



Project Manual

**REPLACE CHILLER BLDG 11
PROJECT NO. 2648221**

**HORIZON ELEMENTARY
4751 HIDDEN LAKE DR.
PORT ORANGE, FL 32129**

**THE SCHOOL BOARD OF VOLUSIA COUNTY FLORIDA
200 NORTH CLARA AVENUE
DELAND, FLORIDA**

MECHANICAL

BCER Engineering, Inc.
6555 N. Wickham Rd, Suite 104
Melbourne, FL 32940

ELECTRICAL

BCER Engineering, Inc.
6555 N. Wickham Rd, Suite 104
Melbourne, FL 32940

**DATE: 11.12.2025
REVISED: 1.06.2026**



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SCHOOL BOARD OF VOLUSIA COUNTY FLORIDA

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Project Name: Replace Chiller Bldg. 11
VCS Project No.: 2648221

All references herein that conflict with processes, procedures, or other terms outlined in the Owner contracts, as associated with this Project, the Owner contracts shall take precedence.

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Project \$200,000 or more, utilize the A101-2017 Standard Form of Agreement, A101-2017 Exhibit A and the A201-2017 General Conditions of the Contract (Standard Bid); project is less than \$200,000 utilize the 625 Standard Form of Agreement (Proposals).

Specific documents listed above may not apply to this project. Select "N/A" for document(s) which do not apply to this project.
Required: consult the Owner's Construction Project Manager in charge to make this determination.

Facility Name: Horizon Elementary
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ADVERTISEMENT FOR BID
SCHOOL BOARD OF VOLUSIA COUNTY FLORIDA
FAC DOCUMENT 630

NOTICE is hereby given that sealed bids for: (Facility Name) Horizon Elementary, (Project Name) Replace Chiller Bldg. 11, VCS Project Number 2648221, will be received by the School Board of Volusia County Florida, until (date) 2/19/2026 at (time) 1:00 pm, in the Volusia County Schools Facilities Services Building, at which time all bids will be publicly opened and read aloud. Bids received after this time will not be accepted. Bids may be mailed or hand delivered to Volusia County Schools, Facilities Services, 3750 Olson Drive, Daytona Beach Florida 32124.

A MANDATORY PRE-BID CONFERENCE is scheduled for (date) 2/04/2026, (time) 10:00 am at (location) Horizon Elementary - 4751 Hidden Lake Drive, Port Orange, FL 32129. **All bidders must attend.** The representative of each bidder shall be an authorized employee of the bidder and shall sign in accordingly.

Documents, including complete specifications, may be examined by appointment at the office of the Construction Project Manager of record at Facilities Services, 3750 Olson Drive, Daytona Beach Florida (386) 947-8786.

BID DOCUMENTS ARE AVAILABLE VIA THE VOLUSIA COUNTY SCHOOLS WEBSITE AT: <https://www.vcsedu.org/facilities-design> The documents are in PDF format and may be viewed, printed or saved to your computer.

A310 Bid Bond Included

(The following sentence applies if the A310 Bid Bond is included for this project) Bids must be accompanied by a bid bond, certified check or cashier's check in an amount equal to five (5) percent of the total bid.

Bidders for this project are required to hold a current Certificate of Prequalification issued by the School Board of Volusia County Florida at the time of bid opening. To pre-qualify contact Purchasing, 200 North Clara Avenue, DeLand Florida 32720; telephone (386)734-7190.

All bids shall be binding for a period of 60 calendar days from the date of bid opening or until School Board approval of the bid, whichever occurs first. The bid amount of the successful bidder, once approved by the School Board, shall not be subject to change or withdrawal.

All bids shall be subject to the provisions of the Solicitation, as defined in FAC Document 631, Instructions to Bidders. It is the sole responsibility of all bidders to fully comply with the provisions of the Solicitation during this bidding process.

The School Board reserves the right to reject any one or more bids as provided by law.

The School Board of Volusia County Florida

Ruben Colon, Board Chair



INSTRUCTIONS TO BIDDERS
SCHOOL BOARD OF VOLUSIA COUNTY FLORIDA
FAC DOCUMENT 631

TO BIDDERS: You are hereby invited to submit a sealed bid for the following project. Bids will be publicly opened and read aloud at the time and place designated. Bids received after this time will not be accepted.

1. PROJECT INFORMATION

FACILITY NAME: HORIZON ELEMENTARY
PROJECT NAME: REPLACE CHILLER BLDG 11
PROJECT NUMBER: 2648221
OWNER: THE SCHOOL BOARD OF VOLUSIA COUNTY FLORIDA
ENGINEER: BCER ENGINEERING, INC.

BID DATE AND TIME: 2/19/2026, 1:00 pm
LOCATION: Volusia County Schools
Facilities Services
Bid Conference Room
3750 Olson Drive
Daytona Beach, Florida 32124
Phone: 386-947-8786

MANDATORY PRE-BID CONFERENCE

DATE AND TIME: 2/04/2026, 10:00 am
LOCATION: Horiozon Elementary
4751 Hidden Lake Dr.
Port Orange, FL 32129

All Bidders must attend the pre-bid conference. The representative of each Bidder shall be an authorized employee of the Bidder and shall sign in accordingly.

CONSTRUCTION TIME:
Seventy (70) consecutive calendar days after written "Notice to Proceed".

BID DOCUMENTS:

Documents, including drawings and specifications, may be examined at the office of:

BCER Engineering
6555 N. Wickhan Road
Suite 104
Melbourne, FL 32940
321.241.4142 x Joe Berkebile, Call in advance to setup a viewing appointment.

Bid documents are available in digital format. Bidders may view, print or save copies of the bid documents via the Volusia County Schools website at: <https://www.vcsedu.org/facilities-design>
(Note: documents for proposals not published online.)

BID RESULTS:

The bid results will be available on the district web site at <https://www.vcsedu.org/facilities-design>
(Note: proposal results not published online.)

DIRECTIONS TO SCHOOLS AND FACILITIES

Directions to School Board of Volusia County schools and facilities are available via the district website at: <https://www.vcsedu.org/community-information-services/maps-and-directions>.

2. DEFINITIONS

- 2.1 **Contract:** *(select contract applicable to Project)*
☒ Standard Form Agreement between Owner and Contractor, AIA Document A101-2017, as modified by the Owner and General Conditions of the Contract for Construction, AIA Document A201-2017, as modified by the Owner.
☐ Standard Form of Agreement Between Owner and Contractor for a Small Project, FAC Document 625.
- 2.2 **Contractor:** The term Contractor as used in this Solicitation shall be defined as provided in Section 489.105(3), Florida Statutes (2003) and shall be licensed to perform that work and in direct contractual relationship with Owner.
- 2.3 **Bidder:** Contractor which has received a certificate of prequalification by the School Board in conformance with State Board of Education Rules and School Board Policy 604. Certificate of prequalification shall only entitle a Contractor to submit a bid and shall not constitute proof of Bidder's ability to perform a contract or serve as a substitute for any of the qualifications imposed on Contractor in the Solicitation.
- 2.4 **Lowest Responsible Bidder:** A Contractor who has the skills, qualifications, ability and experience to perform the contract, in all respects, as required by the Solicitation and who has submitted the lowest responsible bid.
- 2.5 **Non-responsive bid:** Shall include, but not be limited to, submission of a subcontractor without required licensing, submission of incomplete forms or documentation, failure to demonstrate the skills, qualifications, ability and experience to perform the contract as required by the Solicitation of both the Bidder and its subcontractor(s), or any other reason provided by law.
- 2.6 **Self-performance:** Performance of work by the Bidder in one or more of the types of work as disclosed under FAC Document 633, List of Subcontractors, which is undertaken and completed entirely by his own forces through the use of skilled and unskilled labor, supervision and equipment owned, operated and controlled by the Bidder without the assistance, employ, contract or reliance on any third parties, individual or corporate, except that a total of not more than 10% of the cost of performing the work, that is to be self-performed, may be expended to utilize outside sources to perform the work and then only when the third party assistance is so specialized as to be commonly employed in the industry as it is otherwise not economically reasonable to maintain it internally.
- 2.7 **School Board:** The School Board of Volusia County Florida. The term "Owner" may be used interchangeably.
- 2.8 **Solicitation:** Consists of the following documents: Project Manual, Advertisement for Bid, Drawings, Addenda. The term includes what is generally defined as "Invitation to Bid" and "Request for Proposals" in Section 287.012, Fla. Stat. (2003).
- 2.9 **Subcontractor:** Any person or entity under contract with a Contractor to provide services or labor for the construction, installation, or repair of an improvement of real property. For purposes of this Solicitation, this term does not include suppliers who provide only materials, equipment or supplies to a Contractor.

3. PREQUALIFICATION OF BIDDERS

The prequalification process and terms and conditions of certificates of prequalification shall be governed by Volusia County School Board Policy 604.

A Bidder's failure to hold a certificate of prequalification at the time of bid submittal shall result in the automatic rejection of that bid.

4. BID SUBMITTAL

Each Bidder, on or before the bid date and time specified above, shall sign and submit, to Volusia County Schools, Facilities Services, 3750 Olson Drive, Daytona Beach Florida 32124, one (1) original and one (1) copy of the FAC Document 632, Bid Form, of the Solicitation in the format provided herein, with all bid information completed and two (2) copies of all other required bid documentation. If bids are delivered by U.S. mail, or some other form of delivery other than hand-delivery, a return receipt may be requested. Submittals containing any condition, omissions, unexplained erasures, alterations, items not called for or irregularities of any kind may be rejected by the School Board. Any additions or deletions made before bid opening shall be made solely on FAC Document 632, Bid Form. Verbal or digital bid submittals will not be considered.

Each Bidder's submittal shall be placed in an envelope and sealed and marked with the name of the project. Required bid documents included with the Bid Form shall be assembled as follows: FAC Document 632 Bid Form, AIA Document A310 Bid Bond (if required for this project), Power of Attorney (if required for this project), FAC Document 633 List of Subcontractors and then any other documents required. Bid documents (original set and copy set) shall be stapled or paperclipped, binders of any kind as well as separation pages should not be used. Failure to submit any bid document or bid information with the bid, as specified, shall result in the bid being rejected as non-responsive.

The School Board expressly reserves the right to waive minor technicalities, and to use sufficient time to investigate the bids and the skills, qualifications, experience and ability of the Bidders and its subcontractor(s) to fully perform the contract requirements. Any refusal by a Bidder or subcontractor(s) to respond to the School Board's request for information shall deem a bid non-responsive and serve as grounds for rejection of the bid by the School Board. Any documentation requested by School Board during this investigation process shall not be deemed a supplement to a bid, but as part of its good faith investigation process. Any withdrawal of a subcontractor by a Bidder without good cause shown shall deem a bid non-responsive and serve as grounds for rejection of the bid by the School Board; however, in no event shall any substitution of a subcontractor result in an increase in the bid amount.

A Bidder's failure to file a protest within the time prescribed in Section 120.57(3), Florida Statutes, shall constitute a waiver of the right to protest under Chapter 120, Florida Statutes, or by any other means.

Award of the contract will be made to the lowest responsible Bidder for the actual amount bid; however, the School Board reserves the right to reject all bids as provided by law.

All bids shall be binding for a period of 60 calendar days from the date of bid opening or until School Board approval of the bid, whichever occurs first. The bid amount of the successful Bidder, once approved by the School Board, shall not be subject to change or withdrawal.

5. AIA DOCUMENT A310, BID BOND - REQUIRED

If a Bid Bond is required, the Bid and Bid Bond must be accompanied by a certified check or cashier's check in an amount equal to five (5) percent of the total bid and shall be made payable to the "School Board of Volusia County Florida." The bond or check shall be irrevocable for 60 calendar days from the date of bid opening or until School Board approval of the bid, whichever occurs first.

All Bidders shall submit one (1) copy of the Bid Bond on form AIA Document A310 Bid Bond. Surety companies providing Bidders' bonds shall be licensed to operate in the State of Florida and shall be rated "excellent" or better by Best Insurance Rating Guide. The bond shall be signed or countersigned by a

Florida Resident Agent. You must provide a signed Power of Attorney for each copy of the bond. A Bidder may, at its option, submit a certified check from a Florida bank or a cashier's check as bid security, original and one photostat copy required.

6. SUBCONTRACTOR DISCLOSURE

Bidders shall furnish, on the FAC Document 633, List of Subcontractors form, a full disclosure of subcontractors to be utilized on the project or a clear representation of the Bidder's intent to self-perform the work, as defined, as an attachment to FAC Document 632, Bid Form.

7. EXAMINATION OF SITE

Bidders are required to visit the construction site, prior to bidding, compare the Drawings and Specifications with any work in place and inform themselves of all conditions thereof. Failure to visit site will in no way relieve the successful Bidder from furnishing materials or performing any work necessary to complete the project in accordance with the contract documents, and specifications.

8. ADDENDA

Only those Contractors who attend the mandatory pre-bid meeting will be notified via email of the issuance of Addenda for this project. All addenda will be published on the Owner's website.

(Note: addenda for proposal projects not published online.)

9. PUBLIC ENTITY CRIME INFORMATION STATEMENT

All invitations to bid as defined by Section 287.012(11), Florida Statutes, requests for proposals as defined by Section 287.012(16), Florida Statutes, and any contract document described by Section 287.058, Florida Statutes, shall contain a statement informing persons of the provisions of paragraph (2)(a) of Section 287.133, Florida Statutes, which reads as follows:

"A person or affiliate who has been placed on the convicted vendor list following a conviction for a public entity crime may not submit a bid on a contract to provide any goods or services to a public entity, may not submit a bid on a contract with a public entity for the construction or repair of a public building or public work, may not submit bids on leases or real property to a public entity, may not be awarded or perform work as a contractor, supplier, subcontractor, or consultant under a contract with any public entity, and may not transact business with any public entity in excess of the threshold amount provided in Section 287.017, for CATEGORY TWO for a period of 36 months from the date of being placed on the convicted vendor list."

10. BID PROTEST BOND

As a condition precedent to filing a bid protest pursuant to Section 120.57(3)(f), Florida Statutes, a protestor shall post a bid protest bond consistent with Section 255.0516, Florida Statutes. Any failure by a protestor to file a bid protest bond with the School Board at the time of filing a bid protest shall result in a dismissal with prejudice of the protest for failure to comply with Section 255.0516, Florida Statutes. All bid protests must be accompanied by a bid protest bond in the form provided herein and a certified check or cashier's check in an amount consistent with that identified in Section 255.0516(1) or (2), Florida Statutes for this project.

11. CONTRACTOR ACKNOWLEDGMENT FORM

The successful Contractor shall submit an executed Contractor Acknowledgment Form (included in these specifications) to Facilities Services before work begins. On this form the Contractor acknowledges that it has been given access to and has read the asbestos survey, management plan, re-inspection report (if applicable) and/or the certificate of final inspection (if applicable) for the school it will be working in. Further, it acknowledges that the Contractor must cease work and notify the project manager and asbestos program manager in the event of encountering materials not previously identified by the aforementioned reports.

This document must be submitted with the executed contract documents.

12. CONTRACT

The successful Bidder shall execute the Contract for the amount as submitted by the Bidder and approved by the School Board, within ten (10) working days after written notification of acceptance. A binding contract exists upon the issuance of the School Board's Notice of Acceptance of Bid.

The terms and conditions of this Solicitation shall prevail over any other conflicting language until the award of the contract to the lowest responsible Bidder and issuance of the School Board's Notice of Acceptance of Bid.

13. FAC DOCUMENT 640, PERFORMANCE AND PAYMENT BOND - REQUIRED

If a Performance and Payment is required, the successful Bidder shall submit four (4) signed copies of a Performance and Payment Bond from a surety insurer authorized to do business in the State of Florida equal to one hundred percent (100%) of the total contract amount. The School Board's standard Bond Form, included herein, shall be used to submit the information. The Performance and Payment Bond shall be submitted simultaneously with the execution of the Contract. The Performance and Payment Bond shall be subject to the provisions of Section 255.05, Florida Statutes, and shall not expire until one (1) year after the date of the Certificate of Final Payment. The Performance and Payment Bond shall be executed on the same day as the Contract and shall include a Power of Attorney for each copy of the Bond.

14. LIQUIDATED DAMAGES

The parties acknowledge the School Board will suffer damages if the project has not reached Substantial Completion and Final Completion on the dates set forth in the Contract. The damages suffered by the School Board, in the event of a delay, are not readily ascertainable. Due to the difficulty in ascertaining the damages, the Contractor and the Contractor's surety shall be liable for and shall pay, as liquidated damages, the sum of five hundred dollars and zero cents (\$500.00) per calendar day for each calendar day or part thereof, the delay in the project continues beyond the deadline set by the terms of the Contract for Substantial Completion of the work. The parties acknowledge that these sums are not a penalty, but are the amount agreed upon by the parties as liquidated damages representing the losses to the School Board which would be incurred in the event the project is delayed by the Contractor beyond the date of Substantial Completion and the date of Final Completion as set forth in the Contract.

15. TIME OF THE ESSENCE

Any time periods provided for herein which shall end on a Saturday, Sunday, or a legal holiday shall extend to 5:00 p.m. of the next business day. Time is of the essence in this Contract.



BID FORM
SCHOOL BOARD OF VOLUSIA COUNTY FLORIDA
FAC DOCUMENT 632

TO: School Board of Volusia County Florida
Facilities Services
3750 Olson Drive, Daytona Beach Florida 32124
(386) 947-8786

The undersigned, having become familiarized with the local conditions affecting the cost of the work and with the Drawings and Specifications as prepared by BCER Engineering hereby submits the following bid / proposal:

Facility Name: Horizon Elementary
Project Name: Replace Chiller Bldg. 11
VCS Project No.: 2648221

COMPANY NAME: _____
ADDRESS: _____
PHONE: _____

I (We) propose to furnish all labor, materials, equipment and services necessary for the completion of the above project, all in accordance with the Drawings and Specifications hereof, including any addenda issued, as indicated below.

BASE BID

Note: modify the format in the box below as needed for this project.

As shown on the drawings and specifications, the sum of:

_____ (\$_____).

ALTERNATES - No alternates for this project.

(Note: A/E insert description below; add additional Alternates as needed.)

ALTERNATE NO.1: *(insert description here)*

If the owner elects to proceed with Alternate No. 1, as described in the Contract Documents:

☐ add / ☐ deduct _____

(\$_____).

UNIT PRICES - No unit prices for this project.

(Note: A/E insert description below; add additional Unit Prices as needed.)

UNIT PRICE A: *(insert description here)*

If the owner elects to proceed with Unit Price A, as described in the Contract Documents:

☐ add / ☐ deduct _____

(\$_____) per _____.

BID SECURITY - NOT REQUIRED

If required, bid security in an amount equal to 5% of the total bid proposal is enclosed with the understanding that this proposal shall remain in full effect for a period of 60 days starting at the bid opening date and time.

The undersigned agrees to commence work under the Contract on or before a date to be specified in the written FAC Document 650 Notice to Proceed, and to substantially complete the project within seventy (70) consecutive calendar days thereafter, as specified in Article 3 of AIA Document A101-2017 Agreement, or Article 2 of FAC Document 625 Agreement, which ever is applicable to this project.

The Bidder acknowledges the following addendum (addenda) is made an integral part of the bid documents:

Addendum No.	Date Issued	Addendum No.	Date Issued
_____	_____	_____	_____
_____	_____	_____	_____
_____	_____	_____	_____
_____	_____	_____	_____
_____	_____	_____	_____
_____	_____	_____	_____

In submitting this bid / proposal, the Bidder acknowledges this bid / proposal is based on all construction documents and addenda as posted on the Owner's website or otherwise provided by the Owner's representative. The Owner reserves the right to accept or reject any or all bids / proposals and is not obligated to accept the lowest responsible bid / proposal.

OFFICIAL COMPANY NAME AND ADDRESS:

_____	By: _____
_____	(Signature)
_____	_____
_____	(Print Name, Title)
_____	_____

AIA® Document A310™ – 2010

Bid Bond

CONTRACTOR:

(Name, legal status and address)

SURETY:

(Name, legal status and principal place of business)

OWNER:

(Name, legal status and address)

BOND AMOUNT: \$

PROJECT:

(Name, location or address, and Project number, if any)

ADDITIONS AND DELETIONS:

The author of this document has added information needed for its completion. The author may also have revised the text of the original AIA standard form. An *Additions and Deletions Report* that notes added information as well as revisions to the standard form text is available from the author and should be reviewed. A vertical line in the left margin of this document indicates where the author has added necessary information and where the author has added to or deleted from the original AIA text.

This document has important legal consequences. Consultation with an attorney is encouraged with respect to its completion or modification.

Any singular reference to Contractor, Surety, Owner or other party shall be considered plural where applicable.

The Contractor and Surety are bound to the Owner in the amount set forth above, for the payment of which the Contractor and Surety bind themselves, their heirs, executors, administrators, successors and assigns, jointly and severally, as provided herein. The conditions of this Bond are such that if the Owner accepts the bid of the Contractor within the time specified in the bid documents, or within such time period as may be agreed to by the Owner and Contractor, and the Contractor either (1) enters into a contract with the Owner in accordance with the terms of such bid, and gives such bond or bonds as may be specified in the bidding or Contract Documents, with a surety admitted in the jurisdiction of the Project and otherwise acceptable to the Owner, for the faithful performance of such Contract and for the prompt payment of labor and material furnished in the prosecution thereof; or (2) pays to the Owner the difference, not to exceed the amount of this Bond, between the amount specified in said bid and such larger amount for which the Owner may in good faith contract with another party to perform the work covered by said bid, then this obligation shall be null and void, otherwise to remain in full force and effect. The Surety hereby waives any notice of an agreement between the Owner and Contractor to extend the time in which the Owner may accept the bid. Waiver of notice by the Surety shall not apply to any extension exceeding sixty (60) days in the aggregate beyond the time for acceptance of bids specified in the bid documents, and the Owner and Contractor shall obtain the Surety's consent for an extension beyond sixty (60) days.

If this Bond is issued in connection with a subcontractor's bid to a Contractor, the term Contractor in this Bond shall be deemed to be Subcontractor and the term Owner shall be deemed to be Contractor.

When this Bond has been furnished to comply with a statutory or other legal requirement in the location of the Project, any provision in this Bond conflicting with said statutory or legal requirement shall be deemed deleted herefrom and provisions conforming to such statutory or other legal requirement shall be deemed incorporated herein. When so furnished, the intent is that this Bond shall be construed as a statutory bond and not as a common law bond.

Init.

Signed and sealed this day of ,

_____	_____
(Witness)	(Contractor as Principal) (Seal)
_____	_____
	(Title)
_____	_____
	(Surety) (Seal)
_____	_____
(Witness)	(Title)

Init.
/



LIST OF SUBCONTRACTORS
SCHOOL BOARD OF VOLUSIA COUNTY FLORIDA
FAC DOCUMENT 633

Bidder Company Name: _____
Facility Name: Horizon Elementary
Project Name: Replace Chiller Bldg. 11
VCS Project Number: 2648221

This form shall be considered an integral part of FAC Document 632, Bid Form, and shall be submitted with the Bid Form.

The term Subcontractor as used herein shall be used as defined in FAC Document 631, Instructions to Bidders.

For each "TYPE OF WORK" listed below, list the name of the subcontractor who will be performing any portion of that work. Use additional sheets, if needed.

Bidder may list itself to self-perform, as defined in FAC Document 631, Instructions to Bidders, a type of work when the Bidder is currently licensed to and shall perform that type of work and provides completed FAC Document 634, Bidder Project Data for Self-Performed Projects, within five (5) days to the date of this bid, for at least two (2) previously self-performed projects of comparable size and scope of this Contract for the last five (5) years.

There shall be no exceptions to a Bidder's obligation to provide the aforementioned documentation in the time frame provided. Failure to provide any of the aforementioned documentation or comply with the requirements of this form shall constitute a material deviation from the requirements of this Solicitation and shall serve as grounds for rejecting the bid as non-responsive.

(Consultant: modify the list of work in the table below as needed for the Project.)

<u>TYPE OF WORK</u>	<u>SUBCONTRACTOR</u>
1. HVAC	_____
2. Electrical	_____



BIDDER PROJECT DATA
FOR SELF-PERFORMED PORTIONS OF THE WORK
SCHOOL BOARD OF VOLUSIA COUNTY FLORIDA
FAC DOCUMENT 634

Facility Name: Horizon Elementary
Project Name: Replace Chiller Bldg. 11
VCS Project No.: 2648221

Instructions to Bidder: Work completed in the past 5-years. For each type of work proposed to be self-performed by Bidder in FAC Document 633 of the Solicitation, provide full responses to this form. In the event Bidder requires additional space, Bidder is authorized to reproduce this form.

Submitted by - Firm Name: _____
Firm Address: _____

Self-performed Project No. 1

Project: _____

A. Type of Work: _____
Description: _____ Date Completed: _____
Location: _____
Value of Self-performed Work: _____ Total Project Value: _____

B. Owner: _____
Contact Person(s): _____ Phone: _____
Email: _____
Office Address: _____

C. Arch. or Eng.: _____
Contact Person(s): _____ Phone: _____
Email: _____
Office Address: _____

Self-performed Project No. 2

Project: _____

A. Type of Work: _____
Description: _____ Date Completed: _____
Location: _____
Value of Self-performed Work: _____ Total Project Value: _____

B. Owner: _____
Contact Person(s): _____ Phone: _____
Email: _____
Office Address: _____

C. Arch. or Eng.: _____
Contact Person(s): _____ Phone: _____
Email: _____
Office Address: _____

Self-performed Project No. 3

Project: _____

A. Type of Work: _____

Description: _____ Date Completed: _____

Location: _____

Value of Self-performed Work: _____ Total Project Value: _____

B. Owner: _____

Contact Person(s): _____ Phone: _____

Email: _____

Office Address: _____

C. Arch. or Eng.: _____

Contact Person(s): _____ Phone: _____

Email: _____

Office Address: _____

Self-performed Project No. 4

Project: _____

A. Type of Work: _____

Description: _____ Date Completed: _____

Location: _____

Value of Self-performed Work: _____ Total Project Value: _____

B. Owner: _____

Contact Person(s): _____ Phone: _____

Email: _____

Office Address: _____

C. Arch. or Eng.: _____

Contact Person(s): _____ Phone: _____

Email: _____

Office Address: _____

The foregoing is a statement of fact. Any inaccurate information disclosed in this form shall constitute a major deviation from the Solicitation and result in the rejection of bid as non-responsive to the requirements of the Solicitation.

Print Name

Title

Signature

Date



TRENCH SAFETY ACT FORM
SCHOOL BOARD OF VOLUSIA COUNTY FLORIDA
FAC DOCUMENT 635

Facility Name: Horizon Elementary
Project Name: Replace Chiller Bldg. 11
VCS Project No.: 2648221

This form shall be completed, signed and submitted with FAC Document 632, Bid Form. Failure to submit this form at the time of bid will constitute automatic disqualification and non-acceptance of bid proposal.

The undersigned, herein called "Bidder", has determined to his own complete satisfaction that all portions of the Florida Trench Safety Act (90-96, Laws of Florida) as the OSHA Excavation Safety Standards 29, CFR part 1926.650 Subpart P, will be fully complied with and executed properly on this project.

Bidder acknowledges that included in the various items of the proposal and in the Total Bid Price are costs for complying with the Florida Trench Safety Act (90-96, Laws of Florida) effective October 1, 1990. The bidder further identifies the costs to be summarized below:

Trench Safety Measure (Description)	Units of Measure (LF, SY)	Unit (Quantity)	Unit Cost	Extended Cost
A. _____	_____	_____	_____	_____
B. _____	_____	_____	_____	_____
C. _____	_____	_____	_____	_____
D. _____	_____	_____	_____	_____
Total				_____

In Witness whereof, the Bidder as hereunto set his signature and affixed his seal

this _____ day of _____ in the year _____

Firm: _____ (SEAL)

By: _____

Name and Title: _____



BID PROTEST BOND
SCHOOL BOARD OF VOLUSIA COUNTY FLORIDA
FAC DOCUMENT 636

Bond Number:
Facility Name:
Project Name:
VCS Project No.:

KNOW ALL PERSONS BY THESE PRESENTS:

That we, _____ a (*select one*) ☐ corporation ☐ joint venture ☐ partnership ☐ proprietorship ☐ limited liability company organized and existing under the laws of the State of _____, and duly authorized to do business in the State of Florida and having its principal place of business at _____ as PRINCIPAL; and _____, a surety company, organized under the laws of the State of _____, and duly authorized to do business in the State of Florida, whose principal place of business is _____ as SURETY, are held and firmly bound unto the School Board of Volusia County Florida as OBLIGEE in the amount of _____ Dollars (\$_____) for the payment of which sum we bind ourselves, our heirs, personal representatives, successors and assigns, jointly and severally.

THIS BOND is issued under provisions of Section 255.0516, Florida Statutes. The above-named principal has initiated an administrative protest pursuant to Section 120.57, Florida Statutes, regarding the School Board of Volusia County's (Board) bid solicitation, bid rejection or contract award for the above-referenced project, which protest is conditioned upon the posting of a bond. The bond shall be conditioned upon the payment of all costs and attorneys' fees which may be adjudged against the person filing the protest in the administrative hearing in which the action is brought and any subsequent appellate court proceeding.

NOW, THEREFORE, if the Principal, after conclusion or termination of the administrative hearing process, and/or any appellate court proceedings regarding the protest, shall satisfy all attorneys' fees, costs and interest thereon, rendered by final order and/or judgment, in favor of the Board as the prevailing party, then the obligation shall be null and void; otherwise this bond shall remain in full force and effect.

The Board may bring an action in a proper court on this bond for the amount of such liability, including all additional costs and attorneys' fees associated with a claim against the bond.

PRINCIPAL _____

BY _____

TITLE _____

(CORPORATE SEAL)

ATTEST _____

TITLE _____

SURETY _____

BY _____

(CORPORATE SEAL)

TITLE _____

Florida Licensed Insurance Agent _____

NOTE: Power of attorney showing authority of Surety's agent or Attorney in fact must be attached.



AIA Document A101 – 2017

Standard Form of Agreement Between Owner and Contractor where the basis of payment is a Stipulated Sum

AGREEMENT made as of the ____ day of ____ in the year ____.
(In words, indicate day, month, and year.)

BETWEEN the Owner:
(Name, legal status, address and other information)

School Board of Volusia County Florida
200 North Clara Avenue, DeLand Florida 32720

Document mailing address: 3750 Olson Drive, Daytona Beach Florida 32124

and the Contractor:
(Name, legal status, address and other information)

for the following Project:
(Name, location and detailed description)

The Architect:
(Name, legal status, address and other information)

The Owner and Contractor agree as follows.

Initial

AIA Document A101-2017, Standard Form of Agreement Between Owner and Contractor (as modified by Licensee)
School Board of Volusia County Florida
Contractor

This document produced under VCS AIA License Order No. ____ which expires ____.

VCS Master 2025-May-01
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TABLE OF ARTICLES

- 1 THE CONTRACT DOCUMENTS
- 2 THE WORK OF THIS CONTRACT
- 3 DATE OF COMMENCEMENT AND SUBSTANTIAL COMPLETION
- 4 CONTRACT SUM
- 5 PAYMENTS
- 6 DISPUTE RESOLUTIONS
- 7 TERMINATION OR SUSPENSION
- 8 MISCELLANEOUS PROVISIONS
- 9 ENUMERATION OF CONTRACT DOCUMENTS

EXHIBIT A INSURANCE AND BONDS

ARTICLE 1 THE CONTRACT DOCUMENTS

The Contract Documents consist of this Agreement, Conditions of the Contract (General, Supplementary, and other Conditions), Drawings, Specifications, Addenda issued prior to execution of this Agreement, other documents listed in this Agreement, and Modifications issued after execution of this Agreement, all of which form the Contract, and are as fully a part of the Contract as if attached to this Agreement or repeated herein. The Contract represents the entire and integrated agreement between the parties hereto and supersedes prior negotiations, representations, or agreements, either written or oral. An enumeration of the Contract Documents, other than a Modification, appears in Article 9. Contract documents include the Contractor's bid or proposal.

ARTICLE 2 THE WORK OF THIS CONTRACT

The Contractor shall fully execute the Work described in the Contract Documents, except as specifically indicated in the Contract Documents to be the responsibility of others.

ARTICLE 3 DATE OF COMMENCEMENT AND SUBSTANTIAL COMPLETION

§ 3.1. The date of commencement of the Work shall be:

☐ The date of this Agreement.

☒ A date set forth in a notice to proceed issued by the Owner.

☐ Established as follows:

(Insert a date or a means to determine the date of commencement of the Work.)

If a date of commencement of the Work is not selected, then the date of commencement shall be the date of this Agreement.

§ 3.2 The Contract Time shall be measured from the date of commencement of the Work.

§ 3.3 Substantial Completion

§ 3.3.1 Subject to adjustments of the Contract Time as provided in the Contract Documents, the Contractor shall achieve Substantial Completion of the entire Work:
(Check one of the following boxes and complete the necessary information.)

[X] Not later than _____ (_____) consecutive calendar days from the date of commencement of the Work.

[] By the following date:

§ 3.3.2 Subject to adjustments of the Contract Time as provided in the Contract Documents, if portions of the Work are to be completed prior to Substantial Completion of the entire Work, the Contractor shall achieve Substantial Completion of such portions by the following dates:

Portion of Work

Substantial Completion Date

§ 3.3.3 If the Contractor fails to achieve Substantial Completion as provided in this Section 3.3, liquidated damages, if any, shall be assessed as set forth in Section 4.5.

ARTICLE 4 CONTRACT SUM

§ 4.1 The Owner shall pay the Contractor the Contract Sum in current funds for the Contractor's performance of the Contract. The Contract Sum shall be _____ (\$ _____), subject to additions and deductions as provided in the Contract Documents.

§ 4.2 Alternates

§ 4.2.1 Alternates, if any, included in the Contract Sum:

Item

Price

~~§ 4.2.2 Subject to the conditions noted below, the following alternates may be accepted by the Owner following execution of this Agreement. Upon acceptance, the Owner shall issue a Modification to this Agreement.
(Insert below each alternate and the conditions that must be met for the Owner to accept the alternate.)~~

Item

Price

Conditions of Acceptance

§ 4.3 Allowances, if any, included in the Contract Sum:
(Identify each allowance.)

Item

Price

§ 4.4 Unit prices, if any:

(Identify the item and state the unit price and quantity limitations, if any, to which the unit price will be applicable.)

Item

Units and Limitations

Price per Unit (\$0.00)

§ 4.5 Liquidated damages, if any:

(Insert terms and conditions for liquidated damages, if any.)

The parties acknowledge the Owner will suffer damages if the project has not reached Substantial Completion and Final Completion on the dates set forth in the Contract. The damages suffered by the Owner, in the event of a delay, are not readily ascertainable. Due to the difficulty in ascertaining the damages, the Contractor and the Contractor's surety shall be liable for and shall pay, as liquidated damages, the sum of _____ dollars _____ cents (\$ _____) per calendar

Initial AIA Document A101-2017, Standard Form of Agreement Between Owner and Contractor (as modified by Licensee)

School Board of Volusia County Florida

Contractor

This document produced under VCS AIA License Order No. _____ which expires _____.

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day for each calendar day or part thereof, the delay in the project continues beyond the deadline set by the terms of the Contract for Substantial Completion of the work. The parties acknowledge that these sums are not a penalty, but are the amount agreed upon by the parties as liquidated damages representing the losses to the Owner which would be incurred in the event the project is delayed by the Contractor beyond the date of Substantial Completion as set forth in the Contract. Time is of the essence. Any such liquidated damages may, at the option of the Owner, be withheld and deducted from any unpaid portion of the Contract sum.

§ 4.6 Other:

(Insert provisions for bonus or other incentives, if any, that might result in a change to the Contract Sum.)

ARTICLE 5 PAYMENTS

§ 5.1 Progress Payments

§ 5.1.1 Based upon Applications for Payment submitted to the Architect by the Contractor and Certificates for Payment issued by the Architect, the Owner shall make progress payments on account of the Contract Sum to the Contractor as provided below and elsewhere in the Contract Document.

§ 5.1.2 The period covered by each Application for Payment shall be one calendar month ending on the last day of the month, or as follows:

§ 5.1.3 Provided that an Application for Payment is received by the Architect not later than the first day of a month and certified to the Owner by the seventh day of the month, the Owner shall make payment of the amount certified to the Contractor not later than the last day of the same month. If an Application for Payment is received by the Architect and certified to the Owner after the application date fixed above, payment of the amount certified shall be made by the Owner not later than thirty (30) days after the Architect receives the Application for Payment.
(Federal, state or local laws may require payment within a certain period of time.)

§ 5.1.4 Each Application for Payment shall be based on the most recent schedule of values submitted by the Contractor in accordance with the Contract Documents. The schedule of values shall allocate the entire Contract Sum among the various portions of the Work. The schedule of values shall be prepared in such form, and supported by such data to substantiate its accuracy, as the Architect and Owner may require. This schedule of values shall be used as a basis for reviewing the Contractor's Applications for Payment. The Contractor shall not make changes in the Schedule of Values without prior approval of the Architect and Owner.

§ 5.1.5 Applications for Payment shall show the percentage of completion of each portion of the Work as of the end of the period covered by the Application for Payment.

§ 5.1.6 In accordance with AIA Document A201™–2017, General Conditions of the Contract for Construction, and subject to other provisions of the Contract Documents, the amount of each progress payment shall be computed as follows:

§ 5.1.6.1 The amount of each progress payment shall first include:

- .1 That portion of the Contract Sum properly allocable to completed Work;
- .2 That portion of the Contract Sum properly allocable to materials and equipment delivered and suitably stored at the site for subsequent incorporation in the completed construction, or, if approved in advance by the Owner, suitably stored off the site at a location agreed upon in writing; ~~and~~
- ~~.3 That portion of Construction Change Directives that the Architect determines, in the Architect's professional judgment, to be reasonably justified.~~

§ 5.1.6.2 The amount of each progress payment shall then be reduced by:

- .1 The aggregate of any amounts previously paid by the Owner;

- .2 The amount, if any, for Work that remains uncorrected and for which the Architect has previously withheld a Certificate for Payment as provided in Article 9 of AIA Document A201–2017;
- .3 Any amount for which the Contractor does not intend to pay a Subcontractor or material supplier, unless the Work has been performed by others the Contractor intends to pay;
- .4 For Work performed or defects discovered since the last payment application, any amount for which the Architect may withhold payment, or nullify a Certificate of Payment in whole or in part, as provided in Article 9 of AIA Document A201–2017; and
- .5 Retainage withheld pursuant to Section 5.1.7.

§ 5.1.7 Retainage

§ 5.1.7.1 For each progress payment made prior to Substantial Completion of the Work, the Owner may withhold the following amount, as retainage, from the payment otherwise due:

(Insert a percentage or amount to be withheld as retainage from each Application for Payment. The amount of retainage may be limited by governing law.)

Retainage, not to exceed five percent (5%), shall be withheld from each progress payment to the Contractor for Projects with a total cost of construction services identified in the contract of more than two hundred thousand dollars (\$200,000.00), 218.735 F.S.

§ 5.1.7.1.1 The following items are not subject to retainage:

(Insert any items not subject to the withholding of retainage, such as general conditions, insurance, etc.)

§ 5.1.7.2 Reduction or limitation of retainage, if any, shall be as follows:

(If the retainage established in Section 5.1.7.1 is to be modified prior to Substantial Completion of the entire Work, including modifications for Substantial Completion of portions of the Work as provided in Section 3.3.2, insert provisions for such modifications.)

§ 5.1.7.3 Except as set forth in this Section 5.1.7.3, upon Substantial Completion of the Work, the Contractor may submit an Application for Payment that includes the retainage withheld from prior Applications for Payment pursuant to this Section 5.1.7. The Application for Payment submitted at Substantial Completion shall not include retainage as follows:
(Insert any other conditions for release of retainage upon Substantial Completion.)

§ 5.1.8 If final completion of the Work is materially delayed through no fault of the Contractor, the Owner shall pay the Contractor any additional amounts in accordance with Article 9 of AIA Document A201–2017.

§ 5.1.9 Except with the Owner's prior approval, the Contractor shall not make advance payments to suppliers for materials or equipment which have not been delivered and stored at the site.

§ 5.2 Final Payment

§ 5.2.1 Final payment, constituting the entire unpaid balance of the Contract Sum, shall be made by the Owner to the Contractor when

- .1 the Contractor has fully performed the Contract except for the Contractor's responsibility to correct Work as provided in Article 12 of AIA Document A201–2017, and to satisfy other requirements, if any, which extend beyond final payment; and
- .2 applicable for Final Payment along with all warranties, guarantees, close out documents including all as built drawings in paper document and digital combined PDF format, transmitted via FTP or other Owner accepted protocol, and items required under the Contract Documents as submitted to the Architect or Engineer for review and transmittal to the Owner; and
- .3 Board acceptance of the Certificate of Final Inspection (CFI); and

4 a final Certificate for Payment has been issued by the Architect.

§ 5.2.2 The Owner's final payment to the Contractor shall be made ~~no later than~~ 30 days after the issuance of the Architect's final Certificate for Payment, or as follows:

§ 5.2 Interest

~~Payments due and unpaid under the Contract shall bear interest from the date payment is due at the rate stated below, or in the absence thereof, at the legal rate prevailing from time to time at the place where the Project is located.
(Insert rate of interest agreed upon, if any.)~~

ARTICLE 6 DISPUTE RESOLUTION

§ 6.1 Initial Decision Maker

The Architect will serve as the Initial Decision Maker pursuant to Article 15 of AIA Document A201-2017, ~~unless the parties appoint below another individual, not party to this Agreement, to serve as the Initial Decision Maker.
(If the parties mutually agree, insert the name, address and other contact information of the Initial Decision Maker, if other than the Architect.)~~

§ 6.2 Binding Dispute Resolution

For any Claim subject to, but not resolved by, mediation pursuant to Article 15 of AIA Document A201-2017, the method of binding dispute resolution shall be as follows:
(Check the appropriate box.)

☐ Arbitration pursuant to Section 15.4 of AIA Document A201-2017

☒ Litigation in a court of competent jurisdiction

☐ Other (Specify)

If the Owner and Contractor do not select a method of binding dispute resolution, or do not subsequently agree in writing to a binding dispute resolution method other than litigation, Claims will be resolved by litigation in a court of competent jurisdiction.

ARTICLE 7 TERMINATION OR SUSPENSION

§ 7.1 The Contract may be terminated by the Owner or the Contractor as provided in Article 14 of AIA Document A201-2017.

~~§ 7.1.1 If the Contract is terminated for the Owner's convenience in accordance with Article 14 of AIA Document A201-2017, then the Owner shall pay the Contractor a termination fee as follows:
(Insert the amount of, or method for determining, the fee, if any, payable to the Contractor following a termination for the Owner's convenience.)~~

§ 7.2 The Work may be suspended by the Owner as provided in Article 14 of AIA Document A201-2017.

ARTICLE 8 MISCELLANEOUS PROVISIONS

§ 8.1 Where reference is made in this Agreement to a provision of AIA Document A201-2017 or another Contract Document, the reference refers to that provision as amended or supplemented by other provisions of the Contract Documents.

§ 8.2 The Owner's representative:
(Name, address, email address, and other information)

§ 8.3 The Contractor's representative:
(Name, address, email address, and other information)

§ 8.4 Neither the Owner's nor the Contractor's representative shall be changed without ten days prior notice to the other party. The Contractor's representative shall not be changed without prior written approval by the Owner.

§ 8.5 Insurance and Bonds

§ 8.5.1 The Owner and the Contractor shall purchase and maintain insurance as set forth in AIA Document A101™-2017, Standard Form of Agreement Between Owner and Contractor where the basis of payment is a Stipulated Sum, Exhibit A, Insurance and Bonds, and elsewhere in the Contract Documents.

§ 8.5.2 The Contractor shall provide bonds as set forth in AIA Document A101™-2017 Exhibit A, and elsewhere in the Contract Documents.

§ 8.6 Other provisions:

ARTICLE 9 ENUMERATION OF CONTRACT DOCUMENTS

§ 9.1 This Agreement is comprised of the following documents:

- .1 AIA Document A101™-2017, Standard Form of Agreement Between Owner and Contractor
- .2 AIA Document A101™-2017, Exhibit A, Insurance and Bonds
- .3 AIA Document A201™-2017, General Conditions of the Contract for Construction

.4 Drawings

Exhibit

B

Title

List of Drawings

Date

.5 Specifications

Exhibit

C

Title

List of Specifications

Date

.6 Addenda, if any:

Number

Date

Pages

Portions of Addenda relating to bidding or proposal requirements are not part of the Contract Documents unless the bidding or proposal requirements are also enumerated in this Article 9.

.7 Other Exhibits:
(Check all boxes that apply and include appropriate information identifying the exhibit where required.)

Supplemental and other Conditions of the Contract:

Initial

AIA Document A101-2017, Standard Form of Agreement Between Owner and Contractor (as modified by Licensee)

School Board of Volusia County Florida

Contractor

This document produced under VCS AIA License Order No. _____ which expires _____.

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.8 Other documents, if any, listed below:

(List here any additional documents that are intended to form part of the Contract Documents. AIA Document A201™-2017 provides that the advertisement or invitation to bid, Instructions to Bidders, sample forms, the Contractor's bid or proposal, portions of Addenda relating to bidding or proposal requirements, and other information furnished by the Owner in anticipation of receiving bids or proposals, are not part of the Contract Documents unless enumerated in this Agreement. Any such documents should be listed here only if intended to be part of the Contract Documents.)

This Agreement entered into as of the day and year first written above.

School Board of Volusia County Florida

OWNER (Signature)

_____, Board Chair
(Printed name and title)

CONTRACTOR (Signature)

(Printed name and title)

WITNESS (Signature)

_____, Superintendent
(Printed name and title)

WITNESS (Signature)

(Printed name and title)



Exhibit A – Insurance and Bonds to AIA Document A101 – 2017 Agreement

This Insurance and Bonds Exhibit is part of the Agreement, between the Owner and the Contractor, dated the _____ day of _____ in the year _____.

(In words, indicate day, month, and year.)

for the following PROJECT:

(Name and location or address)

THE OWNER:

(Name, legal status and address)

School Board of Volusia County Florida
200 North Clara Avenue, DeLand Florida 32720

Document mailing address: 3750 Olson Drive, Daytona Beach Florida 32124

THE CONTRACTOR:

(Name, legal status and address)

TABLE OF ARTICLES

- A.1 GENERAL
- A.2 OWNER'S INSURANCE
- A.3 CONTRACTOR'S INSURANCE AND BONDS
- A.4 SPECIAL TERMS AND CONDITIONS

ARTICLE A.1 GENERAL

The Owner and Contractor shall purchase and maintain insurance, and provide bonds, as set forth in this Exhibit. As used in this Exhibit, the term General Conditions refers to AIA Document A201™–2017, General Conditions of the Contract for Construction. The Owner, at its discretion, may modify this document at any time during the preparation of the Contract to conform to the Project.

ARTICLE A.2 OWNER'S INSURANCE

§ A.2.1 General

Prior to commencement of the Work, the Owner shall secure the insurance, and provide evidence of the coverage, required under ~~this Article~~ Section A.2.2 and, upon the Contractor's request, provide a copy of the ~~property~~ insurance policy or policies required by ~~Section A.2.3~~. The copy of the policy or policies provided shall contain all applicable conditions, definitions, exclusions, and endorsements.

§ A.2.2 Liability and Property Insurance

The Owner shall be responsible for purchasing and maintaining the Owner's usual general liability and property insurance.

§ A.2.3 Required Property Insurance

§ A.2.3.1 ~~Unless this obligation is placed on the~~ The Contractor, pursuant to Section A.3.3.2.1, ~~the Owner~~ shall purchase and maintain, from an insurance company or insurance companies lawfully authorized to issue insurance in the jurisdiction where the Project is located, property insurance written on a builder's risk "all-risks" completed value or equivalent policy form and sufficient to cover the total value of the entire Project on a replacement cost basis. The ~~Owner's~~ Contractor's property insurance coverage shall be no less than the amount of the initial Contract Sum, plus the value of subsequent Modifications and labor performed and materials or equipment supplied by others. The property insurance shall be maintained until Substantial Completion and thereafter as provided in Section A.2.3.1.3, unless otherwise provided in the Contract Documents or otherwise agreed in writing by the parties to this Agreement. This insurance shall include the interests of the Owner, Contractor, Subcontractors, and Sub-subcontractors in the Project as insureds. This insurance shall include the interests of mortgagees as loss payees.

§ A.2.3.1.1 Causes of Loss. The insurance required by this Section A.2.3.1 shall provide coverage for direct physical loss or damage, and shall not exclude the risks of fire, explosion, theft, vandalism, malicious mischief, collapse, earthquake, flood, or windstorm. The insurance shall also provide coverage for ensuing loss or resulting damage from error, omission, or deficiency in construction methods, design, specifications, workmanship, or materials. Sub-limits, if any, are as follows:

(Indicate below the cause of loss and any applicable sub-limit.)

Causes of Loss

Sub-Limit

§ A.2.3.1.2 Specific Required Coverages. The insurance required by this Section A.2.3.1 shall provide coverage for loss or damage to falsework and other temporary structures, and to building systems from testing and startup. The insurance shall also cover debris removal, including demolition occasioned by enforcement of any applicable legal requirements, and reasonable compensation for the Architect's and Contractor's services and expenses required as a result of such insured loss, including claim preparation expenses. Sub-limits, if any, are as follows:

(Indicate below type of coverage and any applicable sub-limit for specific required coverages.)

Coverage

Sub-Limit

§ A.2.3.1.3 Unless the parties agree otherwise, upon Substantial Completion, the ~~Owner~~ Contractor shall continue the insurance required by Section A.2.3.1 or, if necessary, replace the insurance policy required under Section A.2.3.1 with property insurance written for the total value of the Project that shall remain in effect until expiration of the period for correction of the Work set forth in Section 12.2.2 of the General Conditions.

§ A.2.3.1.4 Deductibles and Self-Insured Retentions. If the insurance required by this Section A.2.3 is subject to deductibles or self-insured retentions, the ~~Owner~~ Contractor shall be responsible for all loss not covered because of such deductibles or retentions. Deductibles in excess of \$50,000 shall not be permitted.

§ A.2.3.2 Occupancy or Use Prior to Substantial Completion. The Owner's occupancy or use of any completed or partially completed portion of the Work prior to Substantial Completion shall not commence until the insurance company or companies providing the insurance under Section A.2.3.1 have consented in writing to the continuance of coverage. The Owner and the Contractor shall take no action with respect to partial occupancy or use that would cause cancellation, lapse, or reduction of insurance, unless they agree otherwise in writing.

§ A.2.3.3 Insurance for Existing Structures

If the Work involves remodeling an existing structure or constructing an addition to an existing structure, the ~~Owner~~ Contractor shall purchase and maintain, until the expiration of the period for correction of Work as set forth in Section 12.2.2 of the General Conditions, "all-risks" property insurance, on a replacement cost basis, protecting the existing structure against direct physical loss or damage from the causes of loss identified in Section A.2.3.1, notwithstanding the undertaking of the Work. The Contractor shall be responsible for all co-insurance penalties.

§ A.2.4 Optional Extended Property Insurance.

The ~~Owner~~ Contractor shall purchase and maintain the insurance selected and described below.

(Select the types of insurance the ~~Owner~~ Contractor is required to purchase and maintain by placing an X in the box(es) next to the description(s) of selected insurance. For each type of insurance selected, indicate applicable limits of coverage or other conditions in the fill point below the selected item.)

- ☐ § 2.4.1 Loss of Use, Business Interruption, and Delay in Completion Insurance, to reimburse the Owner for loss of use of the Owner's property, or the inability to conduct normal operations due to a covered cause of loss.
- ☒ § 2.4.2 Ordinance or Law Insurance, for the reasonable and necessary costs to satisfy the minimum requirements of the enforcement of any law or ordinance regulating the demolition, construction, repair, replacement or use of the Project.
- ☐ § 2.4.3 Expediting Cost Insurance, for the reasonable and necessary costs for the temporary repair of damage to insured property, and to expedite the permanent repair or replacement of the damaged property.
- ☐ § 2.4.4 Extra Expense Insurance, to provide reimbursement of the reasonable and necessary excess costs incurred during the period of restoration or repair of the damaged property that are over and above the total costs that would normally have been incurred during the same period of time had no loss or damage occurred.
- ☐ § 2.4.5 Civil Authority Insurance, for losses or costs arising from an order of a civil authority prohibiting access to the Project, provided such order is the direct result of physical damage covered under the required property insurance.
- ☐ § 2.4.6 Ingress/Egress Insurance, for loss due to the necessary interruption of the insured's business due to physical prevention of ingress to, or egress from, the Project as a direct result of physical damage.
- ☐ § 2.4.7 Soft Costs Insurance, to reimburse the Owner for costs due to the delay of completion of the Work, arising out of physical loss or damage covered by the required property insurance: including construction loan fees; leasing and marketing expenses; additional fees, including those of architects, engineers, consultants, attorneys and accountants, needed for the completion of the construction, repairs, or reconstruction; and carrying costs such as property taxes, building permits, additional interest on loans, realty taxes, and insurance premiums over and above normal expenses.

§ A.2.5 Other Optional Insurance.

The Owner shall purchase and maintain the insurance selected below.

(Select the types of insurance the Owner is required to purchase and maintain by placing an X in the box(es) next to the description(s) of selected insurance.)

☒ § 2.5.1 Cyber Security Insurance for loss to the Owner due to data security and privacy breach, including costs of investigating a potential or actual breach of confidential or private information. (Indicate applicable limits of coverage or other conditions in the fill point below.)

☐ § 2.5.2 Other Insurance
(List below any other insurance coverage to be provided by the Owner and any applicable limits.)

Coverage

Limits

ARTICLE A.3 CONTRACTOR'S INSURANCE AND BONDS

§ A.3.1 General

§ A.3.1.1 Certificates of Insurance. The Contractor shall provide certificates of insurance acceptable to the Owner evidencing compliance with the requirements in this Article A.3 at the following times: (1) prior to commencement of the Work; (2) upon renewal or replacement of each required policy of insurance; and (3) upon the Owner's written request. The Contractor shall furnish to the Owner copies of any endorsements that are subsequently issued amending coverage or limits. Failure of the contractor to obtain and maintain required insurance shall be grounds for termination of the Contract by the Owner. An additional certificate evidencing continuation of commercial liability coverage, including coverage for completed operations, shall be submitted with the final Application for Payment and thereafter upon renewal or replacement of such coverage until the expiration of the periods required by Section A.3.2.1 and Section A.3.3.1. The certificates will show the Owner as an additional insured, including a copy of the additional insured form attached to the certificate of insurance, on the Contractor's Commercial General Liability and excess or umbrella liability policy or policies. Umbrella excess liability shall be provided for Projects with a contract sum in excess of one million dollars (\$1,000,000); not less than one million dollars (\$1,000,000) over primary insurance; and retention for self-insured hazards for one million dollars (\$1,000,000).

§ A.3.1.2 Deductibles and Self-Insured Retentions. The Contractor shall disclose to the Owner any deductible or self-insured retentions applicable to any insurance required to be provided by the Contractor.

§ A.3.1.3 Additional Insured Obligations. To the fullest extent permitted by law, the Contractor shall cause the commercial general liability coverage to include (1) the Owner, the Architect, and the Architect's consultants as additional insureds for claims caused in whole or in part by the Contractor's negligent acts or omissions during the Contractor's operations; and (2) the Owner as an additional insured for claims caused in whole or in part by the Contractor's negligent acts or omissions for which loss occurs during completed operations. The additional insured coverage shall be primary and non-contributory to any of the Owner's general liability insurance policies and shall apply to both ongoing and completed operations. The Contractor, for your Work, shall maintain completed operations coverage for itself and each additionally insured for at least five (5) years or the Florida Statute of Repose whichever is greater. To the extent commercially available, the additional insured coverage shall be no less than that provided by Insurance Services Office, Inc. (ISO) forms CG 20 10 07 04, CG 20 37 07 04, and, with respect to the Architect and the Architect's consultants, CG 20 32 07 04.

§ A.3.2 Contractor's Required Insurance Coverage

§ A.3.2.1 The Contractor shall purchase and maintain the following types and limits of insurance from an insurance company or insurance companies, rated by A.M. Best "A-" or better, lawfully authorized to issue insurance in the jurisdiction where the Project is located. The Contractor shall maintain the required insurance until the expiration of the period for correction of Work as set forth in Section 12.2.2 of the General Conditions, unless a different duration is stated below:

(If the Contractor is required to maintain insurance for a duration other than the expiration of the period for correction of Work, state the duration.)

§ A.3.2.2 Commercial General Liability

§ 3.2.2.1 Commercial General Liability insurance for the Project written on an occurrence form with policy limits of not less than one million dollars (\$1,000,000) each occurrence, one million dollars (\$1,000,000) per claimant, two million dollars (\$2,000,000) general aggregate, and two million dollars (\$2,000,000) aggregate for products-completed operations hazard, providing coverage for claims including

- .1 damages because of bodily injury, sickness or disease, including occupational sickness or disease, and death of any person;
- .2 personal injury and advertising injury;
- .3 damages because of physical damage to or destruction of tangible property, including the loss of use of such property;
- .4 bodily injury or property damage arising out of completed operations; ~~and~~
- .5 the Contractor's indemnity obligations under Section 3.18 of the General Conditions;
- .6 contractual liability for bodily injury and property damage not less than one million dollars (\$1,000,000) per claimant and each occurrence; and for property damage two million dollars (\$2,000,000) general aggregate; and
- .7 property damage liability shall provide X, C and U coverage.

§ A.3.2.2.2 The Contractor's Commercial General Liability policy under this Section A.3.2.2 shall not contain an exclusion or restriction of coverage for the following:

- .1 Claims by one insured against another insured, if the exclusion or restriction is based solely on the fact that the claimant is an insured, and there would otherwise be coverage for the claim.
- .2 Claims for property damage to the Contractor's Work arising out of the products-completed operations hazard where the damaged Work or the Work out of which the damage arises was performed by a Subcontractor.
- .3 Claims for bodily injury other than to employees of the insured.
- .4 Claims for indemnity under Section 3.18 of the General Conditions arising out of injury to employees of the insured.
- .5 Claims or loss excluded under a prior work endorsement or other similar exclusionary language.
- .6 Claims or loss due to physical damage under a prior injury endorsement or similar exclusionary language.
- .7 Claims related to residential, multi-family, or other habitational projects, if the Work is to be performed on such a project.
- .8 Claims related to roofing, if the Work involves roofing.
- .9 Claims related to exterior insulation finish systems (EIFS), synthetic stucco or similar exterior coatings or surfaces, if the Work involves such coatings or surfaces.
- .10 Claims related to earth subsidence or movement, where the Work involves such hazards.
- .11 Claims related to explosion, collapse and underground hazards, where the Work involves such hazards.

§ 3.2.3 Automobile Liability covering vehicles owned, hired, leased and non-owned vehicles used, by the Construction Manager, with policy limits of not less than one million dollars (\$1,000,000) per accident, for bodily injury, death of any person, and property damage arising out of the ownership, maintenance and use of those motor vehicles along with any other statutorily required automobile coverage. The Owner is to be named as additionally insured. The State of Florida has no-fault automobile insurance requirements; the Contractor shall be certain coverage is provided which conforms to any specific stipulation in this law.

§ A.3.2.4 The Contractor may achieve the required limits and coverage for Commercial General Liability and Automobile Liability through a combination of primary and excess or umbrella liability insurance, provided such primary and excess or umbrella insurance policies result in the same or greater coverage as the coverages required under Section A.3.2.2 and A.3.2.3, and in no event shall any excess or umbrella liability insurance provide narrower coverage than the primary policy. The excess policy shall not require the exhaustion of the underlying limits only through the actual payment by the underlying insurers.

§ A.3.2.5 Workers' Compensation at State, Chapter 440 Florida Statutes, and Federal, e.g. Longshoremen's Statute, statutory limits with policy limits not less than one million dollars (\$1,000,000.00) each accident, each employee and policy limit.

§ A.3.2.5.1 In the event the Contractor is using leased employees (PEO arrangement), provide the same workers' compensation policy limits as Section 3.2.5; and a waiver of subrogation in favor of alternate employers' endorsement showing the subcontractor as the alternate employer.

§ 3.2.6 Employers' Liability with policy limits not less than one million dollars (\$1,000,000) each accident, one million dollars (\$1,000,000) each employee, and one million dollars (\$1,000,000) policy limit.

§ A.3.2.7 Jones Act, and the Longshore & Harbor Workers' Compensation Act, as required, if the Work involves hazards arising from work on or near navigable waterways, including vessels and docks.

§ 3.2.8 If the Construction Manager is required to furnish professional services as part of the Work, the Construction Manager shall procure Professional Liability insurance covering performance of the professional services, with policy limits of not less than one million dollars (\$1,000,000) per claim and one million dollars (\$1,000,000) in the aggregate.

§ 3.2.9 If the Work involves the transport, dissemination, use, or release of pollutants, the Construction Manager shall procure Pollution Liability insurance, with policy limits of not less than one million dollars (\$1,000,000) per claim and one million dollars (\$1,000,000) in the aggregate.

§ 3.2.10 Coverage under Sections 3.2.8 and 3.2.9 may be procured through a Combined Professional Liability and Pollution Liability insurance policy, with combined policy limits of not less than _____ (\$ _____) per claim and _____ (\$ _____) in the aggregate.

§ 3.2.11 Insurance for maritime liability risks associated with the operation of a vessel, if the Work requires such activities, with policy limits of not less than _____ (\$ _____) per claim and _____ (\$ _____) in the aggregate.

§ 3.2.12 Insurance for the use or operation of manned or unmanned aircraft, if the Work requires such activities, with policy limits of not less than _____ (\$ _____) per claim and _____ (\$ _____) in the aggregate.

§ A.3.3 Contractor's Other Insurance Coverage

§ A.3.3.1 Insurance selected and described in this Section A.3.3 shall be purchased from an insurance company or insurance companies lawfully authorized to issue insurance in the jurisdiction where the Project is located. The Contractor shall maintain the required insurance until the expiration of the period for correction of Work as set forth in Section 12.2.2 of the General Conditions, unless a different duration is stated below:

(If the Contractor is required to maintain any of the types of insurance selected below for a duration other than the expiration of the period for correction of Work, state the duration.)

§ 3.3.2 The Contractor shall purchase and maintain the following types and limits of insurance in accordance with Section 3.3.1.

(Select the types of insurance the Contractor is required to purchase and maintain by placing an X in the box(es) next to the description(s) of selected insurance. Where policy limits are provided, include the policy limit in the appropriate fill point.)

- [X] § 3.3.2.1 Property insurance of the same type and scope satisfying the requirements identified in Section A.2.3, which, if selected in this section A.3.3.2.1, relieves the Owner of the responsibility to purchase and maintain such insurance ~~except insurance required by Section A.2.3.1.3 and Section A.2.3.3~~. The Contractor shall comply with all obligations of the Owner under Section A.2.3 except to the extent provided below. The Contractor shall disclose to the Owner the amount of any deductible, and the Owner shall be responsible for losses within the deductible. Upon request, the Contractor shall provide the Owner with a copy of the property insurance policy or policies required. The Owner shall adjust and settle

the loss with the insurer and be the trustee of the proceeds of the property insurance in accordance with Article 11 of the General Conditions unless otherwise set forth below.
(Where the Contractor's obligation to provide property insurance differs from the Owner's obligations as described under Section A.2.3, indicate such differences in the space below. Additionally, if a party other than the Owner will be responsible for adjusting and settling a loss with the insurer and acting as the trustee of the proceeds of property insurance in accordance with Article 11 of the General Conditions, indicate the responsible party below.)

- ☐ § 3.3.2.2 Railroad Protective Liability Insurance, with policy limits of not less than ____ (\$ ____) per claim and ____ (\$ ____) in the aggregate, for Work within fifty (50) feet of railroad property.
- ☐ § 3.3.2.3 Asbestos Abatement Liability Insurance, with policy limits of not less than ____ (\$ ____) per claim and ____ (\$ ____) in the aggregate, for liability arising from the encapsulation, removal, handling, storage, transportation, and disposal of asbestos-containing materials.
- ☒ § 3.3.2.4 Insurance for physical damage to property while it is in storage and in transit to the construction site, including scaffolding and other equipment used on the Project, on an "all-risks" completed value form.
- ☐ § 3.3.2.5 Property insurance on an "all-risks" completed value form, covering property owned by the Construction Manager and used on the Project, including scaffolding and other equipment.
- ☐ § 3.3.2.6 Other Insurance
(List below any other insurance coverage to be provided by the Construction Manager and any applicable limits.)

Coverage

Limits

§ A.3.4 Performance Bond and Payment Bond

§ A.3.4.1 The Contractor shall provide surety bonds, from a company or companies lawfully authorized to issue surety bonds in the jurisdiction where the Project is located, as follows:

(Specify type and penal sum of bonds.)

~~Payment and Performance Bonds shall be AIA Document A312, Payment Bond and Performance Bond, or contain provisions identical to AIA Document A312, current as of the date of this Agreement.~~

§ A.3.4.2 Unless otherwise agreed in writing prior to beginning Work, the Contractor shall furnish and pay for a Performance and Payment Bond on the Project in the amount of one-hundred percent (100%) of the Contract Price. The liability under said Bond shall be coextensive with the Contractor for all damages arising out of Contractor's breach of this agreement or failure to perform, including, but not limited to, delay damages, liquidated damages (if any), completion of punch lists and the Contractor's responsibilities under Section 12.2.2.1 of the General Conditions. "Conditional" Payment Bonds under Florida Statutes, Section 713.245, shall not be acceptable. Proper Power of Attorney shall accompany said bonds.

§ A.3.4.3 The Contractor shall provide a Public Construction Bond as required by 255.05 F.S.; the Performance and Payment Bonds shall be on forms provided and approved by the Owner.

§ A.3.4.4 Bonds shall be secured through sources acceptable to the Owner. To be acceptable to the Owner as Surety for Performance and Payment Bonds, a Surety Company shall comply with the following provisions:

- .1 the Surety Company must be authorized to do business in the State of Florida; and
- .2 the Surety Company shall have been in business and have a record of successful continuous operations for at least five years; and

Initial

Exhibit A, Insurance and Bonds, to AIA Document A101-2017 (as modified by Licensee)

School Board of Volusia County Florida

Contractor

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.3 the Surety Company shall have at least A.M. Best Company Policyholder's Rating of "A-" and "Financial Size Category" of class XI or an equivalent rating from the Insurance Commissioner if not rated by A.M. Best.

ARTICLE A.4 SPECIAL TERMS AND CONDITIONS

Special terms and conditions that modify this Insurance and Bonds Exhibit, if any, are as follows:

DRAFT

Initial

Exhibit A, Insurance and Bonds, to AIA Document A101-2017 (as modified by Licensee)

School Board of Volusia County Florida

Contractor

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AIA Document A201 – 2017

General Conditions of the Contract for Construction

for the following PROJECT:
(Name and location or address)

THE OWNER:
(Name, legal status and address)

School Board of Volusia County Florida
200 North Clara Avenue, DeLand Florida 32720

Document mailing address: 3750 Olson Drive, Daytona Beach Florida 32124

THE ARCHITECT:
(Name, legal status and address)

TABLE OF ARTICLES

- 1 GENERAL PROVISIONS
- 2 OWNER
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- 5 SUBCONTRACTORS
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- 9 PAYMENTS AND COMPLETION
- 10 PROTECTION OF PERSONS AND PROPERTY
- 11 INSURANCE AND BONDS
- 12 UNCOVERING AND CORRECTION OF WORK
- 13 MISCELLANEOUS PROVISIONS
- 14 TERMINATION OR SUSPENSION OF THE CONTRACT
- 15 CLAIMS AND DISPUTES

Initial

AIA Document A201-2017, General Conditions of the Contract for Construction (as modified by Licensee)
School Board of Volusia County Florida
Contractor

/

This document produced under VCS AIA License Order No. _____ which expires _____.

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ARTICLE 1 GENERAL PROVISIONS

§ 1.1 Basic Definitions

§ 1.1.1 The Contract Documents

All references herein to “Contractor” shall mean “Construction Manager” for Construction Management contract Projects in lieu thereof. The Contract Documents are enumerated in the Agreement between the Owner and Contractor (hereinafter the Agreement) and consist of the Agreement, Conditions of the Contract (A201-2017 General Conditions of the Contract as modified by Owner hereinafter “A201-2017”, Supplementary and other Conditions), Drawings, Specifications, Addenda issued prior to execution of the Contract, other documents listed in the Agreement, and Modifications issued after execution of the Contract. A Modification is (1) a written amendment to the Contract signed by both parties, (2) a Change Order, ~~(3) a Construction Change Directive~~, or (3) a written order for a minor change in the Work issued by the Architect. ~~Unless specifically enumerated in the Agreement, the Contract Documents do not include the advertisement or invitation to bid, Instructions to Bidders, sample forms, other information furnished by the Owner in anticipation of receiving bids or proposals, the Contractor’s bid or proposal, or portions of Addenda relating to bidding or proposal requirements.~~

§ 1.1.2.1 Three (3) original Contract documents shall be signed by both parties with one (1) signed document delivered to Contractor after Owner approval.

§ 1.1.3 The Work

The term “Work” means the construction and services required by the Contract Documents, whether completed or partially completed, and includes all other labor, materials, equipment, and services provided or to be provided by the Contractor to fulfill the Contractor’s obligations. The Work may constitute the whole or a part of the Project.

§ 1.1.4 The Project

The Project is the total construction of which the Work performed under the Contract Documents may be the whole or a part and which may include construction by the Owner and by Separate Contractors.

§ 1.1.5 The Drawings

The Drawings are the graphic and pictorial portions of the Contract Documents showing the design, location and dimensions of the Work, generally including plans, elevations, sections, details, schedules, and diagrams.

§ 1.1.6 The Specifications

The Specifications are that portion of the Contract Documents consisting of the written requirements for materials, equipment, systems, standards and workmanship for the Work, and performance of related services.

§ 1.1.7 Instruments of Service

Instruments of Service are representations, in any medium of expression now known or later developed, of the tangible and intangible creative work performed by the Architect and the Architect’s consultants under their respective professional services agreements. Instruments of Service may include, without limitation, studies, surveys, models, sketches, drawings, specifications, and other similar materials.

§ 1.1.8 Initial Decision Maker

~~The Architect~~ Initial Decision Maker is the person identified in the Agreement to render initial decisions on Claims in accordance with Section 15.2. The Initial Decision Maker shall not show partiality to the Owner or Contractor and shall not be liable for results of interpretations or decisions rendered in good faith.

§ 1.1.9 Third Party Beneficiary

Nothing contained in the Contract Documents shall create a contractual relationship between the Owner and any third party; however, it is understood and agreed that the Owner is an intended third-party beneficiary of all contracts for design or engineering services, all subcontracts, purchase orders as well as all agreements between the Contractor and third parties. The Contractor shall incorporate the obligations of this Contract into its respective subcontracts, supply agreements and purchase orders.

§ 1.2 Correlation and Intent of the Contract Documents

§ 1.2.1 The intent of the Contract Documents is to include all items necessary for the proper execution and completion of the Work by the Contractor. The Contract Documents are complementary, and what is required by one shall be as binding as if required by all; performance by the Contractor shall be required only to the extent consistent with the Contract Documents and reasonably inferable from them as being necessary to produce the intended ~~indicated~~ results.

§ 1.2.1.1 The invalidity of any provision of the Contract Documents shall not invalidate the Contract or its remaining provisions. If it is determined that any provision of the Contract Documents violates any law, or is otherwise invalid or unenforceable, then that provision shall be revised to the extent necessary to make that provision legal and enforceable. In such case the Contract Documents shall be construed, to the fullest extent permitted by law, to give effect to the parties' intentions and purposes in executing the Contract.

§ 1.2.2 Organization of the Specifications into divisions, sections and articles, and arrangement of Drawings shall not control the Contractor in dividing the Work among Subcontractors or in establishing the extent of Work to be performed by any trade.

§ 1.2.3 Unless otherwise stated in the Contract Documents, words that have well-known technical or construction industry meanings are used in the Contract Documents in accordance with such recognized meanings.

§ 1.2.4 The term "Provide", as used in the Contract Documents, includes furnishing all labor, supervision, tools, materials, supplies, equipment, shop drawings, product data and samples, together with all services, accessories and costs associated with performance of the work, for production of an item or system usable in the completed project.

§ 1.2.5 Where conflict or discrepancies exists within or between the Contract Documents or between the Contract Documents and applicable industry standards or applicable codes, ordinances, or other legal requirements, the more stringent requirements shall apply; otherwise, the following order of precedence shall be used.

- .1 The Agreement
- .2 Supplementary Conditions, if any
- .3 These General Conditions
- .4 Addenda, if any, with those of later date having precedence over those of earlier date
- .5 Specifications
- .6 Drawings

§ 1.2.6 Any organization's document referred to, unless otherwise specified in the Specifications, shall mean the latest edition of such document adopted and published prior to the date of the Specifications, and such documents shall be a part of the Specifications with the same effect as if written therein in full.

§ 1.2.7 Dimensions indicated on any Drawings are required dimensions, regardless of measurement per given scale. The Contractor shall verify at the Site necessary levels, measurements, etc., for proper and complete fabrication, assembly and installation of Work. Where dimensions are not indicated, and exact location is not apparent, the Contractor shall notify the Owner and Architect. Inadvertent discrepancies or omissions of details, figures or notes on one drawing, where another drawing correctly sets forth such information, shall not be cause for additional charges or claims.

§ 1.2.8 The interrelation of the Specifications, the Drawings and the Schedules is as follows: The Specifications determine the nature of the setting of the various materials; the Drawings establish the quantities, dimension and details; and the Schedules give the locations. Should the Drawings disagree in themselves, or with the Specifications, the better quality or greater quantity of work or materials shall be estimated upon and, unless otherwise ordered by the Architect in writing, shall be performed or furnished. Explanatory notes on Drawings take precedence over Specifications. Figures given on Drawings take precedence over scaled measurements, and large-scale details take precedence over small Drawings.

§ 1.3 Capitalization

Terms capitalized in these General Conditions include those that are (1) specifically defined, (2) the titles of numbered articles, or (3) the titles of other documents published by the American Institute of Architects.

§ 1.4 Interpretation

In the interest of brevity the Contract Documents frequently omit modifying words such as “all” and “any” and articles such as “the” and “an,” but the fact that a modifier or an article is absent from one statement and appears in another is not intended to affect the interpretation of either statement.

§ 1.5 Ownership and Use of Drawings, Specifications, and Other Instruments of Service

§ 1.5.1 Unless otherwise provided in the Owner’s Agreement with the Architect, the Architect and the Architect’s consultants shall be deemed the authors and owners of their respective Instruments of Service, including the Drawings and Specifications, and retain all common law, statutory, and other reserved rights in their Instruments of Service, including copyrights. The Contractor, Subcontractors, Sub-subcontractors, and suppliers shall not own or claim a copyright in the Instruments of Service. Submittal or distribution to meet official regulatory requirements or for other purposes in connection with the Project is not to be construed as publication in derogation of the Architect’s or Architect’s consultants’ reserved rights.

§ 1.5.2 The Contractor, Subcontractors, Sub-subcontractors, and suppliers are authorized to use and reproduce the Instruments of Service provided to them, subject to any protocols established pursuant to Sections 1.7 and 1.8, solely and exclusively for execution of the Work. All copies made under this authorization shall bear the copyright notice, if any, shown on the Instruments of Service. The Contractor, Subcontractors, Sub-subcontractors, and suppliers may not use the Instruments of Service on other projects or for additions to the Project outside the scope of the Work without the specific written consent of the Owner, Architect, and the Architect’s consultants.

§ 1.6 Notice

§ 1.6.1 Except as otherwise provided in Section 1.6.2, where the Contract Documents require one party to notify or give notice to the other party, such notice shall be provided in writing to the designated representative of the party to whom the notice is addressed and shall be deemed to have been duly served if delivered in person, by mail, by courier, or by electronic transmission if a method for electronic transmission is set forth in the Agreement.

§ 1.6.2 Notice of Claims as provided in Section 15.1.3 shall be provided in writing and shall be deemed to have been duly served only if delivered to the designated representative of the party to whom the notice is addressed by certified or registered mail, or by courier providing proof of delivery.

§ 1.6.3 Written notice requirements of this Contract imposed upon the Contractor shall be strictly construed and such requirements are a condition precedent to Contractor pursuing any rights or remedies hereunder. Contractor expressly waives its rights to claim any waiver by the Owner of such notice requirements based upon the Owner having actual knowledge, implied, verbal or constructive notice, suffering lack of prejudice or any other grounds as substitute for the failure of the Contractor to comply with the express written notice requirements herein.

§ 1.7 Digital Data Use and Transmission

§ 1.7.1 The parties shall agree upon protocols governing the transmission and use of Instruments of Service or any other information or documentation in digital form. ~~The parties will use AIA Document E203™ 2013, Building Information Modeling and Digital Data Exhibit, to establish the protocols for the development, use, transmission, and exchange of digital data.~~

§ 1.7.2 The Owner, at its discretion and direction, intends to utilize Procore Construction Management software platform which is licensed to the Owner. Access to the platform shall be provided to the Contractor at no cost to the Contractor.

- .1 The Procore Certification Program, as applicable to the Contractor’s software access, shall be provided to those deemed necessary by the Contractor and Owner for the Project. The program is a self-paced webinar format intended to familiarize the user with the software. Time will be allotted to the Contractor for this purpose.
- .2 The Contractor shall perform the following:
 - .1 upload pertinent documents and files within the Procore software as established by the Owner; and
 - .2 utilize Procore Tools to manage specific data based documents and information; and
 - .3 collaborate and communicate with the Owner and Consultants within the Procore software; and
 - .4 modify the drawings within the Procore software throughout the Project in order to create as built drawings; and

- .5 other Owner assigned and/or required Procore software processes necessary for the successful completion of the Project.

§ 1.8 Building Information Models Use and Reliance

Any use of, or reliance on, all or a portion of a building information model without agreement to protocols governing the use of, and reliance on, the information contained in the model ~~and without having those protocols set forth in AIA Document E203™ 2013, Building Information Modeling and Digital Data Exhibit, and the requisite AIA Document G202™ 2013, Project Building Information Modeling Protocol Form,~~ shall be at the using or relying party's sole risk and without liability to the other party and its contractors or consultants, the authors of, or contributors to, the building information model, and each of their agents and employees.

§ 1.9 Public Records Compliance

§ 1.9.1 If the Contractor has questions regarding the application of Chapter 119, Florida Statutes, to the Contractor's duty to provide public records relating to this contract, contact the Custodian of Public Records at (386) 734-7190 extension 20119, custserv@volusia.k12.fl.us or 200 North Clara Avenue, DeLand Florida 32720. The Contractor shall:

- .1 Keep and maintain public records required by the school district to perform the service; and
- .2 Upon request from the school district's custodian of public records, provide the school district with a copy of the requested records or allow the records to be inspected or copied within a reasonable time at a cost that does not exceed the cost provided in this chapter or as otherwise provided by law; and
- .3 Ensure that public records that are exempt or confidential and exempt from public records disclosure requirements are not disclosed except as authorized by law for the duration of the contract term and following completion of the contract if the Contractor does not transfer the records to the school district; and
- .4 Upon completion of the contract, transfer, at no cost, to the school district all public records in possession of the Contractor or keep and maintain public records required by the school district to perform the service. If the Contractor transfers all public records to the school district upon completion of the contract, the Contractor shall destroy any duplicate public records that are exempt or confidential and exempt from public records disclosure requirements. If the Contractor keeps and maintains public records upon completion of the contract, the Contractor shall meet all applicable requirements for retaining public records. All records stored electronically must be provided to the school district, upon request from the school district's custodian of public records, in a format that is compatible with the information technology systems of the school district.

§ 1.9.2 Failure of the Contractor to abide by the terms of this provision shall be deemed a material breach of this agreement and the School District of Volusia County may enforce the terms of this provision in the form of a court proceeding and shall, as a prevailing party, be entitled to reimbursement of all attorney's fees and costs associated with that proceeding. This provision shall survive termination or expiration of the contract.

ARTICLE 2 OWNER

§ 2.1 General

§ 2.1.1 The Owner is the person or entity identified as such in the Agreement and is referred to throughout the Contract Documents as if singular in number. The term "Owner" means the Owner or the Owner's authorized representative, who shall be the Superintendent or designee. The Owner's Representative is authorized to act on the Owner's behalf as provided herein and in applicable law, regulation or ordinance. The Owner's Representative has the authority to reject unsatisfactory work and to stop the work if necessary to ensure its proper execution. Failure of the Owner's Representative, in any one or more instances, to insist on strict performance of any of the terms of the Contract or to exercise any option herein conferred shall not be construed as a waiver or relinquishment of future insistence of any such terms or options. Owner shall designate in writing a representative who shall have express authority to bind the Owner with respect to all matters requiring the Owner's approval or authorization. Except as otherwise provided in Section 4.2.1, the Architect does not have such authority. The term "Owner" means the Owner or the Owner's authorized representative.

§ 2.1.2 The Owner shall furnish to the Contractor, within fifteen days after receipt of a written request, information necessary and relevant for the Contractor to evaluate, give notice of, or enforce mechanic's lien rights. Such information

shall include a correct statement of the record legal title to the property on which the Project is located, usually referred to as the site, and the Owner's interest therein.

§ 2.2 Evidence of the Owner's Financial Arrangements

§ 2.2.1 Where the Owner has designated information furnished under this Section 2.2 as "confidential," the Contractor shall keep the information confidential and shall not disclose it to any other person. However, the Contractor may disclose "confidential" information, after seven (7) days' notice to the Owner, where disclosure is required by law, including a subpoena or other form of compulsory legal process issued by a court or governmental entity, or by court or arbitrator(s) order. The Contractor may also disclose "confidential" information to its employees, consultants, sureties, Subcontractors and their employees, Sub-subcontractors, and others who need to know the content of such information solely and exclusively for the Project and who agree to maintain the confidentiality of such information. Prior to commencement of the Work and upon written request by the Contractor, the Owner shall furnish to the Contractor reasonable evidence that the Owner has made financial arrangements to fulfill the Owner's obligations under the Contract. The Contractor shall have no obligation to commence the Work until the Owner provides such evidence. If commencement of the Work is delayed under this Section 2.2.1, the Contract Time shall be extended appropriately.

§ 2.2.2 Following commencement of the Work and upon written request by the Contractor, the Owner shall furnish to the Contractor reasonable evidence that the Owner has made financial arrangements to fulfill the Owner's obligations under the Contract only if (1) the Owner fails to make payments to the Contractor as the Contract Documents require; (2) the Contractor identifies in writing a reasonable concern regarding the Owner's ability to make payment when due; or (3) a change in the Work materially changes the Contract Sum. If the Owner fails to provide such evidence, as required, within fourteen days of the Contractor's request, the Contractor may immediately stop the Work and, in that event, shall notify the Owner that the Work has stopped. However, if the request is made because a change in the Work materially changes the Contract Sum under (3) above, the Contractor may immediately stop only that portion of the Work affected by the change until reasonable evidence is provided. If the Work is stopped under this Section 2.2.2, the Contract Time shall be extended appropriately and the Contract Sum shall be increased by the amount of the Contractor's reasonable costs of shutdown, delay and start up, plus interest as provided in the Contract Documents.

§ 2.2.3 After the Owner furnishes evidence of financial arrangements under this Section 2.2, the Owner shall not materially vary such financial arrangements without prior notice to the Contractor.

§ 2.2.4 Where the Owner has designated information furnished under this Section 2.2 as "confidential," the Contractor shall keep the information confidential and shall not disclose it to any other person. However, the Contractor may disclose "confidential" information, after seven (7) days' notice to the Owner, where disclosure is required by law, including a subpoena or other form of compulsory legal process issued by a court or governmental entity, or by court or arbitrator(s) order. The Contractor may also disclose "confidential" information to its employees, consultants, sureties, Subcontractors and their employees, Sub-subcontractors, and others who need to know the content of such information solely and exclusively for the Project and who agree to maintain the confidentiality of such information.

§ 2.3 Information and Services Required of the Owner

§ 2.3.1 Except for permits and fees that are the responsibility of the Contractor under the Contract Documents, including those required under Section 3.7.1, the Owner shall secure and pay for necessary approvals, easements, assessments and charges required for construction, use or occupancy of permanent structures or for permanent changes in existing facilities.

§ 2.3.2 The Owner ~~shall~~ may, at Owner's sole discretion, retain an architect lawfully licensed to practice architecture, or an entity lawfully practicing architecture, in the jurisdiction where the Project is located. That person or entity is identified as the Architect in the Agreement and is referred to throughout the Contract Documents as if singular in number.

§ 2.3.3 If the employment of the Architect terminates, the Owner ~~shall~~ may employ a successor ~~to whom the Contractor has no reasonable objection and~~ whose status under the Contract Documents shall be that of the Architect.

§ 2.3.4 The Owner shall furnish surveys to the extent available to the Owner, without being responsible for the accuracy of completeness of same, describing physical characteristics, legal limitations and utility locations for the site of the

Project, and a legal description of the site. ~~The Contractor shall be entitled to rely on the accuracy of such survey information furnished by the Owner but shall exercise proper precautions relating to the safe performance of the Work.~~

§ 2.3.5 The Owner shall furnish information or services required of the Owner by the Contract Documents with reasonable promptness. The Owner shall also furnish any other information or services under the Owner's control and relevant to the Contractor's performance of the Work with reasonable promptness after receiving the Contractor's written request for such information or services.

§ 2.3.6 Unless otherwise provided in the Contract Documents, the Owner shall furnish to the Contractor one copy of the Contract Documents for purposes of making reproductions pursuant to Section 1.5.2.

§ 2.4 Owner's Right to Stop the Work

§ 2.4.1 If the Contractor fails to correct Work that is not in accordance with the requirements of the Contract Documents as required by Section 12.2 or repeatedly fails to carry out Work in accordance with the Contract Documents, the Owner may issue a written order to the Contractor to stop the Work, or any portion thereof, until the cause for such order has been eliminated; however, the right of the Owner to stop the Work shall not give rise to a duty on the part of the Owner to exercise this right for the benefit of the Contractor or any other person or entity, except to the extent required by Section 6.1.3. The Owner shall incur no liability for delays occasioned by any stop-work order issued in accordance with this paragraph.

§ 2.4.2 If, after consultation with the Architect, suspension of the Work is warranted by reason of unforeseen conditions which may adversely affect the quality of the Work if such Work were continued, the Owner may suspend the Work by written notice to the Contractor. In such event, the Contract Time shall be adjusted accordingly, and the Contract Sum shall be adjusted to the extent, if any, that additional costs are incurred by reason of such suspension. If the Contractor, in its reasonable judgment, believes that a suspension is warranted by reason of unforeseen circumstances which may adversely affect the quality of the Work if the Work were continued, the Contractor shall immediately notify the Owner and the Architect of such belief and describe with particularity the reasons therefor.

§ 2.5 Owner's Right to Carry Out the Work

If the Contractor defaults or neglects to carry out the Work in accordance with the Contract Documents and fails within a ~~five~~ ten-day period after receipt of notice from the Owner to commence and continue correction of such default or neglect with diligence and promptness, the Owner may, without prejudice to other remedies the Owner may have, ~~correct such default or neglect. Such action by the Owner and amounts charged to the Contractor are both subject to prior approval of the Architect and the Architect commence and continue to carry out the Work.~~ The Architect may, pursuant to Section 9.5.1, withhold or nullify a Certificate for Payment in whole or in part, to the extent reasonably necessary to reimburse the Owner for the reasonable cost of correcting such deficiencies, including Owner's expenses and compensation for the Architect's additional services made necessary by such default, neglect, or failure. If current and future payments are not sufficient to cover such amounts, the Contractor shall pay the difference to the Owner. ~~If the Contractor disagrees with the actions of the Owner or the Architect, or the amounts claimed as costs to the Owner, the Contractor may file a Claim pursuant to Article 15. The right of Owner to stop the Work pursuant to this Section 2.5 shall not give rise to any duty on the part of the Owner to exercise this right for the benefit of the Contractor or any other person or entity.~~

ARTICLE 3 CONTRACTOR

§ 3.1. General

§ 3.1.1 The Contractor is the person or entity identified as such in the Agreement and is referred to throughout the Contract Documents as if singular in number. The Contractor shall be lawfully licensed, if required in the jurisdiction where the Project is located. The Contractor shall designate in writing a representative who shall have express authority to bind the Contractor with respect to all matters under this Contract. The term "Contractor" means the Contractor or the Contractor's authorized representative.

§ 3.1.2 The Contractor shall perform the Work in accordance with the Contract Documents.

§ 3.1.3 The Contractor shall not be relieved of its obligations to perform the Work in accordance with the Contract Documents either by activities or duties of the Architect in the Architect's administration of the Contract, or by tests, inspections or approvals required or performed by persons or entities other than the Contractor.

§ 3.2 Review of Contract Documents and Field Conditions by Contractor

§ 3.2.1 Execution of the Contract by the Contractor is a representation that the Contractor has visited the site, become ~~generally~~ familiar with local conditions under which the Work is to be performed, and correlated personal observations with requirements of the Contract Documents. Familiarity with local conditions shall include, without limitation, (1) the condition and layout of the Project site and surrounding locale, (2) available labor supply and costs, (3) available subcontractors and suppliers, (4) the prevailing climate, including the impact of rain and saltwater environment, (5) available material and equipment and costs, and (6) other similar issues. Extra payments will not be authorized for Work that could have been foreseen by careful examination of the Site. Execution of the Contract shall constitute acceptance, by the Contractor, of existing Site conditions as a part of the requirements for this Work, except as to concealed and unknown conditions as provided in Section 3.7.4. Contractor shall make no claim for additional time or money based upon its failure to comply with this Paragraph.

§ 3.2.2 Because the Contract Documents are complementary, the Contractor shall, before starting each portion of the Work, carefully study and compare the various Contract Documents relative to that portion of the Work, as well as the information furnished by the Owner pursuant to Section 2.3.4, shall take field measurements of any existing conditions related to that portion of the Work, and shall observe any conditions at the site affecting it. These obligations are for the purpose of facilitating coordination and construction by the Contractor and are not for the purpose of discovering errors, omissions, or inconsistencies in the Contract Documents; however, the Contractor shall promptly report to the Architect any errors, inconsistencies or omissions discovered by or made known to the Contractor as a request for information in such form as the Architect may require. It is recognized that the Contractor's review is made in the Contractor's capacity as a contractor and not as a licensed design professional, unless otherwise specifically provided in the Contract Documents.

§ 3.2.3 The Contractor is not required to ascertain that the Contract Documents are in accordance with applicable laws, statutes, ordinances, codes, rules and regulations, or lawful orders of public authorities, but the Contractor shall promptly report to the Architect any nonconformity discovered by or made known to the Contractor as a request for information in such form as the Architect may require.

§ 3.2.4 If the Contractor believes that additional cost or time is involved because of clarifications or instructions the Architect issues in response to the Contractor's notices or requests for information pursuant to Sections 3.2.2 or 3.2.3, the Contractor shall submit Claims as provided in Article 15. If the Contractor fails to perform the obligations of Sections 3.2.2 or 3.2.3, the Contractor shall pay such costs and damages to the Owner, subject to Section 15.1.7, as would have been avoided if the Contractor had performed such obligations. If the Contractor performs those obligations, the Contractor shall not be liable to the Owner or Architect for damages resulting from errors, inconsistencies or omissions in the Contract Documents, for differences between field measurements or conditions and the Contract Documents, or for nonconformities of the Contract Documents to applicable laws, statutes, ordinances, codes, rules and regulations, and lawful orders of public authorities.

§ 3.3 Supervision and Construction Procedures

§ 3.3.1 The Contractor shall supervise and direct the Work, using the Contractor's best skill and attention and in accordance with all local and Florida licensing requirements and Florida Building Code. The Contractor shall be solely responsible for, and have control over, construction means, methods, techniques, sequences, and procedures, and for coordinating all portions of the Work under the Contract. If the Contract Documents give specific instructions concerning construction means, methods, techniques, sequences, or procedures, the Contractor shall evaluate the jobsite safety thereof and shall be solely responsible for the jobsite safety of such means, methods, techniques, sequences, or procedures. If the Contractor determines that such means, methods, techniques, sequences or procedures may not be safe, the Contractor shall give timely notice to the Owner and Architect, and shall propose alternative means, methods, techniques, sequences, or procedures. The Architect shall evaluate the proposed alternative solely for conformance with the design intent for the completed construction. Unless the Architect objects to the Contractor's proposed alternative, the Contractor shall perform the Work using its alternative means, methods, techniques, sequences, or procedures.

§ 3.3.2 The Contractor shall be responsible to the Owner for acts and omissions of the Contractor's employees, Subcontractors and their agents and employees, and other persons or entities performing portions of the Work for, or on behalf of, the Contractor or any of its Subcontractors. The Contractor agrees to remove from the Project any employee, Subcontractor, or Subcontractor employee that commits any breach of the Contract Documents or any breach of the Owner's written rules and regulations regarding jobsite conduct.

§ 3.3.3 The Contractor shall enforce strict discipline and good order among the Contractor's employees and other persons carrying out the Work. The Contractor shall not permit employment of unfit persons or persons not properly skilled in tasks assigned to them. The Contractor shall require all construction personnel to maintain a neat general appearance at all times. Shirts, trousers and proper shoes are required apparel. The display of vulgar words, signs or figures is prohibited. Sandals and flip-flops are prohibited on the Project site. The use of radios, sound producing devices and the like are prohibited on the Project site. The Contractor shall not be permitted to use restrooms or other sanitary facilities within the Owner's existing buildings or on-site facilities.

§ 3.3.4 The Contractor shall be responsible for inspection of portions of Work already performed to determine that such portions are in proper condition to receive subsequent Work. Neither the presence or absence of the Owner or Architect shall relieve the Contractor from any requirements of the Contract Documents.

§ 3.3.5 The Contractor will be responsible for all building grades, lines, levels, etc., required for layout of the Work.

§ 3.3.6 If required by Owner on a Project where applicable, at the earliest possible time after the commencement of the Work on the Project site, the Contractor shall have all property corners and benchmarks verified or established by a state-licensed land surveyor, shall locate the Project on the Project site, establishing necessary reference marks and axes from which the Work accurately can progress, shall furnish Architect evidence of such verification and shall report at once any errors discovered during the process of such verification.

§ 3.3.7 If any of the Work is required to be inspected or approved by any public authority, the Contractor shall cause such inspection or approval to be performed. No inspection performed or failed to be performed by the Owner hereunder shall be a waiver of any of the Contractor's obligations hereunder or be construed as an approval or acceptance of the Work or any part thereof.

§ 3.3.8 The Contractor acknowledges that it is the Contractor's responsibility to hire all personnel for the proper and diligent prosecution of the Work and the Contractor shall use its best efforts to maintain labor peace for the duration of the Project. In the event of a labor dispute of the Contractor, its subcontractors or suppliers, the Contractor shall not be entitled to any increase in the Contract Sum.

§ 3.4 Labor and Materials

§ 3.4.1 Unless otherwise provided in the Contract Documents, the Contractor shall provide and pay for labor, materials, equipment, tools, construction equipment and machinery, water, heat, utilities, transportation, and other facilities and services necessary for proper execution and completion of the Work, whether temporary or permanent and whether or not incorporated or to be incorporated in the Work.

§ 3.4.2 Equal Opportunity

§ 3.4.2.1 ~~Except in the case of minor changes in the Work approved by the Architect in accordance with Section 3.12.8 or ordered by the Architect in accordance with Section 7.4, the Contractor may make substitutions only with the consent of the Owner, after evaluation by the Architect and in accordance with a Change Order or Construction Change Directive.~~ The Contractor shall maintain policies of employment as follows: (1) the Contractor and the Contractor's Subcontractors shall not discriminate against any employee or applicant for employment because of race, gender, religion, national origin, ethnicity, sexual orientation, age or disability; (2) the Contractor and the Contractor's Subcontractors shall, in all solicitations or advertisements for employees placed by them or on their behalf, state that all qualified applicants will receive consideration for employment without regard to race, gender, religion, national origin, ethnicity, sexual orientation, age or disability.

§ 3.4.3 The Contractor may make substitutions only with the consent of the Owner, after evaluation by the Architect and in accordance with a Change Order or other appropriate written directive by the Owner ~~shall enforce strict discipline and~~

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School Board of Volusia County Florida

Contractor

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~~good order among the Contractor's employees and other persons carrying out the Work. The Contractor shall not permit employment of unfit persons or persons not properly skilled in tasks assigned to them.~~

§ 3.4.4 Value Engineering Incentive

§ 3.4.4.1 Any proposal initiated and developed by the Contractor for variation from contractual requirements, which to be acceptable under the Contract would necessitate issuance of a contractual change and which reduces the cost of performing the Contract, without degrading operational functions: e.g., performance, reliability or maintainability of the item. Such proposals would be submitted by the Contractor to the Architect in the same form as prescribed for any other proposal, which would likewise necessitate a change in the contractual requirements but would include a statement that they are a proposed Value Engineering Change subject to the operation of this clause.

§ 3.4.4.2 The Architect will be the sole judge of acceptability, and no substitute will be ordered, installed, used or initiated without the Architect's prior written acceptance which will be evidenced by Change Order. However, any Value Engineering Change accepted by the Architect shall not result in any increase in the Contract Price or Contract Time. By making a request for a Value Engineering Change, the Contractor agrees to pay directly to the Architect all Architect's fees and charges related to the Architect's review of the request for Value Engineering Change, whether or not the Architect accepts the request. The Owner may require the Contractor to furnish at the Contractor's expense a special performance guarantee or other surety with respect to any substitute approved after award of the Contract.

§ 3.4.5 Owner Direct Purchase

§ 3.4.5.1 The Owner is tax exempt and may wish to exercise its right to purchase directly various construction materials, supplies and equipment that may be part of the Contract. The Owner will, via its purchase orders, purchase that material and the Contractor shall assist the Owner in the preparation of purchase orders. The Owner may direct the Contractor to prepare the purchase order on the Owner's form and make ready for verification and execution by the Owner. The materials shall be purchased from the vendors and or suppliers originally selected by the Contractor, for the price originally negotiated by the Contractor. Within thirty (30) days of the Notice to Proceed (NTP) the Contractor shall prepare a complete list of materials, supplies and equipment, including the cost of each item, for the Project and the Owner will advise the Contractor in writing which items from the list the Owner wishes to purchase directly.

§ 3.4.5.2 At a time deemed acceptable to the Owner, the Contract amount shall be reduced by the net, undiscounted amount of the purchase order, plus all sales taxes and surtax as levied. Issuance of the purchase orders by the Owner does not change any of the Contractor's responsibilities regarding material purchases, or installations, with the exception of the payments for the materials purchased. The Contractor remains responsible for coordination, correct quantities ordered, submittals, protection, storage, scheduling, shipping, security, expedition, receiving and unloading, certifying the accuracy of shipping tickets and invoices, installation, cleaning, all applicable warranties and that all materials purchased meet the requirements of the Contract Documents. The Contractor shall certify all invoices as accurate and acceptable and forward to the Owner the certified invoices for payment by the Owner.

§ 3.4.5.3 In the event that materials, supplies or equipment purchased under this option are defective or rejected for any reason whatsoever, and it becomes necessary in the opinion of the Contractor to initiate legal action against the responsible party, the Owner agrees to assign and subordinate to the Contractor any claims the Owner has against the responsible party resulting from the purchase order and to execute any legal documents necessary to accomplish the assignment, subordination or subrogation of such claims, and to cooperate with the Contractor in such legal action.

§ 3.4.5.4 The Contractor agrees to execute the Owner's document "Contractor's Direct Material Purchase Affidavit" and to submit the affidavit to the Owner along with the above described list of materials, supplies and equipment, as agreed to between the Owner and Contractor. Tax savings will be returned to the Owner via Change Order.

§ 3.5 Warranty

§ 3.5.1 The Contractor warrants to the Owner and Architect that materials and equipment furnished under the Contract will be of good quality and new unless the Contract Documents require or permit otherwise. The Contractor further warrants that the Work will conform to the requirements of the Contract Documents and will be free from defects, except for those inherent in the quality of the Work the Contract Documents require or permit. Work, materials, or equipment not conforming to these requirements, including substitutions not properly approved and authorized, may be considered defective. The Contractor's warranty excludes remedy for damage or defect caused by abuse, alterations to the Work not

executed by the Contractor, improper or insufficient maintenance, improper operation, or normal wear and tear and normal usage. If required by the Architect or Owner, the Contractor shall furnish satisfactory evidence as to the kind and quality of materials and equipment.

§ 3.5.2 All material, equipment, or other special warranties required by the Contract Documents shall be issued in the name of the Owner, or shall be transferable to the Owner, and shall commence in accordance with Section 9.8.4.

§ 3.6 Taxes

The Contractor shall pay sales, consumer, use and similar taxes for the Work in accordance with the laws of the state and other taxing authorities in the jurisdiction where the Project is located ~~provided by the Contractor~~ that are legally enacted when bids are received or negotiations concluded, whether or not yet effective or merely scheduled to go into effect.

§ 3.7 Permits, Fees, Notices and Compliance with Laws

§ 3.7.1 Unless otherwise provided in the Contract Documents, the Contractor shall secure and pay for the building permit as well as for other permits, fees, licenses, and inspections by government agencies necessary for proper execution and completion of the Work that are customarily secured after execution of the Contract and legally required at the time bids are received or negotiations concluded. The Contractor shall procure all certificates of inspection, use, occupancy, permits and licenses, pay all charges and fees and give all notices necessary and incidental to the due and lawful prosecution of the Work. Certificates of inspection, use and occupancy shall be delivered to the Owner upon completion of the Work in sufficient time for occupation of the Project in accordance with the approved schedule for the Work. The costs of such procurement, payment and delivery are included within the Contract Sum.

§ 3.7.1.1 Certain permits, regulations and fees may apply to work involved in this Project when such work takes place beyond the limits of the school site. This may include but not be limited to hauling and disposal of materials and debris resulting from demolition. The Contractor shall obtain any such permits, comply with all applicable regulations and pay the cost of any and all fees required by such offsite work.

§ 3.7.1.2 The Owner's building department is the authority having jurisdiction for building code compliance unless otherwise provided in the Contract Documents. The Owner's building permit is required to be issued before construction may commence and will be furnished to the Contractor at no cost upon compliance with permit application requirements.

§ 3.7.2 The Contractor shall comply with and give notices required by applicable laws, statutes, ordinances, codes, rules and regulations, and lawful orders of public authorities applicable to performance of the Work. The Contractor shall comply with all applicable federal, state and county, and city statutes, safety regulations, codes, ordinances and orders, including the Occupational Safety and Health Administration Act of 1970 (OSHA) as amended from time to time.

§ 3.7.3 If the Contractor performs Work ~~knowing it to be~~ contrary to applicable laws, statutes, ordinances, codes, rules and regulations, or lawful orders of public authorities, the Contractor shall assume appropriate responsibility for such Work and shall bear the costs attributable to correction.

§ 3.7.4 Concealed or Unknown Conditions (Excluding Claims for Unsuitable Soils)

If the Contractor encounters conditions at the site that are (1) subsurface or otherwise concealed physical conditions that differ materially from those indicated in the Contract Documents or (2) unknown physical conditions of an unusual nature that differ materially from those ordinarily found to exist and generally recognized as inherent in construction activities of the character provided for in the Contract Documents, the Contractor shall promptly provide notice to the Owner and the Architect before conditions are disturbed and in no event later than 14 days after first observance of the conditions. The Architect will promptly investigate such conditions and, if the Architect determines that they differ materially and cause an increase or decrease in the Contractor's cost of, or time required for, performance of any part of the Work, will recommend that an equitable adjustment be made in the Contract Sum or Contract Time, or both. If the Architect determines that the conditions at the site are not materially different from those indicated in the Contract Documents and that no change in the terms of the Contract is justified, the Architect shall promptly notify the Owner and Contractor, stating the reasons. No adjustment in Contract Sum or Contract Time shall be allowed pursuant to this Article to the extent the concealed or unknown condition should have been reasonably discovered by the Contractor during pre-bid site inspections, review, or preconstruction services. If either party disputes the Architect's determination or recommendation, that party may submit a Claim as provided in Article 15.

§ 3.7.5 If, in the course of the Work, the Contractor encounters human remains or recognizes the existence of burial markers, archaeological sites or wetlands not indicated in the Contract Documents, the Contractor shall immediately suspend any operations that would affect them and shall notify the Owner and Architect. Upon receipt of such notice, the Owner shall promptly take any action necessary to obtain governmental authorization required to resume the operations. The Contractor shall continue to suspend such operations until otherwise instructed by the Owner but shall continue with all other operations that do not affect those remains or features. Requests for adjustments in the Contract Sum and Contract Time arising from the existence of such remains or features may be made as provided in Article 15.

§ 3.7.6 Claims for Unsuitable Soils “Unsuitable soil” does not include soil with high or low moisture content or soil adversely affected by weather conditions and no claim for additional cost will be accepted based solely on the moisture content of excavated material. If the excavated material is unsatisfactory for the specified use on the project solely because of either high or low moisture content or the soil is adversely affected by weather conditions, the Contractor may, in its discretion, either (1) process the material to adjust the moisture content to the specified condition or an acceptable condition if not specified, or (2) remove the material and replace it with satisfactory material. Contractor’s election of either option will be at Contractor’s expense with no additional cost to the Owner.

§ 3.7.7 E-Verify

§ 3.7.7.1 State of Florida, Office of the Governor, Executive Order 11-116 (superseding Executive Order 11-02) requires all agencies under the direction of the Governor to verify the employment eligibility of all new employees through the U.S. Department of Homeland Security’s E-Verify system. Further, in conjunction with Section 448.095 F.S., the Contractor is directed to include as a condition of all contracts for the provision of goods or services to the School Board of Volusia County in excess of nominal value, an express requirement that the Contractor utilizes the U.S. Department of Homeland Security’s E-Verify system to verify the employment eligibility of all new employees hired by the Contractor during the contract term, and an express requirement that the Contractor include in such subcontracts the requirement that subcontractors performing work or providing services pursuant to the state contract utilize the E-Verify system to verify the employment eligibility of all new employees hired by the subcontractor during the contract term. To enroll in the E-Verify system employers should visit www.e-verify.gov.

§ 3.7.7.2 Failure to comply shall be cause for termination of contract by the Owner, at its sole discretion. The Contractor is liable for any additional costs incurred as a result of the termination of Contract, Section 448.095(2) F.S.

§ 3.7.7.3 The Contractor is required to submit to the Owner FAC Document 639, Contractor E-Verify Affidavit, upon contract execution.

§ 3.7.8 Use of Coercion for Labor and Services

§ 3.7.8.1 Section 787.06(13) F.S., requires all nongovernmental entities executing, renewing or extending a contract with a governmental entity to provide an affidavit signed by an officer or representative of the nongovernmental entity under penalty of perjury that the nongovernmental entity does not use coercion for labor or services as defined in that statute. The School Board of Volusia County Florida is a governmental entity for purposes of this statute. Unless otherwise directed by the Owner, said affidavit shall be submitted as part of the Contractor’s Pre-qualification via the School District’s Purchasing Department.

§ 3.8 Allowances

§ 3.8.1 The Contractor shall include in the Contract Sum all allowances stated in the Contract Documents. Items covered by allowances shall be supplied for such amounts and by such persons or entities as the Owner may direct, but the Contractor shall not be required to employ persons or entities to whom the Contractor has reasonable objection.

§ 3.8.2 Unless otherwise provided in the Contract Documents,

- .1 allowances shall cover the cost to the Contractor of materials and equipment delivered at the site and all required taxes, less applicable trade discounts;
- .2 Contractor’s costs for unloading and handling at the site, labor, installation costs, overhead, profit, and other expenses contemplated for stated allowance amounts shall be included in the Contract Sum but not in the allowances; and

- .3 whenever costs are more than or less than allowances, the Contract Sum shall be adjusted accordingly by Change Order. The amount of the Change Order shall reflect (1) the difference between actual costs and the allowances under Section 3.8.2.1 and (2) changes in Contractor's costs under Section 3.8.2.2

§ 3.8.3 Materials and equipment under an allowance shall be selected by the Owner with reasonable promptness.

§ 3.9 Superintendent

§ 3.9.1 The Contractor shall employ a competent superintendent and necessary assistants who shall be in attendance at the Project site during all performance of the Work. The superintendent shall represent the Contractor, and communications given to the superintendent shall be as binding as if given to the Contractor. Important communications shall be confirmed in writing. Other communications shall be similarly confirmed on written request in each case. The superintendent shall be satisfactory to the Owner in all respects, and Owner shall have the right to require Contractor to dismiss from the Project any superintendent whose performance is not satisfactory to Owner, and to replace such superintendent with a superintendent satisfactory to Owner. The Contractor shall not replace the superintendent without the written consent of the Owner.

§ 3.9.2 The Contractor, as soon as practicable after award of the Contract, shall notify the Owner and Architect of the name and qualifications of a proposed superintendent. Within 14 days of receipt of the information, the Architect may notify the Contractor, stating whether the Owner or the Architect (1) has reasonable objection to the proposed superintendent or (2) requires additional time for review. Failure of the Architect to provide notice within the 14-day period shall constitute notice of no reasonable objection.

§ 3.9.3 The Contractor shall not employ a proposed superintendent to whom the Owner or Architect has made reasonable and timely objection. The Contractor shall not change the superintendent without the Owner's consent, which shall not unreasonably be withheld or delayed.

§ 3.9.4 If required by Owner, a list of all supervisory personnel, including the project manager and superintendent, that the Contractor intends to use on the Project and a chain-of-command organizational chart shall be submitted to the Owner for approval. The Contractor shall not engage supervisory personnel or utilize an organization and chain-of-command other than as approved by Owner in writing and shall not change such personnel or form of organization without the written approval of the Owner.

§ 3.10 Contractor's Construction and Submittal Schedules

§ 3.10.1 The Contractor, ~~promptly~~ within thirty (30) days after ~~being awarded~~ execution of the Contract, shall submit for the Owner's and Architect's ~~information~~ written approval a Contractor's construction schedule for the Work. The construction schedule shall contain detail appropriate for the Project, including (1) the date of commencement of the Work, interim schedule milestone dates, and the date of Substantial Completion; (2) an apportionment of the Work by construction activity; and (3) the time required for completion of each portion of the Work. The schedule shall provide for the orderly progression of the Work to completion and shall not exceed time limits current under the Contract Documents. The schedule shall be revised at appropriate intervals as required by the Owner and conditions of the Work and Project.

§ 3.10.2 Within thirty (30) days of Notice to Proceed (NTP), the Contractor shall prepare, for the Architect's approval, and thereafter keep current, a schedule of submittals which is coordinated with the Contractor's construction schedule and allows the Architect reasonable time to review submittals. No payment shall be due until this schedule is submitted and approved. The Contractor, promptly after being awarded the Contract and thereafter as necessary to maintain a current submittal schedule, shall submit a submittal schedule for the Architect's approval. The Architect's approval shall not be unreasonably delayed or withheld. The submittal schedule shall (1) be coordinated with the Contractor's construction schedule, and (2) allow the Architect reasonable time to review submittals. If the Contractor fails to submit a submittal schedule, or fails to provide submittals in accordance with the approved submittal schedule, the Contractor shall not be entitled to any increase in Contract Sum or extension of Contract Time based on the time required for review of submittals.

§ 3.10.3 The Contractor shall perform the Work in ~~general accordance~~ conformity with the most recent schedules submitted to the Owner and Architect.

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§ 3.10.4 If the Contractor submits a schedule indicating an intention to achieve completion of the Work prior to contractually required dates, including milestones, no liability of the Owner to the Contractor for any failure of the Contractor to complete early shall be created, whether or not the Owner approve such schedule.

§ 3.10.5 At the Owner's option, the Contractor shall provide a schedule utilizing critical path techniques to measure the progress of the Work. Such schedules shall be subject to the Owner's and Architect's written approval.

§ 3.10.6 Float or slack is not for the exclusive use or benefit of either the Owner or the Contractor. Extensions of time for performance will be granted only to the extent that the equitable time adjustments for the activity or activities affected exceed the total float along the activity chain involved at the time the change was ordered or the delay occurred. Notwithstanding the above, the Contractor shall only be entitled to an extension of the time for an excusable delay to the critical path of the Work that delays completion of the Project beyond the completion date stated in the Agreement.

§ 3.10.7 The Contractor acknowledges that the Owner may retain the services of a scheduling consultant at the Owner's expense. The Contractor shall cooperate with any such scheduling consultant at the Owner's direction, including, without limitation, with regard to the preparation of the Project schedule.

§ 3.11 As Built Drawings, Documents and Samples at the Site

§ 3.11.1 As Built drawings shall be updated monthly, which shall be a condition precedent to all Progress Payments, and shall provide as much accuracy as possible. As built drawings of the completed Project are precedent to final payment and shall be submitted in paper document and combined PDF, or other Architect and Owner acceptable digital format, on CD, DVD or other approved file transfer protocol (FTP), transmitted from the Contractor to the Architect for review and acceptance as built drawings to the Owner shall be a condition precedent to Final Payment. Completed as built drawings shall be submitted as paper documents and on CD or DVD in combined PDF format.

§ 3.11.2 The Contractor shall make available, at the Project site, the Contract Documents, including Change Orders, Construction Change Directives, and other Modifications, in good order and marked currently to indicate field changes and selections made during construction, and the approved Shop Drawings, Product Data, Samples, and similar required submittals. These shall be in electronic form or and paper copy, available to the Architect and Owner, and delivered to the Architect for submittal to the Owner upon completion of the Work as a record of the Work as constructed.

§ 3.11.3 The Contractor shall maintain all approved permit drawings in a manner so as to make them accessible to governmental inspectors and other authorized agencies. All approved drawings shall be appropriately identified and delivered to the Owner within sixty (60) days of final completion of the Work.

§ 3.12 Shop Drawings, Product Data and Samples

§ 3.12.1 Shop Drawings are drawings, diagrams, schedules, and other data specially prepared for the Work by the Contractor or a Subcontractor, Sub-subcontractor, manufacturer, supplier, or distributor to illustrate some portion of the Work.

§ 3.12.2 Product Data are illustrations, standard schedules, performance charts, instructions, brochures, diagrams, and other information furnished by the Contractor to illustrate materials or equipment for some portion of the Work.

§ 3.12.3 Samples are physical examples that illustrate materials, equipment, or workmanship, and establish standards by which the Work will be judged.

§ 3.12.4 Shop Drawings, Product Data, Samples, and similar submittals are not Contract Documents. Their purpose is to demonstrate how the Contractor proposes to conform to the information given and the design concept expressed in the Contract Documents for those portions of the Work for which the Contract Documents require submittals. Review by the Architect is subject to the limitations of Section 4.2.7. Informational submittals upon which the Architect is not expected to take responsive action may be so identified in the Contract Documents. Submittals that are not required by the Contract Documents may shall be returned by the Architect without action.

§ 3.12.5 The Contractor shall review for compliance with the Contract Documents, approve, and submit to the Architect, Shop Drawings, Product Data, Samples, and similar submittals required by the Contract Documents, in accordance with

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the submittal schedule approved by the Architect or, in the absence of an approved submittal schedule, with reasonable promptness and in such sequence as to cause no delay in the Work or in the activities of the Owner or of Separate Contractors. Submittals which are not marked as reviewed for compliance with the Contract Documents and approved by the Contractor shall be returned by the Architect without action.

§ 3.12.6 By submitting Shop Drawings, Product Data, Samples, and similar submittals, the Contractor represents to the Owner and Architect that the Contractor has (1) reviewed and approved them, (2) determined and verified materials, field measurements and field construction criteria related thereto, or will do so, and (3) checked and coordinated the information contained within such submittals with the requirements of the Work and of the Contract Documents.

§ 3.12.7 The Contractor shall perform no portion of the Work for which the Contract Documents require submittal and review of Shop Drawings, Product Data, Samples, or similar submittals, until the respective submittal has been approved by the Architect.

§ 3.12.8 The Work shall be in accordance with approved submittals except that the Contractor shall not be relieved of responsibility for deviations from the requirements of the Contract Documents by the Architect's approval of Shop Drawings, Product Data, Samples, or similar submittals, unless the Contractor has specifically notified the Architect of such deviation at the time of submittal and (1) the Architect has given written approval to the specific deviation as a minor change in the Work, or (2) a Change Order or Construction Change Directive has been issued authorizing the deviation. The Contractor shall not be relieved of responsibility for errors or omissions in Shop Drawings, Product Data, Samples, or similar submittals, by the Architect's approval thereof.

§ 3.12.9 The Contractor shall direct specific attention, in writing or on resubmitted Shop Drawings, Product Data, Samples, or similar submittals, to revisions other than those requested by the Architect on previous submittals. In the absence of such notice, the Architect's approval of a resubmission shall not apply to such revisions.

§ 3.12.10 The Contractor shall not be required to provide professional services that constitute the practice of architecture or engineering unless such services are specifically required by the Contract Documents for a portion of the Work or unless the Contractor needs to provide such services in order to carry out the Contractor's responsibilities for construction means, methods, techniques, sequences, and procedures. The Contractor shall not be required to provide professional services in violation of applicable law.

§ 3.12.10.1 If professional design services or certifications by a design professional related to systems, materials, or equipment are specifically required of the Contractor by the Contract Documents, the Owner and the Architect will specify all performance and design criteria that such services must satisfy. The Contractor shall be entitled to rely upon the adequacy and accuracy of the performance and design criteria provided in the Contract Documents. The Contractor shall cause such services or certifications to be provided by an appropriately licensed design professional in Florida, whose signature and seal shall appear on all drawings, calculations, specifications, certifications, Shop Drawings, and other submittals prepared by such professional. Shop Drawings, and other submittals related to the Work, designed or certified by such professional, if prepared by others, shall bear such professional's written approval when submitted to the Architect. The Owner and the Architect shall be entitled to rely upon the adequacy and accuracy of the services, certifications, and approvals performed or provided by such design professionals, provided the Owner and Architect have specified to the Contractor the performance and design criteria that such services must satisfy. Pursuant to this Section 3.12.10, the Architect will review and approve or take other appropriate action on submittals only for the limited purpose of checking for conformance with information given and the design concept expressed in the Contract Documents.

§ 3.12.10.2 If the Contract Documents require the Contractor's design professional to certify that the Work has been performed in accordance with the design criteria, the Contractor shall furnish such certifications to the Architect at the time and in the form specified by the Architect.

§ 3.12.11 The Contractor shall assemble for the Architect's approval two (2) complete binders of all operating and maintenance data from all manufacturers whose equipment is or will be installed in the Work.

§ 3.12.12 The Contractor shall submit to Owner one copy of all submissions made to the Architect pursuant to this Section 3.12.

§ 3.13 Use of Site

The Contractor shall confine operations at the site to areas permitted by applicable laws, statutes, ordinances, codes, rules and regulations, lawful orders of public authorities, and the Contract Documents and shall not unreasonably encumber the site with materials or equipment. The Contractor shall be responsible for the permitting, erection, maintaining and removal of all construction signage. The Contractor must submit all sign copy for approval prior to erecting or displaying. The Contractor and Owner shall meet promptly after execution of the Agreement to determine reasonable requirements for ingress and egress from the site. Reasonable locations for staging, parking and a single construction entrance shall be designated by the Contractor, subject to the Owner's approval.

§ 3.13.2 The Contractor shall assure free, convenient, unencumbered and direct access to properties neighboring the Project site for the owners of such properties and their respective tenants, agents, invitees and guests.

§ 3.14 Cutting and Patching

§ 3.14.1 The Contractor shall be responsible for cutting, fitting, or patching required to complete the Work or to make its parts fit together properly. All areas requiring cutting, fitting, or patching shall be restored to the condition existing prior to the cutting, fitting, or patching, unless otherwise required by the Contract Documents.

§ 3.14.2 The Contractor shall not damage or endanger a portion of the Work or fully or partially completed construction of the Owner or Separate Contractors by cutting, patching, or otherwise altering such construction, or by excavation. The Contractor shall not cut or otherwise alter construction by the Owner or a Separate Contractor except with written consent of the Owner and of the Separate Contractor. Consent shall not be unreasonably withheld. The Contractor shall not unreasonably withhold, from the Owner or a Separate Contractor, its consent to cutting or otherwise altering the Work.

§ 3.15 Cleaning Up

§ 3.15.1 The Contractor shall keep the premises and surrounding area free from accumulation of waste materials and rubbish caused by operations under the Contract. The Contractor shall prevent paint, mortar and concrete splatter on concrete sidewalks and stair tower floors. Any such splatter shall be immediately removed so no evidence of splatter remains. All construction debris shall be removed in a timely manner. Surrounding graded and grassed areas shall be regularly magnetically scanned to collect miscellaneous nails and other sharp objects; the Contractor shall remove such objects from the construction site. At completion of the Work, the Contractor shall remove waste materials, rubbish, the Contractor's tools, construction equipment, machinery, and surplus materials from and about the Project.

§ 3.15.2 If the Contractor fails to clean up as provided in the Contract Documents, the Owner may do so and the Owner shall be entitled to reimbursement from the Contractor.

§ 3.15.3 Immediately prior to the Architect's inspection for Substantial Completion, the Contractor shall completely clean the premises utilizing a licensed cleaning service. Concrete and ceramic surfaces shall be cleaned and washed. Woodwork and resilient shall be dusted and cleaned. Sash, fixtures and equipment shall be thoroughly cleaned. Stains, spots, dust, marks and smears shall be removed from all surfaces. Hardware and metal surfaces shall be cleaned and polished. Glass and plastic surfaces shall be thoroughly cleaned by professional window cleaners. All damaged, broken or scratched glass or plastic shall be replaced by the Contractor at the Contractor's expense.

§ 3.16 Access to Work

The Contractor shall provide the Owner and Architect at all times with access to the Work in preparation and progress wherever located.

§ 3.17 Royalties, Patents and Copyrights

The Contractor shall pay all royalties and license fees. The Contractor shall defend suits or claims for infringement of copyrights and patent rights and shall hold the Owner and Architect harmless from loss on account thereof, but shall not be responsible for defense or loss when a particular design, process, or product of a particular manufacturer or manufacturers is required by the Contract Documents, or where the copyright violations are contained in Drawings,

Specifications, or ~~other documents~~ Instruments of Service prepared by the Owner or Architect. However, if an infringement of a copyright or patent is discovered by, or made known to, the Contractor, the Contractor shall be responsible for the loss unless the information is promptly furnished to the Architect.

§ 3.18 Indemnification

§ 3.18.1 For one hundred dollars (\$100.00), which is included in the contract price, the other good and valuable considerations, receipt of which is hereby acknowledged by the Contractor as consideration for the indemnity herein; said Contractor hereby agrees to defend and indemnify the Owner and the Architect/Engineer and their Agents and employees, from and against all claims, damages, losses and expenses, including but not limited to attorney's fees, arising out of or resulting from the performance of Work, provided that any such claim, damage, loss or expense is (1) attributed to bodily injury, sickness, disease or death, or to injury to, or destruction of tangible property, other than the work itself, including the loss of use resulting therefrom, and (2) caused in whole or in part by any act or omission of the Contractor, any Subcontractor, anyone directly or indirectly employed by any of them or anyone for whose acts any of them may be liable, regardless of whether or not it is caused in part by a party indemnified hereunder. Such obligation shall not be construed to negate, abridge or otherwise reduce any other right or obligation of indemnity which otherwise exist as to any party or person described in this Article. To the fullest extent permitted by law, the Contractor shall indemnify and hold harmless the Owner, Architect, Architect's consultants, and agents and employees of any of them from and against claims, damages, losses, and expenses, including but not limited to attorneys' fees, arising out of or resulting from performance of the Work, provided that such claim, damage, loss, or expense is attributable to bodily injury, sickness, disease or death, or to injury to or destruction of tangible property (other than the Work itself), but only to the extent caused by the negligent acts or omissions of the Contractor, a Subcontractor, anyone directly or indirectly employed by them, or anyone for whose acts they may be liable, regardless of whether or not such claim, damage, loss, or expense is caused in part by a party indemnified hereunder. Such obligation shall not be construed to negate, abridge, or reduce other rights or obligations of indemnity that would otherwise exist as to a party or person described in this Section 3.18.

§ 3.18.2 In claims against any person or entity indemnified under this Section 3.18 by an employee of the Contractor, a Subcontractor, anyone directly or indirectly employed by them, or anyone for whose acts they may be liable, the indemnification obligation under Section 3.18.1 shall not be limited by a limitation on amount or type of damages, compensation, or benefits payable by or for the Contractor or a Subcontractor under workers' compensation acts, disability benefit acts, or other employee benefit acts.

§ 3.18.3 The Contractor acknowledges that for one hundred dollars (\$100.00) of the Contract Price, as recited in Paragraph 3.18.1 above, and other good and valuable consideration from the Owner and Architect/Engineer, constitutes consideration for giving the Owner and the Architect/Engineer, respectively, the indemnifications required in this Agreement and the Contract Documents. The limit of dollar amount of Contractor's indemnity obligations required by the Agreement and the Contract Documents specifically for those claims caused in whole or in part by the Owner and Architect/Engineer shall be \$1,000,000 or the Contract Sum of the Project, whichever is more. The parties agree that the indemnity provided herein bears a reasonable commercial relationship to the Agreement and is incorporated by this reference into the Project specifications and bid documents, if any.

§ 3.18.4 Notwithstanding the above and without monetary limitation, the Contractor hereby indemnifies and holds harmless the Owner, their officers and employees, from liabilities, damages, losses and costs, including, but not limited to, reasonable attorney's fees, to the extent caused by the negligence, recklessness, or intentional wrongful misconduct of the Contractor and persons employed or utilized by the Contractor in the performance of the construction Contract.

ARTICLE 4 ARCHITECT

§ 4.1 General

§ 4.1.1 The Architect is the person or entity retained by the Owner pursuant to Section 2.3.2 and identified as such in the Agreement.

§ 4.1.2 Duties, responsibilities, and limitations of authority of the Architect as set forth in the Contract Documents shall not be restricted, modified, or extended without written consent of the Owner, Contractor, and Architect. Consent shall not be unreasonably withheld.

§ 4.2 Administration of the Contract

§ 4.2.1 The Architect will provide administration of the Contract as described in the Contract Documents and will be an Owner's representative during construction until final payment is due and with the Owner's authorization, from time to time during the one-year period for correction of Work described in Section 12.2, the date the Architect issues the final Certificate for Payment. The Architect will have authority to act on behalf of the Owner only to the extent provided in the Contract Documents, unless otherwise modified in writing in accordance with other provisions of the Contract.

§ 4.2.2 The Architect will visit the site at intervals appropriate to the stage of construction, or as otherwise agreed with the Owner, to become generally familiar with the progress and quality of the portion of the Work completed, and to determine in general if the Work observed is being performed in a manner indicating that the Work, when fully completed, will be in accordance with the Contract Documents. However, the Architect will not be required to make exhaustive or continuous on-site inspections to check the quality or quantity of the Work. The Architect will not have control over, charge of, or responsibility for the construction means, methods, techniques, sequences or procedures, or for the safety precautions and programs in connection with the Work, since these are solely the Contractor's rights and responsibilities under the Contract Documents.

§ 4.2.3 On the basis of the site visits, the Architect will keep the Owner ~~reasonably~~ informed about the progress and quality of the portion of the Work completed, and promptly report to the Owner (1) ~~known~~ deviations from the Contract Documents, (2) known deviations from the most recent construction schedule submitted by the Contractor, and (3) defects and deficiencies ~~observed~~ in the Work. The Architect will not be responsible for the Contractor's failure to perform the Work in accordance with the requirements of the Contract Documents. The Architect will not have control over or charge of, and will not be responsible for acts or omissions of, the Contractor, Subcontractors, or their agents or employees, or any other persons or entities performing portions of the Work.

§ 4.2.4 Communications

The Owner and Contractor shall include the Architect, if any, in all communications that relate to or affect the Architect's services or professional responsibilities. The Owner and Contractor shall promptly notify the Architect of the substance of any direct communications between the Owner and the Contractor otherwise relating to the Project. Communications by and with the Architect's consultants shall be through the Architect. Communications by and with Subcontractors and suppliers shall be through the Contractor. Communications by and with Separate Contractors shall be through the Owner. The Contract Documents may specify other communication protocols.

§ 4.2.5 Based on the Architect's evaluations of the Contractor's Applications for Payment, the Architect will review and certify the amounts due the Contractor and will issue Certificates for Payment in such amounts.

§ 4.2.6 The Architect has authority to reject Work that does not conform to the Contract Documents. Whenever the Architect considers it necessary or advisable, the Architect will have authority to require inspection or testing of the Work in accordance with Sections 13.4.2 and 13.4.3, whether or not the Work is fabricated, installed or completed. However, neither this authority of the Architect nor a decision made in good faith either to exercise or not to exercise such authority shall give rise to a duty or responsibility of the Architect to the Contractor, Subcontractors, suppliers, their agents or employees, or other persons or entities performing portions of the Work.

§ 4.2.7 The Architect will review and approve, or take other appropriate action upon, the Contractor's submittals such as Shop Drawings, Product Data, and Samples, but only for the limited purpose of checking for conformance with information given and the design concept expressed in the Contract Documents. The Architect's action will be taken in accordance with the submittal schedule approved by the Architect or, in the absence of an approved submittal schedule, with reasonable promptness to cause no delay in the Work or in the activities of the Owner, Contractor or separate contractors, while allowing sufficient time in the Architect's professional judgment to permit adequate review. Review of such submittals is not conducted for the purpose of determining the accuracy and completeness of other details such as dimensions and quantities, or for substantiating instructions for installation or performance of equipment or systems, all of which remain the responsibility of the Contractor as required by the Contract Documents. The Architect's review of the Contractor's submittals shall not relieve the Contractor of the obligations under Sections 3.3, 3.5, and 3.12. The Architect's review shall not constitute approval of safety precautions or of any construction means, methods, techniques, sequences, or procedures. The Architect's approval of a specific item shall not indicate approval of an assembly of which the item is a component.

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§ 4.2.8 The Architect will prepare Change Orders ~~and Construction Change Directives, or other appropriate written directives,~~ and may order minor changes in the Work as provided in Section 7.4. The Architect will investigate and make determinations and recommendations regarding concealed and unknown conditions as provided in Section 3.7.4.

§ 4.2.9 The Architect will conduct inspections to determine the date or dates of Substantial Completion and the date of final completion; issue Certificates of Substantial Completion pursuant to Section 9.8; receive and forward to the Owner, for the Owner's review and records, written warranties and related documents required by the Contract and assembled by the Contractor pursuant to Section 9.10; and issue a final Certificate for Payment pursuant to Section 9.10.

§ 4.2.10 If the Owner and Architect agree, the Architect will provide one or more Project representatives to assist in carrying out the Architect's responsibilities at the site. The Owner shall notify the Contractor of any change in the duties, responsibilities and limitations of authority of the Project representatives.

§ 4.2.11 The Architect will interpret and decide matters concerning performance under, and requirements of, the Contract Documents on written request of either the Owner or Contractor. The Architect's response to such requests will be made in writing no later than fifteen (15) days after receipt of the request ~~within any time limits agreed upon or otherwise with reasonable promptness.~~

§ 4.2.12 Interpretations and decisions of the Architect will be consistent with the intent of, and reasonably inferable from, the Contract Documents and will be in writing or in the form of drawings. When making such interpretations and decisions, the Architect will endeavor to secure faithful performance by both Owner and Contractor, will not show partiality to either, and will not be liable for results of interpretations or decisions rendered in good faith.

§ 4.2.13 The Architect's decisions on matters relating to aesthetic effect will be final if consistent with the intent expressed in the Contract Documents.

§ 4.2.14 The Architect will review and respond to requests for information about the Contract Documents. The Architect's response to such requests will be made in writing within any time limits agreed upon or otherwise with reasonable promptness. If appropriate, the Architect will prepare and issue supplemental Drawings and Specifications in response to the requests for information.

§ 4.2.15 Upon request of the Owner, claims, disputes and other matters in question relating to the execution or progress of the Work or the interpretation of the Contract Documents may be referred to the Architect for initial decision, which the Architect shall render in writing within a reasonable time, not to exceed fifteen (15) days after the date on which such request is made.

ARTICLE 5 SUBCONTRACTORS

§ 5.1 Definitions

§ 5.1.1 A Subcontractor is a person or entity who has a direct contract with the Contractor to perform a portion of the Work at the site. The term "Subcontractor" is referred to throughout the Contract Documents as if singular in number and means a Subcontractor or an authorized representative of the Subcontractor. The term "Subcontractor" does not include a Separate Contractor or the subcontractors of a Separate Contractor.

§ 5.1.2 A Sub-subcontractor is a person or entity who has a direct or indirect contract with a Subcontractor to perform a portion of the Work at the site. The term "Sub-subcontractor" is referred to throughout the Contract Documents as if singular in number and means a Sub-subcontractor or an authorized representative of the Sub-subcontractor.

§ 5.2 Award of Subcontracts and Other Contracts for Portions of the Work

§ 5.2.1 ~~Subcontractors must be properly licensed in accordance with Florida law. Unless otherwise stated in the Contract Documents, the Contractor, as soon as practicable after award of the Contract, shall notify the Owner and Architect of the persons or entities proposed for each principal portion of the Work, including those who are to furnish materials or equipment fabricated to a special design. Within 14 days of receipt of the information, the Architect may notify the Contractor whether the Owner or the Architect (1) has reasonable objection to any such proposed person or entity or (2) requires additional time for review. Failure of the Architect to provide notice within the 14 day period shall constitute notice of no reasonable objection.~~

§ 5.2.2 The Contractor shall not contract with a proposed person or entity to whom the Owner or Architect has made reasonable and timely objection. The Contractor shall not be required to contract with anyone to whom the Contractor has made reasonable objection.

§ 5.2.3 If the Owner or Architect has reasonable objection to a person or entity proposed by the Contractor, the Contractor shall propose another to whom the Owner or Architect has no reasonable objection. If the proposed but rejected Subcontractor was reasonably capable of performing the Work, the Contract Sum and Contract Time shall be increased or decreased by the difference, if any, occasioned by such change, and an appropriate Change Order shall be issued before commencement of the substitute Subcontractor's Work. However, no increase in the Contract Sum or Contract Time shall be allowed for such change unless the Contractor has acted promptly and responsively in submitting names as required.

§ 5.2.4 The Contractor shall not substitute a Subcontractor, person, or entity for one previously selected if without due cause ~~unless the Owner or Architect makes reasonable objection to such substitution.~~ The Owner may require the Contractor to change any Subcontractor, person, or entity in situations where the Owner determines that their Work is inadequate and adversely affects the Project.

§ 5.2.5 The Contractor shall disclose the existence and extent of any financial interest, whether direct or indirect, it has in any subcontractors or material suppliers which it proposes for the Project.

§ 5.3 Subcontractual Relations

By appropriate written agreement, the Contractor shall require each Subcontractor, to the extent of the Work to be performed by the Subcontractor, to be bound to the Contractor by terms of the Contract Documents, and to assume toward the Contractor all the obligations and responsibilities, including the responsibility for safety of the Subcontractor's Work that the Contractor, by these Contract Documents, assumes toward the Owner and Architect. Each subcontract agreement shall preserve and protect the rights of the Owner and Architect under the Contract Documents with respect to the Work to be performed by the Subcontractor so that subcontracting thereof will not prejudice such rights, and shall allow to the Subcontractor, unless specifically provided otherwise in the subcontract agreement, the benefit of all rights, remedies, and redress against the Contractor that the Contractor, by the Contract Documents, has against the Owner. Where appropriate, the Contractor shall require each Subcontractor to enter into similar agreements with Sub-subcontractors. The Contractor shall make available to each proposed Subcontractor, prior to the execution of the subcontract agreement, copies of the Contract Documents to which the Subcontractor will be bound, and, upon written request of the Subcontractor, identify to the Subcontractor terms and conditions of the proposed subcontract agreement that may be at variance with the Contract Documents. Subcontractors will similarly make copies of applicable portions of such documents available to their respective proposed Sub-subcontractors.

§ 5.4 Contingent Assignment of Subcontracts

§ 5.4.1 Each subcontract agreement for a portion of the Work is assigned by the Contractor to the Owner, provided that

- .1 assignment is effective only after termination of the Contract by the Owner for cause pursuant to Section 14.2 or Termination for Convenience by the Owner pursuant to Paragraph 14.4 and only for those subcontract agreements that the Owner accepts by notifying the Subcontractor and Contractor; and
- .2 assignment is subject to the prior rights of the surety, if any, obligated under bond relating to the Contract.

§ 5.4.1.3 When the Owner accepts the assignment of a subcontract agreement, the Owner assumes the Contractor's rights and obligations under the subcontract subsequent to the date of acceptance of the assignment; however, in no event shall the Owner's acceptance of such an assignment release the Contractor from its obligations under the subcontract agreement or this Agreement. Subcontracts between the Contractor and its Subcontractors shall provide for the assignment of those subcontracts from the Contractor to the Owner at election of the Owner upon termination of the Contractor.

§ 5.4.2 Upon such assignment, if the Work has been suspended for more than 30 days, the Subcontractor's compensation shall be equitably adjusted for increases in direct cost resulting from the suspension beyond the thirty (30) days.

§ 5.4.3 ~~Upon assignment to the Owner under this Section 5.4, the Owner may further assign the subcontract to a successor contractor or other entity. If the Owner assigns the subcontract to a successor contractor or other entity, the~~

~~Owner shall nevertheless remain legally responsible for all of the successor contractor's obligations under the subcontract.~~

ARTICLE 6 CONSTRUCTION BY OWNER OR BY SEPARATE CONTRACTORS

§ 6.1 Owner's Right to Perform Construction and to Award Separate Contracts

§ 6.1.1 The term "Separate Contractor(s)" shall mean other contractors retained by the Owner under separate agreements. The Owner reserves the right to perform construction or operations related to the Project with the Owner's own forces, and with Separate Contractors retained under Conditions of the Contract substantially similar to those of this Contract, including those provisions of the Conditions of the Contract related to insurance and waiver of subrogation.

§ 6.1.2 When separate contracts are awarded for different portions of the Project or other construction or operations on the site, the term "Contractor" in the Contract Documents in each case shall mean the Contractor who executes each separate Owner-Contractor Agreement.

§ 6.1.3 The Owner, at its option, shall either (1) provide for coordination of the activities of the Owner's own forces and of each Separate Contractor with the Work of the Contractor, who shall cooperate with them or (2) shall require that the Contractor provide for such coordination, which the Contractor shall perform when directed by Owner to do so. The Contractor shall participate with any Separate Contractors and the Owner in reviewing their construction schedules. The Contractor shall make any revisions to its construction schedule deemed necessary after a joint review and mutual agreement. The construction schedules shall then constitute the schedules to be used by the Contractor, Separate Contractors, and the Owner until subsequently revised.

§ 6.1.4 Unless otherwise provided in the Contract Documents, when the Owner performs construction or operations related to the Project with the Owner's own forces or with Separate Contractors, the Owner or its Separate Contractors shall have the same obligations and rights that the Contractor has under the Conditions of the Contract, including, without excluding others, those stated in Article 3, this Article 6, and Articles 10, 11, and 12.

§ 6.2 Mutual Responsibility

§ 6.2.1 The Contractor shall afford the Owner and Separate Contractors reasonable opportunity for introduction and storage of their materials and equipment and performance of their activities, and shall connect and coordinate the Contractor's construction and operations with theirs as required by the Contract Documents.

§ 6.2.2 If part of the Contractor's Work depends for proper execution or results upon construction or operations by the Owner or a Separate Contractor, the Contractor shall, prior to proceeding with that portion of the Work, promptly notify the Architect of apparent discrepancies or defects in the construction or operations by the Owner or Separate Contractor that would render it unsuitable for proper execution and results of the Contractor's Work. Failure of the Contractor to notify the Architect of apparent discrepancies or defects prior to proceeding with the Work shall constitute an acknowledgment that the Owner's or Separate Contractor's completed or partially completed construction is fit and proper to receive the Contractor's Work. The Contractor shall not be responsible for discrepancies or defects in the construction or operations by the Owner or Separate Contractor that are not apparent.

§ 6.2.3 The Contractor shall reimburse the Owner for costs the Owner incurs that are payable to a Separate Contractor because of the Contractor's delays, improperly timed activities or defective construction. The Owner shall be responsible to the Contractor for costs the Contractor incurs because of a Separate Contractor's delays, improperly timed activities, damage to the Work or defective construction.

§ 6.2.4 The Contractor shall promptly remedy damage that the Contractor wrongfully causes to completed or partially completed construction or to property of the Owner or Separate Contractor as provided in Section 10.2.5.

§ 6.2.5 The Owner and each Separate Contractor shall have the same responsibilities for cutting and patching as are described for the Contractor in Section 3.14.

§ 6.2.6 If any Subcontractor initiates legal or any other proceedings against the Owner on account of any damage alleged to have been caused by the Contractor, the Owner shall notify the Contractor, who shall defend such proceedings at its own expense, and if any settlement, judgment or award against the Owner arises therefrom, the Contractor shall pay or

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satisfy it and shall indemnify and reimburse the Owner for all monies paid or to be paid including attorneys' fees and court or other costs which the Owner has incurred.

§ 6.3 Owner's Right to Clean Up

If a dispute arises among the Contractor, Separate Contractors, and the Owner as to the responsibility under their respective contracts for maintaining the premises and surrounding area free from waste materials and rubbish, the Owner may clean up and the Architect will allocate the cost among those responsible.

ARTICLE 7 CHANGES IN THE WORK

§ 7.1 General

§ 7.1.1 Changes in the Work may be accomplished after execution of the Contract, and without invalidating the Contract, by Change Order, ~~Construction Change Directive~~ or order for a minor change in the Work, subject to the limitations stated in this Article 7 and elsewhere in the Contract Documents. Agreement on and execution of any Change Order shall constitute a final settlement and a full accord and satisfaction of all matters relating to the change and to the impact of the change on unchanged Work, including all direct and indirect costs of whatever nature, and all adjustments to the Contract Schedule.

§ 7.1.2 A Change Order shall be based upon agreement among the Owner, Contractor, and Architect. ~~A Construction Change Directive requires agreement by the Owner and Architect and may or may not be agreed to by the Contractor.~~ An order for a minor change in the Work may be issued by the Architect alone.

§ 7.1.3 Changes in the Work shall be performed under applicable provisions of the Contract Documents. The Contractor shall proceed promptly with changes in the Work, unless otherwise provided in the Change Order, ~~Construction Change Directive~~, or order for a minor change in the Work. A change in Contract Sum or Contract Time shall be accomplished only by Change Order. No course of conduct, verbal discussions or dealings between the parties shall be the basis of claims by the Contractor to any change in the Contract Sum or Contract Time.

§ 7.1.4 If the Architect determines that a change or changes in the Work might be or are necessary or desirable, the Architect shall issue a proposal request to the Contractor in which the Architect describes the proposed change or changes in the Work. The Contractor shall respond to each such proposal request in writing within a reasonable time, but in no event more the fourteen (14) days after receipt, such response to contain (1) the amount of any increase or decrease in the Contract Price or Guaranteed Maximum Price for effecting the proposed change or changes in the Work (2) a written comprehensive and itemized cost breakdown of the estimated reasonable additional or reduced costs to the Contractor of all labor, materials and equipment required by such proposal requests and (3) the length of any extension or reduction of the Contract Time for effecting the proposed change or changes in the Work.

§ 7.1.5 If any Change Order, signed by the Owner and the Contractor, results in or contains an adjustment to the Contract Price, the amount of such adjustment shall be conclusively deemed and held to include the Contractor's applicable profit, Fee and costs of and for all applicable taxes, bond premiums, insurance premiums, supervision, overhead, profit, labor, labor impact and materials related to the Change Order and the additional Work required and/or contemplated thereby, and the Contractor shall be conclusively deemed and held to have waived any claim for any additional sum or time extension for delays, disruption, acceleration, loss of productivity, ripple effect, inefficiency or any other matter arising out of or in any way related to such Change Order and the additional Work contemplated thereby.

§ 7.2 Change Orders

§ 7.2.1 A Change Order is a written instrument prepared by the Architect and signed by the Owner, Contractor, and Architect stating their agreement upon all of the following:

- .1 The change in the Work, if any;
- .2 The amount of the adjustment, if any, in the Contract Sum; and
- .3 The extent of the adjustment, if any, in the Contract Time.

§ 7.2.2 If the Change Order provides for an adjustment to the Contract Sum, the adjustment shall be based on one of the following methods:

- .1 Mutual acceptance of a lump sum properly itemized and supported by sufficient substantiating data to permit evaluation;

- .2 Unit prices stated in the Contract Documents or subsequently agreed upon;
- .3 Cost to be determined in a manner agreed upon by the parties and a mutually acceptable fixed or percentage fee; or
- .4 As provided in Section 7.2.3.

§ 7.2.3 If the Contractor does not respond promptly or disagrees with the method for adjustment in the Contract Sum, the Architect shall determine the adjustment on the basis of reasonable expenditures and savings of those performing the Work attributable to the change, including, in case of an increase in the Contract Sum, an amount for overhead and profit as set forth in the Agreement, or if no such amount is set forth in the Agreement, a reasonable amount. In such case, and also under Section 7.2.2, the Contractor shall keep and present, in such form as the Architect may prescribe, an itemized accounting together with appropriate supporting data. Unless otherwise provided in the Contract Documents, costs for the purposes of this Section 7.2.3 shall be limited to the following:

- .1 Costs of labor, including applicable payroll taxes, fringe benefits required by agreement or custom, workers' compensation insurance, and other employee costs approved by the Architect;
- .2 Costs of materials, supplies, and equipment, including cost of transportation, whether incorporated or consumed;
- .3 Rental costs of machinery and equipment, exclusive of hand tools, whether rented from the Contractor or others;
- .4 Costs of premiums for all bonds and insurance, permit fees, and sales, use, or similar taxes, directly related to the change; and
- .5 Costs of supervision and field office personnel directly attributable to the change.

§ 7.2.4 If the Contractor disagrees with the adjustment in the Contract Time, the Contractor may make a Claim in accordance with applicable provisions of Article 15.

§ 7.2.5 The amount of credit to be allowed by the Contractor to the Owner for a deletion or change that results in a net decrease in the Contract Sum shall be actual net cost as confirmed by the Architect. When both additions and credits covering related Work or substitutions are involved in a change, the allowance for overhead and profit shall be figured on the basis of net increase, if any, with respect to that change.

§ 7.2.6 In subparagraph 7.2.3 above, the reasonable allowance for overhead and profit, including the Contractor's Fee, if any, included in the total cost to the Owner, shall be based on the following schedule, which shall be full compensation for all overhead and profit of whatever nature associated with the Change:

- .1 For the Contractor, for any Work performed by the Contractor's own forces, ten percent (10%) of the cost.
- .2 For the Contractor, for Work performed by its Subcontractor, five percent (5%) of the amount due the Subcontractor.
- .3 For each Subcontractor or Sub-subcontractor, for any Work performed by that Subcontractor's or Sub-subcontractor's own forces, ten percent (10%) of the cost.
- .4 For each Subcontractor, for Work performed by its Sub-subcontractor, five percent (5%) of the amount due the Sub-subcontractor.
- .5 Costs to which overhead and profit are to be applied shall be determined in accordance with subparagraphs 7.2.3.1 through 7.2.3.5.
- .6 In order to facilitate checking of quotations for extras or credits, all proposals, except those so minor that their propriety can be seen by inspection, shall be accompanied by a complete itemization of all increased and decreased costs to both Contractor and its Subcontractors as follows:
 - .1 Material quantities and unit costs.
 - .2 Labor costs identified with the specific item of material to be placed or operation to be performed.
 - .3 Construction equipment
 - .4 Workmen's Compensation and Public Liability Insurance.
 - .5 Overhead and Profit.
 - .6 Employment taxes under FICA and FUTA.
 - .7 In no case will a change over \$500.00 be approved without such itemization.

§ 7.3 Construction Change Directives

§ 7.3.1 A Construction Change Directive is a written order prepared by the Architect and signed by the Owner and Architect, directing a change in the Work prior to agreement on adjustment, if any, in the Contract Sum or Contract Time, or both. The Owner may by Construction Change Directive, without invalidating the Contract, order changes in the Work within the general scope of the Contract consisting of additions, deletions, or other revisions, the Contract Sum and Contract Time being adjusted accordingly.

§ 7.3.2 A Construction Change Directive shall be used in the absence of total agreement on the terms of a Change Order.

§ 7.3.3 If the Construction Change Directive provides for an adjustment to the Contract Sum, the adjustment shall be based on one of the following methods:

1. Mutual acceptance of a lump sum properly itemized and supported by sufficient substantiating data to permit evaluation;
2. Unit prices stated in the Contract Documents or subsequently agreed upon;
3. Cost to be determined in a manner agreed upon by the parties and a mutually acceptable fixed or percentage fee; or
4. As provided in Section 7.3.4.

§ 7.3.4 If the Contractor does not respond promptly or disagrees with the method for adjustment in the Contract Sum, the Architect shall determine the adjustment on the basis of reasonable expenditures and savings of those performing the Work attributable to the change, including, in case of an increase in the Contract Sum, an amount for overhead and profit as set forth in the Agreement, or if no such amount is set forth in the Agreement, a reasonable amount. In such case, and also under Section 7.3.3.3, the Contractor shall keep and present, in such form as the Architect may prescribe, an itemized accounting together with appropriate supporting data. Unless otherwise provided in the Contract Documents, costs for the purposes of this Section 7.3.4 shall be limited to the following:

1. Costs of labor, including applicable payroll taxes, fringe benefits required by agreement or custom, workers' compensation insurance, and other employee costs approved by the Architect;
2. Costs of materials, supplies, and equipment, including cost of transportation, whether incorporated or consumed;
3. Rental costs of machinery and equipment, exclusive of hand tools, whether rented from the Contractor or others;
4. Costs of premiums for all bonds and insurance, permit fees, and sales, use, or similar taxes, directly related to the change; and
5. Costs of supervision and field office personnel directly attributable to the change.

§ 7.3.5 If the Contractor disagrees with the adjustment in the Contract Time, the Contractor may make a Claim in accordance with applicable provisions of Article 15.

§ 7.3.6 Upon receipt of a Construction Change Directive, the Contractor shall promptly proceed with the change in the Work involved and advise the Architect of the Contractor's agreement or disagreement with the method, if any, provided in the Construction Change Directive for determining the proposed adjustment in the Contract Sum or Contract Time.

§ 7.3.7 A Construction Change Directive signed by the Contractor indicates the Contractor's agreement therewith, including adjustment in Contract Sum and Contract Time or the method for determining them. Such agreement shall be effective immediately and shall be recorded as a Change Order.

§ 7.3.8 The amount of credit to be allowed by the Contractor to the Owner for a deletion or change that results in a net decrease in the Contract Sum shall be actual net cost as confirmed by the Architect. When both additions and credits covering related Work or substitutions are involved in a change, the allowance for overhead and profit shall be figured on the basis of net increase, if any, with respect to that change.

§ 7.3.9 Pending final determination of the total cost of a Construction Change Directive to the Owner, the Contractor may request payment for Work completed under the Construction Change Directive in Applications for Payment. The Architect will make an interim determination for purposes of monthly certification for payment for those costs and certify for payment the amount that the Architect determines, in the Architect's professional judgment, to be reasonably

justified. The Architect's interim determination of cost shall adjust the Contract Sum on the same basis as a Change Order, subject to the right of either party to disagree and assert a Claim in accordance with Article 15.

~~§ 7.3.10 When the Owner and Contractor agree with a determination made by the Architect concerning the adjustments in the Contract Sum and Contract Time, or otherwise reach agreement upon the adjustments, such agreement shall be effective immediately and the Architect will prepare a Change Order. Change Orders may be issued for all or any part of a Construction Change Directive.~~

§ 7.4 Minor Changes in the Work

The Architect may order minor changes in the Work that are consistent with the intent of the Contract Documents and do not involve an adjustment in the Contract Sum or an extension of the Contract Time. The Architect's order for minor changes shall be in writing and approved by the Owner. ~~If the Contractor believes that the proposed minor change in the Work will affect the Contract Sum or Contract Time, the Contractor shall notify the Architect and shall not proceed to implement the change in the Work. If the Contractor performs the Work set forth in the Architect's order for a minor change without prior notice to the Architect that such change will affect the Contract Sum or Contract Time, the Contractor waives any adjustment to the Contract Sum or extension of the Contract Time. The Contractor shall not receive any additional compensation, nor shall there be any adjustment to the Contract Time as a result thereof.~~

ARTICLE 8 TIME

§ 8.1 Definitions

§ 8.1.1 Unless otherwise provided, Contract Time is the period of time, including authorized adjustments, allotted in the Contract Documents for Substantial Completion of the Work.

§ 8.1.2 The date of commencement of the Work is the date established in the Agreement.

§ 8.1.3 The date of Substantial Completion is the date certified by the Architect in accordance with Section 9.8.

§ 8.1.4 The term "day" as used in the Contract Documents shall mean calendar day including weekends and legal holidays unless otherwise specifically defined.

§ 8.2 Progress and Completion

§ 8.2.1 Time limits stated in the Contract Documents are of the essence of the Contract. By executing the Agreement, the Contractor confirms that the Contract Time is a reasonable period for performing the Work.

§ 8.2.2 The Contractor shall not knowingly, except by agreement or instruction of the Owner in writing, commence the Work prior to the effective date of insurance required to be furnished by the Contractor ~~and Owner~~.

§ 8.2.3 The Contractor shall proceed expeditiously with adequate forces and shall achieve Substantial Completion within the Contract Time. To ensure that Substantial Completion of the Work is achieved within the Contract Time, the Contractor will, before commencing the Work, submit to Owner a progress schedule showing milestone dates for completion of major portions of the Work which, if the milestone dates are met, will achieve Substantial Completion of the Work within the Contract Time. In the event any milestone date is missed, the Contractor will immediately accelerate the progress of the Work by taking those steps necessary to ensure that the next milestone date is achieved as originally planned, including without limitation, working seven days a week and overtime and employing additional employees or subcontractors. Unless the failure to meet a milestone date is caused by act of the Owner, the additional cost resulting from such acceleration shall not increase the Contract Sum.

§ 8.3 Delays and Extensions of Time

§ 8.3.1 Except as provided in Subparagraph 8.3.2, no adjustment in Contract Sum shall be made for any delays hereunder and no damages shall be paid by the Owner for such delay. The Contractor shall delay or suspend the progress of the Work, or of any part thereof, whenever he shall be so required by written order of the Owner, and for such periods of time as the Owner may order, providing that in the event of such delay or delays or of such suspension or suspensions of the progress of the Work, or any part thereof, the Contract Time for the Work so suspended or of Work delayed by such suspension shall be extended for a period equivalent to the time lost by reason of the suspension(s), except when the Contractor is notified to suspend Work on account of faulty construction or construction methods that endanger the

Work. Such order of the Owner shall not otherwise modify or invalidate in any way any of the provisions of this Contract, and the Contractor shall not be entitled to any damages or compensation from the Owner on account of such delay or delays, suspension or suspensions, except as provided below. If the Contractor is delayed at any time in the commencement or progress of the Work by (1) an act or neglect of the Owner or Architect, of an employee of either, or of a Separate Contractor; (2) by changes ordered in the Work; (3) by labor disputes, fire, unusual delay in deliveries, unavoidable casualties, adverse weather conditions documented in accordance with Section 15.1.6.2, or other causes beyond the Contractor's control; (4) by delay authorized by the Owner pending mediation and binding dispute resolution; or (5) by other causes that the Contractor asserts, and the Architect determines, justify delay, then the Contract Time shall be extended for such reasonable time as the Architect may determine.

§ 8.3.2 When alterations or additions on the critical path are made to the Work, and such alterations or additions increase the overall completion date, the Contractor shall submit to the Architect in writing any resultant claim for an extension in the Contract Time, and shall deliver such claims to the Architect within ten (10) days after the occurrence of the event giving rise to the claim. The recommendation of the Architect regarding extension of Contract Time shall be submitted to the Owner for approval. Claims relating to time shall be made in accordance with applicable provisions of Article 15.

§ 8.3.2.1 Any approved changes in Contract Time shall be incorporated in a Change Order. No changes in Contract Time shall be made for any alterations or additions to the Work which are not demonstrated to affect the overall completion of the job. The provision of this Article 8 shall in no way alter, change or invalidate the provisions of the Contract Documents with respect to liquidated damages. The Contractor shall not be entitled to any delay damages or other compensation solely on account of an increase in Contract Time except in accordance with Section 8.3.4 below.

§ 8.3.3 Notwithstanding Subparagraph 8.3.1, if the Work is delayed due to the fault or neglect of the Owner, and such delays have a cumulative total impact of more than fifteen (15) calendar days to the critical path, the Contractor may make claim pursuant to Article 4 for its actual and direct costs arising out of the delay. The Contract Sum shall be adjusted for such actual and direct costs, but in no event shall indirect, impact, inefficiency, offsite or home office overhead, loss of productivity, consequential damages, legal or consulting costs be paid on account of such delays. The Contractor hereby expressly waives its right to such delay or time-related costs or damages.

§ 8.3.4 In the event the Contractor accelerates its Work, without written authorization of the Owner, the Owner shall pay no overtime inefficiencies to the Contractor for such acceleration and the Contractor hereby expressly waives its right to recover such overtime inefficiencies. This Section 8.3 does not preclude recovery of damages for delay by either party under other provisions of the Contract Documents.

§ 8.3.5 The Contractor's written claims for extension of Contract Time shall be accompanied by detailed dates, correspondence, notices and any other data which provides proof of the events which are the basis for the claim, including a network analysis justifying the time extension. Said network analysis shall specifically detail the extension of the critical path of the Project caused by the events, which underlie the time extension request. Any claim not including said data and network analysis shall be deemed waived.

§ 8.3.6 Should the Contractor be obstructed or delayed in the commencement, prosecution or completion of any part of the Work by any act or delay of the Owner; or by any acts or neglect by any separate contractor employed by the Owner; material or appurtenances for the Work; or by riot, insurrection, war (excluding wars involving the United States in the Mid-Eastern portion of the World), pestilence, fire, earthquakes, cyclones, floods, epidemics; or through any act, default or delay of other parties under contract with the Owner; then the Contract Time for the Work so delayed shall be extended for a period equivalent to the time lost. Such allowance shall not be made unless a claim for extension of time is made by the Contractor to the Owner and Architect in writing within ten (10) days from the time when the alleged cause for delay occurs.

§ 8.3.7 It is further expressly agreed that the Contractor shall not be entitled to any damages or compensation from the Owner on account of any delays resulting from any of the causes specified above except those circumstances where delays are caused by the Owner or by parties under contract with the Owner, in which circumstances the Contractor shall be entitled to compensation (1) for Contractor's actual costs of increased direct jobsite wages resulting from the extended completion date caused by Owner; and (2) for extra premiums on bonds actually paid by the Contractor on account of the

additional time required to complete all Work hereunder. Any change in the Contract Time resulting from any claims for delays shall be incorporated in a signed Change Order upon approval of the change by the Owner.

§ 8.3.8 Except for weather events listed in Section 8.3.6 above, Contractor expressly assumes the risk for all weather delays of every kind and nature.

ARTICLE 9 PAYMENTS AND COMPLETION

§ 9.1 Contract Sum

§ 9.1.1 The Contract Sum is stated in the Agreement and, including authorized adjustments, is the total amount payable by the Owner to the Contractor for performance of the Work under the Contract Documents.

~~§ 9.1.2 If unit prices are stated in the Contract Documents or subsequently agreed upon, and if quantities originally contemplated are materially changed so that application of such unit prices to the actual quantities causes substantial inequity to the Owner or Contractor, the applicable unit prices shall be equitably adjusted.~~

§ 9.2 Schedule of Values

Where the Contract is based on a stipulated sum or Guaranteed Maximum Price, the Contractor shall submit a schedule of values to the Architect before the first Application for Payment, allocating the entire Contract Sum to the various portions of the Work. The schedule of values shall be prepared in the form, and supported by the data to substantiate its accuracy, required by the Architect. The schedule of values shall be prepared in such manner that each major item of the Work and each subcontracted item of the Work is shown as a separate line item on AIA Document G703, Application and Certificate for Payment, Continuation Sheet, or other form acceptable to the Owner. This schedule, unless objected to by the Architect or Owner, shall be used as a basis for reviewing the Contractor's Applications for Payment. Any changes to the schedule of values shall be submitted to the Architect and supported by such data to substantiate its accuracy as the Architect may require, and unless objected to by the Architect, shall be used as a basis for reviewing the Contractor's subsequent Applications for Payment. The Contractor shall not make changes in the Schedule of Values without prior approval of the Architect and Owner. The form for the Application for Payment shall be AIA Document G702, supported by AIA Document G703, or other Owner approved form. The Schedule of Values shall be prepared in such a manner that each major item of Work and each subcontracted item of Work is shown as a single item on AIA Document G703 Application and Certificate for Payment Continuation Sheet, or other Owner approved form.

§ 9.3 Applications for Payment

§ 9.3.1 At least ten days before the date established for each progress payment, the Contractor shall submit to the Architect an itemized Application for Payment prepared in accordance with the schedule of values, if required under Section 9.2, for completed portions of the Work. The application shall be notarized, if required, and supported by all data substantiating the Contractor's right to payment that the Owner or Architect require, such as copies of requisitions, and releases and waivers of liens from Subcontractors and suppliers, and shall reflect retainage if provided for in the Contract Documents.

~~§ 9.3.1.1 As provided in Section 7.3.9, such applications may include requests for payment on account of changes in the Work that have been properly authorized by Construction Change Directives, or by interim determinations of the Architect, but not yet included in Change Orders.~~

§ 9.3.1.2 Applications for Payment shall not include requests for payment for portions of the Work for which the Contractor does not intend to pay a Subcontractor or supplier, unless such Work has been performed by others whom the Contractor intends to pay.

§ 9.3.2 Unless otherwise provided in the Contract Documents, payments shall be made on account of materials and equipment delivered and suitably stored at the site for subsequent incorporation in the Work. If approved in advance by the Owner, payment may similarly be made for materials and equipment suitably stored off the site at a location agreed upon in writing and bonded or insured as required by the Owner. Payment for materials and equipment stored on or off the site shall be conditioned upon compliance by the Contractor with procedures satisfactory to the Owner to establish the Owner's title to such materials and equipment or otherwise protect the Owner's interest, and shall include the costs of applicable insurance, storage, and transportation to the site, for such materials and equipment stored off the site. The Contractor shall submit, within 30 days after the date of commencement of the Work and thereafter as the Owner

requires, schedules of materials and equipment for each category or subcontract for which application for payment under this Section 9.3.2 will be made, which schedules shall include items, quantities, value of unit prices with extensions. Schedules shall be updated on a monthly basis and submitted as an attachment to the Contractor's Application for Payment.

§ 9.3.3 The Contractor warrants that title to all Work covered by an Application for Payment will pass to the Owner no later than the time of payment. The Contractor further warrants that upon submittal of an Application for Payment all Work for which Certificates for Payment have been previously issued and payments received from the Owner shall, to the best of the Contractor's knowledge, information, and belief, be free and clear of liens, claims, security interests, or encumbrances, in favor of the Contractor, Subcontractors, suppliers, or other persons or entities that provided labor, materials, and equipment relating to the Work.

§ 9.4 Certificates for Payment

§ 9.4.1 The Architect will, within seven days after receipt of the Contractor's Application for Payment, either (1) issue to the Owner a Certificate for Payment in the full amount of the Application for Payment, with a copy to the Contractor; or (2) issue to the Owner a Certificate for Payment for such amount as the Architect determines is properly due, and notify the Contractor and Owner of the Architect's reasons for withholding certification in part as provided in Section 9.5.1; or (3) withhold certification of the entire Application for Payment, and notify the Contractor and Owner of the Architect's reason for withholding certification in whole as provided in Section 9.5.1.

§ 9.4.2 The issuance of a Certificate for Payment will constitute a representation by the Architect to the Owner, based on the Architect's evaluation of the Work and the data in the Application for Payment, that, to the best of the Architect's knowledge, information, and belief, the Work has progressed to the point indicated, the quality of the Work is in accordance with the Contract Documents, and that the Contractor is entitled to payment in the amount certified. The foregoing representations are subject to an evaluation of the Work for conformance with the Contract Documents upon Substantial Completion, to results of subsequent tests and inspections, to correction of minor deviations from the Contract Documents prior to completion, and to specific qualifications expressed by the Architect. However, the issuance of a Certificate for Payment will not be a representation that the Architect has (1) made exhaustive or continuous on-site inspections to check the quality or quantity of the Work; (2) reviewed construction means, methods, techniques, sequences, or procedures; (3) reviewed copies of requisitions received from Subcontractors and suppliers and other data requested by the Owner to substantiate the Contractor's right to payment; or (4) made examination to ascertain how or for what purpose the Contractor has used money previously paid on account of the Contract Sum.

§ 9.5 Decisions to Withhold Certification

§ 9.5.1 The Architect may withhold a Certificate for Payment, in whole or in part, to the extent reasonably necessary to protect the Owner, if in the Architect's opinion the representations to the Owner required by Section 9.4.2 cannot be made. If the Architect is unable to certify payment in the amount of the Application, the Architect will notify the Contractor and Owner as provided in Section 9.4.1. If the Contractor and Architect cannot agree on a revised amount, the Architect will promptly issue a Certificate for Payment for the amount for which the Architect is able to make such representations to the Owner. The Architect may also withhold a Certificate for Payment or, because of subsequently discovered evidence, may nullify the whole or a part of a Certificate for Payment previously issued, to such extent as may be necessary in the Architect's opinion to protect the Owner from loss for which the Contractor is responsible, including loss resulting from acts and omissions described in Section 3.3.2, because of

- .1 defective Work not remedied;
- .2 third party claims filed or reasonable evidence indicating probable filing of such claims, unless security acceptable to the Owner is provided by the Contractor;
- .3 failure of the Contractor to make payments properly to Subcontractors or suppliers for labor, materials or equipment;
- .4 reasonable evidence that the Work cannot be completed for the unpaid balance of the Contract Sum;
- .5 damage to the Owner or a Separate Contractor;
- .6 reasonable evidence that the Work will not be completed within the Contract Time, and that the unpaid balance would not be adequate to cover actual or liquidated damages for the anticipated delay; or
- .7 repeated failure to carry out the Work in accordance with the Contract Documents.

~~§ 9.5.2 When either party disputes the Architect's decision regarding a Certificate for Payment under Section 9.5.1, in whole or in part, that party may submit a Claim in accordance with Article 15 the reasons for withholding certification are removed, certification will be made for amounts previously withheld.~~

§ 9.5.3 When the reasons for withholding certification are removed, certification will be made for amounts previously withheld.

§ 9.5.4 If the Contractor disputes any determination by the Architect and/or Owner with respect to any Certificate of Payment, the Contractor nevertheless expeditiously shall continue to complete the Work. ~~If the Architect withholds certification for payment under Section 9.5.1.3, the Owner may, at its sole option, issue joint checks to the Contractor and to any Subcontractor or supplier to whom the Contractor failed to make payment for Work properly performed or material or equipment suitably delivered. If the Owner makes payments by joint check, the Owner shall notify the Architect and the Contractor shall reflect such payment on its next Application for Payment.~~

§ 9.6 Progress Payments

§ 9.6.1 After the Architect has issued a Certificate for Payment, the Owner shall make payment in the manner and within the time provided in the Contract Documents and shall so notify the Architect.

§ 9.6.2 The Contractor shall pay each Subcontractor, no later than seven days after receipt of payment from the Owner, the amount to which the Subcontractor is entitled, reflecting percentages actually retained from payments to the Contractor on account of the Subcontractor's portion of the Work. The Contractor shall, by appropriate agreement with each Subcontractor, require each Subcontractor to make payments to Sub-subcontractors in a similar manner.

§ 9.6.3 The Architect will, on request, furnish to a Subcontractor, if practicable, information regarding percentages of completion or amounts applied for by the Contractor and action taken thereon by the Architect and Owner on account of portions of the Work done by such Subcontractor.

§ 9.6.4 The Owner has the right to request written evidence from the Contractor that the Contractor has properly paid Subcontractors and suppliers amounts paid by the Owner to the Contractor for subcontracted Work. If the Contractor fails to furnish such evidence within seven days, the Owner shall have the right to contact Subcontractors and suppliers to ascertain whether they have been properly paid. Neither the Owner nor Architect shall have an obligation to pay, or to see to the payment of money to, a Subcontractor or supplier, except as may otherwise be required by law.

§ 9.6.5 The Contractor's payments to suppliers shall be treated in a manner similar to that provided in Sections 9.6.2, 9.6.3 and 9.6.4.

§ 9.6.6 A Certificate for Payment, a progress payment, or partial or entire use or occupancy of the Project by the Owner shall not constitute acceptance of Work not in accordance with the Contract Documents.

§ 9.6.7 Unless the Contractor provides the Owner with a payment bond in the full penal sum of the Contract Sum, payments received by the Contractor for Work properly performed by Subcontractors or provided by suppliers shall be held by the Contractor for those Subcontractors or suppliers who performed Work or furnished materials, or both, under contract with the Contractor for which payment was made by the Owner. ~~Nothing contained herein shall require money to be placed in a separate account and not commingled with money of the Contractor, create any fiduciary liability or tort liability on the part of the Contractor for breach of trust, or entitle any person or entity to an award of punitive damages against the Contractor for breach of the requirements of this provision.~~

§ 9.6.8 Provided the Owner has fulfilled its payment obligations under the Contract Documents, the Contractor shall defend and indemnify the Owner from all loss, liability, damage or expense, including reasonable attorney's fees and litigation expenses, arising out of any lien claim or other claim for payment by any Subcontractor or supplier of any tier. Upon receipt of notice of a lien claim or other claim for payment, the Owner shall notify the Contractor. If approved by the applicable court, when required, the Contractor may substitute a surety bond for the property against which the lien or other claim for payment has been asserted.

§ 9.7 Failure of Payment

If the Architect does not issue a Certificate for Payment, through no fault of the Contractor, within ~~seven~~ fourteen days after receipt of the Contractor's Application for Payment, or if the Owner does not pay the Contractor within ~~seven~~ fourteen days after the date established in the Contract Documents, the amount certified by the Architect ~~or awarded by binding dispute resolution~~, then the Contractor may, upon seven additional days' notice to the Owner and Architect, stop the Work until payment of the amount owing not in dispute has been received. The Contract Time shall be extended appropriately and the Contract Sum shall be increased by the amount of the Contractor's reasonable direct costs of shutdown, ~~delay~~ and start-up, ~~plus interest~~ as provided for in the Contract Documents. Notwithstanding the preceding sentence, the Contractor shall not stop the Work during the pendency of a bona fide dispute between the Owner and the Contractor, provided all sums not in dispute claimed by the Contractor are paid.

§ 9.8 Substantial Completion

§ 9.8.1 Substantial Completion is the stage in the progress of the Work when the Work or designated portion thereof is sufficiently complete in accordance with the Contract Documents so that the Owner can occupy or utilize the Work for its intended use. For the Work or any designated portion thereof to be "Substantially Complete", the Work must also satisfy all of the following conditions, except to the extent the same shall be specifically waived or modified in writing by the Owner:

- .1 the Work has been completed in accordance with the Contract Documents, except for Punch List Work, to the extent required for the Owner to obtain an occupancy permit and such permit(s) shall have been granted by the appropriate authorities for all of the Work; and
- .2 all HVAC, plumbing and electrical systems included in the Work are functioning substantially in accordance with the Contract Documents; and
- .3 all life safety systems included in the Work are functioning in accordance with the Contract Documents; and
- .4 a Certificate of Substantial Completion has been issued by the Architect as required under Paragraph 9.8; and
- .5 all elevators, if any, included in the Work are functioning in accordance with the Contract Documents; and
- .6 all offices, rooms and public areas are ready to receive, or have received if required for issuance of a Certificate of Occupancy, furniture, fixtures and equipment supplied by the Owner.

§ 9.8.2 When the Contractor considers that the Work, or a portion thereof which the Owner agrees to accept separately, is substantially complete, the Contractor shall prepare and submit to the Architect and Owner a comprehensive list of items to be completed or corrected prior to final payment. Failure to include an item on such list does not alter the responsibility of the Contractor to complete all Work in accordance with the Contract Documents.

§ 9.8.3 Upon receipt of the Contractor's list, the Architect and Owner will ~~make~~ perform an inspection to determine whether the Work or designated portion thereof is substantially complete. If the Architect's and or the Owner's inspection discloses any item, whether or not included on the Contractor's list, which is not sufficiently complete in accordance with the Contract Documents so that the Owner can occupy or utilize the Work or designated portion thereof for its intended use, the Contractor shall, before issuance of the Certificate of Substantial Completion, complete or correct such item upon notification by the Architect. In such case, the Contractor shall then submit a request for another inspection by the Architect and Owner to determine Substantial Completion.

§ 9.8.4 When the Work or designated portion thereof is determined to be substantially complete, the Architect will prepare a Certificate of Substantial Completion, utilizing the Owner's Procore platform, that shall establish the date of Substantial Completion; establish responsibilities of the Owner and Contractor for security, maintenance, heat, utilities, damage to the Work and insurance; and fix the time of thirty (30) days within which the Contractor shall finish all items on the list. Warranties required by the Contract Documents shall commence on the date of Substantial Completion of the Work or designated portion thereof unless otherwise provided in the Certificate of Substantial Completion.

§ 9.8.5 ~~When the Work or designated portion thereof is substantially complete, The Architect, as the Owner's representative, including all Project Consultants, shall prepare a single list of items (Punch List) to be completed by the Contractor. The Punch List shall include close out requirements, not limited to, Operations and Maintenance Manual, warranties, and as built drawings, contingent on Project completion, which will be submitted to the Contractor. The~~

Contractor will assign a cost estimate for each item then submit the Punch List to the Architect and Owner for review and acceptance. Estimated costs to render the Project complete, satisfactory and acceptable are to be agreeable to the Contractor, Owner and Architect. The development and review of the Punch List shall be completed within 30 calendar days, or 45 calendar days by applicable law and mutual agreement of Contractor and Owner, of the substantial completion date and shall be issued by the Architect to the Contractor and Owner within five (5) days of acceptance by all parties. Within twenty (20) business days after the final Punch List is issued, the Owner must pay the Contractor the remaining contract balance that includes all retainage previously withheld less an amount equal to one hundred fifty percent (150%) of the estimated cost to complete the Punch List items, will prepare a Certificate of Substantial Completion that shall establish the date of Substantial Completion; establish responsibilities of the Owner and Contractor for security, maintenance, heat, utilities, damage to the Work and insurance; and fix the time within which the Contractor shall finish all items on the list accompanying the Certificate. Warranties required by the Contract Documents shall commence on the date of Substantial Completion of the Work or designated portion thereof unless otherwise provided in the Certificate of Substantial Completion.

§ 9.8.6 The Certificate of Substantial Completion shall be submitted to the Owner and Contractor for their written acceptance of responsibilities assigned to them in the Certificate. ~~Upon such acceptance, and consent of surety if any, the Owner shall make payment of retainage applying to the Work or designated portion thereof. Such payment shall be adjusted for Work that is incomplete or not in accordance with the requirements of the Contract Documents.~~

§ 9.8.7 The Owner shall have the right to take possession of and use any completed or partially completed portions of the Work, notwithstanding that the time for completing the entire Work or such portions of the Work may not yet have expired. However, such action on the part of the Owner shall not be deemed to be an acceptance of any Work not completed in accordance with the Contract Documents. Likewise, absent the issuance of a Certificate of Substantial Completion by the Project Architect, no portion of the Work shall be subject to the running of the Contractor's bonded one (1) year guarantee on workmanship and materials, despite the fact that the building may be partially utilized. Where mechanical equipment is used prior to final inspection, the Owner shall perform routine maintenance and furnish those supplies that normally wear out in use, such as seals, packings, lubricants, etc. However, any major failure or breakdown of equipment not attributable to lack of maintenance or improper use or abuse of the equipment by the Owner shall be made good by the Contractor under terms of its contract warranty, guarantee, bonds, etc.

§ 9.9 Partial Occupancy or Use

§ 9.9.1 The Owner may occupy or use any completed or partially completed portion of the Work at any stage when such portion is designated by separate agreement with the Contractor, provided such occupancy or use is consented to by the insurer and authorized by public authorities having jurisdiction over the Project. Such partial occupancy or use may commence whether or not the portion is substantially complete, provided the Owner and Contractor have accepted in writing the responsibilities assigned to each of them for payments, retainage, if any, security, maintenance, heat, utilities, damage to the Work and insurance, and have agreed in writing concerning the period for correction of the Work and commencement of warranties required by the Contract Documents. When the Contractor considers a portion substantially complete, the Contractor shall prepare and submit a list to the Architect as provided under Section 9.8.2, 9.8.3, 9.8.4 and 9.8.5. Consent of the Contractor to partial occupancy or use shall not be unreasonably withheld. The stage of the progress of the Work shall be determined by written agreement between the Owner and Contractor or, if no agreement is reached, by decision of the Architect.

§ 9.9.2 Immediately prior to such partial occupancy or use, the Owner, Contractor, and Architect shall jointly inspect the area to be occupied or portion of the Work to be used in order to determine and record the condition of the Work.

§ 9.9.3 Unless otherwise agreed upon, partial occupancy or use of a portion or portions of the Work shall not constitute acceptance of Work not complying with the requirements of the Contract Documents.

§ 9.10 Final Completion and Final Payment

§ 9.10.1 Upon receipt of the Contractor's notice that the Work is ready for final inspection and acceptance and upon receipt of a final Application for Payment, the Architect will promptly make such inspection. When the Architect finds the Work acceptable under the Contract Documents and the Contract fully performed, the Architect will promptly issue a final Certificate for Payment stating that to the best of the Architect's knowledge, information and belief, and on the basis of the Architect's on-site visits and inspections, the Work has been completed in accordance with the Contract

Documents and that the entire balance found to be due the Contractor and noted in the final Certificate is due and payable. The Architect's final Certificate for Payment will constitute a further representation that conditions listed in Section 9.10.2 as precedent to the Contractor's being entitled to final payment have been fulfilled.

§ 9.10.2 Neither final payment nor any remaining retained percentage shall become due until the Contractor submits to the Architect (1) an affidavit that payrolls, bills for materials and equipment, and other indebtedness connected with the Work for which the Owner or the Owner's property might be responsible or encumbered (less amounts withheld by Owner) have been paid or otherwise satisfied, (2) a certificate evidencing that insurance required by the Contract Documents to remain in force after final payment is currently in effect, (3) a written statement that the Contractor knows of no reason that the insurance will not be renewable to cover the period required by the Contract Documents, (4) consent of surety, if any, to final payment, (5) documentation of any special warranties, such as manufacturers' warranties or specific Subcontractor warranties, and (6) if required by the Owner, other data establishing payment or satisfaction of obligations, such as receipts and releases and waivers of liens, claims, security interests, or encumbrances arising out of the Contract, to the extent and in such form as may be designated by the Owner. If a Subcontractor refuses to furnish a release or waiver required by the Owner, the Contractor may furnish a bond satisfactory to the Owner to indemnify the Owner against such lien, claim, security interest, or encumbrance. If a lien, claim, security interest, or encumbrance remains unsatisfied after payments are made, the Contractor shall refund to the Owner all money that the Owner may be compelled to pay in discharging the lien, claim, security interest, or encumbrance, including all costs and reasonable attorneys' fees. As a condition precedent to Final Payment, and as part of the Application for Payment, the Contractor shall deliver to the Owner all warranties, guarantees and other close out documents required under the Contract Documents.

§ 9.10.2.1 Final Payment is also contingent upon Building Official final inspection and Owner acceptance of the Department of Education (DOE) document OEF 209, Certificate of Final Inspection (CFI).

§ 9.10.3 If, after Substantial Completion of the Work, final completion thereof is materially delayed through no fault of the Contractor or by issuance of Change Orders affecting final completion, and the Architect so confirms, the Owner shall, upon application by the Contractor and certification by the Architect, and without terminating the Contract, make payment of the balance due for that portion of the Work fully completed, corrected, and accepted. If the remaining balance for Work not fully completed or corrected is less than retainage stipulated in the Contract Documents, and if bonds have been furnished, the written consent of the surety to payment of the balance due for that portion of the Work fully completed and accepted shall be submitted by the Contractor to the Architect prior to certification of such payment. Such payment shall be made under terms and conditions governing final payment, except that it shall not constitute a waiver of Claims.

§ 9.10.4 The making of final payment shall constitute a waiver of Claims by the Owner except those arising from

- .1 liens, Claims, security interests, or encumbrances arising out of the Contract and unsettled;
- .2 failure of the Work to comply with the requirements of the Contract Documents;
- .3 terms of special warranties required by the Contract Documents; or
- .4 audits performed by the Owner, if permitted by the Contract Documents, after final payment.

§ 9.10.5 Acceptance of final payment by the Contractor, a Subcontractor, or a supplier, shall constitute a waiver of claims by that payee except those previously made in writing and identified by that payee as unsettled at the time of final Application for Payment.

§ 9.10.6 After execution of the Certificate of Substantial Completion and the Certificate of Final Inspection (CFI), and prior to the submittal of the Final Certificate and Application for Payment, the Contractor shall submit to the Architect, along with the affidavits and other documents set forth in Section 9.10.2 above:

- .1 Validated warranties and notarized copies of all guarantees for equipment and materials as required by the Construction Documents, and, if applicable, as referred to in the Supplementary Conditions;
- .2 Copies of all approved Shop Drawings or installation diagrams and three (3) copies of all brochures, manuals, etc. of all equipment as offered by the manufacturers;
- .3 List of subcontractors and major material suppliers (shall include address, telephone number and name of individual to contact regarding this Project); and

.4 As built drawings of the completed Project in paper document and combined PDF or other Architect and Owner acceptable digital format, on CD, DVD or other approved file transfer protocol (FTP), transmitted from the Contractor to the Architect for review and acceptance; Architect shall review for inclusion in the record drawings then transmit to the Owner.

§ 9.10.7 Prior to submission of the Final Certificate and Application for Payment, Contractor and manufacturer's representatives shall provide free instruction in the proper use of installed equipment to representatives of the Owner as designated by the Architect. Instruction shall be given in presence of the Architect.

§ 9.10.7.1 Instruction of the Owner's designated Maintenance Supervisor in the proper methods of cleaning and maintaining all of the finished surfaces and the proper methods of replacement of the consumable items such as filters, light bulbs, washers, etc. shall be the responsibility of the Contractor.

§ 9.10.8 Prior to submission of the Final Certificate and Application for Payment, the Contractor shall start up, test, adjust, balance and otherwise place in a satisfactory working condition all items of mechanical and electrical systems and shall fully instruct representatives of the Owner in the care and operation of such systems.

§ 9.10.8.1 Contractor shall submit to the Architect, along with final requisition for payment, two (2) copies of a manual for the Project, assembled and bound, presenting for the Owner's guidance full details for care and maintenance of equipment included in the Contract.

§ 9.10.8.2 Contractor shall, for this manual, obtain from subcontractors literature of manufacturers relating to equipment, including motors; also furnish cuts, wiring diagrams, instruction sheets and other information pertaining to same in overall operation and maintenance.

§ 9.10.9 During a valid warranty period, if the Contractor is unable or unwilling to respond immediately to make emergency repairs under conditions which the Owner may determine to be an emergency situation, the Owner reserves the right to make such emergency repairs and then to bill the Contractor for a fair and reasonable amount in the reimbursement for such repair.

ARTICLE 10 PROTECTION OF PERSONS AND PROPERTY

§ 10.1 Safety Precautions and Programs

The Contractor shall be responsible for initiating, maintaining, and supervising all safety precautions and programs in connection with the performance of the Contract.

§ 10.2 Safety of Persons and Property

§ 10.2.1 The Contractor shall take reasonable precautions for safety of, and shall provide reasonable protection to prevent damage, injury, or loss to

- .1 employees on the Work and other persons who may be affected thereby;
- .2 the Work and materials and equipment to be incorporated therein, whether in storage on or off the site, under care, custody, or control of the Contractor, a Subcontractor, or a Sub-subcontractor; and
- .3 other property at the site or adjacent thereto, such as trees, shrubs, lawns, walks, pavements, roadways, structures, and utilities not designated for removal, relocation, or replacement in the course of construction.

§ 10.2.2 The Contractor shall comply with, and give notices required by applicable laws, statutes, ordinances, codes, rules and regulations, and lawful orders of public authorities, bearing on safety of persons or property or their protection from damage, injury, or loss. Contractor shall comply with all applicable federal, state and county, and city statutes, safety regulations, codes, ordinances and orders, including the Occupational Safety and Health Administration Act of 1970 (OSHA).

§ 10.2.3 The Contractor shall implement, erect, and maintain, as required by existing conditions and performance of the Contract, reasonable safeguards for safety and protection, including posting danger signs and other warnings against hazards; promulgating safety regulations; and notifying the owners and users of adjacent sites and utilities of the safeguards.

§ 10.2.4 When use or storage of explosives or other hazardous materials or equipment, or unusual methods are necessary for execution of the Work, the Contractor shall exercise utmost care and carry on such activities under supervision of properly qualified personnel.

§ 10.2.5 The Contractor shall promptly remedy damage and loss (other than damage or loss insured under property insurance required by the Contract Documents) to property referred to in Sections 10.2.1.2 and 10.2.1.3 caused in whole or in part by the Contractor, a Subcontractor, a Sub-subcontractor, or anyone directly or indirectly employed by any of them, or by anyone for whose acts they may be liable and for which the Contractor is responsible under Sections 10.2.1.2 and 10.2.1.3. The Contractor may make a Claim for the cost to remedy the damage or loss to the extent such damage or loss is attributable to acts or omissions of the Owner or Architect or anyone directly or indirectly employed by either of them, or by anyone for whose acts either of them may be liable, and not attributable to the fault or negligence of the Contractor. The foregoing obligations of the Contractor are in addition to the Contractor's obligations under Section 3.18.

§ 10.2.6 The Contractor shall designate a responsible member of the Contractor's organization at the site whose duty shall be the prevention of accidents. This person shall be the Contractor's superintendent unless otherwise designated by the Contractor in writing to the Owner and Architect.

§ 10.2.7 The Contractor shall not permit any part of the construction or site to be loaded so as to cause damage or create an unsafe condition.

§ 10.2.8 Injury or Damage to Person or Property

If either party suffers injury or damage to person or property because of an act or omission of the other party, or of others for whose acts such party is legally responsible, written notice of the injury or damage, whether or not insured, shall be given to the other party within a reasonable time not exceeding 21 days after discovery. The notice shall provide sufficient detail to enable the other party to investigate the matter.

§ 10.2.9 Contractor shall protect adjoining private or municipal property and shall provide barricades, temporary fences, and covered walkways required to protect the safety of passers-by, as required by prudent construction practices, local building codes, ordinances or other laws, or the Contract Documents.

§ 10.2.10 Contractor shall maintain Work, materials and apparatus free from injury or damage from rain, wind, storms, frost or heat. If adverse weather makes it impossible to continue operations safely in spite of weather precautions, the Contractor shall cease Work and notify the Owner and the Architect of such cessation. The Contractor shall not permit open fires on the Project site.

§ 10.2.11 In addition to its other obligations pursuant to this Article 10, the Contractor shall, at its sole cost and expense, promptly repair any damage or disturbance to walls, utilities, sidewalks, curbs and the property of third parties (including municipalities) resulting from the performance of the Work, whether by it or by its Subcontractors at any tier. The Contractor shall maintain streets in good repair and traversable condition.

§ 10.3 Hazardous Materials and Substances

§ 10.3.1 The Owner has on file at each school and the department of Facilities Services, the following information: (1) Asbestos Management Plan, and (2) Asbestos Survey Report. These documents are available for the Contractor's review at the above locations. The Contractor shall determine if the information contained therein is relevant to the Project. The Contractor shall execute the Owner's "Contractor Acknowledgement Form" of these documents. The Contractor is responsible for compliance with any requirements included in the Contract Documents regarding hazardous materials or substances. If the Contractor encounters a hazardous material or substance not addressed in the Contract Documents and if reasonable precautions will be inadequate to prevent foreseeable bodily injury or death to persons resulting from a material or substance, including but not limited to asbestos or polychlorinated biphenyl (PCB), encountered on the site by the Contractor, the Contractor shall, upon recognizing the condition, immediately stop Work in the affected area and notify the Owner and Architect of the condition.

§ 10.3.1.1 If during the construction of the Project any known hazardous material, or friable asbestos is suspected or encountered, Work in that area shall be suspended and the Owner's Representative shall be notified immediately.

§ 10.3.1.2 The Owner shall be responsible for investigation, removal and disposition of any such material in accordance with applicable laws and regulations. The Contractor will be directed by the Owner on further procedures concerning the project as a result of investigation, removal and disposition of such material.

§ 10.3.2 In the event the Contractor encounters on the site material reasonably believed to be asbestos or polychlorinated biphenyl (PCB) which has not been rendered harmless, the Contractor shall immediately stop Work in the area affected and report the condition to the Owner's Representative in writing. The Work in the affected area shall not thereafter be resumed except by written agreement of the Owner and Contractor if in fact the material is asbestos or polychlorinated biphenyl (PCB) and has not been rendered harmless. The Work in the affected area shall be resumed in the absence of asbestos or polychlorinated biphenyl (PCB), or when it has been rendered harmless, by written agreement of the Owner and Contractor, or in accordance with final determination by the Architect. Upon receipt of the Contractor's notice, the Owner shall obtain the services of a licensed laboratory to verify the presence or absence of the material or substance reported by the Contractor and, in the event such material or substance is found to be present, to cause it to be rendered harmless. Unless otherwise required by the Contract Documents, the Owner shall furnish in writing to the Contractor and Architect the names and qualifications of persons or entities who are to perform tests verifying the presence or absence of the material or substance or who are to perform the task of removal or safe containment of the material or substance. The Contractor and the Architect will promptly reply to the Owner in writing stating whether or not either has reasonable objection to the persons or entities proposed by the Owner. If either the Contractor or Architect has an objection to a person or entity proposed by the Owner, the Owner shall propose another to whom the Contractor and the Architect have no reasonable objection. When the material or substance has been rendered harmless, Work in the affected area shall resume upon written agreement of the Owner and Contractor. By Change Order, the Contract Time shall be extended appropriately and the Contract Sum shall be increased by the amount of the Contractor's reasonable additional costs of shutdown, delay, and start up.

§ 10.3.3 The Contractor shall not be required, pursuant to Article 13, perform without consent any Work relating to asbestos or polychlorinated biphenyl (PCB). To the fullest extent permitted by law, the Owner shall indemnify and hold harmless the Contractor, Subcontractors, Architect, Architect's consultants, and agents and employees of any of them from and against claims, damages, losses, and expenses, including but not limited to attorneys' fees, arising out of or resulting from performance of the Work in the affected area if in fact the material or substance presents the risk of bodily injury or death as described in Section 10.3.1 and has not been rendered harmless, provided that such claim, damage, loss, or expense is attributable to bodily injury, sickness, disease or death, or to injury to or destruction of tangible property (other than the Work itself), except to the extent that such damage, loss, or expense is due to the fault or negligence of the party seeking indemnity.

§ 10.3.4 To the fullest extent permitted by law, the Owner shall defend, indemnify and hold harmless the Contractor and its agents and employees from and against claims, losses and expenses, including but not limited to attorney's fees, arising out of or resulting from performance of the Work in the affected area if in fact the material is asbestos or polychlorinated biphenyl (PCB) and has not been rendered harmless, provided that such claim, damage, loss or expense is attributable to bodily injury, sickness, disease or death, or to injury to or destruction of tangible property, other than the Work itself, including loss of use resulting therefrom, but only to the extent caused in whole or in part by negligent acts or omissions of the Owner, anyone directly or indirectly employed by the Owner, or anyone for whose acts the Owner may be liable. The Owner shall not be responsible under this Section 10.3 for hazardous materials or substances the Contractor brings to the site unless such materials or substances are required by the Contract Documents. The Owner shall be responsible for hazardous materials or substances required by the Contract Documents, except to the extent of the Contractor's fault or negligence in the use and handling of such materials or substances.

§ 10.3.5 The Contractor shall reimburse the Owner for the cost and expense the Owner incurs (1) for remediation of hazardous materials or substances the Contractor brings to the site and negligently handles, or (2) where the Contractor fails to perform its obligations under Section 10.3.1, except to the extent that the cost and expense are due to the Owner's fault or negligence.

§ 10.3.6 If, without negligence on the part of the Contractor, the Contractor is held liable by a government agency for the cost of remediation of a hazardous material or substance solely by reason of performing Work as required by the Contract Documents, the Owner shall reimburse the Contractor for all cost and expense thereby incurred.

§ 10.4 Emergencies

In an emergency affecting safety of persons or property, the Contractor shall act, at the Contractor's discretion, to prevent threatened damage, injury, or loss. Additional compensation or extension of time claimed by the Contractor on account of an emergency shall be determined as provided in Article 15 and Article 7.

ARTICLE 11 INSURANCE AND BONDS

§ 11.1 Contractor's Insurance and Bonds

§ 11.1.1 The Contractor shall purchase and maintain insurance of the types and limits of liability, containing the endorsements, and subject to the terms and conditions, as described in the Agreement or elsewhere in the Contract Documents. The Contractor shall purchase and maintain the required insurance from an insurance company or insurance companies lawfully authorized to issue insurance in the jurisdiction where the Project is located. The Owner, Architect, and Architect's consultants shall be named as additional insureds under the Contractor's commercial general liability policy or as otherwise described in the Contract Documents.

§ 11.1.2 The Contractor shall provide surety bonds of the types, for such penal sums, and subject to such terms and conditions as required by the Contract Documents. The Contractor shall purchase and maintain the required bonds from a company or companies lawfully authorized to issue surety bonds in the jurisdiction where the Project is located.

§ 11.1.3 Upon the request of any person or entity appearing to be a potential beneficiary of bonds covering payment of obligations arising under the Contract, the Contractor shall promptly furnish a copy of the bonds or shall authorize a copy to be furnished.

§ 11.1.4 **Notice of Cancellation or Expiration of Contractor's Required Insurance.** Within three (3) business days of the date the Contractor becomes aware of an impending or actual cancellation or expiration of any insurance required by the Contract Documents, the Contractor shall provide notice to the Owner of such impending or actual cancellation or expiration. Upon receipt of notice from the Contractor, the Owner shall, unless the lapse in coverage arises from an act or omission of the Owner, have the right to stop the Work until the lapse in coverage has been cured by the procurement of replacement coverage by the Contractor. The furnishing of notice by the Contractor shall not relieve the Contractor of any contractual obligation to provide any required coverage.

§ 11.2 Owner's Insurance

§ 11.2.1 ~~The Owner shall purchase and maintain insurance of the types and limits of liability, containing the endorsements, and subject to the terms and conditions, as described in the Agreement or elsewhere in the Contract Documents. The Owner shall purchase and maintain the required insurance from an insurance company or insurance companies lawfully authorized to issue insurance in the jurisdiction where the Project is located.~~

§ 11.2.2 ~~**Failure to Purchase Required Property Insurance.** If the Owner fails to purchase and maintain the required property insurance, with all of the coverages and in the amounts described in the Agreement or elsewhere in the Contract Documents, the Owner shall inform the Contractor in writing prior to commencement of the Work. Upon receipt of notice from the Owner, the Contractor may delay commencement of the Work and may obtain insurance that will protect the interests of the Contractor, Subcontractors, and Sub-Subcontractors in the Work. When the failure to provide coverage has been cured or resolved, the Contract Sum and Contract Time shall be equitably adjusted. In the event the Owner fails to procure coverage, the Owner waives all rights against the Contractor, Subcontractors, and Sub-subcontractors to the extent the loss to the Owner would have been covered by the insurance to have been procured by the Owner. The cost of the insurance shall be charged to the Owner by a Change Order. If the Owner does not provide written notice, and the Contractor is damaged by the failure or neglect of the Owner to purchase or maintain the required insurance, the Owner shall reimburse the Contractor for all reasonable costs and damages attributable thereto.~~

§ 11.2.3 ~~**Notice of Cancellation or Expiration of Owner's Required Property Insurance.** Within three (3) business days of the date the Owner becomes aware of an impending or actual cancellation or expiration of any property insurance required by the Contract Documents, the Owner shall provide notice to the Contractor of such impending or actual cancellation or expiration. Unless the lapse in coverage arises from an act or omission of the Contractor: (1) the Contractor, upon receipt of notice from the Owner, shall have the right to stop the Work until the lapse in coverage has been cured by the procurement of replacement coverage by either the Owner or the Contractor; (2) the Contract Time and Contract Sum shall be equitably adjusted; and (3) the Owner waives all rights against the Contractor, Subcontractors, and Sub-~~

Initial

AIA Document A201-2017, General Conditions of the Contract for Construction (as modified by Licensee)

School Board of Volusia County Florida

Contractor

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~~subcontractors to the extent any loss to the Owner would have been covered by the insurance had it not expired or been cancelled. If the Contractor purchases replacement coverage, the cost of the insurance shall be charged to the Owner by an appropriate Change Order. The furnishing of notice by the Owner shall not relieve the Owner of any contractual obligation to provide required insurance.~~

§ 11.3 Waivers of Subrogation

§ 11.3.1 The Owner and Contractor waive all rights against (1) each other and any of their subcontractors, sub-subcontractors, agents, and employees, each of the other; (2) the Architect and Architect's consultants; and (3) Separate Contractors, if any, and any of their subcontractors, sub-subcontractors, agents, and employees, for damages caused by fire, or other causes of loss, to the extent those losses are covered by property insurance required by the Agreement or other property insurance applicable to the Project, except such rights as they have to proceeds of such insurance. The Owner or Contractor, as appropriate, shall require similar written waivers in favor of the individuals and entities identified above from the Architect, Architect's consultants, Separate Contractors, subcontractors, and sub-subcontractors. The policies of insurance purchased and maintained by each person or entity agreeing to waive claims pursuant to this Section 11.3.1 shall not prohibit this waiver of subrogation. This waiver of subrogation shall be effective as to a person or entity (1) even though that person or entity would otherwise have a duty of indemnification, contractual or otherwise, (2) even though that person or entity did not pay the insurance premium directly or indirectly, or (3) whether or not the person or entity had an insurable interest in the damaged property.

§ 11.3.2 If required in writing by a party in interest, the Owner as fiduciary shall, upon occurrence of an insured loss, give bond for proper performance of the Owner's duties. The cost of required bonds shall be charged against proceeds received as fiduciary. The Owner shall deposit in a separate account proceeds so received, which the Owner shall distribute in accordance with such agreement as the parties in interest may reach. If after such loss no other special agreement is made and unless the Owner terminates the Contract for convenience, replacement of damaged property shall be performed by the Contractor after notification of a Change in the Work in accordance with Article 7. If during the Project construction period the Owner insures properties, real or personal or both, at or adjacent to the site by property insurance under policies separate from those insuring the Project, or if after final payment property insurance is to be provided on the completed Project through a policy or policies other than those insuring the Project during the construction period, to the extent permissible by such policies, the Owner waives all rights in accordance with the terms of Section 11.3.1 for damages caused by fire or other causes of loss covered by this separate property insurance.

§ 11.3.3 The Owner as fiduciary shall have power to adjust and settle a loss with insurers unless one of the parties in interest shall object in writing within five days after occurrence of loss to the Owner's exercise of this power. If such objection be made, the Owner shall not make any settlement with respect to such loss until a resolution has been reached by agreement between such parties in interest and the insurers or by a court of competent jurisdiction.

§ 11.4 Loss of Use, Business Interruption, and Delay in Completion Insurance

The Owner, at the Owner's option, may require the Contractor to purchase and maintain insurance that will protect the Owner against loss of use of the Owner's property, or the inability to conduct normal operations, due to fire or other causes of loss. ~~The Owner waives all rights of action against the Contractor and Architect for loss of use of the Owner's property, due to fire or other hazards however caused.~~

§11.5 Adjustment and Settlement of Insured Loss

§ 11.5.1 A loss insured under the property insurance required by the Agreement shall be adjusted by the ~~Owner~~ Contractor as fiduciary and made payable to the ~~Owner~~ Contractor as fiduciary for the insureds, as their interests may appear, subject to requirements of any applicable mortgagee clause and of Section 11.5.2. The ~~Owner~~ Contractor shall pay the Architect and ~~Contractor~~ Owner their just shares of insurance proceeds received by the ~~Owner~~ Contractor, and by appropriate agreements the Architect and Contractor shall make payments to their consultants and Subcontractors in similar manner.

§ 11.5.2 Prior to settlement of an insured loss, the ~~Owner~~ Contractor shall notify the ~~Contractor~~ Owner of the terms of the proposed settlement as well as the proposed allocation of the insurance proceeds. The ~~Contractor~~ Owner shall have 14 days from receipt of notice to object to the proposed settlement or allocation of the proceeds. If the ~~Contractor~~ Owner does not object, the ~~Owner~~ Contractor shall settle the loss and the ~~Contractor~~ Owner shall be bound by the settlement and allocation. Upon receipt, the ~~Owner~~ Contractor shall deposit the insurance proceeds in a separate account and make the

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appropriate distributions. Thereafter, if no other agreement is made or the Owner does not terminate the Contract for convenience, the Owner and Contractor shall execute a Change Order for reconstruction of the damaged or destroyed Work in the amount allocated for that purpose. If the Contractor timely objects to either the terms of the proposed settlement or the allocation of the proceeds, the Owner may proceed to settle the insured loss, and any dispute between the Owner and Contractor arising out of the settlement or allocation of the proceeds shall be resolved pursuant to Article 15. ~~Pending resolution of any dispute, the Owner may issue a Construction Change Directive for the reconstruction of the damaged or destroyed Work.~~

ARTICLE 12 UNCOVERING AND CORRECTION OF WORK

§ 12.1 Uncovering of Work

§ 12.1.1 If a portion of the Work is covered contrary to the Architect's ~~or Owner's~~ request or to requirements specifically expressed in the Contract Documents, it must, if requested in writing by the Architect ~~or Owner~~, be uncovered for the Architect's ~~or Owner's~~ examination and be replaced at the Contractor's expense without change in the Contract Time.

§ 12.1.2 If a portion of the Work has been covered that the Architect has not specifically requested to examine prior to its being covered, the Architect may request to see such Work and it shall be uncovered by the Contractor. If such Work is in accordance with the Contract Documents, the Contractor shall be entitled to an equitable adjustment to the Contract Sum and Contract Time as may be appropriate. If such Work is not in accordance with the Contract Documents, the costs of uncovering the Work, and the cost of correction, shall be at the Contractor's expense.

§ 12.2 Correction of Work

§ 12.2.1 Before Substantial Completion

The Contractor shall promptly correct Work rejected by the Architect ~~or for~~ failing to conform to the requirements of the Contract Documents, ~~whether~~ discovered before ~~or after~~ Substantial Completion and whether or not fabricated, installed or completed. Costs of correcting such rejected Work, including additional testing and inspections, the cost of uncovering and replacement, and compensation for the Architect's services and expenses made necessary thereby, shall be at the Contractor's expense.

§ 12.2.2 After Substantial Completion

§ 12.2.2.1 In addition to the Contractor's obligations under Section 3.5, if, within one year after the date of Substantial Completion of the Work or designated portion thereof or after the date for commencement of warranties established under Section 9.9.1, or by terms of any applicable special warranty required by the Contract Documents, any of the Work is found to be not in accordance with the requirements of the Contract Documents, the Contractor shall correct it promptly after receipt of notice from the Owner to do so, unless the Owner has previously given the Contractor a written acceptance of such condition. The Owner shall give such notice promptly after discovery of the condition. ~~During the one-year period for correction of Work, if the Owner fails to notify the Contractor and give the Contractor an opportunity to make the correction, the Owner waives the rights to require correction by the Contractor and to make a claim for breach of warranty.~~ If the Contractor fails to correct nonconforming Work within a reasonable time during that period after receipt of notice from the Owner or Architect, the Owner may correct it in accordance with Section 2.5.

§ 12.2.2.2 The one-year period for correction of Work shall be extended with respect to portions of Work first performed after Substantial Completion by the period of time between Substantial Completion and the actual completion of that portion of the Work.

§ 12.2.2.3 The one-year period for correction of Work shall not be extended by corrective Work performed by the Contractor pursuant to this Section 12.2.

§ 12.2.3 The Contractor shall remove from the site portions of the Work that are not in accordance with the requirements of the Contract Documents and are neither corrected by the Contractor nor accepted by the Owner.

§ 12.2.4 The Contractor shall bear the cost of correcting destroyed or damaged construction of the Owner or Separate Contractors, whether completed or partially completed, caused by the Contractor's correction or removal of Work that is not in accordance with the requirements of the Contract Documents.

§ 12.2.5 Nothing contained in this Section 12.2 shall be construed to establish a period of limitation with respect to other obligations the Contractor has under the Contract Documents. Establishment of the one-year period for correction of Work as described in Section 12.2.2 relates only to the specific obligation of the Contractor to correct the Work, and has no relationship to the time within which the obligation to comply with the Contract Documents may be sought to be enforced, nor to the time within which proceedings may be commenced to establish the Contractor's liability with respect to the Contractor's obligations other than specifically to correct the Work nor to Owner's right to make claim with respect to latent defects.

§ 12.3 Acceptance of Nonconforming Work

If the Owner prefers to accept Work that is not in accordance with the requirements of the Contract Documents, the Owner may do so instead of requiring its removal and correction, in which case the Contract Sum will be reduced as appropriate ~~and equitable~~. Such adjustment shall be effected whether or not final payment has been made.

ARTICLE 13 MISCELLANEOUS PROVISIONS

§ 13.1 Governing Law

The Contract shall be governed by the law of the place where the Project is located ~~excluding that jurisdiction's choice of law rules. If the parties have selected arbitration as the method of binding dispute resolution, the Federal Arbitration Act shall govern Section 15.4.~~

§ 13.1.2 Historical lack of enforcement of any local law shall not constitute a waiver of Contractor's responsibility for compliance with such law in a manner consistent with the Contract Documents unless and until the Contractor has received written consent for the waiver of such compliance from the Owner and the agency responsible for the local law enforcement.

§ 13.2 Successors and Assigns

§ 13.2.1 The Owner and Contractor respectively bind themselves, their partners, successors, assigns, and legal representatives to covenants, agreements, and obligations contained in the Contract Documents. ~~Except as provided in Section 13.2.2, neither party to the Contract shall assign the Contract as a whole without written consent of the other. If either party attempts to make an assignment without such consent, that party~~ Contractor may not assign its rights or obligation under this Contract. If Contractor attempts to make such an assignment, it shall nevertheless remain legally responsible for all obligations under the Contract.

~~§ 13.2.2 The Owner may, without consent of the Contractor, assign the Contract to a lender providing construction financing for the Project, if the lender assumes the Owner's rights and obligations under the Contract Documents. The Contractor shall execute all consents reasonably required to facilitate the assignment.~~

§ 13.3 Rights and Remedies

§ 13.3.1 Duties and obligations imposed by the Contract Documents and rights and remedies available thereunder shall be in addition to and not a limitation of duties, obligations, rights, and remedies otherwise imposed or available by law.

§ 13.3.2 No action or failure to act by the Owner, Architect, or Contractor shall constitute a waiver of a right or duty afforded them under the Contract, nor shall such action or failure to act constitute approval of or acquiescence in a breach thereunder, except as may be specifically agreed upon in writing.

§ 13.3.3 The invalidity of any part or provision of the Contract Documents shall not impair or affect in any manner the validity, enforceability or effect of the remaining parts and provisions of the Contract Documents.

§ 13.4 Tests and Inspections

§ 13.4.1 Tests, inspections, and approvals of portions of the Work shall be made as required by the Contract Documents and by applicable laws, statutes, ordinances, codes, rules, and regulations or lawful orders of public authorities. Unless otherwise provided, the Contractor shall make arrangements for such tests, inspections, and approvals with an independent testing laboratory or entity acceptable to the Owner, or with the appropriate public authority, and shall bear all related costs of tests, inspections, and approvals. The Contractor shall give the Architect timely notice of when and where tests and inspections are to be made so that the Architect may be present for such procedures. The Owner shall bear costs of tests, inspections, or approvals that do not become requirements until after bids are received or negotiations

concluded. The Owner shall directly arrange and pay for tests, inspections, or approvals where building codes or applicable laws or regulations so require.

§ 13.4.1.1 During construction, periodic building code compliance inspections are required and will be performed by the Owner's building department inspectors when requested by the Contractor. It is the responsibility of the Contractor to properly request such code inspections and no Work shall be covered until such Work has been inspected for code compliance.

§ 13.4.2 If the Architect, Owner, or public authorities having jurisdiction determine that portions of the Work require additional testing, inspection, or approval not included under Section 13.4.1, the Architect will, upon written authorization from the Owner, instruct the Contractor to make arrangements for such additional testing, inspection, or approval, by an entity assigned by the Owner, and the Contractor shall give timely notice to the Architect of when and where tests and inspections are to be made so that the Architect may be present for such procedures. Such costs, except as provided in Section 13.4.3, shall be at the Owner's expense.

§ 13.4.3 If procedures for testing, inspection, or approval under Sections 13.4.1 and 13.4.2 reveal failure of the portions of the Work to comply with requirements established by the Contract Documents, all costs made necessary by such failure, including those of repeated procedures and compensation for the Architect's services and expenses, shall be at the Contractor's expense, including the cost of retesting for verification of compliance if necessary, until the Architect certifies that the Work in question does comply with the requirements of the Contract Documents, and all such costs shall not be included in computing the Contract Sum.

§ 13.4.4 Required certificates of testing, inspection, or approval shall, unless otherwise required by the Contract Documents, be secured by the Contractor and promptly delivered to the Architect.

§ 13.4.5 If the Architect is to observe tests, inspections, or approvals required by the Contract Documents, the Architect will do so promptly and, where practicable, at the normal place of testing.

§ 13.4.6 Tests or inspections conducted pursuant to the Contract Documents shall be made promptly to avoid unreasonable delay in the Work.

§ 13.5 Interest

Payments due and unpaid under the Contract Documents shall bear interest from the date payment is due at the rate the parties agree upon in writing or, in the absence thereof, at the legal rate prevailing from time to time at the place where the Project is located.

§ 13.6 Time Limits on Claims

The Owner and Contractor shall commence all claims and causes of action, whether in contract, tort, breach of warranty or otherwise, against the other arising out of or related to the Contract in accordance with the requirements of the final dispute resolution method selected in the Agreement within the time period specified by applicable law.

§ 13.7 Financial Disclosures

§ 13.7.1 During the term of this Contract, Contractor covenants and agrees that it will keep adequate books and records of accounts in accordance with Generally Accepted Accounting Principles (GAAP). Contractor further covenants and agrees that, upon request from Owner, Contractor shall provide to Owner financial statements of Contractor, including current income and expense statements of Contractor, consolidated balance sheets signed by a financial officer of Contractor, and audited reports provided to Contractor's Surety, audited financial statements certified by a Certified Public Accountant concerning the financial affairs of Contractor and all affiliates of Contractor, and such other financial information requested by Owner. All such financial information shall comply with GAAP.

§ 13.7.2 In the event the Contractor becomes insolvent and/or fails to pay its current obligations when they become due, Contractor shall so advise Owner of such situation. Contractor hereby authorizes its sureties, lenders, financial institutions and other third parties to release to Owner financial information requested by Owner, including, but not limited to, the financial information described in the preceding Section 13.7.1.

§ 13.8 Waiver of Jury Trial

All parties hereby waive any and all right to any trial by jury in any action or proceeding arising directly or indirectly hereunder.

ARTICLE 14 TERMINATION OR SUSPENSION OF THE CONTRACT

§ 14.1 Termination by the Contractor

§ 14.1.1 The Contractor may terminate the Contract if the Work is stopped for a period of 60 consecutive days through no act or fault of the Contractor, a Subcontractor, a Sub-subcontractor, their agents or employees, or any other persons or entities performing portions of the Work, for any of the following reasons:

- .1 Issuance of an order of a court or other public authority having jurisdiction that requires all Work to be stopped;
- .2 An act of government, such as a declaration of national emergency, that requires all Work to be stopped; or
- .3 Because the Architect has not issued a Certificate for Payment and has not notified the Contractor of the reason for withholding certification as provided in Section 9.4.1, or because the Owner has not made payment on a Certificate for Payment within the time stated in the Contract Documents; ~~or~~
- ~~.4 The Owner has failed to furnish to the Contractor reasonable evidence as required by Section 2.2.~~

§ 14.1.2 The Contractor may terminate the Contract if, through no act or fault of the Contractor, a Subcontractor, a Sub-subcontractor, their agents or employees, or any other persons or entities performing portions of the Work, repeated suspensions, delays, or interruptions of the entire Work by the Owner as described in Section 14.3, constitute in the aggregate more than 100 percent of the total number of days scheduled for completion, or 120 days in any 365-day period, whichever is less.

§ 14.1.3 If one of the reasons described in Section 14.1.1 or 14.1.2 exists, the Contractor may, upon seven days' notice to the Owner and Architect, terminate the Contract and recover from the Owner payment for Work executed, ~~as well as reasonable overhead and profit on Work not executed,~~ and costs incurred by reason of such termination excluding profit on unexecuted Work.

§ 14.1.4 If the Work is stopped for a period of 60 consecutive days through no act or fault of the Contractor, a Subcontractor, a Sub-subcontractor, or their agents or employees or any other persons or entities performing portions of the Work because the Owner has repeatedly failed to fulfill the Owner's obligations under the Contract Documents with respect to material matters important to the progress of the Work, the Contractor may, upon seven additional days' written notice to the Owner and the Architect, terminate the Contract and recover from the Owner as provided in Section 14.1.3.

§ 14.2 Termination by the Owner for Cause

§ 14.2.1 The Owner may terminate the Contract if the Contractor

- .1 repeatedly refuses or fails to supply enough properly skilled workers or proper materials;
- .2 fails to make payment to Subcontractors or suppliers in accordance with the respective agreements between the Contractor and the Subcontractors or suppliers;
- .3 repeatedly disregards applicable laws, statutes, ordinances, codes, rules and regulations, or lawful orders of a public authority; ~~or~~
- .4 otherwise is guilty of substantial breach of a provision of the Contract Documents; or
- .5 is adjudged a bankrupt or insolvent, or if it makes a general assignment for the benefit of its creditors, or if a trustee or receiver is appointed for the Contractor or for any of its property, or if it files a petition to take advantage of any debtor's loss, or to reorganize under the bankruptcy or similar laws.

§ 14.2.2 When any of the reasons described in Section 14.2.1 exist, ~~and upon certification by the Architect that sufficient cause exists to justify such action,~~ the Owner may, without prejudice to any other rights or remedies of the Owner and after giving the Contractor and the Contractor's surety, if any, seven days' notice, terminate employment of the Contractor and may, subject to any prior rights of the surety:

- .1 Exclude the Contractor from the site and take possession of all materials, equipment, tools, and construction equipment and machinery thereon owned by the Contractor;
- .2 Accept assignment of subcontracts pursuant to Section 5.4; and

Initial

AIA Document A201-2017, General Conditions of the Contract for Construction (as modified by Licensee)

School Board of Volusia County Florida

Contractor

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- .3 Finish the Work by whatever reasonable method the Owner may deem expedient. Upon written request of the Contractor, the Owner shall furnish to the Contractor a detailed accounting of the costs incurred by the Owner in finishing the Work

§ 14.2.3 When the Owner terminates the Contract for one of the reasons stated in Section 14.2.1, the Contractor shall not be entitled to receive further payment until the Work is finished.

§ 14.2.4 If the unpaid balance of the Contract Sum exceeds costs of finishing the Work, including compensation for the Architect's services and expenses made necessary thereby, and other damages incurred by the Owner and not expressly waived, such excess shall be paid to the Contractor. If such costs and damages exceed the unpaid balance, the Contractor shall pay the difference to the Owner. The amount to be paid to the Contractor or Owner, as the case may be, shall be certified by the ~~Initial Decision Maker Architect~~ Architect, upon application, and this obligation for payment shall survive termination of the Contract.

§ 14.3 Suspension by the Owner for Convenience

§ 14.3.1 The Owner may, without cause, order the Contractor in writing to suspend, delay or interrupt the Work, in whole or in part for such period of time as the Owner may determine.

§ 14.3.2 The Contract Sum and Contract Time shall be adjusted for increases in the direct cost and time caused by suspension, delay, or interruption under Section 14.3.1. Adjustment of the Contract Sum shall not include profit. No adjustment shall be made to the extent

- .1 that performance is, was, or would have been, so suspended, delayed, or interrupted, by another cause for which the Contractor is responsible; or
- .2 that an adjustment is made or denied under another provision of the Contract.

§ 14.4 Termination by the Owner for Convenience

§ 14.4.1 The Owner may, at any time, terminate the Contract for the Owner's convenience and without cause.

§ 14.4.2 Upon receipt of notice from the Owner of such termination for the Owner's convenience, the Contractor shall

- .1 cease operations as directed by the Owner in the notice;
- .2 take actions necessary, or that the Owner may direct, for the protection and preservation of the Work; and
- .3 except for Work directed to be performed prior to the effective date of termination stated in the notice, terminate all existing subcontracts and purchase orders and enter into no further subcontracts and purchase orders.

§ 14.4.3 In case of such termination for the Owner's convenience, the Owner shall pay the Contractor for Work properly executed; costs incurred by reason of the termination, including costs attributable to termination of Subcontracts; ~~and the termination fee, if any, set forth in the Agreement~~ along with reasonable overhead and profit on the Work performed to date, but in no event shall the Contractor be entitled to anticipated profits on unperformed Work.

ARTICLE 15 CLAIMS AND DISPUTES

§ 15.1 Claims

§ 15.1.1 Definition

A Claim is a demand or assertion by one of the parties seeking, as a matter of right, payment of money, a change in the Contract Time, or other relief with respect to the terms of the Contract. The term "Claim" also includes other disputes and matters in question between the Owner and Contractor arising out of or relating to the Contract. The responsibility to substantiate Claims shall rest with the party making the Claim. This Section 15.1.1 does not require the Owner to file a Claim in order to impose liquidated damages in accordance with the Contract Documents.

§ 15.1.2 Time Limits on Claims

Any statutes of limitations shall commence to run, and all causes of action shall be deemed to have accrued, in accordance with applicable Florida law. The Owner and Contractor shall commence all Claims and causes of action against the other and arising out of or related to the Contract, whether in contract, tort, breach of warranty or otherwise, in accordance with the requirements of the binding dispute resolution method selected in the Agreement and within the period specified by applicable law, but in any case not more than 10 years after the date of Substantial Completion of the

~~Work. The Owner and Contractor waive all Claims and causes of action not commenced in accordance with this Section 15.1.2.~~

§ 15.1.3 Notice of Claims

~~§ 15.1.3.1 Claims by either party must be made within 21 days after occurrence of the event giving rise to such Claim or within 21 days after the claimant first recognizes the condition giving rise to the Claim, whichever is later. Claims must be made by written notice to the Architect and the other party. Claims must specifically detail all facts and issues substantiating the Claim, including all costs and expenses incurred. Contractor Claims must be made in writing and timely filed in accordance with the specific requirements of the Contract Documents and under no circumstances whatsoever be based upon actual or verbal notice or lack of prejudice to the other party. An additional Contractor Claim after the initial Claim has been implemented by Change Order will not be considered unless submitted in a timely manner. The Owner or Contractor, where the condition giving rise to the Claim is first discovered prior to expiration of the period for correction of the Work set forth in Section 12.2.2, shall be initiated by notice to the other party and to the Initial Decision Maker with a copy sent to the Architect, if the Architect is not serving as the Initial Decision Maker. Claims by either party under this Section 15.1.3.1 shall be initiated within 21 days after occurrence of the event giving rise to such Claim or within 21 days after the claimant first recognizes the condition giving rise to the Claim, whichever is later.~~

§ 15.1.3.2 Claims by either the Owner or Contractor, where the condition giving rise to the Claim is first discovered after expiration of the period for correction of the Work set forth in Section 12.2.2, shall be initiated by written notice to the other party. In such event, no decision by the ~~Initial Decision Maker~~ Architect is required.

§ 15.1.4 Continuing Contract Performance

§ 15.1.4.1 Pending final resolution of a Claim, except as otherwise agreed in writing or as provided in Section 9.7 and Article 14, the Contractor shall proceed diligently with performance of the Contract and the Owner shall continue to make payments in accordance with the Contract Documents.

§ 15.1.4.2 The Contract Sum and Contract Time shall be adjusted in accordance with the ~~Initial Decision Maker's~~ Architect's decision, subject to the right of either party to proceed in accordance with this Article 15. The Architect will issue Certificates for Payment accordingly ~~in accordance with the decision of the Initial Decision Maker.~~

§ 15.1.5 Claims for Additional Cost

If the Contractor wishes to make a Claim for an increase in the Contract Sum, notice as provided in Section 15.1.3 shall be given before proceeding to execute the portion of the Work that is the subject of the Claim. Prior notice is not required for Claims relating to an emergency endangering life or property arising under Section 10.4.

§ 15.1.5.1 If the Contractor believes additional cost is involved for reasons including but not limited to (1) a written interpretation from the Architect, (2) an order by the Owner to stop the Work where the Contractor was not at fault, (3) a written order for a minor change in the Work issued by the Architect, (4) failure of payment by the Owner, (5) termination of the Contract by the Owner, (6) Owner's suspension or (7) other reasonable grounds, Claim shall be filed in accordance with this Section 15.1.

§ 15.1.6 Claims for Additional Time

§ 15.1.6.1 If the Contractor wishes to make a Claim for an increase in the Contract Time, notice as provided in Section 15.1.3 shall be given. The Contractor's Claim shall include an estimate of cost and of probable effect of delay on progress of the Work. In the case of a continuing delay, only one Claim is necessary.

§ 15.1.6.2 If adverse weather conditions are the basis for a Claim for additional time, such Claim shall be documented by data substantiating that weather conditions were abnormal for the period of time, could not have been reasonably anticipated, and had an adverse effect on the scheduled construction.

§ 15.1.7 Waiver of Claims for Consequential Damages

The Contractor and Owner waive Claims against each other for consequential damages arising out of or relating to this Contract. This mutual waiver includes:

- .1 damages incurred by the Owner for rental expenses, for losses of use, income, profit, financing, business and reputation, and for loss of management or employee productivity or of the services of such persons; and
- .2 damages incurred by the Contractor for principal office expenses including the compensation of personnel stationed there, for losses of financing, business and reputation, and for loss of profit, except anticipated profit arising directly from the Work.

This mutual waiver is applicable, without limitation, to all consequential damages due to either party's termination in accordance with Article 14. Nothing contained in this Section 15.1.7 shall be deemed to preclude assessment of liquidated damages, when applicable, in accordance with the requirements of the Contract Documents.

§ 15.2 Initial Decision

§ 15.2.1 Decision of the Architect. Claims, including those alleging an error or omission by the Architect but excluding those arising under Section 10.3 shall be referred initially to the Architect for decision. An initial decision by the Architect shall be required as a condition precedent to mediation or litigation of all Claims between the Contractor and Owner arising prior to the date final payment is due, unless 30 days have passed after the Claim has been referred to the Architect with no decision having been rendered by the Architect. The Architect will not decide disputes between the Contractor and persons or entities other than the Owner. Claims, excluding those where the condition giving rise to the Claim is first discovered after expiration of the period for correction of the Work set forth in Section 12.2.2 or arising under Sections 10.3, 10.4, and 11.5, shall be referred to the Initial Decision Maker for initial decision. The Architect will serve as the Initial Decision Maker, unless otherwise indicated in the Agreement. Except for those Claims excluded by this Section 15.2.1, an initial decision shall be required as a condition precedent to mediation of any Claim. If an initial decision has not been rendered within 30 days after the Claim has been referred to the Initial Decision Maker, the party asserting the Claim may demand mediation and binding dispute resolution without a decision having been rendered. Unless the Initial Decision Maker and all affected parties agree, the Initial Decision Maker will not decide disputes between the Contractor and persons or entities other than the Owner.

§ 15.2.2 The Initial Decision Maker Architect will review Claims and within ten days of the receipt of a Claim take one or more of the following actions: (1) request additional supporting data from the claimant or a response with supporting data from the other party, (2) reject the Claim in whole or in part, (3) approve the Claim, (4) suggest a compromise, or (5) advise the parties that the Initial Decision Maker Architect is unable to resolve the Claim if the Initial Decision Maker Architect lacks sufficient information to evaluate the merits of the Claim or if the Initial Decision Maker Architect concludes that, in the Architect's sole discretion, it would be inappropriate for the Initial Decision Maker Architect to resolve the Claim.

§ 15.2.3 In evaluating Claims, the Initial Decision Maker Architect may, but shall not be obligated to, consult with or seek information from either party or from persons with special knowledge or expertise who may assist the Initial Decision Maker Architect in rendering a decision. The Initial Decision Maker Architect may request the Owner to authorize retention of such persons at the Owner's expense.

§ 15.2.4 If the Initial Decision Maker Architect requests a party to provide a response to a Claim or to furnish additional supporting data, such party shall respond, within ten days after receipt of the request, and shall either (1) provide a response on the requested supporting data, (2) advise the Initial Decision Maker Architect when the response or supporting data will be furnished, or (3) advise the Initial Decision Maker Architect that no supporting data will be furnished. Upon receipt of the response or supporting data, if any, the Initial Decision Maker Architect will either reject or approve the Claim in whole or in part.

§ 15.2.5 The Architect will approve or reject Claims by written decision, which shall state the reasons therefore and which shall notify the parties of any change in the Contract Sum or Contract Time or both. The approval or rejection of a Claim by the Architect shall be final and binding on the parties but subject to mediation and litigation. The Initial Decision Maker will render an initial decision approving or rejecting the Claim, or indicating that the Initial Decision Maker is unable to resolve the Claim. This initial decision shall (1) be in writing; (2) state the reasons therefor; and (3) notify the parties and the Architect, if the Architect is not serving as the Initial Decision Maker, of any change in the Contract Sum or Contract Time or both. The initial decision shall be final and binding on the parties but subject to mediation and, if the parties fail to resolve their dispute through mediation, to binding dispute resolution.

§ 15.2.6 ~~Either party may file for mediation of an initial decision at any time, subject to the terms of Section 15.2.6.1.~~

§ 15.2.6.1 ~~Either party may, within 30 days from the date of receipt of an initial decision, demand in writing that the other party file for mediation. If such a demand is made and the party receiving the demand fails to file for mediation within 30 days after receipt thereof, then both parties waive their rights to mediate or pursue binding dispute resolution proceedings with respect to the initial decision.~~

§ 15.2.7 In the event of a Claim against the Contractor, the Owner may, but is not obligated to, notify the surety, if any, of the nature and amount of the Claim. If the Claim relates to a possibility of a Contractor's default, the Owner may, but is not obligated to, notify the surety and request the surety's assistance in resolving the controversy.

§ 15.2.8 If a Claim relates to or is the subject of a mechanic's lien, the party asserting such Claim may proceed in accordance with applicable law to comply with the lien notice or filing deadlines.

§ 15.3 Mediation

§ 15.3.1 Claims, disputes, or other matters in controversy arising out of or related to the Contract, ~~except those waived as provided for in Sections 9.10.4, 9.10.5 and 15.1.7,~~ shall be subject to mediation as a condition precedent to binding dispute resolution.

§ 15.3.2 ~~Claims, disputes or other matters in question between the parties to this Agreement shall be first subject to pre-suit mediation prior to the filing of any legal claims or litigation. Completion of pre-suit mediation is a condition precedent to litigation. The obligation to mediate is a material and essential provision of the Agreement. The parties shall endeavor to resolve their Claims by mediation which, unless the parties mutually agree otherwise, shall be administered by the American Arbitration Association in accordance with its Construction Industry Mediation Procedures in effect on the date of the Agreement. A request for mediation shall be made in writing, delivered to the other party to the Contract, and filed with the person or entity administering the mediation. The request may be made concurrently with the filing of binding dispute resolution proceedings but, in such event, mediation shall proceed in advance of binding dispute resolution proceedings, which shall be stayed pending mediation for a period of 60 days from the date of filing, unless stayed for a longer period by agreement of the parties or court order. If an arbitration is stayed pursuant to this Section 15.3.2, the parties may nonetheless proceed to the selection of the arbitrator(s) and agree upon a schedule for later proceedings.~~

§ 15.3.3 Either party may, within 30 days from the date that mediation has been concluded without resolution of the dispute or 60 days after mediation has been demanded without resolution of the dispute, demand in writing that the other party file for binding dispute resolution. If such a demand is made and the party receiving the demand fails to file for binding dispute resolution within 60 days after receipt thereof, then both parties waive their rights to binding dispute resolution proceedings with respect to the initial decision.

§ 15.3.4 Unless otherwise agreed in writing, the Contractor shall carry on the Work and maintain its progress during any mediation or litigation, and the Owner shall continue to make payments to the Contractor in accordance with the Contract Documents. The parties shall share the mediator's fee and any filing fees equally. The mediation shall be held in the place where the Project is located, unless another location is mutually agreed upon. Agreements reached in mediation shall be enforceable as settlement agreements in any court having jurisdiction thereof.

§ 15.3.5 Either party may initiate a mediation preceding by a request in writing to the other party within a reasonable time after the claim, dispute or other matter in question has arisen or as provided in subparagraph 15.3.1, but in no event after the expiration of the applicable statute of limitations.

§ 15.3.6 The parties shall endeavor in good faith to mutually agree upon an acceptable mediator. In the event the parties have not agreed upon a mediator within thirty (30) days of the request for mediation, the Orlando office of the American Arbitration Association, upon the written request of either party, shall appoint a mediator from its pool of approved mediators.

§ 15.3.7 Unless otherwise mutually agreed, the mediation shall be held in accordance with the Construction Industry Mediation Rules of the American Arbitration Association currently in effect, each party to bear its own fees, costs and expenses.

§ 15.3.8 In the event that pre-suit mediation is unsuccessful, all claims, disputes or other matters in question shall be resolved in the Circuit Courts of Volusia County Florida. The Parties, including the Contractor's Surety, waive Venue and Jurisdiction of any Federal Court and expressly waive Trial by Jury.

§ 15.3.9 All references to Arbitration in the Contract Documents are deleted.

§ 15.4 Arbitration

~~§ 15.4.1 If the parties have selected arbitration as the method for binding dispute resolution in the Agreement, any Claim subject to, but not resolved by, mediation shall be subject to arbitration which, unless the parties mutually agree otherwise, shall be administered by the American Arbitration Association in accordance with its Construction Industry Arbitration Rules in effect on the date of the Agreement. The Arbitration shall be conducted in the place where the Project is located, unless another location is mutually agreed upon. A demand for arbitration shall be made in writing, delivered to the other party to the Contract, and filed with the person or entity administering the arbitration. The party filing a notice of demand for arbitration must assert in the demand all Claims then known to that party on which arbitration is permitted to be demanded.~~

~~§ 15.4.1.1 A demand for arbitration shall be made no earlier than concurrently with the filing of a request for mediation, but in no event shall it be made after the date when the institution of legal or equitable proceedings based on the Claim would be barred by the applicable statute of limitations. For statute of limitations purposes, receipt of a written demand for arbitration by the person or entity administering the arbitration shall constitute the institution of legal or equitable proceedings based on the Claim.~~

~~§ 15.4.2 The award rendered by the arbitrator or arbitrators shall be final, and judgment may be entered upon it in accordance with applicable law in any court having jurisdiction thereof.~~

~~§ 15.4.3 The foregoing agreement to arbitrate and other agreements to arbitrate with an additional person or entity duly consented to by parties to the Agreement, shall be specifically enforceable under applicable law in any court having jurisdiction thereof.~~

§ 15.4.4 Consolidation or Joinder

~~§ 15.4.4.1 Subject to the rules of the American Arbitration Association or other applicable arbitration rules, either party may consolidate an arbitration conducted under this Agreement with any other arbitration to which it is a party provided that (1) the arbitration agreement governing the other arbitration permits consolidation, (2) the arbitrations to be consolidated substantially involve common questions of law or fact, and (3) the arbitrations employ materially similar procedural rules and methods for selecting arbitrator(s).~~

~~§ 15.4.4.2 Subject to the rules of the American Arbitration Association or other applicable arbitration rules, either party may include by joinder persons or entities substantially involved in a common question of law or fact whose presence is required if complete relief is to be accorded in arbitration, provided that the party sought to be joined consents in writing to such joinder. Consent to arbitration involving an additional person or entity shall not constitute consent to arbitration of any claim, dispute or other matter in question not described in the written consent.~~

~~§ 15.4.4.3 The Owner and Contractor grant to any person or entity made a party to an arbitration conducted under this Section 15.4, whether by joinder or consolidation, the same rights of joinder and consolidation as those of the Owner and Contractor under this Agreement.~~



CONTRACTOR E-VERIFY AFFIDAVIT
SCHOOL BOARD OF VOLUSIA COUNTY FLORIDA
FAC DOCUMENT 639

PURSUANT TO STATE OF FLORIDA, OFFICE OF THE GOVERNOR, EXECUTIVE ORDER 11-116
(Superseding Executive Order 11-02) AND SECTION 448.095 F.S.

Executive Order 11-116 requires all agencies under the direction of the Governor to verify the employment eligibility of all new employees through the U.S. Department of Homeland Security's E-Verify system. Further, in conjunction with Section 448.095 F.S., the Contractor is directed to include as a condition of all contracts for the provision of goods or services to the School Board of Volusia County in excess of nominal value, an express requirement that the Contractor utilizes the U.S. Department of Homeland Security's E-Verify system to verify the employment eligibility of all new employees hired by the Contractor during the contract term, and an express requirement that the Contractor include in such subcontracts the requirement that subcontractors performing work or providing services pursuant to the state contract utilize the E-Verify system to verify the employment eligibility of all new employees hired by the subcontractor during the contract term.

In accordance with Executive Order 11-116 and Section 448.095 F.S. the School Board of Volusia County Florida requires all contractors who are awarded state funded contracts to verify newly hired employees using the U.S. Department of Homeland Security's E-Verify system. It is the responsibility of the awarded Contractor to insure compliance. To enroll in the E-Verify system employers should visit www.e-verify.gov.

By affixing your signature below you hereby affirm that you will comply with all applicable E-Verify requirements for the following project:

Facility Name: _____ Project No.: _____

Project Name: _____

The undersigned has hereunto set his/her hand this _____ day of _____, _____

(Print or Type Name, Title) (Signature of Affiant)

(Federal Employer ID Number – FEIN) (E-Verify Number)

(Firm Name)

(Firm Address) (City) (State) (Zip Code)

NOTARY PUBLIC

STATE OF FLORIDA, COUNTY OF _____

Before me, the undersigned authority, personally appeared _____
known to me to be the person described herein and who executed the foregoing instrument and
acknowledged before me executed the same.

IN WITNESS WHEREOF, I have hereunto set my hand and official seal this

_____ day of _____, _____

(Notary Seal)

My commission expires: _____ (Notary Signature)

(Date) (Print, type or stamp name of notary public)

☐ Personally known to me ☐ Produced ID _____
(Type of ID, if applicable)



PERFORMANCE AND PAYMENT BOND
SCHOOL BOARD OF VOLUSIA COUNTY FLORIDA
FAC DOCUMENT 640

PUBLIC CONSTRUCTION BOND

Bond No. _____

BY THIS BOND, WE (Contractor Firm) _____, (Physical Address) _____, (Phone) _____, a corporation, (Surety Firm) _____, (Physical Address) _____, (Phone) _____, as Surety, are bound to (Owner) School Board of Volusia County Florida, (Address) 200 North Clara Avenue, DeLand Florida 32720, (Phone) (386) 734-7190, herein called Owner, in the sum of _____ (\$_____) for payment of which we bind ourselves, our heirs, personal representatives, successors, and assigns, jointly and severally.

THE CONDITION OF THIS BOND is that if Principal:

1. Performs the contract dated _____, between Principal and Owner for construction of (Facility Name) _____, (Address) _____, (Project Name) _____, (Contract/Project No.) _____, the contract being made a part of this bond by reference, at the times and in the manner prescribed in the contract; and
2. Promptly makes payments to all claimants, as defined in Section 255.05(1), Florida Statutes, supplying Principal with labor, materials, or supplies, used directly or indirectly by Principal, in the prosecution of the work provided for in the contract; and
3. Pays Owner all losses, damages, expenses, costs, and attorney's fees, including appellate proceedings, that Owner sustains because of a default by Principal under the contract; and
4. Performs the guarantee of all work and materials furnished under the contract for the time specified in the contract, then this bond is void; otherwise it remains in full force.

Any action instituted by a claimant under this bond for payment must be in accordance with the notice and time limitation provisions in Section 255.05(2), Florida Statutes.

Any changes in or under the contract documents and compliance or noncompliance with any formalities connected with the contract or the changes does not affect Surety's obligation under this bond.

DATED ON _____ day of _____, _____

Signed, sealed and delivered in the presence of:

As to President / Principal

(Print/Type Name of Witness to Contractor)

By:

President / Principal

(Print/Type Name of Contractor)

By:

Attorney-in-Fact

(Print/Type Name of Attorney-in-Fact)

As to Surety

(Print/Type Name of Witness to Surety)

Florida Resident Agent

(Print/Type Name of Florida Resident Agent)

NOTE: If both Principal and Surety are corporations, the respective corporate seals should be affixed and attached. Power-of- Attorney to be attached.

APPROVED

Signature

Printed Name

Florida Bar Number

Approved as to form only and for reliance
only by the School Board of Volusia
County.



CONTRACTOR'S DIRECT MATERIAL PURCHASE AFFIDAVIT
SCHOOL BOARD OF VOLUSIA COUNTY FLORIDA
FAC DOCUMENT 641

STATE OF FLORIDA
COUNTY OF VOLUSIA

COMES NOW _____, and after being duly sworn, does depose and state as follows:

1. My name is: _____, I am employed in the position of *(title)* _____ for *(Contractor)* _____.
2. I am over the age of eighteen years and I have personal knowledge of the facts stated herein.
3. All of the materials which the School Board of Volusia County Florida has purchased directly for the project known as *(Facility Name)* _____, *(Project Name)* _____, *(VCS Project No.)* _____, and pursuant to AIA Document A201-2017, Article 3.4.5 have been purchased from subcontractors, suppliers or vendors who provided bids to the Contractor for this Project and whose bids were relied upon by the Contractor in submitting its bid to Volusia County Schools.
4. All materials purchased directly by Volusia County Schools from the Contractor's subcontractors, suppliers and vendors were purchased at or below the price originally negotiated by the Contractor.

FURTHER AFFIANT SAYETH NAUGHT _____

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

Signature of Notary Public, State of Florida

Print, Type or Stamp Commissioned
Name of Notary Public

Personally Known ☐ or Produced Identification ☐

Type of I. D. Produced _____



CONTRACTOR'S ACKNOWLEDGMENT FORM

SCHOOL BOARD OF VOLUSIA COUNTY FLORIDA

FAC DOCUMENT 642

(Asbestos Survey)

TO: Volusia County Schools
Facilities Design and Construction
3750 Olson Drive
Daytona Beach, Florida 32124

I acknowledge that I have been given access to and have read the Asbestos Survey, Management Plan, Re-inspection Report (if applicable) and/or Certificate of Final Inspection (if applicable).

Facility Name: _____

Address: _____

☐ Not applicable - Reason: _____

I further acknowledge that I must cease work and notify the project manager and environmental specialist, 3750 Olson Drive, Daytona Beach Florida 32124, telephone number (386) 947-8786, in the event of encountering materials not previously identified by the aforementioned reports. In addition, I understand that any questions regarding the aforementioned reports should be directed to the environmental specialist as stated above.

My reason for being in the school is: _____

My signature is acknowledgement of the above.

(Signature) Date: _____

Printed Name: _____

Firm's Name: _____

Address: _____

Telephone: _____

AIA Document G702™ – 1992

Application and Certificate for Payment

TO OWNER:	PROJECT: G Series Form	APPLICATION NO: 001	Distribution to:
		PERIOD TO:	OWNER: ☐
FROM	VIA	CONTRACT FOR: General Construction	ARCHITECT: ☐
CONTRACTOR:	ARCHITECT:	CONTRACT DATE:	CONTRACTOR: ☐
		PROJECT NOS: / /	FIELD: ☐
			OTHER: ☐

CONTRACTOR'S APPLICATION FOR PAYMENT

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

1. ORIGINAL CONTRACT SUM	\$0.00
2. NET CHANGE BY CHANGE ORDERS	\$0.00
3. CONTRACT SUM TO DATE (Line 1 ± 2)	\$0.00
4. TOTAL COMPLETED & STORED TO DATE (Column G on G703)	\$0.00
5. RETAINAGE:	
a. 0 % of Completed Work (Column D + E on G703)	\$0.00
b. 0 % of Stored Material (Column F on G703)	\$0.00
Total Retainage (Lines 5a + 5b or Total in Column I of G703)	\$0.00
6. TOTAL EARNED LESS RETAINAGE	\$0.00
(Line 4 Less Line 5 Total)	
7. LESS PREVIOUS CERTIFICATES FOR PAYMENT	\$0.00
(Line 6 from prior Certificate)	
8. CURRENT PAYMENT DUE	\$0.00
9. BALANCE TO FINISH, INCLUDING RETAINAGE	\$0.00
(Line 3 less Line 6)	

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

CONTRACTOR:

By: _____ Date: _____

State of: _____

County of: _____

Subscribed and sworn to before
me this _____ day of _____

Notary Public:

My Commission expires: _____

ARCHITECT'S CERTIFICATE FOR PAYMENT

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

AMOUNT CERTIFIED \$0.00

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

ARCHITECT:

By: _____ Date: _____

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

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

AIA Document, G702™–1992, Application and Certification for Payment, or G736™–2009, Project Application and Project Certificate for Payment, Construction Manager as Adviser Edition, containing Contractor's signed certification is attached.
In tabulations below, amounts are in US dollars.
Use Column I on Contracts where variable retainage for line items may apply.

APPLICATION NO:

001

APPLICATION DATE:

PERIOD TO:

ARCHITECT'S PROJECT NO:

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PARTIAL RECEIPT AND RELEASE
PROGRESS PAYMENT
SCHOOL BOARD OF VOLUSIA COUNTY FLORIDA
FAC DOCUMENT 655

The undersigned _____, of _____ was heretofore on _____ day of _____, _____ awarded a contract by the SCHOOL BOARD OF VOLUSIA COUNTY FLORIDA, to furnish all of the materials and labor in the construction project entitled (Facility Name) _____, (Address) _____, (Project Name) _____, (VCS Project No.) _____, in accordance with the plans and specifications therefore, as prepared by _____, Architect, and the undersigned has completed said work and fully complied with said contract and has heretofore received the sum of _____, (\$_____) as progress payment thereon.

That the undersigned has this date received from the SCHOOL BOARD OF VOLUSIA COUNTY FLORIDA, the sum representing the balance due as of this progress payment, under terms of said contract, and certifies that said work has been performed in accordance with terms thereof and that, as Contractor, has received monies due and to become due to thereunder for work performed and materials furnished in connection with said work, and that, as Contractor, has paid in full all persons furnishing labor and/or materials in connection therewith, including all subcontractors and suppliers, and that there are no unpaid bills for labor performed or materials furnished in connection with said Work or improvements to date.

That the undersigned, for value received, does hereby forever release and discharge the said building and premises as described in said contract, from any and all liens, claims or demands whatsoever that, as Contractor, has or may have for work performed or materials furnished in connection therewith, or for work performed or materials furnished thereon by any subcontractor or supplier, and will hold the SCHOOL BOARD OF VOLUSIA COUNTY FLORIDA, safe and harmless from any and all loss and liability arising or to arise by reason of any unpaid bills for labor performed or materials furnished on said building or premises in connection with said work or improvements as of this progress payment.

IN WITNESS WHEREOF,

the undersigned has hereunto set hand and seal this _____ day of _____, _____
Witnessed by:

_____ (Witness Signature)	_____ (Contractor Signature) (SEAL)
_____ (Print or Type Name, Title)	_____ (Print or Type Name, Title)

STATE OF FLORIDA, COUNTY OF _____

Before me, the undersigned authority, personally appeared _____
to me well-known and known to me to be the person described in and who executed the foregoing instrument, and acknowledged before me executed the same.

IN WITNESS WHEREOF, I have hereunto set my hand and official seal this

_____ day of _____, _____

(Notary Seal)

My commission expires:

Notary Public, State of Florida

_____ (Date)	_____ (Print, type or stamp name of notary public)
-----------------	---

☐ Personally known to me ☐ Produced ID

(Type of ID, if applicable)

AIA[®] Document G707A[™] – 1994

Consent of Surety to Reduction in or Partial Release of Retainage

PROJECT: <i>(Name and address)</i>	ARCHITECT'S PROJECT NUMBER:	OWNER: ☐
	CONTRACT FOR:	ARCHITECT: ☐
TO OWNER: <i>(Name and address)</i>	CONTRACT DATED:	CONTRACTOR: ☐
		SURETY: ☐
		OTHER: ☐

In accordance with the provisions of the Contract between the Owner and the Contractor as indicated above, the
(Insert name and address of Surety)

on bond of
(Insert name and address of Contractor)

, SURETY,

hereby approves the reduction in or partial release of retainage to the Contractor as follows:

, CONTRACTOR,

The Surety agrees that such reduction in or partial release of retainage to the Contractor shall not relieve the Surety of any of its obligations to
(Insert name and address of Owner)

as set forth in said Surety's bond.

, OWNER,

IN WITNESS WHEREOF, the Surety has hereunto set its hand on this date:
(Insert in writing the month followed by the numeric date and year.)

(Surety)

(Signature of authorized representative)

Attest:
(Seal):

(Printed name and title)



AIA[®] Document G707[™] – 1994

Consent Of Surety to Final Payment

PROJECT: <i>(Name and address)</i>	ARCHITECT'S PROJECT NUMBER:	OWNER: ☐
	CONTRACT FOR:	ARCHITECT: ☐
TO OWNER: <i>(Name and address)</i>	CONTRACT DATED:	CONTRACTOR: ☐
		SURETY: ☐
		OTHER: ☐

In accordance with the provisions of the Contract between the Owner and the Contractor as indicated above, the
(Insert name and address of Surety)

on bond of
(Insert name and address of Contractor)

, SURETY,

hereby approves of the final payment to the Contractor, and agrees that final payment to the Contractor shall not relieve the Surety of any of its obligations to
(Insert name and address of Owner)

, CONTRACTOR,

as set forth in said Surety's bond.

, OWNER,

IN WITNESS WHEREOF, the Surety has hereunto set its hand on this date:
(Insert in writing the month followed by the numeric date and year.)

(Surety)

(Signature of authorized representative)

Attest:
(Seal):

(Printed name and title)



CONTRACTOR AFFIDAVIT
SCHOOL BOARD OF VOLUSIA COUNTY FLORIDA
FAC DOCUMENT 661

PURSUANT TO SECTION 713.06(3), FLORIDA STATUTES

TO: SCHOOL BOARD OF VOLUSIA COUNTY FLORIDA

The undersigned, as Contractor, has heretofore, on the _____ day of _____, in the year _____, been awarded a contract by you, as Owner, to furnish all of the materials and labor in the construction project entitled *(Facility Name)* _____, *(Address)* _____, *(Project Name)* _____, *(VCS Project No.)* _____, for the final contract price of _____ (\$_____) in accordance with plans and specifications therefore, as prepared by _____, Architect.

The said project has been completed and the contract and plans therefore fully complied with, and all of the contract price has been paid by you, except the final payment thereon, which is now due, but is being withheld until a sworn statement is furnished as required by law, showing whether there are any unpaid and outstanding bills in connection with said building.

That the undersigned hereby certified, under oath, that all lienors contracting directly with or directly employed by the undersigned, on said contract, have been paid in full, and further certified, under oath, that there are no outstanding or unpaid bills for labor performed or materials furnished in connections with said work or improvements.

That this sworn statement is furnished by the Contractor to the Owner pursuant to Section 713.06(3), Florida Statutes.

IN WITNESS WHEREOF,

the undersigned has hereunto set his hand and seal this _____ day of _____, _____

Witnessed by:

(Witness Signature)

(Contractor Signature)

(SEAL)

(Print or Type Name, Title)

(Print or Type Name, Title)

STATE OF FLORIDA, COUNTY OF VOLUSIA

Before me, the undersigned authority, personally appeared _____
to me well-known and known to me to be the person described in and who executed the foregoing instrument, and he acknowledged before me that he executed the same.

IN WITNESS WHEREOF, I have hereunto set my hand and official seal this

_____ day of _____, _____

(Notary Seal)

My commission expires:

Notary Public, State of Florida

(Date)

(Print, type or stamp name of notary public)

☐ Personally known to me ☐ Produced ID

(Type of ID, if applicable)



RECEIPT AND RELEASE
SCHOOL BOARD OF VOLUSIA COUNTY FLORIDA
FAC DOCUMENT 662

The undersigned _____, of _____ was heretofore on _____ day of _____, _____ awarded a contract by the SCHOOL BOARD OF VOLUSIA COUNTY FLORIDA, for the final contract price of _____, (\$_____) to furnish all of the materials and labor in the construction project entitled (Facility Name) _____, (Address) _____, (Project Name) _____, (VCS Project No.) _____, in accordance with the plans and specifications therefore, as prepared by _____, Architect, and the undersigned has completed said work and fully complied with said contract and has heretofore received the sum of _____, (\$_____) as payment thereon.

That the undersigned has this date received from the SCHOOL BOARD OF VOLUSIA COUNTY FLORIDA, the sum of _____, (\$_____) representing the full balance due him as Contractor, under terms of said contract, and certifies that said contract has been fully performed in accordance with terms thereof and that, as Contractor, has received all monies due and to become due thereunder for work performed and materials furnished in connection with said work, and that, as Contractor, has paid in full all persons furnishing labor and/or materials in connection therewith, including all subcontractors and suppliers, and that there are no unpaid bills for labor performed or materials furnished in connection with said work or improvements.

That the undersigned, for value received, does hereby forever release and discharge the said building and premises as described in said contract, from any and all liens, claims or demands whatsoever that, as Contractor, has or may have for work performed or materials furnished in connection therewith, or for work performed or materials furnished thereon by any subcontractor or supplier, and will hold the SCHOOL BOARD OF VOLUSIA COUNTY FLORIDA, safe and harmless from any and all loss and liability arising or to arise by reason of any unpaid bills for labor performed or materials furnished on said building or premises in connection with said work or improvements.

IN WITNESS WHEREOF,

the undersigned has hereunto set hand and seal this _____ day of _____, _____
Witnessed by:

_____ (Witness Signature)	_____ (Contractor Signature) (SEAL)
_____ (Print or Type Name, Title)	_____ (Print or Type Name, Title)

STATE OF FLORIDA, COUNTY OF _____

Before me, the undersigned authority, personally appeared _____
to me well-known and known to me to be the person described in and who executed the foregoing instrument, and acknowledged before me executed the same.

IN WITNESS WHEREOF, I have hereunto set my hand and official seal this

_____ day of _____, _____

(Notary Seal)

My commission expires:

_____ (Date)	_____ Notary Public, State of Florida
_____ (Print, type or stamp name of notary public)	

☐ Personally known to me ☐ Produced ID

(Type of ID, if applicable)

SECTION 23 00 00 - BASIC MECHANICAL REQUIREMENTS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of Contract, including the General and Supplementary Conditions, Division-1 Conditions specification sections apply to the Division 23 specifications and drawings.
- B. Related Sections: Refer to all sections in Division 23. Refer to Division 26 specification section and Division 26 drawings.

1.2 SUMMARY

- A. This Section specifies the basic requirements for mechanical installations and includes requirements common to more than one (1) section of Division 23. It expands and supplements the requirements specified in sections of Division 1.
- B. The Contractor shall coordinate and co-operate with Owner at all times for all new to existing connections, system shutdowns and restart-up, flushing and filling both new and existing systems.
- C. Coordinate all services shutdown with the Owner, provide temporary services as shown on the drawings.

1.3 PROJECT CONDITIONS

- A. The Contractor shall make themselves familiar with the existing conditions. No additional costs to the Owner shall be accepted for additional work for these existing conditions.
- B. Report any existing damaged equipment or systems to the Owner prior to any work.
- C. Protect all mechanical and electrical work against theft, injury or damage from all causes until it has been tested and accepted.
- D. Be responsible for all damage to the property of the Owner or to the work of other contractors during the construction and guarantee period. Repair or replace any part of the Work which may show defect during one (1) year from the final acceptance of all work. Provided such defect is, in the opinion of the Architect, due to imperfect material or workmanship and not due to the Owner's carelessness or improper use.

1.4 ACCESSIBILITY

- A. Install equipment and materials to provide required access for servicing and maintenance. Coordinate the final location of concealed equipment and devices requiring access with final location of required access panels and doors. Allow ample space for removal of all parts that require replacement or servicing.

1.5 ROUGH-IN

- A. Verify final locations for rough-ins with field measurements and with the requirements of the actual equipment to be connected.
- B. Refer to equipment shop drawings and manufacturer's requirements for actual provided equipment for rough-in requirements.

1.6 REQUIREMENTS OF REGULATORY AGENCIES

- A. Refer to Division 1.
- B. Execute and inspect all work in accordance with all Underwriters, local and state codes, rules and regulations applicable to the trade affected as a minimum, but if the plans and/or specifications call for requirements that exceed these rules and regulations, the greater requirement shall be followed. Follow recommendations of NFPA, SMACNA, EPA, OSHA and ASHRAE.
- C. Comply with standards in effect at the date of these Contract Documents, except where a standard or specific date or edition is indicated.
- D. The handling, removal and disposal of regulated refrigerants shall be in accordance with U.S. EPA, state and local regulations.
- E. After entering into contract, Contractor will be held to complete all work necessary to meet these requirements without additional expense to the Owner.

1.7 PERMITS AND FEES

- A. Refer to Division 1.
- B. Contractor shall arrange for and pay for all inspections, licenses and certificates required in connection with the Work.

1.8 MECHANICAL INSTALLATIONS

- A. Drawings are diagrammatic in character and do not necessarily indicate every required offset, valve, fitting, etc.
- B. Drawings and specifications are complementary. Whatever is called for in either is binding as though called for in both.
- C. Drawings shall not be scaled for rough-in measurements or used as shop drawings. Where drawings are required for these purposes or have to be made from field measurement, take the necessary measurements and prepare the drawings.
- D. Before any Work is installed, determine that equipment will properly fit the space; that required piping grades can be maintained.
- E. Verify all dimensions by field measurements.

- F. Arrange for chases, slots, and openings in other building components to allow for mechanical installations.
- G. Coordinate the installation of required supporting devices and sleeves to be set in poured in place concrete and other structural components, as they are constructed.
- H. Sequence, coordinate, and integrate installations of mechanical materials and equipment for efficient flow of the work
- I. Coordinate the cutting and patching of building components to accommodate the installation of mechanical equipment and materials.
- J. Install mechanical equipment to facilitate maintenance and repair or replacement of equipment components. As much as practical, connect equipment for ease of disconnecting, with minimum of interference with other installations.

1.9 CUTTING AND PATCHING

- A. This Article specifies the cutting and patching of mechanical equipment, components, and materials to include removal and legal disposal of selected materials, components, and equipment.
- B. Refer to Division 1.
- C. Do not endanger or damage installed work through procedures and processes of cutting and patching.
- D. Arrange for repairs required to restore other work, because of damage caused as a result of mechanical installations.
- E. No additional compensation will be authorized for cutting and patching work that is necessitated by ill-timed, defective, or non-conforming installations.
- F. Cut, remove and legally dispose of selected mechanical equipment, components, and materials as indicated, including, but not limited to removal of mechanical piping, heating units, and other mechanical items made obsolete by the new work.
- G. Protect the structure, furnishings, finishes, and adjacent materials not indicated or scheduled to be removed.

1.10 PRODUCT OPTIONS AND SUBSTITUTIONS

- A. Refer to the Instructions to Bidders and Division 1, "PRODUCTS, OPTIONS AND SUBSTITUTION".

1.11 MECHANICAL SUBMITTALS

- A. Refer to the Conditions of the Contract (General and Supplementary), Division 1.

- B. The contractor is to prepare a submittal schedule that coincides with the overall construction schedule. This submittal schedule should include a list of individual products to be submitted under each specification section. This submittal schedule shall also include dates for anticipated review, shipment and on-site delivery times of the submitted product.
- C. The Engineer shall be given a submittal review time of ten (10) working days upon receipt of submittal. Previous submittal rejection or revision shall not compress this review time. It shall be the contractor's responsibility to ensure these review and/or re-review times are incorporated into the submittal schedule with enough lead time as not to affect overall construction schedule. If the project requires a commissioning agent to review the submittals, the engineer's review period does not start until after their review is complete.
 - 1. After review, submittals shall be returned together with review comments and specific actions (if required) to be taken by the Contractor. Typical comments and actions will be:
 - a. Reviewed – Resubmittal not required.
 - b. Rejected – Resubmittal required.
 - c. Revised and Resubmit – Resubmittal required.
 - d. Make Correction Noted – Resubmittal not required unless correction cannot be met.
- D. The manufacturer's material or equipment listed in the schedule or identified by name on the drawings are the types to be provided for the establishment of size, capacity, grade and quality. If alternates are used in lieu of the scheduled names, the cost of any changes in construction required by their use shall be borne by Contractor.
- E. Submittals shall be prepared by authorized equipment dealers, vendors, suppliers, or representative of the products submitted. Include contact and business information of the equipment dealers, vendors, suppliers and representatives. Products and equipment submitted shall also be representative of the products and equipment to be procured and installed. General product data and shop drawings downloaded from unaffiliated websites will not be reviewed or accepted.
- F. All equipment shall conform to the State and/or Local Energy Conservation Standards.
- G. Submittal of shop drawings, product data, and samples will be accepted only when submitted by and stamped by the Contractor. Data submitted from subcontractors and material suppliers directly to the Engineer will not be processed unless prior written approval is obtained by the Contractor.
- H. Submit all submittal items required for each Specification Section Submittals shall be prepared and submitted in accordance with the submittal schedule. The contractor is to determine and coordinate submittal review times, lead times and delivery times of submitted products as it coincides with the overall construction schedule. Submittals submitted in bulk or under a single division will not be reviewed and will be sent back as "revise and resubmit".
- I. If more than one (1) re-submittals (either for shop drawings or for as-built drawings) are made by the Contractor, the Owner reserves the right to charge the Contractor for subsequent reviews by their consultants. Such extra fees shall be deducted from payments by the Owner to the Contractor.

- J. Before starting Work, prepare and submit to the Engineer all shop drawings and descriptive equipment data required for the project. Unless each item is identified with specification section and sufficient data to identify its compliance with the specifications and drawings, the item will be returned without action or "Revise and Resubmit". Continue to submit shop drawings after each Engineer's action, until a "Reviewed" action is received. Submittals shall include the following specified materials and, in addition, any materials not listed below but which are specified in the individual sections of Division 23 which follow.
1. Pipe Markers
 2. Piping
 3. Valves
 4. Pumps
 5. Tanks
 6. Thermometers and pressure gauges
 7. Piping specialties
 8. Supports, anchors and seals
 9. Insulation
 10. Chillers
 11. Automatic control systems
- K. Wiring diagrams, control panelboards, motor test data, motors, starters and controls for electrically operated equipment furnished by mechanical trades.
- L. Identify each item with specification section and sufficient data to certify its compliance with the specifications.
- M. Electronic submittals shall be packaged as a bookmarked multi-page single PDF file and shall not be over 5MB. Electronic Submittals over 5MB will not be accepted and will be returned un-reviewed.

1.12 REQUESTS FOR INFORMATION

- A. All "Requests for Information" submitted by the Contractor shall include a proposed solution and an estimated cost/schedule impact. Any RFI's that do not contain this required information will be sent back to the Contractor unanswered.
- B. Schedule the work to provide the Engineer a minimum review time of five (5) business days upon receipt of RFIs to provide a response.

1.13 PRODUCT LISTING

- A. Prepare listing of major mechanical equipment and materials for the project, within two (2) weeks of signing the Contract Documents and transmit to the Mechanical Engineer.
- B. Unless otherwise specified, all materials and equipment shall be of domestic (USA) manufacture and shall be of the best quality used for the purpose in commercial practice.
- C. Provide all information requested.
- D. Submit this listing as a part of the submittal requirement specified in Division 1, "PRODUCTS AND SUBSTITUTION".

- E. When two (2) or more items of same material or equipment are required (pumps, valves, air conditioning units, etc.) they shall be of the same manufacturer. Product manufacturer uniformity does not apply to raw materials, bulk materials, pipe, tube, fittings (except flanged and grooved types), sheet metal, wire, steel bar stock, welding rods, solder, fasteners, motors for dissimilar equipment units, and similar items used in work, except as otherwise indicated.
- F. Provide products which are compatible within systems and other connected items.

1.14 NAMEPLATE DATA

- A. Provide permanent operational data nameplate on each item of mechanical equipment, indicating manufacturer, product name, model number, serial number, efficiency rating (i.e. EER, etc.) capacity, operating and power characteristics, labels of tested compliances, and similar essential data. Locate nameplates in an accessible location.

1.15 DELIVERY, STORAGE, AND HANDLING

- A. Refer to Division 1.
- B. Deliver products to project properly identified with names, model numbers, types, grades, compliance labels, and similar information needed for distinct identifications; adequately packaged and protected to prevent damage during shipment, storage, and handling.
- C. Store equipment and materials at the site, unless off-site storage is authorized in writing. Protect stored equipment and materials from damage, dirt, dust and moisture.
- D. Coordinate deliveries of mechanical materials and equipment to minimize construction site congestion. Limit each shipment of materials and equipment to the items and quantities needed for the smooth and efficient flow of installations.
- E. Provide factory-applied plastic end-caps on each length of pipe and tube, except for concrete, corrugated metal, hub-and-spigot, clay pipe. Maintain end-caps through shipping, storage and handling to prevent pipe-end damage and prevent entrance of dirt, debris, and moisture.
- F. Protect stored pipes and tubes. Elevate above grade and enclose with durable, waterproof wrapping. When stored inside, do not exceed structural capacity of the floor.
- G. Protect flanges, fittings, and specialties from moisture and dirt by inside storage and enclosure, or by packaging with durable, waterproof wrapping.

1.16 RECORD DOCUMENTS

- A. Refer to Division 1. The following paragraphs supplement the requirements of Division 1.
- B. Keep a complete set of record document prints or electronic mark-ups in custody during entire period of construction at the construction site.

- C. Mark drawing prints to indicate revisions to piping and ductwork, size and location both exterior and interior; including locations of coils, dampers and other control devices, filters, boxes, and similar units requiring periodic maintenance or repair; actual equipment locations, dimensioned from column lines; actual inverts and locations of underground piping; concealed equipment, dimensioned to column lines; mains and branches of piping systems, with valves and control devices located and numbered, concealed unions located, and with items requiring maintenance located (i.e., traps, strainers, expansion compensators, tanks, etc.); RFI's; change orders; concealed control system devices. Changes to be noted on the drawings shall include final location of any piping or ductwork relocated more than 1'-0" from where shown on the drawings.
- D. Mark Equipment Schedules on the drawings with changes to Manufacturer, Model Number, and data based on reviewed shop drawings.

1.17 OPERATION AND MAINTENANCE DATA

- A. Refer to Division 1.
- B. The Testing and Balancing Report shall be submitted and received by the Engineer at least five (5) calendar days prior to the Contractor's request for final observation time frame requirements. Final Observation(s) will not proceed without T&B Report. Include in the O&M Manual after review with "Review" or "Make Corrections Noted" has been accomplished.
- C. In addition to the information required by Division 1 for maintenance data, include the following information:
 - 1. Description of mechanical equipment, function, normal operating characteristics and limitations, performance curves, engineering data and tests, and complete nomenclature and commercial numbers of all replaceable parts.
 - 2. Manufacturer's printed operating procedures to include start-up, break-in, routine and normal operating instructions; regulation, control, stopping, shutdown, and emergency instructions; and summer and winter operating instructions.
 - 3. Maintenance procedures for routine preventative maintenance and troubleshooting; disassembly, repair, and reassembly; aligning and adjusting instructions.
 - 4. Servicing instructions and lubrication charts and schedules.
 - 5. Manufacturer's service manuals for all mechanical equipment provided under this Contract.
 - 6. Include the valve tag list.
 - 7. Name, Address and Telephone Number of party to be contacted for twenty-four (24) hour service for each item of equipment.
 - 8. Starting, stopping, lubrication, equipment identification numbers and adjustment clearly indicated for each piece of equipment.
 - 9. Complete parts list.
 - 10. Mechanical warranties.
- D. This Contract will not be considered completed, nor will final payment be made, until all specified material, including Testing and Balancing Report, is received in this Operating and Maintenance Report and the manual is reviewed by the Engineer.

1.18 LUBRICATION OF EQUIPMENT

- A. Refer to Division 1. The following paragraphs supplement the requirements of Division 1.

- B. Contractor shall properly lubricate all mechanical pieces of equipment which he provided before turning the building over to the Owner. He shall attach a linen tag or heavy duty shipping tag on the piece of equipment showing the date of lubrication and the type and brand of lubricant used.
- C. Furnish the Engineer with a typewritten list in quadruplicate, of each item lubricated and type of lubricant used, no later than two (2) weeks before completion of the project, or at time of acceptance by the Owner of a portion of the building and the mechanical systems involved.

1.19 DEMOLITION

- A. During the demolition phase of this Contract, it is the responsibility of this Contractor to carefully remove existing equipment, piping, fixtures and related items either as shown on the demolition drawings as being removed, or as required for the work. These items shall be removed from the premises.
- B. The location of existing equipment, pipes, and other components shown on the drawings has been taken from existing drawings and is, therefore, only as accurate as that information. All existing conditions shall be verified from field measurements with necessary adjustment being made to the drawing information.
- C. If asbestos material, in any form, is discovered by this Contractor in the process of his work, he shall report such occurrence to the Owner immediately. The Owner will determine the action to be taken for the asbestos removal, which is not a part of the work to be done under this Division.

1.20 WARRANTIES

- A. Refer to Division 1 for procedures and submittal requirements for warranties. Refer to individual equipment specifications for warranty requirements. In any case, the entire mechanical system shall be warranted no less than one (1) year from the time of acceptance by the Owner.
- B. Provide complete warranty information for each item to include product or equipment to include date or beginning of warranty or bond; duration of warranty or bond; and names, addresses, and telephone numbers and procedures for filing a claim and obtaining warranty services.

1.21 CLEANING

- A. Refer to Division 1.
- B. Refer to Division 23, "TESTING, ADJUSTING AND BALANCING" for requirements for cleaning filters, strainers, and mechanical systems prior to final acceptance.

END OF SECTION 23 00 00

SECTION 23 01 00 - M&E COORDINATION

PART 1 - GENERAL

1.1 SUMMARY

- A. Carefully coordinate the interface between Division 23 (Mechanical) and Division 26 (Electrical) before submitting any equipment for review or commencing installation.
- B. Responsibility: Unless otherwise indicated, all motor and controls for Division 23 equipment shall be furnished, set in place and wired in accordance with the following schedule:

COORDINATION SCHEDULE				
ITEM	Furnished Under	Set in Place Under	Power Wiring Under	Control Wiring Under
Equipment Motor	23	23	26	--
Automatically Controlled Starters/Contactors:				
Separate	23	26	26	23
Factory Mounted and Wired	23	23	26	23
Manually Controlled Starter/Contactors:				
Separate	23	26	26	23
Factory Mounted and Wired	23	23	26	23
Disconnect Switches (Note 1)	26	26	26	--
Variable Frequency Drives	23	26	26	23
Contactors	26	26	26	--
Thermal Overload Switches (Note 1)	26	26	26	--
Manual Operating Switches (Note 2)	26	26	26	--
Control Relays (Note 2)	23	23	26	23
Control Transformers	23	23	26	23
Control Circuit Outlets	26	26	26	--
Thermostats (Note 2)	23	23	--	23
Push Button Stations, Pilot Lights (Note 2)	23	23	26	23
Thermostat and Controls Integral with Equipment or Directly Attached to Ducts, Pipes, etc. (Note 2)	23	23	26	23
Equipment in Temperature Control Panels (Note 2)	23	23	26	23
Standalone Control Panels (Note 2)	23	23	26	23
Valve Motors Damper Motors, Solenoid Valves, etc. (Note 2)	23	23	--	23
Equipment Interlock	23	23	N/A	23

COORDINATION SCHEDULE				
ITEM	Furnished Under	Set in Place Under	Power Wiring Under	Control Wiring Under
Notes: (1) If furnished as part of factory wired equipment, furnish and set in place under Division 23, wiring and connections under Division 26. (2) If float switches, line thermostats, P.E. switches, time switches, or other controls carry the FULL LOAD CURRENT to any motor, they shall be furnished and set in place under Division 23, but they shall be connected under Division 26. If they do not carry the FULL LOAD CURRENT to any motor, they shall be furnished, set in place and wired under Division 23.				

- C. Control Wiring:
 - 1. Consists of wiring in pilot circuits of contactors, starters, sensors, controllers, and relays, and wiring for valve and damper operators.
- D. Connections:
 - 1. Make connections to all controls directly attached to ducts, piping and mechanical equipment with flexible connections.
- E. Starters:
 - 1. Provide magnetic starters for all three phase motors and equipment complete with:
 - a. Control transformers.
 - b. 120V holding coils.
 - c. Integral hand-off auto switch.
 - d. Auxiliary contacts required for system operation plus one (1) spare.
- F. Remote Switches and Pushbutton Stations:
 - 1. Provide all remote switches and/or pushbutton stations required for manually operated equipment (if no automatic controls have been provided) complete with pilot lights of an approved type lighted by current from load side of starter.
- G. Special Requirement:
 - 1. Motor, starters and other electrical equipment installed in moist areas or areas of special conditions, such as explosion proof, shall be designed and approved for installation in such areas with appropriate enclosure.
- H. Identification:
 - 1. Provide identification of purpose for each switch and/or pushbutton station furnished. Identification may be either engraved plastic sign or permanent mounting to wall below switch, or stamping on switch cover proper. All such identification signs and/or switch covers in finished areas shall match other hardware in the immediate area.
- I. Control Voltage:
 - 1. Maximum allowable control voltage is 120V. Fully protect control circuit conductors in accordance with National Electrical Code.
 - 2. Fully coordinate the requirements of each division with regard to supplying a complete DDC Control System. J-Boxes and control transformer connections shall be provided under Division 26. The transformers shall be furnished and set in place under Div. 23.

PART 2 - PRODUCTS

2.1 MOTOR HORSEPOWER

- A. In general, all motors 3/4 HP and above shall be three phase, all motors less than 3/4 HP shall be single phase.
- B. Voltage and phase of motors as scheduled on the electrical drawings shall take precedence in the case of a conflict between the mechanical and electrical drawings or general conditions 2.1 A., above.
- C. Work under Division 23 includes coordinating the electrical requirements of all mechanical equipment with the requirements of the work under Division 26, before ordering the equipment.
 - 1. If motor horsepowers are changed under the work of Division 23, without a change in duty of the motor's driven device, coordination of additional electrical work (if any) and additional payment for the work (if any) shall be provided under the section of Division 23 initiating the change. Increases or decreases in motor horsepower from that specified shall not be made without written approval from the Architect.

PART 3 - EXECUTION - Not used.

END OF SECTION 23 01 00

SECTION 23 05 00 - COMMON WORK RESULTS FOR HVAC

PART 1 - GENERAL

1.1 DESCRIPTION OF WORK

- A. Extent of Piping Specialties Work required by this section is indicated on drawings and schedules and by requirements of this section.
- B. Types of Piping Specialties specified in this section include the following:
 - 1. Escutcheons
 - 2. Mechanical Sleeve Seal
 - 3. Fire and Smoke Barrier Penetration Seal
 - 4. Pipe Sleeve
 - 5. Sleeve Seals
- C. Piping Specialties furnished as part of factory-fabricated equipment, are specified as part of equipment assembly in other Division 23 sections.

1.2 QUALITY ASSURANCE

- A. Manufacturer's Qualifications: Firms regularly engaged in manufacture of piping specialties of types and sizes required, whose products have been in satisfactory use in similar service for not less than five (5) years.
- B. Codes and Standards:
 - 1. ASME B 31.9 "Building Services Piping" for materials, products, and installation.
 - 2. Safety valves and pressure vessels shall bear the appropriate ASME label.
 - 3. Fabricate and stamp air separators and compression tanks to comply with ASME Boiler and Pressure Vessel Code, Section VIII, Division 1.
 - 4. ASME "Boiler and Pressure Vessel Code," Section IX, "Welding and Brazing Qualification" for qualifications for welding processes and operators.

1.3 SUBMITTALS

- A. Product Data: Submit manufacturer's technical product data, including installation instructions, and dimensioned drawings for each type of manufactured piping specialty. Submit schedule showing manufacturer's figure number, size, location, and features for each required piping specialty.
- B. Shop Drawings: Submit for fabricated specialties, indicating details of fabrication, materials, and method of support.
- C. Maintenance Data: Submit maintenance data and spare parts lists for each type of manufactured piping specialty. Include this data, product data, and shop drawings in maintenance manual; in accordance with requirements of Divisions 23.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

- A. Manufacturer: Subject to compliance with requirements, provide products by one of the following:
 - 1. Pipe Escutcheons:
 - a. Chicago Specialty Mfg. Co.
 - b. Producers Specialty & Mfg. Corp.
 - c. Sanitary-Dash Mfg. Co.
 - 2. Mechanical Sleeve Seal:
 - a. GPT Industries
 - b. "Metraseal" by Metraflex Co.
 - 3. Fire and Smoke Barrier Penetration Seal:
 - a. Electrical Products Division/3M
 - b. Dow Corning
 - c. Flame Stop, Inc.
 - d. MetaCaulk
 - e. Hilti
 - f. HoldRite

2.2 PIPE ESCUTCHEONS

- A. General: Provide pipe escutcheons as specified herein with inside diameter closely fitting pipe outside diameter, or outside of pipe insulation where pipe is insulated. Select outside diameter of escutcheon to completely cover pipe penetration hole in floors, walls, or ceilings; and pipe sleeve extension, if any. Furnish pipe escutcheons with nickel or chrome finish for occupied areas, prime paint finish for unoccupied areas.
- B. Pipe Escutcheons for Moist Areas: For waterproof floors, and areas where water and condensation can be expected to accumulate, provide cast brass or sheet brass escutcheons, solid or split hinged.
- C. Pipe Escutcheons for Dry Areas: Provide sheet steel escutcheons, solid or split hinged.

2.3 MECHANICAL SLEEVE SEALS

- A. General: Modular mechanical type, consisting of interlocking synthetic rubber links shaped to continuously fill annular space between pipe and sleeve, connected with bolts and pressure plates which cause rubber sealing elements to expand when tightened, providing watertight seal and electrical insulation.

2.4 FIRE AND SMOKE BARRIER PENETRATION SEALS

- A. General: Provide UL Listed firestopping systems composed of components that are compatible with each other, the substrates forming openings, and the items, if any, penetrating the firestopping under conditions of service and application, as demonstrated by the firestopping manufacturer based on testing and field experience.
- B. Provide components for each firestopping system that are needed to install fill material. Use only components specified by the firestopping manufacturer and approved by the qualified testing agency for the designated fire-resistance-rated systems.

- C. Penetrations in Fire Resistive Rated Walls: Provide firestopping with ratings determined in accordance with UL 1479 or ASTM E 814.
 - 1. F-Rating: Not less than the fire-resistance rating of the wall construction being penetrated.
- D. Penetration in Horizontal Assemblies: Provide firestopping with ratings determined in accordance with UL 1479 or ASTM E 814.
 - 1. F-Rating: Minimum of 1-hour rating, but not less than the fire-resistance rating of the floor construction being penetrated.
 - 2. T-Rating: When penetrant is located outside of a wall cavity, minimum of 1-hour rating, but not less than the fire-resistance rating of the floor construction being penetrated.
 - 3. W-Rating: Class 1 rating in accordance with water leakage test per UL 1479.
- E. Penetrations in Smoke Barriers: Provide firestopping with ratings determined in accordance with UL1479 or ASTM E 814.
 - 1. L-Rating: Not exceeding 5.0 cfm/sq. ft. of penetration opening at both ambient and elevated temperatures.

2.5 FABRICATED PIPING SPECIALTIES

- A. Pipe Sleeves: Provide pipe sleeves of one (1) of the following:
 - 1. Sheet Metal: Fabricate from galvanized sheet metal; round tube closed with snaplock joint, welded spiral seams, or welded longitudinal joint. Fabricate from the following gauges: 3-inch and smaller, 20 gauge; 4-inch to 6-inch, 16 gauge; over 6-inch, 14 gauge.
 - 2. Steel Pipe: Fabricate from Schedule 40 galvanized steel pipe; remove burrs.
 - 3. Iron Pipe: Fabricate from cast iron or ductile iron pipe; remove burrs.
- B. Sleeve Seals: Provide sleeve seals for sleeves located in foundation walls below grade, or in exterior walls, of one (1) of the following:
 - 1. Mechanical Sleeve Seals: Installed between sleeve and pipe.

PART 3 - EXECUTION

3.1 INSTALLATION OF PIPING SPECIALTIES

- A. Pipe Escutcheons: Install pipe escutcheons on each pipe penetration through floors, walls, partitions, and ceilings where penetration is exposed to view; and on exterior of building. Secure escutcheon to pipe or insulation so escutcheon covers penetration hole, and is flush with adjoining surface.
- B. Mechanical Sleeve Seals: Loosely assemble rubber links around pipe with bolts and pressure plates located under each bolt head and nut. Push into sleeve and center. Tighten bolts until links have expanded to form watertight seal.
- C. Fire or Fire/Smoke Barrier Penetration Seals: Where pipe penetration occurs in fire or fire/smoke rated walls, provide a complete listed protection assembly equal to the rating of the wall/floor.
- D. Provide dielectric waterways or insulating flanges, as required by pipe size, on all connections of dissimilar metals.

3.2 SLEEVES AND SEALS

A. Pipes:

1. Pipes:

- a. New Construction: Pipes penetrating concrete or masonry construction, whether insulated or not, shall be provided with sheet metal or pipe sleeves fitted into place at time of construction. In poured concrete, the sleeves shall be steel pipe with a full circle, continuously welded water stop plate to also act as a sleeve anchor. When installing Link-Seal the sleeve and Link-Seal shall be of matched sizes. Otherwise, sleeves shall be of such size to provide all around clearance of 1/4-inch to 1-inch. Seal entire space between pipe and sleeve with fire stopping as specified in "Seals".
- b. Existing Construction: For existing construction or masonry construction, prepare pipe opening by carefully cutting or core drilling, install sheet metal sleeve, and fill any open space with material assembly equal to the listing of the wall. Cutting of concrete or masonry shall be done after approval of Structural Engineer.
- c. Sleeves in non-fire rated or non-bearing walls, floors or ceilings, new or existing construction, shall be steel pipe or galvanized sheet metal with lock-type longitudinal seam. Pack all open spaces on each end with mineral wool or other non-combustible material, positively fastened in place. Asbestos is not acceptable.
- d. Where a pipe of any description passes through a concrete floor, the sleeve shall extend at least 2-inch above the finished floor, except when using the ProSet Systems.
- e. At Contractor's option, where uninsulated pipes penetrate cast-in-place concrete floors, the "ProSet Systems," Atlanta, Georgia, sleeving may be employed.
- f. For pipes penetrating foundation walls, water-proofing membrane floors or other places where water leakage could be encountered, install Link-Seal wall sleeves by Thunderline Corporation in manner recommended by the manufacturer.

- B. Where pipe penetrations occur in non-fire rated floors, roof slabs, or walls, the space between pipe insert and the sleeve shall be packed on each end with mineral wool or other non-combustible material, positively fastened in place. Use plenum rated caulk to seal packing around pipe.

C. Seals:

1. General:

- Seal all holes or voids where mechanical systems penetrate fire rated floors and walls with a fire stopping sealant having a fire rating equal to or greater than that of the construction being penetrated. The sealant shall meet the requirements of ASTM E-814, ASTM E-119 and UL-1479. It shall be installed with strict adherence to the manufacturer's instructions and according to the product's UL Laboratory listing. The use of asbestos in any form is not permitted.
2. Conduct tests according to manufacturer's written recommendations to verify that substrates are free of oil, grease, rolling compounds, incompatible primers, loose mill scale, dirt and other foreign substances capable of impairing bond of firestopping.
 3. Do not cover firestopping with other construction until approval of authority having jurisdiction has been received.

D. Escutcheons:

1. In finished parts of the building, after painting is completed, install chromium plated escutcheons on all pipes passing through walls and floors where piping is exposed to view.

- E. Flash and counterflash where mechanical equipment passes through weather or water-proofed walls, floors, and roofs per roof manufacturer's instructions.

3.3 INSTALLATION OF FABRICATED PIPING SPECIALTIES

- A. Pipe Sleeves: Install pipe sleeves of types indicated where piping passes through walls, floors, ceilings, and roofs. Install sleeves accurately centered on pipe runs. Size sleeves so that piping and insert will have free movement in sleeve, including allowance for thermal expansion; but not less than two (2) pipe sizes larger than piping run. Install length of sleeve equal to thickness of construction penetrated, and finish flush to surface.
1. Install sheet metal sleeves at interior partitions and ceilings other than suspended ceilings.
 2. Install iron pipe sleeves at exterior penetrations; both above and below grade.
 3. Install steel pipe sleeves except as otherwise indicated.

END OF SECTION 23 05 00

SECTION 23 05 13 – MECH/ELEC REQUIREMENTS FOR MECHANICAL EQUIPMENT

PART 1 - GENERAL

1.1 DESCRIPTION OF WORK

- A. This Section specifies the basic requirements for Electrical Components for Mechanical Equipment. These components include, but are not limited to, motors, starters, and disconnect switches for mechanical equipment.
- B. Wiring of field-mounted switches and similar mechanical-electrical devices provided for mechanical systems, to equipment control panels.
- C. Specific electrical requirements (i.e. horsepower and electrical characteristics) for mechanical equipment are scheduled on the Electrical Drawings. In case of conflict, Electrical Drawings shall take precedence. Do not purchase motors or electrical equipment until power characteristics available at building site location have been confirmed by Contractor.
- D. Refer to Table in Section 230100 for Mechanical/Electrical Coordination.

1.2 QUALITY ASSURANCE

- A. Manufacturers: Firms regularly engaged in manufacture of motors, motor starters and drives of types, ratings and characteristics required, whose products have been in satisfactory use in similar service for not less than five (5) years.
- B. Installer's Qualifications: Firm with at least three (3) years of successful installation experience on projects utilizing electric motors, motor starters, capacitors and drives similar to that required for this project.
- C. NFPA Compliance: Comply with applicable requirements of NFPA 70E, "Standard for Electrical Safety Requirements for Employee Workplaces."
- D. UL Compliance: Provide equipment and/or components which are UL-listed and labeled.
- E. Standards:
 - 1. NEMA Standards MG 1: Motors and Generators.
 - 2. NEMA Standard ICS 2: Industrial Control Devices, Controllers, and Assemblies.
 - 3. NEMA Standard 250: Enclosures for Electrical Equipment.
 - 4. NEMA Standard KS 1: Enclosed Switches.
 - 5. Comply with National Electrical Code (NFPA 70).
- F. Coordination with Electrical Work: Wherever possible, match elements of electrical provisions of Mechanical Work with similar elements of Electrical Work specified in Division 26 sections. Comply with applicable requirements of Division 26 sections for Electrical Work of this section which are not otherwise specified.

1.3 SUBMITTALS

- A. Listing, Motors of Mechanical Work: Concurrently, with submittal of mechanical products listing, **submit separate listing** showing rating, power characteristics, efficiencies, power factors, application and general location **of every motor** to be provided with mechanical work. Submit updated information promptly when and if initial data is revised.
 - 1. Include in listing of motors, notations of whether motor starter is furnished or installed integrally with motor or equipment containing motor.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

- A. Subject to compliance with requirements, provide products by one of the following manufacturers for each type of product:
 - 1. Motors:
 - a. Century/MagneTek
 - b. Baldor
 - c. U.S. Motor
 - d. Reliance
 - e. General Electric
 - f. Louis Allis

2.2 DISCONNECT SWITCHES

- A. See Division 26 for requirements.

2.3 EQUIPMENT FABRICATION

- A. General: Fabricate mechanical equipment for secure mounting of motors and other electrical items included in work. Provide either permanent alignment of motors with equipment, or adjustable mountings as applicable for belt drives, special couplings and similar indirect coupling of equipment. Provide safe, secure, durable, and removable guards for motor drives, arranged for lubrication and similar running-maintenance without removal of guards.

PART 3 - EXECUTION

3.1 TEST AND TEST DATA

- A. A factory load test shall be performed on each motor of 1,000 watt input or greater to assure compliance with the energy-efficiency section of this specification.
- B. Typical test data on every motor to be used on this project shall be made available upon request.

3.2 INSTALLATION

- A. Install motors on motor mounting systems in accordance with motor manufacturer's instructions, securely anchored to resist torque, drive thrusts, and other external forces inherent in mechanical work. Secure sheaves and other drive units to motor shafts with keys and Allen set screws, except motors of 1/3 HP and less may be secured with Allen set screws on flat surface of shaft. Unless otherwise indicated, set motor shafts parallel with machine shafts.
- B. Deliver starters and wiring devices which have not been factory-installed on equipment unit to electrical installer for installation.
- C. Install power and control connections for motors to comply with NEC and applicable provisions of Division 26 sections. Install grounding except where non-grounded isolation of motor is indicated.

3.3 INSTALLATION COORDINATION

- A. Furnish equipment requiring electrical connections to operate properly and to deliver full capacity at electrical service available.
- B. All control wiring to be in accordance with manufacturer's recommendations, and shall be color-coded and individually numbered to facilitate checking.
- C. Unless otherwise indicated, all mechanical equipment motors and controls shall be furnished, set in place, and wired in accordance with the schedule contained in Division 23. The exact furnishing and installation of the equipment is left to the Contractors involved. Contractor should note that the intent of the schedule is to have the Division 23 and 26 Contractors responsible for coordinating all control wiring as outlined, whether or not specifically called for by the Mechanical or Electrical Drawings and Specifications. Comply with the applicable requirements of Division 26 for all electrical work which is not otherwise specified. No extras will be allowed for Contractor's failure to provide for these required items. The Contractor shall refer to the Division 26 and Division 23 specifications and plans for all power and control wiring and shall advise the Architect/Engineer of any discrepancies prior to bidding.

END OF SECTION 23 05 13

SECTION 23 05 19 - METERS AND GAUGES

PART 1 - GENERAL

1.1 DESCRIPTION OF WORK

- A. Extent of Meters and Gauges required by this section is indicated on drawings and/or specified in other Division 23 sections.
- B. Types of Meters and Gauges specified in this section include the following:
 - 1. Temperature Gauges and Fittings:
 - a. Glass Thermometers
 - b. Thermometer Wells
 - c. Temperature Gauge Connector Plugs
 - 2. Pressure Gauges and Fittings:
 - a. Pressure Gauges
 - b. Pressure Gauge Cocks
 - c. Pressure Gauge Connector Plugs
- C. Meters and gauges furnished as part of factory-fabricated equipment are specified as part of equipment assembly in other Division 23 sections.

1.2 QUALITY ASSURANCE

- A. Manufacturer's Qualifications: Firms regularly engaged in manufacture of meters and gauges, of types and sizes required, whose products have been in satisfactory use in similar service for not less than five (5) years.
- B. Codes and Standards:
 - 1. UL Compliance: Comply with applicable UL Standards pertaining to meters and gauges.
 - 2. ANSI and ISA Compliance: Comply with applicable portions of ANSI and Instrument Society of America (ISA) Standards pertaining to construction and installation of meters and gauges.
 - 3. Certification: Provide meters and gauges whose accuracies, under specified operating conditions, are certified by manufacturer.

1.3 SUBMITTALS

- A. Product Data: Submit manufacturer's technical product data, including installation instructions for each type of meter and gauge. Include scale range, ratings, and calibrated performance curves, certified where indicated. Submit meter and gauge schedule showing manufacturer's figure number, scale range, location, and accessories for each meter and gauge.
- B. All flow measuring devices to be provided shall be reviewed and approved by the Test and Balance Contractor and the Temperature Control Contractor for proper scale, rangeability and function prior to submitting shop drawings. The Test and Balance Contractor and Temperature Control Contractor shall provide a typed letter stating this review has been completed and included with shop drawing submittals.

- C. Maintenance Data: Submit maintenance data and spare parts lists for each type of meter and gauge. Include this data and product data in Maintenance Manual; in accordance with requirements of Division 1.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

- A. Manufacturer: Subject to compliance with requirements, provide products by one of the following:
1. Glass Thermometers:
 - a. Ernst Gauge Co.
 - b. Marshalltown Instruments, Inc.
 - c. Miljoco Corp.
 - d. Weiss Instruments, Inc.
 - e. Dwyer
 - f. Terrice
 2. Direct Mount Dial Thermometers:
 - a. Marsh Instrument Co.; Unit of General Signal
 - b. Miljoco Corp.
 - c. Weiss Instruments, Inc.
 - d. Dwyer
 - e. Terrice
 3. Remote Reading Dial Thermometers:
 - a. Ametek/U.S. Gauge
 - b. Marsh Instrument Co.; Unit of General Signal
 - c. Miljoco Corp.
 - d. Weiss Instruments, Inc.
 - e. Terrice
 4. Dial Type Insertion Thermometers and Wells:
 - a. Marsh Instrument Co.; Unit of General Signal
 - b. Taylor Instrument Co.
 - c. Miljoco Corp.
 - d. Weiss Instruments, Inc.
 - e. Terrice
 5. Solar Digital Thermometers:
 - a. Miljoco Corp.
 - b. Terrice
 - c. Weiss Instruments, Inc.
 - d. Dwyer
 6. Temperature Gauge Connector Plugs:
 - a. Fairfax Company
 - b. Peterson Equipment Co.
 - c. Universal Lancaster
 - d. Sisco
 - e. MG Piping Products Co.
 - f. Terrice
 7. Pressure Gauges:
 - a. Ametek/U.S. Gauge
 - b. Marsh Instrument Co.; Unit of General Signal
 - c. Marshalltown Instruments, Inc.
 - d. Miljoco Corp.
 - e. Weiss Instruments, Inc.

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- f. MG Piping Products Co.
 - g. Dwyer
 - h. Terice
- 8. Pressure Gauge Connector Plugs:
 - a. Fairfax Company
 - b. Peterson Equipment Co.
 - c. Universal Lancaster
 - d. Sisco
 - e. MG Piping Products Co.
 - f. Miljoco Corp.
 - g. Terice
- 9. Venturi Tube Flow Measuring Elements:
 - a. Gerand
 - b. Barco/Aeroquip Corp.
 - c. Griswold
 - d. Preso
- 10. Calibrated Balancing Valves:
 - a. Bell & Gossett ITT; Fluid Handling Division
 - b. "Flowset" - Flow Design, Inc.
 - c. Thrush Products, Inc.
 - d. Tour and Anderson, Inc.
 - e. Gerand "Balvalve Indicator"
 - f. Griswold
 - g. Preso
- 11. Automatic Flow Control Valves:
 - a. Griswold
 - b. Hays Fluid Controls
 - c. IMI Flow Design
- 12. BTU Meters:
 - a. Onicon
 - b. Insta Energy Systems Corp.
- 13. Pitot Tube Flow Meters:
 - a. Dieterich Standard
 - b. Preso
- 14. Meter Kit:
 - a. Bell and Gossett
 - b. Dieterich Standard
 - c. Gerand Engineering Co.
 - d. Griswold
 - e. Preso

2.2 GLASS THERMOMETERS

- A. General: Provide glass thermometers of materials, capacities, and ranges indicated, designed and constructed for use in service indicated.
- B. Case: Die cast aluminum finished in baked epoxy enamel, glass front, spring secured, 9-inch long.
- C. Adjustable Joint: Die cast aluminum, finished to match case, 180 degree adjustment in vertical plane, 360 degree adjustment in horizontal plane, with locking device.
- D. Tube and Capillary: Non-Toxic spirit filled, 1 percent scale range accuracy, shock mounted.

- E. Scale: Satin faced, non-reflective aluminum, permanently etched markings.
- F. Stem: Copper-plated steel, or brass, for separable socket, length to suit installation.
- G. Range: Conform to the following:
 - 1. Hot Water: 30 Degree - 240 degree F with 2 degree F scale divisions (0 degree - 160 degree C with 2 degree C scale divisions).
 - 2. Chilled Water: 30 - 100 Degree F with 2 degree F scale divisions (0 degree - 100 degree C with 1 degree C scale divisions).
 - 3. Steam and Condensate: 50 Degree - 400 degree F with 2 degree F scale divisions (10 degree - 205 degree C with 1 degree C scale divisions).

2.3 THERMOMETER WELLS

- A. General: Provide thermometer wells constructed of brass or stainless steel, pressure rated to match piping system design pressure. Provide 2-inch extension for insulated piping. Provide cap nut with chain fastened permanently to thermometer well.

2.4 TEMPERATURE GAUGE CONNECTOR PLUGS

- A. General: Provide temperature gauge connector plugs pressure rated for 500 PSI and 200 degree F (93 degree C). Construct of brass and finish in nickel-plate, equip with 1/2-inch NPS fitting, with self-sealing valve core type neoprene gasketed orifice suitable for inserting 1/8-inch O.D. probe assembly from dial type insertion thermometer. Equip orifice with gasketed screw cap and chain. Provide extension, length equal to insulation thickness, for insulated piping.

2.5 PRESSURE GAUGES

- A. General: Provide pressure gauges of materials, capacities, and ranges indicated, designed and constructed for use in service indicated.
- B. Type: General Use, 1 percent accuracy, ANSI B40.1 Grade A, phosphor bronze bourdon type, bottom connection.
- C. Case: Stainless steel, drawn steel, or brass, glass lens, 4-1/2 inch diameter.
- D. Connector: Brass with 1/4-inch male NPT. Provide protective syphon when used for steam service.
- E. Scale: White coated aluminum, with permanently etched markings.
- F. Range: Conform to the following:
 - 1. Vacuum: 30-Inch Hg - 15 PSI.
 - 2. Water: 0 - 100 PSI.
 - 3. Steam: 0 - 200 PSI.

2.6 PRESSURE GAUGE COCKS

- A. General: Provide pressure gauge cocks between pressure gauges and gauge tees on piping systems. Construct gauge cock of brass with 1/4-inch female NPT on each end, and "T" handle brass plug.
- B. Syphon: 1/4-Inch straight coil constructed of brass tubing with 1/4-inch male NPT on each end.
- C. Snubber: 1/4-Inch brass bushing with corrosion resistant porous metal disc, through which pressure fluid is filtered. Select disc material for fluid served and pressure rating.

2.7 PRESSURE GAUGE CONNECTOR PLUGS

- A. General: Provide pressure gauge connector plugs pressure rated for 500 PSI and 200 degree F (93 degree C). Construct of brass and finish in nickel-plate equip with 1/2-inch NPS fitting, with self-sealing valve core type neoprene gasketed orifice suitable for inserting 1/8-inch O.D. probe assembly from dial type insertion pressure gauge. Equip orifice with gasketed screw cap and chain. Provide extension, length equal to insulation thickness, for insulated piping.

2.8 CALIBRATED BALANCING VALVES

- A. General: Provide as indicated, calibrated balance valves equipped with readout valves to facilitate connecting of differential pressure meter to balance valves. Equip each readout valve with integral EPT check valve designed to minimize system fluid loss during monitoring process. Provide calibrated nameplate to indicated degree of closure of precision machined orifice. Construct balancing valve with internal EPT O-ring seals to prevent leakage around rotating element. Provide balance valves with preformed polyurethane insulation suitable for use on heating and cooling systems, and to protect balance valves during shipment.
- B. Balancing Valve Manufacturer shall select valve sizes to provide meter readings between 7-inch and 25-inch w.g. at rated GPM.

PART 3 - EXECUTION

3.1 INSPECTION

- A. Examine areas and conditions under which meters and gauges are to be installed. Do not proceed with work until unsatisfactory conditions have been corrected in manner acceptable to Installer.

3.2 INSTALLATION OF TEMPERATURE GAUGES

- A. General: Install temperature gauges in vertical upright position, and tilted so as to be easily read by observer standing on floor.
- B. Locations: Install in the following locations, and elsewhere as indicated:
 - 1. At inlet and outlet of each chiller.

- C. Thermometer Wells: Install in piping tee where indicated, in vertical upright position. Fill well with oil or graphite, secure cap.
- D. Temperature Gauge Connector Plugs: Install in piping tee where indicated, located on pipe at most readable position. Secure cap. Provide portable temperature gauge for each plug connection.

3.3 INSTALLATION OF PRESSURE GAUGES

- A. General: Install pressure gauges in piping tee with pressure gauge cock, located on pipe at most readable position.
- B. Locations: Install in the following locations, and elsewhere as indicated:
 - 1. At suction and discharge of each pump.
 - 2. At the inlet and outlet of each chiller.
- C. Pressure Gauge Cocks: Install in piping tee with snubber. Install syphon for steam pressure gauges.
- D. Pressure Gauge Connector Plugs: Install in piping tee where indicated, located on pipe at most readable position. Secure cap. Provide portable pressure gauge for each plug connection.
- E. All pressure gauges shall have coil syphon and isolation gauge cock, "snubber" valve, to service the gauge and isolate it from the pipe system service without having to drain the piping system.
- F. For 6-Inch and Larger Piping Service, use ball valve for gauge isolation valve which shall be not less than 1/4-inch diameter for full gauge pipe correction diameter.

3.4 INSTALLATION OF FLOW MEASURING METERS

- A. General: Install flow measuring meters on piping systems located in accessible locations at most readable position.
- B. Calibrated Balance Valves: Install on piping with readout valves in vertical upright position. Maintain minimum length of straight unrestricted piping equivalent to three (3) pipe diameters upstream of valve.
- C. Automatic Flow Control Valves: Install in piping in location indicated on details. Package installation piping kits may be provided for terminal units.

3.5 ADJUSTING AND CLEANING

- A. Adjusting: Adjust faces of meters and gauges to proper angle for best visibility.
- B. Cleaning: Clean windows of meters and gauges and factory-finished surfaces. Replace cracked or broken windows, repair any scratched or marred surfaces with manufacturer's touch-up paint.

END OF SECTION 23 05 19

SECTION 23 05 29 - SUPPORTS AND ANCHORS

PART 1 - GENERAL

1.1 DESCRIPTION OF WORK

- A. Extent of Supports and Anchors required by this section is indicated on drawings and/or specified in other Division 23 sections.
- B. Types of Supports and Anchors specified in this section include the following:
 - 1. Piping Hangers and Supports
 - 2. Hanger-Rod Attachments
 - 3. Building Attachments
 - 4. Saddles and Shields
 - 5. Miscellaneous Materials
- C. Supports and anchors furnished as part of factory-fabricated equipment are specified as part of equipment assembly in other Division 23 sections.

1.2 QUALITY ASSURANCE

- A. Manufacturer's Qualifications: Firms regularly engaged in manufacture of supports and anchors, of types and sizes required, whose products have been in satisfactory use in similar service for not less than five (5) years.
- B. Codes and Standards:
 - 1. Regulatory Requirements: Comply with applicable Mechanical Codes pertaining to product materials and installation of supports and anchors.
 - 2. Duct Hangers: SMACNA Duct Manuals.
 - 3. MSS Standard Compliance:
 - a. Provide pipe hangers and supports of which materials, design, and manufacture comply with MSS SP-58.

1.3 SUBMITTALS

- A. Product Data: Submit manufacturer's technical product data, including installation instructions for each type of support and anchor. Submit pipe hanger and support schedule showing manufacturer's figure number, size, location, and features for each required pipe hanger and support.
- B. Shop Drawings: Submit manufacturer's assembly-type shop drawings for each type of support and anchor, indicating dimensions, weights, required clearances, and methods of assembly of components.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

- A. Manufacturer: Subject to compliance with requirements, provide products by one of the following:
1. Pipe Hangers and Supports:
 - a. B-Line Systems Inc.
 - b. Carpenter and Patterson, Inc.
 - c. Mason Industries, Inc.
 - d. PHD Manufacturing, Inc.
 - e. Elcen Metal Products Company
 - f. Erico/Caddy
 - g. Unistrut Metal Framing Systems
 - h. Hilti USA.
 - i. Advanced Thermal Systems
 - j. Anvil
 2. Saddles and Shields:
 - a. B-Line Systems, Inc.
 - b. Pipe Shields, Inc.
 - c. Erico/Caddy
 - d. Component Products Co.
 - e. Value Engineered Products, Inc.
 - f. Snappitz Pipe Inserts by KB Enterprises
 - g. Anvil
 3. Concrete Inserts and Anchors:
 - a. Phillips Drill Company
 - b. Erico/Caddy
 - c. Elcen Metal Products Company
 - d. Ramset/Red Head
 - e. Hilti USA.
 - f. Star fasteners
 - g. B-Line
 - h. Blue Banger Hanger

2.2 PIPE HANGERS AND SUPPORTS

- A. Hangers and support components shall be factory fabricated of materials, design, and manufacturer complying with MSS SP-58.
1. Components shall have galvanized coatings where installed for piping and equipment that will not have field-applied finish.
 2. Pipe attachments shall have nonmetallic coating for electrolytic protection where attachments are in direct contact with copper tubing.
- B. Adjustable Clevis Hanger: MSS Type 1
1. Steel Pipe, size 3/8-inch thru 12-inch, B-Line B3100
 2. Copper Pipe, size 1/2-inch thru 4-inch, B-Line B3104CT
- C. Adjustable Swivel Ring: MSS Type 10
1. Steel Pipe, size 1/2-inch thru 2-inch, B-Line B3170NF
 2. Copper Pipe, size 1/2-inch thru 2-inch, B-Line B3170CT

- D. Standard Pipe Clamps: MSS Type 8
 - 1. Steel Pipe, size 3/4-inch thru 20-inch, B-Line B3373
 - 2. Copper Pipe, size 1/2-inch thru 4-inch, B-Line B3373CT
- E. Hanger Rods: Continuous threaded steel, sizes as specified.

2.3 UPPER ATTACHMENTS

- A. Beam Clamps
 - 1. All thread rod sized 3/8-inch and 1/2-inch: B-Line B3034
 - 2. All thread rod sizes 5/8- inch: B-Line B3033
 - 3. All thread rod sizes 3/4-inch and up: B-Line B3055

2.4 CONCRETE INSERTS AND ANCHORS

- A. Inserts: Case shall be of galvanized carbon steel with square threaded concrete insert nut for hanger rod connection; 3/4-inch lateral adjustment; top lugs for reinforcing rods, nail holes for attaching to forms. This type of upper attachment is to be used for all areas having poured in place concrete construction.
- B. Anchors: Carbon steel, zinc plated and coated with a clear chromate finish. Installation shall be in holes drilled with carbide-tipped drill bits or by use of self-drilling anchors.
 - 1. Provide anchors suitable for the location of installation and designed to withstand all forces and movements acting in the anchor. Manufacture pipe anchors in accordance with MSS SP 58. Provide a safety factor of four (4) for the anchor installation.
 - 2. Powder driven fasteners subject to approval of Structural Engineer. Each fastener shall be capable of holding a test load of 1,000 pounds whereas the actual load shall not exceed 50 pounds.
 - 3. Self-drilling expansion shields. The load applied shall not exceed one-fourth the proof test load required.
 - 4. Machine bolt expansion anchor. The load applied shall not exceed one-fourth the proof test load required.

2.5 SADDLES AND THERMAL SHIELD INSERTS AND PROTECTIVE SHIELDS

- A. General: Provide saddles and thermal shield inserts under all insulated piping hangers. Provide thermal shield inserts on all piping through floors, wall and roof construction penetrations. Size saddles and thermal shield inserts for exact fit to mate with pipe insulation or a minimum of 1-inch thick for uninsulated pipe thermal shield inserts.
- B. Protection Saddles: MSS Type 39; fill interior voids with segments of insulation matching adjoining insulation. For use with roller Hangers.
 - 1. B-Line B3160 to B3165
- C. Galvanized Steel Protection Shields: MSS Type 40; of length recommended by manufacturer to prevent crushing of insulation or insert. (Considering weight, use, temperature). See also Part 3.G.3.

- D. Thermal Shield Inserts: Provide 100-psi average compressive strength, waterproof, asbestos free calcium silicate, encased with a sheet metal enclosure or other listed system manufacturers. Insert and shield shall cover the entire circumference on vertical pipes, or the bottom half circumference of the pipe on horizontal mounting supports and shall be of length recommended by the manufacturer for pipe size and thickness of insulation or the thickness of the wall, roof or floor construction.
- E. Thermal Mechanical Pipe Shields: Self-locking insulated pipe supports/shields shall be provided at hanger, support, and guide locations on pipe requiring insulation. The insert shall consist of either hydrous calcium silicate or polyisocyanurate foam insulation (urethane) encircling the entire circumference of the pipe. Provide with a 360 degree PVC or Galvanized steel jacket which complies with the International Mechanical Code for installation in plenum ceilings where applicable. The length of the jacket shall be sized for pipe expansion.

2.6 MISCELLANEOUS MATERIALS

- A. Steel Plates, Shapes, and Bars: ASTM A 36.
- B. Cement Grout: Portland cement (ASTM C 150, Type I or Type III) and clean uniformly graded, natural sand (ASTM C 404, Size No. 2). Mix ratio shall be 1.0 part cement to 3.0 parts sand, by volume, with minimum amount of water required for placement and hydration.
- C. Heavy-Duty Steel Trapezes: Fabricate from steel shapes selected for loads required; weld steel in accordance with AWS Standards.

PART 3 - EXECUTION

3.1 INSPECTION

- A. Examine areas and conditions under which supports and anchors are to be installed. Do not proceed with work until unsatisfactory conditions have been corrected in manner acceptable to Installer.

3.2 PREPARATION

- A. Proceed with installation of hangers, supports and anchors only after required building structural work has been completed in areas where the work is to be installed. Correct inadequacies including (but not limited to) proper placement of inserts, anchors and other building structural attachments. Review Structural Drawings to obtain structural support limitations.

3.3 INSTALLATION OF BUILDING ATTACHMENTS

- A. Install building attachments within concrete or on structural steel. Space attachments within maximum piping span length indicated in MSS SP-69 and tables in this section. Install additional attachments at concentrated loads, including valves, flanges, guides, strainers, expansion joints, and at changes in direction of piping. Install concrete inserts before concrete is placed; fasten insert to forms. Where concrete with compressive strength less than 2,500 psi is indicated, install reinforcing bars through openings at top of inserts.

- B. Existing Construction:
 - 1. In existing concrete construction, drill into concrete slab and insert and tighten expansion anchor bolt. Connect anchor bolt to hanger rod. Care must be taken in existing concrete construction not to sever reinforcement rods or tension wires.

3.4 INSTALLATION OF PIPE HANGERS AND SUPPORTS

- A. Install hangers, supports, clamps and attachments to support piping properly from building structure; comply with MSS SP-69 and SP-89. Arrange for grouping of parallel runs of horizontal piping to be supported together on field fabricated, heavy-duty trapeze hangers where possible. Install supports with maximum spacings complying with MSS SP-69 and tables this section. Where piping of various sizes is supported together by trapeze hangers, space hangers for smallest pipe size or install intermediate supports for smaller diameter pipe. Do not use wire or perforated metal to support piping, and do not support piping from other piping.
- B. Install hangers and supports complete with necessary inserts, bolts, rods, nuts, washers and other accessories.
- C. Install hangers and supports to allow controlled movement of piping systems, to permit freedom of movement between pipe anchors, to facilitate action of expansion joints, expansion loops, expansion bends and similar units.
- D. Load Distribution: Install hangers and supports so that piping live and dead loading and stresses from movement will not be transmitted to connected equipment.
- E. Pipe Slopes: Install hangers and supports to provide indicated pipe slopes, and so that maximum pipe deflections allowed by ANSI B31.9 Building Services Piping Code is not exceeded.
- F. Hangers and supports shall be installed per the detail on the drawings.
- G. Insulated Piping: Comply with the following installation requirements:
 - 1. Clamps: Attach clamps, including spacers (if any), to piping with clamps projecting through insulation; do not exceed pipe stresses allowed by ANSI B31.
 - 2. Saddles: Install Protection saddles MSS Type 39 where insulation without vapor barrier is indicated. Fill interior voids with segments of insulation that match adjoining pipe insulation.
 - 3. Thermal Protective Metal Shields: Install thermal protective shields MSS Type 40 on cold and chilled water piping that is insulated. Thermal protective shields shall span an arc of 180 degrees and shall have dimensions per the detail on the drawings:
 - 4. Thermal shield inserts shall be provided where thermal protective metal shields are provided and shall span an arc of 180 degrees and shall match the length of the thermal protective shield.
 - 5. All piping shall have thermal shield inserts at each penetration through wall, floor and roof.
 - 6. All hangers shall be properly sized to accommodate the thermal shield insert and no hanger shall penetrate or crush any of the insulating material.
- H. Where several pipes can be installed in parallel and at same elevation, provide trapeze hangers.
- I. Where practical, support riser piping independently of connected horizontal piping.

- J. Each pipe drop to equipment shall be adequately supported. All supporting lugs or guides shall be securely anchored to the building structure.
- K. Install all couplings with torque wrench, torqued to inch-pounds as specified by the manufacturer.
- L. Hang all insulated pipe at the point of support in the following manner:
 - 1. All insulated pipes ($\geq 2"$ d) shall have thermal shield insert insulation protection saddles at all support points.
- M. Install anchors and fasteners in accordance with manufacturer's recommendations and the following:
 - 1. In the event a self-drilling expansion shield or machine bolt expansion shield is considered to have been installed improperly, the Contractor shall make an acceptable replacement or demonstrate the stability of the anchor by performing an on-site test under which the anchor will be subjected to a load equal to twice the actual load.
 - 2. Powder-driven fasteners may be used only where they will be concealed after the construction is complete. Where an occasional fastener appears to be improperly installed, additional fastener(s) shall be driven nearby (not closer than six (6) inches) in undisturbed concrete. Where it is considered that many fasteners are improperly installed, the Contractor shall test load any fifty (50) successively driven fasteners. If 10 percent or more of these fasteners fail, the Contractor shall utilize other fastening means as approved and at no additional cost to the Owner.
 - 3. Hangers for piping and ducts shall be attached to cellular steel floor decks with steel plates and bolted rod conforming to the steel deck manufacturer's requirements. Where the individual hanger load exceeds the capacity of a single floor deck attachment, steel angles, beams or channels shall be provided to span the number of floor deck attachments required.
 - 4. Welding may be used for securing hangers to steel structural members. Welded attachments shall be designed so that the fiber stress at any point of the weld or attachment will not exceed the fiber stress in the hanger rod.

3.5 METAL FABRICATION

- A. Cut, drill, and fit miscellaneous metal fabrications for pipe anchors and equipment supports. Install and align fabricated anchors in indicated locations.
- B. Fit exposed connections together to form hairline joints. Field weld connections that cannot be shop welded because of shipping size limitations.
- C. Field Welding: Comply with AWS D1.1 for procedures of manual shielded metal-arc welding, appearance and quality of welds made, methods used in correcting welding work, and the following:
 - 1. Use materials and methods that minimize distortion and develop strength and corrosion resistance of base metals.
 - 2. Obtain fusion without undercut or overlap.
 - 3. Remove welding flux immediately.
 - 4. Finish welds at exposed connections so that no roughness shows after finishing.

3.6 ADJUSTING

- A. Hanger Adjustment: Adjust hangers to distribute loads equally on attachments and to achieve indicated slope of pipe.
- B. Touch-Up Painting: Immediately after erection of anchors and supports, clean field welds and abraded areas of shop paint and paint exposed areas with same material as used for shop painting to comply with SSPC-PA-1 requirements for touch-up of field-painted surfaces.
 - 1. Apply by brush or spray to provide a minimum dry film thickness of 2.0 mils unless Division 09 provides more stringent touchup painting requirements.
- C. For galvanized surfaces, clean welds, bolted connections and abraded areas and apply galvanizing repair paint to comply with ASTM A 780.

END OF SECTION 23 05 29

SECTION 23 05 53 - MECHANICAL IDENTIFICATION

PART 1 - GENERAL

1.1 DESCRIPTION OF WORK

- A. Extent of Mechanical Identification Work required by this section is indicated on drawings and/or specified in other Division 23 sections.
- B. Types of Identification Devices specified in this section include the following:
 - 1. Plastic Pipe Markers
 - 2. Plastic Tape
 - 3. Plasticized Tags
 - 4. Lettering and Graphics
- C. Refer to other Division 23 sections for Identification Requirements at Central-Station Mechanical Control Center; not work of this section.
- D. Refer to Division 26 sections for Identification Requirements of Electrical Work; not work of this section.

1.2 QUALITY ASSURANCE

- A. Manufacturer's Qualifications: Firms regularly engaged in manufacturer of identification devices of types and sizes required, whose products have been in satisfactory use in similar service for not less than five (5) years.
- B. Codes and Standards:
 - 1. Existing Building Standards: Comply with the existing lettering size, length of color field, colors and identification method as presently exists in the existing building unless otherwise indicated.

1.3 SUBMITTALS

- A. Product Data: Submit manufacturer's technical product data and installation instructions for each identification material and device required.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

- A. Manufacturer: Subject to compliance with requirements, provide products by one of the following:
 - 1. Brady (W.H.) Co.; Signmark Division
 - 2. Brimar Industries, Inc.
 - 3. Industrial Safety Supply Co., Inc.
 - 4. Seton Name Plate Corp.

5. Holbi.

2.2 MECHANICAL IDENTIFICATION MATERIALS

- A. General: Provide manufacturer's standard products of categories and types required for each application as referenced in other Division 23 sections. Where more than single type is specified for application, selection is Installer's option, but provide single selection for each product category.

2.3 PLASTIC PIPE MARKERS

- A. Snap-On Type: Provide manufacturer's standard pre-printed, semi-rigid snap-on, color-coded pipe markers, complying with ANSI A13.1.
- B. Insulation: Furnish 1-inch thick molded fiberglass insulation with jacket for each plastic pipe marker to be installed on uninsulated pipes subjected to fluid temperatures of 125 degree F (52 degree C) or greater. Cut length to extend 2-inch beyond each end of plastic pipe marker.
- C. Small Pipes: For external diameters less than 6-inch (including insulation if any), provide full-band pipe markers, extending 360 degrees around pipe at each location, fastened by one (1) of the following methods:
1. Snap-on application of pre-tensioned semi-rigid plastic pipe marker.
 2. Taped to pipe (or insulation) with color-coded plastic adhesive tape, not less than 3/4-inch wide; full circle at both ends of pipe marker, tape lapped 1-1/2 inch.
- D. Large Pipes: For external diameters of 6-inch and larger (including insulation if any), provide either full-band or strip-type pipe markers, but not narrower than three (3) times letter height (and of required length), fastened by one (1) of the following methods:
1. Steel spring or non-metallic fasteners.
 2. Taped to pipe (or insulation) with color-coded plastic adhesive tape, not less than 1-1/2 inch wide; full circle at both ends of pipe marker, tape lapped 3-inches.
 3. Strapped-to-pipe (or insulation) application of semi-rigid type, with manufacturer's standard stainless steel bands.
- E. Lettering: Comply with piping system nomenclature as specified, scheduled, shown, or to match existing building lettering nomenclature system and abbreviate only as necessary for each application length.
- F. Arrows: Print each pipe marker with arrows indicating direction of flow, either integrally with piping system service lettering (to accommodate both directions), or as separate unit of plastic.

2.4 PLASTIC TAPE

- A. General: Provide manufacturer's standard color-coded pressure-sensitive (self-adhesive) vinyl tape, not less than 3 mils thick.
- B. Width: Provide 1-1/2 inch wide tape markers on pipes with outside diameters (including insulation, if any) of less than 6-inch, 2-1/2 inch wide tape for larger pipes.
- C. Color: Comply with ANSI A13.1, except where another color selection is indicated.

2.5 VALVE TAGS

- A. Plastic Laminate Valve Tags: Provide manufacturer's standard 3/32-inch thick engraved plastic laminate valve tags, with piping system abbreviation in 1/4-inch high letters and sequenced valve numbers 1/2-inch high, and with 5/32-inch hole for fastener.
 - 1. Provide 1-1/2 inch square Black tags with White lettering, except as otherwise indicated.
 - 2. Provide size, shape and color combination as specified or scheduled for each piping system.
- B. Valve Tag Fasteners: Provide manufacturer's standard solid brass chain (wire link or beaded type), and solid brass S-hooks of the sizes required for proper attachment of tags to valves, and manufactured specifically for that purpose.
- C. Access Panel Markers: Provide manufacturer's standard 1/16-inch thick engraved plastic laminate access panel markers, with abbreviations and numbers corresponding to concealed valve. Include 1/8-inch center hole to allow attachment.

2.6 ENGRAVED PLASTIC-LAMINATE SIGNS

- A. General: Provide engraving stock melamine plastic laminate, complying with FS L-P-387, in the sizes and thicknesses indicated, engraved with engraver's standard letter style of the sizes and wording indicated, Black with White core (letter color) except as otherwise indicated, punched for mechanical fastening except where adhesive mounting is necessary because of substrate.
- B. Thickness: 1/8-Inch, except as otherwise indicated.
- C. Fasteners: Self-tapping stainless steel screws, except contact-type permanent adhesive where screws cannot or should not penetrate the substrate.

2.7 PLASTICIZED TAGS

- A. General: Manufacturer's standard pre-printed or partially pre-printed accident-prevention tags, of plasticized card stock with matt finish suitable for writing, approximately 3-1/4 inch x 5-5/8 inch, with brass grommets and wire fasteners, and with appropriate pre-printed wording including large-size primary wording (As examples; DANGER, CAUTION, DO NOT OPERATE).

2.8 LETTERING AND GRAPHICS

- A. General: Coordinate names, abbreviations and other designations used in mechanical identification work, with corresponding designations shown, specified, scheduled and approved by the Owner/Engineer. Provide numbers, lettering and wording as indicated and approved by the Owner/Engineer for proper identification and operation/maintenance of mechanical systems and equipment.
- B. Multiple Systems: Where multiple systems of same generic name are shown and specified, provide identification which indicates individual system number as designated on the drawings or schedule as well as service.

PART 3 - EXECUTION

3.1 GENERAL INSTALLATION REQUIREMENTS

- A. Coordination: Where identification is to be applied to surfaces which require insulation, painting or other covering or finish, including valve tags in finished mechanical spaces, install identification after completion of covering and painting. Install identification prior to installation of acoustical ceilings and similar removable concealment.

3.2 PIPING SYSTEM IDENTIFICATION

- A. General: Install pipe markers of the following type on each system indicated to receive identification, and include arrows to show normal direction of flow. Existing building identification shall match the existing method which exists in the building.
- B. Plastic pipe markers, with application system as indicated under "MATERIALS" in this section. Install on pipe insulation segment where required for hot non-insulated pipes.
- C. Locate pipe markers and color bands as follows wherever piping is exposed to view in occupied spaces, machine rooms, accessible maintenance spaces (shafts, tunnels, plenums) and exterior non-concealed locations.
- D. Provide identification labels on each ceiling grid or ceiling access door for control device and equipment located above ceiling.
- E. Near each branch, excluding short take-offs for fixtures and terminal units; mark each pipe at branch, where there could be question of flow pattern.
- F. Near locations where pipes pass through walls or floors/ceilings, or enter non-accessible enclosures.
- G. At access doors, manholes and similar access points which permit view of concealed piping.
- H. Near major equipment items and other points of origination and termination.
- I. Spaced intermediately at maximum spacing of 25-foot along each piping run, except reduce spacing to 15-foot in congested areas of piping and equipment.
- J. On piping above removable acoustical ceilings.

3.3 VALVE IDENTIFICATION

- A. General: Provide valve tag on valves in each piping system. List each tagged valve in valve schedule for each piping system.
 - 1. Building services main shutoff valves.
 - 2. Each individual system main shutoff valves.
 - 3. Each individual system riser shutoff valves.
 - 4. Each individual system floor shutoff valves.
 - 5. Each individual system major branch shutoff valves.

- B. Provide the following columns and information for each valve:
 - 1. Valve Tag Number (*example*: HWS-1)
 - 2. Service (*example*: ISOLATE AHU-1 HEATING COIL)
 - 3. Room Number (location of valve)
 - 4. Size of Valve
 - 5. Type of Valve
 - 6. Normal Position of the Valve (open or closed)
- C. Mount valve schedule frames and schedules in mechanical equipment rooms where directed by Architect/Owner/Engineer.
- D. Where more than one (1) major mechanical equipment room is shown for project, install mounted valve schedule in each major mechanical equipment room, and repeat only main valves which are to be operated in conjunction with operations of more than single mechanical equipment room.

3.4 MECHANICAL EQUIPMENT IDENTIFICATION

- A. General: Install minimum 2-inch x 4-inch engraved plastic laminate equipment marker on each individual items of mechanical equipment. Provide signs for the following general categories of equipment.
 - 1. Main building systems control and operating valves, including safety devices and hazardous units such as gas outlets.
 - 2. Room thermostats, except gun tag labels are acceptable for room thermostats.
 - 3. Fuel-burning units including boilers, furnaces, heaters, stills and absorption chillers.
 - 4. Pumps, compressors, chillers, condensers and similar motor-driven units.
 - 5. Heat exchangers, cooling towers, heat recovery units and similar equipment.
 - 6. Fans and blowers.
 - 7. HVAC units.
 - 8. Tanks and pressure vessels.
 - 9. Water treatment systems and similar equipment.
- B. Lettering Size: Minimum 1/4-inch high lettering for name of unit.
- C. Text of Signs: In addition to the identified unit, inform operator of operational requirements, indicate safety and emergency precautions, and warn of hazards and improper operations.

3.5 ADJUSTING AND CLEANING

- A. Adjusting: Relocate any mechanical identification device which has become visually blocked by work of this division or other divisions.
- B. Cleaning: Clean face of identification devices, and glass frames of valve charts.

END OF SECTION 23 05 53

SECTION 23 05 93 - TESTING, ADJUSTING & BALANCING

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of Contract, including General and Supplementary Conditions and Divisions 1 and 23 Specification sections, apply to work of this section.

1.2 DESCRIPTION OF WORK

- A. This section covers Testing and Balancing of Environmental Systems including but not limited to air distribution systems, hydronic distribution systems, and the equipment and apparatus connected thereto. The testing and balancing of all environmental systems shall be the responsibility of one (1) testing, balancing and adjusting firm.
 - 1. Test, Adjust, and Balance all of the following mechanical systems:
 - a. Hydronic Systems;
 - b. Pumps;
 - c. Temperature Control System;
 - 2. Report any systems for excessive sound and vibration levels.

1.3 QUALIFICATIONS OF CONTRACTOR

- A. Procure the services of an independent testing and balancing Agency specializing in the testing, adjusting and balancing of environmental systems to perform the above mentioned work. An independent agency is defined as an organization that is not engaged in engineering design or is not a division of a mechanical contractor entity that installs mechanical systems. It shall be an agency certified by NEBB, TABB, or AABC. Testing and balancing work shall be directly supervised by a NEBB certified Supervisor or Professional Engineer on the Testing and Balancing Agency's staff. The Supervisor shall represent the Testing and Balancing Agency in progress meetings as requested, and shall be available for interpreting all material found in the Balance Report.
 - 1. All field work shall be performed by qualified technicians who are currently certified by either NEBB, TABB, or AABC Test and Balance Certification Agencies.

1.4 CONTRACTOR QUALIFICATIONS REVIEW

- A. The Mechanical Contractor shall submit the name of the Testing and Balancing Agency to the Engineer within thirty (30) days of contract award to ensure that the Testing and Balancing Agency is on the project from the outset of construction.
- B. Any testing and balancing agency desiring to offer their services for this Work shall submit their qualifications to the Engineer, not less than seven (7) working days before the bid date. Review and recommendations to Owner will be given on each request and action on the recommendation will be given in writing prior to bidding the work. Agencies meeting the qualifications of the Specification are those Agencies approved by the Owner.

1.5 CODES AND STANDARDS

- A. ASHRAE: ASHRAE Handbook Chapter, Testing, Adjusting, and Balancing.
- B. NEBB: "Procedural Standards for Testing, Adjusting and Balancing of Environmental Systems."
- C. SMACNA: "Tab Procedure Guidelines".

1.6 SUBMITTALS

- A. Upon award of the Contract, the Contractor shall submit the name of the Test and Balance Agency who will be performing the work. The submittal shall include a complete list of all technicians who will be performing the field work and include a photocopy of their current certification by either NEBB, TABB, or AABC Certification Agencies.
- B. Only those technicians included in the submittal shall perform the work. Any personnel or staff used to perform the work who are not included in the submittal shall be grounds for rejecting the Test and Balance Report and the Project in whole.

1.7 PROJECT CONDITIONS

- A. Water testing and balancing shall not begin until the system has been completed and is in full working order.
- B. Put all air conditioning systems and equipment into full operation and continue operation of same during each working day of testing and balancing. Preliminary Testing and Balancing requirements shall be ascertained prior to the commencement of work through a review of the project plans and specifications. In addition, visual observations at the site during construction shall be made to determine the location of required balancing devices, that they are being installed properly, and in an accessible location for the need. Report in writing any deficiencies to the Contractor and Mechanical Engineer immediately.
- C. Before any hydronic balancing work is done, the system shall be checked for plugged strainers, proper pump rotation, proper control valve installation and operation, air locks, proper system static pressure to assure a full system, proper flow meter and check valve installation. All throttling devices and control valves shall be open at this time.

1.8 SEQUENCING AND SCHEDULING

- A. Coordinate scheduling of Work with the Contractor.
 - 1. Schedule work to coincide with testing and verification of the temperature control systems where practical.
 - 2. Coordinate system start-up and performance verification with the Engineer as work is in progress.
- B. Provide written notification to the Project Manager five (5) working days prior to commencing TABB and a schedule for completing the work.
- C. Provide written notification to the Contractor within twenty-four (24) hours of an equipment failure preventing TABB work from proceeding.

PART 2 - PRODUCTS

2.1 INSTRUMENTS

- A. Calibration and maintenance of instruments shall be in accordance with manufacturer's standards.
- B. Calibration histories for each instrument shall be available for examination.
- C. Use a true RMS amp and harmonic distortion electrical test meter to test and record operating and performance measurements for all motors operating with variable frequency drives.

PART 3 - EXECUTION

3.1 TEMPERATURE CONTROLS

- A. Operate all temperature control systems with the Temperature Control Contractor's representative for proper sequence of operation and calibration. Report in writing any deficiencies to the Engineer immediately.

3.2 REQUIREMENTS OF WORK

- A. Provide all necessary fan belts and sheaves to balance all fans to the specified air delivery for the actual field conditions.
- B. Balance all water flows within +5 percent to -5 percent of design flow quantities. Measure and record the following data:
- C. Hydronic Balance:
 - 1. Chiller inlet and outlet water temperatures.
 - 2. Chiller inlet and outlet water pressures.
 - 3. Circulating pump flow rates, pressures, running amperage, and full load amperage at design flow and shutoff conditions.
- D. When necessary as determined by the Mechanical Engineer, the Test and Balance Agency shall provide additional testing and measurements as required by the Mechanical Engineer including, but not limited to, the following:
 - 1. Static pressure gradient profiles throughout piping systems.
 - 2. Temperature gradient profiles throughout the piping system.
 - 3. Miscellaneous electrical measurements.This work shall be done immediately upon request with complete cooperation and in an expedient schedule at no additional cost to any other party.

3.3 REPORT OF WORK

- A. The Testing and Balancing Agency shall submit the final Testing and Balancing Report at least five (5) calendar days prior to the Contractor's request for final inspection. All data shall be recorded on applicable reporting forms. The report shall include all operating data as listed above, a list of all equipment used in the testing and balancing work, and shall be signed by the Supervising Registered Professional Engineer and affixed with their registration stamp, signed and dated in accordance with State Law. Final acceptance of this project will not take place until a satisfactory report is received.
- B. Hydronic Systems without Meters (Thermal or Terminal Rated Pressure Drop Balance): The system shall be balanced proportionally to the terminal ratings. On completion of the balance, the following information shall be recorded in the report: Design entering and leaving water temperature/pressure drop, final balanced entering and leaving water temperature/pressure drop.
- C. When all hydronic balancing is done, all valves shall be marked or the locking rings set. Control valve bypass loops shall be set with the balancing valve to provide equal flow in either mode. Confirm in writing this work has been completed.
- D. After all balancing is complete and all coordination with the Contractor and the Engineer is complete, the balancing firm shall furnish aforementioned bound report which shall contain the following information:
 - 1. Pump and motor nameplate information, amperage and voltage to all motors, pressure drop across all system terminals, pressure rise across the pump in PSI and feet of head.
 - 2. Thermal protection for all motors shall be recorded; also power factor for all motors drawing 1,000 watts or more. Starter brand, model, enclosure type, installed thermal heaters and the rating of the heaters, required thermal heaters and the rating of the heaters if different than installed shall be recorded. Starter heaters shall be changed to the correct size and so noted in the report. If the starters were furnished by the Division 26, the correct heater sizes shall be noted in the report and the Contractor shall be advised.
 - 3. A complete set of the Mechanical Contract Drawings which shall be included in the report with all equipment, flow measuring devices, terminals (VAV boxes, outlets, inlets, coils, unit heaters, fintube loops, radiant panel loops, schedules, etc.) clearly marked and all equipment designated.
 - 4. Include in the report all variable frequency drive electrical performance test characteristics for each motor as described in this specification section. Include photocopies of all meter chart recorded <measured data> and/or computer printed output.
- E. The Testing and Balancing Agency shall respond and correct all deficiencies within seven (7) days of receiving the Engineer's written review of the Balancing Report. Failure to comply will result in holding retainage of the final payment until all items have been corrected to the satisfaction of the Engineer.

3.4 GUARANTEE OF WORK

- A. The Testing and Balancing Agency shall guarantee the accuracy of the tests and balance for a period of ninety (90) days from date of final acceptance of the Test and Balance Report. During this period, the Testing and Balancing Agency shall make personnel available at no cost to the Owner to correct deficiencies that may become apparent in the system balance.

3.5 COMPLETION SERVICES

- A. Final Check: Make final checks and do any rebalancing as directed.
- B. Report: Submit Balancing Report as specified above, to the Owner. Submit preliminary copy of report to Engineer for spot-checking as described below.
- C. Acceptance: Notify Engineer and Owner that work is complete and submit preliminary copy of Balancing Report. Schedule time to meet the Owner and Engineer at the site to perform spot-checking and verification as directed. Test and Balance Agency shall furnish personnel and equipment and spot check:
 - 1. The TAB representative shall be a member of the same team used during the original testing.
 - 2. Equipment used during the random testing shall be the same equipment used during the original testing.
 - 3. The system or equipment being verified shall be in the same operating mode as during the original TAB test.
 - 4. Whenever system verifications do not meet specifications, the entire system shall be re-balanced and rechecked.

END OF SECTION 23 05 93

SECTION 23 07 00 - MECHANICAL INSULATION

PART 1 - GENERAL

1.1 DESCRIPTION OF WORK

- A. This Section includes:
 - 1. Piping Insulation, Jackets and Accessories
- B. Refer to other Division 23 sections for Shields, Inserts, and Mechanical Identification.

1.2 QUALITY ASSURANCE

- A. Manufacturer's Qualifications: Firms regularly engaged in manufacture of mechanical insulation products, of types and sizes required, whose products have been in satisfactory use in similar service for not less than three (3) years.
- B. Installer's Qualifications: Firm with at least five (5) years successful installation experience on projects with mechanical insulations similar to that required for this project.
- C. Maintain ambient temperatures and conditions required by manufacturers of adhesives, mastics and insulating cements.

1.3 SUBMITTALS

- A. Product Data: Submit manufacturer's installation instructions and schedule listing materials, thickness, K-value, density, and furnished accessories for each service or equipment specified.

1.4 DELIVERY, STORAGE, AND HANDLING

- A. Deliver insulation, coverings, cements, adhesives, and coatings to site in containers with manufacturer's stamp or label, affixed showing fire hazard ratings of the products, name of manufacturer, and brand.
- B. Protect insulation against dirt, water, chemical, and mechanical damage.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

- A. Manufacturer: Subject to compliance with requirements, provide product by one of the following:
 - 1. Insulation:
 - a. Armaflex
 - b. Johns-Manville Products Corp.
 - c. Knauf Fiber Glass

- d. Manson Insulation Co.
- e. Owens-Corning Fiberglas Corp.
- 2. Jacketing, Coatings, Adhesives, Sealants and Covering Products:
 - a. Childers
 - b. Foster
 - c. Johns-Manville Products Corp.
 - d. Knauf Fiber Glass
 - e. 3M Company Venture Tape
 - f. Design Polymetrics
 - g. PIC Plastics

2.2 PIPING INSULATION

- A. Glass Fiber: ASTM C 547, Type 1, rigid molded, noncombustible, 0.23 "K" value at 75 degree F mean temperature, maximum service temperature 850 degree F, moisture sorption less than 0.2% by volume. Composite 25/50-flame spread/smoke developed rating (ASTM E 84, UL 723, and NFPA 255).
 - 1. Vapor Retarder Jacket: ASTM C 1136, 45lbs/in tensile strength (ASTM D 828), or beach puncture 50 oz in/in tear minimum (ASTM D 781). White Kraft paper reinforced with glass fiber yarn and bonded to aluminum foil, secured with self-sealing longitudinal laps and butt strips.
 - 2. Connections: Tacks, pressure sensitive color matching vinyl tape, Perma-Weld adhesive.
- B. Field Applied Fittings and Jackets:
 - 1. Aluminum: 0.016-Inch thick sheet with factory applied moisture barrier, smooth with longitudinal slip joints and 2-inch laps, die shaped fitting covers.

PART 3 - EXECUTION

3.1 INSPECTION

- A. Examine areas and conditions where mechanical insulation is to be installed. Do not proceed until unsatisfactory conditions have been corrected in manner acceptable to Installer.

3.2 HVAC PIPING INSULATION

- A. Low Temperature Cold Piping (40-60 Degrees F (4-15 Degrees C)).
 - 1. Applications:
 - a. Chilled Water supply and return.
 - 2. Insulation:
 - a. Fiberglass: 1-Inch thickness.

3.3 INSTALLATION OF PIPING INSULATION

- A. Install insulation after piping system tests have been completed.
- B. Clean piping to remove foreign substances and moisture prior to applying insulation.

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REPLACE CHILLER BLDG. 11
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- C. Install insulation products according to manufacturer's written instructions, building codes, and recognized industry standards.
- D. Omit insulation on air chambers, unions, balance cocks, flow regulators, buried piping, and pre-insulated equipment.
- E. Secure longitudinal jacket laps and butt strips according to manufacturer's recommendations.
- F. Firmly rub lap and butt strips to pressurize seam and ensure positive closure.
- G. Insulate each continuous run of piping with full-length units of insulation, with single cut piece to complete run. Do not use scraps.
- H. Apply insulation to piping with all joints tightly fitted to eliminate voids.
- I. Apply insulation on cold surfaces with a continuous, unbroken vapor seal. Hangers, supports, and anchors that are secured directly to cold surfaces must be adequately insulated and vapor sealed to prevent condensation. Seal pipe terminations in chilled water or glycol systems every four (4) pipe sections with vapor barrier coating.
- J. Extend surface finishes to protect all surfaces, end, and raw edges of insulation.
- K. Protect vapor-barrier jackets on pipe insulation from puncture or other damage. Avoid the use of staples on vapor barrier jackets. Seal vapor barrier penetrations with vapor barrier coating.
- L. Cover valves, fittings and similar items with equivalent thickness and composition of insulation as applied to adjoining pipe run. Install factory molded or job fabricated covers (at Installer's option). Coat all below ambient valves, fittings and similar items with vapor barrier coating and reinforcing mesh before application of PVC covers.
- M. Extend piping insulation without interruption through walls, floors and similar piping penetrations, except where fire-stopping materials are required.
- N. Provide thermal shield inserts on all pipe (Refer to 230529). For piping below ambient temperature, apply vapor barrier lap cement on butt joints and seal with 3-inch wide vapor barrier tape.
 - 1. Minimum insulation insert lengths:
 - a. 1-1/2 – 2-1/2 Inch Pipe: 10-Inches
 - b. 3 – 6-Inch Pipe: 12-Inches
- O. Apply galvanized metal shields between hangers or supports and pipe insulation. Form shields to fit the insulation and extend up to the centerline of the pipe. The shield length shall be 4-inches less than the associated insulation hanger insert to allow for vapor retarding butt joints on each side of the shields.
- P. Apply adhesives, mastics and coatings at manufacturer's recommended minimum coverage per gallon.
- Q. Replace all damaged insulation in whole; Repair of damaged insulation will not be accepted.
- R. Insulate fittings and valves with PVC insulated fitting covers and insulation inserts per manufacturer's recommendations.

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- S. Install aluminum jacket on exterior piping.
 - 1. Install metal jackets by overlapping seams 2-inches and securing with metal bands on 24-inch centers. Caulk all seams with 1/8" Bead of metal jacketing sealant. Locate longitudinal seams at the bottom of piping. Finish elbows and tees with matching metal fitting covers. Finish other fittings with conventional weather insulation materials with aluminum finish.

3.4 EXISTING INSULATION REPAIR

- A. Repair damaged sections of existing mechanical insulation, damaged during this construction period and within 3 ft of new connections.
- B. Provide unit price to repair existing mechanical insulation on piping.

END OF SECTION 23 07 00

SECTION 23 21 13 - HYDRONIC PIPING

PART 1 - GENERAL

1.1 DESCRIPTION OF WORK

- A. This section consists of furnishing and installing piping systems associated with heating, chilled, and condenser water systems.

1.2 QUALITY ASSURANCE

- A. Comply with ASME B31.9 (Building Service Piping Code) for materials, products, installation, and testing.
- B. Pipe and Fitting Manufacturer's Qualifications: Firms regularly engaged in manufacture of pipes and pipe fittings of types and sizes required, whose products have been in satisfactory use in similar service for not less than five (5) years.
- C. Welder's Qualifications: All welders shall be qualified in accordance with ASME Boiler and Pressure Vessel Code, Section IX, Welding and Brazing Qualifications.
- D. Before any welding is performed, the Contractor shall submit to the Architect/Engineer, a copy of the Manufacturer's Record of Welder or Welding Operator Qualification Tests and his Welding Procedure Specification together with the Procedure Qualification Record as required by Section IX of ASME Boiler and Pressure Vessel Code.
- E. The types and extent of non-destructive examinations required for pipe welds are as shown in Table 136.4 of the ASME Code for Pressure Piping, ANSI/ASME B31.1 – Power Piping. If requirements for non-destructive examination are to be other than that stated above, the degree of examination, and basis for rejection shall be a matter of prior written agreement between the fabricator, or contractor and the purchaser.
- F. Each manufacturer or contractor shall be responsible for the quality of welding done by his organization and shall repair or replace any work not in accordance with these specifications.
- G. Soldering and Brazing Procedures shall conform to ANSI B9.1 Standard Safety Code for Mechanical Refrigeration.
- H. To assure uniformity and compatibility of piping components in grooved piping systems, all grooved products utilized shall be supplied by a single manufacturer. Grooving tools shall be supplied from the same manufacturer as the grooved components.

1.3 SUBMITTALS

- A. Submit under provisions of Division 1.
- B. Welding Certifications: Submit reports as required for piping work.
- C. Brazing Certifications: Submit reports as required for piping work.

1.4 CLOSEOUT SUBMITTALS

- A. Submit under provisions of Division 1. Additionally, submit the following information:
 - 1. Valve Schedule for all Valves. For each valve, list valve designation number, valve type, size, location, and function.
 - 2. Written report certifying leak testing.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

- A. Manufacturer: Subject to compliance with requirements, provide products by one of the following:
 - 1. Air Vents (Manual and Automatic):
 - a. Armstrong Machine Works.
 - b. Bell & Gossett ITT; Fluid Handling Division
 - c. Hoffman Specialty ITT; Fluid Handling Division
 - d. Spirax Sarco
 - 2. Grooved Couplings
 - a. Victaulic
 - b. Gruvlok
 - c. Grinnell
 - 3. Butterfly Valves
 - a. Keystone
 - b. Nibco
 - c. Milwaukee
 - d. Stockham
 - e. Centerline
 - f. Watts
 - g. Grinnell
 - h. Victaulic
 - i. DeZurik

2.2 PIPING AND FITTINGS

- A. General: Working pressure and temperature maximums, 125 psi and 250 degrees F; water service.
- B. Copper Pipe: ASTM B88, hard-drawn copper tube, Type K for below ground lines and Type L for above ground lines.
 - 1. Fittings:
 - a. Wrought copper solder joint fittings, ASME B16.22
 - b. Bronze pipe flanges/fittings, ANSI B16.24 (Class 150 and 300)
 - c. Mechanical Pressure-Seal Fittings as manufactured by Viega or Nibco.
 - d. Grooved end wrought copper, ASME B16.22 or bronze casting, ASME B16.18 with copper tube dimensioned grooved ends (**flaring of tube ends to IPS dimensions is not permitted**).
 - 2. Joining Material:
 - a. Solder:
 - 1) ASTM B32, 95-5 tin-antimony, Grade 95TA
 - 2) ASTM B32 (NSF), Silver-Tin-Copper Alloy

- b. Brazing: AWS A5.8, for underground lines and where copper pipe is connected to brass.
 - 1) Copper phosphorus-Bcup
 - 2) Silver-Bag
 - c. Grooved Mechanical Couplings:
 - 1) Angle Bolt Pattern Design
 - 3. Unions: ASME B16.22-95. Wrought copper solder joint, ground seat.
 - 4. Dielectric Connections: Fittings having insulating material isolating joined dissimilar metals.
 - a. Waterway Fittings:
 - 1) ASTM-A53 Zinc electroplated steel pipe casing with inert, non-corrosive thermoplastic lining (NSF/FDA listed).
 - 2) Thread x thread ends 1/2-inch x 3-inch through 4-inch x 6-inch.
 - 3) Groove x thread ends 1/2-inch x 4-inch through 4-inch x 6-inch.
 - 4) Listed by IAPMO/UPC and SBCC PST and ESI.
 - 5) Dielectric unions are not an acceptable substitute for dielectric waterway fittings.
- C. Steel Pipe:
 - 1. ASTM A53, Schedule 40, black steel pipe. (Grade B, Type E, electric resistance welded) (Grade B, Type S or A106 high temperature; seamless)
 - 2. Fittings:
 - a. Threaded: ASME B16.11, Class 125, cast iron. Standard pattern for threaded joints. Threads shall conform to ASME B1.20.1-83.
 - b. Flanged: ASME B16.5, Class 150, cast iron, raised ground face, bolt holes spot faced.
 - 1) Gaskets: ANSI B16.21, full-faced for cast iron flanges, raised face for steel flanges.
 - c. Welded: ASTM B16.9, standard weight, seamless black steel, butt weld.
 - d. Grooved: ASTM A536 ductile iron, or ASTM A53 steel, grooved ends with grooved mechanical couplings.
 - 3. Unions: ASME B16.39-86, malleable-iron, Class 150, hexagonal stock, with ball-and-socket joints, metal-to-metal bronze seating surfaces; female threaded ends.
 - 4. Dielectric Connections: Construct to isolate dissimilar metals, prevent galvanic action, and prevent corrosion.
 - a. Waterway Fittings:
 - 1) ASTM-A53 Zinc electroplated steel pipe casing with inert, non-corrosive thermoplastic lining (NSF/FDA listed).
 - 2) Thread x thread ends 1/2-inch x 3-inch through 4-inch x 6-inch.
 - 3) Groove x thread ends 1/2-inch x 4-inch through 4-inch x 6-inch.
 - 4) Listed by IAPMO/UPC and SBCC PST and ESI.
 - 5) Dielectric unions are not an acceptable substitute for dielectric waterway fittings.
 - b. Flanged Connection: Dielectric gasket and bolt kit.
- D. Flexible Pipe Connectors: As specified in Section 230548.

E. Grooved Piping Products:

1. Coupling Housings: Grooved mechanical type, which engages grooved or shouldered pipe ends, encasing an elastomeric gasket which bridges pipe ends to create seal. Cast in two (2), secure together during assembly with nuts and bolts. Rolled grooves must be used on all pipe except for ductile iron which must be cut grooved. Rigid angle-pattern bolt pad coupling must be used on all joints except: equipment connections, vibration attenuation joints, expansions or contraction joints, or for deflection capabilities; all of which must use flexible couplings.
 - a. Ductile iron: ASTM A536.
2. Rigid Couplings Housings: Cast in two parts with offsetting, angle-pattern bolt pads to provide system rigidity and support and hanging in accordance with ASME B31.1 and B31.9, and secured together during assembly with nuts and bolts.
 - a. 2" through 8" Sizes: Gasket shall be Grade 'EPH' EPDM suitable for hot water up to 250 deg F (120 deg C).
 - b. 10" and 12" Sizes: Standard rigid coupling with Grade 'E' EPDM gasket suitable for hot water up to 230 deg F (110 deg C).
 - c. 14" through 60" Sizes: AGS groove, wide key housing profile with flat bolt pads for metal-to-metal contact. Wide-width, pressure responsive, synthetic rubber gasket, Grade 'E' EPDM of a Flush Seal design, suitable for hot water up to 230 deg F (110 deg C).
3. Couplings for copper tubing systems 2" through 8" shall consist of two ASTM A536 ductile iron housings cast with offsetting, angle-pattern bolt pads, to provide system rigidity, coated with copper-colored enamel. Gasket shall be Grade 'EHP' EPDM suitable for hot water up to +250 deg F (+120 def C), and plated steel bolts and nuts. Coupling shall be "installation ready" design, for installation onto roll grooved copper tube without prior field disassembly and no loose parts.
4. Gaskets: Mechanical grooved coupling design, pressure responsive so that internal pressure serves to increase seal's tightness, constructed of elastomers having properties as designated by ASTM D2000.
 - a. Water Services: EDPM Grade E, with Green color code identification, or EPDM Grade EHP.
 - b. Other Services: As recommended by Manufacturer.
5. Bolts and Nuts: Heat-treated carbon steel, ASTM A183 and A449, minimum tensile 110,000 psi.
6. Fittings: Grooved or shouldered end design to accept grooved mechanical couplings.
 - a. Ductile Iron: ASTM A536
 - b. Fabricated Steel: ASTM A53, carbon steel, Schedule 40, Type F, for 3/4-inch to 4-inch; Type E or S, Grade B for 5-inch to 20-inch.
 - c. Steel: ASTM A234
7. Grooves: Conform to the following:
 - a. Standard Steel: Square cut
 - b. Lightweight Steel: Roll grooved
 - c. Cast Iron: Radius cut grooved, AWWA C606
 - d. Copper Tube: Roll grooved.

F. Copper Pressure-Seal-Joint Fittings:

1. Fittings for 2-inch and Smaller: Wrought-copper fitting with EPDM-rubber, O-ring seal in each end.
2. Fittings for 2-1/2-inch to 4-inch: Cast bronze or wrought-copper fitting with EPDM-rubber, O-ring seal in each end.

2.3 VALVES

- A. General:
 - 1. Comply with MSS-92 1980 "Valve Users Manual".
 - 2. Sizes: Provide valves of same size as upstream pipe size. Size control valves for required flow.
- B. Extended Stems: Where insulation is indicated or specified, provide extended stems to allow full operation of the valve without interference by the insulation.
- C. Bypass and Drain Connections: Comply with MSS SP-45.
- D. End Connections: As specified in the individual valves specifications.
 - 1. Threads: Comply with ANSI B2.1.
 - 2. Flanges: Comply with ANSI B16.1 for cast iron, ANSI B16.5 for steel, and ANSI B16.24 for bronze.
 - 3. Solder-Joint: Comply with ANSI B16.18. Where soldered end connections are used, use solder having a melting point below 840 degree F for gate, globe, and check valves and below 421 degree F for ball valves.
- E. Ball Valves:
 - 1. 3-Inch and Smaller: MSS-SP-110, 150 psi SWP, 600 psi WOG, two-piece ASTM B584 cast bronze body, full port, chrome plated brass/bronze ball, TFE seats, anti-blowout stem separate packnut with adjustable stem packing, extended stem, and vinyl covered steel handle. Threaded or soldered end connections. Nibco T/S 585-70-EL.
- F. Butterfly Valves:
 - 1. 4-Inch and Larger: MSS-SP-68, ASTM A126, Class B fully lugged iron body, ASTM B148 aluminum bronze disc, ASTM A582 416 stainless steel stem, RTFE seat liner, reinforced nylon bearings, (EPDM) (BUNA) bushing and NBR stem seals. ASTM class 200 WOG rating. (BUNA) (EPDM) liner, Rated for 200 psi bi-directional shutoff and 200 psi dead-end service with downstream piping removed. Provide extended neck for insulation. Sizes 4"-6" shall be lever operated with 10-position throttling plate; sizes 8-inch and larger shall have weatherproof gear operators.

2.4 PIPING ACCESSORIES

- A. Manual Air Vent: Bronze body and nonferrous internal parts; 150 psig working pressure, 212 degree F operating temperature; manually coin operated and having discharge outlet connection and 1/8-inch NPT male connection.
- B. Automatic Air Vent: Float type vent designed to vent automatically; bronze body and nonferrous internal parts. 150 psig working pressure, 240 degree F operating temperature. 1/4-Inch discharge connection and 1/2-inch inlet connection.

PART 3 - EXECUTION

3.1 PIPE APPLICATIONS

- A. 2-Inches and Smaller:
 - 1. Black Steel: Install steel pipe with threaded joints and fittings.

2. Copper Pipe:
 - a. Install Type L copper pipe with wrought copper fittings and solder joints, above ground, within building.
 - b. Install Type K copper pipe with wrought copper fittings and brazed alloy joints below ground.
- B. 2-1/2 Inches and Larger: Install black steel pipe.
 1. Welded and Flanged Joints: Install welded fittings on pipe 2-1/2 inches and larger.
 2. Grooved Couplings and Mechanical Fittings: Install mechanical grooved end pipe on chilled water piping.

3.2 PIPING INSTALLATION, GENERAL

- A. Arrange piping in horizontal groups, each group to be in one plane. Maintain indicated slope.
- B. Conceal pipe installations in walls, pipe chases, utility spaces, above ceilings, below grade or floors.
- C. Install piping tight to slabs, beams, joists, columns, walls, and other permanent elements of the building. Install piping parallel to permanent elements of building. Provide space to permit insulation applications, with 1-inch clearance outside insulation. Provide 2-inch space above removable ceiling panels to allow for panel removal.
- D. Fire and Smoke Wall Penetrations: Maintain the fire and smoke rated integrity where pipes pass through fire and smoke rated walls, partitions, ceilings, and floors. Refer to Section 230500.
- E. Sloping, Air Venting, and Draining:
 1. Install piping true to line and grade, and free of traps and air pockets. Install piping level except for gravity flow systems such as condenser water and condensate drain piping.
 2. Connect branch piping to bottom of mains, except for up-feed risers, which shall have take-off on top of main.
 3. Install manual air vents at minor changes in elevation downward in the direction of water flow and at all coils. Provide 1/4-inch copper, 180-degree bend pipe to discharge vented water into can.
 4. Install automatic air vent on air separator and where shown. Provide valved inlet and route discharge pipe to floor drain.
 5. Install drain valves with hose adapters at low points in mains, risers, and branch lines. Drain consists of a tee fitting, 3/4-inch ball valve, and short 3/4-inch threaded nipple and cap.
- F. Fittings: Standard manufactured fittings. Field fabricated fittings and bushings are prohibited on all piping.
- G. Make reductions in pipe sizes using eccentric reducer fitting installed with the level side up.
- H. Unions: Install unions in pipes 2-inch and smaller, adjacent to each valve, at final connections of each piece of equipment and elsewhere to permit alterations and repairs. Install dielectric waterway fittings to join dissimilar metals.
- I. Flanges: Install flanges on valves and equipment having 2-1/2 inch and larger connections.
- J. Joints:

1. Threaded Joints: Apply Teflon tape to male equipment threads. Do not use pipe with threads that are corroded or damaged.
 2. Soldered Joints: Comply with AWS Soldering Manual-98.
 3. Grooved Joints: Grooved joint piping systems shall be installed in accordance with the manufacturer's guidelines and recommendations. The gasket style and elastomeric material (grad) shall be verified as suitable for the intended service as specified. Grooved end shall be clean and free from indentations, projections, and roll marks in the area from pipe end to groove for proper gasket sealing.
- K. Keep openings in piping closed during construction to prevent entrance of foreign matter.
- L. Install flexible connectors or grooved flexible couplings at inlet and discharge connections to base-mounted pumps and other vibration producing equipment.
- M. Electrical Equipment Spaces: Do not run piping through transformer vaults and other electrical spaces.
- N. Pressure-Sealed Joints for Copper Tubing: Join copper tube and pressure-seal fittings with tools recommended by fitting manufacturer.

3.3 VALVES

- A. Field check valves for packing and lubricant. Replace leaking packing. Service valves with lubricant for smooth and proper operation before placing in service.
- B. Install valves accessible from floor level, located for easy access.
- C. Install valves in horizontal piping with stem at or above center of pipe. Install valves in position to allow full stem movement. Provide operating handles for valves and cocks without integral operators.
- D. Provide extended valve stems where insulation is specified.
- E. Provide separate support where necessary.
- F. Where soldered end connections are used for valves, use solder having a melting point below 840 degrees F for gate, globe, and check valves; below 421 degrees F for ball valves.
- G. Provide valves same size as line size.
- H. Provide drain valves and hose adapters at strainers for blowoff; same size as strainer blowoff connection.
- I. Provide mechanical actuators with chain operators where valves 2-1/2 inches and larger are mounted more than 6-feet above the floor. Extend chains to elevation of 5-feet above floor.
- J. Valve End Selection: Select valves with the following ends or types of pipe/tube connections:
1. Copper Tube Size 2-Inch and Smaller: Solder ends.
 2. Steel Pipe Sizes 2-Inch and Smaller: Threaded or grooved-end.
 3. Steel Pipe Sizes 2-1/2 Inch and Larger: Flanged or grooved end.
 4. At all piping hot taps provide a gate valve with the hot tap and a butterfly valve for shutoff service. Hot taps shall be provided only where approved by the Engineer.

- K. Valve Application: Install valves in accordance with the following table.

SERVICE	VALVE TYPE
Hydronic Isolation; 2" and Smaller	Ball Valve
Hydronic Isolation; 2-1/2" and Larger	Butterfly Valve
Hydronic Throttling or Bypass Valve; All Sizes	Globe Valve
Hydronic Balancing Valve; 2" and Smaller	Calibrated Balancing Valve
Hydronic Balancing Valve; 2-1/2" and Larger	Calibrated Balancing Valve
Hydronic Pump Discharge Check Valves; 2" & Smaller	Swing Check
Hydronic Pump Discharge Check Valve; 2-1/2" & Larger	Wafer Check Valve

3.4 EQUIPMENT PIPING

- A. Provide combination balancing and shutoff valves to regulate water flow through piping, coils, and at other equipment and piping where shown or required for proportioning flow.
- B. Install automatic fill valve in cold water make-up to boilers and chillers. Install three-valve bypass with globe valve around automatic fill valve for quick filling system. Install backflow preventer upstream of fill valve and bypass.

3.5 TESTING

- A. General: Provide temporary equipment for testing including pump and gauges. Test before insulation is installed. Test piping to be concealed prior to permanent enclosure.
- B. Provide the Engineer a minimum of twenty-four hours notice of dates when acceptance test will be conducted. Conduct tests in presence of representative of agency having jurisdiction.
- C. Test piping systems using ambient temperature water, except where there is risk of damage due to freezing. Engineer approval is required prior to testing if other than hydrostatic tests are used.
- D. Use vents installed at high points in the direction of flow, in the system to release trapped air while filling the system. Use drains installed at low points for complete removal of the liquid.
- E. Examine system to see that equipment and parts that cannot withstand test pressures are properly isolated.
- F. System Tests:
 - 1. Hydrostatic Test: Pressurize the system to 100 psig or 1.5 times the design pressure, whichever is greater. Maintain pressure until the entire system has been inspected for leaks, but in no case for a time period of less than four (4) hours.
 - 2. Compressed Air or Nitrogen Test: Compressed air tests may be substituted for hydrostatic tests only when ambient conditions or existing building conditions prohibit safe use of hydrostatic testing and must be reviewed by the Engineer prior to any testing. For tests of this type, subject the piping system to the gas pressure indicated for that

specific system. Maintain the test pressure for the duration of a soapy water test of each joint.

3. Maintain test pressure until the entire system has been inspected for leaks, but in no case less than four hours. Examine all piping, joints, and connections for leakage.

G. Repair failed piping sections by disassembly and re-installation, using new materials to extent required to overcome leakage. Do not use chemicals, stop-leak compounds, mastics, or other temporary repair methods.

H. Drain test water after testing and repair work has been completed.

I. Prepare written report of testing, indicating locations of leaks corrected, method used to correct leaks, number of tests required, and certification that system is leak free. Provide three (3) copies of test results.

3.6 ADJUSTING AND CLEANING

A. Flush system with clean water. Remove, clean, and replace strainer screens.

B. After cleaning and flushing but before balancing, remove disposable fine mesh strainers in pump suction diffusers.

3.7 HYDRONIC SPECIALTIES INSTALLATION

A. Manual Air Vent: Provide manual air vents at all high points and drops in the direction of flow, of all mains and risers of the hydronic systems, at heat transfer coils, radiation and elsewhere shown and as required for system air venting.

1. Provide enlarged air collection standpipe where large air quantities can accumulate.
 1. Provide a 1/2-inch ball valve, reducer and pipe nipple installed between hydronic system pipe and manual air vent.
2. Provide 1/4-inch discharge pipe from manual air vent discharge connection to nearest floor drain or as indicated.

B. Dip Tube Fittings: Install dip tube fittings in hydronic systems boiler outlet. Run piping to compression tank with 1/4-inch per foot (2 percent) upward slope towards tank. Connect boiler outlet piping.

3.8 TRAINING

A. Provide two (2) hours of instruction on hydronic systems. Include following items as a minimum:

1. Location of automatic and manual air vents.
2. Location of strainers and blow down valves.
3. Location of safety and relief valves.
4. System drain valves.
5. System fill and associated devices.
6. Expansion tank and air separator.

B. A factory-trained field representative shall provide on-site training for contractor's field personnel in the proper use of grooving tools and installation of grooved piping products. Factory-trained

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representative shall periodically review the product installation. Contractor shall remove and replace any improperly installed product.

END OF SECTION 23 21 13

SECTION 23 64 23 - SCROLL CHILLERS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of Contract, including General and Supplementary Conditions and Division 1 and 23 Specification sections, apply to work of this section.

1.2 REFRIGERANTS

- A. All refrigerants used for each condensing unit shall be on the latest EPA list of approved refrigerants and environmentally friendly.
- B. No CFC based refrigerants shall be used.

1.3 DESCRIPTION OF WORK

- A. Extent of Scroll Liquid Chiller Work required by this section is indicated on drawings and schedules, and by requirements of this section.
- B. Types of Scroll Liquid Chillers specified in this section include the following:
 - 1. Packaged Outdoor Air Cooled
- C. Refer to other Division 23 sections for concrete pads, piping, piping specialties, pumps, and valves, which are required external to chillers for installation.
- D. Refer to other Division 23 sections for field-installed automatic temperature controls required in conjunction with chillers.
- E. Refer to Division 23 section "Vibration Control" for vibration control work required in connection with chillers.
- F. Manufacturers shall be responsible to provide any information to the contractor prior to bidding which may impact the installed cost for the Contractor including but not limited to:
 - 1. Power wiring sizing quantity and type of conductors
 - 2. Control power
 - 3. Auxiliary piping connections

1.4 QUALITY ASSURANCE

- A. Manufacturers: Firms regularly engaged in manufacture of chillers, of types and capacities required, whose products have been in satisfactory use in similar service for not less than five (5) years.
- B. Installer's Qualifications: Firm with at least five (5) years of successful installation experience with projects utilizing chillers similar to those required for this project.

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- C. ASHRAE Compliance: Construct and install chillers in accordance with ASHRAE Standard 15, "Safety Code for Mechanical Refrigeration". Provide Energy Efficiency Ratio (EER) for chillers not less than prescribed by ASHRAE Standard 90A, "Energy Conservation in New Building Design".
- D. NEC Compliance: Comply with applicable NEC requirements pertaining to electrical power and control wiring for construction and installation of chillers.
- E. ANSI/ASHRAE Compliance: Comply with ANSI 15 safety code requirements pertaining to unit construction of chillers.
- F. ASME Compliance: Construct and test air-cooled liquid chiller in accordance with ASME Boiler and Pressure Vessel Code, Section 8.
- G. NEMA Compliance: Provide high-efficiency motors for chillers which comply with NEMA Standards Pub./No.'s MG 1, 2, 3, 10, and 11.
- H. ANSI/UL 984: Safety standards for hermetic motor compressors.

1.5 SUBMITTALS

- A. Each manufacturer shall describe in writing, how their company is addressing the CFC legislation issue. Provide equipment capable of accepting a substitute refrigerant. Provide description of alternative refrigerant including:
 - 1. Potential lifetime in years
 - 2. Ozone depletion factor potential
 - 3. Global warming potential

The equipment provided shall provide the scheduled capacity when the substitute refrigerant proposed, the nominal equipment capacity reduction effects (if any), performance in KW/TON, the refrigerant change out procedure and long term maintenance effects the new refrigerant has on the equipment.
- B. Product Data: Submit manufacturer's technical product data, including rated capacities for chillers indicated, sound power levels, weights (shipping, installed, and operating), furnished specialties and accessories; and rigging, installation, and start-up instructions.
- C. Shop Drawings: Submit manufacturer's assembly-type shop drawings indicating dimensions, weight loadings, required clearances, methods of assembly of components, and location and size of each field-connection.
- D. Provide templates for anchor bolt placement in concrete pad. Deliver templates to concrete Installer so work by others is not delayed.
- E. Wiring Diagrams: Submit manufacturer's electrical requirements for power supply wiring to units. Submit manufacturer's ladder-type wiring diagrams for interlock and control wiring. Clearly differentiate between portions of wiring that are factory-installed and portions to be field-installed.
- F. Record Drawings: At project closeout, submit record drawings of installed systems products in accordance with requirements of Division 1.

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- G. Maintenance Data: Submit maintenance data and parts list for each chiller, control, and accessory; including "trouble-shooting" maintenance guide. Include this data and product data in maintenance manual; in accordance with requirements of Division 1.

1.6 DELIVERY, STORAGE, AND HANDLING

- A. Handle chillers and components properly to prevent damage, breaking, denting and scoring. Do not install damaged reciprocating chillers or components; replace with new. Comply with manufacturer's rigging and installation instructions for unloading chillers, and transporting them to final location.
- B. Store reciprocating chiller and components in clean dry space. Protect from weather, dirt, fumes, water, construction debris, and physical damage. Storage temperatures for unit controls are not to exceed 185 degree F (85 degree C).

1.7 WARRANTY

- A. Provide five (5) year motor/compressor replacement warranty in addition to the one (1) year warranty required under Division 23. Warranty shall include parts and labor.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

- A. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
 - 1. Outdoor Air-Cooled Scroll Liquid Chillers:
 - a. Carrier Corporation
 - b. McQuay Group
 - c. Trane Company
 - d. York/Johnson Controls

2.2 OUTDOOR AIR-COOLED SCROLL LIQUID CHILLERS

- A. General: Provide factory-assembled and tested outdoor air-cooled liquid chillers as indicated, consisting of compressors, evaporator, condensers, thermal expansion valves, and control panels. Provide capacity and electrical characteristics as scheduled.
- B. Refrigerant: Provide full operating charge of refrigerant and oil.
- C. Housing: Housing shall be minimum 14 gauge welded galvanized steel frame with 14 and 16 gauge galvanized steel panels and access doors with corrosion protection coating, and exterior finish. Provide removable panels and/or access doors for inspection and access to internal parts and components.

- D. Evaporator: Provide shell-and-tube design with seamless copper tubes roller expanded into tube sheets. Design, test, and stamp for refrigerant side working pressure of 650 PSIG minimum, and water side working pressure of 150 PSIG minimum, in accordance with ASME Pressure Vessel Code. Provide one (1) water pass with series of internal baffles. Insulate with 3/4-inch minimum flexible unicellular insulation with maximum K-value of 0.26. Provide water drain connection and bulb wells for temperature controller and low-temperature cutout.
 - 1. Heater Tapes: Provide electrical resistance heater tape on evaporator to protect against freezing at -20 degree F (-29 degree C) ambient at no-flow condition.
 - 2. Multiple-Compressor Units: Provide independent multiple refrigerant circuits with gasketed evaporator heads.
- E. Condenser: Construct coils with configured aluminum fins mechanically bonded to seamless copper tubing. Provide integral subcooling circuit with liquid accumulators. Leak test coils with air under water at 425 PSIG air pressure. Provide protective grilles over exposed coil faces.
 - 1. Multiple-Compressor Units: Provide multiple circuited condenser coils.
 - 2. Condenser Fans: Provide propeller fans, direct driven, draw-through design, statically and dynamically balanced. Provide permanently lubricated ball-bearing motors with overload protection. Provide protective grille over air discharge.
- F. Compressors: Provide direct drive 3600 RPM, multi-cylinder scroll compressors with crankcase heater; either semi-hermetic or hermetic, with a minimum 44 steps of capacity control. Mount compressors on vibration isolators within chiller housing.
 - 1. Lubrication: Provide oil pump, oil filter, oil level sight glass, and oil charging valve.
- G. Capacity Modulation: Provide step-control by means compressor staging, from return water temperature.
- H. Refrigerant Circuit: Provide for each refrigerant circuit the following:
- I. Controls and Control Panels:
 - 1. Locate on chiller, Nema 3R unit control panel, containing both a controls section as well as a starter section.
 - 2. Provide the following devices in starter section:
 - a. Factory wired single point power hook-up to unit mounted, non-fused disconnect switch
 - b. Three-phase solid-state overload protection.
 - c. Customer wired grounding lug.
 - d. Control power transformer with primary and secondary fused protection.
 - e. Factory wired across-the-line starter with solid state fixed OFF/ON timers on all compressor motors.
 - f. Non-recycling compressor overloads.
 - g. Phase loss/reversal/imbalance and undervoltage monitor on main power connection. A 15 percent under voltage condition for 4-5 seconds will shut unit OFF and require manual reset.
 - 3. Provide the following devices in the control panel:
 - a. Compressor run lights.
 - b. System start-stop switch.
 - c. Low pressure lockout lights.
 - d. Terminal strips.
 - e. Central micro-processor
 - 1) Leaving fluid setpoint
 - 2) Delta T setpoint
 - 3) Number of stages
 - f. Control power fuses.
 - g. Motor protection/oil failure controller.

- h. Indicating lights for load limit.
 - i. Stages of unit unloading.
 - 4. Provide the following safety controls arranged so that operating any one (1) will shutdown machine and require manual reset:
 - a. Low chilled water temperature switch.
 - b. High discharge pressure switch for each circuit.
 - c. Low suction pressure switch for each circuit.
 - d. Oil pressure switch.
 - e. Current overload.
 - f. Motor temperature.
 - 5. Provide the following safety controls so there is automatic shutdown of the machine with automatic reset:
 - a. Over voltage.
 - b. Under voltage.
 - c. Phase reversal.
 - d. Chilled water flow interlock.
 - e. Condenser water flow interlock.
 - 6. Provide the following operating controls:
 - a. Multi-step chilled water temperature controller which cycles compressor.
 - b. Five-minute OFF timer prevents compressor from short cycling.
 - c. Across-the-line solid state start timer.
 - d. Provide automatic circuit-to-circuit lead-lag capability to allow for equal run time per compressor.
 - e. Periodic pump-out timer to pump down on chilled water flow and high evaporator refrigerant pressure.
 - f. Load limit thermostat to limit compressor loading on high return water temperature.
 - g. Power supply monitor to protect unit by stopping compressor on phase loss, phase reversal, incorrect phase sequence, and low voltage.
 - h. Cycle counter and operating hour meter.
 - 7. Provide readout for suction and discharge refrigerant pressures, and oil pressures for each compressor.
- J. Accessories: Provide the following accessories:
 - 1. Hot gas bypass valve, factory-piped and wired.
 - 2. Load limit thermostat, if required.
 - 3. Vapor-proof chilled water flow switch.
 - 4. Suction and discharge gauges.
 - 5. Copper condenser fins.

PART 3 - EXECUTION

3.1 INSPECTION

- A. Installer must examine areas and conditions under which reciprocating chillers are to be installed and notify Contractor in writing of conditions detrimental to proper completion of the work. Do not proceed with the work until unsatisfactory conditions have been corrected in a manner acceptable to Installer.

3.2 INSTALLATION OF SCROLL CHILLERS

- A. Support: Install floor-mounted units on reinforced concrete pad. Furnish anchor bolts which are to be inserted in concrete pad to Concrete Installer.
- B. Chilled Water Piping: Refer to Division 23. Connect inlet to evaporator with controller bulb well, shutoff valve, thermometer, strainer, flow switch, flexible pipe connector, drain valve, pressure gauge, and union or flange. Connect outlet to evaporator with shutoff valve, balancing cock, flow meter, thermometer, flexible pipe connection, pressure gauge, drain valve, and union or flange.
- C. Electrical Wiring: Install electrical devices furnished by manufacturer but not specified to be factory-mounted. Furnish copy of manufacturer's wiring diagram submittal to Electrical Installer.
 - 1. Verify that electrical wiring installation is in accordance with manufacturer's submittal and installation requirements of Division 26 sections. Do not proceed with equipment start-up until wiring installation is acceptable to manufacturer and equipment Installer.
- D. Control: Furnish field-installed automatic temperature control requirements to Control Installer.
- E. Start-up: Chiller start-up shall be by factory authorized service representative in accordance with manufacturer's recommendations. Test controls and demonstrate compliance with requirements. Replace damaged, or malfunctioning, controls and equipment and retest.
 - 1. Do not place chillers in sustained operation prior to initial balancing of mechanical systems which interface with the reciprocating chillers.

3.3 TRAINING OF OWNER'S PERSONNEL

- A. Provide services of manufacturer's technical representative for two (2) 8-hour days to instruct Owner's personnel in operation and maintenance of reciprocating chillers.
 - 1. Schedule training with Owner, provide at least seven (7) day notice to Contractor and Engineer of training date.

END OF SECTION 23 64 23

SECTION 26 05 05 – ELECTRICAL DEMOLITION FOR REMODELING

PART 1 - GENERAL

1.1 DESCRIPTION

- A. Tagged Property: For all tagged Property, (e.g., equipment or material with a property tag which contains a property record number) it is the Contractor's responsibility to remove and deliver this property to the Pinellas County School Board (PCSB) and to maintain documentation of such property removal and transfer as follows:
- 1) Chapter 274 Florida Statutes obligates the School District to retain ownership of material and equipment; to trace and control its location; and to dispose of it in accordance with law. The School District has adopted and published a policy as to this subject. The School District has an established procedure to comply with these requirements.
 - 2) Materials and equipment identified herein remain the property of the School District. This Contractor is responsible to exercise care in the removal of such and its delivery to a PCSB site or facility as directed by the project leader.
 - a) Delivery of air conditioning and all other designated materials and equipment will be to the Walter Pownall Service Center Annex, (WPSCA), 12000 South Belcher Road, Largo, Florida 33773, or the Walter Pownall Service Center (WPSC), 11111 South Belcher Road, Largo, Florida 33773, as directed by the project leader.
 - b) Prior to delivery of such materials and equipment, the Contractor shall notify the Maintenance Department, telephone (727) 547-7214, forty- eight (48) hours in advance of their intent to deliver such materials or equipment.
 - c) The hours established for delivery of material and equipment to the WPSCA and WPSC will be from 8:00 a.m. until 2:00 p.m., Monday - Friday, or 8:00 a.m. until 4:00 pm for summer hours Monday - Thursday, excluding holidays.
 - 3) The Principal/Director of the school or facility shall prepare an Asset Transfer Form PCS 818 (current edition) listing all tagged equipment which is to be transferred off the facility site. An attachment to this form shall indicate the basic condition of the item and any apparent damage or missing parts. The Principal shall sign the form and retain the pink or gold copies for his distribution. The original form shall be given to the contractor for delivery to WPSCA along with the equipment.
 - 4) The Contractor shall deliver the property to PCSB's designated site or facility. Upon delivery, the Contractor shall obtain the recipient's signature on the Asset Transfer Form PCS 818. The original Asset Transfer Form will remain with the recipient who will prepare a photocopy for the Contractor's records.
 - 5) The Contractor shall schedule delivery of such property to the designated site or facility at the date and time designated by the Maintenance Department Production Controller.
 - 6) Failure to handle this property as described above shall place the sole responsibility for loss of this property upon this Contractor and such loss shall be charged by the School District to this Contractor for any missing material or equipment at a replacement value. Such charges shall be deducted by change order from the Contractor's purchase order.

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- 7) All material or equipment bearing a Property Record Number but not listed here below as scheduled for removal and delivery to a PCSB site or facility shall either (a) remain in place, or (b) be removed from its location by this Contractor and suitably stored on site where directed by the Principal or Director of the school or facility. The Contractor may, at his option, require an acknowledgment signed by the Principal/Director of such relocation at the school or center.
- 8) The Principal shall attach to the Asset Transfer Form an itemization of any apparent damage or missing parts.
- 9) All property items identified and tagged as salvageable material shall be removed by the Contractor and delivered to Walter Pownall Service Center Annex and the Walter Pownall Service Center.

PART 2 - PRODUCTS

2.1 MATERIALS AND EQUIPMENT

Materials and equipment for patching and extending work: As specified in individual sections.

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Verify field measurements and circuiting arrangements are as shown on drawings.
- B. Verify that abandoned wiring, cables, and equipment be removed in their entirety.
- C. Demolition drawings are based on casual field observation and existing record documents. Report discrepancies to the Architect/Engineer before disturbing existing installation.
- D. Beginning of demolition means installer accepts existing conditions.
- E. Verify that abandoned fire alarm, intercom, clock & bell, television, old data coax, HVAC control wiring, cables, and equipment, etc., be removed in their entirety.

3.2 PREPARATION

- A. Disconnect electrical systems in walls, floors, and ceilings scheduled for removal.
- B. Coordinate utility service outages with utility company and school facility.
- C. Provide temporary wiring and connections to maintain existing systems in service during construction. When work must be performed on energized equipment or circuits, use personnel experienced in such operations.
- D. Existing Electrical Service and Distribution System: Disable system only to make switchovers and connections. Obtain permission from the Owner at least one week before partially or completely disabling system. Minimize outage duration. Make temporary connections to maintain service in areas adjacent to work area.

- E. Existing Fire Alarm System: Disable portions of system only to make switchovers and connections. Notify the Owner at least one week before partially or completely disabling system. Minimize outage duration. Make temporary connections to maintain service in areas adjacent to work area. Relocate system to temporary office location. Extend all existing and temporary fire alarm circuit and control wiring to this location.
- F. Existing Telephone System: Disable system only to make switchovers and connections. Notify the Owner and telephone utility company at least one week before partially or completely disabling system. Minimize outage duration. Make temporary connections to maintain service in areas adjacent to work area.
- G. Existing Intercom System: Disable system only to make switchovers and connections. Notify the Owner at least one week before partially or completely disabling system. Minimize outage duration. Make temporary connections to maintain service in areas adjacent to work area. Furnish and install temporary wiring and intercom circuits as required.
- H. Furnish, install, and maintain temporary power and lighting for all areas and for trades. Lighting levels shall equal the existing condition prior to demolition work.

3.3 DEMOLITION AND EXTENSION OF EXISTING ELECTRICAL WORK

- A. Exposed, abandoned conduit, including abandoned conduit above ceiling spaces/finishes, shall be removed back to a junction box with a blank cover plate. Box to be identified as abandoned.
- B. Prior to any demolition, this Contractor shall survey the building and paint a large red 'R' on the equipment to be removed as coordinated with the architectural and HVAC plans and roofer. If any item(s) is incorrectly tagged, then this Contractor shall clean off the paint so there is no confusion.
- C. If any conflicts arise in the field as to which equipment, ductwork, etc., is to be removed, then this Contractor shall notify the Owner/Engineer in writing and shall include a sketch and description of the field conflict for further direction.
- D. In areas where demolition is required of this Contractor, then this Contractor shall be responsible for all phases of demolition, including, but not limited to, removal, storage, and reinstallation of items to remain.
- E. Remove, relocate, and extend existing installations to accommodate new construction.
- F. Remove abandoned wiring to source of supply. Abandoned conductors shall be removed entirely.
- G. Remove exposed, abandoned conduit, including abandoned conduit above accessible ceiling finishes. Cut conduit flush with walls and floors and patch surfaces with fire rated products.
- H. Disconnect abandoned outlets and remove devices. Remove abandoned outlets if conduit servicing them is abandoned and removed. Provide blank cover for abandoned outlets which are not removed or remove boxes for wall to be patched.
- I. Disconnect and remove abandoned panelboards, distribution equipment, enclosures, cabinets, disconnects, etc.
- J. Disconnect and remove electrical devices and equipment serving utilization equipment that has been removed.

- K. Disconnect and remove abandoned luminaires. Remove brackets, stems, hangers, and other accessories.
- L. Repair adjacent construction and finishes damaged during demolition and extension work.
- M. Maintain access to existing electrical installations which remain active. Modify installation or provide access panel as appropriate.
- N. Extend existing installations using materials and methods compatible with existing electrical installations, or as specified.
- O. Coordinate with roofer and assist in removal of all roof mounted electrical conduit devices, equipment, etc., to be removed as indicated on the roofing drawings and HVAC drawings.

3.4 CLEANING AND REPAIR

- A. Clean and repair existing materials and equipment which remain or are to be reused.
- B. Panelboards: Clean exposed surfaces and check tightness of electrical connections. Replace damaged circuit breakers and provide closure plates for vacant positions. Provide typed circuit directory showing revised circuiting arrangement.

3.5 INSTALLATION

- A. Install relocated materials and equipment under the provisions of this contract.
- B. When or where raceway or conduit systems and enclosures are designed/intended to be reused, all same systems must meet the entire contract specifications and the National Electrical Code for support, fill, etc.

END OF SECTION 26 05 05

SECTION 26 05 10 – BASIC ELECTRICAL REQUIREMENTS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. The Bidding Requirements and Contractual Requirements of Division 01 shall apply to all work hereunder.
- B. Bidders of work in Sections under Division 26 are expected to have read the above requirements and, upon subcontracting for work called for in such Sections, shall be responsible for compliance with such Sections.

1.2 REQUIREMENTS OF REGULATORY AGENCIES

All work under Division 26 shall comply with requirements of Department of Education (DOE) of the State of Florida, State Requirements for Educational Facilities (SREF), and to other pertinent codes made a part of such code by reference.

1.3 INTENT

- A. It is the intention of these specifications and drawings to call for finished work, tested, and ready for operation. Wherever the word "provide" is used, it shall mean "furnish and install complete and ready for use."
- B. Minor details not usually shown or specified, but necessary for the proper installation and operation, shall be included in the work, the same as if herein specified or shown.

1.4 SURVEYS AND MEASUREMENTS

Base all measurements, both horizontal and vertical from established bench marks. All work shall agree with these established lines and levels. Verify all measurements at site and check the correctness of same as related to the work. All material take-offs for the site shall be field measured prior to bids.

1.5 DRAWINGS

- A. Drawings are diagrammatic and indicate the general arrangement of systems and work included in the contract. Drawings are not to be scaled. The architectural drawings and details shall be examined for exact location of fixtures and equipment. Where they are not definitely located, this information shall be obtained from the Architect.
- B. If directed by the Architect or Engineer, the Contractor shall, without extra charge, make reasonable modifications in the layout as needed to prevent conflict with work of other trades or for proper execution of the work.
- C. At the time of each shop drawing submission, the Contractor shall call the Engineer's attention (in writing) to, and plainly mark on shop drawings, any deviations from the Contract Documents.
- D. At the close of the job, prior to final review, five (5) bound copies of the following shall be submitted by transmittal letter to the Engineer for review and acceptance.
 - 1) Equipment warranties
 - 2) Contractor's warranty

- 3) Parts list and manuals for all equipment
- 4) Operating Instructions (in writing)
- 5) Written instructions on maintenance and care of the system

1.6 REFERENCES

- 1) ANSI/NFPA 70—National Electrical Code
- 2) State Requirements for Educational Facilities (SREF)
- 3) SREF—Florida Building Code Section 453
- 4) NFPA 101—Life Safety Code
- 5) Florida Department of Education Accessibility Guidelines and Requirements
- 6) Florida Fire Protection Code

1.7 SUBSTITUTIONS

- A. The intention of the terms of these Contract Documents is for the Contractor to furnish and the School District to receive the exact materials and equipment specified in (a) the originally published Specifications and Drawings or, (b) as previously specified in any addendum issued by the Project Architect/Engineer (PA/E) during bidding and prior to bid opening.
- B. Therefore, it is the intention of the Project Architect and Engineers to prohibit substitutions after the time of bid opening. Manufacturers and others with interests in providing materials or equipment other than that originally specified have ample opportunity to request inclusion up to ten (10) days before bids open. See the following in Division 01:
 - 1) Division 01, Instructions to Bidders
 - 2) Division 01, Supplementary General Conditions
- C. The limited conditions for which a substitution may be considered are set forth in the above listed articles/paragraphs. Substitutions on any other basis will be considered not in the School District's best interest and as non-competitive.
- D. The Project Architect/Engineer, on advice of the Electrical Engineer, shall turn down appeals for substitutions after the award of the Contract and the School District's representative, the Facilities Design & Construction Office's representative, will not entertain such requests.
- E. Contractor options:
 - 1) For products specified only by a referenced standard, such as ASTM, ANSI, etc., select any product meeting that standard.
 - 2) For products specified by naming several products or manufacturers, select any one of the products or manufacturers names, which complies with the Contract Documents. To comply, a product must be acceptable to the Facilities Design & Construction Representative and the Project Architect/Engineer in quality, performance, space requirements and maintenance requirements. This Contractor must prove product acceptability.
 - 3) For a product specified by naming only one product and manufacturer, there is no option.
 - 4) When products are provided as an option if this Contractor selects an option, this Contractor shall be responsible for modifications required for his work and work of other trades at no additional cost to the Owner.

- F. Materials and equipment are specified herein by a single or by multiple manufacturers to indicate quality and performance required. The drawings are based upon equipment scheduled on drawings and specified. If another manufacturer is considered substitution during the bidding process, the Electrical Contractor shall be responsible for coordinating all electrical, mechanical, structural, or architectural changes. Comparable equipment manufacturers which are listed as equals shall be considered as substitutes. Manufacturers other than the basis of design shall submit a catalog information and 1/4" scale plan and section drawings showing proper fit and all clearances for maintenance items.
- G. Substitutions of other manufacturers will be considered for use if, in the Engineers opinion, the item requested for substitution is equal to that specified. The Contractor shall provide to the Engineer a typed comparative list of the basis of design and the proposed substitute.
- H. Request for approval of substitutions or equals prior to bid must be made in writing. The approval of any substitutions or equals prior to bid shall not be construed as a shop drawing approval. The substitute or equal must be submitted as described in the specifications and meet all the requirements of the specifications and drawings.
- I. All requests for substitutions shall be submitted as described in Paragraph 1.07, G., and specifically indicate any and all differences or omissions between the product specified as basis of design and the product proposed for substitution.
- J. Where the Contractor proposes to use an item of equipment other than that specified or detailed on the drawing, which requires any redesign of the structure, partitions, foundations, piping, wiring, or any other part of the mechanical or electrical, all such redesign, and all new drawings and detailing required therefore, shall be prepared by the Subcontractor at his own expense and submitted to the Architect/Engineer for approval.
- K. Where such approved deviation requires quantity and arrangement of equipment from that specified or indicated on the drawings, any other additional equipment required by the system, shall be provided by this Contractor at no additional cost to the Owner.
- L. Dry-Type Transformers (Section 26 22 13), Motor Control Center (Section 26 24 19) Distribution Switchboards (Section 26 24 13), Panelboards (Section 26 24 16), Disconnect Switches (Section 26 28 16), and Enclosed Motor Controllers (Section 26 29 13) shall be of the same manufacturer.

1.8 SUBMITTALS

- A. Submit under provisions of Division 01.
- B. Proposed Products List: Include Products specified in the following Sections, but not limited to:
 - 1) Section 26 05 33.13 Conduit and Raceways
- C. It shall be understood that review of shop drawings by the Engineer does not supersede the requirement to provide a complete and functioning system in compliance with the Contract Documents.
- D. Samples, drawings, specifications, catalogs, submitted for approval, shall be properly labeled indicating specific service for which material or equipment is to be used, location, section and article number of specifications governing, Contractor's name, and name of job. All equipment shall be labeled to match labeling on contract documents.

- E. Catalogs, pamphlets, or other documents submitted to describe items on which approval is being requested, shall be specific and identification in catalog, pamphlet, etc. of item submitted shall be clearly made in ink. Data of a general nature will not be accepted.
- F. Approval rendered on shop drawings shall not be considered as a guarantee of measurements or building conditions. Where drawings are approved, said approval does not mean that drawings have been checked in detail; said approval does not in any way relieve the Contractor from his responsibility or necessity of furnishing material or performing work as required by the contract drawings and specifications.
- G. All shop drawings shall be submitted to the Architect/Engineer by Contractor no later than thirty (30) days from the day of contract award.
- H. Failure of the Contractor to submit shop drawings in ample time for checking shall not entitle him to an extension of contract time, and no claim for extension by reason of such default will be allowed.
- I. Submit all Division 26 submittals at one (1) time in one (1) integral group. Piece- by-piece submission of individual items will not be acceptable. Engineer may check contents of each submittal set upon initial delivery; if not complete as set forth herein, submittal sets may be returned to Contractor without review and approval and will not be accepted until made complete.
- J. The Project Architect/Engineer shall have the authority to determine the method of submitting shop drawings whether in multiple sets or by the reproducible transparency technique. The Project Architect/Engineer shall instruct the Contractor and the Subcontractors at the pre-construction meeting as to the method to be used. The Contractor shall submit shop drawings and technical data for each product within thirty (30) calendar days of award of the Contract by the Owner.
- K. However, the following number of shop drawings and submittals shall be the minimum number reproduced for distribution:

For the Project Architect/Engineer and the school district, furnish the quantity set forth in each pertinent subparagraph under Section 01 70 00, Execution and Closeout Requirements. In particular, furnish one copy for the following:

- a) The Project Architect's file record.
- b) The Project Architect's Engineer for his file record.
- c) The Contractor's main office file.
- d) The Contractor's field office.
- e) The Subcontractor's file.
- f) The Subcontractor's field office.
- g) The workers in the field.
- h) The Facilities Design & Construction file (AFTER APPROVAL).
- i) The Maintenance Department file (AFTER APPROVAL).

- j) The School's (or Facilities) Head Plant Operator's file (AFTER APPROVAL).
- L. Submittals are required for all items of mechanical and electrical equipment and products provided by this contractor. Refer to each section for additional requirements.
 - M. Submittals shall be referenced correctly to the Contract Documents.
 - N. Manufacturer's catalog cuts may be submitted for all standard cataloged equipment, provided that the item required to meet the Project Specifications is not modified in any way from the standard catalog version of said item.
 - O. Cuts shall be clearly marked to indicate the exact size, type, rating, capacity, etc., of the item to be furnished.
 - P. Bind shop drawings/catalog-cuts in folders with a title sheet and identification on front of the folder. Submit all at one time. Allow space for Contractor, Project Architect, and Engineer review stamps.
 - Q. All submittals must bear the handwritten signature of the Contractor and his stamp of approval before being considered for review by the Project Architect/Engineer.
 - R. Shop drawings and submittals which have not been previously approved and corrected and so marked by the Contractor, will be returned to the Contractor for such action before the Project Architect or Engineer will review and comment on such submittals.
 - S. Partial submittals will not be accepted for review and approval.
 - T. Full submittal shall be made for all equipment (whether or not it is exactly as specified) on the basis of design. Any items marked REJECTED or similarly marked shall be resubmitted and furnished exactly as specified.
 - U. Full electrical characteristics for each motor, piece of equipment or device shall be prominently displayed on the shop drawings or submittal. Prominently displayed on the shop drawings or prominently attached to the submittal shall mean a statement signed by maker of the submittal to the Contractor that he or she has carefully examined the electrical characteristics specified in the Contract Documents (and if remodeling or an addition, conformed to existing electrical characteristics), and that the motors, equipment or devices proposed to be furnished are compatible.

This signed statement shall be on the shop drawings or submittal before forwarding to the Contractor who shall otherwise return these documents to the Subcontractor for resubmittal. The Contractor shall not forward incomplete documents to the Project Architect/Engineer. The responsibility to provide motors and equipment having compatibility with electric service provided shall rest with the Subcontractor furnishing the equipment, at no additional cost to the School Board.
 - V. Operating and maintenance manuals shall be provided in an organized manner. They should include instructions, wiring/control diagrams, spare parts list, warranties and test certificates. Any special tools or keys should also be included.

W. Test and Certifications:

- 1) Provide insulation resistance at ground continuity tests for all feeders, branch circuits, or other equipment. In no case shall the insulation resistance be less than 50,000 ohms at 600 volts.
- 2) Written test results and certification shall be required for proper fire alarm operation from the installer of the fire alarm equipment.
- 3) Optimum phase balance under full load conditions shall be obtained. Special care shall be taken to prevent reverse rotation of motors during these adjustments.

1.9 COOPERATION WITH OTHER TRADES

- A. Give full cooperation to other trades and furnish in writing to the General Contractor, with copies to the Architect, any information necessary to permit the work of all trades to be installed satisfactorily and with the least possible interference or delay.
- B. When work installed under this Division will be in close proximity to, or will interfere with work of other trades, assist in working out space conditions to make a satisfactory adjustment. If so directed by the Engineer/Architect, prepare composite working drawings and sections at a suitable scale not less than $1/4" = 1'0"$, clearly showing how work is to be installed in relation to the work of other trades. If the work is installed before coordinating with other trades, or so as to cause any interference with work of other trades, make all the necessary changes in work to correct the condition without extra charge.
- C. Furnish to other trades, as required, all necessary templates, patterns, setting plans, and shop details for the proper installation of work and for the purpose of coordinating adjacent work.
- D. This Contractor shall coordinate the layout of electrical work with other trades involved. Locations of structural systems, plumbing, and heating work should take preference over the location of conduit runs.

1.10 PROTECTION

- A. Protect all work and material provided under this Division from damage. All damaged equipment, work, or material provided under this Division shall be replaced with new. Rebuilt or Reconditioned materials are not acceptable.
- B. Protect all work and equipment until inspected, tested, and accepted. Protect work against theft, injury, or damage; and carefully store material and equipment received on site which are not immediately installed. Close open ends of work with temporary covers or plugs during storage and construction to prevent entry of obstructing material.

1.11 SCAFFOLDING, RIGGING, AND HOISTING

Provide all scaffolding, rigging, hoisting, and services necessary for erection and delivery into the premises of any equipment and apparatus furnished. Remove same from premises when no longer required.

1.12 REMOVAL OF RUBBISH

This Contractor shall at all times keep premises free from accumulations of waste materials or rubbish caused by his employees or work. At completion of work he shall remove all his tools, scaffolding, materials, and rubbish from the building and site. He shall leave the premises and his work in a clean, orderly, and acceptable condition.

1.13 SAFETY

This Contractor shall comply with Section 107 of the Contract Work Hours and Safety Standards Act (40 U.S.C.333), Title 29—Labor, Chapter XIII, Bureau of Standards, Department of Labor, Part 1518—Safety and Health Regulations for Construction; and that his housekeeping and equipment be maintained in such a manner that they comply with the Florida Industrial Commission Safety Code and Regulations of the Federal Williams—Steiger Occupational Safety and Health Act of 1970 (OSHA), wherein it states that the Contractor shall not require any laborer or mechanic employed in the performance of the contract to work in surroundings or under working conditions which are unsanitary, hazardous, or dangerous to his health and safety.

1.14 SUPERVISION

This Contractor shall provide a competent, experienced, full time superintendent who is acceptable to the Architect/Engineer and Owner, and who is authorized to make decisions on behalf of the Contractor. Working foreman on jobs over \$50,000 shall not be considered proper supervision.

1.15 MATERIAL AND WORKMANSHIP

- A. All materials and apparatus required for the work, except as specifically specified otherwise, shall be new, of first-class quality, and shall be furnished, delivered, erected, connected and finished in every detail, and shall be so selected and arranged as to fit properly into the building spaces. Where no specific kind or quality of material is given, a first-class standard article as approved by the Engineer shall be furnished. Refer to substitutions in this Section.
- B. Unless otherwise specifically indicated on the plans or specifications, all equipment and materials shall be installed with the approval of the Architect and Engineer in accordance with the recommendations of the manufacturer. This includes the performance of such tests as the manufacturer recommends.

1.16 QUIET OPERATION AND VIBRATION

All work shall operate under all conditions of load without any sound or vibration which is objectionable in the opinion of the Engineer and the Owner. In case of moving machinery, sound, or vibration noticeable outside of room in which it is installed, or annoyingly noticeable inside its own room, will be considered objectionable. Sound or vibration conditions considered objectionable by the Engineer and the Owner shall be corrected in an approved manner at no additional expense to the Owner.

1.17 FOUNDATIONS, SUPPORTS, PIERS, ATTACHMENTS

- A. This Contractor shall furnish and install all necessary foundations, supports, pads, bases and piers required for all equipment furnished under this Division, and shall submit drawings to the Architect and Engineer for approval before purchase, fabrication, or construction of same.
- B. For all floor mounted equipment, provide concrete pads which extend six inches (6") beyond equipment base in all directions with top edge chamfered. Inset six inches (6") steel dowel rods into floors to anchor pads. Shop drawings of all foundations and pads shall be submitted to the Architect and Engineer for approval before same are constructed.
- C. Construction of foundations, supports, pads, bases, and piers where mounted on the floor, shall be the same materials and same quality of finish as the adjacent and surrounding flooring material.

- D. All equipment, unless shown otherwise, shall be securely attached to the building structure in an approved manner. Attachments shall be of a strong and durable nature and any attachments that are, in the opinion of the Architect and the Engineer, not strong enough shall be replaced as directed.

1.18 ACCESS DOORS FOR WALLS AND CEILINGS

- A. Provide flush panel access doors with a 16 gauge steel frame and a 14 gauge steel door panel.
- B. Finish is to be primed painted steel.
- C. Provide concealed hinges which allow the door to open 175 degrees and have a removable pin.
- D. Provide access doors with a locked flush mounted vandal proof spanner head operated steel cams.
- E. Provide 1-1/2 hour "B" label door for rated chase walls.
- F. Furnish masonry anchors for installation in masonry walls and metal lath wings with casing bead for plaster installation.
- G. Provide a minimum 2'-0" by 2'-0" access doors unless shown or noted otherwise on the drawings.
- H. Access doors for chase walls shall be mounted 16" off the finish floor.
- I. Access doors for electrical equipment shall be a minimum of 12" larger than equipment all around.
- J. Each pertinent Subcontractor shall furnish access doors for access to all electrical pull boxes, dampers, and other electrical equipment the Subcontractor furnishes which are concealed in walls, furring and in hung ceilings, or where may be necessary.
- K. Delivery: These access doors shall be delivered to the Contractor for installation by the appropriate trade. Delivery of the access doors shall be made so as not to cause delay in the work of the Contractor or other trades.
- L. Material and Finish: Access doors shall conform to the finish of adjacent construction as indicated in the Project Architect's finish schedule. Access doors shall be as specified by the Project Architect/Engineer.
- M. Quality Control: Each Subcontractor shall inspect the installation of the access doors and shall immediately inform the Contractor in writing if they are not being located and installed to afford proper access to the equipment.

1.19 EXPOSED WORK

All ductwork, piping and conduit shall be concealed from view of occupied spaces and shall be concealed from view from the exterior, unless such is specifically identified on the Drawings or Specifications to be exposed.

HORIZON ELEMENTARY SCHOOL
REPLACE CHILLER BLDG. 11
VCS PROJECT 2648221

1.20 COORDINATION WITH BEGINNING AND/OR CONTINUING SCHOOL (OR FACILITY) OPERATIONS

Subcontractors doing work in Sections under Division 26 shall read and comply with requirements set forth in Section 00 72 00, Standard Requirements, as to keeping school or facilities operating in a safe and practical fashion. Difficulties on this Project will result in the Contractors responsible being prohibited from doing future Pinellas County School Board work.

1.21 ROOF TOP WORK PROHIBITED

No electrical or other equipment, piping, conduit or other materials shall be installed or placed on roof tops of buildings or on covered walkways excepting exit- housing for intake or exhaust of ventilating fans and immediately adjacent electrical work serving such equipment.

1.22 MINIMUM HEAD CLEARANCE IN OCCUPIED SPACES

No electrical or other equipment, piping, conduit, structural framing and support elements of suspended equipment or boxed-in soffits shall be installed in a manner which occurs lower than 8'-0" above the finished floor of the area it occurs above, if people can stand or walk under it.

1.23 CONSTRUCTION FACILITIES

A. Temporary construction facilities such as temporary toilets, temporary wiring, electric outlets, temporary lighting, grounding, storage and work areas, field offices, shall be as set forth in Section 00 72 00, Standard Requirements, Paragraphs 7A - 7H, and as set forth in Section 00 73 00, Special Requirements.

B. On-site office facilities, construction water, temporary sewage connections, temporary construction site restroom facilities, electricity for construction, existing fire alarms, emergency lighting, temporary lighting, existing intercom and electrical systems, use of site, etc., shall be as set forth in Section 00 73 00, Special Requirements, Paragraphs 4, 5, 6, 7, 8, 9 and 10.

1.24 PROJECT RECORD DRAWINGS—CHANGES

Comply with Section 00 72 00, Standard Requirements.

1.25 USE OF SITE FOR CONSTRUCTION PURPOSES

Comply with the requirements set forth in Section 00 73 00, Special Requirements, for use of the site for access and construction purpose.

1.26 OWNERSHIP OF EXISTING EQUIPMENT AND HANDLING THEREOF

A. Comply with the requirements set forth in Section 00 73 00, Special Requirements, for the removal, transportation and delivery of special equipment/material set forth to be delivered on a prearranged schedule to Walter Pownall Service Center.

B. Such equipment/material is owned by the School District and is not to be taken by or otherwise disposed of by the Contractor (or Subcontractors). If such unauthorized removal or disposal is done, this Contractor will be back charged a sum representing fair market retail value of such items.

C. Provide demolition of existing work in remodeled areas as indicated on Drawings.

HORIZON ELEMENTARY SCHOOL
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Demolition includes but is not limited to removal of all equipment, controls, piping, ducts, supports, panels, meters, raceways, etc. and filling, patching and painting to match existing surfaces.

1.27 PROJECT CONDITIONS

- A. All existing electrical utilities shall be located prior to the beginning of work. Any conflicts should be identified and noted on As-Built (Record) drawings.
- B. Adequate means of protection for all utilities should be provided and, if damaged during working operations, such shall be repaired to the satisfaction of the utility owner at this Contractor's expense.
- C. Where existing devices are permanently abandoned, each outlet, branch circuit, etc. shall be removed completely and the conduit plugged or capped at a point well behind the proposed new finished closures or newly finished surfaces.
- D. Install Work in locations shown on Drawings, unless prevented by Project conditions.
- E. Prepare drawings showing proposed rearrangement of Work to meet Project conditions, including changes to Work specified in other Sections. Obtain permission of Architect/Engineer before proceeding.
- F. The Contractor shall inform the Engineer of any work or materials which conflict with any of the applicable codes, standards, laws and regulations before submitting his bid.
- G. The scope of the work included under this Division of the Specifications shall include complete electrical systems as shown on the plans and as specified herein. The General Conditions and Special Conditions of these specifications shall form a part and be included under this Section of the Specifications. Provide all supervision, labor, material, equipment, machinery, factory trained personnel, and any and all other items necessary to complete the electrical systems. All items of equipment are specified in the singular; however, provide and install the number of items of equipment as indicated on the drawings, and as required for complete systems.

1.28 TEMPORARY ELECTRIC

The Contractor will be required to furnish power for the office trailer. The school power may be utilized for construction work during a renovation project. If a new building is under construction it will be the Contractor's responsibility to provide and pay for temporary power. (Specification writer: See Section 00 73 00, Special Requirements).

1.29 ELECTRICAL CONNECTIONS

Each Subcontractor under Division 26 shall provide and install all electrical work and connections except those specifically set forth below as being provided and installed by the Mechanical Subcontractor under Divisions 22 or 23.

- 1) The Electrical Contractor shall furnish and install all wiring under Division 26, except:
 - a) Temperature Control Wiring
 - b) Equipment Control Wiring
 - c) Interlock Wiring

- 2) The Electrical Contractor shall furnish and install under Division 26 all power wiring complete from power source to motor or equipment junction box, including power wiring through starters and shall connect to power lugs on the equipment. Nothing in any section in Divisions 22, 23, 26, 27, or 28 shall overrule this.

1.30 CONDUITS

When conduit is required for low voltage wiring, the Electrical Subcontractor shall provide and install same under Division 26.

1.31 MOTORS

- A. Motors shall be furnished by the manufacturer or supplier of the specified equipment.
- B. General purpose motors shall be open drip-proof conforming to NEMA Design B, Class B insulation, continuous 40 degree C ambient, 60 Hz, 1.15 service factor, and 1800 RPM maximum speed unless specified otherwise. Voltage shall be as specified in individual Specification Sections. All motors 3/4 HP and smaller shall be self-lubricating. Larger motors shall be self-lubricated, if specified.
- C. Motors shall be protected with thermal overload devices at the motor, or by the motor starter. Disconnect switch at motors are for service purposes and shall be unfused type, unless fusing is specifically required by the manufacturer.
- D. Motors smaller than 3/4 HP shall be single phase and shall be three phase when 3/4 HP and larger, unless specified otherwise.
 - 1) Single phase motors 1/2 HP and smaller shall have built-in overload protection furnished by the Mechanical Subcontractor; single phase and three phase motors larger than 1/2 HP shall have separate motor starters furnished by the Mechanical Subcontractor and installed by the Electrical Subcontractor as overload protection.
 - 2) Single phase motors shall be capacitor start, capacitor run.
 - 3) Equipment requiring 1,000 watts or more shall have a power factor of 85% or greater at rated load conditions. Equipment with a power factor less than 85% shall be corrected to at least 90% power factor under full load operating conditions. Power factor corrective devices shall be switched with related equipment.
 - 4) Motor characteristics which change from that specified, due to the Contractor electing to use one of the optional manufacturers, or an updated model, etc., shall be coordinated with the Electrical Subcontractor, through the General Contractor.

The Contractor making the change is responsible for the cost and design of any revisions necessary to provide proper power and control connections in full accordance with the National Electrical Code, and State and Local Codes.
 - 5) Phase monitors shall be provided by this Contractor for motors over 3/4 HP.
- E. The Electrical Contractor shall install under Division 26 all motor starters and contactors, except when specified to be furnished by the equipment manufacturer under Divisions 22 and 23. Separate motor starters shall be provided by the Mechanical Subcontractor and installed by the Electrical Subcontractor, ANY WORK IN DIVISIONS 22, 23, AND 26 TO THE CONTRARY NOT WITHSTANDING.

- F. Electrical work provided and installed by Subcontractors under Divisions 22, 23 and 26 shall be performed by electrical contractors licensed under the Florida Construction Industries Licensing Board, and by properly qualified foremen, journeymen and apprentices. At least one electrician licensed by the State of Florida shall be on the site whenever any electrical work is being done. All fire alarm wiring shall be by licensed and experienced technicians trained by the manufacturer of the equipment.
- G. Air conditioning equipment containing various electrical components within its housing shall be furnished by Division 23 with internal wiring arranged to terminate at one set of electrical power lugs. Components shall be approved for group operation as defined by the National Electrical Code, or auxiliary equipment must be provided as required to satisfy the National Electrical Code and UL Labels (or other appropriate labels) of the unit.
- H. Where specific instructions are not indicated or specified, provide the following items on the installation of motor equipment furnished under Division 26:
 - 1) Provide templates and anchor bolts.
 - 2) For equipment placed on the ground floor or on the structural system, provide a minimum of a four inch (4") thick reinforced concrete equipment pads, and also provide resilient isolation pads between equipment and slab or structure. Such slabs shall be designed and reinforced to meet the conditions.
 - 3) For suspended equipment, this Contractor shall provide structural supports designed to carry all loads, with "simple" framing, anchoring devices and vibration isolation devices approved by the Project Architect/Engineer.
- I. Control devices, such as thermostats, firetraps, step controllers, strip heat contactors, etc., shall be installed in place under the Mechanical Sections of these Specifications and shall be wired complete under the pertinent Mechanical Section. All control circuiting shall be installed in accordance with diagrams furnished under the appropriate Mechanical Section, and which have been approved by the Project Architect/Engineer.

1.32 PAINTING

A. General:

All field painting shall be performed under the subcontract for electrical work and shall be as specified in the Painting Section of Division 09 of the Specifications. Each Subcontractor shall leave his work clean and free from oil, dirt, and grease and shall do field painting, where required.

- B. The Contractor providing equipment, conduit, raceways, piping, etc., shall, upon completion, thoroughly clean all work to remove all dirt, grease, rust and oil. The Contractor shall vacuum clean the inside and outside of panel box and equipment cabinets. The Contractor shall clean galvanized piping, conduit, raceway, and work in exposed areas with diluted acetic acid. He shall thoroughly prepare all such work for painting.

C. Equipment:

- 1) All equipment shall have factory standard finish. Where zinc chromate paint is specified to be left for painting by each Subcontractor, it shall be made up in synthetic resin vehicle.
- 2) Factory finished equipment which has rusted or been damaged shall be repaired, cleaned, spot primed and entirely repainted the original color by this Contractor.

- 3) Insulation coverings shall be cleaned, sized (if necessary), and painted for service identification by this Contractor.
- D. Ferrous metal installed under this Division 26 of the Specifications which is exposed to view or to the weather, such as conduits, raceway, supports, etc., shall first be painted with one coat of priming zinc chromate. Finished paint shall be in accordance with the Painting Section of Division 09 by the Contractor providing the work under the Electrical Section.
- E. Painting Schedule for visible equipment & conduit:

Table 1 - Color Identification

Classification	Predominant Color of System	Color of Letters for Legend
F - Fire protection	Red	White materials & equipment
D - Dangerous	Yellow (or orange)	Black
S - Safe Materials	Green (or the achromatic colors: white, black, gray, or aluminum	
P - Protective materials	Bright Blue	White

1.33 PENETRATION OF ROOFING MEMBRANES

- A. Penetration of finished roofing or roofing membranes by work under this Division 26 shall only be done through curbed construction that meets the requirements of Division 07 and Chapter 15 of the Florida Building Code.
- B. Such curbs shall be constructed to meet the requirements of Division 07 and Chapter 15 of the Florida Building Code. Such curbs shall be thoroughly anchored to the roof framing system. All necessary steel framing shall be provided and installed.
- C. The Subcontractor providing the conduit or equipment penetrating the finished roofing or roofing membrane shall provide the roof curbing and cant system prefabricated and ready for the (General) Contractor to install, for and to which the Roofing Subcontractor shall provide and install roofing membrane and fabric base flashing.
- D. The Subcontractor providing the conduit or equipment penetrating the finished roofing or roofing membrane shall provide, for the (General) Contractor to install, miscellaneous steel framing members to support the roof curbs and to anchor to the roof framing system.
- E. The Subcontractor providing the conduit or equipment penetrating the finished roofing or roofing membrane shall, in every instance, provide the metal counterflashing (which may be an integral part of the equipment housing) to cover and to extend down over the upturned roofing membrane and fabric base flashing perimetering the curb, by a minimum of three (3) inches.
- F. Penetration of finished roofing or roofing membranes by conduit vents or similar work:
 - 1) For built-up roofs, modified bitumen roofs, single ply roofs, clay or cement tile roofs or shingle roof, conduit penetrations shall be curbed and flashed as specified in Division 07 and the Florida Building Code.

- 2) For metal roofs, conduit and similar penetrations shall be flashed with special roof vent flashings compatible with the metal roof.
- 3) Such flashing shall be furnished to the Contractor to be installed by the Roofing Subcontractor.
- G. Electrical conduit shall only penetrate roofing membrane through curbed openings (whether such opening serves equipment penetration or a grouping of conduit).

1.34 PENETRATION OF WATERPROOFING (INCLUDING WATERPROOF CONCRETE)

A. Quality Control:

Where any work pierces waterproofing including waterproof concrete, the method of installation shall be as approved by the Project Architect/Engineer before work is done.

B. Materials and Installation:

The Subcontractor causing the penetration shall furnish and install in a timely fashion all necessary sleeves, caulking, and flashing materials required to make openings absolutely water tight.

1.35 PENETRATION OF SOUNDPROOFING

- A. The Subcontractor causing the penetration of any sound proofing materials shall provide all necessary materials and labor to provide thorough and complete caulking of all penetrations through walls, partitions and decks, whether such penetration occurs above or below dropped ceiling lines.
- B. Penetrations of special materials (such as face brick, precast concrete, etc.) shall be done by the trades doing such original work, at the expense of the Subcontractor needing the penetration.
- C. Penetrations shall be cut or patched by such skilled mechanics in a manner that the hole is uniformly 1/8 inch clear all around the item penetrating it (including insulation) so that a full penetration (but not excessive) sealant bead can be installed.
- D. This Subcontractor shall do all sealant work required to seal completely on both sides of walls, partitions and decks which are penetrated.
- E. Sealing work shall be done in strict compliance with requirements of the Caulking and Sealants Section.
- F. Any pipe, duct, conduit or other item penetrating a wall, partition or deck which item tends to vibrate, shall have sufficient corrective methods effected to one or both sides of the penetration that no vibration occurs at point of penetration. This work, or the cost of such work, shall be at the expense of the Subcontractor needing the penetration.

1.36 DEFINITIONS

- A. The definitions set forth in Division 01, Instruction to Bidders, shall apply to Sections in this Division 26. (Such also includes the definitions in the General Conditions.)

B. Additional Technical Definitions:

- 1) "Raceway" shall mean pipe, conduit, fittings, flanges, controls, hangers, and items customarily required in connection with the transmission of electrical energy.
- 2) "Concealed" shall mean embedded in masonry or other construction, installed within or behind wall furring, within partitions or double partitions or hung ceilings, in crawl spaces, in shafts, in chases, buried in trenches.
- 3) "Exposed" shall mean not concealed
- 4) "Demolition" shall be the removal of any existing equipment, and the capping or plugging of any existing services to that equipment. (See paragraph 1.26 above.)
- 5) "Furnish" means to purchase and deliver products and equipment to the project site and prepare for installation.
- 6) "Install" means to uncrate, assemble, erect, place, anchor and connect furnished products into satisfactory operation.
- 7) "Provide" means to furnish and install

1.37 AMPLIFICATION

- A. Except where modified by a specific notation to the contrary, it shall be understood that the indication and/or description of an item, in the Drawings or Specifications either or both, carries with it the intent to furnish and install the item, regardless of whether or not this is explicitly stated as part of the indication or description.
- B. The intent of the Contract Documents is to include all items necessary for the proper execution and completion of the Work. The Contract Documents are complementary, and what is required by any one shall be as binding as if required by all. Work not covered in the Contract Documents will not be required unless it is consistent therewith and is reasonably inferable therefrom as being necessary to produce the intended results. Words and abbreviations which have well-known technical or trade meanings are used in the Contract Documents in accordance with such recognized meanings."
- C. In case of discrepancy concerning quality and/or quantity within the Contract Documents, this Contractor shall provide the better quality and/or the greater quantity unless otherwise determined in writing by the Project Architect/Engineer, at no increase to the Contract amount.
- D. No exclusions from, or limitations in, the language used in the Drawings or Specifications shall be interpreted as meaning that the appurtenances or accessories necessary to complete any required system or item of equipment are to be omitted. This Contractor shall furnish and install such at no increase to the Contract amount.
- E. The Drawings, of necessity, utilize symbols and schematic diagrams to indicate various items of work. Neither of these have any dimensional significance nor do they delineate every item required for the intended installations. The Work shall be installed, in accordance with the diagrammatic intent expressed on the electrical and mechanical drawings, and in conformity with the dimensions indicated on final architectural and structural drawings. Such may be adjusted to accommodate equipment shop drawings.

- F. Where Drawings and Specifications conflict, it shall be the responsibility of this Contractor to bring such conflict to the attention of the Project Architect/Engineer for clarification. In general, the architectural drawings shall take precedence over the mechanical or electrical drawings with reference to building construction. Any change from the drawings necessary to make the work conform with the building as constructed and to fit the work of other trades or to the rules of authorities having jurisdiction, shall be made at no expense to the Owner.
- G. No interpretation shall be made from the limitations of symbols and diagrams that any elements necessary for complete Work are excluded.
- H. Certain details appear on the Drawings which are specific with regard to the dimensioning and positioning of the Work. These details are intended only for the purpose of establishing general feasibility. They do not obviate this Contractor's responsibility for field coordination for the indicated Work. It shall be the duty of this Contractor to supplement any plans and details shown with his own knowledge and experience concerning good installation practice and, with the approval of the inspecting authority, to make any modifications necessary to fit the specific equipment for use, to avoid conflicts with other trades, and to execute this work properly in accordance with the full intent and meaning of the Drawings and Specifications.
- I. Capacities, sizes and conditions specified or shown are allowable minimums. Based on design and rated operating conditions of systems, motors shall not be overloaded. Equipment shall not operate at speeds or temperatures greater than manufacturer's published recommendations, and no strain or demand shall be imposed upon any component of any system, structure or building. Also, no quality of architectural feature, function, or end result shall be adversely affected.
- J. Information as to the general construction shall be derived from structural and architectural Drawings and Specifications.
- K. The use of a word in the singular shall not be considered as limiting where other indications denote that more than one item is required. The determining of correct quantities in compiling his bid shall be the responsibility of this Contractor. The authority for determining the intent of the Contract Documents shall, in the first instance, be that of the Project Architect/Engineer.
- L. In the event that extra work is authorized and performed by this Contractor, Work shown on Drawings depicting such extra work, and/or described by Addendum, or by Change Order, shall be subject to the basic building and Contract Specifications in all respects.

1.38 QUALITY ASSURANCE

- A. Standards: Certain standard materials and installation requirements are described by reference to standard specifications. These standards include the following:
 - 1) ASA American Standards Association
 - 2) ASTM American Society for Testing and Materials
 - 3) ASME American Society of Mechanical Engineers - Code of Unfired Pressure Vessels
 - 4) NFPA National Fire Protection Association
 - 5) NEMA National Electrical Manufacturers Association
 - 6) UL Underwriters Laboratories
 - 7) ANSI American National Standards Institute
 - 8) ASHRAE American Society of Heating, Refrigerating, and Air Conditioning Engineers
 - 9) SMACNA Sheet Metal and Air Conditioning Contractors' National Association

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| 10) AMCA | Air Moving and Conditioning Association |
| 11) ARI | Air Conditioning and Refrigeration Institute |
| 12) AMA | Acoustical Materials Association |
| 13) NEC | National Electrical Code |
| 14) IEEE | Institute of Electrical and Electronic Engineers |
| 15) EIA | Electric Industries Associates |
| 16) IES | Illuminating Engineering Society |

- B. Whenever a reference is made to a standard, installation and materials, the intention is such shall comply with the latest published edition at the time project is bid, unless the edition is otherwise specified herein.
- C. Materials and equipment herein shall be new and standard catalogued items manufactured by reputable concerns regularly supplying such materials. Material shall bear the Underwriters' Laboratories, Inc. label (or other appropriate label) where such is required or allowed by code, by Contract Documents or by authorities having jurisdiction.
- D. Product deliveries shall be arranged in accordance with construction schedules and to avoid conflict with work and site conditions.
- 1) Deliver and store products in undamaged condition, in manufacturer's original containers or packaging, with identifying labels intact and legible.
 - 2) Immediately upon delivery, this Contractor shall inspect shipments to assure compliance with the requirements of the Contract Documents and approved submittals, and that products are properly protected and undamaged.
 - 3) Provide equipment and personnel to handle products by methods to prevent soiling or damage to products or packaging.
- E. Codes and Rules:

All material furnished and all work installed shall comply with the following codes (Current Editions) as they apply to this project:

- 1) NFPA 70, 72 and 101
- 2) Florida Building Code/SREF
- 3) Regulations of the Florida Industrial Commission Concerning Safety
- 4) Applicable County, State and Local Building Codes
- 5) Local and State Fire Marshal Rules and Regulations
- 6) Chapter 4A-47, Florida Administrative Code—Uniform Fire Safety Standards for Elevators
- 7) Occupational Safety and Health Agency Standards (OSHA)
- 8) Florida State Board of Health Rules and Regulations
- 9) Florida Department of Education - Office of Educational Facilities; State Requirements for Educational Facilities (SREF), Current Edition

Applicable codes shall be those adopted by the authority having jurisdiction at the time project is bid.

F. Permits, Fees, and Inspections

- 1) The Contractor shall give all necessary notices, obtain all permits, and pay all government fees, sales taxes, and other costs, including utility connections or extensions, in connection with this work; file all necessary approvals of all governmental departments having jurisdiction.

- 2) Obtain all required certificates of inspection for their work and deliver to the Owner/Engineer the same certificates before request for acceptance and final payment for the work.
- 3) The Contractor shall include in the work, without extra cost to the Owner, any labor, materials, services, apparatus, and drawings required to comply with all applicable laws, ordinances, rules, and regulations.
- 4) The Contractor shall inform the Engineer of any work or materials which conflict with any of the applicable codes, standards, laws, and regulations before submitting their bid.

1.39 CONTRACTOR QUALIFICATIONS

- A. The Contractor or Subcontractors performing work under all Sections of this Division 26 shall be regularly engaged in the type of work to be furnished under these Sections and shall be licensed under the Florida Construction Industries Licensing Boards for such specialty trades, and such firms shall employ properly qualified foremen, journeymen and apprentices as appropriate and in keeping with best trade practices.
- B. Each firm shall be able to provide, upon request, a list of similar jobs it has completed.
- C. The Project Architect/Engineer and the Owner reserve the right to reject Subcontractors who have seriously questionable capabilities to perform the specific type and quality of work intended, or who have a poor record in performance. (See Division 01, Supplementary General Conditions.)

1.40 ORGANIZATION OF THE WORK

- A. Each Subcontractor in Division 26 (i.e., this Contractor) shall put his work in place as fast as possible to meet all construction schedules, but only after coordinating his own work and the work priorities of other Subcontractors and the General Contractor.
- B. Prior to starting the work, this Contractor shall carefully verify all measurements at the site and determine that the work will properly clear openings, structural members and the work of other trades. Correlate the time of each work item with all other items to the best advantage of the completed job. Furnish, in ample time to avoid delays in the work, all information required to revise footing elevations, structural elements, chases and openings in floors and walls, and to provide clearances which may be required to accommodate the work. Set all sleeves, anchor bolts and inserts required to accommodate equipment before concrete is poured or masonry is started.
- C. Locate existing utilities prior to beginning work. Reroute or replace existing utilities where necessary to permit installation of Work. Provide adequate means of protection during work operations. Repair existing utilities damaged during work operations to the satisfaction of the utility and at this Contractor's expense.
- D. Should uncharted or incorrectly charted electrical or other utilities be encountered during work operations, notify the Project Architect/Engineer and Facilities Design & Construction's Inspector immediately for procedure directions. Cooperate with utility companies in maintaining active utilities in operation.
- E. It is this Contractor's responsibility to immediately act to put any damaged utilities back in functioning conditions. Resolution to establish obligation to bear the cost will follow.

- F. Each Subcontractor in Division 26 shall, at all times while work under such subcontract is taking place, keep on the site a competent superintendent in charge of the Work. Such superintendent shall be replaced if unsatisfactory to the School District and/or Project Architect/Engineer.
- G. Each Subcontractor shall maintain a complete file of all Contract Drawings, Specifications, and approved shop drawings at the site to be made available for inspection by School District's and/or Project Architect/Engineer's representatives.
- H. Installation and equipment shop drawings shall be initialed and dated upon installation. This procedure will serve to ensure proper scheduling and enable Owner's representatives to check the work in progress.
- I. Each Subcontractor shall be responsible for his work until its acceptance and final Substantial Completion, and shall replace any of the same which may be damaged, lost or stolen without additional cost to the School District.
- J. Unless otherwise set forth in the subcontracting agreement, each Subcontractor shall furnish all scaffolding, rigging, hoisting and services necessary for erection and delivery to and removal from the premises of any equipment and apparatus furnished. Remove same from premises when no longer required.
- K. Each Subcontractor shall at all times keep the premises free from accumulations of waste material or rubbish caused by his employees or his work.
 - 1) Normal construction cleaning: For new schools or facilities and new additions, or portions thereof not yet certified as Substantially Complete and thereafter during holidays as above defined, only normal construction cleaning need be maintained by the Contractor. Such shall include complete removal of debris from the immediate construction areas and adjacent areas to one or more Contractor provided on-site refuse containers which the Contractor shall have emptied no less than once a week.
 - 2) Special cleaning: At all other times (except holidays) the Contractor, in addition to normal construction cleaning, shall keep the areas needed by faculty, staff, and students (including corridor, exit ways) free of all debris, materials, storage materials, and trash and periodically during the school day hours shall clean-up to a stage of being "broom clean." The Contractor shall periodically "dust (oil) mop" the flooring as may be practical and as may be necessary to minimize dust.
 - 3) Upon completion of the Contract or portions thereof and prior to or shortly after the Date of Substantial Completion, the Contractor shall clean all windows, glass, aluminum/steel or other metal, floors, walls, and other surfaces and make such surfaces clean and free of stain or discoloration. All surfaces shall be left by the Contractor in a first class finished condition as determined appropriate by the Project Architect.
- L. The Contractor is required to minimize construction noise levels in all locations adjacent to or in occupied areas.
- M. The Owner reserves that right to prevent use of any tools which cause detrimental vibration or noise when the school or facility is occupied.
- N. Protect equipment and materials during construction from damage from water, dirt, welding and cutting splatter, paint droppings, etc., by use of shields and drop cloths. Damaged equipment or materials shall be repaired or replaced by the responsible Subcontractor to the Project Architect/Engineer's satisfaction.

- O. Products stored outside shall be covered with waterproof drop cloths or tarpaulins. Equipment which may be damaged by the elements shall not be stored outside. Condensation shall be prevented by heating and ventilating.
- P. During construction, maintain materials and equipment in an orderly manner.
- Q. Provide the following accessory materials for electrical systems. Where similar accessory materials are specified with material and/or equipment, or are shown on the Drawings, the requirements of the Technical Specification Section or Drawings shall govern.
 - 1) Anchor bolts or other anchoring devices be of the size and type recommended by equipment manufacturer for specific application.
 - 2) Structural support (steel) for elevated or suspended mechanical items shall be made with connections using "simple" framing.
 - 3) Resilient isolation pads for motors and equipment shall be rubber-in-shear pads and of type recommended by manufacturer of the motor and equipment unless otherwise specified. (See sound proofing requirements.)
 - 4) Dielectric fittings shall be provided where copper joins steel, aluminum or iron, or any dissimilar metals such as insulating bushings or unions.
 - 5) Escutcheons shall be provided where conduits pierce exposed partitions, floors, walls or ceilings, to cover raw edge. Escutcheons shall be chrome plated. (See sound proofing requirements.)
- R. Delay caused by equipment not being on the job site when required shall be avoided in the following manner:

This Contractor shall furnish and install a temporary substitute piece of equipment (subject to approval of the Project Architect/Engineer), allowing the building to become operative. The temporary substitute equipment shall later be removed and replaced with that originally specified (or originally approved) when it arrives, all at the convenience of and at no additional cost to the Owner.

1.41 EXCAVATION

- A. Each Subcontractor shall do trench and pit excavating and backfilling inside and outside the building, as required by his work, including shoring and bracing, pumping and protection for safety of persons and property. Trench excavations performed under this Contract whether by the Contractor or any Subcontractor shall be done in strict compliance with Florida Statute Chapter 553 Part III "The Trench Safety Act" (See Section 553.60-553.64). This pertains to the design of the trench safety system and shoring. (See Division 01, the Proposal Form and Instruction to Bidders).
- B. Backfill shall be compacted in layers not exceeding six inches (6") in depth. Completed backfill shall conform to surrounding ground and finished grade and with compaction requirements of Division 31, Sitework.
 - 1) Concrete encasement: Piping passing under footings, foundations and other locations, as shown on Drawings, shall be encased on all sides. Concrete shall conform to Division 03, Concrete Requirements.

- 2) Extend concrete encasement around piping and each side of footings or foundations.
- C. Remove non-usable excavated material from the site. Deposit any usable surplus material on site where directed by the Project Architect/Engineer. Do not remove usable material from site.
- D. Provide and maintain bracing, shoring, sheet piling, or sheathing as required to safely support sides of excavations. The Contractor doing the excavation and the Contractor using the excavation are responsible for safety in excavations.
- E. This Contractor shall provide and operate pumping equipment to keep excavations free of water.
- F. This Contractor is responsible for repairing and restoring paving, streets, curbs, walks, and other work in the area where excavations are made. Any existing underground piping, conduit, etc. damaged during construction, shall be returned to original condition at no additional cost to Owner.
- G. Provide additional excavation and backfill where required to resolve conflicts in buried lines.
- H. Coordinate timing of excavations in advance with other trades.
- I. Excavation shall be open cut from the surface.
- J. Hold trench width to a minimum.
- K. Do not excavate utility trenches parallel to building footings closer than four feet (4') from the footings except by approval of the Project Architect/Engineer. When parallel trenches require cuts deeper than the building footings, the horizontal distance from the footing shall be equal to or greater than one and one half (1-1/2) times the vertical distance below the footing, but in no case shall the horizontal distance be less than four feet (4') except by the approval of the Project Architect/Engineer.
- L. Mechanical excavation shall be held to four inches (4") above final grade of the bottom of trench. The remainder shall be shaped by manual excavation, so that piping is fully supported on undisturbed soil. Shoring of piping in trench will not be allowed. Piping must be suspended from above.
- M. Whenever, in the opinion of the Project Architect/Engineer, the soil is unsuitable for supporting raceway and appurtenances, provisions for proper foundations shall be made at no additional cost to the Owner. Soil test reports are bound in the Specification book.
- N. The Drawings for this project show the anticipated underground utilities. Where locations will interfere with proposed construction such shall be assumed to be a known factor to each Subcontractor unless such locations can be shown to be in error.
- O. Wherever trenching or excavating, assume utilities may exist in area without such being shown on the Drawings. Exercise extreme caution. Should existing facilities be damaged, repair such to Project Architect/Engineer's satisfaction at no additional cost to the School District.

1.42 CHASE, CUTTING AND PATCHING

- A. Provide and place required sleeves, forms and inserts before walls, ceilings, partitions, floors or roofs are built. The cost of cutting and patching of walls, partitions, ceilings, roofs and floors necessary for reception of this Contractor's work caused by his failure to provide or properly locate sleeves, forms and inserts, or caused by incorrect location of his Work, shall be borne by the offending Contractor.

B. Cutting of Finished Materials:

When it becomes necessary to cut finished materials, submit to the Project Architect/Engineer for approval, drawings showing the work required, and obtain approval before doing such cutting.

C. Chases and Openings:

Chases and openings in walls will be provided under the work of other Sections of these Specifications. This Contractor shall furnish exact dimensions and locations of these openings to suit the apparatus to be used before such walls are built, or shall bear the cost of the additional work to correct and provide for installation of such work.

D. Cutting of Work by Others:

No cutting or altering the work of other sections in these Specifications will be permitted without the approval of the Project Architect/Engineer and the Contractor. No structural members shall be cut without the previous written approval of the Project Architect/Engineer.

E. Core Boring:

- 1) Any holes in existing slabs or other concrete or finished work required for the installation of new piping shall be core bored and this Contractor shall seal around pipe or material. All fire ratings of slabs shall be maintained with approved UL listed fire rated products.
 - 2) Prior to commencement of work, the area to be core drilled shall be examined by X-ray or ground penetrating radar.
- F. Finish patch cut areas with floor tile, gypsum wallboard, plaster, ceiling panels or tiles as required to match existing. Paint entire disturbed area to match existing. This Contractor shall provide, at his expense, new ceiling panels and grid which his employees may have damaged during construction, utilizing skilled Subcontractors for each trade. Such work shall match existing.

1.43 LUBRICATION AND PACKING

- A. Equipment furnished under Sections in Division 26 shall be lubricated by the Contractor furnishing such equipment, using manufacturer's recommended lubricants, with correct type and quantity of lubricant before placing into service. Damage caused by not providing proper lubrication shall be repaired at this Contractor's expense.
- B. Lubrication of equipment requiring factory supervised start-up shall be verified by manufacturer's representative.
- C. Packing glands shall be examined by this Contractor for proper packing. Proper packing seals shall be maintained during construction and during the warranty period.

1.44 QUIET OPERATION AND VIBRATION

A. Scope:

All equipment provided under Sections in this Division 26 shall operate (under all conditions of load), free of noise levels higher than specified in the pertinent Section and shall not be in excess of the requirements in Section 23 05 93, Testing and Balance, Sound Testing. Such shall be free of annoying vibrations. Sound and vibration conditions considered objectionable by the Project Architect/Engineer shall be corrected by whatever additional work is required in an approved manner at no cost to the School District.

B. Quality Control:

Vibration control shall be by means of approved vibration eliminators (or suppressor in a manner as specified and as recommended by the manufacturer of the eliminators. Submit shop drawings for review by the Project Architect/Engineer.

1.45 INSTRUCTIONS

A. After the systems are in operation, the Contractor furnishing the equipment will thoroughly instruct the designated Owner's personnel on operation and maintenance of electrical equipment and systems.

B. This Contractor shall schedule, with the Facilities Design & Construction's Inspector, a series of meetings which will be attended by several designated representatives of the School District's Maintenance Department, the Head Plant Operator and other designees of the Principal or Director of the school or facility and certain representatives of the Facilities Design & Construction's Department.

C. This Contractor shall be required to provide a minimum of twenty-four (24) hours total instruction to Maintenance Department and School Board personnel. Instructions shall include the following:

- 1) Location of equipment and explanation of function.
- 2) Review of operating instruction manual for record and clarity.
- 3) Explanation of specific maintenance requirements to be performed by the Owner.

D. This Contractor shall certify in writing that the designated personnel of the Owner (indicated above) were fully instructed in the care, operation and maintenance of all electrical equipment. This certification shall be signed by all persons attending acknowledging they attended the full instructional program.

1.46 EXISTING FIRE ALARM, SECURITY ALARM AND OTHER ALARMS EMERGENCY LIGHTING, INTERCOM, ENERGY MANAGEMENT, AND ELECTRICAL SYSTEMS

A. For purposes of this Contract the assumption during bidding is that any and all existing fire alarm, intercom, security, emergency lighting and electrical systems are complete and operating properly.

- B. Before commencing any work on fire alarm, security alarm, energy management, intercom, emergency lighting or electrical systems or any work which affects them, the specialty Contractor shall examine such system thoroughly. If this Contractor finds any portion of any system not functioning fully and properly, he shall notify the Project Architect/Engineer (PA/E) and the Facilities Design & Construction's (FD&C) Project Manager in writing exactly and precisely which item(s) are not working. (This paragraph does not require diagnosis as to why such item(s) are not working nor the repair of such.)
- C. Upon above notification to the Owner, the PA/E and FD&C Inspector shall verify whether such report is accurate. If found not accurate, the PA/E and the FD&C Inspector shall demonstrate such to this Contractor. If the report is found accurate, the Owner may either:
 - 1) Correct such deficiencies with his own Maintenance forces or by employing another specialty Contractor.
 - 2) Require of the Contractor for this construction project a proposal sum to thoroughly diagnose the cause of such deficiencies and the specifying of precise corrective action needed.
 - 3) Upon receipt of such proposal sum, the Owner may elect to employ the Contractor, by Change Order, to effect such corrections; or, with the Contractor's approval, employ the Contractor's appropriate specialty Contractor directly by Purchase Order, to effect such corrections; or the Owner may achieve corrections to the system by other means.
- D. However, upon commencing any work under this Contract on fire alarm, security alarm, energy management, emergency lighting, intercom or electrical systems under this Construction Contract, this Contractor has accepted the systems as complete and functioning properly. From the time of commencing work on such systems, they become the responsibility of this Contractor to maintain and keep functional through the Date of Final Substantial Completion. If, at the time of Final Substantial Completion, such a system or portion of such system is found not to be functioning properly, such item shall be listed on the "punch-list" and shall be corrected by this Contractor. Once corrected, inspected by the PA/E and FD&C Inspector and found to be functioning properly, the item shall be removed from the "punch-list" as satisfied.
- E. The guarantees, warranties and obligations of this Contractor for his work under this Contract shall not be extended to include the existing fire alarm, security alarm, other alarm systems, intercom, emergency lighting, energy management and electrical systems beyond the date of final acceptance of the work under this Contract.

1.47 CLEANING

- A. This Contractor shall comply with all cleaning requirements as set forth in Section 00 72 00 - Standard Requirements.
- B. Further, upon completion, raceways, panels, cabinets and equipment shall be thoroughly cleaned of dirt, grease, rust and oil, primed where necessary, and made ready for painting.
- C. Clean galvanized work in exposed areas with diluted acetic acid.
- D. Clean copper in exposed areas with emery cloth and solvent.
- E. Clean gauges, thermostats and fittings.

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1.48 BONDS

UPON BEING AWARDED A CONTRACT, THE ELECTRICAL SUBCONTRACTOR SHALL PROVIDE TO THE (GENERAL) CONTRACTOR, AT THE ELECTRICAL CONTRACTOR'S OWN EXPENSE, A COMPLETELY EXECUTED PERFORMANCE AND LABOR & MATERIAL PAYMENT BOND FOR 100% OF THE SUBCONTRACT SUM. Such bonds shall be provided by a Surety company licensed in Florida and meeting all requirements of Division 01, Instruction to Bidders. These bonds shall be executed as a warranty bond for at least one (1) year following the date of the Final Substantial Completion of the completed project.

1.49 LICENSE

- A. The Subcontracting Firm for the electrical and systems installation shall be licensed by the State of Florida and the local authorities, regularly engaged in the installation of electrical systems, and other related equipment. The Subcontracting Firm shall be familiar with all local conditions including interpretations, codes and shall have at least five (5) years of successful installation experience on similar projects of the same magnitude and scope.
- B. The Subcontracting Firm shall list at least three (3) projects it has successfully completed over the last five (5) years for proof of experience of this caliber. This list shall be included with submittals for review by Architect/Engineer. The Subcontracting Firm shall hold a Florida State Certified Electrical Contractor license for this project. The Subcontracting firm for the fire alarm system shall be a certified "EF" installer.

1.50 AS-BUILT DRAWINGS

The Contractor shall provide AutoCAD as-built drawings and copies of each AutoCAD file on CD before final payment will be issued.

END OF SECTION 26 05 10

SECTION 26 05 19 – BUILDING WIRE AND CABLE

PART 1 - GENERAL

1.1 SECTION INCLUDES

- A. Building Wire and Cable
- B. Remote Control and Signal Cable
- C. Power Limited Fire Protective Signaling Cable
- D. Wiring Connectors and Connections

1.2 RELATED SECTIONS

- A. Section 26 05 33.13 Conduit and Raceways
- B. Section 26 05 33.16 Boxes
- C. Section 26 05 53 Electrical Identification

1.3 REFERENCES

- A. ANSI/NFPA 70—National Electrical Code (NEC)
- B. NEMA WC5—Thermoplastic-insulated wire and cable for the transmission and distribution of electrical energy

1.4 PROJECT CONDITIONS

- A. Verify that field measurements are as shown on drawings.
- B. All conductors shall be copper.
- C. Conductor sizes are based on copper.
- D. Where wire and cable routing is not shown, and destination only is indicated, determine exact routing and lengths required.

1.5 COORDINATION

- A. Coordinate work under provisions of Division 01.
- B. Determine required separation between cable and other work.
- C. Determine cable routing to avoid interference with other work.

PART 2 - PRODUCTS

2.1 BUILDING WIRE AND CABLE

- A. Description: Single conductor insulated wire
- B. Conductor: Copper
- C. Insulation Voltage Rating: 600 volts
- D. Insulation: ANSI/NFPA 70, Type THHN/THWN, XHHW material rated 90°C

2.2 CLASS 1 REMOTE CONTROL AND SIGNAL CABLE

- A. Description: ANSI/NFPA 70, Type TFFN, THHN

- B. Conductor: Copper
- C. Insulation Voltage Rating: 600 volts

2.3 CLASS 2 OR 3 REMOTE CONTROL AND SIGNAL CABLE

- A. Description: NEMA/ICEA WC5, thermoplastic insulated cable, individual insulated conductors twisted together, metallic shielded and covered with PVC jacket when installed in metal raceway
- B. Conductor: Copper, stranded
- C. Insulation Voltage Rating: 300 volts

2.4 CLASS 1 AND NON POWER—LIMITED FIRE PROTECTIVE SIGNALING CABLES

- A. Description: NEMA/NFPA 70, Type TFFN, THHN installed in metal raceway
- B. Conductor: Copper
- C. Insulation Voltage Rating: 600 volts

2.5 POWER LIMITED FIRE PROTECTIVE SIGNALING CABLES

- A. Description: NEMA/NFPA 70, Type TFFN, THHN installed in metal raceway
- B. Conductor: Copper
- C. Insulation Voltage Rating: 600 volts

2.6 POWER LIMITED FIRE PROTECTIVE SIGNALING CABLES

- A. Description: NEMA/NFPA 70, Type FPL, FPLR installed in metal raceway
- B. Conductor: Copper
- C. Insulation Voltage Rating: 300 Volts

2.07 POWER LIMITED FIRE PROTECTIVE SIGNALING CABLES

- A. Description: NEMA/NFPA 70, Type FPLP installed in metal raceway
- B. Conductor: Copper
- C. Insulation Voltage Rating: 300 volts

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Verify that interior of building has been protected from weather.
- B. Verify that mechanical work, likely to damage wire and cable, has been completed.

3.2 PREPARATION

Completely and thoroughly swab raceway before installing wire.

3.3 WIRING METHODS

- A. Concealed Dry Interior Locations: Use only building wire and cable (all types) in raceway.
- B. Exposed Dry Interior Locations: For feeders, branch circuits, and Class 1 remote control circuits, use only building wire in raceway. For Class 2 or 3 control cable and power limited fire protective signaling cables, run in raceway.

- C. Above Accessible Ceilings: For feeders, branch circuits and Class 1 remote control cables use only building wire in raceway. For Class 2 or 3 remote control cables run exposed. For power limited fire protective signaling cables, run in raceway.
- D. Wet or Damp Interior Locations: For feeders, branch circuits and Class 1 remote control cables use only building wire in raceway. For Class 2 or 3 remote control cable and power limited fire protective signaling cables run in raceway.
- E. Exterior Locations: For feeders, branch circuits and Class 1 remote control cables, use only building wire run in raceway. For Class 2 or 3 remote control cables and fire protective signaling cables, run in raceway.
- F. Underground Installations: For feeders, branch circuits and Class 1 remote control cables, use only building wire run in raceway. For Class 2 or 3 remote control cables and power limited fire protective signaling cables, run in raceway.
- G. Use wiring methods indicated on drawings.

3.4 INSTALLATION

- A. Install products in accordance with manufacturer's instructions.
- B. Each computer/clean power receptacle and lighting circuits shall have a dedicated neutral conductor.
- C. If stranded conductors are used for branch-circuits, the devices shall be pressure terminal type.
- D. Use stranded conductors for control circuits and for feeder and branch circuits No. 10 and larger.
- E. Use conductor not smaller than #12 AWG for power and lighting circuits.
- F. Use conductor not smaller than #14 AWG for control circuits.
- G. Use #10 AWG conductors for 20 ampere, 120 volt branch circuits longer than 75 feet throughout the entire length of the branch circuit. Branch circuits of exceptionally longer lengths (i.e., site lighting, marquee signs, basketball court power, etc.) shall require an increase in conductor size.
- H. Use #10 AWG conductors for 20 ampere, 277 volt branch circuits longer than 200 feet.

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- I. All phase conductors shall have color coded insulation. All branch circuit, feeder and service entrance conductors shall be color coded the entire length. All color coding shall be with the same color being used with its respective phase or bus through the entire length of conductor with enclosures, boxes, cabinets, wireways, panels, switchboards, as follows:

120/240 VOLTS	120/208 VOLTS	277/480 VOLTS
Phase A.....Black	Phase A Black	Phase A.....Brown
Phase B.....Orange (Hi-Leg)	Phase B Red	Phase B.....Orange
Phase C.....Blue	Phase C Blue	Phase C.....Yellow
Neutral.....White	Neutral White	Neutral.....Gray
Ground.....Green	Ground Green	Ground Green
Travelers...Purple	Travelers.....Purple	Travelers Purple

- J. Grounded conductors (neutral) shall be identified with a continuous outer finish that is white or gray. Color coding with plastic tape is not acceptable. Grounded conductors (larger than size #4) shall be color coded at 12" intervals with a continuous white or gray outer finish or by white plastic tape on other than green insulation along its entire length at its terminations. This marking shall encircle the conductor or insulation and cover the entire exposed portion of the conductor at the terminations.
- K. Equipment grounding conductors shall be identified with a continuous outer finish that is green or green with one or more yellow stripes. Color coding with plastic tape is not acceptable. Grounding conductors (larger than size #4) shall be color coded at each end and at every point where the conductor is accessible. Identification shall encircle the conductor and shall be accomplished by one of the following:
- 1) Stripping the insulation or covering from the entire exposed length.
 - 2) Cover the entire length of exposed insulation with green plastic tape at all locations the conductor is accessible.
- L. Use suitable, approved, wire pulling lubricant for building wire where needed.
- M. Protect exposed cable from damage.
- N. All conduits entering boxes, enclosures, cabinets, wireways, etc., shall be labeled with a suitable approved permanent marker identifying the appropriate panel/panelboard and branch circuit number serving same. The same shall apply to all enclosure covers.
- O. Use suitable cable fittings and connectors.
- P. Neatly train and lace wiring inside boxes, equipment, and panelboards.
- Q. Clean conductor surfaces before installing lugs and connectors.
- R. Make splices, taps, and terminations to carry full ampacity of conductors with no perceptible temperature rise.
- S. Use Polaris insulated multi-tap wire connector for copper conductor splices and taps, #6 AWG and larger. Tape uninsulated conductors and connector with electrical tape to 150 percent of insulation rating of conductor.

- T. Terminate spare conductors with electrical tape or wire nut.
- U. Use insulated spring wire connectors with plastic caps for copper conductor splices and taps, #8 AWG and smaller.
- V. Splice only in accessible junction boxes.
- W. Do not use quick-connect splice devices.
- X. Feeders and service entrance conductors (as defined by NEC Article 100) shall not be spliced.

3.5 INTERFACE WITH OTHER PRODUCTS

Identify wire and cable under provisions of Section 26 05 53.

3.6 FIELD QUALITY CONTROL

- A. Perform field inspection and testing under provisions of Division 01.
- B. Inspect wire and cable for physical damage and proper connection.
- C. Measure tightness of bolted connections and compare torque measurements with manufacturer's recommended values.
- D. Verify continuity of each branch circuit conductor.
- E. Verify continuity of each control circuit conductor.
- F. Verify proper phasing of conductors prior to energizing or reenergizing any and all electrical equipment.

END OF SECTION 26 05 19

SECTION 26 05 26 – GROUNDING AND BONDING

PART 1 - GENERAL

1.1 SECTION INCLUDES

- A. Grounding Electrodes and Conductors
- B. Equipment Grounding Conductors
- C. Power System Grounding/Bonding
- D. Communication System Grounding
- E. Electrical Equipment and Raceway Grounding and Bonding
- F. Building Grounding/Bonding Detail

1.2 RELATED SECTIONS

- A. Section 26 21 16 Service Entrance.
- B. Section 26 41 13 Lightning Protection Systems.
- C. Section 26 43 00 Surge Protective Devices
- D. Section 26 43 13 Surge Protective Devices for Data and Low Voltage Systems

1.3 REGULATORY REQUIREMENTS

- A. Conform to requirements of ANSI/NFPA 70 / NEC Article 250.
- B. Furnish products listed and classified by Underwriters Laboratories, Inc. (UL) or NRTL, as suitable for purpose specified and shown.

1.4 SYSTEM DESCRIPTION

- A. Ground the electrical service system neutral and each separately-derived system (i.e., transformers and generators) neutral at service entrance equipment within five feet (5') of entrance to building to metallic water service, concrete encased rebar, to building steel, and to supplementary grounding electrodes.
- B. All low voltage communication systems shall be bonded per the grounding detail.

1.5 SUBMITTALS

- A. Submit shop drawings under provisions of Division 01.
- B. Indicate location of system grounding electrode connections and routing of grounding electrode conductor.

1.6 PERFORMANCE REQUIREMENTS

The grounding system installed on permanent building and structures shall provide a maximum of 5 ohms resistance to ground. Grounding systems installed on relocatable structures and play courts shall provide a maximum of 10 ohms resistance to ground.

PART 2 - PRODUCTS

2.1 ROD ELECTRODE

- A. Material: Copper-clad steel

- B. Diameter: 3/4 inch for permanently installed buildings and structures; 5/8 inch for relocatables and play courts
- C. Length: 20 feet minimum

2.02 MECHANICAL COUPLINGS (GROUND RODS)

Material: Bronze

2.03 WIRE

- A. Material: Solid copper 4 AWG and smaller. Stranded copper larger than 4 AWG
- B. Foundation Electrodes: 4 AWG copper
- C. Grounding Electrode Conductor: Sized to meet National Electrical Code Table 250-66 requirements

2.04 GENERAL

All connections shall be exothermic welds to made electrodes (Erico CADWELD or equal). Access boxes shall be provided for inspections, whether in sidewalks, concrete, or landscape areas. Provide an Eritech T416B HDP inspection well for each driven ground rod.

PART 3 - EXECUTION

3.01 EXAMINATION

Verify that final backfill and compaction has been completed before driving rod electrodes.

3.02 INSTALLATION

- A. Install products in accordance with manufacturer's instructions.
- B. Install rod electrodes at locations indicated. Install additional rod electrodes as required to achieve specified resistance to ground.
- C. Provide grounding electrode conductor and connect to reinforcing steel in foundation footing. Minimum twenty feet (20') continuous/unbroken per NEC.
- D. Provide grounding and bonding at Utility Company's metering equipment and pad-mounted transformer.
- E. Connect grounding electrode conductors to metal water pipe using a suitable ground clamp. Make connections to flanged piping at street side of flange. Provide bonding jumper around water meter.
- F. Provide bonding to meet Regulatory Requirements.
- G. Bond together metal siding not attached to grounded structure.
- H. Bond together each metallic raceway, pipe, and other metal objects.
- I. Provide minimum #12 equipment grounding conductors in all raceways including FAS/Intercom or Paging/CATV/Data/Telecommunications/Power/Lighting/etc. per NEC.
- J. Provide a separate, insulated equipment grounding conductor in feeder and branch circuits. Terminate each end on a grounding lug, bus, or ground bar.

- K. Provide a system bonding jumper from each separately derived system to connect the equipment grounding conductors of the separately derived system to the grounded conductor. The grounded conductor of the separately derived system shall be bonded to the equipment grounding conductors at the transformer of origin.
- L. The following systems and/or equipment shall be bonded in strict accordance with the NEC as minimum requirements:
 - 1) Fire alarm systems
 - 2) Intercommunication/Paging systems
 - 3) Building power/lighting systems
 - 4) Raceway and conduit systems
 - 5) Telecommunication systems
 - 6) Lightning protection systems/SPD
 - 7) Non-current carrying metal parts of all motors, panels, and other electrically operated equipment
 - 8) CATV Systems
- M. Use minimum 4 AWG copper conductor for communications service bonding conductor.
- N. All connections to ground rods, footer steel and ground rings shall be made by exothermic welds. Also see Electrical Distribution Grounding System detail and ground buss on contract drawings.
- O. All ground rod installations shall be a minimum 20' in total length.

3.03 FIELD QUALITY CONTROL

- A. Inspect grounding and bonding system conductors and connections for tightness and proper installation.
- B. Prior to energizing, measure ground resistance from system neutral connection at service entrance to convenient ground reference point using suitable ground testing equipment. Resistance shall not exceed 5 ohms for permanent buildings and structures and 10 ohms for relocatables and play courts.
- C. Use suitable test instrument to measure resistance to ground of system. Perform testing in accordance with test instrument manufacturer's recommendations using the fall-of-potential method. Submit test results to Engineer for review and approval.

3.04 PROJECT RECORD DOCUMENTS

- A. Submit under provisions of Division 01
- B. Accurately record actual locations of grounding electrodes
- C. Test Reports: Indicate overall resistance to ground and resistance of each electrode
Appendix Reference: Electrical Distribution Grounding System Detail (2 pages)

END OF SECTION 26 05 26

SECTION 26 05 29 – SUPPORTING DEVICES

PART 1 - GENERAL

1.1 WORK INCLUDED

- A. Conduit and Equipment Supports
- B. Fastening Hardware
- C. Luminaire Supports

1.2 COORDINATION

- A. Coordinate size, shape, and location of concrete pads.

1.3 QUALITY ASSURANCE

- A. Support systems shall be adequate for weight of equipment and conduit, including wiring, which they carry.

PART 2 - PRODUCTS

2.1 MATERIAL

- A. Support Channel: Galvanized or Painted Steel or Aluminum (Interior). Aluminum or Stainless Steel (Exterior).
- B. Hardware: All exterior hardware (nuts, bolts, screws, washers, etc.) shall be stainless steel.

PART 3 - EXECUTION

3.1 INSTALLATION

- A. Fasten hanger rods, conduit clamps, outlets, and junction boxes to building structure using expansion anchors, beam clamps, or spring steel clips. All supporting devices and hardware shall be UL listed for that purpose and per other sections of this specification. In no case will the support device be less than this specification or the manufacturer's requirements and standards for the equipment/material to be supported.
- B. Use toggle bolts or hollow wall fasteners in hollow masonry, plaster, or gypsum board partitions and walls; expansion anchors or preset inserts in solid masonry walls; self-drilling anchors or expansion anchor on concrete surfaces; sheet metal screws in sheet metal studs; and wood screws in wood construction.
- C. All raceways shall be independently supported to building structure. Do not use boxes with attached conduit brackets as sole conduit support.
- D. Do not fasten supports to piping, ductwork, mechanical equipment, or conduit.
- E. Do not use powder-actuated anchors.
- F. Do not drill structural steel members. Limited to strapping conduit. All other holes shall have Structural Engineer's approval prior to cutting or drilling.

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- G. Fabricate supports from structural steel or steel channel, rigidly welded or bolted to present a neat appearance. Use hexagon head bolts with spring lock washers under all nuts.
- H. In wet locations, install free-standing electrical equipment on concrete pads.
- I. Install surface-mounted cabinets and panelboards with minimum of four (4) anchors.
- J. Bridge studs (top and bottom) with channels to support flush-mounted cabinets and panelboards in stud walls.
- K. Safety of Overhead Materials, Fixtures, and Equipment (Reference Specification Section 26 51 13, Luminaires):

1) Troffer or Lay-In Fixtures

Typical 2' x 4', 1' x 4', and 2' x 2' lay-in light fixtures shall be independently supported at all four corners with a minimum #12 solid galvanized wire to building structure (i.e., four (4), independent, support/tie wires to each fixture). Support wires shall not exceed 45° angles to support means.

2) Surface Mounted Fixture

- a) Each surface mounted fixture on plaster ceiling shall be secured to lighting outlet box.
- b) Exposed Grid Ceilings: Support surface mounted luminaires on grid ceiling directly from building structure. (i.e., four (4), independent, support/tie wires to each fixture, or 1/4" all thread to bar joist or to unistrut bolted to bar joist). Support wires shall not exceed 45° angles to support means.

3) Pendant Mounted/Suspended Fixture

- a) Grid Ceilings: Each pendant mounted fluorescent light fixture shall be independently secured by a secondary and supplementary system of two (2) wires from the canopy and support system of each pendant leg of such fixtures to the building's structural framing above.
- b) Plaster Ceilings: Each surface mounted fixture on plaster ceilings, shall be secured to lighting outlet box and shall be installed with two (2), 1/4" threaded rods (one on each end) secured to structural ceiling joists.
- c) Install suspended luminaires using pendants supported from swivel hangers. Provide pendant length required to suspend luminaires at indicated height.

4) Recessed Fixtures

- a) Grid Ceiling: Each recessed fixtures shall be independently supported at all four corners with a minimum #12 solid galvanized wire to building structure (i.e., four (4), independent, support/tie wires to each fixture). Support wires shall not exceed 45° angles to support means.
- b) Plaster Ceilings: Support recessed luminaires in hard ceiling directly from building structure. (i.e., four (4), independent, support/tie wires to each fixture). Support wires shall not exceed 45° angles to support means.

5) Wall Mounted Fixtures

Each wall mounted fixture shall be secured to lighting outlet box and shall be installed with either two (2) ¼" 20 toggle bolts, or tapcons or metal screws secured to block or stud walls.

6) Exit Signs

Install exit signs using pendants supported from swivel hangers. Provide pendant length required to suspend exit sign at indicated height. Outlet box shall be supported by T-Bar hanger with one tie wire to structural support.

7) Emergency Battery Packs

Each wall mounted, emergency batter pack shall be secured to outlet box and shall be installed with either two (2) ¼" 20 toggle bolts, or tapcons or metal screws secured to block or stud walls.

8) Any incandescent (or other fixture) shall be independently secured by a secondary and supplementary system of one (1) wire from the fixture can or canopy and support system of each such fixture to the building's structural framing above.

9) Other similar equipment (heavy speakers, etc.) shall be similarly secured with and independent secondary and supplementary support system.

10) Connection to structure, fixtures, equipment:

- a) Wire shall penetrate the cans or canopies of light fixtures and equipment or otherwise connect to such in a fool-proof and positive manner. Wire shall loop through structural framing members above. Wire shall be turned back onto itself and be given two (2) minimum full twists with at least one inch (1") tail remaining beyond the twist. Wire kinked or evidencing failure at twists or elsewhere shall be replaced. Wire shall be installed in a taut fashion (not slack).
- b) Wire rope and cable shall penetrate or pass through a portion of the fixture or equipment in a manner adequate to sustain the force developed by the fixture or equipment should it drop or fail. Wire rope and cable shall be either turned back into itself or continue into a complete loop until it lays beside-itself. Wire rope and cable shall be secured to itself with a minimum of two (2) each swagings or clips, fully tightened. A minimum of one inch (1") tails shall protrude after tightening of the clamping device.
- c) Chain shall pass through a portion of the fixture or equipment in a manner adequate to sustain the force should the fixture or equipment drop or fail, or should the primary support system fail or fall. Chain shall be secured to the fixture or equipment and to the building's structural framing by means of special links, shackles, or fittings.
- d) Wire, chain, wire rope, and cable shall be installed as nearly vertical as possible and in no event at an angle of more than 45 degrees from the vertical.

11) Materials

- a) General Specifications for Chain: Equivalent to Campbell Chain Company's specified system of steel, electrically welded standard finish (do not galvanize or electroplate) in continuous lengths. Comply with manufacturer's recommendations.

- b) Drop Forged Chain Fittings (eye bolts, pad eyes, links, chain shackles, snaps, anchor shackles, swivels, turn buckles): Of the same materials and finish as the chain and of the same or greater working load limits, of the same manufacturer or as may be specifically recommended by the chain manufacturer.
- c) General Specifications for Wire: 12-gauge galvanized annealed steel wire (multiple strands of lesser gauge will not be considered acceptable). Each wire shall, itself, be looped through the building structural framing above and not to other wiring systems. The angle of the wires shall be kept as vertical as possible and not over 45 degrees from the vertical.
- d) Cable for Exposed-to-Public-View-Applications: Where suspended chandeliers, light fixtures, or special equipment occurs, stainless steel flexible aircraft cable or stainless steel flexible marine cable, 302/304, as manufactured by Paulsen, or equal, or Sailbryte as manufactured by Macwhyte corrosion resistant stainless steel or better, right regular lay, in continuous lengths, shall be used. Comply with manufacturer's recommendations.
- e) Forged and other stainless steel fittings for stainless steel aircraft or marine cable (turnbuckles, swagings, Nicro-Press sleeves, wire rope clips, use only in concealed positions), connecting links shoulder rivets, jaw fittings, eye fittings, lifting eyes, thimbles, swivels, eye nuts, heavy thimbles, clevis nuts, eye pads, shoulder pins); of same material, of same or greater working loads limits as the cable, of the same manufacturer or as recommended by the cable manufacturer, of type 304/316 electro-polished finish, drop forged, non-magnetic (when available for particular fitting). Manufactured by Merrill or equal. See Workmanship paragraph below.
- f) Stainless steel cable for loads (per cable) not exceeding 100 lbs.: 3/32" 7x19 with tensile load limit of 920 lbs. minimum.
- g) Stainless steel cable for loads (per cable) not exceeding 500 lbs.: 3/16" 7x19 with tensile load limit of 3,700 lbs. minimum.
- h) Workmanship: Stainless steel cable is required to be used only in areas where such is exposed to "public view;" therefore, only fittings designed for cold swaging or Nicro-Press fittings or swagless terminals such as Macwhyte Norseman Terminals are to be used whereby no wire ends, nuts, pins, or cotter keys, or clips are visible. Swaging shall be done only with a rotary swager (not a roll swager). Manufacturer's recommendations and specifications shall be adhered to. Pertinent portions of the booklet Wire Rope Facts published by Banks Wire Rope and Sling, Inc. (available in Tampa) and Construction Care and Maintenance of Marine Rigging by Macwhyte Wire Rope Company (available at the Lazzerette Company) which may pertain also to stainless steel cable, shall be adhered to.

END OF SECTION 26 05 29

SECTION 26 05 33.13 – CONDUIT AND RACEWAYS

PART 1 - GENERAL

1.1 SECTION INCLUDES

- A. Metal Conduit
- B. Flexible Metal Conduit
- C. Liquid tight Flexible Metal Conduit
- D. Electrical Metallic Tubing
- E. Non-Metal Conduit
- F. Fittings and Conduit Bodies

1.2 RELATED SECTIONS

- A. Section 26 05 26 Grounding and Bonding
- B. Section 26 05 29 Supporting Devices
- C. Section 26 05 33.16 Boxes
- D. Section 26 05 53 Electrical Identification

1.3 REFERENCES

- A. ANSI C80.1—Rigid Steel Conduit, Zinc Coated
- B. ANSI C80.3—Electrical Metallic Tubing, Zinc Coated
- C. ANSI/NEMA FB 1—Fittings, Cast Metal Boxes, and Conduit Bodies for Conduit and Cable Assemblies
- D. ANSI/NFPA 70—National Electrical Code.
- E. NECA "Standard of Installation"
- F. NEMA TC 2—Electrical Plastic Tubing (EPT) and Conduit (EPC-40 and EPC-80).
- G. NEMA TC 3—PVC Fittings for Use with Rigid PVC Conduit and Tubing
- H. UL651A—Type EB and A Rigid PVC Conduit and HDPE Conduit
- I. UL651B—Continuous Length HDPE Conduit

1.4 DESIGN REQUIREMENTS

Conduit Size: ANSI/NFPA 70.

1.5 PROJECT RECORD DOCUMENTS

- A. Accurately record actual routing of conduits larger than 1-1/4 inches.
- B. Accurately record actual routing of all underground conduits.

1.6 DELIVERY, STORAGE, AND HANDLING

- A. Deliver, store, protect, and handle Products to site under provisions of Division 01.
- B. Accept conduit on site. Inspect for damage.
- C. Protect conduit from corrosion and entrance of debris by storing above grade. Provide appropriate covering.
- D. Protect PVC conduit from sunlight.

1.7 PROJECT CONDITIONS

- A. Verify that field measurements are as shown on Drawings.
- B. Verify routing and termination locations of conduit prior to rough-in.
- C. Conduit routing is shown on Drawings in approximate locations unless dimensioned. Route as required to complete wiring system.

PART 2 - PRODUCTS

2.1 CONDUIT REQUIREMENTS

- A. Homerun shall mean first outlet box or adjacent J-box for lighting branch circuits. Homeruns shall be a minimum size of three-quarter inch ($\frac{3}{4}$ "), unless otherwise specified.
- B. Underground Installations:
 - 1) Use thickwall nonmetallic conduit, Schedule 40 PVC.
 - 2) In or Under Slab-on-Grade: Use Schedule 40 PVC or gray HDPE pipe, per NEC requirements. Use only UL listed and approved fittings for coupling and change-over to different type raceways.
 - 3) Minimum Size: $\frac{3}{4}$ ".
 - 4) Install rigid steel elbows for conduits larger than two inches (2"). Long radius for four inches (4") and larger.
 - 5) Under slab metal conduit or poured-in concrete metal conduit shall be painted with a coat of bitumastic. The bitumastic shall be continuous and continue up through penetration of concrete slabs, up to 12" A.F.G. Corrosion tape is acceptable.
- C. Outdoor Locations, Above Grade: Use rigid steel and liquidtight flexible metal conduit.
- D. Wet and Damp Locations: Use rigid steel, aluminum, intermediate, and liquidtight flexible metal conduit.
- E. Dry Locations:
 - 1) Concealed: Use rigid steel, aluminum, intermediate metal conduit, and electrical metallic tubing.
 - 2) Exposed:
 - a) Exterior—Rigid Steel or aluminum rigid
 - b) Interior—Electrical Metallic Tubing
- F. Fire alarm systems raceways/conduits shall be RED its entire length as applied by the manufacturer.

2.2 METAL CONDUIT

- A. Rigid Steel, Aluminum, and Intermediate Metal Conduit: ANSI C80.1
- B. Fittings and Conduit Bodies: ANSI/NEMA FB 1; all steel fittings

- C. Provide a minimum of half-inch ($\frac{1}{2}$ ") for flexible connections to equipment

2.3 FLEXIBLE METAL CONDUIT

- A. Description: For exposed locations, interlocked steel construction. For concealed locations, interlocked steel construction or aluminum.
- B. Fittings: ANSI/NEMA FB 1

2.4 LIQUIDTIGHT FLEXIBLE METAL CONDUIT

- A. Description: Interlocked steel construction with PVC jacket
- B. Fittings: ANSI/NEMA FB 1

2.5 ELECTRICAL METALLIC TUBING (EMT)

- A. Description: ANSI C80.3; galvanized tubing
- B. Fittings and Conduit Bodies: ANSI/NEMA FB 1; steel set screw or steel compression coupling or connectors. All connectors shall be insulated throat, up to one inch.

2.6 NONMETALLIC CONDUIT

- A. Description: NEMA TC 2; Schedule 40 PVC
- B. Fittings and Conduit Bodies: NEMA TC 3

2.7 HIGH DENSITY POLYETHYLENE (HDPE) CONDUIT

- A. Description: UL651A; UL651B, extruded rigid, Schedule 40, high density polyethylene. Gray in color
- B. Fittings: UL651A

PART 3 - EXECUTION

3.1 INSTALLATION

- A. All work shall be done in a neat and workman like manner per NECA "Standard of Installation."
- B. PVC conduits and raceways are only permitted underground or under slabs. Exception: PVC is permitted within block walls to first outlet box A.F.F. if PVC raceway is one inch (1") trade size or smaller. All raceways and conduits installed underground shall have a minimum burial depth of 24" to the top of conduit (36" for service entrance).
- C. All underground conduits and raceways, not under building slabs, shall have a yellow marker tape for communication or a red marker tape for power installed above its entire length and placed approximately 12" below finished grade. Exception: Raceway installation by directional boring.
- D. Provide a yellow marker ribbon for communication conduits and a red marker ribbon for power conduits installed underground. Exception: Raceway installation by directional boring.
- E. Contractor shall provide a one-inch (1") conduit from the nearest mechanical room to the electrical service meter. Provide a 'FD' type cast junction box and cover at the electrical meter and a 4" x 4" square box and cover in the mechanical room. Provide a nylon pull string. Locate box adjacent to controls equipment cabinet. Coordinate with Mechanical Engineer/Mechanical Contractor.

- F. All thru-slab conduits and raceways larger than one inch (1") installed into block masonry walls and through slabs shall be rigid galvanized conduit to the first enclosure, cabinet, panelboard/switchboard, or box/outlet. All exposed/surface mounted raceways thru slabs to panelboards/switchboards, enclosures, cabinets, conduits and boxes shall be rigid galvanized conduits entering into same enclosures with no junction boxes. All 90° ells and sweeps larger than 1" shall be rigid galvanized conduit.
- G. All raceways and conduits within concrete second floor and above slabs shall be intermediate metal conduit, rigid galvanized conduit, or PVC. EMT is not acceptable. EMT conduits may be used in tilt-wall construction using approved fittings and methods and coated with an asphalt trim paint, corrosive tape or other approved coating.
- H. All raceway and conduits installed under-slabs and under-buildings shall be installed under the slab and not within the concrete pour or slab.
- I. All exterior conduits and raceways shall be rigid galvanized steel or aluminum conduit, or intermediate metal conduit. EMT and PVC shall not be used. Exterior conduits that transition to underground shall be rigid galvanized steel or aluminum rigid.
- J. All conduit shall be concealed whenever possible. Concealed conduit run above the ceiling shall be supported independent of ceiling supports. When a lay-in type ceiling is utilized, the conduit must be installed high enough to permit removal of ceiling tile.
- K. Exposed and surface mounted raceway systems shall have two approved supporting devices per 10' length as equally spaced as practical.
- L. Route exposed conduit parallel and perpendicular to walls. Exposed conduits shall only be run in mechanical and electrical rooms unless otherwise specified.
- M. Conduit/raceway chases to above-ceiling spaces for all cable drops communication, data, CATV and telephone shall have a bushing at the top of the conduit/raceway for protection or terminated in an approved box.
- N. All above ceiling and within partition wall raceways and conduits shall be EMT, intermediate metal conduit or rigid galvanized conduit. PVC is not permitted above the ceiling spaces.
- O. All conduit and raceway systems shall have UL approved supports (equal to Erico Caddy® SK-I Clamp) within three feet (3') of boxes or enclosures and couplings/fittings/condulets. Bar Joist spacing exceeding three feet (3') shall meet the N.E.C. 5' exception to the rule for support.
- P. Tie-wire, tie-wrap, duct tape, etc. shall not be permitted as a means of support for any conduit or raceway system. All conduits and raceways shall be adequately supported with U.L. approved supporting devices. Tie wire or tie wraps shall not be permitted for support and/or securing of electrical raceways, boxes, or equipment.
- Q. Conduit systems shall be racked and run in parallel and perpendicular from its point or origin (i.e., panelboard/panel/switchboard, systems cabinet, etc.) to its destination or first termination. Authority having jurisdiction shall approve any deviation or conflicts with this rule. All conduits after the first point of termination shall be run parallel with or at right angles to building walls or building structure.
- R. Arrange supports to prevent misalignment during wiring installation.
- S. Horizontal runs of conduit in masonry walls is not permissible.

- T. Home-Run conduits are to be a minimum of ¾" trade size to first point of use box/enclosure. Branch circuit conduits for lighting and receptacles shall be filled a maximum of three (3) phase/hot conductors.
- U. A minimum of three spare ¾" and two empty 1" conduits shall be stubbed out of each panelboard or panel to building structure above and terminated in a J-box with cover. Conduits stubs shall also be capped at top with approved fittings where not terminating in a box.
- V. Conduit shall be continuous from outlet to outlet, from outlet to cabinet, junction box to pull box in such a manner that each system shall be electrically continuous from point of service to all outlets.
- W. Any conduit that penetrates a firewall shall be sealed with a fire barrier caulk or similar compound to preserve the fire rating of the wall. Fire-rated foam spray is acceptable.
- X. Conduits not terminating in boxes and unused shall be capped.
- Y. All empty conduits and raceways shall have a pull-string installed capable of pulling conductors typical of conduit size.
- Z. Arrange conduit to maintain headroom and present neat appearance. Minimum headroom for equipment suspended from ceiling or building structure shall be 6'8" unless otherwise specified.
- AA. Maintain 12" clearance between conduit and surfaces with temperatures exceeding 104°F (40°C) unless otherwise specified.
- BB. Cut conduit square using saw or pipe cutter; de-burr cut ends. Bring conduit to shoulder of fittings; fasten securely.
- CC. Install no more than equivalent of four (4) 90° bends between boxes. Use conduit bodies to make sharp changes in direction, as around beams. Use hydraulic one-shot bender or factory elbows for bends in metal conduit larger than 2" size.
- DD. Provide fittings designed to accommodate expansion and deflection where conduit crosses, control, and expansion joints.
- EE. Threadless connectors and couplings for intermediate metal conduit and rigid galvanized conduits are not permitted. Exception: By approval of the "Authority Having Jurisdiction" for special conditions.
- FF. EMT Fittings (connectors/couplings) shall be steel set screw or steel compression type. Fittings in wet locations shall be compression type.
- GG. When hot dipped rigid galvanized steel conduit is installed below grade, it shall be coated with an asphalt trim paint or approved corrosion tape.
- HH. PVC sweeps into utility transformers shall be permitted.
- II. Install nonmetallic conduit in accordance with manufacturer's instructions.

- JJ. Join nonmetallic conduit using cement as recommended by manufacturer. Wipe nonmetallic conduit dry and clean before joining. Apply full even coat of cement to entire area inserted in fitting.
- KK. Corrosive environments/pool pump houses:
- 1) PVC conduits, fitting, conduit fittings, boxes, and enclosures shall be permitted.
 - 2) Additional conduit supports shall be provided if PVC conduit is exposed.
 - 3) Walk-in coolers and freezers—PVC conduit with stainless steel hardware.
- LL. HDPE conduit shall not be installed above grade per NEC.
- MM. All flexible conduits in exposed areas shall be steel or metal seal-tite. All flexible raceways in damp or wet locations shall be metal seal-tite. All flexible conduits above suspended lay-in ceilings shall be aluminum or steel. Flexible conduits are not permitted above drywall, plaster or hard ceilings where not accessible. Minimum size flexible conduits for all installations shall be ½" trade size and shall not exceed 6' in length. Flexible metal conduit fittings and connectors shall be clamp-type. Set screw type fittings and connectors are not permitted. Exceptions as approved by Project Architect.
- NN. Equipment in mechanical rooms shall include but not be limited to, circulating pumps, air handlers, compressors, chillers, etc. Use ½" minimum liquid tight flexible metal conduit, not flexible metal conduit. Liquid tight metal conduit shall not exceed 2' in length when connecting to the above equipment.
- OO. Seal tight or flexible conduit shall NOT be installed through walls.
- PP. Flexible metal conduit shall be used for a flexible connection only, not raceways.
- QQ. All raceway terminations at boxes and enclosures one inch (1") and smaller shall be made with insulated throat connectors. RMC, aluminum, intermediate metal conduit to comply with NEC.
- RR. All raceway terminations at boxes and enclosures larger than one inch (1") shall be made with insulated throat connectors or metallic insulated bushings. Plastic bushings are not acceptable. Conduits/raceways enclosing #3 or larger conductors shall have connectors with insulated throat or use metal insulated bushings.
- SS. Install metallic insulated grounding bushings with lug on all mains, sub-feeders, switchboards, panelboards, transformers, chillers, disconnects, and equipment rated at 100 amps and above.
- TT. No conduit system or raceway system will be installed on or under walkway roofs. Only raceways required for walkway lighting will be permissible. Walkway raceways shall be aluminum and installed under walkway roof decks with approved aluminum or stainless steel supports and hardware. Also see walkway roof specifications, Section 26 56 33 (walkway lighting).
- UU. Install and seal boxes and conduit in acoustical treated walls and ceilings per architectural acoustics specifications.
- VV. All fixture whips shall be supported to fixture support wire/cable with an approved fastener equal to an Erico "KX" flexible conduit hanger or other UL listed supports and fasteners.

3.2 INTERFACE WITH OTHER PRODUCTS

- A. Install conduit to preserve fire resistance rating of partitions and other elements, using materials and methods that are UL listed and tested.
- B. Route conduit through roof openings for piping and ductwork or through suitable roof jack with pitch pocket. Coordinate location with roofing installation specified under Division 07.

END OF SECTION 26 05 33.13

SECTION 26 05 33.16 – BOXES

PART 1 - GENERAL

1.1 SECTION INCLUDES

- A. Wall and Ceiling Outlet Boxes
- B. Floor Boxes
- C. Pull and Junction Boxes
- D. In-Ground Cast Concrete Boxes
- E. FS/FD Cast Device Boxes

1.2 RELATED SECTIONS

- A. Section 26 05 01 Basic Electrical Requirements
- B. Section 26 05 26 Grounding and Bonding
- C. Section 26 05 53 Electrical Identification
- D. Section 26 27 16 Cabinets and Enclosures
- E. Section 26 27 26 Wiring Devices

1.3 REFERENCES

- A. ANSI/NEMA OS 1—Sheet-steel Outlet Boxes, Device Boxes, Covers, and Box Supports
- B. ANSI/NFPA 70—National Electrical Code
- C. NEMA 250—Enclosures for Electrical Equipment (1,000 Volts Maximum)

1.4 PROJECT CONDITIONS

- A. Verify field measurements are as shown on drawings.
- B. Verify locations of floor boxes and outlets to rough-in.
- C. Electrical boxes are shown on drawings in approximate locations unless dimensioned. Install at location required for box to serve intended purpose.

PART 2 - PRODUCTS

2.1 OUTLET BOXES

- A. Sheet Metal Outlet Boxes: ANSI/NEMA OS 1, galvanized steel.
 - 1) Luminaire and Equipment Supporting Boxes: Rated for weight of equipment supported. Minimum depth—2-1/8 inches.
 - 2) Concrete Ceiling Boxes: Concrete type.
- B. Cast Boxes: NEMA FB 1, Type FD, cast ferrolloy deep type. Provide gasketed cover by box manufacturer. Provide threaded hubs.

2.2 FLOOR BOXES

- A. Floor Boxes: ANSI/NEMA OS 1, fully adjustable.
- B. Material: Cast metal with brass cover plate.

- C. Shape: Round or Rectangular.
- D. Conform to regulatory requirements for concrete-tight floor boxes.
- E. Hubbell: B-2436, B-4233, and B-4333 Series.
- F. Walker: 880CS1, 880CS2, and 880CS3.
- G. Replace trims, covers, and device with new in existing floor boxes.

2.3 PULL AND JUNCTION BOXES

- A. Sheet Metal Boxes: NEMA OS 1, galvanized steel. Minimum depth—2-1/8-inches.
- B. Surface-Mounted Cast Metal Box: NEMA 250, Type 4, flat-flanged, surface- mounted junction box.
 - 1) Material: Stainless Steel.
 - 2) Cover: Furnish with ground flange, neoprene gasket, and stainless steel cover screws.

PART 3 - EXECUTION

3.1 INSTALLATION

- A. Install electrical boxes, as shown on drawings and as required for splices, taps, wire pulling, equipment connections, and compliance with regulatory requirements.
- B. Install electrical boxes to maintain headroom and to present neat mechanical appearance.
- C. Install pull boxes and junction boxes above accessible ceilings and in unfinished areas only. Boxes shall not be installed more than 4 feet above finished ceiling. Use 1/4" threaded rod for box support up to 4' in length and 3/8" threaded rod for box supports exceeding 4' in length.
- D. Inaccessible Ceiling Areas: Install outlet and junction boxes no more than 6 inches from ceiling access panel or from removable recessed luminaire. Openings shall be a minimum 24" x 24" hinged door with cylinder cam.
- E. Install boxes to preserve fire resistance rating of partitions and other elements, using materials and methods that are UL listed and tested.
- F. Align adjacent wall-mounted outlet boxes for switches, thermostats, and similar devices with each other.
- G. Use flush mounting outlet boxes in finished areas.
- H. Do not install flush mounting boxes back-to-back in walls; provide minimum 12 inch separation. Provide minimum 24 inches separation in fire-rated walls. Through-the-wall boxes are not allowed.
- I. Secure flush mounting box to interior wall and partition studs. Accurately position to allow for surface finish thickness.
- J. Use stamped steel bridges to fasten flush mounting outlet box between studs.
- K. Install flush mounting box without damaging wall insulation or reducing its effectiveness.

- L. Use adjustable steel channel fasteners for hung ceiling outlet box.
- M. Do not fasten boxes to ceiling support wires.
- N. All boxes and enclosures, including Wiremold boxes, shall be grounded by use of a threaded ground lug/screw. No ground clips acceptable. This shall apply to new and existing installations.
- O. Use gang box where more than one device is mounted together. If sectional boxes are used, barriers are required to separate different voltage systems.
- P. Use gang box with plaster ring for multiple devices mounted together.
- Q. Use FD malleable outlet boxes in exterior locations exposed to the weather, wet locations, kitchens, and toilet rooms where surface mounted with weatherproof "while-in-use" cover. Standard weather proof cast boxes are not acceptable.
- R. Set floor boxes level.
- S. Large Pull Boxes: Boxes larger than 100 cubic inches (1-600 cubic centimeters) in volume or 12 inches (300 mm) in any dimension.
 - 1) Interior Dry Locations: Use hinged enclosure under provisions of Section 26 27 16.
 - 2) Other Locations: Use surface-mounted cast metal box.
- T. Interior PVC boxes, PVC junction boxes, PVC pull boxes, and PVC enclosures are not acceptable for any purpose.
- U. Cabinets, enclosures, wire-ways, junction boxes, etc., shall be color identified per the following color schedule. Also, each raceway entry shall be similarly identified for approximately 12" in length at the box/conduit termination for all items listed below and at ten foot intervals for Fire Alarm and Emergency.

Fire Alarm:	Red
Emergency:	Orange
Data/Tech/Telephone:	Black
C.C.T.V:	Green
Intercom:	Blue
- V. All boxes are to be supported to building structure or building structural support with approved supports and hardware suitable for the task. No box, cabinet, or enclosure will be supported by the conduit or raceway only. Tie wraps, tie wire, or any other non-approved supports shall not be permitted.
- W. All boxes, junction boxes, and enclosures shall have the exterior cover marked identifying the branch circuit and panelboard of origination with an indelible ink marker or grease pencil.
- X. Myers hubs shall be used on all exterior boxes or enclosures where the conduits terminate on top of box or enclosure. Sealing lock nuts or Myers hubs shall be used where the conduits enter the side or bottom of the box or enclosure.

3.2 INTERFACE WITH OTHER PRODUCTS

- A. Coordinate locations and sizes of required access doors with Construction Manager/General Contractor and other trades.
- B. Locate flush mounting box in masonry wall to require cutting of masonry unit corner only. Coordinate masonry cutting to achieve neat opening.
- C. Coordinate heights and locations of outlets mounted above counters, benches, and backsplashes.
- D. Position outlet boxes to locate luminaries as shown on reflected ceiling plan.
- E. Outlet boxes for exit lights shall be wall-mounted, where possible, and installed no higher than 24 inches above door frame. Where exit lights are suspended, the box and/or light fixture shall be rigidly secured.

3.3 ADJUSTING

- A. Adjust floor box flush with finish flooring material.
- B. Adjust flush-mounting outlets to make front flush with finished wall material.
- C. Install knockout closures in all unused box openings.

END OF SECTION 26 05 33.16

SECTION 26 05 53 – ELECTRICAL IDENTIFICATION

PART 1 - GENERAL

1.1 WORK INCLUDED

- A. Nameplates and Tape Labels
- B. Wire and Cable Markers
- C. Conduit System Junction Box and Pull Box Color Coding

1.2 SUBMITTALS

Include schedule for nameplates and tape labels.

PART 2 - PRODUCTS

2.1 MATERIALS

- A. Phenolic Nameplates: Engraved, three-layer, laminated plastic with black letters on a white background. For emergency panels and equipment, engraved, three-layer, laminated plastic with white letters on a red background.
- B. Wire and Cable Markers: Cloth markers, split sleeve or tubing type.

PART 3 - EXECUTION

3.1 INSTALLATION

- A. Degrease and clean surfaces to receive nameplates.
- B. Install nameplates parallel to equipment lines.
- C. Secure nameplates to equipment fronts using screws or rivets. Secure nameplate to inside face of recessed panelboard doors in finished locations.
- D. Embossed tape will not be permitted for any application.
- E. Every circuit and circuit modification shall be legibly identified as to its clear, evident, and specific purpose or use, not limited to lights and receptacles. Transformer/switchboard/panelboard identification shall include sufficient detail to allow each circuit to be distinguished from all others. The identification shall be included in a circuit directory that is located on the face or inside of the panel door in the case of a panelboard, and located at each switch on a switchboard. For any panelboard or switchboard, a laminated affixed label shall be provided with the following information: Equipment I.D., voltage, phase, amperage, panelboard or switchboard from where served, circuit number, rating of circuit feeder (overcurrent device), and from where the overcurrent device is fed. Example: Panel "LA"-120/208V-3 Phase/4 Wire-Served by Panel "MDP"-Circuit #9-800 Amp, B-2/R-106A. Label shall be a single, one-piece application/unit.
- F. Service disconnect identification shall be provided on the exterior of all covers of enclosures. A laminated affixed label shall be provided with the following information: what it serves, where served from (panel), service circuit number, and circuit rating. Example: A.H.U. 1A, Served by Panel "HA", Circuit #6, 60 Amp.

- G. Panel schedules shall be typewritten by F.I.S.H. room number. Changes and/or additions shall be updated per this standard.
- H. Special application switches shall be provided with laminated affixed labels.
- I. All affixed laminated labels to be pop-riveted to panel cover in a neat and workman- like manner. Wall mounted labels shall be mounted in a permanent manner not relying on adhesive.
- J. All replaced/upgraded panelboards/panels/switchboards and load centers shall have schedules completely re-made or re-labeled appropriately identifying all existing and new loads.

3.2 WIRE IDENTIFICATION

- A. Provide wire markers on each conductor in panelboard gutters, pull boxes, outlet and junction boxes, and at load connection. Identify with branch circuit or feeder number for power and lighting circuits, and with control wire number as indicated on schematic and interconnection diagrams or equipment manufacturer's shop drawings for control wiring.
- B. Provide permanent label below ceiling on ceiling grid identifying location of all motor starters, service disconnects, lighting relays, occupancy sensors, exhaust fans, and any other electrical equipment. Labels to be white background with black letters.

3.3 NAMEPLATE ENGRAVING SCHEDULE

- A. Provide nameplates of minimum letter height as scheduled below:
 - 1) Panelboards, Switchboards, and Motor Control Centers: 1/4 inch; identify equipment designation. 1/8 inch; identify voltage rating and source.
 - 2) Individual Circuit Breakers, Switches, and Motor Starters in Panelboards, Switchboards, and Motor Control Centers: 1/8 inch; identify circuit and load served, including location.
 - 3) Individual Circuit Breakers, Enclosed Switches, and Motor Starters: 1/8 inch; identify load served.
 - 4) Transformers: 1/4 inch; identify equipment designation. 1/8 inch; identify primary and secondary voltages, primary source, and secondary load and location.

3.4 CONDUIT SYSTEM, JUNCTION BOX, AND PULL BOX COLOR CODING SCHEDULE

- A. Coordinate color of paint with Division 09, "Painting" to identify conduit system junction boxes and pull boxes, as scheduled below:
 - 1) Emergency Distribution System: Orange
 - 2) 480 Volt, Single and Three Phase System: Yellow
 - 3) 208 Volt, Single and Three Phase System: Brown
 - 4) Fire Alarm System: Red
 - 5) Motor and Other Control Systems: Purple
 - 6) Telephone System: Black
 - 7) Television System: Green
 - 8) Security System: White
 - 9) Intercom/Zone Paging: Blue

HORIZON ELEMENTARY SCHOOL
REPLACE CHILLER BLDG. 11
VCS PROJECT 2648221

END OF SECTION 26 05 53

SECTION 26 27 16 – CABINETS AND ENCLOSURES

PART 1 - GENERAL

1.1 WORK INCLUDED

- A. Hinged Cover Enclosures
- B. Cabinets
- C. Terminal Blocks and Accessories

1.2 REFERENCES

- A. NEMA 250—Enclosures for Electrical Equipment (1000 Volts Maximum)
- B. ANSI/NEMA ICS 1—Industrial Control and Systems
- C. ANSI/NEMA ICS 4—Terminal Blocks for Industrial Control Equipment and
- D. Systems
- E. ANSI/NEMA ICS 6—Enclosures for Industrial Control Equipment and Systems

1.3 SUBMITTALS

- A. Submit product data under provisions of Division 01.
- B. Shop Drawings for Equipment Panels: Include wiring schematic diagram, wiring diagram, outline drawing and construction diagram as described in ANSI/NEMA ICS 1.

PART 2 - PRODUCTS

2.1 HINGED COVER ENCLOSURES

- A. Construction: NEMA 250; Type 1 steel.
- B. Finish: Manufacturer's standard enamel finish.
- C. Covers: Continuous hinge, held closed by flush latch operable by key.
- D. Panel for Mounting Terminal Blocks or Electrical Components: 14 gauge steel, white enamel finish.

2.2 CABINETS

- A. Cabinet Boxes: Galvanized steel, 24 inches wide, 24 inches high, 6 inches deep minimum. Provide $\frac{3}{4}$ " thick, AC-grade, plywood backboard, painted on all six sides with two coats of flame retardant paint, as manufactured by Pathway & Spaces, Inc. If voltage exceeds 50 volts to ground, backboard shall be metal. Backboard shall standoff cabinet back wall a minimum of $\frac{1}{2}$ inch. Minimum thickness of backboard shall be 16 gauge.
- B. Cabinet Fronts: Steel, surface type with screw cover front, concealed hinge; finish in gray baked enamel.

2.3 ENCLOSURES AND CABINETS FOR LIFT STATIONS AND BALL FIELDS

- A. Construction: NEMA 250; Type 4X Stainless Steel
- B. Finish: Smooth brushed stainless steel
- C. Covers: Continuous hinged, held closed by flush latch operable by key

2.4 TERMINAL BLOCKS AND ACCESSORIES

- A. Terminal Blocks: ANSI/NEMA ICS 4; UL listed.
- B. Power Terminals: Unit construction type, closed-back type, with tubular pressure screw connectors, rated 600 volts.
- C. Signal and Control Terminals: Modular construction type, channel mounted; tubular pressure screw connectors, rated 300 volts.
- D. Copper Ground Bar Strip with #6 Copper Grounding: Bonding conductor to building main grounding buss.

2.5 MANUFACTURERS

- A. Burndy #RK Series
- B. Buss
- C. Belden

2.6 FABRICATION

- A. Shop assemble enclosures and cabinets housing terminal blocks or electrical components in accordance with ANSI/NEMA ICS 6.
- B. Provide conduit hubs on enclosures.
- C. Provide protective pocket inside front cover with schematic diagram, connection diagram, and layout drawing of control wiring and components within enclosure.

PART 3 - EXECUTION

3.1 INSTALLATION

- A. All cabinets shall have hinge type doors.
- B. Cabinets shall have built in locks and keys provided unless installed in mechanical, electrical, or communication rooms.
- C. Install cabinets and enclosures plumb; anchor securely to wall and structural supports at each corner, minimum.
- D. Provide accessory feet for free-standing equipment enclosures.
- E. Install trim plumb.
- F. All exterior mounted enclosures shall be either NEMA 4X.
- G. Any conduit penetrations made on the top or sides of exterior mounted enclosures shall be made using a manufactured hub or hub assembly.
- H. No penetrations shall be made in an exterior mounted enclosure on the sides of enclosure higher than the bottom third of the enclosure.

END OF SECTION 26 27 16

SECTION 26 28 16 – DISCONNECT SWITCHES

PART 1 - GENERAL

1.1 WORK INCLUDED

- A. Disconnect Switches
- B. Fuses
- C. Enclosures

1.2 REFERENCES

- A. ANSI/UL 198C—High-Intensity Capacity Fuses; Current Limiting Types
- B. ANSI/UL 198E—Class R Fuses
- C. FS W-F-870—Fuse Holders (For Plug and Enclosed Cartridge Fuses)
- D. FS W-S-865—Switch, Box, (Enclosed), Surface-Mounted
- E. NEMA KS 1—Enclosed Switches

1.3 SUBMITTALS

- A. Submit product data under provisions of Division 01.
- B. Include outline drawings with dimensions, and equipment ratings for voltage, capacity, horsepower, and short circuit.

PART 2 - PRODUCTS

2.1 ACCEPTABLE MANUFACTURERS—DISCONNECT SWITCHES

- A. Square D
- B. Cutler Hammer
- C. Siemens
- D. General Electric
- E. Substitutions: Under provisions of Division 01

2.2 DISCONNECT SWITCHES

- A. Fusible Switch Assemblies: NEMA KS 1; Type HD, FS W-S-865; quick-make, quick-break, load interrupter enclosed knife switch with externally operable handle interlocked to prevent opening front cover with switch in ON position. Handle lockable in OFF position. Fuse Clips: FS W-F- 870.
- B. Nonfusible Switch Assemblies: NEMA KS 1; Type HD, FS W-S-865; quick-make, quick-break, load interrupter enclosed knife switch with externally operable handle interlocked to prevent opening front cover with switch in ON position. Handle lockable in OFF position.
- C. Enclosures: NEMA KS 1; as indicated on drawings
- D. All service disconnects shall be “Heavy-Duty Type.” General duty equipment is not acceptable.

2.3 ACCEPTABLE MANUFACTURERS—FUSES

- A. Bussmann
- B. Gould-Shawmut
- C. Littelfuse

D. Substitutions: Under provisions of Division 01

2.4 FUSES

- A. Fuses 600 Amperes and Less: ANSI/UL 198E, Class J for feeders and transformer loads and Class RK 5 for motor loads. Dual element, current limiting, time delay, one-time fuse, 250 or 600 volt.
- B. Interrupting Rating: 200,000 rms amperes
- C. Spare fuses shall be provided in the amount of 10% of each size and type of fuse installed; but, in no case, shall be less than three (3) spares for each different size and class of fuse being provided. Store in fuse cabinet of sufficient size to house all fuses (provided by Electrical Contractor), located by Architect/Engineer.

PART 3 - EXECUTION

3.1 INSTALLATION

- A. Install disconnect switches where indicated on drawings. Where equipment is manufactured/provided with integral disconnecting means, disconnect switches shall not be required.
- B. Install fuses in fusible disconnect switches.
- C. Fuses and fuse holders shall be equipped with UL Class "R" rejection clips.
- D. All fusible switches which contain current limiting fusing shall have UL Class "R" rejection clips
- E. Fuses shall be dual element and current limiting.
- F. When using fuses of ratings above 600 amperes, specify 600 volt UL Class "L", current limiting/ time delay/dual element with 200,000 ampere interrupting capacity (AIC).
- G. When using fuses of ratings 600 ampere and below, specify UL Class RK1 current limiting/time delay/dual element with 200,000 ampere interrupting capacity (AIC).
- H. All fuses shall be by the same manufacturer.
- I. All multi-pole breakers shall have factory installed common trip handle ties.
- J. Install in accordance with manufacturer's instructions and per NEC 110.26.

END OF SECTION 26 28 16