DELAWARE RIVER AND BAY AUTHORITY

CAPE MAY-LEWES FERRY

CONTRACT DOCUMENTS

FOR

CONTRACT NO. CMLF-C23-01

CAPE MAY VESSEL MAINTENANCE SHOP RENOVATION

May 2024

DELAWARE RIVER AND BAY AUTHORITY

CAPE MAY-LEWES FERRY

CONTRACT NO. CMLF-C23-01

CAPE MAY VESSEL MAINTENANCE SHOP RENOVATION

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CAPE MAY-LEWES FERRY

CONTRACT NO. CMLF-C23-01

CAPE MAY VESSEL MAINTENANCE SHOP RENOVATION

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May 30, 2024

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 12:00 p.m. local time on June 25, 2024, at which time and place said Bids will be opened.

The project is located at the Cape May Ferry Terminal, 1200 Lincoln Blvd., North Cape May, New Jersey. The essential project components are included within the Base Bid work and three (3) optional project components are included within three (3) individual Additive Alternates, any of which may be awarded in addition to the Base Bid at the sole discretion of the Authority.

The Base Bid work generally consists of, but is not limited to, providing all labor and materials necessary for renovations to the Cape May vessel maintenance shop, including the addition of a new office in the mezzanine area, flooring, lighting, HVAC, electrical, and general architectural upgrades. Additive Alternate No. 1 work generally includes, but is not limited to, the installation of shelving and work benches. Additive Alternate No. 2 work generally includes, but is not limited to, the installation of flexible strip doors on the outside of the bay doors. Additive Alternate No. 3 generally includes, but is not limited to, the installation of a pre-engineered canopy above the bay doors.

The Authority intends to formally authorize the Contractor to proceed with the work on or around September 3, 2024. Once authorized to proceed, the Contractor will have a total of two hundred ninety (290) calendar days to complete the work. In order to accommodate DRBA personnel during construction, the Base Bid work shall be performed in three (3) successive ninety-day phases:

- During **Phase 1,** the Contractor will perform the mezzanine work, including adding a new office, refurbishing the stairway, adding a new guardrail, etc.
- During **Phase 2,** the Contractor will perform work on the "left side" of the shop first-floor, including updating the first-floor offices, refurbishing the tool storage cage, and various mechanical/electrical upgrades.
- During **Phase 3,** the Contractor will perform work on the "right side" of the shop first-floor, including upgrading the welding areas, installing new fans and bay doors, etc.

The phase during which HVAC/electrical work is performed will be at the discretion of the Contractor. For each individual phase, the Contractor will have up to ninety (90) calendar days to complete the work within that phase. At the completion of Phases 1 and 2, the Authority will allow one (1) week to elapse prior to the Contractor beginning work on the next phase. **TIME IS OF THE ESSENCE.**

A non-mandatory pre-bid meeting and site visit will be held on June 10, 2024, at 11:00 a.m. local time at the Cape May Ferry Administration Building, 1200 Lincoln Blvd., North Cape May, New Jersey 08204. All visitors must check in with the DRBA Police Department at Building C-2 to obtain a Visitor I.D. badge and must wait at the Administration Building entrance area for further instructions from DRBA staff. Unsupervised access to the project site is strictly 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 firm that 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. CMLF-C23-01: CAPE MAY VESSEL MAINTENANCE SHOP RENOVATION". 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 <u>both</u> of the following forms of Bid Guaranty:

(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 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.

Any Bid that is <u>not</u> accompanied by the required two (2) forms of Bid Guaranty at the time of Bid opening will <u>not</u> be accepted.

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.

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 indicate that Bidder's acceptance of the Authority's Example Form of

Contract and insurance requirements. Any subsequent attempt to revise any portion of such will be disregarded and shall be just cause for disqualification.

Bidders are advised that, pursuant to DRBA Resolution 09-25, this project is subject to the DRBA's Supplier Diversity Policy. The participation goal for certified Minority-Owned, Women-Owned, or Disadvantaged Business Enterprises (collectively, "M/W/DBEs") is 5% of the total value of the contract.

Bidders are advised that, pursuant to DRBA Resolution 15-12, this project is not subject to mandatory prevailing wages.

DELAWARE RIVER AND BAY AUTHORITY

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

DELAWARE RIVER AND BAY AUTHORITY

CAPE MAY-LEWES FERRY

CONTRACT NO. CMLF-C23-01

CAPE MAY VESSEL MAINTENANCE SHOP RENOVATION

* * * * * * * * * *

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. CMLF-C23-01; 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 DRBA General Provisions, Special Provisions, and Plans and binds himself on award to him by the Delaware River and Bay Authority (herein called "Authority") under this Bid, to execute an Contract in accordance with such award, of which Contract this Bid, said DelDOT Standard Specifications and DRBA General Provisions, Special Provisions, and Plans 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 lump sum prices, if any, 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 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 (Including the Base and all Additive Alternate Bids) Must Be Completed or the Offending Bid Will Be Disqualified.

NOTE: Unless the Bid is rejected pursuant to subsection 102.07, or the Bidder is disqualified pursuant to subsection 102.12 of the Standard Specifications, the basis of Contract Award shall be to the responsible and responsive Contractor that has submitted the lowest sum of the Base Bid plus the price of any combination of Additive Alternates if awarded by the Authority.

At the time of preliminary award, the Authority will notify all Bidders of the inclusion or omission of any Additive Alternate in the Contract. Additional compensation will not be given to the Contractor if the Authority chooses not to award any Additive Alternate.

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 both of the following forms of Bid Guaranty:

(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.

Any Bid that is <u>not</u> accompanied by the required two (2) forms of Bid Guaranty at the time of Bid opening will <u>not</u> be accepted.

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.

Failure by the successful Bidder to execute and deliver the Contract Agreement and all other documents listed in Subsection 103.06 of 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 as 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."

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

CAPE MAY-LEWES FERRY

CONTRACT NO. CMLF-C23-01

CAPE MAY VESSEL MAINTENANCE SHOP RENOVATION

* * * * * * *

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 New Jersey, 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. CMLF-C23-01 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 with the Bid by each Bidder)

DELAWARE RIVER AND BAY AUTHORITY

CAPE MAY-LEWES FERRY

CONTRACT NO. CMLF-C23-01

CAPE MAY VESSEL MAINTENANCE SHOP RENOVATION

* * * * * * *

CONSENT OF SURETY

Delaware River and Bay Authority:

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

of_____
(Contractor Address)

for Contract No. CMLF-C23-01 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 Maintenance Bond required by the Contract Documents.

We are duly authorized to do business in the State of New Jersey:

Surety Company Name/Address:

_____

_____

_____
(Authorized Signature)

ATTEST:

_____
[Attach Power of Attorney]

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

M/W/DBE PARTICIPATION ASSURANCE

All bidders must make good faith efforts to achieve the targeted minimum level of Minority-owned Business Enterprise, Women-owned Business Enterprise or Disadvantaged Business Enterprise (M/W/DBE) participation. To be eligible for credit toward the targeted goal, a M/W/DBE firm 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, Delaware Office of Supplier Diversity, or New Jersey Division of Revenue, Business Support Services.

The M/W/DBE participation goal for CMLF-C23-01 is 5% of the total value of the Contract.

The M/W/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 M/W/DBE participation), during the project, and at the conclusion of the project (i.e., actual M/W/DBE utilization). A Bidder may satisfy the M/W/DBE requirements in one of two ways:

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

Option B: Bidder makes a good faith effort to locate sufficient M/W/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 M/W/DBE firms. The Authority, in its sole discretion, will determine if Bidder has acted in good faith.

At all times the burden of proving good faith efforts to comply with the M/W/DBE goal, set forth above, lies with the Bidder. Good faith efforts are those one would reasonably expect a firm to make if it is actively trying to obtain M/W/DBE participation.

M/W/DBE Credit

The Contractor will receive M/W/DBE participation credit for the full paid value of work managed and performed by, or manufactured by, M/W/DBEs. The Contractor will receive 60% participation credit for the paid value of materials purchased from certified M/W/DBE Suppliers/Regular Dealers. The Authority utilizes the provisions and definitions found in 49 CFR § 26.55 to determine goal-eligible M/W/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 M/W/DBE firms, via a signed *Subcontractor Utilization Report*, attached hereto as **Attachment B**.

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 considered 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% M/W/DBE goal on this project.**

If, and upon being notified by the DRBA of 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 A**), completed by each participating M/W/DBE. Each *Letter of Intent* must be signed by both the M/W/DBE principal owner and the Bidder.

Option B:

☐ **Bidder is unable to meet the advertised M/W/DBE participation goal and hereby commits to a minimum of_____% M/W/DBE utilization on this project.**

(Insert number)

If, and upon being notified by the DRBA of 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 A**), completed by each participating M/W/DBE. Each *Letter of Intent* must be signed by both the M/W/DBE principal owner and the Bidder.

*** Bidder may choose Option B only after exhausting all other methods to meet the advertised M/W/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 M/W/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)

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 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. CMLF-C23-01, CAPE MAY VESSEL MAINTENANCE SHOP RENOVATION.

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

CAPE MAY-LEWES FERRY

CONTRACT NO. CMLF-C23-01

CAPE MAY VESSEL MAINTENANCE SHOP RENOVATION

* * * * * * *

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. CMLF-C23-01 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)

CONTRACTOR'S STORM WATER POLLUTION PREVENTION CERTIFICATION FORM

Contract No.: CMLF-C23-01

Project Name: CAPE MAY VESSEL MAINTENANCE SHOP RENOVATION

Location: Lower Township, New Jersey

Contractor's Official Name: _____

Address: _____

Telephone Number: _____

The 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 New Jersey and Cape May County regulations.

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

The Contractor must promptly notify the DRBA 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. I shall comply with all applicable State of New Jersey Pollutant Discharge Elimination System ("NJPDES") Rules as applicable."*

_____

Printed Name and Title

_____ _____

Signature Date

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

DELAWARE RIVER AND BAY AUTHORITY

CAPE MAY-LEWES FERRY

CONTRACT NO. CMLF-C23-01

CAPE MAY VESSEL MAINTENANCE SHOP RENOVATION

* * * * * * *

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. CMLF-C23-01:

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

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

( ) An Individual
( ) A Partnership
(c) _____ ( ) 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 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__

My commission expires _____

_____
Notary Public

(a) _____
Name of Contractor

By _____
Print Name:

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

My commission expires _____

_____
Notary Public

(b) _____
Name of Contractor

By _____
Print Name:

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

My commission expires _____

_____
Notary Public

(c) _____
Name of Contractor

By _____
Print Name:

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

DELAWARE RIVER AND BAY AUTHORITY

CAPE MAY-LEWES FERRY

CONTRACT NO. CMLF-C23-01

CAPE MAY VESSEL MAINTENANCE SHOP RENOVATION

* * * * * * *

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 _____, a
(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 described in the specifications and/or 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 subcontractor will perform. Indicate any subcontractors listed that are also certified Minority-Owned, Women-Owned, or Disadvantaged Business Enterprises (collectively, "M/W/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 reason, including default? _____ If YES, provide information regarding each default and/or termination 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(s) of the other organization and 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 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.

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 attach to this Questionnaire.

12. In the last five (5) years, have liquidated damages been 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 or currently undergoing an investigation or defending a citation, 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 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, 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, beyond design change, that contributed or caused significant delays to the overall completion of projects with similar scope, size, and complexity? _____ If YES, provide information regarding each delay and the corresponding 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

CAPE MAY-LEWES FERRY

CONTRACT NO. CMLF-C23-01

CAPE MAY VESSEL MAINTENANCE SHOP RENOVATION

* * * * * * *

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 Base Bid Work [and/or Additive Alternate No. 1 and/or Additive Alternate No. 2 and/or Additive Alternate No. 3] under Contract No. CMLF-C23-01 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. [this sentence to be updated to codify if no Additive Alternates are awarded]

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

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.

the intent of, or incidental to the Specifications, Special Provisions, Plans and drawings, whether or not such work is explicitly stated.

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, inclusive of Authority property, resulting from the performance of said work, or through the negligence of said Contractor, 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 Subcontractors, 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, including additional expenses, 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

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.

specified in the Contractor's Bid and in the manner and upon the conditions set forth in the Standard Specifications and Special Provisions. It is understood and agreed that the amount paid to the Contractor shall be the sum of the Unit Prices named in the Contractor's Bid, each multiplied by the number of corresponding Pay Item Units completed by the Contractor and accepted by the Authority.

ARTICLE SIX. It is further mutually agreed between the parties hereto that no pay 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 in interest 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.

ARTICLE ELEVEN. It is expressly understood and agreed that the Contractor, in performing 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(s) of the Contractor.

ARTICLE TWELVE. 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 Contract against accidental or unlawful destruction, alteration, unauthorized disclosure, or access. The Contractor agrees to indemnify, defend and hold harmless the Authority from and against 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.

ARTICLE THIRTEEN. The effective date of this Contract shall be on the 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.

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

CAPE MAY-LEWES FERRY

CONTRACT NO. CMLF-C23-01

CAPE MAY VESSEL MAINTENANCE SHOP RENOVATION

* * * * * * *

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 New Jersey, 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. CMLF-C23-01 (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 Documents, all and every sum or sums of money due him, them or any of them, 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.

all such labor and materials for 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, change, delay or disruption 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 Maintenance Bond 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

CAPE MAY-LEWES FERRY

CONTRACT NO. CMLF-C23-01

CAPE MAY VESSEL MAINTENANCE SHOP RENOVATION

* * * * * * *

MAINTENANCE 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 New Jersey, 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. CMLF-C23-01 (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.

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 Maintenance Bond 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.

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 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.

Furthermore, if no faulty workmanship, 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 any other applicable 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 Maintenance Bond 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 Maintenance 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 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

CAPE MAY-LEWES FERRY

CONTRACT NO. CMLF-C23-01

CAPE MAY
VESSEL MAINTENANCE SHOP RENOVATION

* * * * * * *

CONTRACTOR'S RELEASE OF LIENS

Date: _____

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

Re: Contract No. CMLF-C23-01
CAPE MAY VESSEL MAINTENANCE SHOP RENOVATION

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, 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

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 Contractor's Release of Liens. Below is the form approved for use by the DRBA. For additional information see Section 109.10 Final Payment.

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.

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 filing of statutory liens as a matter of law.

Contractor: _____

Address: _____

_____

Witness or Attest:

By: _____

Title: _____

_____

(Corporate Seal)

DELAWARE RIVER AND BAY AUTHORITY

CAPE MAY-LEWES FERRY

CONTRACT NO. CMLF-C23-01

CAPE MAY
VESSEL MAINTENANCE SHOP RENOVATION

* * * * * * *

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

CAPE MAY-LEWES FERRY

CONTRACT NO. CMLF-C23-01

CAPE MAY
VESSEL MAINTENANCE SHOP RENOVATION

* * * * * * *

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.

101.39.0 Holidays.

The following shall be added to the list of DRBA-recognized holidays:

Juneteenth

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 all 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 site visit will be held on June 10, 2024, at 11:00 a.m. local time at the Cape May Ferry Administration Building, 1200 Lincoln Blvd., North Cape May, New Jersey 08204. All visitors must check in with the DRBA Police Department at Building C-2 to obtain a Visitor I.D. badge and must wait at the Administration Building entrance area for further instructions from DRBA staff. Unsupervised access to the project site is prohibited.

102.07 Irregular Bids.

Delete the last sentence and replace with the following:

The Authority reserves the right to waive minor irregularities and/or technicalities in the submission of Bids, as may be permitted by law.

103.02 Award of Contract.

Remove the second paragraph and replace with the following:

Unless the Bid is rejected pursuant to subsection 102.07, or the Bidder is disqualified pursuant to subsection 102.12 of the Standard Specifications, the basis of Contract Award shall be to the responsible and responsive Contractor that has submitted the lowest sum of the Base Bid plus the price of any combination of Additive Alternates if awarded by the Authority.

At the time of preliminary award, the Authority will notify all Bidders of the inclusion or omission of any Additive Alternate in the Contract. Additional compensation will not be given to the Contractor if the Authority chooses not to award any Additive Alternate.

103.06 Execution and Approval of Contract.

Add the following:

Upon the DRBA Board of Commissioners approval to award the Contract and the expiration of the subsequent Governors' veto period with no objections, the official notice of Award of the Contract will be delivered in the form of a written message sent along with the Contract to the Contractor for electronic signature via DocuSign.

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 Employers 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 New Jersey.

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 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). Products/completed operations coverage to remain in effect for a period not less than the New Jersey statute of repose after the work has been completed. General aggregate to apply per project (ISO Form CG 2503 or equivalent). The policy shall not contain any XCU exclusions.

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. The policy shall include the Authority as additional insured.
iii. The policy shall include primary and non-contributory language for the Authority.
iv. The policy shall include 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 Five Million Dollars ($5,000,000) (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 shall include additional insured/primary and non-contributory provisions for DRBA's benefit.

F. **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, D and E 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.

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 and E 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 New Jersey 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 after the last 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. The Contractor is expected to accommodate Authority maintenance and operations personnel while performing its duties under the Contract. The Contractor is required to provide notice to the Authority in writing, within a reasonable time if problems coordinating with other contractors or Authority personnel should arise. The reasonableness of the 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 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 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 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 two (2) years from the date of suspension.

The Maintenance Bond (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 (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 the Contract Documents.

106.01 Source of Supply and Quality Requirements

Remove and replace the seventh paragraph with the following:

No exceptions to or deviations from any brand or make of material or any particular device or equipment that is specified in *Section 087100, Section 200000, or Section 210000* herein will be considered by the Authority. The Contractor shall supply the brand or make of material or any particular device or equipment specified in Section 087100, Section 200000, or Section 210000, exactly as specified.

With the exception of any specific brand or make of Material or a particular device or Equipment specified in *Section 087100 – Door Hardware, Section 200000 – General*

Mechanical Requirements, and Section 210000 – General Fire Protection **(located in Special Provisions Part IV), whenever a particular brand or make of Material or a particular device or Equipment is shown indicated on the Plans or in the Specifications, such Material, device or Equipment should be considered only as a standard of acceptability (i.e., "approved equal" shall apply)**. In such cases, other makes or brands of equal grade, suitability, availability, and finish may be proposed as an alternative by the Contractor for the Engineer's approval and utilized only if approved by the Engineer.

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 confirming 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 manifests for regulated materials sent must bear the signature of a representative from 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 (2) 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. The fire watch shall not perform any other duties in combination with fire watch activities. The fire watch shall not perform any other duties in combination with fire watch activities.

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 Qualification 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; and
d. Environmental incidents must be reported to the NRC/DNREC/NJDEP within fifteen (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 and 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 is 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 to the DRBA at the pre-construction meeting. The information shall include the following and be posted at the project 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 project 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. During this fourteen (14) calendar day period, the Contractor shall continue all other portions of the Work and, without additional compensation, coordinate and adjust the order of the Work to minimize impact to the overall Project completion date set forth in Section 108.08. 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.

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%)** of the awarded Contract (not including the cost of materials, equipment or supplies incidental to the performance of 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 (winter break period being the sole exception, if so authorized). Neither weather delays nor material delivery delays will be considered grounds for extension of the schedule.

108.06 Character of Workers and Equipment.

Add the following after the first paragraph:

The Contractor must provide their personnel with ready means of identification to clearly establish their identity with the Contractor's company. The Contractor's personnel must, at all times, maintain a clean and neat appearance.

The Contractor's personnel must restrict their movements and duties to areas of the premises specifically related to the performance of their work.

The Contractor agrees that all personnel must not drink alcoholic beverages or use any controlled substances while performing work. The Contractor's personnel must not be under the influence of alcohol or controlled substances while on the Authority's premises. The Contractor must immediately remove any personnel committing any such act from the premises.

Authority premises are Tobacco-Free facilities. While on Authority property, the Contractor's personnel must not use any tobacco products. Tobacco products include, but are not limited to cigars, cigarettes, vapor/electronic cigarettes, and chewing tobacco.

108.08 Failure to Complete on Time.

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

The Authority intends to formally authorize the Contractor to proceed with the work on or around September 3, 2024. Once authorized to proceed, the Contractor will have a total of two hundred ninety (290) calendar days to complete the work. In order to accommodate DRBA personnel during construction, the Base Bid work shall be performed in three (3) successive ninety-day phases:

- **Phase 1**: During Phase 1, the Contractor will perform the mezzanine work, including adding a new office, refurbishing the stairway, adding a new guardrail, etc.
- **Phase 2**: During Phase 2, the Contractor will perform work on the "left side" of the shop first-floor, including updating the first-floor offices, refurbishing the tool storage cage, and various mechanical/electrical upgrades.
- **Phase 3**: During Phase 2, the Contractor will perform work on the "right side" of the shop first-floor, including upgrading the welding areas, installing new fans and bay doors, etc.

The phase during which HVAC/electrical work is performed will be at the discretion of the Contractor. For each individual phase, the Contractor will have up to ninety (90) calendar days to complete the work within that phase. At the completion of Phases 1 and 2, the Authority will allow one (1) week to elapse prior to the Contractor beginning work on the next phase. **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 date 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 its 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

CAPE MAY-LEWES FERRY

CONTRACT NO. CMLF-C23-01

CAPE MAY VESSEL MAINTENANCE SHOP RENOVATION

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SPECIAL PROVISIONS

PART II – ADDITIONAL 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 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 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 shall govern.

[NO ADDITIONAL GENERAL PROVISIONS]

DELAWARE RIVER AND BAY AUTHORITY

CAPE MAY-LEWES FERRY

CONTRACT NO. CMLF-C23-01

CAPE MAY VESSEL MAINTENANCE SHOP RENOVATION

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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 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

CAPE MAY-LEWES FERRY

CONTRACT NO. CMLF-C23-01

CAPE MAY VESSEL MAINTENANCE SHOP RENOVATION

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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 of the Special Provisions provided herein; and
(v) 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.

SECTION 024100

DEMOLITION

PART 1 - GENERAL

1.1 SECTION INCLUDES

A. Selective demolition of building elements for alteration purposes.

1.2 DEFINITIONS

A. Remove: Detach or dismantle items from existing construction and dispose of them off site, unless items are indicated to be salvaged or reinstalled.

B. Remove and Reinstall: Detach or dismantle items from existing construction in a manner to prevent damage. Clean and prepare for reuse and reinstall where indicated.

C. Existing to Remain: Designation for existing items that are not to be removed and that are not otherwise indicated to be salvaged or reinstalled.

1.3 REFERENCE STANDARDS

A. 29 CFR 1926 - U.S. Occupational Safety and Health Standards; current edition.

B. NFPA 241 - Standard for Safeguarding Construction, Alteration, and Demolition Operations; 2019.

1.4 SUBMITTALS

A. Project Record Documents: Accurately record actual locations of capped and active utilities and subsurface construction.

PART 2 - PRODUCTS - NOT USED

PART 3 - EXECUTION

3.1 SCOPE

A. Remove select building elements as indicated in the Specifications and as otherwise required to complete the work of the contract.

3.2 GENERAL PROCEDURES AND PROJECT CONDITIONS

A. Comply with applicable codes and regulations for demolition operations and safety of adjacent structures and the public.

1. Obtain required permits.

2. Comply with applicable requirements of NFPA 241.

3. Take precautions to prevent catastrophic or uncontrolled collapse of structures to be removed; do not allow worker or public access within range of potential collapse of unstable structures.

4. Provide, erect, and maintain temporary barriers and security devices.

5. Conduct operations to minimize effects on and interference with adjacent structures and occupants.

6. Do not close or obstruct roadways or sidewalks without permit.

7. Conduct operations to minimize obstruction of public and private entrances and exits; do not obstruct required exits at any time; protect persons using entrances and exits from removal operations.

8. Obtain written permission from owners of adjacent properties when demolition equipment will traverse, infringe upon or limit access to their property.

B. Do not begin removal until receipt of notification to proceed from the DRBA.

C. Protect existing structures and other elements that are not to be removed.

1. Provide bracing and shoring.

2. Prevent movement or settlement of adjacent structures.

3. Stop work immediately if adjacent structures appear to be in danger.

3.3 EXISTING UTILITIES

A. Coordinate work with utility companies; notify before starting work and comply with their requirements; obtain required permits.

B. Protect existing utilities to remain from damage.

C. Do not close, shut off, or disrupt existing life safety systems that are in use without at least seven (7) days prior written notification to the DRBA.

D. Do not close, shut off, or disrupt existing utility branches or take-offs that are in use without at least three (3) days prior written notification to the DRBA.

E. Locate and mark utilities to remain; mark using highly visible tags or flags, with identification of utility type; protect from damage due to subsequent construction, using substantial barricades if necessary.

F. Remove exposed piping, valves, meters, equipment, supports, and foundations of

disconnected and abandoned utilities.

G. Prepare building demolition areas by disconnecting and capping utilities outside the demolition zone; identify and mark utilities to be subsequently reconnected, in same manner as other utilities to remain.

3.4 SELECTIVE DEMOLITION FOR ALTERATIONS

A. Plans/Drawings showing existing construction and utilities are based on casual field observation and existing record documents only.

1. Verify that construction and utility arrangements are as indicated.

2. Report any discrepancies to the Engineer before disturbing existing installation.

3. Beginning of demolition work constitutes acceptance of existing conditions that would be apparent upon examination prior to starting demolition.

B. Separate areas in which demolition is being conducted from other areas that are still occupied.

1. Provide, erect, and maintain temporary dustproof partitions of construction as follows.

2. Provide temporary partitions as indicated and as otherwise required to separate work areas from DRBA-occupied areas, to prevent penetration of dust and moisture into DRBA-occupied areas, and to prevent damage to existing materials and equipment.

3. Construction: Framing and reinforced polyethylene with plywood overlay. Tape joints in polyethylene and seal all edges and penetrations. Extend polyethylene to deck.

C. Remove existing work as indicated and as required to accomplish new work.

1. Remove items indicated on Plans/Drawings.

D. Services (Including but not limited to HVAC, Plumbing, Fire Protection, and Electrical): Remove existing systems and equipment as indicated.

1. Maintain existing active systems that are to remain in operation; maintain access to equipment and operational components.

2. Where existing active systems serve occupied facilities but are to be replaced with new services, maintain existing systems in service until new systems are complete and ready for service.

3. Verify that abandoned services serve only abandoned facilities before removal.

4. Remove abandoned pipe, ducts, conduits, and equipment, including those above accessible ceilings; remove back to source of supply where possible, otherwise cap stub and tag with identification.

E. Protect existing work to remain.

1. Prevent movement of structure; provide shoring and bracing if necessary.

2. Perform cutting to accomplish removals neatly and as specified for cutting new work.

3. Repair adjacent construction and finishes damaged during removal work.

4. Patch as specified for patching new work.

3.5 DEBRIS AND WASTE REMOVAL

A. Remove debris, junk, and trash from site.

B. Leave site in clean condition, ready for subsequent work.

C. Clean up spillage and wind-blown debris from public and private lands.

3.6 METHOD OF MEASUREMENT

A. Work performed under this Section shall be considered incidental to Lump Sum **Pay Item 1: Existing Conditions**, and thus will not be measured.

3.7 BASIS OF PAYMENT

A. Work properly performed in accordance with this Section will be paid for at the Lump Sum Unit Price for **Pay Item 1: Existing Conditions**. Payment for work shall include full compensation for performing all work specified and for the furnishing of all materials, tools, equipment, labor, testing, submittals, and incidentals necessary to complete the work as described in the Contract Documents. Payment will be made on a monthly basis, based on percent completion of the work properly performed and accepted as determined by the Engineer.

END OF SECTION 024100

SECTION 033000

CAST-IN-PLACE CONCRETE

PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes:

1. Cast-in-place concrete, including concrete materials, mixture design, placement procedures, and finishes.

1.2 DEFINITIONS

A. Cementitious Materials: Portland cement alone or in combination with one or more of the following: blended hydraulic cement, fly ash, slag cement, other pozzolans, and silica fume; materials subject to compliance with requirements.

B. Water/Cement Ratio (w/cm): The ratio by weight of water to cementitious materials.

1.3 ACTION SUBMITTALS

A. Product Data: For each of the following.

1. Portland cement.
2. Aggregates.
3. Admixtures.

B. Design Mixtures: For each concrete mixture, include the following:

1. Mixture identification.
2. Minimum 28-day compressive strength.
3. Maximum w/cm.
4. Slump limit.
5. Air content.
6. Nominal maximum aggregate size.
7. Submit alternate design mixtures when characteristics of materials, Project conditions, weather, test results, or other circumstances warrant adjustments.

1.4 DELIVERY, STORAGE, AND HANDLING

A. Comply with ASTM C94/C94M and ACI 301.

1.5 FIELD CONDITIONS

A. Cold-Weather Placement: Comply with ACI 301 and ACI 306.1 and as follows.

1. Protect concrete work from physical damage or reduced strength that could be caused by frost, freezing actions, or low temperatures.

2. When average high and low temperature is expected to fall below 40 deg F for three successive days, maintain delivered concrete mixture temperature within the temperature range required by ACI 301.

3. Do not use frozen materials or materials containing ice or snow.

4. Do not place concrete in contact with surfaces less than 35 deg F, other than reinforcing steel.

5. Do not use calcium chloride, salt, or other materials containing antifreeze agents or chemical accelerators unless otherwise specified and approved in mixture designs.

B. Hot-Weather Placement: Comply with ACI 301 and ACI 305.1, and as follows:

1. Maintain concrete temperature at time of discharge to not exceed 95 deg F.

2. Fog-spray forms, steel reinforcement, and subgrade just before placing concrete. Keep subgrade uniformly moist without standing water, soft spots, or dry areas.

PART 2 - PRODUCTS

2.1 CONCRETE, GENERAL

A. ACI Publications: Comply with ACI 301 unless modified by requirements in the Specifications.

2.2 CONCRETE MATERIALS

A. Cementitious Materials:

1. Portland Cement: ASTM C150/C150M, Type I/II.

2. Fly Ash: ASTM C618, Class C or F.

3. Slag Cement: ASTM C989/C989M, Grade 100 or 120.

B. Normal-Weight Aggregates: ASTM C33/C33M, coarse aggregate or better, graded. Provide aggregates from a single source.

C. Air-Entraining Admixture: ASTM C260/C260M.

D. Water and Water Used to Make Ice: ASTM C94/C94M, potable

2.3 CONCRETE MIXTURES, GENERAL

A. Prepare design mixtures for each type and strength of concrete, proportioned on the basis of laboratory trial mixture or field test data, or both, in accordance with ACI 301.

B. Cementitious Materials: Limit percentage, by weight, of cementitious materials other than portland cement in concrete as follows:

1. Total of Fly Ash or Other Pozzolans, Slag Cement, and Silica Fume: 50 percent by mass, with fly ash or pozzolans not exceeding 25 percent by mass and silica fume not exceeding 10 percent by mass.

2. Total of Fly Ash or Other Pozzolans and Silica Fume: 35 percent by mass with fly ash or pozzolans not exceeding 25 percent by mass and silica fume not exceeding 10 percent by mass.

C. Admixtures: Use admixtures in accordance with manufacturer's written instructions.

1. Use admixture in concrete, as required, for placement and workability.

2.4 CONCRETE MIXTURES

A. Class: Normal-weight concrete used for footings, grade beams, and tie beams.

1. Exposure Class: ACI 318 F2 S0 W0 C1.

2. Minimum Compressive Strength: 4500 psi at twenty-eight (28) days.

3. Maximum w/cm: 0.50.

4. Slump Limit: four (4) inches, plus or minus one (1) inch.

5. Slump Flow Limit.

6. Air Content:

a. Exposure Classes F2 and F3: 6 percent, plus or minus 1.5 percent at point of delivery for concrete containing three-fourth (¾) inch nominal maximum aggregate size 5.5 percent, plus or minus 1.5 percent at point of delivery for concrete containing one and one-half (1-1/2-inch) nominal maximum aggregate size.

7. Limit water-soluble, chloride-ion content in hardened concrete to 0.30 percent by weight of cement.

2.5 CONCRETE MIXING

A. Ready-Mixed Concrete: Measure, batch, mix, and deliver concrete in accordance with ASTM C94/C94M and furnish batch ticket information.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Verification of Conditions:

1. Before placing concrete, verify that installation of concrete forms, accessories,

and reinforcement, and embedded items is complete and that required inspections have been performed.

2. Do not proceed until unsatisfactory conditions have been corrected.

3.2 CONCRETE PLACEMENT

A. Before placing concrete, verify that the installation of formwork, reinforcement, and embedded items is completed and that required inspections have been conducted.

B. Notify the Engineer and testing and inspection agencies twenty-four (24) hours prior to commencement of concrete placement.

C. Do not add water to concrete during delivery, at the Project site, or during placement unless approved by the Engineer in writing, but not to exceed the amount indicated on the concrete delivery ticket.

D. Deposit concrete continuously in one layer or in horizontal layers of such thickness that no new concrete is placed on concrete that has hardened enough to cause seams or planes of weakness.

1. Deposit concrete to avoid segregation.

2. Consolidate placed concrete with mechanical vibrating equipment in accordance with ACI 301.

a. Do not use vibrators to transport concrete inside forms.

b. Insert and withdraw vibrators vertically at uniformly spaced locations to rapidly penetrate the placed layer and at least 6 inches into the preceding layer.

c. Do not insert vibrators into lower layers of concrete that have begun to lose plasticity.

d. At each insertion, limit duration of vibration to time necessary to consolidate concrete, and complete embedment of reinforcement and other embedded items without causing mixture constituents to segregate.

3.3 TOLERANCES

A. Conform to ACI 117.

3.4 FIELD QUALITY CONTROL

A. Special Inspections: DRBA will engage a special inspector to perform field tests and inspections and prepare testing and inspection reports.

B. Batch Tickets: For each load delivered, submit three copies of batch delivery ticket to testing agency, indicating quantity, mix identification, admixtures, design strength, aggregate size, design air content, design slump at time of batching, and amount of water that can be added at Project site.

C. Inspections:

1. Verification of use of required design mixture.

2. Concrete placement, including conveying and depositing.

D. Concrete Tests: Testing of composite samples of fresh concrete obtained in accordance with ASTM C 172/C 172M to be performed in accordance with the following requirements:

1. Testing Frequency: Obtain one composite sample for each day's pour of each concrete mixture exceeding 5 cu. yd., but less than 25 cu. yd., plus one (1) set for each additional 50 cu. yd. or fraction thereof.

a. When the frequency of testing provides fewer than five compressive-strength tests for each concrete mixture, testing is to be conducted from at least three (3) randomly selected batches or from each batch if fewer than five (5) are used.

2. Slump: ASTM C143/C143M:

a. One test at point of placement for each composite sample, but not less than one test for each day's pour of each concrete mixture.

b. Perform additional tests when concrete consistency appears to change.

3. Air Content: ASTM C231/C231M pressure method, for normal weight concrete;

a. One test for each composite sample, but not less than one test for each day's pour of each concrete mixture.

4. Concrete Temperature: ASTM C1064/C1064M:

a. One test hourly when the air temperature is 40 degrees F and below or 80 degrees F and above, and one test for each composite sample.

5. Compression Test Specimens: ASTM C31/C31M:

a. Cast and laboratory cure three sets of two six (6) inch by twelve (12) inch or four (4) inches by eight (8) inches cylinder specimens for each composite sample.

b. Cast, initial cure, and field cure two (2) sets of three (3) standard cylinder specimens for each composite sample.

6. Compressive-Strength Tests: ASTM C39/C39M.

a. Test one set of two laboratory-cured specimens at seven (7) days and one (1) set of two (2) specimens at twenty-eight (28) days.

b. Test one (1) set of two field-cured specimens at seven (7) days and one set of two (2) specimens at twenty-eight (28) days.

c. A compressive-strength test is to be the average compressive strength from a set of two (2) specimens obtained from the same composite sample and tested at age indicated.

7. When the strength of field-cured cylinders is less than 85 percent of companion laboratory-cured cylinders, the Contractor shall evaluate operations and provide corrective procedures for protecting and curing in-place concrete.

8. The strength of each concrete mixture will be satisfactory if the average of any three consecutive compressive-strength tests equals or exceeds specified compressive strength, and no compressive-strength test value falls below the specified compressive strength by more than 500 psi if the specified compressive strength is 5000 psi, or no compressive strength test value is less than 10 percent of the specified compressive strength if the specified compressive strength is greater than 5000 psi.

9. Nondestructive Testing: Impact hammer, sonoscope, or other nondestructive device may be permitted by the Engineer but will not be used as sole basis for approval or rejection of concrete.

10. Additional Tests:

a. The testing and inspecting agency shall perform additional tests of concrete when test results indicate that slump, air entrainment, compressive strengths, or other requirements have not been met, as directed by the Engineer.

b. The testing and inspecting agency may conduct tests to determine adequacy of concrete by cored cylinders complying with ASTM C42/C42M or by other methods as directed by Engineer.

11. Additional testing and inspecting, at the Contractor's expense, will be performed to determine compliance of replaced or additional work with specified requirements.

12. Correct deficiencies in the Work that test reports and inspections indicate do not comply with the Specifications.

3.5 METHOD OF MEASUREMENT

A. Work performed under this Section shall be considered incidental to Lump Sum **Pay Item 2: Cast-In-Place Concrete, Pay Item 11: General Mechanical Requirements**, **and Pay Item No. 23: Cast-In-Place Concrete** and thus will not be measured.

3.6 BASIS OF PAYMENT

A. Work properly performed in accordance with this Section will be paid for at the Lump Sum Unit Price for **Pay Item 2: Cast-In-Place Concrete, Pay Item 11: General Mechanical Requirements, and Pay Item 23: Cast-In-Place Concrete**. Payment for work shall include full compensation for performing all work specified and for the furnishing of all materials, tools, equipment, labor, testing, submittals, and incidentals necessary to complete the work as described in the Contract

Documents. Payment will be made on a monthly basis, based on percent completion of the work properly performed and accepted as determined by the Engineer.

END OF SECTION 033000

SECTION 051200

STRUCTURAL STEEL FRAMING

PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes:

1. Structural-steel materials.

1.2 ACTION SUBMITTALS

A. Shop Drawings: Show fabrication of structural-steel components.

1. Include details of cuts, connections, splices, camber, holes, and other pertinent data.

2. Indicate welds by standard AWS symbols, distinguishing between shop and field welds, and show size, length, and type of each weld. Show backing bars that are to be removed and supplemental fillet welds where backing bars are to remain.

3. Indicate type, size, and length of bolts, distinguishing between shop and field bolts.

1.3 INFORMATIONAL SUBMITTALS – NOT USED

1.4 QUALITY ASSURANCE

A. Welding Qualifications: Qualify procedures and personnel in accordance with AWS D1.1/D1.1M.

1.5 DELIVERY, STORAGE, AND HANDLING

A. Store materials to permit easy access for inspection and identification. Keep steel members off ground and spaced by using pallets, dunnage, or other supports and spacers. Protect steel members and packaged materials from corrosion and deterioration.

1. Do not store materials on structure in a manner that might cause distortion, damage, or overload to members or supporting structures. Repair or replace damaged materials or structures as directed.

B. Store fasteners in a protected place in sealed containers with manufacturer’s labels intact.

1. Fasteners may be repackaged provided DRBA’s testing and inspecting agency observes repackaging and seals containers.

2. Clean and relubricate bolts and nuts that become dry or rusty before use.

PART 2 - PRODUCTS

2.1 PERFORMANCE REQUIREMENTS

A. Comply with applicable provisions of the following specifications and documents:

1. ANSI/AISC 303.
2. ANSI/AISC 341.
3. ANSI/AISC 360.
4. RCSC's "Specification for Structural Joints Using High-Strength Bolts".

B. Connection Design Information:

1. Fabricator's experienced steel detailer selects or completes connections in accordance with ANSI/AISC 303.
   a. Select and complete connections using schematic details indicated and ANSI/AISC 360.
   b. Use Allowable Stress Design; data are given at service-load level.

2.2 STRUCTURAL-STEEL MATERIALS

A. W-Shapes: ASTM A992/A992M.

B. Channels, Angles, S-Shapes: ASTM A36/A36M.

C. Plate and Bar: ASTM A36/A36M.

D. Welding Electrodes: Comply with AWS requirements.

2.3 BOLTS AND CONNECTORS

A. High-Strength A325 Bolts, Nuts, and Washers: ASTM F3125/F3125M, Grade A325, Type 1, heavy-hex steel structural bolts; ASTM A563, Grade DH, heavy-hex carbon-steel nuts; and ASTM F436/F436M, Type 1, hardened carbon-steel washers; all with plain finish.

2.4 FABRICATION

A. Structural Steel: Fabricate and assemble in shop to greatest extent possible. Fabricate in accordance with ANSI/AISC 303 and to ANSI/AISC 360.

1. Fabricate beams with rolling camber up.
2. Identify high-strength structural steel in accordance with ASTM A6/A6M and maintain markings until structural-steel framing has been erected.
3. Mark and match-mark materials for field assembly.
4. Complete structural-steel assemblies, including welding of units, before starting shop-priming operations.

B. Bolt Holes: Cut, drill, or punch standard bolt holes perpendicular to metal surfaces.

C. Finishing: Accurately finish the ends of columns and other members transmitting bearing loads.

D. Cleaning: Clean and prepare steel surfaces that are to remain unpainted in accordance with SSPC-SP 1 and SSPC-SP 2.

E. Holes: Provide holes required for securing other work to structural steel and for other work to pass through steel members.

1. Cut, drill, or punch holes perpendicular to steel surfaces. Do not thermally cut bolt holes or enlarge holes by burning.

2.5 SHOP PRIMING

A. Shop prime steel surfaces, except the following:

1. Surfaces to be field welded.

B. Surface Preparation of Steel: Clean surfaces to be painted. Remove loose rust and mill scale and spatter, slag, or flux deposits. Prepare surfaces in accordance with the following specifications and standards:

1. SSPC-SP 2.

C. Priming: Immediately after surface preparation, apply primer in accordance with manufacturer's written instructions and at rate recommended by SSPC to provide a minimum dry film thickness of 1.5 mils. Use priming methods that result in full coverage of joints, corners, edges, and exposed surfaces.

1. Stripe paint corners, crevices, bolts, welds, and sharp edges.

2. Apply two (2) coats of shop paint to surfaces that are inaccessible after assembly or erection. Change the color of the second coat to distinguish it from the first.

PART 3 - EXECUTION

3.1 PREPARATION

A. Provide temporary shores, guys, braces, and other supports during erection to keep structural steel secure, plumb, and in alignment against temporary construction loads and loads equal in intensity to design loads. Remove temporary supports when permanent structural steel, connections, and bracing are in place unless otherwise indicated on the Plans/Drawings.

1. Do not remove temporary shoring supporting composite deck construction until cast-in-place concrete has attained its design compressive strength.

3.2 ERECTION

A. Set structural steel accurately in locations and to elevations indicated and in accordance with ANSI/AISC 303 and ANSI/AISC 360.

B. Maintain erection tolerances of structural steel within ANSI/AISC 303.

C. Align and adjust various members that form part of the complete frame or structure before permanently fastening. Before assembly, clean bearing surfaces and other surfaces that are in permanent contact with members. Perform necessary adjustments to compensate for discrepancies in elevations and alignment.

1. Level and plumb individual members of structure. Slope roof framing members to slopes indicated on Plans/Drawings.

2. Make allowances for the difference between the temperature at the time of erection and the mean temperature when structure is completed and in service.

D. Splice members only where indicated.

E. Do not use thermal cutting during erection unless approved by Engineer. Finish thermally cut sections within smoothness limits in AWS D1.1/D1.1M.

F. Do not enlarge unfair holes in members by burning or using drift pins. Ream holes that must be enlarged to admit bolts.

3.3 FIELD CONNECTIONS

A. High-Strength Bolts: Install high-strength bolts in accordance with RCSC's "Specification for Structural Joints Using High-Strength Bolts" for bolt and joint type specified.

1. Joint Type: Snug tightened.

B. Weld Connections: Comply with AWS D1.1/D1.1M for tolerances, appearances, welding procedure specifications, weld quality, and methods used in correcting welding work.

1. Comply with ANSI/AISC 303 and ANSI/AISC 360 for bearing, alignment, adequacy of temporary connections, and removal of paint on surfaces adjacent to field welds.

2. Remove backing bars or runoff tabs, back gouge, and grind steel smooth.

3. Assemble and weld built-up sections by methods that maintain true alignment of axes without exceeding tolerances in ANSI/AISC 303 for mill material.

3.4 REPAIR

A. Touchup Painting:

1. Immediately after erection, clean exposed areas where primer is damaged or missing, and paint with the same material as used for shop painting to comply with SSPC-PA 1 for touching up shop-painted surfaces.

a. Clean and prepare surfaces by SSPC-SP 2 hand-tool cleaning or SSPC-SP 3 power-tool cleaning.

2. Cleaning and touchup painting per Structural Specifications in this Section.

3.5 FIELD QUALITY CONTROL

A. Special Inspections: DRBA will engage a special inspector to perform the following special inspections:

1. Verify structural-steel materials and inspect steel frame joint details.
2. Verify weld materials and inspect welds.
3. Verify connection materials and inspect high strength bolted connections.

B. Testing Agency: DRBA will engage a qualified testing agency to perform tests and inspections.

1. Bolted Connections: Inspect bolted connections in accordance with RCSC's "Specification for Structural Joints Using High-Strength Bolts".
2. Welded Connections: Visually inspect field welds in accordance with AWS D1.1/D1.1M.

3.6 METHOD OF MEASUREMENT

A. Work performed under this Section shall be considered incidental to Lump Sum **Pay Item 3: Structural Steel Framing**, and thus will not be measured.

3.7 BASIS OF PAYMENT

A. Work properly performed in accordance with this Section will be paid for at the Lump Sum Unit Price for **Pay Item 3: Structural Steel Framing**. Payment for work shall include full compensation for performing all work specified and for the furnishing of all materials, tools, equipment, labor, testing, submittals, and incidentals necessary to complete the work as described in the Contract Documents. Payment will be made on a monthly basis, based on percent completion of the work properly performed and accepted as determined by the Engineer.

END OF SECTION 051200

SECTION 055100

METAL STAIRS

PART 1 - GENERAL

1.1 SECTION INCLUDES

A. Stairs with metal treads.

B. Prefabricated stairs.

C. Structural steel stair framing and supports.

1.2 RELATED REQUIREMENTS

A. Section 033000 - Cast-in-Place Concrete: Placement of metal anchors in concrete.

B. Section 055213 - Pipe and Tube Railings: Metal handrails and balusters other than specified in this Section.

1.3 REFERENCE STANDARDS

A. ADA Standards - Americans with Disabilities Act (ADA) Standards for Accessible Design; 2010.

B. ASTM A36/A36M - Standard Specification for Carbon Structural Steel; 2014.

C. ASTM A500/A500M - Standard Specification for Cold-Formed Welded and Seamless Carbon Steel Structural Tubing in Rounds and Shapes; 2021a.

D. ASTM A501/A501M - Standard Specification for Hot-Formed Welded and Seamless Carbon Steel Structural Tubing; 2021.

E. ASTM F3125/F3125M - Standard Specification for High Strength Structural Bolts and Assemblies, Steel and Alloy Steel, Heat Treated, Inch Dimensions 120 ksi and 150 ksi Minimum Tensile Strength, and Metric Dimensions 830 MPa and 1040 MPa Minimum Tensile Strength; 2022.

F. AWS A2.4 - Standard Symbols for Welding, Brazing, and Nondestructive Examination; 2020.

G. AWS D1.1/D1.1M - Structural Welding Code - Steel; 2020, with Errata (2022).

H. ICC (IBC) - International Building Code; Most Recent Edition Adopted by Authority Having Jurisdiction, Including All Applicable Amendments and Supplements.

I. SSPC-Paint 15 - Steel Joist Shop Primer/Metal Building Primer; 2004.

J. SSPC-SP 2 - Hand Tool Cleaning; 2018.

1.4 SUBMITTALS

A. Shop Drawings: Indicate profiles, sizes, connection attachments, reinforcing, anchorage, size and type of fasteners, and accessories.

1. Indicate welded connections using standard AWS A2.4 welding symbols. Indicate net weld lengths.

B. Design Data: As required by authorities having jurisdiction.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

A. Prefabricated Metal Stairs:

1. Panel Built Inc: www.panelbuilt.com

2. Upside Innovations: https://upsideinnovations.com

3. ErectaStep; Commercial Stairs: www.erectastep.com

4. Or Approved Equal.

2.2 METAL STAIRS - GENERAL

A. Metal Stairs: Provide stairs of the design specified, complete with landing platforms, vertical and horizontal supports, railings, and guards, fabricated accurately for anchorage to each other and to building structure.

1. Regulatory Requirements: Provide stairs and railings that comply with most stringent requirements of local, state, and federal regulations; where requirements of the Specifications exceed those of regulations, comply with the Specifications.

2. Handrails: Comply with applicable accessibility requirements of ADA Standards.

3. Structural Design: Provide complete stair and railing assemblies that comply with the applicable local code.

4. Dimensions: As indicated on Plans/Drawings.

5. Shop assemble components; disassemble into largest practical sections suitable for transport and access to site.

6. No sharp or rough areas on exposed travel surfaces and surfaces accessible

to touch.

7. Separate dissimilar metals using paint or permanent tape.

B. Metal Jointing and Finish Quality Levels:

1. Commercial: Exposed joints should be as inconspicuous as possible, whether welded or mechanical; the underside of the stair not covered by the soffit is considered exposed to view.

a. Welded Joints: Intermittently welded on back side, filled with body putty, and sanded smooth and flush.

b. Welds Exposed to View: Ground smooth and flush.

c. Mechanical Joints: Butted tight, flush, and hairline.

d. Bolts Exposed to View: Countersunk flat or oval head bolts; no exposed nuts.

e. Exposed Edges and Corners: Eased to a small uniform radius.

f. Metal Surfaces to be Painted: Sanded or ground smooth, suitable for a satin or matte finish.

C. Fasteners: Same material or compatible with materials being fastened; choose a type consistent with design and specified quality level.

D. Anchors and Related Components: Use the same material and finish as item to be anchored, except where specifically indicated otherwise; provide all anchors and fasteners required.

2.3 PREFABRICATED STAIRS

A. Prefabricated Egress Stairs: Welded unit, factory fabricated to greatest degree practical and in the largest components possible.

1. Design Requirements: Comply with structural design criteria stated elsewhere in this section and applicable local code.

a. Comply with ADA Standards.

b. Comply with applicable sections of the IBC.

2. Materials: Manufacturer’s standard aluminum tubes, plates, bars, shapes, sheets, wire and mesh that comply with requirements of MATERIALS article of this section.

a. Rails: Manufacturer’s standard rails.

b. Guardrails: forty-two (42) inches high.

c. Handrails: thirty (30) inches to thirty-eight (38) inches high.

d. Infill: Manufacturer's standard pickets.

e. Treads: Manufacturer's standard diamond plate.

f. Finish: Mill finish.

g. Guardrail/Handrail Finish: Powder coat; color to be selected by the Engineer from manufacturer's standard range.

2.4 MATERIALS

A. Steel Sections: ASTM A36/A36M.

B. Steel Tubing: ASTM A500/A500M or ASTM A501/A501M structural tubing, round and shapes as indicated.

2.5 ACCESSORIES

A. Bolts, Nuts, and Washers: ASTM F3125/F3125M, Type 1.

B. Welding Materials: AWS D1.1/D1.1M; type required for materials being welded.

C. Shop and Touch-Up Primer: SSPC-Paint 15, and comply with VOC limitations of authorities having jurisdiction.

2.6 SHOP FINISHING

A. Clean surfaces of rust, scale, grease, and foreign matter prior to finishing.

B. Do not prime surfaces in direct contact with concrete or where field welding is required.

C. Prime Painting: Use specified shop- and touch-up primer.

1. Preparation of Steel: In accordance with SSPC-SP 2, Hand Tool Cleaning.

2. Number of Coats: One.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Verify that field conditions are acceptable and are ready to receive work.

3.2 PREPARATION

B. When field welding is required, clean and strip primed steel items to bare metal.

C. Supply items required to be cast into concrete and embedded in masonry with setting templates.

3.3 INSTALLATION

A. Install components plumb and level, accurately fitted, and free from distortion or defects.

B. Provide anchors, plates, angles, hangers, and struts required for connecting stairs to structure.

C. Allow for erection loads and for sufficient temporary bracing to maintain true alignment until completion of erection and installation of permanent attachments.

D. Provide welded field joints where specifically indicated on drawings. Perform field welding in accordance with AWS D1.1/D1.1M.

E. Other field joints may be either welded or bolted provided the result complies with the limitations specified for jointing quality levels.

F. Obtain approval prior to site cutting or creating adjustments not scheduled.

G. After erection, prime welds, abrasions, and surfaces not shop primed or galvanized, except surfaces to be in contact with concrete.

3.4 TOLERANCES

A. Maximum Variation From Plumb: one-fourth (1/4) inch per story, non-cumulative.

B. Maximum Offset From True Alignment: one-fourth (1/4) inch.

3.5 METHOD OF MEASUREMENT

A. Work performed under this Section shall be considered incidental to **Lump Sum Pay Item 4: Metals**, and thus will not be measured.

3.6 BASIS OF PAYMENT

A. Work properly performed in accordance with this Section will be paid for at the Lump Sum Unit Price for **Pay Item 4: Metals**. Payment for work shall include full compensation for performing all work specified and for the furnishing of all materials, tools, equipment, labor, testing, submittals, and incidentals necessary to complete the work as described in the Contract Documents. Payment will be made on a monthly basis, based on percent completion of the work properly performed and accepted as determined by the Engineer.

END OF SECTION 055100

SECTION 055141

SAFETY GATES

PART 1 - GENERAL

1.1 SUBMITTALS

A. Product Data: Illustrate products, installation, and relationship to adjacent construction.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

A. Basis of Design are based on SafeMezz Pallet Gate by PS Safety Access, https://www.pssafetyaccess.com.

B. Alternative Manufacturer:

1. CAI Safety Systems: https://caisafety.com
2. Or Approved equal.

2.2 MATERIALS

A. Aluminum:

1. Extrusions: ASTM B221.
2. Sheet: ASTM B209.

2.3 ACCESSORIES

A. Hardware: Corrosion-resistant coated steel.

2.4 FABRICATION

A. Safety Gates:

1. Provide barrier to prevent accidental travel beyond point where gate is installed.
2. Maximum 108 degree opening.
3. Self-closing.
4. Self-stopping.
5. Field-adjustable tension.
6. Double swing.
7. Universal mounting.
8. Width: sixty (60) inches.

9. Equip each gate with warning sign.

2.5 FINISHES

A. Aluminum: Safety yellow powder coat.

PART 3 - EXECUTION

3.1 INSTALLATION

A. Install in accordance with manufacturer's instructions.

3.2 METHOD OF MEASUREMENT

A. Work performed under this Section shall be considered incidental to **Lump Sum Pay Item 4: Metals**, and thus will not be measured.

3.3 BASIS OF PAYMENT

A. Work properly performed in accordance with this Section will be paid for at the Lump Sum Unit Price for **Pay Item 4: Metals**. Payment for work shall include full compensation for performing all work specified and for the furnishing of all materials, tools, equipment, labor, testing, submittals, and incidentals necessary to complete the work as described in the Contract Documents. Payment will be made on a monthly basis, based on percent completion of the work properly performed and accepted as determined by the Engineer.

END OF SECTION 055141

SECTION 055213

PIPE AND TUBE RAILINGS

PART 1 - GENERAL

1.1 SECTION INCLUDES

A. Wall mounted handrails.

B. Balcony railings and guardrails.

1.2 RELATED REQUIREMENTS

A. Section 055100 - Metal Stairs: Handrails other than those specified in this Section.

1.3 REFERENCE STANDARDS

A. AAMA 2604 - Voluntary Specification, Performance Requirements and Test Procedures for High Performance Organic Coatings on Aluminum Extrusions and Panels (with Coil Coating Appendix); 2021, with Errata (2022).

B. ADA Standards - Americans with Disabilities Act (ADA) Standards for Accessible Design; 2010.

C. ASTM A780/A780M - Standard Practice for Repair of Damaged and Uncoated Areas of Hot-Dip Galvanized Coatings; 2020.

D. ASTM E935 - Standard Test Methods for Performance of Permanent Metal Railing Systems and Rails for Buildings; 2021.

E. AWS A2.4 - Standard Symbols for Welding, Brazing, and Nondestructive Examination; 2020.

F. AWS D1.1/D1.1M - Structural Welding Code - Steel; 2020, with Errata (2022).

G. AWS D1.6/D1.6M - Structural Welding Code - Stainless Steel; 2017, with Amendment (2021).

H. AWS C3.4M/C3.4 - Specification for Torch Brazing; 2016.

I. AWS C3.5M/C 3.5 - Specification for Induction Brazing; 2007.

J. AWS C3.9M/C3.9 - Specification for Resistance Brazing; 2020.

1.4 SUBMITTALS

A. Shop Drawings: Indicate profiles, sizes, connection attachments, anchorage, size and type of fasteners, and accessories.

1. Indicate welded connections using standard AWS A2.4 welding symbols.

Indicate net weld lengths.

2. Include the design engineer's seal and signature on each sheet of Shop Drawings.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

A. Handrails and Railings:

1. Alumi-Guard: www.alumi-guard.com/#sle
2. Or Approved Equal.

2.2 RAILINGS - GENERAL REQUIREMENTS

A. Design, fabricate, and test railing assemblies in accordance with the most stringent requirements of applicable local code.

B. Concentrated Loads: Design railing assembly, wall rails, and attachments to resist a concentrated force of 200 pounds applied at any point on the top of the assembly and in any direction, without damage or permanent set. Test in accordance with ASTM E935.

C. Allow for expansion and contraction of members and building movement without damage to connections or members.

D. Dimensions: See drawings for configurations and heights.

1. Top Rails and Wall Rails: one and one-half (1-1/2) inches diameter, round.
2. Intermediate Rails: one and one-half (1-1/2) inches diameter, round.
3. Balusters: one-half (1/2) inch round solid bar.

E. Provide anchors and other components as required to attach to structure, made of same materials as railing components unless otherwise indicated; where exposed fasteners are unavoidable provide flush countersunk fasteners.

F. Provide mechanical and welding fittings where indicated to join lengths, seal open ends, and conceal exposed mounting bolts and nuts, including but not limited to elbows, T-shapes, splice connectors, flanges, escutcheons, and wall brackets.

G. Welded and Brazed Joints: Make visible joints butt tight, flush, and hairline; use methods that avoid discoloration and damage of finish; grind smooth, polish, and restore to required finish.

1. Ease exposed edges to a small uniform radius.
2. Welded Joints:

a. Carbon Steel: Perform welding in accordance with AWS D1.1/D1.1M.

b. Stainless Steel: Perform welding in accordance with AWS D1.6/D1.6M.

3. Brass/Bronze Brazed Joints:

a. Perform torch brazing in accordance with AWS C3.4M/C3.4.

b. Perform induction brazing in accordance with AWS C3.5M/C 3.5.

c. Perform resistance brazing in accordance with AWS C3.9M/C3.9.

2.3 STEEL RAILING SYSTEM

A. Non-Weld Mechanical Fittings: Slip-on, galvanized malleable iron castings, for Schedule 40 pipe, with flush setscrews for tightening by standard hex wrench, no bolts or screw fasteners.

B. Welding Fittings: Factory or shop-welded from matching pipe or tube; seams continuously welded; joints and seams ground smooth.

C. Exposed Fasteners: No exposed bolts or screws.

2.4 FABRICATION

A. Accurately form components to suit specific project conditions and for proper connection to building structure.

B. Fit and shop assemble components in largest practical sizes for delivery to site.

C. Fabricate components with joints tightly fitted and secured. Provide spigots and sleeves to accommodate site assembly and installation.

D. Welded Joints:

1. Exterior Components: Continuously seal joined pieces by intermittent welds and plastic filler. Drill condensate drainage holes at bottom of members at locations that will not encourage water intrusion.

2. Interior Components: Continuously seal joined pieces by intermittent welds and plastic filler.

3. Grind exposed joints flush and smooth with adjacent finish surface. Make exposed joints butt tight, flush, and hairline. Ease exposed edges to small uniform radius.

E. Weld connections that cannot be shop welded due to size limitations.

1. Weld in accordance with AWS D1.1/D1.1M.

2. Match shop welding and bolting.

3. Clean welds, bolted connections, and abraded areas.

4. Touch up shop primer and factory-applied finishes.

5. Repair galvanizing with galvanizing repair paint per ASTM A780/A780M.

2.5 ALUMINUM FINISHES

A. High Performance Organic Coating System: AAMA 2604 multiple coat, thermally cured fluoropolymer system.

B. Touch-Up Materials: As recommended by coating manufacturer for field application.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Verify that field conditions are acceptable and are ready to receive work.

3.2 PREPARATION

A. Clean and strip aluminum where site welding is required.

B. Supply items required to be placed in partitions with setting templates, for installation as work of other sections.

3.3 INSTALLATION

A. Install in accordance with manufacturer's instructions.

B. Install components plumb and level, accurately fitted, free from distortion or defects, with tight joints.

C. Install railings in compliance with ADA Standards for accessible design at applicable locations.

D. Anchor railings securely to structure.

E. Conceal anchor bolts and screws whenever possible. Where not concealed, use flush countersunk fastenings.

3.4 METHOD OF MEASUREMENT

A. Work performed under this Section shall be considered incidental to **Lump Sum Pay Item 4: Metals**, and thus will not be measured.

3.5 BASIS OF PAYMENT

A. Work properly performed in accordance with this Section will be paid for at the Lump Sum Unit Price for **Pay Item 4: Metals**. Payment for work shall include full compensation for performing all work specified and for the furnishing of all materials, tools, equipment, labor, testing, submittals, and incidentals necessary to complete the

work as described in the Contract Documents. Payment will be made on a monthly basis, based on percent completion of the work properly performed and accepted as determined by the Engineer.

END OF SECTION 055213

SECTION 061000

ROUGH CARPENTRY

PART 1 - GENERAL

1.1 SECTION INCLUDES

A. Nonstructural dimension lumber framing.

B. Rough opening framing for doors, windows, and roof openings.

C. Underlayment.

D. Concealed wood blocking, nailers, and supports.

E. Miscellaneous wood nailers, furring, and grounds.

1.2 REFERENCE STANDARDS

A. ASTM A153/A153M - Standard Specification for Zinc Coating (Hot-Dip) on Iron and Steel Hardware; 2016a.

B. PS 1 - Structural Plywood; 2009.

C. PS 20 - American Softwood Lumber Standard; 2020.

D. SPIB (GR) - Grading Rules; 2014.

1.3 SUBMITTALS

A. Product Data: Provide technical data on insulated sheathing, wood preservative materials, and application instructions.

1.4 DELIVERY, STORAGE, AND HANDLING

A. General: Cover wood products to protect against moisture. Support stacked products to prevent deformation and to allow air circulation.

PART 2 - PRODUCTS

2.1 GENERAL REQUIREMENTS

A. Dimension Lumber: Comply with PS 20 and requirements of specified grading agencies.

1. If no species is specified, provide any species graded by the agency specified; if no grading agency is specified, provide lumber graded by any grading agency meeting the specified requirements.
2. Grading Agency: Any grading agency whose rules are approved by the Board of Review, American Lumber Standard Committee (www.alsc.org)

and who provides grading service for the species and grade specified; provide lumber stamped with grade mark unless otherwise indicated.

2.2 DIMENSION LUMBER FOR CONCEALED APPLICATIONS

A. Grading Agency: Southern Pine Inspection Bureau, Inc.; SPIB (GR).

B. Sizes: Nominal sizes as indicated on Plans/Drawings, S4S.

C. Moisture Content: S-dry or MC19.

D. Stud Framing (2 by 2 through 2 by 6):

1. Grade: No. 2.

E. Miscellaneous Framing, Blocking, Nailers, Grounds, and Furring:

1. Lumber: S4S, No. 2 or Standard Grade.
2. Boards: Standard or No. 3.

2.3 CONSTRUCTION PANELS

A. Subfloor/Underlayment Combination: PS 1 or PS 2 type, rated Single Floor.

1. Bond Classification: Exposure 1.

2.4 ACCESSORIES

A. Fasteners and Anchors:

1. Metal and Finish: Hot-dipped galvanized steel complying with ASTM A153/A153M for high humidity and preservative-treated wood locations, unfinished steel elsewhere.

PART 3 - EXECUTION

3.1 PREPARATION

A. Coordinate installation of rough carpentry members specified in other sections.

3.2 INSTALLATION - GENERAL

A. Select material sizes to minimize waste.

B. Reuse scrap to the greatest extent possible; clearly separate scrap for use on site as accessory components, including: shims, bracing, and blocking.

C. Where treated wood is used on interior, provide temporary ventilation during and immediately after installation sufficient to remove indoor air contaminants.

3.3 BLOCKING, NAILERS, AND SUPPORTS

A. Provide framing and blocking members as indicated or as required to support finishes, fixtures, specialty items, and trim.

B. In metal stud walls, provide continuous blocking around door and window openings for anchorage of frames, securely attached to stud framing.

C. In walls, provide blocking attached to studs as backing and support for wall-mounted items, unless item can be securely fastened to two or more studs or other method of support is explicitly indicated.

D. Where ceiling-mounting is indicated, provide blocking and supplementary supports above ceiling, unless other method of support is explicitly indicated.

E. Provide the following specific nonstructural framing and blocking:

1. Cabinets and shelf supports.
2. Wall brackets.
3. Wall-mounted door stops.
4. Joints of rigid wall coverings that occur between studs.
5. Any additional wall mounted accessories not listed above.

3.4 INSTALLATION OF CONSTRUCTION PANELS

A. Underlayment

1. Secure to subflooring with nails and glue.

2. At locations with resilient flooring being installed, fill and sand splits, gaps, and rough areas.

3. Place building paper between floor underlayment and subflooring.

3.5 TOLERANCES

A. Framing Members: one-fourth (1/4) inch from true position, maximum.

B. Variation from Plane, Other than Floors: one-fourth (1/4) inch in ten (10) feet maximum, and one-fourth (1/4) inch in thirty (30) feet maximum.

3.6 CLEANING

A. Do not leave any wood, shavings, sawdust, etc. on the ground or buried in fill.

B. Prevent sawdust and wood shavings from entering the storm drainage system.

3.7 METHOD OF MEASUREMENT

A. Work performed under this Section shall be considered incidental to **Lump Sum Pay**

Item 5: Wood, Plastics & Composites, and thus will not be measured.

3.8 BASIS OF PAYMENT

A. Work properly performed in accordance with this Section will be paid for at the Lump Sum Unit Price for **Pay Item 5: Wood, Plastics & Composites**. Payment for work shall include full compensation for performing all work specified and for the furnishing of all materials, tools, equipment, labor, testing, submittals, and incidentals necessary to complete the work as described in the Contract Documents. Payment will be made on a monthly basis, based on percent completion of the work properly performed and accepted as determined by the Engineer.

END OF SECTION 061000

SECTION 064100

ARCHITECTURAL WOOD CASEWORK

PART 1 - GENERAL

1.1 SECTION INCLUDES

A. Specially fabricated cabinet units.

B. Countertops.

C. Hardware.

1.2 REFERENCE STANDARDS

A. AWI (QCP) - Quality Certification Program; Current Edition.

B. AWI/AWMAC/WI (AWS) - Architectural Woodwork Standards; 2014, with Errata (2018).

C. AWMAC/WI (NAAWS) - North American Architectural Woodwork Standards, U.S. Version 3.1; 2017, with Errata (2019).

D. BHMA A156.9 - American National Standard for Cabinet Hardware; 2015.

1.3 SUBMITTALS

A. Shop Drawings: Indicate materials, component profiles, fastening methods, jointing details, and accessories.

1. Scale of Drawings: one and one-half (1-1/2) inch to one (1) foot, minimum.

2. Provide the information required by AWI/AWMAC/WI (AWS) or AWMAC/WI (NAAWS).

3. Include certification program label.

B. Product Data: Provide data for hardware accessories.

C. Samples: Submit sample of finish materials in manufacturer’s full range for color/finish selection by DRBA.

1.4 QUALITY ASSURANCE

A. Fabricator Qualifications: Company specializing in fabricating the products specified in this section with minimum ten (10) years of documented experience.

1. Accredited participant in the specified certification program prior to the commencement of fabrication and throughout the duration of the project.

B. Quality Certification:

1. Comply with AWI (QCP) woodwork association quality certification service/program in accordance with requirements for work specified in this section: www.awiqcp.org/#sle.

1.5 DELIVERY, STORAGE, AND HANDLING

A. Protect units from moisture damage.

1.6 FIELD CONDITIONS

A. During and after installation of custom cabinets, maintain temperature and humidity conditions in building spaces at same levels planned for occupancy.

PART 2 - PRODUCTS

2.1 CABINETS

A. Quality Standard: Custom Grade, in accordance with AWI/AWMAC/WI (AWS) or AWMAC/WI (NAAWS), unless noted otherwise.

B. Plastic Laminate Faced Cabinets: Custom grade.

C. Cabinets:

1. Finish - Exposed Exterior Surfaces: Wood.
2. Finish - Exposed Interior Surfaces: Wood.
3. Finish - Semi-Exposed Surfaces: Wood
4. Finish - Concealed Surfaces: Manufacturer's option.
5. Door and Drawer Front Edge Profiles: Square edge with thin applied band.
6. Door and Drawer Front Retention Profiles: Fixed panel.
7. Casework Construction Type: Type A - Frameless.
8. Interface Style for Cabinet and Door: Style 1 - Overlay; reveal overlay.
9. Cabinet Design Series: As indicated on drawings.
10. Adjustable Shelf Loading: 50 lbs. per sq. ft.
    a. Deflection: L/144.
11. Cabinet Style: Flush overlay.
12. Cabinet Doors and Drawer Fronts: Flush style.

2.2 WOOD-BASED COMPONENTS

A. Wood fabricated from old growth timber is not permitted.

2.3 LAMINATE MATERIALS

A. Manufacturers:

1. Panolam Industries International, Inc; Nevamar Standard HPL: https://panolam.com/nevamar/
2. Panolam Industries International, Inc; Pionite Standard HPL: www.panolam.com/#sle
3. Wilsonart LLC: www.wilsonart.com/#sle
4. Or Approved Equal.

B. Provide specific types as indicated.

1. Horizontal Surfaces: PLAM-2, 0.039 inch nominal thickness, through color, colors as indicated, To be determined.
2. Cabinet Liner: CLS, 0.020 inch nominal thickness, color as selected, finish as indicated.
3. Laminate Backer: BKL, 0.020 inch nominal thickness, undecorated; for application to concealed backside of panels faced with high pressure decorative laminate.

2.4 COUNTERTOPS

A. Plastic Laminate Countertops: Medium density fiberboard substrate covered with HPDL, conventionally fabricated and self-edge banded.

2.5 ACCESSORIES

A. Adhesive: Type recommended by fabricator to suit application.

B. Plastic Edge Banding: Extruded PVC, convex shaped; smooth finish; self-locking serrated tongue; of width to match component thickness.

1. Color: To match PLAM-1.
2. Use at all exposed plywood edges.
3. Use at all exposed shelf edges.

C. Vinyl Countertop Edge: PVC anchor type tee-molding edging in width to match thickness of countertop, color as indicated, used at locations as indicated.

D. Fasteners: Size and type to suit application.

E. Bolts, Nuts, Washers, Lags, Pins, and Screws: Of size and type to suit application; galvanized or chrome-plated finish in concealed locations and stainless steel or chrome-plated finish in exposed locations.

F. Concealed Joint Fasteners: Threaded steel.

2.6 HARDWARE

A. Hardware: BHMA A156.9, types as recommended by fabricator for quality grade specified.

B. Adjustable Shelf Supports: Standard side-mounted system using surface mounted metal shelf standards or multiple holes for pin supports and coordinated self-rests, polished chrome finish, for nominal 1" spacing adjustments.

C. Adjustable Shelf Supports: Standard back-mounted system using surface mounted metal shelf standards and coordinated cantilevered shelf brackets, satin chrome finish, for nominal one (1) inch spacing adjustments.

D. Drawer and Door Pulls: Extruded aluminum bar pull, 3" center to center, matte black finish.

E. Drawer Slides:

1. Type: Full extension.
2. Static Load Capacity: Heavy Duty grade.
3. Mounting: Side mounted.
4. Stops: Integral type.
5. Features: Provide self-closing/stay closed type.

F. Hinges: Concealed (fully mortised) self-closing type, steel with polished finish.

2.7 FABRICATION

A. Assembly: Shop assemble cabinets for delivery to site in units easily handled and to permit passage through building openings.

B. Edging: Fit shelves, doors, and exposed edges with specified edging. Do not use more than one piece for any single length.

C. Fitting: When necessary to cut and fit on site, provide materials with ample allowance for cutting. Provide matching trim for scribing and site cutting.

D. Plastic Laminate: Apply plastic laminate finish in full uninterrupted sheets consistent with manufactured sizes. Fit corners and joints hairline; secure with concealed fasteners. Slightly bevel arises. Locate counter butt joints minimum 2 feet from sink cut-outs.

1. Apply laminate backing sheet to reverse side of plastic laminate finished surfaces.
2. Cap exposed plastic laminate finish edges with material of same finish and pattern.

2.8 SHOP FINISHING

A. Finish work in accordance with AWI/AWMAC/WI (AWS) or AWMAC/WI (NAAWS), Section 5 - Finishing for grade specified and as follows:

1. Transparent:

a. System - 2, Lacquer, Precatalyzed.

b. Stain: As selected by the Engineer.

c. Sheen: Satin.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Verify adequacy of backing and support framing.

B. Verify location and sizes of utility rough-in associated with work of this section.

3.2 INSTALLATION

A. Install work in accordance with AWI/AWMAC/WI (AWS) or AWMAC/WI (NAAWS) requirements for grade indicated.

B. Set and secure custom cabinets in place, assuring that they are rigid, plumb, and level.

C. Use concealed joint fasteners to align and secure adjoining cabinet units.

D. Secure cabinets to floor using appropriate angles and anchorages.

E. Countersink anchorage devices at exposed locations. Conceal with solid wood plugs of species to match surrounding wood; finish flush with surrounding surfaces.

3.3 ADJUSTING

A. Adjust installed work.

B. Adjust moving or operating parts to function smoothly and correctly.

3.4 CLEANING

A. Clean casework, counters, shelves, hardware, fittings, and fixtures.

3.5 METHOD OF MEASUREMENT

A. Work performed under this Section shall be considered incidental to **Lump Sum Pay Item 18: Wood, Plastics & Composites**, and thus will not be measured.

3.6 BASIS OF PAYMENT

A. Work properly performed in accordance with this Section will be paid for at the Lump Sum Unit Price for **Pay Item 18: Wood, Plastics & Composites**. Payment for work

shall include full compensation for performing all work specified and for the furnishing of all materials, tools, equipment, labor, testing, submittals, and incidentals necessary to complete the work as described in the Contract Documents. Payment will be made on a monthly basis, based on percent completion of the work properly performed and accepted as determined by the Engineer.

END OF SECTION 064100

SECTION 079005

JOINT SEALERS

PART 1 - GENERAL

1.1 SECTION INCLUDES

A. Sealants and joint backer rods.

B. Pre-compressed foam sealers.

1.2 REFERENCE STANDARDS

A. ASTM C834 - Standard Specification for Latex Sealants; 2017.

B. ASTM C920 - Standard Specification for Elastomeric Joint Sealants; 2018.

C. ASTM C1193 - Standard Guide for Use of Joint Sealants; 2016.

D. ASTM D1056 - Standard Specification for Flexible Cellular Materials--Sponge or Expanded Rubber; 2014.

E. ASTM D1667 - Standard Specification for Flexible Cellular Materials--Poly(Vinyl Chloride) Foam (Closed-Cell); 2017.

1.3 ADMINISTRATIVE REQUIREMENTS

A. Coordinate the work with other sections referencing this section.

1.4 SUBMITTALS

A. Product Data: Provide data indicating sealant chemical characteristics, performance criteria, substrate preparation, limitations, and color availability.

B. Samples: Submit two samples, 2" x 1/2" size illustrating sealant colors for selection.

C. Manufacturer’s Installation Instructions: Indicate special procedures, surface preparation, and perimeter conditions requiring special attention.

1.5 QUALITY ASSURANCE

A. Maintain one (1) copy of each referenced document covering installation requirements on site.

1.6 MOCK-UP

A. Construct mock-up with specified sealant types and with other components noted.

B. Locate where directed.

1.7 FIELD CONDITIONS

A. Maintain temperature and humidity recommended by the sealant manufacturer during and after installation.

1.8 COORDINATION

A. Coordinate the work with all sections referencing this section.

1.9 WARRANTY

A. Correct defective work within a five (5) year period after Date of Completion.

B. Warranty: Include coverage for installed sealants and accessories which fail to achieve airtight seal, exhibit loss of adhesion or cohesion, or do not cure.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

A. Acrylic Sealants (ASTM C920):

1. Pecora Corporation: www.pecora.com
2. Tremco, Inc.: www.tremcosealants.com
3. Bostik, Inc.: www.bostik.com/us/en_US/
4. Or Approved Equal.

B. Preformed Compressible Foam Sealers and backer rods:

1. Dayton Superior Corporation: www.daytonsuperior.com
2. Tremco Global Sealants: www.tremcosealants.com
3. Or Approved Equal.

2.2 SEALANTS

A. Exterior Expansion Joint Sealer: Pre-compressed foam sealer; urethane with water-repellent.

1. Color: Black.
2. Applications: Use for:
   a. Exterior wall expansion joints.

B. General Purpose Interior Sealant: Acrylic emulsion latex; ASTM C834, Type OP, Grade NF single component, paintable.

1. Color: Standard colors matching finished surfaces.
2. Applications: Use for:

a. Interior wall and ceiling control joints.

b. Joints between door and window frames and wall surfaces.

c. Other interior joints for which no other type of sealant is indicated.

3. Products:

a. Pecora Corporation; AC-20 + Silicone Acrylic Latex Caulking Compound: www.pecora.com

b. Or Approved Equal.

C. Acoustical Sealant: acrylic sealant; ASTM C 920, Grade NS, Class 12-1/2, Uses M and A; single component, solvent release curing, non-skinning.

1. Product: AIS-919 manufactured by Pecora.

a. Or approved equal.

2. Applications: Use for concealed locations only:

a. Sealant bead between top stud runner and structure and between bottom stud track and floor and where shown on plans.

2.3 ACCESSORIES

A. Primer: Non-staining type, recommended by sealant manufacturer to suit application.

B. Joint Cleaner: Non-corrosive and non-staining type, recommended by sealant manufacturer; compatible with joint forming materials.

C. Joint Backing: Round foam rod compatible with sealant; ASTM D 1667, closed cell PVC; oversized 30 to 50 percent larger than joint width.

D. Bond Breaker: Pressure sensitive tape recommended by sealant manufacturer to suit application.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Verify that substrate surfaces and joint openings are ready to receive work.

B. Verify that joint backing and release tapes are compatible with sealant.

3.2 PREPARATION

A. Remove loose materials and foreign matter that could impair adhesion of sealant.

B. Clean and prime joints in accordance with manufacturer’s instructions.

C. Perform preparation in accordance with manufacturer’s instructions and ASTM C1193.

D. Protect elements surrounding the work of this section from damage or disfigurement.

3.3 INSTALLATION

A. Perform work in accordance with sealant manufacturer's requirements for preparation of surfaces and material installation instructions.

B. Perform installation in accordance with ASTM C1193.

C. Perform acoustical sealant application work in accordance with ASTM C919.

D. Install bond breaker where joint backing is not used.

E. Install sealant free of air pockets, foreign embedded matter, ridges, and sags.

F. Apply sealant within recommended application temperature ranges. Consult manufacturer when sealant cannot be applied within these temperature ranges.

G. Tool joints concave.

3.4 CLEANING

A. Clean adjacent soiled surfaces.

3.5 PROTECTION

A. Protect sealants until cured.

3.6 METHOD OF MEASUREMENT

A. Work performed under this Section shall be considered incidental to **Lump Sum Pay Item 6: Thermal and Moisture Protection**, and thus will not be measured.

3.6 BASIS OF PAYMENT

A. Work properly performed in accordance with this Section will be paid for at the Lump Sum Unit Price for **Pay Item 6: Thermal and Moisture Protection**. Payment for work shall include full compensation for performing all work specified and for the furnishing of all materials, tools, equipment, labor, testing, submittals, and incidentals necessary to complete the work as described in the Contract Documents. Payment will be made on a monthly basis, based on percent completion of the work properly performed and accepted as determined by the Engineer.

END OF SECTION 079005

SECTION 081113

HOLLOW METAL DOORS AND FRAMES

PART 1 GENERAL

1.1 SECTION INCLUDES

A. Non-fire-rated hollow metal doors and frames.

B. Hollow metal borrowed lites glazing frames.

1.2 RELATED REQUIREMENTS

A. Section 087100 - Door Hardware.

B. Section 088000 - Glazing: Glass for doors and borrowed lites.

C. Section 099123 - Interior Painting: Field painting.

1.3 ABBREVIATIONS AND ACRONYMS

A. ANSI: American National Standards Institute.

B. HMMA: Hollow Metal Manufacturers Association.

C. NAAMM: National Association of Architectural Metal Manufacturers.

D. SDI: Steel Door Institute.

E. UL: Underwriters Laboratories.

1.4 REFERENCE STANDARDS

A. ADA Standards - Americans with Disabilities Act (ADA) Standards for Accessible Design; 2010.

B. ANSI/SDI A250.4 - Test Procedure and Acceptance Criteria for Physical Endurance for Steel Doors, Frames and Frame Anchors; 2011.

C. ANSI/SDI A250.6 - Recommended Practice for Hardware Reinforcing on Standard Steel Doors and Frames; 2003 (R2009).

D. ANSI/SDI A250.8 - Specifications for Standard Steel Doors and Frames (SDI-100); 2017.

E. ANSI/SDI A250.10 - Test Procedure and Acceptance Criteria for Prime Painted Steel Surfaces for Steel Doors and Frames; 2011.

F. NAAMM HMMA 840 - Guide Specifications For Receipt, Storage and Installation of Hollow Metal Doors and Frames; 2007.

G. NAAMM HMMA 861 - Guide Specifications for Commercial Hollow Metal Doors and Frames; 2014.

H. SDI 117 - Manufacturing Tolerances for Standard Steel Doors and Frames; 2013.

1.5 SUBMITTALS

A. Product Data: Materials and details of design and construction, hardware locations, reinforcement type and locations, anchorage and fastening methods, and finishes; and one copy of referenced standards/guidelines.

B. Shop Drawings: Details of each opening, showing elevations, glazing, frame profiles, and any indicated finish requirements.

C. Installation Instructions: Manufacturer's published instructions, including any special installation instructions relating to this project.

1.6 DELIVERY, STORAGE, AND HANDLING

A. Comply with NAAMM HMMA 840 or ANSI/SDI A250.8 (SDI-100) in accordance with specified requirements.

B. Protect with resilient packaging; avoid humidity build-up under coverings; prevent corrosion and adverse effects on factory applied painted finish.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

A. Hollow Metal Doors and Frames:

1. Ceco Door, an Assa Abloy Group company: www.assaabloydss.com/#sle
2. Curries, an Assa Abloy Group company: www.assaabloydss.com/#sle
3. Republic Doors, an Allegion brand: www.republicdoor.com/#sle
4. Or Approved Equal.

2.2 PERFORMANCE REQUIREMENTS

A. Combined Requirements: If a particular door and frame unit is indicated to comply with more than one type of requirement, comply with the specified requirements for each type; for instance, an exterior door that is also indicated as being sound-rated must comply with the requirements specified for exterior doors and for sound-rated doors; where two requirements conflict, comply with the most stringent.

2.3 HOLLOW METAL DOORS

A. Door Finish: Factory primed and field finished.

B. Interior Doors, Non-Fire-Rated:

1. Based on SDI Standards: ANSI/SDI A250.8 (SDI-100).
    a. Level 1 - Standard-duty.
    b. Physical Performance Level C, 250,000 cycles; in accordance with ANSI/SDI A250.4.
    c. Model 1 - Full Flush.
    d. Door Face Metal Thickness: 20 gauge, 0.032", minimum.
2. Door Thickness: 1-3/4", nominal.
3. Door Finish: Factory primed and field finished.

2.4 HOLLOW METAL FRAMES

A. Comply with standards and/or custom guidelines as indicated for corresponding door in accordance with applicable door frame requirements.

B. Interior Door Frames, Non-Fire Rated: Full profile/continuously welded type.

1. Frame Metal Thickness: 18 gauge, 0.042", minimum.
2. Frame Finish: Factory primed and field finished.

C. Borrowed Lites Glazing Frames: Construction and face dimensions are to match door frames, and as indicated on Plans/Drawings.

2.5 FINISHES

A. Primer: Rust-inhibiting, complying with ANSI/SDI A250.10, door manufacturer's standard.

2.6 ACCESSORIES

A. Glazing: As specified in Section 088000, factory installed.

B. Removable Stops: Formed sheet steel, shape as indicated on drawings, mitered or butted corners; prepared for countersink style tamper proof screws.

C. Mechanical Fasteners for Concealed Metal-to-Metal Connections: Self-drilling, self-tapping, steel with electroplated zinc finish.

D. Temporary Frame Spreaders: Provide for factory- or shop-assembled frames.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Verify existing conditions before starting work.

B. Verify that opening sizes and tolerances are acceptable.

C. Verify that finished walls are in plane to ensure proper door alignment.

3.2 INSTALLATION

A. Install doors and frames in accordance with manufacturer's instructions and related requirements of specified door and frame standards or custom guidelines indicated.

B. Coordinate frame anchor placement with wall construction.

C. Install door hardware as specified in Section 087100 – Door Hardware.

1. Comply with recommended practice for hardware placement of doors and frames in accordance with ANSI/SDI A250.6 or NAAMM HMMA 861.

D. Comply with glazing installation requirements of Section 088000.

3.3 TOLERANCES

A. Clearances Between Door and Frame: Comply with related requirements of specified frame standards or custom guidelines indicated in accordance with SDI 117 or NAAMM HMMA 861.

B. Maximum Diagonal Distortion: 1/16" measured with straight edge, corner to corner.

3.4 ADJUSTING

A. Adjust for smooth and balanced door movement.

B. Adjust sound control doors so that seals are fully engaged when door is closed.

C. Test sound control doors for force to close, latch, and unlatch; adjust as necessary in compliance with requirements.

3.5 METHOD OF MEASUREMENT

A. Work performed under this Section shall be considered incidental to **Lump Sum Pay Item 7: Openings**, and thus will not be measured.

3.6 BASIS OF PAYMENT

A. Work properly performed in accordance with this Section will be paid for at the Lump Sum Unit Price for **Pay Item 7: Openings** Payment for work shall include full compensation for performing all work specified and for the furnishing of all materials, tools, equipment, labor, testing, submittals, and incidentals necessary to complete the work as described in the Contract Documents. Payment will be made on a monthly basis, based on percent completion of the work properly performed and accepted as determined by the Engineer.

END OF SECTION 081113

SECTION 083813

FLEXIBLE STRIP DOOR

PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes: Flexible Strip Door

1.2 SUBMITTALS

A. Product Data.

B. Shop Drawings: Show fabrication details and anchorage.

C. Quality Assurance/Control Submittals:

1. Manufacturer's Installation Instructions.
2. Manufacturer's storage and handling instructions.

D. Closeout Submittals:

1. Cleaning and Maintenance instructions.

1.3 QUALITY ASSURANCE

A. Qualifications:

1. Manufacturer Qualifications: Regular manufacturer of flexible strip doors for at least five (5) years.

1.4 DELIVERY STORAGE AND HANDLING

A. Store per manufacturer's recommendations until ready for use.

PART 2 - PRODUCTS

2.1 MANUFACTURES

A. Basis of Design: Akon Curtains: www.curtain-and-divider.com

B. Alternative Manufacturers:

1. Uline: www.uline.com
2. Extruflex North America: https://extruflex.com
3. Amcraft Manufacturing, Inc.: https://amcraftindustrialcurtainwall.com
4. Or Approved Equal.

2.2 COMPONENTS

A. Strips:

1. Standard PVC
    a. Color: Clear
    b. Type: Offset-ribbed
    c. Size/Overlap:
        i. 12" x .120 / 100%

B. Mounting Hardware:

1. Universal Mounting System, galvanized steel

2.3 ACCESSORIES

A. Horizontal Slide Kit.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Examine opening in which door will be installed.

B. Coordinate with responsible entity to perform corrective work on unsatisfactory conditions.

C. Commencement of work by installer is acceptance of opening conditions.

3.2 INSTALLATION

A. Follow manufacturer's instructions.

3.3 ADJUSTING

A. Follow manufacturer's instructions as required to:

1. Align strips to ensure most effective seal; field adjust and modify as required for proper fit.

3.4 CLEANING

A. Clean surfaces soiled by work as recommended by manufacturer.

B. Remove surplus materials and debris from the site.

3.5 METHOD OF MEASUREMENT

A. Work performed under this Section shall be considered incidental to **Lump Sum Pay Item 21: Openings**, and thus will not be measured.

3.6 BASIS OF PAYMENT

A. Work properly performed in accordance with this Section will be paid for at the Lump Sum Unit Price for **Pay Item 21: Openings** Payment for work shall include full

compensation for performing all work specified and for the furnishing of all materials, tools, equipment, labor, testing, submittals, and incidentals necessary to complete the work as described in the Contract Documents. Payment will be made on a monthly basis, based on percent completion of the work properly performed and accepted as determined by the Engineer.

END OF SECTION 083813

SECTION 087100

DOOR HARDWARE

PART 1 - GENERAL

1.1 SECTION INCLUDES

A. Hardware for hollow metal doors.

B. Thresholds.

C. Weatherstripping and gasketing.

1.2 RELATED REQUIREMENTS

1.3 REFERENCE STANDARDS

A. ADA Standards - Americans with Disabilities Act (ADA) Standards for Accessible Design; 2010.

B. BHMA A156.1 - American National Standard for Butts and Hinges; 2016.

C. BHMA A156.4 - American National Standard for Door Controls - Closers; 2013.

D. BHMA A156.13 - American National Standard for Mortise Locks & Latches Series 1000; 2017.

E. BHMA A156.16 - American National Standard for Auxiliary Hardware; 2018.

F. BHMA A156.18 - American National Standard for Materials and Finishes; 2016.

G. BHMA A156.21 - American National Standard for Thresholds; 2014.

H. BHMA A156.22 - American National Standard for Door Gasketing and Edge Seal Systems Sponsor; 2017.

I. BHMA A156.30 - American National Standard for High Security Cylinders; 2014.

J. BHMA A156.115W - American National Standard for Hardware Preparation in Wood Doors with Wood or Steel Frames; 2006.

K. ICC A117.1 - Accessible and Usable Buildings and Facilities; 2017.

L. ITS (DIR) - Directory of Listed Products; current edition.

M. NFPA 70 - National Electrical Code; Most Recent Edition Adopted by Authority Having Jurisdiction, Including All Applicable Amendments and Supplements.

N. NFPA 80 - Standard for Fire Doors and Other Opening Protectives; 2019.

O. UL (DIR) - Online Certifications Directory; Current Edition.

P. UL 437 - Standard for Key Locks; Current Edition, Including All Revisions.

1.4 ADMINISTRATIVE REQUIREMENTS

A. Coordinate the manufacture, fabrication, and installation of products that door hardware is installed on.

B. Pre-installation Meeting: Convene a pre-installation meeting one week prior to commencing work of this section; attendance is required by affected installers and the following:

1. Engineer.
2. Installer's Architectural Hardware Consultant (AHC).
3. Hardware Installer.
4. DRBA Maintenance.

C. Keying Requirements Meeting:

1. Attendance Required:
   a. Contractor.
   b. DRBA.
   c. Engineer.
   d. Installer's Architectural Hardware Consultant (AHC).
   e. Hardware Installer.
   f. DRBA Maintenance.
2. Agenda:
   a. Establish keying requirements.
   b. Verify locksets and locking hardware are functionally correct for project requirements.
   c. Verify that keying and programming complies with project requirements.
   d. Establish keying submittal schedule and update requirements.
3. Incorporate "Keying Requirements Meeting" decisions into keying submittal upon review of door hardware keying system including, but not limited to, the following:
   a. Access control requirements.
   b. Key control system requirements.
   c. Flow of traffic and extent of security required.

4. Record minutes and distribute copies within two days after meeting to participants, with two copies to Engineer, DRBA, participants, and those affected by decisions made.

5. Deliver established keying requirements to manufacturers.

1.5 SUBMITTALS

A. Product Data: Manufacturer's catalog literature for each type of hardware, marked to clearly show products to be furnished for this project, and includes construction details, material descriptions, finishes, and dimensions and profiles of individual components.

B. Shop Drawings - Door Hardware Schedule: Submit detailed listing that includes each item of hardware to be installed on each door. Use door numbering scheme as included in Contract Documents.

1. Prepared by or under supervision of Architectural Hardware Consultant (AHC).

2. Provide complete description for each door listed.

C. Maintenance Data: Include data on operating hardware, lubrication requirements, and inspection procedures related to preventative maintenance.

D. Keying Schedule:

1. Submit three (3) copies of Keying Schedule in compliance with requirements established during Keying Requirements Meeting unless otherwise indicated.

E. Warranty: Submit manufacturer's warranty and ensure that forms have been completed in DRBA's name and registered with manufacturer.

F. Project Record Documents: Record actual locations of concealed equipment, services, and conduit.

G. Maintenance Materials and Tools: Furnish the following for DRBA's use in maintenance of project.

1. Lock Cylinders: One for each master keyed group.

2. Tools: One set of each special wrench or tool applicable for each different or special hardware component, whether supplied by hardware component manufacturer or not.

1.6 QUALITY ASSURANCE

A. Supplier Qualifications: Company with certified Architectural Hardware Consultant (AHC) and Electrified Hardware Consultant (EHC) to assist in work of this Section.

1.7 DELIVERY, STORAGE, AND HANDLING

A. Package hardware items individually; label and identify each package with door opening code to match door hardware schedule.

1.8 WARRANTY

A. Warranty against defects in material and workmanship for period indicated, from Date of Completion.

1. Closers: Five (5) years, minimum.
2. Exit Devices: Three (3) years, minimum.
3. Locksets and Cylinders: Three (3) years, minimum.
4. Other Hardware: Two (2) years, minimum.

PART 2 - PRODUCTS

2.1 DESIGN AND PERFORMANCE CRITERIA

A. Provide specified door hardware as required to make doors fully functional, compliant with applicable codes, and secure to extent indicated.

B. Provide individual items of single type, of same model, and by same manufacturer.

C. Provide door hardware products that comply with the following requirements:

1. Applicable provisions of federal, state, and local codes.
2. Accessibility: ADA Standards and ICC A117.1.
3. Hardware on Fire-Rated Doors: Listed and classified by UL (DIR), ITS (DIR), or testing firm acceptable to authorities having jurisdiction as suitable for application indicated.
4. Hardware Preparation for Wood Doors with Wood or Steel Frames: BHMA A156.115W.
5. Products Requiring Electrical Connection: Listed and classified by UL (DIR) as suitable for the purpose specified.

D. Electrically Operated and/or Controlled Hardware: Provide necessary power supplies, power transfer hinges, relays, and interfaces as required for proper operation; provide wiring between hardware and control components and to building power connection in compliance with NFPA 70.

E. Lock Function: Provide lock and latch function numbers and descriptions of manufacturer’s series. Refer to the Plans/Drawings for Lock Function.

F. Fasteners:

1. Provide fasteners of proper type, size, quantity, and finish that comply with commercially recognized standards for proposed applications.
    a. Aluminum fasteners are not permitted.
    b. Provide Phillips flat-head screws with heads finished to match door surface hardware unless otherwise indicated.
2. Fire-Rated Applications: Comply with NFPA 80.
    a. Provide wood or machine screws for hinges mortised to doors or frames, strike plates to frames, and closers to doors and frames.
    b. Provide steel through bolts for attachment of surface mounted closers, hinges, or exit devices to door panels unless proper door blocking is provided.

2.2 HINGES

A. Manufacturers:

1. McKinney; an Assa Abloy Group company: www.assaabloydss.com/#sle
2. Bommer Industries, Inc: www.bommer.com/#sle
3. Hager Companies: www.hagerco.com/#sle
4. Stanley, dormakaba Group: www.stanleyhardwarefordoors.com/#sle
5. Or Approved Equal.

B. Hinges: Comply with BHMA A156.1, Grade 1.

1. Provide hinges on every swinging door.
2. Provide five-knuckle full mortise butt hinges unless otherwise indicated.
3. Provide following quantity of butt hinges for each door:
    a. Doors From 60" High up to 90" High: Three hinges.

2.3 LOCK CYLINDERS

A. Manufacturers:

1. Schlage, compatible with existing keying system.

B. Lock Cylinders: Provide key access on outside of each lock, unless otherwise indicated.

1. Provide high security mechanical type cylinders, Grade 1, with six-pin core in compliance with BHMA A156.30 or UL 437 at locations indicated.
2. Provide cylinders from same manufacturer as locking device.
3. Provide cams and/or tailpieces as required for locking devices.

4. Within specific Door Sections, when provisions for lock cylinder are being referenced to this Section, provide specified lock cylinder and keyed to building keying system, unless otherwise indicated.

2.4 MORTISE LOCKS

A. Manufacturers:

1. Schlage, an Allegion brand; L-Series Grade 1 Mortise Lock: www.allegion.com/us/#sle

B. Mortise Locks: Comply with BHMA A156.13, Grade 1, Security, 1000 Series.

1. Latchbolt Throw: ¾", minimum.
2. Deadbolt Throw: 1", minimum.
3. Backset: 2-3/4" unless otherwise indicated.
4. Strikes: Provide manufacturer's standard strike for each latchset or lockset with strike box and curved lip extending to protect frame in compliance with indicated requirements.
   a. Flat-Lip Strikes: Provide for locks with three piece antifriction latchbolts as recommended by manufacturer.
   b. Finish: To match lock or latch.

2.5 CLOSERS

A. Manufacturers; Surface Mounted:

1. Corbin Russwin, Norton, Rixson, Sargent, or Yale; an Assa Abloy Group company: www.assaabloydss.com/#sle
2. DORMA USA, Inc.; 8600 Series: www.dorma.com/#sle
3. LCN, an Allegion brand: www.allegion.com/us/#sle
4. Or Approved Equal.

B. Closers: Comply with BHMA A156.4, Grade 1.

1. Type: Surface mounted to door.
2. At door 153 and door 157, mount the closer on the secure side of the door.

2.6 WALL STOPS

A. Manufacturers:

1. Rockwood; an Assa Abloy Group company: www.assaabloydss.com/#sle
2. Ives, an Allegion brand: www.allegion.com/us/#sle
3. Trimco: www.trimcohardware.com/#sle

4. Or Approved Equal.

B. Wall Stops: Comply with BHMA A156.16, Grade 1 and Resilient Material Retention Test as described in this standard.

1. Provide wall stops to prevent damage to wall surface upon opening door.
2. Type: Bumper, concave, wall stop.
3. Material: Aluminum housing with rubber insert.

2.7 THRESHOLDS

A. Thresholds: Comply with BHMA A156.21.

1. Provide threshold at interior doors for transition between two different floor types, and over building expansion joints, unless otherwise indicated.
2. Provide threshold at each exterior door, unless otherwise indicated.
3. Provide threshold with Sound Transmission Class (STC) of 25-30 at locations indicated.
4. Type: Adjustable.
5. Material: Aluminum.
6. Threshold Surface: Fluted horizontal grooves across full width.
7. Field cut threshold to profile of frame and width of door sill for tight fit.
8. Provide non-corroding fasteners at exterior locations.

2.8 WEATHERSTRIPPING AND GASKETING

A. Weatherstripping and Gasketing: Comply with BHMA A156.22.

1. Head and Jamb Type: Adjustable.
2. Door Sweep Type: Encased in retainer.
3. Material: Aluminum, with brush weatherstripping.
4. Provide sound-rated gasketing and automatic door bottom on doors indicated as “Sound-Rated”, “Acoustical”, or with “Sound Transmission Class (STC) rating”; fabricate as continuous gasketing, do not cut or notch gasketing material.

2.9 COAT HOOKS

A. Coat Hooks: Provide on room side of door, screw fastened.

B. Material: Brass.

2.10 SILENCERS

A. Manufacturers:

1. Ives, an Allegion brand: www.allegion.com/us/#sle

2. Trimco: www.trimcohardware.com/#sle

3. Or Approved Equal.

B. Silencers: Provide at equal locations on door frame to mute sound of door's impact upon closing.

1. Single Door: Provide three on strike jamb of frame.

2. Material: Rubber, gray color.

2.11 FINISHES

A. Finishes: Provide door hardware of same finish, unless otherwise indicated.

1. Primary Finish: 630; satin stainless steel, with stainless steel 300 series base material (former US equivalent US32D); BHMA A156.18.

2. Secondary Finish: 626; satin chromium plated over nickel, with brass or bronze base material (former US equivalent US26D); BHMA A156.18.

a. Use secondary finish in kitchens, bathrooms, and other spaces containing chrome or stainless steel finished appliances, fittings, and equipment; provide primary finish on one side of door and secondary finish on other side if necessary.

3. Exceptions:

a. Where base material metal is specified to be different, provide finish that is an equivalent appearance in accordance with BHMA A156.18.

b. Door Closer Covers and Arms: Color as selected by Engineer from manufacturer's standard colors unless otherwise indicated.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Verify that doors and frames are ready to receive this work; labeled, fire-rated doors and frames are properly installed, and dimensions are as indicated on shop drawings.

B. Verify that electric power is available to power operated devices and of correct characteristics.

3.2 INSTALLATION

A. Install hardware in accordance with manufacturer's instructions and applicable codes.

B. Use templates provided by hardware item manufacturer.

C. Door Hardware Mounting Heights: Distance from finished floor to center line of hardware item. As indicated in following list; unless noted otherwise in Door Hardware

Schedule or on the Plans/Drawings.

1. Mounting heights in compliance with ADA Standards:

   a. Locksets: 40-5/16".

3.3 FIELD QUALITY CONTROL

A. Provide an Architectural Hardware Consultant (AHC) to inspect installation and certify that hardware and installation has been furnished and installed in accordance with manufacturer's instructions and as specified.

3.4 ADJUSTING

A. Adjust hardware for smooth operation.

B. Adjust gasketing for complete, continuous seal; replace if unable to make complete seal.

3.5 CLEANING

A. Clean finished hardware in accordance with manufacturer's written instructions after final adjustments have been made.

B. Clean adjacent surfaces soiled by hardware installation.

C. Replace items that cannot be cleaned to manufacturer's level of finish quality at no additional cost.

3.6 PROTECTION

A. Protect finished Work.

B. Do not permit adjacent work to damage hardware or finish.

3.7 METHOD OF MEASUREMENT

A. Work performed under this Section shall be considered incidental to **Lump Sum Pay Item 7: Openings**, and thus will not be measured.

3.8 BASIS OF PAYMENT

A. Work properly performed in accordance with this Section will be paid for at the Lump Sum Unit Price for **Pay Item 7: Openings** Payment for work shall include full compensation for performing all work specified and for the furnishing of all materials, tools, equipment, labor, testing, submittals, and incidentals necessary to complete the work as described in the Contract Documents. Payment will be made on a monthly basis, based on percent completion of the work properly performed and accepted as determined by the Engineer.

3.9 HARDWARE SCHEDULE

A. See Plan Sheet A-601 for door hardware schedule.

B. Provide cylinders and cores at all doors.

C. Provide construction cores, final cores and keys.

D. Cylinders, cores and keys shall be compatible with existing ASSA system.

END OF SECTION 087100

SECTION 088000

GLAZING

PART 1 - GENERAL

1.1 SECTION INCLUDES

A. Glazing units.

B. Glazing compounds.

1.2 RELATED REQUIREMENTS

A. Section 081113 - Hollow Metal Doors and Frames: Glazed borrowed lites.

1.3 REFERENCE STANDARDS

A. ASTM C864 - Standard Specification for Dense Elastomeric Compression Seal Gaskets, Setting Blocks, and Spacers; 2005 (Reapproved 2019).

B. ASTM C920 - Standard Specification for Elastomeric Joint Sealants; 2018.

C. ASTM C1048 - Standard Specification for Heat-Strengthened and Fully Tempered Flat Glass; 2018.

D. ASTM C1193 - Standard Guide for Use of Joint Sealants; 2016.

E. GANA (SM) - GANA Sealant Manual; 2008.

1.4 ADMINISTRATIVE REQUIREMENTS

A. Pre-installation Meeting: Convene a pre-installation meeting one week before starting work of this section; require attendance by each of the affected installers.

1.5 SUBMITTALS

A. Product Data on Glazing Unit Glazing Types: Provide structural, physical and environmental characteristics, size limitations, special handling and installation requirements.

B. Product Data on Glazing Compounds and Accessories: Provide chemical, functional, and environmental characteristics, limitations, special application requirements, and identify available colors.

C. Warranty Documentation: Submit manufacturer warranty and ensure that forms have been completed in DRBA’s name and registered with manufacturer.

1.6 QUALITY ASSURANCE

A. Manufacturer Qualifications: Company specializing in manufacturing the products specified in this section with minimum three (3) years of documented experience.

B. Installer Qualifications: Company specializing in performing work of the type specified and with at least three (3) years documented experience.

1.7 FIELD CONDITIONS

A. Do not install glazing when ambient temperature is less than 40 degrees F.

B. Maintain minimum ambient temperature before, during and twenty-four (24) hours after installation of glazing compounds.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

A. Glass Fabricators:

1. Trulite Glass & Aluminum Solutions, LLC: www.trulite.com/#sle
2. Viracon, Inc.: www.viracon.com/#sle
3. Or Approved Equal.

2.2 GLASS MATERIALS

A. Float Glass: Provide float glass based glazing unless otherwise indicated.

1. Kind FT - Fully Tempered Type: Complies with ASTM C1048.
2. Thicknesses: As indicated; provide greater thickness as required for exterior glazing wind load design.

2.3 GLAZING UNITS

A. Monolithic Interior Vision Glazing:

1. Applications: Interior glazing unless otherwise indicated.
2. Glass Type: Fully tempered float glass.
3. Tint: Clear.
4. Thickness: ¼", nominal.
5. Glazing Method: Wet/dry glazing method, preformed tape and sealant.

2.4 GLAZING COMPOUNDS

A. Silicone Sealant: Single component; neutral curing; capable of water immersion without loss of properties; nonbleeding, non-staining; ASTM C920, Type S, Grade NS, Class 25, Uses M, A, and G; with cured Shore A hardness range of 15 to 25; color as selected.

2.5 ACCESSORIES

A. Setting Blocks: Silicone, with 80 to 90 Shore A durometer hardness; ASTM C864

Option II. Length of 0.1 inch for each square foot of glazing or minimum 4 inch by width of glazing rabbet space minus 1/16 inch by height to suit glazing method and pane weight and area.

B. Glazing Tape: Closed cell polyvinyl chloride (PVC) foam, coiled on release paper over adhesive on two sides, maximum water absorption by volume of 2 percent, designed for compression of 25 percent to effect an air barrier and vapor retarder seal.

PART 3 - EXECUTION

3.1 VERIFICATION OF CONDITIONS

A. Verify that openings for glazing are correctly sized and within tolerances, including those for size, squareness, and offsets at corners.

B. Verify that surfaces of glazing channels or recesses are clean, free of obstructions that may impede moisture movement, weeps are clear, and support framing is ready to receive glazing system.

3.2 PREPARATION

A. Clean contact surfaces with appropriate solvent and wipe dry within maximum of twenty-four (24) hours before glazing. Remove coatings that are not tightly bonded to substrates.

B. Seal porous glazing channels or recesses with substrate compatible primer or sealer.

C. Prime surfaces scheduled to receive sealant where required for proper sealant adhesion.

3.3 INSTALLATION, GENERAL

A. Install glazing in compliance with written instructions of glass, gaskets, and other glazing material manufacturers, unless more stringent requirements are indicated, including those in glazing referenced standards.

B. Install glazing sealants in accordance with ASTM C1193, GANA (SM), and manufacturer’s instructions.

C. Do not exceed edge pressures around perimeter of glass lites as stipulated by glass manufacturer.

D. Prevent glass from coming contact with any contaminating substances that may result from construction operations, including but not limited to the following: weld splatter, fire-safing, plastering, mortar droppings, etc.

3.4 INSTALLATION - WET/DRY GLAZING METHOD (TAPE AND SEALANT)

A. Application - Interior Glazed: Set glazing infills from the interior of the building.

B. Cut glazing tape to length and install against permanent stops, projecting 1/16" above

sight line.

C. Place setting blocks at 1/4 points with edge block no more than 6 inch from corners.

D. Rest glazing on setting blocks and push against tape to ensure full contact at perimeter of pane or unit.

E. Install removable stops, spacer shims inserted between glazing and applied stops at 24" intervals, ¼" below sight line.

F. Fill gaps between pane and applied stop with silicone type sealant to depth equal to bite on glazing, to uniform and level line.

G. Carefully trim protruding tape with knife.

3.5 CLEANING

A. Remove excess glazing materials from finish surfaces immediately after application using solvents or cleaners recommended by manufacturers.

B. Remove nonpermanent labels immediately after glazing installation is complete.

C. Clean glass and adjacent surfaces after sealants are fully cured.

D. Clean glass on both exposed surfaces not more than four (4) days prior to Date of Completion in accordance with glass manufacturer's written recommendations.

3.6 PROTECTION

A. After installation, mark pane with an 'X' by using removable plastic tape or paste; do not mark heat absorbing or reflective glass units.

B. Remove and replace glass that is damaged during construction period prior to Date of Completion.

3.7 METHOD OF MEASUREMENT

A. Work performed under this Section shall be considered incidental to **Lump Sum Pay Item 7: Openings**, and thus will not be measured.

3.8 BASIS OF PAYMENT

A. Work properly performed in accordance with this Section will be paid for at the Lump Sum Unit Price for **Pay Item 7: Openings** Payment for work shall include full compensation for performing all work specified and for the furnishing of all materials, tools, equipment, labor, testing, submittals, and incidentals necessary to complete the work as described in the Contract Documents. Payment will be made on a monthly basis, based on percent completion of the work properly performed and accepted as determined by the Engineer.

END OF SECTION 088000

SECTION 090561

COMMON WORK RESULTS FOR FLOORING PREPARATION

PART 1 - GENERAL

1.1 SECTION INCLUDES

A. This section applies to floors identified in Specifications that are receiving the following types of floor coverings:

1. Resilient tile and sheet.
2. Epoxy Floor.

B. Removal of existing floor coverings.

C. Preparation of existing concrete floor slabs for installation of floor coverings.

D. Testing of concrete floor slabs for moisture and alkalinity (pH).

E. Remediation of concrete floor slabs due to unsatisfactory moisture or alkalinity (pH) conditions.

1. Contractor shall perform all specified remediation of concrete floor slabs. If such remediation is indicated by testing agency's report and is due to a condition not under Contractor’s control or could not have been predicted by examination prior to entering into the contract, a contract modification will be issued.

F. Patching compound.

G. Remedial floor coatings.

H. Preparation of new and existing wood-based floors and subfloors for installation of new floor coverings.

1.2 REFERENCE STANDARDS

A. ASTM C109/C109M - Standard Test Method for Compressive Strength of Hydraulic Cement Mortars (Using 2-in. or [50 mm] Cube Specimens); 2021.

B. ASTM C472 - Standard Test Methods for Physical Testing of Gypsum, Gypsum Plasters and Gypsum Concrete; 2020.

C. ASTM F1869 - Standard Test Method for Measuring Moisture Vapor Emission Rate of Concrete Subfloor Using Anhydrous Calcium Chloride; 2016a.

D. ASTM F2170 - Standard Test Method for Determining Relative Humidity in Concrete Floor Slabs Using in situ Probes; 2019a.

E. RFCI (RWP) - Recommended Work Practices for Removal of Resilient Floor Coverings; 2011.

1.3 ADMINISTRATIVE REQUIREMENTS

A. Coordinate scheduling of cleaning and testing, so that preliminary cleaning has been completed for at least twenty-four (24) hours prior to testing.

1.4 SUBMITTALS

A. Floor Covering and Adhesive Manufacturers' Product Literature: For each specific combination of substrate, floor covering, and adhesive to be used; showing:

1. Moisture and alkalinity (pH) limits and test methods.
2. Manufacturer's required bond/compatibility test procedure.

B. Remedial Materials Product Data: Manufacturer's published data on each product to be used for remediation.

C. Testing Agency's Report:

1. Description of areas tested; include floor plans and photographs if helpful.
2. Summary of conditions encountered.
3. Moisture and alkalinity (pH) test reports.
4. Copies of specified test methods.
5. Recommendations for remediation of unsatisfactory surfaces.
6. Product data for recommended remedial coating.
7. Submit report to Engineer.
8. Submit report not more than two (2) business days after conclusion of testing.

D. Adhesive Bond and Compatibility Test Report.

E. Copy of RFCI (RWP).

1.5 QUALITY ASSURANCE

A. Moisture and alkalinity (pH) testing shall be performed by an independent testing agency employed and paid by Contractor.

B. Contractor's Responsibility Relating to Independent Agency Testing:

1. Provide access for and cooperate with testing agency.
2. Confirm date of start of testing at least ten (10) days prior to actual start.
3. Allow at least four (4) business days on site for testing agency activities.
4. Achieve and maintain specified ambient conditions.

5. Notify Engineer when specified ambient conditions have been achieved and when testing will start.

1.6 DELIVERY, STORAGE, AND HANDLING

A. Deliver, store, handle, and protect products in accordance with manufacturer's instructions and recommendations.

B. Deliver materials in manufacturer's packaging; include installation instructions.

C. Keep materials from freezing.

1.7 FIELD CONDITIONS

A. Maintain ambient temperature in spaces where concrete testing is being performed, and for at least forty-eight (48) hours prior to testing, at not less than 65 degrees F or more than 85 degrees F.

B. Maintain relative humidity in spaces where concrete testing is being performed, and for at least forty-eight (48) hours prior to testing, at not less than 40 percent and not more than 60 percent.

PART 2 - PRODUCTS

2.1 MATERIALS

A. Patching Compound: Floor covering manufacturer's recommended product, suitable for conditions, and compatible with adhesive and floor covering. In the absence of any recommendation from flooring manufacturer, provide a product with the following characteristics:

1. Cementitious moisture, mildew, and alkali-resistant compound, compatible with floor, floor covering, and floor covering adhesive, and capable of being feathered to nothing at edges.
2. Latex or polyvinyl acetate additions are permitted; gypsum content is prohibited.
3. Compressive Strength: 3000 psi, minimum, after 28 days, when tested in accordance with ASTM C109/C109M or ASTM C472, whichever is appropriate.

B. Remedial Floor Coating: Single or multi-layer coating or coating/overlay combination intended by its manufacturer to resist water vapor transmission to degree sufficient to meet flooring manufacturer's emission limits, resistant to the level of alkalinity (pH) found, and suitable for adhesion of flooring without further treatment.

1. Thickness: As required for application and in accordance with manufacturer's installation instructions.

2. Use product recommended by testing agency and flooring system manufacturer.

3. Products: Subject to compliance with flooring manufacturer's requirements, the following products may be provided.

   a. ARDEX Engineered Cements; ARDEX MC RAPID: www.ardexamericas.com/#sle

   b. Crown Polymers, a division of American Polymers Corporation; CrownShield 8303 MVB: www.crownpolymers.com/#sle

   c. Custom Building Products; TechMVC Moisture Vapor and Alkalinity Barrier: www.custombuildingproducts.com/#sle

   d. H.B. Fuller Construction Products, Inc; TEC LiquiDam with TEC Level Set 200 SLU: www.tecspecialty.com/#sle

   e. Maxxon Corporation; Aquafin SG2: www.maxxon.com/#sle

   f. Sika Corporation; Sikafloor Moisture Tolerance Epoxy Primer and Sikafloor Self-Leveling Moisture Tolerant Resurfacer: www.sikafloorusa.com/#sle

   g. Or Approved Equal.

PART 3 - EXECUTION

3.1 CONCRETE SLAB PREPARATION

A. Perform following operations in the order indicated:

1. Existing concrete slabs (on-grade and elevated) with existing floor coverings:

   a. Visual observation of existing floor covering, for adhesion, water damage, alkaline deposits, and other defects.

   b. Removal of existing floor covering.

2. Preliminary cleaning.

3. Moisture vapor emission tests; 3 tests in the first 1,000 square feet and one test in each additional 1,000 square feet, unless otherwise indicated or required by flooring manufacturer.

4. Internal relative humidity tests; in same locations as moisture vapor emission tests, unless otherwise indicated.

5. Alkalinity (pH) tests; in same locations as moisture vapor emission tests, unless otherwise indicated.

6. Specified remediation, if required.

7. Remove subfloor ridges and bumps. Fill low spots, cracks, joints, holes, and other defects with subfloor filler.

8. Apply, trowel, and float filler to achieve smooth, flat, hard surface. Grind irregularities above the surface level. Prohibit traffic until filler is cured.

9. Other preparation specified.

10. Adhesive bond and compatibility test.

11. Protection.

B. Remediation:

1. Active Water Leaks or Continuing Moisture Migration to Surface of Slab: Correct this condition before doing any other remediation; re-test after correction.

2. Excessive Moisture Emission or Relative Humidity: If an adhesive that is resistant to the level of moisture present is available and acceptable to flooring manufacturer, use that adhesive for installation of the flooring; if not, apply remedial floor coating or remedial sheet membrane over entire suspect floor area.

3. Excessive Alkalinity (pH): If remedial floor coating is necessary to address excessive moisture, no additional remediation is required; if not, if an adhesive that is resistant to the level present is available and acceptable to the flooring manufacturer, use that adhesive for installation of the flooring; otherwise, apply a skim coat of specified patching compound over entire suspect floor area.

3.2 REMOVAL OF EXISTING FLOOR COVERINGS

A. Comply with local, State, and federal regulations and recommendations of RFCI Recommended Work Practices for Removal of Resilient Floor Coverings, as applicable to floor covering being removed.

B. Dispose of removed materials in accordance with local, State, and federal regulations and as specified.

3.3 PRELIMINARY CLEANING

A. Clean floors of dust, solvents, paint, wax, oil, grease, asphalt, residual adhesive, adhesive removers, film-forming curing compounds, sealing compounds, alkaline salts, excessive laitance, mold, mildew, and other materials that might prevent adhesive bond.

B. Do not use solvents or other chemicals for cleaning.

3.4 MOISTURE VAPOR EMISSION TESTING

A. Where the floor covering manufacturer’s requirements conflict with either the referenced test method or this Specification, comply with the manufacturer’s requirements.

B. Where this Specification conflicts with the referenced test method, comply with the requirements of this section.

C. Test in accordance with ASTM F1869 and as follows.

D. Plastic sheet test and mat bond test may not be substituted for the specified ASTM test method, as those methods do not quantify the moisture content sufficiently.

E. In the event that test values exceed floor covering manufacturer's limits, perform remediation as indicated. In the absence of manufacturer limits, perform remediation if test values exceed 3 pounds per 1,000 square feet per twenty-four (24) hours.

F. Report: Report the information required by the test method.

3.5 INTERNAL RELATIVE HUMIDITY TESTING

A. Where the floor covering manufacturer's requirements conflict with either the referenced test method or this Specification, comply with the manufacturer's requirements.

B. Where this Specification conflicts with the referenced test method, comply with the requirements of this Section.

C. Test in accordance with ASTM F2170 Procedure A and as follows.

D. Testing with electrical impedance or resistance apparatus may not be substituted for the specified ASTM test method, as the values determined are not comparable to the ASTM test values and do not quantify the moisture content sufficiently.

E. In the event that test values exceed floor covering manufacturer's limits, perform remediation as indicated. In the absence of manufacturer limits, perform remediation if any test value exceeds 75 percent relative humidity.

F. Report: Report the information required by the test method.

3.6 ALKALINITY TESTING

A. Where the floor covering manufacturer's requirements conflict with either the referenced test method or this specification, comply with the manufacturer's requirements.

B. In the event that test values exceed floor covering manufacturer's limits, perform remediation as indicated. In the absence of manufacturer limits, perform remediation if alkalinity (pH) test value is over 10.

3.7 PREPARATION

A. See individual floor covering section(s) for additional requirements.

B. Comply with requirements and recommendations of floor covering manufacturer.

C. Fill and smooth surface cracks, grooves, depressions, control joints and other non-moving joints, and other irregularities with patching compound.

D. Do not fill expansion joints, isolation joints, or other moving joints.

3.8 ADHESIVE BOND AND COMPATIBILITY TESTING

A. Comply with requirements and recommendations of floor covering manufacturer.

3.9 APPLICATION OF REMEDIAL FLOOR COATING

A. Comply with requirements and recommendations of coating manufacturer.

3.10 METHOD OF MEASUREMENT

A. Work performed under this Section shall be considered incidental to **Lump Sum Pay Item 8: Finishes,** and thus will not be measured.

3.11 BASIS OF PAYMENT

A. Work properly performed in accordance with this Section will be paid for at the Lump Sum Unit Price for **Pay Item 8: Finishes.** Payment for work shall include full compensation for performing all work specified and for the furnishing of all materials, tools, equipment, labor, testing, submittals, and incidentals necessary to complete the work as described in the Contract Documents. Payment will be made on a monthly basis, based on percent completion of the work properly performed and accepted as determined by the Engineer.

END OF SECTION 090561

SECTION 092116

GYPSUM BOARD ASSEMBLIES

PART 1 - GENERAL

1.1 SECTION INCLUDES

A. Metal stud wall, ceiling and soffit framing.

B. Metal framing for top of wall bracing and ceiling framing.

C. Acoustic insulation.

D. Gypsum wallboard.

E. Joint treatment and accessories.

1.2 RELATED REQUIREMENTS

A. Section 061000 - Rough Carpentry: Wood blocking product and execution requirements.

B. Section 079005 - Joint Sealers: Acoustic sealant.

1.3 REFERENCE STANDARDS

A. AISI SG02-1 - North American Specification for the Design of Cold-Formed Steel Structural Members; American Iron and Steel Institute; 2001 with 2004 supplement. (replaced SG-971)

B. ASTM A653/A653M - Standard Specification for Steel Sheet, Zinc-Coated (Galvanized) or Zinc-Iron Alloy-Coated (Galvannealed) by the Hot-Dip Process; 2019a.

C. ASTM C475/C475M - Standard Specification for Joint Compound and Joint Tape for Finishing Gypsum Board; 2017.

D. ASTM C514 - Standard Specification for Nails for the Application of Gypsum Board; 2004 (Reapproved 2014).

E. ASTM C645 - Standard Specification for Nonstructural Steel Framing Members; 2018.

F. ASTM C665 - Standard Specification for Mineral-Fiber Blanket Thermal Insulation for Light Frame Construction and Manufactured Housing; 2017.

G. ASTM C754 - Standard Specification for Installation of Steel Framing Members to Receive Screw-Attached Gypsum Panel Products; 2018.

H. ASTM C840 - Standard Specification for Application and Finishing of Gypsum Board;

2019b.

I. ASTM C954 - Standard Specification for Steel Drill Screws for the Application of Gypsum Panel Products or Metal Plaster Bases to Steel Studs From 0.033 in. (0.84 mm) to 0.112 in. (2.84 mm) in Thickness; 2018.

J. ASTM C1002 - Standard Specification for Steel Self-Piercing Tapping Screws for Application of Gypsum Panel Products or Metal Plaster Bases to Wood Studs or Steel Studs; 2018.

K. ASTM C1047 - Standard Specification for Accessories For Gypsum Wallboard and Gypsum Veneer Base; 2019.

L. ASTM C1396/C1396M - Standard Specification for Gypsum Board; 2017.

M. ASTM C1629/C1629M - Standard Classification for Abuse-Resistant Nondecorated Interior Gypsum Panel Products and Fiber-Reinforced Cement Panels; 2019.

N. ASTM C1658/C1658M - Standard Specification for Glass Mat Gypsum Panels; 2019.

O. ASTM D3273 - Standard Test Method for Resistance to Growth of Mold on the Surface of Interior Coatings in an Environmental Chamber; 2016.

P. ASTM E84 - Standard Test Method for Surface Burning Characteristics of Building Materials; 2019b.

Q. ASTM E90 - Standard Test Method for Laboratory Measurement of Airborne Sound Transmission Loss of Building Partitions and Elements; 2009 (Reapproved 2016).

R. ASTM E119 - Standard Test Methods for Fire Tests of Building Construction and Materials; 2019.

S. ASTM E413 - Classification for Rating Sound Insulation; 2016.

T. ASTM F1233 - Standard Test Method for Security Glazing Materials and Systems.

U. GA-214 - Recommended Levels of Gypsum Board Finish; Gypsum Association; 2007.

V. GA-216 - Application and Finishing of Gypsum Panel Products; 2016.

1.4 SUBMITTALS

A. Shop Drawings: Indicate special details associated with vertical deflection joints and acoustic seals. Provide special details for suspended ceilings. Indicate layout, anchorage to structure, type and location of fasteners, framed openings, accessories, and items of related work.

B. Product Data: Provide data on metal framing, gypsum board, accessories, and joint finishing system.

C. Product Data: Provide manufacturer's data on partition head to structure connectors, showing compliance with requirements.

1.5 QUALITY ASSURANCE

A. Perform in accordance with ASTM C 840. Comply with requirements of GA-600 for fire-rated assemblies.

1.6 REGULATORY REQUIREMENTS

A. Conform to applicable code for fire rated assemblies as indicated on the Plans/Drawings.

1.7 DELIVERY, HANDLING, AND STORAGE

A. Deliver materials to project with manufacturer's UL LISTED Labels intact and legible.

PART 2 - PRODUCTS

2.1 GYPSUM BOARD ASSEMBLIES

A. Provide completed assemblies per the Plans/Drawings.

2.2 METAL FRAMING MATERIALS

A. Manufacturers - Metal Framing, Connectors, and Accessories:

1. Clarkwestern Dietrich Building Systems LLC: www.clarkdietrich.com/#sle
2. Marino: www.marinoware.com/#sle
3. SCAFCO Corporation: www.scafco.com/#sle
4. Or Approved Equal.

B. Non-Loadbearing Framing System Components: ASTM C645; galvanized sheet steel, of size and properties necessary to comply with ASTM C754 for the spacing indicated, with maximum deflection of wall framing of L/360 at 5 psf.

1. Exception: The minimum metal thickness and section properties requirements of ASTM C 645 are waived provided steel of 40 ksi minimum yield strength is used, the metal is continuously dimpled, the effective thickness is at least twice the base metal thickness, and maximum stud heights are determined by testing in accordance with ASTM E 72 using assemblies specified by ASTM C 754.
2. Studs: "C" shaped with flat or formed webs with knurled faces.
3. Runners: "U" shaped, sized to match studs.
4. Ceiling Channels: C shaped.

5. Resilient Sound Isolation Clips: Steel resilient clips with molded rubber isolators, attaches to framing; improves noise isolation performance of wall and floor-ceiling assemblies.

C. Partition Head to Structure Connections: Provide mechanical anchorage devices that accommodate deflection using slotted holes, screws and anti-friction bushings, preventing rotation of studs while maintaining structural performance of partition.

1. Structural Performance: Maintain lateral load resistance and vertical movement capacity required by applicable code, when evaluated in accordance with AISI North American Specification for the Design of Cold-Formed Steel Structural Members.
2. Material: ASTM A653/A653M steel sheet, SS Grade 50/340, with G60/Z180 hot dipped galvanized coating.
3. Provide kickers / framing for top of wall and soffits as necessary.

D. Non-structural Framing Accessories:

1. Framing Connectors: ASTM A653/A653M G90 galvanized steel clips; secures cold rolled channel to wall studs for lateral bracing.

2.3 BOARD MATERIALS

A. Manufacturers - Gypsum-Based Board:

1. CertainTeed Corporation: www.certainteed.com/#sle
2. Georgia-Pacific Gypsum: https://buildgp.com/gypsum/#sle
3. National Gypsum Company: www.nationalgypsum.com/#sle
4. USG Corporation: www.usg.com/#sle
5. Or Approved Equal.

B. Cementitious Underlayment:

1. Application: High-traffic areas indicated.
2. Mold Resistance: Score of 10, when tested in accordance with ASTM D3273.
3. Thickness: ¼".
4. Edges: Square.
5. Paper-Faced Products:
   a. USG Corporation; Fiberock Brand Underlayment ¼" (6.4 mm): www.usg.com/#sle
   b. Or Approved Equal.

C. Gypsum Wallboard: Paper-faced gypsum panels as defined in ASTM C1396/C1396M; sizes to minimize joints in place; ends square cut.

1. Application: Use for vertical surfaces, unless otherwise indicated.
2. Glass mat faced gypsum panels, as defined in ASTM C1658/C1658M, suitable for paint finish, of the same core type and thickness may be substituted for paper-faced board.
3. Thickness:
    a. Vertical Surfaces: 5/8".
4. Paper-Faced Products:
    a. CertainTeed Corporation; Type X Drywall: www.certainteed.com/#sle
    b. Georgia-Pacific Gypsum; ToughRock Fireguard X: https://buildgp.com/gypsum
    c. USG Corporation; Sheetrock Brand EcoSmart Panels Firecode X 5/8". (15.9 mm): www.usg.com/#sle
    d. Or Approved Equal.

D. Ceiling Board: Special sag resistant gypsum ceiling board as defined in ASTM C1396/C1396M; sizes to minimize joints in place; ends square cut.

1. Application: Ceilings, unless otherwise indicated.
2. Thickness: ½".
3. Edges: Tapered.
4. Products:
    a. CertainTeed Corporation; Interior Ceiling Drywall: www.certainteed.com/#sle
    b. Georgia-Pacific Gypsum; ToughRock Span 24 Ceiling Board: https://buildgp.com/gypsum
    c. USG Corporation; Sheetrock Brand UltraLight Panels ½" (12.7 mm): www.usg.com/#sle
    d. Or Approved Equal.

2.4 ACCESSORIES

A. Acoustic Insulation: ASTM C665; preformed glass fiber, friction fit type, un-faced.

B. Sound Isolation Tape: Elastomeric foam tape for sound decoupling.

1. Surface Burning Characteristics: Provide assemblies with flame spread index of 75 or less and smoke developed index of 450 or less, when tested in accordance with ASTM E84.
2. Tape Thickness: ¼".

C. Acoustic Sealant: Acrylic emulsion latex or water-based elastomeric sealant; do not

use solvent-based non-curing butyl sealant.

D. Finishing Accessories: ASTM C1047, rigid plastic, unless otherwise indicated.

1. Types: As detailed or required for finished appearance.
2. Special Shapes: In addition to conventional cornerbead and control joints, provide U-bead at exposed panel edges.

E. Beads, Joint Accessories, and Other Trim: ASTM C1047, rigid plastic, galvanized steel, or rolled zinc, unless noted otherwise.

F. Joint Materials: ASTM C475 and as recommended by gypsum board manufacturer for project conditions.

1. Tape: 2" wide, coated glass fiber tape for joints and corners, except as otherwise indicated.
2. Tape: 2" wide, creased paper tape for joints and corners, except as otherwise indicated.
3. Ready-mixed vinyl-based joint compound.
4. Powder-type vinyl-based joint compound.
5. Chemical hardening type compound.

G. Finishing Compound: Surface coat and primer, takes the place of skim coating.

H. Screws for Attachment to Steel Members Less Than 0.03 inch In Thickness, to Wood Members, and to Gypsum Board: ASTM C1002; self-piercing tapping type; cadmium-plated for exterior locations.

I. Screws for Attachment to Steel Members From 0.033 to 0.112 Inch in Thickness: ASTM C954; steel drill screws for application of gypsum board to loadbearing steel studs.

J. Screws: ASTM C 1002; self-piercing tapping type; cadmium-plated for exterior locations.

K. Staples: ASTM C 840.

L. Anchorage to Substrate: Tie wire, screws, and other metal supports, of type and size to suit application; to rigidly secure materials in place.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Verify that project conditions are appropriate for work of this Section to commence.

3.2 FRAMING INSTALLATION

A. Metal Framing: Install in accordance with ASTM C754 and manufacturer's instructions.

B. Suspended Ceilings and Soffits: Space framing and furring members as indicated.

1. Level ceiling system to a tolerance of 1/600.
2. Laterally brace entire suspension system, to structure above.
3. Install bracing as required at exterior locations to resist wind uplift.

C. Studs: Space studs as indicated.

1. Extend partition framing to structure where indicated and to ceiling in other locations.
2. Partitions Terminating at Ceiling: Attach ceiling runner securely to ceiling framing in accordance with details.
3. Partitions Terminating at Structure: Attach extended leg top runner to structure, maintain clearance between top of studs and structure, and brace both flanges of studs with continuous bridging.
4. Partitions Terminating at Structure: Attach top runner to structure, maintain clearance between top of studs and structure, and connect studs to track using specified mechanical devices in accordance with manufacturer's instructions; verify free movement of top of stud connections; do not leave studs unattached to track.

D. Openings: Reinforce openings as required for weight of doors or operable panels, using not less than double studs at jambs.

E. Connections: Minimum (4) #12 screws per connection of cold formed metal framing members.

F. Blocking: Install wood blocking for support of:

1. Framed openings.
2. Wall-mounted door hardware.

3.3 ACOUSTIC ACCESSORIES INSTALLATION

A. Acoustic Insulation: Place tightly within spaces, around cut openings, behind and around electrical and mechanical items within partitions, and tight to items passing through partitions.

B. Sound Isolation Tape: Apply to vertical studs and top and bottom tracks/runners in accordance with manufacturer's instructions.

C. Acoustic Sealant: Install as follows:

1. Place two beads continuously on substrate before installation of perimeter framing members.

2. Place continuous bead at perimeter of each layer of gypsum board.

3. In non-fire-rated construction, seal around all penetrations by conduit, pipe, ducts, and rough-in boxes; and other penetrations.

3.4 INSTALLATION OF TRIM AND ACCESSORIES

A. Control Joints: Place control joints consistent with lines of building spaces and as directed.

1. Not more than thirty (30) feet apart on walls and ceilings over fifty (50) feet long.

B. Corner Beads: Install at external corners, using longest practical lengths.

C. Edge Trim: Install at locations where gypsum board abuts dissimilar materials and as indicated.

3.5 JOINT TREATMENT

A. Paper Faced Gypsum Board: Use fiberglass joint tape, bedded with ready-mixed vinyl-based; or powder-type vinyl-based; or chemical hardening type joint compound and finished with ready-mixed vinyl-based; or powder-type vinyl-based; or chemical hardening type joint compound.

B. Finish gypsum board in accordance with levels defined in ASTM C840, as follows:

1. Level 4: Walls and ceilings to receive paint finish or wall coverings, unless otherwise indicated.

2. Level 4: Walls and ceilings to receive paint finish or wall coverings, unless otherwise indicated.

3. Level 1: Fire rated wall areas above finished ceilings, whether or not accessible in the completed construction.

C. Finish gypsum board in scheduled areas in accordance with levels defined in GA-214; or ASTM C 840 and as scheduled below.

1. Above Finished Ceilings Concealed From View: Level 1.

2. Walls and Ceilings to Receive Flat Paint Finish: Level 4.

D. Tape, fill, and sand exposed joints, edges, and corners to produce smooth surface ready to receive finishes.

1. Feather coats of joint compound so that camber is maximum 1/32”.

2. Taping, filling, and sanding is not required at surfaces behind adhesive applied ceramic tile and fixed cabinetry.

3. Taping, filling and sanding is not required at base layer of double layer applications.

E. Fill and finish joints and corners of cementitious backing board as recommended by manufacturer.

3.6 TOLERANCES

A. Maximum Variation of Finished Gypsum Board Surface from True Flatness: one-eighth (1/8) inch in ten (10) feet in any direction.

3.7 FINISH LEVEL SCHEDULE (SEE 1.03 REFERENCES FOR DEFINITION)

A. Level 1: Above finished ceilings concealed from view.

B. Level 2: Utility areas and areas behind cabinetry or where FRP will be applied.

C. Level 4: Walls and ceilings scheduled to receive flat paint finish.

3.8 METHOD OF MEASUREMENT

A. Work performed under this Section shall be considered incidental to **Lump Sum Pay Item 8: Finishes,** and thus will not be measured.

3.9 BASIS OF PAYMENT

A. Work properly performed in accordance with this Section will be paid for at the Lump Sum Unit Price for **Pay Item 8: Finishes.** Payment for work shall include full compensation for performing all work specified and for the furnishing of all materials, tools, equipment, labor, testing, submittals, and incidentals necessary to complete the work as described in the Contract Documents. Payment will be made on a monthly basis, based on percent completion of the work properly performed and accepted as determined by the Engineer.

END OF SECTION 092116

SECTION 095100

ACOUSTICAL CEILINGS

PART 1 - GENERAL

1.1 SECTION INCLUDES

A. Suspended metal grid ceiling system.

B. Acoustical units.

1.2 REFERENCE STANDARDS

A. ASTM A653/A653M - Standard Specification for Steel Sheet, Zinc-Coated (Galvanized) or Zinc-Iron Alloy-Coated (Galvannealed) by the Hot-Dip Process; 2019a.

B. ASTM C635/C635M - Standard Specification for the Manufacture, Performance, and Testing of Metal Suspension Systems for Acoustical Tile and Lay-in Panel Ceilings; 2017.

C. ASTM C636/C636M - Standard Practice for Installation of Metal Ceiling Suspension Systems for Acoustical Tile and Lay-In Panels; 2013.

D. ASTM C665 - Standard Specification for Mineral-Fiber Blanket Thermal Insulation for Light Frame Construction and Manufactured Housing; 2017.

E. ASTM E1264 - Standard Classification for Acoustical Ceiling Products; 2019.

1.3 SUBMITTALS

A. Product Data: Provide data on suspension system components and acoustical units.

B. Samples: Submit two full size samples illustrating material and finish of acoustical units.

C. Maintenance Materials: Furnish the following for DRBA's use in maintenance of project.

1. Extra Acoustical Units: Quantity equal to 5 percent of total installed.

1.4 QUALITY ASSURANCE

A. Suspension System Manufacturer Qualifications: A company specializing in manufacturing the products specified in this section with a minimum of ten (10) years of documented experience.

B. Acoustical Unit Manufacturer Qualifications: A company specializing in manufacturing the products specified in this section with a minimum of ten (10) years of documented experience.

C. Acoustical Ceiling System Installer: A company specializing in installation of the products specified in this section with a minimum of five (5) years of documented experience.

1.5 FIELD CONDITIONS

A. Maintain uniform temperature of minimum 60 degrees F, and maximum humidity of 40 percent prior to, during, and after acoustical unit installation.

PART 2 - PRODUCTS

2.1 ACOUSTICAL UNITS

A. Acoustical Panels, Type ACT-1: Mineral fiber with membrane-faced overlay, with the following characteristics:

1. Classification: ASTM E1264 Type IV.
2. Size: 24" x 24".
3. Thickness: ¾".
4. Panel Edge: Square.
5. Suspension System: Exposed grid.
6. Products:
   a. Armstrong World Industries, Inc.; Ultima: www.armstrongceilings.com/#sle
   b. USG Corporation; Mars Acoustical Panels: www.usg.com/ceilings/#sle
   c. Or Approved Equal.

2.2 SUSPENSION SYSTEM(S)

A. Metal Suspension Systems - General: Complying with ASTM C635/C635M; die cut and interlocking components, with perimeter moldings, hold down clips, stabilizer bars, clips, and splices as required.

B. Exposed Suspension System, Type 1: Hot-dipped galvanized steel grid with steel cap.

1. Structural Classification: Heavy-duty, when tested in accordance with ASTM C635/C635M.
2. Finish: Baked-on polyester paint.
3. Color: White.
4. Panel Installation Requirements: System designed to accept panels field-cut to size and field-revealed to provide adequate lay-in edges.
5. Products:

a. USG Corporation; Donn Brand ZXLA 15/16" Acoustical Suspension System: www.usg.com/ceilings/#sle

b. Armstrong World Industries, Inc.; PRELUDE XL 15/16” Exposed Tee: www.armstrongceilings.com/#sle

c. Or Approved Equal.

2.3 ACCESSORIES

A. Support Channels and Hangers: Galvanized steel; size and type to suit application, seismic requirements, and ceiling system flatness requirement specified.

B. Hanger Wire: 12-gage 0.08 inch galvanized steel wire.

C. Hold-Down Clips: Manufacturer’s standard clips to suit application.

D. Perimeter Moldings: Same metal and finish as grid.

1. Angle Molding: L-shaped, for mounting at same elevation as face of grid.
2. Acoustical Sealant For Perimeter Moldings: Non-hardening, non-skinning, for use in conjunction with suspended ceiling system.

E. Touch-up Paint: Type and color to match acoustical and grid units.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Verify existing conditions before starting work.

B. Verify that layout of hangers will not interfere with other work.

3.2 Preparation

A. Install after major above-ceiling work is complete.

B. Coordinate the location of hangers with other work.

3.3 INSTALLATION - SUSPENSION SYSTEM

A. Rigidly secure system, including integral mechanical and electrical components, for maximum deflection of 1:360.

B. Locate system on room axis according to reflected plan.

C. Perimeter Molding: Install at intersection of ceiling and vertical surfaces and at junctions with other interruptions.

1. Use longest practical lengths.
2. Overlap and rivet corners.

D. Suspension System, Non-Seismic: Hang suspension system independent of walls, columns, ducts, pipes and conduit. Where carrying members are spliced, avoid visible displacement of face plane of adjacent members.

E. Where ducts or other equipment prevent the regular spacing of hangers, reinforce the nearest affected hangers and related carrying channels to span the extra distance.

F. Do not support components on main runners or cross runners if weight causes total dead load to exceed deflection capability.

G. Support fixture loads using supplementary hangers located within six (6) inches of each corner, or support components independently.

H. Do not eccentrically load system or induce rotation of runners.

3.4 INSTALLATION - ACOUSTICAL UNITS

A. Install acoustical units in accordance with manufacturer's instructions.

B. Fit acoustical units in place, free from damaged edges or other defects detrimental to appearance and function.

C. Fit border trim neatly against abutting surfaces.

D. Install acoustical units level, in uniform plane, and free from twist, warp, and dents.

E. Cutting Acoustical Units:

1. Make field cut edges of same profile as factory edges.

F. Where round obstructions occur, provide preformed closures to match perimeter molding.

G. Lay acoustical insulation for a distance of 48" either side of acoustical partitions.

H. Install hold-down clips on each panel to retain panels tight to grid system; comply with fire rating requirements.

I. Install hold-down clips on panels within twenty (20) feet of an exterior door.

3.5 TOLERANCES

A. Maximum Variation from Flat and Level Surface: one-eighth (1/8) inch in ten (10) feet.

B. Maximum Variation from Plumb of Grid Members Caused by Eccentric Loads: 2 degrees.

3.6 CLEANING

A. Clean surfaces.

B. Replace damaged or abraded components.

3.7 METHOD OF MEASUREMENT

A. Work performed under this Section shall be considered incidental to **Lump Sum Pay Item 8: Finishes,** and thus will not be measured.

3.8 BASIS OF PAYMENT

A. Work properly performed in accordance with this Section will be paid for at the Lump Sum Unit Price for **Pay Item 8: Finishes.** Payment for work shall include full compensation for performing all work specified and for the furnishing of all materials, tools, equipment, labor, testing, submittals, and incidentals necessary to complete the work as described in the Contract Documents. Payment will be made on a monthly basis, based on percent completion of the work properly performed and accepted as determined by the Engineer.

END OF SECTION 095100

SECTION 096500

RESILIENT FLOORING

PART 1 - GENERAL

1.1 SECTION INCLUDES

A. Resilient tile flooring.

B. Resilient base.

C. Installation accessories.

1.2 SUBMITTALS

A. Product Data: Provide data on specified products, describing physical and performance characteristics; including sizes, patterns and colors available; and installation instructions.

B. Shop Drawings: Indicate seaming plans and floor patterns.

C. Selection Samples: Submit manufacturer's complete set of color samples for Engineer's initial selection.

D. Maintenance Data: Include maintenance procedures, recommended maintenance materials, and suggested schedule for cleaning, stripping, and re-waxing.

1.3 DELIVERY, STORAGE, AND HANDLING

A. Upon receipt, immediately remove any shrink-wrap and check materials for damage and the correct style, color, quantity and run numbers.

B. Store all materials off of the floor in an acclimatized, weather-tight space.

C. Maintain temperature in storage area between 55 degrees F and 90 degrees F.

1.4 FIELD CONDITIONS

A. Store materials for not less than forty-eight (48) hours prior to installation in area of installation at a temperature of 70 degrees F to achieve temperature stability. Thereafter, maintain conditions above 55 degrees F.

PART 2 PRODUCTS

2.1 TILE FLOORING

A. Vinyl Composition Tile – Type VCT-1: Homogeneous, with color extending throughout thickness.

1. Manufacturers:

a. Armstrong Flooring; Standard Execelon Imperial Texture: www.armstrongflooring.com/#sle.

b. Johnsonite, a Tarkett Company; VCT II: https://commercial.tarkett.com/

c. Or approved equal.

2. Minimum Requirements: Comply with ASTM F1066, of Class corresponding to type specified.

3. Size: 12"x 12".

4. Thickness: 0.125 inch.

5. Color: To be selected by Engineer from manufacturer's full range.

2.2 RESILIENT BASE

A. Resilient Base - Type RB-1: ASTM F1861, Type TS rubber, vulcanized thermoset; style as scheduled.

1. Manufacturers:

a. Roppe Corporation; 700 Series Wall Base System: www.roppe.com/#sle.

b. Johnsonite, a Tarkett Company; Duracove Thermoplastic Rubber: https://commercial.tarkett.com/

c. Or approved equal.

2. Height: 4".

3. Thickness: 0.125 inch.

4. Finish: Satin.

5. Length: Roll.

6. Color: To be selected by Engineer from manufacturer's full range.

7. Accessories: Pre-molded external corners and internal corners.

2.3 ACCESSORIES

A. Primers, Adhesives, and Seam Sealer: Waterproof; types recommended by flooring manufacturer.

B. Moldings, Transition and Edge Strips: Same material as flooring.

C. Sealer and Wax: Types recommended by flooring manufacturer.

D. Sound Control Underlayment: Types recommended by flooring manufacturer.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Verify that surfaces are flat to tolerances acceptable to flooring manufacturer, free of cracks that might telegraph through flooring, clean, dry, and free of curing compounds, surface hardeners, and other chemicals that might interfere with bonding of flooring to substrate.

B. Verify that wall surfaces are smooth and flat within the tolerances specified for that type of work, are dust-free, and are ready to receive resilient base.

C. Verify that required floor-mounted utilities are in correct location.

3.2 PREPARATION

A. Prepare floor substrates for installation of flooring in accordance with Section 090561 - Common Work Results For Flooring Preparation.

3.3 INSTALLATION - GENERAL

A. Starting installation constitutes acceptance of subfloor conditions.

B. Install in accordance with manufacturer's written instructions.

3.4 INSTALLATION - TILE FLOORING

A. Mix tile from container to ensure shade variations are consistent when tile is placed, unless otherwise indicated in manufacturer's installation instructions.

3.5 INSTALLATION - RESILIENT BASE

A. Fit joints tightly and make vertical. Maintain minimum dimension of 18" between joints.

B. Install base on solid backing. Bond tightly to wall and floor surfaces.

3.6 METHOD OF MEASUREMENT

A. Work performed under this Section shall be considered incidental to **Lump Sum Pay Item 8: Finishes,** and thus will not be measured.

3.7 BASIS OF PAYMENT

A. Work properly performed in accordance with this Section will be paid for at the Lump Sum Unit Price for **Pay Item 8: Finishes.** Payment for work shall include full compensation for performing all work specified and for the furnishing of all materials, tools, equipment, labor, testing, submittals, and incidentals necessary to complete the work as described in the Contract Documents. Payment will be made on a monthly basis, based on percent completion of the work properly performed and accepted as determined by the Engineer.

END OF SECTION 096500

SECTION 096700

FLUID-APPLIED FLOORING

PART 1 - GENERAL

1.1 SECTION INCLUDES

A. Fluid-applied flooring and base.

1.2 RELATED REQUIREMENTS

A. Section 090561 - Common Work Results for Flooring Preparation: Removal of existing floor coverings, cleaning, and preparation.

B. Section 090561 - Common Work Results for Flooring Preparation: Concrete slab moisture and alkalinity testing and remediation procedures.

1.3 REFERENCE STANDARDS

1.4 SUBMITTALS

A. Product Data: Provide data on specified products, describing physical and performance characteristics; sizes, patterns and colors available.

B. Maintenance Data: Include maintenance procedures, recommended maintenance materials, procedures for stain removal, repairing surface, and suggested schedule for cleaning.

C. Maintenance Materials: Furnish the following for DRBA's use in maintenance of project.

1. Extra Top Coat Materials: 2 gallons.

1.5 MOCK-UP

A. Construct mock-up(s) of fluid applied flooring to serve as basis for evaluation of texture and workmanship.

1. Number of Mock-Ups to be Prepared: One (1).
2. Use same materials and methods for use in the work.
3. Use approved design samples as basis for mock-ups.
4. Locate where directed.
5. Minimum Size: 48" x 48".
6. Arrange for Engineer's review and acceptance, obtain written acceptance before proceeding with Work.

7. Upon acceptance, mock-up shall serve as a minimum standard of quality for the balance of the work of this Section. Mock-up shall be left in place for the duration of the work.

B. Pre-application Meeting: Convene a pre-application meeting two (2) weeks before start of application of floor coating. Require attendance of parties directly affecting work of this section, including the Contractor, the Engineer, applicator, and manufacturer's representative. Review surface preparation, priming, application, curing, protection, and coordination with other work.

1.6 DELIVERY, STORAGE, AND HANDLING

A. Delivery:

1. Deliver materials to site in manufacturer's original, unopened containers and packaging, with labels clearly identifying product name, manufacturer, batch or lot number, and date of manufacture.

2. Material should be delivered to job site and checked for completeness and shipping damage prior to job start.

B. Storage:

1. Store materials in accordance with manufacturer's written instructions.
2. Keep containers sealed until ready for use. Material should be stored in a dry, enclosed, protected area from the elements.
3. Do not subject material to excessive heat or freezing.
4. Shelf life: Established based on manufacturer's written recommendation for each material being used.

C. Handling: Protect materials during handling and application to prevent damage or contamination.

D. Condition materials for use accordingly to manufacturer's written instructions prior to application.

E. Record material lot number and quantity delivered to jobsite/storage.

1.7 FIELD CONDITIONS

A. Do not install the Work of this Section outside of the following environmental ranges with Manufacturers' written acceptance:

1. Material Temperature: Precondition material for at least twenty-four (24) hours between 65° to 75°F (18° to 24°C)
2. Ambient Temperature: Minimum/Maximum 50°/85°F (10°/30°C)

3. Substrate Temperature: Minimum/Maximum 50°/85°F (10°/30°C). Substrate temperature must be at least 5°F (3°C) above measured Dew Point.

4. Mixing and Application attempted at Material, Ambient and/or Substrate Temperature conditions less than 65°F (18°C) will result in a decrease in product workability and slower cure rates.

5. Relative Ambient Humidity: Minimum ambient humidity 30%, maximum ambient humidity 75% (during application and curing)

6. Measure and confirm Substrate Moisture Content, Ambient Relative Humidity, Ambient and Surface Temperature and Dew Point.

B. Substrate moisture:

1. Moisture content of concrete substrate must be = 4% by mass as measured with a Tramex® CME/CMExpert type concrete moisture meter.

2. Additionally, relative humidity tests may be conducted per ASTM F2170 and values must be = 85%.

3. If moisture content of concrete substrate is > 4% by mass as measured with Tramex® CME/CMExpert type and/or if relative humidity tests per ASTM F2170 exceed values > 85%, consider moisture mitigation systems or moisture tolerant primer.

C. Utilities, including electric, water, HVAC and permanent lighting to be supplied by Contractor

D. Maintain constant ambient room temperature of plus or minus 15ºF (plus or minus 7ºC) with a minimum temperature of 50ºF (10ºC) and maximum temperature of 85ºF (30ºC). Maintain constant ambient room temperature for forty-eight (48) hours before, during and after installation, or until cured. Do not apply while ambient and temperatures are rising.

E. Erect suitable barriers and post legible signs at points of entry to prevent traffic and trades from entering the work area during application and cure period of the floor.

F. Protection of finished floor from damage by subsequent trades shall be the responsibility of the Contractor.

1.8 WARRANTY

A. Manufacturer’s warranty covering the resinous flooring against defects in materials for one (1) year from date of installation.

PART 2 - PRODUCTS

2.1 Fluid-Applied Flooring SYSTEMS

A. Fluid-Applied Flooring Type EPOXY: Polyurethane cement slurry base coat(s) with

broadcast aggregate.

1. Aggregate: Fine silica sand.
2. Texture: Slip resistant.
3. Color: As selected by Engineer.
4. 4" Integral cove base.
5. Products:
    a. Elite Crete Systems; Hermetic 4.8S Urethane Cement Slurry: www.elitecrete.com/#sle
    b. PPG Flooring; Self-Leveling Urethane Cement FLR700-0/FLR700-2, Low Gloss, with Self-Leveling Epoxy FLR600 Series, High Gloss: www.ppgpaints.com/#sle and www.ppgmc.com.aspx/#sle
    c. Sika Corporation; Sikafloor PurCem Self-Leveling Broadcast System: www.sikafloorusa.com/#sle
    d. Or approved equal.

2.2 ACCESSORIES

A. Base Caps: Extruded mill finished aluminum with projecting base of 1/8"; color as selected.

B. Cant Strips: Molded of flooring resin material.

C. Subfloor Filler: Type recommended by fluid-applied flooring manufacturer.

D. Primer: Type recommended by fluid-applied flooring manufacturer.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Verify that subfloor surfaces are smooth and flat within the tolerances specified for that type of work and are ready to receive flooring.

B. Verify that wall surfaces are smooth and flat within the tolerances specified for that type of work, are dust-free, and are ready to receive flooring.

C. Verify that subfloor surfaces are dust-free and free of substances that could impair bonding of materials to subfloor surfaces.

D. Verify that wood subfloors have 12 percent maximum moisture content.

E. Cementitious Subfloor Surfaces: Verify that substrates are ready for fluid-applied flooring installation by testing for moisture and alkalinity (pH).

1. Test in accordance with Section 090561 - Common Work Results For Flooring Preparation.
2. Obtain instructions if test results are not within limits recommended by fluid-applied flooring manufacturer.

F. Ensure concrete substrate conforms to the minimum requirements of the flooring manufacturer.

G. Verify that required floor-mounted utilities are in correct location.

3.2 PREPARATION

A. Prepare floor substrates for installation of flooring in accordance with Section 090561 - Common Work Results For Flooring Preparation.

B. Prepare surface to receive flooring systems in accordance with manufacturer's written instructions.

C. Remove dirt, oil, grease, wax, laitance, curing compounds, water-soluble concrete hardeners, and other surface contaminants. Remove sealers, finishes, and paints. Remove unsound concrete by appropriate mechanical means.

D. Concrete: Shall be cleaned and prepared to achieve laitance-free and contaminant-free, open textured surface by shot blasting or equivalent mechanical means (CSP level as per ICRI guidelines and manufacturer’s written recommendation).

E. Chemical Surface Preparation: Use of chemical surface preparation (such as acid etching) is unacceptable and will result in voiding of the Manufacturer’s warranty.

F. Remove subfloor ridges and bumps. Fill low spots, cracks, joints, holes, and other defects with subfloor filler.

G. Apply, trowel, and float filler to achieve smooth, flat, hard surface. Grind irregularities above the surface level. Prohibit traffic until filler is cured.

H. Control joints and cracks: Provide repair and treatment of control joints and surface cracks utilizing manufacturer’s standard materials and installation details.

I. Vacuum clean substrate.

J. Apply primer to surfaces required by flooring manufacturer.

3.3 INSTALLATION - ACCESSORIES

A. Install cant strips at base of walls where flooring is to be extended up wall as base.

B. Install terminating cap strip at top of base; attach securely to wall substrate.

3.4 INSTALLATION - FLOORING

A. Apply in accordance with manufacturer's instructions.

B. Follow Manufacturer's written recommendations on terminations and connections to walls, drains, doorways, columns and floor-to-floor transitions.

C. Do not apply while ambient and substrate temperatures are rising.

D. Apply resinous flooring with care to ensure that no laps, voids, or other marks or irregularities are visible, and with an appearance of uniform color, sheen and texture, all within limitations of materials and areas concerned.

E. Match colors and textures of approved samples.

F. Install cove base 6" high with 3/4" radius in accordance with manufacturer's written instructions.

G. Apply each coat to minimum thickness indicated.

H. Finish to smooth level surface.

3.5 CLEAN UP

A. Disposal of this product, solution and any by-products should at all times comply with the requirements of environmental protection and waste disposal legislation and any regional local authority requirements.

B. Empty containers should be taken to an approved waste handling site for recycling or disposal.

3.6 PROTECTION

A. Prohibit traffic on floor finish for forty-eight (48) hours after installation.

B. Freshly applied material should be protected from dampness, condensation, and water for at least seventy-two (72) hours.

C. Beware of air flow and changes in air flow. Introduction of dust, debris, and particles, etc., may result in surface imperfections and other defects.

D. Follow the manufacturer's written recommendation with respect to cure, wait time, and return to service.

3.7 METHOD OF MEASUREMENT

A. Work performed under this Section shall be considered incidental to **Lump Sum Pay Item 8: Finishes,** and thus will not be measured.

3.8 BASIS OF PAYMENT

A. Work properly performed in accordance with this Section will be paid for at the Lump Sum Unit Price for **Pay Item 8: Finishes.** Payment for work shall include full compensation for performing all work specified and for the furnishing of all materials, tools, equipment, labor, testing, submittals, and incidentals necessary to complete the work as described in the Contract Documents. Payment will be made on a monthly basis, based on percent completion of the work properly performed and accepted as determined by the Engineer.

END OF SECTION 096700

SECTION 099123

INTERIOR PAINTING

PART 1 - GENERAL

1.1 SECTION INCLUDES

A. Surface preparation.

B. Field application of paints.

C. Scope: Finish interior surfaces exposed to view, unless fully factory-finished and unless otherwise indicated.

D. Do Not Paint or Finish the Following Items:

1. Items factory-finished unless otherwise indicated; materials and products having factory-applied primers are not considered factory finished.
2. Items indicated to receive other finishes.
3. Items indicated to remain unfinished.
4. Fire rating labels, equipment serial number and capacity labels, bar code labels, and operating parts of equipment.
5. Floors, unless specifically indicated.
6. Glass.
7. Concealed pipes, ducts, and conduits.

1.2 DEFINITIONS

A. Comply with ASTM D16 for interpretation of terms used in this Section.

1.3 REFERENCE STANDARDS

A. 40 CFR 59, Subpart D - National Volatile Organic Compound Emission Standards for Architectural Coatings; U.S. Environmental Protection Agency; current edition.

B. ASTM D16 - Standard Terminology for Paint, Related Coatings, Materials, and Applications; 2016.

C. ASTM D4442 - Standard Test Methods for Direct Moisture Content Measurement of Wood and Wood-Based Materials; 2016.

D. MPI (APSM) - Master Painters Institute Architectural Painting Specification Manual; Current Edition.

E. SSPC-SP 1 - Solvent Cleaning; 2015, with Editorial Revision (2016).

F. SSPC-SP 6 - Commercial Blast Cleaning; 2007.

1.4 SUBMITTALS

A. Product Data: Provide complete list of products to be used, with the following information for each:

1. Manufacturer’s name, product name and/or catalog number, and general product category (e.g. “alkyd enamel”).
2. MPI product number (e.g. MPI #47).
3. Cross-reference to specified paint system(s) product is to be used in; include description of each system.

B. Samples: Submit three paper “draw down” samples, 8-1/2" x 11" in size, illustrating range of colors available for each finishing product specified.

1. Where sheen is specified, submit samples in only that sheen.

C. Maintenance Data: Submit data including finish schedule showing where each product/color/finish was used, product technical data sheets, material safety data sheets (MSDS), care and cleaning instructions, touch-up procedures, repair of painted and finished surfaces, and color samples of each color and finish used.

D. Maintenance Materials: Furnish the following for DRBA’s use in maintenance of project.

1. Extra Paint and Finish Materials: one (1) gallon of each color; from the same product run, store where directed.
2. Label each container with color in addition to the manufacturer’s label.

1.5 DELIVERY, STORAGE, AND HANDLING

A. Deliver products to site in sealed and labeled containers; inspect to verify acceptability.

B. Container Label: Include manufacturer's name, type of paint, brand name, lot number, brand code, coverage, surface preparation, drying time, cleanup requirements, color designation, and instructions for mixing and reducing.

C. Paint Materials: Store at minimum ambient temperature of 45 degrees F and a maximum of 90 degrees F, in ventilated area, and as required by manufacturer’s instructions.

1.6 FIELD CONDITIONS

A. Do not apply materials when surface and ambient temperatures are outside the temperature ranges required by the paint product manufacturer.

B. Follow the manufacturer’s recommended procedures for producing best results, including testing of substrates, moisture in substrates, and humidity and temperature

limitations.

C. Do not apply materials when relative humidity exceeds 85 percent, at temperatures less than 5 degrees F above the dew point, or to damp or wet surfaces.

D. Provide a lighting level of eighty (80) feet candles measured mid-height at substrate surface.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

A. Provide paints and finishes from the same manufacturer to the greatest extent possible.

1. If a single manufacturer cannot provide specified products, minor exceptions will be permitted, provided approval by the Engineer is obtained using the specified procedures for substitutions.

2.2 PAINTS AND FINISHES - GENERAL

A. Paints and Finishes: Ready mixed, unless intended to be a field-catalyzed paint.

1. Provide paints and finishes of a soft paste consistency, capable of being readily and uniformly dispersed to a homogeneous coating, with good flow and brushing properties, and capable of drying or curing free of streaks or sags.
2. Supply each paint material in quantity required to complete entire project's work from a single production run.
3. Do not reduce, thin, or dilute paint or finishes or add materials unless such procedure is specifically described in manufacturer’s product instructions.

B. Volatile Organic Compound (VOC) Content:

1. Provide paints and finishes that comply with the most stringent requirements specified in the following:
   a. 40 CFR 59, Subpart D--National Volatile Organic Compound Emission Standards for Architectural Coatings.
2. Determination of VOC Content: Testing and calculation in accordance with 40 CFR 59, Subpart D (EPA Method 24), exclusive of colorants added to a tint base and water added at project site; or other method acceptable to authorities having jurisdiction.

C. Sheens: Provide the sheens specified; where sheen is not specified, sheen will be selected later by Engineer from the manufacturer’s full line.

D. Colors: To be selected from manufacturer’s full range of available colors.

1. Selection to be made by Engineer after award of contract.

2.3 PAINT SYSTEMS - INTERIOR

A. Interior Surfaces to be Painted, Unless Otherwise Indicated: Including gypsum board.

1. Two top coats and one coat primer.
2. Top Coat(s): Institutional Low Odor/VOC Interior Latex; MPI #143, 144, 145, 146, 147, or 148.
    a. Products:
        i. PPG Paints Speedhide Zero Interior Latex, 6-4310XI Series, Eggshell.
        ii. Sherwin-Williams ProMar 200 Zero VOC Interior Latex, Low Sheen. (MPI #144)
        iii. Or approved equal.

B. Medium Duty Door/Trim: For surfaces subject to frequent contact by occupants, including metals and wood:

1. Medium duty applications include doors and door frames.
2. Two top coats and one coat primer.
3. Top Coat(s): Interior Alkyd, Water Based; MPI #167, 168, or 169.
    a. Products:
        i. PPG Paints Speedhide Interior/Exterior WB Alkyd, 6-1510XI Series, Semi-Gloss.
        ii. Sherwin-Williams ProMar 200 Water based Acrylic-Alkyd, Semi-Gloss.
        iii. Or approved equal.

C. Medium Duty Overhead: Including gypsum board and plaster.

1. Two top coats and one coat primer.
2. Top Coat(s): Institutional Low Odor/VOC Interior Latex; MPI #143, 144, 145, 146, 147, or 148.
    a. Products:
        i. Sherwin-Williams ProMar 200 Zero VOC Interior Latex, Flat.
        ii. Or approved equal.

2.4 PRIMERS

A. Primers: Provide the following unless other primer is required or recommended by manufacturer of top coats.

1. Bonding Primer, Latex;
    a. Products:

i. Sherwin-Williams Extreme Bond Primer.

ii. Or approved equal.

2. Water-Borne Synthetic Resin Based Primer

a. Products:

i. MAPEI Corporation Eco Prim Grip.

ii. Or approved equal.

2.5 ACCESSORY MATERIALS

A. Accessory Materials: Provide primers, sealers, cleaning agents, cleaning cloths, sanding materials, and clean-up materials as required for final completion of painted surfaces.

B. Patching Material: Latex filler.

C. Fastener Head Cover Material: Latex filler.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Verify that surfaces are ready to receive work as instructed by the product manufacturer.

B. Examine surfaces scheduled to be finished prior to commencement of work. Report any condition that may potentially effect proper application.

C. Test shop-applied primer for compatibility with subsequent cover materials.

D. Measure moisture content of surfaces using an electronic moisture meter. Do not apply finishes unless moisture content of surfaces are below the following maximums:

1. Gypsum Wallboard: 12 percent.

2. Plaster and Stucco: 12 percent.

3. Interior Wood: 15 percent, measured in accordance with ASTM D4442.

3.2 PREPARATION

A. Clean surfaces thoroughly and correct defects prior to application.

B. Prepare surfaces using the methods recommended by the manufacturer for achieving the best result for the substrate under the project conditions.

C. Remove or mask surface appurtenances, including electrical plates, hardware, light fixture trim, escutcheons, and fittings, prior to preparing surfaces or finishing.

D. Seal surfaces that might cause bleed through or staining of topcoat.

E. Masonry:

1. Prepare surface as recommended by top coat manufacturer.

F. Gypsum Board: Fill minor defects with filler compound. Spot prime defects after repair.

G. Plaster: Fill hairline cracks, small holes, and imperfections with latex patching plaster. Make smooth and flush with adjacent surfaces. Wash and neutralize high alkali surfaces.

H. Ferrous Metal:

1. Solvent clean according to SSPC-SP 1.

2. Remove rust, loose mill scale, and other foreign substances using methods recommended in writing by paint manufacturer and blast cleaning according to SSPC-SP 6 "Commercial Blast Cleaning". Protect from corrosion until coated.

I. Wood Surfaces to Receive Opaque Finish: Wipe off dust and grit prior to priming. Seal knots, pitch streaks, and sappy sections with sealer. Fill nail holes and cracks after primer has dried; sand between coats. Back prime concealed surfaces before installation.

3.3 APPLICATION

A. Remove unfinished louvers, grilles, covers, and access panels on mechanical and electrical components and paint separately.

B. Apply products in accordance with manufacturer's written instructions and recommendations in "MPI Architectural Painting Specification Manual".

C. Do not apply finishes to surfaces that are not dry. Allow applied coats to dry before next coat is applied.

D. Apply each coat to uniform appearance in thicknesses specified by manufacturer.

E. Dark Colors and Deep Clear Colors: Regardless of number of coats specified, apply as many coats as necessary for complete hide.

F. Sand wood and metal surfaces lightly between coats to achieve required finish.

G. Vacuum clean surfaces of loose particles. Use tack cloth to remove dust and particles just prior to applying next coat.

H. Reinstall electrical cover plates, hardware, light fixture trim, escutcheons, and fittings removed prior to finishing.

3.4 CLEANING

A. Collect waste material that could constitute a fire hazard, place in closed metal containers, and remove daily from site.

3.5 PROTECTION

A. Protect finishes until completion of project.

B. Touch-up damaged finishes after Completion.

3.6 COLOR SCHEDULE

A. See Plan Sheet A-601 for finish selections.

3.7 METHOD OF MEASUREMENT

A. Work performed under this Section shall be considered incidental to **Lump Sum Pay Item 8: Finishes,** and thus will not be measured.

3.8 BASIS OF PAYMENT

A. Work properly performed in accordance with this Section will be paid for at the Lump Sum Unit Price for **Pay Item 8: Finishes.** Payment for work shall include full compensation for performing all work specified and for the furnishing of all materials, tools, equipment, labor, testing, submittals, and incidentals necessary to complete the work as described in the Contract Documents. Payment will be made on a monthly basis, based on percent completion of the work properly performed and accepted as determined by the Engineer.

END OF SECTION 099123

SECTION 101400

SIGNAGE

PART 1 - GENERAL

1.1 SECTION INCLUDES

A. Room and door signs.

1.2 REFERENCE STANDARDS

A. 36 CFR 1191 - Americans with Disabilities Act (ADA) Accessibility Guidelines for Buildings and Facilities; Architectural Barriers Act (ABA) Accessibility Guidelines; current edition.

B. ADA Standards - Americans with Disabilities Act (ADA) Standards for Accessible Design; 2010.

C. ICC A117.1 - Accessible and Usable Buildings and Facilities; 2017.

1.3 SUBMITTALS

A. Product Data: Manufacturer's printed product literature for each type of sign, indicating sign styles, font, foreground and background colors, locations, overall dimensions of each sign.

B. Signage Schedule: Provide information sufficient to completely define each sign for fabrication, including room number, room name, other text to be applied, sign and letter sizes, fonts, and colors.

1. When room numbers to appear on signs differ from those on drawings, include the drawing room number on schedule.
2. When content of signs is indicated to be determined later, request such information from the DRBA through Engineer at least two (2) months prior to start of fabrication; upon request, submit preliminary schedule.
3. Submit for approval by the DRBA through Engineer prior to fabrication.

C. Manufacturer's Qualification Statement.

1.4 QUALITY ASSURANCE

A. Manufacturer Qualifications: A company specializing in manufacturing the products specified in this section with a minimum of ten (10) years of documented experience.

1.5 DELIVERY, STORAGE, AND HANDLING

A. Package signs as required to prevent damage before installation.

B. Package room and door signs in sequential order of installation, labeled by floor or building.

C. Store tape adhesive at normal room temperature.

1.6 FIELD CONDITIONS

A. Do not install tape adhesive when ambient temperature is lower than recommended by manufacturer.

B. Maintain this minimum temperature during and after installation of signs.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

A. Flat Signs:

1. Best Sign Systems, Inc.: www.bestsigns.com/#sle
2. FASTSIGNS: www.fastsigns.com/#sle
3. Inpro: www.inprocorp.com/#sle
4. Mohawk Sign Systems, Inc.: www.mohawksign.com/#sle
5. Seton Identification Products: www.seton.com/aec/#sle
6. Or approved equal.

2.2 SIGNAGE APPLICATIONS

A. Accessibility Compliance: Signs are required to comply with ADA Standards and ICC A117.1 and applicable building codes, unless otherwise indicated; in the event of conflicting requirements, comply with the most comprehensive and specific requirements.

B. Room and Door Signs: Provide a sign for every doorway, whether it has a door or not, not including corridors, lobbies, and similar open areas.

1. Sign Type: Flat signs with engraved panel media as specified.
2. Provide “tactile” signage, with letters raised minimum 1/32" and Grade II braille.
3. Character Height: 1".
4. Sign Height: 2", unless otherwise indicated.
5. Office Doors: Identify with room name and corresponding braille.
6. Service Rooms: Identify with room name and corresponding braille.
7. Rest Rooms: Identify the text “RESTROOM”, corresponding braille, as well as female pictogram, male pictogram, handicapped accessible pictogram.

2.3 SIGN TYPES

C. Flat Signs: Signage media without frame.

1. Edges: Square.
2. Corners: Radiuses.
3. Wall Mounting of One-Sided Signs: Tape adhesive.

D. Color and Font: Unless otherwise indicated:

1. Character Font: Helvetica, Arial, or other sans serif font.
2. Character Case: Upper case only.
3. Background Color: To be determined.
4. Character Color: Contrasting color.

2.4 TACTILE SIGNAGE MEDIA

A. Engraved Panels: Laminated colored plastic; engraved through face to expose core as background color:

1. Total Thickness: 1/8".

2.5 ACCESSORIES

A. Tape Adhesive: Double sided tape, permanent adhesive.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Verify that substrate surfaces are ready to receive work.

3.2 INSTALLATION

A. Install in accordance with manufacturer's instructions.

B. Install neatly, with horizontal edges level.

C. Locate signs and mount at heights indicated on drawings and in accordance with ADA Standards and ICC A117.1.

D. Protect from damage until Completion; repair or replace damaged items.

3.3 METHOD OF MEASUREMENT

A. Work performed under this Section shall be considered incidental to **Lump Sum Pay Item 9: Specialties,** and thus will not be measured.

3.4 BASIS OF PAYMENT

A. Work properly performed in accordance with this Section will be paid for at the Lump Sum Unit Price for **Pay Item 9: Specialties.** Payment for work shall include full

compensation for performing all work specified and for the furnishing of all materials, tools, equipment, labor, testing, submittals, and incidentals necessary to complete the work as described in the Contract Documents. Payment will be made on a monthly basis, based on percent completion of the work properly performed and accepted as determined by the Engineer.

END OF SECTION 101400

SECTION 102213

WIRE MESH PARTITIONS

PART 1 - GENERAL

1.1 SECTION INCLUDES

A. Wire mesh systems for walls and ceilings.

1.2 RELATED REQUIREMENTS

A. Section 087100 - Door Hardware: Cylinders for locksets.

1.3 SUBMITTALS

A. Product Data: Provide data for mesh materials, finishes.

B. Shop Drawings: Indicate plan and vertical dimensions, elevations, component details; head, jamb, and sill details; location of hardware. Provide component details, anchorage, and type and location of fasteners.

1. Show field measurements on shop drawings.

C. Manufacturer's Installation Instructions: Indicate special procedures, perimeter conditions requiring special attention.

1.4 QUALITY ASSURANCE

A. Manufacturer Qualifications: Company specializing in manufacturing products specified in this Section, with not less than three (3) years of documented experience.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

A. Wire Mesh Partitions:

1. Spaceguard Products; BeastWire Mesh Partitions with Standard Welded Wire Mesh- 2 inch square: www.spaceguardproducts.com/#sle
2. Newark Wire Works, Inc.: www.newarkwireworks.com
3. WireCrafters, LLC: www.wirecrafters.com
4. Or Approved Equal.

2.2 WIRE MESH PARTITIONS

A. Wire Mesh Partitions: Factory-fabricated modular assemblies of panels, doors, anchors, hardware, and accessories as required to provide a complete system.

1. Design Criteria:

a. Design partition system to provide for movement of components without damage, undue stress on fasteners or other detrimental effects, when subject to design loads.

b. Design system to accommodate construction tolerances, deflection of building structural members, and clearances of intended openings.

c. Comply with applicable code for wire mesh opening size.

2. Style: Full mesh.

3. Post Spacing: As required to suit dimensions, using manufacturer's standard panel widths.

4. Provide special panels of same construction as adjacent panels to achieve horizontal partition dimensions indicated.

5. Panel frames bolted together and to posts.

6. Provide ceiling panels where indicated.

2.3 Components

A. Woven Wire Mesh: Heavy duty.

1. Material: ASTM A510/A510M uncoated crimped steel wire.

2. Wire Size: 6 gauge, 0.192 inch.

3. Mesh Opening Size: 2 inch diamond shape.

4. Mesh Weave: Plain weave, double crimped.

B. Framing and Support Members:

1. Material: ASTM A36/A36M steel shapes and ASTM A500/A500M cold-formed steel tubing.

2. Framing, Corner Posts, and Intermediate Support Members: Manufacturer's standard sizes for system specified and as indicated on drawings.

3. Vertical Stiffeners: As required for partitions greater than 144" in height.

C. Doors: Same material as partitions, fully framed; manufacturer's standard construction and hardware for sliding operation.

1. Locking: Mortise type cylinder locks, keyed on outside, operated by recessed turn knob inside.

2.4 FASTENERS

A. Bolts, Nuts and Washers: Hot dip galvanized.

B. Anchorage Devices: Provide power driven, powder actuated, and drilled expansion

bolts.

2.5 ACCESSORIES

A. Bracing: Formed sheet steel, thickness determined for conditions encountered, manufacturer's standard shapes, same finish as framing members.

B. Plates, Gussets, Clips: Formed sheet steel, thickness determined for conditions encountered, manufacturer's standard shapes, same finish as framing members.

C. Floor and Ceiling Pilaster Shoe: Manufacturer's standard.

D. Floor Base: Manufacturer's standard.

2.6 FABRICATION

A. Fit and assemble in largest practical sections for delivery to site, ready for installation.

B. Make exposed joints flush or tight.

C. Provide components required for anchorage to adjacent construction.

D. Frame openings made for penetrating mechanical and electrical components.

2.7 FINISHES

A. Painted Finish: Manufacturer's standard powder coat finish.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Verify that field measurements are as indicated.

B. Verify that substrate surfaces and required openings are ready to receive work.

3.2 PREPARATION

A. Clean substrate surfaces.

3.3 INSTALLATION

A. Install in accordance with manufacturer's instructions.

B. Install items plumb and level, accurately fitted, free from distortion or defects.

C. Perform field welding in accordance with AWS D1.1/D1.1M.

D. After installation, touch-up field welds scratched or damaged surfaces with shop applied finish.

3.4 TOLERANCES

A. Maximum Variation From Plumb or Level: 1/4".

B. Maximum Misalignment From True Position: 1/4".

3.5 ADJUSTING

A. Adjust doors to achieve free movement.

3.6 CLEANING

A. Remove temporary protection to prefinished surfaces.

3.7 METHOD OF MEASUREMENT

A. Work performed under this Section shall be considered incidental to **Lump Sum Pay Item 9: Specialties,** and thus will not be measured.

3.8 BASIS OF PAYMENT

A. Work properly performed in accordance with this Section will be paid for at the Lump Sum Unit Price for **Pay Item 9: Specialties.** Payment for work shall include full compensation for performing all work specified and for the furnishing of all materials, tools, equipment, labor, testing, submittals, and incidentals necessary to complete the work as described in the Contract Documents. Payment will be made on a monthly basis, based on percent completion of the work properly performed and accepted as determined by the Engineer.

END OF SECTION 102213

SECTION 104400

FIRE PROTECTION SPECIALTIES

PART 1 - GENERAL

1.1 SECTION INCLUDES

A. Fire extinguishers.

B. Fire extinguisher cabinets.

C. Accessories.

1.2 RELATED REQUIREMENTS

A. Section 061000 - Rough Carpentry: Wood blocking product and execution requirements.

1.3 REFERENCE STANDARDS

A. NFPA 10 - Standard for Portable Fire Extinguishers; 2022.

1.4 SUBMITTALS

A. Product Data: Provide extinguisher operational features.

B. Maintenance Data: Include test, refill or recharge schedules and re-certification requirements.

1.5 FIELD CONDITIONS

A. Do not install extinguishers when ambient temperature may cause freezing of extinguisher ingredients.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

A. Fire Extinguishers:

1. Activar Construction Products Group, Inc. - JL Industries: www.activarcpg.com/#sle
2. Nystrom, Inc.: www.nystrom.com/#sle
3. Potter-Roemer: www.potterroemer.com/#sle
4. Or Approved Equal.

B. Fire Extinguisher Cabinets and Accessories:

1. Activar Construction Products Group, Inc. - JL Industries; Clear Vu Series: www.activarcpg.com/#sle

2. Nystrom, Inc; Ridge Fire Extinguisher Cabinet: www.nystrom.com/#sle

3. Potter-Roemer; Loma Fire Extinguisher Cabinet: www.potterroemer.com/#sle

4. Or Approved Equal.

2.2 FIRE EXTINGUISHERS

A. Fire Extinguishers - General: Comply with product requirements of NFPA 10 and applicable codes, whichever is more stringent.

B. Multipurpose Dry Chemical Type Fire Extinguishers: Carbon steel tank, with pressure gauge.

1. Class: A:B:C type.

2. Size: 10 pound.

3. Finish: Baked polyester powder coat, red color.

2.3 FIRE EXTINGUISHER CABINETS

A. Cabinet Construction: Non-fire rated.

1. Formed primed steel sheet; 0.036 inch thick base metal.

B. Cabinet Configuration: Semi-recessed type.

1. Size to accommodate accessories.

2. Projected Trim: Returned to wall surface, with 1 5/8" projection, and 2 1/2" wide face.

3. Provide cabinet enclosure with right angle inside corners and seams, and with formed perimeter trim and door stiles.

C. Door Glazing: Acrylic plastic, clear, 1/8" thick, full view bubble shape and set in resilient channel glazing gasket.

D. Cabinet Mounting Hardware: Appropriate to cabinet, with pre-drilled holes for placement of anchors.

E. Fabrication: Weld, fill, and grind components smooth.

F. Finish of Cabinet Exterior Trim and Door: Baked enamel, white color.

2.4 ACCESSORIES

A. Lettering: “FIRE EXTINGUISHER” decal, or vinyl self-adhering, pre-spaced black lettering in accordance with authorities having jurisdiction (AHJ).

PART 3 - EXECUTION

3.1 EXAMINATION

A. Verify existing conditions before starting work.

B. Verify rough openings for cabinet are correctly sized and located.

3.2 INSTALLATION

A. Install in accordance with manufacturer's instructions.

B. Secure rigidly in place.

C. Place extinguishers in cabinets.

3.3 METHOD OF MEASUREMENT

A. Work performed under this Section shall be considered incidental to **Lump Sum Pay Item 9: Specialties,** and thus will not be measured.

3.4 BASIS OF PAYMENT

A. Work properly performed in accordance with this Section will be paid for at the Lump Sum Unit Price for **Pay Item 9: Specialties.** Payment for work shall include full compensation for performing all work specified and for the furnishing of all materials, tools, equipment, labor, testing, submittals, and incidentals necessary to complete the work as described in the Contract Documents. Payment will be made on a monthly basis, based on percent completion of the work properly performed and accepted as determined by the Engineer.

END OF SECTION 104400

SECTION 105113

METAL LOCKERS

PART 1 - GENERAL

1.1 SECTION INCLUDES

A. Metal lockers.

1.2 REFERENCE STANDARDS

A. ADA Standards - Americans with Disabilities Act (ADA) Standards for Accessible Design; 2010.

B. ICC A117.1 - Accessible and Usable Buildings and Facilities; 2017.

1.3 SUBMITTALS

A. Product Data: Manufacturer's published data on locker construction, sizes, and accessories.

B. Shop Drawings: Indicate locker plan layout, numbering plan.

C. Manufacturer's Installation Instructions: Indicate component installation assembly.

1.4 DELIVERY, STORAGE, AND HANDLING

A. Protect locker finish and adjacent surfaces from damage.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

A. Metal Lockers:

1. Art Metal Products: www.artmetalproducts.com/#sle
2. ASI Storage Solutions: www.asi-storage.com/#sle
3. Republic Storage Systems Co: www.republicstorage.com/#sle
4. Salsbury Industries: www.lockers.com
5. Or Approved Equal.

2.2 LOCKER APPLICATIONS

A. Student Lockers: Metal lockers, free-standing with matching closed base.

1. Width: 18".
2. Depth: 18".
3. Height: 72".

4. Configuration: Two tier.

5. Fittings: Size and configuration as indicated on drawings.

   a. Hat shelf.

   b. Hooks: One (1) double prong.

6. Ventilation: Louvers at top and bottom of door panel.

7. Locking: Padlock hasps, for padlocks provided by DRBA.

8. Color: To be selected from manufacturer's full range by the Engineer.

2.3 METAL LOCKERS

A. Locker Case Construction:

   1. Heavy-Duty, Welded Construction: Made of formed and welded together sheet steel; metal edges finished smooth without burrs; baked enamel or powder coat finished inside and out.

      a. Assembly: Do not use bolts, screws, or rivets to assemble locker bodies.

      b. Locker Body Components: Formed and flanged from steel sheet of the following type and minimum thicknesses:

      c. Frames: Formed channel shape, welded and ground flush, welded to body, resilient gaskets and latching for quiet operation.

         i. Door Frame: 16 gauge, 0.0598 inch, minimum.

      d. Where ends or sides are exposed, provide flush panel closures.

B. Doors: Channel edge; welded construction, manufacturer's standard stiffeners, grind and finish edges smooth.

   1. Door Thickness: 16 gauge, 0.0598 inch, minimum.

   2. Form recess for operating handle and locking device.

C. Latches and Door Handles: Manufacturer's standard.

   1. Latching: Manufacturer's standard for locking arrangement selected.

D. Cup, Pocket: Manufacturer's standard, with integral pull, and recessed surface punched for installation of lock, latch lift mechanism, and number plate.

E. Hinges: Continuous piano hinge with powder coat finish to match locker color.

F. Trim: 20 gauge, 0.0359 inch.

G. Coat Hooks: Stainless steel or zinc-plated steel.

H. Number Plates: Provide oval shaped aluminum plates. Form numbers 2" high of block font style with ADA designation, in contrasting color.

I. Locks: Locker manufacturer's standard type indicated in Applications article above.

J. Locker Groups: Gang lockers in groups of two and assemble in factory for shipment as a single unit.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Verify that prepared bases are in correct position and configuration.

B. Verify bases and embedded anchors are properly sized.

3.2 INSTALLATION

A. Install in accordance with manufacturer's instructions.

B. Place and secure on prepared base.

C. Install lockers plumb and square.

D. Secure lockers with anchor devices to suit substrate materials. Minimum Pullout Force: 100 pounds.

E. Bolt adjoining locker units together to provide rigid installation.

F. Install end panels and filler panels.

G. Install fittings if not factory installed.

H. Replace components that do not operate smoothly.

3.3 CLEANING

A. Clean locker interiors and exterior surfaces.

3.4 METHOD OF MEASUREMENT

A. Work performed under this Section shall be considered incidental to **Lump Sum Pay Item 9: Specialties,** and thus will not be measured.

3.5 BASIS OF PAYMENT

A. Work properly performed in accordance with this Section will be paid for at the Lump Sum Unit Price for **Pay Item 9: Specialties.** Payment for work shall include full compensation for performing all work specified and for the furnishing of all materials, tools, equipment, labor, testing, submittals, and incidentals necessary to complete the work as described in the Contract Documents. Payment will be made on a monthly basis, based on percent completion of the work properly performed and accepted as determined by the Engineer.

END OF SECTION 105113

SECTION 105613

METAL STORAGE SHELVING

PART 1 - GENERAL

1.1 SECTION INCLUDES

A. Four post shelving.

B. Case type shelving.

C. Case type cabinets.

D. Shelving accessories.

1.2 SUBMITTALS

A. Product Data: Manufacturer's data sheets on each product to be used, including:

1. Rated uniform shelf loads.
2. Details of shelving assemblies, including reinforcement.
3. Accessories.

B. Test Reports: Provide independent agency test reports documenting compliance with specified structural requirements.

C. Selection Samples: For each finish product specified, color chips representing manufacturer's full range of available colors and finishes.

D. Warranty: Submit manufacturer warranty and ensure that forms have been completed in the DRBA's name and registered with manufacturer.

1.3 DELIVERY, STORAGE, AND HANDLING

A. Inspect for dents, scratches, or other damage. Replace damaged units.

B. Store in manufacturer's unopened packaging until ready for installation.

C. Store under cover and elevated above grade.

1.4 WARRANTY

A. Provide one year manufacturer warranty covering defects of manufacturing and workmanship and rust and corrosion.

PART 2 - PRODUCTS

2.1 SHELVING - GENERAL

A. See Plans/Drawings for layout and sizes.

B. Anchors: Provide anchoring hardware to secure each shelving unit to floor.

1. Provide hardware of type recommended by manufacturer for substrate.

2.2 FOUR POST SHELVING

A. Four Post Shelving: Steel post-and-beam type with sway bracing, shelving brackets, shelving surfaces, and accessories as specified.

1. Unit Width: 96 inches, center to center of posts.
2. Shelf Beam Capacity: 6,800 lbs. per shelving bay.
3. Shelf Depth: 48", minimum.
4. Shelves per Unit: Manufacturer standard.
5. Unit Height: 96", overall, maximum.
6. Finish: Galvanized.
7. Color: Manufacturer's standard gray.
8. Provide single-face and double-face units where indicated.
9. Number of Units: As indicated on Plans/Drawings.

B. Posts and Beams: Formed sheet members; perforations exposed on face of members are not acceptable.

1. Post Face Width: 2", maximum.
2. Connecting Hardware: Manufacturer's standard.

C. Bracing: Formed sheet members.

1. Side Sway Bracing: Either strap or panel; at each side of each unit.
2. Strap Sway Bracing: One strap installed diagonally, 16 gauge, 0.0598 inch; welded, riveted, or bolted to uprights.

D. Shelves: Galvanized steel wire decking with support channel; brushed or satin finish; cut ends concealed or smoothed for safety.

1. Wire Diameter: 1/8", minimum.
2. Maximum Opening Dimension: 1/4", maximum.
3. Shelf Edge Profile: Extending 3/4" high, maximum, below top surface of shelf.
4. Shelf Connection to Posts: Manufacturer' s standard.

E. Manufacturer:

1. Hallowell: www.hallowell-list.com/#sle
2. List Industries, Inc.: www.listindustries.com/#sle

3. Penco Products, Inc.; Heavy-duty Pallet Racks: www.pencoproducts.com/#sle
4. Tennsco Storage; Bulk Rack Shelving: www.tennsco.com/#sle
5. ULINE; Pallet Rack: www.uline.com
6. Or Approved Equal.

2.3 ADJUSTABLE REEL STORAGE SHELVING

A. Four Post Shelving: Steel post-and-beam type with sway bracing, shelving brackets, shelving surfaces, and accessories as specified.

1. Unit Width: 96", center to center of posts.
2. Shelf Beam Capacity: 6,800 lbs. per shelving bay.
3. Shelf Depth: 48", minimum.
4. Shelves per Unit: Manufacturer standard.
5. Unit Height: 96", overall, maximum.
6. Finish: Baked enamel, medium gloss.
7. Color: Manufacturer's standard gray.
8. Provide single-face and double-face units where indicated.
9. Number of Units: As indicated on Plans/Drawings.

B. Posts and Beams: Formed sheet members; perforations exposed on face of members are not acceptable.

1. Post Face Width: 2", maximum.
2. Connecting Hardware: Manufacturer's standard.

C. Axel's

1. Quantity: four (4).

D. Bracing: Formed sheet members.

1. Side Sway Bracing: Either strap or panel; at each side of each unit.

E. Manufacturer:

1. Global Industrial: www.globalindustrial.com
2. Hallowell: www.hallowell-list.com/#sle
3. List Industries, Inc.: www.listindustries.com/#sle
4. ULINE: www.uline.com
5. Or Approved Equal.

2.4 CASE TYPE SHELVING AND CABINETS

A. Case Type Shelving: Steel, closed sides and backs, with shelving brackets, shelving surfaces, and accessories as specified.

1. Unit Width: As listed on Plan Sheet A-801.
2. Shelf Capacity: Uniform distributed load of 50 psf, minimum.
3. Adjustability of Shelving: At intervals of 6 inches on center.
4. Unit Depth: As listed on Plan Sheet A-801.
5. Unit Height: As listed on Plan Sheet A-801.
6. Finish: Baked enamel, medium gloss.
7. Color: As selected by Engineer from manufacturer's standard range.
8. Number of Units: As indicated on Plans/Drawings.

B. Case Construction: Formed sheet metal comprising vertical support members and enclosure panels.

1. Shelf Support Members: 16 gauge, 0.0598 inch, minimum; manufacturer's standard profile.
2. Face Width of Exposed Vertical Supports: 2", maximum.
3. Panels: 24 gauge, 0.0239 inch, minimum.
4. Connecting Hardware: Manufacturer's standard.

C. Shelves: Formed sheet metal, finished on all surfaces with slots for dividers.

1. Thickness: 16 gauge, 0.0598 inch, minimum.
2. Shelf Edge Profile: Extending 3/4", maximum, below top surface of shelf.
3. Shelf Connection to Posts: Manufacturer's standard.

D. Cabinet Doors: Manufacturer's standard welded steel.

1. Style: Solid panel.
2. Hinges: Four-knuckle type.
3. Handles: Brushed chrome, one per door.
4. Locks: Manufacturer's standard keyed lock.

E. Manufacturer:

1. ASI Storage Solutions: www.asi-storage.com/#sle
2. List Industries, Inc.: www.listindustries.com/#sle
3. Penco Products, Inc.: www.pencoproducts.com/#sle
4. Tennsco Storage: www.tennsco.com/#sle

5. ULINE: www.uline.com

6. Or Approved Equal.

2.5 ACCESSORIES

A. Anchors: Concrete floor anchor bolts.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Verify that substrate is level and that clearances are as specified.

B. Verify that floors are suitable for shelving attachment.

C. Do not begin installation until substrates have been properly prepared.

D. If substrate preparation is the responsibility of another installer, notify Engineer of unsatisfactory preparation before proceeding.

3.2 PREPARATION

A. Clean surfaces thoroughly prior to installation.

B. Prepare surfaces using the methods recommended by the manufacturer for achieving the best result for the substrate under the project conditions.

3.3 INSTALLATION

A. Install in accordance with manufacturer's instructions.

B. Anchor and reinforce as specified, as indicated on drawings, and as recommended by manufacturer.

C. Install shelving with shelf surfaces level and vertical supports plumb; adjust feet and bases as required.

D. Out-Of-Square Tolerance - Four Post Shelving: Maximum of 1/8" difference in distance between bottom shelf and canopy top, measured along any post in any direction.

3.4 CLEANING

A. Clean shelving and surrounding area after installation.

3.5 PROTECTION

A. Protect installed products until completion of project.

B. Touch-up, repair or replace damaged products before Date of Completion.

3.6 METHOD OF MEASUREMENT

A. Work performed under this Section shall be considered incidental to **Lump Sum Pay Item 19: Specialties,** and thus will not be measured.

3.7 BASIS OF PAYMENT

A. Work properly performed in accordance with this Section will be paid for at the Lump Sum Unit Price for **Pay Item 19: Specialties.** Payment for work shall include full compensation for performing all work specified and for the furnishing of all materials, tools, equipment, labor, testing, submittals, and incidentals necessary to complete the work as described in the Contract Documents. Payment will be made on a monthly basis, based on percent completion of the work properly performed and accepted as determined by the Engineer.

END OF SECTION 105613

SECTION 107326

WALKWAY COVERINGS

PART 1 - GENERAL

1.1 SECTION INCLUDES

A. Metal walkway coverings.

1.2 REFERENCE STANDARDS

A. AAMA 2604 - Voluntary Specification, Performance Requirements and Test Procedures for High Performance Organic Coatings on Aluminum Extrusions and Panels (with Coil Coating Appendix); 2021, with Errata (2022).

B. ASCE 7 - Minimum Design Loads and Associated Criteria for Buildings and Other Structures; Most Recent Edition Cited by Referring Code or Reference Standard.

C. ASTM B209/B209M - Standard Specification for Aluminum and Aluminum-Alloy Sheet and Plate; 2021.

D. ASTM B221 - Standard Specification for Aluminum and Aluminum-Alloy Extruded Bars, Rods, Wire, Profiles, and Tubes; 2014.

E. ASTM B221M - Standard Specification for Aluminum and Aluminum-Alloy Extruded Bars, Rods, Wire, Profiles, and Tubes (Metric); 2021.

F. AWS D1.2/D1.2M - Structural Welding Code - Aluminum; 2014, with Errata (2020).

1.3 SUBMITTALS

A. Metal Product Data: Product data sheets, including material descriptions and finishes, and preparation instructions and recommendations.

B. Shop Drawings: Indicate profiles, sizes, connection attachments, footings, anchorage, size and type of fasteners, graphic images, patterns, accessories, and locations.

C. Design Data: Submit comprehensive structural analysis of design for the specified loads. Stamp and sign calculations by professional engineer.

D. Designer’s qualification statement.

E. Manufacturer’s qualification statement.

F. Installer’s qualification statement.

G. Executed warranty.

H. Specimen warranty.

1.4 QUALITY ASSURANCE

A. Designer Qualifications: Perform design under direct supervision of Professional Engineer experienced in design of this type of work and licensed in the State in which the Project is located.

B. Manufacturer Qualifications: Company specializing in manufacturing products specified in this section, with at least three (3) years of documented experience.

C. Installer Qualifications: Company specializing in performing work of the type specified and with at least three (3) years of documented experience.

1.5 WARRANTY

A. Finish Warranty: Provide a twenty (20) year manufacturer warranty against excessive degradation of factory-applied finishes. Include provisions for the replacement of units with excessive fading, chalking, or flaking. Complete forms in DRBA's name and register with the warrantor.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

A. Metal Walkway Coverings:

1. Upside Innovations: https://upsideinnovations.com
2. Mapes Architectural Canopies: https://mapescanopies.com
3. Lawrence Fabric & Metal Structures, Inc.: www.lawrencefabric.com/#sle
4. Mitchell Metals: www.mitchellmetals.net/#sle
5. Or Approved Equal.

2.2 Walkway Coverings - GENERAL

A. Design Criteria: Design and fabricate to resist the following loads without failure, damage, or permanent deflection in accordance with ASCE 7.

B. Configuration: Column layout, walkway clearance, fascia profile, and roof covering design as indicated on drawings.

1. Drainage Concept: Water collected in decking conducted into perimeter drain beams and discharged through columns.

C. Provide a complete system ready for erection at project site.

D. Shop fabricate to the greatest extent possible; disassemble if necessary for shipping.

2.3 METAL WALKWAY COVERINGS

A. Description: Flat top metal framework with metal covering supported by metal

columns.

B. Type: Column-supported by pairs of columns.

C. Column Anchorage: Column baseplates installed with anchor bolts or expansion anchors into concrete footing, slab, or pier.

D. Framework: Aluminum.

E. Water Management: Drain beams and internal column drains with drainage outlet on grade.

F. Covering Materials:

1. Interlocking extruded aluminum decking modules.

2.4 Components

A. Aluminum Framing for Metal Walkway Coverings:

1. Columns: Extruded aluminum.
   a. Type: Fluted column.
   b. Cross-Section: 6" x 6".
   c. Provide cutout and internal diverter for drainage where indicated.
   d. Grout Key: Provide two 1-1/2" diameter holes on opposite sides in column base.
2. Beams: Extruded aluminum.
   a. Style: U-shaped drain beams.
3. Extruded Decking: Self-flashing, interlocking sections.
   a. Deck Profile: Flat pan deck.
   b. Panel Size: 3" x 12".
   c. Provide welded endplate water dams where sections terminate at other than drainage channels.
4. Fascia/Gutter: Extruded aluminum.

B. Exposed Framing Fasteners: Flush countersunk stainless steel screws or bolts; consistent with design of system and acceptable to manufacturer.

1. Decking Fasteners: Stainless steel with neoprene washers.
2. Finish exposed fasteners to match metal frame.

C. Exposed Aluminum Finish: Class I natural anodized.

D. Flashings: Metal and finish matching system framing components, with thickness as

recommended by manufacturer for conditions encountered.

1. Secured using concealed fastening method.
2. Secured using exposed fasteners with neoprene washers and head finished to match.

2.5 Materials

A. Aluminum:

1. Aluminum Extrusions: Alloy and temper 6063-T5, 6063-T6, or 6061-T6 members complying with ASTM B221 (ASTM B221M), with minimum thickness 1/8" for structural members and 1/16" for nonstructural members.
2. Formed Aluminum: Sheet material of alloy 5052, 5005, or 6061-T651 members complying with ASTM B209/B209M, with minimum thickness 1/8" for structural members and 1/16" for nonstructural members.

2.6 FABRICATION - METAL COMPONENTS

A. Fit and shop assemble components in largest practical sizes, for delivery to site.

B. Fabricate components with joints tightly fitted and secured.

C. Provide notches, cut outs, and internal deflectors in members as noted to act as internal water drainage system.

D. Weld aluminum members in accordance with AWS D1.2/D1.2M.

E. Exposed Fastenings: Unobtrusively located; consistent with design of component, except where specifically noted otherwise.

F. Supply components required for anchorage of framing. Fabricate anchors and related components of same material and finish as framing, except where specifically noted otherwise.

G. Continuously seal joined pieces by intermittent welds and plastic filler.

H. Grind exposed joints flush and smooth with adjacent finish surface. Make exposed joints butt tight, flush, and hairline. Ease exposed edges to small uniform radius.

I. Accurately form components to suit each other and to building structure.

2.7 FINISHES

A. High Performance Organic Coatings: AAMA 2604, multiple coats, thermally cured fluoropolymer system.

B. Finish Color: As selected by Engineer from manufacturer’s standard range.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Examine substrates and site area for conditions that might prevent satisfactory installation.

B. Verify that foundation, electrical utilities, and placed anchors are in correct position.

C. Do not proceed with installation until conditions are satisfactory.

3.2 PREPARATION

A. Clean and strip primed steel items to bare metal where site welding is required.

B. Supply items required to be cast into concrete with setting templates for installation of work in other sections.

3.3 INSTALLATION - FRAMING

A. Install in accordance with manufacturer’s instructions.

B. Install components plumb and level, accurately fitted, free from distortion or defects.

C. Provide anchors required for connecting framing to structure. Anchor framing to structure.

D. Conceal bolts and screws whenever possible. Where not concealed, use flush countersunk fastenings.

3.4 INSTALLATION - METAL COVERING

A. Install in accordance with manufacturer’s instructions.

B. Fasten metal decking to metal support members, aligned level and plumb.

C. Install fascia panels, trim, and flashing.

D. Separate dissimilar metals using concealed bituminous paint.

E. Touch-up damaged finish coating using material provided by manufacturer to match original coating.

3.5 TOLERANCES

A. Maximum Variation from Plumb, Level, or Line: 1/8" per ten (10) feet, or 3/8" total in overall dimension.

B. Alignment of Two Adjoining Members Abutting in Plane: Within 1/16".

3.6 FIELD QUALITY CONTROL

A. Test for water tightness, water management, and lack of ponding of completed walkway covering and components, including decking, gutters, drain beams, and columns.

3.7 CLEANING

A. Clean all exposed surfaces after installation.

3.8 PROTECTION

A. Touch-up, repair, or replace damaged components before Date of Completion.

B. Protect walkway covering after installation to prevent damage due to other work until Date of Completion.

3.9 METHOD OF MEASUREMENT

A. Work performed under this Section shall be considered incidental to **Lump Sum Pay Item 22: Specialties,** and thus will not be measured.

3.10 BASIS OF PAYMENT

A. Work properly performed in accordance with this Section will be paid for at the Lump Sum Unit Price for **Pay Item 22: Specialties.** Payment for work shall include full compensation for performing all work specified and for the furnishing of all materials, tools, equipment, labor, testing, submittals, and incidentals necessary to complete the work as described in the Contract Documents. Payment will be made on a monthly basis, based on percent completion of the work properly performed and accepted as determined by the Engineer.

END OF SECTION 107326

SECTION 123553.13

METAL LABORATORY CASEWORK

PART 1 - GENERAL

1.1 SECTION INCLUDES

A. Standard metal cabinets and cabinet hardware.

B. Tables.

C. Fixed- and adjustable-height custom workbenches.

1.2 REFERENCE STANDARDS

A. ADA Standards - Americans with Disabilities Act (ADA) Standards for Accessible Design; 2010.

B. ASTM A513/A513M - Standard Specification for Electric-Resistance-Welded Carbon and Alloy Steel Mechanical Tubing; 2020a.

C. ASTM A666 - Standard Specification for Annealed or Cold-Worked Austenitic Stainless Steel Sheet, Strip, Plate, and Flat Bar; 2015.

D. ASTM A1008/A1008M - Standard Specification for Steel, Sheet, Cold-Rolled, Carbon, Structural, High-Strength Low-Alloy, High-Strength Low-Alloy with Improved Formability, Solution Hardened, and Bake Hardenable; 2018.

E. ASTM C920 - Standard Specification for Elastomeric Joint Sealants; 2018.

F. ASTM D522/D522M - Standard Test Methods for Mandrel Bend Test of Attached Organic Coatings; 2017 (Reapproved 2021).

G. ASTM E84 - Standard Test Method for Surface Burning Characteristics of Building Materials; 2019b.

H. NEMA LD 3 - High-Pressure Decorative Laminates; 2005.

I. SEFA 2 - Installations; 2010.

J. SEFA 3 - Laboratory Work Surfaces; 2010.

K. SEFA 8M - Laboratory Grade Metal Casework; 2016.

1.3 SUBMITTALS

A. Product Data: Details of materials, component dimensions and configurations, construction details, joint details, attachments; manufacturer’s catalog literature on hardware and keying, accessories, and service fittings, if any.

B. Shop Drawings: Indicate casework types, sizes, and locations, using large scale plans, elevations, and cross sections. Include rough-in and anchors and reinforcements placement dimensions and tolerances, clearances required, and utility locations, if any. Include coordinated information for laboratory equipment specified in another section and/or furnished by DRBA.

C. Test Reports: Independent laboratory reports showing compliance with chemical and physical resistance requirements for casework finish.

D. Maintenance Data: Manufacturer's recommendations for care and cleaning.

E. Finish touch-up kit for each type and color of materials provided.

1.4 QUALITY ASSURANCE

A. Manufacturer Qualifications: Company specializing in manufacturing the products specified in this section with minimum three (3) years of documented experience.

B. Installer Qualifications: Company specializing in performing work of the type specified in this section, with not less than three (3) years of documented experience and approved by manufacturer.

1.5 DELIVERY, STORAGE, AND HANDLING

A. Protect items provided by this section, including finished surfaces and hardware items during handling and installation. For metal surfaces, use polyethylene film or other protective material standard with the manufacturer.

1.6 WARRANTY

A. Manufacturer Warranty: Provide five (5) year warranty against defects. Complete forms in DRBA's name and register with manufacturer. Covered defects include, but are not limited to:

1. Ruptured, cracked, or stained finish coating.
2. Discoloration, or lack of finish integrity.
3. Cracking or peeling of finish.
4. Weld or any other structural failure.
5. Failure of hardware.

PART 2 - PRODUCTS

2.1 METAL LABORATORY CASEWORK

A. Computer Workstations: Include fixed height units.

1. Fixed Height Table Construction: Manufacturer's standard, with manufacturer's standard material countertops, unless noted otherwise.

a. Formed metal skirting panels welded into a rigid frame. Corners notched and reinforced to receive manufacturer's standard square metal tubular legs, bolted securely in place.

b. Table Bracing: Removable tube members, in size standard with the manufacturer, installed between legs in manufacturer's standard configuration. Removable bracing designed to be mechanically fixed to concealed U-shaped mounting tabs that are integral with each leg.

c. 3/8 inch leveling devices.

d. Height: 30 inch.

e. Width: 60 inch.

f. Depth: 30 inch.

2. Accessory Components: Manufacturer’s standard.

a. Back Frame: Upright frame for mounting accessory components.

i. Load Capacity: 250 lb., evenly distributed.

ii. Mounting: Bolted to back of work surface support frame.

iii. Electric Power Strip: Single receptacles at manufacturer’s standard spacing with total current rating of 15 Amp.

b. Storage and Display Components: Sizes and configurations indicated on Plans/Drawings.

i. Shelves.

ii. Storage cabinets.

iii. Cabinet Hardware: Manufacturer’s standard types as required for drawers, doors, shelves, levelers, and similar items.

c. Footrest bar.

3. Primary Materials: Manufacturer’s standard for each component.

a. Tubing: Hot-rolled steel, ASTM A513/A513M.

b. Sheet Metal: Cold-rolled steel, ASTM A1008/A1008M.

c. Metal Finish Color: Manufacturer’s standard.

d. Countertop: High Pressure Decorative Laminate (HPDL): NEMA LD 3, types as recommended for specific applications. complying with Grade requirements, and standard with the manufacturer.

4. Manufacturer:

a. Global Industrial: www.globalindustrial.com

b. Work Station Industries: https://workstationindustries.com

c. RDM Industrial Products, Inc.: www.rdm-ind.com

d. OnePointe Solutions: www.onepointesolutions.com

e. Or Approved Equal.

2.2 Fixed and ADJUSTABLE WORKBENCHES

A. Type: Fixed-height unit.

B. Load Capacity: 3,000 lb., evenly distributed on work surface.

C. Fixed Height Table Construction: Stainless steel, with stainless steel work surface.

1. Base frame: Center supports
2. Assembly: Fully welded.
3. Height: 36 inch.
4. Width: 96 inch.
5. Depth: 48 inch.
6. Work surface: Stainless steel with marine edge or drain top with five (5) gallon minimum liquid capacity.

D. Accessory Components: Manufacturer's standard.

1. Drainage hole with plug.
2. Electric Power Strip: Single receptacles at manufacturer's standard spacing with total current rating of 15 Amp.
3. Storage and Display Components: Sizes and configurations indicated on drawings.
   a. Under shelf.

E. Manufacturer:

1. Formaspace: https://formaspace.com
2. RDM Industrial Products, Inc.: www.rdm-ind.com
3. OnePointe Solutions: www.onepointesolutions.com
4. SteelSentry: https://steelsentry.com
5. Or Approved Equal.

2.3 WELDING TABLES

A. Size: 96" wide x 48" front-to-back by 36" high.

B. Work surface Finish: Nitrided.

C. Load Capacity: 1,500 lbs./leg

D. Supports: Material matching work surface material, reinforced with powder-coated

steel bracing.

E. Manufacturer:

1. Strong Hand Tools: https://stronghandtools.com
2. Siegmund Welding Tables: https://weldingtablesandfixtures.com
3. Built Systems: www.builtsystems.net
4. Or Approved Equal.

2.4 MATERIALS

A. Sheet Steel: High-strength low-alloy, cold rolled and leveled unfinished steel sheet, ASTM A1008/A1008M, Class 1 (matte) finish.

B. Stainless Steel Sheet: ASTM A666, Type 304.

C. High Pressure Decorative Laminate (HPDL): NEMA LD 3, types as recommended for specific applications. complying with Grade requirements, and standard with the manufacturer.

2.5 FINISHES

A. Sheet Steel Finish: Having chemical resistance equal to Level 0 (no change) or Level 1 (slight change of gloss or slight discoloration) according to SEFA 8M. Test applied finishes using procedures specified in ASTM D522/D522M.

1. Coating Type, New Casework: Baked on epoxy; minimum two coats.
2. Color: As selected from manufacturer's standard selection.
3. Preparation: Degrease and phosphate etch, and prime.

2.6 ACCESSORIES

A. Task-Light Luminaires: LED luminaires, with switch and heavy-duty cord and plug.

1. Length: 24", nominal.
2. Lens: Clear acrylic.
3. Finish: Baked enamel.
4. Color of Housing: Selected from manufacturer's standard range.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Verify that electrical connections are correctly located and of proper characteristics.

3.2 INSTALLATION

A. Perform installation in accordance with manufacturer's instructions and with SEFA 2.

B. Large Components: Ensure that large components can be moved into final position without damage to other construction.

C. Use anchoring devices to suit conditions and substrate materials encountered. Use concealed fasteners to the greatest degree possible. Use exposed fasteners only where allowed by approved shop drawings, or where concealed fasteners are impracticable.

D. Set casework items plumb and square, securely anchored to building structure, with no distortion.

1. Base Cabinets: Examine floor levelness and flatness of installation space. Do not proceed with installation if encountered floor conditions required more than 3/4" leveling adjustment. When installation conditions are acceptable, for each space, establish the high point of the floor. Set and make level and plumb first cabinet in relation to this high point.

E. Align cabinets to adjoining components, install filler and/or scribe panels where necessary to close gaps.

F. Fasten together cabinets in continuous runs, with joints flush, uniform and tight. Misalignment of adjacent units not to exceed 1/16". In addition, do not exceed the following tolerances:

1. Variation of Tops of Base Cabinets from Level: 1/16" in ten (10) feet.
2. Variation of Faces of Cabinets from a True Plane: 1/8" in ten (10) feet.
3. Variation of Adjacent Surfaces from a True Plane (Lippage): 1/32".
4. Variation in Alignment of Adjacent Door and Drawer Edges: 1/16".

G. Separate dissimilar metals to prevent galvanic action.

H. Replace units that are damaged, including those that have damaged finishes.

3.3 ADJUSTING

A. Adjust operating parts, including doors, drawers, hardware, and fixtures to function smoothly.

3.4 CLEANING

A. Clean casework and other installed surfaces thoroughly.

3.5 PROTECTION

A. Do not permit finished casework to be exposed to continued construction activity.

B. Protect casework and countertops from ongoing construction activities. Prevent installers from standing on or storing tools and materials on casework or countertops.

C. Repair damage that occurs prior to Date of Completion, including finishes, using methods prescribed by manufacturer; replace units that cannot be repaired to like-new condition.

3.6 METHOD OF MEASUREMENT

A. Work performed under this Section shall be considered incidental to **Lump Sum Pay Item 20: Furnishings,** and thus will not be measured.

3.7 BASIS OF PAYMENT

A. Work properly performed in accordance with this Section will be paid for at the Lump Sum Unit Price for **Pay Item 20: Furnishings.** Payment for work shall include full compensation for performing all work specified and for the furnishing of all materials, tools, equipment, labor, testing, submittals, and incidentals necessary to complete the work as described in the Contract Documents. Payment will be made on a monthly basis, based on percent completion of the work properly performed and accepted as determined by the Engineer.

END OF SECTION 123553.13

SECTION 125716

WELDING SCREENS

PART 1 - GENERAL

1.1 Section Includes

A. Welding Curtain Partitions.

1.2 Submittals

A. Product Data: Manufacturer's data sheets on each product to be used, including:.

1. Preparation instructions and recommendations.
2. Storage and handling requirements and recommendations.
3. Installation methods.

B. Shop Drawings: Indicate size, shape, and dimensions, including clearances from adjacent walls, doors, and obstructions.

1.3 Delivery, Storage, and Handling

A. Store products in manufacturer's unopened packaging until ready for installation..

B. Handle partitions and accessories with sufficient care to prevent scratches and other damage to the finish.

PART 2 - PRODUCTS

2.1 Manufacturers

A. Akon Curtains; Model SB-5000: www.curtain-and-divider.com

B. Steel Guard Safety Corporation; Retractable Welding Screens & Curtains: www.steelguardsafety

C. Or Approved Equal.

2.2 Welding Screen Assembly

A. Mounting: Mobile pedestal mounted.

1. Pedestal width and depth: 20.40 inches.
2. Pedestal height: 96".
3. Weight: 205 lbs.
4. Screen Mounting: Retractable
5. Spring rating up to 250,000 cycles.

B. Screen

1. Type: Sheet
2. Thickness: .020 inches.
3. Thread count: 18 x 17 sq. inch.
4. Screen height: 5 ft. 6".
5. Screen material: PVC coated polyester fabric
6. Transparency: Opaque
7. Color: Blue
8. UV resistance: rated for exterior applications
9. Temperature resistance: -20° ~ +150° F

C. Assembly:

1. Factory assemble.

PART 3 - EXECUTION

3.1 Preparation

A. Ensure surfaces to receive partitions and accessories are clean, flat, and level.

3.2 Installation

A. Install in accordance with manufacturer's written instructions.

B. Freestanding installation: Place in location indicated on Plans/Drawings.

3.3 Cleaning

A. Clean installed work to like-new condition. Do not use cleaning materials or methods that could damage finish..

3.4 Protection

A. Protect installed products until completion of project.

B. Touch-up, repair or replace damaged products before Date of Completion.

3.5 METHOD OF MEASUREMENT

A. Work performed under this Section shall be considered incidental to **Lump Sum Pay Item 10: Furnishings,** and thus will not be measured.

3.6 BASIS OF PAYMENT

A. Work properly performed in accordance with this Section will be paid for at the Lump Sum Unit Price for **Pay Item 10: Furnishings.** Payment for work shall include full

compensation for performing all work specified and for the furnishing of all materials, tools, equipment, labor, testing, submittals, and incidentals necessary to complete the work as described in the Contract Documents. Payment will be made on a monthly basis, based on percent completion of the work properly performed and accepted as determined by the Engineer.

END OF SECTION 125716

SECTION 200000

GENERAL MECHANICAL REQUIREMENTS

PART 1 - GENERAL

1.1 SUMMARY

A. Section includes administrative and procedural requirements for work under CSI MasterFormat Division 20.

B. Coordinate the work of this Section with the requirements of the Project.

1.2 DEFINITIONS

A. Following are definitions of terms and expressions used in the Mechanical Sections in addition to definitions found in the Contract Conditions:

1. "Piping" includes pipe, fittings, valves, hangers, and other accessories that comprise a system.

2. "Ductwork" includes ducts, fittings, housings, dampers, hangers, and other accessories, which comprise a system.

3. "Refurbish" shall include but not be limited to: inspecting/repairing unit cabinet, such as repairing, seals/latches, curbs, etc., cleaning coils, replacing belts, lubricating bearings, changing filters, inspecting and cleaning gas fired heat exchanger, cleaning/repairing condensate drain and secondary drain pan, check and adjust refrigeration charge on each unit, leak test and repair any refrigeration leaks, etc. to bring the piece of equipment being refurbished into the manufacturers original operating specifications/tolerances and provide warranty of operability for sixty (60) days after the systems have been turned over to the DRBA.

1.3 QUALITY ASSURANCE

A. Regulatory Requirements

1. Work shall conform to the requirements of the codes, laws and ordinances of Cape May, New Jersey, National Fire Protection Association, American Society of Mechanical Engineers, and other authorities having jurisdiction.

2. Comply with applicable codes, laws, standard practices.

3. Comply with the standards of good practice as outlined in the ASHRAE Guide, the Sheet Metal and Air Conditioning Contractor's Association's "Duct Manual", and the Apprentice Training Manual of the Steam Fitters Union.

4. The requirements of the authorities having jurisdiction shall take precedence over the Plans/Drawings and Specifications and changes required by the authorities shall be made after review by the Engineer.

1.4 SUBMITTALS

A. Shop drawings are required for the following:

1. Fire Protection

a. Sprinkler Piping

b. Hydraulic Calculations

2. Heating and Air Conditioning

a. Air Devices

b. Insulation

c. Exhaust Fans

d. Heating and Air Conditioning Equipment

e. Flue Vents

f. Temperature Controls

g. Testing, Adjustment and Balancing Reports and Qualifications

3. Field Instructor's Name and Credentials.

B. Review of shop drawings does not relieve the Contractor of responsibility for complying with the contract documents.

1.5 PROTECTION

A. Protect material and equipment from damage.

B. Cap or plug openings in equipment, piping and ductwork with proper caps and plugs.

C. Building materials should be stored in a weather-tight, clean area prior to unpacking for installation.

D. Accumulation of water during construction should be avoided and any porous construction materials such as insulation should be protected from moisture.

1.6 VARIANCES

A. Where conflicts exist within the Specifications, request clarification prior to the submission of a bid. If clarification is not requested, provide the work representing the higher cost and quality.

1.7 WARRANTY

A. During the warranty period, make the proper adjustments to systems, equipment and devices installed and perform the work necessary to ensure the efficient and proper operation of the systems, equipment, and devices.

B. Certain items of equipment shall be warranted for a longer time than the general warranty period. Provide for service or replacement required in connection with

the warranty of these items.

C. The warranty period shall not begin until the project has reached substantial completion. Any warranty limits from the manufacturer related to delivery of equipment or unit startup shall be between the Contractor and the manufacturer only and shall not have an impact on the warranty between the DRBA and the Contractor.

PART 2 - PRODUCTS

2.1 PRODUCTS TO BE USED

A. Items are specified by designations such as trade name, manufacturer's name, catalog number and indicate the capacity and quality of the products or materials to be used on this project.

B. Only products indicated on Specifications by name and model number have been coordinated with other trades. Coordinate items of other manufacturers with other trades.

C. The product indicated on the Specifications by name and model number are the basis of design. Additional manufacturers named in the specifications are approved equals.

2.2 MATERIALS AND WORKMANSHIP

A. Items shown and not specifically called for, or items specified and not specifically indicated or detailed on the Plans/Drawings, or items neither specified nor shown, but which are reasonably incidental to and commonly required to make a complete job, shall be provided.

2.3 FOUNDATIONS AND EQUIPMENT SUPPORTS

A. Provide foundations, supports, curbs and bases for equipment, as indicated or necessary for satisfactory installation and operation of equipment. Furnish and set anchor bolts.

B. Concrete pads shall be 4" thick minimum, thicker if necessary to accommodate a particular piece of equipment. Edges shall be beveled with outer edge extending 3" beyond equipment. Provide concrete pads for floor-mounted equipment. Exterior pads shall be reinforced and shall have edges turned down to below the frost line. Exterior pads shall extend eight inches beyond the edges of equipment and shall be sloped for drainage.

2.4 HANGERS AND PIPE SUPPORTS

A. Provide pipe hangers and supports to maintain required slope and alignment for equipment and piping. Pipe hangers shall be manufactured by Carpenter & Patterson, Fee & Mason, Modern Hanger, or Grinnell.

B. Pipes may not be supported from other pipes. Trapeze hangers may be used for parallel runs of pipe with same slope.

C. Provide sway bracing at sufficient intervals to prevent lateral motion of horizontal or vertical piping and ductwork as required by the jurisdiction to meet the appropriate regional requirements.

D. For pipe and tubing, both horizontal and vertical, and regardless of the spacing of other supports, provide supports at or near changes in direction. Hangers shall be spaced at not over six (6) feet apart for 1/2" pipe, not over eight (8) feet apart for 3/4" and 1" pipe and not over ten (10) feet for larger sizes.

E. For steel bar joist construction, hanger rods shall be supported from the top chord of the joists or from panel points of the lower chord of the joists. Where piping runs parallel to joists or where hangers are required at other than joist locations, provide steel angles welded to joists to support hangers so that weight is supported from the top chord of the joists.

F. Hangers for pipe shall be similar to Carpenter & Paterson "Clevis" figure 100. Hangers for insulated lines with vapor barrier and carrying fluids with temperatures below 70 degrees shall be large enough to permit continuous insulation. Hangers on vapor barrier insulated piping shall be provided with rigid protector saddles with rigid core of insulation to thickness of adjacent insulation. Saddles shall be 16-gauge galvanized steel and shall cover one half of the circumference of the pipe covering. Saddle shall be secured to insulation with adhesive.

G. Pipes upon or within close distance of walls shall be carried by wall brackets, Carpenter & Paterson, Fig. 221, 139, or 227 as approved.

H. Support vertical lines at floor level with extension pipe clamps. Support lowest level of riser with pipe hanger as specified above on horizontal pipe as close to riser as possible.

I. Special supports required shall be provided to suit the conditions.

J. Expansion bolts or wood plugs will not be permitted in slag block walls. Equipment hung on such walls shall be supported by through bolts or approved anchor bolts set into masonry as the wall is laid up.

K. Where piping is supported on the exterior of the building seal any resulting penetrations and paint bracing to match existing. Bracing is to be appropriate for a marine environment.

2.5 OPENINGS, CHASES, LINTELS AND SLEEVES

A. Determine the location and size of chases, lintels, and openings necessary for the proper installation of the work and provide them during the erection of the work in which such chases and openings occur.

B. Provide sleeves through walls and floors for pipes. Sleeves through walls shall be of sufficient size to permit the insulation, where specified, to continue through the sleeve. Sleeves through walls shall be flush with the walls.

C. In case cutting of building construction is necessary, including cutting of structural members, such cutting shall be done and repaired to match original condition of the work.

D. Where non-combustible pipes pass through sleeves or around ductwork through openings in fire rated wall, floor-ceiling and ceiling-roof assemblies, seal openings with an Underwriters Laboratories classified firestop method. Firestop method shall be a one part, intumescent (expands with heat), latex elastomer capable of expanding a minimum of three times. Firestop materials shall be UL listed when tested in accordance with ASTM E814 for a two (2) hour fire (F) and temperature (T) rating.

E. Escutcheon plates shall be used to conceal sleeve openings on exposed uninsulated piping. Floor plates shall be split chrome plated cast brass similar to Ritter No. 36A.

2.6 VIBRATION ISOLATION

A. Provide vibration isolators manufactured by a firm specializing in this type of work for equipment and piping that is capable of transmitting noise and vibration to the building structures.

B. Isolators shall be designed to suit vibration frequency to be absorbed. Provide isolator units of area distribution to obtain proper resiliency under machinery load and impact. Where unequal distribution of weight occurs, design isolators for uniform deflection under imposed load.

C. Examine the contract drawings for sizes, horsepower, rotational speeds, equipment location, length of span between columns and beams and construction type to determine the isolator selection type and deflection required for each piece of mechanical equipment. Conform to the requirements of the American Society of Heating, Refrigerating, and Air-Conditioning Engineers (ASHRAE) Handbook, “HVAC Applications”, Chapter 48, “Sound and Vibration Control”.

D. Isolators of the same type shall be the product of the same manufacturer, Mason, Vibration Eliminator, or Korfund.

E. Mountings shall be of the types indicated below:

1. Type A: Double deflection neoprene mountings shall have a minimum static deflection of 0.50". Metal surfaces shall be neoprene covered to avoid corrosion and have friction pads both top and bottom, so they need not be bolted to the floor. Bolt holes shall be provided for those areas where bolting is required. On equipment such as small vent sets and close coupled pumps, steel rails shall be used above the mountings to compensate for the overhang. Mountings shall be type ND or rails type DNR as manufactured by Mason Industries, Inc. Color code to indicate durometer.

F. Hangers shall be of the types indicated below:

1. Type E: Vibration hangers shall contain a steel spring and 0.3" deflection neoprene element in series. The neoprene element shall be molded with a

rod isolation bushing that passes through the hanger box. Spring diameters and hanger box lower hole sizes shall be large enough to permit the hanger rod to swing through a 30-degree arc before contacting the hole and short-circuiting the spring. Springs shall have a minimum additional travel to solid equal to 50% of the rated deflection. Submittals shall include a scale drawing of the hanger showing the 30-degree capability. The hanger shall be type 30N as manufactured by Mason Industries, Inc.

G. Horizontal thrust restraints shall be of the types indicated below:

1. Type X: Air handling equipment shall be protected against excessive displacement, which might result from high air thrusts in relation to the equipment weight. The horizontal thrust restraint shall consist of a spring element in series with a neoprene pad as specified for the mountings or hangers. The spring element shall be contained within a steel frame and designed so it can be present for thrust at the factory and adjusted in the field to allow for maximum of 1/4" movement at start and stop. The assembly shall be furnished with one rod and angle brackets for attachment to both the equipment and ductwork or the equipment and structure. Horizontal restraints shall be attached at the centerline of thrust and symmetrically on either side of the unit. Horizontal thrust restraints shall be WB as manufactured by Mason Industries, Inc.

H. Provide vibration isolation as required above and as indicted in the following schedule:

EQUIPMENT	LOCATION	ISOLATION TYPE	DEFL. (IN)
Indoor Air Handling Units and Heaters (Commercial)		E – Suspended	1.0"
Ceiling Fans		E, X	1.0"

2.7 ACCESS PANELS

A. In general, valves, dampers, traps, and equipment shall be accessible through the removable panels in the ceiling. Where ceilings are not removable and in walls where access is required for service, access panels shall be provided. Access panels shall be appropriate for the finish in which they are installed, with a fire rating to match the wall or ceiling in which they are installed.

B. Group valves, dampers, and equipment together to keep the required number of access panels to a minimum.

2.8 ELECTRICAL WORK

A. Motors and heating elements for equipment specified under the mechanical Sections of the Specifications shall be provided with the equipment.

B. Starters, disconnect switches, and work pertaining to equipment power connections are specified under CSI MasterFormat Division 26 unless specified with the equipment of CSI MasterFormat Division 20. Electrical devices provided under this Division shall meet requirements for similar equipment specified under CSI MasterFormat Division 26.

C. Interlock wiring, and the provision of pilot devices such as push buttons, thermostats, flow switches and similar items and their related wiring associated with the Automatic Control System, shall be provided in accordance with the applicable requirements of CSI MasterFormat Division 26. For ease of servicing, permanently identify both ends of conductors with W. H. Brady Co. self-sticking Perma-Code wire markers. Mark control diagrams accordingly.

D. Coordinate control device voltages.

E. Unless specifically noted otherwise, motors ½ HP and over shall be wound for 208 volts, 3 phase, 60 hertz current, and those under ½ HP for 120 volts, single phase, 60 hertz current. Motors shall be equipped with grease packed ball bearings. Motors shall be rated for continuous duty at 100 percent of rated capacity with an ambient temperature of 40 degrees C.

F. Design motors in accordance with NEMA standards and affix to each a nameplate accurately listing pertinent data. Motors shall have sufficient capacity to start and operate the machine they drive without exceeding the motor nameplate rating at the speed specified or at speeds or loads which may be obtained by the drive actually furnished. The motor HP or KW ratings are those estimated to be required by the driven equipment when operating at specified duties and efficiencies and are used to determine electrical feeder sizes. If the actual horsepower or KW required for the equipment to be furnished is greater than the indicated horsepower or KW, it shall be provided. Changes required in starter, feeder, branch circuit or other electrical items shall be made. Provide a shop drawing showing the mechanical/electrical coordination between trades. The shop drawing shall list all mechanical equipment with power demand, associated branch circuit feeder designation, conduit and wire size, breaker size and fused safety switch.

G. Unless otherwise indicated, polyphase motors shall be Class B, general purpose, squirrel cage, single speed, open induction type, stamped with NEMA Class B letter designation.

H. Single phase motors except as noted shall be open, capacitor start type. Motors of 1/6 horsepower and under shall be permanent split capacitor type with built-in reset thermal overload protection, unless specifically noted otherwise. Motors 1/12 horsepower and smaller that start with no load may be shaded pole with built-in reset thermal overload protection.

I. Mechanical equipment with a factory wired control panel shall be wired in accordance with the National Electrical Code. Additionally, components within the panel shall bear the UL label.

J. Equipment shall be UL listed as a system or be tested by an independent electrical testing agency acceptable to the Engineer to comply with requirements of the

Authority having jurisdiction.

K. Do not install equipment, ductwork, or piping in the dedicated spaces above switchgear, panels and transformers as identified in the National Electrical Code.

2.9 FLASHING

A. Flashing assemblies specified above shall be set in place as part of the work under CSI MasterFormat Division 20 but will be finally installed as specified in another Division of this Specification.

B. Base flashing of roof drains, ducts, fans, and other equipment, if required, is specified in Section 079005 – Joint Sealers. Cap flashings shall be provided to make a watertight seal.

2.10 IDENTIFICATION

A. Equipment shall be identified with engraved plastic laminate or anodized aluminum nameplates with pressure sensitive backing. Plates shall also be provided with drilled holes and fastened to equipment with moly-rivets. Letters shall be at least 3/8" high and larger in proportion to the size of the piece of equipment. Identification shall be the same as noted on schedules on the Plans/Drawings. Labels shall be provided for the following equipment.

1. Condensing Units
2. Fan Coil Units
3. Gas Fired Unit Heaters
4. Radiant Heaters
5. Fans

B. Labels shall identify the piping system. Labels shall be located where pipe enters and leaves a space and at thirty (30) foot centers on normal runs. Duct systems shall be similarly identified by noting the system and direction of flow.

PART 3 - EXECUTION

3.1 EXISTING CONDITIONS

A. Visit the site and become familiar with existing conditions. Modifications to the work required to allow for existing conditions shall be provided. Submit proposed modifications to the Engineer for approval prior to installation.

B. Relocate existing hangers and supports where necessary to install new work. Maximum spacing requirements shall apply for relocated supports.

C. Coordinate interruptions in service of existing systems with the DRBA. Provide temporary connections to maintain operation of existing systems.

3.2 MANNER OF INSTALLATION

A. Piping and ductwork shall be installed to preserve access to valves, dampers, and equipment. Valves, dampers, and equipment which require frequent service, adjustment, or control and which cannot be located in a readily accessible and safe place, shall be provided with extension devices and remote operators, as necessary and as accepted for use by the Engineer.

B. Piping and ductwork shall be run to follow the lines of the building and to allow the maximum headroom consistent with proper pitch. Piping subject to thermal expansion shall be arranged to permit movement without damage to the piping, ductwork, and equipment.

C. The Drawings are generally indicative of the work to be installed, but they do not show all offsets, fittings and similar details required, which shall be provided to meet the job conditions. In areas where work is installed in close proximity to work of other trades or within trades covered by CSI MasterFormat Division 20, prepare larger scale drawings consisting of plans and sections to show how work is to be installed in relation to work of other trades.

D. Equipment and systems shall be installed in accordance with the requirements and recommendations of the associated manufacturer.

3.3 EXCAVATION AND BACKFILL

A. Provide excavation and backfill necessary to install underground piping and other work included in this CSI MasterFormat Division 20. Establish lines and grades required for the proper location of the work.

B. After the piping has been placed, the trenches shall be backfilled to the lines of present grades or finished grade as required. No backfill shall be placed, however, until water has been removed from the trenches and joints have been set and after the tests have been made on piping as required.

3.4 RECORD DRAWINGS

A. Keep at the site two (2) sets of black and white prints for the express purpose of showing changes from the contract Drawings made during construction. Mark up the prints with red pencil during construction and deliver the prints, before final inspection, to the Engineer as a final set of “Record Drawings”.

3.5 TESTING

A. Before concealing piping and before insulating piping, test piping per the requirements listed below or as required by the authority having jurisdiction, whichever is more stringent, and prove tight.

B. Replace and retest to Engineer’s satisfaction pipe or fittings broken or damaged under test.

C. Before testing piping systems, remove or otherwise protect from damage, control devices, air vents, plumbing fixtures and other parts which are not designed to stand pressures used in testing piping.

D. New gas piping shall be air pressure tested at 50 psi test pressure for two (2) hours without a drop in pressure during the test period.

3.6 CLEANING OF SYSTEMS

A. Dust shall be removed from ductwork before Completion. Filter media shall be new at Completion.

B. If systems become stopped with refuse, remove the obstruction, and replace and repair work disturbed.

C. Dust in the construction area shall be suppressed with wetting agents or sweeping compounds. Dust shall be cleaned regularly.

D. Remove rust and clean surfaces to be insulated or painted.

E. Leave systems in clean condition and running order.

3.7 PAINTING

A. Remove rust, scale, grease, and dirt from equipment and material and leave ready for finish painting. Equipment specified with factory baked enamel finish shall be touched up as required to provide a surface visually free of scratches, nicks, and blemishes.

B. Paint uninsulated ferrous piping, hangers, and miscellaneous iron work in concealed spaces with one coat of Rust-O-Leum dampproof red primer.

C. Paint gas piping systems (Yellow) with associated markings per ANSI/ASME standards or as required by the Authority Having Jurisdiction.

D. Where metal duct is visible through a register or grille, paint the interior of the duct with flat black paint.

3.8 OPERATING AND MAINTENANCE MANUAL

A. Submit operating and maintenance instructions. The manual shall include the following:

1. A brief description of systems and their various components.

2. Full, definite, and explicit instructions for starting, stopping, controlling, and changing over systems from one season to another.

3. List of manufacturer’s representatives with address and telephone numbers.

4. Manufacturer’s printed operating and maintenance instructions, parts lists, illustrations, and diagrams for pieces of equipment.

5. A complete schedule of periodic servicing and lubrication requirements for equipment.

6. One (1) copy of each shop drawing and Contractor’s drawings.

7. One (1) copy of other items of equipment where not required as a shop drawing submittal.

8. One (1) copy of each wiring diagram.

9. Motor manufacturer's certificate for motors exposed to the weather.

10. The field test data specified in Section 230000 under Balancing and Adjusting.

11. Sterilization certificate for domestic water systems.

3.9 FIELD INSTRUCTION

A. Upon completion of work, furnish services of a competent representative to instruct DRBA's representative in the proper operation and maintenance of elements of the mechanical systems. Submit instructor's name and credentials to the Engineer for approval.

B. Spend not less than eight (8) hours in such formal instruction to prepare the DRBA to operate and maintain the systems.

C. At least four (4) hours of the specified eight (8) hours of instruction shall occur after thirty days operation by DRBA's representative and may be divided into periods of four (4) hours at different seasons of the year.

3.10 PERFORMANCE TEST

A. Should the performance or capacity of the systems, equipment or devices furnished be questioned by written notice from the Engineer after installation, provide necessary test equipment and complete a satisfactory test of the items in question. The test shall be run when and as directed by the Engineer and in the presence of his representative. Should the items furnished not pass such a test, they shall be removed and replaced by systems, equipment, or devices satisfactory to the Engineer.

3.11 METHOD OF MEASUREMENT

A. Work performed under this Section shall be considered incidental to **Lump Sum Pay Item 11: General Mechanical Requirements,** and thus will not be measured.

3.12 BASIS OF PAYMENT

A. Work properly performed in accordance with this Section will be paid for at the Lump Sum Unit Price for **Pay Item 11: General Mechanical Requirements.** Payment for work shall include full compensation for performing all work specified and for the furnishing of all materials, tools, equipment, labor, testing, submittals, and incidentals necessary to complete the work as described in the Contract Documents. Payment will be made on a monthly basis, based on percent completion of the work properly performed and accepted as determined by the Engineer.

END OF SECTION 200000

SECTION 210000
FIRE PROTECTION

PART 1 - GENERAL

1.1 SUMMARY

A. The requirements of Section 200000 apply to work performed under this Section.

B. Section includes fire protection sprinkler systems.

1.2 QUALITY ASSURANCE

A. Regulatory requirements of the fire protection system shall be in compliance with the rules and regulations of the Fire Department and the State Fire Marshal (or the legislated authoritative representative) and in accordance with the following:

1. Building Code
2. NFPA 101 - Life Safety Code
3. NFPA Standards
    a. NFPA 13
    b. NFPA 20

B. Fire alarm system and associated wiring are specified under CSI MasterFormat Division 26. Coordinate changes to the fire alarm system due to changes in the sprinkler system layout from that shown in the Specifications.

1.3 SUBMITTALS

A. A sprinkler system working drawing as required by NFPA and local jurisdiction shall be submitted to the Engineer for review after governmental and regulatory agency approvals have been obtained. The submittal shall include the manufacturer's data sheets and hydraulic calculations. Approval agencies shall include the local fire department and the State Fire Marshal's office. No installation of the system shall be made until approval is obtained. The system shown on the Plans/Drawings is schematic and is intended for use as a guide.

PART 2 - PRODUCTS

2.1 SPRINKLER SYSTEM EQUIPMENT

A. Ceiling sprinkler heads shall be chrome plated pendant heads for installation on a suspended ceiling system. Ceiling heads shall have a full 360-degree spray pattern provided with fusible links or with thermal glass bulb for ordinary temperature rating. Sprinkler and other major devices shall be manufactured by Reliable or Viking, or Automatic Sprinkler.

B. Sidewall sprinkler heads shall be chrome plated, horizontal type with a special deflector to distribute the water in a uniform pattern. Sidewall heads shall have a

fusible link or with thermal glass bulb or with thermal glass bulb with an ordinary temperature rating.

C. Exposed piping upright sprinkler heads shall be natural bronze finish for exposed piping installation. Heads shall have a full 360-degree spray pattern provided with fusible links for ordinary temperature rating.

D. Alarm check valve shall be provided at service entrance and shall have alarm connection to the fire alarm system. Wiring from the alarm connection to the fire alarm system is specified in CSI MasterFormat Division 26.

E. Flow switches shall be Simplex, Pyrotronics, Johnson or Honeywell pneumatically damped switch with 15 second delay, actuated by a flow rate of 10 gpm or greater. Alarm shall actuate an electric switch. Wiring from the switch to the fire alarm system is specified under CSI MasterFormat Division 26.

PART 3 - EXECUTION

3.1 PIPING

A. Piping within the building shall be per NFPA 13 except that plastic pipe shall not be used.

3.2 SPRINKLER SYSTEM

A. The sprinkler system shall be a completely automatic wet pipe system complete with piping, sprinkler heads, valves, accessories, hangers, etc. System shall be generally classified for the code application hazard.

B. The layout of sprinkler heads and piping shall be coordinated with the Architectural, Structural, Mechanical and Electrical Drawings and field conditions. Provide offsets, sleeves, etc., required for the installation.

C. Extend piping for fire protection use from the water service where it enters the building.

D. The location of mains is shown on the plans. These locations have been coordinated with other work as shown on the Plans/Drawings. Piping locations shall be coordinated, and field measured to ensure proper fit.

E. The system shall be hydraulically designed. Computer readout sheets shall be submitted as required for approval and permit purposes.

F. Have a flow test performed in accordance with the procedures established in NFPA 20. Results of this flow test shall be included with the computer calculations.

3.3 METHOD OF MEASUREMENT

A. Work performed under this Section shall be considered incidental to **Lump Sum Pay Item 12: General Fire Protection,** and thus will not be measured.

3.12 BASIS OF PAYMENT

A. Work properly performed in accordance with this Section will be paid for at the Lump Sum Unit Price for **Pay Item 12: General Fire Protection.** Payment for work shall include full compensation for performing all work specified and for the furnishing of all materials, tools, equipment, labor, testing, submittals, and incidentals necessary to complete the work as described in the Contract Documents. Payment will be made on a monthly basis, based on percent completion of the work properly performed and accepted as determined by the Engineer.

END OF SECTION 210000

SECTION 220000

GENERAL PLUMBING REQUIREMENTS

PART 1 - GENERAL

1.1 NOTE

A. The requirements of Section 200000 apply to work performed under this Section.

1.2 SCOPE

A. The work under this Section of the Specification shall include the furnishing of labor, materials and equipment for the installation of complete plumbing systems, including interior sanitary soil, waste and vent piping; storm, interior domestic hot and cold-water piping, condensate drain piping, plumbing fixtures and appliances to provide continuous and satisfactory service.

1.3 CONNECTIONS TO EQUIPMENT

A. Provide labor and materials to connect equipment furnished under this Section of the Specification.

B. Provide labor and materials to connect equipment furnished under other Sections of the Specification and requiring plumbing connections as if the equipment was furnished under this Section of the Specification. Provide traps, water stop valves, etc., for equipment requiring such connections to provide functioning systems.

PART 2 - PRODUCTS

2.1 VALVES

A. Provide valves as indicated on Plans/Drawings, as specified below, and as required. Valves, where possible, shall be of one manufacturer, Stockham, Nibco, or Jenkins, Jomar whose figure numbers are used below.

B. Valves 2" and smaller, which will be operated frequently, or will be used for throttling services, shall be ball or globe valves. Stop valves shall be ball valves.

Valves in gas piping shall be corrosion resistant, double-seal, O-ring stem seal, meets ANSI 125 lb. standard, manufactured from bronze or Electroless nickel-plated cast-iron eccentric plug by Key Port Valve series 400.

PART 3 - EXECUTION

3.1 CONDENSATE PIPING

A. Drain piping from air conditioning unit condensate pans above the ground shall be type “L” hard drawn copper water tube, ASTM B88 with solder type wrought copper fittings, ANSI A40.3.

3.2 GAS PIPING - NATURAL GAS

A. Make arrangements with the local gas utility for the installation of the gas service and meter. Note that the gas service exists, and the existing meter and regulator may be able to accommodate the increased load. The DRBA will pay costs levied by the utility for this work.

B. Gas piping shall be extended from the gas meter to the appliances requiring connections.

C. Gas piping shall be Schedule 40 black steel pipe with malleable iron fittings made up with gasoila pipe dope compound. Concealed/non-accessible piping shall be provided with welded fittings. Piping shall be installed in accordance with the NFPA code for gas piping.

D. Provide shut off valves at branches and at pieces of equipment. Slope pipe to drain at low points and provide drip legs at these locations. Provide for thermal expansion of pipes. Provide shut off the valves on the two main branches at the meter.

E. Provide utility company coordination.

F. Piping system shall be tested to meet local code and inspection requirements.

3.3 INSULATION

A. After the systems have been installed and tested, insulation as specified below shall be applied. Materials shall be UL, Inc., approved and shall be applied as recommended by the manufacturer's written instructions. Materials used shall be the products of Owens Corning, PPG, Manville, Knauff Corporation, Certainteed, Armstrong, Eagle Picher, Insul Coustic or Benjamin Foster and shall be equal to those products that meet the Specifications below.

B. Insulate condensate drain. Insulation shall be heavy density long strand fiberglass, sectional insulation with all service vapor barrier jacket and double side adhesive self-sealing lap, Johns Manville Micro-Lok system or equal of Owens Corning. Insulation shall comply with ASTM E84 with a flame spread rating of 25 or less and smoke developed rating of 50 or less. Insulation thickness shall be in accordance with the Energy Code but shall not be less than ½ inch. Fittings, valve bodies, etc., shall be covered with Zeston type precut vinyl insulation jackets with pre-shaped fiberglass insert.

C. On exposed insulated piping in finished areas within seven feet of the floors, provide .010-inch-thick galvanized steel insulation jackets. This does not include piping exposed in unfinished areas such as boiler rooms, storage rooms, etc.

D. At the pipe hangers, for piping carrying fluids with temperatures below 70 degrees, provide a rigid core of insulation to support the pipe. Rigid insulation shall be the same thickness as the adjacent semi-rigid insulation and have the same flame spread and smoke developed ratings. Vapor barrier shall be continuous and integral between the rigid and semi-rigid sections of insulation. Rigid insulation shall be composed of hydrous calcium silicate. Rigid insulation shall be Johns Manville Thermo-12 Gold or equal of Owens Corning.

3.4 METHOD OF MEASUREMENT

A. Work performed under this Section shall be considered incidental to **Lump Sum Pay Item 13: General Plumbing Requirements,** and thus will not be measured.

3.5 BASIS OF PAYMENT

A. Work properly performed in accordance with this Section will be paid for at the Lump Sum Unit Price for **Pay Item 13: General Plumbing Requirements.** Payment for work shall include full compensation for performing all work specified and for the furnishing of all materials, tools, equipment, labor, testing, submittals, and incidentals necessary to complete the work as described in the Contract Documents. Payment will be made on a monthly basis, based on percent completion of the work properly performed and accepted as determined by the Engineer.

END OF SECTION 220000

SECTION 230000

HEATING & AIR CONDITIONING

PART 1 - GENERAL

1.1 NOTE

A. The requirements of Section 200000 apply to work performed under this Section.

1.2 SCOPE

A. The Work under this Section of the Specification shall include the furnishing of labor, equipment, and materials for the installation of heating, air conditioning and ventilating systems as specified, shown on the Plans/Drawings, or implied to provide continuous and satisfactory service.

PART 2 - PRODUCTS

2.1 HEAT PUMP SPLIT SYSTEM – CONCEALED DUCTED CEILING TYPE

A. Provide direct expansion, split system heat pump system consisting of exterior unit and interior fan coil unit. Unit shall be ARI rated but shall operate at the conditions and capacities as noted on the Plans/Drawings.

B. Outdoor condensing unit

1. The outdoor condensing unit shall be air cooled with horizontal air discharge provided with a scroll compressor.

2. Compressors shall be scrolling type provided with internal vibration isolation, crank case heater and motor winding over temperature and overcurrent safety devices.

3. The heater transfer coil shall be copper tube with aluminum plate fins. Heat rejection fan shall be deep pitched corrosion resistant propeller fan protected by a fan guard. Fan shall be directly driven by permanently lubricated motor with inherent overload protection and class B insulation.

4. Provide outdoor unit with defrost controls, high- and low-pressure safety controls, time delay relay to prevent short cycling and automatic restart on resumption of electric service after a power failure. Controls shall be solid state.

5. The casing shall be suitable for exterior use and shall be provided with baked enamel finish over properly treated galvanized steel or other approved corrosion resistant finish.

C. Indoor Unit

1. The indoor unit shall be factory assembled and pre-wired with all necessary electronic and refrigerant controls. Both liquid and suction lines must be individually insulated between the outdoor and indoor units.

2. The indoor unit shall be constructed of heavy gauge galvanized steel. The unit shall be internally insulated and shall be capable of installation in indoor environments up to 80% relative humidity without requiring additional field installed insulation. The drain and refrigerant piping shall be accessible from the right side. The cabinet shall have a factory rear return air position with the ability to convert to bottom return. The cabinet shall include a drain pan inspection port on the right side to observe drain pan conditions. Provide backwater valve in condensate drain line.

3. The evaporator fan shall be an assembly consisting of a direct-driven fan by a single motor. The fan shall be statically and dynamically balanced and operated on a motor with permanent lubricated bearings. The indoor fan shall offer a choice of three speeds, plus a quiet setting. The fan shall have a delayed start when initially put into HEAT operation, giving time for the evaporator coil to heat up and preventing a cold draft from entering the room. The unit shall be equipped with internal controls to allow the fan motor to be manually adjusted, via field setting, to deliver airflow at a variety of external static pressures.

4. The evaporator coil shall be a nonferrous, aluminum fin on copper tube heat exchanger. All tube joints shall be brazed with silver alloy or phoscopper. All coils will be factory pressure tested. A condensate pan shall be provided under the coil with a drain connection. The unit shall be equipped with a factory-integral condensate lift mechanism.

5. The unit shall have a wired type of remote controller capable of operating the system. The controller shall be able to display two-digit fault codes extracted from the indoor unit to aid in troubleshooting. The indoor unit microprocessor has the capability to receive and process commands via return air temperature and indoor coil temperature sensors enabled by commands from the remote control.

6. Split system – single zone – inverter driven air-cooled heat pump units shall be Daikin, Carrier, Mitsubishi, or Sanyo.

D. Split Heat Pump system shall be Daikin, Carrier, Mitsubishi, or Sanyo.

2.2 UNIT HEATERS - GAS

A. Provide gas fired unit heaters where shown on the Plans/Drawings and of the capacities indicated.

B. The unit heater shall be complete with casing, heat exchanger, gas burner, centrifugal fan and deflecting louvers.

C. Heating elements shall be constructed with aluminized steel or porcelain glass coating or steel heat exchanger enclosed in a corrosive resistant baked enamel steel jacket and provided with a built-in draft diverter. Provide hanger support brackets.

D. Gas burners shall be multi-port steel with crossovers for fast and quiet ignition. Burners shall be suitable for use with natural gas and easily accessible for service. Provide with complete gas train for electric ignition and including shut-off valve,

solenoid valves, pilot operating and safety valve, gas pressure regulator, etc.

E. Supply fan shall be horizontal blow direct driven propeller fan. Fan blades shall be statically and dynamically balanced. Motor shall be permanent split capacitor.

F. Provide unit heaters complete with controls including space thermostat, fan control and over temperature control. Provide control wiring for a complete system.

G. Unit heater shall be Reznor, Sterling, or Modine.

2.3 INFRARED HEATERS - GAS

A. Provide gas fired infrared heaters where shown on the Plans/Drawings and of the capacities indicated.

B. Unit heater shall be complete with casing, heat exchanger, gas burner, venting termination kit, and reflecting hood.

C. Install gas fired infrared heaters as indicated, in accordance with manufacturer's installation operation and service manual and in compliance with applicable codes and approvals. Allow adequate space for servicing or removal of the unit without disturbing other piping or equipment. Maintain clearance to combustibles as outlined and printed on burner nameplate and in manufacturer's product data. Measure clearance distance from surface of heat exchanger or as indicated by approval agency’s listing.

D. Provide burner assemblies consisting of heavy-duty cast-iron burner heads; other substitutions will not be accepted. Pre-wired gas controls with direct spark ignition module, and combustion air filters supplied. Provide minimum numbers of burners indicated to insure proper radiant heat distribution. If combustion air flow is impeded for any reason, gas flow rate will decrease in constant proportion to maintain proper gas/air mixture for complete combustion.

E. The system shall vent all products of combustion outdoors. The connection between the 4" inlet and tailpipe is made with acoustic boot and clamps provided. The discharge connection is made with an acoustic boot and schedule 40 steel pipe or 4" ABS schedule 5 pipe and fittings. Utilize concentric type fittings as directed.

F. Provide high radiant reflective aluminum reflectors installed over all heat exchanger tubes. Provide wide parabolic design reflector with 12 reflective surfaces and additional ribbing formed into reflector sides for added rigidity. Provide reflector joint pieces overheat exchanger fittings such as elbows so reflector covers heat exchanger continuously. In order to maximize radiant output and reduce convective heat losses, reflectors are to extend below the bottom of the heat exchanger tube. The orientation of the reflectors is to be as directed. Provide with reflector end caps.

G. Provide fresh outside air to supply each burner and end vent for the support of combustion air. A fresh outside air supply must be installed in accordance with the requirements within the installation operation and service manual.

H. Condensate piping shall be per the recommendations and requirements of the manufacturer. Provide and install condensate neutralization tube as per the

manufacturer's instructions in the installation operation and service manual.

I. Gas vacuum-firing burner units shall be equipped with a Direct Spark Ignition Module (DSI). The DSI module shall have a 15-second flame safety time per ignition trial before lockout occurs. In addition, the DSI module shall be capable of a minimum of 3 trials for ignition to provide maximum reliability.

J. To assure a high degree of fail-safe operation, the design shall preclude main flow of gas if any or all of the following abnormal conditions occur: Power fails (Gas valves in burners close in safe position), Main Valve fails in open position.

K. Provide a single control panel capable of managing multiple zones of burners' temperature control and power. The control panel shall have indicator lights showing: Line Power, Pressure Switch 1 Power, Pressure Switch 2 power and 4-Zones. The panel shall include a 24 VAC power supply to supply power to electronic thermostats and shall be capable of using mechanical thermostats equipped with a heat anticipator. The control panel enclosure shall be painted steel and shall include indicator lights to display when line power is available to the panel, and when the burner zone relays are energized. The control panel shall have separate line voltage and low voltage terminal strips for ease of wiring. The control panel shall be manufactured by the same manufacturer as the infrared burners for single-source accountability.

L. Infrared heater shall be Roberts Gordon (CoRayVac), ReVerberRay, or Reznor.

2.4 HIGH VOLUME, LOW SPEED CEILING CIRCULATION FANS

A. The ceiling-mounted circulation fan is the model scheduled with the capacities indicated on the drawings. The fan shall be furnished with standard mounting hardware and variable speed control to provide cooling and destratification.

B. The entire fan assembly shall be ETL-certified and built pursuant to the construction guidelines set forth by UL standard 507 and CSA standard 22.2. No. 113-08.

C. The fan shall be equipped with six (6) high volume, low speed airfoils of precision extruded, anodized aluminum alloy. Each airfoil shall be of the high-performance Mini-Elipto design. The airfoils shall be connected to the hub and interlocked with six (6) stainless steel retainers and two (2) sets of clear zinc plated steel bolts and lock washers per airfoil on indoor fans and stainless-steel bolts and lock washers per airfoil on outdoor fans.

D. The fan shall be equipped with six (6) vertical winglets designed to redirect outward airflow downward, thereby enhancing efficiency. The winglets shall be molded of high strength polymer and shall be attached at the tip of each airfoil with a stainless-steel screw.

E. The fan controller shall be incorporated into the fan assembly and housed in an enclosure independent of the motor to prevent overheating or electrical interference. The fan controller shall be factory programmed to minimize starting and braking torques and shall be equipped with a simple diagnostic program and an LED light to identify and relay faults in the system. The digital wall controller shall

be compliant with Part 15 of the FCC Rules. Operation is subject to the following two conditions: (1) The device may not cause harmful interference, and (2) The device must accept any interference received, including interference that may cause undesirable operation.

F. The fan motor shall be a permanent magnet brushless motor rated for continuous operation at maximum speed with the capability of modulating the fan speed from 0–100% without the use of a gearbox or other mechanical means of control. The motor shall operate from any voltage ranging from 100–130 VAC, single phase, and 60Hz, or 200–250 VAC, single phase, and 50 Hz, without requiring adapters or customer selection. The motor shall be a non-ventilated, heat sink design with the capability of continuous operation in -40°F to 131°F (-40°C to 55°C) ambient conditions. The motor frame shall be designed for ease of service.

G. The fan mounting system shall be designed for quick and secure installation from a variety of structural supports. Designed for quick and secure installation to the mounting structure, all components in the mounting system shall be of formed metal design using low-carbon steel and contain no critical welds. The mounting systems shall be powder coated for appearance and resistance to corrosion. The mounting system shall be modified as required to ensure required operation and service clearances are maintained.

H. The fan hub shall be constructed of steel for high strength and durability. The hub shall be precision machined to achieve a well-balanced and solid rotating assembly. The hub shall incorporate five (5) safety retaining clips made of 1/8" (0.3 cm) thick steel that shall restrain the hub/airfoil assembly in case of shaft failure

I. The fan shall be equipped with a safety cable that provides an additional means of securing the fan assembly to the building structure. The safety cable shall be Ø3/16" (0.48 cm) diameter and fabricated out of 7 x 19 zinc galvanized steel cable, pre-loaded and tested to 3,200 lbf (13,345 N).

J. Includes a 10–30 VDC pilot relay for seamless fire control panel integration. The pilot relay can be wired Normally Open or Normally Closed in the field.

K. Starting, stopping and speed control duties are handled by distributed I/O using a 0-10 VDC interface module, which will replace the fan's original wall controller. The module is capable of controlling up to four fans.

L. High volume, low speed (HVLS) fans shall be licensed to bear the AMCA Certified Rating Seal for Circulating Fan Performance to ensure performance as cataloged in the field. Unlicensed HVLS fans shall not be accepted.

M. Variable Frequency Drive (VFD)

1. The onboard VFD shall be pre-wired to the motor and factory-programmed to minimize starting and braking torques for smooth and efficient operation.

2. The VFD shall be pre-wired to the motor using a short run of flexible conduit with a dedicated ground conductor to minimize electromagnetic interference (EMI) and radio frequency interference (RFI).

3. The VFD shall include a quick disconnect feature to allow for easy replacement of the drive.

4. A 15-ft (4.6-m) incoming power cord shall be pre-wired to the VFD.

5. The VFD shall be housed in a sealed, IP66-rated aluminum enclosure for protection in harsh environments.

6. The VFD shall have an operating temperature of up to 131oF (55oC) ambient conditions.

7. The VFD and digital wall controller shall communicate over a wired connection using Modbus communication protocol.

8. The VFD shall be capable of integration with building automation systems.

9. The VFD shall be equipped with the most current firmware version, and the VFD firmware shall be subject to updates without notice.

10. The VFD shall include an embedded accelerometer with precise rotor control sensing to instantly detect impacts and obstructions and automatically shut down the fan.

N. Fans shall be Big Ass Fans, Leading Edge or EnviroFan Systems.

2.5 AIR DEVICES

A. Provide air devices to complete the heating, air conditioning and ventilating systems. Air devices in the ceiling shall have flat white lacquered finish unless noted otherwise. Coordinate the appropriate border and mount for the specific application.

B. Air devices shall be manufactured by Titus, Tuttle & Bailey, Price, Anemostat, Krueger, or Metalaire.

C. Air devices used for relief shall have backdraft dampers installed behind the air device or in the ductwork connected to the device. Damper shall be gravity operated with extruded aluminum frame and blades, metal axles turning in synthetic bearings and have extruded vinyl, polyurethane sponge or neoprene blade seals. Backdraft damper shall be Greenheck model EM, or similar of American Warming and Ventilating, or Ruskin.

D. Supply air diffusers in the ceiling shall be square or rectangular pattern with removable directional multi-blade core. The pattern shall be four-way, unless noted otherwise on drawings. Construction shall be steel. Where diffuser is to be installed in a lay-in ceiling, diffuser shall have panels to fit into 24 x 24 modular lay-in ceiling. Provide diffusers with horizontal to vertical patterns, adjusting tabs and opposed blade damper. Where indicated on the Plans/Drawings to be connected to flexible ductwork, provide square to round adaptor.

1. Titus TDC

E. Return air registers in the ceiling shall be steel or aluminum perforated face. Face shall be removable from the plenum section. Provide with square or round neck duct connection as noted, fitted with opposed blade damper.

1. Titus PAR

2.6 DUCTWORK

A. Provide ductwork and plenums of the sizes shown on the Plans/Drawings and the materials, gauges and construction as listed below.

B. Ductwork shall not be fabricated or installed until clearances and dimensions have been verified in the field. Discrepancies between the duct sizes and configurations shown on the Contract Documents and those required to meet field conditions shall be brought to the attention of the Engineer for his direction. Ductwork fabricated or installed prior to field verification that the ductwork will fit is done at the Contractor's risk and expense.

C. For details of duct construction not specified below refer to the latest editions of the Sheet Metal and Air Conditioning Contractors National Association (SMACNA) Manuals. Duct systems shall be defined as follows with the applicable manual.

1. All systems “HVAC Duct Construction Standards” metal and flexible.

D. Ductwork shall be galvanized steel except as specified hereinafter of sizes indicated with sheets shaped and constructed as noted in the SMACNA Manual.

E. Flexible ductwork shall consist of a coated spring steel wire helix, polymeric liner, fiberglass insulation and fiberglass reinforced metallized film vapor barrier. Flexible ductwork shall be listed by Underwriters Laboratories under UL 181 standards as Class I flexible Air Duct Material and shall comply with NFPA Standards 90A and 90B. Flexible duct shall be rated for two inches positive and negative pressure and 2500 fpm maximum velocity. Flexible ducts shall be Thermoflex M-KE, Wiremold or General.

F. Where ducts are noted to be acoustically lined, they shall be lined with one half inch thickness of coated and edge sealed lining system. The Liner and insulation shall meet the requirements of UL 181 and NFPA 90A/B. Liner shall meet bacteriological standards of ASTM C 1071. Seams and cut edges shall be sealed from airstream using metal brackets. Use of adhesive-backed tape is unacceptable. Insulation shall be 3 lb/cubic foot density with a minimum R-Value of 2.0. The duct sizes shown on the Plans/Drawings are the interior sizes of insulated duct. As a minimum, supply and return ducts from heating, ventilating and air conditioning units for a distance of fifteen (15) feet from the units shall be acoustically lined. Duct lining shall be Owens Corning QuietR Duct Liner or equal of Johns Manville, Certain Teed or Knauf.

G. Ductwork shall be galvanized steel except as specified hereinafter of sizes indicated with sheets shaped and constructed as noted in the SMACNA Manual and of the pressure classification required to meet the pressures listed in the equipment schedules.

H. Duct connections to air handling units and elsewhere as required to compensate for expansion and contraction and noise reduction shall be made with UL approved glass fabric such as Ventglas as manufactured by Vent Fabrics, Inc.

I. On low pressure systems duct details shall be as follows:

1.	Square elbows	Figure 4-2
2.	Hangers	Figure 5-1
3.	Tee connections	Figure 3-6
4.	Register on trunk	Figure 7-6
5.	Volume dampers	Figures 7-4 and 7-5

J. Provide manual volume dampers as shown on the Plans/Drawing and additionally as required to properly balance the air distribution systems as directed by the independent Test and Balance Agency.

2.7 LOUVERS & DAMPERS

A. Provide louvers and dampers required for the operation of the mechanical systems as indicated on the drawings. Units shall be fabricated after field measurements have been made.

B. Louvers shall be constructed of 0.081-inch-thick type 6063-T5 aluminum alloy with integral caulking slot and retaining bead for installation in masonry openings. Fasteners shall be aluminum or stainless steel. Louvers shall be Wind-Driven Rain stationary type with drainable blades in a 6" louver frame. Each stationary blade shall incorporate an integral drain gutter and each jamb shall incorporate an integral downspout, so water drains to blade end, then down the downspouts and out at the louver sill rather than cascading from blade to blade. Each louver shall be equipped with a framed, removable, rear-mounted bird screen of 0.75" x 0.051" expanded, flattened aluminum. Each factory assembled louver section shall be designed to withstand wind loadings of 25 PSF (100.0 MPH wind equivalent). The beginning point of water penetration for the louver shall be above 1250 fpm free area velocity. Louver frames, mullions, and section joints shall be adequately supported from the building structure to withstand this same wind loading. Louver performance data shall be licensed under the AMCA Certified Ratings Program and shall bear the AMCA Certified Ratings Seal. This certified performance data shall include air flow pressure loss and water penetration and shall demonstrate performance equal to or better than the model specified. Louver shall be supplied with a baked enamel finish applied after a thorough cleaning and preparation of the metal surface. A total dry film thickness of approximately 1.2 mm shall be provided. Color to be selected by the Engineer from the standard color chart. Louvers shall be Greenheck EHH-601 drainable type, or similar of American Warming and Ventilating, or Construction Specialties.

C. Provide backdraft dampers behind louvers that are used for relief or exhaust. Damper shall be gravity operated with extruded aluminum frame and blades, metal axles turning in synthetic bearings and have extruded vinyl, polyurethane sponge,

or neoprene blade seals. Backdraft damper shall be Greenheck model EM, or similar of American Warming and Ventilating, or Ruskin.

D. Motor operated damper blades shall be 16 ga galvanized steel 3V type with three longitudinal grooves for reinforcement. Blades shall be completely symmetrical relative to their axle pivot point, presenting identical resistance to airflow and operation in either direction through the damper (blades that are non-symmetrical relative to their axle pivot point or utilize blade stops larger than 0.500 in. are unacceptable). Blade seals shall be TPE. Linkage shall be blade-to-blade concealed in jamb (out of the airstream) to protect linkage and reduce pressure drop and noise. The damper frame shall be 16 ga galvanized steel formed into a structural hat channel shape with reinforced corners to meet 11 ga criteria. Bearings shall be corrosion resistant, permanently lubricated, synthetic (acetal) sleeve type rotating in extruded holes in the damper frame for maximum service. Axles shall be square and positively locked into the damper blade. Jamb seals shall be flexible stainless steel compression type to prevent leakage between blade end and damper frame. The Damper Manufacturer's submittal data shall certify all air leakage and air performance pressure drop data is licensed in accordance with the AMCA Certified Ratings Program for Test Figures 5.2, 5.3 and 5.5. Damper air performance data shall be developed in accordance with the latest edition of AMCA Standard 500-D. Motor operated dampers shall be Greenheck model VCD-23, or similar of American Warming and Ventilating, or Construction Specialties.

PART 3 - EXECUTION

3.1 INSULATION

A. After the systems have been installed and tested, insulation as specified below shall be applied. Materials shall be Underwriters Laboratory, Inc., approved and shall be applied as recommended by the manufacturer's written instructions. Materials used shall be the products of Owens Corning, Manville, Knauff Corporation, Armstrong, Certainteed, Miracle Adhesive, Moneco or Benjamin Foster and shall be similar to those products that meet the specifications below.

B. Ductwork

1. Exposed supply ductwork and return air ductwork except where ductwork located in the room supplied and exposed outside air ductwork shall be insulated with a minimum 1-1/2 inch thickness of 3 PCF density, a minimum R-Value of 6.0 for attic/concealed spaces and R 8.0 for exterior use fiberglass board with reinforced foil faced ASJ vapor barrier jacket secured to duct with Graham weld pins or perforated base stick clips set in Moneco M46420 adhesive. Pins shall be covered with a finish cap to match insulation. Butt joints and seams and cover with vapor barrier mastic. Finish with a coat of lagging adhesive such as Benjamin Foster 30-35 or Moneco 55-10 embedding 8.5 glass cloth fabric over the adhesive. Use corner beads on edges of the duct.

2. Concealed supply air duct, return air duct, outside air duct, and exhaust duct

within apartment units shall be covered with minimum 2" thickness of 3/4 PCF density, a minimum R-Value of 6.0 for attic/concealed spaces and R 8.0 for exterior use flexible fiberglass duct covering with reinforced foil and kraft paper vapor barrier FRK jacket. Insulation shall be applied to duct over 100 percent coverage of duct adhesive such as Benjamin Foster 85-20. Edges shall be butted together with a vapor barrier lap of 2" minimum. Seal joint and punctures with Benjamin Foster 30-35. Where ducts are over 24 inches in width, weld pins and caps shall be used to secure insulation to the underside of duct. Secure laps with adhesive and flared staples on 4" center.

3. Ductwork that is internally lined with energy code compliant liner is required to be insulated externally as indicated herein.

C. Piping

1. Refrigeration suction piping and condensate drain piping above the ground shall be covered with 1/2" thickness of 6 PCF polyethylene foamed closed cell elastomeric pipe covering conforming to Mil Spec 15280, Armstrong Armaflex. Fittings shall be neatly mitered or continuous with piping. Covering the exterior of building shall be finished with 2 coats of Armaflex or other latex base finish to blend with adjacent finishes.

2. On exposed insulated piping in finished areas within seven feet of the floor, provide .010-inch-thick galvanized steel insulation jackets. This does not include piping exposed in unfinished areas such as boiler rooms, storage rooms, etc.

3. On exposed insulated piping exposed to outdoor elements, provide. 016 aluminum insulation jackets.

4. At the pipe hangers for piping carrying fluids with temperatures below 70 degrees, provide rigid core of insulation to support the pipe. Rigid insulation shall be the same thickness as the adjacent insulation and shall have the same flame spread and smoke developed ratings.

3.2 TESTING AND BALANCING AIR SYSTEMS

A. The air distribution system shall be balanced and adjusted to distribute the air quantities as noted on the Plans/Drawings. Demonstrate to the Engineer's satisfaction knowledgeability in this work and familiarity with the test instruments to be used. If the Engineer does not approve of the Contractor's qualifications, the Contractor shall engage the services of an independent test organization specializing in this work and is a member of the Associated Air Balance Council or other nationally recognized air balancing organization.

B. Test equipment must be approved by the Engineer and properly calibrated prior to starting work. Repairs, alterations, adjustments, and readjustments necessary to meet the design conditions shall be made.

C. The balancing agency shall review the drawings before installation and advise the Contractor of additional dampers required in the ductwork, flow devices and balancing valves in the water piping, etc., to effectively and properly balance the

systems. These devices shall be installed at no additional cost to the DRBA.

D. At the completion of the balancing and adjusting and prior to the operating test, submit to the Engineer three (3) certified typewritten reports to be retained by the DRBA. Reports shall include:

1. Velocities and air quantities at supply returns and exhaust outlets installed under this contract.

2. Pressure and/or temperature difference across various pieces of equipment.

3. Air temperature delivered from heating and cooling equipment.

4. Schedule of equipment.

5. Speed of belt driven equipment.

6. Nameplate data on motors installed under this contract.

7. Actual operating voltage and ampacity readings on motors.

8. Separate six (6) hour operating tests shall be made during the cooling season and during the heating season in which an hourly record shall be made of the following:

a. Settings of control equipment.

b. Outside weather conditions.

c. Thermostat readings.

d. Dry and wet bulb temperatures in spaces.

Outside temperatures shall be below 40 degrees Fahrenheit during the heating test and above 85 degrees Fahrenheit during the cooling test.

3.3 AUTOMATIC TEMPERATURE CONTROLS

A. Provide labor, materials, equipment, services, etc., to install a system of automatic temperature controls to perform the functions noted on the drawings. Coordinate with unit supplied controls. Integrate new systems with existing JCI Metasys BMS.

B. The system shall be DDC and shall be installed under the supervision of the manufacturer's authorized representative.

C. Power source for the system shall be taken from 120-volt sources. Provide motors, starters, overload protection, control power transformers and related wiring devices, etc., in accordance with the applicable requirements of the CSI MasterFormat Division 26 as appropriate for the voltage used. Interlock wiring to fans, pumps, motors, dampers, valves, etc., shall be provided as part of this work.

D. Automatic dampers shall be furnished by the temperature control manufacturer but shall be installed by the trade normally installing such an item, under the supervision of the control manufacturer.

E. The temperature control system, as hereinafter specified and designated on the drawings and plans, shall be guaranteed free of original defects in material and

workmanship for a period of two (2) years. After completion of the installation, thermostats, control valves, control motors, dampers, etc., shall be regulated and adjusted to perform the proper function.

F. Prepare a schematic drawing of the temperature control system and submit them to the Engineer for his review prior to starting work.

G. Upon completion of the work, revise the diagrammatic layouts to record conditions and mount the revised layouts in clear plastic envelopes where directed.

H. Control devices shall be identified by embossed nameplates to identify control devices as shown on control diagram.

I. Dampers shall be Arrow Foil double seal dampers with a maximum 0.5 percent leakage or Honeywell D642 or D643 Type.

3.4 METHOD OF MEASUREMENT

A. Work performed under this Section shall be considered incidental to **Lump Sum Pay Item 14: Heating and Air Conditioning,** and thus will not be measured.

3.5 BASIS OF PAYMENT

A. Work properly performed in accordance with this Section will be paid for at the Lump Sum Unit Price for **Pay Item 14: Heating and Air Conditioning.** Payment for work shall include full compensation for performing all work specified and for the furnishing of all materials, tools, equipment, labor, testing, submittals, and incidentals necessary to complete the work as described in the Contract Documents. Payment will be made on a monthly basis, based on percent completion of the work properly performed and accepted as determined by the Engineer.

END OF SECTION 230000

SECTION 260000

GENERAL ELECTRICAL REQUIREMENTS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Plans/Drawings and DRBA Standard Specifications apply to this Section.

B. Section includes administrative and procedural requirements for work under CSI MasterFormat Division 26.

C. Coordinate the work of this Section with the requirements of the Project.

1.2 SUMMARY

A. The Work under this Section of the Specification includes furnishing of labor, materials, and equipment for the installation of a complete electrical system as shown and specified herein.

1.3 DEFINITIONS

A. Following are definitions of terms and expressions used in the Electrical Sections in addition to definitions found in the Contract Conditions of the CSI MasterFormat:

1. "Wiring" includes wire, fittings, conduit, boxes, and other accessories that comprise a system.

1.4 QUALITY ASSURANCE

A. Regulatory Requirements

1. Work shall conform to the requirements of the codes, laws and ordinances, National Fire Protection Association, National Electrical Code (NEC), National Electrical Manufacturer's Association (NEMA) and other authorities having jurisdiction.

2. The requirements of the authorities having jurisdiction shall take precedence over the Plans/Drawings and Specifications and changes required by the authorities shall be made after review by the Engineer.

1.5 SUBMITTALS

A. Product data and shop drawings are required for the following:

1. Panelboards.

2. Transformers.

3. Safety Switches.

4. Busway System.

5. Wiring Devices.

6. Lighting Controls.

7. Lighting Fixtures.

B. Review of product data and shop drawings does not relieve the Contractor of responsibility for complying with the Specifications.

1.6 PROTECTION

A. Protect material and equipment from damage.

B. Cap or plug openings in equipment and conduits with proper caps and plugs.

1.7 VARIANCES

A. Where conflicts exist within the Specifications, request clarification prior to the submission of a bid. If clarification is not requested, provide the work representing the higher cost and quality.

1.8 WARRANTY

A. During the warranty period, make the proper adjustments of systems, equipment and devices installed and perform the work necessary to ensure the efficient and proper functioning of the systems, equipment, and devices.

B. Certain items of equipment shall be warranted for a longer time than the general warranty period. Provide for service or replacement required in connection with the warranty of these items.

PART 2 - PRODUCTS

2.1 PRODUCTS TO BE USED

A. Items specified by designations such as trade name, manufacturer's name, and catalog number indicate the capacity and quality of the products or materials to be used on this project.

B. Only products indicated in the Specifications by name, series and/or model number have been coordinated with other trades. Coordinate items of other manufacturers with other trades, and make any necessary modifications required by use of the alternate product.

2.2 MATERIALS AND WORKMANSHIP

A. Items shown and not specifically called for, items specified and not specifically indicated or detailed on the Plans/Drawings, or items neither specified nor shown but reasonably incidental to and commonly required to make a complete job, shall be provided.

2.3 EQUIPMENT SUPPORTS

A. Provide supports as necessary for satisfactory installation and operation of equipment. Furnish and set anchor bolts.

2.4 HANGERS AND CONDUIT SUPPORTS

A. Provide conduit hangers and the supports to maintain required alignment for equipment, busways, and conduits.

B. Conduits may not be supported by other conduits. Trapeze hangers may be used for parallel runs of conduit.

C. Provide the supports for equipment and materials under these Specifications. Supports shall be structural steel shapes (angles, channels) of Kindorf or Unistrut. Minimum rod size shall be 3/8".

D. For wood joist construction, hanger rods shall be supported from wood joists with hangers bolted through or attached with lag crews to the joists.

E. For steel bar joist construction, hanger rods shall be supported from the top chord of the joists or from panel points of the lower chord of the joists. Where conduit runs parallel to joists or where hangers are required at other than joist locations, provide steel angles welded to joists to support hangers so that weight is supported from the top chord of the joists.

F. For poured in place concrete construction, support hanger rods by drilled steel drop-in anchors, wedge anchor or expansion anchor. Zamac type nail in, spike or powder actuated type anchors shall not be used.

G. For existing concrete plank construction or where the concrete topping is less than 2" thick, hangers shall be bolted into planks using toggle bolts. Where these toggle bolts are used, hanger rods shall carry no more than 200 pounds per hanger. The hanger spacing shall be reduced as required to meet this requirement.

H. Expansion bolts or wood plugs will not be permitted in slag block walls. Equipment hung on such walls shall be supported by through bolts or approved anchor bolts set into masonry as the wall is laid up.

2.5 OPENINGS

A. Determine the location and size of openings necessary for the proper installation of the work and provide them during the erection of the work in which such openings occur.

B. In case cutting of building construction is necessary, such cutting shall be done and repaired to match original condition of the work. Do not cut structural members.

C. Where non-combustible conduits pass through sleeves or openings in fire rated wall, floor-ceiling and ceiling-roof assemblies, seal openings with a UL classified firestop method. Firestop method shall be a one part, intumescent (expands with heat), latex elastomer capable of expanding a minimum of three times. Firestop

materials shall be UL listed when tested in accordance with ASTM E814 for a two (2) hour fire (F) and temperature (T) rating.

2.6 ACCESS PANELS

A. In general, boxes, devices and equipment shall be accessible through the removable panels in the ceiling. Where ceilings are not removable and in walls where access is required for service, access panels shall be provided. Access panels shall be appropriate for the finish in which they are installed, with a fire rating to match the wall or ceiling in which they are installed. Refer to other specification section covering access panels.

B. Coordinate with Section 200000, Section 230000, and group boxes, devices, and equipment together to keep the required number of access panels to a minimum.

2.7 IDENTIFICATION

A. Equipment shall be identified with self-adhesive printed and laminated labels. Letters shall be at least 3/8" high and larger in proportion to the size of the piece of equipment. Outdoor labels shall be UV and water resistant. Lettering shall include equipment name, voltage, source panel and circuit number where it is being fed from. Labels shall be provided for the following equipment.

1. Devices.

B. Junction boxes and pull boxes, except those located at the fixture or equipment to which system is connected, shall be identified with permanent marker in large legible lettering to indicate system and circuiting installed. In exposed areas mark the inside of the cover.

C. Panels shall be provided with a typed directory listing load served and associated circuit numbers.

PART 3 - EXECUTION

3.1 EXISTING CONDITIONS

A. Visit the site and become familiar with existing conditions. Modifications to the work required to allow for existing conditions shall be provided. Submit proposed modifications to the Engineer for approval prior to installation.

B. Where electrical systems pass through the renovated areas to serve other portions of the premises, they shall be suitably relocated, and the systems restored to normal operation. Any outages in systems shall be coordinated with the DRBA. Where duration of proposed outages cannot be tolerated by the DRBA, provide temporary connection as required to maintain service.

C. Coordinate any power interruptions with the DRBA. Provide temporary connections to maintain operation of existing systems.

D. Relocate existing hangers and supports where necessary to install new work.

Maximum spacing requirements shall apply for relocated supports.

E. Where new devices are added to existing walls and ceilings, new wiring shall be concealed by chasing existing walls as required. Devices shall be installed flush.

F. Where new finishes or treatments are added to existing walls and ceilings by the Engineer, provide necessary outlet box extensions, plaster rings, etc., so that devices are installed in the same manner as existing, i.e., flush, concealed, surface, etc.

3.2 DEMOLITION

A. Equipment removed that is salvageable and desired by the DRBA to be retained, shall be stored on the site as directed by the DRBA. Otherwise, other materials and equipment which are removed shall become the property of the contractor and shall be removed by him from the premises.

B. In each area to be renovated, remove the entire existing electrical installation except those portions indicated to be reused. When existing electrical work is removed, remove conduit, ducts, supports, etc. to a point below the finished floors or behind finished walls and cap. Such points shall be far enough behind finished surfaces to allow for the installation of the normal thickness of finished material. Unused wiring and cable shall be removed back to source.

3.3 MANNER OF INSTALLATION

A. The Plans/Drawings showing the layout of the electrical systems indicate the approximate location of outlets and equipment. The runs of feeders and branch circuits on the Plans/Drawings are schematic only and are not intended to show the routing and location of conduits. The final determination of routing and location shall be governed by structural conditions, obstructions, and connection locations on equipment. Detailed drawings showing major deviations shall be submitted to the Engineer for acceptance before such changes are made.

B. The Engineer reserves the right to a reasonable amount of shifting of outlet locations at no additional cost to the DRBA until the time of roughing-in the work.

3.4 RECORD DRAWINGS

A. Keep at the site one (1) set of black and white prints for the express purpose of showing changes from the Plans/Drawings made during construction. Mark up the prints with red pencil during construction and deliver the prints, before final inspection, to the Engineer as a final set of “Record Drawings”.

3.5 TESTING

A. Provide labor, instruments and equipment required for the tests. Make necessary changes to the systems as required to produce the specified results. Retest to the Engineer’s satisfaction.

B. Tests shall be conducted before equipment is connected that would be subject to

damage from the test.

C. Notify the Engineer of the date and time of the test at least three days prior to that date.

D. The tests shall demonstrate to the satisfaction of the Engineer the following:

1. Those circuits are continuous and free from short circuits.

2. Those circuits are properly connected.

3. That equipment is fully functional.

3.6 PAINTING

A. Remove rust, scale, grease, and dirt from equipment and material and leave ready to finish painting. Equipment specified with factory baked enamel finish shall be touched up as required to provide a surface visually free of scratches, nicks and blemishes.

3.7 OPERATING AND MAINTENANCE MANUAL

A. Submit operating and maintenance instructions. Unless covered in another specification section, provide a minimum of four copies in three-ring binders and one CD. The manual shall include the following:

1. A brief description of systems and their various components.

2. Full, definite, and explicit instructions for starting, stopping, and controlling systems.

3. List of manufacturer’s representatives with address and telephone numbers.

4. Manufacturer's printed operating and maintenance instructions, parts lists, illustrations, and diagrams for pieces of equipment.

5. A complete schedule of periodic servicing and lubrication requirements for equipment.

6. One (1) copy of each shop drawing, engineer’s shop drawing review comments, and Contractor’s drawings.

7. One (1) copy of other items of equipment where not required as a shop drawing submittal.

8. One (1) copy of each wiring diagram.

9. Manufacturer’s data report from UL certifying code compliance for equipment specified.

3.8 GROUNDING

A. Grounds and connections shall be provided in accordance with the latest provisions of the National Electrical Code, and as indicated on the Plans/Drawings and specified.

B. Unless otherwise noted, ground conductors shall be of copper, sized as required by the National Electrical Code. Ground lugs and clamps shall be cast non-ferrous metal, bolt-on type.

C. The required equipment grounding conductors and straps shall be sized in compliance with the National Electrical Code. Equipment grounding conductors shall be provided with green insulation equivalent to the insulation on the associated phase conductors. The related feeder and the branch circuit grounding conductors shall be connected to the grounding bus with approved pressure connectors.

D. Provide a separate green insulated equipment grounding conductor for each feeder and branch circuit. The required grounding conductor shall be installed in the common raceway with the related phase and/or neutral conductors. Flexible metallic conduit equipment connections utilized in conjunction with the above shall be provided with suitable green insulated grounding conductors connected to approved grounding terminals at ends of the flexible conduit.

3.9 MOUNTING HEIGHTS

A. The mounting heights indicated on the drawings provide a general location of the outlets for bidding purposes only. Where mounting height information is not given, or contradicting information is given, request the information from the Engineer. Field coordinate final location of outlets.

3.10 METHOD OF MEASUREMENT

A. Work performed under this Section shall be considered incidental to **Lump Sum Pay Item 15: General Electrical Requirements,** and thus will not be measured.

3.11 BASIS OF PAYMENT

A. Work properly performed in accordance with this Section will be paid for at the Lump Sum Unit Price for **Pay Item 15: General Electrical Requirements.** Payment for work shall include full compensation for performing all work specified and for the furnishing of all materials, tools, equipment, labor, testing, submittals, and incidentals necessary to complete the work as described in the Contract Documents. Payment will be made on a monthly basis, based on percent completion of the work properly performed and accepted as determined by the Engineer.

END OF SECTION 260000

SECTION 260500

ELECTRICAL METHODS AND MATERIALS

PART 1 - GENERAL

1.1 RELATED DOCUMENT

A. Plans/Drawings and DRBA Standard Specifications apply to this Section.

B. Section includes administrative and procedural requirements for work under CSI MasterFormat Division 26.

C. Coordinate the work of this Section with the requirements of the Project.

1.2 SUMMARY

A. The Work under this Section of the Specification includes the furnishing of labor, materials, and equipment for the installation of a complete electrical system as shown and as specified herein.

PART 2 - PRODUCTS

2.1 PANELBOARDS

A. General

1. Provide panelboards constructed in accordance with NEMA Standard PB1 and which bear the UL service entrance label.

2. For main or feeder overcurrent devices with a maximum continuous current trip setting of 1200A or higher, provide device with an arc energy reduction setting, per 2014 NEC 240.87.

3. Provide panelboard enclosures as follows:

a. General interior – NEMA 1 enclosure.

b. Mounting – as indicated within the contract documents.

4. For multi-section panelboards, provide separate cabinets of the same height and trims for each section, mounted adjacent to one another at the same height.

5. For existing panelboards with interior replacements, provide interior components, mounting accessories, trims, covers, and doors. Field-verify the existing back boxes dimensions before purchasing.

6. Indicate circuit number on or adjacent to circuit breakers and provide a typed circuit directory on the inside of panelboard doors which clearly describes the loads served by breakers. Also provide the following information on the directory:

a. Panel designation

b. Voltage, Phase and Amps

c. AIC rating

d. Feeder and conduit size

e. Feeder source and overcurrent protection size.

7. Provide panelboards with copper bus.

8. Provide panelboard assemblies with sufficient ampere interrupting capacity for available fault current. Provide fully rated panelboard assemblies. Series rating is not permitted.

9. Circuit numbers indicated on plans are to indicate grouping of loads on circuits and do not necessarily indicate actual circuit numbers in panelboard. Arrange circuits such that loads are balanced as closely as practical over the phases and that a branch circuit neutral conductor does not serve as a shared neutral for two or more single phase circuits connected to the same phase in the panelboard.

10. Locate conduits entering flush panels away from the front edge of the panel to allow approximately 2" between finished wall surface and conduit.

B. Circuit Breaker Panelboards

1. Subject to compliance with requirements, provide products by one of the following:

a. Square D

b. ABB General Electric

c. Eaton

d. Siemens

2. Provide bolt-on thermal-magnetic circuit breakers.

3. Provide common trip type two or three-pole breakers. Single pole units with a handle tie are not acceptable. Provide multi-pole breakers for all multiwire branch circuits.

4. Provide circuit breaker type power and distribution panelboards with thermal-magnetic circuit breakers. Breakers feeding HVAC loads shall be HACR rated. When circuit breakers are used in combination with motor starters with overload relay for the protection of motors, provide motor circuit protector (MCP) type breakers with adjustable instantaneous trip which is adjustable and accessible from the front of the circuit breaker.

5. In multi-section panelboards provide conductors required for sub-feed purposes within the panels. Provide sub-feed cables of the same ampacity as the main buses or main circuit breaker. Provide each section of multi-section panelboards with frame rating indicated. Provide sub-feed or through-feed lugs to supply the next section.

6. Provide a minimum of 6" wide gutters where feeders to branch circuit

panelboards feed through and tap to panel.

2.2 DRY TYPE TRANSFORMERS

A. Subject to compliance with requirements, provide products by one of the following:

1. Square D
2. ABB General Electric
3. Eaton Cutler Hammer
4. Siemens

B. Comply with 10 CRF 431 (DOE 2016) efficiency levels and marked as compliant with such levels.

C. Coils material: Copper

D. Each primary winding of each transformer having a rating not exceeding 15 KVA shall have a minimum of two 5 percent fully rated taps below rated primary voltage. Each primary winding of each transformer having a rating greater than or equal to 15 KVA shall be provided with either four or six taps, two 2-1/2 percent fully rated above rated primary voltage, the remainder being fully rated 2-1/2 percent taps below rated primary voltage. Primary windings of 3-phase transformers shall be "delta" connected, unless noted otherwise.

E. Insulation Class: 220 deg C, UL component recognized insulation system with maximum 150 deg C temperature rise above 40 deg C ambient temperatures.

F. Sound ratings of transformers shall meet or exceed ANSI Standard for the size. Sound levels shall be as measured in accordance with ANSI C89.1 - 1961. Transformer shall be in accordance with NEMA ST-20 and UL 506 and bear the UL label.

G. Transformers shall be provided with suitable vibration and noise isolators installed between the core/coil assembly and the enclosure frame.

H. Enclosures: Ventilated unless installed in damp or wet locations, then NEMA 3R.

2.3 SAFETY SWITCHES

A. General

1. Heavy duty type.
2. Cover interlock to prevent operation with cover open.
3. Visible blade.
4. Externally operated with current carrying parts silver or tin plated.
5. Provisions for two or more external padlocks.
6. Capable of accepting copper or aluminum cables.

B. Enclosure

1. NEMA 1 for general interior work.
2. NEMA 4X stainless steel grade 316 or grade 304 for exterior work and damp locations.

C. Safety switches shall be by Square D, Siemens, or Cutler-Hammer.

2.4 ENCLOSED MANUAL CONTROLLERS / MOTOR RATED SWITCHES

A. General

1. UL Listed Heavy duty type.
2. Externally operated lockable toggle handle.
3. 30-Amp current rating at 600V.
4. Number of poles shall be based on load requirements.
5. Capable of accepting copper or aluminum cables.

B. Enclosure

1. NEMA 1 for general interior work.
2. NEMA 4X for exterior work and damp locations.

C. Enclosed manual controllers / motor rated switches shall be by Square D, Siemens, Cutler-Hammer, Pass and Seymour, Hubbell, or Leviton.

2.5 BUSWAY SYSTEM

A. Busway system shall be by Starline or Approved Equal.

B. Busway system shall be designed for overhead distribution of electrical power and supporting designated work areas and equipment. Busway shall provide a simple and versatile means of distributing power. Loads fed from a variety of plug-in units can be easily added or removed without shutting power down to the busway.

C. Busway system shall consist of the following components:

1. Busway / Track straight sections, 20’ long continuous for each section. Extruded aluminum housings suitable for 100% grounding path. 4-pole insulated copper bus, 3-Phase, 4-Wire. Suitable for 208Y/120V and 0Y/277V supply power. 100A rating. Full load voltage drop shall not exceed 1 volt per 42’ for 1-Phase or 72’ for 3-Phase.
2. End feed units with painted steel housings and bolted covers. 100A rating.
3. End caps.
4. Support hardware, 10’ spacing max.
5. Plug-in devices (circuit breakers), 20A, 120V, painted steel housings and covers.
6. Prewired Drop cords with strain relief cord grips (from circuit breakers to quad receptacles).

7. Quad receptacles, 20A, 120V, painted steel housings and covers.

8. Busway housing couplers, tees, and elbows shall not be used.

D. Busway system shall be designed and manufactured to the following standards:

1. Underwriters Laboratories Standard, UL 857 — The common UL, CSA, and ANCE Standard for Busways that is derived from the fifth edition of CSA Standard C22.2 No. 27, the twelfth edition of UL 857, and the second edition of NMX-J-148-1998-ANCE.

2. Low Voltage Switchgear and Controlgear Assemblies, Part 1: Type Tested and partially type tested Assemblies, IEC 61439-1 & IEC 61439-6.

E. Busway shall have unique polarizing stripes to prevent mismatch components and cross phasing.

F. Finish color: Black.

2.6 WIRING DEVICES

A. Wiring Devices shall be by Hubbell, Pass & Seymour, or Leviton.

B. Lighting switches:

1. Single pole, Three-way and Four-way.

2. Toggle type or Rocker type or to match low-voltage switches and dimmers.

3. Back and side wired.

4. Commercial specification grade

a. 120/277V

b. 20A

5. White color.

C. Receptacles:

1. Commercial grade, duplex, 20 amperes.

2. Ground fault circuit interrupter. Provide standard sized GFCI receptacles for standard depth boxes. Provide slim type GFCI receptacle for shallow box only when standard sized receptacle cannot meet the NEC's fill capacity requirement.

3. White color.

D. Welder Receptacles and matching Plugs:

1. UL Listed, IEC style Pin and Sleeve devices.

2. Provide matching receptacle and plug with cast aluminum back box.

3. Approved as a disconnecting means.

4. Heavy-Duty, impact and corrosion-resistant construction.

5. Power and unswitched ground LED indicating lights.

6. Receptacle and plug ratings:

   a. 480V, 1-Phase, 2-Pole + Ground, 3-Wire (Phases + Ground)

   b. 60A

E. Wiring Device Cover Plates:

1. Oversized plates.

2. Painted steel. Match device color

3. Die-cast aluminum weatherproof while-in-used type for exterior and damp locations.

2.7 OCCUPANCY/VACANCY SENSOR SWITCHES

A. Unless otherwise noted, all sensors for interior applications (excluding corridors, stairways, restrooms, primary building entrance areas, and lobbies) shall be wired as vacancy sensors (manual on, automatic off).

1. Ceiling-mount sensors shall achieve manual-on via manual wall-mount toggle switch wired in series with (and downstream of) occupancy sensor power pack.

2. Ceiling-mount sensors shall achieve manual-on via low-voltage wall station.

B. All sensors shall utilize dual technology (infrared and ultrasonic).

C. Wall-mount

1. Wall switch sensors shall be rated for 120/277V operation, 1200VA fluorescent load minimum.

2. Sensors shall be factory set to manual-on operation.

3. Sensors shall be equipped with the following: manual override switch for on/off operation; adjustable timer settings; minimum on time to maximize lamp life; optional ambient light sensing override.

4. Basis-of-design product is Wattstopper DW Series or Sensor Switch WSX PDT SA. Provide this product or approved equal by Leviton or Hubbell.

D. Ceiling-mount

1. Ceiling sensors shall be rated for 120/277V operation, up to 2000 square feet coverage area, surface-mountable to suspended ceiling.
2. Provide low voltage power packs as required. Each power pack shall be capable of accepting at least six sensors.
3. Sensors shall be equipped with the following: adjustable timer settings; self-adjusting technology to minimize nuisance switching; low voltage auxiliary relay/contacts; optional ambient light sensing override.
4. Basis-of-design product is Wattstopper DT Series with BZ power pack or Sensor Switch CM PDT 10. Provide this product or approved equal by Leviton or Hubbell.

E. Low Voltage Wall Station

1. Low voltage wall stations shall be configured for manual operation to comply with energy code requirements. Stations shall include soft-click buttons and LED indicator lights and shall be designed for use with low voltage ceiling sensors and related power packs.

2. Provide 0-10V dimming control where indicated on the Plans/Drawings.

3. Basis-of-design product is Wattstopper LVSW Series (for non-dimmable) or Wattstopper DCLV-2 Series (for dimmable) or Sensor Switch sPODM series. Provide this product or approved equal by Leviton or Hubbell.

2.8 BOXES AND FITTINGS

A. Provide metal boxes manufactured by one of the following:

1. Steel City

2. Raco

3. Thomas & Betts

4. Crouse-Hinds

5. Walker

B. Provide O-Z/Gedney type “FS” or “FD” cast aluminum device boxes, equipped with matching covers for boxes less than 50 cubic inches accommodating wiring devices installed:

1. Flush in exterior locations.

2. Exposed on walls of unfinished interior spaces.

C. Provide pull boxes, junction boxes and wire troughs indicated in the construction documents or required by field conditions or the National Electrical Code to facilitate wiring installation. Obtain approval prior to installing boxes in finished areas.

D. Provide a 4" square, 1-1/2" deep or larger box with appropriate raised covers or plaster rings for flush mounted switches and receptacles.

E. In fire-rated assemblies, install boxes in a manner listed for such purpose.

F. Mount flush boxes in or exposed on walls plumb. Install flush boxes such that the distance between the lip of the box and the wall is less than 1/8 inch. Mount receptacles vertically, unless noted otherwise.

G. Provide gasketed covers for boxes in exterior, damp, or wet locations.

2.9 CONDUCTORS

A. Provide soft drawn, 98 percent conductivity, copper conductors with 600-volt insulation, and manufactured in accordance with the requirements of the National Electrical Code, the Board of Fire Underwriters, A.S.A., N.E.M.A. and I.C.E.A.

B. Provide conductors with 90 °C “THHN-THWN” insulation.

C. Sizes are AWG or kcmil. The minimum size for power and lighting circuits is #12. The minimum size for 120-volt control circuits is #14. The minimum insulation rating of conductors is 600 volts.

D. Aluminum wire is not permitted.

E. Provide stranded wire for No. 8 and larger. Make conductors continuous from outlet with no splices made except within outlet or junction boxes.

F. A color-coding system shall be as follows throughout the building's network of feeders and circuits and used as a basis of balancing the load. The color code shall be continuous from fixture to fixture or other outlets.

Color System	Phase A	Phase B	Phase C	Neutral
480Y277V	Brown	Orange	Yellow	Gray
208Y/120V	Black	Red	Blue	White

G. Provide UL approved “Y-ER-Ease”, Buchanan, or Ideal pulling compound. Soap, grease or substances other than specified will not be permitted.

2.10 METAL CLAD CABLE

A. Provide type “MC” cable with galvanized steel armor, “THHN/THWN” 90º C, 600-volt, insulated copper conductors and insulated green grounding conductor.

B. Comply with Federal Specification A-A-59544 and bears the UL label.

2.11 RACEWAYS AND WIRING METHODS

A. Rigid metal conduit (RMC)

1. Provide threaded heavy-wall conduit and couplings which conform to Federal Specification WW-C-581, as amended, ANSI Standard C80.1 and bear the UL label.

2. Provide type “A” insulating bushings manufactured by O-Z/Gedney.

B. Electrical Metallic Tubing (EMT)

1. Provide galvanized EMT which conforms to Federal Specification WW-C-563, as amended, ANSI Standard C80.3 and bears the UL label.

2. EMT Couplings and box connectors:

a. Steel.

b. compression ring type.

c. with insulated throat.

d. manufactured by:

i. Thomas & Betts

ii. Raco

iii. Steel City

C. Flexible metal conduit

1. Provide flexible metal conduit which conforms to Federal Specification, WW-C-566, as amended. The minimum size is 1". Provide Appleton Liquidtite gasket assembly and "Sealtite" flexible conduit for flexible connections subject to weather, at liquid-tight equipment, and as noted.

PART 3 - EXECUTION

3.1 EQUIPMENT CONNECTIONS

A. Conduit, outlets, wiring and other necessary fittings or accessories for power connections for heating equipment, fans and special furnishings shall be provided under this Section. Motor and equipment of different ratings shall be furnished and circuit components shall be adjusted accordingly.

B. Make final connections to electrical equipment specified under this Section and other Sections of these Specifications.

3.2 TRANSFORMERS

A. Install transformers level and plumb as follows:

1. On a concrete base with vibration dampening supports.

2. From structure above, with vibration dampening supports.

3. From manufacturer's wall brackets and structure.

B. Coordinate size of transformer concrete base with transformer(s) provided.

C. Secure transformer to concrete base per manufacturer's instructions.

D. Install with proper clearance all around to permit adequate natural draft ventilation. Clearances from walls and other obstructions for proper cooling shall be as required by the manufacturer of the transformers, who shall state minimum clearance on shop drawings.

E. Set transformer taps to provide optimal secondary voltage under loaded condition.

F. Where transformers are hung from the overhead structure, submit details of supporting means for review.

3.3 PANELBOARDS

A. Coordinate layout and installation of panelboards and components with other construction that penetrates walls or is supported by them, including electrical and other types of equipment, raceways, piping, encumbrances to workspace clearance requirements, and adjacent surfaces. Maintain required workspace clearances and required clearances for equipment access doors and panels.

B. Install filler plates in unused spaces.

3.4 WIRING DEVICES

A. Protect installed devices and their boxes. Do not place wall finish materials over device boxes and do not cut holes for device boxes with routers that are guided by riding against outside of boxes.

B. Clean boxes prior to installation of devices.

C. When conductors larger than what is recommended for termination by the manufacturer are installed, splice #12AWG pigtails for device connection. Do not exceed box fill requirements.

D. Install ground pin of vertically mounted receptacles down, and on horizontally mounted receptacles to the right.

3.5 LOW-VOLTAGE DEVICES

A. Voice and data outlets: Provide 4" square boxes and mud rings to allow for installation of single-gang devices. Provide 3/4" conduit with pull string to above accessible ceiling or high up in open ceiling. Provide nylon rings / bushings on ends of conduits to protect cables.

3.6 SAFTEY SWITCHES

A. Coordinate layout of switches to maintain required workspace clearances and clearances/access for equipment access doors and panels.

B. Install fuses in fusible switches.

3.7 FUSES

A. Main Devices

1. 60 to 600A: Class RK1, time delay.

B. Feeders

1. Class RK1, time delay

C. Motor Circuits Protection

1. Class RK1, time delay.

D. Large Motor Circuits Protection (601-4000A)

1. Class L time delay

E. General Branch Circuit Devices

1. Class RK1, time delay.

F. Fuses shall not be installed until installation is complete. Fuses shall be installed on the job site; they shall not be installed in equipment at the factory and shipped in place in the equipment.

G. Fuses shall be of the same manufacturer and shall be of the sizes indicated. Where not indicated, fuses shall be of the proper size for the equipment protected.

H. Provide one (1) set of fuses in fuse spaces.

I. Requests for change in manufacturer or fuse types from that specified below shall be accompanied by a complete coordination study indicating the suitability of the proposed changes.

3.8 MOTORS, EQUIPMENT, CONTROLS AND CONTROL WIRING

A. Motors, air handling units, compressors, etc., and built-in control devices will be provided under other Sections unless noted otherwise.

B. Provide control connections for devices and equipment.

C. Provide power connections for equipment furnished under other Sections.

D. The installation, connections and operation of controls not noted will be done under other Sections, including provisions for conduits, wiring, outlet boxes, control components and connections.

E. Control wiring shall be in accordance with the drawings and/or manufacturer's certified and approved wiring diagrams.

F. Control wires shall be marked with “E-Z” tape markers at terminal points. Terminal blocks shall be marked to correspond to wire terminated.

G. Provide conduit and wires, install, and connect control equipment (starters, push buttons, etc.) and connect motors, air handling units, air conditioning equipment, and built-in control devices, in accordance with wiring diagrams furnished under other Sections.

3.9 CONDUCTOR APPLICATIONS

A. Utilize conduit and wire for circuits in exposed areas, feeders, and where other wiring methods are not specifically allowed by the National Electrical Code, the authority having jurisdiction, or elsewhere in these specifications.

B. Utilize conduit and wire throughout.

C. Wire and cable shall be delivered to the job site in full coils or reels, each bearing a tag containing the UL approval stamp, name of manufacturer, trade name, code, type of wire, and month and year manufactured.

3.10 CONDUCTOR AND CABLE INSTALLATION

A. Sizes are AWG or kcmil. The minimum size for power and lighting circuits is #12. The minimum size for 120-volt control circuits is #14. The minimum insulation rating of conductors is 600 volts.

B. Provide stranded wire for No. 8 and larger. Make conductors continuous from outlet with no splices made except within outlet or junction boxes.

C. Conceal cables in finished walls, ceiling and floors unless otherwise indicated.

D. Use manufacturer approved pulling compound or lubricant where necessary. Compound used must not deteriorate conductor or insulations. Do not exceed manufacturer's recommended maximum pulling tensions.

E. Install concealed and exposed cables parallel and perpendicular to structural members.

F. A color-coding system shall be as follows throughout the building's network of feeders and circuits and used as a basis of balancing the load. The color code shall be continuous from fixture to fixture or other outlet.

Color System	Phase A	Phase B	Phase C	Neutral
480Y277V	Brown	Orange	Yellow	Gray
208Y/120V	Black	Red	Blue	White

G. Wire and cable shall be delivered to the job site in full coils or reels, each bearing a tag containing the UL approval stamp, name of manufacturer, trade name, code, type of wire, and month and year manufactured.

3.11 RACEWAY, CABLES, AND WIRING METHOD APPLICATIONS

A. Minimum Raceway Size: 3/4" trade size.

B. Rigid metal conduit (RMC)

1. Utilize rigid metal conduit under the following conditions (excluding conduit installed on the dry side of waterproofing membranes):

a. Exposed in damp or wet locations or outdoor locations.

b. Where subject to damage by vehicular traffic.

C. Electrical Metallic Tubing (EMT)

1. Provide EMT except where other conduit types are required by the NEC, the authority having jurisdiction, or elsewhere in these contract documents.

D. Flexible metal conduit

1. Utilize flexible metal conduit under the following conditions:

a. In short lengths for connection to motor terminal boxes, dry transformers, engine generators, and other equipment subject to vibration. Where such equipment is exposed to weather or in damp or wet locations, "Sealtite" or "Liquidtite" flexible conduit shall be employed.

b. In lengths as allowed by the National Electrical Code between outlet boxes and recessed lighting fixtures.

c. Flexible metal conduit may be used in sizes up to 1-1/4" suspended ceilings, in hollow spaces of precast concrete plank floor systems, and dry wall interior partitions except where prohibited by the NEC.

d. Provide 2-screw clamp type or “Tite-Bite” box connectors with insulated throats as manufactured by Thomas & Betts, Raco, Steel City.

E. MC cables:

1. Utilize MC cables for branch circuits concealed in ceilings, walls, partitions, and crawl spaces.

3.12 WIRING METHODS

A. Conduit and cable methods shall conform to the National Electrical Code requirements and these Specifications and shall produce a complete, safe, well-built electrical system.

B. Conduit sizes shall be in accordance with the National Electrical Code. 1 inch minimum.

C. Conduits passing from heated to unheated spaces, exterior spaces, refrigerated spaces and cold section plenums of air conditioning units shall be suitably sealed by means of sealing fittings to prevent accumulation of condensation.

D. On conduits crossing expansion joints, provide expansion fittings manufactured by O-Z/Gedney.

E. Conduit nipples connecting outlets in adjoining rooms shall be packed with Johns-Manville “Duxseal” after wires are in place to prevent transmission of noise between rooms unless nipples are 12" or more in length.

F. Where electrical equipment or material is installed in or through fire-rated building elements, provide appropriate UL-listed firestop material to maintain the rated integrity of the affected surface.

G. Provide fiberglass fire-rated outlet boxes or listed putty pads required to maintain fire rating of wall.

3.13 SPLICES AND TERMINATIONS

A. Provide continuous wiring at full circuit length unless connection must be spliced or tapped when making connections to existing circuits or loads with preinstalled pigtails. Comply with the following requirements for splices, taps, and terminations:

1. Splices in branch circuits and control wiring shall be made with 3-M Company “Scotchlocks”, Ideal “Wirenuts” or equivalent. Splices shall be insulation rated for 90ºC at 600 volts.

2. Splices, taps and terminations for feeder and motor wiring shall be made with approved set screw mechanical taps, insulated connectors, sleeves, or lugs. Provide terminations with a minimum 75ºC rating at 600 volts.

3. Vinyl electrical tape shall be 90ºC, 600-volt insulation rated for use whenever added insulation is required. Rubber and friction tape shall not be used.

3.14 TESTING

A. Transformers

1. Perform Tests and Inspections

a. Visual and Mechanical Inspection.

i. Inspect physical and mechanical condition.

ii. Inspect anchorage, alignment, and grounding.

iii. Verify the unit is clean.

iv. Perform specific inspections and mechanical tests recommended by manufacturer.

2. Adjusting

a. Return 30 days after building is occupied to record transformer secondary voltage at each unit for at least 48 hours of typical occupancy period. Adjust transformer taps to provide optimum voltage conditions at secondary terminals. Optimum is defined as not exceeding nameplate voltage plus 5 percent and not being lower than nameplate voltage minus 3 percent at maximum load conditions. Submit recording and tap settings as test results.

b. Output Settings Report: Prepare a written report recording output voltages and tap settings.

3. Prepare and submit test and inspection report.

B. Panelboards

1. Perform Tests and Inspections

a. Test continuity of each circuit.

b. Perform each visual and mechanical inspection test for low-voltage circuit breakers stated in NETA ATS, Paragraph 7.6 Circuit Breakers. Certify compliance with test parameters.

i. Correct malfunctioning units on-site, where possible, and retest to demonstrate compliance; otherwise, replace with new units and retest.

2. Adjusting

a. Adjust moving parts and operable components to function smoothly and lubricate as recommended by manufacturer.

3. Prepare and submit test and inspection reports.

C. Disconnect Switches and Enclosed Circuit Breaker

1. Perform tests and inspections:

a. Visual and Mechanical Inspection:

i. Inspect physical and mechanical condition.

ii. Inspect anchorage, alignment, grounding, and clearances.

iii. Verify unit is clean.

iv. Verify blade alignment and mechanical operation.

v. Verify fuse sizes and types match the specifications and drawings.

vi. Verify tightness of bolted electrical connections.

b. Prepare and submit test and inspection report.

D. Wiring Devices

1. Perform the following tests and inspections:

a. Test Instruments: Use instruments that comply with UL 1436.

b. Test Instrument for Receptacles: Digital wiring analyzer with digital readout or illuminated digital-display indicators of measurement.

c. Test for Receptacles:

i. Line Voltage: Acceptable range is 114 to 126 V.

ii. GFCI Trip: Test using integral test/reset buttons.

iii. Using the test plug, verify that the device and its outlet box are securely mounted.

2. Wiring device will be considered defective if they do not pass tests and inspections.

3. Prepare and submit test and inspection reports.

E. Busway System

1. Perform tests and inspections:

a. Visual and Mechanical Inspection:

i. Inspect busway physical and mechanical condition.

ii. Inspect busway anchorage, alignment, grounding, and clearances.

iii. Verify busway, plug-in devices, and receptacles are clean.

iv. Verify bus alignment and mechanical operation.

v. Verify fuse sizes and types match the specifications and drawings.

vi. Verify tightness of bolted electrical connections.

vii. Verify plug-in devices are properly seated on buses and secured to busway.

2. Adjusting

a. Adjust moving parts and operable components to function smoothly

and lubricate as recommended by manufacturer.

3. Testing

   a. Test continuity of each circuit.

   b. Test circuit breakers for proper On/Off operation. When in "On" position load side is energized. When in "Off" position, load side is deenergized.

   c. Test receptacles in the same manner as outlined under "Wiring Devices" paragraph above.

4. Prepare and submit test and inspection report.

3.15 METHOD OF MEASUREMENT

A. Work performed under this Section shall be considered incidental to **Lump Sum Pay Item 16: General Electrical Materials and Methods,** and thus will not be measured.

3.11 BASIS OF PAYMENT

A. Work properly performed in accordance with this Section will be paid for at the Lump Sum Unit Price for **Pay Item 16: General Electrical Materials and Methods.** Payment for work shall include full compensation for performing all work specified and for the furnishing of all materials, tools, equipment, labor, testing, submittals, and incidentals necessary to complete the work as described in the Contract Documents. Payment will be made on a monthly basis, based on percent completion of the work properly performed and accepted as determined by the Engineer.

END OF SECTION 260500

SECTION 265000

LIGHTING

PART 1 - GENERAL

1.1 RELATED DOCUMENTS SUMMARY

A. Plans/Drawings and DRBA Standard Specifications apply to this Section.

B. Section includes administrative and procedural requirements for work under CSI MasterFormat Division 26.

C. Coordinate the work of this Section with the requirements of the Project.

1.2 SUMMARY

A. Section includes lighting fixtures, LED's, drivers, and backup batteries.

B. Coordinate the work of this Section with the requirements of the Project.

1.3 SCOPE

A. Provide a lighting fixture for each lighting fixture symbol shown on the Plans/Drawings, of the type and quality described herein and on the drawings. Fixtures shall be installed complete with lamps of the wattage indicated, sockets, housing, driver, backup batteries, shades, diffusers and supports, and wired for operation.

1.4 SUBMITTALS

A. Submit product data for each lighting fixture type. Cut sheets shall indicate all options/accessories being provided.

B. When alternate fixtures than the basis of design are proposed (and allowed by owner), submit a photometric plan indicating point-by-point footcandle levels. Photometric plan shall include a schedule indicating all data relevant to the calculation (ies file used, LLF, average, avg-to-max, max-to-min, etc.).

1.5 WARRANTY

A. Five (5) year warranty for all components.

PART 2 - PRODUCTS

2.1 LIGHTING FIXTURES

A. Provide fixtures according to the designation indicated on the plans. Fixture designations are explained and specified in the Lighting Fixture Schedule.

B. Lighting fixtures designated for use as emergency lighting, provide integral backup

batteries and separate connection to unswitched circuit to allow for battery charging.

C. Construction Features

1. General Requirements

a. Provide galvanized support hangers, channels, and bolts.

b. Provide rustproof hardware such as screws, nuts, washers, and anchor bolts.

c. Fixtures shall be wired for polarized system with one wire in each fixture to be distinctly marked for its entire length. Wire shall bear the UL label.

2.2 LED FIXTURES

A. General

1. Individual LEDs shall be connected such that a catastrophic loss or the failure of one LED will not result in the loss of the entire luminaire.

2. Lumen output shall not decrease by more than 20% over the minimum operational life of 50,000 hours.

3. Provide thermal management to ensure proper operation of luminaire over its expected useful life. Thermal management shall be passive type only.

4. Operating temperature range shall be -40°C to 40°C minimum for entire fixture including LED's, drivers, and batteries.

B. Driver

1. 120-277V, UL-listed, CSA-certified. The driver shall be at least 80% efficient at full load.

2. The driver shall be suitable for continuous dimming without perceivable flicker over a range of 100% to 5% of rated lumen output with a smooth shutoff function.

3. Provide driver disconnect per NEC requirement.

4. Provide surge protection internal to driver to protect driver in accordance with ANSI/IEEE C64.41 2002.

5. Driver shall be tested and certified to NEMA 410 standard.

2.3 BATTERIES

A. RoHS, cURus 1310, cURus 924, CEC Title 20, Dry and Damp Locations.

B. Batteries shall have capacity to provide a minimum of 90 minutes operation at rated lumens during normal power outage.

C. Battery Over Discharge Protection, Output Short Circuit Protection, and LED Red/Green Stainless Steel Test Switch.

D. Input: 100-277VAC, 50/60Hz, 0.1A maximum, 6W maximum, 2.5KV Ring Wave Input Surge Protection.

E. Output: Constant current, LED Class 2.

F. RFI/EMI: FCC Part 15 Class A.

G. Battery Type: LiFePO 4 (Lithium Iron Phosphate, LFP).

H. Life: 50,000 Hours.

2.4 EMERGENCY LIGHTING UNITS AND EXIT SIGNS

A. Provide battery backup emergency lighting units and exit signs, UL 924-listed.

B. Comply with "Batteries" Article above.

C. Exit signs shall have universal faces, universal chevrons, and universal mounting.

D. Combination exit signs shall include manufacturer installed LED heads.

E. Emergency lighting units and exit signs shall be self-diagnostic type.

PART 3 - EXECUTION

3.1 LOCATION

A. Coordinate the location of lighting fixtures with the Engineer before final installation. Allow for a reasonable amount of shifting of fixture locations.

B. Consult the Engineer's reflected ceiling plans and the installer of the ceilings to ensure that fixtures are properly aligned, ventilated, and located.

C. Coordinate actual fixture depths with piping, duct work, bulkheads, etc. prior to rough-in.

D. Install exit signs above a doorway with two active leaves that swing in opposite directions centered above egress leaf, not centered above the doorway.

3.2 INSTALLATION

A. Provide "Earthquake" hold down clips on recessed fixtures.

B. Provide necessary accessories, as required, to support the fixtures independently of the ceiling suspension system. Securely fasten box and fixture supports to structural system main supports. Where fixtures are surface mounted, cut neat holes in the hung ceilings as required for the fixture supports.

C. Provide at least two (2) grid drop wires, 12 gauge minimum, supported from building structural system on recessed fixtures. Provide additional support wires where required by AHJ.

D. Lighting fixtures installed in rated walls or ceilings shall be listed for the purpose or suitably tented with approved material.

E. Provide spring loaded sockets and acrylic tube guards on fluorescent lighting

fixtures with exposed tubes. Provide tube guards on all lighting fixtures in food service areas, elevator pit, and elevator machine room.

F. Install fixtures so lamps are oriented in the same direction.

G. Wire emergency and exit lighting fixtures with unswitched circuit leg, unless otherwise noted.

H. Test all fixtures for proper operation and correct any deficiencies.

3.3 METHOD OF MEASUREMENT

A. Work performed under this Section shall be considered incidental to **Lump Sum Pay Item 17: Lighting,** and thus will not be measured.

3.14 BASIS OF PAYMENT

A. Work properly performed in accordance with this Section will be paid for at the Lump Sum Unit Price for **Pay Item 17: Lighting.** Payment for work shall include full compensation for performing all work specified and for the furnishing of all materials, tools, equipment, labor, testing, submittals, and incidentals necessary to complete the work as described in the Contract Documents. Payment will be made on a monthly basis, based on percent completion of the work properly performed and accepted as determined by the Engineer.

END OF SECTION 265000

[End of Special Provisions - Part IV]

DELAWARE RIVER AND BAY AUTHORITY

CAPE MAY-LEWES FERRY

CONTRACT NO. CMLF-C23-01

CAPE MAY VESSEL MAINTENANCE SHOP RENOVATION

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ATTACHMENT A

Letter of Intent

Located in the CapEx Project File

DELAWARE RIVER AND BAY AUTHORITY

CAPE MAY-LEWES FERRY

CONTRACT NO. CMLF-C23-01

CAPE MAY VESSEL MAINTENANCE SHOP RENOVATION

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ATTACHMENT B

Subcontractor Utilization Report

Located in the CapEx Project File

DELAWARE RIVER AND BAY AUTHORITY

CAPE MAY-LEWES FERRY

CONTRACT NO. CMLF-C23-01

CAPE MAY VESSEL MAINTENANCE SHOP RENOVATION

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ATTACHMENT C

Plans/Drawings

Located in the CapEx Project File