

PROJECT MANUAL

HVAC RENOVATIONS TO MATILDA HARTLEY ELEMENTARY

For
BIBB COUNTY
BOARD OF EDUCATION

Macon,
Georgia

PROJECT#
17-005
DATE:
04/18/17



Architects and Engineers Inc.



5191 Columbus Rd
Macon, GA 31206
(P) 478.477.7465
(F) 478.477.9511
spdesigngrp.com

**HARTLEY ELEMENTARY SCHOOL - HVAC RENOVATION
BIBB COUNTY BOARD OF EDUCATION**

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Document A305-1986, Contractor's Qualification Statement
Document A310-2010, Bid Bond Document
A312-2010, Payment Bond Document A312-
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1997, Instructions to Bidders
Contractor Affidavit under O.C.G.A. § 13-10-91(b)(1)
Subcontractor Affidavit under O.C.G.A. § 13-10-91(b)(3)
Verification of Lawful Presence in United States
Pursuant to O.C.G.A. § 50-36-1(e)

**SECTION 00100
REQUEST FOR PROPOSALS – 17-26**

THE BIBB COUNTY SCHOOL DISTRICT, GEORGIA, BOARD OF EDUCATION (the “Board”), pursuant to the provisions of O.C.G.A. § 36-91-1, *et. seq.*, herein seeks competitive proposals from general contractors for the **HVAC Renovations to Matilda Hartley Elementary**.

The requirements for construction of the Project, and the duties and responsibilities of the contractor whose Proposal is accepted, are set forth in the Contract Documents which include the Instructions to Proposers; Form of Agreement and Supplementary General Conditions (the “Contract”); supplementary and other conditions; the drawings; the specifications; and, any addenda issued by the Engineer. Contractors interested in submitting Proposals must obtain copies of the Contract Documents by contacting the **Bibb County School District Procurement Office at 4580 Cavalier Dr., Macon, GA 31220 (478) 779-3522**. An electronic copy of the Documents will be posted on the Procurement website. Any Contractor who intends to submit a Proposal is required to attend a Mandatory Pre-Proposal meeting, which will be held on the May 30th at 10:30 A.M. at the **Bibb County School District Procurement Office located at 4580 Cavalier Dr., Macon, Ga 31220**.

The Contract Documents require, among other things, the furnishing of all materials, labor and equipment for construction of the Project. The Board reserves the right to make available other relevant documents or information concerning the Project. Any Proposal submitted in response to this Request should comply strictly with all requirements set forth in the Instructions to Proposers. Any such Proposal must contain the completed Proposal Form setting forth the contractor’s proposed lump sum contract price for full and complete construction of the Project in conformity with all requirements of the Contract Documents. Any Proposal must include a fully executed Bid Bond in the amount of five percent (5%) of the proposed lump sum contract price (exclusive of any alternates and unit prices) in the form required by the Instructions to

Proposers. As noted above, any contractor submitting a Proposal must also complete and submit the required Contractor’s Qualification Statement and Questionnaire and a completed Subcontractor’s Qualification Statement and Questionnaire for the electrical, mechanical, structural steel and roofing subcontractors. For any work requiring a specialty or professional license, only licensed subcontractors may be submitted for consideration, and copies of all applicable licenses shall be attached to the Subcontractors’ Qualification Statements and Questionnaires. The Board in its evaluation of Proposals will rely upon a contractor’s identification of proposed subcontractors. **NO SUBSTITUTION OF SUBCONTRACTORS IS ALLOWED, AND IN THE EVENT OF ANY ATTEMPTED SUBSTITUTION AFTER THE DATE DESIGNATED AT THE PRE-PROPOSAL MEETING, THE BOARD MAY, IN ITS SOLE DISCRETION, DISQUALIFY ANY PROPOSAL FROM CONSIDERATION OR CANCEL ANY CONTRACT AWARDED TO ANY SUCH CONTRACTOR.**

In evaluating Proposals, the Board may seek additional information from any contractor concerning such contractor's Proposal or its proposed subcontractors' qualifications to construct the Project. The Board intends to award the construction contract to the responsible and responsive contractor whose Proposal is determined in writing to be the most advantageous to the Board, taking into consideration the following evaluation factors which are listed in their order of relative importance:

- (A) The reputation of the contractor for integrity. (20 Points)
- (B) The contractor's prior experience in constructing similar projects on schedule and within budget including at least two projects comparable in size and scope to this Project. (30 Points)
- (C) The contractor's proposed lump sum contract price for full and complete construction of the Project in conformity with all requirements of the Contract Documents. (50 Points)

All Proposals must be properly signed, submitted in duplicate in a sealed envelope, must have Subcontractor Listing and received to the Bibb County School District Procurement Office located at 4580 Cavalier Dr., Macon, Ga 31220, no later than 10:00 a.m. on the June 14th, 2017. The Board will receive such Proposals at such time and place. Proposals received after said time will not be accepted. At the discretion of the Board, and in conformity with the applicable provisions of Georgia Law, the Board may afford contractors an opportunity for subsequent discussion, negotiation, and revision of Proposals. The Board reserves the right to reject any or all Proposals and to waive any technicalities or formalities.

Any Proposal submitted in response to this Request shall remain open for acceptance by the Board, and same shall be honored by the contractor, for a period of thirty (30) days from the date set forth hereinabove for the receipt of Proposals.

Any questions or comments concerning this Request for Proposals should be addressed in writing to the Director of Procurement at 4580 Cavalier Dr., Macon, GA 31220

Bibb County School District

By: Elaine Wilson – Director of Procurement

END OF SECTION

**SECTION 00200
INSTRUCTIONS TO BIDDERS**

1. BASIS OF CONTRACT: Lump Sum.
2. BID SECURITY: Proposal Form and Supplementary Conditions.
3. INTERPRETATIONS: If any person contemplating submitting a bid for the proposed contract is in doubt as to the true meaning of any part of these proposed contract documents, he may submit to the office of the Architects a written request for an interpretation thereof. The person submitting the request will be responsible for its prompt and actual delivery. Any interpretation of such documents will be made only by addendum, and a copy of such addendum will be mailed or delivered to each person receiving a set of such documents. The office of the architect will not be responsible for any other explanations or interpretations of such documents where anyone presumes to make on behalf of the Owner before expiration of the ultimate time set for the receipt of bids.
4. PROPOSALS: See 00100.
5. EXAMINATION OF PREMISES: The contractor is held to have examined the site, and to have fully informed himself of all conditions under which the work is to be carried on and to have compared same with the drawings and specifications before the delivery of his proposal. Failure to have so informed himself will in no way relieve him of the responsibility of furnishing any materials or performing any labor that may be required to complete the work as herein contemplated by either the drawings or this specification without any additional cost to the Owner.
6. CONTRACT FORM AND BONDS: The bidder's attention is directed to Sections 00430, 00520 and 00610.
7. AWARD: See 00100
8. SURETY AND INSURANCE COMPANIES: The contract provides that the surety and insurance companies must be acceptable to the Owner. To avoid complications, any general contractor or subcontractor should get in touch with the Owner to determine whether the surety or insurance companies anticipated for use on the work are acceptable to the Owner.
9. SUBSTITUTIONS: The attention of bidders and all other parties is called to the procedure under "Supplementary General Conditions" for the submission proposed substitutions under what is commonly described as an "Or equal" provision.
10. OWNER: Whenever the term "Owner" occurs in these specifications, it refers to the Bibb County School District, Macon, Georgia.
11. ARCHITECT: Whenever the term "Architect" occurs in these specifications, it shall refer to SP Design Group--Architects and Engineers, Inc., P.O. Box 6254, Macon, Georgia 31208 (Phone: 478-477-7465).
12. The following shall hereby be made a part of this document: "Instruction to Bidders, 1997 Edition", AIA Document A701. See Appendix.

END OF SECTION

**SECTION 00210
SUPPLEMENTAL INSTRUCTIONS TO BIDDERS**

1. GENERAL: The following supplements modify or supplement the "Instruction to Bidders, 1997 Edition", AIA Document A701 referenced in "Section 00200 - Instructions to Bidders". Where a portion of the foregoing document is modified or deleted by this section, the unaltered portions remain in effect.

2. ARTICLES MODIFIED:

"Art. 3 - Bidding Documents"

At par. 3.1.1 change from "ten days" to "thirty days"

"Art. 4 - Bidding Procedures"

At par. 4.1.1 add: Three (3) counterpart originals of the completed proposal form are to be submitted.

"Art. 5 - Consideration of Bids"

Delete par. 5.3.2 entirely and substitute the following:

"5.3.2 The Owner will accept Deductive alternates only in the order presented on the proposal form. **Low bidder will be determined on the basis of the sum of Base Bid only.**

END OF SECTION

**SECTION 00410
PROPOSAL FORM**

The undersigned ("Contractor") herein submits to THE BIBB COUNTY SCHOOL DISTRICT (the "Board") the following Proposal for the installation of HVAC Renovations to Matilda Hartley Elementary. This Proposal is submitted in response to the Board's Request for Proposal 17-26 dated the 24th day of April 2017. This Proposal is for the full and complete construction of the Project in conformity with all requirements of the Contract Documents. The submission of this Proposal constitutes a representation by the Contractor that it has carefully studied and examined all of the Contract Documents dated April 18, 2017 furnished by **SP Design Group (the "Engineer")** and such other information as may have been furnished by the Board or the Engineer including Addendum/Addenda No._____.

By the act of submitting a proposal for the proposed contract, the Contractor represents that:

- The contractor and all subcontractors the contractor intends to use have carefully and thoroughly reviewed the drawings, specifications and other construction documents and have found them complete and free from ambiguities and sufficient for the purpose intended.
- The contractor and all workers, employees and subcontractors the contractor intends to use are skilled and experienced in the type of construction represented by the construction contract documents bid upon.
- The proposal figure is based solely upon the construction contract documents and properly issued written addenda and not upon any other written representation.
- Neither the contractor nor any of the contractor's employees, agents, intended suppliers or subcontractors have relied upon any verbal representations from the Owner, or the Owner's employees or agents including architects, engineers or consultants in assembling the bid figure.

A. Base Proposal

The Contractor proposes to fully and completely construct the Project in conformity with all requirements of the Contract Documents and furnish all necessary labor, material and equipment for such construction, and, furthermore, to fully, completely, and strictly perform all obligations of the Contractor as set forth in the Contract Documents, for the lump sum contract price of

_____ (\$_____). Said lump sum contract price is allocated, in its entirety, to the following elements of the work:

Utility Allowance	\$_
Low Voltage	\$_
Electrical	\$_
Mechanical	\$_
Roofing	\$_
Other	\$ _____
TOTAL AMOUNT OF PROPOSAL	\$ _____

Alternate Proposals – if applicable

Contractor proposes this Alternate Proposal in accordance with the Specifications. The lump sum pricing below is to fully implement the work described. (The Contractor shall clearly indicate the pricing below by use of the words “Add” or “Deduct.”)

VOLUNTARY ALTERNATE NO. 1: (attach pages if needed)

State the amount to be Added to or Deducted from the Total Proposal amount should the Owner decide to proceed with the portion of the work identified as Alternate No. 1.

_____ ADD \$ _____

_____ DEDUCT \$ _____

VOLUNTARY ALTERNATE NO. 2 : (attach pages if needed)

State the amount to be Added to or Deducted from the Total Proposal amount should the Owner decide to proceed with the portion of the work identified as Alternate No. 2.

_____ ADD \$ _____

_____ DEDUCT \$ _____

Attached hereto, and incorporated herein as part of this Proposal, Contractor submits a completed Contractor's Qualification Statement and Questionnaire and a complete Subcontractor's Qualification Statement and Questionnaire for the site work, electrical, plumbing, mechanical, structural steel, masonry, and roofing subcontractors. Contractor acknowledges that the Board may rely upon the truthfulness and accuracy of the responses set forth therein. Contractor has also submitted herewith the required "General Contractor's Subcontractor Listing". In addition, Contractor has submitted herewith as part of this Proposal such documentation and information as Contractor deems appropriate to establish that it is a responsible and responsive Contractor and that its Proposal is the most advantageous to the Board, taking into consideration the specific evaluation factors, listed in their order of relative importance, as set forth in the above-referenced Request for Proposals. Contractor acknowledges that the Board may rely upon the truthfulness and accuracy of such documentation and information. The Contractor proposes and agrees to commence actual construction (i.e, physical work) on site with adequate management, labor, materials and equipment in accordance with the specifications and prosecute the Work diligently and faithfully to completion within the required Contract Time. Prior to commencing such Work, and prior to the issuance of the Notice to Proceed, Contractor shall furnish to the Board duly executed Payment and Performance Bonds complying with all requirements of the Contract Documents along with Certificates of Insurance demonstrating that all required coverages are in place.

Contractor submits herewith its executed Bid Bond in accordance with the requirements of the Board as set forth in the Instruction to Proposers. Contractor herein acknowledges that this Proposal shall constitute an offer by Contractor to contract with the Board for construction of the Project in conformity with all requirements of the Contract Documents for the lump sum contract price as set forth hereinabove. Such offer also includes the proposed unit prices and proposed pricing for any Alternates. Said offer by Contractor is irrevocable and subject to acceptance by the Board until the expiration of thirty (30) days following the date set forth in the Request for Proposals for receipt of Proposals by the Board.

CONTRACTOR: _____

By: _____

Title: _____

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

NOTARY PUBLIC
Commission Expiration:

END OF SECTION

**SECTION 00411
GENERAL CONTRACTOR'S QUALIFICATION
STATEMENT AND QUESTIONNAIRE**

NAME OF PROJECT:

Bibb County School District – HVAC Renovations to Matilda Hartley Elementary

NAME OF OWNER: THE BIBB COUNTY SCHOOL DISTRICT

**NAME OF PROPOSED
CONTRACTOR:**

(The "Contractor")

I. INSTRUCTIONS

- A. ALL QUESTIONS ARE TO BE ANSWERED IN FULL, WITHOUT EXCEPTION. IF COPIES OF OTHER DOCUMENTS WILL ANSWER THE QUESTION COMPLETELY, THEY MAY BE ATTACHED AND CLEARLY LABELED. IF ADDITIONAL SPACE IS NEEDED, ADDITIONAL PAGES MAY BE ATTACHED AND CLEARLY LABELED.
- B. THE OWNER, THE BIBB COUNTY SCHOOL DISTRICT, GEORGIA, BOARD OF EDUCATION (HEREINAFTER "OWNER"), ITS AGENTS AND REPRESENTATIVES, SHALL BE ENTITLED TO CONTACT EACH AND EVERY REFERENCE LISTED IN RESPONSE TO THIS QUESTIONNAIRE, AND EACH ENTITY REFERENCED IN ANY RESPONSE TO ANY QUESTION IN THIS QUESTIONNAIRE. THE CONTRACTOR, _____, (HEREINAFTER "CONTRACTOR"), BY COMPLETING THIS QUESTIONNAIRE, EXPRESSLY AGREES THAT ANY INFORMATION CONCERNING THE CONTRACTOR IN POSSESSION OF SAID ENTITIES AND REFERENCES MAY BE MADE AVAILABLE TO THE OWNER.
- C. ONLY COMPLETE AND ACCURATE INFORMATION SHALL BE PROVIDED BY THE CONTRACTOR. THE CONTRACTOR HEREBY WARRANTS THAT, TO THE BEST OF ITS KNOWLEDGE AND BELIEF, THE RESPONSES CONTAINED HEREIN ARE TRUE, ACCURATE, AND COMPLETE. THE CONTRACTOR

ALSO ACKNOWLEDGES THAT THE OWNER IS RELYING ON THE TRUTH AND ACCURACY OF THE RESPONSES CONTAINED HEREIN.

IF IT IS LATER DISCOVERED THAT ANY MATERIAL INFORMATION GIVEN IN RESPONSE TO A QUESTION WAS PROVIDED BY THE CONTRACTOR, KNOWING IT WAS FALSE, IT SHALL CONSTITUTE GROUNDS FOR IMMEDIATE TERMINATION OR RESCISSION BY THE OWNER OF ANY SUBSEQUENT AGREEMENT BETWEEN THE OWNER AND THE CONTRACTOR. THE OWNER SHALL ALSO HAVE AND RETAIN ANY OTHER REMEDIES PROVIDED BY LAW.

- D. IF THERE ARE ANY QUESTIONS CONCERNING THE COMPLETION OF THIS FORM, THE CONTRACTOR IS ENCOURAGED TO CONTACT THE PROJECT ENGINEER,
- E. THE COMPLETED FORM SHALL BE SUBMITTED WITH THE CONTRACTOR'S PROPOSAL.
- F. THIS FORM, ITS COMPLETION BY THE CONTRACTOR, AND ITS USE BY THE CONTRACTOR, AND ITS USE BY THE OWNER, SHALL NOT GIVE RISE TO ANY LIABILITY ON THE PART OF THE OWNER TO THE CONTRACTOR OR ANY THIRD PARTY OR PERSON.

II. **GENERAL BACKGROUND**

A. CURRENT NAME AND ADDRESS OF CONTRACTOR:

B. PREVIOUS NAME OR ADDRESS OF CONTRACTOR, IF ANY:

C. CURRENT PRESIDENT OR CHIEF EXECUTIVE OFFICER:

Years in that position

D. NUMBER OF EMPLOYEES: (Permanent) _____

E. NAME AND ADDRESSES OF CURRENT AFFILIATED COMPANIES (PARENT, SUBSIDIARY, DIVISIONS):

III. **FINANCIAL STATUS**

A. PLEASE ATTACH FINANCIAL STATEMENTS FOR THE PAST THREE YEARS FOR WHICH THEY ARE COMPLETE. IF SUCH STATEMENTS ARE NOT AVAILABLE, PLEASE FURNISH THE FOLLOWING INFORMATION:

1. LAST COMPLETE FISCAL YEAR:

- a. Revenues (Gross) _____
- b. Expenditures (Gross) _____
- c. Overhead & Admin. Cost (Gross) _____
- d. Profit (Gross) _____

2. YE AR PRIOR TO " 1" ABO VE:

- a. Revenues (Gross) _____
- b. Expenditures (Gross) _____
- c. Overhead & Admin. Cost (Gross) _____
- d. Profit (Gross) _____

3. YE AR PRIOR TO " 2" ABO VE:

- a. Revenues (Gross) _____
- b. Expenditures (Gross) _____
- c. Overhead & Admin. Cost (Gross) _____
- d. Profit (Gross) _____

B. BANKRUPTCIES

1. Has the Contractor, or any of its parents or subsidiaries, ever had a Bankruptcy Petition filed in its name, voluntarily or involuntarily? (If yes, specify date, circumstances, and resolution).

2. Has any Majority Shareholder ever had a Bankruptcy Petition filed in his/her name, voluntarily or involuntarily? (If yes, specify date, circumstances, and resolution).

C. LOANS

1. Is this Contractor currently in default on any loan agreement or financing agreement with any bank, financial institution or other entity? (If yes, specify details, circumstances, and prospects for resolution).

D. BONDING

1. What is the Contractor's current bonding capacity with a contract surety company?

2. Please identify the Contractor's surety company and the current line of bonding credit that company has extended to the Contractor.

3. Please give the name, address, and telephone number of your current surety agent or underwriting contact.

4. Have Performance or Payment Bond claims ever been made to a surety for Contractor on any project, past or present?

5. If the answer to (4) is yes, please describe the claim, the name of the company or person making the claim, and the resolution of the claim.

6. In the past five years, has any surety company refused to bond the Contractor on any project? (If answer is yes, specify the reasons given for such refusal, and the name and address of the surety company that refused to bond).

7. In the past five years, has any surety company refused to bond the Contractor's parent, or subsidiaries, on any project? (If answer is yes, please specify the reasons given for such refusal, and the name and address of the surety company that refused to bond).

E. MERGERS AND ACQUISITIONS

1. State whether or not the Contractor has been the subject of a corporate merger within the preceding three years. If so, please identify all parties to such merger, provide the date of same, and a brief description of the transaction.

2. State whether or not the Contractor has acquired any other companies or entities in the preceding three years. If so, please identify all companies or entities acquired, provide the date of acquisition, and a brief description of the business of the company or entity acquired.

IV. **PROPOSED PROJECT PERSONNEL**

A. **PROPOSED PROJECT MANAGER**

1. List the name, qualifications and background of your proposed project manager for this Project. (Include the names and addresses of companies he/she has been affiliated with in the last five years).

2. List at least three projects, by size, type and duration that the proposed project manager has supervised in the last five years for the Contractor, or for any other company.

B. **PROPOSED SUPERINTENDENT**

1. List the qualifications and background of your proposed job superintendent (if different than the project manager) and include the names and addresses of any companies he/she has been affiliated with in the last five years.

2. List at least three projects within a 60 mile radius, by size, type, and duration that the proposed job superintendent has supervised in the last five years for the Contractor, or for any other company.

3. List at least three projects outside a 60 mile radius, by size, type, and duration that the proposed job superintendent has supervised in the last five years for the Contractor, or for any other company.

V. **COMPANY EXPERIENCE - SIMILAR PROJECTS**

- A. List all projects of reasonably similar nature, scope, and duration (similar to the Owner's Project) performed by your company in the last seven years, specifying, where possible, the name and last known address of each owner of such projects.

- B. Of the projects listed in response to Subsection (A), identify any which was the subject of a substantial claim or lawsuit by, or against, the Contractor. Please identify in your response the nature of such claim or lawsuit, the court in which the case was filed, and the details of its resolution.

VI. **LEGAL PROCEEDINGS**

- A. **ARBITRATIONS OR MEDIATION**

List all construction arbitration or mediation demands filed by, or against, the Contractor in the last five years, and identify the nature of the claim, the amount in dispute, the parties, and the ultimate resolution of the proceeding and whether the proceedings were arbitration or mediation.

B. LAWSUITS

List all construction-related lawsuits (other than labor or personal injury litigation) filed by, or against, the Contractor in the last five years, and identify the nature of the claim, the amount in dispute, the parties, and the ultimate resolution of the lawsuit.

C. DISPUTES

1. Identify any disputes filed against or by the Contractor in regards to the Owner or the Architect on any project in the last five years.

D. OTHER PROCEEDINGS

1. Identify any lawsuits, administrative proceedings, or hearings initiated by the National Labor Relations Board or similar state agency in the past seven years concerning any labor practices of the Contractor. Identify the nature of any proceeding and its ultimate resolution.

2. Identify any lawsuits, administrative proceedings, or hearings initiated by the Occupational Safety and Health Administration concerning the project safety practices of the Contractor in the last seven years. Identify the nature of any proceeding and its ultimate resolution.

3. Identify any lawsuits, administrative proceedings, or hearings initiated by the Internal Revenue Service, or any state revenue department, concerning the tax liability of the Contractor (other than audits) in the last seven years. Identify the nature of any proceeding and its ultimate resolution.

4. Have any criminal proceedings or investigations been brought against the Contractor in the last ten years? (If the answer is yes, please attach a complete and detailed report of the facts and circumstances concerning all such proceedings or investigations with your responses to this Questionnaire)

VII. **REFERENCES**

(ALL REFERENCES MUST BE CURRENT, I.E., ENTITIES WITH WHOM YOU HAVE DONE BUSINESS IN THE PRECEDING TWELVE MONTHS.)

A. **BANKS**

Bank #1

Name: _____

Address: _____

City/State: _____

Contact: _____

Phone: _____

Bank #2

Name: _____

Address: _____

City/State: _____

Contact: _____

Phone: _____

B. MAJOR SUBCONTRACTORS

Subcontractor #1

Name: _____

Address: _____

City/State: _____

Contact: _____

Phone: _____

Subcontractor #2

Name: _____

Address: _____

City/State: _____

Contact: _____

Phone: _____

C. SUPPLIERS

Major Supplier #1

Name: _____

Address: _____

City/State: _____

Contact: _____

Phone: _____

Major Supplier #2

Name: _____

Address: _____

City/State: _____

Contact: _____

Phone: _____

D. OWNERS

Project #1

Name:

Location:

Contract Price:

Owner:

Address:

City/State:

Contact:

Phone:

Arch/Eng:

Contact/Phone:

Project #2

Name:

Location:

Contract Price:

Owner:

Address:

City/State:

Contact:

Phone:

Arch/Eng:

Contact/Phone:

Project #3

Name: _____
Location: _____
Contract Price: _____
Owner: _____
Address: _____
City/State: _____
Contact: _____
Phone: _____
Arch/Eng: _____
Contact/Phone: _____

Project #4

Name: _____
Location: _____
Contract Price: _____
Owner: _____
City/State: _____
Contact: _____
Phone: _____
Arch/Eng: _____
Contact/Phone: _____

VIII. **COMMENTS**

Please list any additional information that you believe would assist the Owner in evaluating the possibility of using the Contractor on this Project. You may attach such additional information as an Exhibit to this Statement and Questionnaire.

I certify to the Owner that the information and responses provided on this Questionnaire are true, accurate and complete. The Owner, or its designated representative, may contact any entity or reference listed in this Questionnaire. Each entity or reference may make any information concerning the Contractor available to the Owner or its designated representative.

Dated _____, 20__.

CONTRACTOR:

By: _____

Title: _____

Date: _____

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

Notary Public

My Commission Expires _____

END OF SECTION

**SECTION 00412
SUBCONTRACTOR'S QUALIFICATION
STATEMENT AND QUESTIONNAIRE**

NAME OF PROJECT:

Bibb County School District – HVAC Renovations to Matilda Hartley Elementary

NAME OF OWNER: THE BIBB COUNTY SCHOOL DISTRICT

NAME OF CONTRACTOR: _____

NAME OF PROPOSED SUBCONTRACTOR: _____

I. INSTRUCTIONS

- A. ALL QUESTIONS ARE TO BE ANSWERED IN FULL, WITHOUT EXCEPTION. IF COPIES OF OTHER DOCUMENTS WILL ANSWER THE QUESTION COMPLETELY, THEY MAY BE ATTACHED AND CLEARLY LABELED. IF ADDITIONAL SPACE IS NEEDED, ADDITIONAL PAGES MAY BE ATTACHED AND CLEARLY LABELED.

- B. THE OWNER AS WELL AS THE CONTRACTOR, AND THEIR AGENTS AND REPRESENTATIVES, SHALL BE ENTITLED TO CONTACT EACH AND EVERY REFERENCE LISTED IN RESPONSE TO THIS QUESTIONNAIRE, AND EACH ENTITY REFERENCED IN ANY RESPONSE TO ANY QUESTION IN THIS QUESTIONNAIRE. THE SUBCONTRACTOR, _____ (HEREINAFTER "SUBCONTRACTOR"), BY COMPLETING THIS QUESTIONNAIRE, EXPRESSLY AGREES THAT ANY INFORMATION CONCERNING THE SUBCONTRACTOR IN POSSESSION OF SAID ENTITIES AND REFERENCES MAY BE MADE AVAILABLE TO THE OWNER AND THE CONTRACTOR.

- C. ONLY COMPLETE AND ACCURATE INFORMATION SHALL BE PROVIDED BY THE SUBCONTRACTOR. THE SUBCONTRACTOR HEREBY WARRANTS THAT, TO THE BEST OF ITS KNOWLEDGE AND BELIEF, THE RESPONSES CONTAINED HEREIN ARE TRUE, ACCURATE, AND COMPLETE. THE SUBCONTRACTOR ALSO ACKNOWLEDGES THAT THE OWNER AND THE CONTRACTOR ARE RELYING ON THE TRUTH AND ACCURACY OF THE RESPONSES CONTAINED HEREIN. IF IT IS LATER DISCOVERED THAT ANY MATERIAL INFORMATION GIVEN IN RESPONSE TO A QUESTION WAS PROVIDED BY THE SUBCONTRACTOR KNOWING IT WAS FALSE, IT SHALL CONSTITUTE GROUNDS FOR IMMEDIATE TERMINATION OR RESCISSION BY THE CONTRACTOR OF ANY SUBSEQUENT AGREEMENT BETWEEN THE CONTRACTOR AND THE SUBCONTRACTOR. THE OWNER AND THE CONTRACTOR SHALL ALSO HAVE AND RETAIN ANY OTHER REMEDIES PROVIDED BY LAW.

- D. IF THERE ARE ANY QUESTIONS CONCERNING THE COMPLETION OF THIS FORM, THE SUBCONTRACTOR IS ENCOURAGED TO CONTACT THE CONTRACTOR'S REPRESENTATIVE, _____, AT _____, TELEPHONE _____.

- E. THE COMPLETED FORM IS DUE IN THE OFFICE OF THE CONTRACTOR NO LATER THAN _____.
- F. THIS FORM, ITS COMPLETION BY THE SUBCONTRACTOR, AND ITS USE BY THE SUBCONTRACTOR, AND ITS USE BY THE OWNER AND THE CONTRACTOR, SHALL NOT GIVE RISE TO ANY LIABILITY ON THE PART OF THE OWNER OR THE CONTRACTOR TO THE SUBCONTRACTOR OR TO ANY THIRD PARTY OR PERSON.

II. **GENERAL BACKGROUND**

- A. CURRENT NAME AND ADDRESS OF SUBCONTRACTOR:

Minority Owned Information (for data purposes only)

African American () Asian American () Female ()

Hispanic American () Native American ()

- B. PREVIOUS NAME OR ADDRESS OF SUBCONTRACTOR, IF ANY:

- C. CURRENT PRESIDENT OR CHIEF EXECUTIVE OFFICER: _____
 Years in that position _____

- D. NUMBER OF EMPLOYEES: (Permanent) _____

- E. NAME AND ADDRESSES OF CURRENT AFFILIATED COMPANIES (PARENT, SUBSIDIARY, DIVISIONS):

III. **COMPANY EXPERIENCE - SIMILAR PROJECTS**

- A. List all projects of reasonably similar nature, scope, and duration (similar to the Owner's Project) performed by your company in the last five years, specifying, where possible, the name and last known address of the General Contractor on such projects.

- B. Of the projects listed in response to Subsection (A), identify any which was the subject of a substantial claim or lawsuit by, or against, the Subcontractor. Please identify in your response the nature of such claim or lawsuit, the court in which the case was filed, and the details of its resolution.

IIII. **REFERENCES**

(ALL REFERENCES MUST BE CURRENT, I.E., ENTITIES WITH WHOM YOU HAVE DONE BUSINESS IN THE PRECEDING TWELVE MONTHS.)

- A. **GENERAL CONTRACTORS**

Project #1

Name: _____

Location: _____

Contract Price: _____

General Contractor: _____

Address: _____

City/State: _____

Contact: _____

Phone: _____

Arch/Eng: _____

Contact/Phone: _____

Project #2

Name: _____

Location: _____

Contract Price: _____

General Contractor: _____

Address: _____

City/State: _____

Contact: _____

Phone: _____

Arch/Eng: _____

Contact/Phone: _____

Project #3

Name: _____

Location: _____

Contract Price: _____

General Contractor: _____

Address: _____

City/State: _____

Contact: _____

Phone: _____

Arch/Eng: _____

Contact/Phone: _____

Project #4

Name: _____

Location: _____

Contract Price: _____

General Contractor: _____

City/State: _____

Contact: _____

Phone: _____

Arch/Eng: _____

Contact/Phone: _____

E. OWNERS
Project #1

Name: _____

Location: _____

Contract Price: _____

Owner: _____

Address: _____

City/State: _____

Contact: _____

Phone: _____

Arch/Eng: _____

Contact/Phone: _____

Project #2

Name: _____

Location: _____

Contract Price: _____

Owner: _____

Address: _____

City/State: _____

Contact: _____

Phone: _____

Arch/Eng: _____

Contact/Phone: _____

Project #3

Name: _____

Location: _____

Contract Price: _____

Owner: _____

Address: _____

City/State: _____

Contact: _____

Phone: _____

Arch/Eng: _____

Contact/Phone: _____

Project #4

Name: _____

Location: _____

Contract Price: _____

Owner: _____

City/State: _____

Contact: _____

Phone: _____

Arch/Eng: _____

Contact/Phone: _____

V. **COMMENTS**

Please list any additional information that you believe would assist the Contractor in evaluating the possibility of using the Subcontractor on this Project.

I certify to the OWNER AND CONTRACTOR that the information and responses provided on this Questionnaire are true, accurate and complete. The OWNER AND THE CONTRACTOR, or their designated representatives, may contact any entity or reference listed in this Questionnaire. Each entity or reference may make any information concerning the Subcontractor available to the OWNER OR THE CONTRACTOR or their designated representatives.

Dated this ____ day of _____, 20__.

SUBCONTRACTOR:

By: _____

Its: _____

Sworn to and subscribed before me
this ____ day of

_____, 20__.

Notary Public

My Commission Expires:

END OF SECTION

**SECTION 00413
GENERAL CONTRACTOR'S
SUBCONTRACTOR LISTING**

PROJECT: Bibb County School District – HVAC Renovations to Matilda Hartley Elementary

SITE WORK SUBCONTRACTOR

Subcontractor Name _____

Subcontractor Address _____

Subcontractor Qualification Statement and Questionnaire Form is required.

CONCRETE FOUNDATION & SLABS

Subcontractor Name _____

Subcontractor Address _____

Subcontractor Qualification Statement and Questionnaire Form is required.

FIRE ALARM SYSTEM SUBCONTRACTOR

Subcontractor Name _____

Subcontractor Address _____

Subcontractor Qualification Statement and Questionnaire Form is required

LOW VOLTAGE SUBCONTRACTOR

Subcontractor Name _____

Subcontractor Address _____

Subcontractor Qualification Statement and Questionnaire Form is required.

ROOFING SUBCONTRACTOR

Subcontractor Name _____

Subcontractor Address _____

Subcontractor Qualification Statement and Questionnaire Form is required.

ELECTRICAL SUBCONTRACTOR

Subcontractor Name _____

Subcontractor Address _____

Subcontractor Qualification Statement and Questionnaire Form is required.

PLUMBING SUBCONTRACTOR

Subcontractor Name _____

Subcontractor Address _____

Subcontractor Qualification Statement and Questionnaire Form is required.

MECHANICAL SUBCONTRACTOR

Subcontractor Name _____

Subcontractor Address _____

Subcontractor Qualification Statement and Questionnaire Form is required.

STRUCTURAL STEEL SUBCONTRACTOR

Subcontractor Name _____

Subcontractor Address _____

Subcontractor Qualification Statement and Questionnaire Form is required.

FIRE PROTECTION SUBCONTRACTOR

Subcontractor _____ Name_

Subcontractor _____ Address

Subcontractor Qualification Statement and Questionnaire Form is required.

MASONRY SUBCONTRACTOR

Subcontractor _____ Name_

Subcontractor Address _____

Subcontractor Qualification Statement and Questionnaire Form is required.

END OF SECTION

**SECTION 00430
BID BOND**

1. GENERAL

- A. AIA Document Form A310, "Bid Bond", February 2010 edition, is made herewith a part of these documents. See Appendix.
- B. Bidders shall use this document when submitting their bids.

END OF SECTION

**SECTION 00520
FORM OF AGREEMENT**

1. GENERAL

- A. The "Standard Form of Agreement Between Owner and Contractor", Consensus Doc 205 – Standard Short Form Agreement Between Owner and Constructor, is part of these documents. See Appendix.

END OF SECTION

**SECTION 00610
CONSTRUCTION BONDS**

1. GENERAL

- A. "Performance Bond and Payment Bond", AIA Document A312, 2010 Edition, is part of these documents. See Appendix.
- B. The provided bond shall be from a bonding company listed in good standing on the Federal Registry.

END OF SECTION

**SECTION 00800
SUPPLEMENTARY GENERAL CONDITIONS**

1. GENERAL:

- A. The "General Conditions of the contract for construction", AIA Document A201, 2007 is part of these documents. See Appendix.
- B. The following supplements modify the "General Conditions of the Contract for Construction" AIA Document A201, 2007 referenced hereinbefore. Where a portion of the General Conditions is modified or deleted by these Supplementary Conditions, the unaltered portions of the General Conditions remain in effect.

2. ARTICLES:

Article 1 - General Provisions:

1.2.4 Add the following:

In the event of conflicts or discrepancies among the Contract Documents, interpretations will be based on the following priorities:

- 1. The Agreement.
- 2. Addenda, with those of later date having precedence over those of earlier date.
- 3. The Supplementary Conditions.
- 4. The General Conditions of the Contract for Construction.
- 5. Drawings and Specifications.

In case of an inconsistency between Drawings and specifications, the specification will govern for discrepancies within either Document not clarified by addendum, the better quality or greater quantity of Work shall be provided in accordance with the Architect's interpretation.

Article 3 - Contractor:

3.4 Labor and Materials - Add the following Subparagraphs:

3.4.2 Add the following: After the Contract has been executed, the Owner and the Architect will consider a formal request for the substitution of products in place of those specified only under the conditions that either:

- .1 the specified material cannot be delivered and incorporated into the work in the time allowed due to conditions beyond the control of the contractor, or
- .2 the Owner will benefit by a reduced cost or an improved project.

3.4.4 Request for substitutions:

- .1 statement of cause for request with substantiating documents;

- .2 documentary proof of equal or superior quality, delivery time, and cost in the form of certified quotations from suppliers of both specified and proposed material. Approved substitutions will be incorporated into the work by appropriate modification.

3.4.5 By making requests for substitution, the Contractor

- .1 represents that he has personally investigated the proposed substitute product and determined that it is equal or superior in all respects to that specified;
- .2 represents that he will provide the same warranty for the substitution that he would for the specified;
- .3 certifies that the cost data presented is complete and includes all related costs under this contract but excludes costs under separate contracts, and excludes the Architect's redesign costs, and waives all claims for additional costs related to the substitution which subsequently become apparent; and
- .4 will coordinate the installation of the accepted substitute, making such changes as may be required for the work to be complete in all respects, without additional costs to the Owner.

Article 4 - Administration of the Contract:

- 4.6 Delete in its entirety.

Article 7 - Changes in the Work:

7.3.10 In Subparagraph 7.3.6, the allowance for the combined overhead and profit included in the total cost to the Owner shall be based on the following schedule:

- .1 For the Contractor, for Work performed by the Contractor's own forces, 15 percent of the cost.
- .2 For the Contractor, for Work performed by the Contractor's Subcontractor, 7.5 percent of the amount due the Subcontractor.
- .3 For each Subcontractor or Sub-subcontractor involved, for Work performed by that Subcontractor's or Sub-subcontractor's own forces, 15 percent of the cost.
- .4 For each Subcontractor, for Work performed by the Subcontractor's Sub-subcontractors, 7.5 percent of the amount due the Sub-subcontractor.
- .5 Cost to which overhead and profit is to be applied shall be determined in accordance with Subparagraph 7.3.6.
- .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 costs including labor, materials and Subcontractors. Labor and

materials shall be itemized in the manner prescribed above. Where major cost items are Subcontracts, they shall be itemized also. In no case will a change involving over \$100.00 be approved without such itemization.

Article 8 - Time:

8.3.1 In the fourth line change "arbitration" to "litigation".

Article 9 - Payments and Completion:

9.3.1 Add the following clause:

9.3.1.3 Until the work is 50 percent complete, the Owner shall pay 90 percent of the amount due the Contractor on account of progress payments. At the time the work is 50 percent complete and thereafter, the Architect may authorize remaining partial payment to be paid in full.

Article 11 - Insurance

11.1, 11.2, 11.3, 11.4: No insurance will be acceptable unless written by a company licensed by the State Insurance Commissioner to do business in Georgia at the time the policy is issued, and the company must in addition be acceptable to the Owner. To avoid inconvenience, any contractor or subcontractor must get in touch with the Owner to determine whether the insurance company or companies he expects to use is or are acceptable to the Owner. If, subsequent to this date, the insurance carrier is no longer licensed to do business in Georgia, the contractor shall engage another insurer subject to the same conditions as described in the foregoing for the initial insurer. Such change shall be accomplished in such a manner that there is no loss of insurance to the Owner, but no later than 30 days from date that the insurance company was removed from licensed list. All policies and certificates must be signed or countersigned, as the case may be, by resident Georgia agents.

11.1.1.8 Liability Insurance shall include all major divisions of coverage and be on a comprehensive basis including:

1. Premises Operations (including, X, C and U coverage as applicable).
2. Independent Contractors' Protective
3. Products and completed Operations.
4. Person Injury Liability with Employment Exclusion deleted.
5. Contractual, including specified provision for Contractor's obligation under Paragraph 3.18.
6. Owned, non-owned and hired motor vehicles. Acceptable Alternate: The insurance company may elect to issue a separate employment personal injury liability policy showing the owner as an additional insured on a separate certificate.
7. Broad Form Property Damage including Completed Operations.

11.1.1.9 If the General Liability coverage are provided by a Commercial General Liability Policy on a claims-made basis, the policy date or retroactive date shall predate the Contract; the termination date of the policy or applicable extended reporting period shall be no earlier than the termination date of coverage required to be maintained after final payment, certified in accordance with Subparagraph 9.10.2.

Add the following Clause 11.1.2.1 to 11.1.2:

11.1.2.1 The insurance required by Subparagraph 11.1.1 shall be written for not less than the following limits, or greater if required by law:

1. Workers' Compensation:
 - (a) State: Georgia Statutory
 - (b) Applicable Federal (e.g. Longshoremen's): Statutory
 - (c) Employer's Liability: \$100,00 per accident
\$500,000 disease, policy limit
\$100,000 disease, each employee
2. Comprehensive or Commercial General Liability (including Premises-Operations; Independent Contractors' Protective; Products and Completed Operations; Broad Form Property Damage):
 - (a) Bodily Injury: \$500,000 each occurrence
\$1,000,000 aggregate
 - (b) Property Damage: \$50,000 each occurrence
\$100,000 aggregate
 - (c) Products and Completed Operations to be maintained for 1 year after final payment: \$500 aggregate
 - (d) Property Damage Liability Insurance shall provide X, C, and U coverage.
 - (e) Broad Form Property Damage Coverage shall include Completed Operations.
3. Contractual Liability:
 - (a) Bodily Injury: \$500,000 each occurrence
\$500,000 aggregate
 - (b) Property Damage: \$50,000 each occurrence
\$100,000 aggregate
4. Personal Injury, with Employment Exclusion deleted:
\$500,000 aggregate

5. Business Auto Liability (including owned, non-owned and hired vehicles):
 - (a) Bodily Injury: \$500,000 each person
\$500,000 each occurrence
 - (b) Property Damage: \$50,000 each occurrence
6. If the General Liability coverage are provided by a Commercial Liability policy, the
 - (a) General Aggregate shall be not less than \$500,000 and it shall apply, in total, to this project only.
 - (b) Fire Damage Limit shall be not less than \$50,000 on any one fire.
 - (c) Medical Expense Limit shall be not less than \$10,000 on any one person.
7. Umbrella Excess Liability:
 - \$1,000,000 over primary insurance
 - \$25,000 retention for self-insured hazards each occurrence

11.1.3 Add the following to Subparagraph 11.1.3:

"If this insurance is written on the Comprehensive General Liability policy form, the Certificates shall be AIA Document G705, Certificate of Insurance. If this insurance is written on a Commercial General Liability policy form, ACORD form 255 will be acceptable.

11.2 Owners Liability Insurance:

11.2.1 Add the following: The Contractor shall purchase and maintain insurance covering the Owner's contingent liability for claims which may arise from operations under the Contract.

11.3 Add the following sentence: "The form of policy for this coverage shall be completed value. If the Owner is damaged by the failure of the Contractor to maintain such insurance, then the Contractor shall bear all reasonable costs properly attributable thereto."

11.4.1.2 Delete in its entirety.

11.4.1.3 Delete in its entirety.

11.4.1.4 Delete in its entirety.

11.4.6 Delete Subparagraph 11.4.6 and substitute the following:

Before an exposure to loss may occur, the Contractor shall file with the Owner two certified copies of the policy or policies providing this Property Insurance coverage, each containing those endorsements specifically related to the Project. Each policy shall contain a provision that the policy

will not be cancelled or allowed to expire until at least 30 days prior written notice has been given to the Contractor.

- 11.4.7 Modify Subparagraph 11.4.7 by substituting "Contractor" for "Owner" as fiduciary.
- 11.4.9 Modify Subparagraph 11.4.9 by substituting "Contractor" for "Owner" each time the latter word appears.
- 11.4.10 Modify Subparagraph 11.4.10 by substituting "Contractor" for "Owner" each time the latter word appears.
- 11.5 Performance Bond and Payment Bond: Delete Subparagraph 11.5.1 and substitute the following:
 - 11.5.1 The Contractor shall furnish bonds covering faithful performance of the Contract and payment of obligations arising thereunder. Bonds may be obtained through the Contractor's usual source and the cost thereof shall be included in the Contract Sum. The amount of each bond shall be equal to 100 percent of the Contract Sum.
 - 11.5.1.1 The Contractor shall deliver the required bonds to the Owner not later than three days following the date the Agreement is entered into, or if the Work is to be commenced prior thereto in response to a letter of intent, the Contractor shall, prior to the commencement of the Work, submit evidence satisfactory to the Owner that such bonds will be furnished.
 - 11.5.1.2 The Contractor shall require the attorney-in-fact who executes the required bonds on behalf of the surety to affix thereto a certified and current copy of the power of attorney.

Article 13 - Miscellaneous Provisions

- 13.6.1 Add the following:

Interest will not be paid on monies withheld as retained percentages or on monies withheld as provided in Paragraph 9.5 of the General Conditions.

- 13.8 Codes: Add the following paragraphs:

- 13.8.1 International Building Code

The 2012 Edition of the International Building Code with all amendments as of date of opening of bids shall govern the construction of this project and is adopted and incorporated into the Contract Documents and is made a part thereof by reference, provided, however: That the drawings and specifications shall be adhered to in all cases where they call for quality of materials, quality of workmanship, or quality of construction which is equal to or in excess of the quality required by the International Building Code, and provided also; that there shall be no variances from the plans and specifications except to the extent that the said variances shall be necessary in order to comply with the International Building Code. It shall be the responsibility of the contractor to familiarize himself with the requirements of the International Building Code. If there are any expressed requirements in the plans and/or specifications which are at variance to the International Building Code, all changes in the work, necessary to eliminate the said requirements and make the work conform

to the International Building Code shall be adjusted as provided in the contract for changes in the work.

13.8.2 International Fire Code

The 2012 Edition of the International Fire Code with all amendments as of date of opening of bids shall govern the construction of this project and is adopted and incorporated into the Contract Documents and is made a part thereof by reference, provided, however: That the drawings and specifications shall be adhered to in all cases where they call for quality of materials, quality of workmanship, or quality of construction which is equal to or in excess of the quality required by the International Fire Code, and provided also; that there shall be no variances from the plans and specifications except to the extent that the said variances shall be necessary in order to comply with the International Fire Code. It shall be the responsibility of the contractor to familiarize himself with the requirements of the International Fire Code. If there are any expressed requirements in the plans and/or specifications which are at variance to the International Fire Code, all changes in the work, necessary to eliminate the said requirements and make the work conform to the International Fire Code shall be adjusted as provided in the contract for changes in the work.

13.8.3 International Plumbing Code

The 2012 Edition of the International Plumbing Code with all amendments as of the date of the opening of bids shall govern the installation of all work and is adopted and incorporated into the Contract Documents and made a part thereof by reference, provided, however: That the drawings and specifications shall be adhered to in all cases where they call for quality of materials, quality of workmanship, or quality of construction which is equal to or in excess of the quality required by the International Plumbing Code and provided also; that there may be no variances from the plans and specifications except to the extent that the said variances shall be necessary in order to comply with the International Plumbing Code. It shall be the responsibility of the contractor to familiarize himself with the requirements of the International Plumbing Code. If there are any expressed requirements in the plans and/or specifications which are at variance to the International Plumbing Code, all changes in the work, necessary to eliminate the said requirements and make the work conform to the International Plumbing Code shall be adjusted as provided in the contract for changes in the work.

13.8.4 International Fuel Gas Code

The 2012 Edition of the International Fuel Gas Code with all amendments as of the date of the opening of bids shall govern the installation of all work and is adopted and incorporated into the Contract Documents and made a part thereof by reference, provided, however: That the drawings and specifications shall be adhered to in all cases where they call for quality of materials, quality of workmanship, or quality of construction which is equal to or in excess of the quality required by the International Fuel Gas Code and provided also; that there may be no variances from the plans and specifications except to the extent that the said variances shall be necessary in order to comply with the International Fuel Gas Code. It shall be the responsibility of the contractor to familiarize himself with the requirements of the International Fuel Gas Code. If there are any expressed requirements in the plans and/or specifications which are at

variance to the International Fuel Gas Code, all changes in the work, necessary to eliminate the said requirements and make the work conform to the International Fuel Gas Code shall be adjusted as provided in the contract for changes in the work.

13.8.5 International Mechanical Code

The 2012 Edition of the International Mechanical Code with all amendments as of the date of the opening of bids shall govern the installation of all work and is adopted and incorporated into the Contract Documents and made a part thereof by reference, provided, however: That the drawings and specifications shall be adhered to in all cases where they call for quality of materials, quality of workmanship, or quality of construction which is equal to or in excess of the quality required by the International Mechanical Code and provided also; that there may be no variances from the plans and specifications except to the extent that the said variances shall be necessary in order to comply with the International Mechanical Code. It shall be the responsibility of the contractor to familiarize himself with the requirements of the International Mechanical Code. If there are any expressed requirements in the plans and/or specifications which are at variance to the International Mechanical Code, all changes in the work, necessary to eliminate the said requirements and make the work conform to the International Mechanical Code shall be adjusted as provided in the contract for changes in the work.

13.8.6 National Electrical Code

The 2014 Edition of the National Electrical Code with all Georgia amendments as of the date of the opening of bids shall govern the installation of all work and is adopted and incorporated into the Contract Documents and made a part thereof by reference, provided, however: That the drawings and specifications shall be adhered to in all cases where they call for quality of materials, quality of workmanship, or quality of construction which is equal to or in excess of the quality required by the National Electrical Code and provided also; that there may be no variances from the plans and specifications except to the extent that the said variances shall be necessary in order to comply with the National Electrical Code. It shall be the responsibility of the contractor to familiarize himself with the requirements of the National Electrical Code. If there are any expressed requirements in the plans and/or specifications which are at variance to the National Electrical Code, all changes in the work, necessary to eliminate the said requirements and make the work conform to the National Electrical Code shall be adjusted as provided in the contract for changes in the work.

13.8.7 International Energy Conservation Code

The 2009 Edition of the International Energy Conservation Code with all amendments as of date of opening of bids shall govern the construction of this project and is adopted and incorporated into the Contract Documents and is made a part thereof by reference, provided, however: That the drawings and specifications shall be adhered to in all cases where they call for quality of materials, quality of workmanship, or quality of construction which is equal to or in excess of the quality required by the International Energy Conservation Code, and provided also; that there shall be no variances from the plans and specifications except to the extent that the said variances shall be necessary in order to comply with

the International Energy Conservation Code. It shall be the responsibility of the contractor to familiarize himself with the requirements of the International Energy Conservation Code. If there are any expressed requirements in the plans and/or specifications which are at variance to the International Energy Conservation Code, all changes in the work, necessary to eliminate the said requirements and make the work conform to the International Energy Conservation Code shall be adjusted as provided in the contract for changes in the work.

13.8.8 Life Safety Code

The 2012 Edition of the Life Safety Code, NFPA 101, with all amendments as of the date of the opening of bids shall govern the installation of all work and is adopted and incorporated into the Contract Documents and made a part thereof by reference, provided, however: That the drawings and specifications shall be adhered to in all cases where they call for quality of materials, quality of workmanship, or quality of construction which is equal to or in excess of the quality required by the Life Safety Code and provided also; that there may be no variances from the plans and specifications except to the extent that the said variances shall be necessary in order to comply with the Life Safety Code. It shall be the responsibility of the contractor to familiarize himself with the requirements of the Life Safety Code. If there are any expressed requirements in the plans and/or specifications which are at variance to the Life Safety Code, all changes in the work, necessary to eliminate the said requirements and make the work conform to the Life Safety Code shall be adjusted as provided in the contract for changes in the work.

13.8.9 Accessibility Code

2010 Department of Justice ADA Standard for Accessible Design hereinafter referred to as "Accessibility Code", shall govern the installation of all work and is adopted and incorporated into the Contract Documents and made a part thereof by reference, provided, however: That the drawings and specifications shall be adhered to in all cases where they call for quality of materials, quality of workmanship, or quality of construction which is equal to or in excess of the quality required by the Accessibility Code and provided also; that there may be no variances from the plans and specifications except to the extent that the said variances shall be necessary in order to comply with the Accessibility Code. It shall be the responsibility of the contractor to familiarize himself with the requirements of the Accessibility Code. If there are any expressed requirements in the plans and/or specifications which are at variance to the Accessibility Code, all changes in the work, necessary to eliminate the said requirements and make the work conform to the Accessibility Code shall be adjusted as provided in the contract for changes in the work.

END OF SECTION

**SECTION 01100
SPECIAL CONDITIONS**

1.1 DISCREPANCIES

- A. All errors or discrepancies that may be discovered in the Drawings and Specifications shall be promptly reported to the Architect for correction.
- B. In case of discrepancies between Drawings and Specifications, the requirements of the Specifications shall govern.
- C. Figures given on the Drawings govern scaled measurements; large scale drawings govern small scale drawings.
- D. In case of conflict between the referenced works and these Specifications, these Specifications shall govern. In case of a conflict between referenced works themselves, the one having the more stringent requirements shall govern.

1.2 REFERENCE STANDARDS

- A. All references made in the Project Manual to codes and other standards shall mean and intend to be the latest edition, amendment or revision of the referenced work in effect as of the date of this Project Manual, and shall govern over dates given in the technical sections.
- B. In case of conflict between the referenced works and this Project Manual, the Project Manual shall govern. In case of a conflict between referenced works themselves, the one having the more stringent requirements shall govern.

1.3 REQUEST FOR PRIOR APPROVAL: In order to facilitate the Architect's review of requests for approval of substitutions for specified equipment or materials, all such requests shall be made in writing at least ten (10) days prior to bidding date, and contain the following information:

- A. Project Name
- B. Specified Item
- C. Proposed Substitute
- D. Deviations from that specified
- E. Changes required in other work, if substitute is accepted
- F. Technical Data (Mfg.'s Brochure, Test Data, etc.)

1.4 TESTING AGENCY

- A. The Owner shall retain the services of an independent testing laboratory to perform the tests and make the required inspections and reports as specified in the various sections, or as required by the Architect in case of a question as to the project or result meeting this specification. Testing laboratories shall be responsible for conducting and interpreting the tests, shall state in each report whether or not the specimens tested conform to all requirements of the Contract Documents and shall specifically note deviations, if any.

- B. The testing laboratory shall be subject to the Architect's approval.
 - C. The Owner shall pay for all testing services that are specifically called for or required by the Contract Documents, and for all services and tests required by the Architect in case a question arises as to whether or not the results meet those specified in the technical sections.
 - D. The nature and scope of testing services performed by an agency retained by the Owner shall be in accordance with requirements of governing authorities having jurisdiction over the work, and as otherwise specified, and shall be consistent with reasonable standards of engineering practice.
- 1.5 **FORMAT FOR PAYMENT:** Submit monthly pay request on AIA Standard Form G702 fully executed. In order to get reimbursement for stored materials, stored materials must be stored at the site, with invoices attached to each copy. Furnish three copies of above forms per pay request.
- 1.6 **GOVERNMENTAL INSPECTIONS:** It is a condition of this specification that the agreement is not complete, nor final payment due, until such items as may be required by the governmental inspection be satisfied and a Certificate of Occupancy issued. Should this inspection require work not in the contract documents, the contractor shall be reimbursed as outlined in Section 00800.
- A. **E-Verify and Systematic Alien Verification for Entitlements (SAVE):** Contractor shall provide the required documents to meet E-Verify and SAVE. See attached affidavits.
- 1.7 **EXISTING CONDITIONS:** The Contractor is responsible for verifying in the field that the actual existing conditions are accurately described in these contract documents. If existing conditions are different, the Contractor shall immediately notify the Architect and Owner and request directions on how to proceed. Failure of the Contractor to notify the Architect and Owner prior to further work being accomplished, will result in denial of compensation for additional work performed.
- 1.8 **PROGRESS SCHEDULE:** Prior to submitting the first periodical application for payment, the contractor shall have furnished a construction progress schedule in a format acceptable to the architect. The required schedule shall be CPM format and shall be updated every 2 weeks.
- A. This contract shall be substantially complete on or before a date to be determined once contract is awarded.
 - B. Upon award of contract, general contractor shall coordinate with owner, architect the amount of work that can be undertaken and completed during the summer recess.
 - C. Owner intends to occupy some areas of the building during the summer recess for instruction. General contractor to coordinate construction activities with owner's schedule.
- 1.9 **CONTRACTOR'S WARRANTY:**
- A. In addition to any warranties and guarantees listed in Divisions 2 through 16 of this Project Manual, the General Contractor shall furnish a one-year warranty of all labor and materials furnished under this contract.

- B. In the event that certain areas of a project are accepted and occupied by the Owner prior to substantial completion of the entire job, a separate substantial completion date for that specific area shall be determined and the one year warranty shall begin from that date.
- C. In the event certain equipment or materials are accepted by the Owner and used, these items shall be identified and a substantial completion date determined for purposes of determining the one-year warranty period.

END OF SECTION

**SECTION 01210
ALLOWANCES**

1. GENERAL:

1.1 Related Documents

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

1.2 Summary:

- A. This section includes the following:
 - 1. Allowance for work that may or may not be required as listed below.

1.3 Lump Sum Allowances:

- A. Include in the Base Bid the lump sum allowance of \$10,000 to cover the cost for removing or relocating any existing utility lines that conflict with new construction.

NOTES:

- 1. Prior to completion of the project, the Contractor shall credit the Owner by deductive change order all unused allowances. The credit shall be determined by multiplying the remaining allowance quantity by the corresponding Unit Price provided by the Contractor on the Proposal form.

END OF SECTION

SECTION 01230

GENERAL

1.1 SUMMARY

- A. Section Includes
 - 1. Documentation of changes to Contract Sum and Contract Time.
- B. Contract Documents contain pertinent requirements for materials and methods to accomplish work described herein.
- C. Provide alternate costs for inclusion in Contract Sum if accepted by Owner.

1.2 RELATED REQUIREMENTS

- A. Owner/Contractor Agreement: Alternates accepted by Owner for incorporation into the Work.
- B. Individual specification sections identified.

1.3 PROCEDURES

- A. Alternates will be exercised at the option of Owner.
- B. Coordinate related work and modify surrounding work as required to complete the work, including changes under each Alternate, when acceptance is designated in [Owner/Contractor] [Owner/Construction Manager] Agreement.

C. DESCRIPTION OF ALTERNATE

- i. Alternate No. 1 – Install new mechanical units indicated in Gymnasium Area. See drawings for additional description.
- ii. Alternate No. 2 – Replace existing mechanical wall hung units on back wing, ceiling heaters, DSS system and exhaust fans as indicated. See drawings for additional description.

PART 2 PRODUCTS

Not used

PART 3 EXECUTION

Not used

END OF SECTION

**SECTION 01300
TEMPORARY REQUIREMENTS**

1. GENERAL:

A. LICENSES AND PERMITS: The Contractor shall pay for all temporary permits and obtain all temporary licenses required to construct this project, including the Building Permit and Utility Permits.

B. FACILITIES:

(1) Contractor Furnished:

(a) Temporary water closet with sanitary sewer connection, or chemical type, approved by the local Health Department

(b) Field office with telephone

(c) Temporary water

(d) Temporary electricity

(2) Owner Furnished: None

(3) The Owner shall have the right to approve or reject the area designated by the contractor to place his field office and equipment and material storage yard.

C. BARRIERS:

(1) The Contractor shall furnish all necessary barriers and barricades to meet minimum safety requirements of OSHA.

END OF SECTION

**SECTION 01320
PROJECT RECORD DOCUMENTS**

PART 1 GENERAL

1.1 Quality Assurance:

- A. **Qualifications of Workmen:** Contractor shall designate one workman in his employ who shall maintain all Project Record Documents and who shall record all changes to the original contract documents.
- B. **Identification of Documents:** All project record documents shall be clearly marked PROJECT RECORD COPY, not used for construction purposes and available to the Architect or his representative.

1.2 Submittal:

- A. **General:** At least 10 days prior to date of final inspection and as a condition of acceptance of the work, submit all project record documents to the Architect.

PART 2 PRODUCTS

2.1 Project Record Documents:

- A. **Description:** Project record documents include but are not limited to:
 - 1. Drawings
 - 2. Project Manual
 - 3. Addenda
 - 4. Approved Shop Drawings/Product Data
 - 5. Change Orders
 - 6. Field Orders
 - 7. Construction drawings
 - 8. Operation/Maintenance Manuals
 - 9. Test Reports/Certifications/Inspection Reports
 - 10. Agency Approvals secured by Contractor

PART 3 EXECUTION

- A. **Marking:** Mark the most appropriate document within twenty four (24) hours of receipt of information to show.
 - 1. Changes made during construction.
 - 2. Details not shown on original Contract Documents.

3. Location of Underground Utilities and Appurtenance, Reference to permanent surface improvements.
 4. Location of all Internal Utilities and Appurtenance concealed in the building structure, referenced to visible and accessible features of the structure.
- B. Method of Marking and Recording:
1. Using colored pencils for graphic work, conform to following:
 - a. Architectural Work - Red
 - b. Structural Work - Brown
 - c. Mechanical Work - Green
 - d. Electrical Work - Yellow
 2. Use a red pen for all written work.
- C. Quality Control: Documents shall be kept current; no work shall be concealed before required information has been recorded and documents shall be clearly marked "PROJECT RECORD DOCUMENTS", not used for construction purposes and available to Architect and/or his representative at all times.
1. Progress Payments nor Final Payment will not be made until Architect is satisfied that status of documents is current.

END OF SECTION

SECTION 01330 SUBMITTALS

PART 1 GENERAL

1.1 Quality Assurance:

- A. Reference Standards: Unless specifically modified hereinafter or in pertinent other sections of this Project Manual, the requirements of Article 3 of the General Conditions of the Contract for Construction, AIA Document A201, 1997 (15th) Edition shall apply and be complied with.
- B. Definitions: Unless specifically noted otherwise hereinafter or in pertinent other sections of this Project Manual, all definitions shall be as enumerated in the General Conditions of the Contract for Construction, AIA Document A201, 1997 (15th) Edition.
- C. Submittals: Unless specifically noted otherwise in pertinent other sections of this Project Manual, make all submittals to Architect and in sufficient number as to allow the Architect to retain two (2) of the submittals.
 - 1. Timing of Submittals: Make all submittals far enough in advance of scheduled dates of installation to allow at least twenty (20) full working days for review following Architect's receipt of the submittal.
 - 2. Delays: Cost of delays occasioned by tardiness of submittals may be back charged to the contractor and shall not be borne by the Owner.
 - 3. All samples and shop drawings shall be routed through the Contractor to the Architect, who will return them to the Contractor for distribution.
 - 4. All samples and shop drawings shall receive the Contractor's approval and shall bear the Contractor's approval stamp prior to submission to the Architect. Failure of the Contractor to affix his approval stamp to any submittal will be cause for rejection of the submittal by the Architect.
- D. Approval: Shop drawings are for the purpose of determining more details of a specific item than is shown in the contract documents. Architect's indicated approval of shop drawings does not indicate approval of changes from the contract documents included on the shop drawings unless indicated as approved for that specific change or variation.

PART 2 PRODUCTS (OMITTED)

PART 3 EXECUTION

3.1 Detail Requirements:

- A. Identification: Completely identify each submittal by showing at least the following:
 - 1. Name of Project and Architect as they appear on the Project Manual cover.
 - 2. Name and address of submitter.

3. Sheet Number and/or Project Manual Section Number to which the submittal applies.
4. Whether the submittal is an original submittal or a resubmittal.

END OF SECTION

**SECTION 01700
CONTRACT CLOSEOUT**

PART 1 - GENERAL

1.1 SUMMARY

- A. This section includes administrative and procedural requirements for contract closeout, including, but not limited to, the following:
 - 1. Inspection Procedures
 - 2. Project Record Document Submittal
 - 3. Operation and Maintenance Manual Submittal
 - 4. Submittal of Warranties
 - 5. Final Cleaning

- B. Definitions:
 - 1. Completion Inspection: Inspection called for by contractor when the contractor believes the work required by the contract documents is 100% complete and ready for turn over to the Owner.
 - 2. Final Inspection: Inspection at request of the contractor when all punch list items have been completed.

PART 2 - PRODUCTS

2.1 PROJECT AND RECORD DOCUMENTS REQUIRED FOR CLOSE OUT:

- A. Provide 1 copies of the following documents in three ring binder (if applicable) and "pdf" file of complete documents to be turned over to the architect for review:
 - 1. Operation and Maintenance Manuals
 - 2. As-Built Drawings (Including Sprinkler and Fire Alarm)
 - 3. As-Built Specifications
 - 4. Fire Marshal Approved Drawings and Specifications (Original)
 - 5. Fire Marshal Approved Sprinkler Drawings (Original)
 - 6. HVAC Certification
 - 7. Fire Alarm Certification
 - 8. Electrical Certification
 - 9. Underground Water System Certification
 - 10. Warranties

11. Fire Marshal Building Permit
12. Test and Balance Report
13. Certificate of Occupancy
14. Inventory of material to be left on site; (i.e. paint, floor/ceiling tile, carpet, base)
15. Release of Liens
16. Copy of all Change Orders with supporting data.
17. Copy of all "Approved" submittals.

PART 3 - EXECUTION

- 3.1 Final Payment will not be made until Architect is satisfied that the close out documents are correct and complete.

END OF SECTION

**SECTION 02220
SELECTIVE DEMOLITION**

PART 1 GENERAL

1.1. Quality Assurance:

- A. **Qualifications of Workmen:** Provide at least one person who shall be present at all times during demolition operations and who shall be thoroughly familiar with the requirements of this portion of the work and the methods by which the same is accomplished.
- B. **Codes and Standards:** In addition to complying with all pertinent codes and regulations, comply with the requirements of those insurance carriers providing coverage for this project.
- C. **Contractor's Responsibility:** It shall be the Contractor's responsibility to protect all existing construction designated to remain and to provide for the public safety during all demolition operations.
- D. **Damage to Existing Construction:** In the event of damage to any construction and/or equipment not scheduled to be demolished or removed, the Contractor shall immediately make all repairs and replacements necessary to the approval of the Architect and at no additional cost to the Owner.
- E. **Dust Control:** Use all means necessary to prevent the spread of dust during the performance of the work of this section.
- F. **Burning:** On-site burning will not be permitted.
- G. **Asbestos Materials:** Should, during the course of demolition, any suspect asbestos materials be encountered, stop work in suspect area and immediately notify the Owner and Architect.

PART 2 PRODUCTS

2.1 Materials:

- A. **Barricades:** Use only new and solid lumber and plywood of utility grade or better for the construction of all temporary barricades.
- B. **Miscellaneous:** All other materials, not specifically described but required for the proper execution of the work of this section shall be selected by the contractor, subject to approval by the Architect.

PART 3 EXECUTION

3.1 Preparation:

- A. **Notification:** Notify the Architect at least two full working days prior to commencing the work of this section.
- B. **Site Inspection:** Prior to all work of this section, carefully inspect the entire site, building and all objects designated to be removed and to be preserved.

- C. Clarification: The drawings show generally all existing construction that is to be removed; demolition includes but is not limited to the following:
1. Removal of existing ceilings except as otherwise noted.
 2. Removal of doors, frames, windows and similar items.
 3. Removal of walls and partitions as required for new work.
 4. Removal of existing floor covering, resilient base and related items (i.e. carpet, resilient tile, and adhesives).
 5. Removal of mechanical (plumbing and HVAC) and electrical items (see respective sections).
 6. Before commencing the work of this section, verify with the Architect all construction that is to be removed.
- D. Scheduling:
1. Schedule all work in a careful manner with all necessary consideration for neighbors and the public.
 2. No interior demolition of any nature shall be commenced until approval to commence has been granted by the Owner.
- E. Field Quality Control:
1. Temporary Barricade: Construct temporary barricades and fencing as necessary to protect existing construction and the public from damage or harm caused by the work of this section; barricades shall be constructed in accordance with all pertinent codes and regulations.
 2. Disconnection of Utilities: Before starting demolition, disconnect or arrange for disconnection of all utility services designated to be removed, performing all such work in accordance with the requirements of the utility company or agency involved.
 3. Protection of Utilities: Preserve in operating condition all active utilities traversing the site, and all active utilities designated to remain.
 4. Demolition: Demolish existing construction designated to be removed on the drawings or as determined under Article 3.1,C,6 in their entirety.
 5. Disposal of Debris: Remove from the site all debris resulting from the demolition operations; burning of debris on site will not be permitted; place of disposal for demolished items shall be the Contractor's responsibility.

END OF SECTION

**SECTION 06100
ROUGH CARPENTRY**

PART 1 GENERAL

1.1 Quality Assurance:

A. Industry Standards:

1. Some products and execution are specified in this section by reference to published specifications or standards (with respective abbreviations used); these referenced publications may be subject to special conditions or limitations where specified hereinafter.
2. Referenced Publications, having latest date prior to date of this Project Manual.
 - a. American Plywood Association (APA).
 - b. American Society for Testing and Materials (ASTM).
 - c. American Wood Preservers Association (AWPA).
 - d. Federal Specifications (FS).
 - e. National Institute of Standards and Technology (NBS).
 - f. Southern Pine Inspection Bureau (SPIB).
 - g. Truss Plate Institute (TPI).

B. Grade Mark: All lumber and plywood shall bear the grade mark as described hereinafter.

1.2 Submittals:

A. General: Make submittals in accordance with Section 01330.

B. Product Data: Manufacturer's detailed material specifications for the following:

1. Framing Accessories with installation recommendations.
2. Wood Preservative.
3. Nails, Bolts, and Screws.

C. Samples: As follows:

1. Framing Accessories: Full size for each type proposed for use in the work.

1.3 Product Handling:

A. Delivery: Deliver manufactured items in manufacturer's original packaging with labels intact and legible.

- B. Storage and Protection: Store materials to insure protection from damage due to inclement weather and poor ventilation.

PART 2 PRODUCTS

2.1 Materials:

A. Lumber:

1. Framing, Blocking, Roof Edges, Curbs and Furring: SPIB Grade Marked No. 2, Southern Yellow Pine, kiln-dried with moisture content of not more than 19 percent; nominal sizes as indicated on the drawings, complying with NBS PS 20, except where actual sizes are specifically required; surfacing shall be dressed (S4S).
2. Fascia and Related Wood: SPIB Grade Marked No. 1 Southern Yellow Pine, kiln-dried with moisture content of not more than 19%; nominal sizes as indicated on the drawings, complying with NBS PS 20 except where actual sizes are specifically required; surfacing shall be dressed (S4S).

B. Fasteners:

1. Nails:

- a. For application to wood, nails shall be of sizes, types and finishes best suited for intended use and meet RS FF-N-105.
- b. For application to concrete or masonry, nails shall be of sizes, types and finishes best suited for intended use and meet RS FF-N-105.

2. Bolts (lag, toggle, expansion and miscellaneous) and Screws: Types, sizes and finishes best suited for intended use and meet FS FF-N-105; bolt heads and nuts bearing on wood shall be fit with washers.

C. Wood Preservative: shall be type treated listed for direct ground contact.

D. Wood Roof Deck at covered entry: 5/8" CDX plywood, clipped.

2.2 Fabrication:

A. Rough Carpentry: Fabricate all framing, furring, blocking and other items from lumber as described hereinbefore and to the designs required by the drawings.

B. Wood Preservative Treatment: All lumber and fabricated wood items that will be in contact with concrete or masonry, used in roof construction (i.e. blocking, edges, etc.) or specifically noted on the drawings to be preservative treated (P.T.) shall be pressure treated with wood preservative in accordance with AWPA Standard C1 & C2 after treatment reduce moisture content to maximum of 19 percent.

1. Wolmanized
2. Osmose
3. Georgia Lumber

PART 3 EXECUTION

3.1 Installation:

- A. Workmanship: All rough carpentry shall produce joints that are true, tight and well fastened and with all members assembled in accordance with the drawings.
- B. Section of Lumber Pieces:
 - 1. Carefully select all members; select individual pieces so that knots and obvious defects will not interfere with placing bolts or proper nailing or making proper connections.
 - 2. Cut out and discard all defects which will render a piece unable to serve its intended function; lumber may be rejected by the Architect, whether or not it has been installed, for excessive warp, twist, bow, crook, mildew, fungus, or mold, as well as for improper cutting and fitting.
- C. Shimming: Do not shim sills, joists, short studs, trimmers, headers, lintels or other framing components.
- D. General Framing:
 - 1. In addition to all framing operations normal to the fabrication and erection indicated on the drawings, install all backing required for the work of other trades.
 - 2. Set all horizontal or sloped members with crown up.
 - 3. Do not notch, bore or cut members for pipes, ducts, conduits or other reasons except as shown on the drawings or as specifically approved in advance by the Architect.
 - 4. Install miscellaneous items for which the rough carpenter trade is customarily responsible, such as "Template" setting of anchor bolts, providing frames for openings through concrete and/or masonry.
 - 5. Make all bearings full unless otherwise indicated on the drawings.
 - 6. Finish all bearing surfaces on which structural members are to rest so as to give sure and even support; where framing members slope, cut or notch the ends as required to give uniform bearing surface.
 - 7. Install all blocking, furring and similar items as shown on the drawings.
 - 8. Install roof edges and curbs in the locations shown on the drawings and in accordance with the details shown thereon.
- E. Nailing: Using only the proper nails; do all nailing without splitting wood members, preboring as required.
- F. Bolting:
 - 1. Drill holes 1/16" larger in diameter than the bolts being used; drill straight and true from one side only.

2. Bolt threads must not bear on wood; use washers under head and nut where both bear on wood; use washers under all nuts.

G. Screws:

1. For lag screws and wood screws, prebore holes same diameter as root of thread; enlarge holes to shank diameter for length of shank.
2. Screw, do not drive, all lag screws and wood screws.

3.2 Field Quality Control:

A. Wood Preservative: Apply two brush coats of the approved preservative chemical all field cuts of treated lumber.

B. Clean Up:

1. At the end of each working day, or more often if necessary, thoroughly sweep all surfaces where refuse from this portion of the work has settled.
2. Remove the refuse to the area of the job set aside for its storage.
3. Upon completion of this portion of the work, thoroughly broom clean all surfaces.

END OF SECTION

**SECTION 07900
SEALANTS AND CAULKING**

PART 1 GENERAL

1.1 Quality Assurance:

A. Industry Standards:

1. Some products and execution are specified in this section by reference to published specifications or standards (with respective abbreviations used); these referenced publications may be subject to special conditions or limitations where specified hereinafter.
2. Reference Publications:
 - a. American Society for Testing and Materials (ASTM).
 - b. Federal Specifications (FS).

1.2 Definitions:

- A. Sealant: A weatherproof elastomer used in filling and sealing joints, having properties of adhesion, cohesion, extensibility under tension, compressibility and recovery.
- B. Caulk: Term used to denote the process of filling and sealing the joints, without regard to type of material.

1.3 Submittals:

- A. General: Make submittals in accordance with Section 01330.
- B. Product Data: Manufacturer's detailed descriptive and specification data for each type of sealant and joint filler described hereinafter; furnish color card showing full range of colors available.
- C. Samples: For each type and color of sealant required accompanied by sample of joint filler.

1.4 Product Handling:

- A. Delivery: Deliver the products of this section in manufacturer's original unopened packaging with labels intact and legible.
- B. Storage and Protection: Store and protect products of this section in accordance with manufacturer's instructions.

1.5 Job Conditions:

- A. Temperature: Do no caulking if ambient temperature is 32 degree F or below.

PART 2 PRODUCTS

2.1 Materials:

A. Sealants:

1. Type 1: Single-component polyurethane, gun-grade, complying with F TT-S-00230C, Type II, Class A; color as selected by Architect.
2. Type 2: One-component acetoxysilicone, complying with FS TT-S-001543A, Type Non-Sag, Class A; white color.
3. Type 3: Acrylic latex, gun grade, paintable, complying with ASTM C834-86; white color.
4. Type 4: Oleo-resinous compound, gun grade, non-staining, non-shrinking, and non-sagging, complying with FS TT-C-598b.
5. Type 5: One-part silicone rubber, non-slump, conforming to ASTM E814-88, UL rated for rating of construction with which used.
6. Type 6: One part non-hardening, non-drying, non-bleeding, and non-staining acoustical sealant of synthetic rubber.

B. Joint Filler: Foam rod, approved by sealant manufacturer, sized to require 20% to 50% compression upon insertion.

C. Primer: Only that as recommended by the sealant manufacturer.

D. Application Equipment: Sealant application equipment shall be only such equipment as is specifically recommended by the manufacturer of the sealant being installed.

PART 3 EXECUTION

3.1 Installation:

A. Preliminary Requirements:

1. Surface Preparation:

- a. Surfaces to be sealed shall be sound, clean, dry, frost free and free of contamination by laitance, form release agents, concrete curing compounds or other surface treatments.
- b. Masonry and concrete surfaces shall be wire brushed.
- c. Metal, glass and wood surfaces shall be wiped with methyl ethyl ketone.

2. Masking: Surfaces adjacent to joints shall be masked to obtain a neat sealant line.

3. Joint Filler: Joints exceeding the maximum allowable depth as hereinafter described shall be filled to within the allowable depth with the specified joint filler.

4. Primer: Apply primer to surfaces to be caulked as recommended by the manufacturer of the sealant being installed.

B. Locations:

1. As the work progresses caulk and seal all joints subject to movement or subject to passage of air or moisture.
2. Type 1 Sealant: Install wherever caulking is required in conjunction with roofing, sheet metal work, flashings, exterior and interior perimeter of all window and door frames, louvers and similar items and at all expansion and control joints.
3. Type 2 Sealant: Around plumbing fixtures, at walls and floors.
4. Type 3 Sealant: Around perimeter of interior frames, and at interior of building where caulking is called for and where dissimilar materials abut, except as described in Article 3.1.B,2 hereinbefore.
5. Type 4: Beneath metal thresholds.
6. Type 5 Sealant: Where sealant or caulk is required in fire rated walls, floors or ceilings to maintain integrity of rated construction.
7. Type 6 Sealant: Refer to Section 09260.

C. Application of Sealant:

1. Install sealant under pressure to fill joint, taking care to produce beads of proper width and depth; tool as recommended by the manufacturer; immediately remove all surplus sealant.
2. Width and depth of sealed joint shall not exceed the proportions of 1/2 inch width x 1/2 inch diameter and 3/4 inch width x 1/4 inch diameter, except that metal thresholds and sills shall be set in full bed of specified sealant.

3.2 Field Quality Control:

- A. Protection: To insure proper curing, sealed joints shall not be touched, washed or otherwise disturbed for 48 hours after installation unless specifically recommended otherwise by the sealant manufacturer.

END OF SECTION

**SECTION 09500
ACOUSTICAL TREATMENT**

PART 1 GENERAL

1.1 Quality Assurance:

A. Industry Standards:

1. Some products and execution are specified in this section by reference to published specifications or standard (with respective abbreviations used); these referenced publications may be subject to special conditions where specified hereinafter.
2. Referenced Publications:
 - a. American Society for Testing and Material (ASTM)
 - b. Federal Specifications (FS)

1.2 Submittals:

- A. General: Make submittals in accordance with Section 01330.
- B. Shop Drawings: Fully dimensioned, showing actual field measurements, superimposed over duct work; show locations of all mechanical and electrical items located in the ceiling tile.
- C. Samples:
 1. Suspension System: Full size components not less than 4" inches long for each suspension system described hereinafter.
 2. Ceiling Tile: Not less than 12" x 12" full thickness for each type of ceiling tile described hereinafter.
- D. Product Data: Manufacturer's detailed material and fabrication specification and installation instructions for each suspension system and ceiling tile type described hereinafter.
- E. Extra Stock: After completion of this work, deliver to Owner not less than 2 percent replacement material for each 2,000 square feet (or fraction thereof) for each type, finish and pattern of tile installed; extra stock shall be from same manufactured lot as material installed, boxed and labeled.

1.3 Product Handling:

- A. Delivery: Deliver product in original packaging with labels intact and legible.
- B. Storage and Protection: Store products in a housed dry area and protect from damage as per their manufacturer's instructions.

1.4 Job Conditions:

- A. Environmental Requirements: For a period of ten days prior to and throughout the installation of acoustical tile and until date of Architect's Final Certificate, maintain a temperature of not less than 50 degrees F and a relative humidity of not more than 60%.
- B. Glazing: All glazing of exterior openings shall be complete and exterior doors shall be on place before beginning installation of any work under this section.
- C. Wet Work: All concrete and other wet work shall be complete before installation is begun.

PART 2 PRODUCTS

2.1 Materials:

A. Acoustical Tile:

Design is based on Dune, angled tegular 15/16" (item 1774), 24" x 24" x 5/8", lay-in tile as manufactured by Armstrong World Industries, Inc. Products by Celotex Corp. and USG are acceptable.

B. Suspension System:

Design is based on DX System as manufactured by USG. Products by Chicago Metallic Corp. and Armstrong are acceptable.

C. Wall Moulding: Manufacturer's standard angle for use with suspension systems. Finish to match finish of suspension system with which used.

D. Hanger Wire: 12 gauge, galvanized, except as otherwise recommended by the manufacturer of the suspension system being installed.

E. Decorative Perimeter Trim: Design is based on Armstrong axiom system. 6" trim channel. Acoustical ceiling to drywall soffit with light tone and deep tone color palette available. System similar to Armstrong detail AX-3.

F. Acoustical Wall Panels: shall be equal to "Soundsoak II" by Armstrong World Industries in manufacturer's standard colors. Equal products by Capaul & Rampart Partition, Inc. shall be acceptable.

PART 3 EXECUTION

3.1 Preliminary Requirements:

A. Layout: Ceilings shall be centered within areas, producing no tile less than 1/2 size, unless specifically shown otherwise on the drawings.

B. Lines: Contractor shall establish lines and maintain same throughout the work and all trades shall work to these lines.

C. Install type tile and suspension system where indicated on ceiling plan.

3.2 Installation:

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Bibb County BOE

09500 -2

- A. Provide and install an additional 4 hanger wires adjacent to each light fixture at intersections of framing members.
 - B. The suspension systems, once installed and fully loaded shall have a deflection of no more than 1/360 of the span and shall be level to within 1/8" in 12' with levels taken at random. Erect in accordance with manufacturer's requirements.
 - C. Ceiling Tiles: Install in ceiling tile suspension system in accordance with the tile manufacturer's installation specifications.
 - D. Wall Panels: install in strict accordance with the manufacturer's recommendations for concealed fastening.
- 3.3 Field Quality Control:
- A. Cleaning: Upon completion of the work, clean all exposed to view surfaces and leave tile and trim in a clean and spotless condition.

END OF SECTION

**SECTION 09900
PAINTING**

PART 1 GENERAL

1.1 Quality Assurance

- A. Manufacturers: All paints/stains selected for the coating and finishing system for each type of surface shall be the product of a single manufacturer and as described hereinafter.

1.2 Definitions:

- A. Paint: Term used in a general sense and has reference to sealers, primer, stains, oils, alkyd, latex, epoxy and enamel type paints.
- B. Painting: Term used in a general sense and has reference to the application of "paint" without regard to the type of material, to an item.
- C. Back Prime: Terms used in a general sense and has reference to the application of "paint" (first coat), without regard to the type of material, to the back side (unexposed to view) of an item.

1.3 Submittals

- A. General: Make submittals in accordance with Section 01330.
- B. Material List: Prior to delivery of any paint materials to the project site, submit a complete list of all paint materials to be used in this project as described hereinafter.
- C. Manufacturer's Data: Accompanying the materials list, furnish the paint manufacturer's detailed descriptive and specification data and application instructions for each type of paint required.
- D. Color Cards: Manufacturer's full range of colors available for each finish described hereinafter in the "Painting Systems Schedule" including wall coverings.
- E. Color Schedule: After receipt of the information requested hereinabove (1.3,B,C & D) the Architect will furnish the Contractor a "Color Schedule". This schedule will be prepared only after all color submittals required by other sections of this Project Manual have been received (i.e. ceramic tile, resilient tile, carpet, etc.)
- F. Color Samples:
 - 1. After the color schedule has been received by the Contractor and prior to ordering of any paints, submit color samples, not less than 6" x 6" each, for each type and color of finish required.
 - 2. Wherever possible, the material upon which the sample colors are applied shall be the same material as that on which the paint will be applied in the project.
- G. A list of paint products used (manufacturer), and color codes (mix proportions) shall be provided to the maintenance paint department at the end of the project.

1.4 Product Handling:

- A. Delivery: Deliver the products of this section in manufacturer's original unopened packaging with labels intact and legible.
- B. Storage and Protection: Store products of this section in a housed, dry and ventilated area, and protect from damage.

1.5 Job Conditions:

- A. Temperature: Maintain a constant temperature of not less than 65 degrees F during interior painting and drying operations and until date of Architect's Certificate of Substantial Completion.
- B. Ventilation: Provide ventilation to allow for the proper drying of the paint materials by using either of the following:
 - 1. Temporary air circulators (spark proof)
 - 2. Air conditioning system.
- C. Lighting: Maintain lighting of not less than three (3) watts per square foot of floor area where painting operations are in progress.

PART 2 PRODUCTS

2.1 Materials

- A. Paints and Stains:
 - 1. Manufacturer:
 - a. The materials specified hereinafter in the painting system schedule, unless specifically noted otherwise, are those of ICI Dulux Paint Stores, Cleveland, Ohio.
 - b. The use of manufacturer's names and products are for reference only to indicate characteristics of the material and the finished required.
 - 2. Equal products by the following manufacturers are acceptable:
 - a. Martin Senour
 - b. Pratt and Lambert
 - c. Benjamin Moore
 - d. PPG
- B. Accessory Equipment: Ladders, scaffolding, drop clothes, scrapers, dusters and similar items are not required to be new, but they shall be safe, adequate and acceptable of producing the results for which they are intended.
- C. Application Equipment: Brushes, rollers, spray apparatus and similar application equipment are not required to be new, but they shall be capable of producing the required results specified hereinafter.

- D. Thinners: Only those recommended for that purpose by the manufacturer of the material being installed.

PART 3 EXECUTION

3.1 Installation:

A. Surface Preparation:

1. General: Do not begin painting on any surface until it has been inspected and is in condition to receive the paint as specified herein. Should any surface be found unsuitable to produce a proper paint finish, the Architect shall be notified in writing and no material shall be applied until the unsuitable surfaces have been made satisfactory. Absence of such notification shall be construed as acceptance of such surface to receive paint. Later claims of defects in surfaces or incompatible coatings prior to painting shall not relieve the Contractor from his responsibility for compliance with the requirements of the Specifications.
2. Steel and Iron: Remove grease, dirt, mud, rust and scale. Touch up any chipped or abraded places on items that have been shop coated. Where steel and iron have a heavy coating of scale, it shall be removed by de-scaling or wire brushing to produce a smooth surface for painting.
3. Masonry: Masonry surfaces to be painted shall be prepared by removing all dirt, dust, oil and grease stains, mortar droppings, and efflorescence.
4. Wood Surfaces: Primed and finish-coated as specified in the painting schedule herein. Wood surfaces shall be cleaned of all dirt, oil, or foreign substances with mineral spirits, scraper, sandpaper and/or wire brush. Finished surface exposed to view shall be made smooth by sandpapering. Small, dry, seasoned knots shall be surface scraped and cleaned and shall be given a thin coat of knot sealer before application of the priming coat. Pitch on large, open, unseasoned knots and on all other beads or streaks of pitch shall be scraped off, or if still soft, shall be removed with mineral spirits or turpentine and the resinous area thinly coated with knot sealer. After priming, all holes and imperfections in finish surface shall be filled with putty or plastic wood filler colored to match the finish coat, allowed to dry and sandpapered smooth. Painting shall proceed only when the moisture content of the wood does not exceed 12% as measured by a moisture meter. All wood trim shall be backed primed.
5. Exposed pipes and conduit shall be cleaned using mechanical cleaning and/or solvents, mineral spirits or other paraffin-free solvents having a flash point no higher than 100 degrees F. and shall be painted in accordance with the Painting Systems Schedule.
6. Hardware, hardware accessories, lighting fixtures, switch and outlet plates, in place and not to be painted shall be removed prior to surface preparation and painting operations or protected. Following completion of painting of each space, removed items shall be reinstalled.

B. Application and Instructions:

1. The proportions of all ingredients in all paints and stains mixed on the site shall be in accordance with the recommendations of the paint

manufacturer printed on the container applicable to the particular use for which the specific mixture is intended. No thinner or flattening oil will be used in the last coat. Screen out all lumps and impurities during mixing using clean containers, and protect against dirt or trash entering the mix. Stir until uniform consistency is procured.

2. During the actual application and drying of the paint, and until normal occupancy of the building occurs, a minimum temperature of 65 degrees F. shall be maintained. This temperature shall be held as constant as possible to prevent condensation. Ventilation shall be provided at all times so that the humidity cannot rise above the dew point of the coldest wall.
3. Do not apply exterior paint in damp rainy weather or until the surface has dried thoroughly from the effects of such weather.
4. Surface to be stained or painted shall be clean, dry and smooth. Each coat of paint shall be smoothly applied, worked out evenly and allowed to dry before the subsequent coat is applied.
5. Enamel or varnish undercoats on wood surfaces and on steel surfaces shall be sanded smooth prior to recoating. Undercoats on steel and iron shall be dusted prior to recoating.
6. Finished work shall be uniform and of the specified color. It shall completely cover, be smooth and free from runs, sags, clogging or excessive flooding. Make edges of paint adjoining other materials or color, sharp and clean without overlapping. Where high gloss enamel is used, lightly sand undercoats to obtain a smooth finish coat.
7. Each coat of paint shall be slightly different shade than preceding coat. Final coat shall not be applied until the previous coat has been approved by the Architect.
8. Paste wood filler, applied on open grain wood, when "set" shall be wiped across the grain of the wood, then with the grain to secure a clean surface.
9. Correction of improper or damaged work may be by "spot touching" except that in final coat corrections, a re-coating of the entire surface between corners or "breaks" will be required without additional charge.
10. Where open cabinets or shelves occur, room finish on wall shall not be omitted. However, painting on walls will not be required back of permanently built-in cabinets with closed back.
11. The interior of all cabinets shall be finished the same as the exterior of the cabinet.
12. The insides of all wood drawers shall be given one coat of pure white shellac.
13. Access panels, registers, and grilles (except aluminum) shall be painted the same color as adjacent walls or ceilings. Where adjacent surfaces do not require painting, use color as directed by the Architect.
14. Prime coated butts shall be painted the same color as door trim to which they are attached.

15. Exposed piping, conduit, duct work and hangers in finished spaces, shall be painted a color and texture to match walls or ceilings adjacent to them. Where adjacent surfaces are unpainted, use color as directed by the Architect
16. The top and bottom edges of all wood and metal doors shall be finished with two coats of paint or varnish as used for finish coat. Apply after fitting and before faces are painted.
17. Cleaning: At completion of the work, clean all paint, coatings, oil and stain spots from all surfaces not required to be painted under this section. Remove all surplus materials and debris resulting from the work included herein.

C. Painting Systems Schedule: All trade names and numbers listed hereinafter are in the following order, unless specifically shown otherwise:

- a. ICI ICI/GLIDDEN AND DEVOE
- b. MS Martin Senour
- c. PL Pratt and Lambert
- d. BM Benjamin Moore

1. Exterior:

Ferrous Metals

- 1) Prime Coat – Alkyd Multi-Purpose Metal Primer:
 - ICI 4160 Devguard Multi-Purpose Tank and Structural Primer
 - MS Tough Coat® Rust Control Universal Metal Primer
 - PL S45XX Steeltech® Rust Inhibitive Metal Primer
 - BM Super Spec HP Universal Alkyd Metal Primer P07
- 2) 2 Coats - Alkyd Industrial Enamel
 - ICI 4308 Devguard 4308 Alkyd Industrial Gloss Enamel
 - MS Tough Coat® Heavy Duty Alkyd Enamel
 - PL S45XX Techgard Maintenance Gloss Enamel
 - BM Benjamin Moore® Super Spec HP® D.T.M. Alkyd Gloss Enamel P26

2. Interior:

Gypsum Board:

- 1) Prime Coat - Waterborne Acrylic Latex
 - ICI: Prep&Prime Gripper Multi-Purpose Primer 3210
 - MS: T.P.S.® Interior Multi-Surface Latex Enamel Undercoater
 - PL: Z1013 SUPRIME® Interior Latex Enamel Undercoater
 - BM: Super Spec® Latex Enamel Undercoater & Primer Sealer 253
- 2) 2 Coats – Waterborne Polyamide High Performance Acrylic Semi-Gloss Epoxy
 - ICI: 4406 Devoe Tru-Glaze-WB Waterborne Polyamide Semi-Gloss Epoxy
 - MS: Super Tough Coat® Acrylic Water Based Epoxy
 - PL: Enducryl® HP (High Performance) Water-Based Epoxy
 - BM: Polyamide Epoxy Semi-Gloss Coating M36/M38

Ferrous Metal:

- 1) Prime Coat – Alkyd Multi-Purpose Metal
ICI 4160 Devguard Multi-Purpose Tank and Structural Primer
MS Tough Coat® Rust Control Universal Metal Primer
PL S45XX Steeltech® Rust Inhibitive Metal Primer
BM Super Spec HP Universal Alkyd Metal Primer P07
- 2) 2 Coats - Alkyd Industrial Enamel
ICI 4308 Devguard 4308 Alkyd Industrial Enamel
MS Tough Coat® Heavy Duty Alkyd Enamel
PL S45XX Techgard Maintenance Gloss Enamel
BM Benjamin Moore® Super Spec HP® D.T.M. Alkyd Gloss Enamel P26

Concrete Unit Masonry:

- 1) Block Filler -Heavy Duty Interior/Exterior Heavy Duty Block Filler
ICI 4000 Blok-Fill Int/Ext Heavy Duty Acrylic Block Filler
MS ProLine® Premium Int/Ext Heavy Duty Block Filler
PL Z8465 Enducryl Int/Ext Heavy Duty Latex Block Filler
BM Super Spec® HP Latex Block Filler 160
- 2) 2 Coats – Waterborne Polyamide High Performance Acrylic Semi-Gloss Epoxy
ICI 4406 Devoe Tru-Glaze-WB Waterborne Polyamide Semi-Gloss Epoxy
MS Super Tough Coat® Acrylic Water Based Epoxy
PL Enducryl® HP (High Performance) Water-Based Epoxy
BM Polyamide Epoxy Semi-Gloss Coating M36/M38

Galvanized Metals

- 1) Primer-Waterborne Acrylic DTM Metal Primer
ICI 4020 Devflex DTM Flat Interior/Exterior Waterborne Primer Finish
MS Super Tough Coat® Acrylic Prime & Finish
PL Z190 Steeltech® Acrylic Prime or Finish
BM SuperSpec Acrylic Metal Primer 004
- 2) 2 coats-Waterborne Int/Ext Waterborne Acrylic Semi-Gloss
ICI 4206 Devflex Interior/Exterior Waterborne Acrylic Semi-Gloss
MS Super Tough Coat® Acrylic Semi-Gloss Enamel
PL 6620 Enducryl® Acrylic Semi-Gloss Enamel
BM DTM Acrylic Semi-Gloss M29

3. Special Requirements:

- a. See drawings for accent colors. All spaces not otherwise designated to have special accent color areas, shall have a maximum of one accent color on walls and/or ceiling furring.
- b. At any fire wall and or smoke barrier required this project stencil the following directly to the surface of both sides of wall @ 2'-0" clear minimum above ceiling material, 12'-0" on center horizontally

in letters 2" high, color as selected by Architect. Fire and Smoke
Barrier- Protect all Openings

END OF SECTION

SECTION 15010

MECHANICAL GENERAL

PART 1 - GENERAL

1.01 DESCRIPTION:

- A. This division and the accompanying drawings cover furnishing of all labor, equipment, appliances and materials and performing all operations in connection with the installation of complete air conditioning, ventilating, heating, plumbing and fire protection systems as specified herein and as shown on the drawings.
- B. The general provisions of the Contract including the conditions of the Contract (General, Supplementary and other Conditions) and other divisions as appropriate, apply to all work specified in this division.

1.02 CODES AND REGULATIONS:

- A. Comply with the following codes and standards as applicable, including all Georgia amendments, for all heating, ventilating and air conditioning materials and workmanship:
 - 1. The International Energy Conservation Code, 2009 Edition.
 - 2. The International Mechanical Code, 2012 Edition.
 - 3. The National Electrical Code, 2014 Edition.
- B. Comply with the following codes and standards as applicable, including all Georgia amendments, for all plumbing materials and workmanship:
 - 1. The International Plumbing Code, 2012 Edition.
 - 2. The International Fuel Gas Code, 2012 Edition.
 - 3. The National Electrical Code, 2014 Edition.
- C. Comply with the following codes and standards as applicable, including all Georgia amendments, for all fire protection material and workmanship:
 - 1. The International Fire Code, 2012 Edition.
 - 2. The National Electrical Code, 2014 Edition.
- D. The publications listed below form a part of this specification to the extent referenced and are referred to in the text by the basic designation only.
 - 1. Air-Conditioning and Refrigeration Institute Standards (ARI).
 - 2. American National Standards Institute, Inc. Standards (ANSI).
 - 3. American Society for Testing and Materials Publications (ASTM).
 - 4. American Gas Association, Inc. Laboratories (AGA).
 - 5. American Society of Mechanical Engineers Code (ASME).
 - 6. Factory Mutual Underwriters (FM).
 - 7. National Fire Protection Association Standards (NFPA).
 - 8. Sheet Metal and Air-Conditioning Contractors' National Association, Inc. (SMACNA).
 - 9. Underwriters Laboratories, Inc. (UL).

- E. Comply with all state and local codes having jurisdiction. Make all modifications required by these codes without additional charges. Immediately bring to the attention of the Architect any conflict between these documents and the governing codes. Follow the drawings and specifications where code requirements are less stringent than those shown on the drawings or in the specifications.
- F. Obtain all permits, inspections and approvals as required by all authorities having jurisdiction and deliver certificates of approval to the Architect. Assume and pay all fees and costs of any nature whatsoever incidental to these permits.
- G. Comply with all applicable provisions of the William-Steiger Occupational Safety and Health Act (OSHA).

PART 2 - PRODUCTS

2.01 COORDINATION:

- A. The products of particular manufacturers have been used as the basis of design in preparation of these documents. Coordinate with all other trades for any modifications to the mechanical systems and their components, the electrical systems, the building structure and architecture or any other portion of the building that result from the use of any other than the basis of design equipment.
- B. Such coordination shall occur before delivery of products from the manufacturer and shall be clearly indicated on the shop drawings. Perform all related modifications without any additional cost to the Contract.

2.02 DESCRIPTION:

- A. All products shall be new and shall bear the Underwriter's Laboratories, Inc. (UL) label unless specifically indicated otherwise.

PART 3 - EXECUTION

3.01 GENERAL:

- A. The mechanical drawings do not give exact elevations or location of lines, nor do they show all the offsets, control lines or installation details. Carefully lay out the work at the site to conform to the structural conditions.
- B. If equipment, piping and ductwork requires space conditions other than those shown, or if the equipment is rearranged, assume full responsibility for the rearrangement of the space and have the Architect review the change before proceeding with the work. Perform all related costs incurred without any additional cost to the Contract.
- C. Properly locate and size of all slots and openings in the building structure pertaining to the work and correctly locate sleeves, inserts and cores.
- D. Coordinate the work of several various trades so that it may be installed in the most direct and workmanlike manner without hindering or handicapping the other trades. Handle piping interferences by giving precedence to pipe lines which require a stated grade for proper operation. For example, sewer lines and condensate piping shall take precedence over water lines in determination of elevations. Where there is interference between sewer lines and condensate lines, the sewer lines shall

have precedence and provisions shall be made in the condensate lines for looping them around the sewer lines. In all cases, lines requiring a stated grade for their proper operation shall have precedence over electrical conduit and ductwork.

- E. Do not install piping, equipment or ductwork in electrical rooms, elevator machine rooms or electronic data rooms except as serving only those rooms. Do not run piping or ductwork or locate equipment with respect to switchboards, panelboards, power panels, motor control centers or dry type transformers. Clearances apply vertically from floor to structure:
 - 1. Within 42" in front (and rear if free standing) of electrical equipment.
 - 2. Within 36" of sides of electrical equipment.
- F. Provide access to equipment and apparatus requiring operation, service or maintenance within the life of the system. Devices include but are not limited to motors, valves, filters, dampers and shock absorbers. Equipment located above lay-in type ceilings is considered accessible.
- G. Locate required terminal boxes, valves and dampers in areas accessible for maintenance.

3.02 ELECTRICAL WORK:

- A. Comply with the electrical system characteristics indicated on the electrical drawings and specified in Division 16 all electrical equipment provided under this Division.
- B. All components shall be in conformance with the requirements of the National Electrical Code and Division 16. Furnish motor starters for all equipment under Section 15013, Starters and Disconnect Switches, unless specifically indicated to be furnished under Division 16.
- C. Provide all power wiring and final power connections to the systems under Division 16.
- D. Provide control wiring (120 volt and less) under Division 15 and extend from the 120 volt power circuits indicated on the electrical drawings. All wiring for voltages higher than 30 volts shall be done by a licensed electrician.
- E. Take all electrical characteristics from the electrical drawings and coordinate with the electrical drawings before equipment is ordered or shop drawings submitted.
- F. Electrical power wiring to HVAC control panels may not be indicated on the drawings. Determine final control panel locations and quantity prior to bidding and include 115 volt power circuits to each control panel location.

3.03 MOTORS:

- A. Unless specifically noted otherwise in other sections of these specifications, all motors and motor controllers shall meet the requirements specified in this Section. All motors shall be built in accordance with the current applicable IEEE and NEMA standards and shall have voltage, phase, frequency and service as scheduled.
- B. Each motor shall be of the premium efficiency type, Century E-Plus or equal. They shall be suitable for the brake horsepower of the driven unit, rated with 1.15

minimum service factor, and shall be NEMA design B. The motor temperature rise shall not exceed 40 degrees C for drip proof motors, 50 degrees C for splash-proof motors and 55 degrees C for totally enclosed motors. The motors shall be capable of operating continuously at such temperatures and shall be capable of withstanding momentary overloads of 25 percent without injurious overheating.

- C. Motors shall be ball bearing type selected for quiet operation and shall be manufactured for general purpose duty unless otherwise indicated. Each bearing shall be accessible for lubrication and designed for the load imposed by the V-belt drive or the driven apparatus. Direct drive motors shall be designed for the specific application with all necessary thrust bearings and shaft capacities.
- D. Motors larger than 1/2 horsepower shall have bearings with pressure grease lubrication fittings.
- E. Furnish motors connected to drive equipment by belt with adjustable slide rail bases except for fractional horsepower motors which shall have slotted bases. Motor leads shall be permanently identified and supplied with connectors.
- F. Each motor to be installed outdoors shall be of the totally enclosed fan-cooled type or housed in a weatherproof housing.
- G. Unless otherwise indicated, motors smaller than 1/2 horsepower shall be capacitor start or split phase type designed for 120 volt, single phase, 60 cycle alternating current. Shaded pole motors will not be acceptable except 35 watts and smaller. Motors 1/2 horsepower and larger shall be squirrel cage induction type, 3 phase, 60 cycle alternating current.
- H. Motors controlled by variable frequency speed controllers shall, except as noted, be consequent pole, variable torque, single winding. Variable speed motors operating over an adjustable range of speeds shall be motors specifically designed and rated for this duty, shall have Class F insulation or better, shall have a minimum 1.15 service factor, and shall have factory installed motor shaft grounding ring in accordance with NEMA Standard MG1, Section IV, Part 31, Definite-Purpose Inverter-Fed Polyphase Motors.
- I. If motors are furnished varying in horsepower and/or characteristics from those specified, first inform the Architect of the change by clearly identifying it on the shop drawings or submittal, and then coordinate the change with all associated parties. Bear all additional charges in connection with the change.

3.04 PROTECTION OF EQUIPMENT:

- A. Store all equipment, including pipe and valves, off the ground and under cover. For storage outdoors, securely fit minimum 4 mil thick plastic to withstand splattering, ground water, precipitation and wind.
- B. Protect air handling unit coils by use of protective sheet metal panels or plywood.
- C. Plug ends of pipe and close ends of ducts when work is stopped with 4 mil thick plastic taped in place until work resumes. Duct tape is not an acceptable substitute
- D. Repair or replace damaged equipment at the option of the Architect.

3.05 PAINTING:

- A. Repaint factory painted equipment that has been scratched or marred to match original factory color.
- B. Clean and paint all un-insulated black ferrous metal items exposed to sight inside the building such as gas piping, equipment hangers and supports with one coat of zinc chromate primer. In addition, paint such items in finished spaces with two coats of finish paint in a color to match adjacent surfaces or as otherwise directed by the Architect.
- C. Clean and paint black ferrous metal items exposed outside the building such as gas piping, pipe and pipe supports with one coat of rust inhibiting primer and two coats of an asphaltic base aluminum paint. Clean and paint all piping installed outside the building that is to be insulated with one coat of rust inhibiting primer before installing insulation.
- D. In lieu of painting hanger rods, cadmium plated or galvanized steel rods may be furnished.
- E. Do not paint nameplates on equipment and afford suitable protection to the plates to prevent their being rendered illegible during the painting operation.
- F. Re-coat galvanizing broken during construction with cold galvanizing compound.
- G. Paint all ductwork, piping, insulation, conduit, structural members or other appurtenances visible through ceiling grilles flat black.

3.06 CUTTING AND PATCHING:

- A. Assume all cost of, and be responsible for, all cutting and patching required to complete the installation of the work. All cutting shall be carefully and neatly done so as not to damage or cut away more than is necessary of any portions of the structure.
- B. Reinstate all surfaces to the condition of the adjacent surfaces.
- C. Make suitable provisions for adequately water-proofing at the penetrations of exterior walls, floors and roofs. This shall include, but not be limited to, floor drains, floor sinks, open sight drains, hub drains, cleanouts and sleeves for the various piping systems.

3.07 SLEEVES AND FRAMES:

- A. Install in concrete, carpentry or masonry construction, all necessary sleeves, frames, hangers, expansion bolts, inserts and other fixtures and appurtenances necessary for the support of all pipe, duct, equipment and devices furnished under this Division.
- B. Cut openings and install sleeves or frames through walls and surfaces in a neat workmanlike manner. Cut openings only as large as required for the installation. Install sleeves and/or frames flush with finished surfaces and grout in place unless otherwise indicated. Leave surfaces around openings smooth and finish to match surrounding surface.

3.08 ESCUTCHEONS:

- A. Install escutcheons on all pipes where they pass through floors, ceilings, walls or partitions in finished and exposed construction areas.
- B. Escutcheons shall be split, hinged, stamped brass type designed to fit the pipe and to cover the terminating pipe sleeve. Escutcheons shall be chrome plated finish unless otherwise specified with a securing device to hold them tight to the pipe.
- C. Allow sufficient spacing between parallel pipe runs to ensure installation of escutcheons without modification. Do not alter the escutcheons in any manner to allow for installation.

3.09 CLEANING:

- A. Remove all stickers, rust, stains, labels and temporary covers before final acceptance.
- B. Clean the exterior surfaces of all mechanical equipment, plumbing fixtures, piping and ducts of all grease, oil, paint, dust and other construction debris.
- C. Clean the interior of all ducts, plenums and casings of all debris and blow free all particles of rubbish and dust before installing outlet faces.
- D. Lubricate bearings that require lubrication in accordance with the manufacturer's recommendations. Provide two copies of certification of lubrication.
- E. Leave equipment rooms broom clean.
- F. Provide temporary filters for any fans operated during construction. Change temporary filters regularly to prevent contamination of the equipment and duct systems. Install new and unused permanent filters one week prior to final inspection.
- G. Cover ends of open ducts and pipes during construction except when working on such end prohibits covering. Cover with minimum 4 mil thick polyethylene taped, tied or wired in place.
- H. Clean and polish identification plates.

3.10 EQUIPMENT, MATERIALS AND BID BASIS:

- A. It is the intent of these Specifications to indicate a standard of quality for all materials incorporated into the work. Manufacturer's names are used to designate the item of equipment or material as a means of establishing grade and quality.
- B. Substituted manufacturers of similar quality products will be considered unless these specifications state otherwise. Such manufacturer's products may be considered as substitutions but shall not be used as a basis for bidding. In the event substitutions are submitted to the Architect for review prior to bid, furnish descriptive catalog material, test data and samples, as well as any other pertinent data necessary to demonstrate that the proposed substitutions are acceptable equals to the specified product. No substitutions shall be made without the written consent of the Architect.

- C. The use of one named manufacturer in the schedules on the drawings is for guide purposes. The provisions of the previous paragraph shall govern in the selection of products to be used.

3.11 WARRANTY:

- A. Provide all systems and components with a one year warranty from the date of final acceptance unless otherwise noted in the contract documents. The warranty shall cover all materials and workmanship. During this warranty period correct all defects in materials and workmanship by repair or replacement without incurring any additional cost to the Contract.
- B. Warrant all air conditioning compressors for an additional four years beyond the initial one year warranty. This additional warranty shall include parts only.

3.12 FOUNDATIONS:

- A. Concrete foundations are required for equipment furnished under Division 15. Unless otherwise noted, foundations shall be 4" high.

3.13 RECORDS AND INSTRUCTIONS FOR OWNER:

- A. Accumulate during the job's progress the following data in triplicate prepared in neat brochures or packet folders and turn over to the Architect for check and subsequent delivery to the Owner:
 - 1. All warranties, guarantees and manufacturer's directions on equipment and materials.
 - 2. Approved fixture brochures, wiring diagrams and control diagrams.
 - 3. Copies of approved shop drawings.
 - 4. Operating instructions for the HVAC and other mechanical systems. Include recommended periodic maintenance and seasonal changeover procedures, and suggested procedures in operation of all systems to promote energy conservation. Write these instructions expressly for this project and refer to equipment, valves and devices by mark number from the drawing schedules. Submit operating instructions and procedures in draft form for approval, prior to final issue of complete brochures. Manufacturer's advertising literature or catalogs will not be acceptable for operating and maintenance instructions.
 - 5. Repair parts lists of all major items of equipment including name, address and telephone number of the local supplier or agent.
- B. Submit all of the above data to the Architect for approval at such time as the last inspection is requested prior to the final inspection, but in no case less than two weeks before final inspection.
- C. Give not less than one day of operating instruction, during the adjustment and testing period, to the Owner's operating personnel in order to familiarize them with the proper care and operation of the equipment. Break the 8 hours into a series of two 4 hour sessions. Use the written operating instructions referred to above as the basis for this instruction.
- D. A competent technician employed by the Building Automation System subcontractor shall be required to instruct the Owner in proper operating procedures and shall explain the significance of the controls literature filed in the

maintenance manual over a period of two days while the system is in continuous operation.

3.14 RECORD DRAWINGS:

- A. Maintain on a daily basis at the project site a complete set of "Record Drawings" reflecting an accurate dimensional record of all buried or concealed work. Mark the "Record Drawings" to show the precise location of concealed work and equipment, including concealed or embedded piping and valves and all changes and deviations in the work from that shown on the Contract Documents. This requirement shall not be construed as authorization to make changes in the layout of the work without definitive instructions from the Architect.
- B. The "Record Drawings" shall consist of bond prints, scanned PDFs or autocad drawings for this Division with the Engineer's seal and Engineer's firm name removed from the drawings.
- C. Record dimensions shall clearly and accurately delineate the work as installed. Locations shall be suitably identified by at least two dimensions to a permanent structure.
- D. Mark all "Record Drawings" on the front lower right hand corner with a rubber stamp impression that states the following: "RECORD DRAWINGS. To be used for recording field deviations and dimensional data only"

3.15 INSTALLATION:

- A. Install all equipment in strict conformance with the manufacturer's recommendations, as specified herein and as shown. If any conflict arises between these instructions notify the Architect immediately for guidance.

3.16 EQUIPMENT LABELS:

- A. Permanently label each item of equipment with a nameplate of sufficient size to clearly indicate the identification designation (i.e. mark number) appearing in the Contract documents.
- B. Nameplates shall be 1/16" thick bakelite laminate engraved with white letters through black, or aluminum with black enameled surface and engraved letters. Handwritten marker identifications will not be acceptable.

3.17 ACCESS DOORS:

- A. Furnish and install access doors at each point required to provide access to concealed valves, cleanouts, fire dampers and other devices requiring operation, adjustment or maintenance. Access doors shall be 16 gauge steel, prime coat finish with mounting straps, concealed hinges and screwdriver locks, designed for the door to open 180 degrees.
- B. Access doors installed in fire rated walls or partitions shall be UL labeled to maintain the fire rating of the wall or partition.
- C. Coordinate access panels in ceilings with the architectural reflected ceiling plans. Obtain approval from the Architect before installing any ceiling access panels.

3.18 FLAME SPREAD AND SMOKE DEVELOPED RATINGS OF MATERIALS:

- A. Materials and adhesives used throughout the mechanical systems for insulation, jackets or coverings of any kind, or for piping or conduit systems or components, shall have a flame spread rating not over 25 without evidence of continued combustion, and with a smoke developed rating not to exceed 50. If such materials are to be applied with adhesives, test them as applied with such adhesives, or the adhesives used shall have a flame spread rating not over 25 and a smoke developed rating not to exceed 50.
- B. Determine flame spread rating and smoke developed rating by the Method of Testing of Surface Burning Characteristics of Building Materials, NFPA 255, ASTM E84, and Underwriters' Laboratories, Inc. standards. Such materials are listed in the Underwriters' Laboratories, Inc., Building Materials List, under the heading Hazard Classification (Fire).

3.19 HAZARDOUS MATERIALS:

- A. Use no products that contain any known hazardous or carcinogenic materials. Do not use products with asbestos or radioactive content.
- B. Handling of any hazardous material is beyond the scope of these specifications. Any requirements for such shall be handled outside this Contract by persons contracted to do so.

3.20 BELT DRIVES:

- A. Provide guards for all belt drives not enclosed within equipment housings. Belt guards for fans shall be expanded metal with heavy gauge sheet metal sides. Provide openings in guards at driving and driven sheaves for use of tachometer for revolution measurement.

END OF SECTION

SECTION 15011

SCHEDULE OF SUBMITTAL DATA

PART 1- GENERAL

1.01 RELATED DOCUMENTS:

- A. The requirements of the General Conditions, Special Conditions and Section 15010, Mechanical General, apply to all work herein.

1.02 SHOP DRAWINGS:

- A. Submit shop drawings or fully descriptive catalog data for all items of material and equipment furnished and installed under this Division. Submit to the Architect six copies of all such shop drawings or catalog data.
- B. Before submitting shop drawings to the Architect for review, examine them and ensure that they correctly represent the material and equipment to which they pertain. The Contractor's review of the shop drawings is not intended to take the place of the official review by the Architect, and shop drawings which have not been reviewed and accepted by the Architect shall not be used in fabricating or installing any work.
- C. The review of shop drawings or catalog data by the Architect shall not relieve the Contractor from his responsibility for deviations from the drawings or specifications unless he has specifically called attention to such deviations, in writing, at the time of submission and has obtained the permission of the Architect thereon, nor shall it relieve him from responsibility for errors of any kind in the shop drawings. When attention is called to deviations, state in the letter whether or not such deviations involve any additional cost. If no additional costs are noted, it will be assumed that no extra cost is involved for making the change.
- D. Verifications and assignment of dimensions, quantities and construction means, methods, sequences and procedures are the sole responsibility of the Contractor and will not be a part of the Architect's review.
- E. Reproduction of design documents in any portion for use in a submittal is not acceptable and shop drawings submitted in this manner will be returned without review.
- F. The Architect reserves the right to require a sample of any equipment or material to be submitted for approval.
- G. If resubmittals are necessary, make them exactly as specified herein for submittals. Highlight resubmittals to indicate all revisions made to the original submittal and include the applicable phrase "RESUBMITTAL NO.____".

PART 2 - PRODUCTS

2.01 GENERAL:

All product samples shall be new and shall bear all labels as identified by the applicable specification section or drawing.

PART 3 - EXECUTION

3.01 SUBMITTAL DATA:

- A. Comply with these specifications and with the drawings in their entirety the submittal data to be furnished for this project. The submittals scheduled herein are a minimum and shall not be construed to limit the submittal data required to adequately describe all materials and equipment to be incorporated into the work.
- B. Shop drawings will be returned without review unless the following information as applicable is included:
 - 1. References to all pertinent data in these specifications or on the drawings such as sound power levels, performance curves, etc.
 - 2. Electrical characteristics and horsepower ratings.
 - 3. Capacities of all equipment including capacity curves for fans [and pumps].
 - 4. Construction materials.
 - 5. UL labels and ASME stamps where required.
 - 6. Accessories specified.
 - 7. Manufacturer, make and model number.
 - 8. Weights and dimensional data of all major items of equipment.
 - 9. Motor starters where required by Division 15 [23].
 - 10. A space large enough to accept a submittal stamp.
- C. The data submitted shall reflect the actual equipment performance under the specified conditions and shall not simply be a copy of the scheduled data on the drawings. Identify all submitted equipment on the shop drawings with the same mark numbers as indicated on the drawings or in these specifications. Clearly highlight any deviation from any part of the Contract Documents.
- D. Submit to the Architect electronic submittals, in PDF images of the items to be submitted, shall be properly collated and shall include a cover sheet with index. Identify each item in the index with the paragraph number relating to the submitted item. Electronically submitted shop drawings not submitted in accordance with this paragraph will be returned without review.
 - 1. HVAC Submittals
 - Starters and disconnect switches
 - Piping identification markers
 - Test, adjusting and balancing report forms
 - Thermal insulation
 - Fan coil units including sound data
 - Air handling units including fan, coil and sound data
 - Split system heat pumps
 - Wall Mounted Heat pump units
 - Gas fired duct heaters
 - Ductless split systems
 - Electric heating equipment
 - Fans including sound data and performance curves
 - Preformed spiral round and flat oval ductwork
 - Dampers
 - Fire dampers and fire/smoke dampers
 - Intake and relief hoods
 - Roof curbs
 - Roof equipment support rails
 - Pipe curb assemblies

Filters
Grilles, registers and diffusers
Building automation system

3.02 OTHER SUBMITTALS:

- A. In addition to the above provide the following prior to final acceptance of the building by the Owner:
1. As-built drawings for the HVAC and plumbing installations specified in Section 15010, Mechanical General.
 2. All warranties as specified in Section 23 00 00, Mechanical General, and in other sections of these specifications.
 3. Operation and maintenance instructions as specified in Section 15010, Mechanical General.
 4. Test, adjusting and balancing reports as specified in Section 15080, Test and Balance.

END OF SECTION

SECTION 15013

STARTERS AND DISCONNECT SWITCHES

PART 1 - GENERAL

1.01 RELATED DOCUMENTS:

- A. The requirements of the General Conditions, Special Conditions and Section 15010, Mechanical General, apply to all work specified in this section.

1.02 SCOPE OF WORK:

- A. Furnish and install all motor starters and disconnect switches required by this section. Where starters and/or disconnect switches are furnished by equipment manufacturers, comply with all requirements of this section. Refer to Division 16 for disconnect switches provided therein.
- B. All items required for a complete installation shall be provided.

1.03 QUALITY ASSURANCE:

- A. Furnish all starters and disconnect switches to be installed under this section of these specifications to be the product of one manufacturer.
- B. Starters and disconnect switches manufactured by Asea Brown Boveri (ABB), Allen-Bradley, Eaton, General Electric, Schneider or Siemens will be acceptable.

PART 2 - PRODUCTS

2.01 STARTERS AND CONTACTORS:

- A. Furnish starters for all motors unless indicated to be equipment furnished with mechanical equipment, or as a part of Division 16 motor control centers.
- B. Each starter shall incorporate overload elements of proper size to protect motors.
- C. Coordinate starter holding coils with Section 15900, Building Automation System. Holding coils shall be 120 volt or less.
- D. Provide 480V/120V control transformer with each 480 volt magnetic starter or control panel.
- E. Provide 208V/120V control transformer with each 208 magnetic starter or control panel.
- F. Provide one set of spare auxiliary contacts (1 normally open set and 1 normally closed set) in each starter for the future, in addition to sealed contact.
- G. Starters for 3 phase motors shall be magnetic type and unless otherwise indicated shall be as follows:
 - 1. NEMA 1 enclosure, combination line starter with disconnect (non fused) and thermal overload protection on all 3 phases.

2. 24V coil or 120V coil (to agree with control circuit - not to exceed 120V) and control transformer built-in, with fuses in primary leads and in hot secondary lead, other secondary grounded.
 3. Furnish HAND-OFF-AUTO control for all automatically controlled starters and remotely controlled starters. Furnish ON-OFF selector switch where there is no automatic, remote or interlock control.
- H. Starters for single phase motors shall be manual type motor rated switches with thermal overload device (except omit overload device from switches for motors with built-in overload protection) and NEMA type 1 enclosure except for installation in public spaces or when noted for flush mounting. In such locations, provide jumbo stainless steel flush plate and pull box. Provide pilot lights in starters when noted.

2.02 DISCONNECT SWITCHES:

- A. Furnish and install a disconnect switch for all equipment requiring electrical power, unless provided under Division 16.
- B. When equipment manufacturer recommends over-current protection by HARC circuit breaker or fuses, the disconnect switch for that piece of equipment shall be fused at the maximum recommended fuse size. Otherwise, the disconnect shall be non-fused.
- C. All disconnect switches and switch installation shall meet the requirements of NFPA 70.
- D. Coordinate switch size and configuration with the equipment manufacturer's recommended maximum fuse size or other applicable data.

PART 3 - EXECUTION

3.01 INSTALLATION:

- A. Install equipment complete with all components connecting services and adjustments for its safe operation and in compliance with requirements of the Contract.

END OF SECTION

SECTION 15080

TEST AND BALANCE

PART 1 - GENERAL

1.01 RELATED DOCUMENTS:

- A. The requirements of the General Conditions, Special Conditions and Section 15010, Mechanical General, apply to all work specified in this section.

1.02 SCOPE OF WORK:

- A. Procure the services of an independent Test and Balance agency that is independent of any contractor or manufacturer to perform the testing and balancing and to prepare reports to the General Contractor and to the Architect. The Test and Balance agency shall be a certified member of the Associated Air Balance Council (AABC) or the National Environmental Balancing Bureau (NEBB).
- B. Perform testing and balancing in accordance with the latest edition of the AABC National Standards for Total System Balance, and in accordance with the scope of work defined herein.
- C. The Test and Balance agency, as part of its contract, shall act as an authorized inspection agency, responsible to the Owner and shall, during the test and balance, list all systems that require correction or that have not been installed in accordance with the drawings and specifications.
- D. A single agency shall be responsible for all phases of testing and balancing.
- E. Do not begin testing and balancing until all systems have been completed and are in full working order. Put all heating, ventilating and air conditioning equipment into full operation and continue the operation of same during each working day of testing and balancing.
- F. Upon the completion of the test and balance work the agency shall compile the test data and submit four copies of the complete report to the Architect for his evaluation and approval.

PART 2 - PRODUCTS

2.01 MATERIALS:

- A. Provide all required instrumentation, equipment, tools, devices and utility services to perform the operations as specified herein.
- B. Calibrate instruments used for testing and balancing of systems within six months preceding the tests and check them for accuracy prior to start of work.
- C. Instruments shall be of a type normally recognized as adequate and accurate for the test contemplated. List the types of instruments, including manufacturer, serial number and latest calibration date as a part of the submitted test data.

2.02 PATCHING MATERIALS:

- A. Unless indicated otherwise, use same products as used in the work for patching holes in insulation, ductwork and housings which have been cut or drilled for test purposes, including access for test instruments, attaching jigs and similar purposes.

PART 3 - EXECUTION

3.01 REQUIRED DOCUMENTS:

- A. Provide the following, in a timely fashion, to the Test and Balance agency:
 - 1. Contract drawings (complete set).
 - 2. Applicable specifications (Division 15 and 16 as a minimum).
 - 3. Related addenda, change orders, reviewed shop drawings, reviewed equipment manufacturer's submittal data and reviewed temperature control drawings.

3.02 COOPERATION:

- A. Refer to Section 15010, Mechanical General, for requirements in preparation for Test and Balance.

3.03 BELT DRIVES:

- A. Adjustable sheave drives shall be adjusted by the Test and Balance agency. In cases where the specified capacities cannot be obtained with the original adjustable sheave or original fixed drive sheave the agency shall report the sheave size required to obtain the specified capacity.
- B. Where larger or smaller sheave sizes are required provide new sheaves and, if required, new belts.

3.04 OPERATING TEST:

- A. Make a complete system operating test for a period of eight hours with controls set in their various positions to ensure proper operation under the design conditions. Make all tests and final adjustments to the complete satisfaction of the Owner and the Architect.
- B. Schedule the operating test four weeks prior to scheduled completion date.

3.05 CONTROL PERFORMANCE CHECK:

- A. The results produced by the operation of automatic controls shall be checked by the Test and Balance agency. List and report controls requiring adjustment. The agency shall be responsible only for final settings.

3.06 SETTINGS:

- A. Permanently mark the settings of all valves, dampers and other adjustment devices in a manner that will allow the settings to be restored. If a balancing device is provided with a memory stop it shall be set and locked.

3.07 AIR BALANCING PROCEDURE:

- A. Prepare the air side systems for balancing as specified in Section 15010, Mechanical General.

3.08 AIR BALANCING REQUIREMENTS:

- A. Test, record and incorporate in the test and balance report the following items. The report shall not be limited to these items, but shall include as minimum the following requirements. Make all tests with supply, return and exhaust systems operating, and with all doors, windows or other openings closed or in their normal operating condition.
- B. Split system air handling units:
 - 1. Record each unit equipment manufacturer, model number and serial number.
 - 2. Record installed supply fan drive assembly, fan sheave, motor sheave and belts.
 - 3. Record installed motor manufacturer, motor horsepower, motor name plate and measured voltage and motor name plate and measured full load amperage (one reading for each phase leg on three phase motors).
 - 4. Test, adjust and record supply fan RPM.
 - 5. Test and record dry and wet bulb air temperature entering and leaving the cooling coil and the capacity of coil in BTU per hour.
 - 6. Test and record dry bulb air temperature entering and leaving the heating coil and the capacity of coil in BTU per hour.
 - 7. Test, adjust and record required and measured total CFM for the supply fan by duct traverse. Test and record quantity of supply, return and outside air in CFM.
 - 8. Test and record required and measured system static pressure, filter pressure differential, coil pressure differential and fan total static pressure.
- B. Exhaust fans:
 - 1. Record each unit equipment manufacturer, model number and serial number.
 - 2. Record fan drive assembly, fan sheave, motor sheave and belts.
 - 3. Record motor manufacturer, motor horsepower, motor name plate and measured voltage, and motor name plate and measured full load amperage (one reading for each phase leg on three phase motors).
 - 4. Test, adjust and record fan RPM.
 - 5. Test, adjust and record required and measured total CFM by duct traverse. Test and record quantity of exhaust air in CFM.
 - 6. Test and record required and measured system static pressure and fan total static pressure.
- B. Supply diffusers, supply registers and exhaust registers:
 - 1. Test and adjust the CFM delivery of each supply diffuser, supply register and exhaust register.
 - 2. Identify the location of each diffuser and register.
 - 3. Record the size and type of each diffuser and register.
 - 4. Include required FPM velocity and test resultant velocity, required CFM and test resultant CFM after adjustment for each diffuser and register.
 - 5. Adjust all supply diffusers and registers to minimize drafts.

C. Building pressurization testing:

1. The final balanced condition of each area shall include the testing and adjusting of pressure conditions. Check front doors, exits, elevator shafts or other openings for air flow so that exterior conditions do not cause excessive or abnormal pressure conditions.
2. Test and adjust fan systems, dampers and other balancing devices as necessary so as to produce a slight overall positive building pressurization with respect to the outdoors.
3. Record measured building positive pressurization in inches water gauge.

END OF SECTION

SECTION 15180

THERMAL INSULATION FOR MECHANICAL SYSTEMS

PART 1 - GENERAL

1.01 RELATED DOCUMENTS:

- A. The requirements of the General Conditions, Special Conditions and Section 15010, Mechanical General, apply to all work specified in this section.

1.02 DESCRIPTION:

- A. All insulation products shall meet NFPA requirements for a Flame Spread Rating not to exceed 25, a Smoke Developed Rating not to exceed 50 and a Fuel Contributed Rating not to exceed 50.
- B. Do not use staples for securing insulation.
- C. Insulation and vapor barrier shall be continuous through wall and floor sleeves, ceilings and roofs.
- D. Do not store insulation materials in the building until it is enclosed and dry. Do not install wet insulation.
- E. Do not apply insulation products with self-sealing type lap jackets at ambient temperatures below 40 degrees F.
- F. Paint ferrous metal piping installed outdoors with one coat of rust inhibiting primer before installing insulation.

1.03 QUALITY ASSURANCE:

- A. Codes and regulations referred to in these specifications are minimum standards, however if the requirements of these specifications exceed those of the codes and regulations, the specifications shall govern.
- B. Any methods of application of insulation products or finishes not specifically detailed herein shall be applied in accordance with the insulation manufacturer's published recommendations. Apply insulation by experienced workers regularly employed in this type of work.
- C. Insulation products manufactured by Owens-Corning, Johns-Manville, CertainTeed, Knauf or Armstrong will be acceptable.
- D. Adhesives, mastics and coatings manufactured by Foster, Childers, Insul-Coustic or Minnesota Mining and Manufacturing Co. (3M) will be acceptable.

PART 2 - PRODUCTS

2.01 FOAMED PLASTIC TUBING:

- A. Foamed plastic tubing shall have a minimum density of 4.5 pcf. Thermal conductivity shall not exceed 0.28 at 75 degrees F mean temperature.

- B. Apply and secure insulation and seal all joints with Armaflex 520, Foster 85-75, or Childers CP-82 adhesive so as to maintain a continuous vapor barrier. On piping, do not split the insulation longitudinally except at branch fittings where it cannot be avoided.
- C. Insulate the following with 1/2" thick foamed plastic tubing insulation:
 - 1. Condensate drain piping.
- D. Insulate the following with 3/4" thick foamed plastic tubing insulation:
 - 1. Refrigerant suction piping. Coat piping outside the building with two coats of white, ultra-violet resistant Armaflex vinyl lacquer or Foster 30-64 coating.

2.02 FIBERGLASS WRAP DUCT INSULATION:

- A. Insulation shall be 1 pcf minimum density having a thermal conductivity of 0.27 at 75 degrees F mean temperature. Insulation shall have a factory applied vapor barrier of foil-faced flame resistant kraft paper.
- B. Insulate the following with 2" thick fiberglass wrap duct insulation:
 - 1. All supply ductwork outside mechanical rooms.
 - 2. All return and relief ductwork outside mechanical rooms except ductwork run in return air plenums and internally lined return and relief ducts need not be insulated.
 - 3. All outdoor air ductwork outside mechanical rooms.

2.03 FIBERGLASS BOARD DUCT INSULATION:

- A. Insulation shall be 3 pcf semi-rigid board material having a thermal conductivity not to exceed 0.25 at 75 degrees F mean temperature.
- B. Insulate the following with 2" thick fiberglass board duct insulation:
 - 1. All supply ductwork inside mechanical rooms.
 - 2. All return, relief and outdoor air ductwork inside mechanical rooms whether internally lined or not.
 - 3. All ductwork installed outdoors.

2.04 ADHESIVES, MASTICS, COATINGS AND VAPOR BARRIERS:

- A. The treatment of pipe insulation jackets and duct insulation facings to impart flame spread and smoke developed ratings shall be permanent. The use of water-soluble treatments is prohibited.
- B. Vapor barriers shall be installed on all pipe and duct insulation which shall have a perm rating of not more than 0.05 perms. Adhesives, coatings and mastics shall have a perm rating of not less than 0.25 perms.
- C. Vapor Barrier Coatings shall have a perm rating of 0.03 perms or less at 45 mils dry as tested by ASTM E 96. Foster 30-65 or Childers CP-34.
- D. Weather Barrier Mastics shall be water based. Foster 46-50 or Childers CP-10/11.

- E. Adhesives for fiberglass shall meet ASTM C 916, Type II. Foster 85-60 or Childers CP-127. Water based.
- F. Insulation Joint Sealant (cellular glass) shall be used on all chilled water pipe insulation butt and longitudinal joints wherever cellular glass insulation is used. Foster 95-50 or Childers CP-76
- G. Metal Jacketing Sealant shall be non hardening elastomeric sealant. Foster 95-44 or Childers CP-76 shall be used.
- H. Elastomeric Insulation Adhesive shall be Foster 85-75, Childers CP-82 or Armaflex 520
- I. Elastomeric Outer Coating shall be white polyacrylate copolymer emulsion. Foster 30-64 or Armacell WB coating.
- J. Lagging Adhesive shall be Foster 30-36 or Childers CP-50AMV1.

2.05 TAPE:

- A. Whenever tape is used for sealing purposes, it shall be of the type and shall be applied as recommended by the covering manufacturer. If there is no such recommendation, the tape used shall be 3M Adhesive EC-1329.

2.06 INSULATING CEMENT:

- A. Insulating cement shall be Ramco Thermokote. Where insulating cement is applied to pipe fittings in concealed locations it shall be "one-coat" cement.

2.07 GLASS CLOTH JACKET:

- A. Glass cloth jacket on pipe, duct and equipment insulation shall be open weave, standard weight. Foster Mast a Fab or Childers Chil Glas #10.

PART 3 - EXECUTION

3.01 GENERAL:

- A. Clean all surfaces to be insulated of all loose scale, dirt, rust, oil and other foreign matter and thoroughly dry before applying insulation.
- B. Perform pressure tests required by other sections before insulation is applied.
- C. Where existing insulation is damaged due to demolition or construction operations, remove and replace it with new insulation to match the existing work or as specified herein for new insulation.
- D. Insulate completely all metal surfaces of piping and ductwork other than hangers.
- E. Insulation surface finishes shall present a tight, smooth appearance and the surface finish shall be extended to protect all raw ends and edges of the insulation.

3.02 INSULATION FOR DUCTWORK:

- A. Cover all standing ribs and seams with insulation. Secure insulation to the duct with specified adhesive applied in 4" strips around the duct on 18" centers. Use nylon cord ties at 18" intervals to secure the insulation on round ductwork.. Seal the vapor barrier at all butt joints, laps and breaks using 4" wide foil-reinforced tape.
- B. Provide insulation, jackets and coatings continuous through wall and floor openings except do not insulate fire and fire/smoke dampers.
- C. Secure insulation to kitchen exhaust ductwork using copper wire spaced 24" apart or weld pins on not more than 16" centers. Seal butt joints, edges and breaks with mineral fiber insulating cement. Finish with a 1/4" coat of mineral fiber insulating cement troweled smooth. Do not use adhesive on kitchen exhaust ducts.
- D. Insulate all ductwork exposed outdoors with 2" thick, 3 pcf density glass fiber semi-rigid board insulation, secured with self-adhering pins and self-locking washers spaced not more than 18" on center. Seal butt joints and edges with mastic. Finish with standard weight glass cloth set in 1/16" thick specified weather barrier. After drying, apply a 1/16" thick finish coat of water barrier mastic.

3.03 CLEANING:

- A. Prior to final acceptance, clean the finished surfaces of all exposed insulation of all stains and blemishes. If necessary to obtain a new appearance, coat any discolored insulation with off-white latex based semi-gloss paint or lagging adhesive.

END OF SECTION

SECTION 15317

REFRIGERANT AND CONDENSATE DRAIN PIPING SYSTEMS

PART 1 - GENERAL

1.01 RELATED DOCUMENTS:

- A. The requirements of the General Conditions, Special Conditions and Section 15010, Mechanical General, apply to all work specified in this section.

1.02 QUALITY ASSURANCE:

- A. Codes and regulations referred to are minimum standards. Where the requirements of the specifications or drawings exceed those of the codes and regulations the drawings and specifications shall govern.
- B. Firms regularly engaged in the manufacture of piping products of the types, materials and sizes required and whose products have been in satisfactory use in similar service for not less than 5 years will be acceptable.
- C. Certify brazing procedures, brazers and operators in accordance with Section IX, ASME Boiler and Pressure Vessel Code (ANSI B31.5). Submit two copies of the qualification test report and certification to the Architect.
- D. Size refrigerant piping by the compressor manufacturer. Submit a piping diagram showing valves, pipe sizes, line resistance, elbows and traps, approved by the compressor manufacturer.
- E. Refrigerant piping accessories manufactured by Sporlan or approved equal will be acceptable.

PART 2 - PRODUCTS

2.01 REFRIGERANT PIPING:

- A. Type: Copper tubing of the pipe sizes listed.
- B. Class: Type "ACR" hard drawn copper tubing, ASTM B-88.
- C. Fittings:
 - 1. Sweat type wrought copper for pipe sizes 4-1/8" O.D. and smaller.
 - 2. Cast brass, hot tin dipped inside and out ASTM B-32 for pipe sizes larger than 4-1/8" O.D.
- D. Joints: Socket brazed with 15% silver, phosphor-copper brazing alloy.

2.02 CONDENSATE DRAIN LINES:

- A. Located above ceilings and in finished areas:
 - 1. Type: Copper tubing.
 - 2. Class: Type "L" hard drawn.
 - 3. Fittings: Sweat type wrought copper.

4. Joints: Socket brazed using 95-5 tin-antimony.

B. Located in mechanical rooms:

1. Type: Galvanized steel pipe.
2. Class: Schedule 40, ASTM A53.
3. Fittings: Standard weight galvanized steel.
4. Joints: Threaded.

2.03 FILTER DRIER:

- A. For systems 5 tons and over provide a replaceable molded porous-core filter drier in the suction line near the compressor but upstream of the service valves. For systems less than 5 tons provide a sealed type filter drier.
- B. For heat pump systems, provide a reversible flow filter drier with replaceable core and check valves at either end.

2.04 MOISTURE AND LIQUID INDICATOR:

- A. Provide a moisture and liquid indicator with reversible color change for wet and dry conditions and large full view sight glass with cap in the liquid line ahead of each expansion valve.

2.05 CONDENSATE PUMPS:

- A. Provide where indicated on the drawings a pump designed to lift and remove condensate. The pump shall be suitable for use with equipment rated up to 5 tons.
- B. Each pump shall contain a reservoir, float switch, electric pump and LED signal light. Unit shall be mounted on the side of the air handling unit or mounted on the wall or floor adjacent to the air handling unit. The LED signal light shall give visual verification that the unit is operating correctly.
- C. Provide an electrical interlock to shut down the air handling unit fan in the event of the condensate pump malfunctioning.
- D. Condensate pumps shall be manufactured by Hartzell Pumps or approved equal.

PART 3 - EXECUTION

3.01 GENERAL PIPING SYSTEM:

- A. Where nonferrous metallic pipe such as copper tubing crosses any ferrous piping material maintain a separation between pipes.
- B. Cut pipe accurately to field measurements and ream free of burrs and cutting splatter. Carefully align and grade pipe and work accurately into place without springing or forcing. Fittings shall be used for changes in direction. [Provide for expansion at every building expansion joint.] Protect open pipe ends to prevent trash being placed in the lines during installation. Clean all dirt and cutting debris from pipes before making the next joint.

- C. Isolate copper tubing from steel supports, anchors and metal studs to prevent electrolysis. Isolate piping with neoprene pads, sheet lead strips or plastic inserts. Duct tape shall not be used to isolate piping.
- D. Install piping so as to preserve access to all valves, air vents and other equipment and to provide the maximum headroom possible.
- E. Make joints in refrigerant lines with nitrogen gas in the pipes to prevent oxidation. Install all piping parallel to or at right angles to building walls, columns and partitions.
- F. Clean inside of refrigerant lines with methyl alcohol before assembly and tape thereafter to prevent foreign matter from entering and being sealed in. Cut pipe ends square and deburr. Clean pipe and fitting with #00 steel wool before joining. Make joints without burning.

3.02 TESTS:

- A. Test refrigerant piping at a pressure of 445 psig by introducing nitrogen throughout the refrigerant circuit. Use electronic pressure gauges capable of measuring pressure to a tenth of a pound, and test for at least one hour. Bubble test joints with soap lather, clean joints of soap and leak-test with an electronic type leak detector. Pump out the system, place the entire circuit under 27 inches of vacuum and allow to stand sealed off for a period of one hour without any loss of vacuum
- B. Submit an affidavit signed by the Contractor's representative stating they have witnessed and approved the dehydration test.

3.03 SUBMITTALS:

- A. Submittals shall include but shall not be limited to a diagram approved by the compressor manufacturer to include the size and length of the refrigerant piping, all offsets and elbows required for the installation, location of all valves, filter driers, moisture and liquid indicators and flexible connectors where required.

END OF SECTION

SECTION 15604

HEAT PUMPS, SINGLE PACKAGED WALL-MOUNT

PART 1 - GENERAL

1.01 RELATED DOCUMENTS:

- A. The requirements of the General Conditions, Special Conditions and Section 15010, Mechanical General, apply to all work specified in this section.

1.02 QUALITY ASSURANCE:

- A. Codes and regulations referred to are minimum standards. Where the requirements of the specifications or drawings exceed those of the codes and regulations, the drawings and specifications shall govern.
- B. All heat pump equipment shall be factory run tested and shall be UL listed.
- C. Materials and equipment furnished under this specification shall be standard catalogued products of manufacturers who have produced similar equipment for at least three years. All heat pumps of a given type, class, and size shall be of the same manufacturer.
- D. Single packaged wall-mount heat pumps manufactured by Bard, Marvair or approved equal will be acceptable.

1.03 WARRANTY:

- A. In addition to the one year parts and labor warranty required by Section 15010, Mechanical General, provide an additional four years parts only warranty for the compressor.

PART 2 - PRODUCTS

2.01 WALL-MOUNT UNITS:

- A. The wall-mount heat pump units shall be self-contained electrically operated units, employing factory assembled refrigerant circuit or circuits. The heat pumps shall consist of a weatherproof, galvanized enclosure with factory applied polyester enamel finish. Weatherproof access panels shall be provided for access to all internal parts requiring service. Units shall be factory insulated with fiber glass insulation. Provide throw away filters. Units shall be provided with drain connection for indoor and outdoor coil water runoff. Provided all necessary tubing, piping, control circuits, and accessories required for a complete operating unit ready for operation after being set in place and connected to the utilities.
- B. Compressors shall be totally enclosed type, rated for heat pump service, and shall be resiliently mounted to avoid vibration and noise. Compressors shall be rated for operation down to 0 degrees F. Compressors shall be provided with motor starter, internal overload protection, crankcase heater, time delay recycling of the compressor, and high and low pressure safeties. In the event of compressor malfunction, a warning light shall be lit on the wall thermostat.

- C. Refrigeration circuits shall be factory assembled and fully charged, and shall include suction line accumulator, timed defrost and reversing valve. Indoor and outdoor coils shall be fabricated from aluminum fins mechanically bonded to copper tubes.
- D. Fans in each unit shall be of the twin centrifugal type, quiet in operation and adequately secured to the shafts. Shafts shall be supported by at least two self-aligning bearings. Fans shall be direct drive and motor overload protection shall be provided.
- E. Supplemental electric resistance heaters shall be provided integral with each unit, located downstream of the evaporator coil. Capacity in kilowatts, number of circuits and stages shall be as scheduled on the drawing.
- F. Manual and automatic controls, factory wired and accessible for service and inspection shall be provided. Controls shall include timed defrost control for indoor and outdoor coils, head pressure control, and reversing valve.

2.02 ACCESSORIES:

- A. Outdoor coil guards shall be provided for each unit.
- B. Mounting brackets for each unit shall be provided to facilitate unit mounting on the exterior of the wall. Refer to the detail on the drawings.
- C. Provide air-side economizer dampers and controls to provide cooling using from 0 to 100% outdoor air when the outside air humidity and temperature are acceptable. Provide outdoor air, return air, and relief air dampers in a factory-provided enclosure. Outdoor and return air shall be filtered and a bird screen shall be installed.
- D. Provide a remote, automatic change-over, wall-mounted thermostat with each unit to include system selector switches for OFF-HEAT-AUTO-COOL-EMERGENCY HEAT and AUTO-OFF fan switches.

PART 3 - EXECUTION

3.01 GENERAL:

- A. Units shall not be operated until filters are in place. Provide an extra set of clean filters at the time of final inspection.

3.02 INSTALLATION:

- A. Install each unit as required by the job conditions and as recommended by the manufacturer, and install proper flashing and counter flashing. Refer to the detail on the drawings.
- B. Set each unit in place, taking care to protect the adjacent wall surfaces, and connect the supply and return ductwork.
- C. Make electrical connections, taking care that these do not block access to any part of the equipment requiring service.

3.03 TESTING

- A Operate each unit on heating and cooling and check for proper supply air quantity, temperature, noise, and correct operation.

END OF SECTION

SECTION 15615

GAS VENTS

PART 1 - GENERAL

1.01 RELATED DOCUMENTS:

- A. The requirements of the General Conditions, Special Conditions and Section 15010, Mechanical General, apply to all work specified in this section.

1.02 DESCRIPTION OF WORK:

- A. Provide flues for gas furnace and duct furnace as shown on the drawings.

1.03 QUALITY ASSURANCE:

- A. Codes and regulations referred to are minimum standards. Where the requirements of the specifications or drawings exceed those of the codes and regulations, the drawings and specifications shall govern.
- B. Factory built flues shall be laboratory tested and listed by the Underwriters Laboratories Inc. (UL), for use with the heating equipment burning gas or liquid fuels as described in NFPA 37 and 211 which produce exhausted flue gases at a temperature not exceeding 1400 degrees F under continuous operating conditions.
- C. Flues manufactured by Silkirk, Metal-Fab or Ampco will be acceptable.

PART 2 - PRODUCTS

2.01 FLUES:

- A. The stack and fittings shall be double wall constructed of aluminized steel outer jacket and inner gas carrying pipe of type 304 or 316 stainless steel. The inner pipe shall be a minimum of 0.035 inch wall thickness. There shall be a minimum of one inch air space between the walls.
- B. Inner joints shall be sealed by use of V-bands and silicone sealant for gas or oil fired equipment, and V-bands and cement similar to Saverisen #33 for diesel fired equipment.
- C. All parts exposed to the outside atmosphere shall be type 304 or 316 stainless steel up to and including sizes 24 inches diameter. Sizes over 24 inches diameter shall be protected by two coats of heat resistant paint similar to Rust-O-Leum Corp. Series 4200-4300.
- D. Supports above and below the roof shall be in accordance with the manufacturer published recommendations.
- E. Weatherproof roof caps, and bird screens shall be UL listed.

2.02 FORCED-DRAFT FLUE PIPING:

- A. Forced-draft equipment shall be vented using a positive pressure piping system, similar to Silkirk Type PS.
- B. The inner flue pipe shall be type 304 stainless steel surrounded by a 1" air space and an aluminized steel outer jacket.

PART 3 - EXECUTION

3.01 GENERAL:

- A. Flues extending above the roof shall terminate as required by local code or as required by NFPA 211 and NFPA 54.
- B. Drain tee caps shall be provided at the base of all risers and a cleanout tee shall be provided at the end of the horizontal run on multiple boiler installations, at the last boiler. Provide vented roof thimbles at roof penetrations. Provide expansion joints as recommended by the manufacturer.

3.02 INSTALLATION:

- A. Flues shall be installed in complete conformance with local codes, NFPA and the manufacturer's published recommendations.

END OF SECTION

SECTION 15660

AIR COOLED CONDENSING UNITS

PART 1 - GENERAL

1.01 RELATED DOCUMENTS:

- A. The requirements of the General Conditions, Special Conditions and Section 15010, Mechanical General, apply to all work specified in this section.

1.02 QUALITY ASSURANCE:

- A. Equipment and installation shall be in compliance with the Safety Code for Mechanical Refrigeration, ANSI/ASHRAE 15-1989.
- B. Only those firms regularly engaged in the manufacture of air-cooled condensing units with characteristics, sizes, and capacities required, and whose products have been in satisfactory use in similar service for not less than ten years, will be approved.
- C. Condensing units manufactured by AAON, Lennox, Carrier, Trane or York will be acceptable.

1.03 WARRANTY:

- A. In addition to the first year warranty, the manufacturer shall provide an additional four year extended warranty on each compressor, to cover repair or replacement at no additional cost to the Owner.

PART 2 - PRODUCTS

2.01 EQUIPMENT:

- A. Furnish and install air-cooled condensing units in the location shown on the drawings. The units shall be properly assembled and factory tested. They shall be designed for use with refrigerant R-410a.
- B. Nominal unit electrical characteristics shall be as scheduled on the electrical drawings.

2.02 CONDENSER COIL:

- A. The condenser coil shall be of non-ferrous construction. Coil shall have [aluminum] [copper] plate fins mechanically bonded to seamless copper tubes. The coil shall be circuited for sub-cooling.

2.03 CONDENSER FANS AND MOTORS:

- A. Each unit shall be furnished with direct-driven, propeller-type fans arranged for vertical discharge. Condenser fan motors shall have inherent thermal and over-load protection, and shall be of the permanently lubricated type, resiliently mounted. Each fan shall have a safety guard. Controls shall be included for cycling each fan for intermediate season operation.

2.04 COMPRESSORS:

- A. Each unit shall have compressors of serviceable scroll design with external spring isolators and shall have an automatically reversible oil pump. Maximum power input to compressors shall not be more than as scheduled on the drawings.
- B. Compressors shall unload in response to suction pressure down to 0% of full capacity in four steps (100%-66%-33%-0%) for partial load operation. The compressors shall be located in a section separated from the condenser fans and coil.
- C. Multiple compressor units shall have stop-start fans. Compressor motors shall have across-the-line start.

2.05 CONTROLS:

- A. Controls shall be factory wired and located in their own individual enclosure. Safety devices shall consist of high- and low-pressure switches and compressor overload devices. Unit wiring shall incorporate a positive acting timer to prevent short cycling of the compressor if power is interrupted. Timer shall prevent compressor from restarting for approximately 5 minutes after shutoff.
- B. Each unit shall have a 24 volt transformer for the control circuit.

2.06 CASING:

- A. Casing shall make be specifically designed for outdoor installation. Casing shall be fabricated of galvanized steel, zinc phosphatized and finished with baked enamel.
- B. Openings shall be provided for power and refrigerant piping connections. Panels shall be removable to provide access to internal components for servicing.

2.07 PROTECTIVE COATING:

- A. Each condensing unit shall be provided with an anti-corrosive protective film which may be applied in the field or at the factory. The protective film shall be specifically designed to resist the effects of a salt-laden corrosive environment while maintaining heat exchange efficiencies in the condenser coils. The product shall be certified in accordance with the 6,000 hour salt spray test per ASTM B117.
- B. The protective film shall be applied on all surfaces of the condenser coils and on the interior and exterior surfaces of the condensing unit casings, including control boxes, coil guards and any other accessories. The protective film shall be applied in strict accordance with the manufacturer's recommendations.
- C. The anti-corrosive protective film shall be an inorganic Siloxane material, applied by conventional spray to a dry film thickness of 8 microns and shall be manufactured by Adsil, Inc., type 'MicroGuard AD35'.

2.08 CONNECTIONS:

- A. Liquid lines, suction lines, and a single power supply connection shall be furnished for each unit.

PART 3 - EXECUTION

3.01 SHIPMENT:

- A. Each unit shall be shipped to the site completely assembled as a single component ready for installation. No field assembly shall be required.
- B. The compressors shall have restrainers to prevent damage during transit, and condenser coils shall be protected by temporary covers.
- C. All refrigerant pipe connections requiring field piping shall be capped and sealed air and water tight for shipment.
- D. All unit wiring diagrams shall be plastic encased and permanently affixed to the inside of the electrical access door prior to shipment.

3.02 INSTALLATION:

- A. The condensing units shall be installed in strict conformance with the manufacturer's recommendations. Coordinate the complete installation with all trades involved.

3.03 START-UP:

- A. The initial start-up shall be made by an authorized representative of the unit manufacturer with written confirmation submitted to the Architect, as described below.
- B. The units shall not be started until complete checkout of the entire refrigerant piping system and charging the system with refrigerant has been completed.
- C. Provide the services of a factory-trained representative employed by the unit manufacturer to perform the following services:
 - 1. Leak test.
 - 2. Refrigerant pressure test.
 - 3. Evacuate (if required).
 - 4. Dehydrate (if required).
 - 5. Charge condensing unit with refrigerant and oil (if required).
- D. Secure the services of a factory trained and qualified service engineer employed by the unit manufacturer who shall inspect the installation of external interlocks, power connections, supervision of initial operation, calibration of operating and safety controls and supervision of electrical testing including insulation resistance of motors and voltage balance between phases during starting and running. This service engineer shall forward 3 reports to the Architect when the units are in safe and proper operating condition.
- E. The report shall contain all pressure and control settings, meg readings, voltage readings per phase during start and run, suction temperature and pressure and liquid temperature and pressure and shall list minor discrepancies to be corrected which do not affect safe and reliable operation. One copy of bound installation, operation, and maintenance service and parts brochures, including applicable serial numbers, full unit description and parts ordering sources shall be included in the Operating and Maintenance manual.

END OF SECTION

SECTION 15771

SPLIT SYSTEM HEAT PUMPS

PART 1 - GENERAL

1.01 RELATED DOCUMENTS:

- A. The requirements of the General Conditions, Special Conditions and Section 15010 [23 00 00], Mechanical General, apply to all work specified in this section.

1.02 DESCRIPTION OF WORK:

- A. Materials and equipment furnished under this specification shall be standard cataloged products of manufacturers regularly engaged in production of such materials or equipment and shall be the manufacturer's latest design that complies with these specifications.
- B. Each component shall be factory tested, dehydrated and charged. All equipment shall conform to the requirements of ARI 240 and UL 559. All components shall be UL listed. Each outdoor condensing unit and indoor air handling unit shall be factory rated for use together to provide the heating and cooling capacities and operating efficiencies within 5% of that indicated on the drawings.

1.03 QUALITY ASSURANCE:

- A. Split system heat pumps manufactured by Carrier, Trane, York or Lennox will be acceptable.

PART 2 - PRODUCTS

2.01 OUTDOOR CONDENSING UNITS:

- A. Outdoor air cooled heat pump condensing units shall be completely packaged, factory assembled, electrically operated units consisting of hermetic compressor with crank case heater, compressor, high and low pressure safeties, operating controls, refrigerant reversing valve for heating/cooling changeover, air-cooled condenser coil with circulating fan and necessary structural frame, housing, valves, piping and wiring.
- B. Each entire condensing unit shall be completely factory charged with the amount of refrigerant and lubricating oil as recommended by manufacturer.
- C. A temperature sensor and automatic control shall be included to initiate a periodic defrost cycle when coil frosting may occur.
- D. Condensing units shall have isolation mounting and shall be enclosed in a weatherproof cabinet.
- E. Motor controller and control devices shall conform to NEMA IC1 and UL 508. Provide each motor with thermal overload protection. Provide overload protective devices either integral to motor or controller or mounted in separate enclosure.

- F. Automatic control devices may control starting or stopping of motors directly provided they are designed for that purpose and have an adequate horsepower rating.

2.02 PROTECTIVE COATING ON OUTDOOR CONDENSING UNITS:

- A. Each outdoor condensing unit shall be provided with an anti-corrosive protective film which may be applied in the field or at the factory. The protective film shall be specifically designed to resist the effects of a salt-laden corrosive environment while maintaining heat exchange efficiencies in the condenser coils. The product shall be certified in accordance with the 6,000 hour salt spray test per ASTM B117.
- B. The protective film shall be applied on all surfaces of the condenser coils and on the interior and exterior surfaces of the condensing unit casings, including control boxes, coil guards and any other accessories. The protective film shall be applied in strict accordance with the manufacturer's recommendations.
- C. The anti-corrosive protective film shall be an inorganic Siloxane material, applied by conventional spray to a dry film thickness of 8 microns and shall be manufactured by Adsil, Inc., type 'MicroGuard AD35'.

2.03 INDOOR AIR HANDLING UNITS:

- A. Indoor air handling units shall be the [vertical] [horizontal] type unit with blower, cooling coil and supplemental electric heater within the unit cabinet allowing replacement or removal of equipment.
- B. Blower section of each unit shall have capacity for distributing and conditioning air over the evaporator coil and heating element to provide cooling and heating and allowance not exceeding 10% above or below the specified capacities.
- C. Each unit shall consist of a reinforced sheet metal enclosure with baked-on enamel finish, direct drive fan and motors, cooling coil, condensate pan and drain, expansion device for metering refrigerant to coil, quick-connect couplings, supplemental electric heating element and necessary piping, structural frame and supports.
- D. Evaporator shall be equipped with an expansion device. A protective strainer shall be installed ahead of the expansion device. Ship coil after dehydration with a holding charge of refrigerant provided by manufacturer. Evaporator coil shall have mechanical refrigeration tubing connectors of the quick-connect type. Construct of seamless copper tubes with aluminum plate fins mechanically bonded to tubes.
- E. Provide evaporator coils with drain pan of nonferrous material or with steel pan completely waterproofed with a non-hardening type mastic on the water side. Provide drain pan with thermal insulation to prevent casing condensation.
- F. Direct drive or belt driven fan as indicated shall be dynamically and statically balanced and equipped with a three speed motor. Fan motors shall be factory lubricated with internal overload protection and shall be resiliently mounted. Fan motor assembly shall slide out for service.

2.04 FILTERS:

- A. Provide throwaway type air filters 1" thick. Filters shall be Class 2, conforming to the requirements of UL.
- B. Install a second set of new filters of each air handling unit just before the building is turned over to the Owner.
- C. Filters shall be easily removable for cleaning without use of special tools.
- D. Operation of blowers before installation of filters is prohibited.

2.05 THERMOSTATS:

- A. Furnish electric type controls for each split system heat pump.
- B. Room thermostat shall have the following characteristics:
 - 1. Low voltage heating-cooling type with separate temperature sensing elements for each system.
 - 2. Design thermostat for a mechanical differential not to exceed 1-1/2 degrees F.
 - 3. Single-pole throw switch hermetically sealed. Each element shall operate switches to provide single control for heating or cooling equipment.
 - 4. Electrically isolate heating and cooling circuits from each other.
 - 5. Housing shall be corrosion-resisting metal finish or molded plastic.
 - 6. Thermostat shall be mounted on sub-base and shall be provided with selector switches for COOL-OFF-HEAT and FAN-AUTO-ON.

PART 3 - EXECUTION

3.01 INSTALLATION:

- A. Split system heat pumps shall be installed in accordance with the manufacturer's recommendations.

3.02 DRAIN PAN:

- A. Provide a supplemental drain pan under each horizontal air handling unit. Drain line from the auxiliary pan shall be routed independently of the primary unit condensate drain line as shown on the detail on the drawings.

END OF SECTION

SECTION 15773

DUCTLESS SPLIT SYSTEMS

PART 1 - GENERAL

1.01 RELATED DOCUMENTS:

- A. The requirements of the General Conditions, Special Conditions and Section 15010, Mechanical General, apply to all work specified in this section.

1.02 DESCRIPTION OF WORK:

- A. Materials and equipment furnished under this specification shall be standard cataloged products of manufacturers regularly engaged in production of such materials or equipment and shall be the manufacturer's latest design that complies with these specifications.
- B. Each component shall be factory tested, dehydrated and charged. All equipment capacities shall be certified in accordance with ARI 240 and sound levels shall comply with the requirements of ARI 270 and ARI 350. All components shall be UL listed. Each outdoor condensing unit and indoor fan coil unit shall be factory rated for use together to provide the heating and cooling capacities and operating efficiencies within 5% of that indicated on the drawings.

1.03 QUALITY ASSURANCE:

- A. Ductless split systems manufactured by Mitsubishi, LG, or Samsung will be acceptable.

PART 2 - PRODUCTS

2.01 OUTDOOR CONDENSING UNITS:

- A. Outdoor air cooled [heat pump] condensing units shall be completely packaged, factory assembled, electrically operated units consisting of hermetic reciprocating or rotary compressor with crankcase heater, high and low pressure safeties, operating controls, refrigerant reversing valve, air-cooled condenser coil with direct drive propeller fan, suction and liquid line service valves, service gauge connection port, liquid line accumulator, filter drier and wiring.
- B. Each entire condensing unit shall be completely factory charged with the amount of refrigerant and lubricating oil as recommended by manufacturer.
- C. Condensing units shall have isolation mountings under the compressor and shall be enclosed in a weatherproof cabinet constructed of galvanized steel, bonderized and coated with a baked-on enamel finish. Condenser coil shall be constructed of aluminum fins mechanically bonded to seamless copper tubes which have been cleaned, dehydrated and sealed.
- D. Motor shall be NEMA rated class F suitable for operation in a refrigerant atmosphere. Provide each motor with thermal overload protection. Provide overload protective devices either integral to motor or controller or mounted in separate enclosure.

- E. Operating and safety controls shall include time delay restart, automatic restart on power failure, high pressure and liquid line low pressure switches, start capacitor and relay, compressor motor current and temperature overload protection and outdoor fan failure protection.

2.02 HIGH WALL INDOOR FAN COIL UNITS:

- A. Indoor fan coil units shall be the high wall mounted type complete with blower, cooling coil, piping connectors, microprocessor control system and remote wall mounted [wireless infra-red] hard wired controller. Unit cabinet shall allow replacement or removal of all items of equipment.
- B. Direct drive fan shall have capacity for distributing and conditioning air over evaporator coil [and heating element] to provide cooling [and heating] allowance not exceeding 10% above or below specified capacities. A user adjustable horizontal and vertical air sweep shall be provided.
- C. Each unit shall consist of a reinforced sheet metal enclosure with baked-on enamel finish and with high impact polystyrene discharge and inlet grilles. Furnish each unit with wall mounting bracket and mounting hardware.
- D. Ship coil after dehydration with a holding charge of refrigerant provided by the manufacturer. Evaporator coil shall be constructed of seamless copper or galvanized steel tubes with aluminum plate fins mechanically bonded to tubes.
- E. Provide evaporator coil with a drip pan of nonferrous material or with steel pan completely waterproofed with a non-hardening type mastic on water side and with thermal insulation to prevent casing condensation.

2.03 CEILING MOUNTED INDOOR FAN COIL UNITS:

- A. Indoor fan coil units shall be the fully exposed partial recessed ceiling mounted type complete with blower, cooling coil, electric heating element, piping connectors, microprocessor control system and remote wall mounted temperature sensing, allowing replacement or removal of all items of equipment.
- B. Dual direct drive blowers shall have capacity for distributing and conditioning air over evaporator coil [and heating element] to provide cooling [and heating] allowance not exceeding 10% above or below specified capacities. A user adjustable horizontal and vertical air sweep shall be provided.
- C. Each unit shall consist of 20 gauge reinforced sheet metal enclosure with powder coated enamel finish and with high impact polystyrene discharge and inlet grilles. Furnish each unit with hanger brackets and mounting hardware. A fresh air opening shall be provided in the top or back of the cabinet.
- D. Ship coil after dehydration with a holding charge of refrigerant provided by the manufacturer. Evaporator coil shall be constructed of seamless copper or galvanized steel tubes with aluminum plate fins mechanically bonded to tubes.
- E. Provide evaporator coil with a drip pan of nonferrous material or with steel pan completely waterproofed with a non-hardening type mastic on water side and with thermal insulation to prevent casing condensation.

2.04 FILTER:

- A. Provide cleanable type air filter 1" thick. Filters shall be Class 2, conforming to the requirements of UL.
- B. Filter shall be easily removable for cleaning without use of special tools.

2.05 CONTROLS:

- A. Furnish microprocessor-based controls for each ductless split system.
- B. System controls shall have the following characteristics:
 - 1. Automatic restart after power failure at the same conditions as at failure.
 - 2. Return air temperature sensor and indoor high discharge temperature shutdown.
 - 3. Remote [wireless infrared] hard-wired controller to enter set points and operating conditions.
 - 4. Dehumidification mode to provide increased latent removal capability by modulating fan speed and temperature set point.
 - 5. Diagnostics to provide continuous checks of all unit operations with error messages displayed at the unit and remote controller.
 - 6. Fan speed controls for high, medium and low modes.
 - 7. [Automatic heating to cooling changeover with dead-band to prevent rapid cycling.]
 - 8. [Demand defrost with internal timer and indoor coil freeze protection.]

PART 3 - EXECUTION

3.01 INSTALLATION:

- A. Ductless split systems shall be installed in accordance with the manufacturer's recommendations.

END OF SECTION

SECTION 15820

FANS

PART 1 - GENERAL

1.01 RELATED DOCUMENTS:

- A. The requirements of the General Conditions, Special Conditions and Section 15010, Mechanical General, apply to all work specified in this section.

1.02 QUALITY ASSURANCE:

- A. Fans shall be tested and rated in accordance with the Air Moving and Conditioning Association, Inc. Standard NO. 210, Test Code for Air Moving Devices and shall bear the AMCA Seal.
- B. Exhaust fans manufactured by Greenheck, Carnes, Cook, Twin City, Penn or Breidert will be acceptable.

PART 2- PRODUCTS

2.01 GENERAL:

- A. V-belt drives shall be designed for not less than 150% of connected driving capacity and motor sheaves shall be adjustable to provide not less than 20% speed variation. Sheaves shall be selected to drive the fan at a speed to produce the scheduled capacity indicated on the drawings when set at the approximate midpoint of the sheave adjustment. Motors with V-belt drives shall be provided with adjustable bases. Belt driven power assemblies shall be mounted on vibration isolators.

2.02 CENTRIFUGAL ROOF EXHAUST FANS:

- A. Centrifugal roof exhaust fans shall have a spun aluminum housing enclosing the motor drive, a spun aluminum shroud enclosing the fan wheel, an aluminum centrifugal fan wheel, a backdraft damper and birdscreen.
- B. Motor shall be single speed, single winding and the motor and drive shall be located in a ventilated compartment out of the exhaust air stream. A safety disconnect switch shall be factory installed in the motor compartment and shall be factory wired to the fan motor.
- C. with oil resistant belts and complete with adjustable sheaves and belt guard.

2.03 IN-LINE CENTRIFUGAL FANS:

- A. In-line fans shall be the belt driven centrifugal type complete with housings, adjustable motor bases, motor and drive, fan wheel, bearings, drive guards and inlet screens where indicated.
- B. The fan housing shall be the heavy gauge steel tubular type of all welded Class 1 construction complete with curved conversion vanes, inlet and outlet flanges, access door and drive arrangement indicated. The bearings and drive shall be protected.

- C. The bearings shall be the self-aligning, ball bearing, pillow-block type with double locking cover. The bearings shall have a 400,000 hour average life and shall have the grease lines extended to the outside of the fan housing for ease of maintenance.
- D. The fan wheel shall be the airfoil centrifugal type for fan wheels 27" and larger in diameter and the backward inclined type for fan wheels under 27". Fan wheels shall be of all welded construction and shall have a spun inlet section and cast iron hubs. Fan wheels shall be of Class 1 construction and shall be statically and dynamically balanced. The fan shall bear a certification to verify that the wheel has been balanced.
- E. The motor shall be mounted on an adjustable base and a drive guard shall be provided.

2.04 CEILING CABINET FANS:

- A. Ceiling cabinet fans shall be direct driven. Each fan housing shall be constructed of phosphatized steel with an oven baked enamel finish. The housing interior shall be acoustically lined with 1/2" thick insulation. The discharge outlet shall be adaptable to horizontal or vertical positions.
- B. The terminal box shall be internally mounted for motor hook-up. The motor shall be mounted on resilient elastic grommets. The fan shall have a forward curved centrifugal wheel.

PART 3- EXECUTION

3.01 INSTALLATION:

- A. Fans shall be installed in complete conformance with the manufacturer's recommendations.

3.02 ADJUSTMENT:

- A. The fans shall be tested and adjusted in accordance with Section 15080, Test and Balance, to provide the scheduled capacities.

END OF SECTION

SECTION 15840

DUCTWORK AND ACCESSORIES

PART 1- GENERAL

1.01 RELATED DOCUMENTS:

- A. The requirements of the General Conditions, Special Conditions and Section 15010, Mechanical General, apply to all work specified in this section.

1.02 PRESSURE CLASSIFICATIONS:

- A. SMACNA standards referred to herein shall mean standards published by the Sheet Metal and Air Conditioning Contractor's National Association, Inc. Ductwork shall be constructed in complete conformance with the latest edition of the SMACNA manual.
- B. Pressure classifications shall be as follows:
 - 1. All ductwork: low pressure, 2" wg static pressure, Class A seals.

PART 2- PRODUCTS

2.01 LOW PRESSURE DUCT CONSTRUCTION:

- A. Construct low pressure rectangular ductwork from lock forming quality galvanized steel sheets having a galvanized coating of 1-1/4 ounces total for both sides per one square foot of sheet. Metal stamp shall be visible after installation. Inside of unlined ducts visible through sidewall grilles and registers shall be paint flat black.
- B. Construction methods, metal gauges and stiffening shall be in accordance with the latest edition of SMACNA HVAC Duct Construction Standards, Metal and Flexible. All duct dimensions indicated are clear inside dimensions.
- C. Install turning vanes in all 90 degree square or rectangular elbows and at other locations shown. The turning vanes shall be large size, double thickness airfoil style with vanes secured to the runners and runners secured to the duct. Elbows in round ductwork and other radiused elbows shall have an inside radius equal to the depth of the duct.

2.02 DUCT HANGERS AND SUPPORTS:

- A. Duct hangers and supports shall be in accordance with the Hangers and Supports section of the referenced SMACNA standards, except:
 - 1. Do not space hangers over 8'-0" on centers.
 - 2. For rectangular ductwork with the longest dimensions up through 60", hangers shall be the galvanized steel strap type. For rectangular ductwork with the longest dimension 61" and larger, hangers shall be trapeze type constructed of galvanized steel angles with round hanger rods. Sizes for strap hangers and trapeze angles and rods shall be based on duct size as scheduled in the SMACNA standard for strap hangers and for trapeze hangers.

3. For round ductwork, hangers shall be galvanized steel strap hangers. Sizes and number of strap hangers shall be based on the duct size as scheduled in the SMACNA standard.
- B. Support duct in existing concrete construction with cadmium plated, malleable iron, expansion anchors, Grinnell Fig. 117 or equal. Powder actuated fasteners shall not be used in lightweight aggregate concrete without written approval of the Architect.
- C. Support ductwork in steel construction with side beam brackets bolted or welded to the side of the beam, Grinnell Fig. 202, or equal.
- D. Support duct in wood construction with side beam bracket, Grinnell Fig. 202 or equal, or with hanger flange, Grinnell Fig 128R or equal using lag screws.
- E. Lower attachment fasteners which penetrate the duct shall be sheet metal screws, blind rivets or self tapping metal screws. Cover all ductwork penetrations with mastic to provide air tight closures.

2.03 MANUAL DAMPERS AND DAMPER HARDWARE:

- A. Construct splitter dampers of not less than 20 gauge galvanized steel sheet. The length of the damper blade shall be the same as the width of the widest duct section at the split, but in no case shall blade length be less than 12".
- B. Volume control dampers shall be low leakage single blade butterfly type in ducts up to and including 18" x 12" size. For ducts larger than 18" x 12", in either or both dimensions, the dampers shall be the low leakage multi-blade type. All dampers in outdoor air intake ductwork shall shut tightly and have vinyl blade edge and end seals.
 1. Single blade butterfly dampers shall be constructed of not less than 16 gauge galvanized steel mounted in a steel frame. For rectangular dampers, the top and bottom edges of the blade shall be crimped to stiffen the blade. Dampers shall be provided with an extended rod to permit installation of a quadrant or actuator on the exterior of the insulation.
 2. Multi-blade dampers shall be the opposed blade type, constructed of not less than 16 gauge galvanized steel blades mounted in a galvanized steel channel frame. Blade spacing shall not exceed 6" and the top and bottom edges of the blade shall be crimped to stiffen the blades. Damper blades shall be interconnected by rods and linkages to provide simultaneous operation of all blades. Dampers shall be provided with an extended rod to permit installation of a quadrant or actuator on the exterior of the insulation.
 3. Dampers manufactured by Ruskin, Cesco, Carnes, Nailor or Louvers and Dampers, Inc. will be acceptable.
- C. Hardware for manual dampers:
 1. When neither dimension of the splitter damper exceeds 18" the damper shall be provided with a ball joint bracket attached to the outside of the duct. The bracket shall have a set screw for securing the damper rod in position. The damper operating rod shall be not less than 1/4" diameter steel rod and shall be secured to the damper blade with a clip. When either dimension of the damper exceeds 18" the damper shall be provided with

two ball joint brackets and rods. The rods shall be located at quarter points on the damper.

2. Duct mounted regulators with operating handle and locking quadrant shall be provided on all manual volume control dampers.
3. Damper hardware manufactured by Ventfabrics, Young Regulator or Duro-Dyne will be acceptable.

2.04 FLEXIBLE ROUND DUCTWORK:

- A. Flexible round ductwork shall be Class 1, UL 181 air duct with an aluminized mylar or polyester inner liner laminated to a corrosion resistant steel wire helix. Aluminum helix is not acceptable.
- B. A 1" thick, one pound density fiberglass insulation and vinyl outer jacket shall cover the wire helix.
- C. Low pressure flexible ductwork shall be designed for pressures up to 4" wg. The maximum allowable length of low pressure flexible ductwork shall be 5'-0" and shall be limited to short run-outs connected to round neck ceiling supply diffusers. Provide a spin-in fitting with integral volume damper at all flexible run-out connections.
- D. Flexible ductwork manufactured by Genflex, Flexmaster, Atco or Royal will be acceptable.

2.05 FLEXIBLE DUCT CONNECTORS:

- A. Flexible duct connectors shall be non-combustible, installed at the intake and discharge connections of all belt-driven equipment and where shown. Material shall be glass fabric double coated with neoprene (30oz. per square yard minimum). Provide duct supports on each side of flexible connectors.
- B. Flexible duct connectors manufactured by Vent Fabrics, Duro-Dyne or Young Regulator will be acceptable.

2.06 FIRE DAMPERS:

- A. Provide fire dampers at all penetrations through fire rated walls, floors and partitions. Fire dampers shall comply with the requirements of UL 555, 6th Edition, and damper type shall be as follows:
 1. Type 'A' with blades and blade channels in the air stream for use behind sidewall registers and grilles.
 2. Type 'B' with blades out of the air stream for rectangular ductwork passing completely through walls, floors and partitions.
 3. Type 'C' with blades and blade channels out of the air stream for round and flat oval ductwork passing completely through walls, floors and partitions.
- B. Fire dampers shall be rated as either static (for use in HVAC systems that are automatically shut down in the event of a fire), or dynamic (for use in HVAC systems that are operational in the event of a fire), as appropriate for the application.

- C. Fire dampers manufactured by Prefco, Nailor, Greenheck, Ruskin or Air Balance will be acceptable.

2.07 SMOKE DAMPERS AND FIRE/SMOKE DAMPERS:

- A. Smoke dampers and fire/smoke dampers shall comply with the requirements of UL 555S, 4th Edition. Dampers shall close when a signal from the smoke detection system is received and fire/smoke dampers shall also close when excessive heat is detected.
- B. Dampers shall be rated as either smoke dampers (for use in HVAC systems where ducts pass through smoke barriers), or fire/smoke dampers (for use in HVAC systems where a fire damper and smoke damper are required at a single location), as appropriate for the application.
- C. Dampers shall meet UL 555S Class 2A for low leakage rating. Smoke dampers and fire/smoke dampers shall be of non-heat degradable design with friction free metal-to-metal seals incorporating integral resettable and reusable UL listed electric-ambient temperature link and UL listed releasing device and mechanical lock assembly.
- D. Damper frames shall be 16 gauge galvanized steel formed channel with pre-punched slotted mounting holes a minimum of 7" on center. Blades shall be 16 gauge galvanized steel, maximum width of 8". Blades 36" and longer and driven blades shall be furnished with reinforcing cones.
- E. The link shall be activated by either an electric signal from the fire alarm circuit or by the associated air system's smoke detector to permit the damper to close and lock independently of the motor actuator position. Upon cessation of the alarm condition or normalization of the air system's smoke detector, the link shall return to its reset position enabling the damper to be fully recycled automatically by the actuator.
- F. Electric motor actuators shall be 24 volt, UL listed and furnished with all necessary mounting hardware from the factory for installation on the outside of the ductwork. The actuators shall be power open/spring closed operation. Dampers shall be furnished with connecting shafts and linkages utilizing not more than one actuator for single and multiple sections assembly sized up to 23 sq. ft. Power for motors shall come from the nearest 24 volt fire alarm circuit.
- G. Smoke dampers and fire/smoke dampers manufactured by Prefco, Nailor, Greenheck, Ruskin or Air Balance will be acceptable.

2.08 MOTOR OPERATED DAMPERS:

- A. Motor operated dampers shall have blades not over 6" wide and 36" long with heavy galvanized steel channel frames and non-corrosive sleeve type bearings, and shall be furnished by the automatic temperature controls Building Automation System] manufacturer except for dampers furnished with air handling equipment. All dampers opening to the outside shall have air tight blade edge and end seals.
- B. Dampers specified for modulating service shall be opposed-blade type, while dampers for two position service shall be parallel-blade type, with double-thickness extruded aluminum blades with an approximate airflow cross-section. Linkage shall be outside of airstream and blades shall seat against continuous resilient

seals. When fully closed, leakage shall not exceed 6 CFM per square foot, as measured inside damper frame at a pressure differential of 2 inches wg.

- C. Damper actuators shall position the controlled device positively and accurately. Actuators shall provide not less than 7.5 inch-pounds torque per square foot of damper area to the damper drive shaft.
- D. Damper actuators shall be of the push-pull or rotary type for modulating, 3-point floating, or 2-position control as required by the application. The actuators shall use overload-proof synchronous motors or electric motors with end switches to de-energize the motor at the end of the stroke limits. Control voltage shall be 24 VAC, 0-20 VDC or 4-20 mA as required.

2.09 DUCT ACCESS DOORS:

- A. Provide a duct access door at each fire damper, fire/smoke damper or smoke damper, at the upstream and downstream sides of each duct mounted coil, at each air measuring station and elsewhere as indicated on the drawings. Access doors shall be a minimum 18" x 18", duct size allowing, and shall have a continuous hinge on one side with latch on the other side. Access door shall be designed for five times the pressure of the duct in which it is mounted. Access doors shall be of sufficient size to provide access to the dampers for resetting or replacing thermal links.
- B. Do not locate duct access doors above inaccessible ceilings unless approved by the Architect prior to installation.

2.10 ROOF CURBS:

- A. Provide a factory fabricated roof curb at every ductwork penetration of the roof.
- B. Factory fabricated roof curbs shall be constructed of aluminum and shall be 12" high. Curbs shall be canted, insulated type and shall be field-flashed to make watertight. Extend field flashing up the sides of the curb with washers and sheet metal screws placed not more than 12" on centers but in no case using less than two screws per side. Curbs shall have 2" thick rigid insulation with a smoke developed rating not to exceed 25 and a flame spread rating not to exceed 50 when tested in accordance with ASTM E84. Wood nailer strips shall be provided. Coordinate the installation of the roof curbs with the roof installer.
- C. Roof curbs manufactured by Pate, Thy Curb or Roof Products and Systems will be acceptable.

2.11 ROOF EQUIPMENT SUPPORT RAILS:

- A. Factory fabricated roof equipment support rails shall be constructed of 18 gauge galvanized steel and shall be 12" high. Support rails shall be canted and shall be field-flashed to make watertight. Field-flashing shall extend up the sides of the support rails with washers and sheet metal screws placed not more than 12" on centers. Wood nailer strips shall be provided. Coordinate the installation of the roof equipment support rails with the roof installer and with the manufacturer of the equipment to be supported.
- B. Provide equipment support rails under each roof mounted condensing unit, minimum two rails per unit.

- C. Roof equipment support rails manufactured by Pate, Thy Curb or Roof Products and Systems will be acceptable.

2.12 PIPE CURB ASSEMBLIES:

- A. Factory fabricated pipe curb assemblies shall be 18 gauge galvanized steel, unitized construction with integral base plate and all seams welded. Provide 1-1/2" thick, 3 lb density rigid fiberglass insulation on the interior surfaces and a wood nailer strip around the top perimeter. Counter flashing cap shall be acrylic clad ABS thermoplastic with graduated step PVC boots and adjustable stainless steel clamps. Boot size option shall be selected to suit the refrigerant pipe sizes applicable to the project. Pipe curbs shall have integral cants.
- B. Provide pipe curb assemblies at each refrigerant piping penetration of the roof.
- C. Pipe curb assemblies manufactured by Pate, Thy Curb or Roof Products and Systems will be acceptable.

2.13 ROOF PIPE MOUNTING PEDESTALS:

- A. Factory fabricated roof pipe mounting pedestals shall consist of adjustable threaded rods fastened to a steel slide channel by means of a lateral adjustment spacer bracket which in turn shall be secured to the roof equipment support rail using welded steel brackets and lag bolts. For multiple pipe runs, two or more pairs of threaded rods and lateral adjustment spacer brackets shall be provided and attached to a common steel slide channel.
- B. The pipe shall be supported on a cast iron pipe roller and shall be complete with a removable pipe retainer bracket which shall be installed over the outside of the pipe insulation. The assembly shall allow for the height adjustment of the pipe from 4 inches to 16 inches above the top of the equipment support rail.
- C. The threaded rods, lateral adjustment spacer brackets, slide channel and pipe retainer bracket shall be constructed from galvanized steel.
- D. Roof pipe mounting pedestals manufactured by Pate, Thy Curb or Roof Products and Systems will be acceptable.

PART 3- EXECUTION

3.01 INSTALLATION:

- A. Install all ductwork and accessories as shown and in accordance with applicable SMACNA standards.
- B. Seal all joints in ductwork with a fire-retardant sealant. Tape is not acceptable.
- C. Provide sound proof construction for duct penetrations through openings between the ductwork and following construction:
 - 1. Equipment room walls.
 - 2. Floors, except in shafts.
- D. Sound proofing installation shall include:

1. Fill openings with fibrous glass blanket for full depth of penetration.
2. Caulk each side of opening with non-hardening, non-aging caulking compound equal to Johns-Manville "Duxeal".

END OF SECTION

SECTION 15854

BI-POLAR IONIZATION UNITS

PART 1 - GENERAL

1.01 RELATED DOCUMENTS:

- A. The requirements of the General Conditions, Special Conditions and Section 15010 [23 00 00], Mechanical General, apply to all work specified in this section.

1.02 QUALITY ASSURANCE:

- A. The bi-polar ionization units manufacturer indicated in the schedule on the drawings have been used as the basis of design. Any modifications to ductwork, building structure, etc., that result from the use of any other manufacturer shall be coordinated with all trades prior to delivery of approved equipment to the job site. Any costs incurred due to these modifications shall be borne by the Contractor.
- B. A qualified representative from the manufacturer shall be available to inspect the installation of the air purification system to ensure installation in accordance with manufacturer's recommendation. Inspections shall continue at each maintenance interval following startup. Inspection reports shall be submitted to the owner and engineer upon completion.
- C. The complete air purification system, including the bi-polar ionization unit as assembled, shall be complete with power and control wiring, airflow switches, controls and housing. The units shall possess the following classifications:
 - 1. Underwriters Laboratories UL 1995 classification.
 - 2. Underwriters Laboratories UL 867 classification.
 - 3. USEPA US Energy Star Certification Room Air Cleaners.
 - 4. ANSI/AHAM AC-1-2002.
- D. Bi-polar ionization units manufactured by AtmosAir or approved equal will be acceptable.

PART 2 - PRODUCTS

2.01 BI-POLAR IONIZATION UNITS:

- A. Each bi-polar ionization system shall be capable of effectively killing microorganisms throughout the ductwork and interior spaces served by the bi-polar system (including mold, bacteria and viruses) controlling gas phase contaminants generated from human occupants, building structure and furnishings, and reducing static space charges.
- B. Each bi-polar ionization system shall be designed to increase ionization levels in the areas served the air handling system the units are installed in. The acceptable ionization level increase shall be between 500 and 1,500 ions/cm³ as measured in the negative ion range. System commissioning shall include ion level measurements to ensure these design increase levels have been achieved. At the designed ion level increases the system shall provide a minimum of 125 Dust Clean Air Delivery Rate and 190 Mold Spore Clean Air Delivery Rate per

the testing protocol as developed by the American Home Appliance Manufacturers (ANSI/AHAM AC-1-2002).

- C. Each bi-polar ionization system shall operate in such a manner so that agglomeration or precipitation of airborne particulate shall not be permitted to collect on occupants, walls or furnishings by virtue of its operation.
- D. Velocity profile: The air velocity through the plenum approaching the air purification system shall not exceed 1,000 fpm in the bi-polar ionization section.
- E. Humidity: Ion tubes shall not require pre-heat protection when the relative humidity of the entering air exceeds 85%. Relative humidity from 0 - 99% shall not cause damage, deterioration or dangerous conditions within the air purification system. The ion tubes shall be rated at 200° F.
- F. Each unit shall include mounting plate, ion tube(s), ion generator, differential pressure switch and on/off switch with green LED power indicator.
- G. Each unit shall include the required number of electrodes and power generators sized to the air handling unit capacity. Electrodes shall be installed with insulators to create the required dielectric. The dielectric shall consist of suitable inorganic non-corrosive insulation material so that the presence of water vapor, gasses or airborne particles will not affect the dielectric value. Electrodes of ferrous or copper composition with or without plating are not acceptable due to uncontrolled corrosion.
- H. Electrical power to the electrodes shall be interrupted when the airflow is less than 100 fpm or when access doors to the electrode plenum section are opened.
- I. Mounting: Electrodes and power generators shall be installed on the duct with a single point wiring connection. It shall include one quick disconnect electrical connector for removal from the power source without the use of hand tools. The mounting plate shall include a standard 120VAC/60/1 outlet for the electrician to terminate power.
- J. Each bi-polar ionization system shall consist of ionization tubes, power generators, power regulator, airflow switches and other accessories required for safe and efficient operation.

PART 3 - EXECUTION

3.01 INSTALLATION:

- A. The bi-polar ionization units and all associated items shall be installed in complete conformance with the manufacturer's recommendations.
- B. A manufacturer's authorized representative shall provide start-up supervision and training of Owner's personnel in the proper operation and maintenance of all equipment.
- C. Service: A manufacturer's authorized service representative shall provide service support to ensure satisfactory air purification system operation. The service program shall include as a minimum, factory startup and commissioning, bi-annual site visits and annual mandatory ionization tube replacements. A written report shall be submitted to the Owner and **Architect**.

END OF SECTION

SECTION 15870

GRILLES, REGISTERS AND DIFFUSERS

PART 1 - GENERAL

1.01 RELATED DOCUMENTS:

- A. The requirements of the General Conditions, Special Conditions and Section 15010 [23 00 00], Mechanical General, apply to all work specified in this section.

1.02 COORDINATION:

- A. The grilles, registers and diffusers of one manufacturer have been used as the basis of design. Any modifications to the ductwork or building structure that result from the use of any other manufacturer's units shall be coordinated with all trades, especially architecture. Any modifications shall be performed without incurring any additional cost to the Contract.
- B. The color of all grilles, registers and diffusers shall match the surface in which they are installed or shall be as selected by the **Architect**. Additionally, ceiling mounted devices shall be selected to be compatible with the ceiling types in which they are installed.

1.03 SHOP DRAWINGS:

- A. Provide air flow capacities, pressure drop and noise criteria data for grilles, registers and diffusers.
- B. Provide dimensional data including frame styles for each unit provided.
- C. Indicate type of finish and provide color chart for **Architect's** selection of colors as indicated.

1.04 ACCEPTABLE MANUFACTURERS:

- A. Grilles, registers and diffusers manufactured by Krueger, Carnes, Titus, Metal*Aire, Nailor [Hart & Cooley] or E.H. Price will be acceptable.
- B. All devices selected shall meet or exceed all the requirements of these contract documents.

PART 2 - PRODUCTS

2.01 SUPPLY REGISTERS AND DIFFUSERS:

- A. Supply drum diffusers shall be extruded aluminum with vertical blades spaced on 3 inch or 5 inch centers inside a movable drum louver. The drum and blades shall be independently movable up to 30 degrees from the horizontal or vertical axis. Provide an opposed blade damper for balancing. Provide a factory applied primer for field painting.
- B. Linear bar registers shall be manufactured of extruded aluminum and shall have 15 degree deflection horizontal fixed blades on 1/4" or 1/2" centers. Provide an opposed blade damper operable through the face of the register for balancing and provide straightening vanes. Provide a factory applied clear coat anodized finish.

- C. Ceiling supply diffusers shall be square or round neck as indicated, extruded aluminum square louver face type with mitered corners. Louver cores shall be removable and held in place with spring loaded pins. Stamped aluminum diffusers will not be acceptable. Provide a steel opposed blade damper for balancing. Radial 'bow tie' dampers will not be acceptable. Provide a factory applied enamel finish of a color as selected by the **Architect**.
- D. Sidewall supply air registers shall be all aluminum with adjustable double deflection blades on 3/4" centers. The front set of blades shall be horizontal. Provide a face operable steel opposed blade damper for balancing. Finish shall be factory applied primer for field painting.
- E. Supply slot diffusers shall be side inlet type slot diffusers sized as indicated. Plenum shall be constructed of 24 gauge galvanized steel, substantially reinforced and supported independently of the ceiling. Plenum shall be lined with 3/4" thick insulation and shall not extend more than 13" above the finished ceiling. Provide a screwdriver operated face operated butterfly damper. Interior finishes of the diffuser shall be painted flat black while exterior surfaces shall have a baked enamel finish of a color selected by the **Architect**.
- F. Linear supply diffusers shall be extruded aluminum with equally spaced slots of the indicated width, concealed mounting and baked enamel finish of color approved by the **Architect**. Integral pattern adjuster bars shall be adjustable to discharge air from horizontal to vertical. The pattern adjuster bars shall also act as air balancing devices by the ability to move the pattern adjuster bars closer to, or further from, the discharge slot openings. Number of slots, approximate length, and total air flow shall be as indicated on the drawings. Each component of adjacent sections of linear diffusers shall be in perfect alignment and flush with adjacent ceiling material. Diffusers shall be provided with alignment strips for insertion in extruded alignment slots in each section. Junction between supply plenum and ends and sides of diffuser shall be sealed airtight. Supply plenum shall be constructed of 24 gauge galvanized steel, substantially reinforced and supported independently of the ceiling. Plenum shall be lined with 3/4" thick insulation.
- G. Ceiling supply diffusers shall be round steel type with round neck consisting of inner concentric flared cones and an outer ceiling plate collar. The inner cone assembly shall be removable and attached with a positive locking mechanism. The inner cones shall be adjustable to provide horizontal, vertical or intermediate air patterns. Provide a steel radial volume control damper, adjustable from the diffuser face. Provide a factory applied enamel finish of a color as selected by the **Architect**.
- H. Laminar flow diffusers shall be aluminum with a removable perforated face plate having minimum 20% free area and an egg-crate grid attached to the rear of the face plate to ensure even air distribution. The air distribution box shall have a top inlet collar and shall incorporate a filtration system with minimum 90% efficiency per ASHRAE Standard 52-76.

2.02 RETURN AND EXHAUST REGISTERS AND GRILLES:

- A. Ceiling return and exhaust registers and grilles shall be square neck, steel perforated plate sized to fit the ceiling grid with steel opposed blade volume damper for balancing, or shall be panel only as indicated. Provide a factory applied finish of a color as selected by the **Architect**. The interior of registers and grilles shall be factory painted flat black.
- B. Ceiling return and exhaust air registers and grilles shall be square neck, aluminum 1/2" x 1/2" x 1/2" egg-crate grid. Registers shall have a face operable steel opposed blade volume damper for balancing, or shall be panel only as indicated. Lay-in registers and grilles shall have a U-channel frame. Finish shall be factory applied enamel of a color as selected by the **Architect**.

- C. Sidewall return air registers shall be all aluminum with 45 degrees fixed deflection blades on 3/4" centers. The blades shall be horizontal. Provide a face operable opposed blade damper and the finish shall be factory applied primer for field painting.
- D. Linear return diffuser shall be identical in all respects to linear supply diffusers except pattern adjuster shall be omitted.
- E. Soffit grilles shall be all aluminum with fixed horizontal blades on 1/2" centers. Provide factory applied primer for field painting.
- F. Floor grilles shall be extruded aluminum with 1/8" horizontal bars on 1/4" centers with 0 degree deflection. Provide fully removable cores with no flange as indicated. Provide a factory applied clear anodized finish.
- G. Door grilles shall be steel, telescopic sight proof type with flanges on both sides of the door, and with inverted V blades on 1/2" centers. Provide factory applied primer for field painting.

2.03 SECURITY REGISTERS AND GRILLES:

- A. Medium security supply, return and exhaust registers shall have 12 gauge hot rolled steel face plate with 1/2" square holes on 11/16" centers. A 12 gauge wall sleeve shall be welded to the face plate and a loose wall angle shall be provided for field attachment, fabricated from 1-1/2" x 1-1/2" x 1/8" hot rolled steel. Provide an opposed blade damper for balancing, screwdriver operated through the face plate. The finish shall be white prime coat.

PART 3 - EXECUTION

3.01 INSTALLATION:

- A. Grilles, registers and diffusers shall be installed as indicated and in conformance with the manufacturer's recommendations. Coordinate the actual units to be provided with all trades. Ceiling mounted units shall match the ceiling type provided to ensure proper installation.
- B. Grille, register and diffuser locations shall be coordinated with the architectural reflected ceiling plans.

3.02 ADJUSTMENT:

- A. The registers and diffusers shall be balanced and adjusted in accordance with Section 15080 [23 05 93], Test and Balance, to provide the scheduled capacities.

END OF SECTION

SECTION 15950
BUILDING AUTOMATION SYSTEM

PART 1 - GENERAL

1.01 RELATED DOCUMENTS:

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

1.02 DESCRIPTION:

- A. General: The control system shall consist of a high-speed, peer-to-peer network of DDC controllers, a control system server, and a web-based operator interface.
- B. Hartley Elementary is comprised of two main buildings: B2010 built in 1968, and B2020 built in 2002.
- C. Hartley Elementary has an existing obsolete front end in place (an older Novar panel). Provide new controllers, accessories, sensors, wiring, etc. to control the mechanical equipment as specified herein for both buildings.
- D. System software shall be based on a server/thin client architecture, designed around the open standards of web technology. The control system server shall be accessed using a Web browser over the control system network, the owner's local area network, and (at the owner's discretion) over the Internet.
- E. The intent of the thin-client architecture is to provide operators complete access to the control system via a Web browser. Web browser shall be used to access graphics, point displays, and trends, configure trends, configure points and controllers, or to download programming into the controllers. Control system should support several web based browsers, including Microsoft Internet Explorer, Google Chrome, Mozilla Firefox and Apple Safari.
- F. System shall use the BACnet protocol for communication to the operator workstation or web server and for communication among control modules. I/O points, schedules, set-points, trends and alarms specified in "Sequence of Operations for HVAC Controls" shall be BACnet objects.

1.03 APPROVED CONTROL SYSTEM MANUFACTURERS:

- A. Carrier iVu, Novar TL-1/Alerton, or Honeywell
 - 1. The Contractor shall use only operator workstation software, controller software, custom application programming language, and controllers from the corresponding manufacturer and product line unless Owner approves use of multiple manufacturers.
 - 2. Other products specified herein (such as sensors, valves, dampers, and actuators) need not be manufactured by the above manufacturers.

1.04 QUALITY ASSURANCE:

- A. Installer and Manufacturer Qualifications:

1. Installer shall have an established working relationship with Control System Manufacturer.
 2. Installer shall have successfully completed Control System Manufacturer's control system training. Upon request, Installer shall present record of completed training including course outlines.
- B. Codes and Standards: Work, materials, and equipment shall comply with the most restrictive of local, state, and federal authorities' codes and ordinances or these plans and specifications. As a minimum, the installation shall comply with the current editions in effect 30 days prior to the receipt of bids of the following codes:
1. National Electric Code (NEC).
 2. International Building Code (IBC).
 3. Section 719 Ducts and Air Transfer Openings.
 4. International Mechanical Code (IMC).
 5. ANSI/ASHRAE Standard 135, BACnet - A Data Communication Protocol for Building Automation and Control Systems.

1.05 SYSTEM PERFORMANCE:

- A. Performance Standards: System shall conform to the following minimum standards over network connections. Systems shall be tested using manufacturer's recommended hardware and software for operator workstation (server and browser for web-based systems):
1. Graphic Display: A graphic with 20 dynamic points shall display with current data within 10 sec.
 2. Graphic Refresh: A graphic with 20 dynamic points shall update with current data within 8 sec. and shall automatically refresh every 15 sec.
 3. Configuration and Tuning Screens: Screens used for configuring, calibrating, or tuning points, PID loops, and similar control logic shall automatically refresh within 6 sec.
 4. Object Command: Devices shall react to command of a binary object within 2 sec. Devices shall begin reacting to command of an analog object within 2 sec.
 5. Alarm Response Time: An object that goes into alarm shall be annunciated at the workstation within 45 sec.
 6. Program Execution Frequency. Custom and standard applications shall be capable of running as often as once every 5 sec. Select execution times consistent with the mechanical process under control.
 7. Performance: Programmable controllers shall be able to completely execute DDC PID control loops at a frequency adjustable down to once per sec. Select execution times consistent with the mechanical process under control.
 8. Multiple Alarm Annunciation: Each workstation on the network shall receive alarms within 5 sec of other workstations.
 9. Reporting Accuracy: System shall report values with minimum end-to-end accuracy listed in Table 1.
 10. Table 1 Reporting Accuracy / Table 2 Control Stability and Accuracy:

Measured Variable	Reported Accuracy
Space Temperature	±0.5°C (±1°F)
Ducted Air	±1°F
Outside Air	±2°F
Dew Point	±3°F
Delta-T	±0.25°F
Relative Humidity	±5% RH
Electrical	±1% of reading (see Note 3)

Note 3: Not including utility-supplied meters.

Controlled Variable	Control Accuracy	Range of Medium
Air Pressure	±0.2 in. w.g.) ±0.01 in. w.g.	0–6 in. w.g.) -0.1 to 0.1 in. w.g.)
Airflow	±10% of full scale	
Space Temperature	±2.0°F	
Duct Temperature	±3°F	
Humidity	±5% RH	

1.06 SUBMITTALS:

- A. Product Data and Shop Drawings: Meet requirements of Section 15011 Mechanical Submittals on Shop Drawings, Product Data, and Samples. In addition, the contractor shall provide shop drawings or other submittals on hardware, software, and equipment to be installed or provided. No work may begin on any segment of this project until submittals have been approved for conformity with design intent. Provide drawings as AutoCAD 2006 (or newer) compatible files on flash drive or optical disk (file format: .DWG, .DXF, .VSD, or comparable) and three 11" x 17" prints of each drawing. When manufacturer's cutsheets apply to a product series rather than a specific product, the data specifically applicable to the project shall be highlighted or clearly indicated by other means. Each submitted piece of literature and drawings shall clearly reference the specification and/or drawing that the submittals cover. General catalogs shall not be accepted as cut-sheet to fulfill submittal requirements. Select and show submittal quantities appropriate to scope of work. Submittal approval does not relieve Contractor of responsibility to supply sufficient quantities to complete work. Submittals shall be provided within 12 weeks of contract award. Provide the following:
1. Schematic diagrams for all control, communication, and power wiring. Provide a schematic drawing of the central system installation. Label all cables and ports with computer manufacturers' model numbers and functions. Show interface wiring to control system.
 2. Network riser diagrams of wiring between central control unit and control panels.
 3. Riser diagrams showing control network layout, communication protocol, and wire types.
 4. A schematic diagram of each controlled system. The schematics shall have all control points labeled with point names shown or listed. The schematics shall graphically show the location of all control elements in the system.
 5. A schematic wiring diagram of each controlled system. Label control elements and terminals. Where a control element is also shown on control system schematic, use the same name.

6. An instrumentation list (Bill of Materials) for each controlled system. List each control system element in a table. Show element name, type of device, manufacturer, model number, and product data sheet number.
 7. A mounting, wiring, and routing plan-view drawing. The design shall take into account HVAC, electrical, and other systems' design and elevation requirements. The drawing shall show the specific location of all concrete pads and bases and any special wall bracing for panels to accommodate this work.
 8. A complete description of the operation of the control system, including sequences of operation. The description shall include and reference a schematic diagram of the controlled system.
 9. Provide a point list for each control system. List I/O points and software points for each type of equipment. Indicate alarmed and trended points.
- B. Training Materials: Provide course outline and materials for each class at least six weeks before first class. Training shall be furnished via instructor-led sessions, computer-based training, or web-based training.

1.07 WARRANTY:

- A. Warrant work as follows:
1. Warrant labor and materials for specified control system free from defects for a period of 12 months after final acceptance. Control system failures during warranty period shall be adjusted, repaired, or replaced at no additional cost or reduction in service to Owner. Respond during normal business hours within 24 hours of Owner's warranty service request.
 2. Work shall have a single warranty date, even if Owner receives beneficial use due to early system start-up. If specified work is split into multiple contracts or a multi-phase contract, each contract or phase shall have a separate warranty start date and period.
 3. If the engineer determines that equipment and systems operate satisfactorily at the end of final start-up, testing, and commissioning phase, the engineer will certify in writing that control system operation has been tested and accepted in accordance with the terms of this specification. Date of acceptance shall begin warranty period.
 4. Provide updates to operator workstation or web server software, project-specific software, graphic software, database software, and firmware that resolve the contractor-identified software deficiencies at no charge during warranty period. If available, Owner can purchase in-warranty service agreement to receive upgrades for functional enhancements associated with above-mentioned items. Do not install updates or upgrades without Owner's written authorization.
 5. Exception: Contractor shall not be required to warrant reused devices except those that have been rebuilt or repaired. Installation labor and materials shall be warranted. Demonstrate operable condition of reused devices at time of Engineer's acceptance.

PART 2 – PRODUCTS

2.01 MATERIALS:

- A. Use new products the manufacturer is currently manufacturing and selling for use in new installations. Do not use this installation as a product test site unless explicitly approved in writing by Owner. Spare parts shall be available for at least five years after completion of this contract.

2.02 COMMUNICATION:

- A. Control products, communication media, connectors, repeaters, hubs, and routers shall comprise a BACnet internetwork. Controller and operator interface communication shall conform to ANSI/ASHRAE Standard 135, BACnet.
- B. Install new wiring and network devices as required to provide a complete and workable control network.
- C. Each controller shall have a communication port for temporary connection to a laptop computer or other operator interface. Connection shall support memory downloads and other commissioning and troubleshooting operations.
- D. Internetwork operator interface and value passing shall be transparent to internetwork architecture. An operator interface connected to a controller shall allow the operator to interface with each internetwork controller as if directly connected. Controller information such as data, status, and control algorithms shall be viewable and editable from each internetwork controller. Inputs, outputs, and control variables used to integrate control strategies across multiple controllers shall be readable by each controller on the internetwork. Program and test all cross-controller links required to execute control strategies specified herein. An authorized operator shall be able to edit cross-controller links by typing a standard object address or by using a point-and-click interface.

2.03 OPERATOR INTERFACE:

- A. The Operator Workstation or server shall conform to the BACnet Operator Workstation (B-OWS) or BACnet Advanced Workstation (B-AWS) device profile as specified in ASHRAE/ANSI 135 BACnet Annex L.
- B. Operator Interface: Web server shall reside on high-speed network with building controllers.
- C. Communication: Web server or workstation and controllers shall communicate using BACnet protocol. Web server or workstation and control network backbone shall communicate using ISO 8802-3 (Ethernet) Data Link/Physical layer protocol and BACnet/IP addressing as specified in ANSI/ASHRAE 135, BACnet Annex J.
 - 1. System Diagnostics: The system shall automatically monitor the operation of all building management panels and controllers. The failure of any device shall be annunciated to the operator.
 - 2. Alarm Processing: System input and status objects shall be configurable to alarm on departing from and on returning to normal state. Operator shall be able to enable or disable each alarm and to configure alarm limits, alarm limit differentials, alarm states, and alarm reactions for each system object. Configure and enable alarm points as specified in Section 23 09 93 (Sequences of Operation). Alarms shall be BACnet alarm objects and shall use BACnet alarm services.
 - 3. Alarm Messages: Alarm messages shall use the English language descriptor for the object in alarm in such a way that the operator will be able to recognize the source, location, and nature of the alarm without relying on acronyms.
 - 4. Alarm Reactions: Operator shall be able to configure (by object) what, if any actions are to be taken during an alarm. As a minimum, the workstation or web server shall be able to log, print, start programs, display messages, send e-mail, send page, and audibly annunciate.
 - 5. Alarm and Event Log: Operators shall be able to view all system alarms and

changes of state from any location in the system. Events shall be listed chronologically. An operator with the proper security level may acknowledge and delete alarms, and archive closed alarms to the workstation or web server hard disk.

6. Trend Logs: The operator shall be able to configure trend sample or change of value (COV) interval, start time, and stop time for each system data object and shall be able to retrieve data for use in spreadsheets and standard database programs. Controller shall sample and store trend data and shall be able to archive data to the hard disk. Configure trends as specified in Section 23 09 93 (Sequences of Operation). Trends shall be BACnet trend objects.
7. Object and Property Status and Control: Provide a method for the operator to view, and edit if applicable, the status of any object or property in the system. The status shall be available by menu, on graphics, or through custom programs.
8. Reports and Logs: Operator shall be able to select, to modify, to create, and to print reports and logs. Operator shall be able to store report data in a format accessible by standard spreadsheet and word processing programs.
9. Standard Reports: Furnish the following standard system reports:
 - a. Objects: System objects and current values filtered by object type, by status (in alarm, locked, normal), by equipment, by geographic location, or by combination of filter criteria.
 - b. Alarm Summary: Current alarms and closed alarms. System shall retain closed alarms for an adjustable period.
 - c. Logs: System shall log the following to a database or text file and shall retain data for an adjustable period:
 - (1) Alarm History.
 - (2) Trend Data. Operator shall be able to select trends to be logged.
 - (3) Operator Activity. At a minimum, system shall log operator log in and log out, control parameter changes, schedule changes, and alarm acknowledgment and deletion. System shall date and time stamp logged activity.

2.04 CONTROLLER SOFTWARE:

- A. Furnish the following applications for building and energy management. All software application shall reside and operate in the system controllers. Applications shall be editable through operator workstation, web browser interface, or engineering workstation.
- B. Scheduling: Provide the capability to execute control functions according to a user created or edited schedule. Each schedule shall provide the following schedule options as a minimum:
 1. Weekly Schedule. Provide separate schedules for each day of the week. Each schedule shall be able to include up to 5 occupied periods (5 start-stop pairs or 10 events).
 2. Exception Schedules. Provide the ability for the operator to designate any day of the year as an exception schedule. Exception schedules may be defined up to a year in advance. Once an exception schedule has executed, the system shall discard and replace the exception schedule with the standard schedule for that day of the week.
 3. Holiday Schedules. Provide the capability for the operator to define up to 24 special or holiday schedules. These schedules will be repeated each year. The operator shall be able to define the length of each holiday period.
- C. Demand Limiting:
 1. The demand-limiting program shall monitor building power consumption from a

building power meter (provided by others) which generates pulse signals or a BACnet communications interface. An acceptable alternative is for the system to monitor a watt transducer or current transformer attached to the building feeder lines.

2. When power consumption exceeds adjustable levels, system shall automatically adjust setpoints, de-energize low-priority equipment, and take other programmatic actions to reduce demand as specified in Part 4 (Sequences of Operation). When demand drops below adjustable levels, system shall restore loads as specified.

D. Maintenance Management: The system shall be capable of generating maintenance alarms when equipment exceeds adjustable runtime, equipment starts, or performance limits. Configure and enable maintenance alarms as specified in Part 4 (Sequences of Operation).

E. PID Control: System shall provide direct- and reverse-acting PID (proportional-integral-derivative) algorithms. Each algorithm shall have anti-windup and selectable controlled variable, setpoint, and PID gains. Each algorithm shall calculate a time-varying analog value that can be used to position an output or to stage a series of outputs. The calculation interval, PID gains, and other tuning parameters shall be adjustable by a user with the correct security level.

2.05 CONTROLLERS:

A. BACnet:

1. Building Controllers (BCs): Each BC shall conform to BACnet Building Controller (B-BC) device profile as specified in ANSI/ASHRAE 135, BACnet Annex L, and shall be listed as a certified B-BC in the BACnet Testing Laboratories (BTL) Product Listing.
2. Advanced Application Controllers (AACs): Each AAC shall conform to BACnet Advanced Application Controller (B-AAC) device profile as specified in ANSI/ASHRAE 135, BACnet Annex L and shall be listed as a certified B-AAC in the BACnet Testing Laboratories (BTL) Product Listing.
3. Application Specific Controllers (ASCs): Each ASC shall conform to BACnet Application Specific Controller (B-ASC) device profile as specified in ANSI/ASHRAE 135, BACnet Annex L and shall be listed as a certified B-ASC in the BACnet Testing Laboratories (BTL) Product Listing.
4. Smart Sensors (SSs): Each SS shall conform to BACnet Smart Sensor (B-SS) device profile as specified in ANSI/ASHRAE 135, BACnet Annex L and shall be listed as a certified B-SS in the BACnet Testing Laboratories (BTL) Product Listing.
5. BACnet Communication:
 - a. Each BC shall reside on or be connected to a BACnet network using ISO 8802-3 (Ethernet) Data Link/Physical layer protocol and BACnet/IP addressing.
 - b. BACnet routing shall be performed by BCs or other BACnet device routers as necessary to connect BCs to networks of AACs and ASCs.
 - c. Each AAC shall reside on a BACnet network using ISO 8802-3 (Ethernet) Data Link/Physical layer protocol with BACnet/IP addressing, or it shall reside on a BACnet network using the ARCNET or MS/TP Data Link/Physical layer protocol.
 - d. Each ASC shall reside on a BACnet network using the ARCNET or MS/TP Data Link/Physical layer protocol.
 - e. Each SA shall reside on a BACnet network using the ARCNET or MS/TP Data Link/Physical layer protocol.
 - f. Each SS shall reside on a BACnet network using ISO 8802-3 (Ethernet) Data Link/Physical layer protocol with BACnet/IP addressing, or it shall

reside on a BACnet network using ARCNET or MS/TP Data Link/Physical layer protocol.

B. Communication:

1. Service Port. Each controller shall provide a service communication port for connection to a Portable Operator's Terminal. Connection shall be extended to space temperature sensor ports where shown on drawings.
2. Signal Management. BC and ASC operating systems shall manage input and output communication signals to allow distributed controllers to share real and virtual object information and to allow for central monitoring and alarms.
3. Data Sharing. Each BC and AAC shall share data as required with each networked BC and AAC.
4. Stand-Alone Operation. Each piece of equipment specified in Sequence of Operations shall be controlled by a single controller to provide stand-alone control in the event of communication failure. All I/O points specified for a piece of equipment shall be integral to its controller. Provide stable and reliable stand-alone control using default values or other method for values normally read over the network such as outdoor air conditions, supply air or water temperature coming from source equipment, etc.

C. Environment: Controller hardware shall be suitable for anticipated ambient conditions.

1. Controllers used outdoors or in wet ambient conditions shall be mounted in waterproof enclosures and shall be rated for operation at -20°F to 140°F.
2. Controllers used in conditioned space shall be mounted in dust-protective enclosures and shall be rated for operation 32°F to 120°F.

D. Real-Time Clock: Controllers that perform scheduling shall have a real-time clock.

E. Serviceability: Provide diagnostic LEDs for power, communication, and processor. All wiring connections shall be made to a field-removable modular terminal strip or to a termination card connected by a ribbon cable. Each BC and AAC shall continually check its processor and memory circuit status and shall generate an alarm on abnormal operation. System shall continuously check controller network and generate alarm for each controller that fails to respond.

F. Memory:

1. Controller memory shall support operating system, database, and programming requirements.
2. Each BC and AAC shall retain BIOS and application programming for at least 72 hours in the event of power loss.
3. Each ASC and SA shall use nonvolatile memory and shall retain BIOS and application programming in the event of power loss. System shall automatically download dynamic control parameters following power loss.

G. Immunity to Power and Noise: Controllers shall be able to operate at 90% to 110% of nominal voltage rating and shall perform an orderly shutdown below 80% nominal voltage. Operation shall be protected against electrical noise of 5 to 120 Hz and from keyed radios up to 5 W at 1 m (3 ft.).

H. Transformer: ASC power supply shall be fused or current limiting and shall be rated at a minimum of 125% of ASC power consumption.

2.06 AUXILIARY CONTROL DEVICES:

A. Motorized Control Dampers, unless otherwise specified elsewhere, shall be as follows:

1. Type: Control dampers shall be the parallel or opposed-blade type as specified below or as scheduled on drawings.
2. Outdoor and return air mixing dampers and face-and-bypass dampers shall be parallel-blade and shall direct airstreams toward each other.
3. Other modulating dampers shall be opposed-blade.
4. Two-position shutoff dampers shall be parallel- or opposed-blade with blade and side seals.

B. Temperature Sensors:

1. Type: Temperature sensors shall be Resistance Temperature Device (RTD) or thermistor.
2. Duct Sensors: Duct sensors shall be single point or averaging as shown. Averaging sensors shall be a minimum of 5 ft. in length per 10 ft² of duct cross-section.
3. Immersion Sensors: Provide immersion sensors with a separable stainless steel well. Well pressure rating shall be consistent with system pressure it will be immersed in. Well shall withstand pipe design flow velocities.
4. Space Sensors: Space sensors shall have setpoint adjustment, override switch, display, and communication port as shown.
5. Differential Sensors: Provide matched sensors for differential temperature measurement.

C. Humidity Sensors:

1. Duct and room sensors shall have a sensing range of 20%–80%.
2. Duct sensors shall have a sampling chamber.
3. Outdoor air humidity sensors shall have a sensing range of 20%–95% RH and shall be suitable for ambient conditions of -40°F to 170°F.
4. Humidity sensors shall not drift more than 1% of full scale annually.

D. Relays:

1. Control Relays: Control relays shall be plug-in type, UL listed, and shall have dust cover and LED “energized” indicator. Contact rating, configuration, and coil voltage shall be suitable for application.
2. Time Delay Relays: Time delay relays shall be solid-state plug-in type, UL listed, and shall have adjustable time delay. Delay shall be adjustable $\pm 100\%$ from setpoint shown. Contact rating, configuration, and coil voltage shall be suitable for application. Provide NEMA 1 enclosure for relays not installed in local control panel.

E. Voltage Transmitters:

1. AC voltage transmitters shall be self-powered single-loop (two-wire) type, 4–20 mA output with zero and span adjustment.
2. Adjustable full-scale unit ranges shall be 100–130 Vac, 200–250 Vac, 250–330 Vac, and 400–600 Vac. Unit accuracy shall be $\pm 1\%$ full-scale at 500 ohm maximum burden.
3. Transmitters shall meet or exceed ANSI/ISA S50.1 requirements and shall be UL/CSA recognized at 600 Vac rating.

- F. Voltage Transformers:
1. AC voltage transformers shall be UL/CSA recognized, 600 Vac rated, and shall have built-in fuse protection.
 2. Transformers shall be suitable for ambient temperatures of 40°F–130°F and shall provide $\pm 0.5\%$ accuracy at 24 Vac and 5 VA load.
 3. Windings (except for terminals) shall be completely enclosed with metal or plastic.
- G. Power Monitors:
1. Selectable rate pulse output for kWh reading, 4–20 mA output for kW reading, N.O. alarm contact, and ability to operate with 5.0 amp current inputs or 0–0.33 volt inputs.
 2. 1.0% full-scale true RMS power accuracy, ± 0.5 Hz, voltage input range 120–600 V, and auto range select.
 3. Under voltage/phase monitor circuitry.
 4. NEMA 1 enclosure.
 5. Current transformers having a 0.5% FS accuracy, 600 VAC isolation voltage with 0–0.33 V output. If 0–5 A current transformers are provided, a three-phase disconnect/shorting switch assembly is required.
- H. Current Switches:
1. Current-operated switches shall be self-powered, solid-state with adjustable trip current. Select switches to match application current and DDC system output requirements.
- I. Pressure Transducers:
1. Transducers shall have linear output signal and field-adjustable zero and span.
 2. Transducer sensing elements shall withstand continuous operating conditions of positive or negative pressure 50% greater than calibrated span without damage.
- J. Local Control Panels:
1. All indoor control cabinets shall be fully enclosed NEMA 1 construction with (hinged door) key-lock latch and removable subpanels. A single key shall be common to all field panels and subpanels.
 2. Interconnections between internal and face-mounted devices shall be prewired with color-coded stranded conductors neatly installed in plastic troughs and/or tie-wrapped. Terminals for field connections shall be UL listed for 600 volt service, individually identified per control/ interlock drawings, with adequate clearance for field wiring. Control terminations for field connection shall be individually identified per control drawings.
 3. Provide ON/OFF power switch with overcurrent protection for control power sources to each local panel.

2.07 WIRING AND RACEWAYS:

- A. General. Provide copper wiring, plenum cable, and raceways as specified in applicable sections of Division 16.
- B. Insulated wire shall use copper conductors and shall be UL listed for 200°F minimum service.

2.08 FIBER OPTIC CABLE SYSTEM:

- A. Optical Cable: Optical cables shall be duplex 900 mm tight-buffer construction designed for intra-building environments. Sheath shall be UL listed OFNP in accordance with NEC Article 770. Optical fiber shall meet the requirements of FDDI, ANSI X3T9.5 PMD for 62.5/125mm.
- B. Connectors: Field terminate optical fibers with ST type connectors. Connectors shall have ceramic ferrules and metal bayonet latching.

PART 3 - EXECUTION

3.01 EXAMINATION:

- A. The contractor shall inspect the site to verify that equipment may be installed as shown. Any discrepancies, conflicts, or omissions shall be reported to the engineer for resolution before rough-in work is started.
- B. The contractor shall examine the drawings and specifications for other parts of the work. If head room or space conditions appear inadequate—or if any discrepancies occur between the plans and the contractor’s work and the plans and the work of others—the contractor shall report these discrepancies to the engineer and shall obtain written instructions for any changes necessary to accommodate the contractor’s work with the work of others. Any changes in the work covered by this specification made necessary by the failure or neglect of the contractor to report such discrepancies shall be made by—and at the expense of—this contractor.

3.02 PROTECTION:

- A. The contractor shall protect all work and material from damage by his/her work or employees and shall be liable for all damage thus caused.
- B. The contractor shall be responsible for his/her work and equipment until finally inspected, tested, and accepted. The contractor shall protect any material that is not immediately installed. The contractor shall close all open ends of work with temporary covers or plugs during storage and construction to prevent entry of foreign objects.

3.03 COORDINATION:

- A. Site:
 - 1. Where the mechanical work will be installed in close proximity to, or will interfere with, work of other trades, the contractor shall assist in working out space conditions to make a satisfactory adjustment. If the contractor installs his/her work before coordinating with other trades, so as to cause any interference with work of other trades, the contractor shall make the necessary changes in his/her work to correct the condition without extra charge.
 - 2. Coordinate and schedule work with other work in the same area and with work dependent upon other work to facilitate mutual progress.
- B. Test and Balance:
 - 1. The contractor shall furnish a single set of all tools necessary to interface to the control system for test and balance purposes.
 - 2. The contractor shall provide training in the use of these tools. This training will be

planned for a minimum of 4 hours.

3. In addition, the contractor shall provide a qualified technician to assist in the test and balance process, until the first 20 units are balanced.
4. The tools used during the test and balance process will be returned at the completion of the testing and balancing.

C. Life Safety:

1. Duct smoke detectors required for air handler shutdown are provided under Division 16. Interlock smoke detectors to air handlers for shutdown as specified in Sequences of Operation.
2. Smoke dampers and actuators required for duct smoke isolation are provided under Division 15. Interlock smoke dampers to air handlers as specified in Sequences of Operation.
3. Fire and smoke dampers and actuators required for fire-rated walls are provided under Division 15. Fire and smoke damper control is provided under Division 16.

D. Coordination with controls specified in other sections or divisions. Other sections and/or divisions of this specification include controls and control devices that are to be part of or interfaced to the control system specified in this section. These controls shall be integrated into the system and coordinated by the contractor as follows:

1. All communication media and equipment shall be provided as specified in Communication.
2. Each supplier of a controls product is responsible for the configuration, programming, start up, and testing of that product to meet the Sequences of Operation.
3. The contractor shall coordinate and resolve any incompatibility issues that arise between control products provided under this section and those provided under other sections or divisions of this specification.
4. The contractor is responsible for providing all controls described in the contract documents regardless of where within the contract documents these controls are described.
5. The contractor is responsible for the interface of control products provided by multiple suppliers regardless of where this interface is described within the contract documents.

3.04 GENERAL WORKMANSHIP:

- A. Install equipment, piping, and wiring/raceway parallel to building lines (i.e. horizontal, vertical, and parallel to walls) wherever possible.
- B. Provide sufficient slack and flexible connections to allow for vibration of piping and equipment.
- C. Install equipment in readily accessible locations as defined by Chapter 1 Article 100 Part A of the National Electrical Code (NEC).
- D. Verify integrity of all wiring to ensure continuity and freedom from shorts and grounds.
- E. All equipment, installation, and wiring shall comply with industry specifications and standards for performance, reliability, and compatibility and be executed in strict adherence to local codes and standard practices.

3.05 FIELD QUALITY CONTROL:

- A. All work, materials, and equipment shall comply with rules and regulations of applicable local, state, and federal codes and ordinances as identified in Codes and Standards.
- B. Contractor shall continually monitor the field installation for code compliance and quality of workmanship.
- C. Contractor shall have work inspection by local and/or state authorities having jurisdiction over the work.

3.06 WIRING:

- A. All control and interlock wiring shall comply with national and local electrical codes, and Division 16 of this specification. Where the requirements of this section differ from Division 16, the requirements of this section shall take precedence.
- B. All NEC Class 1 (line voltage) wiring shall be UL listed in approved raceway according to NEC and Division 26 requirements.
- C. All low-voltage wiring shall meet NEC Class 2 requirements. Low-voltage power circuits shall be subfused when required to meet Class 2 current limit.
- D. Where NEC Class 2 (current-limited) wires are in concealed and accessible locations, including ceiling return air plenums, approved cables not in raceway may be used provided that cables are UL listed for the intended application.
- E. All wiring in mechanical, electrical, or service rooms – or where subject to mechanical damage – shall be installed in raceway at levels below 10ft.
- F. Do not install Class 2 wiring in raceways containing Class 1 wiring. Boxes and panels containing high-voltage wiring and equipment may not be used for low-voltage wiring except for the purpose of interfacing the two (e.g. relays and transformers).
- G. Do not install wiring in raceway containing tubing.
- H. Where Class 2 wiring is run exposed, wiring is to be run parallel along a surface or perpendicular to it and neatly tied at 10 ft intervals.
- I. Where plenum cables are used without raceway, they shall be supported from or anchored to structural members. Cables shall not be supported by or anchored to ductwork, electrical raceways, piping, or ceiling suspension systems.
- J. All wire-to-device connections shall be made at a terminal block or terminal strip. All wire-to-wire connections shall be at a terminal block.
- K. All wiring within enclosures shall be neatly bundled and anchored to permit access and prevent restriction to devices and terminals.
- L. Maximum allowable voltage for control wiring shall be 120 V. If only higher voltages are available, the contractor shall provide step-down transformers.
- M. All wiring shall be installed as continuous lengths, with no splices permitted between termination points.
- N. Install plenum wiring in sleeves where it passes through walls and floors. Maintain fire rating at all penetrations.

- O. Size of raceway and size and type of wire type shall be the responsibility of the contractor in keeping with the manufacturer's recommendations and NEC requirements, except as noted elsewhere.
- P. Include one pull string in each raceway 1 in. or larger.
- Q. Use color-coded conductors throughout with conductors of different colors.
- R. Control and status relays are to be located in designated enclosures only. These enclosures include packaged equipment control panel enclosures unless they also contain Class 1 starters.
- S. Conceal all raceways except within mechanical, electrical, or service rooms. Install raceway to maintain a minimum clearance of 6 in. from high-temperature equipment (e.g. steam pipes or flues).
- T. Secure raceways with raceway clamps fastened to the structure and spaced according to code requirements. Raceways and pull boxes may not be hung on flexible duct strap or tie rods. Raceways may not be run on or attached to ductwork.
- U. Adhere to this specification's Division 26 requirements where raceway crosses building expansion joints.
- V. Install insulated bushings on all raceway ends and openings to enclosures. Seal top end of vertical raceways.
- W. The contractor shall terminate all control and/or interlock wiring and shall maintain updated (as-built) wiring diagrams with terminations identified at the job site.
- X. Flexible metal raceways and liquid-tight flexible metal raceways shall not exceed 3 ft in length and shall be supported at each end. Flexible metal raceway less than ½ in. electrical trade size shall not be used. In areas exposed to moisture, liquid-tight, flexible metal raceways shall be used.
- Y. Raceway must be rigidly installed, adequately supported, properly reamed at both ends, and left clean and free of obstructions. Raceway sections shall be joined with couplings (according to code). Terminations must be made with fittings at boxes, and ends not terminating in boxes shall have bushings installed.

3.07 COMMUNICATION WIRING:

- A. The contractor shall adhere to the items listed in the "Wiring" article in Part 3 of the specification.
- B. All cabling shall be installed in a neat and workmanlike manner. Follow manufacturer's installation recommendations for all communication cabling.
- C. Do not install communication wiring in raceways and enclosures containing Class 1 or other Class 2 wiring.
- D. Maximum pulling, tension, and bend radius for the cable installation, as specified by the cable manufacturer, shall not be exceeded during installation.
- E. Contractor shall verify the integrity of the entire network following cable installation. Use appropriate test measures for each particular cable.

- F. When a cable enters or exits a building, a lightning arrestor must be installed between the lines and ground. The lightning arrestor shall be installed according to manufacturer's instructions.
- G. All runs of communication wiring shall be unspliced length when that length is commercially available.
- H. All communication wiring shall be labeled to indicate origination and destination data.
- I. All communication wiring shall be labeled to indicate origination and destination data.
- J. Grounding of coaxial cable shall be in accordance with NEC regulations article on "Communications Circuits, Cable, and Protector Grounding."
- K. BACnet MS/TP communications wiring shall be installed in accordance with ASHRAE/ANSI Standard 135. This includes but is not limited to:
 - 1. The network shall use shielded, twisted-pair cable with characteristic impedance between 100 and 120 ohms. Distributed capacitance between conductors shall be less than 30 pF per foot.
 - 2. The maximum length of an MS/TP segment is 4000 ft with AWG 18 cable. The use of greater distances and/or different wire gauges shall comply with the electrical specifications of EIA-485.
 - 3. The maximum number of nodes per segment shall be 32, as specified in the EIA 485 standard. Additional nodes may be accommodated by the use of repeaters.
 - 4. An MS/TP EIA-485 network shall have no T connections.

3.08 FIBER OPTIC CABLE:

- A. Maximum pulling tensions as specified by the cable manufacturer shall not be exceeded during installation. Post-installation residual cable tension shall be within cable manufacturer's specifications.
- B. All cabling and associated components shall be installed in accordance with manufacturers' instructions. Minimum cable and unjacketed fiber bend radii, as specified by cable manufacturer, shall be maintained.

3.09 INSTALLATION OF SENSORS:

- A. Install sensors in accordance with the manufacturer's recommendations.
- B. Mount sensors rigidly and adequately for environment within which the sensor operates.
- C. Room temperature sensors shall be installed on concealed junction boxes properly supported by wall framing.
- D. All wires attached to sensors shall be sealed in their raceways or in the wall to stop air transmitted from other areas from affecting sensor readings.
- E. Sensors used in mixing plenums and hot and cold decks shall be of the averaging type. Averaging sensors shall be installed in a serpentine manner vertically across the duct. Each bend shall be supported with a capillary clip.
- F. Low-limit sensors used in mixing plenums shall be installed in a serpentine manner horizontally across duct. Each bend shall be supported with a capillary clip. Provide 1 ft of

sensing element for each 1 ft² of coil area.

- G. Install outdoor air temperature sensors on north wall, complete with sun shield at designated location.

3.10 ACTUATORS:

- A. General: Mount and link control damper actuators according to manufacturer's instructions.
 - 1. To compress seals when spring-return actuators are used on normally closed dampers, power actuator to approximately 5° open position, manually close the damper, and then tighten the linkage.
 - 2. Check operation of damper/actuator combination to confirm that actuator modulates damper smoothly throughout stroke to both open and closed positions.
 - 3. Provide all mounting hardware and linkages for actuator installation.
- B. Electric/Electronic:
 - 1. Dampers: Actuators shall be direct mounted on damper shaft or jackshaft unless shown as a linkage installation. For low-leakage dampers with seals, the actuator shall be mounted with a minimum 5° travel available for tightening the damper seal. Actuators shall be mounted following manufacturer's recommendations.

3.11 WARNING LABELS:

- A. Permanent warning labels shall be affixed to all equipment that can be automatically started by the control system.
 - 1. Labels shall use white lettering (12-point type or larger) on a red background.
 - 2. Warning labels shall read as follows.

CAUTION

This equipment is operating under automatic control and may start or stop at any time without warning. Switch disconnect to "Off" position before servicing.

- B. Permanent warning labels shall be affixed to all motor starters and control panels that are connected to multiple power sources utilizing separate disconnects.
 - 1. Labels shall use white lettering (12-point type or larger) on a red background.
 - 2. Warning labels shall read as follows.

CAUTION

This equipment is fed from more than one power source with separate disconnects. Disconnect all power sources before servicing.

3.12 IDENTIFICATION OF HARDWARE AND WIRING:

- A. All wiring and cabling, including that within factory-fabricated panels shall be labeled at each end within 2 in. of termination with control system address or termination number.
- B. Permanently label or code each point of field terminal strips to show the instrument or item served.
- C. Identify control panels with minimum ½ in. letters on laminated plastic nameplates.

- D. Identify all other control components with permanent labels. All plug-in components shall be labeled such that label removal of the component does not remove the label.
- E. Identify room sensors related to terminal boxes or valves with nameplates.
- F. Manufacturers' nameplates and UL or CSA labels shall be visible and legible after equipment is installed.
- G. Identifiers shall match record documents.

3.13 CONTROLLERS:

- A. Provide a separate controller for each HVAC system. A DDC controller may control more than one system provided that all points associated with the system are assigned to the same DDC controller. Points used for control loop reset, such as outside air or space temperature, are exempt from this requirement.
- B. Building Controllers and Custom Application Controllers shall be selected to provide the required I/O point capacity required to monitor all of the hardware points listed in Sequences of Operation.

3.14 PROGRAMMING:

- A. Provide sufficient internal memory for the specified sequences of operation and trend logging.
- B. Point Naming: Name points as shown on the equipment points list provided with each sequence of operation. See Sequences of Operation. If character limitations or space restrictions make it advisable to shorten the name, abbreviations may be used. Where multiple points with the same name reside in the same controller, each point name may be customized with its associated Program Object number. For example, "Zone Temp 1" for Zone 1, "Zone Temp 2" for Zone 2.
- C. Software Programming: Provide programming for the system and adhere to the sequences of operation provided. All other system programming necessary for the operation of the system, but not specified in this document, also shall be provided by the contractor. Embed into the control program sufficient comment statements to clearly describe each section of the program. The comment statements shall reflect the language used in the sequences of operation. Use the appropriate technique based on the following programming types:
 - 1. Text-based:
 - a. Must provide actions for all possible situations
 - b. Must be modular and structured
 - c. Must be commented
 - d. Graphic-based:
 - e. Must provide actions for all possible situations
 - f. Must be documented
 - 2. Parameter-based:
 - a. Must provide actions for all possible situations
 - b. Must be documented.
- D. Operator Interface:
 - 1. Standard Graphics. Provide graphics for all mechanical systems and floor plans of

the building. This includes each, air handler, split system, wall hung heat pump, exhaust fan and ceiling heater. Point information on the graphic displays shall dynamically update. Show on each graphic all input and output points for the system. Also show relevant calculated points such as setpoints. As a minimum, show on each equipment graphic the input and output points and relevant calculated points.

2. The contractor shall provide all the labor necessary to install, initialize, start up, and troubleshoot all operator interface software and its functions as described in this section. This includes any operating system software, the operator interface database, and any third-party software installation and integration required for successful operation of the operator interface.

3.15 CONTROL SYSTEM CHECKOUT AND TESTING:

- A. Startup Testing: All testing listed shall be performed by the contractor and shall make up part of the necessary verification of an operating control system. This testing shall be completed before the owner's representative is notified of the system demonstration.
 1. The contractor shall furnish all labor and test apparatus required to calibrate and prepare for service of all instruments, controls, and accessory equipment furnished under this specification.
 2. Verify that all control wiring is properly connected and free of all shorts and ground faults. Verify that terminations are tight.
 3. Enable the control systems and verify calibration of all input devices individually. Perform calibration procedures according to manufacturers' recommendations.
 4. Verify that all binary output devices (relays, solenoid valves, two-position actuators and control valves, magnetic starters, etc.) operate properly and that the normal positions are correct.
 5. Verify that all analog output devices (I/Ps, actuators, etc.) are functional, that start and span are correct, and that direction and normal positions are correct. The contractor shall check all control valves and automatic dampers to ensure proper action and closure. The contractor shall make any necessary adjustments to valve stem and damper blade travel.
 6. Verify that the system operation adheres to the sequences of operation. Simulate and observe all modes of operation by overriding and varying inputs and schedules. Tune all DDC loops.
 7. Alarms and Interlocks:
 - a. Check each alarm separately by including an appropriate signal at a value that will trip the alarm.
 - b. Interlocks shall be tripped using field contacts to check the logic, as well as to ensure that the fail-safe condition for all actuators is in the proper direction.
 - c. Interlock actions shall be tested by simulating alarm conditions to check the initiating value of the variable and interlock action.

3.16 CONTROL SYSTEM DEMONSTRATION AND ACCEPTANCE:

- A. Demonstration:
 1. Prior to acceptance, the control system shall undergo a series of performance tests to verify operation and compliance with this specification. These tests shall occur after the Contractor has completed the installation, started up the system, and performed his/her own tests.
 2. The tests described in this section are to be performed in addition to the tests that

the contractor performs as a necessary part of the installation, start-up, and debugging process and as specified in the "Control System Checkout and Testing" article in Part 3 of this specification. The engineer will be present to observe and review these tests. The engineer shall be notified at least 10 days in advance of the start of the testing procedures.

3. The demonstration process shall follow that approved in Part 1, "Submittals." The approved checklists and forms shall be completed for all systems as part of the demonstration.
4. The contractor shall provide at least two persons equipped with two-way communication and shall demonstrate actual field operation of each control and sensing point for all modes of operation including day, night, occupied, unoccupied, fire/smoke alarm, seasonal changeover, and power failure modes. The purpose is to demonstrate the calibration, response, and action of every point and system. Any test equipment required to prove the proper operation shall be provided by and operated by the contractor.
5. As each control input and output is checked, a log shall be completed showing the date, technician's initials, and any corrective action taken or needed.
6. Demonstrate compliance with Part 1, "System Performance."
7. Demonstrate compliance with sequences of operation through all modes of operation.
8. Demonstrate complete operation of operator interface.
9. Additionally, the following items shall be demonstrated:
 - a. DDC loop response. The contractor shall supply trend data output in a graphical form showing the step response of each DDC loop. The test shall show the loop's response to a change in set point, which represents a change of actuator position of at least 25% of its full range. The sampling rate of the trend shall be from 10 seconds to 3 minutes, depending on the speed of the loop. The trend data shall show for each sample the set point, actuator position, and controlled variable values. Any loop that yields unreasonably under-damped or over-damped control shall require further tuning by the Contractor.
 - b. Demand limiting. The contractor shall supply a trend data output showing the action of the demand limiting algorithm. The data shall document the action on a minute-by-minute basis over at least a 30-minute period. Included in the trend shall be building kW, demand limiting set point, and the status of sheddable equipment outputs.
 - c. Optimum start/stop. The contractor shall supply a trend data output showing the capability of the algorithm. The change-of-value or change-of-state trends shall include the output status of all optimally started and stopped equipment, as well as temperature sensor inputs of affected areas.
 - d. Interface to the building fire alarm system.
 - e. Operational logs for each system that indicate all set points, operating points, valve positions, mode, and equipment status shall be submitted to the architect/engineer. These logs shall cover three 48-hour periods and have a sample frequency of not more than 10 minutes. The logs shall be provided in both printed and disk formats.
10. Any tests that fail to demonstrate the operation of the system shall be repeated at a later date. The contractor shall be responsible for any necessary repairs or revisions to the hardware or software to successfully complete all tests.

B. Acceptance:

1. All tests described in this specification shall have been performed to the satisfaction of both the engineer and owner prior to the acceptance of the control system

as meeting the requirements of completion. Any tests that cannot be performed due to circumstances beyond the control of the contractor may be exempt from the completion requirements if stated as such in writing by the engineer. Such tests shall then be performed as part of the warranty.

2. The system shall not be accepted until all forms and checklists completed as part of the demonstration are submitted and approved as required in Part 1, "Submittals."

3.17 CLEANING:

- A. The contractor shall clean up all debris resulting from his/her activities daily. The contractor shall remove all cartons, containers, crates, etc., under his/her control as soon as their contents have been removed. Waste shall be collected and placed in a designated location.
- B. At the completion of work in any area, the contractor shall clean all work, equipment, etc., keeping it free from dust, dirt, and debris, etc.
- C. At the completion of work, all equipment furnished under this section shall be checked for paint damage, and any factory-finished paint that has been damaged shall be repaired to match the adjacent areas. Any cabinet or enclosure that has been deformed shall be replaced with new material and repainted to match the adjacent areas.

3.18 TRAINING:

- A. Provide training for a designated staff of Owner's representatives. Training shall be provided via self-paced training, web-based or computer-based training, classroom training, or a combination of training methods.
- B. Classroom training shall be done using a network of working controllers representative of installed hardware.

3.19 DUCT SMOKE DETECTION:

- A. Submit data for coordination of duct smoke detector interface to HVAC systems as required in Part 1, "Submittals."
- B. This Contractor shall provide a dry-contact alarm output in the same room as the HVAC equipment to be controlled.

3.20 CONTROLS COMMUNICATION PROTOCOL:

- A. General: The electronic controls packaged with this equipment shall communicate with the building direct digital control (DDC) system. The DDC system shall communicate with these controls to read the information and change the control setpoints as shown in the points list, sequences of operation, and control schematics. The information to be communicated between the DDC system and these controls shall be in the standard object format as defined in ANSI/ASHRAE Standard 135 (BACnet). Controllers shall communicate with other BACnet objects on the internetwork using the Read (Execute) Property service as defined in Clause 15.5 of Standard 135.
- B. Distributed Processing: The controller shall be capable of stand-alone operation and shall continue to provide control functions if the network connection is lost.

- C. I/O Capacity: The controller shall contain sufficient I/ O capacity to control the target system.
- D. The Controller shall have a physical connection for a laptop computer or a portable operator's tool.
- E. Environment: The hardware shall be suitable for the anticipated ambient conditions.
 - 1. Controllers used outdoors and/or in wet ambient conditions shall be mounted within waterproof enclosures and shall be rated for operation at 40°F to 140°F.
 - 2. Controllers used in conditioned space shall be mounted in dust-proof enclosures and shall be rated for operation at 32°F to 120°F.
- F. Serviceability: Provide diagnostic LEDs for power, communication, and processor. All wiring connections shall be made to field removable, modular terminal strips or to a termination card connected by a ribbon cable.
- G. Memory: The Controller shall maintain all BIOS and programming information in the event of a power loss for at least 30 days.
- H. Power: Controller shall be able to operate at 90% to 110% of nominal voltage rating.
- I. Transformer: Power supply for the Controller must be rated at minimum of 125% of ASC power consumption and shall be fused or current limiting type.

3.21 START-UP AND CHECKOUT PROCEDURES:

- A. Start up, check out, and test all hardware and software and verify communication between all components.
 - 1. Verify that all control wiring is properly connected and free of all shorts and ground faults. Verify that terminations are tight.
 - 2. Verify that all analog and binary input/output points read properly.
 - 3. Verify alarms and interlocks.
 - 4. Verify operation of the integrated system.

PART 4 - SEQUENCE OF OPERATION

4.01 Wall Hung Heat Pumps

- A. Wall Hung Heat Pump units shall be enabled/disabled by the BAS, based on a time scheduled as directed by the owner.
- B. Once the units are enabled, they should operate under their internal controls to maintain temperature and humidity setpoints. Temperature setpoints shall be controlled by the BAS.
- C. Occupied Mode: The supply fan shall run continuously with a BAS master setpoint of 75°F cooling and 69°F heating.
- D. Unoccupied Mode (night setback): The supply fan shall run intermittently and maintain 85°F (adj.) space cooling setpoint and 55°F (adj.) space heating setpoint.
- E. High Zone Temp Alarm: If the zone temperature is greater than the cooling setpoint by a user definable amount (adj.).

- F. Low Zone Temp Alarm: If the zone temperature is less than the heating setpoint by a user definable amount (adj.).
- G. Zone Setpoint Adjust: The occupant shall be able to adjust the BAS master setpoint by + or - 2°F.
- H. The outside and exhaust air dampers shall close and the return air damper shall open when the unit is off. The mixed air damper shall operate as described in the occupied mode except that the outside air damper shall modulate to fully closed.
- I. Minimum Outside Air Ventilation - Fixed Percentage: The outside air dampers shall maintain a minimum position (adj.) during building occupied hours and be closed during unoccupied hours.
- J. Energy Recovery Ventilator – The energy wheel shall run continuously when the unit is operating.
- K. Dehumidification: The wall mounted humidistat shall maintain 60% RH (adj) Space humidity. If the space relative humidity rises above set point, the unit shall energize the hot gas solenoid valve, and the cooling shall be on, until the space humidity falls below set-point. Dehumidification shall be enabled whenever the supply fan status is on. Cooling mode will override the humidity mode.

Point Name	Hardware Points				Software Points						Show On Graphic
	AI	AO	BI	BO	AV	BV	Loop	Sch.	Trend	Alarm	
Zone Temp	x								x		x
Zone Setpoint Adjust	x										x
Space Humidity	x								x		x
Supply Air Smoke Detector			x						x	x	x
Dehumidification Setpoint					x				x		x
Schedule								x			
Heating Setpoint									x		x
Cooling Setpoint									x		x

4.02 Gas Split System Unit Controls Sequence

- A. Occupied Mode: The supply fan shall run continuously with a BAS master setpoint of 75°F cooling and 69°F heating.
- B. Unoccupied Mode (night setback): The supply fan shall run intermittently and maintain 85°F (adj.) space cooling setpoint and 55°F (adj.) space heating setpoint.
- C. High Zone Temp Alarm: If the zone temperature is greater than the cooling setpoint by a user definable amount (adj.).
- D. Low Zone Temp Alarm: If the zone temperature is less than the heating setpoint by a user definable amount (adj.).

- E. Zone Setpoint Adjust: The occupant shall be able to adjust the BAS master setpoint by + or - 2°F.
- F. Zone Optimal Start: The unit shall use an optimal start algorithm for morning start-up. This algorithm shall minimize the unoccupied warm-up or cool-down period while still achieving comfort conditions by the start of scheduled occupied period.
- G. Zone Unoccupied Override: A timed local override control shall allow an occupant to override the schedule and place the unit into an occupied mode for an adjustable period of time. At the expiration of this time, control of the unit shall automatically return to the schedule.
- H. Emergency Shutdown: The unit shall shut down and generate an alarm upon receiving an emergency shutdown signal.
- I. Supply Air Smoke Detection: The unit shall shut down and generate an alarm upon receiving a supply air smoke detector status.
- J. Alarms shall be provided as follows:
 - 1. Supply Fan Failure: Commanded on, but the status is off.
 - 2. Supply Fan in Hand: Commanded off, but the status is on.
 - 3. Supply Fan Runtime Exceeded: Status runtime exceeds a user definable limit (adj.).
- K. Cooling (AHU-1 ONLY): The controller shall measure the zone temperature and energize the cooling to maintain its cooling setpoint. To prevent short cycling, there shall be a user definable (adj.) delay between starts, and each start shall have a user definable (adj.) minimum runtime. Cooling shall be enabled whenever outside air temperature is greater than 45°F (adj.) and the economizer is disabled or fully open and the zone temperature is above cooling setpoint and the supply fan status is on and the heating is not active.
- L. Cooling Stages (AHU-2 ONLY): The controller shall measure the zone temperature and stage the cooling to maintain its cooling setpoint. To prevent short cycling, there shall be a user definable (adj.) delay between stages, and each stage shall have a user definable (adj.) minimum runtime. Cooling shall be enabled whenever outside air temperature is greater than 45°F (adj.) and the economizer is disabled or fully open and the zone temperature is above cooling setpoint and the supply fan status is on and the heating is not active.
- M. Gas Heating (AHU-1 ONLY): The controller shall measure the zone temperature and energize the heating to maintain its heating setpoint. To prevent short cycling, there shall be a user definable (adj.) delay between starts, and each start shall have a user definable (adj.) minimum runtime. Heating shall be enabled whenever outside air temperature is less than 65°F (adj.) and the zone temperature is below heating setpoint and the supply fan status is on and the cooling is not active.
- N. Gas Heating Stages (Duct Heater for AHU-2 ONLY): The controller shall measure the zone temperature and stage the heating to maintain its heating setpoint. To prevent short cycling, there shall be a user definable (adj.) delay between stages, and each stage shall have a user definable (adj.) minimum runtime. Heating shall be enabled whenever outside air temperature is less than 65°F (adj.) and the zone temperature is below heating setpoint and the supply fan status is on and the cooling is not active.

- O. Economizer: The controller shall measure the zone temperature and modulate the economizer dampers in sequence to maintain a setpoint 2°F less than the zone cooling setpoint. The outside air dampers shall maintain a minimum adjustable position of 10% (adj.) open whenever occupied. The economizer shall be enabled whenever outside air temperature is less than 55°F (adj.) and the outside air temperature is less than the return air temperature and the supply fan status is on. The economizer shall close whenever mixed air temperature drops from 45°F to 40°F (adj.) or on loss of supply fan status.
- P. The outside and exhaust air dampers shall close and the return air damper shall open when the unit is off. If Optimal Start Up is available, the mixed air damper shall operate as described in the occupied mode except that the outside air damper shall modulate to fully closed.
- Q. Minimum Outside Air Ventilation - Fixed Percentage: The outside air dampers shall maintain a minimum position (adj.) during building occupied hours and be closed during unoccupied hours.
- R. Dehumidification (AHU-2 ONLY): The controller shall measure the Space humidity and sequence to maintain space humidity by energizing the hot gas solenoid valve whenever the humidity in the space is above an adjustable setpoint 60% rh (adj.). Dehumidification shall be enabled whenever the supply fan status is on. Cooling mode will override the humidity mode.
- S. Supply Air Temperature: The controller shall monitor the supply air temperature. Alarms shall be provided for High Supply Air Temp (If the supply air temperature is greater than 125°F (adj.)) and Low Supply Air Temp (If the supply air temperature is less than 35°F (adj.)).

Point Name	Hardware Points				Software Points							Show On Graphic
	AI	AO	BI	BO	AV	BV	Loop	Sch.	Trend	Alarm		
Zone Temp	x								x		x	
Zone Setpoint Adjust	x										x	
Space Humidity	x								x		x	
Return Air Temp	x								x		x	
Supply Air Temp	x								x		x	
Mixed Air Dampers		x							x		x	
Zone Override			x						x		x	
Supply Air Smoke Detector			x						x	x	x	
Supply Fan Status			x						x		x	
Supply Fan Start/Stop				x					x		x	
Cooling Stage 1				x					x		x	
Cooling Stage 2				x					x		x	
Heating Stage 1				x					x		x	
Economizer Zone Temp Setpoint					x				x		x	

Point Name	Hardware Points				Software Points							Show On Graphic
	AI	AO	BI	BO	AV	BV	Loop	Sch.	Trend	Alarm		
Dehumidification Setpoint					x				x		x	
Environmental Index					x				x			
Percent of Time Satisfied					x				x			
Emergency Shutdown						x				x	x	
Schedule								x				
Heating Setpoint									x		x	
Cooling Setpoint									x		x	
High Zone Temp										x		
Low Zone Temp										x		
Supply Fan Failure										x		
Supply Fan in Hand										x		
Supply Fan Runtime Exceeded										x		
Compressor Runtime Exceeded										x		
Final Filter Change Required										x	x	
High Mixed Air Temp										x		
Low Mixed Air Temp										x		
High Return Air Humidity										x		
Low Return Air Humidity										x		
High Return Air Temp										x		
Low Return Air Temp										x		
High Supply Air Temp										x		
Low Supply Air Temp										x		

4.03 Split System Heat Pumps

- A. Split System Heat Pump units shall be enabled/disabled by the BAS, based on a time scheduled as directed by the owner.
- B. Once the units are enabled, , they should operate under their internal controls to maintain temperature and humidity setpoints. Temperature setpoints shall be controlled by the BAS.
- C. Occupied Mode: The supply fan shall run continuously with a BAS master setpoint of 75°F cooling and 69°F heating.
- D. Unoccupied Mode (night setback): The supply fan shall run intermittently and maintain

85°F (adj.) space cooling setpoint and 55°F (adj.) space heating setpoint.

- E. High Zone Temp Alarm: If the zone temperature is greater than the cooling setpoint by a user definable amount (adj.).
- F. Low Zone Temp Alarm: If the zone temperature is less than the heating setpoint by a user definable amount (adj.).
- G. Zone Setpoint Adjust: The occupant shall be able to adjust the BAS master setpoint by + or - 2°F.
- H. Dehumidification (FCU/HP-1 through FCU/HP-5 ONLY): The wall mounted humidistat shall maintain 60% RH (adj) Space humidity. If the space relative humidity rises above set point, the unit shall energize the hot gas solenoid valve, and the cooling shall be on, until the space humidity falls below setpoint. Dehumidification shall be enabled whenever the supply fan status is on. Cooling mode will override the humidity mode.

Point Name	Hardware Points				Software Points							Show On Graphic
	AI	AO	BI	BO	AV	BV	Loop	Sch.	Trend	Alarm		
Zone Temp	x									x		x
Zone Setpoint Adjust	x											x
Space Humidity	x									x		x
Dehumidification Setpoint					x					x		x
Schedule									x			
Heating Setpoint										x		x
Cooling Setpoint										x		x

4.04 Electric Ceiling Heater

- A. The unit will be provided a start stop contact closure for enable and disable of the Unit heater based on occupancy mode and outdoor air temperature lock out.

Point Name	Hardware Points				Software Points							Show On Graphic
	AI	AO	BI	BO	AV	BV	Loop	Sch.	Trend	Alarm		
Enable				x					x			

4.05 Exhaust Fans ON/OFF

- A. Occupied Mode: The exhaust fan shall run continuously during Occupied Mode.
- B. Unoccupied Mode: The exhaust fan shall be “off.”

C. The controller shall monitor the fan status.

D. Alarms shall be provided as follows:

1. Fan Failure: Commanded on, but the status is off.
2. Fan in Hand: Commanded off, but the status is on.
3. Fan Runtime Exceeded: Fan status runtime exceeds a user definable limit (adj.).

Point Name	Hardware Points				Software Points							Show On Graphic
	AI	AO	BI	BO	AV	BV	Loop	Sch.	Trend	Alarm		
Fan Status			x							x		x
Fan Start/Stop				x						x		x
Fan Failure											x	
Fan in Hand											x	
Fan Runtime Exceeded											x	

END OF SECTION

**SECTION 16100
ELECTRICAL**

1. SCOPE:

- 1.1 General: Provide a complete electrical system as described herein and as shown on the drawings.
- 1.2 Items Included: Items under Division 16100 shall include but not be limited to:
 - A. Power and lighting distribution complete in areas to be modified (see drawings) This shall include all raceways, boxes, conductors and disconnect switches for all equipment served. Provide raceways as required for mechanical t-stats and controls.
 - B. Lighting fixtures and lamps.
 - C. Devices and Plates: This shall include all receptacles, light switches, blank plates and cover plates.
 - D. Panelboards – add breakers as indicated. Match existing ratings.
 - E. Conduit system for telephone system, computer data and video distribution.
 - F. Rework existing Fire Alarm wiring as required to accomplish demolition etc. Reprogram as required. Work shall be performed by factory authorized service dealer.

2. APPLICABLE SPECIFICATIONS AND CODES: All work shall conform to the National Electric Code and all local codes and addenda. All materials and equipment included in Underwriter's Label Service shall bear that label. Where requirements of these specifications and the accompanying drawings exceed the codes, conform to these specifications.

3. COMPLETION OF WORK:

- 3.1 Testing: At the completion of work, a test shall be made and the entire system shall be shown to be in perfect working condition. The following shall be made available to personnel conducting the test:
 - A. Electrician with hand tools
 - B. Accurate voltmeter
 - C. Clamp-on ammeter
 - D. Test lamp
 - E. Phase rotation indicator
 - F. Complete electrical specifications and drawings with addenda and revisions.
- 3.2 Submittal: Upon completion of work, submit for approval three bound copies of the following:
 - A. Certificate of final inspection from local authorities

- B. Details of operations and maintenance of equipment. This shall include corrected shop drawings, wiring diagrams, spare parts list and recommended maintenance procedure.
- C. Instructions: After completion and at a time convenient to the Owner, qualified mechanics shall thoroughly familiarize the Owner's personnel with the operation and the maintenance of the items listed under "Submittal".

4. SPACE CONDITIONS: All apparatus shall fit into the available spaces in the building and must be introduced into the building so as not to cause damage to the structure. All equipment requiring service shall be accessible.

5. DRAWINGS: Drawings are diagrammatic and show generally the location of the lighting, lamps, wiring, raceways, switches and accessories and are not to be scaled. All dimensions shall be verified at the building site. Prefabrication of work from drawings shall be at contractor's risk.

6. WORKMANSHIP AND MATERIALS:

6.1 Workmanship: All work necessary to complete the project shall be executed in a thorough, neat and workmanlike manner.

6.2 Materials: All materials shall be new and equipment included in Underwriter's Label Service shall bear that label.

6.3 Substitutions:

A. Where equipment is specified herein or on drawings by manufacturer's names or model numbers, this shall denote minimum requirements as to quality, type, capacity, function and performance.

B. Substitutions of specified items will be considered only if written request has been submitted to the Architect and Engineer for approval at least ten days prior to the receipt of bid proposals. Each request shall include a description of the proposed substitute, the name of material or equipment for which it is to be substituted, drawings, cuts, performance and test data for an evaluation and a statement from the equipment manufacturer's representative that the items to be substituted meet or exceed the specifications of the item substituted for. Requests for substitutions which do not comply with the requirements of this paragraph will not be considered.

6.4 If the substitution is allowed, such approval will be set forth in an addendum. No other substitution shall be allowed. Verbal approval for substitution shall not be valid.

7. SHOP DRAWINGS AND CUTS:

7.1 General:

A. Contractor agrees that the purpose of shop drawing submittals is to demonstrate to the Engineer that the Contractor understands the design concept, that he demonstrate his understanding by indicating which equipment and material he intends to furnish and install and by detailing the fabrication and installation method he intends to use. Approval of shop drawings will be general, is only for conformance with the design concept of the project and in compliance with the information given in the contract document, and is subject to coordination by the Contractor with other trades; it is not an approval of quantities, or dimensions, nor an authorization for extra work. The Engineer's approval of such drawings, schedules or cuts shall not relieve the Contractor from responsibility for deviation

from drawings or specifications, unless he has in writing called the Engineer's attention to such deviation at the time of submission, and has received from the Engineer, in writing, permission for such deviations, nor shall it relieve him from responsibility for errors of any sort in shop drawing or schedules.

B. Shop drawings shall be stamped by the Engineer with the following classifications:

1. REVIEWED [] NO EXCEPTIONS TAKEN: No corrections, no marks. Contractor shall submit copies for distribution.
2. REVIEWED [] MAKE CORRECTIONS NOTED: A few minor corrections. All items may be fabricated as marked up without further resubmission. Submit copies for distribution.
3. REVISE AND RESUBMIT []: Items not noted to be corrected may be fabricated at the Contractor's option. Contractor shall resubmit drawings with corrections noted.
4. NOT REQUIRED BY CONTRACT DOCUMENTS []: Items noted are not required in the contract documents.
5. REJECTED []: Major corrections or not in accordance with the contract documents. No items shall be fabricated. Contractor shall correct and resubmit drawings.

7.2 Preparer's Identification: The name and telephone number of the individual preparing the submittal shall be included on the index sheet so that questions concerning the submittal can be directed to that person.

7.3 Contractor's Approval: Each copy of shop drawings and cuts shall be signed and dated by Contractor as evidence of checking to ensure compliance with plans and specifications.

7.4 Submittals: Shall be assembled, bound in a three-ring binder with an index sheet and shall be submitted at one time unless unavailable drawings would delay project. Partial submittals will be identified as such with a statement as to which equipment is missing, the reason why it is missing, and approximate submittal date of the missing items. Submittals not complying with the provisions of this paragraph will be returned without action.

7.5 Each submittal sheet shall clearly contain the manufacturer's name, model number, and all options included. Extraneous information on each sheet shall be crossed out.

7.6 Submittals shall include but not be limited to:

Panelboards
Circuit Breakers
Disconnect Switches
Starters and Contactors
Wiring Devices and Plates
Lighting Fixtures
Time Clocks
Conduit and Wire

Also provide submittals as required by other sections of these electrical specifications

8. APPARATUS PROVIDED UNDER OTHER SECTIONS:

8.1 General: No roughing shall be done until roughing drawings are furnished.

8.2 Mechanical Equipment:

A. Division 15

- (1) Provide and install all power wiring up to disconnects, starters, contactors, freezestats, firestats and other control devices. Provide conduit, fuses, wiring and disconnect switches.
- (2) Firestats, freezestats, aquastats, emergency shut-down devices and other electrical control devices are furnished and mounted under other sections.
- (3) Coordinate with mechanical drawings and control specifications and provide all junction boxes and raceways as required for all devices indicated by Division 15.

B. Other Equipment (Kitchen equipment, etc.): Connect for operation and provide any appurtenances required for operation. Refer to appropriate sections of these specifications and shop drawings for more details.

C. Coordinate with other trades: In areas where wall cabinets or other equipment is to be installed, coordinate outlet mounting heights and locations with suppliers and installers of that equipment. Report all possible conflicts prior to performance to work.

9. SERVICE:

9.1 General: service is existing - see drawings and coordinate with utility and include any fees required by power company.

9.2 Voltage: 480Y/277V 3-phase 4-wire service w/ dry type transformers to achieve 208Y/120V, 3-phase, 4-wire .

10. CONDUIT:

10.1 General: Conduit shall be galvanized rigid conduit, intermediate metallic conduit or electrical metallic tubing. Conduits 1-1/2" and larger, exposed below 5'-0"; branch conduit to motors, conduits in ground, slabs or walls on or below grade; or exposed to weather shall be IMC or rigid. Elsewhere conduit shall be EMT. Contractor shall have option of providing Schedule 40 PVC with separate ground conductor below floor slab or below grade.

Type 'MC' prewire metal clad shall be acceptable for general power wiring.

10.2 Connectors and Couplings: Same material and finish as raceway. IMC rigid shall be threaded. EMT shall be split-right compression type. Indenter or set screw type are not acceptable.

10.3 Threads: Cut clean and remove rough edges. Running threads shall not be used.

10.4 Pullboxes: Specified in NEC Article 370.

10.5 Insulating Bushings: On all conduits entering raceways, pullboxes, cabinets, stubs, panelboards, switchboard and motor control centers.

10.6 Insulated Throat Connectors: On all EMT connections and on EMT entering outlet boxes, cabinets, panels, switchboard and motor control centers.

- 10.7 Connections to Motors: Where over 18" from walls or column, a vertical conduit, minimum size 3/4" attached to ceiling and floor with wiring into and from this conduit with flexible conduit and condulets.
- 10.8 Metal Conduits in Contact with Ground: Coat complete with two coats of asphaltic paint or use conduit with 20 mil bonded coat of PVC.
- 10.9 Expansion Fittings: APPLETON, CROUSE-HINDS or O.Z. at all expansion joints.
- 10.10 Capping: Cap conduits exposed during construction to prevent entrance of moisture or foreign matter, use T&B Push-Pennies.
- 10.11 Plugging: All conduit runs which extend from interior to exterior of building and those that enter and leave refrigerated spaces shall be sealed to prevent the circulation of air. This shall be done by stuffing the conduit ends with wicking where the conduit run terminates inside the building or outside the refrigerated spaces in the outlet box or panel, as the case may be.
- 10.12 Manufacturers: ALLIED, CLIFTON, CAVALIER, JONES & LAUGHLIN, REPUBLIC, TRIANGLE, WHEATLAND, WHEELING or YOUNGSTOWN.
- 10.13 Conduit Routing:
- A. Clearances: Maintain 3" crossing hot piping and 12" paralleling.
 - B. Concealed: Where possible.
 - C. Exposed Routings: Run parallel or at right angles to the building lines.
 - D. Supports: Individual runs shall be anchored in place within 3' of changes in direction and at intervals not over 8' by means of straps or clamps specifically designed for the purpose. Wire, hanger iron, nails and other means shall not be used. Do not strap to the piping. Multiple runs shall be supported by assemblies or trapeze type hangers to provide a rigid installation. Anchor supports by means of toggle bolts on hollow masonry units, expansion anchors on solid masonry units and machine screws in steel work.
- 10.14 Conduit Color Coding: Paint low voltage conduit in intermediate pattern. (Minimum 4 feet on center with approximate 8" pattern). All junction boxes shall be painted.
- | | |
|-----------------|--------|
| Fire Alarm | Red |
| Intercom | Blue |
| TV Distribution | Yellow |
| Comp/Telephone | Green |
| Security System | Orange |

11. FLEXIBLE CONDUIT:

- 11.1 General: Short lengths for connection to rotating or vibrating machinery or equipment, 6' lengths maximum for connection to lighting troffers. B-X cable is not acceptable. Flexible connections to motors shall not be less than four diameters nor more than 24" in length and shall be liquid tight neoprene coated for motor connections and where subjected to moisture. Provide separate grounding conductor in flexible conduits.
- 11.2 Connectors: Steel, zinc or cadmium plates. Fittings that anchor the conduit by means of set screws are not acceptable.

12. CONDUCTORS (50 TO 600 VOLTS):

- 12.1 General: Minimum size AWG 12 copper with minimum conductance of 98% unless noted otherwise, solid for #10 and smaller, stranded for #8 and larger installed in continuous conduit system.
- 12.2 Taps and Joints: Mechanically and electrically sound. Use 3M Skotchloks or Ideal Wing-Nut for #10 and smaller. BURNDY HYDENT or T&B Color-Keyed on #8 and larger.
- 12.3 Tape: All joints shall be covered with gum tape and taped over with friction tape. Vinyl plastic tape may be used in lieu of gum and friction tape.
- 12.4 Terminal Lugs: Use for connecting conductors larger than #10 and for all multiple connections to terminals. BURNDY HYDENT or T&B Color-Keyed.
- 12.5 Lacing: All wiring in cabinets, panels, pullboxes, junction boxes are to be neatly laced and held with T&B Ty-Raps.
- 12.6 Lubricants: Electro Y-ER-EAS; Ideal Wire-Lube or Minerallac 100.
- 12.7 Use 3/4" tape bands corresponding to color code on all wire not available with factory applied color coding. Color code shall match existing.
- 12.8 Wire Pulling: Not until conduit system is complete.
- 12.9 Conductor insulation, unless noted otherwise:
 - A. No. 8 and smaller: Type "THWN-THHN"
 - B. No. 6 and larger: Type "XHHW"
- 12.10 Manufacturers: ANACONDA, BRAND-REX, COOLYER, CRESCENT, DIAMOND, GENERAL CABLE, GENERAL ELECTRIC, HABIRSHAW, HATFIELD, HAZARD, MANHATTAN, NATIONAL, OKONITE, PIRELLI, ROME, SIMPLEX or TRIANGLE.

13. OUTLET BOXES:

- 13.1 General: Provide outlet boxes for lighting fixtures, wall switches, wall receptacles, etc., of such form and dimensions as to be adapted to their specific usage, location and size and number of conduits connecting thereto.
- 13.2 Concealed:
 - A. Boxes and covers shall be not less than 1/16" thick and firmly anchored in place and shall be provided with approved 3/8" fixtures studs for fixtures. Except as otherwise specified, ceiling outlet boxes need not be provide with plaster rings and shall be 2" deep or more. Junction boxes shall be provided with blank covers painted to match surroundings.
 - B. Ceiling outlet boxes shall be 4" octagonal or 4-11/16" square as specified in NEC due to number of wires, switch and wall receptacles outlet boxes in plastered walls shall be 4" square with standard switch covers. In exposed masonry or tile walls, Steel City Series "GW" boxes in slabs shall be concrete type and where slab is not to be plastered, the plaster covers shall be omitted.
- 13.3 Exposed: Boxes shall be corrosion resistant cast iron.

13.4 Pullboxes: Shall be constructed of code gauge welded and galvanized steel. Such boxes shall be sized in accordance with NEC requirements and shall be furnished without knockouts; holes for raceways shall be drilled on the job.

13.5 Manufacturers:

- A. Concealed: STEEL CITY, APPLETON, NEPCO, RACO or SPRAUGE.
- B. Exposed: CROUSE-HINDS Condulets, APPLETON or PYLE.

13.6 Location:

A. The approximate locations of outlets are shown on the drawings. The exact locations shall be determined at the building. The right is reserved to change without additional cost the location of any outlet a maximum of 10' before it is permanently installed.

B. Unless otherwise indicated or directed, wall outlet boxes shall be placed with bottom or top lines at distances above the finished floor as follows:

Convenience Outlets:	16"
Convenience Outlets (for C.R. TV & Clock)	88"
Convenience Outlets (countertop height) *	
Telephone Outlets:	16"
Television Outlets (classrooms):	88"
Switches:	48" to bottom
Data Outlets:	16" to bottom
Data Outlets (countertop height):	*
Fire Alarm Pull Stations:	48" to top
Fire Alarm Horn/Light:	80" to bottom
Program Clock (in corridor):	104" or 4" below ceiling height
Intercom Push Buttons:	48"
TV/display boxes	see dwgs

*4" above counter backsplash unless noted otherwise - see arch. coordinate

C. Where outlets of different levels are shown adjacent, they shall be installed in one vertical line.

D. At locations where two or more devices are shown adjacent and at the same mounting height, they shall be installed in one outlet box and covered with one face plate.

E. Where outlets are installed in unfinished block or tile partitions, they shall be installed at the joints in the tile to permit the face plate to cover the rough openings. The horizontal and vertical locations indicated may be altered slightly to permit doing this. However, the contractor shall check the architectural drawings to prevent conflicts when shifting location.

F. Where outlets are installed in woodwork, the outlets shall be shifted as required to miss trim, etc. Contractor shall check woodwork shop drawings before roughing in any outlet.

14. NAMEPLATES:

14.1 Power:

17005 Hartley Elem. - HVAC Reno.
Bibb County BOE

16100-7

- A. Provide for all switchboards, panelboards, transformers, safety switches, fuse holders, push buttons, control switches and branch breakers in main distribution panelboards. Mount on exterior of door on all surface panels, interior of flush panels, or on cover plate for push buttons and control switches.
- B. Designation: The usage of each device or circuit shall be etched in 1/4" letters and mounted on device cover except flush panels shall be nameplate mounted inside panel.
- C. Type: White core black bakelight adhered with epoxy glue.

14.2 Labelling of Pullboxes/Junction Boxes:

- A. All pullboxes and junction boxes shall be labelled indicating circuit numbers of conductors, or usage of conductors contained therein.
- B. Box covers shall be marked with permanent black ink except that boxes containing emergency power conductors shall be marked with red ink. Where multiple conductors on same electrical phase are contained within same box such that there may be confusion as to the circuit number, conductors shall have tabs indicating circuit numbers.
- C. Where boxes contain conductors other than 208Y/120 volt wiring, the boxes shall be marked as to their usage, i.e.: fire alarm, telephone, etc.

15. not used:

16. FUSES:

16.1 General: Provide fuses in all fuse holders. This includes equipment provided by other trades. Fuses shall not be installed until equipment is ready to be energized. All fuses shall be furnished and installed by the electrical contractor. All fuses shall be of the same manufacturer. Fuses shall be as follows:

Mains, Feeders and Branch Circuits:

- A. Circuits 601 to 6000 ampere shall be protected by current limiting BUSSMAN HI-CAP Time-Delay Fuses KRP-C Fuses. Fuses shall employ "O" rings as positive seals between the end bells and the glass melamine fuse barrel. The terminals shall be panned. Fuses shall be time-delay and must hold 500% of rated current for a minimum of four seconds, clear 20 times rated current in .01 seconds or less and be listed by Underwriter's Laboratories, Inc., with an interrupting rating of 200,000 amperes R.M.S. symmetrical. The fuses shall be UL Class L.
- B. Circuits 0 to 600 ampere shall be protected by current limiting BUSSMAN LOW-PEAK Dual-Element Fuses LPN-RK (250 volts) or LPS-RK (600 volts). All dual-element fuses shall have separate overload and short-circuit elements. Fuse shall incorporate a spring activated thermal overload element, have a 284°F melting point alloy and shall be independent of the short-circuit clearing chamber. The fuse must hold 500% of rated current for a minimum of ten seconds and be listed by Underwriter's Laboratories, Inc., with an interrupting rating of 200,000 amperes R.M.S. symmetrical. The fuses shall be UL Class RK1.

16.2 Equipment Protection: Where fused disconnects are furnished for mechanical equipment and fuses shall be sized not greater than the listed maximum overcurrent protection

(MOCP) listed for that piece of equipment. (See mechanical submittals for MOCP of equipment furnished.)

- 16.3 Labeling: Prior to the installation of any fuse, the fuse holder shall be permanently labeled with the amperage of the fuse to be installed. See NAMEPLATES paragraph elsewhere in this specification.
- 16.4 Spares: Upon completion of the building, the contractor shall provide the Owner with fuses as shown below:
- A. 10% (minimum of three) of each type and rating of installed fuses shall be supplied as spares.
- 16.5 Manufacturers: BUSSMAN as specified, or equal UL classes by CEFCO, CHASE SHAWMUT, ECONOMY or GENERAL ELECTRIC.

17. SAFETY SWITCH, HEAVY DUTY:

- 17.1 General: Provide heavy duty safety switches having the electrical characteristics, ratings and modifications shown on drawings. All switches shall have: NEMA 1 general purpose enclosures indoors, NEMA 4 stainless steel for dishwasher and pulper, or NEMA 3R where exposed to weather unless noted otherwise, handle whose position is easily recognizable that is integral with the switch base and is padlockable in the "OFF" position; visible blades, reinforced fuse clips; non-teasible, positive, quick-make; quick-break mechanisms and switch assembly plus operating handle as an integral part of the enclosure base. All switches shall be UL listed, HP rated, shall have defeatable door interlocks that prevent the door from opening when the operating handle is in the "ON" position and shall have line terminal shields.
- 17.2 Manufacturers: GENERAL ELECTRIC, SQUARE D or WESTINGHOUSE.
- 17.3 Nameplates: Label each device specified under "NAMEPLATES".

18. ENCLOSED CIRCUIT BREAKERS:

- 18.1 General: Provide enclosed circuit breakers having the electrical characteristics, ratings and modifications shown on the drawings. All enclosed circuit breakers shall have: NEMA 1 general purpose enclosures indoors or NEMA 3R where exposed to weather unless noted otherwise; handles that are padlockable in the "OFF" position and remain in positive contact with the breaker handle at all times; nonteasible, positive, quick-make, quick-break mechanisms. Circuit breakers shall be molded case and have minimum interrupting capacity (UL and NEMA) of not less than 22,000 amperes symmetrical at 480 volts and 10,000 amperes symmetrical at 240/120 volts.
- 18.2 Manufacturers: GENERAL ELECTRIC, SQUARE D or WESTINGHOUSE.
- 18.3 Nameplates: Label each device as specified under "NAMEPLATES".

19. MOTOR VOLTAGES:

- 19.1 Motor Voltages: Unless specified otherwise, all motors shall conform to the following voltages:
- A. Smaller than 1/2 HP: 120 volts
- B. 1/2 HP and Over: 200 volts for 208 volt systems

19.2 The motor horsepowers, voltages and phases are the estimated power requirements of all equipment furnished under other sections of these specifications. If the contractor selects equipment with larger horsepowers, different voltages, or phases, the circuits (wire and conduit) and protective devices (circuit breakers or switches and starters), both size and poles, shall be changed for the ampacity, voltage and phase actually to be installed. In no case shall the circuit KVA be less than that specified. The contractor shall coordinate with trades to this end at no additional cost to the contractor.

20. GROUNDING:

- A. General: Provide grounding and bonding of elements of facility as required by the current edition of the National Electrical Code and as specified herein.
- B. Grounding: existing main.
- C. Bond panelboards, safety switches, non-current carrying parts of fixed equipment, conduit, conductor enclosures and related items to the grounding system.
- D. Provide grounding jump for each receptacle to the conduit system with exception of isolated ground receptacles. For isolated ground circuits, provide a separate grounding conductor from isolated receptacle to isolated ground buss in panelboard.

21. WIRING DEVICES:

21.1 General: Provide heavy duty specification grade devices as specified herein and as shown on the drawings. Receptacles not specified herein not scheduled on drawings but shown on the drawings shall be of similar construction and NEMA configuration.

21.2 Devices:

A. Switches:

	<u>ARROW/HART</u>	<u>EAGLE</u>	<u>HUBBELL</u>	<u>LEVITON</u>
SPST	1991-I	2221-V	1221-I	1221-I
Three-Way	1993-I	2223-V	1223-I	1223-I
SPST-Key	1991-I	2221-L	1221-L	1221-L
Three-Way Key	1993-L	2223-L	1223-L	1223-L
SPST s/Pilot	2999-R	2221-PL	1297	
SPDTCO (Momentary)	1895-I	1200V	1556-I	

B. Convenience Outlets:

	<u>ARROW/HART</u>	<u>EAGLE</u>	<u>HUBBELL</u>	<u>LEVITON</u>
Simplex (15A-120V)	5261-I	5261-V	5261-I	5261-I
Duplex (15A-120V)	5262-I	5262-V	5262-I	5262-I
Clock (Outlet Only)	6707	775V	7707-SS	
Ground Fault	1591-IF	7677V		6198-I
Isolated Ground	IG5262	IG5262RN	IG5262	IG5262

- C. Other Special Outlets: Provide outlet as required to match equipment shroud. Provide one mating plug with each special outlet. Provide a 1/2" x 1 1/2" nameplate, black for 120/208V with rating engraved in 3/16" letters on all special outlets.
- D. Equals by PASS and SEYMOUR.

22. DEVICE PLATES:

- 22.1 General: Provide suitable plate for all outlets and install with all edges in contact with finished wall. Mount plates vertically.
- 22.2 Gangs: Where two or more device are shown adjacent, they shall be mounted in ganged boxes and covered with one face plate.
- 22.3 Size: Plates shall be standard size, except where necessary to cover masonry openings, jumbo plates shall be used.
- 22.4 Finish:
 - A. Device plates on exposed boxes shall be galvanized steel.
 - B. Weatherproof covers shall be weatherproof in-use type.
 - C. All other device plates shall be satin stainless steel.

23. LIGHTING FIXTURES:

- 23.1 General: Provide lighting fixtures of types and sizes as indicated on drawings complete with plaster frames, supports and mounting accessories. Fixtures shall be left clean at completion of project.
- 23.2 Suspension:
 - A. Grid Troffers: Omit hangers and fasten to inverted tees with holddown clips.
 - B. Surface and recessed incandescent: For ceiling support systems with members 2' on center, use fixture support brackets supplied by manufacturer. Where no bracket is supplied by manufacturer and where span exceeds 2', provide two 1 5/8" x 7/8" x 12 ga. minimum channels spanning ceiling supports with 18 ga. stainless steel wire tiles.
 - C. Flanged troffers, surface fluorescent or recessed H.I.D.: Support from structural system with two 3/8" threaded rods, unless otherwise noted. Use nut and locknut to secure fixture. For fixtures not connected with flexible conduit, the contractor shall verify exact location of fixture knock-out and wireway prior to roughing outlet box.
- 23.4 Structural System Attachments:
 - A. Poured-in-place concrete or precast solid masonry: Concrete expandable anchors unless otherwise noted.
 - B. Steel Bar Joints or Steel Beams: 1 5/8" x 3/4" x 12 ga. channel bolted to top chords. Drill channel and secure threaded rods to channel with nut and locknut unless otherwise noted.

- C. Along Bar Joist or Steel Beam Center Line: F&M Fig. 255, GRINNELL Fig. 88 or ELCEN Fig. 29 beam clamps unless otherwise noted.
- 23.5 Fixture Ceiling Compatibility: Fixture numbers scheduled are for general design only (i.e. size, number of lamps, lens, etc.). Contractor is to verify type ceiling system (plaster, sheetrock, grid, spline, etc.) to be used and order appropriate fixtures complete with all necessary accessories as required for ceiling system.
24. TELEPHONE/DATA CONDUIT SYSTEM:
- 24.1 General: Provide outlets and raceways at locations shown on the drawings.
- 24.2 Telephone Service Entrance: Existing.
- 24.3 Floor Outlets: Flush box with cover plate. See drawings for detail.
- 24.4 Wall Outlets: Flush boxes with blank plates.
- 24.5 Raceway: 1" conduit with pull cord from each wall or floor outlet back to above ceiling and terminate with smooth bushing within 12" of cable tray if cable tray is shown. Otherwise route to above corridor ceiling.

END OF SECTION

APPENDIX



ConsensusDocs™ 205
STANDARD SHORT FORM AGREEMENT BETWEEN OWNER AND CONSTRUCTOR
(Lump Sum Price)

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ConsensusDocs 205

STANDARD SHORT FORM AGREEMENT BETWEEN OWNER AND CONSTRUCTOR (Lump Sum Price)



Account Code:

This Agreement is made this _____ day of _____, by and between

OWNER,

**BIBB COUNTY SCHOOL DISTRICT
484 MULBERRY STREET
MACON, GA 31201**

and

CONSTRUCTOR,

Tax identification number (TIN) [] Contractor License No., if applicable []



The Owner and Constructor are collectively the "Parties." Notice to the Parties shall be given at the above addresses.

PROJECT: HVAC Renovation – Hartley Elementary School

DESIGN PROFESSIONAL: SP Design Group
5191 Columbus Rd
Macon, Georgia 31206

1. THE WORK The Constructor shall furnish construction administration and management services and use the Constructor's diligent efforts to perform the Work in an expeditious manner consistent with the Contract Documents. The Constructor shall provide all labor, materials, equipment and services necessary to complete the Work, as described in Exhibit A "The Work", all of which shall be provided in full accord with and reasonably inferable from the Contract Documents.

2. PRICE As full compensation for performance by the Constructor of the Work, the Owner shall pay the Constructor the lump sum price of The lump sum price is hereinafter referred to as the Contract Price, which shall be subject to increase or decrease as provided in this Agreement.

3. EXHIBITS The following attached exhibits are made part of this Agreement:

- A. EXHIBIT A: The Work, 1 page.
- B. EXHIBIT B: Contract Documents.

4. ETHICS The Parties shall perform their obligations with integrity, ensuring at a minimum that each: (a) avoids conflicts of interest and promptly discloses any to the other Party; and (b) warrants that it has not and shall not pay nor receive any contingent fees or gratuities to or from the other Party, including its agents, officers, and employees, subcontractors, or others for whom they may be liable, to secure preferential treatment.

5. CONSTRUCTOR'S RESPONSIBILITIES The Constructor shall be responsible for supervision and coordination of the Work, including the construction means, methods, techniques, sequences, and procedures utilized, unless the Contract Documents give other specific instructions.

5.1. Except for permits and fees that are the responsibility of the Owner pursuant to this Agreement, the Constructor shall obtain and pay for all necessary permits, licenses, and renewals pertaining to the Work.

5.2. The Constructor shall pay all applicable taxes legally enacted when bids are received or negotiations concluded for the Work provided by the Constructor.



5.3. In the event that the Owner elects to perform work at the Worksite directly or by others retained by the Owner, the Constructor and Owner shall coordinate the activities of all forces at the Worksite and shall agree upon fair and reasonable schedules and operational procedures for Worksite activities. The Owner shall require each separate contractor to cooperate with the Constructor and assist with the coordination of activities and the review of construction schedules and operations. The Contract Price and Contract Time shall be equitably adjusted, as mutually agreed by the Parties, for changes made necessary by the coordination of construction activities, and the construction schedule shall be revised accordingly.

5.4. In order to facilitate its responsibilities for completion of the Work in accordance with and as reasonably inferable from the Contract Documents, prior to commencing the Work, the Constructor shall examine and compare the drawings and specifications with information furnished by the Owner pursuant to section 6.2; relevant field measurements made by the Constructor; and any visible conditions at the Worksite affecting the Work.

5.5. COMPLIANCE WITH LAWS The Constructor shall comply with all laws at its own costs. The Constructor shall be liable to the Owner for all loss, cost, or expense, attributable to any acts or omissions by the Constructor, its employees, subcontractors, and agents for failure to comply with laws, including, fines, penalties, or corrective measures.

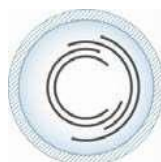
5.6. WARRANTY

5.6.1. The Work shall be executed in accordance with the Contract Documents in a workmanlike manner. The Constructor warrants that all materials and equipment shall be new unless otherwise specified, of good quality, in conformance with the Contract Documents, and free from defective workmanship and materials. The Constructor further warrants that the Work will be free from material defects not intrinsic in the design or materials required in the Contract Documents. The Constructor's warranty does not include remedies for defects or damages caused by normal wear and tear during normal usage, use for a purpose for which the Project was not intended, improper or insufficient maintenance, modifications performed by the Owner or others retained by Owner, or abuse.

5.6.2. If, prior to the Date of Substantial Completion and within one year after the date of Substantial Completion of the Work, any portion of the Work is found to be not in conformance with the Contract Documents ("Defective Work"), the Owner shall promptly notify the Constructor in writing. Unless the Owner provides written acceptance of the condition, the Constructor shall promptly correct the Defective Work at its own cost and time and bear the expense of additional services required for correction of any Defective Work for which it is responsible.

5.7. SAFETY The Constructor shall have overall responsibility for safety precautions and programs in the performance of the Work, except that the Constructor's subcontractors shall also be responsible for the safety of persons or property in the performance of their work, and for compliance with the provisions of laws. The Constructor shall seek to avoid injury, loss or damage to persons or property by taking reasonable steps to protect its employees and other persons at the Worksite; materials and equipment stored at on-site or off-site locations for use in the Work; and property located at the Worksite and adjacent to Work areas, whether or not the property is part of the Work.

5.8. HAZARDOUS MATERIALS A Hazardous Material is any substance or material identified now or in the future as hazardous under any federal, state, or local law or regulation, or any other substance or material which may be considered hazardous or otherwise subject to statutory or regulatory



requirement governing handling, disposal, or clean-up. The Constructor shall not be obligated to commence or continue work until any Hazardous Material discovered at the Worksite has been removed, or rendered or determined to be harmless by the Owner as certified by an independent testing laboratory and approved by the appropriate government agency. If the Constructor incurs additional costs or is delayed due to the presence or remediation of Hazardous Material, the Constructor shall be entitled to an equitable adjustment in the Contract Price or the Contract Time.

5.9. MATERIALS BROUGHT TO THE WORKSITE The Constructor shall be responsible for the proper delivery, handling, application, storage, removal, and disposal of all materials and substances brought to the Worksite by the Constructor in accordance with the Contract Documents and used or consumed in the performance of the Work.

5.10. SUBMITTALS The Constructor shall submit to the Owner and Design Professional for review and approval all shop drawings, samples, product data, and similar submittals required by the Contract Documents. Submittals may be submitted in electronic form if required in accordance with ConsensusDocs 200.2 and section 6.5. The Constructor shall be responsible to the Owner for the accuracy and conformity of its submittals to the Contract Documents. The Constructor shall prepare and deliver its submittals to the Owner and Design Professional in a manner consistent with the Schedule of the Work and in such time and sequence so as not to delay the performance of the Work or the work of the Owner and others retained by the Owner. The Constructor submittals shall identify in writing for each submittal all changes, deviations, or substitutions from the requirements of the Contract Documents. The approval of any Constructor submittal shall not be deemed to authorize deviations, substitutions, or changes in the requirements of the Contract Documents unless express written approval is obtained from the Owner specifically authorizing such deviation, substitution, or change. Further, the Owner shall not make any change, deviation, or substitution through the submittal process without specifically identifying and authorizing such deviation to the Constructor. The Owner shall be responsible for review and approval of submittals with reasonable promptness to avoid causing delay. The Constructor shall perform all Work strictly in accordance with approved submittals. The Owner's approval does not relieve the Constructor from responsibility for Defective Work resulting from errors or omissions of any kind on the approved shop drawings.

5.11. WORKSITE CONDITIONS If the conditions at the Worksite are (a) subsurface or other physical conditions which are materially different from those indicated in the Contract Documents, or (b) unusual and unknown physical conditions which are materially different from conditions ordinarily encountered and generally recognized as inherent in the Work provided for in the Contract Documents, the Constructor shall stop Work and give prompt written notice of the condition to the Owner and Design Professional. The Constructor shall not be required to perform any work relating to the unknown condition without the written mutual agreement of the Parties. Any change in the Contract Price or Contract Time as a result of the unknown condition shall be made by Change Order.

5.12. CUTTING, FITTING, AND PATCHING The Constructor shall perform cutting, fitting, and patching necessary to coordinate the various parts of the Work and to prepare its Work for the work of the Owner or others retained by the Owner.

5.13. CLEANING UP The Constructor shall regularly remove debris and waste materials at the Worksite resulting from the Work. Prior to discontinuing Work in an area, the Constructor shall clean the area and remove all rubbish and its construction equipment, tools, machinery, waste, and surplus materials. The Constructor shall minimize and confine dust and debris resulting from construction activities. At the completion of the Work, the Constructor shall remove from the Worksite all construction equipment, tools, surplus materials, waste materials, and debris.



6. OWNER'S RESPONSIBILITIES Any information or services to be provided by the Owner shall be provided in a timely manner.

6.1. FINANCIAL INFORMATION Before commencing the Work and thereafter at the written request of the Constructor, the Owner shall provide the Constructor with evidence of Project financing. Evidence of such financing shall be a condition precedent to the Constructor's commencing or continuing the Work. The Constructor shall be notified prior to any material change in Project financing.

6.2. WORKSITE INFORMATION The Owner shall provide at the Owner's expense and with reasonable promptness the following, which the Constructor shall be entitled to rely upon for its accuracy and completeness:

6.2.1. information describing the physical characteristics of the Worksite, including surveys, Worksite evaluations, legal descriptions, data, or drawings depicting existing conditions, subsurface, and environmental studies, reports and investigations;

6.2.2. tests, inspections and other reports dealing with environmental matters, hazardous material and other existing conditions, including structural, mechanical, and chemical tests required by the Contract Documents or by law; and

6.2.3. any other information or services requested in writing by the Constructor that are relevant to the Constructor's performance of the Work and under the Owner's control. The information required by this subsection shall be provided in reasonable detail. Legal descriptions shall include easements, title restrictions, boundaries, and zoning restrictions. Worksite descriptions shall include existing buildings and other construction and all other pertinent Worksite conditions. Adjacent property descriptions shall include structures, streets, sidewalks, alleys, and other features relevant to the Work. Utility details shall include available services, lines at the Worksite and adjacent thereto, and connection points. The information shall include public and private information, subsurface information, grades, contours, and elevations, drainage data, exact locations and dimensions, and benchmarks that can be used by the Constructor in laying out the Work.

6.3. MECHANICS AND CONSTRUCTION LIEN INFORMATION Within seven (7) days after receiving the Constructor's written request, the Owner shall provide the Constructor with the information necessary to give notice of or enforce mechanics lien rights and, where applicable, stop notices. This information shall include the Owner's interest in the real property on which the Project is located and the record legal title.

6.4. BUILDING PERMIT, FEES, AND APPROVALS Except for those required of the Constructor pursuant to this Agreement, the Owner shall secure and pay for all other permits, approvals, easements, assessments, and fees required for the development, construction, use, or occupancy of permanent structures or for permanent changes in existing facilities, including the building permit.

6.5. DOCUMENTS IN ELECTRONIC FORM the Owner requires that the Owner, Design Professional, and Constructor exchange documents and data in electronic or digital form, prior to any such exchange, the Owner, Design Professional, and Constructor shall agree on a written protocol governing all exchanges in ConsensusDocs 200.2 or a separate addendum.

7. SUBCONTRACTS Work not performed by the Constructor with its own forces shall be performed by subcontractors. The Constructor agrees to bind every subcontractor and material supplier (and require every subcontractor to so bind its subcontractors and material suppliers) to all the provisions of this



Agreement and the Contract Documents as they apply to the subcontractor's and material supplier's portions of the Work.

8. CONTRACT TIME

8.1. DATE OF COMMENCEMENT The Date of Commencement is the Agreement date on page one.

8.2. TIME Substantial Completion of the Work shall be achieved in **NLT 23 July 2017** from the Date of Commencement. Unless otherwise specified in the Certificate of Substantial Completion, the Work shall be finally complete within Thirty (30) days after the date of Substantial Completion, subject to adjustments as provided for in the Contract Documents. Time is of the essence for this Agreement.

9. SCHEDULE OF THE WORK Before submitting the first application for payment, the Constructor shall submit, for review by the Design Professional and approval by the Owner, a Schedule of the Work that shall show the dates on which the Constructor plans to begin and to complete various parts of the Work, including dates on which information and approvals are required from the Owner.

9.1. The Owner may determine the sequence in which the Work shall be performed, provided it does not unreasonably interfere with the Schedule of the Work. The Owner may require the Constructor to make reasonable changes in the sequence at any time during the performance of the Work in order to facilitate the performance of work by the Owner or others. To the extent such changes increase the Constructor's time and costs, the Contract Price and Contract Time shall be equitably adjusted.

10. DELAYS AND EXTENSIONS OF TIME

10.1. If the Constructor is delayed at any time in the commencement or progress of the Work by any cause beyond the control of the Constructor, the Constructor shall be entitled to an equitable extension of the Contract Time. Examples of causes beyond the control of the Constructor include, but are not limited to, the following: acts or omissions of the Owner, the Design Professional, or others; changes in the Work or the sequencing of the Work ordered by the Owner or arising from decisions of the Owner that impact the time of performance of the Work; transportation delays not reasonably foreseeable; labor disputes not involving the Constructor; general labor disputes impacting the Project but not specifically related to the Worksite; fire; terrorism, epidemics, adverse governmental actions, unavoidable accidents or circumstances; adverse weather conditions not reasonably anticipated; encountering Hazardous Materials; concealed or unknown conditions; and delay authorized by the Owner pending dispute resolution. The Constructor shall process any requests for equitable extensions of Contract Time in accordance with the provisions of article 12.

10.2. In addition, if the Constructor incurs additional costs as a result of a delay that is caused by acts or omissions of the Owner, the Design Professional, or others, changes in the Work or the sequencing of the Work ordered by the Owner, or arising from decisions of the Owner that impact the time of performance of the Work, encountering Hazardous Materials, concealed or unknown conditions, or delay authorized by the Owner pending dispute resolution, the Constructor shall be entitled to an equitable adjustment in the Contract Price subject to article 12.

10.3. In the event delays to the Work are encountered for any reason, the Constructor shall provide prompt written notice to the Owner of the cause of such delays after the Constructor first recognizes the delay. The Owner and Constructor agree to undertake reasonable steps to mitigate the effect of such delays.



10.4. NOTICE OF DELAY CLAIMS If the Constructor requests an equitable extension of the Contract Time or an equitable adjustment in the Contract Price as a result of a delay, the Constructor shall give the Owner written notice of the claim. If the Constructor causes delay in the completion of the Work, the Owner shall be entitled to recover its additional costs, subject to the mutual waiver of consequential damages herein.

11. ALLOWANCES All allowances stated in the Contract Documents shall be included in the Contract Price. While the Owner may direct the amounts of, and particular material suppliers or subcontractors for, specific allowance items, if the Constructor reasonably objects to a material supplier or subcontractor, it shall not be required to contract with them. The Owner shall select allowance items in a timely manner so as not to delay the Work. Allowances shall include the costs of materials and equipment delivered to the Worksite less applicable trade discounts and including requisite taxes, unloading and handling at the Worksite, and labor and installation, unless specifically stated otherwise. The Constructor's overhead and profit for the allowances shall be included in the Contract Price, but not in the allowances. The Contract Price shall be adjusted by Change Order to reflect the actual costs when they are greater than or less than the allowances.

12. CHANGES

12.1. The Constructor may request or the Owner may order changes in the Work or the timing or sequencing of performance of the Work that impacts the Contract Price or the Contract Time. All such changes in the Work that affect the Contract Time or Contract Price shall be formalized in a Change Order.

12.2. The Owner and Constructor shall negotiate in good faith an appropriate adjustment to the Contract Price or the Contract Time and shall conclude these negotiations as expeditiously as possible. Acceptance of the Change Order and any adjustment in the Contract Price or Contract Time shall not be unreasonably withheld.

12.3. INTERIM DIRECTED CHANGE

12.3.1. The Constructor shall not be obligated to perform changes in the Work that impact the Contract Price or the Contract Time until a Change Order has been executed or a written Interim Directed Change has been issued. The Owner may issue a written Interim Directed Change directing a change in the Work prior to reaching agreement with the Constructor on the adjustment, if any, in the Contract Price or the Contract Time.

12.3.2. The Owner and the Constructor shall negotiate expeditiously and in good faith for appropriate adjustments, as applicable, to the Contract Price or the Contract Time arising out of an Interim Directed Change. As the changed work is performed, the Constructor shall submit its costs for such work with its application for payment. If there is a dispute as to the cost of the Work, the Owner shall pay the Constructor fifty percent (50%) of its estimated cost to perform the work. In such event, the Parties reserve their rights as to the disputed amount, submitted to the requirements of article 20.

12.3.3. When the Owner and the Constructor agree upon the adjustment in the Contract Price or the Contract Time, for a change in the Work directed by an Interim Directed Change, such agreement shall be the subject of a Change Order.



12.4. COST OR CREDIT DETERMINATION

12.4.1. An increase or decrease in the Contract Price or the Contract Time resulting from a change in the Work shall be determined by one or more of the following methods:

12.4.1.1. unit prices set forth in this Agreement or as subsequently agreed;

12.4.1.2. a mutually accepted, itemized lump sum;

12.4.1.3. by the method provided here: n/a.

12.4.1.4. If a cost or credit determination cannot be agreed to above, the cost of the change in the Work shall be determined by the reasonable actual expense incurred or savings realized in the performance of the Work resulting from the change. If there is a net increase in the Contract Price, the Constructor's overhead and profit shall be adjusted accordingly. In case of a net decrease in the Contract Price, the Constructor's overhead and profit shall not be adjusted unless ten percent (10%) or more of the Project is deleted. The Constructor shall maintain a documented itemized accounting evidencing the expenses and savings.

12.5. UNIT PRICES If unit prices are included in the Contract Documents or are subsequently agreed to by the Parties, but the character or quantity of such unit price items as originally contemplated is so different in a proposed Change Order that the original unit prices will cause substantial inequity to the Owner or Constructor, such unit prices shall be equitably adjusted.

12.6. PERFORMANCE OF CHANGED WORK The Constructor shall not be obligated to perform Changed Work until a **written directive has been issued**.

13. PAYMENT

13.1. SCHEDULE OF VALUES Within **Five (5)** days from the date of execution of this Agreement, the Constructor shall prepare and submit to the Owner and, if directed, the Design Professional, a schedule of values apportioned to the various divisions or phases of the Work. Each line item contained in the schedule of values shall be assigned a monetary price such that the total of all items shall equal the Contract Price.

13.2. PROGRESS PAYMENTS The Constructor shall submit to the Owner and the Design Professional a monthly application for payment no later than the **28th** day of the calendar month for the preceding thirty (30) days. The Constructor's applications for payment shall be itemized and supported by the Constructor's schedule of values and any other substantiating data as required by **the Owner**. Payment applications shall include payment requests on account of properly authorized Change Orders. The Owner shall pay the amount otherwise due on any payment application, less any amounts as set forth below, no later than thirty (30) days after the Constructor has submitted a complete and accurate payment application. The Owner **will** deduct, from any progress payment, such amounts as may be retained pursuant to section 13.3.

13.3. RETAINAGE From each progress payment made prior to Substantial Completion the Owner **will** retain Ten percent (10 %) of the amount otherwise due after deduction of any amounts as provided in section 13.4.



13.4. ADJUSTMENT OF CONSTRUCTOR'S PAYMENT APPLICATION The Owner may adjust or reject a payment application or nullify a previously approved payment application, in whole or in part, as may reasonably be necessary to protect Owner from loss or damage based upon the following, to the extent that Constructor is responsible for such under this Agreement:

13.4.1. the Constructor's repeated failure to perform the Work as required by the Contract Documents;

13.4.2. loss or damage arising out of or relating to this Agreement and caused by the Constructor to the Owner or to others retained by the Owner to whom the Owner may be liable;

13.4.3. the Constructor's failure to properly pay subcontractors for labor, materials, or equipment furnished in connection with the Work following receipt of such payment from the Owner;

13.4.4. Defective Work not corrected in a timely fashion;

13.4.5. reasonable evidence of delay in performance of the Work such that the Work will not be completed within the Contract Time;

13.4.6. reasonable evidence demonstrating that the unpaid balance of the Contract Price is insufficient to fund the cost to complete the Work; and

13.4.7. uninsured third-party claims involving the Constructor or reasonable evidence demonstrating that third-party claims are likely to be filed unless and until the Constructor furnishes the Owner with adequate security in the form of a surety bond, letter of credit, or other collateral or commitment which are sufficient to discharge such claims if established.

No later than seven (7) days after receipt of an application for payment, the Owner shall give written notice to the Constructor disapproving or nullifying it or a portion of it, specifying the reasons for the disapproval or nullification. When the above reasons for disapproving or nullifying an application for payment are removed, payment shall be made for the amounts previously withheld.

13.5. PAYMENT DELAY If for any reason not the fault of the Constructor, the Constructor does not receive a progress payment from the Owner within seven (7) days after the time such payment is due, the Constructor, upon giving seven (7) days' written notice to the Owner, and without prejudice to and in addition to any other legal remedies, may stop Work until payment of the full amount owing to the Constructor has been received. The Contract Price and Contract Time shall be equitably adjusted by Change Order for reasonable cost and delay resulting from shutdown, delay, and start-up.

13.6. SUBSTANTIAL COMPLETION When Substantial Completion of the Work or a designated portion thereof is achieved, the Constructor shall prepare a Certificate of Substantial Completion that shall establish the date of Substantial Completion, and the respective responsibilities of the Owner and Constructor for interim items such as security, maintenance, utilities, insurance, and damage to the Work, and fixing the time for completion of all items on the list accompanying the Certificate. The Certificate of Substantial Completion shall be submitted by the Constructor to the Owner for written acceptance of responsibilities assigned in the Certificate. Unless otherwise provided in the Certificate of Substantial Completion, warranties required by the Contract Documents shall commence on the date of Substantial Completion of the Work or a designated portion.



13.6.1. Upon acceptance by the Owner of the Certificate of Substantial Completion, the Owner MAY elect to release retainage on subcontractors whose work is 100% complete and has been accepted.

13.7. FINAL COMPLETION When final completion has been achieved, the Constructor shall prepare for the Owner's acceptance a final application for payment stating that to the best of Constructor's knowledge, and based on the Owner's inspections, the Work has reached final completion in accordance with the Contract Documents.

13.7.1. Final payment of the balance of the Contract Price shall be made to the Constructor within thirty (30) days after the Constructor has submitted to the Owner a complete and accurate application for final payment and the following submissions:

13.7.1.1. an affidavit declaring any indebtedness connected with the Work, e.g. payrolls or invoices for materials or equipment, to have been paid, satisfied, or to be paid with the proceeds of final payment, so as not to encumber the Owner's property;

13.7.1.2. as-built drawings, manuals, copies of warranties, and all other close-out documents required by the Contract Documents;

13.7.1.3. release of any liens, conditioned on final payment being received;

13.7.1.4. consent of any surety, if applicable; and

13.7.1.5. a report of any accidents or injuries experienced by the Constructor or its subcontractors at the Worksite.

13.8. Claims not reserved by the Owner in writing with the making of final payment shall be waived except for claims relating to liens or similar encumbrances, warranties, Defective Work, and latent defects. Unless the Constructor provides written identification of unsettled claims known to the Constructor at the time of making application for final payment, acceptance of final payment constitutes a waiver of such claims.

13.9. LATE PAYMENT Payments due but unpaid shall bear interest from the date payment is due at the statutory rate at the place of the Project.

14. INDEMNITY

14.1. To the fullest extent permitted by law, the Constructor shall indemnify and hold harmless the Owner, Owner's officers, directors, members, consultants, agents, and employees and the Design Professional (the Indemnitees) from all claims for bodily injury and property damage, other than to the Work itself and other property insured under section 15.3, including reasonable attorneys' fees, costs, and expenses, that may arise from the performance of the Work but only to the extent caused by the negligent acts or omissions of the Constructor, subcontractors or anyone employed directly or indirectly by any of them or by anyone for whose acts any of them may be liable. The Constructor shall be entitled to reimbursement of any defense costs paid above the Constructor's percentage of liability for the underlying claim to the extent provided in the section immediately below.



14.2. To the fullest extent permitted by law, the Owner shall indemnify and hold harmless the Constructor, its officers, directors, or members, subcontractors, or anyone employed directly or indirectly by any of them or anyone for whose acts any of them may be liable from all claims for bodily injury and property damage, other than property insured under section 15.3, including reasonable attorneys' fees, costs, and expenses, that may arise from the performance of work by the Owner, Design Professional, or others retained by the Owner, but only to the extent caused by the negligent acts or omissions of the Owner, the Design Professional, or others retained by the Owner. The Owner shall be entitled to reimbursement of any defense costs paid above the Owner's percentage of liability for the underlying claim to the extent provided in the section immediately above.

14.3. NO LIMITATION ON LIABILITY In any and all claims against the Indemnitees by any employee of the Constructor, anyone directly or indirectly employed by the Constructor or anyone for whose acts the Constructor may be liable, the indemnification obligation shall not be limited in any way by any limitation on the amount or type of damages, compensation, or benefits payable by or for the Constructor under Workers' Compensation acts, disability benefit acts, or other employment benefit acts.

15. INSURANCE

15.1. Before commencing the Work and as a condition precedent to payment, the Constructor shall procure and maintain in force Workers' Compensation Insurance, Employers' Liability Insurance, Business Automobile Liability Insurance, and Commercial General Liability Insurance (CGL). The CGL policy shall include coverage for liability arising from premises, operations, independent contractors, products-completed operations, personal injury and advertising injury, contractual liability, and broad form property damage. The Constructor shall maintain completed operations liability insurance for one year after Substantial Completion, or as required by the Contract Documents, whichever is longer. If requested, the Constructor shall provide the Owner with certificates of the insurance coverage required. The Constructor's Employers' Liability, Business Automobile Liability, and CGL policies, as required in this article, shall be written with at least the following limits of liability:

15.1.1. Employers' Liability Insurance:

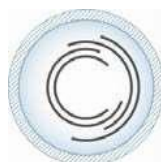
- a. \$100,000 bodily injury by accident per accident;
- b. \$100,000 bodily injury by disease policy limit
- c. \$100,000 bodily injury by disease per employee.

15.1.2. Business Automobile Liability Insurance:

- a. \$350,000 per accident.

15.1.3. CGL Insurance:

- a. \$250,000 per occurrence;
- b. \$1,000,000 general aggregate;



15.2. Employers' Liability, Business Automobile Liability, and CGL coverage required in the subsection above may be arranged under a single policy for the full limits required or by a combination of underlying policies with the balance provided by excess or umbrella liability policies. The Constructor shall maintain in effect all insurance coverage required in the section immediately above with insurance companies lawfully authorized to do business in the jurisdiction in which the Project is located. If the Constructor fails to obtain or maintain any insurance coverage required under this Agreement, the Owner may purchase such coverage and charge the expense to the Constructor, or terminate this Agreement. To the extent commercially available to the Constructor from its current insurance company, insurance policies required under section 15.1 shall contain a provision that the insurance company or its designee must give the Owner written notice transmitted in paper or electronic format: (a) 30 days before coverage is non-renewed by the insurance company and (b) within 10 business days after cancelation of coverage by the insurance company. Prior to commencing the Work and upon renewal or replacement of the insurance policies, the Constructor shall furnish the Owner with certificates of insurance until one year after Substantial Completion or longer if required by the Contract Documents. In addition, if any insurance policy required under section 15.1 is not to be immediately replaced without lapse in coverage when it expires, exhausts its limits, or is to be cancelled, the Constructor shall give Owner prompt written notice upon actual or constructive knowledge of such condition.

15.3. PROPERTY INSURANCE Before the start of Work, the Constructor shall obtain and maintain Builder's Risk Policy upon the entire Project for the full cost of replacement at the time of loss. This insurance shall also name the Owner, subcontractors, sub-subcontractors, material suppliers, and Design Professional as named insureds. This insurance shall be written as a Builder's Risk Policy or equivalent form to cover all risks of physical loss except those specifically excluded by the policy. The Owner shall be solely responsible for any deductible amounts or coinsurance penalties. This policy shall provide for a waiver of subrogation in favor of the Constructor, subcontractors, sub-subcontractors, material suppliers and Design Professional. This insurance shall remain in effect until final payment has been made or until no person or entity other than the Owner has an insurable interest in the property to be covered by this insurance, whichever is sooner. Partial occupancy or use of the Work shall not commence until the Owner has secured the consent of the insurance company or companies providing the coverage required in this section. Before commencing the Work, the Constructor shall provide a copy of the property policy or policies obtained in compliance with this section.

15.3.1. The Owner and Constructor waive all rights against each other and their respective employees, agents, contractors, subcontractors and sub-subcontractors, and the Design Professional for damages caused by risks covered by the property insurance except such rights as they may have to the proceeds of the insurance.

15.3.2. To the extent of the limits of the Constructor's CGL insurance specified in section 15.1 the Constructor shall indemnify and hold harmless the Owner against any and all liability, claims, demands, damages, losses, and expenses, including attorneys' fees, in connection with or arising out of any damage or alleged damage to any of the Owner's existing adjacent property that may arise from the performance of the Work, to the extent caused by the negligent acts or omissions of the Constructor, subcontractor, or anyone employed directly or indirectly by any of them or by anyone for whose acts any of them may be liable.

15.4. OWNER'S INSURANCE The Owner may procure and maintain insurance against loss of use of the Owner's property caused by fire or other casualty loss. The Owner shall either self-insure or obtain and maintain its own liability insurance for protection against claims arising out of the performance of



this Agreement, including without limitation, loss of use and claims, losses and expenses arising out of the Owner's errors or omissions.

16. BONDS Performance and Payment Bonds are/ required of the Constructor. Such bonds shall be issued by a surety admitted in the state in which the Project is located and must be acceptable to the Owner. The Owner's acceptance shall not be withheld without reasonable cause. The penal sum of the Payment Bond shall equal the penal sum of the Performance Bond.

17. LIMITED MUTUAL WAIVER OF CONSEQUENTIAL DAMAGES Except for (a) losses covered by insurance required by the Contract Documents, or (b) specific items of damages excluded from this waiver as mutually agreed upon by the Parties and identified below, the Parties agree to waive all claims against each other for any consequential damages that may arise out of or relate to this Agreement. The following items of damages are excluded from this mutual waiver: [_____].

17.1. The provisions of this section shall also apply to the termination of this Agreement and shall survive such termination. The Owner and the Constructor shall require similar waivers in contracts with subcontractors and others retained for the project.

18. RISK OF LOSS Except to the extent a loss is covered by applicable insurance, risk of loss or damage to the Work shall be upon the Constructor until the Date of Substantial Completion, unless otherwise agreed to by the Parties.

19. NOTICE TO CURE AND TERMINATION

19.1. NOTICE TO CURE A DEFAULT If the Constructor persistently fails to supply enough qualified workers, proper materials, or equipment to maintain the approved Schedule of the Work in accordance with article 9, or fails to make prompt payment to its workers, subcontractors, or material suppliers, disregards law or orders of any public authority having jurisdiction, or is otherwise guilty of a material breach of a provision of this Agreement, the Constructor may be deemed in default. If the Constructor fails within seven (7) business days after written notification to commence and continue satisfactory correction of such default with diligence and promptness, then the Owner shall give the Constructor a second written notice to correct the default within a three (3) business day period. If the Constructor fails to promptly commence and continue satisfactory correction of the default following receipt of such second notice, the Owner, without prejudice to any other rights or remedies, shall have the right to take reasonable steps it deems necessary to correct deficiencies and charge the cost to the Constructor, who shall be liable for such payments including reasonable overhead, profit, and attorneys' fees.

19.2. TERMINATION BY OWNER If, within seven (7) days of receipt of a notice to cure pursuant to section immediately above, the Constructor fails to commence and satisfactorily continue correction of the default set forth in the notice to cure, the Owner may notify the Constructor that it intends to terminate this Agreement for default absent appropriate corrective action within fourteen (14) additional days. After the expiration of the additional fourteen (14) day period, the Owner may terminate this Agreement by written notice absent appropriate corrective action. Termination for default is in addition to any other remedies available to the Owner. If the Owner's costs arising out of the Constructor's failure to cure, including the cost of completing the Work and reasonable attorney fees, exceed the unpaid Contract Price, the Constructor shall be liable to the Owner for such excess costs. If the Owner's costs are less than the unpaid Contract Price, the Owner shall pay the difference to the Constructor. In the event the Owner exercises its rights under this section, upon the request of



the Constructor, the Owner shall furnish to Constructor a detailed accounting of the costs incurred by the Owner.

19.2.1. The Owner shall make reasonable efforts to mitigate damages arising from the Constructor default and shall promptly invoice the Constructor for all amounts due.

19.3. TERMINATION BY CONSTRUCTOR Upon seven (7) days' written notice to the Owner, the Constructor may terminate this Agreement if the Work has been stopped for a thirty (30) day period through no fault of the Constructor for any of the following reasons: (a) under court order or order of other governmental authorities having jurisdiction; (b) as a result of the declaration of a national emergency or other governmental act during which, through no act or fault of the Constructor, materials are not available.

19.3.1. In addition, upon seven (7) days' written notice to Owner, Constructor may terminate the Agreement if the Owner does any of the following: (a) fails to furnish reasonable evidence that sufficient funds are available and committed for the entire cost of the Project in accordance with section 6.1; (b) assigns this Agreement over the Constructor's reasonable objection; (c) fails to pay the Constructor in accordance with this Agreement and the Constructor has complied with the notice provisions of section 13.5; or (d) otherwise materially breaches this Agreement.

19.3.2. Upon termination by the Constructor pursuant to this Agreement, the Constructor shall be entitled to recover from the Owner payment for all Work executed and for any proven loss, cost, or expense in connection with the Work, including all demobilization costs plus reasonable overhead and profit.

19.4. OBLIGATIONS ARISING BEFORE TERMINATION Even after termination the provisions of this Agreement still apply to any Work performed, payments made, events occurring, costs charged or incurred, or obligations arising before the termination date.

20. CLAIMS AND DISPUTE RESOLUTION

20.1. CLAIMS FOR ADDITIONAL COST OR TIME Except as provided in sections 10.3 and 10.4 for any claim for an increase in the Contract Price or the Contract Time, the Constructor shall give the Owner written notice of the claim within fourteen (14) days after the occurrence giving rise to the claim or within fourteen (14) days after the Constructor first recognizes the condition giving rise to the claim, whichever is later. Except in an emergency, notice shall be given before proceeding with the Work. Any change in the Contract Price or the Contract Time resulting from such claim shall be authorized by Change Order.

20.2. WORK CONTINUANCE AND PAYMENT Unless otherwise agreed in writing, the Constructor shall continue the Work and maintain the Schedule of the Work during any dispute resolution proceedings. If the Constructor continues to perform, the Owner shall continue to make payments in accordance with the Agreement.

20.3. DISPUTE MITIGATION THROUGH DIRECT DISCUSSIONS If a dispute arises out of or relates to this Agreement or its breach, the Parties shall endeavor to settle the dispute through direct discussions. Within five (5) business days, the Parties' representatives, who shall possess the necessary authority to resolve such matter and who shall record the date of first discussions shall conduct direct discussions and make a good faith effort to resolve such dispute.



20.4. **MEDIATION** Disputes between the Owner and Constructor not resolved by direct discussion shall be submitted to mediation pursuant to the Construction Industry Mediation Rules of the American Arbitration Association (AAA). The Parties shall select the mediator within fifteen (15) days of the request for mediation. Engaging in mediation is a condition precedent to any form of binding dispute resolution.

20.5. **BINDING DISPUTE RESOLUTION** If neither direct discussions nor mediation successfully resolves the dispute, the Parties shall submit the matter to the binding dispute resolution procedure selected below:

LITIGATION Litigation in either the state or federal court having jurisdiction of the matter in the location of the Project.

20.5.1. **COSTS** The costs of any binding dispute resolution procedures and reasonable attorneys' fees shall be borne by the non-prevailing Party, as determined by the adjudicator of the dispute.

20.5.2. **VENUE** The venue of any binding dispute resolution procedure shall be the location of the Project, unless the Parties agree on a mutually convenient location.

20.5.3. Neither Party may commence arbitration if the claim or cause of action would be barred by the applicable statute of limitations had the claim or cause of action been filed in a state or federal court. Receipt of a demand for arbitration by the person or entity administering the arbitration shall constitute the commencement of legal proceedings for the purposes of determining whether a claim or cause of action is barred by the applicable statute of limitations.

20.5.4. An award entered in an arbitration proceeding pursuant to this Agreement shall be final and binding upon the Parties, and judgment may be entered upon an award in any court having jurisdiction.

21. MISCELLANEOUS

21.1. **EXTENT OF AGREEMENT** Except as expressly provided, this Agreement is for the exclusive benefit of the Parties and not for the benefit of any third party. This Agreement represents the entire and integrated agreement between the Parties, and supersedes all prior negotiations, representations, or agreements, either written or oral.

21.2. **ASSIGNMENT** Except as to the assignment of proceeds, neither Party shall assign its interest in this Agreement, in whole or in part, without the written consent of the other Party. The terms and conditions of this Agreement shall be binding upon both Parties, their partners, successors, assigns, and legal representatives.

21.3. **GOVERNING LAW** This Agreement shall be governed by the law in effect at the location of the Project.

21.4. **JOINT DRAFTING** The Parties expressly agree that this Agreement was jointly drafted, and that they both had opportunity to negotiate terms and to obtain assistance of counsel in reviewing terms prior to execution. This Agreement shall be construed neither against nor in favor of either Party, but shall be construed in a neutral manner.



OWNER: **BIBB COUNTY SCHOOL DISTRICT**

BY: _____

PRINT NAME **Mr. Lester Miller**

PRINT TITLE: **Board President**

ATTEST: _____

NAME **Dr. Curtis L Jones, Jr.**

PRINT TITLE: **-SUPERINTENDENT**

CONSTRUCTOR:

BY: _____

PRINT NAME:

PRINT TITLE: _____

ATTEST: _____

NAME: _____

TITLE: _____

DRAFT



EXHIBIT A "The Work"
April 18, 2017

The work for the HVAC Renovation – Matilda Hartley Elementary School Project. This project consists of all work included in the plans, specifications, addenda and RFP prepared by **SP Design Group** for the HVAC Renovations for the Bibb County Board of Education dated April 18, 2017.

- **T1 – Title Sheet**
 - **AE1.1 – Overall Exist. Plan & Partial Power Floor Plan**
 - **M1.1 – Mechanical Demolition Plan**
 - **M2.1 – Mechanical New Work Plan**
-
- All other work specified in the contract documents

DRAFT



EXHIBIT B CONTRACT
DOCUMENTS April 18, 2017

- Plans prepared by SP Design Group titled HVAC Renovation – Matilda Hartley Elementary School for Bibb County Board of Education, dated April 18, 2017 consisting of the following sheets:
 - T1 – Title Sheet
 - AE1.1 – Overall Exist. Plan & Partial Power Floor Plan
 - M1.1 – Mechanical Demolition Plan
 - M2.1 – Mechanical New Work Plan
- REQUEST FOR PROPOSALS for _____.

END OF DOCUMENT



AIA Document A201™- 2007

General Conditions of the Contract for Construction

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

THE OWNER:
(Name, legal status and address)

THE ARCHITECT:
(Name, legal status and address)

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5	SUBCONTRACTORS
6	CONSTRUCTION BY OWNER OR BY SEPARATE CONTRACTORS
7	CHANGES IN THE WORK
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9	PAYMENTS AND COMPLETION
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13	MISCELLANEOUS PROVISIONS
14	TERMINATION OR SUSPENSION OF THE CONTRACT
15	CLAIMS AND DISPUTES

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.

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ARTICLE 1 GENERAL PROVISIONS

§ 1.1 BASIC DEFINITIONS

§ 1.1.1 THE CONTRACT DOCUMENTS

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 (General, 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 (4) 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 requirements.

§ 1.1.2 THE CONTRACT

The Contract Documents form the Contract for Construction. The Contract represents the entire and integrated agreement between the parties hereto and supersedes prior negotiations, representations or agreements, either written or oral. The Contract may be amended or modified only by a Modification. The Contract Documents shall not be construed to create a contractual relationship of any kind (1) between the Contractor and the Architect or the Architect's consultants, (2) between the Owner and a Subcontractor or a Sub-subcontractor, (3) between the Owner and the Architect or the Architect's consultants or (4) between any persons or entities other than the Owner and the Contractor. The Architect shall, however, be entitled to performance and enforcement of obligations under the Contract intended to facilitate performance of the Architect's duties.

§ 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 Initial Decision Maker is the person identified in the Agreement to render initial decisions on Claims in accordance with Section 15.2 and certify termination of the Agreement under Section 14.2.2.

§ 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 indicated results.

§ 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.

§ 1.3 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 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 will retain all common law, statutory and other reserved rights, including copyrights. The Contractor, Subcontractors, Sub-subcontractors, and material or equipment 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 this 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 material or equipment suppliers are authorized to use and reproduce the Instruments of Service provided to them 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 material or equipment suppliers may not use the Instruments of Service on other projects or for additions to this Project outside the scope of the Work without the specific written consent of the Owner, Architect and the Architect's consultants.

§ 1.6 TRANSMISSION OF DATA IN DIGITAL FORM

If the parties intend to transmit Instruments of Service or any other information or documentation in digital form, they shall endeavor to establish necessary protocols governing such transmissions, unless otherwise already provided in the Agreement or the Contract Documents.

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 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 INFORMATION AND SERVICES REQUIRED OF THE OWNER

§ 2.2.1 Prior to commencement of the Work, the Contractor may request in writing that the Owner provide reasonable evidence that the Owner has made financial arrangements to fulfill the Owner's obligations under the Contract. Thereafter, the Contractor may only request such evidence if (1) the Owner fails to make payments to the Contractor as the Contract Documents require; (2) a change in the Work materially changes the Contract Sum; or (3) the Contractor identifies in writing a reasonable concern regarding the Owner's ability to make payment when due. The Owner shall furnish such evidence as a condition precedent to commencement or continuation of the Work or

the portion of the Work affected by a material change. After the Owner furnishes the evidence, the Owner shall not materially vary such financial arrangements without prior notice to the Contractor.

§ 2.2.2 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.

§ 2.2.3 The Owner shall furnish surveys 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 information furnished by the Owner but shall exercise proper precautions relating to the safe performance of the Work.

§ 2.2.4 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.

§ 2.2.5 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.

§ 2.3 OWNER'S RIGHT TO STOP THE WORK

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.

§ 2.4 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 ten-day period after receipt of written 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 deficiencies. In such case an appropriate Change Order shall be issued deducting from payments then or thereafter due the Contractor 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. Such action by the Owner and amounts charged to the Contractor are both subject to prior approval of the Architect. If payments then or thereafter due the Contractor are not sufficient to cover such amounts, the Contractor shall pay the difference to the Owner.

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 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.

§ 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 2.2.3, 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 make 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 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. The Contractor shall be solely responsible for, and have control over, construction means, methods, techniques, sequences and procedures and for coordinating all portions of the Work under the Contract, unless the Contract Documents give other specific instructions concerning these matters. If the Contract Documents give specific instructions concerning construction means, methods, techniques, sequences or procedures, the Contractor shall evaluate the jobsite safety thereof and, except as stated below, shall be fully and 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 written notice to the Owner and Architect and shall not proceed with that portion of the Work without further written instructions from the Architect. If the Contractor is then instructed to proceed with the required means, methods, techniques, sequences or procedures without acceptance of changes proposed by the Contractor, the Owner shall be solely responsible for any loss or damage arising solely from those Owner-required 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.

§ 3.3.3 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.

§ 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 Except in the case of minor changes in the Work authorized by the Architect in accordance with Sections 3.12.8 or 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.

§ 3.4.3 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.

§ 3.5 WARRANTY

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 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, the Contractor shall furnish satisfactory evidence as to the kind and quality of materials and equipment.

§ 3.6 TAXES

The Contractor shall pay sales, consumer, use and similar taxes for the Work 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.

§ 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.

§ 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. 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 21 days after first observation 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 an equitable adjustment 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 in writing, stating the reasons. If either party disputes the Architect's determination or recommendation, that party may proceed 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.

§ 3.8 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 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.

§ 3.9.2 The Contractor, as soon as practicable after award of the Contract, shall furnish in writing to the Owner through the Architect the name and qualifications of a proposed superintendent. The Architect may reply within 14 days to the Contractor in writing stating (1) whether the Owner or the Architect has reasonable objection to the proposed superintendent or (2) that the Architect requires additional time to review. Failure of the Architect to reply 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.

§ 3.10 CONTRACTOR'S CONSTRUCTION SCHEDULES

§ 3.10.1 The Contractor, promptly after being awarded the Contract, shall prepare and submit for the Owner's and Architect's information a Contractor's construction schedule for the Work. The schedule shall not exceed time limits current under the Contract Documents, shall be revised at appropriate intervals as required by the conditions of the Work and Project, shall be related to the entire Project to the extent required by the Contract Documents, and shall provide for expeditious and practicable execution of the Work.

§ 3.10.2 The Contractor shall prepare a submittal schedule, promptly after being awarded the Contract and thereafter as necessary to maintain a current submittal schedule, and shall submit the schedule(s) for the Architect's approval. The Architect's approval shall not unreasonably be 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, 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 with the most recent schedules submitted to the Owner and Architect.

§ 3.11 DOCUMENTS AND SAMPLES AT THE SITE

The Contractor shall maintain at the site for the Owner one copy of the Drawings, Specifications, Addenda, Change Orders and other Modifications, in good order and marked currently to indicate field changes and selections made during construction, and one copy of approved Shop Drawings, Product Data, Samples and similar required submittals. These shall be available to the Architect and shall be delivered to the Architect for submittal to the Owner upon completion of the Work as a record of the Work as constructed.

§ 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 the way by which 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 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 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.

§ 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 requirements of the Contract Documents by the Architect's approval of Shop Drawings, Product Data, Samples or similar submittals unless the Contractor has specifically informed the Architect in writing 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 written 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. 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 cause such services or certifications to be provided by a properly licensed design professional, 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, accuracy and completeness of the services, certifications and approvals performed or provided by such design professionals, provided the Owner and Architect have specified to the Contractor all performance and design criteria that such services must satisfy. Pursuant to this Section 3.12.10, the Architect will review, 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. The Contractor shall not be responsible for the adequacy of the performance and design criteria specified in the Contract Documents.

§ 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, and lawful orders of public authorities and the Contract Documents and shall not unreasonably encumber the site with materials or equipment.

§ 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 and patching shall be restored to the condition existing prior to the cutting, fitting and 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 such construction by the Owner or a separate contractor except with written consent of the Owner and of such separate contractor; such consent shall not be unreasonably withheld. The Contractor shall not unreasonably withhold from the Owner or a separate contractor the Contractor's 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 or rubbish caused by operations under the Contract. 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 Owner shall be entitled to reimbursement from the Contractor.

§ 3.16 ACCESS TO WORK

The Contractor shall provide the Owner and Architect 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 such 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 prepared by the Owner or Architect. However, if the Contractor has reason to believe that the required design, process or product is an infringement of a copyright or a patent, the Contractor shall be responsible for such loss unless such information is promptly furnished to the Architect.

§ 3.18.1 INDEMNIFICATION

§ 3.18.1 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.

ARTICLE 4 ARCHITECT

§ 4.1 GENERAL

§ 4.1.1 The Owner shall 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.

§ 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.

§ 4.1.3 If the employment of the Architect is terminated, the Owner shall employ a successor architect as to whom the Contractor has no reasonable objection and whose status under the Contract Documents shall be that of the Architect.

§ 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 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.

§ 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, except as provided in Section 3.3.1.

§ 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 report to the Owner (1) known deviations from the Contract Documents and from the most recent construction schedule submitted by the Contractor, and (2) 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 FACILITATING CONTRACT ADMINISTRATION

Except as otherwise provided in the Contract Documents or when direct communications have been specially authorized, the Owner and Contractor shall endeavor to communicate with each other through the Architect about matters arising out of or relating to the Contract. Communications by and with the Architect's consultants shall be through the Architect. Communications by and with Subcontractors and material suppliers shall be through the Contractor. Communications by and with separate contractors shall be through the Owner.

§ 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 13.5.2 and 13.5.3, whether or not such 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, material and equipment 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 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, unless otherwise specifically stated by the Architect, 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.

§ 4.2.8 The Architect will prepare Change Orders and Construction Change Directives, and may authorize 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 duties, responsibilities and limitations of authority of such project representatives shall be as set forth in an exhibit to be incorporated in the Contract Documents.

§ 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 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.

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 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 Unless otherwise stated in the Contract Documents or the bidding requirements, the Contractor, as soon as practicable after award of the Contract, shall furnish in writing to the Owner through the Architect the names of persons or entities (including those who are to furnish materials or equipment fabricated to a special design) proposed for each principal portion of the Work. The Architect may reply within 14 days to the Contractor in writing stating (1) whether the Owner or the Architect has reasonable objection to any such proposed person or entity or (2) that the Architect requires additional time for review. Failure of the Owner or Architect to reply 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 previously selected if the Owner or Architect makes reasonable objection to such substitution.

§ 5.3 SUBCONTRACTUAL RELATIONS

By appropriate agreement, written where legally required for validity, 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, which the Contractor, by these 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 and only for those subcontract agreements that the Owner accepts by notifying the Subcontractor and Contractor in writing; and
- .2 assignment is subject to the prior rights of the surety, if any, obligated under bond relating to the Contract.

When the Owner accepts the assignment of a subcontract agreement, the Owner assumes the Contractor's rights and obligations under the subcontract.

§ 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 cost resulting from the suspension.

§ 5.4.3 Upon such 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 Owner reserves the right to perform construction or operations related to the Project with the Owner's own forces, and to award separate contracts in connection with other portions of the Project or other construction or operations on the site under Conditions of the Contract identical or substantially similar to these including those portions related to insurance and waiver of subrogation. If the Contractor claims that delay or additional cost is involved because of such action by the Owner, the Contractor shall make such Claim as provided in Article 15.

§ 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 shall 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. The Contractor shall participate with other separate contractors and the Owner in reviewing their construction schedules. The Contractor shall make any revisions to the 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, the Owner shall be deemed to be subject to the same obligations and to have the same rights that apply to the Contractor 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 report to the Architect apparent discrepancies or defects in such other construction that would render it unsuitable for such proper execution and results. Failure of the Contractor so to report 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, except as to defects not then reasonably discoverable.

§ 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 the Contractor wrongfully causes to completed or partially completed construction or to property of the Owner or separate contractors 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.

§ 6.3 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.

§ 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, and the Contractor shall proceed promptly, unless otherwise provided in the Change Order, Construction Change Directive or order for a minor change in the Work.

§ 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;
- .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.

§ 7.3 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 Jump 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 7.3.7.

§ 7.3.4 If unit prices are stated in the Contract Documents or subsequently agreed upon, and if quantities originally contemplated are materially changed in a proposed Change Order or Construction Change Directive so that application of such unit prices to quantities of Work proposed will cause substantial inequity to the Owner or Contractor, the applicable unit prices shall be equitably adjusted.

§ 7.3.5 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.

§ 7.3.6 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.

§ 7.3.7 If the Contractor does not respond promptly or disagrees with the method for adjustment in the Contract Sum, the Architect shall determine the method and 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 7.3.7 shall be limited to the following:

- 1 Costs of labor, including social security, old age and unemployment insurance, fringe benefits required by agreement or custom, and workers' compensation insurance;
- 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 related to the Work; and
- 5 Additional costs of supervision and field office personnel directly attributable to the change.

§ 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 has authority to order minor changes in the Work not involving adjustment in the Contract Sum or extension of the Contract Time and not inconsistent with the intent of the Contract Documents. Such changes will be effected by written order signed by the Architect and shall be binding on the Owner and Contractor.

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 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, prematurely commence operations on the site or elsewhere prior to the effective date of insurance required by Article 11 to be furnished by the Contractor and Owner. The date of commencement of the Work shall not be changed by the effective date of such insurance.

§ 8.2.3 The Contractor shall proceed expeditiously with adequate forces and shall achieve Substantial Completion within the Contract Time.

§ 8.3 DELAYS AND EXTENSIONS OF TIME

§ 8.3.1 If the Contractor is delayed at any time in the commencement or progress of the Work by an act or neglect of the Owner or Architect, or of an employee of either, or of a separate contractor employed by the Owner; or by changes ordered in the Work; or by labor disputes, fire, unusual delay in deliveries, unavoidable casualties or other causes beyond the Contractor's control; or by delay authorized by the Owner pending mediation and arbitration; or by other causes that the Architect determines may justify delay, then the Contract Time shall be extended by Change Order for such reasonable time as the Architect may determine.

§ 8.3.2 Claims relating to time shall be made in accordance with applicable provisions of Article 15.

§ 8.3.3 This Section 8.3 does not preclude recovery of damages for delay by either party under other provisions of the Contract Documents.

ARTICLE 9 PAYMENTS AND COMPLETION

§ 9.1 CONTRACT SUM

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.

§ 9.2 SCHEDULE OF VALUES

Where the Contract is based on a stipulated sum or Guaranteed Maximum Price, the Contractor shall submit to the Architect, before the first Application for Payment, a schedule of values allocating the entire Contract Sum to the various portions of the Work and prepared in such form and supported by such data to substantiate its accuracy as the Architect may require. This schedule, unless objected to by the Architect, shall be used as a basis for reviewing the Contractor's Applications for Payment.

§ 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. Such application shall be notarized, if required, and supported by such data substantiating the Contractor's right to payment as the Owner or Architect may require, such as copies of requisitions from Subcontractors and material 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 material 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. 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.

§ 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, material suppliers, or other persons or entities making a claim by reason of having 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 issue to the Owner a Certificate for Payment, with a copy to the Contractor, for such amount as the Architect determines is properly due, or notify the Contractor and Owner in writing of the Architect's reasons for withholding certification in whole or in part 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 comprising the Application for Payment, that, to the best of the Architect's knowledge, information and belief, the Work has progressed to the point indicated and that the quality of the Work is in accordance with the Contract Documents. 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. The issuance of a Certificate for Payment will further constitute a representation that the Contractor is entitled to payment in the amount certified. 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 material 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 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 the above reasons for withholding certification are removed, certification will be made for amounts previously withheld.

§ 9.5.3 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 material or equipment suppliers 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 Architect will reflect such payment on the next Certificate 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 material and equipment 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 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, except as may otherwise be required by law.

§ 9.6.5 Contractor payments to material and equipment 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 and 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, shall create any fiduciary liability or tort liability on the part of the Contractor for breach of trust or shall entitle any person or entity to an award of punitive damages against the Contractor for breach of the requirements of this provision.

§ 9.7 FAILURE OF PAYMENT

If the Architect does not issue a Certificate for Payment, through no fault of the Contractor, within seven days after receipt of the Contractor's Application for Payment, or if the Owner does not pay the Contractor within seven 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' written notice to the Owner and Architect, stop the Work until payment of the amount owing 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 costs of shut-down, delay and start-up, plus interest as provided for in the Contract Documents.

§ 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.

§ 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 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 will make an inspection to determine whether the Work or designated portion thereof is substantially complete. If the Architect'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 to determine Substantial Completion.

§ 9.8.4 When the Work or designated portion thereof is substantially complete, the Architect will prepare a Certificate of Substantial Completion that shall establish the date of Substantial Completion, shall establish responsibilities of the Owner and Contractor for security, maintenance, heat, utilities, damage to the Work and insurance, and shall 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.

§ 9.8.5 The Certificate of Substantial Completion shall be submitted to the Owner and Contractor for their written acceptance of responsibilities assigned to them in such Certificate. Upon such acceptance and consent of surety, if any, the Owner shall make payment of retainage applying to such 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.

§ 9.9 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 as required under Section 11.3.1.5 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. 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 written 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 and, 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 terms and conditions of 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 (I) 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 and will not be canceled or allowed to expire until at least 30 days' prior written notice has been given to the Owner, (3) a written statement that the Contractor knows of no substantial 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 and (5), if required by the Owner, other data establishing payment or satisfaction of obligations, such as receipts, 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. If such lien 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 such lien, including all costs and reasonable attorneys' fees.

§ 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 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 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; or
- .3 terms of special warranties required by the Contract Documents.

§ 9.10.5 Acceptance of final payment by the Contractor, a Subcontractor or material 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.

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 or the Contractor's Subcontractors or Sub-subcontractors; 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.

§ 10.2.3 The Contractor shall 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 owners and users of adjacent sites and utilities.

§ 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, except damage or loss 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 such 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.

§ 10.3 HAZARDOUS MATERIALS

§ 10.3.1 The Contractor is responsible for compliance with any requirements included in the Contract Documents regarding hazardous materials. 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 report the condition to the Owner and Architect in writing.

§ 10.3.2 Upon receipt of the Contractor's written 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 such material or substance or who are to perform the task of removal or safe containment of such 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 in the amount of the Contractor's reasonable additional costs of shut-down, delay and start-up.

§ 10.3.3 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 The Owner shall not be responsible under this Section 10.3 for 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 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 indemnify the Owner for the cost and expense the Owner incurs (1) for remediation of a material or substance 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 indemnify 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 LIABILITY INSURANCE

§ 11.1.1 The Contractor shall purchase from and maintain in a company or companies lawfully authorized to do business in the jurisdiction in which the Project is located such insurance as will protect the Contractor from claims set forth below which may arise out of or result from the Contractor's operations and completed operations under the Contract and for which the Contractor may be legally liable, whether such operations be by the Contractor or by a Subcontractor or by anyone directly or indirectly employed by any of them, or by anyone for whose acts any of them may be liable:

- .1 Claims under workers' compensation, disability benefit and other similar employee benefit acts that are applicable to the Work to be performed;
- .2 Claims for damages because of bodily injury, occupational sickness or disease, or death of the Contractor's employees;
- .3 Claims for damages because of bodily injury, sickness or disease, or death of any person other than the Contractor's employees;
- .4 Claims for damages insured by usual personal injury liability coverage;
- .5 Claims for damages, other than to the Work itself, because of injury to or destruction of tangible property, including loss of use resulting therefrom;
- .6 Claims for damages because of bodily injury, death of a person or property damage arising out of ownership, maintenance or use of a motor vehicle;
- .7 Claims for bodily injury or property damage arising out of completed operations; and
- .8 Claims involving contractual liability insurance applicable to the Contractor's obligations under Section 3.18.

§ 11.1.2 The insurance required by Section 11.1.1 shall be written for not less than limits of liability specified in the Contract Documents or required by law, whichever coverage is greater. Coverages, whether written on an occurrence or claims-made basis, shall be maintained without interruption from the date of commencement of the

Work until the date of final payment and termination of any coverage required to be maintained after final payment, and, with respect to the Contractor's completed operations coverage, until the expiration of the period for correction of Work or for such other period for maintenance of completed operations coverage as specified in the Contract Documents.

§ 11.1.3 Certificates of insurance acceptable to the Owner shall be filed with the Owner prior to commencement of the Work and thereafter upon renewal or replacement of each required policy of insurance. These certificates and the insurance policies required by this Section 11.1 shall contain a provision that coverages afforded under the policies will not be canceled or allowed to expire until at least 30 days' prior written notice has been given to the Owner. An additional certificate evidencing continuation of liability coverage, including coverage for completed operations, shall be submitted with the final Application for Payment as required by Section 9.10.2 and thereafter upon renewal or replacement of such coverage until the expiration of the time required by Section 11.1.2. Information concerning reduction of coverage on account of revised limits or claims paid under the General Aggregate, or both, shall be furnished by the Contractor with reasonable promptness.

§ 11.1.4 The Contractor shall cause the commercial liability coverage required by the Contract Documents 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 during the Contractor's completed operations.

§ 11.2 OWNER'S LIABILITY INSURANCE

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

§ 11.3 PROPERTY INSURANCE

§ 11.3.1 Unless otherwise provided, the Owner shall purchase and maintain, in a company or companies lawfully authorized to do business in the jurisdiction in which the Project is located, property insurance written on a builder's risk "all-risk" or equivalent policy form in the amount of the initial Contract Sum, plus value of subsequent Contract Modifications and cost of materials supplied or installed by others, comprising total value for the entire Project at the site on a replacement cost basis without optional deductibles. Such property insurance shall be maintained, unless otherwise provided in the Contract Documents or otherwise agreed in writing by all persons and entities who are beneficiaries of such insurance, until final payment has been made as provided in Section 9.10 or until no person or entity other than the Owner has an insurable interest in the property required by this Section 11.3 to be covered, whichever is later. This insurance shall include interests of the Owner, the Contractor, Subcontractors and Sub-subcontractors in the Project.

§ 11.3.1.1 Property insurance shall be on an "all-risk" or equivalent policy form and shall include, without limitation, insurance against the perils of fire (with extended coverage) and physical loss or damage including, without duplication of coverage, theft, vandalism, malicious mischief, collapse, earthquake, flood, windstorm, falsework, testing and startup, temporary buildings and debris removal including demolition occasioned by enforcement of any applicable legal requirements, and shall cover reasonable compensation for Architect's and Contractor's services and expenses required as a result of such insured loss.

§ 11.3.1.2 If the Owner does not intend to purchase such property insurance required by the Contract and with all of the coverages in the amount described above, the Owner shall so inform the Contractor in writing prior to commencement of the Work. The Contractor may then effect insurance that will protect the interests of the Contractor, Subcontractors and Sub-subcontractors in the Work, and by appropriate Change Order the cost thereof shall be charged to the Owner. If the Contractor is damaged by the failure or neglect of the Owner to purchase or maintain insurance as described above, without so notifying the Contractor in writing, then the Owner shall bear all reasonable costs properly attributable thereto.

§ 11.3.1.3 If the property insurance requires deductibles, the Owner shall pay costs not covered because of such deductibles.

§ 11.3.1.4 This property insurance shall cover portions of the Work stored off the site, and also portions of the Work in transit.

§ 11.3.1.5 Partial occupancy or use in accordance with Section 9.9 shall not commence until the insurance company or companies providing property insurance have consented to such partial occupancy or use by endorsement or otherwise. The Owner and the Contractor shall take reasonable steps to obtain consent of the insurance company or companies and shall, without mutual written consent, take no action with respect to partial occupancy or use that would cause cancellation, lapse or reduction of insurance.

§ 11.3.2 BOILER AND MACHINERY INSURANCE

The Owner shall purchase and maintain boiler and machinery insurance required by the Contract Documents or by law, which shall specifically cover such insured objects during installation and until final acceptance by the Owner; this insurance shall include interests of the Owner, Contractor, Subcontractors and Sub-subcontractors in the Work, and the Owner and Contractor shall be named insureds.

§ 11.3.3 LOSS OF USE INSURANCE

The Owner, at the Owner's option, may purchase and maintain such insurance as will insure the Owner against loss of use of the Owner's property due to fire or other hazards, however caused. The Owner waives all rights of action against the Contractor for loss of use of the Owner's property, including consequential losses due to fire or other hazards however caused.

§ 11.3.4 If the Contractor requests in writing that insurance for risks other than those described herein or other special causes of loss be included in the property insurance policy, the Owner shall, if possible, include such insurance, and the cost thereof shall be charged to the Contractor by appropriate Change Order.

§ 11.3.5 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, the Owner shall waive all rights in accordance with the terms of Section 11.3.7 for damages caused by fire or other causes of loss covered by this separate property insurance. All separate policies shall provide this waiver of subrogation by endorsement or otherwise.

§ 11.3.6 Before an exposure to loss may occur, the Owner shall file with the Contractor a copy of each policy that includes insurance coverages required by this Section 11.3. Each policy shall contain all generally applicable conditions, definitions, exclusions and endorsements related to this Project. Each policy shall contain a provision that the policy will not be canceled or allowed to expire, and that its limits will not be reduced, until at least 30 days' prior written notice has been given to the Contractor.

§ 11.3.7 WAIVERS OF SUBROGATION

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, and (2) the Architect, Architect's consultants, separate contractors described in Article 6, 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 covered by property insurance obtained pursuant to this Section 11.3 or other property insurance applicable to the Work, except such rights as they have to proceeds of such insurance held by the Owner as fiduciary. The Owner or Contractor, as appropriate, shall require of the Architect, Architect's consultants, separate contractors described in Article 6, if any, and the subcontractors, sub-subcontractors, agents and employees of any of them, by appropriate agreements, written where legally required for validity, similar waivers each in favor of other parties enumerated herein. The policies shall provide such waivers of subrogation by endorsement or otherwise. A waiver of subrogation shall be effective as to a person or entity even though that person or entity would otherwise have a duty of indemnification, contractual or otherwise, did not pay the insurance premium directly or indirectly, and whether or not the person or entity had an insurable interest in the property damaged.

§ 11.3.8 A loss insured under the Owner's property insurance shall be adjusted by the Owner as fiduciary and made payable to the Owner as fiduciary for the insureds, as their interests may appear, subject to requirements of any applicable mortgagee clause and of Section 11.3.10. The Contractor shall pay Subcontractors their just shares of insurance proceeds received by the Contractor, and by appropriate agreements, written where legally required for validity, shall require Subcontractors to make payments to their Sub-subcontractors in similar manner.

§ 11.3.9 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, or as determined in accordance with the method of binding dispute resolution selected in the Agreement between the Owner and Contractor. 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.

§ 11.3.10 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 is made, the dispute shall be resolved in the manner selected by the Owner and Contractor as the method of binding dispute resolution in the Agreement. If the Owner and Contractor have selected arbitration as the method of binding dispute resolution, the Owner as fiduciary shall make settlement with insurers or, in the case of a dispute over distribution of insurance proceeds, in accordance with the directions of the arbitrators.

§ 11.4 PERFORMANCE BOND AND PAYMENT BOND

§ 11.4.1 The Owner shall have the right to require the Contractor to furnish bonds covering faithful performance of the Contract and payment of obligations arising thereunder as stipulated in bidding requirements or specifically required in the Contract Documents on the date of execution of the Contract.

§ 11.4.2 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.

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 request or to requirements specifically expressed in the Contract Documents, it must, if requested in writing by the Architect, be uncovered for the Architect'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, costs of uncovering and replacement shall, by appropriate Change Order, be at the Owner's expense. If such Work is not in accordance with the Contract Documents, such costs and the cost of correction shall be at the Contractor's expense unless the condition was caused by the Owner or a separate contractor in which event the Owner shall be responsible for payment of such costs.

§ 12.2 CORRECTION OF WORK

§ 12.2.1 BEFORE OR AFTER SUBSTANTIAL COMPLETION

The Contractor shall promptly correct Work rejected by the Architect or 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 an 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 written 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 2.4.

§ 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, whether completed or partially completed, of the Owner or separate contractors 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.

§ 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 except that, if the parties have selected arbitration as the method of binding dispute resolution, the Federal Arbitration Act shall govern Section 15.4.

§ 13.2 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 such an assignment without such consent, that party 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 such assignment.

§ 13.3 WRITTEN NOTICE

Written notice shall be deemed to have been duly served if delivered in person to the individual, to a member of the firm or entity, or to an officer of the corporation for which it was intended; or if delivered at, or sent by registered or certified mail or by courier service providing proof of delivery to, the last business address known to the party giving notice.

§ 13.4 RIGHTS AND REMEDIES

§ 13.4.1 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.

§ 13.4.2 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 there under, except as may be specifically agreed in writing.

§ 13.5 TESTS AND INSPECTIONS

§ 13.5.1 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 (1) tests, inspections or approvals that do not become requirements until after bids are received or negotiations concluded, and (2) tests, inspections or approvals where building codes or applicable laws or regulations prohibit the Owner from delegating their cost to the Contractor.

§ 13.5.2 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 13.5.1, 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 acceptable to 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 13.5.3, shall be at the Owner's expense.

§ 13.5.3 If such procedures for testing, inspection or approval under Sections 13.5.1 and 13.5.2 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.

§ 13.5.4 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.

§ 13.5.5 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.

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

§ 13.6 INTEREST

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

§ 13.7 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, 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 13.7.

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 30 consecutive days through no act or fault of the Contractor or a Subcontractor, Sub-subcontractor or their agents or employees or any other persons or entities performing portions of the Work under direct or indirect contract with the Contractor, 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;
- .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 promptly, upon the Contractor's request, reasonable evidence as required by Section 2.2.1.

§ 14.1.2 The Contractor may terminate the Contract if, through no act or fault of the Contractor or a Subcontractor, Sub-subcontractor or their agents or employees or any other persons or entities performing portions of the Work under direct or indirect contract with the Contractor, 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' written notice to the Owner and Architect, terminate the Contract and recover from the Owner payment for Work executed, including reasonable overhead and profit, costs incurred by reason of such termination, and damages.

§ 14.1.4 If the Work is stopped for a period of 60 consecutive days through no act or fault of the Contractor or a Subcontractor or their agents or employees or any other persons performing portions of the Work under contract with the Contractor because the Owner has repeatedly failed to fulfill the Owner's obligations under the Contract Documents with respect to 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 for materials or labor in accordance with the respective agreements between the Contractor and the Subcontractors;
- .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.

§ 14.2.2 When any of the above reasons exist, the Owner, upon certification by the Initial Decision Maker that sufficient cause exists to justify such action, 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' written 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
- .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, 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 cost and time caused by suspension, delay or interruption as described in Section 14.3.1. Adjustment of the Contract Sum shall 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 equitable 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 written 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 Contractor shall be entitled to receive payment for Work executed, and costs incurred by reason of such termination, along with reasonable overhead and profit on the Work not executed.

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, 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.

§ 15.1.2 NOTICE OF CLAIMS

Claims by either the Owner or Contractor must be initiated by written 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 must 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 CONTINUING CONTRACT PERFORMANCE

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. The Architect will prepare Change Orders and issue Certificates for Payment in accordance with the decisions of the Initial Decision Maker.

§ 15.1.4 CLAIMS FOR ADDITIONAL COST

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

§ 15.1.5 CLAIMS FOR ADDITIONAL TIME

§ 15.1.5.1 If the Contractor wishes to make a Claim for an increase in the Contract Time, written notice as provided herein 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.

§ 15.1.5.21 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.

§ 15.1.6 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 15.1.6 shall be deemed to preclude an award of liquidated damages, when applicable, in accordance with the requirements of the Contract Documents.

§ 15.21 INITIAL DECISION

§ 15.2.1 Claims, excluding those arising under Sections 10.3, 10.4, 11.3.9, and 11.3.10, 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 arising prior to the date final payment is due, unless 30 days have passed after the Claim has been referred to the Initial Decision Maker with no 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 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 is unable to resolve the Claim if the Initial Decision Maker lacks sufficient information to evaluate the merits of the Claim or if the Initial Decision Maker concludes that, in the Initial Decision Maker's sole discretion, it would be inappropriate for the Initial Decision Maker to resolve the Claim.

§ 15.2.3 In evaluating Claims, the Initial Decision Maker 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 in rendering a decision. The Initial Decision Maker may request the Owner to authorize retention of such persons at the Owner's expense.

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

§ 15.2.5 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 an initial decision, demand in writing that the other party file for mediation within 60 days of the initial decision. If such a demand is made and the party receiving the demand fails to file for mediation within the time required, 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 15.1.6 shall be subject to mediation as a condition precedent to binding dispute resolution.

§ 15.3.2 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 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.

§ 15.4 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. 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 Either party, at its sole discretion, may consolidate an arbitration conducted under this Agreement with any other arbitration to which it is a party provided that (I) 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 Either party, at its sole discretion, 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 the Owner and Contractor under this Agreement.

Document A30S™ -1986

Contractor's Qualification Statement

The Undersigned certifies under oath that the information provided herein is true and sufficiently complete so as not to be misleading.

SUBMITTED TO:

ADDRESS:

SUBMITTED BY:

NAME:

ADDRESS:

PRINCIPAL OFFICE:

- Corporation
- Partnership
- Individual
- Joint Venture
- Other

NAME OF PROJECT: *(if applicable)*

TYPE OF WORK: *(file separate form for each Classification of Work)*

- General Construction
- HVAC
- Electrical
- Plumbing
- Other: *(Specify)*

§ 1 ORGANIZATION

§ 1.1 How many years has your organization been in business as a Contractor?

§ 1.2 How many years has your organization been in business under its present business name?

§ 1.2.1 Under what other or former names has your organization operated?

§ 1.3 If your organization is a corporation, answer the following:

- § 1.3.1 Date of incorporation:
- § 1.3.2 State of incorporation:
- § 1.3.3 President's name:

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.

This form is approved and recommended by the American Institute of Architects (AIA) and The Associated General Contractors of America (AGC) for use in evaluating the qualifications of contractors. No endorsement of the submitting party or verification of the information is made by AIA or AGC.

§ 1.3.4 Vice-president's name(s)

§ 1.3.5 Secretary's name:

§ 1.3.6 Treasurer's name:

§ 1.4 If your organization is a partnership, answer the following:

§ 1.4.1 Date of organization:

§ 1.4.2 Type of partnership (if applicable):

§ 1.4.3 Name(s) of general partner(s)

§ 1.5 If your organization is individually owned, answer the following:

§ 1.5.1 Date of organization:

§ 1.5.2 Name of owner:

§ 1.6 If the form of your organization is other than those listed above, describe it and name the principals:

§ 2 LICENSING

§ 2.1 List jurisdictions and trade categories in which your organization is legally qualified to do business, and indicate registration or license numbers, if applicable.

§ 2.2 List jurisdictions in which your organization's partnership or trade name is filed.

§ 3 EXPERIENCE

§ 3.1 List the categories of work that your organization normally performs with its own forces.

§ 3.2 Claims and Suits. (If the answer to any of the questions below is yes, please attach details.)

§ 3.2.1 Has your organization ever failed to complete any work awarded to it?

§ 3.2.2 Are there any judgments, claims, arbitration proceedings or suits pending or outstanding against your organization or its officers?

§ 3.2.3 Has your organization filed any law suits or requested arbitration with regard to construction contracts within the last five years?

§ 3.3 Within the last five years, has any officer or principal of your organization ever been an officer or principal of another organization when it failed to complete a construction contract? (If the answer is yes, please attach details.)

§ 3.4 On a separate sheet, list major construction projects your organization has in progress, giving the name of project, owner, architect, contract amount, percent complete and scheduled completion date.

§ 3.4.1 State total worth of work in progress and under contract:

§ 3.5 On a separate sheet, list the major projects your organization has completed in the past five years, giving the name of project, owner, architect, contract amount, date of completion and percentage of the cost of the work performed with your own forces.

§ 3.5.1 State average annual amount of construction work performed during the past five years:

§ 3.6 On a separate sheet, list the construction experience and present commitments of the key individuals of your organization .

§ 4 REFERENCES

§ 4.1 Trade References:

§ 4.2 Bank References:

§ 4.3 Surety:

§ 4.3.1 Name of bonding company:

§ 4.3.2 Name and address of agent:

§ 5 FINANCING

§ 5.1 Financial Statement.

§ 5.1.1 Attach a financial statement, preferably audited, including your organization 's latest balance sheet and income statement showing the following items:

Current Assets (e.g., cash, joint venture accounts, accounts receivable, notes receivable, accrued income, deposits, materials inventory and prepaid expenses);

Net Fixed Assets;

Other Assets;

Current Liabilities (e.g., accounts payable, notes payable, accrued expenses, provision for income taxes, advances, accrued salaries and accrued payroll taxes);

Other Liabilities (e.g., capital, capital stock, authorized and outstanding shares par values, earned surplus and retained earnings).

§ 5.1.2 Name and address of firm preparing attached financial statement, and date thereof:

§ 5.1.3 Is the attached financial statement for the identical organization named on page one?

§ 5.1.4 If not, explain the relationship and financial responsibility of the organization whose financial statement is provided (e.g., parent-subsidiary).

§ 5.2 Will the organization whose financial statement is attached act as guarantor of the contract for construction?

§ 6 SIGNATURE

§ 6.1 Dated at this day of

Name of Organization:

By:

Title:

§ 6.2

M being duly sworn deposes and says that the information provided herein is true and sufficiently complete so as not to be misleading.

Subscribed and sworn before me this day of

Notary Public:

My Commission Expires:

 **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)*

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

ADDITIONS AND DELETIONS:

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



AIA

Document A312™- 2010

Payment Bond

CONTRACTOR:
(Name, legal status and address)

SURETY:
(Name, legal status and principal place of business)

OWNER:
(Name, legal status and address)

CONSTRUCTION CONTRACT

Date:
Amount:\$
Description:
(Name and location)

BOND

Date:
(Not earlier than Construction Contract Date)

Amount:\$
Modifications to this Bond: **c:=J** None **r==J** See Section 18

CONTRACTOR AS PRINCIPAL
Company: *(Corporate Seal)*

SURETY
Company: *(Corporate Seal)*

Signature: _____
Name and
Title:

Signature: _____
Name and
Title:

(Any additional signatures appear on the last page of this Payment Bond)

(FOR INFORMATION ONLY — Name, address and telephone)

AGENT or BROKER:

OWNER'S REPRESENTATIVE:
(Architect, Engineer or other parry:)

ADDITIONS AND DELETIONS:
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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.

§ 1 The Contractor and Surety, jointly and severally, bind themselves, their heirs, executors, administrators, successors and assigns to the Owner to pay for labor, materials and equipment furnished for use in the performance of the Construction Contract, which is incorporated herein by reference, subject to the following terms.

§ 2 If the Contractor promptly makes payment of all sums due to Claimants, and defends, indemnifies and holds harmless the Owner from claims, demands, liens or suits by any person or entity seeking payment for labor, materials or equipment furnished for use in the performance of the Construction Contract, then the Surety and the Contractor shall have no obligation under this Bond.

§ 3 If there is no Owner Default under the Construction Contract, the Surety's obligation to the Owner under this Bond shall arise after the Owner has promptly notified the Contractor and the Surety (at the address described in Section 13) of claims, demands, liens or suits against the Owner or the Owner's property by any person or entity seeking payment for labor, materials or equipment furnished for use in the performance of the Construction Contract and tendered defense of such claims, demands, liens or suits to the Contractor and the Surety.

§ 4 When the Owner has satisfied the conditions in Section 3, the Surety shall promptly and at the Surety's expense defend, indemnify and hold harmless the Owner against a duly tendered claim, demand, lien or suit.

§ 5 The Surety's obligations to a Claimant under this Bond shall arise after the following:

§ 5.1 Claimants, who do not have a direct contract with the Contractor,

- .1 have furnished a written notice of non-payment to the Contractor, stating with substantial accuracy the amount claimed and the name of the party to whom the materials were, or equipment was, furnished or supplied or for whom the labor was done or performed, within ninety (90) days after having last performed labor or last furnished materials or equipment included in the Claim; and
- .2 have sent a Claim to the Surety (at the address described in Section 13).

§ 5.2 Claimants, who are employed by or have a direct contract with the Contractor, have sent a Claim to the Surety (at the address described in Section 13).

§ 6 If a notice of non-payment required by Section 5.1.1 is given by the Owner to the Contractor, that is sufficient to satisfy a Claimant's obligation to furnish a written notice of non-payment under Section 5.1.1.

§ 7 When a Claimant has satisfied the conditions of Sections 5.1 or 5.2, whichever is applicable, the Surety shall promptly and at the Surety's expense take the following actions:

§ 7.1 Send an answer to the Claimant, with a copy to the Owner, within sixty (60) days after receipt of the Claim, stating the amounts that are undisputed and the basis for challenging any amounts that are disputed; and

§ 7.2 Pay or arrange for payment of any undisputed amounts.

§ 7.3 The Surety's failure to discharge its obligations under Section 7.1 or Section 7.2 shall not be deemed to constitute a waiver of defenses the Surety or Contractor may have or acquire as to a Claim, except as to undisputed amounts for which the Surety and Claimant have reached agreement. If, however, the Surety fails to discharge its obligations under Section 7.1 or Section 7.2, the Surety shall indemnify the Claimant for the reasonable attorney's fees the Claimant incurs thereafter to recover any sums found to be due and owing to the Claimant.

§ 8 The Surety's total obligation shall not exceed the amount of this Bond, plus the amount of reasonable attorney's fees provided under Section 7.3, and the amount of this Bond shall be credited for any payments made in good faith by the Surety.

§ 9 Amounts owed by the Owner to the Contractor under the Construction Contract shall be used for the performance of the Construction Contract and to satisfy claims, if any, under any construction performance bond. By the Contractor furnishing and the Owner accepting this Bond, they agree that all funds earned by the Contractor in the performance of the Construction Contract are dedicated to satisfy obligations of the Contractor and Surety under this Bond, subject to the Owner's priority to use the funds for the completion of the work.

§ 10 The Surety shall not be liable to the Owner, Claimants or others for obligations of the Contractor that are unrelated to the Construction Contract. The Owner shall not be liable for the payment of any costs or expenses of any Claimant under this Bond, and shall have under this Bond no obligation to make payments to, or give notice on behalf of, Claimants or otherwise have any obligations to Claimants under this Bond.

§ 11 The Surety hereby waives notice of any change, including changes of time, to the Construction Contract or to related subcontracts, purchase orders and other obligations.

§ 12 No suit or action shall be commenced by a Claimant under this Bond other than in a court of competent jurisdiction in the state in which the project that is the subject of the Construction Contract is located or after the expiration of one year from the date (1) on which the Claimant sent a Claim to the Surety pursuant to Section 5.1.2 or 5.2, or (2) on which the last labor or service was performed by anyone or the last materials or equipment were furnished by anyone under the Construction Contract, whichever of (1) or (2) first occurs. If the provisions of this Paragraph are void or prohibited by law, the minimum period of limitation available to sureties as a defense in the jurisdiction of the suit shall be applicable.

§ 13 Notice and Claims to the Surety, the Owner or the Contractor shall be mailed or delivered to the address shown on the page on which their signature appears. Actual receipt of notice or Claims, however accomplished, shall be sufficient compliance as of the date received.

§ 14 When this Bond has been furnished to comply with a statutory or other legal requirement in the location where the construction was to be performed, 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.

§ 15 Upon request by any person or entity appearing to be a potential beneficiary of this Bond, the Contractor and Owner shall promptly furnish a copy of this Bond or shall penn it a copy to be made.

§ 16 Definitions

§ 16.1 Claim. A written statement by the Claimant including at a minimum:

- .1 the name of the Claimant;
- .2 the name of the person for whom the labor was done, or materials or equipment furnished;
- .3 a copy of the agreement or purchase order pursuant to which labor, materials or equipment was furnished for use in the performance of the Construction Contract;
- .4 a brief description of the labor, materials or equipment furnished;
- .5 the date on which the Claimant last performed labor or last furnished materials or equipment for use in the performance of the Construction Contract;
- .6 the total amount earned by the Claimant for labor, materials or equipment furnished as of the date of the Claim;
- .7 the total amount of previous payments received by the Claimant; and
- .8 the total amount due and unpaid to the Claimant for labor, materials or equipment furnished as of the date of the Claim.

§ 16.2 Claimant. An individual or entity having a direct contract with the Contractor or with a subcontractor of the Contractor to furnish labor, materials or equipment for use in the performance of the Construction Contract. The tenn Claimant also includes any individual or entity that has rightfully asserted a claim under an applicable mechanic's lien or similar statute against the real property upon which the Project is located. The intent of this Bond shall be to include without limitation in the tenns "labor, materials or equipment" that part of water, gas, power, light, heat, oil, gasoline, telephone service or rental equipment used in the Construction Contract, architectural and engineering services required for performance of the work of the Contractor and the Contractor's subcontractors, and all other items for which a mechanic's lien may be asserted in the jurisdiction where the labor, materials or equipment were furnished.

§ 16.3 Construction Contract. The agreement between the Owner and Contractor identified on the cover page, including all Contract Documents and all changes made to the agreement and the Contract Documents.

§ 16.4 Owner Default. Failure of the Owner, which has not been remedied or waived, to pay the Contractor as required under the Construction Contract or to perform and complete or comply with the other material terms of the Construction Contract.

§ 16.5 Contract Documents. All the documents that comprise the agreement between the Owner and Contractor.

§ 17 If this Bond is issued for an agreement between a Contractor and subcontractor, the term Contractor in this Bond shall be deemed to be Subcontractor and the term Owner shall be deemed to be Contractor.

§ 18 Modifications to this bond are as follows:

(Space is provided below for additional signatures of added parties, other than those appearing on the cover page.)

CONTRACTOR AS PRINCIPAL

SURETY

Company: _____
(Corporate Seal)

Company: _____
(Corporate Seal)

Signature: _____
Name and Title: _____
Address: _____

Signature: _____
Name and Title: _____
Address: _____



AIA Document A312™-2010

Performance Bond

CONTRACTOR:
(Name, legal status and address)

SURETY:
(Name, legal status and principal place of business)

OWNER:
(Name, legal status and address)

CONSTRUCTION CONTRACT
Date:
Amount:\$
Description:
(Name and location)

BOND
Date:
(Not earlier than Construction Contract Date)

Amount:\$
Modifications to this Bond: **C=J** None **C:=J** See Section 16

CONTRACTOR AS PRINCIPAL SURETY
Company: *(Corporate Seal)* Company: *(Corporate Seal)*

Signature: _____ Signature: _____
Name and Name and
Title: Title:
(Any additional signatures appear on the last page of this Performance Bond)

(FOR INFORMATION ONLY — Name, address and telephone)
AGENT or BROKER: OWNER'S REPRESENTATIVE:
(Architect, Engineer or other party:)

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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.

§ 1 The Contractor and Surety, jointly and severally, bind themselves, their heirs, executors, administrators, successors and assigns to the Owner for the performance of the Construction Contract, which is incorporated herein by reference.

§ 2 If the Contractor performs the Construction Contract, the Surety and the Contractor shall have no obligation under this Bond, except when applicable to participate in a conference as provided in Section 3.

§ 3 If there is no Owner Default under the Construction Contract, the Surety's obligation under this Bond shall arise after

- .1 the Owner first provides notice to the Contractor and the Surety that the Owner is considering declaring a Contractor Default. Such notice shall indicate whether the Owner is requesting a conference among the Owner, Contractor and Surety to discuss the Contractor's performance. If the Owner does not request a conference, the Surety may, within five (5) business days after receipt of the Owner's notice, request such a conference. If the Surety timely requests a conference, the Owner shall attend. Unless the Owner agrees otherwise, any conference requested under this Section 3.1 shall be held within ten (10) business days of the Surety's receipt of the Owner's notice. If the Owner, the Contractor and the Surety agree, the Contractor shall be allowed a reasonable time to perform the Construction Contract, but such an agreement shall not waive the Owner's right, if any, subsequently to declare a Contractor Default;
- .2 the Owner declares a Contractor Default, terminates the Construction Contract and notifies the Surety; and
- .3 the Owner has agreed to pay the Balance of the Contract Price in accordance with the terms of the Construction Contract to the Surety or to a contractor selected to perform the Construction Contract.

§ 4 Failure on the part of the Owner to comply with the notice requirement in Section 3.1 shall not constitute a failure to comply with a condition precedent to the Surety's obligations, or release the Surety from its obligations, except to the extent the Surety demonstrates actual prejudice.

§ 5 When the Owner has satisfied the conditions of Section 3, the Surety shall promptly and at the Surety's expense take one of the following actions:

§ 5.1 Arrange for the Contractor, with the consent of the Owner, to perform and complete the Construction Contract;

§ 5.2 Undertake to perform and complete the Construction Contract itself, through its agents or independent contractors;

§ 5.3 Obtain bids or negotiated proposals from qualified contractors acceptable to the Owner for a contract for performance and completion of the Construction Contract, arrange for a contract to be prepared for execution by the Owner and a contractor selected with the Owner's concurrence, to be secured with performance and payment bonds executed by a qualified surety equivalent to the bonds issued on the Construction Contract, and pay to the Owner the amount of damages as described in Section 7 in excess of the Balance of the Contract Price incurred by the Owner as a result of the Contractor Default; or

§ 5.4 Waive its right to perform and complete, arrange for completion, or obtain a new contractor and with reasonable promptness under the circumstances:

- .1 After investigation, determine the amount for which it may be liable to the Owner and, as soon as practicable after the amount is determined, make payment to the Owner; or
- .2 Deny liability in whole or in part and notify the Owner, citing the reasons for denial.

§ 6 If the Surety does not proceed as provided in Section 5 with reasonable promptness, the Surety shall be deemed to be in default on this Bond seven days after receipt of an additional written notice from the Owner to the Surety demanding that the Surety perform its obligations under this Bond, and the Owner shall be entitled to enforce any remedy available to the Owner. If the Surety proceeds as provided in Section 5.4, and the Owner refuses the payment or the Surety has denied liability, in whole or in part, without further notice the Owner shall be entitled to enforce any remedy available to the Owner.

§ 7 If the Surety elects to act under Section 5.1 , 5.2 or 5.3, then the responsibilities of the Surety to the Owner shall not be greater than those of the Contractor under the Construction Contract, and the responsibilities of the Owner to the Surety shall not be greater than those of the Owner under the Construction Contract. Subject to the commitment by the Owner to pay the Balance of the Contract Price, the Surety is obligated, without duplication, for

- .1 the responsibilities of the Contractor for correction of defective work and completion of the Construction Contract;
- .2 additional legal, design professional and delay costs resulting from the Contractor's Default, and resulting from the actions or failure to act of the Surety under Section 5; and
- .3 liquidated damages, or if no liquidated damages are specified in the Construction Contract, actual damages caused by delayed performance or non-performance of the Contractor.

§ 8 If the Surety elects to act under Section 5.1, 5.3 or 5.4, the Surety's liability is limited to the amount of this Bond.

§ 9 The Surety shall not be liable to the Owner or others for obligations of the Contractor that are unrelated to the Construction Contract, and the Balance of the Contract Price shall not be reduced or set off on account of any such unrelated obligations. No right of action shall accrue on this Bond to any person or entity other than the Owner or its heirs, executors, administrators, successors and assigns.

§ 10 The Surety hereby waives notice of any change, including changes of time, to the Construction Contract or to related subcontracts, purchase orders and other obligations.

§ 11 Any proceeding, legal or equitable, under this Bond may be instituted in any court of competent jurisdiction in the location in which the work or part of the work is located and shall be instituted within two years after a declaration of Contractor Default or within two years after the Contractor ceased working or within two years after the Surety refuses or fails to perform its obligations under this Bond, whichever occurs first. If the provisions of this Paragraph are void or prohibited by law, the minimum period of limitation available to sureties as a defense in the jurisdiction of the suit shall be applicable.

§ 12 Notice to the Surety, the Owner or the Contractor shall be mailed or delivered to the address shown on the page on which their signature appears.

§ 13 When this Bond has been furnished to comply with a statutory or other legal requirement in the location where the construction was to be performed, 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.

§ 14 Definitions

§ 14.1 Balance of the Contract Price. The total amount payable by the Owner to the Contractor under the Construction Contract after all proper adjustments have been made, including allowance to the Contractor of any amounts received or to be received by the Owner in settlement of insurance or other claims for damages to which the Contractor is entitled, reduced by all valid and proper payments made to or on behalf of the Contractor under the Construction Contract.

§ 14.2 Construction Contract. The agreement between the Owner and Contractor identified on the cover page, including all Contract Documents and changes made to the agreement and the Contract Documents.

§ 14.3 Contractor Default. Failure of the Contractor, which has not been remedied or waived, to perform or otherwise to comply with a material term of the Construction Contract.

§ 14.4 Owner Default. Failure of the Owner, which has not been remedied or waived, to pay the Contractor as required under the Construction Contract or to perform and complete or comply with the other material terms of the Construction Contract.

§ 14.5 Contract Documents. All the documents that comprise the agreement between the Owner and Contractor.

§ 15 If this Bond is issued for an agreement between a Contractor and subcontractor, the term Contractor in this Bond shall be deemed to be Subcontractor and the term Owner shall be deemed to be Contractor.

§ 16 Modifications to this bond are as follows:

(Space is provided below for additional signatures of added parties, other than those appearing on the cover page.)

CONTRACTOR AS PRINCIPAL

SURETY

Company: _____
(Corporate Seal)

Company: _____
(Corporate Seal)

Signature: _____

Signature: _____

Name and Title: _____

Name and Title: _____

Address: _____

Address: _____

AIA Document A701™ -1997

Instructions to Bidders

for the following PROJECT:

(Name and location or address)

THE OWNER:

(Name, legal status and address)

THE ARCHITECT:

(Name, legal status and address)

TABLE OF ARTICLES

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

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ARTICLE 1 DEFINITIONS

§ 1.1 Bidding Documents include the Bidding Requirements and the proposed Contract Documents. The Bidding Requirements consist of the Advertisement or invitation to Bid, Instructions to Bidders, Supplementary Instructions to Bidders, the bid form, and other sample bidding and contract forms. The proposed Contract Documents consist of the form of Agreement between the Owner and Contractor, Conditions of the Contract (General, Supplementary and other Conditions), Drawings, Specifications and all Addenda issued prior to execution of the Contract.

§ 1.2 Definitions set forth in the General Conditions of the Contract for Construction, AIA Document A201, or in other Contract Documents are applicable to the Bidding Documents.

§ 1.3 Addenda are written or graphic instruments issued by the Architect prior to the execution of the Contract which modify or interpret the Bidding Documents by additions, deletions, clarifications or corrections.

§ 1.4 A Bid is a complete and properly executed proposal to do the Work for the sums stipulated therein, submitted in accordance with the Bidding Documents.

§ 1.5 The Base Bid is the sum stated in the Bid for which the Bidder offers to perform the Work described in the Bidding Documents as the base, to which Work may be added or from which Work may be deleted for sums stated in Alternate Bids.

§ 1.6 An Alternate Bid (or Alternate) is an amount stated in the Bid to be added to or deducted from the amount of the Base Bid if the corresponding change in the Work, as described in the Bidding Documents, is accepted.

§ 1.7 A Unit Price is an amount stated in the Bid as a price per unit of measurement for materials, equipment or services or a portion of the Work as described in the Bidding Documents.

§ 1.8 A Bidder is a person or entity who submits a Bid and who meets the requirements set forth in the Bidding Documents.

§ 1.9 A Sub-bidder is a person or entity who submits a bid to a Bidder for materials, equipment or labor for a portion of the Work.

ARTICLE 2 BIDDER'S REPRESENTATIONS

§ 2.1 The Bidder by making a Bid represents that:

§ 2.1.1 The Bidder has read and understands the Bidding Documents or Contract Documents, to the extent that such documentation relates to the Work for which the Bid is submitted, and for other portions of the Project, if any, being bid concurrently or presently under construction.

§ 2.1.2 The Bid is made in compliance with the Bidding Documents.

§ 2.1.3 The Bidder has visited the site, become familiar with local conditions under which the Work is to be performed and has correlated the Bidder's personal observations with the requirements of the proposed Contract Documents.

§ 2.1.4 The Bid is based upon the materials, equipment and systems required by the Bidding Documents without exception.

ARTICLE 3 BIDDING DOCUMENTS

§ 3.1 COPIES

§ 3.1.1 Bidders may obtain complete sets of the Bidding Documents from the issuing office designated in the Advertisement or Invitation to Bid in the number and for the deposit sum, if any, stated therein. The deposit will be refunded to Bidders who submit a bona fide Bid and return the Bidding Documents in good condition within ten days after receipt of Bids. The cost of replacement of missing or damaged documents will be deducted from the deposit. A Bidder receiving a Contract award may retain the Bidding Documents and the Bidder's deposit will be refunded.

§ 3.1.2 Bidding Documents will not be issued directly to Sub-bidders unless specifically offered in the Advertisement or Invitation to Bid, or in supplementary instructions to bidders.

§ 3.1.3 Bidders shall use complete sets of Bidding Documents in preparing Bids; neither the Owner nor Architect assumes responsibility for errors or misinterpretations resulting from the use of incomplete sets of Bidding Documents.

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

§ 3.2 INTERPRETATION OR CORRECTION OF BIDDING DOCUMENTS

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

§ 3.2.2 Bidders and Sub-bidders requiring clarification or interpretation of the Bidding Documents shall make a written request which shall reach the Architect at least seven days prior to the date for receipt of Bids.

§ 3.2.3 Interpretations, corrections and changes of the Bidding Documents will be made by Addendum. Interpretations, corrections and changes of the Bidding Documents made in any other manner will not be binding, and Bidders shall not rely upon them.

§ 3.3 SUBSTITUTIONS

§ 3.3.1 The materials, products and equipment described in the Bidding Documents establish a standard of required function, dimension, appearance and quality to be met by any proposed substitution.

§ 3.3.2 No substitution will be considered prior to receipt of Bids unless written request for approval has been received by the Architect at least ten days prior to the date for receipt of Bids. Such requests shall include the name of the material or equipment for which it is to be substituted and a complete description of the proposed substitution including drawings, performance and test data, and other information necessary for an evaluation. A statement setting forth changes in other materials, equipment or other portions of the Work, including changes in the work of other contracts that incorporation of the proposed substitution would require, shall be included. The burden of proof of the merit of the proposed substitution is upon the proposer. The Architect's decision of approval or disapproval of a proposed substitution shall be final.

§ 3.3.3 If the Architect approves a proposed substitution prior to receipt of Bids, such approval will be set forth in an Addendum. Bidders shall not rely upon approvals made in any other manner.

§ 3.3.4 No substitutions will be considered after the Contract award unless specifically provided for in the Contract Documents.

§ 3.4 ADDENDA

§ 3.4.1 Addenda will be transmitted to all who are known by the issuing office to have received a complete set of Bidding Documents.

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

§ 3.4.3 Addenda will be issued no later than four days prior to the date for receipt of Bids except an Addendum withdrawing the request for Bids or one which includes postponement of the date for receipt of Bids.

§ 3.4.4 Each Bidder shall ascertain prior to submitting a Bid that the Bidder has received all Addenda issued, and the Bidder shall acknowledge their receipt in the Bid.

ARTICLE 4 BIDDING PROCEDURES

§ 4.1 PREPARATION OF BIDS

§ 4.1.1 Bids shall be submitted on the forms included with the Bidding Documents.

§ 4.1.2 All blanks on the bid form shall be legibly executed in a non-erasable medium.

§ 4.1.3 Sums shall be expressed in both words and figures. In case of discrepancy, the amount written in words shall govern.

§ 4.1.4 Interlineations, alterations and erasures must be initialed by the signer of the Bid.

§ 4.1.5 All requested Alternates shall be bid. If no change in the Base Bid is required, enter "No Change."

§ 4.1.6 Where two or more Bids for designated portions of the Work have been requested, the Bidder may, without forfeiture of the bid security, state the Bidder's refusal to accept award of less than the combination of Bids stipulated by the Bidder. The Bidder shall make no additional stipulations on the bid form nor qualify the Bid in any other manner.

§ 4.1.7 Each copy of the Bid shall state the legal name of the Bidder and the nature of legal form of the Bidder. The Bidder shall provide evidence of legal authority to perform within the jurisdiction of the Work. Each copy shall be signed by the person or persons legally authorized to bind the Bidder to a contract. A Bid by a corporation shall further give the state of incorporation and have the corporate seal affixed. A Bid submitted by an agent shall have a current power of attorney attached certifying the agent's authority to bind the Bidder.

§ 4.2 BID SECURITY

§ 4.2.1 Each Bid shall be accompanied by a bid security in the form and amount required if so stipulated in the Instructions to Bidders. The Bidder pledges to enter into a Contract with the Owner on the terms stated in the Bid and will, if required, furnish bonds covering the faithful performance of the Contract and payment of all obligations arising thereunder. Should the Bidder refuse to enter into such Contract or fail to furnish such bonds if required, the amount of the bid security shall be forfeited to the Owner as liquidated damages, not as a penalty. The amount of the bid security shall not be forfeited to the Owner in the event the Owner fails to comply with Section 6.2.

§ 4.2.2 If a surety bond is required, it shall be written on AIA Document A310, Bid Bond, unless otherwise provided in the Bidding Documents, and the attorney-in-fact who executes the bond on behalf of the surety shall affix to the bond a certified and current copy of the power of attorney.

§ 4.2.3 The Owner will have the right to retain the bid security of Bidders to whom an award is being considered until either (a) the Contract has been executed and bonds, if required, have been furnished, or (b) the specified time has elapsed so that Bids may be withdrawn or (c) all Bids have been rejected.

§ 4.3 SUBMISSION OF BIDS

§ 4.3.1 All copies of the Bid, the bid security, if any, and any other documents required to be submitted with the Bid shall be enclosed in a sealed opaque envelope. The envelope shall be addressed to the party receiving the Bids and shall be identified with the Project name, the Bidder's name and address and, if applicable, the designated portion of the Work for which the Bid is submitted. If the Bid is sent by mail, the sealed envelope shall be enclosed in a separate mailing envelope with the notation "SEALED BID ENCLOSED" on the face thereof.

§ 4.3.2 Bids shall be deposited at the designated location prior to the time and date for receipt of Bids. Bids received after the time and date for receipt of Bids will be returned unopened.

§ 4.3.3 The Bidder shall assume full responsibility for timely delivery at the location designated for receipt of Bids.

§ 4.3.4 Oral, telephonic, telegraphic, facsimile or other electronically transmitted bids will not be considered.

§ 4.4 MODIFICATION OR WITHDRAWAL OF BID

§ 4.4.1 A Bid may not be modified, withdrawn or canceled by the Bidder during the stipulated time period following the time and date designated for the receipt of Bids, and each Bidder so agrees in submitting a Bid.

§ 4.4.2 Prior to the time and date designated for receipt of Bids, a Bid submitted may be modified or withdrawn by notice to the party receiving Bids at the place designated for receipt of Bids. Such notice shall be in writing over the signature of the Bidder. Written confirmation over the signature of the Bidder shall be received, and date- and time-stamped by the receiving party on or before the date and time set for receipt of Bids. A change shall be so worded as not to reveal the amount of the original Bid.

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

§ 4.4.4 Bid security, if required, shall be in an amount sufficient for the Bid as resubmitted.

ARTICLE 5 CONSIDERATION OF BIDS

§ 5.1 OPENING OF BIDS

At the discretion of the Owner, if stipulated in the Advertisement or Invitation to Bid, the properly identified Bids received on time will be publicly opened and will be read aloud. An abstract of the Bids may be made available to Bidders.

§ 5.2 REJECTION OF BIDS

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

§ 5.3 ACCEPTANCE OF BID (AWARD)

§ 5.3.1 It is the intent of the Owner to award a Contract to the lowest qualified Bidder provided the Bid has been submitted in accordance with the requirements of the Bidding Documents and does not exceed the funds available. The Owner shall have the right to waive informalities and irregularities in a Bid received and to accept the Bid which, in the Owner's judgment, is in the Owner's own best interests.

§ 5.3.2 The Owner shall have the right to accept Alternates in any order or combination, unless otherwise specifically provided in the Bidding Documents, and to determine the low Bidder on the basis of the sum of the Base Bid and Alternates accepted.

ARTICLE 6 POST-BID INFORMATION

§ 6.1 CONTRACTOR'S QUALIFICATION STATEMENT

Bidders to whom award of a Contract is under consideration shall submit to the Architect, upon request, a properly executed AIA Document A305, Contractor's Qualification Statement, unless such a Statement has been previously required and submitted as a prerequisite to the issuance of Bidding Documents.

§ 6.2 OWNER'S FINANCIAL CAPABILITY

The Owner shall, at the request of the Bidder to whom award of a Contract is under consideration and no later than seven days prior to the expiration of the time for withdrawal of Bids, furnish to the Bidder reasonable evidence that financial arrangements have been made to fulfill the Owner's obligations under the Contract. Unless such reasonable evidence is furnished, the Bidder will not be required to execute the Agreement between the Owner and Contractor.

§ 6.3 SUBMITTALS

§ 6.3.1 The Bidder shall, as soon as practicable or as stipulated in the Bidding Documents, after notification of selection for the award of a Contract, furnish to the Owner through the Architect in writing:

- .1 a designation of the Work to be performed with the Bidder's own forces;
- .2 names of the manufacturers, products, and the suppliers of principal items or systems of materials and equipment proposed for the Work; and
- .3 names of persons or entities (including those who are to furnish materials or equipment fabricated to a special design) proposed for the principal portions of the Work.

§ 6.3.2 The Bidder will be required to establish to the satisfaction of the Architect and Owner the reliability and responsibility of the persons or entities proposed to furnish and perform the Work described in the Bidding Documents.

§ 6.3.3 Prior to the execution of the Contract, the Architect will notify the Bidder in writing if either the Owner or Architect, after due investigation, has reasonable objection to a person or entity proposed by the Bidder. If the Owner or Architect has reasonable objection to a proposed person or entity, the Bidder may, at the Bidder's option, (1) withdraw the Bid or (2) submit an acceptable substitute person or entity with an adjustment in the Base Bid or Alternate Bid to cover the difference in cost occasioned by such substitution. The Owner may accept the adjusted bid price or disqualify the Bidder. In the event of either withdrawal or disqualification, bid security will not be forfeited.

§ 6.3.4 Persons and entities proposed by the Bidder and to whom the Owner and Architect have made no reasonable objection must be used on the Work for which they were proposed and shall not be changed except with the written consent of the Owner and Architect.

ARTICLE 7 PERFORMANCE BOND AND PAYMENT BOND

§ 7.1 BOND REQUIREMENTS

§ 7.1.1 If stipulated in the Bidding Documents, the Bidder shall furnish bonds covering the faithful performance of the Contract and payment of all obligations arising thereunder. Bonds may be secured through the Bidder's usual sources.

§ 7.1.2 If the furnishing of such bonds is stipulated in the Bidding Documents, the cost shall be included in the Bid. If the furnishing of such bonds is required after receipt of bids and before execution of the Contract, the cost of such bonds shall be added to the Bid in determining the Contract Sum.

§ 7.1.3 If the Owner requires that bonds be secured from other than the Bidder's usual sources, changes in cost will be adjusted as provided in the Contract Documents.

§ 7.2 TIME OF DELIVERY AND FORM OF BONDS

§ 7.2.1 The Bidder shall deliver the required bonds to the Owner not later than three days following the date of execution of the Contract. If the Work is to be commenced prior thereto in response to a letter of intent, the Bidder shall, prior to commencement of the Work, submit evidence satisfactory to the Owner that such bonds will be furnished and delivered in accordance with this Section 7.2.1.

§ 7.2.2 Unless otherwise provided, the bonds shall be written on AIA Document A312, Performance Bond and Payment Bond. Both bonds shall be written in the amount of the Contract Sum.

§ 7.2.3 The bonds shall be dated on or after the date of the Contract.

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

ARTICLE 8 FORM OF AGREEMENT BETWEEN OWNER AND CONTRACTOR

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

Contractor Affidavit under O.C.G.A. § 13-10-91(b)(1)

By executing this affidavit, the undersigned contractor verifies its compliance with O.C.G.A. § 13-10-91, stating affirmatively that the individual, firm or corporation which is engaged in the physical performance of services on behalf of (name of public employer) has registered with, is authorized to use and uses the federal work authorization program commonly known as E-Verify, or any subsequent replacement program, in accordance with the applicable provisions and deadlines established in O.C.G.A. § 13-10-91. Furthermore, the undersigned contractor will continue to use the federal work authorization program throughout the contract period and the undersigned contractor will contract for the physical performance of services in satisfaction of such contract only with subcontractors who present an affidavit to the contractor with the information required by O.C.G.A. § 13-10-91(b). Contractor hereby attests that its federal work authorization user identification number and date of authorization are as follows:

Federal Work Authorization User Identification Number

Date of Authorization

Name of Contractor

Name of Project

Name of Public Employer

I hereby declare under penalty of perjury that the foregoing is true and correct.

Executed on _____, ____, 201__ in _____(city), _____(state).

Signature of Authorized Officer or Agent

Printed Name and Title of Authorized Officer or Agent

SUBSCRIBED AND SWORN BEFORE ME
ON THIS THE _____ DAY OF _____, 201__.

NOTARY PUBLIC

My Commission Expires:

Subcontractor Affidavit under O.C.G.A. § 13-10-91(b)(3)

By executing this affidavit, the undersigned subcontractor verifies its compliance with O.C.G.A. § 13-10-91, stating affirmatively that the individual, firm or corporation which is engaged in the physical performance of services under a contract with (name of contractor) on behalf of (name of public employer) has registered with, is authorized to use and uses the federal work authorization program commonly known as E-Verify, or any subsequent replacement program, in accordance with the applicable provisions and deadlines established in O.C.G.A. § 13-10-91. Furthermore, the undersigned subcontractor will continue to use the federal work authorization program throughout the contract period and the undersigned subcontractor will contract for the physical performance of services in satisfaction of such contract only with sub-subcontractors who present an affidavit to the subcontractor with the information required by O.C.G.A. § 13-10-91(b). Additionally, the undersigned subcontractor will forward notice of the receipt of an affidavit from a sub-subcontractor to the contractor within five business days of receipt. If the undersigned subcontractor receives notice of receipt of an affidavit from any sub-subcontractor that has contracted with a sub-subcontractor to forward, within five business days of receipt, a copy of such notice to the contractor. Subcontractor hereby attests that its federal work authorization user identification number and date of authorization are as follows:

Federal Work Authorization User Identification Number

Date of Authorization

Name of Subcontractor

Name of Project

Name of Public Employer

I hereby declare under penalty of perjury that the foregoing is true and correct.

Executed on _____, ____, 201__ in _____(city), _____(state).

Signature of Authorized Officer or Agent

Printed Name and Title of Authorized Officer or Agent

SUBSCRIBED AND SWORN BEFORE ME
ON THIS THE _____ DAY OF _____, 201__.

NOTARY PUBLIC

My Commission Expires:

**Affidavit
Verification of Lawful Presence in United States
Pursuant to O.C.G.A. § 50-36-1(e)**

By executing this affidavit under oath, as an applicant for public benefits from the Bibb County School District, the undersigned applicant verifies one of the following with respect to my citizenship status:

- 1) _____ I am a United States citizen.

- 2) _____ I am a legal permanent resident of the United States.

- 3) _____ I am a qualified alien or non-immigrant under the Federal Immigration and Nationality Act with an alien number issued by the Department of Homeland Security or other federal immigration agency.

My alien number issued by the Department of Homeland Security or other federal immigration agency is: _____

The undersigned applicant also hereby verifies that he or she is 18 years of age or older and has provided at least one secure and verifiable document, as required by O.C.G.A. § 50-36-1(e)(1), with this affidavit.

The secure and verifiable document provided with this affidavit can best be classified as:

(ex., driver's license, birth certificate, state LD. with photo, military LD., or list type of document issued by federal immigration agency)

In making the above representation under oath, I understand that any person who knowingly and willfully makes a false, fictitious, or fraudulent statement or representation in an affidavit shall be guilty of a violation of O.C.G.A. § 16-10-20, and face criminal penalties as allowed by such criminal statute.

Executed in _____ (city), _____ (state).

Signature of Applicant

Printed Name of Applicant

SUBSCRIBED AND SWORN BEFORE
ME ON THIS THE _____ DAY OF
_____, 20____

NOTARY PUBLIC
My Commission Expires: _____