordance with applicable wiring diagrams.
- vii.** The Contractor shall test all circuits within the work area for continuity after backfilling cable trenches. The reading shall be logged and provided to the Engineer prior to payment of cable items.
- viii.** Provide a copy of all test results to the RPR on a daily basis.

After installation, the Contractor shall test and demonstrate to the satisfaction of the RPR the following:

- i.** That all affected lighting power and control circuits (existing and new) are continuous and free from short circuits.
- ii.** That all affected circuits (existing and new) are free from unspecified grounds.
- iii.** That the insulation resistance to ground of all new non-grounded high voltage series circuits or cable segments is not less than 50 megohms. Verify continuity of all series airfield lighting circuits prior to energization. The Contractor shall be responsible for maintaining an insulation resistance of 50 megohms minimum, with isolation transformers connected, in new circuits and new segments of existing circuits through the end of the contract warranty period.
- iv.** That the insulation resistance to ground of all new non-grounded conductors of new multiple circuits or circuit segments is not less than 100 megohms.
- v.** That all affected circuits (existing and new) are properly connected per applicable wiring diagrams.
- vi.** That all affected circuits (existing and new) are operable. Tests shall be conducted that include operating each control not less than 10 times and the continuous operation of each lighting and power circuit for not less than 1/2 hour.
- vii.** That all original lighting power and control circuits are continuous and insulation resistance to ground is not lower than before construction.
- viii.** That the impedance to ground of each ground rod does not exceed 25 ohms prior to establishing connections to other ground electrodes. The fall-of-potential ground impedance test shall be used, as described by American National Standards Institute/Institute of Electrical and Electronic Engineers (ANSI/IEEE) Standard 81, to verify this requirement. As an alternate, clamp-on style ground impedance test meters may be used to satisfy the impedance testing requirement. Test equipment and its calibration sheets shall be submitted for review and approval by the RPR prior to performing the testing.

Two copies of tabulated results of all cable tests performed shall be supplied by the Contractor to the RPR. Where connecting new cable to existing cable, insulation resistance tests shall be performed on the new cable prior to connection to the existing circuit.

There are no approved “repair” procedures for items that have failed testing other than complete replacement.

METHOD OF MEASUREMENT

108-4.1 The cost of all excavation, backfill, dewatering and restoration regardless of the type of material encountered shall be included in the unit price bid for the work.

108-4.2 Cable wire installed in duct bank or conduit shall be measured by the number of linear feet installed and grounding connectors, and trench marking tape ready for operation, and accepted as satisfactory. Separate measurement shall be made for each cable wire installed in trench, duct bank or conduit. The measurement for this item shall not include additional quantities required for slack. Cable slack is considered incidental to this item and is included in the Contractor’s unit price.

108-4.3 No separate payment will be made for ground rods.

BASIS OF PAYMENT

108-5.1 Payment will be made at the contract unit price for trenching, cable wire installed in trench (direct-buried), or cable and equipment ground installed in duct bank or conduit, in place by the Contractor and accepted by the RPR. This price shall be full compensation for furnishing all materials and for all preparation and installation of these materials, and for all labor, equipment, tools, and incidentals, including ground rods and ground connectors and trench marking tape, necessary to complete this item.

Payment will be made under:

Item L-108-5.1a	No. 3/0 AWG, 600V, THWN Cable, Installed in Trench, Duct Bank or Conduit - per liner foot
Item L-108-5.1b	No. 6 AWG, Insulated, Stranded Equipment bonding Installed in Duct Bank or Conduit – per linear foot

REFERENCES

The publications listed below form a part of this specification to the extent referenced. The publications are referred to within the text by the basic designation only.

Advisory Circulars (AC)

AC 150/5340-26	Maintenance of Airport Visual Aid Facilities
AC 150/5340-30	Design and Installation Details for Airport Visual Aids
AC 150/5345-7	Specification for L-824 Underground Electrical Cable for Airport Lighting Circuits
AC 150/5345-26	Specification for L-823 Plug and Receptacle, Cable Connectors
AC 150/5345-53	Airport Lighting Equipment Certification Program

Commercial Item Description

A-A-59544A	Cable and Wire, Electrical (Power, Fixed Installation)
A-A-55809	Insulation Tape, Electrical, Pressure-Sensitive Adhesive, Plastic

ASTM International (ASTM)

ASTM B3	Standard Specification for Soft or Annealed Copper Wire
ASTM B8	Standard Specification for Concentric-Lay-Stranded Copper Conductors, Hard, Medium-Hard, or Soft
ASTM B33	Standard Specification for Tin-Coated Soft or Annealed Copper Wire for Electrical Purposes
ASTM D4388	Standard Specification for Nonmetallic Semi-Conducting and Electrically Insulating Rubber Tapes
Mil Spec	
MIL-PRF-23586F	Performance Specification: Sealing Compound (with Accelerator), Silicone Rubber, Electrical
MIL-I-24391	Insulation Tape, Electrical, Plastic, Pressure Sensitive
National Fire Protection Association (NFPA)	
NFPA-70	National Electrical Code (NEC)
NFPA-780	Standard for the Installation of Lightning Protection Systems
American National Standards Institute (ANSI)/Institute of Electrical and Electronics Engineers (IEEE)	
ANSI/IEEE STD 81	IEEE Guide for Measuring Earth Resistivity, Ground Impedance, and Earth Surface Potentials of a Ground System
Federal Aviation Administration Standard	
FAA STD-019E	Lightning and Surge Protection, Grounding Bonding and Shielding Requirements for Facilities and Electronic Equipment

EXCERPTS FROM AC 150/5340-30J, Appendix E

E.1 Electrical Notes.

E.1.1 General.

1. The electrical installation, at a minimum, must meet the NEC and local regulations.
2. The contractor must ascertain that all lighting system components furnished (including FAA approved equipment) are compatible in all respects with each other and the remainder of the new/existing system. Any non-compatible components furnished by the contractor must be replaced at no additional cost to the airport sponsor with a similar unit that is approved by the engineer and compatible with the remainder of the airport lighting system.
3. In case the contractor elects to furnish and install airport lighting equipment requiring additional wiring, transformers, adapters, mountings, etc., to those shown on the drawings and/or listed in the specifications, any cost for these items must be incidental to the equipment cost.
4. The contractor-installed equipment (including FAA approved) must not generate any EMI in the existing and/or new communications, weather, air navigation, and ATC equipment. Any equipment generating such interference must be replaced by the contractor at no additional cost with equipment meeting the applicable specifications.

5. When a specific type, style, class, etc., of FAA approved equipment is specified only that type, style, class, etc., will be acceptable, though equipment of other types, style, class, etc., may be FAA approved.
6. Any and all instructions from the engineer to the contractor regarding changes in, or deviations from, the plans and specifications must be in writing with copies sent to the airport sponsor and the FAA field office (Airports District Office (ADO)/Airports Field Office (AFO)). The contractor must not accept any verbal instructions from the engineer regarding any changes from the plans and specifications.
7. A minimum of three copies of instruction books must be supplied with each type of equipment. For more sophisticated types of equipment, such as regulators, PAPI, REIL, etc., the instruction book must contain the following:
 - a. A detailed description of the overall equipment and its individual components.
 - b. Theory of operation including the function of each component.
 - c. Installation instructions.
 - d. Start-up instructions.
 - e. Preventative maintenance requirements.
 - f. Chart for troubleshooting.
 - g. Complete power and control detailed wiring diagram(s), showing each conductor/connection/component; “black” boxes are not acceptable. The diagram or the narrative must show voltages/currents/wave shapes at strategic locations to be used when checking and/or troubleshooting the equipment. When the equipment has several brightness steps, these parameters must be indicated for all the different modes.
 - h. Parts list will include all major and minor components, such as resistors, diodes, etc. It must include a complete nomenclature of each component and, if applicable, the name of its manufacturer and the catalog number.
 - i. Safety instructions.

E.1.2 Power and Control.

1. Stencil all electrical equipment to identify function, circuit voltage and phase. Where the equipment contains fuses, also stencil the fuse or fuse link ampere rating. Where the equipment does not have sufficient stenciling area, the stenciling must be done on the wall next to the unit. The letters must be one inch (25 mm) high and painted in white or black paint to provide the highest contrast with the background. Engraved plastic nameplates may also be used with one inch (25 mm) white (black background) or black (white background) characters. All markings must be of sufficient durability to withstand the environment.
2. Color code all phase wiring by the use of colored wire insulation and/or colored tape. Where tape is used, the wire insulation must be black. Black and red must be used for single-phase, three wire systems and black, red and blue must be used for three-phase systems. Neutral conductors, size No. 6 AWG or smaller, must be identified by a continuous white or natural outer finish. Conductors larger than No. 6 AWG must be identified either by a continuous white or natural gray outer finish along its entire length or by the use of white tape at its terminations and inside accessible wireways.
3. All branch circuit conductors connected to a particular phase must be identified with the same color. The color coding must extend to the point of utilization.

4. In control wiring, the same color must be used throughout the system for the same function, such as 10%, 30%, 100% brightness control, etc.
5. All power and control circuit conductors must be copper; aluminum must not be accepted. This includes wire, cable, busses, terminals, switch/panel components, etc.
6. Low voltage (600 V) and high voltage (5000 V) conductors must be installed in separate wireways.
7. Neatly lace wiring in distribution panels, wireways, switches and pull/junction boxes.
8. The minimum size of pull/junction boxes, regardless of the quantity and the size of the conductors shown, must be as follows:
 - a. In straight pulls, the length of the box must not be less than eight times the trade diameter of the larger conduit. The total area (including the conduit cross-sectional area) of a box end must be at least three times greater than the total trade cross-sectional area of the conduits terminating at the end.
 - b. In angle or u-pulls, the distance between each conduit entry inside the box and the opposite wall of the box must not be less than six times the trade diameter of the largest conduit. This distance must be increased for additional entries by the amount of the sum of the diameters of all other conduit entries on the same wall of the box. The distance between conduit entries enclosing the same conductor must not be less than six times the trade diameter of the largest conduit.
9. A run of conduit between terminations at equipment enclosures, square ducts and pull/junction boxes, must not contain more than the equivalent of four quarter bends (360 degrees total), including bends located immediately at the terminations. Cast, conduit type outlets must not be treated as pull/junction boxes.
10. Equipment cabinets must not be used as pull/junction boxes. Only wiring terminating at the equipment must be brought into these enclosures.
11. Splices and junction points must be permitted only in junction boxes, ducts equipped with removable covers, and at easily accessible locations.
12. Circuit breakers in power distribution panel(s) must be thermal-magnetic, molded case, permanent trip with 100-ampere, minimum, frame.
13. Dual lugs must be used where two wires, size No. 6 or larger, are to be connected to the same terminal.
14. All wall mounted equipment enclosures must be mounted on wooden mounting boards.
15. Wooden equipment mounting boards must be plywood, exterior type, 3/4 inch (19 mm) minimum thickness, both sides painted with one coat of primer and two coats of gray, oil-based paint.
16. Rigid steel conduit must be used throughout the installation unless otherwise specified. The minimum trade size must be 3/4 inch (19 mm).
17. All rigid conduit must be terminated at CCRs with a section (10 inch (254 mm) minimum) of flexible conduit.
18. Unless otherwise shown all exposed conduits must be run parallel to, or at right angles with, the lines of the structure.
19. All steel conduits, fittings, nuts, bolts, etc., must be galvanized.

20. Use conduit bushings at each conduit termination. Where No. 4 AWG or larger ungrounded wire is installed, use insulated bushings.
21. Use double lock nuts at each conduit termination. Use weather tight hubs in damp and wet locations. Sealing locknuts must not be used.
22. Wrap all primary and secondary power transformer connections with sufficient layers of insulating tape and cover with insulating varnish for full value of cable insulation voltage.
23. Unless otherwise noted, all indoor single conductor control wiring must be No. 12 AWG.
24. Both ends of each control conductor must be terminated at a terminal block. The terminal block must be of proper rating and size for the function intended and must be located in equipment enclosures or special terminal cabinets.
25. All control conductor terminators must be of the open-eye connector/screw type. Soldered, closed-eyed terminators, or terminators without connectors are not acceptable.
26. In terminal block cabinets, the minimum spacing between parallel terminal blocks must be 6 inches (152 mm). The minimum spacing between terminal block sides/ends and cabinet sides/bottom/top must be 5 inches (127 mm). The minimum spacing will be increased as required by the number of conductors. Additional spacing must be provided at conductor entrances.
27. Both ends of all control conductors must be identified as to the circuit, terminal, block, and terminal number. Only stick-on labels must be used.
28. A separate and continuous neutral conductor must be installed and connected for each breaker circuit in the power panel(s) from the neutral bar to each power/control circuit.
29. The following must apply to relay/contactors panel/enclosures:
 - a. All components must be mounted in dust proof enclosures with vertically hinged covers.
 - b. The enclosures must have ample space for the circuit components, terminal blocks, and incoming internal wiring.
 - c. All incoming/outgoing wiring must be terminated at terminal blocks.
 - d. Each terminal on terminal blocks and on circuit components must be clearly identified.
 - e. All control conductor terminations must be of the open-eye connector/screw type. Soldered, closed-eye connectors, or terminations without connectors are not acceptable.
 - f. When the enclosure cover is opened, all circuit components, wiring, and terminals must be exposed and accessible without any removal of any panels, covers, etc., except those covering high voltage components.
 - g. Access to, or removal of, a circuit component or terminal block will not require the removal of any other circuit component or terminal block.
 - h. Each circuit component must be clearly identified indicating its corresponding number shown on the drawing and its function.
 - i. A complete wiring diagram (not a block or schematic diagram) must be mounted on the inside of the cover. The diagram must represent each conductor by a separate line.
 - j. The diagram must identify each circuit component and the number and color of each internal conductor and terminal.
 - k. All wiring must be neatly trained and laced.

1. Minimum wire size must be No. 12 AWG.

E.1.3 Field Lighting.

1. Unless otherwise stated, all underground field power multiple and series circuit conductors (whether direct earth burial (DEB) or in duct/conduit) must be FAA approved Type L-824. Insulation voltage and size must be as specified.
2. No components of the primary circuit such as cable, connectors and transformers must be brought above ground at edge lights, signs, REIL, etc.
3. There must be no exposed power/control cables between the point where they leave the underground (DEB or L-867 bases) and where they enter the equipment (such as taxiway signs, PAPI, REIL, etc.). Enclosures. These cables must be enclosed in rigid conduit or in flexible water-tight conduit with frangible coupling(s) at the grade or the housing cover, as shown in applicable details.
4. The joints of the L-823 primary connectors must be wrapped with one layer of rubber or synthetic rubber tape and one layer of plastic tape, one half lapped, extending at least 1-1/2 inches (38 mm) on each side of the joint, as shown in Figure E-9.
5. The cable entrance into the field attached L-823 connectors must be enclosed by heat-shrinkable tubing with continuous internal adhesive as shown in Figure E-9.
6. The ID of the primary L-823 field attached connectors must match the cable OD to provide a watertight cable entrance. The entrance must be encapsulated in heat shrinkable tubing with continuous factory applied internal adhesive, as shown in Figure E-9.
7. L-823 type 11, two-conductor secondary connector must be class "A" (factory molded).
8. There must be no splices in the secondary cable(s) within the stems of a runway/taxiway edge/threshold lighting fixtures and the wireways leading to taxiway signs and PAPI/REIL equipment.
9. Electrical insulating grease must be applied within the L-823, secondary, two conductor connectors to prevent water entrance. The connectors must not be taped.
10. DEB isolation transformers must be buried at a depth of 10 inches (254 mm) on a line crossing the light and perpendicular to the runway/taxiway centerline at a location 12 inches (305 mm) from the light opposite from the runway/taxiway.
11. DEB primary connectors must be buried at a depth of 10 inches (254 mm) near the isolation transformer. They must be orientated parallel with the runway/taxiway centerline. There must be no bends in the primary cable 6 inches (152 mm), minimum, from the entrance into the field-attached primary connection.
12. A slack of 3 ft (0.9 m), minimum, must be provided in the primary cable at each transformer/connector termination. At stake-mounted lights, the slack must be loosely coiled immediately below the isolation transformer.
13. Direction of primary cables must be identified by color coding as follows when facing light with back facing pavement: cable to the left is coded red and cable to the right is coded blue, this applies to the stake-mounted lights and base-mounted lights where the base has only one entrance.
14. L-867 bases must be size B, 24" (610 mm) deep Class 1 unless otherwise noted.

15. Base-mounted frangible couplings must not have weep holes to the outside. Plugged holes are not acceptable. The coupling must have a 1/4" (6 mm) diameter minimum or equivalent opening for drainage from the space around the secondary connector into the L-867 base.
16. The elevation of the frangible coupling groove must not exceed 1-1/2" (38 mm) above the edge of the cover for base-mounted couplings or the top of the stake for stake-mounted couplings.
17. Where the frangible coupling is not an integral part of the light fixture stem or mounting leg, a bead of silicone rubber seal must be applied completely around the light stem or wireway at the frangible coupling to provide a watertight seal.
18. Tops of the stakes supporting light fixtures must be flush with the surrounding grade.
19. Plastic lighting fixture components, such as lamp heads, stems, frangible couplings, base covers, brackets, stakes, are not acceptable. L-867 plastic transformer housings are acceptable. A metal threaded fitting must be set in flange during casting process. Base cover bolts must be fabricated from 18-8 stainless steel.
20. The tolerance for the height of runway/taxiway edge lights must be ± 1 inch (25 mm). For stake-mounted lights, the specified lighting fixture height must be measured between the top of the stake and the top of the lens. For base-mounted lights, the specified lighting fixture height must be measured between the top of the base flange and the top of the lens, and includes the base cover, the frangible coupling, the stem, the lamp housing and the lens.
21. The tolerance for the lateral spacing (light lane to runway/taxiway centerline) of runway/taxiway edge lights must be ± 1 inch (25.4 mm). This also applies at intersections to lateral spacing between lights of a runway/taxiway and the intersecting runway/taxiway.
22. L-867 bases may be precast. Entrances into L-867 bases must be plugged from the inside with duct seal.
23. Galvanized/painted equipment/component surfaces must not be damaged by drilling, filing, etc. – this includes drain holes in metal transformer housings.
24. Edge light numbering tags must be facing the pavement.
25. Cable/splice/duct markers must be pre-cast concrete of the size shown. Letters/numbers/arrows for the legend to be impressed into the tops of the markers must be pre-assembled and secured in the mold before the concrete is poured. Legends inscribed by hand in wet concrete are not acceptable.
26. All underground cable runs must be identified by cable markers at 200 ft (61 m) maximum spacing with an additional marker at each change of direction of the cable run. Cable markers must be installed above the cable.
27. Locations of all DEB underground cable splice/connections, except those at isolation transformers, must be identified by splice markers. Splice markers must be placed above the splice/connections.
28. The cable and splice markers must identify the circuits to which the cables belong. For example: RWY 4-22, PAPI-4, PAPI-22.
29. Locations of ends of all underground ducts must be identified by duct markers.
30. The preferred mounting method of runway and taxiway signs is by the use of single row of legs. However, two rows will be acceptable.
31. Reference Figure E-13 and Figure E-14 for an example of a lighted sign installation.

- a. Power to the sign must be provided through breakaway cable connectors installed within the frangible point portion of the sign's mounting legs.
 - b. There must be no above ground electrical connection between signs in a sign array.
- 32. Stencil horizontal and vertical aiming angles on each REIL flash head or equipment enclosure. The numerals must be black and one inch (25 mm) minimum height.
 - 33. Stencil vertical aiming angles on the outside of each PAPI lamp housing. The numerals must be black and one inch (25 mm) minimum height.
 - 34. All power and control cables in man/hand holes must be tagged. Use embossed stainless steel strips or tags attached at both ends to the cable by the use of UV resistant plastic straps. A minimum of two tags must be provided on each cable in a man/hand hole - one at the cable entrance, and one at the cable exit.
 - 35. Apply a corrosion inhibiting, anti-seize compound to all screws, nuts and frangible coupling threads. If coated bolts are used per EB #83, do not apply anti-seize compound.
 - 36. There must be no splices between the isolation transformers. L-823 connectors are allowed at transformer connections only, unless shown otherwise.
 - 37. DEB splices in home runs must be of the cast type, unless shown otherwise.
 - 38. Where a parallel, constant voltage PAPI system is provided, the "T" splices must be of the cast type.
 - 39. Concrete used for slabs, footing, backfill around transformer housings, markers, etc., must be 3000 PSI, min., air-entrained.

E.1.4 Equipment Grounding.

- 1. Ground all non-current-carrying metal parts of electrical equipment by using conductors sized and routed per NEC Handbook, Article 250.
- 2. All ground connections to ground rods, busses, panels, etc., must be made with pressure type solderless lugs and ground clamps. Soldered or bolt and washer type connections are not acceptable. Clean all metal surfaces before making ground connections. Exothermic welds are the preferred method of connection to a ground rod
- 3. Tops of ground rods must be 6 inches (152 mm) below grade.
- 4. The resistance to ground of the vault grounding system with the commercial power line neutral disconnected must not exceed 10 ohms.
- 5. The resistance to ground of the grounding system, or at isolation locations, such as airport beacon must not exceed 10 ohms.

END OF ITEM L-108

Item L-110 Airport Underground Electrical Duct Banks and Conduits

DESCRIPTION

110-1.1 This item shall consist of underground electrical conduits and duct banks (single or multiple conduits encased in concrete or buried in sand) installed per this specification at the locations and per the dimensions, designs, and details shown on the plans. This item shall include furnishing and installing of all underground electrical duct banks and individual and multiple underground conduits and removal of existing duct banks. It shall also include all trenching, backfilling, removal, and restoration of any paved or turfed areas; concrete encasement, mandrelling, pulling lines, duct markers, plugging of conduits, and the testing of the installation as a completed system ready for installation of cables per the plans and specifications. This item shall also include furnishing and installing conduits and all incidentals for providing positive drainage of the system. Verification of existing ducts is incidental to the pay items provided in this specification.

EQUIPMENT AND MATERIALS

110-2.1 General.

a. All equipment and materials covered by referenced specifications shall be subject to acceptance through manufacturer's certification of compliance with the applicable specification when requested by the RPR.

b. Manufacturer's certifications shall not relieve the Contractor of the responsibility to provide materials per these specifications and acceptable to the RPR. Materials supplied and/or installed that do not comply with these specifications shall be removed, when directed by the RPR and replaced with materials, that comply with these specifications, at the Contractor's cost.

c. All materials and equipment used to construct this item shall be submitted to the RPR for approval prior to ordering the equipment. Submittals consisting of marked catalog sheets or shop drawings shall be provided. Submittal data shall be presented in a clear, precise and thorough manner. Original catalog sheets are preferred. Photocopies are acceptable provided they are as good a quality as the original. Clearly and boldly mark each copy to identify products or models applicable to this project. Indicate all optional equipment and delete non-pertinent data. Submittals for components of electrical equipment and systems shall identify the equipment for which they apply on each submittal sheet. Markings shall be made bold and clear with arrows or circles (highlighting is not acceptable). The Contractor is solely responsible for delays in project that accrue directly or indirectly from late submissions or resubmissions of submittals.

d. The data submitted shall be sufficient, in the opinion of the RPR, to determine compliance with the plans and specifications. The Contractor's submittals shall be neatly bound in a properly sized 3-ring binder, tabbed by specification section. The RPR reserves the right to reject any and all equipment, materials or procedures that do not meet the system design and the standards and codes specified in this document.

e. All equipment and materials furnished and installed under this section shall be guaranteed against defects in materials and workmanship for a period of at least twelve (12) months from final acceptance by

the Owner. The defective materials and/or equipment shall be repaired or replaced, at the Owner's discretion, with no additional cost to the Owner.

110-2.2 Steel conduit. Rigid galvanized steel (RGS) conduit and fittings shall be hot dipped galvanized inside and out and conform to the requirements of Underwriters Laboratories Standards 6, 514B, and 1242. All RGS conduits or RGS elbows installed below grade, in concrete, permanently wet locations or other similar environments shall be painted with a 10-mil thick coat of asphaltum sealer or shall have a factory-bonded polyvinyl chloride (PVC) cover.

110-2.3 Plastic conduit. Plastic conduit and fittings shall conform to the following requirements:

- UL 514B covers W-C-1094-Conduit fittings all types, classes 1 thru 3 and 6 thru 10.
- UL 514C covers W-C-1094- all types, Class 5 junction box and cover in plastic (PVC).
- UL 651 covers W-C-1094-Rigid PVC Conduit, types I and II, Class 4.
- UL 651A covers W-C-1094-Rigid PVC Conduit and high-density polyethylene (HDPE) Conduit type III and Class 4.

Underwriters Laboratories Standards UL-651 and Article 352 of the current National Electrical Code shall be one of the following, as shown on the plans:

a. Type I–Schedule 40 and Schedule 80 PVC suitable for underground use either direct-buried or encased in concrete.

b. Type II–Schedule 40 PVC suitable for either above ground or underground use.

c. Type III – Schedule 80 PVC suitable for either above ground or underground use either direct-buried or encased in concrete.

d. Type III –HDPE pipe, minimum standard dimensional ratio (SDR) 11, suitable for placement with directional boring under pavement.

The type of solvent cement shall be as recommended by the conduit/fitting manufacturer.

110-2.3 Plastic conduit and fittings. Plastic conduit and fittings shall be in compliance with Article 352 of the current National Electrical Code and as follows:

a. PVC conduit shall conform to UL 651 or UL 651A. In addition, the conduit shall be one of the following types, as shown on the plans:

1. Type I–Schedule 40 or Schedule 80 PVC suitable for underground use either direct-buried or encased in concrete.
2. Type II–Schedule 40 PVC suitable for either above ground or underground use.
3. Type III – Schedule 80 PVC suitable for either above ground or underground use either direct-buried or encased in concrete.

b. HDPE conduit shall conform to UL 651A. In addition, the conduit shall be the following type:

1. Type III –HDPE pipe, minimum standard dimensional ratio (SDR) 11, suitable for placement with directional boring under pavement.

c. PVC fittings shall conform to UL 514B.

d. PVC junction boxes and covers shall conform to UL 514C.

The type of solvent cement shall be as recommended by the conduit/fitting manufacturer.

110-2.4 Split conduit. Split conduit shall be pre-manufactured for the intended purpose and shall be made of steel or plastic.

110-2.5 Conduit spacers. Conduit spacers shall be prefabricated interlocking units manufactured for the intended purpose. They shall be of double wall construction made of high grade, high density polyethylene complete with interlocking cap and base pads. They shall be designed to accept No. 4 reinforcing bars installed vertically.

110-2.6 Concrete. Concrete foundations shall be proportioned, placed, and cured per state department of transportation structural concrete with minimum 25% Type F fly ash, and a minimum allowable compressive strength of 4,000 psi (28 MPa).

110-2.7 Precast concrete structures. Precast concrete structures shall be furnished by a plant meeting National Precast Concrete Association Plant Certification Program or another RPR approved third party certification program. Precast concrete structures shall conform to ASTM C478.

110-2.8 Flowable backfill. Not used.

110-2.9 Detectable warning tape. Plastic, detectable, American Public Works Association (APWA) red (electrical power lines, cables, conduit and lighting cable), orange (telephone/fiber optic cabling) with continuous legend magnetic tape shall be polyethylene film with a metallized foil core and shall be 3-6 inches (75-150 mm) wide. Detectable tape is incidental to the respective bid item. The legend shall read "CAUTION: BURIED ELECTRIC LINE BELOW", or similar language which includes the words "CAUTION" and "ELECTRIC".

110-2.10 Bedding. Bedding shall meet the requirements of ASTM C 33, fine aggregate for concrete. Gradation shall be in accordance with the table below:

Percentage By Weight	
<u>Sieve Designations</u>	<u>Passing Sieves</u>
3/8 Inch	100
No. 4	95-100
No. 8	80-100
No. 16	50-85
No. 30	25-60
No. 50	5-30
No. 100	0-10

110-2.11 Flexible conduit. Flexible conduit shall be liquid-tight non-metallic conforming to the requirements of NEC 356 and UL 1660. Fittings shall conform to UL 514B. Where connected to rigid steel or PVC conduit, the flexible conduit shall have the same inside diameter.

110-2.12 Reinforcing steel. Reinforcing steel shall be deformed bars of new billet steel meeting the requirements of ASTM A 615, Grade 60. Reinforcing steel shall be hot dipped galvanized in accordance with ASTM A-123, or epoxy coated.

110-2.13 Concrete bonding agent. Concrete bonding agent shall conform to the requirements of ASTM C 881. Concrete bonding agent shall be Type V, Grade 2 and un-pigmented. Concrete bonding agent shall be Class A, B, or C, depending on the temperature of the concrete surface to which the agent will be applied.

110-2.14 Backfill. Backfill shall be suitable on-site material obtained from the trench excavation, unless otherwise shown on the Contract Drawings.

110-2.15 Counterpoise wire. Not used.

110-2.16 Ground rods. Ground Rods shall meet the requirements of Item L-108, Underground Cable for Airports.

110-2.17 Concrete grouting material. This material shall have a maximum initial setting time of one hour. Compressive strength shall be a minimum of 2,000 psi after one day and 5,000 psi after 28 days. The material shall be able to withstand 25 cycles of freeze-thaw (10% NaCl) with a maximum loss of 4%. The material may exhibit expansion at no more than 0.40% and shrinkage of no more than 0.05% such that no cracks are produced. The bond strength shall be a minimum of 200 psi after 5 days air cure without the use of a special bonding agent. The material shall exhibit no appreciable heat of hydration.

110-2.18 Separation Geotextile. Separation geotextile shall be Class 2; 0.02 sec^{-1} permittivity per ASTM D4491; Apparent opening size per ASTM D4751 with 0.60 mm maximum average roll value.

CONSTRUCTION METHODS

110-3.1 General. The Contractor shall install underground duct banks and conduits at the approximate locations indicated on the plans. The RPR shall indicate specific locations as the work progresses, if required to differ from the plans. Duct banks and conduits shall be of the size, material, and type indicated on the plans or specifications. Where no size is indicated on the plans or in the specifications, conduits shall be not less than 2 inches (50 mm) inside diameter or comply with the National Electrical Code based on cable to be installed, whichever is larger. All duct bank and conduit lines shall be laid so as to grade toward access points and duct or conduit ends for drainage. Unless shown otherwise on the plans, grades shall be at least 3 inches (75 mm) per 100 feet (30 m). On runs where it is not practicable to maintain the grade all one way, the duct bank and conduit lines shall be graded from the center in both directions toward access points or conduit ends, with a drain into the storm drainage system. Pockets or traps where moisture may accumulate shall be avoided. Under pavement, the top of the duct bank shall not be less than 18 inches (0.5 m) below the subgrade; in other locations, the top of the duct bank or underground conduit shall be not less than 18 inches (0.5 m) below finished grade.

The Contractor shall mandrel each individual conduit whether the conduit is direct-buried or part of a duct bank. An iron-shod mandrel, not more than 1/4 inch (6 mm) smaller than the bore of the conduit shall be pulled or pushed through each conduit. The mandrel shall have a leather or rubber gasket slightly larger than the conduit hole.

The Contractor shall swab out all conduits/ducts and clean base can, manhole, pull boxes, etc., interiors immediately prior to pulling cable. Once cleaned and swabbed the manholes, pull boxes, etc., and all accessible points of entry to the duct/conduit system shall be kept closed except when installing cables. Cleaning of ducts, base cans, manholes, etc., is incidental to the pay item of the item being cleaned. All raceway systems left open, after initial cleaning, for any reason shall be recleaned at the Contractor's expense. All accessible points shall be kept closed when not installing cable. The Contractor shall verify existing ducts proposed for use in this project as clear and open. The Contractor shall notify the RPR of any blockage in the existing ducts.

For pulling the permanent wiring, each individual conduit, whether the conduit is direct-buried or part of a duct bank, shall be provided with a 1,000 pound test polypropylene pull rope. The ends shall be secured and sufficient length shall be left in access points to prevent it from slipping back into the conduit. Where spare conduits are installed, as indicated on the plans, the open ends shall be plugged with removable tapered plugs, designed for this purpose.

All conduits shall be securely fastened in place during construction and shall be plugged to prevent contaminants from entering the conduits. Any conduit section having a defective joint shall not be

installed. Ducts shall be supported and spaced apart using approved spacers at intervals not to exceed 5 feet (1.5 m).

Unless otherwise shown on the plans, concrete encased duct banks shall be used when crossing under pavements expected to carry aircraft loads, such as runways, taxiways, taxilanes, ramps and aprons. When under paved shoulders and other paved areas, conduit and duct banks shall be encased using flowable fill for protection.

All conduits within concrete encasement of the duct banks shall terminate with female ends for ease in current and future use. Install factory plugs in all unused ends. Do not cover the ends or plugs with concrete.

Where turf is well established and the sod can be removed, it shall be carefully stripped and properly stored.

Trenches for conduits and duct banks may be excavated manually or with mechanical trenching equipment unless in pavement, in which case they shall be excavated with mechanical trenching equipment. Walls of trenches shall be essentially vertical so that a minimum of shoulder surface is disturbed. Blades of graders shall not be used to excavate the trench.

Existing material, regardless of its nature, shall be removed to a depth of at least 3 inches (75 mm) below the required conduit or duct bank depth and it shall be replaced with bedding. Flowable backfill may alternatively be used. The cost of excavation, regardless of the type of material encountered, shall be included in the various pay items involved.

Underground electrical warning (Caution) tape shall be installed in the trench above all underground duct banks and conduits in unpaved areas. Contractor shall submit a sample of the proposed warning tape for approval by the RPR. If not shown on the plans, the warning tape shall be located 6 inches above the duct/conduit.

Joints in plastic conduit shall be prepared per the manufacturer's recommendations for the particular type of conduit. Plastic conduit shall be prepared by application of a plastic cleaner and brushing a plastic solvent on the outside of the conduit ends and on the inside of the couplings. The conduit fitting shall then be slipped together with a quick one-quarter turn twist to set the joint tightly. Where more than one conduit is placed in a single trench, or in duct banks, joints in the conduit shall be staggered a minimum of 2 feet (60 cm).

Changes in direction of runs exceeding 10 degrees, either vertical or horizontal, shall be accomplished using manufactured sweep bends.

Whether or not specifically indicated on the drawings, where the soil encountered at established duct bank grade is an unsuitable material, as determined by the RPR, the unsuitable material shall be removed and replaced with suitable material. Additional duct bank supports shall be installed, as approved by the RPR.

All excavation shall be unclassified and shall be considered incidental to Item L-110. Dewatering necessary for duct installation, and erosion per federal, state, and local requirements is incidental to Item L-110. All excavation shall be unclassified and shall be considered incidental to Item L-110. Dewatering necessary for duct installation, and erosion protection shall be per federal, state, and local requirements and shall be incidental to Item L-110.

Excavation for conduits and duct banks that are placed in embankment fill shall not be made until the embankment has been completed to a height above the top of the conduit and duct bank as shown on the plans.

The Contractor shall do such trench bracing, sheeting or shoring necessary to protect the excavation as required for safety and conformance to governing laws. Contractor shall brace, sheet or shore the trenches in areas such that existing pavements and utilities are not undermined. The bracing, sheeting or shoring

shall not be removed in one operation, but shall be done in successive stages as determined by the Engineer to prevent overloading of the conduit or duct bank during backfilling operations. The cost of the bracing, sheeting or shoring and the removal of same shall be considered as a subsidiary obligation of the Contractor and included in the contract price for the pay items of work involved.

Unless otherwise specified, excavated materials that are deemed by the RPR to be unsuitable for use in backfill or embankments shall be removed and disposed of offsite.

Any excess excavation shall be filled with suitable material approved by the RPR.

It is the Contractor's responsibility to locate existing utilities within the work area prior to excavation. Where existing active cables cross proposed installations, the Contractor shall ensure that these cables are adequately protected. Where crossings are unavoidable, no splices will be allowed in the existing cables, except as specified on the plans. Installation of new cable where such crossings must occur shall proceed as follows:

a. Existing cables shall be located manually. Unearthed cables shall be inspected to assure absolutely no damage has occurred

b. Trenching, etc., in cable areas shall then proceed with approval of the RPR, with care taken to minimize possible damage or disruption of existing cable, including careful backfilling in area of cable.

In the event that any previously identified cable is damaged during the course of construction, the Contractor shall be responsible for the complete repair. In the event that any cable is damaged during the course of construction, the Contractor shall be responsible for the immediate and complete repair.

110-3.2 Duct banks. Unless otherwise shown in the plans, duct banks shall be installed so that the top of the concrete envelope is not less than 18 inches (0.5 m) below the bottom of the base or stabilized base course layers where installed under runways, taxiways, aprons, or other paved areas, and not less than 18 inches (0.5 m) below finished grade where installed in unpaved areas.

Unless otherwise shown on the plans, duct banks under paved areas shall extend at least 3 feet (1 m) beyond the edges of the pavement or 3 feet (1 m) beyond any under drains that may be installed alongside the paved area. Trenches for duct banks shall be opened the complete length before concrete is placed so that if any obstructions are encountered, provisions can be made to avoid them. Duct banks shall be constructed in accordance with the details shown on the Plans. Conduits within the duct bank shall be spaced not less than 3 inches (75 mm) apart (measured from outside wall to outside wall). All such multiple conduits shall be placed using conduit spacers applicable to the type of conduit. As the conduit laying progresses, concrete shall be placed around and on top of the conduits not less than 3 inches (75 mm) thick unless otherwise shown on the plans. All conduits shall terminate with female ends for ease of access in current and future use. Install factory plugs in all unused ends. Do not cover the ends or plugs with concrete.

Conduits forming the duct bank shall be installed using conduit spacers. No. 4 reinforcing bars shall be driven vertically into the soil a minimum of 6 inches (150 mm) to anchor the assembly into the earth prior to placing the concrete encasement. For this purpose, the spacers shall be fastened down with locking collars attached to the vertical bars. Spacers shall be installed at 5-foot (1.5-m) intervals. Spacers shall be in the proper sizes and configurations to fit the conduits. Locking collars and spacers shall be submitted to the RPR for review prior to use.

When specified, the Contractor shall reinforce the bottom side and top of encasements with steel reinforcing mesh or fabric or other approved metal reinforcement. When directed, the Contractor shall supply additional supports where the ground is soft and boggy, where ducts cross under roadways, or where shown on the plans. Under such conditions, the complete duct structure shall be supported on reinforced concrete footings, piers, or piles located at approximately 5-foot (1.5-m) intervals.

All pavement surfaces that are to have ducts installed therein shall be neatly saw cut to form a vertical face. All excavation shall be included in the contract with price for the duct.

Install a plastic, detectable, color as noted, 3 to 6 inches (75 to 150 mm) wide tape, 8 inches (200 mm) minimum below grade above all underground conduit or duct lines not installed under pavement. Utilize the 3-inch (75-mm) wide tape only for single conduit runs. Utilize the 6-inch (150-mm) wide tape for multiple conduits and duct banks.

When existing cables are to be placed in split duct, encased in concrete, the cable shall be carefully located and exposed by hand tools. Prior to being placed in duct, the RPR shall be notified so that he may inspect the cable and determine that it is in good condition. Where required, split duct shall be installed as shown on the drawings or as required by the RPR.

Ground rods shall be installed in accordance with Item L-108, Underground Cable for Airports.

110-3.3 Conduits without concrete encasement. Trenches for single-conduit lines shall be not less than 6 inches (150 mm) nor more than 12 inches (300 mm) wide. The trench for 2 or more conduits installed at the same level shall be proportionately wider. Trench bottoms for conduits without concrete encasement shall be made to conform accurately to grade so as to provide uniform support for the conduit along its entire length.

Unless otherwise shown on the plans, a layer of fine earth material, at least 3 inches (75 mm) thick (loose measurement) shall be placed in the bottom of the trench as bedding for the conduit. The bedding material shall consist of soft dirt, sand or other fine fill, and it shall contain no particles that would be retained on a 1/4-inch (6.3 mm) sieve. The bedding material shall be tamped until firm. Flowable backfill may alternatively be used.

Unless otherwise shown on plans, conduits shall be installed so that the tops of all conduits within the Airport's secured area where trespassing is prohibited are at least 18 inches (0.5 m) below the finished grade. Conduits outside the Airport's secured area shall be installed so that the tops of the conduits are at least 24 inches (60 cm) below the finished grade per National Electric Code (NEC), Table 300.5.

When two or more individual conduits intended to carry conductors of equivalent voltage insulation rating are installed in the same trench without concrete encasement, they shall be spaced not less than 3 inches (75 mm) apart (measured from outside wall to outside wall) in a horizontal direction and not less than 6 inches (150 mm) apart in a vertical direction. Where two or more individual conduits intended to carry conductors of differing voltage insulation rating are installed in the same trench without concrete encasement, they shall be placed not less than 3 inches (75 mm) apart (measured from outside wall to outside wall) in a horizontal direction and not less than 6 inches (150 mm) apart in a vertical direction.

Trenches shall be opened the complete length between normal termination points before conduit is installed so that if any unforeseen obstructions are encountered, proper provisions can be made to avoid them.

Conduits shall be installed using conduit spacers. No. 4 reinforcing bars shall be driven vertically into the soil a minimum of 6 inches (150 mm) to anchor the assembly into the earth while backfilling. For this purpose, the spacers shall be fastened down with locking collars attached to the vertical bars. Spacers shall be installed at 5-foot (1.5-m) intervals. Spacers shall be in the proper sizes and configurations to fit the conduits. Locking collars and spacers shall be submitted to the RPR for review prior to use.

Ground rods shall be installed in accordance with Item L-108, Underground Cable for Airports.

Install a plastic, detectable, color as noted, 3 to 6 inches (75 to 150 mm) wide tape, above all underground conduit or duct lines not installed under pavement, at the depth shown on the plans.

110-3.4 Markers. The location of each end and of each change of direction of conduits and duct banks shall be marked by a concrete slab marker 2 feet (60 cm) square and 4 - 6 inches (100 - 150 mm) thick

extending approximately one inch (25 mm) above the surface. The markers shall also be located directly above the ends of all conduits or duct banks, except where they terminate in a junction/access structure or building. Each cable or duct run from a line of lights and signs to the equipment vault must be marked at approximately every 200 feet (61 m) along the cable or duct run, with an additional marker at each change of direction of cable or duct run.

The Contractor shall impress the word “DUCT” or “CONDUIT” on each marker slab. Impression of letters shall be done in a manner, approved by the RPR, for a neat, professional appearance. All letters and words must be neatly stenciled. After placement, all markers shall be given one coat of high-visibility orange paint, as approved by the RPR. The Contractor shall also impress on the slab the number and size of conduits beneath the marker along with all other necessary information as determined by the RPR. The letters shall be 4 inches (100 mm) high and 3 inches (75 mm) wide with width of stroke 1/2 inch (12 mm) and 1/4 inch (6 mm) deep or as large as the available space permits. Furnishing and installation of duct markers is incidental to the respective duct pay item.

110-3.5 Backfilling for conduits. For conduits, sand, soft earth, or other fine fill (loose measurement), as shown on the Plans, shall be placed around the conduits ducts and carefully tamped around and over them with hand tampers. The remaining trench shall then be backfilled and compacted except that material used for back fill shall be select material not larger than 4 inches (100 mm) in diameter.

Flowable backfill may alternatively be used, provided flowable fill is used as bedding below the conduit. Flowable fill shall not be used above the bottom of subgrade beneath paved areas.

Trenches shall not contain pools of water during back filling operations.

The trench shall be completely backfilled and tamped level with the adjacent surface; except that, where sod is to be placed over the trench, the backfilling shall be stopped at a depth equal to the thickness of the sod to be used, with proper allowance for settlement.

Any excess excavated material shall be removed and disposed of per instructions issued by the RPR.

110-3.6 Backfilling for duct banks. After the concrete has cured, the remaining trench shall be backfilled and compacted in accordance with the details shown on the Plans. Where duct banks are installed under pavement, one moisture/density test per lift shall be made for each 250 linear feet (76 m) of duct bank or one work period's construction, whichever is less.

Trenches shall not contain pools of water during backfilling operations.

The trench shall be completely backfilled and tamped level with the adjacent surface; except that, where sod is to be placed over the trench, the backfilling shall be stopped at a depth equal to the thickness of the sod to be used, with proper allowance for settlement.

Any excess excavated material shall be removed and disposed of per instructions issued by the RPR.

110-3.7 Restoration. Excess suitable material and unsuitable material shall be disposed of on airport property or as ordered by the Engineer. All areas disturbed by the work shall be restored to its original condition. The restoration shall include sodding, fertilizing and liming, sprigging, shown on the plans. The Contractor shall be held responsible for maintaining all disturbed surfaces and replacements until final acceptance. All restoration shall be considered incidental to the respective L-110 pay item. Where conduits or duct banks are installed or removed outside of the general grading limits, or in areas that would not otherwise be disturbed, restoration shall be considered necessary and incidental to the work of this item and the costs shall be included in the associated pay items of work involved. Where conduits or duct banks are installed or removed within the general grading limits, restoration of the area will not be necessary as payment for establishment of turf or pavement will be included in the various pay items of work involved. Following restoration of all trenching near airport movement surfaces, the Contractor shall thoroughly visually inspect the area for foreign object debris (FOD), and remove any such FOD that

is found. This FOD inspection and removal shall be considered incidental to the pay item of which it is a component part.

110-3.8 Ownership of removed cable. All cable removed shall become the property of the Contractor and shall be disposed of in a manner which is in accordance with all Federal, State and Local regulations. In no case, shall any removed cables be left within the airport limits. Contractor shall make every effort to recycle the used cable at an approved recycling center. When the Contractor chooses to dispose of cable off the airport property, the Contractor shall obtain and file with the RPR permission in writing from the property owner for the use of private property for this purpose.

Prior to placing spoil off airport property, Contractor shall submit a "Spoil Deposition and Release" to the RPR. A sample form is contained in Attachment A to Section 70-08 of these Specifications and shall be acceptable to the RPR prior to removing material from the work area.

No direct payment will be made for spoiling operations. The cost of spoiling material off-site shall be considered incidental to this Contract and the costs shall be included in the various pay items involved.

110-3.9 Conduit and duct bank removal.

Where existing conduits and duct banks are to be removed in the same trench as proposed conduits and duct banks, the Contractor shall consider such removal as an incidental part of construction and include the costs thereof in the various pay items involved. Where existing conduits and duct banks are to be removed outside of proposed trenching limits, they shall be paid for separately. The cost of such removal shall include excavation, conduit and duct bank removal, disposal, and backfill. Restoration shall be as specified below in the section titled "Restoration". Backfill shall be with suitable on-site material unless otherwise shown or specified. Backfill under paved areas shall be as shown on the plans. Conduit and duct banks shall be removed as shown on the plans and as directed by the Engineer. When conduit and duct banks are removed and disconnected from existing structures, the openings in the structure shall be closed watertight with brick and mortar. When conduits and duct banks are to be replaced, any structure modifications required to accept the proposed conduit and duct bank shall be done with all connections grouted watertight.

Where conduits or duct banks are installed or removed outside of the general grading limits, or in areas that would not otherwise be disturbed, restoration shall be considered necessary and incidental to the work of this item and the costs shall be included in the associated pay items of work involved.

Where conduits or duct banks are installed or removed within the general grading limits, restoration of the area will not be necessary as payment for establishment of turf or pavement will be included in the various pay items of work involved.

110-3.10 Grouting conduits in pavement. Conduit trenches in pavement to receive concrete grout material shall be thoroughly cleaned to the satisfaction of the Engineer prior to placement of grout material. Trench sides shall be saw cut to a vertical face with no surface spalling. Grout material shall be placed to the depths shown on the Contract Drawings. Grouting conduits in pavement shall be considered necessary and incidental to the work of this item and the costs shall be included in the various pay items involved.

METHOD OF MEASUREMENT

110-4.1 Underground conduits and duct banks shall be measured by the linear feet of conduits and duct banks installed, including encasement, locator tape, trenching and backfill with designated material, and restoration, and for drain lines, the termination at the drainage structure, all measured in place, completed, and accepted. Separate measurement shall be made for the various types and sizes.

BASIS OF PAYMENT

110-5.1 Payment will be made at the contract unit price per linear foot for each type and size of conduit and duct bank completed and accepted, including trench and backfill with the designated material, and, for drain lines, the termination at the drainage structure. This price shall be full compensation for removal and disposal of existing duct banks and conduits as shown on the plans, furnishing all materials and for all preparation, assembly, and installation of these materials, and for all labor, equipment, tools, and incidentals necessary to complete this item per the provisions and intent of the plans and specifications.

Payment will be made under:

Item L-110-5.1a	Concrete Encased Electrical Duct Bank, 2 Way - 4 Inch PVC Conduit, 24-Inches Deep, in Pavement – per linear foot
Item L-110-5.2b	Concrete Encased Electrical Duct Bank, 2 Way - 2 Inch PVC Conduit, 24-Inches Deep, in Pavement – per linear foot
Item L-110-5.3c	Non-Encased Electrical Duct Bank, 2 Way - 2 Inch RGS Conduit, 24-Inches Deep, in Turf – per linear foot

REFERENCES

The publications listed below form a part of this specification to the extent referenced. The publications are referred to within the text by the basic designation only.

Advisory Circular (AC)

AC 150/5340-30	Design and Installation Details for Airport Visual Aids
AC 150/5345-53	Airport Lighting Equipment Certification Program

ASTM International (ASTM)

ASTM A615	Standard Specification for Deformed and Plain Carbon-Steel Bars for Concrete Reinforcement
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National Fire Protection Association (NFPA)

NFPA-70	National Electrical Code (NEC)
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Underwriters Laboratories (UL)

UL Standard 6	Electrical Rigid Metal Conduit - Steel
UL Standard 514B	Conduit, Tubing, and Cable Fittings
UL Standard 514C	Nonmetallic Outlet Boxes, Flush-Device Boxes, and Covers
UL Standard 1242	Electrical Intermediate Metal Conduit Steel
UL Standard 651	Schedule 40, 80, Type EB and A Rigid PVC Conduit and Fittings
UL Standard 651A	Type EB and A Rigid PVC Conduit and HDPE Conduit

END OF ITEM L-110

Item P-101 Preparation/Removal of Existing Pavements

DESCRIPTION

101-1 This item shall consist of preparation of existing concrete slab floors and footings, and pavement surfaces for overlay, surface treatments, removal of existing pavement, and other miscellaneous items including crack repair in rigid concrete pavement. The work shall be accomplished in accordance with these specifications and the applicable plans.

EQUIPMENT AND MATERIALS

101-2.1 Equipment. All equipment and materials shall be specified here and in the following paragraphs or approved by the Resident Project Representative (RPR). The equipment shall not cause damage to the pavement to remain in place.

101-2.2 Epoxy concrete sealant. The epoxy concrete sealant shall be self – leveling, 6,000 PSI, conforming to the requirements of ASTM C-881 and AASHTO M-235.

101-2.3 Bituminous concrete pavement. Section Not Used.

101-2.4 Emulsified asphalt. Section Not Used.

101-2.5 Herbicide. Herbicide shall be a commercially produced product made specifically for killing plants and their root systems. Herbicides shall be packaged in standard sealed containers marked with the name of the material, the name of the manufacturer, the net quantity contained therein and shall be in accordance with the provisions of the Federal and State Rules and Regulations in effect at the time of delivery.

101-2.6 Tack coat. Section Not Used.

101-2.7 Surface treatment. Section Not Used.

CONSTRUCTION

101-3.1 Removal of existing pavement. Section Not Used.

a. Concrete pavement removal. Section Not Used.

b. Asphalt pavement removal. Section Not Used.

c. Repair or removal of Base, Subbase, and/or Subgrade. Section Not Used.

101-3.2 Preparation of joints and cracks. Preparation of joints and cracks are necessary in areas being that are to become the concrete floor for aircraft hangars, being overlaid or surface treated, in area that are being milled and in areas which are not being overlaid, surface treated or milled. In areas being milled, preparation shall occur after milling operations.

Existing vegetation within the limits of work shall be treated with an herbicide. The herbicide shall be applied to the vegetation prior to other preparation of joint and crack operations. Application of herbicide shall be in accordance with the manufacturer's printed instructions and the provisions of Federal and State

regulations in effect at the time of work. Preparation of joint and crack operations shall not proceed until the herbicide manufacturer's instructions indicate that the treated vegetation may be removed.

a. Preparation of Joints in Rigid Pavement. Section Not Used.

b. Preparation of Cracks in Rigid and Flexible Pavement.

(1) **Preparation of Crack.** Rout existing cracks to a minimum of ¼" width, and a minimum of 1 ½" deep or to the top of welded wire mesh. Do not cut welded wire mesh. Blow out all cracks with pressurized air. The groove width and depth shall be as shown on the Contract Drawings. A crack that is routed or sawed should have a constant width from beginning to end. The widest portion of the joint or crack to be routed or sawed shall determine the routing width for the particular joint or crack.

Routed cracks shall be cleaned and kept clean until the sealing operations are completed.

Routed cracks shall be sealed with a joint sealer in accordance with the Contract Drawings. Sealant shall be a self – leveling, 6,000 PSI epoxy for Portland cement concrete (PCC) pavement, and shall conform to the requirements of ASTM C-881 and AASHTO M-235. Sealing shall not proceed until the routed joints and cracks are accepted by the RPR. Joint sealing shall not be performed when the ambient air temperature is below 40 degrees F, when the pavement temperature is below 50 degrees F, or when the pavement is wet.

Sealant which has been damaged, sunk below the surface, or has not bonded properly to the joint or crack shall be removed. The joint or crack shall be re-cleaned and re-sealed in accordance with the specifications at the Contractor's expense. Immediately before sealing, joints will be blown out with a hot air lance combined with oil and water-free compressed air.

(2) **Removal of Existing Sealant.** Existing sealants will be removed by routing or random crack saw. Following routing or sawing any remaining debris will be removed by use of a hot lance combined with oil and water-free compressed air.

Remove all vegetation, joint and crack sealer, and debris from joints and cracks to a minimum depth of 1 ½ ", or to the top of the welded wire mesh. Remove all joint sealant, vegetation and debris from all joints to the full depth of the joint. The crack sealant, preparation, and application shall be compatible with the surface treatment to be used. Underfill joints and cracks with the crack sealant a minimum of 1/8 inch (3 mm), not to exceed ¼ inch (6 mm). Any excess joint or crack sealer shall be removed from the pavement surface.

Wider cracks (over 1 inch wide (25 mm)), and cracks with adjacent soft or sunken spots, shall be repaired or replaced in accordance with paragraph 101-3.4, unless otherwise directed by the RPR.

101-3.3 Removal of Foreign Substances/contaminates prior to overlay, seal-coat or remarking.

Section not used.

101-3.4 Concrete and asphaltic concrete pavement repair. Pavement repair operations shall not proceed until the herbicide manufacturer's instructions indicate that vegetation may be removed.

101-3.5. Section Not Used.

101-3.6. Section not used.

101-3.7 Maintenance. The Contractor shall perform all maintenance work necessary to keep the pavement in a satisfactory condition until the full section is complete and accepted by the RPR. The surface shall be kept clean and free from foreign material. The pavement shall be properly drained at all times. If cleaning is necessary or if the pavement becomes disturbed, any work repairs necessary shall be performed at the Contractor's expense.

101-3.8 Section not used.

101-3.9 Section not used.

101-3.10 Removal of Pipe, Structures and other Buried Items. Section Not Used.

101-3.11 Spoil. Section Not Used.

METHOD OF MEASUREMENT

101-4.1 Preparation of Crack Repair. The unit of measurement for joint and crack repair shall be by the linear foot.

BASIS OF PAYMENT

101-5.1 Payment. The work covered by this section shall be paid at the contract unit price for the unit of measurement as specified above. This price shall be full compensation for furnishing all materials and for all preparation, hauling, and placing of the material and for all labor, equipment, tools, and incidentals necessary to complete this item.

Item P 101-5.1 Joint and Crack Repair – per linear foot

REFERENCES

The publications listed below form a part of this specification to the extent referenced. The publications are referred to within the text by the basic designation only.

Advisory Circulars (AC)

AC 150/5380-6	Guidelines and Procedures for Maintenance of Airport Pavements.
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ASTM International (ASTM)

ASTM D6690	Standard Specification for Joint and Crack Sealants, Hot Applied, for Concrete and Asphalt Pavements
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ASTM C-881	Standard Specification for Epoxy-Resin Base Bonding Systems for Concrete
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AASHTO M-235	Standard Specification for Epoxy Resin Adhesives
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END OF ITEM P-101



U.S. Department
of Transportation
**Federal Aviation
Administration**

Advisory Circular

Subject: Operational Safety on
Airports During Construction

Date: 12/13/2017

Initiated By: AAS-100

AC No: 150/5370-2G

Change:

1 **Purpose.**

This AC sets forth guidelines for operational safety on airports during construction.

2 **Cancellation.**

This AC cancels AC 150/5370-2F, *Operational Safety on Airports during Construction*, dated September 29, 2011.

3 **Application.**

This AC assists airport operators in complying with Title 14 Code of Federal Regulations (CFR) Part 139, *Certification of Airports*. For those certificated airports, this AC provides one way, but not the only way, of meeting those requirements. The use of this AC is mandatory for those airport construction projects receiving funds under the Airport Improvement Program (AIP). See Grant Assurance No. 34, *Policies, Standards, and Specifications*. While we do not require non-certificated airports without grant agreements or airports using Passenger Facility Charge (PFC) Program funds for construction projects to adhere to these guidelines, we recommend that they do so to help these airports maintain operational safety during construction.

4 **Related Documents.**

ACs and Orders referenced in the text of this AC do not include a revision letter, as they refer to the latest version. Appendix A contains a list of reading material on airport construction, design, and potential safety hazards during construction, as well as instructions for obtaining these documents.

5 **Principal Changes.**

The AC incorporates the following principal changes:

1. Notification about impacts to both airport owned and FAA-owned NAVAIDs was added. See paragraph 2.13.5.3, NAVAIDs.

2. Guidance for the use of orange construction signs was added. See paragraph 2.18.4.2, Temporary Signs.
3. Open trenches or excavations may be permitted in the taxiway safety area while the taxiway is open to aircraft operations, subject to restrictions. See paragraph 2.22.3.4, Excavations.
4. Guidance for temporary shortened runways and displaced thresholds has been enhanced. See Figure 2-1 and Figure 2-2.
5. Figures have been improved and a new Appendix F on the placement of orange construction signs has been added.

Hyperlinks (allowing the reader to access documents located on the internet and to maneuver within this document) are provided throughout this document and are identified with underlined text. When navigating within this document, return to the previously viewed page by pressing the “ALT” and “←” keys simultaneously.

Figures in this document are schematic representations and are not to scale.

6 **Use of Metrics.**

Throughout this AC, U.S. customary units are used followed with “soft” (rounded) conversion to metric units. The U.S. customary units govern.

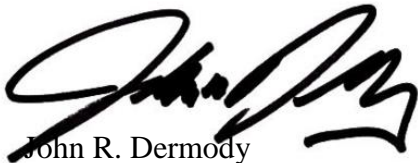
7 **Where to Find this AC.**

You can view a list of all ACs at

http://www.faa.gov/regulations_policies/advisory_circulars/. You can view the Federal Aviation Regulations at http://www.faa.gov/regulations_policies/faa_regulations/.

8 **Feedback on this AC.**

If you have suggestions for improving this AC, you may use the Advisory Circular Feedback form at the end of this AC.



John R. Dermody

Director of Airport Safety and Standards

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CHAPTER 1. PLANNING AN AIRFIELD CONSTRUCTION PROJECT

1.1 Overview.

Airports are complex environments, and procedures and conditions associated with construction activities often affect aircraft operations and can jeopardize operational safety. Safety considerations are paramount and may make operational impacts unavoidable. However, careful planning, scheduling, and coordination of construction activities can minimize disruption of normal aircraft operations and avoid situations that compromise the airport's operational safety. The airport operator must understand how construction activities and aircraft operations affect one another to be able to develop an effective plan to complete the project. While the guidance in this AC is primarily used for construction operations, the concepts, methods and procedures described may also enhance the day-to-day airport maintenance operations, such as lighting maintenance and snow removal operations.

1.2 Plan for Safety.

Safety, maintaining aircraft operations, and construction costs are all interrelated. Since safety must not be compromised, the airport operator must strike a balance between maintaining aircraft operations and construction costs. This balance will vary widely depending on the operational needs and resources of the airport and will require early coordination with airport users and the FAA. As the project design progresses, the necessary construction locations, activities, and associated costs will be identified and their impact to airport operations must be assessed. Adjustments are made to the proposed construction activities, often by phasing the project, and/or to airport operations to maintain operational safety. This planning effort will ultimately result in a project Construction Safety and Phasing Plan (CSPP). The development of the CSPP takes place through the following five steps:

1.2.1 Identify Affected Areas.

The airport operator must determine the geographic areas on the airport affected by the construction project. Some, such as a runway extension, will be defined by the project. Others may be variable, such as the location of haul routes and material stockpiles.

1.2.2 Describe Current Operations.

Identify the normal airport operations in each affected area for each phase of the project. This becomes the baseline from which the impact on operations by construction activities can be measured. This should include a narrative of the typical users and aircraft operating within the affected areas. It should also include information related to airport operations: the Aircraft Approach Category (AAC) and Airplane Design Group (ADG) of the airplanes that operate on each runway; the ADG and Taxiway Design Group (TDG)¹ for each affected taxiway; designated approach visibility minimums;

¹ Find Taxiway Design Group information in AC 150/5300-13, Airport Design.

available approach and departure procedures; most demanding aircraft; declared distances; available air traffic control services; airport Surface Movement Guidance and Control System (SMGCS) plan; and others. The applicable seasons, days and times for certain operations should also be identified as applicable.

1.2.3 Allow for Temporary Changes to Operations.

To the extent practical, current airport operations should be maintained during the construction. In consultation with airport users, Aircraft Rescue and Fire Fighting (ARFF) personnel, and FAA Air Traffic Organization (ATO) personnel, the airport operator should identify and prioritize the airport's most important operations. The construction activities should be planned, through project phasing if necessary, to safely accommodate these operations. When the construction activities cannot be adjusted to safely maintain current operations, regardless of their importance, then the operations must be revised accordingly. Allowable changes include temporary revisions to approach procedures, restricting certain aircraft to specific runways and taxiways, suspension of certain operations, decreased weights for some aircraft due to shortened runways, and other changes. An example of a table showing temporary operations versus current operations is shown in Appendix E.

1.2.4 Take Required Measures to Revise Operations.

Once the level and type of aircraft operations to be maintained are identified, the airport operator must determine the measures required to safely conduct the planned operations during the construction. These measures will result in associated costs, which can be broadly interpreted to include not only direct construction costs, but also loss of revenue from impacted operations. Analysis of costs may indicate a need to reevaluate allowable changes to operations. As aircraft operations and allowable changes will vary widely among airports, this AC presents general guidance on those subjects.

1.2.5 Manage Safety Risk.

The FAA is committed to incorporating proactive safety risk management (SRM) tools into its decision-making processes. FAA Order 5200.11, *FAA Airports (ARP) Safety Management System (SMS)*, requires the FAA to conduct a Safety Assessment for certain triggering actions. Certain airport projects may require the airport operator to provide a Project Proposal Summary to help the FAA determine whether a Safety Assessment is required prior to FAA approval of the CSPP. The airport operator must coordinate with the appropriate FAA Airports Regional or District Office early in the development of the CSPP to determine the need for a Safety Risk Assessment. If the FAA requires an assessment, the airport operator must at a minimum:

1. Notify the appropriate FAA Airports Regional or District Office during the project "scope development" phase of any project requiring a CSPP.
2. Provide documents identified by the FAA as necessary to conduct SRM.
3. Participate in the SRM process for airport projects.
4. Provide a representative to participate on the SRM panel.

5. Ensure that all applicable SRM identified risks elements are recorded and mitigated within the CSPP.

1.3 **Develop a Construction Safety and Phasing Plan (CSPP).**

Development of an effective CSPP will require familiarity with many other documents referenced throughout this AC. See Appendix A for a list of related reading material.

1.3.1 List Requirements.

A CSPP must be developed for each on-airfield construction project funded by the Airport Improvement Program (AIP) or located on an airport certificated under Part 139. For on-airfield construction projects at Part 139 airports funded without AIP funds, the preparation of a CSPP represents an acceptable method the certificate holder may use to meet Part 139 requirements during airfield construction activity. As per FAA Order 5200.11, projects that require Safety Assessments do not include construction, rehabilitation, or change of any facility that is entirely outside the air operations area, does not involve any expansion of the facility envelope and does not involve construction equipment, haul routes or placement of material in locations that require access to the air operations area, increase the facility envelope, or impact line-of-sight. Such facilities may include passenger terminals and parking or other structures. However, extraordinary circumstances may trigger the need for a Safety Assessment and a CSPP. The CSPP is subject to subsequent review and approval under the FAA's Safety Risk Management procedures (see paragraph 1.2.5).

1.3.2 Prepare a Safety Plan Compliance Document (SPCD).

The Safety Plan Compliance Document (SPCD) details how the contractor will comply with the CSPP. Also, it will not be possible to determine all safety plan details (for example specific hazard equipment and lighting, contractor's points of contact, construction equipment heights) during the development of the CSPP. The successful contractor must define such details by preparing an SPCD that the airport operator reviews for approval prior to issuance of a notice-to-proceed. The SPCD is a subset of the CSPP, similar to how a shop drawing review is a subset to the technical specifications.

1.3.3 Assume Responsibility for the CSPP.

The airport operator is responsible for establishing and enforcing the CSPP. The airport operator may use the services of an engineering consultant to help develop the CSPP. However, writing the CSPP cannot be delegated to the construction contractor. Only those details the airport operator determines cannot be addressed before contract award are developed by the contractor and submitted for approval as the SPCD. The SPCD does not restate nor propose differences to provisions already addressed in the CSPP.

1.4 **Who Is Responsible for Safety During Construction?**

1.4.1 Establish a Safety Culture.

Everyone has a role in operational safety on airports during construction: the airport operator, the airport's consultants, the construction contractor and subcontractors, airport users, airport tenants, ARFF personnel, Air Traffic personnel, including Technical Operations personnel, FAA Airports Division personnel, and others, such as military personnel at any airport supporting military operations (e.g. national guard or a joint use facility). Close communication and coordination between all affected parties is the key to maintaining safe operations. Such communication and coordination should start at the project scoping meeting and continue through the completion of the project. The airport operator and contractor should conduct onsite safety inspections throughout the project and immediately remedy any deficiencies, whether caused by negligence, oversight, or project scope change.

1.4.2 Assess Airport Operator's Responsibilities.

An airport operator has overall responsibility for all activities on an airport, including construction. This includes the predesign, design, preconstruction, construction, and inspection phases. Additional information on the responsibilities listed below can be found throughout this AC. The airport operator must:

- 1.4.2.1 Develop a CSPP that complies with the safety guidelines of Chapter 2, Construction Safety and Phasing Plans, and Chapter 3, Guidelines for Writing a CSPP. The airport operator may develop the CSPP internally or have a consultant develop the CSPP for approval by the airport operator. For tenant sponsored projects, approve a CSPP developed by the tenant or its consultant.
- 1.4.2.2 Require, review and approve the SPCD by the contractor that indicates how it will comply with the CSPP and provides details that cannot be determined before contract award.
- 1.4.2.3 Convene a preconstruction meeting with the construction contractor, consultant, airport employees and, if appropriate, tenant sponsor and other tenants to review and discuss project safety before beginning construction activity. The appropriate FAA representatives should be invited to attend the meeting. See AC 150/5370-12, Quality Management for Federally Funded Airport Construction Projects. (Note “FAA” refers to the Airports Regional or District Office, the Air Traffic Organization, Flight Standards Service, and other offices that support airport operations, flight regulations, and construction/environmental policies.)
- 1.4.2.4 Ensure contact information is accurate for each representative/point of contact identified in the CSPP and SPCD.
- 1.4.2.5 Hold weekly or, if necessary, daily safety meetings with all affected parties to coordinate activities.
- 1.4.2.6 Notify users, ARFF personnel, and FAA ATO personnel of construction and conditions that may adversely affect the operational safety of the airport via Notices to Airmen (NOTAM) and other methods, as appropriate. Convene a meeting for review and discussion if necessary.
- 1.4.2.7 Ensure construction personnel know applicable airport procedures and changes to those procedures that may affect their work.
- 1.4.2.8 Ensure that all temporary construction signs are located per the scheduled list for each phase of the project.
- 1.4.2.9 Ensure construction contractors and subcontractors undergo training required by the CSPP and SPCD.
- 1.4.2.10 Ensure vehicle and pedestrian operations addressed in the CSPP and SPCD are coordinated with airport tenants, the airport traffic control tower (ATCT), and construction contractors.
- 1.4.2.11 At certificated airports, ensure each CSPP and SPCD is consistent with Part 139.

- 1.4.2.12 Conduct inspections sufficiently frequently to ensure construction contractors and tenants comply with the CSPP and SPCD and that there are no altered construction activities that could create potential safety hazards.
 - 1.4.2.13 Take immediate action to resolve safety deficiencies.
 - 1.4.2.14 At airports subject to 49 CFR Part 1542, *Airport Security*, ensure construction access complies with the security requirements of that regulation.
 - 1.4.2.15 Notify appropriate parties when conditions exist that invoke provisions of the CSPP and SPCD (for example, implementation of low-visibility operations).
 - 1.4.2.16 Ensure prompt submittal of a Notice of Proposed Construction or Alteration (Form 7460-1) for conducting an aeronautical study of potential obstructions such as tall equipment (cranes, concrete pumps, other), stock piles, and haul routes. A separate form may be filed for each potential obstruction, or one form may be filed describing the entire construction area and maximum equipment height. In the latter case, a separate form must be filed for any object beyond or higher than the originally evaluated area/height. The FAA encourages online submittal of forms for expediency at <https://oeaaa.faa.gov/oeaaa/external/portal.jsp>. The appropriate FAA Airports Regional or District Office can provide assistance in determining which objects require an aeronautical study.
 - 1.4.2.17 Ensure prompt transmission of the Airport Sponsor Strategic Event Submission, FAA Form 6000-26, located at https://oeaaa.faa.gov/oeaaa/external/content/AIRPORT_SPONSOR_STRATEGIC_EVENT_SUBMISSION_FORM.pdf, to assure proper coordination for NAS Strategic Interruption per Service Level Agreement with ATO.
 - 1.4.2.18 Promptly notify the FAA Airports Regional or District Office of any proposed changes to the CSPP prior to implementation of the change. Changes to the CSPP require review and approval by the airport operator and the FAA. The FAA Airports Regional or District office will determine if further coordination within the FAA is needed. Coordinate with appropriate local and other federal government agencies, such as Environmental Protection Agency (EPA), Occupational Safety and Health Administration (OSHA), Transportation Security Administration (TSA), and the state environmental agency.
- 1.4.3 Define Construction Contractor's Responsibilities.
- The contractor is responsible for complying with the CSPP and SPCD. The contractor must:

- 1.4.3.1 Submit a Safety Plan Compliance Document (SPCD) to the airport operator describing how it will comply with the requirements of the CSPP and supply any details that could not be determined before contract award. The SPCD must include a certification statement by the contractor, indicating an understanding of the operational safety requirements of the CSPP and the assertion of compliance with the approved CSPP and SPCD unless written approval is granted by the airport operator. Any construction practice proposed by the contractor that does not conform to the CSPP and SPCD may impact the airport's operational safety and will require a revision to the CSPP and SPCD and re-coordination with the airport operator and the FAA in advance.
- 1.4.3.2 Have available at all times copies of the CSPP and SPCD for reference by the airport operator and its representatives, and by subcontractors and contractor employees.
- 1.4.3.3 Ensure that construction personnel are familiar with safety procedures and regulations on the airport. Provide a point of contact who will coordinate an immediate response to correct any construction-related activity that may adversely affect the operational safety of the airport. Many projects will require 24-hour coverage.
- 1.4.3.4 Identify in the SPCD the contractor's on-site employees responsible for monitoring compliance with the CSPP and SPCD during construction. At least one of these employees must be on-site when active construction is taking place.
- 1.4.3.5 Conduct sufficient inspections to ensure construction personnel comply with the CSPP and SPCD and that there are no altered construction activities that could create potential safety hazards.
- 1.4.3.6 Restrict movement of construction vehicles and personnel to permitted construction areas by flagging, barricading, erecting temporary fencing, or providing escorts, as appropriate, and as specified in the CSPP and SPCD.
- 1.4.3.7 Ensure that no contractor employees, employees of subcontractors or suppliers, or other persons enter any part of the air operations area (AOA) from the construction site unless authorized.
- 1.4.3.8 Ensure prompt submittal through the airport operator of Form 7460-1 for the purpose of conducting an aeronautical study of contractor equipment such as tall equipment (cranes, concrete pumps, and other equipment), stock piles, and haul routes when different from cases previously filed by the airport operator. The FAA encourages online submittal of forms for expediency at <https://oeaaa.faa.gov/oeaaa/external/portal.jsp>.

- 1.4.3.9 Ensure that all necessary safety mitigations are understood by all parties involved, and any special requirements of each construction phase will be fulfilled per the approved timeframe.
- 1.4.3.10 Participate in pre-construction meetings to review construction limits, safety mitigations, NOTAMs, and understand all special airport operational needs during each phase of the project.

1.4.4 Define Tenant's Responsibilities.

If planning construction activities on leased property, Airport tenants, such as airline operators, fixed base operators, and FAA ATO/Technical Operations sponsoring construction are strongly encouraged to:

1. Develop, or have a consultant develop, a project specific CSPP and submit it to the airport operator. The airport operator may forgo a complete CSPP submittal and instead incorporate appropriate operational safety principles and measures addressed in the advisory circular within their tenant lease agreements.
2. In coordination with its contractor, develop an SPCD and submit it to the airport operator for approval issued prior to issuance of a Notice to Proceed.
3. Ensure that construction personnel are familiar with safety procedures and regulations on the airport during all phases of the construction.
4. Provide a point of contact of who will coordinate an immediate response to correct any construction-related activity that may adversely affect the operational safety of the airport.
5. Identify in the SPCD the contractor's on-site employees responsible for monitoring compliance with the CSPP and SPCD during construction. At least one of these employees must be on-site when active construction is taking place.
6. Ensure that no tenant or contractor employees, employees of subcontractors or suppliers, or any other persons enter any part of the AOA from the construction site unless authorized.
7. Restrict movement of construction vehicles to construction areas by flagging and barricading, erecting temporary fencing, or providing escorts, as appropriate, as specified in the CSPP and SPCD.
8. Ensure prompt submittal through the airport operator of Form 7460-1 for conducting an aeronautical study of contractor equipment such as tall equipment (cranes, concrete pumps, other), stock piles, and haul routes. The FAA encourages online submittal of forms for expediency at <https://oeaaa.faa.gov/oeaaa/external/portal.jsp>.
9. Participate in pre-construction meetings to review construction limits, safety mitigations, NOTAMs, and understand all special airport operational needs during each phase of the project.

CHAPTER 2. CONSTRUCTION SAFETY AND PHASING PLANS

2.1 Overview.

Aviation safety is the primary consideration at airports, especially during construction. The airport operator's CSPP and the contractor's Safety Plan Compliance Document (SPCD) are the primary tools to ensure safety compliance when coordinating construction activities with airport operations. These documents identify all aspects of the construction project that pose a potential safety hazard to airport operations and outline respective mitigation procedures for each hazard. They must provide information necessary for the Airport Operations department to conduct airfield inspections and expeditiously identify and correct unsafe conditions during construction. All aviation safety provisions included within the project drawings, contract specifications, and other related documents must also be reflected in the CSPP and SPCD.

2.2 Assume Responsibility.

Operational safety on the airport remains the airport operator's responsibility at all times. The airport operator must develop, certify, and submit for FAA approval each CSPP. It is the airport operator's responsibility to apply the requirements of the FAA approved CSPP. The airport operator must revise the CSPP when conditions warrant changes and must submit the revised CSPP to the FAA for approval. The airport operator must also require and approve a SPCD from the project contractor.

2.3 Submit the CSPP.

Construction Safety and Phasing Plans should be developed concurrently with the project design. Milestone versions of the CSPP should be submitted for review and approval as follows. While these milestones are not mandatory, early submission will help to avoid delays. Submittals are preferred in 8.5×11 inch or 11×17 inch format for compatibility with the FAA's Obstruction Evaluation / Airport Airspace Analysis (OE / AAA) process.

2.3.1 Submit an Outline/Draft.

By the time approximately 25% to 30% of the project design is completed, the principal elements of the CSPP should be established. Airport operators are encouraged to submit an outline or draft, detailing all CSPP provisions developed to date, to the FAA for review at this stage of the project design.

2.3.2 Submit a CSPP.

The CSPP should be formally submitted for FAA approval when the project design is 80 percent to 90 percent complete. Since provisions in the CSPP will influence contract costs, it is important to obtain FAA approval in time to include all such provisions in the procurement contract.

2.3.3 Submit an SPCD.

The contractor should submit the SPCD to the airport operator for approval to be issued prior to the Notice to Proceed.

2.3.4 Submit CSPP Revisions.

All revisions to a previously approved CSPP must be re-submitted to the FAA for review and approval/disapproval action.

2.4 **Meet CSPP Requirements.**

2.4.1 To the extent possible, the CSPP should address the following as outlined in Chapter 3, Guidelines for Writing a CSPP. Details that cannot be determined at this stage are to be included in the SPCD.

1. Coordination.
 - a. Contractor progress meetings.
 - b. Scope or schedule changes.
 - c. FAA ATO coordination.
2. Phasing.
 - a. Phase elements.
 - b. Construction safety drawings.
3. Areas and operations affected by the construction activity.
 - a. Identification of affected areas.
 - b. Mitigation of effects.
4. Protection of navigation aids (NAVAIDs).
5. Contractor access.
 - a. Location of stockpiled construction materials.
 - b. Vehicle and pedestrian operations.
6. Wildlife management.
 - a. Trash.
 - b. Standing water.
 - c. Tall grass and seeds.
 - d. Poorly maintained fencing and gates.
 - e. Disruption of existing wildlife habitat.
7. Foreign Object Debris (FOD) management.
8. Hazardous materials (HAZMAT) management.
9. Notification of construction activities.

- a. Maintenance of a list of responsible representatives/ points of contact.
 - b. NOTAM.
 - c. Emergency notification procedures.
 - d. Coordination with ARFF Personnel.
 - e. Notification to the FAA.
10. Inspection requirements.
- a. Daily (or more frequent) inspections.
 - b. Final inspections.
11. Underground utilities.
12. Penalties.
13. Special conditions.
14. Runway and taxiway visual aids. Marking, lighting, signs, and visual NAVAIDs.
- a. General.
 - b. Markings.
 - c. Lighting and visual NAVAIDs.
 - d. Signs, temporary, including orange construction signs, and permanent signs.
15. Marking and signs for access routes.
16. Hazard marking and lighting.
- a. Purpose.
 - b. Equipment.
17. Work zone lighting for nighttime construction (if applicable).
18. Protection of runway and taxiway safety areas, object free areas, obstacle free zones, and approach/departure surfaces.
- a. Runway Safety Area (RSA).
 - b. Runway Object Free Area (ROFA).
 - c. Taxiway Safety Area (TSA). Provide details for any adjustments to Taxiway Safety Area width to allow continued operation of smaller aircraft. See paragraph 2.22.3.
 - d. Taxiway Object Free Area (TOFA). Provide details for any continued aircraft operations while construction occurs within the TOFA. See paragraph 2.22.4.
 - e. Obstacle Free Zone (OFZ).
 - f. Runway approach/departure surfaces.
19. Other limitations on construction.
- a. Prohibitions.

b. Restrictions.

2.4.2 The Safety Plan Compliance Document (SPCD) should include a general statement by the construction contractor that he/she has read and will abide by the CSPP. In addition, the SPCD must include all supplemental information that could not be included in the CSPP prior to the contract award. The contractor statement should include the name of the contractor, the title of the project CSPP, the approval date of the CSPP, and a reference to any supplemental information (that is, “I, (Name of Contractor), have read the (Title of Project) CSPP, approved on (Date), and will abide by it as written and with the following additions as noted:”). The supplemental information in the SPCD should be written to match the format of the CSPP indicating each subject by corresponding CSPP subject number and title. If no supplemental information is necessary for any specific subject, the statement, “No supplemental information,” should be written after the corresponding subject title. The SPCD should not duplicate information in the CSPP:

1. Coordination. Discuss details of proposed safety meetings with the airport operator and with contractor employees and subcontractors.
2. Phasing. Discuss proposed construction schedule elements, including:
 - a. Duration of each phase.
 - b. Daily start and finish of construction, including “night only” construction.
 - c. Duration of construction activities during:
 - i. Normal runway operations.
 - ii. Closed runway operations.
 - iii. Modified runway “Aircraft Reference Code” usage.
3. Areas and operations affected by the construction activity. These areas and operations should be identified in the CSPP and should not require an entry in the SPCD.
4. Protection of NAVAIDs. Discuss specific methods proposed to protect operating NAVAIDs.
5. Contractor access. Provide the following:
 - a. Details on how the contractor will maintain the integrity of the airport security fence (gate guards, daily log of construction personnel, and other).
 - b. Listing of individuals requiring driver training (for certificated airports and as requested).
 - c. Radio communications.
 - i. Types of radios and backup capabilities.
 - ii. Who will be monitoring radios.
 - iii. Who to contact if the ATCT cannot reach the contractor’s designated person by radio.

- d. Details on how the contractor will escort material delivery vehicles.
- 6. Wildlife management. Discuss the following:
 - a. Methods and procedures to prevent wildlife attraction.
 - b. Wildlife reporting procedures.
- 7. Foreign Object Debris (FOD) management. Discuss equipment and methods for control of FOD, including construction debris and dust.
- 8. Hazardous Materials (HAZMAT) management. Discuss equipment and methods for responding to hazardous spills.
- 9. Notification of construction activities. Provide the following:
 - a. Contractor points of contact.
 - b. Contractor emergency contact.
 - c. Listing of tall or other requested equipment proposed for use on the airport and the timeframe for submitting 7460-1 forms not previously submitted by the airport operator.
 - d. Batch plant details, including 7460-1 submittal.
- 10. Inspection requirements. Discuss daily (or more frequent) inspections and special inspection procedures.
- 11. Underground utilities. Discuss proposed methods of identifying and protecting underground utilities.
- 12. Penalties. Penalties should be identified in the CSPP and should not require an entry in the SPCD.
- 13. Special conditions. Discuss proposed actions for each special condition identified in the CSPP.
- 14. Runway and taxiway visual aids. Including marking, lighting, signs, and visual NAVAIDs. Discuss proposed visual aids including the following:
 - a. Equipment and methods for covering signage and airfield lights.
 - b. Equipment and methods for temporary closure markings (paint, fabric, other).
 - c. Temporary orange construction signs.
 - d. Types of temporary Visual Guidance Slope Indicators (VGSI).
- 15. Marking and signs for access routes. Discuss proposed methods of demarcating access routes for vehicle drivers.
- 16. Hazard marking and lighting. Discuss proposed equipment and methods for identifying excavation areas.
- 17. Work zone lighting for nighttime construction (if applicable). Discuss proposed equipment, locations, aiming, and shielding to prevent interference with air traffic control and aircraft operations.

18. Protection of runway and taxiway safety areas, object free areas, obstacle free zones, and approach/departure surfaces. Discuss proposed methods of identifying, demarcating, and protecting airport surfaces including:
 - a. Equipment and methods for maintaining Taxiway Safety Area standards.
 - b. Equipment and methods to ensure the safe passage of aircraft where Taxiway Safety Area or Taxiway Object Free Area standards cannot be maintained.
 - c. Equipment and methods for separation of construction operations from aircraft operations, including details of barricades.
19. Other limitations on construction should be identified in the CSPP and should not require an entry in the SPCD.

2.5 **Coordination.**

Airport operators, or tenants responsible for design, bidding and conducting construction on their leased properties, should ensure at all project developmental stages, such as predesign, prebid, and preconstruction conferences, they capture the subject of airport operational safety during construction (see AC 150/5370-12, *Quality Management for Federally Funded Airport Construction Projects*). In addition, the following should be coordinated as required:

2.5.1 Progress Meetings.

Operational safety should be a standing agenda item for discussion during progress meetings throughout the project developmental stages.

2.5.2 Scope or Schedule Changes.

Changes in the scope or duration at any of the project stages may require revisions to the CSPP and review and approval by the airport operator and the FAA (see paragraph 1.4.2.17).

2.5.3 FAA ATO Coordination.

Early coordination with FAA ATO is highly recommended during the design phase and is required for scheduling Technical Operations shutdowns prior to construction. Coordination is critical to restarts of NAVAID services and to the establishment of any special procedures for the movement of aircraft. Formal agreements between the airport operator and appropriate FAA offices are recommended. All relocation or adjustments to NAVAIDs, or changes to final grades in critical areas, should be coordinated with FAA ATO and may require an FAA flight inspection prior to restarting the facility. Flight inspections must be coordinated and scheduled well in advance of the intended facility restart. Flight inspections may require a reimbursable agreement between the airport operator and FAA ATO. Reimbursable agreements should be coordinated a minimum of 12 months prior to the start of construction. (See paragraph 2.13.5.3.2 for required FAA notification regarding FAA-owned NAVAIDs.)

2.6 **Phasing.**

Once it has been determined what types and levels of airport operations will be maintained, the most efficient sequence of construction may not be feasible. In this case, the sequence of construction may be phased to gain maximum efficiency while allowing for the required operations. The development of the resulting construction phases should be coordinated with local Air Traffic personnel and airport users. The sequenced construction phases established in the CSPP must be incorporated into the project design and must be reflected in the contract drawings and specifications.

2.6.1 Phase Elements.

For each phase the CSPP should detail:

- Areas closed to aircraft operations.
- Duration of closures.
- Taxi routes and/or areas of reduced TSA and TOFA to reflect reduced ADG use.
- ARFF access routes.
- Construction staging, disposal, and cleanout areas.
- Construction access and haul routes.
- Impacts to NAVAIDs.
- Lighting, marking, and signing changes.
- Available runway length and/or reduced RSA and ROFA to reflect reduced ADG use.
- Declared distances (if applicable).
- Required hazard marking, lighting, and signing.
- Work zone lighting for nighttime construction (if applicable).
- Lead times for required notifications.

2.6.2 Construction Safety Drawings.

Drawings specifically indicating operational safety procedures and methods in affected areas (i.e., construction safety drawings) should be developed for each construction phase. Such drawings should be included in the CSPP as referenced attachments and should also be included in the contract drawing package.

2.7 **Areas and Operations Affected by Construction Activity.**

Runways and taxiways should remain in use by aircraft to the maximum extent possible without compromising safety. Pre-meetings with the FAA ATO will support operational simulations. See Appendix E for an example of a table showing temporary operations versus current operations. The tables in Appendix E can be useful for coordination among all interested parties, including FAA Lines of Business.

2.7.1 Identification of Affected Areas.

Identifying areas and operations affected by the construction helps to determine possible safety problems. The affected areas should be identified in the construction safety drawings for each construction phase. (See paragraph 2.6.2.) Of particular concern are:

2.7.1.1 **Closing, or Partial Closing, of Runways, Taxiways and Aprons, and Displaced Thresholds.**

When a runway is partially closed, a portion of the pavement is unavailable for any aircraft operation, meaning taxiing, landing, or takeoff in either direction on that pavement is prohibited. A displaced threshold, by contrast, is established to ensure obstacle clearance and adequate safety area for landing aircraft. The pavement prior to the displaced threshold is normally available for take-off in the direction of the displacement and for landing and takeoff in the opposite direction. Misunderstanding this difference, may result in issuance of an inaccurate NOTAM, and can lead to a hazardous condition.

2.7.1.1.1 Partially Closed Runways.

The temporarily closed portion of a partially closed runway will generally extend from the threshold to a taxiway that may be used for entering and exiting the runway. If the closed portion extends to a point between taxiways, pilots will have to back-taxi on the runway, which is an undesirable operation. See Figure 2-1 for a desirable configuration.

2.7.1.1.2 Displaced Thresholds.

Since the portion of the runway pavement between the permanent threshold and a standard displaced threshold is available for takeoff and for landing in the opposite direction, the temporary displaced threshold need not be located at an entrance/exit taxiway. See Figure 2-2.

2.7.1.2 Closing of aircraft rescue and fire fighting access routes.

2.7.1.3 Closing of access routes used by airport and airline support vehicles.

2.7.1.4 Interruption of utilities, including water supplies for fire fighting.

2.7.1.5 Approach/departure surfaces affected by heights of objects.

2.7.1.6 Construction areas, storage areas, and access routes near runways, taxiways, aprons, or helipads.

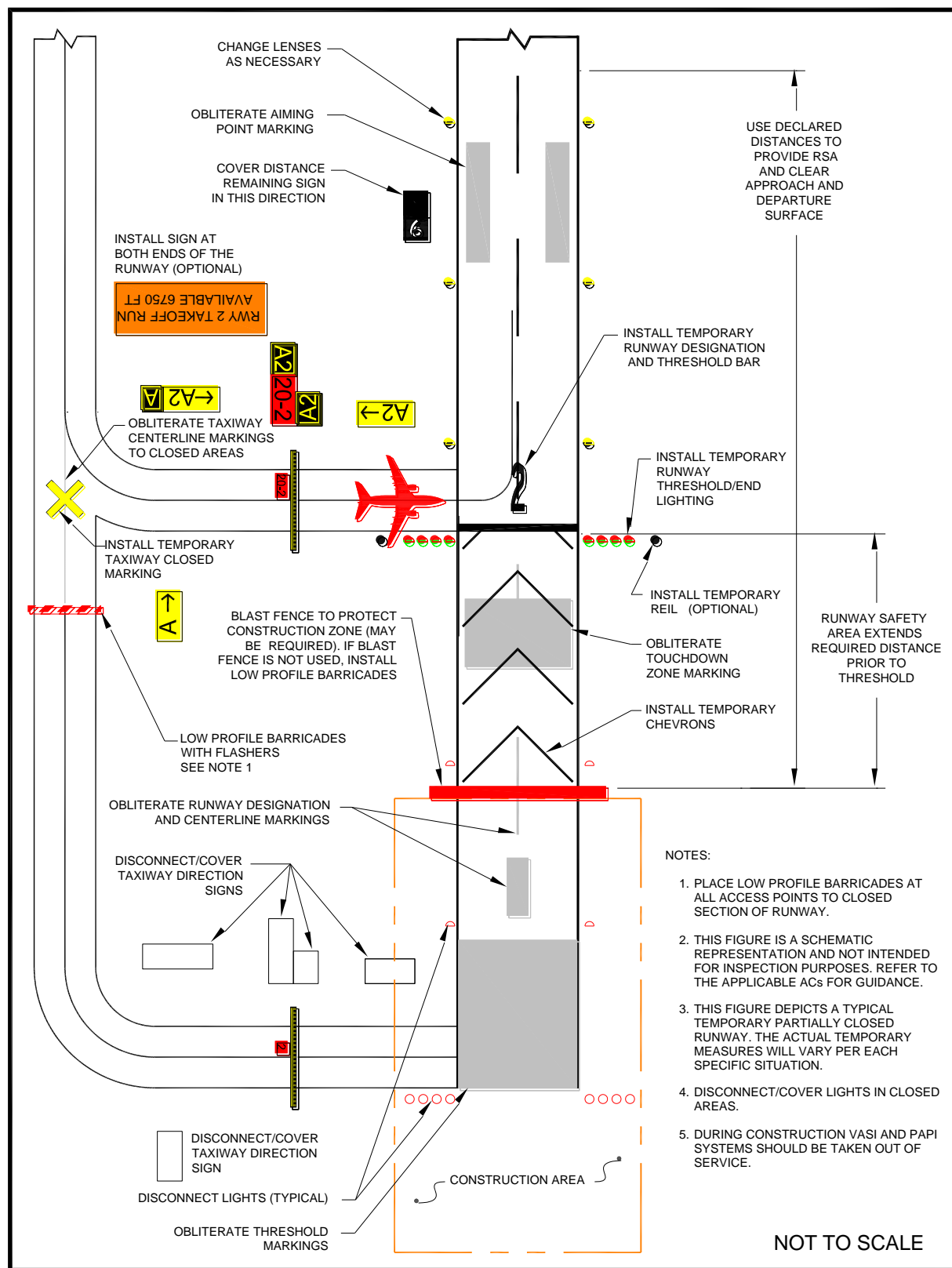
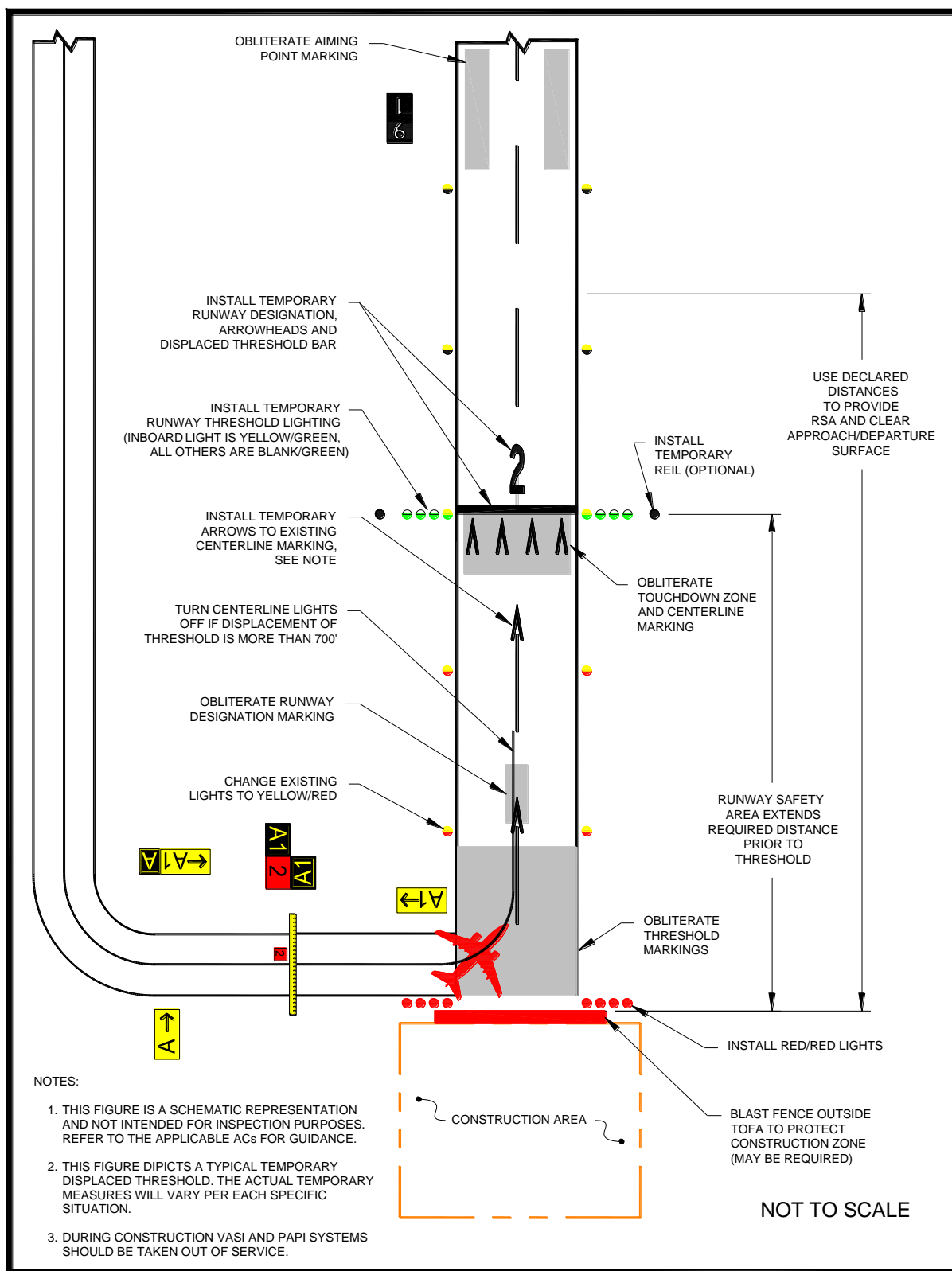
Figure 2-1. Temporary Partially Closed Runway

Figure 2-2. Temporary Displaced Threshold

Note: See paragraph 2.18.2.5.

2.7.2 Mitigation of Effects.

Establishment of specific procedures is necessary to maintain the safety and efficiency of airport operations. The CSPP must address:

- 2.7.2.1 Temporary changes to runway and/or taxi operations.
- 2.7.2.2 Detours for ARFF and other airport vehicles.
- 2.7.2.3 Maintenance of essential utilities.
- 2.7.2.4 Temporary changes to air traffic control procedures. Such changes must be coordinated with the ATO.

2.8 **Navigation Aid (NAVAID) Protection.**

Before commencing construction activity, parking vehicles, or storing construction equipment and materials near a NAVAID, coordinate with the appropriate FAA ATO/Technical Operations office to evaluate the effect of construction activity and the required distance and direction from the NAVAID. (See paragraph 2.13.5.3.) Construction activities, materials/equipment storage, and vehicle parking near electronic NAVAIDs require special consideration since they may interfere with signals essential to air navigation. If any NAVAID may be affected, the CSPP and SPCD must show an understanding of the “critical area” associated with each NAVAID and describe how it will be protected. Where applicable, the operational critical areas of NAVAIDs should be graphically delineated on the project drawings. Pay particular attention to stockpiling material, as well as to movement and parking of equipment that may interfere with line of sight from the ATCT or with electronic emissions. Interference from construction equipment and activities may require NAVAID shutdown or adjustment of instrument approach minimums for low visibility operations. This condition requires that a NOTAM be filed (see paragraph 2.13.2.). Construction activities and materials/equipment storage near a NAVAID must not obstruct access to the equipment and instruments for maintenance. Submittal of a 7460-1 form is required for construction vehicles operating near FAA NAVAIDs. (See paragraph 2.13.5.3.)

2.9 **Contractor Access.**

The CSPP must detail the areas to which the contractor must have access, and explain how contractor personnel will access those areas. Specifically address:

2.9.1 Location of Stockpiled Construction Materials.

Stockpiled materials and equipment storage are not permitted within the RSA and OFZ, and if possible should not be permitted within the Object Free Area (OFA) of an operational runway. Stockpiling material in the OFA requires submittal of a 7460-1 form and justification provided to the appropriate FAA Airports Regional or District Office for approval. The airport operator must ensure that stockpiled materials and equipment adjacent to these areas are prominently marked and lighted during hours of restricted visibility or darkness. (See paragraph 2.18.2.) This includes determining and

verifying that materials are stabilized and stored at an approved location so as not to be a hazard to aircraft operations and to prevent attraction of wildlife and foreign object damage from blowing or tracked material. See paragraphs 2.10 and 2.11.

2.9.2 Vehicle and Pedestrian Operations.

The CSPP should include specific vehicle and pedestrian requirements. Vehicle and pedestrian access routes for airport construction projects must be controlled to prevent inadvertent or unauthorized entry of persons, vehicles, or animals onto the AOA. The airport operator should coordinate requirements for vehicle operations with airport tenants, contractors, and the FAA air traffic manager. In regard to vehicle and pedestrian operations, the CSPP should include the following, with associated training requirements:

2.9.2.1 **Construction Site Parking.**

Designate in advance vehicle parking areas for contractor employees to prevent any unauthorized entry of persons or vehicles onto the AOA. These areas should provide reasonable contractor employee access to the job site.

2.9.2.2 **Construction Equipment Parking.**

Contractor employees must park and service all construction vehicles in an area designated by the airport operator outside the OFZ and never in the safety area of an active runway or taxiway. Unless a complex setup procedure makes movement of specialized equipment infeasible, inactive equipment must not be parked on a closed taxiway or runway. If it is necessary to leave specialized equipment on a closed taxiway or runway at night, the equipment must be well lighted. Employees should also park construction vehicles outside the OFA when not in use by construction personnel (for example, overnight, on weekends, or during other periods when construction is not active). Parking areas must not obstruct the clear line of sight by the ATCT to any taxiways or runways under air traffic control nor obstruct any runway visual aids, signs, or navigation aids. The FAA must also study those areas to determine effects on airport design criteria, surfaces established by 14 CFR Part 77, Safe, Efficient Use, and Preservation of the Navigable Airspace (Part 77), and on NAVAIDs and Instrument Approach Procedures (IAP). See paragraph 2.13.1 for further information.

2.9.2.3 **Access and Haul Roads.**

Determine the construction contractor's access to the construction sites and haul roads. Do not permit the construction contractor to use any access or haul roads other than those approved. Access routes used by contractor vehicles must be clearly marked to prevent inadvertent entry to areas open to airport operations. Pay special attention to ensure that if construction traffic is to share or cross any ARFF routes that ARFF right of way is not impeded at any time, and that construction traffic on haul

roads does not interfere with NAVAIDs or approach surfaces of operational runways. Address whether access gates will be blocked or inoperative or if a rally point will be blocked or inaccessible.

- 2.9.2.4 Marking and lighting of vehicles in accordance with AC 150/5210-5, *Painting, Marking, and Lighting of Vehicles Used on an Airport*.
- 2.9.2.5 Description of proper vehicle operations on various areas under normal, lost communications, and emergency conditions.
- 2.9.2.6 Required escorts.
- 2.9.2.7 **Training Requirements for Vehicle Drivers to Ensure Compliance with the Airport Operator's Vehicle Rules and Regulations.**

Specific training should be provided to vehicle operators, including those providing escorts. See AC 150/5210-20, *Ground Vehicle Operations on Airports*, for information on training and records maintenance requirements.
- 2.9.2.8 **Situational Awareness.**

Vehicle drivers must confirm by personal observation that no aircraft is approaching their position (either in the air or on the ground) when given clearance to cross a runway, taxiway, or any other area open to airport operations. In addition, it is the responsibility of the escort vehicle driver to verify the movement/position of all escorted vehicles at any given time. At non-towered airports, all aircraft movements and flight operations rely on aircraft operators to self-report their positions and intentions. However, there is no requirement for an aircraft to have radio communications. Because aircraft do not always broadcast their positions or intentions, visual checking, radio monitoring, and situational awareness of the surroundings is critical to safety.
- 2.9.2.9 **Two-Way Radio Communication Procedures.**
- 2.9.2.9.1 General.

The airport operator must ensure that tenant and construction contractor personnel engaged in activities involving unescorted operation on aircraft movement areas observe the proper procedures for communications, including using appropriate radio frequencies at airports with and without ATCT. When operating vehicles on or near open runways or taxiways, construction personnel must understand the critical importance of maintaining radio contact, as directed by the airport operator, with:

 1. Airport operations
 2. ATCT

3. Common Traffic Advisory Frequency (CTAF), which may include UNICOM, MULTICOM.
4. Automatic Terminal Information Service (ATIS). This frequency is useful for monitoring conditions on the airport. Local air traffic will broadcast information regarding construction related runway closures and “shortened” runways on the ATIS frequency.

2.9.2.9.2 Areas Requiring Two-Way Radio Communication with the ATCT.

Vehicular traffic crossing active movement areas must be controlled either by two-way radio with the ATCT, escort, flagman, signal light, or other means appropriate for the particular airport.

2.9.2.9.3 Frequencies to be Used.

The airport operator will specify the frequencies to be used by the contractor, which may include the CTAF for monitoring of aircraft operations. Frequencies may also be assigned by the airport operator for other communications, including any radio frequency in compliance with Federal Communications Commission requirements. At airports with an ATCT, the airport operator will specify the frequency assigned by the ATCT to be used between contractor vehicles and the ATCT.

2.9.2.9.4 Proper radio usage, including read back requirements.

2.9.2.9.5 Proper phraseology, including the International Phonetic Alphabet.

2.9.2.9.6 Light Gun Signals.

Even though radio communication is maintained, escort vehicle drivers must also familiarize themselves with ATCT light gun signals in the event of radio failure. See the FAA safety placard “Ground Vehicle Guide to Airport Signs and Markings.” This safety placard may be downloaded through the Runway Safety Program Web site at http://www.faa.gov/airports/runway_safety/publications/ (see “Signs & Markings Vehicle Dashboard Sticker”) or obtained from the FAA Airports Regional Office.

2.9.2.10 **Maintenance of the secured area of the airport, including:**

2.9.2.10.1 Fencing and Gates.

Airport operators and contractors must take care to maintain security during construction when access points are created in the security fencing to permit the passage of construction vehicles or personnel. Temporary gates should be equipped so they can be securely closed and locked to prevent access by animals and unauthorized people. Procedures should be in place to ensure that only authorized persons and vehicles have access to the AOA and to prohibit “piggybacking” behind another person or vehicle. The Department of Transportation (DOT) document DOT/FAA/AR-

00/52, *Recommended Security Guidelines for Airport Planning and Construction*, provides more specific information on fencing. A copy of this document can be obtained from the Airport Consultants Council, Airports Council International, or American Association of Airport Executives.

2.9.2.10.2 Badging Requirements.

Airports subject to 49 CFR Part 1542, *Airport Security*, must meet standards for access control, movement of ground vehicles, and identification of construction contractor and tenant personnel.

2.10 **Wildlife Management.**

The CSPP and SPCD must be in accordance with the airport operator's wildlife hazard management plan, if applicable. See AC 150/5200-33, *Hazardous Wildlife Attractants On or Near Airports*, and CertAlert 98-05, *Grasses Attractive to Hazardous Wildlife*. Construction contractors must carefully control and continuously remove waste or loose materials that might attract wildlife. Contractor personnel must be aware of and avoid construction activities that can create wildlife hazards on airports, such as:

2.10.1 Trash.

Food scraps must be collected from construction personnel activity.

2.10.2 Standing Water.

2.10.3 Tall Grass and Seeds.

Requirements for turf establishment can be at odds with requirements for wildlife control. Grass seed is attractive to birds. Lower quality seed mixtures can contain seeds of plants (such as clover) that attract larger wildlife. Seeding should comply with the guidance in AC 150/5370-10, *Standards for Specifying Construction of Airports*, Item T-901, Seeding. Contact the local office of the United States Department of Agriculture Soil Conservation Service or the State University Agricultural Extension Service (County Agent or equivalent) for assistance and recommendations. These agencies can also provide liming and fertilizer recommendations.

2.10.4 Poorly Maintained Fencing and Gates.

See paragraph 2.9.2.10.1.

2.10.5 Disruption of Existing Wildlife Habitat.

While this will frequently be unavoidable due to the nature of the project, the CSPP should specify under what circumstances (location, wildlife type) contractor personnel should immediately notify the airport operator of wildlife sightings.

2.11 Foreign Object Debris (FOD) Management.

Waste and loose materials, commonly referred to as FOD, are capable of causing damage to aircraft landing gears, propellers, and jet engines. Construction contractors must not leave or place FOD on or near active aircraft movement areas. Materials capable of creating FOD must be continuously removed during the construction project. Fencing (other than security fencing) or covers may be necessary to contain material that can be carried by wind into areas where aircraft operate. See AC 150/5210-24, *Foreign Object Debris (FOD) Management*.

2.12 Hazardous Materials (HAZMAT) Management.

Contractors operating construction vehicles and equipment on the airport must be prepared to expeditiously contain and clean-up spills resulting from fuel or hydraulic fluid leaks. Transport and handling of other hazardous materials on an airport also requires special procedures. See AC 150/5320-15, *Management of Airport Industrial Waste*.

2.13 Notification of Construction Activities.

The CSPP and SPCD must detail procedures for the immediate notification of airport users and the FAA of any conditions adversely affecting the operational safety of the airport. It must address the notification actions described below, as applicable.

2.13.1 List of Responsible Representatives/points of contact for all involved parties, and procedures for contacting each of them, including after hours.

2.13.2 NOTAMs.

Only the airport operator may initiate or cancel NOTAMs on airport conditions, and is the only entity that can close or open a runway. The airport operator must coordinate the issuance, maintenance, and cancellation of NOTAMs about airport conditions resulting from construction activities with tenants and the local air traffic facility (control tower, approach control, or air traffic control center), and must either enter the NOTAM into NOTAM Manager, or provide information on closed or hazardous conditions on airport movement areas to the FAA Flight Service Station (FSS) so it can issue a NOTAM. The airport operator must file and maintain a list of authorized representatives with the FSS. Refer to AC 150/5200-28, *Notices to Airmen (NOTAMs) for Airport Operators*, for a sample NOTAM form. Only the FAA may issue or cancel NOTAMs on shutdown or irregular operation of FAA owned facilities. Any person having reason to believe that a NOTAM is missing, incomplete, or inaccurate must notify the airport operator. See paragraph 2.7.1.1 about issuing NOTAMs for partially closed runways versus runways with displaced thresholds.

2.13.3 Emergency notification procedures for medical, fire fighting, and police response.

2.13.4 Coordination with ARFF.

The CSPP must detail procedures for coordinating through the airport sponsor with ARFF personnel, mutual aid providers, and other emergency services if construction requires:

1. The deactivation and subsequent reactivation of water lines or fire hydrants, or
2. The rerouting, blocking and restoration of emergency access routes, or
3. The use of hazardous materials on the airfield.

2.13.5 Notification to the FAA.

2.13.5.1 **Part 77.**

Any person proposing construction or alteration of objects that affect navigable airspace, as defined in Part 77, must notify the FAA. This includes construction equipment and proposed parking areas for this equipment (i.e., cranes, graders, other equipment) on airports. FAA Form 7460-1, *Notice of Proposed Construction or Alteration*, can be used for this purpose and submitted to the appropriate FAA Airports Regional or District Office. See Appendix A to download the form. Further guidance is available on the FAA web site at oeaaa.faa.gov.

2.13.5.2 **Part 157.**

With some exceptions, Title 14 CFR Part 157, *Notice of Construction, Alteration, Activation, and Deactivation of Airports*, requires that the airport operator notify the FAA in writing whenever a non-Federally funded project involves the construction of a new airport; the construction, realigning, altering, activating, or abandoning of a runway, landing strip, or associated taxiway; or the deactivation or abandoning of an entire airport. Notification involves submitting FAA Form 7480-1, *Notice of Landing Area Proposal*, to the nearest FAA Airports Regional or District Office. See Appendix A to download the form.

2.13.5.3 **NAVAIDs.**

For emergency (short-notice) notification about impacts to both airport owned and FAA owned NAVAIDs, contact: 866-432-2622.

2.13.5.3.1 Airport Owned/FAA Maintained.

If construction operations require a shutdown of 24 hours or greater in duration, or more than 4 hours daily on consecutive days, of a NAVAID owned by the airport but maintained by the FAA, provide a 45-day minimum notice to FAA ATO/Technical Operations prior to facility shutdown, using Strategic Event Coordination (SEC) Form 6000.26 contained within FAA Order 6000.15, *General Maintenance Handbook for National Airspace System (NAS) Facilities*.

2.13.5.3.2 FAA Owned.

1. The airport operator must notify the appropriate FAA ATO Service Area Planning and Requirements (P&R) Group a minimum of 45 days prior to implementing an event that causes impacts to NAVAIDs, using SEC Form 6000.26.
2. Coordinate work for an FAA owned NAVAID shutdown with the local FAA ATO/Technical Operations office, including any necessary reimbursable agreements and flight checks. Detail procedures that address unanticipated utility outages and cable cuts that could impact FAA NAVAIDs. Refer to active Service Level Agreement with ATO for specifics.

2.14 **Inspection Requirements.**

2.14.1 Daily Inspections.

Inspections should be conducted at least daily, but more frequently if necessary to ensure conformance with the CSPP. A sample checklist is provided in Appendix D, Construction Project Daily Safety Inspection Checklist. See also AC 150/5200-18, Airport Safety Self-Inspection. Airport operators holding a Part 139 certificate are required to conduct self-inspections during unusual conditions, such as construction activities, that may affect safe air carrier operations.

2.14.2 Interim Inspections.

Inspections should be conducted of all areas to be (re)opened to aircraft traffic to ensure the proper operation of lights and signs, for correct markings, and absence of FOD. The contractor should conduct an inspection of the work area with airport operations personnel. The contractor should ensure that all construction materials have been secured, all pavement surfaces have been swept clean, all transition ramps have been properly constructed, and that surfaces have been appropriately marked for aircraft to operate safely. Only if all items on the list meet with the airport operator's approval should the air traffic control tower be notified to open the area to aircraft operations. The contractor should be required to retain a suitable workforce and the necessary equipment at the work area for any last minute cleanup that may be requested by the airport operator prior to opening the area.

2.14.3 Final Inspections.

New runways and extended runway closures may require safety inspections at certificated airports prior to allowing air carrier service. Coordinate with the FAA Airport Certification Safety Inspector (ACSI) to determine if a final inspection will be necessary.

2.15 Underground Utilities.

The CSPP and/or SPCD must include procedures for locating and protecting existing underground utilities, cables, wires, pipelines, and other underground facilities in excavation areas. This may involve coordinating with public utilities and FAA ATO/Technical Operations. Note that “One Call” or “Miss Utility” services do not include FAA ATO/Technical Operations.

2.16 Penalties.

The CSPP should detail penalty provisions for noncompliance with airport rules and regulations and the safety plans (for example, if a vehicle is involved in a runway incursion). Such penalties typically include rescission of driving privileges or access to the AOA.

2.17 Special Conditions.

The CSPP must detail any special conditions that affect the operation of the airport and will require the activation of any special procedures (for example, low-visibility operations, snow removal, aircraft in distress, aircraft accident, security breach, Vehicle / Pedestrian Deviation (VPD) and other activities requiring construction suspension/resumption).

2.18 Runway and Taxiway Visual Aids.

This includes marking, lighting, signs, and visual NAVAIDs. The CSPP must ensure that areas where aircraft will be operating are clearly and visibly separated from construction areas, including closed runways. Throughout the duration of the construction project, verify that these areas remain clearly marked and visible at all times and that marking, lighting, signs, and visual NAVAIDs that are to continue to perform their functions during construction remain in place and operational. Visual NAVAIDs that are not serving their intended function during construction must be temporarily disabled, covered, or modified as necessary. The CSPP must address the following, as appropriate:

2.18.1 General.

Airport markings, lighting, signs, and visual NAVAIDs must be clearly visible to pilots, not misleading, confusing, or deceptive. All must be secured in place to prevent movement by prop wash, jet blast, wing vortices, and other wind currents and constructed of materials that will minimize damage to an aircraft in the event of inadvertent contact. Items used to secure such markings must be of a color similar to the marking.

2.18.2 Markings.

During the course of construction projects, temporary pavement markings are often required to allow for aircraft operations during or between work periods. During the design phase of the project, the designer should coordinate with the project manager,

airport operations, airport users, the FAA Airports project manager, and Airport Certification Safety Inspector for Part 139 airports to determine minimum temporary markings. The FAA Airports project manager will, wherever a runway is closed, coordinate with the appropriate FAA Flight Standards Office and disseminate findings to all parties. Where possible, the temporary markings on finish grade pavements should be placed to mirror the dimensions of the final markings. Markings must be in compliance with the standards of AC 150/5340-1, *Standards for Airport Markings*, except as noted herein. Runways and runway exit taxiways closed to aircraft operations are marked with a yellow X. The preferred visual aid to depict temporary runway closure is the lighted X signal placed on or near the runway designation numbers. (See paragraph 2.18.2.1.2.)

2.18.2.1 Closed Runways and Taxiways.

2.18.2.1.1 Permanently Closed Runways.

For runways, obliterate the threshold marking, runway designation marking, and touchdown zone markings, and place an X at each end and at 1,000-foot (300 m) intervals. For a multiple runway environment, if the lighted X on a designated number will be located in the RSA of an adjacent active runway, locate the lighted X farther down the closed runway to clear the RSA of the active runway. In addition, the closed runway numbers located in the RSA of an active runway must be marked with a flat yellow X.

2.18.2.1.2 Temporarily Closed Runways.

For runways that have been temporarily closed, place an X at each end of the runway directly on or as near as practicable to the runway designation numbers. For a multiple runway environment, if the lighted X on a designated number will be located in the RSA of an adjacent active runway, locate the lighted X farther down the closed runway to clear the RSA of the active runway. In addition, the closed runway numbers located in the RSA of an active runway must be marked with a flat yellow X. See Figure 2-3. See also paragraph 2.18.3.3.

2.18.2.1.3 Partially Closed Runways and Displaced Thresholds.

When threshold markings are needed to identify the temporary beginning of the runway that is available for landing, the markings must comply with AC 150/5340-1. An X is not used on a partially closed runway or a runway with a displaced threshold. See paragraph 2.7.1.1 for the difference between partially closed runways and runways with displaced thresholds. Because of the temporary nature of threshold displacement due to construction, it is not necessary to re-adjust the existing runway centerline markings to meet standard spacing for a runway with a visual approach. Some of the requirements below may be waived in the cases of low-activity airports and/or short duration changes that are measured in days rather than weeks. Consider whether the presence of an airport traffic

control tower allows for the development of special procedures. Contact the appropriate FAA Airports Regional or District Office for assistance.

Figure 2-3. Markings for a Temporarily Closed Runway

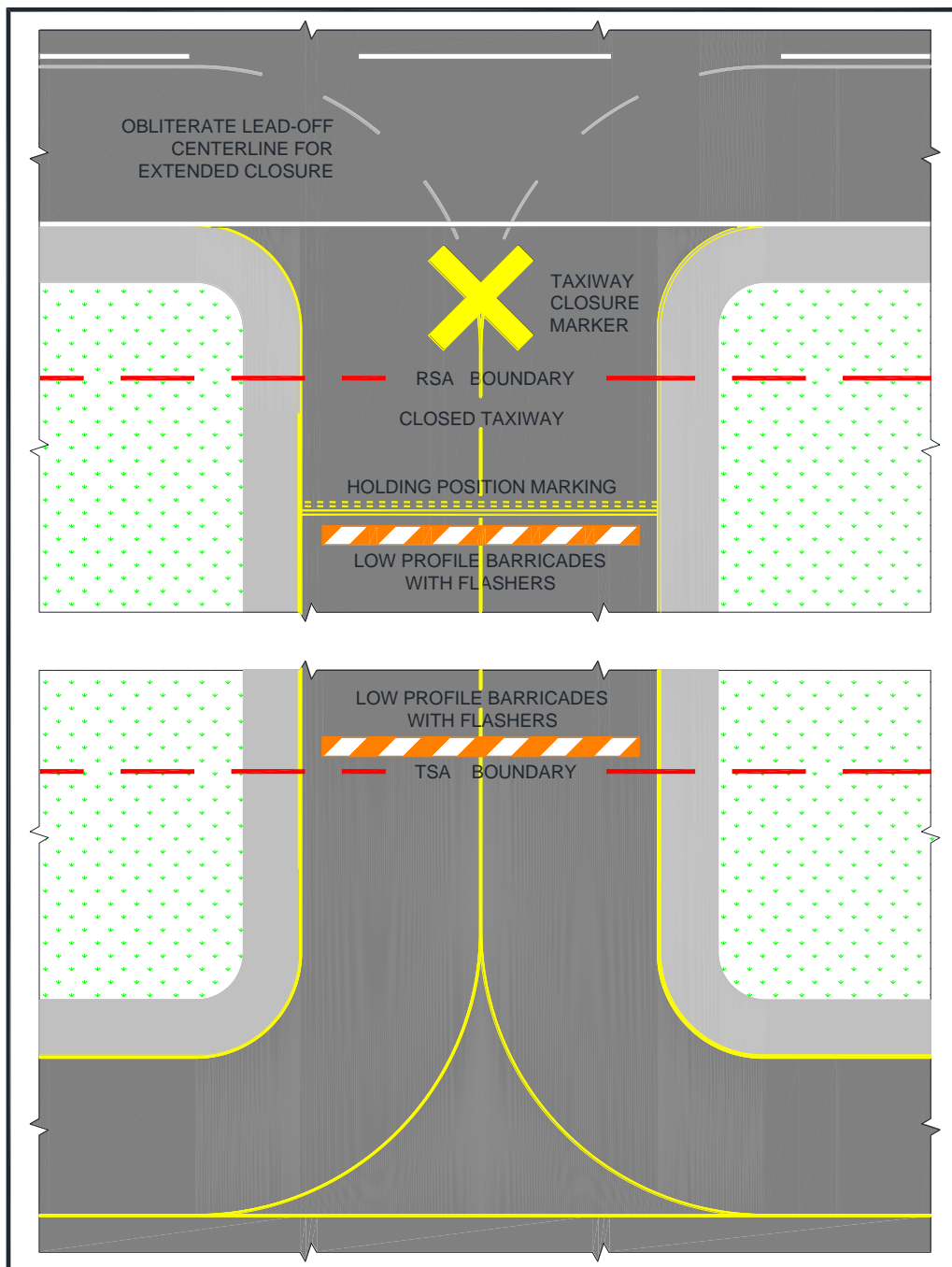


1. **Partially Closed Runways.** Pavement markings for temporary closed portions of the runway consist of a runway threshold bar, runway designation, and yellow chevrons to identify pavement areas that are unsuitable for takeoff or landing (see [AC 150/5340-1](#)). Obliterate or cover markings prior to the moved threshold. Existing touchdown zone markings beyond the moved threshold may remain in place. Obliterate aiming point markings. Issue appropriate NOTAMs regarding any nonstandard markings. See [Figure 2-4](#).
2. **Displaced Thresholds.** Pavement markings for a displaced threshold consist of a runway threshold bar, runway designation, and white arrowheads with and without arrow shafts. These markings are required to identify the portion of the runway before the displaced threshold to provide centerline guidance for pilots during approaches, takeoffs, and landing rollouts from the opposite direction. See [AC 150/5340-1](#). Obliterate markings prior to the displaced threshold. Existing touchdown zone markings beyond the displaced threshold may remain in place. Obliterate aiming point markings. Issue appropriate NOTAMs regarding any nonstandard markings. See [Figure 2-2](#).

2.18.2.1.4 Taxiways.

1. **Permanently Closed Taxiways.** AC 150/5300-13 Airport Design, notes that it is preferable to remove the pavement, but for pavement that is to remain, place an X at the entrance to both ends of the closed section. Obliterate taxiway centerline markings, including runway leadoff lines, leading to the closed taxiway. See Figure 2-4.

Figure 2-4. Temporary Taxiway Closure



2. **Temporarily Closed Taxiways.** Place barricades outside the safety area of intersecting taxiways. For runway/taxiway intersections, place an X at the entrance to the closed taxiway from the runway. If the taxiway will be closed for an extended period, obliterate taxiway centerline markings, including runway leadoff lines and taxiway to taxiway turns, leading to the closed section. Always obliterate runway lead-off lines for high speed exits, regardless of the duration of the closure. If the centerline markings will be reused upon reopening the taxiway, it is preferable to paint over the marking. This will result in less damage to the pavement when the upper layer of paint is ultimately removed. See Figure 2-4.

2.18.2.1.5 Temporarily Closed Airport.

When the airport is closed temporarily, mark all the runways as closed.

- 2.18.2.2 If unable to paint temporary markings on the pavement, construct them from any of the following materials: fabric, colored plastic, painted sheets of plywood, or similar materials. They must be properly configured and appropriately secured to prevent movement by prop wash, jet blast, or other wind currents. Items used to secure such markings must be of a color similar to the marking.

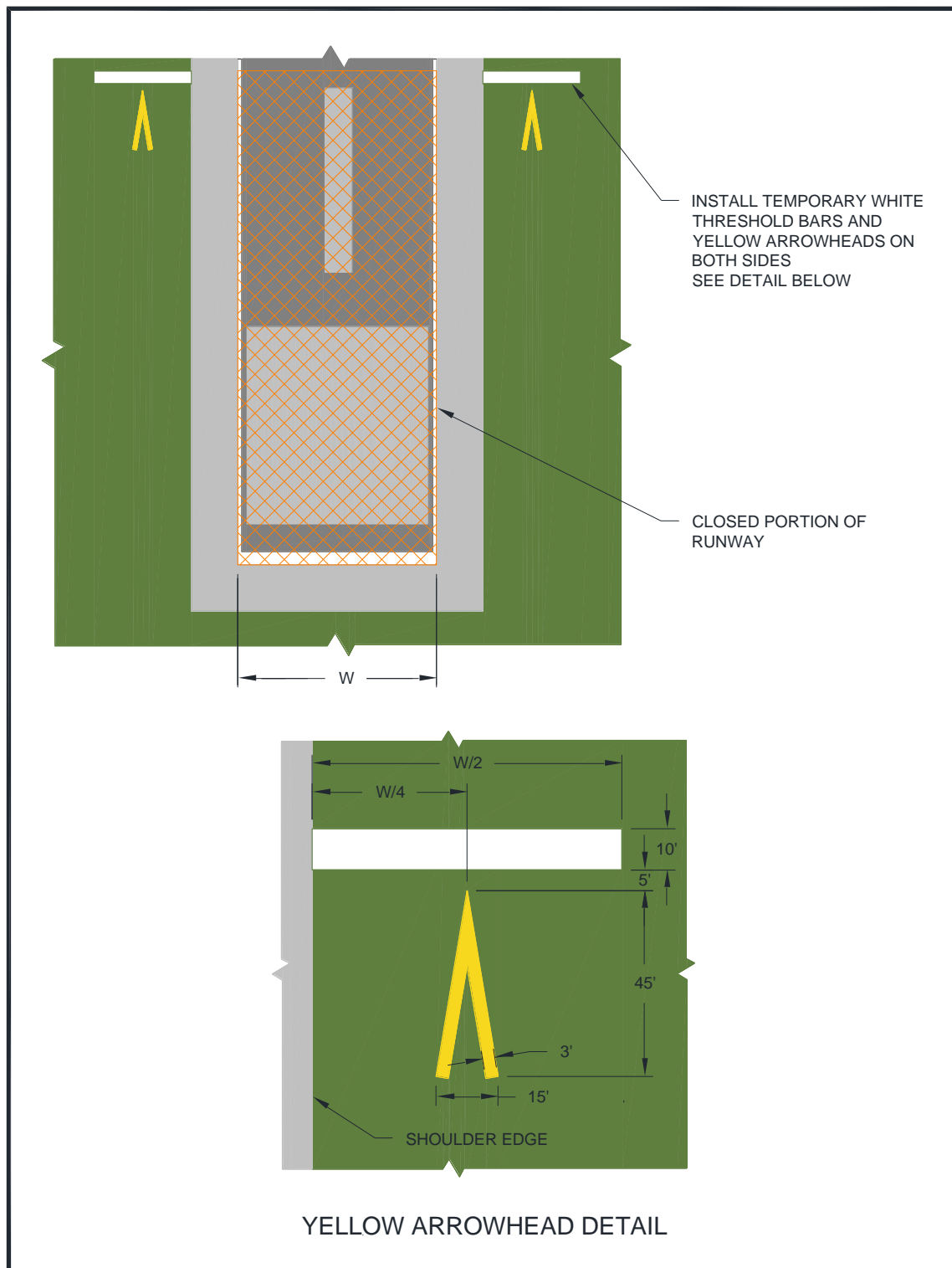
- 2.18.2.3 It may be necessary to remove or cover runway markings, including but not limited to, runway designation markings, threshold markings, centerline markings, edge stripes, touchdown zone markings and aiming point markings, depending on the length of construction and type of activity at the airport. When removing runway markings, apply the same treatment to areas between stripes or numbers, as the cleaned area will appear to pilots as a marking in the shape of the treated area.

- 2.18.2.4 If it is not possible to install threshold bars, chevrons, and arrows on the pavement, “temporary outboard white threshold bars and yellow arrowheads”, see Figure 2-5, may be used. Locate them outside of the runway pavement surface on both sides of the runway. The dimensions must be as shown in Figure 2-5. If the markings are not discernible on grass or snow, apply a black background with appropriate material over the ground to ensure they are clearly visible.

- 2.18.2.5 The application rate of paint to mark a short-term temporary runway and taxiway markings may deviate from the standard (see Item P-620, “Runway and Taxiway Painting,” in AC 150/5370-10), but the dimensions must meet the existing standards. When applying temporary markings at night, it is recommended that the fast curing, Type II paint be used to help offset the higher humidity and cooler temperatures often experienced at night. Diluting the paint will substantially increase cure time and is not recommended. Glass beads are not recommended for temporary markings. Striated markings may also be used for certain temporary markings. AC

150/5340-1, Standards for Airport Markings, has additional guidance on temporary markings.

Figure 2-5. Temporary Outboard White Threshold Bars and Yellow Arrowheads



2.18.3 Lighting and Visual NAVAIDs.

This paragraph refers to standard runway and taxiway lighting systems. See below for hazard lighting. Lighting installation must be in conformance with AC 150/5340-30, *Design and Installation Details for Airport Visual Aids*, and fixture design in conformance with AC 150/5345-50, *Specification for Portable Runway and Taxiway Lights*. When disconnecting runway and taxiway lighting fixtures, disconnect the associated isolation transformers. See AC 150/5340-26, *Maintenance of Airport Visual Aid Facilities*, for disconnect procedures and safety precautions. Alternately, cover the light fixture in such a way as to prevent light leakage. Avoid removing the lamp from energized fixtures because an excessive number of isolation transformers with open secondaries may damage the regulators and/or increase the current above its normal value. Secure, identify, and place any above ground temporary wiring in conduit to prevent electrocution and fire ignition sources. Maintain mandatory hold signs to operate normally in any situation where pilots or vehicle drivers could mistakenly be in that location. At towered airports certificated under Part 139, holding position signs are required to be illuminated on open taxiways crossing to closed or inactive runways. If the holding position sign is installed on the runway circuit for the closed runway, install a jumper to the taxiway circuit to provide power to the holding position sign for nighttime operations. Where it is not possible to maintain power to signs that would normally be operational, install barricades to exclude aircraft. Figure 2-1, Figure 2-2, Figure 2-3, and Figure 2-4 illustrate temporary changes to lighting and visual NAVAIDs.

2.18.3.1 **Permanently Closed Runways and Taxiways.**

For runways and taxiways that have been permanently closed, disconnect the lighting circuits.

2.18.3.2 **Temporarily Closed Runways and New Runways Not Yet Open to Air Traffic.**

If available, use a lighted X, both at night and during the day, placed at each end of the runway on or near the runway designation numbers facing the approach. (Note that the lighted X must be illuminated at all times that it is on a runway.) The use of a lighted X is required if night work requires runway lighting to be on. See AC 150/5345-55, *Specification for L-893, Lighted Visual Aid to Indicate Temporary Runway Closure*. For runways that have been temporarily closed, but for an extended period, and for those with pilot controlled lighting, disconnect the lighting circuits or secure switches to prevent inadvertent activation. For runways that will be opened periodically, coordinate procedures with the FAA air traffic manager or, at airports without an ATCT, the airport operator. Activate stop bars if available. Figure 2-6 shows a lighted X by day. Figure 2-7 shows a lighted X at night.

Figure 2-6. Lighted X in Daytime**Figure 2-7. Lighted X at Night**

2.18.3.3 **Partially Closed Runways and Displaced Thresholds.**

When a runway is partially closed, a portion of the pavement is unavailable for any aircraft operation, meaning taxiing and landing or taking off in either direction. A displaced threshold, by contrast, is put in place to ensure obstacle clearance by landing aircraft. The pavement prior to the displaced threshold is available for takeoff in the direction of the displacement, and for landing and takeoff in the opposite direction. Misunderstanding this difference and issuance of a subsequently inaccurate NOTAM can result in a hazardous situation. For both partially

closed runways and displaced thresholds, approach lighting systems at the affected end must be placed out of service.

2.18.3.3.1 Partially Closed Runways.

Disconnect edge and threshold lights on that part of the runway at and behind the threshold (that is, the portion of the runway that is closed). Alternately, cover the light fixtures in such a way as to prevent light leakage. See Figure 2-1.

2.18.3.3.2 Temporary Displaced Thresholds.

Edge lighting in the area of the displacement emits red light in the direction of approach and yellow light (white for visual runways) in the opposite direction. If the displacement is 700 feet or less, blank out centerline lights in the direction of approach or place the centerline lights out of service. If the displacement is over 700 feet, place the centerline lights out of service. See AC 150/5340-30 for details on lighting displaced thresholds. See Figure 2-2.

2.18.3.3.3 Temporary runway thresholds and runway ends must be lighted if the runway is lighted and it is the intended threshold for night landings or instrument meteorological conditions.

2.18.3.3.4 A temporary threshold on an unlighted runway may be marked by retroreflective, elevated markers in addition to markings noted in paragraph 2.18.2.1.3. Markers seen by aircraft on approach are green. Markers at the rollout end of the runway are red. At certificated airports, temporary elevated threshold markers must be mounted with a frangible fitting (see 14 CFR Part 139.309). At non-certificated airports, the temporary elevated threshold markings may either be mounted with a frangible fitting or be flexible. See AC 150/5345-39, *Specification for L-853, Runway and Taxiway Retroreflective Markers*.

2.18.3.3.5 Temporary threshold lights and runway end lights and related visual NAVAIDs are installed outboard of the edges of the full-strength pavement only when they cannot be installed on the pavement. They are installed with bases at grade level or as low as possible, but not more than 3 inch (7.6 cm) above ground. (The standard above ground height for airport lighting fixtures is 14 inches (35 cm)). When any portion of a base is above grade, place properly compacted fill around the base to minimize the rate of gradient change so aircraft can, in an emergency, cross at normal landing or takeoff speeds without incurring significant damage. See AC 150/5370-10.

2.18.3.3.6 Maintain threshold and edge lighting color and spacing standards as described in AC 150/5340-30. Battery powered, solar, or portable lights that meet the criteria in AC 150/5345-50 may be used. These systems are intended primarily for visual flight rules (VFR) aircraft operations but may

be used for instrument flight rules (IFR) aircraft operations, upon individual approval from the Flight Standards Division of the applicable FAA Regional Office.

- 2.18.3.3.7 When runway thresholds are temporarily displaced, reconfigure yellow lenses (caution zone), as necessary, and place the centerline lights out of service.
- 2.18.3.3.8 Relocate the Visual Glide Slope Indicator (VGSI), such as Visual Approach Slope Indicator (VASI) and Precision Approach Path Indicator (PAPI); other airport lights, such as Runway End Identifier Lights (REIL); and approach lights to identify the temporary threshold. Another option is to disable the VGSI or any equipment that would give misleading indications to pilots as to the new threshold location. Installation of temporary visual aids may be necessary to provide adequate guidance to pilots on approach to the affected runway. If the FAA owns and operates the VGSI, coordinate its installation or disabling with the local ATO/Technical Operations Office. Relocation of such visual aids will depend on the duration of the project and the benefits gained from the relocation, as this can result in great expense. See FAA JO 6850.2, *Visual Guidance Lighting Systems*, for installation criteria for FAA owned and operated NAVAIDs.
- 2.18.3.3.9 Issue a NOTAM to inform pilots of temporary lighting conditions.
- 2.18.3.4 **Temporarily Closed Taxiways.**
If possible, deactivate the taxiway lighting circuits. When deactivation is not possible (for example other taxiways on the same circuit are to remain open), cover the light fixture in a way as to prevent light leakage.

2.18.4 Signs.

To the extent possible, signs must be in conformance with AC 150/5345-44, *Specification for Runway and Taxiway Signs*, and AC 150/5340-18, *Standard for Airport Sign Systems*.

2.18.4.1 **Existing Signs.**

Runway exit signs are to be covered for closed runway exits. Outbound destination signs are to be covered for closed runways. Any time a sign does not serve its normal function or would provide conflicting information, it must be covered or removed to prevent misdirecting pilots. Note that information signs identifying a crossing taxiway continue to perform their normal function even if the crossing taxiway is closed. For long term construction projects, consider relocating signs, especially runway distance remaining signs.

2.18.4.2 Temporary Signs.

Orange construction signs comprise a message in black on an orange background. Orange construction signs may help pilots be aware of changed conditions. The airport operator may choose to introduce these signs as part of a movement area construction project to increase situational awareness when needed. Locate signs outside the taxiway safety limits and ahead of construction areas so pilots can take timely action. Use temporary signs judiciously, striking a balance between the need for information and the increase in pilot workload. When there is a concern of pilot “information overload,” the applicability of mandatory hold signs must take precedence over orange construction signs recommended during construction. Temporary signs must meet the standards for such signs in Engineering Brief 93, *Guidance for the Assembly and Installation of Temporary Orange Construction Signs*. Many criteria in AC 150/5345-44, *Specification for Runway and Taxiway Signs*, are referenced in the Engineering Brief. Permissible sign legends are:

1. CONSTRUCTION AHEAD,
2. CONSTRUCTION ON RAMP, and
3. RWY XX TAKEOFF RUN AVAILABLE XXX FT.

Phasing, supported by drawings and sign schedule, for the installation of orange construction signs must be included in the CSPP or SPCD.

2.18.4.2.1 Takeoff Run Available (TORA) signs.

Recommended: Where a runway has been shortened for takeoff, install orange TORA signs well before the hold lines, such as on a parallel taxiway prior to a turn to a runway hold position. See EB 93 for sign size and location.

2.18.4.2.2 Sign legends are shown in Figure F-1.

Note: See Figure E-1, Figure E-2, Figure E-3, Figure F-2, and Figure F-3 for examples of orange construction sign locations.

2.19 Marking and Signs for Access Routes.

The CSPP should indicate that pavement markings and signs for construction personnel will conform to AC 150/5340-18 and, to the extent practicable, with the Federal Highway Administration Manual on Uniform Traffic Control Devices (MUTCD) and/or State highway specifications. Signs adjacent to areas used by aircraft must comply with the frangibility requirements of AC 150/5220-23, *Frangible Connections*, which may require modification to size and height guidance in the MUTCD.

2.20 **Hazard Marking, Lighting and Signing.**

2.20.1 Hazard marking, lighting, and signing prevent pilots from entering areas closed to aircraft, and prevent construction personnel from entering areas open to aircraft. The CSPP must specify prominent, comprehensible warning indicators for any area affected by construction that is normally accessible to aircraft, personnel, or vehicles. Hazard marking and lighting must also be specified to identify open manholes, small areas under repair, stockpiled material, waste areas, and areas subject to jet blast. Also consider less obvious construction-related hazards and include markings to identify FAA, airport, and National Weather Service facilities cables and power lines; instrument landing system (ILS) critical areas; airport surfaces, such as RSA, OFA, and OFZ; and other sensitive areas to make it easier for contractor personnel to avoid these areas.

2.20.2 Equipment.

2.20.2.1 **Barricades.**

Low profile barricades, including traffic cones, (weighted or sturdily attached to the surface) are acceptable methods used to identify and define the limits of construction and hazardous areas on airports. Careful consideration must be given to selecting equipment that poses the least danger to aircraft but is sturdy enough to remain in place when subjected to typical winds, prop wash and jet blast. The spacing of barricades must be such that a breach is physically prevented barring a deliberate act. For example, if barricades are intended to exclude aircraft, gaps between barricades must be smaller than the wingspan of the smallest aircraft to be excluded; if barricades are intended to exclude vehicles, gaps between barricades must be smaller than the width of the excluded vehicles, generally 4 feet (1.2 meters). Provision must be made for ARFF access if necessary. If barricades are intended to exclude pedestrians, they must be continuously linked. Continuous linking may be accomplished through the use of ropes, securely attached to prevent FOD.

2.20.2.2 **Lights.**

Lights must be red, either steady burning or flashing, and must meet the luminance requirements of the State Highway Department. Batteries powering lights will last longer if lights flash. Lights must be mounted on barricades and spaced at no more than 10 feet (3 meters). Lights must be operated between sunset and sunrise and during periods of low visibility whenever the airport is open for operations. They may be operated by photocell, but this may require that the contractor turn them on manually during periods of low visibility during daytime hours.

2.20.2.3 **Supplement Barricades with Signs (for example) As Necessary.**

Examples are “No Entry” and “No Vehicles.” Be aware of the increased effects of wind and jet blast on barricades with attached signs.

2.20.2.4 Air Operations Area – General.

Barricades are not permitted in any active safety area or on the runway side of a runway hold line. Within a runway or taxiway object free area, and on aprons, use orange traffic cones, flashing or steady burning red lights as noted above, highly reflective collapsible barricades marked with diagonal, alternating orange and white stripes; and/or signs to separate all construction/maintenance areas from the movement area. Barricades may be supplemented with alternating orange and white flags at least 20 by 20 inch (50 by 50 cm) square and securely fastened to eliminate FOD. All barricades adjacent to any open runway or taxiway / taxilane safety area, or apron must be as low as possible to the ground, and no more than 18 inches high, exclusive of supplementary lights and flags. Barricades must be of low mass; easily collapsible upon contact with an aircraft or any of its components; and weighted or sturdily attached to the surface to prevent displacement from prop wash, jet blast, wing vortex, and other surface wind currents. If affixed to the surface, they must be frangible at grade level or as low as possible, but not to exceed 3 inch (7.6 cm) above the ground. Figure 2-8 and Figure 2-9 show sample barricades with proper coloring and flags.

Figure 2-8. Interlocking Barricades



Figure 2-9. Low Profile Barricades**2.20.2.5 Air Operations Area – Runway/Taxiway Intersections.**

Use highly reflective barricades with lights to close taxiways leading to closed runways. Evaluate all operating factors when determining how to mark temporary closures that can last from 10 to 15 minutes to a much longer period of time. However, even for closures of relatively short duration, close all taxiway/runway intersections with barricades. The use of traffic cones is appropriate for short duration closures.

2.20.2.6 Air Operations Area – Other.

Beyond runway and taxiway object free areas and aprons, barricades intended for construction vehicles and personnel may be many different shapes and made from various materials, including railroad ties, sawhorses, jersey barriers, or barrels.

2.20.2.7 Maintenance.

The construction specifications must include a provision requiring the contractor to have a person on call 24 hours a day for emergency maintenance of airport hazard lighting and barricades. The contractor must file the contact person's information with the airport operator. Lighting should be checked for proper operation at least once per day, preferably at dusk.

2.21 Work Zone Lighting for Nighttime Construction.

Lighting equipment must adequately illuminate the work area if the construction is to be performed during nighttime hours. Refer to [AC 150/5370-10](#) for minimum illumination levels for nighttime paving projects. Additionally, it is recommended that all support equipment, except haul trucks, be equipped with artificial illumination to safely

illuminate the area immediately surrounding their work areas. The lights should be positioned to provide the most natural color illumination and contrast with a minimum of shadows. The spacing must be determined by trial. Light towers should be positioned and adjusted to aim away from ATCT cabs and active runways to prevent blinding effects. Shielding may be necessary. Light towers should be removed from the construction site when the area is reopened to aircraft operations. Construction lighting units should be identified and generally located on the construction phasing plans in relationship to the ATCT and active runways and taxiways.

2.22 **Protection of Runway and Taxiway Safety Areas.**

Runway and taxiway safety areas, OFZs, OFAs, and approach surfaces are described in AC 150/5300-13. Protection of these areas includes limitations on the location and height of equipment and stockpiled material. An FAA airspace study may be required. Coordinate with the appropriate FAA Airports Regional or District Office if there is any doubt as to requirements or dimensions (see paragraph 2.13.5) as soon as the location and height of materials or equipment are known. The CSPP should include drawings showing all safety areas, object free areas, obstacle free zones and approach departure surfaces affected by construction.

2.22.1 Runway Safety Area (RSA).

A runway safety area is the defined surface surrounding the runway prepared or suitable for reducing the risk of damage to airplanes in the event of an undershoot, overshoot, or excursion from the runway (see AC 150/5300-13). Construction activities within the existing RSA are subject to the following conditions:

- 2.22.1.1 No construction may occur within the existing RSA while the runway is open for aircraft operations. The RSA dimensions may be temporarily adjusted if the runway is restricted to aircraft operations requiring an RSA that is equal to the RSA width and length beyond the runway ends available during construction. (See AC 150/5300-13). The temporary use of declared distances and/or partial runway closures may provide the necessary RSA under certain circumstances. Coordinate with the appropriate FAA Airports Regional or District Office to have declared distances information published, and appropriate NOTAMs issued. See AC 150/5300-13 for guidance on the use of declared distances.
- 2.22.1.2 The airport operator must coordinate the adjustment of RSA dimensions as permitted above with the appropriate FAA Airports Regional or District Office and the local FAA air traffic manager and issue a NOTAM.
- 2.22.1.3 The CSPP and SPCD must provide procedures for ensuring adequate distance for protection from blasting operations, if required by operational considerations.

2.22.1.4 Excavations.

2.22.1.4.1 Open trenches or excavations are not permitted within the RSA while the runway is open. Backfill trenches before the runway is opened. If backfilling excavations before the runway must be opened is impracticable, cover the excavations appropriately. Covering for open trenches must be designed to allow the safe operation of the heaviest aircraft operating on the runway across the trench without damage to the aircraft.

2.22.1.4.2 Construction contractors must prominently mark open trenches and excavations at the construction site with red or orange flags, as approved by the airport operator, and light them with red lights during hours of restricted visibility or darkness.

2.22.1.5 Erosion Control.

Soil erosion must be controlled to maintain RSA standards, that is, the RSA must be cleared and graded and have no potentially hazardous ruts, humps, depressions, or other surface variations, and capable, under dry conditions, of supporting snow removal equipment, aircraft rescue and fire fighting equipment, and the occasional passage of aircraft without causing structural damage to the aircraft.

2.22.2 Runway Object Free Area (ROFA).

Construction, including excavations, may be permitted in the ROFA. However, equipment must be removed from the ROFA when not in use, and material should not be stockpiled in the ROFA if not necessary. Stockpiling material in the OFA requires submittal of a 7460-1 form and justification provided to the appropriate FAA Airports Regional or District Office for approval.

2.22.3 Taxiway Safety Area (TSA).

2.22.3.1 A taxiway safety area is a defined surface alongside the taxiway prepared or suitable for reducing the risk of damage to an airplane unintentionally departing the taxiway. (See AC 150/5300-13.) Since the width of the TSA is equal to the wingspan of the design aircraft, no construction may occur within the TSA while the taxiway is open for aircraft operations. The TSA dimensions may be temporarily adjusted if the taxiway is restricted to aircraft operations requiring a TSA that is equal to the TSA width available during construction. Give special consideration to TSA dimensions at taxiway turns and intersections. (see AC 150/5300-13).

2.22.3.2 The airport operator must coordinate the adjustment of the TSA width as permitted above with the appropriate FAA Airports Regional or District Office and the FAA air traffic manager and issue a NOTAM.

2.22.3.3 The CSPP and SPCD must provide procedures for ensuring adequate distance for protection from blasting operations.

2.22.3.4 **Excavations.**

1. Curves. Open trenches or excavations are not permitted within the TSA while the taxiway is open. Trenches should be backfilled before the taxiway is opened. If backfilling excavations before the taxiway must be opened is impracticable, cover the excavations appropriately. Covering for open trenches must be designed to allow the safe operation of the heaviest aircraft operating on the taxiway across the trench without damage to the aircraft.
2. Straight Sections. Open trenches or excavations are not permitted within the TSA while the taxiway is open for unrestricted aircraft operations. Trenches should be backfilled before the taxiway is opened. If backfilling excavations before the taxiway must be opened is impracticable, cover the excavations to allow the safe passage of ARFF equipment and of the heaviest aircraft operating on the taxiway across the trench without causing damage to the equipment or aircraft. In rare circumstances where the section of taxiway is indispensable for aircraft movement, open trenches or excavations may be permitted in the TSA while the taxiway is open to aircraft operations, subject to the following restrictions:
 - a. Taxiing speed is limited to 10 mph.
 - b. Appropriate NOTAMs are issued.
 - c. Marking and lighting meeting the provisions of paragraphs 2.18 and 2.20 are implemented.
 - d. Low mass, low-profile lighted barricades are installed.
 - e. Appropriate temporary orange construction signs are installed.
3. Construction contractors must prominently mark open trenches and excavations at the construction site with red or orange flags, as approved by the airport operator, and light them with red lights during hours of restricted visibility or darkness.

2.22.3.5 **Erosion control.**

Soil erosion must be controlled to maintain TSA standards, that is, the TSA must be cleared and graded and have no potentially hazardous ruts, humps, depressions, or other surface variations, and capable, under dry conditions, of supporting snow removal equipment, aircraft rescue and firefighting equipment, and the occasional passage of aircraft without causing structural damage to the aircraft.

2.22.4 Taxiway Object Free Area (TOFA).

Unlike the Runway Object Free Area, aircraft wings regularly penetrate the taxiway object free area during normal operations. Thus, the restrictions are more stringent. Except as provided below, no construction may occur within the taxiway object free area while the taxiway is open for aircraft operations.

- 2.22.4.1 The taxiway object free area dimensions may be temporarily adjusted if the taxiway is restricted to aircraft operations requiring a taxiway object free area that is equal to the taxiway object free area width available. Give special consideration to TOFA dimensions at taxiway turns and intersections.
- 2.22.4.2 Offset taxiway centerline and edge pavement markings (do not use glass beads) may be used as a temporary measure to provide the required taxiway object free area. Where offset taxiway pavement markings are provided, centerline lighting, centerline reflectors, or taxiway edge reflectors are required. Existing lighting that does not coincide with the temporary markings must be taken out of service.
- 2.22.4.3 Construction activity, including open excavations, may be accomplished without adjusting the width of the taxiway object free area, subject to the following restrictions:
 - 2.22.4.3.1 Taxiing speed is limited to 10 mph.
 - 2.22.4.3.2 NOTAMs issued advising taxiing pilots of hazard and recommending reduced taxiing speeds on the taxiway.
 - 2.22.4.3.3 Marking and lighting meeting the provisions of paragraphs 2.18 and 2.20 are implemented.
 - 2.22.4.3.4 If desired, appropriate orange construction signs are installed. See paragraph 2.18.4.2 and Appendix F.
 - 2.22.4.3.5 Five-foot clearance is maintained between equipment and materials and any part of an aircraft (includes wingtip overhang). If such clearance can only be maintained if an aircraft does not have full use of the entire taxiway width (with its main landing gear at the edge of the usable pavement), then it will be necessary to move personnel and equipment for the passage of that aircraft.
 - 2.22.4.3.6 Flaggers furnished by the contractor must be used to direct and control construction equipment and personnel to a pre-established setback distance for safe passage of aircraft, and airline and/or airport personnel. Flaggers must also be used to direct taxiing aircraft. Due to liability issues, the airport operator should require airlines to provide flaggers for directing taxiing aircraft.

2.22.5 Obstacle Free Zone (OFZ).

In general, personnel, material, and/or equipment may not penetrate the OFZ while the runway is open for aircraft operations. If a penetration to the OFZ is necessary, it may be possible to continue aircraft operations through operational restrictions. Coordinate with the FAA through the appropriate FAA Airports Regional or District Office.

2.22.6 Runway Approach/Departure Areas and Clearways.

All personnel, materials, and/or equipment must remain clear of the applicable threshold siting surfaces, as defined in AC 150/5300-13. Objects that do not penetrate these surfaces may still be obstructions to air navigation and may affect standard instrument approach procedures. Coordinate with the FAA through the appropriate FAA Airports Regional or District Office.

2.22.6.1 Construction activity in a runway approach/departure area may result in the need to partially close a runway or displace the existing runway threshold. Partial runway closure, displacement of the runway threshold, as well as closure of the complete runway and other portions of the movement area also require coordination through the airport operator with the appropriate FAA air traffic manager (FSS if non-towered) and ATO/Technical Operations (for affected NAVAIDS) and airport users.

2.22.6.2 **Caution About Partial Runway Closures.**

When filing a NOTAM for a partial runway closure, clearly state that the portion of pavement located prior to the threshold is not available for landing and departing traffic. In this case, the threshold has been moved for both landing and takeoff purposes (this is different than a displaced threshold). There may be situations where the portion of closed runway is available for taxiing only. If so, the NOTAM must reflect this condition).

2.22.6.3 **Caution About Displaced Thresholds.**

Implementation of a displaced threshold affects runway length available for aircraft landing over the displacement. Depending on the reason for the displacement (to provide obstruction clearance or RSA), such a displacement may also require an adjustment in the landing distance available and accelerate-stop distance available in the opposite direction. If project scope includes personnel, equipment, excavation, or other work within the existing RSA of any usable runway end, do not implement a displaced threshold unless arrivals and departures toward the construction activity are prohibited. Instead, implement a partial closure.

2.23 **Other Limitations on Construction.**

The CSPP must specify any other limitations on construction, including but not limited to:

2.23.1 Prohibitions.

- 2.23.1.1 No use of tall equipment (cranes, concrete pumps, and so on) unless a 7460-1 determination letter is issued for such equipment.
- 2.23.1.2 No use of open flame welding or torches unless fire safety precautions are provided and the airport operator has approved their use.
- 2.23.1.3 No use of electrical blasting caps on or within 1,000 feet (300 meters) of the airport property. See AC 150/5370-10.

2.23.2 Restrictions.

- 2.23.2.1 Construction suspension required during specific airport operations.
- 2.23.2.2 Areas that cannot be worked on simultaneously.
- 2.23.2.3 Day or night construction restrictions.
- 2.23.2.4 Seasonal construction restrictions.
- 2.23.2.5 Temporary signs not approved by the airport operator.
- 2.23.2.6 Grades changes that could result in unplanned effects on NAVAIDs.

CHAPTER 3. GUIDELINES FOR WRITING A CSPP

3.1 General Requirements.

The CSPP is a standalone document written to correspond with the subjects outlined in paragraph 2.4. The CSPP is organized by numbered sections corresponding to each subject listed in paragraph 2.4, and described in detail in paragraphs 2.5 - 2.23. Each section number and title in the CSPP matches the corresponding subject outlined in paragraph 2.4 (for example, 1. Coordination, 2. Phasing, 3. Areas and Operations Affected by the Construction Activity, and so on). With the exception of the project scope of work outlined in Section 2. Phasing, only subjects specific to operational safety during construction should be addressed.

3.2 Applicability of Subjects.

Each section should, to the extent practical, focus on the specific subject. Where an overlapping requirement spans several sections, the requirement should be explained in detail in the most applicable section. A reference to that section should be included in all other sections where the requirement may apply. For example, the requirement to protect existing underground FAA ILS cables during trenching operations could be considered FAA ATO coordination (Coordination, paragraph 2.5.3), an area and operation affected by the construction activity (Areas and Operations Affected by the Construction Activity, paragraph 2.7.1.4), a protection of a NAVAID (Protection of Navigational Aids (NAVAIDs), paragraph 2.8), or a notification to the FAA of construction activities (Notification of Construction Activities, paragraph 2.13.5.3.2). However, it is more specifically an underground utility requirement (Underground Utilities, paragraph 2.15). The procedure for protecting underground ILS cables during trenching operations should therefore be described in 2.4.2.11: “The contractor must coordinate with the local FAA System Support Center (SSC) to mark existing ILS cable routes along Runway 17-35. The ILS cables will be located by hand digging whenever the trenching operation moves within 10 feet of the cable markings.” All other applicable sections should include a reference to 2.4.2.11: “ILS cables shall be identified and protected as described in 2.4.2.11” or “See 2.4.2.11 for ILS cable identification and protection requirements.” Thus, the CSPP should be considered as a whole, with no need to duplicate responses to related issues.

3.3 Graphical Representations.

Construction safety drawings should be included in the CSPP as attachments. When other graphical representations will aid in supporting written statements, the drawings, diagrams, and/or photographs should also be attached to the CSPP. References should be made in the CSPP to each graphical attachment and may be made in multiple sections.

3.4 **Reference Documents.**

The CSPP must not incorporate a document by reference unless reproduction of the material in that document is prohibited. In that case, either copies of or a source for the referenced document must be provided to the contractor. Where this AC recommends references (e.g. as in paragraph 3.9) the intent is to include a reference to the corresponding section in the CSPP, not to this Advisory Circular.

3.5 **Restrictions.**

The CSPP should not be considered as a project design review document. The CSPP should also avoid mention of permanent (“as-built”) features such as pavements, markings, signs, and lighting, except when such features are intended to aid in maintaining operational safety during the construction.

3.6 **Coordination.**

Include in this section a detailed description of conferences and meetings to be held both before and during the project. Include appropriate information from AC 150/5370-12. Discuss coordination procedures and schedules for each required FAA ATO Technical Operations shutdown and restart and all required flight inspections.

3.7 **Phasing.**

Include in this section a detailed scope of work description for the project as a whole and each phase of work covered by the CSPP. This includes all locations and durations of the work proposed. Attach drawings to graphically support the written scope of work. Detail in this section the sequenced phases of the proposed construction. Include a reference to paragraph 3.8, as appropriate.

3.8 **Areas and Operations Affected by Construction.**

Focus in this section on identifying the areas and operations affected by the construction. Describe corresponding mitigation that is not covered in detail elsewhere in the CSPP. Include references to paragraphs below as appropriate. Attach drawings as necessary to graphically describe affected areas and mechanisms proposed. See Appendix F for sample operational effects tables and figures.

3.9 **NAVAID Protection.**

List in this section all NAVAID facilities that will be affected by the construction. Identify NAVAID facilities that will be placed out of service at any time prior to or during construction activities. Identify individuals responsible for coordinating each shutdown and when each facility will be out of service. Include a reference to paragraph 3.6 for FAA ATO NAVAID shutdown, restart, and flight inspection coordination. Outline in detail procedures to protect each NAVAID facility remaining in service from interference by construction activities. Include a reference to paragraph 3.14 for the

issuance of NOTAMs as required. Include a reference to paragraph 3.16 for the protection of underground cables and piping serving NAVAIDs. If temporary visual aids are proposed to replace or supplement existing facilities, include a reference to paragraph 3.19. Attach drawings to graphically indicate the affected NAVAIDS and the corresponding critical areas.

3.10 **Contractor Access.**

This will necessarily be the most extensive section of the CSPP. Provide sufficient detail so that a contractor not experienced in working on airports will understand the unique restrictions such work will require. Due to this extent, it should be broken down into subsections as described below:

3.10.1 Location of Stockpiled Construction Materials.

Describe in this section specific locations for stockpiling material. Note any height restrictions on stockpiles. Include a reference to paragraph 3.21 for hazard marking and lighting devices used to identify stockpiles. Include a reference to paragraph 3.11 for provisions to prevent stockpile material from becoming wildlife attractants. Include a reference to paragraph 3.12 for provisions to prevent stockpile material from becoming FOD. Attach drawings to graphically indicate the stockpile locations.

3.10.2 Vehicle and Pedestrian Operations.

While there are many items to be addressed in this major subsection of the CSPP, all are concerned with one main issue: keeping people and vehicles from areas of the airport where they don't belong. This includes preventing unauthorized entry to the AOA and preventing the improper movement of pedestrians or vehicles on the airport. In this section, focus on mechanisms to prevent construction vehicles and workers traveling to and from the worksite from unauthorized entry into movement areas. Specify locations of parking for both employee vehicles and construction equipment, and routes for access and haul roads. In most cases, this will best be accomplished by attaching a drawing. Quote from AC 150/5210-5 specific requirements for contractor vehicles rather than referring to the AC as a whole, and include special requirements for identifying HAZMAT vehicles. Quote from, rather than incorporate by reference, AC 150/5210-20 as appropriate to address the airport's rules for ground vehicle operations, including its training program. Discuss the airport's recordkeeping system listing authorized vehicle operators.

3.10.3 Two-Way Radio Communications.

Include a special section to identify all individuals who are required to maintain communications with Air Traffic (AT) at airports with active towers, or monitor CTAF at airports without or with closed ATCT. Include training requirements for all individuals required to communicate with AT. Individuals required to monitor AT frequencies should also be identified. If construction employees are also required to communicate by radio with Airport Operations, this procedure should be described in detail. Usage of vehicle mounted radios and/or portable radios should be addressed. Communication procedures for the event of disabled radio communication (that is, light

signals, telephone numbers, others) must be included. All radio frequencies should be identified (Tower, Ground Control, CTAF, UNICOM, ATIS, and so on).

3.10.4 **Airport Security.**

Address security as it applies to vehicle and pedestrian operations. Discuss TSA requirements, security badging requirements, perimeter fence integrity, gate security, and other needs. Attach drawings to graphically indicate secured and/or Security Identification Display Areas (SIDA), perimeter fencing, and available access points.

3.11 **Wildlife Management.**

Discuss in this section wildlife management procedures. Describe the maintenance of existing wildlife mitigation devices, such as perimeter fences, and procedures to limit wildlife attractants. Include procedures to notify Airport Operations of wildlife encounters. Include a reference to paragraph 3.10 for security (wildlife) fence integrity maintenance as required.

3.12 **FOD Management.**

In this section, discuss methods to control and monitor FOD: worksite housekeeping, ground vehicle tire inspections, runway sweeps, and so on. Include a reference to paragraph 3.15 for inspection requirements as required.

3.13 **HAZMAT Management.**

Describe in this section HAZMAT management procedures: fuel deliveries, spill recovery procedures, Safety Data Sheet (SDS), Material Safety Data Sheet (MSDS) or Product Safety Data Sheet (PSDS) availability, and other considerations. Any specific airport HAZMAT restrictions should also be identified. Include a reference to paragraph 3.10 for HAZMAT vehicle identification requirements. Quote from, rather than incorporate by reference, AC 150/5320-15.

3.14 **Notification of Construction Activities.**

List in this section the names and telephone numbers of points of contact for all parties affected by the construction project. We recommend a single list that includes all telephone numbers required under this section. Include emergency notification procedures for all representatives of all parties potentially impacted by the construction. Identify individual representatives – and at least one alternate – for each party. List both on-duty and off-duty contact information for each individual, including individuals responsible for emergency maintenance of airport construction hazard lighting and barricades. Describe procedures to coordinate immediate response to events that might adversely affect the operational safety of the airport (such as interrupted NAVAID service). Explain requirements for and the procedures for the issuance of Notices to Airmen (NOTAMs), notification to FAA required by 14 CFR Part 77 and Part 157 and in the event of affected NAVAIDs. For NOTAMs, identify an individual, and at least one alternate, responsible for issuing and cancelling each specific type of Notice to

Airmen (NOTAM) required. Detail notification methods for police, fire fighting, and medical emergencies. This may include 911, but should also include direct phone numbers of local police departments and nearby hospitals. Identify the E911 address of the airport and the emergency access route via haul roads to the construction site. Require the contractor to have this information available to all workers. The local Poison Control number should be listed. Procedures regarding notification of Airport Operations and/or the ARFF Department of such emergencies should be identified, as applicable. If airport radio communications are identified as a means of emergency notification, include a reference to paragraph 3.10. Differentiate between emergency and nonemergency notification of ARFF personnel, the latter including activities that affect ARFF water supplies and access roads. Identify the primary ARFF contact person and at least one alternate. If notification is to be made through Airport Operations, then detail this procedure. Include a method of confirmation from the ARFF department.

3.15 Inspection Requirements.

Describe in this section inspection requirements to ensure airfield safety compliance. Include a requirement for routine inspections by the resident engineer (RE) or other airport operator's representative and the construction contractors. If the engineering consultants and/or contractors have a Safety Officer who will conduct such inspections, identify this individual. Describe procedures for special inspections, such as those required to reopen areas for aircraft operations. Part 139 requires daily airfield inspections at certificated airports, but these may need to be more frequent when construction is in progress. Discuss the role of such inspections on areas under construction. Include a requirement to immediately remedy any deficiencies, whether caused by negligence, oversight, or project scope change.

3.16 Underground Utilities.

Explain how existing underground utilities will be located and protected. Identify each utility owner and include contact information for each company/agency in the master list. Address emergency response procedures for damaged or disrupted utilities. Include a reference to paragraph 3.14 for notification of utility owners of accidental utility disruption as required.

3.17 Penalties.

Describe in this section specific penalties imposed for noncompliance with airport rules and regulations, including the CSPP: SIDA violations, VPD, and others.

3.18 Special Conditions.

Identify any special conditions that may trigger specific safety mitigation actions outlined in this CSPP: low visibility operations, snow removal, aircraft in distress, aircraft accident, security breach, VPD, and other activities requiring construction suspension/resumption. Include a reference to paragraph 3.10 for compliance with airport safety and security measures and for radio communications as required. Include

a reference to paragraph 3.14 for emergency notification of all involved parties, including police/security, ARFF, and medical services.

3.19 Runway and Taxiway Visual Aids.

Include marking, lighting, signs, and visual NAVAIDS. Detail temporary runway and taxiway marking, lighting, signs, and visual NAVAIDS required for the construction. Discuss existing marking, lighting, signs, and visual NAVAIDS that are temporarily, altered, obliterated, or shut down. Consider non-federal facilities and address requirements for reimbursable agreements necessary for alteration of FAA facilities and for necessary flight checks. Identify temporary TORA signs or runway distance remaining signs if appropriate. Identify required temporary visual NAVAIDS such as REIL or PAPI. Quote from, rather than incorporate by reference, AC 150/5340-1, *Standards for Airport Markings*; AC 150/5340-18, *Standards for Airport Sign Systems*; and AC 150/5340-30, as required. Attach drawings to graphically indicate proposed marking, lighting, signs, and visual NAVAIDS.

3.20 Marking and Signs for Access Routes.

Detail plans for marking and signs for vehicle access routes. To the extent possible, signs should be in conformance with the Federal Highway Administration MUTCD and/or State highway specifications, not hand lettered. Detail any modifications to the guidance in the MUTCD necessary to meet frangibility/height requirements.

3.21 Hazard Marking and Lighting.

Specify all marking and lighting equipment, including when and where each type of device is to be used. Specify maximum gaps between barricades and the maximum spacing of hazard lighting. Identify one individual and at least one alternate responsible for maintenance of hazard marking and lighting equipment in the master telephone list. Include a reference to paragraph 3.14. Attach drawings to graphically indicate the placement of hazard marking and lighting equipment.

3.22 Work Zone Lighting for Nighttime Construction.

If work is to be conducted at night, specify all lighting equipment, including when and where each type of device is to be used. Indicate the direction lights are to be aimed and any directions that aiming of lights is prohibited. Specify any shielding necessary in instances where aiming is not sufficient to prevent interference with air traffic control and aircraft operations. Attach drawings to graphically indicate the placement and aiming of lighting equipment. Where the plan only indicates directions that aiming of lights is prohibited, the placement and positioning of portable lights must be proposed by the Contractor and approved by the airport operator's representative each time lights are relocated or repositioned.

3.23 Protection of Runway and Taxiway Safety Areas.

This section should focus exclusively on procedures for protecting all safety areas, including those altered by the construction: methods of demarcation, limit of access, movement within safety areas, stockpiling and trenching restrictions, and so on. Reference AC 150/5300-13, as required. Include a reference to paragraph 3.10 for procedures regarding vehicle and personnel movement within safety areas. Include a reference to paragraph 3.10 for material stockpile restrictions as required. Detail requirements for trenching, excavations, and backfill. Include a reference to paragraph 3.21 for hazard marking and lighting devices used to identify open excavations as required. If runway and taxiway closures are proposed to protect safety areas, or if temporary displaced thresholds and/or revised declared distances are used to provide the required Runway Safety Area, include a reference to paragraphs 3.14 and 3.19. Detail procedures for protecting the runway OFZ, runway OFA, taxiway OFA and runway approach surfaces including those altered by the construction: methods of demarcation, limit of cranes, storage of equipment, and so on. Quote from, rather than incorporate by reference, AC 150/5300-13, as required. Include a reference to paragraph 3.24 for height (i.e., crane) restrictions as required. One way to address the height of equipment that will move during the project is to establish a three-dimensional “box” within which equipment will be confined that can be studied as a single object. Attach drawings to graphically indicate the safety area, OFZ, and OFA boundaries.

3.24 Other Limitations on Construction.

This section should describe what limitations must be applied to each area of work and when each limitation will be applied: limitations due to airport operations, height (i.e., crane) restrictions, areas which cannot be worked at simultaneously, day/night work restrictions, winter construction, and other limitations. Include a reference to paragraph 3.7 for project phasing requirements based on construction limitations as required.

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APPENDIX A. RELATED READING MATERIAL

Obtain the latest version of the following free publications from the FAA on its Web site at <http://www.faa.gov/airports/>.

Table A-1. FAA Publications

Number	Title and Description
<u>AC 150/5200-28</u>	<i>Notices to Airmen (NOTAMs) for Airport Operators</i> Guidance for using the NOTAM System in airport reporting.
<u>AC 150/5200-30</u>	<i>Airport Field Condition Assessments and Winter Operations Safety</i> Guidance for airport owners/operators on the development of an acceptable airport snow and ice control program and on appropriate field condition reporting procedures.
<u>AC 150/5200-33</u>	<i>Hazardous Wildlife Attractants On or Near Airports</i> Guidance on locating certain land uses that might attract hazardous wildlife to public-use airports.
<u>AC 150/5210-5</u>	<i>Painting, Marking, and Lighting of Vehicles Used on an Airport</i> Guidance, specifications, and standards for painting, marking, and lighting vehicles operating in the airport air operations areas.
<u>AC 150/5210-20</u>	<i>Ground Vehicle Operations to include Taxiing or Towing an Aircraft on Airports</i> Guidance to airport operators on developing ground vehicle operation training programs.
<u>AC 150/5300-13</u>	<i>Airport Design</i> FAA standards and recommendations for airport design. Establishes approach visibility minimums as an airport design parameter, and contains the Object Free area and the obstacle free-zone criteria.
<u>AC 150/5210-24</u>	<i>Airport Foreign Object Debris (FOD) Management</i> Guidance for developing and managing an airport foreign object debris (FOD) program

Number	Title and Description
<u>AC 150/5320-15</u>	<p><i>Management of Airport Industrial Waste</i></p> <p>Basic information on the characteristics, management, and regulations of industrial wastes generated at airports. Guidance for developing a Storm Water Pollution Prevention Plan (SWPPP) that applies best management practices to eliminate, prevent, or reduce pollutants in storm water runoff with particular airport industrial activities.</p>
<u>AC 150/5340-1</u>	<p><i>Standards for Airport Markings</i></p> <p>FAA standards for the siting and installation of signs on airport runways and taxiways.</p>
<u>AC 150/5340-18</u>	<p><i>Standards for Airport Sign Systems</i></p> <p>FAA standards for the siting and installation of signs on airport runways and taxiways.</p>
<u>AC 150/5345-28</u>	<p><i>Precision Approach Path Indicator (PAPI) Systems</i></p> <p>FAA standards for PAPI systems, which provide pilots with visual glide slope guidance during approach for landing.</p>
<u>AC 150/5340-30</u>	<p><i>Design and Installation Details for Airport Visual Aids</i></p> <p>Guidance and recommendations on the installation of airport visual aids.</p>
<u>AC 150/5345-39</u>	<p><i>Specification for L-853, Runway and Taxiway Retroreflective Markers</i></p>
<u>AC 150/5345-44</u>	<p><i>Specification for Runway and Taxiway Signs</i></p> <p>FAA specifications for unlighted and lighted signs for taxiways and runways.</p>
<u>AC 150/5345-53</u>	<p><i>Airport Lighting Equipment Certification Program</i></p> <p>Details on the Airport Lighting Equipment Certification Program (ALECP).</p>
<u>AC 150/5345-50</u>	<p><i>Specification for Portable Runway and Taxiway Lights</i></p> <p>FAA standards for portable runway and taxiway lights and runway end identifier lights for temporary use to permit continued aircraft operations while all or part of a runway lighting system is inoperative.</p>
<u>AC 150/5345-55</u>	<p><i>Specification for L-893, Lighted Visual Aid to Indicate Temporary Runway Closure</i></p>

Number	Title and Description
<u>AC 150/5370-10</u>	<i>Standards for Specifying Construction of Airports</i> Standards for construction of airports, including earthwork, drainage, paving, turfing, lighting, and incidental construction.
<u>AC 150/5370-12</u>	<i>Quality Management for Federally Funded Airport Construction Projects</i>
EB 93	<i>Guidance for the Assembly and Installation of Temporary Orange Construction Signs</i>
FAA Order 5200.11	<u>FAA Airports (ARP) Safety Management System (SMS)</u> Basics for implementing SMS within ARP. Includes roles and responsibilities of ARP management and staff as well as other FAA lines of business that contribute to the ARP SMS.
FAA Certalert 98-05	<i>Grasses Attractive to Hazardous Wildlife</i> Guidance on grass management and seed selection.
FAA Form 7460-1	<u>Notice of Proposed Construction or Alteration</u>
FAA Form 7480-1	<u>Notice of Landing Area Proposal</u>
FAA Form 6000.26	National NAS Strategic Interruption Service Level Agreement, Strategic Events Coordination, Airport Sponsor Form

Obtain the latest version of the following free publications from the Electronic Code of Federal Regulations at <http://www.ecfr.gov/>.

Table A-2. Code of Federal Regulation

Number	Title
Title 14 CFR Part 77	Safe, Efficient Use and Preservation of the Navigable Airspace
Title 14 CFR Part 139	Certification of Airports
Title 49 CFR Part 1542	Airport Security

Obtain the latest version of the Manual on Uniform Traffic Control Devices from the Federal Highway Administration at <http://mutcd.fhwa.dot.gov/>.

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APPENDIX B. TERMS AND ACRONYMS**Table B-1. Terms and Acronyms**

Term	Definition
Form 7460-1	Notice of Proposed Construction or Alteration. For on-airport projects, the form submitted to the FAA regional or airports division office as formal written notification of any kind of construction or alteration of objects that affect navigable airspace, as defined in 14 CFR Part 77, <i>Safe, Efficient Use, and Preservation of the Navigable Airspace</i> . (See guidance available on the FAA web site at https://oeaaa.faa.gov .) The form may be downloaded at http://www.faa.gov/airports/resources/forms/ , or filed electronically at: https://oeaaa.faa.gov .
Form 7480-1	Notice of Landing Area Proposal. Form submitted to the FAA Airports Regional Division Office or Airports District Office as formal written notification whenever a project without an airport layout plan on file with the FAA involves the construction of a new airport; the construction, realigning, altering, activating, or abandoning of a runway, landing strip, or associated taxiway; or the deactivation or abandoning of an entire airport. The form may be downloaded at http://www.faa.gov/airports/resources/forms/ .
Form 6000-26	Airport Sponsor Strategic Event Submission Form
AC	Advisory Circular
ACSI	Airport Certification Safety Inspector
ADG	Airplane Design Group
AIP	Airport Improvement Program
ALECP	Airport Lighting Equipment Certification Program
ANG	Air National Guard
AOA	Air Operations Area, as defined in 14 CFR Part 107. Means a portion of an airport, specified in the airport security program, in which security measures are carried out. This area includes aircraft movement areas, aircraft parking areas, loading ramps, and safety areas, and any adjacent areas (such as general aviation areas) that are not separated by adequate security systems, measures, or procedures. This area does not include the secured area of the airport terminal building.
ARFF	Aircraft Rescue and Fire Fighting
ARP	FAA Office of Airports
ASDA	Accelerate-Stop Distance Available
AT	Air Traffic
ATCT	Airport Traffic Control Tower
ATIS	Automatic Terminal Information Service
ATO	Air Traffic Organization
Certificated Airport	An airport that has been issued an Airport Operating Certificate by the FAA under

Term	Definition
	the authority of 14 CFR Part 139, <i>Certification of Airports</i> .
CFR	Code of Federal Regulations
Construction	The presence of construction-related personnel, equipment, and materials in any location that could infringe upon the movement of aircraft.
CSPP	Construction Safety and Phasing Plan. The overall plan for safety and phasing of a construction project developed by the airport operator, or developed by the airport operator's consultant and approved by the airport operator. It is included in the invitation for bids and becomes part of the project specifications.
CTAF	Common Traffic Advisory Frequency
Displaced Threshold	A threshold that is located at a point on the runway other than the designated beginning of the runway. The portion of pavement behind a displaced threshold is available for takeoffs in either direction or landing from the opposite direction.
DOT	Department of Transportation
EPA	Environmental Protection Agency
FAA	Federal Aviation Administration
FOD	Foreign Object Debris/Damage
FSS	Flight Service Station
GA	General Aviation
HAZMAT	Hazardous Materials
HMA	Hot Mix Asphalt
IAP	Instrument Approach Procedures
IFR	Instrument Flight Rules
ILS	Instrument Landing System
LDA	Landing Distance Available
LOC	Localizer antenna array
Movement Area	The runways, taxiways, and other areas of an airport that are used for taxiing or hover taxiing, air taxiing, takeoff, and landing of aircraft, exclusive of loading aprons and aircraft parking areas (reference 14 CFR Part 139).
MSDS	Material Safety Data Sheet
MUTCD	Manual on Uniform Traffic Control Devices
NAVAID	Navigation Aid
NAVAID Critical Area	An area of defined shape and size associated with a NAVAID that must remain clear and graded to avoid interference with the electronic signal.
Non-Movement Area	The area inside the airport security fence exclusive of the Movement Area. It is important to note that the non-movement area includes pavement traversed by aircraft.

Term	Definition
NOTAM	Notices to Airmen
Obstruction	Any object/obstacle exceeding the obstruction standards specified by 14 CFR Part 77, subpart C.
OCC	Operations Control Center
OE / AAA	Obstruction Evaluation / Airport Airspace Analysis
OFA	Object Free Area. An area on the ground centered on the runway, taxiway, or taxi lane centerline provided to enhance safety of aircraft operations by having the area free of objects except for those objects that need to be located in the OFA for air navigation or aircraft ground maneuvering purposes. (See <u>AC 150/5300-13</u> for additional guidance on OFA standards and wingtip clearance criteria.)
OFZ	Obstacle Free Zone. The airspace below 150 ft (45 m) above the established airport elevation and along the runway and extended runway centerline that is required to be clear of all objects, except for frangible visual NAVAIDs that need to be located in the OFZ because of their function, in order to provide clearance protection for aircraft landing or taking off from the runway and for missed approaches. The OFZ is subdivided as follows: Runway OFZ, Inner Approach OFZ, Inner Transitional OFZ, and Precision OFZ. Refer to <u>AC 150/5300-13</u> for guidance on OFZ.
OSHA	Occupational Safety and Health Administration
OTS	Out of Service
P&R	Planning and Requirements Group
NPI	NAS Planning & Integration
PAPI	Precision Approach Path Indicator
PFC	Passenger Facility Charge
PLASI	Pulse Light Approach Slope Indicator
Project Proposal Summary	A clear and concise description of the proposed project or change that is the object of Safety Risk Management.
RA	Reimbursable Agreement
RE	Resident Engineer
REIL	Runway End Identifier Lights
RNAV	Area Navigation
ROFA	Runway Object Free Area
RSA	Runway Safety Area. A defined surface surrounding the runway prepared or suitable for reducing the risk of damage to airplanes in the event of an undershoot, overshoot, or excursion from the runway, in accordance with <u>AC 150/5300-13</u> .
SDS	Safety Data Sheet
SIDA	Security Identification Display Area
SMS	Safety Management System

Term	Definition
SPCD	Safety Plan Compliance Document. Details developed and submitted by a contractor to the airport operator for approval providing details on how the performance of a construction project will comply with the CSPP.
SRM	Safety Risk Management
SSC	System Support Center
Taxiway Safety Area	A defined surface alongside the taxiway prepared or suitable for reducing the risk of damage to an airplane unintentionally departing the taxiway, in accordance with <u>AC 150/5300-13</u> .
TDG	Taxiway Design Group
Temporary	Any condition that is not intended to be permanent.
Temporary Runway End	The beginning of that portion of the runway available for landing and taking off in one direction, and for landing in the other direction. Note the difference from a displaced threshold.
Threshold	The beginning of that portion of the runway available for landing. In some instances, the landing threshold may be displaced.
TODA	Takeoff Distance Available
TOFA	Taxiway Object Free Area
TORA	Takeoff Run Available. The length of the runway less any length of runway unavailable and/or unsuitable for takeoff run computations. See <u>AC 150/5300-13</u> for guidance on declared distances.
TSA	Taxiway Safety Area, or Transportation Security Administration
UNICOM	A radio communications system of a type used at small airports.
VASI	Visual Approach Slope Indicator
VGSI	Visual Glide Slope Indicator. A device that provides a visual glide slope indicator to landing pilots. These systems include precision approach path indicator (PAPI), visual approach slope indicator (VASI), and pulse light approach slope indicator (PLASI).
VFR	Visual Flight Rules
VOR	Very High Frequency Omnidirectional Radio Range
VPD	Vehicle / Pedestrian Deviation

APPENDIX C. SAFETY AND PHASING PLAN CHECKLIST

This appendix is keyed to Chapter 2. In the electronic version of this AC, clicking on the paragraph designation in the Reference column will access the applicable paragraph. There may be instances where the CSPP requires provisions that are not covered by the list in this appendix.

This checklist is intended as an aid, not a required submittal.

Table C-1. CSPP Checklist

Coordination	Reference	Addressed?			Remarks
		Yes	No	NA	
General Considerations					
Requirements for predesign, prebid, and preconstruction conferences to introduce the subject of airport operational safety during construction are specified.	<u>2.5</u>				
Operational safety is a standing agenda item for construction progress meetings.	<u>2.5</u>				
Scheduling of the construction phases is properly addressed.	<u>2.6</u>				
Any formal agreements are established.	<u>2.5.3</u>				
Areas and Operations Affected by Construction Activity					
Drawings showing affected areas are included.	<u>2.7.1</u>				
Closed or partially closed runways, taxiways, and aprons are depicted on drawings.	<u>2.7.1.1</u>				
Access routes used by ARFF vehicles affected by the project are addressed.	<u>2.7.1.2</u>				
Access routes used by airport and airline support vehicles affected by the project are addressed.	<u>2.7.1.3</u>				
Underground utilities, including water supplies for firefighting and drainage.	<u>2.7.1.4</u>				

Coordination	Reference	Addressed?			Remarks
		Yes	No	NA	
Approach/departure surfaces affected by heights of temporary objects are addressed.	<u>2.7.1.5</u>				
Construction areas, storage areas, and access routes near runways, taxiways, aprons, or helipads are properly depicted on drawings.	<u>2.7.1</u>				
Temporary changes to taxi operations are addressed.	<u>2.7.2.1</u>				
Detours for ARFF and other airport vehicles are identified.	<u>2.7.2.2</u>				
Maintenance of essential utilities and underground infrastructure is addressed.	<u>2.7.2.3</u>				
Temporary changes to air traffic control procedures are addressed.	<u>2.7.2.4</u>				
NAVAIDs					
Critical areas for NAVAIDs are depicted on drawings.	<u>2.8</u>				
Effects of construction activity on the performance of NAVAIDS, including unanticipated power outages, are addressed.	<u>2.8</u>				
Protection of NAVAID facilities is addressed.	<u>2.8</u>				
The required distance and direction from each NAVAID to any construction activity is depicted on drawings.	<u>2.8</u>				
Procedures for coordination with FAA ATO/Technical Operations, including identification of points of contact, are included.	<u>2.8, 2.13.1, 2.13.5.3.1, 2.18.1</u>				
Contractor Access					
The CSPP addresses areas to which contractor will have access and how	<u>2.9</u>				

Coordination	Reference	Addressed?			Remarks
		Yes	No	NA	
the areas will be accessed.					
The application of 49 CFR Part 1542 Airport Security, where appropriate, is addressed.	<u>2.9</u>				
The location of stockpiled construction materials is depicted on drawings.	<u>2.9.1</u>				
The requirement for stockpiles in the ROFA to be approved by FAA is included.	<u>2.9.1</u>				
Requirements for proper stockpiling of materials are included.	<u>2.9.1</u>				
Construction site parking is addressed.	<u>2.9.2.1</u>				
Construction equipment parking is addressed.	<u>2.9.2.2</u>				
Access and haul roads are addressed.	<u>2.9.2.3</u>				
A requirement for marking and lighting of vehicles to comply with <u>AC 150/5210-5, Painting, Marking and Lighting of Vehicles Used on an Airport</u> , is included.	<u>2.9.2.4</u>				
Proper vehicle operations, including requirements for escorts, are described.	<u>2.9.2.5, 2.9.2.6</u>				
Training requirements for vehicle drivers are addressed.	<u>2.9.2.7</u>				
Two-way radio communications procedures are described.	<u>2.9.2.9</u>				
Maintenance of the secured area of the airport is addressed.	<u>2.9.2.10</u>				
Wildlife Management					
The airport operator's wildlife management procedures are addressed.	<u>2.10</u>				

Coordination	Reference	Addressed?			Remarks
		Yes	No	NA	
Foreign Object Debris Management					
The airport operator’s FOD management procedures are addressed.	<u>2.11</u>				
Hazardous Materials Management					
The airport operator’s hazardous materials management procedures are addressed.	<u>2.12</u>				
Notification of Construction Activities					
Procedures for the immediate notification of airport user and local FAA of any conditions adversely affecting the operational safety of the airport are detailed.	<u>2.13</u>				
Maintenance of a list by the airport operator of the responsible representatives/points of contact for all involved parties and procedures for contacting them 24 hours a day, seven days a week is specified.	<u>2.13.1</u>				
A list of local ATO/Technical Operations personnel is included.	<u>2.13.1</u>				
A list of ATCT managers on duty is included.	<u>2.13.1</u>				
A list of authorized representatives to the OCC is included.	<u>2.13.2</u>				
Procedures for coordinating, issuing, maintaining and cancelling by the airport operator of NOTAMS about airport conditions resulting from construction are included.	<u>2.8, 2.13.2, 2.18.3.3.9</u>				
Provision of information on closed or hazardous conditions on airport movement areas by the airport operator to the OCC is specified.	<u>2.13.2</u>				
Emergency notification procedures for medical, fire fighting, and police	<u>2.13.3</u>				

Coordination	Reference	Addressed?			Remarks
		Yes	No	NA	
response are addressed.					
Coordination with ARFF personnel for non-emergency issues is addressed.	<u>2.13.4</u>				
Notification to the FAA under 14 CFR parts 77 and 157 is addressed.	<u>2.13.5</u>				
Reimbursable agreements for flight checks and/or design and construction for FAA owned NAVAIDs are addressed.	<u>2.13.5.3.2</u>				
Inspection Requirements					
Daily and interim inspections by both the airport operator and contractor are specified.	<u>2.14.1, 2.14.2</u>				
Final inspections at certificated airports are specified when required.	<u>2.14.3</u>				
Underground Utilities					
Procedures for protecting existing underground facilities in excavation areas are described.	<u>2.15</u>				
Penalties					
Penalty provisions for noncompliance with airport rules and regulations and the safety plans are detailed.	<u>2.16</u>				
Special Conditions					
Any special conditions that affect the operation of the airport or require the activation of any special procedures are addressed.	<u>2.17</u>				
Runway and Taxiway Visual Aids - Marking, Lighting, Signs, and Visual NAVAIDs					
The proper securing of temporary airport markings, lighting, signs, and visual NAVAIDs is addressed.	<u>2.18.1</u>				
Frangibility of airport markings, lighting, signs, and visual NAVAIDs is specified.	<u>2.18.1, 2.18.3, 2.18.4.2, 2.20.2.4</u>				

Coordination	Reference	Addressed?			Remarks
		Yes	No	NA	
The requirement for markings to be in compliance with <u>AC 150/5340-1</u> , <i>Standards for Airport Markings</i> , is specified.	<u>2.18.2</u>				
Detailed specifications for materials and methods for temporary markings are provided.	<u>2.18.2</u>				
The requirement for lighting to conform to <u>AC 150/5340-30</u> , <i>Design and Installation Details for Airport Visual Aids</i> ; <u>AC 150/5345-50</u> , <i>Specification for Portable Runway and Taxiway Lights</i> ; and <u>AC 150/5345-53</u> , <i>Airport Lighting Certification Program</i> , is specified.	<u>2.18.3</u>				
The use of a lighted X is specified where appropriate.	<u>2.18.2.1.2</u> , <u>2.18.3.2</u>				
The requirement for signs to conform to <u>AC 150/5345-44</u> , <i>Specification for Runway and Taxiway Signs</i> ; <u>AC 150/5340-18</u> , <i>Standards for Airport Sign Systems</i> ; and <u>AC 150/5345-53</u> , <i>Airport Lighting Certification Program</i> , is specified.	<u>2.18.4</u>				
Marking and Signs For Access Routes					
The CSPP specifies that pavement markings and signs intended for construction personnel should conform to <u>AC 150/5340-18</u> and, to the extent practicable, with the MUTCD and/or State highway specifications.	<u>2.18.4.2</u>				
Hazard Marking and Lighting					
Prominent, comprehensible warning indicators for any area affected by construction that is normally accessible to aircraft, personnel, or vehicles are specified.	<u>2.20.1</u>				

Coordination	Reference	Addressed?			Remarks
		Yes	No	NA	
Hazard marking and lighting are specified to identify open manholes, small areas under repair, stockpiled material, and waste areas.	<u>2.20.1</u>				
The CSPP considers less obvious construction-related hazards.	<u>2.20.1</u>				
Equipment that poses the least danger to aircraft but is sturdy enough to remain in place when subjected to typical winds, prop wash and jet blast is specified.	<u>2.20.2.1</u>				
The spacing of barricades is specified such that a breach is physically prevented barring a deliberate act.	<u>2.20.2.1</u>				
Red lights meeting the luminance requirements of the State Highway Department are specified.	<u>2.20.2.2</u>				
Barricades, temporary markers, and other objects placed and left in areas adjacent to any open runway, taxiway, taxi lane, or apron are specified to be as low as possible to the ground, and no more than 18 inch high.	<u>2.20.2.3</u>				
Barricades are specified to indicate construction locations in which no part of an aircraft may enter.	<u>2.20.2.3</u>				
Highly reflective barriers with lights are specified to barricade taxiways leading to closed runways.	<u>2.20.2.5</u>				
Markings for temporary closures are specified.	<u>2.20.2.5</u>				
The provision of a contractor's representative on call 24 hours a day for emergency maintenance of airport hazard lighting and barricades is specified.	<u>2.20.2.7</u>				

Coordination	Reference	Addressed?			Remarks
		Yes	No	NA	
Work Zone Lighting for Nighttime Construction					
If work is to be conducted at night, the CSPP identifies construction lighting units and their general locations and aiming in relationship to the ATCT and active runways and taxiways.	<u>2.21</u>				
Protection of Runway and Taxiway Safety Areas					
The CSPP clearly states that no construction may occur within a safety area while the associated runway or taxiway is open for aircraft operations.	<u>2.22.1.1,</u> <u>2.22.3.1</u>				
The CSPP specifies that the airport operator coordinates the adjustment of RSA or TSA dimensions with the ATCT and the appropriate FAA Airports Regional or District Office and issues a local NOTAM.	<u>2.22.1.2,</u> <u>2.22.3.2</u>				
Procedures for ensuring adequate distance for protection from blasting operations, if required by operational considerations, are detailed.	<u>2.22.3.3</u>				
The CSPP specifies that open trenches or excavations are not permitted within a safety area while the associated runway or taxiway is open, subject to approved exceptions.	<u>2.22.1.4</u>				
Appropriate covering of excavations in the RSA or TSA that cannot be backfilled before the associated runway or taxiway is open is detailed.	<u>2.22.1.4</u>				
The CSPP includes provisions for prominent marking of open trenches and excavations at the construction site.	<u>2.22.1.4</u>				
Grading and soil erosion control to maintain RSA/TSA standards are	<u>2.22.3.5</u>				

Coordination	Reference	Addressed?			Remarks
		Yes	No	NA	
addressed.					
The CSPP specifies that equipment is to be removed from the ROFA when not in use.	<u>2.22.2</u>				
The CSPP clearly states that no construction may occur within a taxiway safety area while the taxiway is open for aircraft operations.	<u>2.22.3</u>				
Appropriate details are specified for any construction work to be accomplished in a taxiway object free area.	<u>2.22.4</u>				
Measures to ensure that personnel, material, and/or equipment do not penetrate the OFZ or threshold siting surfaces while the runway is open for aircraft operations are included.	<u>2.22.4.3.6</u>				
Provisions for protection of runway approach/departure areas and clearways are included.	<u>2.22.6</u>				
Other Limitations on Construction					
The CSPP prohibits the use of open flame welding or torches unless adequate fire safety precautions are provided and the airport operator has approved their use.	<u>2.23.1.2</u>				
The CSPP prohibits the use of electrical blasting caps on or within 1,000 ft (300 m) of the airport property.	<u>2.23.1.3</u>				

APPENDIX D. CONSTRUCTION PROJECT DAILY SAFETY INSPECTION CHECKLIST

The situations identified below are potentially hazardous conditions that may occur during airport construction projects. Safety area encroachments, unauthorized and improper ground vehicle operations, and unmarked or uncovered holes and trenches near aircraft operating surfaces pose the most prevalent threats to airport operational safety during airport construction projects. The list below is one tool that the airport operator or contractor may use to aid in identifying and correcting potentially hazardous conditions. It should be customized as appropriate for each project including information such as the date, time and name of the person conducting the inspection.

Table D-1. Potentially Hazardous Conditions

Item	Action Required (Describe)	No Action Required (Check)
Excavation adjacent to runways, taxiways, and aprons improperly backfilled.		
Mounds of earth, construction materials, temporary structures, and other obstacles near any open runway, taxiway, or taxi lane; in the related Object Free area and aircraft approach or departure areas/zones; or obstructing any sign or marking.		
Runway resurfacing projects resulting in lips exceeding 3 inch (7.6 cm) from pavement edges and ends.		
Heavy equipment (stationary or mobile) operating or idle near AOA, in runway approaches and departures areas, or in OFZ.		
Equipment or material near NAVAIDs that may degrade or impair radiated signals and/or the monitoring of navigation and visual aids. Unauthorized or improper vehicle operations in localizer or glide slope critical areas, resulting in electronic interference and/or facility shutdown.		
Tall and especially relatively low visibility units (that is, equipment with slim profiles) — cranes, drills, and similar objects — located in critical areas, such as OFZ and		

Item	Action Required (Describe)	No Action Required (Check)
approach zones.		
Improperly positioned or malfunctioning lights or unlighted airport hazards, such as holes or excavations, on any apron, open taxiway, or open taxi lane or in a related safety, approach, or departure area.		
Obstacles, loose pavement, trash, and other debris on or near AOA. Construction debris (gravel, sand, mud, paving materials) on airport pavements may result in aircraft propeller, turbine engine, or tire damage. Also, loose materials may blow about, potentially causing personal injury or equipment damage.		
Inappropriate or poorly maintained fencing during construction intended to deter human and animal intrusions into the AOA. Fencing and other markings that are inadequate to separate construction areas from open AOA create aviation hazards.		
Improper or inadequate marking or lighting of runways (especially thresholds that have been displaced or runways that have been closed) and taxiways that could cause pilot confusion and provide a potential for a runway incursion. Inadequate or improper methods of marking, barricading, and lighting of temporarily closed portions of AOA create aviation hazards.		
Wildlife attractants — such as trash (food scraps not collected from construction personnel activity), grass seeds, tall grass, or standing water — on or near airports.		
Obliterated or faded temporary markings on active operational areas.		
Misleading or malfunctioning obstruction lights. Unlighted or unmarked obstructions in the approach to any open runway pose aviation hazards.		

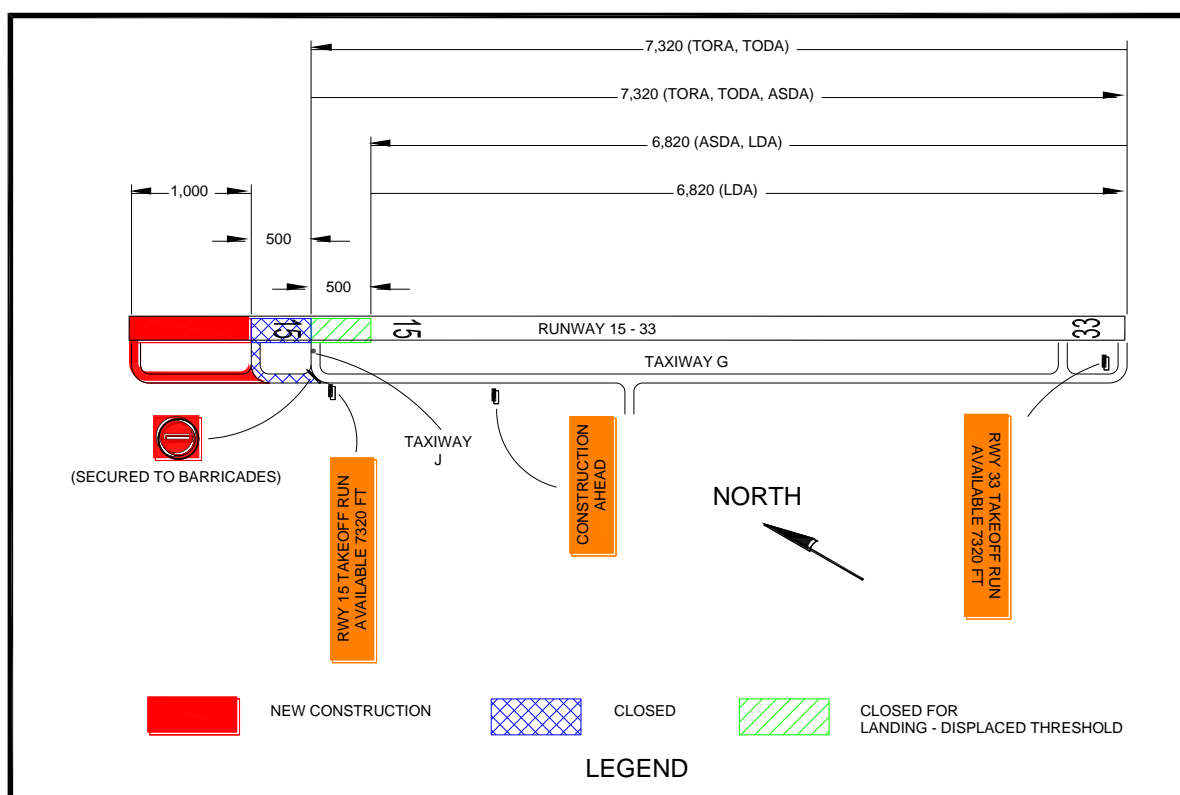
Item	Action Required (Describe)	No Action Required (Check)
Failure to issue, update, or cancel NOTAMs about airport or runway closures or other construction related airport conditions.		
Failure to mark and identify utilities or power cables. Damage to utilities and power cables during construction activity can result in the loss of runway / taxiway lighting; loss of navigation, visual, or approach aids; disruption of weather reporting services; and/or loss of communications.		
Restrictions on ARFF access from fire stations to the runway / taxiway system or airport buildings.		
Lack of radio communications with construction vehicles in airport movement areas.		
Objects, regardless of whether they are marked or flagged, or activities anywhere on or near an airport that could be distracting, confusing, or alarming to pilots during aircraft operations.		
Water, snow, dirt, debris, or other contaminants that temporarily obscure or derogate the visibility of runway/taxiway marking, lighting, and pavement edges. Any condition or factor that obscures or diminishes the visibility of areas under construction.		
Spillage from vehicles (gasoline, diesel fuel, oil) on active pavement areas, such as runways, taxiways, aprons, and airport roadways.		
Failure to maintain drainage system integrity during construction (for example, no temporary drainage provided when working on a drainage system).		

Item	Action Required (Describe)	No Action Required (Check)
Failure to provide for proper electrical lockout and tagging procedures. At larger airports with multiple maintenance shifts/workers, construction contractors should make provisions for coordinating work on circuits.		
Failure to control dust. Consider limiting the amount of area from which the contractor is allowed to strip turf.		
Exposed wiring that creates an electrocution or fire ignition hazard. Identify and secure wiring, and place it in conduit or bury it.		
Site burning, which can cause possible obscuration.		
Construction work taking place outside of designated work areas and out of phase.		

APPENDIX E. SAMPLE OPERATIONAL EFFECTS TABLE**E.1 Project Description.**

Runway 15-33 is currently 7820 feet long, with a 500 foot stopway on the north end. This project will remove the stopway and extend the runway 1000 feet to the north and 500 feet to the south. Finally, the existing portion of the runway will be repaved. The runway 33 glide slope will be relocated. The new runway 33 localizer has already been installed by FAA Technical Operations and only needs to be switched on. Runway 15 is currently served only by a localizer, which will remain in operation as it will be beyond the future RSA. Appropriate NOTAMS will be issued throughout the project.

- E.1.1 During Phase I, the runway 15 threshold will be displaced 1000 feet to keep construction equipment below the approach surface. The start of runway 15 takeoff and the departure end of runway 33 will also be moved 500 feet to protect workers from jet blast. Declared distances for runway 33 will be adjusted to provide the required RSA and applicable departure surface. Excavation near Taxiway G will require its ADG to be reduced from IV to III. See [Figure E-1](#).

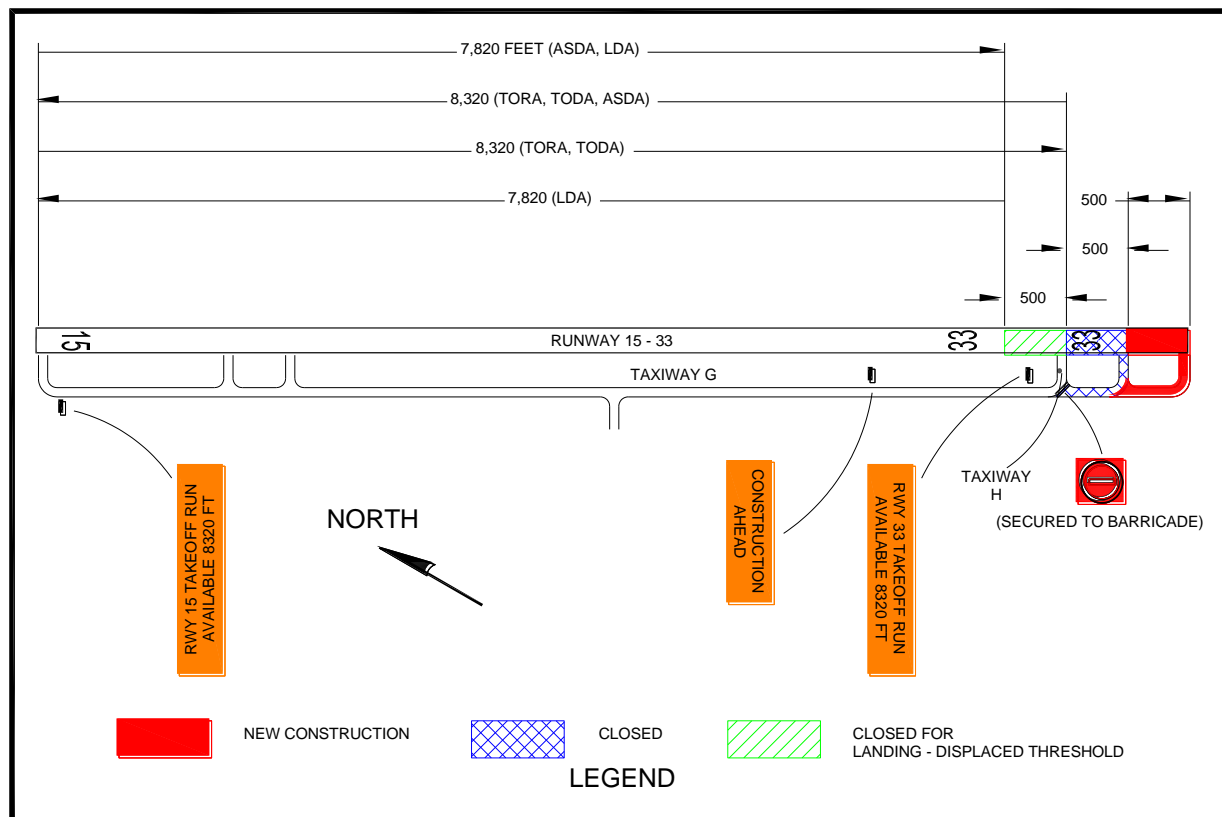
Figure E-1. Phase I Example

Note 1: Where hold signs are installed on both sides of a taxiway, install the TORA sign on the left side of the taxiway before the final turn to the runway intersection.

Note 2: Based on the declared distances for Runway 33 departures, the maximum equipment height in the construction area is 12.5 feet ($500/40 = 12.5$).

- E.2 During Phase II, the runway 33 threshold will be displaced 1000 feet to keep construction equipment below the approach surface. The start of runway 33 takeoff and the departure end of runway 15 will also be moved 500 feet to protect workers from jet blast. Declared distances for runway 15 will be adjusted to provide the required RSA and applicable departure surface. See [Figure E-2](#).

Figure E-2. Phase II Example



Note 1: Where hold signs are installed on both sides of a taxiway, install the TORA sign on the left side of the taxiway before the final turn to the runway intersection.

Note 2: Based on the declared distances for Runway 15 departures, the maximum equipment height in the construction area is 12.5 feet ($500/40 = 12.5$).

- E.3 During Phase III, the existing portion of the runway will be repaved with Hot Mix Asphalt (HMA) and the runway 33 glide slope will be relocated. Construction will be accomplished between the hours of 8:00 pm and 5:00 am, during which the runway will be closed to operations.

Figure E-3. Phase III Example

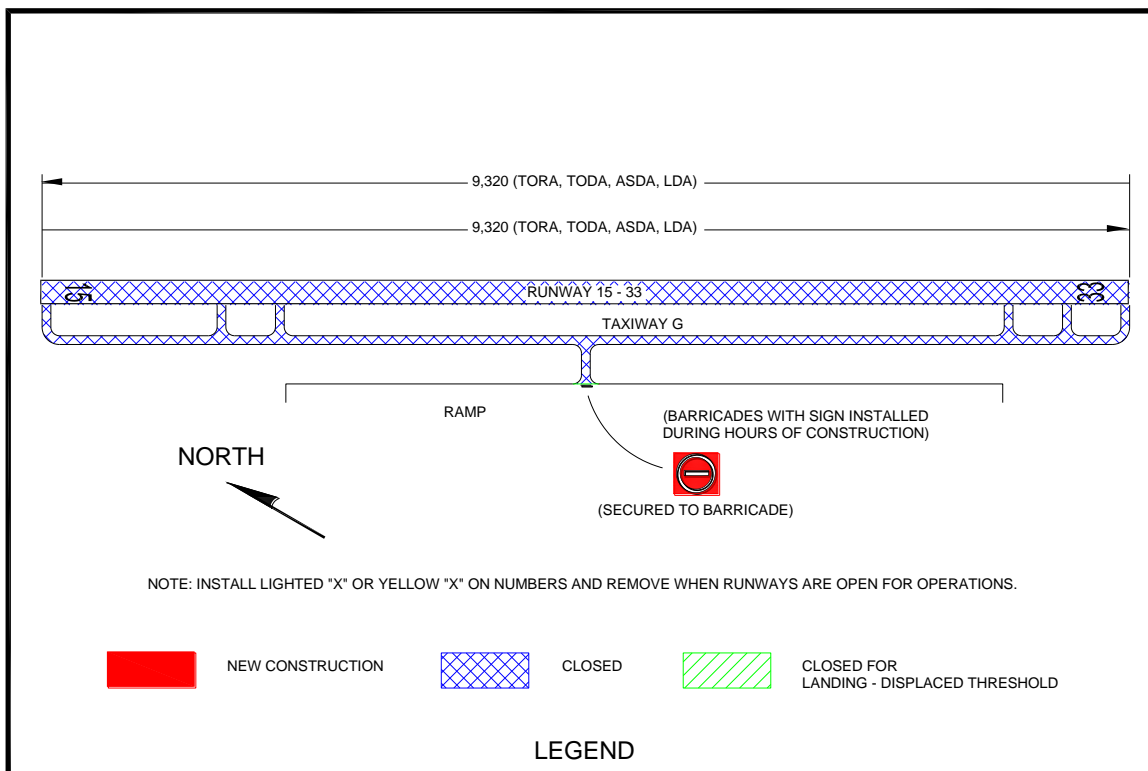


Table E-1. Operational Effects Table

Project	Runway 15-33 Extension and Repaving			
Phase	Normal (Existing)	Phase I: Extend Runway 15 End	Phase II: Extend Runway 33 End	Phase III: Repave Runway
Scope of Work	N/A	Extend Runway 15-33 1,000 ft on north end with Hot Mix Asphaltic Concrete (HMA).	Extend Runway 15-33 500 ft on south end with Hot Mix Asphaltic Concrete (HMA).	Repave existing runway with HMA Relocate Runway 33 Glide Slope
Effects of Construction Operations	N/A	Existing North 500 ft closed	Existing South 500 ft closed	Runway closed between 8:00 pm and 5:00 am Edge lighting out of service
Construction Phase	N/A	Phase I (Anticipated)	Phase II (Anticipated)	Phase III (Anticipated)
Runway 15 Average Aircraft Operations	Carrier: 52 /day GA: 26 /day Military: 11 /day	Carrier: 40 /day GA: 26 /day Military: 0 /day	Carrier: 45 /day GA: 26 /day Military: 5 /day	Carrier: 45 / day GA: 20 / day Military: 0 /day
Runway 33 Average Aircraft Operations	Carrier: 40 /day GA: 18 /day Military: 10 /day	Carrier: 30 /day GA: 18 /day Military: 0 /day	Carrier: 25 /day GA: 18 /day Military: 5 /day	Carrier: 20 /day GA: 5 /day Military: 0 /day
Runway 15-33 Aircraft Category	C-IV	C-IV	C-IV	C-IV
Runway 15 Approach Visibility Minimums	1 mile	1 mile	1 mile	1 mile
Runway 33 Approach Visibility Minimums	$\frac{3}{4}$ mile	$\frac{3}{4}$ mile	$\frac{3}{4}$ mile	1 mile

Note: Proper coordination with Flight Procedures group is necessary to maintain instrument approach procedures during construction.

Project		Runway 15-33 Extension and Repaving			
Phase		Normal (Existing)	Phase I: Extend Runway 15 End	Phase II: Extend Runway 33 End	Phase III: Repave Runway
Runway 15 Declared Distances	TORA	7,820	7,320	8,320	9,320
	TODA	7,820	7,320	8,320	9,320
	ASDA	7,820	7,320	7,820	9,320
	LDA	7,820	6,820	7,820	9,320
Runway 33 Declared Distances	TORA	7,820	7,320	8,320	9,320
	TODA	7,820	7,320	8,320	9,320
	ASDA	8,320	6,820	8,320	9,320
	LDA	7,820	6,820	7,820	9,320
Runway 15 Approach Procedures		LOC only	LOC only	LOC only	LOC only
		RNAV	RNAV	RNAV	RNAV
		VOR	VOR	VOR	VOR
Runway 33 Approach Procedures		ILS	ILS	ILS	LOC only
		RNAV	RNAV	RNAV	RNAV
		VOR	VOR	VOR	VOR
Runway 15 NAVAIDs		LOC	LOC	LOC	LOC
Runway 33 NAVAIDs		ILS, MALSR	ILS, MALSR	ILS, MALSR	LOC, MALSR
Taxiway G ADG		IV	III	IV	IV
Taxiway G TDG		4	4	4	4
ATCT (hours open)		24 hours	24 hours	24 hours	0500 - 2000
ARFF Index		D	D	D	D

Project	Runway 15-33 Extension and Repaving			
Phase	Normal (Existing)	Phase I: Extend Runway 15 End	Phase II: Extend Runway 33 End	Phase III: Repave Runway
Special Conditions	Air National Guard (ANG) military operations	All military aircraft relocated to alternate ANG Base	Some large military aircraft relocated to alternate ANG Base	All military aircraft relocated to alternate ANG Base
Information for NOTAMs		Refer above for applicable declared distances. Taxiway G limited to 118 ft wingspan	Refer above for applicable declared distances.	Refer above for applicable declared distances. Airport closed 2000 – 0500. Runway 15 glide slope OTS.

Note: This table is one example. It may be advantageous to develop a separate table for each project phase and/or to address the operational status of the associated NAVAIDs per construction phase.

Complete the following chart for each phase to determine the area that must be protected along the runway and taxiway edges:

Table E-2. Runway and Taxiway Edge Protection

Runway/Taxiway	Aircraft Approach Category* A, B, C, or D	Airplane Design Group* I, II, III, or IV	Safety Area Width in Feet Divided by 2*

*See AC 150/5300-13 to complete the chart for a specific runway/taxiway.

Complete the following chart for each phase to determine the area that must be protected before the runway threshold:

Table E-3. Protection Prior to Runway Threshold

Runway End Number	Airplane Design Group* I, II, III, or IV	Aircraft Approach Category* A, B, C, or D	Minimum Safety Area Prior to the Threshold*	Minimum Distance to Threshold Based on Required Approach Slope*	
				ft	: 1
			ft	ft	: 1
			ft	ft	: 1
			ft	ft	: 1
			ft	ft	: 1

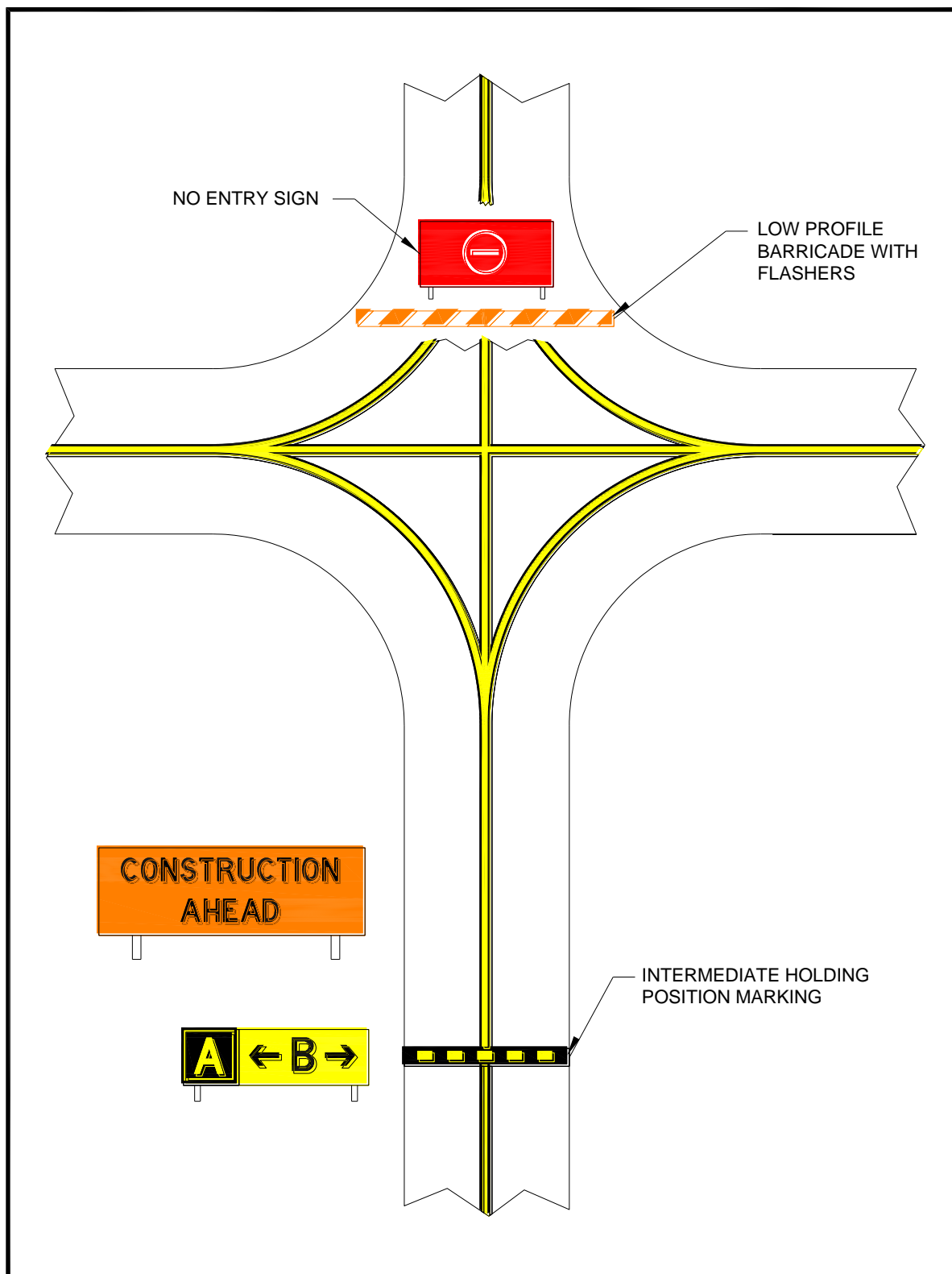
*See AC 150/5300-13 to complete the chart for a specific runway.

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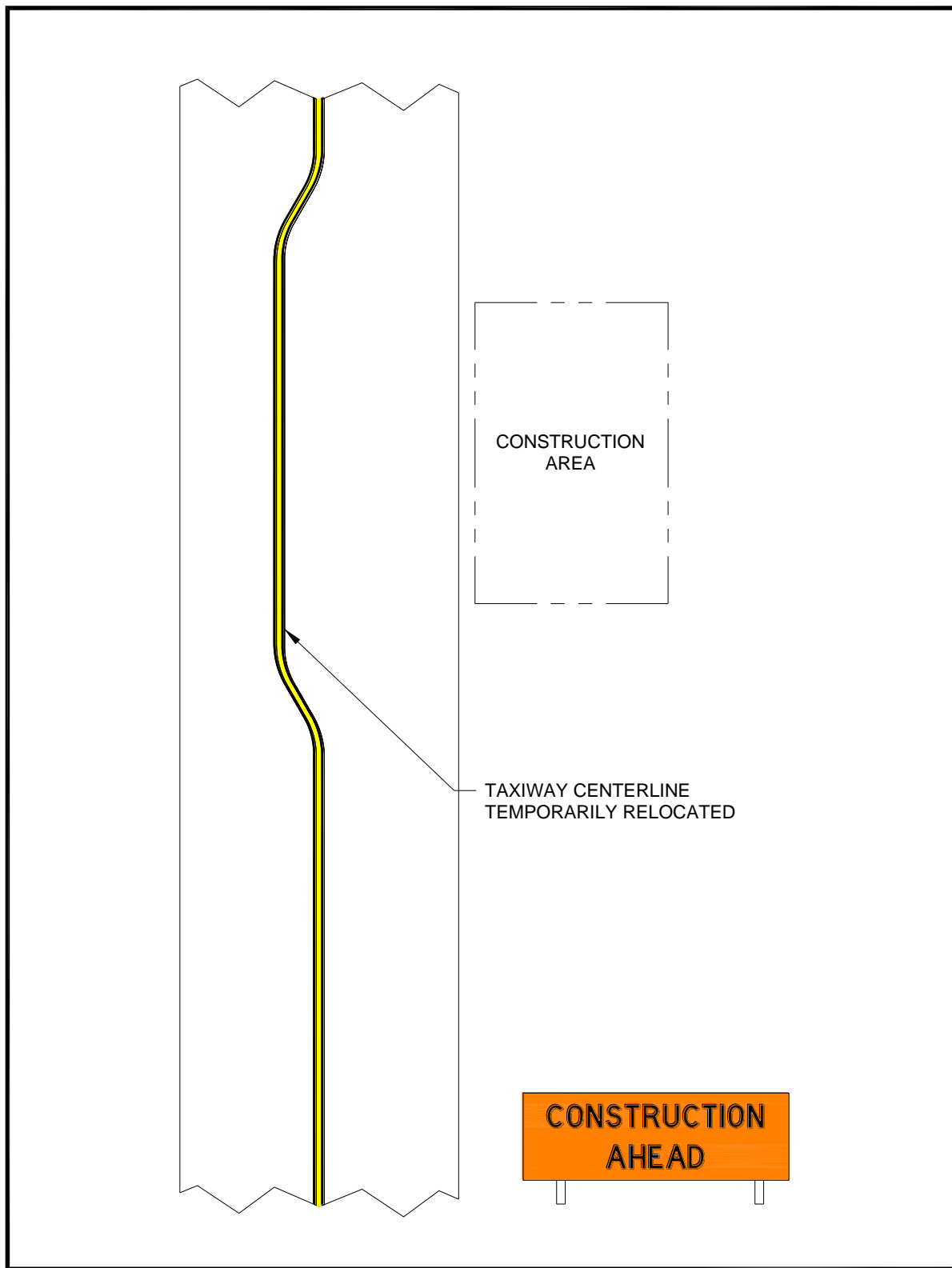
APPENDIX F. ORANGE CONSTRUCTION SIGNS

Figure F-1. Approved Sign Legends



Figure F-2. Orange Construction Sign Example 1

Note: For proper placement of signs, refer to EB 93.

Figure F-3. Orange Construction Sign Example 2

Note: For proper placement of signs, refer to EB 93.

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Advisory Circular Feedback

If you find an error in this AC, have recommendations for improving it, or have suggestions for new items/subjects to be added, you may let us know by (1) mailing this form to Manager, Airport Engineering Division, Federal Aviation Administration ATTN: AAS-100, 800 Independence Avenue SW, Washington DC 20591 or (2) faxing it to the attention of the Office of Airport Safety and Standards at (202) 267-5383.

Subject: AC 150/5370-2G

Date: _____

Please check all appropriate line items:

☐ An error (procedural or typographical) has been noted in paragraph _____ on page _____.

☐ Recommend paragraph _____ on page _____ be changed as follows:

☐ In a future change to this AC, please cover the following subject:
(Briefly describe what you want added.)

☐ Other comments:

☐ I would like to discuss the above. Please contact me at (phone number, email address).

Submitted by: _____

Date: _____

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Letter of Intent –DBE Participation

DRBA Contract No. 33N-24-A; CONSTRUCT BOX HANGAR

Within five (5) days after being designated by the DRBA as the apparent low Bidder, the apparent low Bidder is required to submit a Letter of Intent from each participating DBE to the Authority's Procurement Department, P.O. Box 71, New Castle, DE, 19720. The completed form may also be completed, scanned and emailed directly to caroline.walker@drba.net. **A separate Letter of Intent form should be completed for each DBE firm that will be used toward fulfilling the amount of participation that the Bidder has committed to per their DBE Participation Assurance form.** Each DBE firm must complete and sign Sections A through F as applicable and the Bidder must sign Section G.

SECTION (A): To be completed by each DBE Subcontractor.

DBE Firm Name and Address:	
Name and Title of Principle Owner of DBE Firm:	
DBE Firm Certifying Agency:	Indicate each certification agency with which your firm is currently certified as an DBE. <i>If none of the below choices are applicable, STOP; you are not eligible to be counted toward the DBE contract goal.</i> <input type="checkbox"/> DelDOT <input type="checkbox"/> NJDOT <input type="checkbox"/> Port Authority of NY/NJ <input type="checkbox"/> New Jersey Transit <input type="checkbox"/> DE Office of Supplier Diversity <input type="checkbox"/> NJ Div. of Revenue, Bus. Support Servs.
Dollar Amount of Your Subcontract or Purchase Agreement:	List the full amount of your intended subcontract or purchase agreement: \$
Commercial Function of DBE Firm:	Indicate the role(s) that your DBE firm will be serving on the Project: <input type="checkbox"/> Subcontractor <input type="checkbox"/> Trucking <input type="checkbox"/> Manufacturer <input type="checkbox"/> Regular Dealer <input type="checkbox"/> Other

Describe the specific work that the DBE firm will be performing on the Project:

SECTION (B): To be completed by each DBE subcontractor.

1. What percentage of your subcontract will be performed using your employees and equipment?

☐ 1 to 30% ☐ 31 to 70% ☐ 71 to 100%

2. Will you be providing labor and/or installing materials as part of your contract? ☐ Yes ☐ No

If Yes, check one: ☐ Providing labor only ☐ Installing materials provided by my firm ☐ Installing materials provided by another firm

3. Will you be purchasing, leasing, or using any employees, equipment, or materials provided by the prime Consultant or their affiliate? ☐ Yes ☐ No

SECTION (C): To be completed if you are a DBE manufacturer. If not, skip to next Section.

Does your firm produce, on its premises, the materials or equipment to be purchased by the Bidder?

☐ Yes ☐ No

SECTION (D): To be completed if you are a DBE trucking firm. If not, skip to next Section.

Below, list the ownership status of all trucking units that will be active on your trucking contract:

Number of trucks fully owned and operated by your firm: _____

Number of trucks that your firm will lease from another DBE firm: _____

Number of trucks that your firm will lease from a non- DBE firm: _____

SECTION (E): To be completed if you are a DBE regular dealer. If not, skip to next Section.

Do you maintain a store or warehouse in which the materials to be purchased are kept in stock and regularly sold or leased to the public as the normal course of your business? ☐ Yes ☐ No

SECTION (F): To be signed by the Principle Owner of the DBE firm

I hereby certify that the information exhibited on this form is true and correct.

DBE Principal Owner: _____

Signature

Date

=====

SECTION (G): To be signed by the lowest responsible Bidder

I hereby certify that the information exhibited on this form is true and correct and submit this form as documentation of my commitment to DBE participation on the Project.

Bidder: _____

Signature

Date

SUBCONTRACTOR UTILIZATION REPORT

Project Name: CONSTRUCT BOX HANGAR

Pay Estimate No:

DRBA Contract No: 33N-24-A

Prime Contractor:

DBE Goal: 5.1%

Contract Award Amount:

Contract Amt. Received to Date: \$

Complete Form to reflect all Subcontractor/Supplier payments made:

Name of Subcontractor	DBE ? (Circle Yes or No)	Brief Description of Work Performed and/or Material Supplied	Amount Paid this Pay Estimate	Amount Paid to Date
<input type="text"/>	Yes / No	<input type="text"/>	\$ <input type="text"/>	\$ <input type="text"/>
<input type="text"/>	Yes / No	<input type="text"/>	\$ <input type="text"/>	\$ <input type="text"/>
<input type="text"/>	Yes / No	<input type="text"/>	\$ <input type="text"/>	\$ <input type="text"/>
<input type="text"/>	Yes / No	<input type="text"/>	\$ <input type="text"/>	\$ <input type="text"/>
<input type="text"/>	Yes / No	<input type="text"/>	\$ <input type="text"/>	\$ <input type="text"/>
Total Payments to DBEs:				\$ <input type="text"/>

*Current Participation by DBEs: %

**Divide Total Payments to DBEs by Contract Amount Received to Date*

On behalf of the Prime Contractor, I certify that the above
information is complete and correct:

Signature

Date

This report must be submitted to DRBA upon receipt of each Pay Estimate.