



HVAC UPGRADES

PROJECT MANUAL

LUCAS COUNTY THE SOURCE

**1301 Monroe Street
Toledo, OH 43604-5813**

**The Lathrop Company
460 West Dussel Drive
Maumee, OH 43537**

**The Collaborative Inc.
500 Madison Avenue
Toledo, OH 43604**

*MDA Engineering, Inc.
1415 Holland Road
Maumee, OH 43537*

OCTOBER 3, 2011



LUCAS COUNTY OHIO

INVITATION TO BID

THE SOURCE HVAC UPGRADES

LUCAS COUNTY COMMISSIONERS
COUNTY AGENCY

11-018P
BID NUMBER

OCTOBER 27, 2:00 PM (LOCAL TIME)
DATE AND TIME OF BID OPENING

BIDDER MUST COMPLETE THE FOLLOWING:

NAME OF COMPANY OFFICIAL _____

OFFICIAL'S SIGNATURE _____

NAME OF COMPANY _____

ADDRESS _____

CITY, STATE & ZIP _____

TELEPHONE NUMBER _____

FAX NUMBER _____

E-MAIL ADDRESS _____

The Lucas County Board of Commissioners is seeking bids for upgrades of the existing HVAC systems at 1301 Monroe Street, Toledo, Ohio 43604-5813.

Any bidder submitting a bid must submit a completed bid following the procedure outlined in this Invitation to Bid (ITB) no later than **October 27, 2011 at 2:00 PM (LOCAL TIME)** and submit at **One Government Center, Suite 480, Toledo, OH 43604**. All of the sections applicable in the Invitation to Bid shall be read so as to give meaning to all such provisions. However, when there is a conflict in the interpretation between a specification in the Invitation to Bid and sections, the specification in the Invitation to Bid shall take precedence. A Mandatory Pre-Bid conference and site visit is scheduled for **October 13, 2011 at 9:00 AM (LOCAL TIME)** at **The Source Northwest Ohio, 1301 Monroe St., Toledo, OH 43604**. Bidders may enter the building at the South entrance.

1.0 Legal Framework

This Invitation to Bid (ITB) is issued under the provisions of the Ohio Revised Code (ORC) Sections 307.86 to 307.92. All bids submitted in response to this ITB shall comply with Ohio law. The laws of the State of Ohio will govern any disputes rising under this ITB and subsequent contract.

2.0 Bid Opening

The bid opening is scheduled for **October 27, 2011 2:00 PM (LOCAL TIME)**. All sealed bids received after this time and date, for any reason, will be rejected. The official time will be maintained by the clock located within the Lucas County Commissioners, Suite 480 reception area. The opening of the sealed bids will take place at the Lucas County Support Services, Purchasing Division, One Government Center, Suite 480, Fourth Floor, Toledo, Ohio 43604-2247.

3.0 Bid's Bid Bond Requirement

A signed bid bond for the full amount of **the Total Bid, meeting the requirements of section 153.54 to 153.57, Ohio Revised Code, OR a certified check payable to the Lucas County Treasurer for ten (10%) percent of the full amount of the Bid**, must be included with each bid or be disqualified. Bonds will be returned to unsuccessful bidders within thirty days of contract award.

4.0 Pre-Bid Conference

X	Applicable if box is checked
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Detailed questions regarding this Invitation to Bid can be addressed at the Mandatory Pre-Bid Conference held on **October 13, 2011 at 9:00 AM (LOCAL TIME) at The Source Northwest Ohio located at 1301 Monroe Street, Toledo, OH 43604. ATTENDANCE IS MANDATORY**; failure to attend the Pre-Bid Conference will disqualify your bid. There will be no written responses to questions unless research is required. In that instance, written responses will be mailed or sent via fax or e-mail to all bidders along with any and all amendments that are issued to those that attended the Pre-Bid Conference. The pre-bid conference will include a site visit.

5.0 Prevailing Wage

X	Applicable if box is checked
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Ohio's prevailing wage laws apply to all public improvements financed in whole or in part by public funds when the total overall project cost is fairly estimated to be more than \$78,258.00 for new construction or \$23,447.00 for reconstruction, enlargement, alteration, repair, remodeling, renovation, or painting.

All contractors and subcontractors performing any work on any project that meets the above requirements are responsible for paying prevailing wage rates to their workers. Prime contractors are solely responsible for informing their subcontractors of these requirements. For more information relating to Ohio's prevailing wage laws, please visit <http://wagehour.bes.state.oh.us>.

A copy of the most current Ohio Prevailing Wage document is available for inspection at the Lucas County Support Service Office, One Government Center, Suite 480, Toledo OH 43604. Office hours are 8:30 to 4:30 Monday through Friday with the exception of legal holidays.

All prevailing wage related questions or concerns should be directed to:

Kelleigh Decker
Lucas County Prevailing Wage Coordinator
Office of Management & Budget
Lucas County Commissioners
One Government Center, Suite 800
Toledo, OH 43604
419 213-4649
419 213-2601 FAX

6.0 Administrative Requirements

By submitting a bid, the bidder will be held accountable to know the specifications and conditions under which this contract will be accomplished. This includes the contents of all proposal documents, regulations, and applicable laws.

Each bid will be submitted in a clearly marked sealed container or envelope, with the project title, Bid #, date and time of bid opening marked clearly on the outside of the package. If a selected bidder chooses not to submit a bid, the bid should be returned and marked "No Bid" for the project title, Bid #, date and time of bid opening on the envelope or package. All bids must be sent to:

**Lucas County Support Services, Purchasing Division
One Government Center, Suite 480
Toledo OH 43604-2247**

The entire set of completed ITB documents must be returned intact and in the following order:

- a. Original completed Request for Bid (ITB) and **one (1) copy**; this includes any amendments applicable to this ITB.
- b. Completed Affidavits: (1) Delinquent Property Tax, (2) Non-Discrimination, (3) Non-collusion, (4) No Findings for Recovery, (5)

- Compliance Affidavit for Businesses, (6) Transparency Purchasing Policy Disclosure, (7) Sweatfree Affidavit and (8) Living Wage Affidavit; all signed by your legally authorized representative and notarized and (9) Government Business and Funding Contracts.
- c. Bid Bond - Separated from (ITB) and Marked "Bid Bond", your Company's Name, Project Title and Bid Number. **The bid bond is mandatory.** A bidder will be disqualified if the bid bond is not submitted.
 - d. The ITB Pricing Response Form completed in its entirety (**Section F**).

Faxed transmissions of bid are unacceptable. Sealed bids received through the mail after the specified date and time will also be returned.

Lucas County reserves the right to postpone the bid opening for its convenience. Bidders are required to submit firm and fixed prices in the format specified on the pricing sheet (**Section F**). When there are errors in multiplication or addition in a bid, the unit price quoted will be used for calculating the correct total bid. If the error is in the unit price, the bid will be automatically disqualified.

All bid pricing will be valid for 60 (sixty) calendar days from the bid opening date to permit adequate evaluation of bid responses.

Lucas County may make this award as a whole or on a partial basis, based on the individual bid specifications.

The Board of County Commissioners does not obligate itself to purchase the full quantities indicated and the unit price bid must be effective if purchase is less. Conversely, the Board's requirements may be in excess of the quantities shown and the successful bidder shall be required to furnish all requirements under the specification at the unit price bid for an agreed period of time.

Lucas County does not assume any late payment penalties. No condition will alter this statement.

Ohio Revised Code sections 307.90 and 307.91 permits Lucas County to reject all bids, waive technicalities, and to amend the original estimate and to advertise for new bids on the required items, products or services. Lucas County reserves the right to reject any or all of the bids on any basis without disclosure of a reason. The failure to make such a disclosure will not result in the accrual of any right, claim or cause of action by any unsuccessful bidder against Lucas County.

Bidders may withdraw their bids at any time prior to the bid opening date. After the bid opening, bidders may only withdraw their bids as provided in Section 9.31 of the Ohio Revised Code. Withdrawal of a bid after a bid opening exposes a bidder to legal liability for sanctions, including costs for re-bid, or may result in a bid being awarded to the next lowest bidder. Bidders failing to respond to all requirements specified in this ITB may result in the rejection of the bid.

Questions regarding the drawings/specifications should be directed in writing to:

The Lathrop Company
Olivia Beebe
460 West Dussel Drive
Maumee, Ohio 43537

Phone: 419-887-4295
Fax: 419-893-1741
E-mail: obeebe@tcco.com

Bidders should carefully review all elements of their bids. Once opened, bids may not be altered. Each response in regard to this ITB shall be completed, self-contained and meet the requirements of the ITB. The County may initiate clarifications after the bid opening. However, these clarifications will not constitute an alteration of the bid submitted.

References to a particular trade name, manufacturer's catalog, or model number are made for descriptive purposes to guide the Bidder in interpreting the bid requirements. They should not be construed as excluding proposals on other types of materials, equipment and supplies. However, the successful Bidder will be required to furnish the particular item referred to in the bid specifications unless a departure or substitution is clearly noted and described in the proposal shown to be compatible with the specifications and accepted by the Board. Lucas County reserves the right to be the sole judge of suitability and fitness of the product bid.

If any items being bid have an expiration date, items delivered cannot be expired and must carry a good date for at least 6 (six) months after receipt.

There will be no incidental charges for services. If Lucas County has left any information out of these specifications where the Vendor would foresee additional charges/fees, bidder must include that information on the attached exception form.

All materials in the bid will become the property of Lucas County and may be returned only at the County's discretion. Materials received constitute public information as a matter of statutory law and will be made available for public inspection and copying upon request by members of the public pursuant to ORC Section 149.43. Any portion of the bid to be held confidential should be marked to that effect and will not be considered public record if it clearly falls within an exemption enumerated in ORC Section 149.43.

Additional information, such as brochures, glossies and or promotional materials, is to be provided in a separate section at the back of the response.

6.1 Additional Administrative Requirements - Compliance with Support Order(s)

Financial responsibility, integrity, and accountability are essential for operating a business that services the public. Unpaid obligations are a social problem, which threatens the welfare of children and increases the burden on taxpayers to provide social services. Due to the public's growing concern with non-paying parents, government initiatives to create additional, effective enforcement mechanisms are necessary. It is in the County's interest that all contractors doing business with Lucas County demonstrate financial responsibility and integrity and accountability.

All bidders must submit the completed "Compliance Affidavit For Businesses" with their bid. Once a lowest and best bidder has been determined and prior to award, this form will be submitted by Lucas County to the Child Support Enforcement Agency for certification of substantial compliance of court ordered and/or agency ordered child support of any individuals of the company who have twenty-five (25%) percent or greater vested interest in the company. If the individual is found to be not in compliance, said bidder will be notified that the individual is not in compliance and therefore the bidder/company/contractor is not in compliance and will have five (5) days to be in compliance from date of notification. Failure to comply will cause disqualification of the bidder's/company's/contractor's bid.

Bidders should contact Lucas County Child Support Enforcement Agency, (419) 213-3106, regarding this requirement should they have questions.

6.2 Additional Administrative Requirements - Best Bid Criteria

All Bidders must complete the Best Bid Criteria Form found in Section A and submit with their bid / response. Failure to do so may disqualify the bid. Additionally, any subcontractor with 15% or more of the final contract value shall also be required to submit a Best Bid Criteria Form.

6.2 Additional Administrative Requirements - Declaration Regarding Material Assistance/Non-assistance to a Terrorist Organization (DMA) Section 9.08

Ohio Revised Code Section 2909.21 Terrorism requires that any contract that will result in an Offeror receiving funding in an aggregate amount greater than \$100,000 annually shall certify that it does not provide material assistance to any organization on the United States Department of State Terrorist exclusion list. Prior to award of the contract, the successful Offeror shall complete the DMA Form (Section A).

Affixing a signature on the Declaration Regarding Material Assistance/Nonassistance to a Terrorist Organization form of the Proposal, the Offeror certifies that it does not provide material assistance to any organization on the list, and that failure to complete the form or answer "yes" to any question shall serve for the purposes of this affidavit as a disclosure of the provision of assistance to an organization that is listed on the terrorist exclusion list (Section A).

7.0 Contract Administration

The Lucas County Office of Management and Budget Department will administer the contract.

8.0 Bid Evaluation Criteria and Award

An award will be made to the provider who is considered lowest and best bid for the County's needs.

Lucas County Board of Commissioners reserves the right to reject any and all bids, to waive minor technicalities and to request a re-bid through the bid process. Lucas County reserves the right to conduct site visits of proposed facilities (at County expense) to determine capability of the bidder to perform.

9.0 Bid Alterations, Amendments, and Alternate Bids

No alterations, additions (alternate bids), or exceptions to the specifications contained herein are permitted except by amendments issued by the Lucas County Purchasing Department to all bidders that have received an ITB.

During the bid process, bidders may be furnished certain amendments covering additions or deletions to the ITB documents. Amendments will be included in the scope of work and will become a part of contract documents. Amendments may be issued up to seventy-two (72) hours preceding the bid opening date, excluding weekends and holidays.

Any prospective bidder desiring an explanation or interpretation of the ITB or specifications must request it in writing soon enough to allow a reply to reach all prospective bidders before the submission of their bids but no later than October 20, 2011 at 2:00 PM. Oral explanations or instructions given before the award of a contract will not be binding. Any information given a prospective bidder concerning the ITB will be furnished promptly to all other prospective bidders as an amendment, if that information is necessary in submitting bids or if the lack of it would be prejudicial to other prospective bidders.

10.0 Equal Opportunity Provisions Required

All bidders must be willing to enter a contract containing the express language contained in Section 125.111 of the ORC, which requires the following:

Every contract for or on behalf of the state or any of its political subdivisions for the purchase of materials, equipment, supplies, contract of insurance, or services shall contain provisions similar to those required by Section 153.59 of the Revised Code in the case of construction contracts by which the bidder agrees to both of the following:

That in the hiring of employees for the performance of work under the contract or any subcontract no bidder or subcontractor shall, by reasons of race, color, religion, sex, age, handicap, national origin or ancestry, discriminate against any citizen of this

state in the employment of a person qualified and available to perform the work to which the contract relates.

That no bidder, subcontractor, or any person acting on behalf of any bidder or subcontractor shall, in any manner, discriminate against, intimidate, or retaliate against any employee hired for the performance of work under the contract on account of race, color, religion, sex, age, handicap, national origin or ancestry.

All bidders who contract with the state or any of its political subdivisions for materials, equipment, supplies, contracts of insurance, or services shall have a written affirmative action program for the employment and effective utilization of economically disadvantaged persons, as defined in Section 122.71 of the Revised Code. Annually, each such bidder shall file a description of the affirmative action program and a progress report on its implementation with the Ohio Civil Rights Commission and the Minority Business Development Office established under Section 122.92 of the Ohio Revised Code.

11.0 Insurance Requirements

If bid specifications require performance of labor for Lucas County, seller must agree to indemnify and protect Lucas County against all liabilities, claims, or demands for injuries or damages to any person or property growing out of the performance of this contract, by seller, its servants, employees agents or representatives. Prior to issuance of purchase order, the successful bidder must furnish an Insurance Carrier's Certificate showing that the seller has adequate worker's compensation, public liability, and property damage insurance coverage in accordance with the "County of Lucas Contractor Insurance" page of the bid document.

See attached General Conditions of the Contract for Construction.

12.0 Contract Term and Extension

The successful bidder's Support Services and Implementation Work Plan submission may define the term of the resulting contract. The exact contract commencement date, completion date, and option periods will be set forth in the contract and resolution approving the contract as adopted by the Lucas County Board of Commissioners.

See attached General Conditions of the Contract for Construction.

13.0 Invoices

See attached General Conditions of the Contract for Construction.

Invoices must include the following:

Name and address of bidder
Invoice remittance address as designated in the contract & description including:

Billing period
Location
Unit Code (must match bid)
Calculated extended cost
Description of item purchased
P. O. or Contract #

14.0 Assignment/Subcontractor

Neither the contract nor any rights, duties or obligations described herein will be assigned by either party hereto without prior express, written consent of the other party. The contract will be made pursuant to the bid submitted by the bidder. The contract will be based on the bidder's qualifications and responsibilities. The bidder will not sublet or assign the contract nor shall any subcontractor commence performance of any part of the work included in the resulting contract, without the previous written consent of Lucas County.

15.0 Taxes

Lucas County does not pay local, state or Federal taxes. If requested, the bidder will be furnished with an exemption certificate.

16.0 Permits/Codes

The selected bidder is responsible for obtaining all permits and licenses required for performance of the work specified. All labor and materials provided under this agreement shall meet or exceed minimum standards covered by the current applicable code(s) or bidder shall have obtained a legal waiver.

17.0 Compliance with the Law

The bidder must agree to comply with all applicable Federal, state, and local laws in the conduct of the work specified in this ITB including applicable state and Federal laws regarding drug-free work places. The bidder will be required to accept full responsibility for payment of all taxes and insurance premiums including, but not limited to; Unemployment Compensation insurance premiums, Workers' Compensation, all income tax deductions, Social Security Deductions, and any other taxes or payroll deductions required for all employees engaged by the bidder in the performance of the work specified in this ITB.

18.0 Pricing

Bidders are expected to quote firm and fixed prices in the format specified in **(Section B)**. The successful bidder will not change the unit price or the scope of work during the contract period or any extension periods, however, should the bidder receive a decrease in overall costs associated with the commodity, this provision shall allow for modification of the existing contract to decrease the price.

Bidders must utilize pricing forms supplied in this document contained with **(Section F)**.

19.0 Termination for Convenience

See attached General Conditions of the Contract for Construction.

20.0 Termination for Default

See attached General Conditions of the Contract for Construction.

21.0 Non-Acceptance Criteria for Work, Materials and Service

See attached General Conditions of the Contract for Construction.

22.0 Performance Requirements

See attached General Conditions of the Contract for Construction.

23.0 Indemnification

See attached General Conditions of the Contract for Construction.

24.0 Non-Appropriation of Funds

Bidders are advised that although the term of this contract may span several fiscal years, this contract is contingent upon the County budgeting and appropriating the funds necessary for the continuation of this contract in the current year. In the event that the funds necessary for the continuation of this contract are not approved for expenditure in any year, this contract shall terminate on the last day of the fiscal year in which funding was approved, with no penalty to the County.

25.0 Co-Op Opportunities

ORC 9.48 allows any county to participate in contracts of other counties or townships in the acquisition of equipment, materials, supplies or services using the same terms, conditions and specifications and same or lower price.

Lucas County may permit authorized counties, townships or municipalities here after referred to as political subdivisions, to participate in contracts that Lucas County has entered into for the purchase of certain supplies, services, materials and equipment. Upon contract award, authorized political subdivisions are approved to order directly with the supplier. All invoices for such purchases must be sent directly to the ordering political subdivisions' billing address. Under no circumstances is Lucas County obligated to that political subdivision's financial commitments.

SECTION A - AFFIDAVITS

DELINQUENT PERSONAL PROPERTY TAX STATEMENT
(O.R.C. Section 5719.042)

THIS FORM MUST BE COMPLETED IN ITS ENTIRETY AND NOTARIZED

I _____, _____, _____
(NAME) (TITLE) (NAME OF COMPANY)

affirm that at the time that I submitted the bid for _____
(BID TITLE)

to the Board of Lucas County Commissioners on _____ that
(DATE)

_____ was / was not charged with delinquent
(NAME OF COMPANY) (CIRCLE ONE)

Personal Property Taxes by the Lucas County Auditor.

(If Personal Property Taxes are delinquent, complete the following section)

The amount of delinquent Personal Property Taxes due Lucas County is
_____ and unpaid penalties and interest are _____.
(AMOUNT) (AMOUNT)

(SIGNATURE)

(COMPANY)

(DATE)

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

(SEAL)

(NOTARY)

My Commission Expires:

(Date)

NON-DISCRIMINATION AND EQUAL EMPLOYMENT OPPORTUNITY AFFIDAVIT

STATE OF _____

SS

COUNTY OF _____

_____ being first duly sworn, deposes and says that
(Name)

he/she is _____ of _____ the party
(Title) (Company)

that made the foregoing proposal; that such party as bidder does not and shall not discriminate against any employee or applicant for employment because of race, religion, color, sex or national origin. If awarded the bid and contract under this proposal, said party shall take affirmative action to insure that applicants are employed and that employees are treated, during employment, without regard to their race, religion, color, sex or national origin. If successful as the lowest and best bidder under the foregoing proposal this party shall post non-discrimination notices in conspicuous places available to employees and applicants for employment setting forth the provision of this affidavit.

Furthermore, said party agrees to abide by the assurances found in Section 153.59 of the Ohio Revised Code in the Contract Provisions with the Owner if selected as the successful bidder by the owner.

(Signature)

(Affiant)

(Company/Corporations)

(Address)

(City/State/Zip Code)

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

(Seal)

(Notary)

My Commission Expires:

(Date)

NON-COLLUSION AFFIDAVIT

STATE OF OHIO,

COUNTY OF LUCAS, SS:

_____ being first duly SWORN, deposes and says that he is the _____ or authorized representative of _____ or is the party submitting this bid; that such bid is genuine and not collusive or sham; that said bidder has not colluded, conspired, connived, or agreed, directly or indirectly, with any other bidder or person, to submit a sham bid, or refrain from bidding; has not in any manner, directly or indirectly sought by agreement or collusion, or communication or conference, with any person, to fix the bid price of affiant or any other bidder, to fix any overhead, profit or cost element of said bid price, or of that of any other bidder; to secure any advantage against the County of Lucas or any person or persons interested in the proposed contract; that all statements contained in said proposal of bid are true and that, such bidder has not, directly or indirectly submitted this bid, or the contents thereof, or divulged information or data relative thereto to any other potential bidder. Further, Affiant affirms that no county employee has any financial interest in this company or the bid being submitted.

(Affiant Signature)

(Affiant Title)

SWORN to before me and subscribed in my presence
this _____ day of _____, 20_____.
(Date) (Month) (Year)

(Notary Public)

(SEAL)

My Commission Expires

(Date)

NO FINDINGS FOR RECOVERY AFFIDAVIT

THIS FORM MUST BE COMPLETED IN ITS ENTIRETY AND NOTARIZED

I _____, _____, _____
(NAME) (TITLE) (NAME OF COMPANY)

affirm that at the time that I submitted the bid for _____
(BID TITLE)

to the Board of Lucas County Commissioners on _____ that
(DATE)

_____ has / has no unresolved
(NAME OF COMPANY) (CIRCLE ONE)
finding for recovery from the State Auditor per Ohio Revised Code
Section 9.24. 2011

(If there is unresolved finding for recovery from the State Auditor , complete the following section)

The amount of unresolved finding for recovery due the State Auditor is
_____ and unpaid penalties and interest are _____.
(AMOUNT) (AMOUNT)

(SIGNATURE)

(COMPANY)

(DATE)

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

(SEAL)

(NOTARY)

My Commission Expires:

**Additional Administrative Requirements
Compliance with Support Order(s)**

Financial responsibility, integrity and accountability are essential for operating a business that services the public. Unpaid obligations are a social problem which threatens the welfare of children and increases the burden on taxpayers to provide social services. Due to the public's growing concern with non-paying parents, government initiatives to create additional, effective enforcement mechanisms are necessary. It is in the County's interest that all contractors doing business with Lucas County demonstrate financial responsibility and integrity and accountability.

All bidders **must submit** the **completed** "Compliance Affidavit For Businesses" with their bid. Once a lowest and best bidder has been determined and prior to award, this form will be submitted by Lucas County to the Child Support Enforcement Agency for certification of substantial compliance of court ordered and/or agency ordered child support of any individuals of the company who have twenty-five percent (25%) or greater vested interest in the company. If the individual is found to be not in compliance, said bidder will be notified that the individual is not in compliance and therefore the bidder/company/contractor is not in compliance and will have five (5) days to be in compliance from date of notification. Failure to comply will cause disqualification of the bidder's/company's/contractor's bid.

Bidders should contact Lucas County Child Support Enforcement Agency, 419-213-3106, regarding this requirement should they have questions.

BIDDER:

SIGNATURE: _____

NAME: _____

TITLE: _____

DATE: _____

Sworn to before me and subscribed in my presence by the above named person
this

_____ day of _____, 20 _____.

NOTARY PUBLIC: _____

My Commission Expires: _____

LUCAS COUNTY SWEATFREE AFFIDAVIT

STATE OF _____

COUNTY OF _____, ss:

Personally appeared before me the undersigned, as an individual or as a representative of

_____ for a contract for _____
(Name of Entity) (Type of Product or Service)

to be let by the Board of Commissioners, Lucas County, Ohio, who, being duly cautioned and sworn, makes the following statement with respect to the Lucas County Sweatfree Procurement Policy and further states that the undersigned has the authority to make the following representation on behalf of himself or herself or of the business entity:

1. Name, physical address, phone number and contact persons for each production facility that will be involved in the production of goods or the provision of services.

2. I have personal knowledge of the information contained in section 1 or I have obtained such information from any resale entity.
3. I understand my obligation to ensure that all applicable production facilities adhere to the sweatfree code of conduct as defined in Section IV of the Lucas County Sweatfree Procurement Policy.
4. I understand that if Lucas County, the State and Local Sweatfree Consortium, and/or an independent monitor find any of the production facilities listed above to be out of compliance with any of the provisions of Section IV of the Lucas County's Sweatfree Procurement Policy, and I fail to take all reasonable steps as specified by and/or its designee(s), I will be deemed out of compliance with the sweatfree code of conduct as defined in the Lucas County Sweatfree Procurement Policy.

5. I have furnished a copy of the sweatfree code of conduct as defined in Section IV of the Lucas County Sweatfree Procurement Policy to each production facility named in paragraph 1 and to each relevant subcontractor and I have instructed each subcontractor to furnish the code of conduct to each relevant production facility.

BIDDER:

SIGNATURE: _____

NAME: _____

TITLE: _____

DATE: _____

Sworn to before me and subscribed in my presence by the above named person this _____ day of _____, 20_____.

NOTARY PUBLIC: _____

My Commission Expires: _____

LUCAS COUNTY LIVING WAGE AFFIDAVIT

STATE OF _____

COUNTY OF _____, ss:

Personally appeared before me the undersigned, as an individual or as a representative of

_____ for a contract/public incentive for
(Name of Entity)

for _____
(Type of Product, Service or public incentive)

to be awarded by the Board of Commissioners, Lucas County, Ohio, who, being duly cautioned and sworn, makes the following statement with respect to the Lucas County Living Wage Procurement Policy and further states that the undersigned has the authority to make the following representation on behalf of himself or herself or of the business entity:

1. I have personal knowledge of the information contained herein.
2. Number of employees. _____
3. Is the company/entity a non-profit? YES____ NO ____
4. Are employees paid a wage equivalent to at least 110% of the most recent federal poverty guidelines for a family of four, as defined by the Department of Health and Human Services and adequate healthcare coverage as defined in the Commissioners Living Wage resolution? YES____ NO ____
5. If no healthcare coverage is provided, are employees paid a wage equivalent to at least 130% of the most recent federal poverty guidelines for a family of four, as defined by the Department of Health and Human Services? YES____ NO ____

BIDDER:

SIGNATURE: _____

NAME: _____

TITLE: _____

DATE: _____

Sworn to before me and subscribed in my presence by the above named person this _____ day of _____, 20_____.

NOTARY PUBLIC: _____

My Commission Expires: _____

Best Bid Criteria Form

This form must be completed in its entirety and submitted with the Bid or response to Request for Proposal. Attach additional sheets if necessary to provide complete answers to the questions below. Do not include any misleading statements and make sure to include all facts necessary to make the statements made not misleading. The term "Project" means the project for which the attached Bid is submitted. All references to "Bidder" should be answered with respect to the **actual legal entity** submitting the bid.

Bidder Name _____

Bid Package No.: _____ Bid Item No(s).: _____

Project Name _____

Trade/Service _____

Product(s) Supplied _____

1. How many years has Bidder been engaged in the above referenced trade, rendered the above referenced service or supplied the above referenced products? _____
2. Describe Bidder's experience on projects similar in size, scope or complexity to the Project _____

3. Describe Bidder's experience with bid items similar in size, scope and complexity to the items included in this Bid _____

4. On a separate sheet, list all projects completed by Bidder in the preceding 36 months and for each, provide Bidder's original contract amount and final contract amount.
5. How many employees does Bidder have, both hourly and salaried? Describe Bidder's workforce, focusing on worker experience and continuity _____

6. Provide Bidder's EMR (Workers' Compensation Interstate/Intrastate Experience Modification Rate) for the most recent three years and attach verification of Bidder's EMR data from Bidder's insurance carrier or state fund _____

7. Has Bidder been cited for OSHA violations in the last three years? If yes, please attach a separate sheet providing complete details including the date of each violation; the nature of each violation; the location and type of each

violation and the sanction for each violation. If Bidder was fined, include the dollar amount.

yes no

8. Has Bidder been cited in the last three years for violations of or failure to comply with any laws, including without limitation, unemployment laws, workers compensation laws, prevailing wage laws, wage and hour laws, tax laws, Fair Labor Standards Act, environmental laws, immigration laws or licensing requirements? If yes, on a separate sheet, provide complete details including the date of each citation or violation; the nature of each violation; and the sanction for each violation. If Bidder was fined, include the dollar amount. yes no
9. Is Bidder a participant in the Drug Free Workplace Program for Small Employers (OAC 4123-17-58-1)? yes no
10. Has Bidder been a party to litigation or arbitration proceedings in connection with any work performed, services rendered or products supplied in the last three years? If yes, on a separate sheet, provide complete details, including dates, parties, whether Bidder was a plaintiff/claimant or defendant/respondent, the nature of the dispute and the ultimate determination or other resolution (i.e. settlement). yes no
11. In the last three years, has Bidder had work rejected as defective (other than minor re-work accomplished without formal notice?) If yes, on a separate sheet identify each circumstance and Bidder's response. yes no
12. In the last three years, has Bidder been terminated prior to completion of a project for any reason other than the convenience of the Owner? If yes, on a separate sheet, identify each such circumstance and provide full details. yes no
13. In the past three years, has Bidder had its forces supplemented by an Owner, contractor or construction manager or had a claim made against it for defective, delayed or non-compliant work? If yes, on a separate sheet, identify each such circumstance and provide full details. yes no

The undersigned certifies under oath that the information provided herein and on all supplemental pages of explanation is true, complete and correct.

By _____

Title _____
(Signature must be notarized)

Sworn to and subscribed in my presence this ____ day of _____, _____

By _____, the _____ of

_____, a _____ on

behalf of the _____.

Notary Public

My Commission Expires: _____



Ohio Department of Public Safety
 Division of Homeland Security
<http://www.homelandsecurity.ohio.gov>

GOVERNMENT BUSINESS AND FUNDING CONTRACTS
 In accordance with section 2909.33 of the Ohio Revised Code

DECLARATION REGARDING MATERIAL ASSISTANCE/NONASSISTANCE TO A TERRORIST ORGANIZATION

This form serves as a declaration of the provision of material assistance to a terrorist organization or organization that supports terrorism as identified by the U.S. Department of State Terrorist Exclusion List (see the Ohio Homeland Security Division website for a reference copy of the Terrorist Exclusion List).

Any answer of "yes" to any question, or the failure to answer "no" to any question on this declaration shall serve as a disclosure that material assistance to an organization identified on the U.S. Department of State Terrorist Exclusion List has been provided. Failure to disclose the provision of material assistance to such an organization or knowingly making false statements regarding material assistance to such an organization is a felony of the fifth degree.

For the purposes of this declaration, "material support or resources" means currency, payment instruments, other financial securities, funds, transfer of funds, and financial services that are in excess of one hundred dollars, as well as communications, lodging, training, safe houses, false documentation or identification, communications equipment, facilities, weapons, lethal substances, explosives, personnel, transportation, and other physical assets, except medicine or religious materials.

LAST NAME		FIRST NAME		MIDDLE INITIAL
HOME ADDRESS				
CITY	STATE	ZIP	COUNTY	
HOME PHONE		WORK PHONE		

COMPLETE THIS SECTION ONLY IF YOU ARE A COMPANY, BUSINESS OR ORGANIZATION

BUSINESS/ORGANIZATION NAME				
BUSINESS ADDRESS				
CITY	STATE	ZIP	COUNTY	
PHONE NUMBER				

DECLARATION	
In accordance with division (A)(2)(b) of section 2909.32 of the Ohio Revised Code	
For each question, indicate either "yes," or "no" in the space provided. Responses must be truthful to the best of your knowledge.	
1. Are you a member of an organization on the U.S. Department of State Terrorist Exclusion List?	<input type="checkbox"/> Yes <input type="checkbox"/> No
2. Have you used any position of prominence you have with any country to persuade others to support an organization on the U.S. Department of State Terrorist Exclusion List?	<input type="checkbox"/> Yes <input type="checkbox"/> No

HLS 0038 2/06

GOVERNMENT BUSINESS AND FUNDING CONTRACTS - CONTINUED

3. Have you knowingly solicited funds or other things of value for an organization on the U.S. Department of State Terrorist Exclusion List?
 Yes No
4. Have you solicited any individual for membership in an organization on the U.S. Department of State Terrorist Exclusion List?
 Yes No
5. Have you committed an act that you know, or reasonably should have known, affords "material support or resources" to an organization on the U.S. Department of State Terrorist Exclusion List?
 Yes No
6. Have you hired or compensated a person you knew to be a member of an organization on the U.S. Department of State Terrorist Exclusion List, or a person you knew to be engaged in planning, assisting, or carrying out an act of terrorism?
 Yes No

In the event of a denial of a government contract or government funding due to a positive indication that material assistance has been provided to a terrorist organization, or an organization that supports terrorism as identified by the U.S. Department of State Terrorist Exclusion List, a review of the denial may be requested. The request must be sent to the Ohio Department of Public Safety's Division of Homeland Security. The request forms and instructions for filing can be found on the Ohio Homeland Security Division website.

CERTIFICATION

I hereby certify that the answers I have made to all of the questions on this declaration are true to the best of my knowledge. I understand that if this declaration is not completed in its entirety, it will not be processed and I will be automatically disqualified. I understand that I am responsible for the correctness of this declaration. I understand that failure to disclose the provision of material assistance to an organization identified on the U.S. Department of State Terrorist Exclusion List, or knowingly making false statements regarding material assistance to such an organization is a felony of the fifth degree. I understand that any answer of "yes" to any question, or the failure to answer "no" to any question on this declaration shall serve as a disclosure that material assistance to an organization identified on the U.S. Department of State Terrorist Exclusion List has been provided by myself or my organization. If I am signing this on behalf of a company, business or organization, I hereby acknowledge that I have the authority to make this certification on behalf of the company, business or organization referenced on page 1 of this declaration.

X
Signature

Date

Revised November 24, 2010

Current List of Designated Foreign Terrorist Organizations

1. Abu Nidal Organization (ANO)
2. Abu Sayyaf Group (ASG)
3. Al-Aqsa Martyrs Brigade (AAMS)
4. Al-Shabaab
5. Ansar al-Islam (AAI)
6. Asbat al-Ansar
7. Aum Shinrikyo (AUM)
8. Basque Fatherland and Liberty (ETA)
9. Communist Party of the Philippines/New People's Army (CPP/NPA)
10. Continuity Irish Republican Army (CIRA)
11. Gama'a al-Islamiyya (Islamic Group)
12. HAMAS (Islamic Resistance Movement)
13. Harakat ul-Jihad-i-Islami/Bangladesh (HUJI-B)
14. Harakat ul-Mujahidin (HUM)
15. Hizballah (Party of God)
16. Islamic Jihad Union (IJU)
17. Islamic Movement of Uzbekistan (IMU)
18. Jaish-e-Mohammed (JEM) (Army of Mohammed)
19. Jemaah Islamiya organization (JI)
20. Kahane Chai (Kach)
21. Kata'ib Hizballah (KH)
22. Kongra-Gel (KKG, formerly Kurdistan Workers' Party, PKK, KADEK)
23. Lashkar-e Tayyiba (LT) (Army of the Righteous)
24. Lashkar i Jhangvi (LJ)
25. Liberation Tigers of Tamil Eelam (LTTE)
26. Libyan Islamic Fighting Group (LIFG)
27. Moroccan Islamic Combatant Group (GICM)
28. Mujahedin-e Khalq Organization (MEK)
29. National Liberation Army (ELN)
30. Palestine Liberation Front (PLF)
31. Palestinian Islamic Jihad (PIJ)
32. Popular Front for the Liberation of Palestine (PFLP)
33. PFLP-General Command (PFLP-GC)
34. al-Qaida in Iraq (AQI)
35. al-Qa'ida (AQ)
36. al-Qa'ida in the Arabian Peninsula (AQAP)
37. al-Qaida in the Islamic Maghreb (formerly GSPC)
38. Real IRA (RIRA)
39. Revolutionary Armed Forces of Colombia (FARC)

40. Revolutionary Organization 17 November (17N)
41. Revolutionary People's Liberation Party/Front (DHKP/C)
42. Revolutionary Struggle (RS)
43. Shining Path (Sendero Luminoso, SL)
44. United Self-Defense Forces of Colombia (AUC)
45. Harakat-ul Jihad Islami (HUJI)
46. Tehrik-e Taliban Pakistan (TTP)
47. Jundallah

SECTION B
INSTRUCTIONS TO BIDDERS

INSTRUCTIONS TO BIDDERS

ARTICLE 1 - BIDDING PROCEDURES

1.1 DESCRIPTION AND LOCATION OF PROPOSED WORK AND DESIGNATION OF COUNTY PROJECT REPRESENTATIVE:

The project is generally described as the The Source HVAC Upgrades to be located on an urban site in downtown Toledo, Ohio bound at the Northwest Corner of Monroe Street and 14th Street.

The specifications and the associated documents describe the work to be furnished and installed for the The Source HVAC Upgrades, Toledo, Ohio.

All requirements and instructions listed in the "Instructions to Bidders," General and Supplementary Conditions, and Division One Specifications, apply to work specified.

Work specifications include all labor, equipment, and installation as required to provide a complete technical system in compliance with the contract documents.

1.2 EXAMINATION OF CONTRACT DOCUMENTS AND PROJECT SITE:

Copies of Plans and Specifications may be obtained from Becker Impressions, 4646 Angola Rd., Toledo, OH 43615, Phone: 419-385-5303, Fax: 419-385-0529. One (1) complete set of plans and specifications will be provided to each Prime Contractor. Additional sets shall be purchased by the Contractors. One (1) complete set of plans and specifications will be available for review at Lathrop's Plan Room.

1.2.2 The Bidder shall examine all Contract Documents, including without limitation the Drawings and Specifications for all divisions of Work for the Project, noting particularly all requirements which will affect the Bidders' Work in any way.

1.2.3 Failure of a Bidder to be acquainted with the amount and nature of Work required to complete any applicable division of the Work, in conformity with all requirements of the Project as a whole, will not be considered as a basis for additional compensation.

1.2.4 The Bidder shall evaluate the Project site and related Project conditions where the work will be performed, to judge for himself all the factors affecting the cost of the work and time required for its completion, including without limitation the following:

1.2.4.1 The condition, layout, and nature of the Project site and surrounding area, including sub-surface conditions, if applicable;

- 1.2.4.2 The availability and cost of labor;
 - 1.2.4.3 The availability and cost of materials, supplies and equipment;
 - 1.2.4.4 The cost of temporary utilities required in the bid;
 - 1.2.4.5 The cost of any permit or license required by a local or regional authority having jurisdiction over the project;
 - 1.2.4.6 The generally prevailing climatic conditions;
 - 1.2.4.7 Conditions bearing upon transportation, disposal, handling, and storage of materials.
- 1.2.5 The inspection of the project site shall be made available at the Pre-Bid Meeting.

1.3 INTERPRETATION

- 1.3.1 If the Bidder finds any perceived conflict, error, omission or discrepancy between the Drawings and Specifications, or any of the Contract Documents, or is in doubt as to the meaning of any part of the Drawings, Specifications or other Contract Documents, the Bidder shall submit a written request to the County for an interpretation or clarification.
- 1.3.2 The Bidder shall be responsible for prompt delivery of such request.
- 1.3.3 In order to prevent an extension of the bid opening, the Bidder is required to make all requests for interpretation no later than 2:00 PM on OCTOBER 20, 2011.
- 1.3.4 The County shall issue an Addendum, no later than 72 hours prior to the bid opening, excluding Saturdays, Sundays, and legal holidays, to any and all requests for interpretation of the Contract Documents and provide a copy to each person of record holding Drawings and Specifications.
 - 1.3.4.1 The Addenda shall be deemed to have been validly given if the Addenda is prepared by the County and is mailed or otherwise furnished to each person of record holding Drawings and Specifications.
 - 1.3.4.2 The Addenda shall be numbered when prepared to distinguish it from other Addenda that may be issued at a later date.
 - 1.3.4.3 Failure of any bidder to receive any such Addenda shall not relieve that Bidder from any obligation of his Bid as submitted.

- 1.3.5 Any interpretation of the Contract Documents made by any party other than the County, or in any manner other than a written Addendum, shall not be binding and the Bidder shall not rely upon any such interpretation.
- 1.3.6 The Bidder shall not, at any time after the execution of the Contract, be compensated for a claim alleging insufficient data, incomplete Contract Documents, or incorrectly assumed conditions regarding the nature or character of the Work, if no request for interpretation was made by the Bidder as specified by these instructions.

1.4 SPECIFICATIONS

- 1.4.1 The articles, devices, materials, equipment, fixtures and other items named in the Drawings or Specifications by reference to a specific brand name or catalog number so as to denote kind and quality shall be known as Specifications and all bids shall be based upon those Specifications.
- 1.4.1.1 On highway improvement projects, the “Construction and Material Specifications of the Ohio Department of Transportation, with its revisions and supplementary specifications as noted in the plans unless otherwise specifically amended by Lucas County under” Special Provisions, shall constitute the Specifications for the Project.
- 1.4.2 Where two or more Specifications are named, the Bidder may furnish any one of those Specifications.

1.5 ALTERNATES OR EQUALS

See Specification Section included within this packet

- 1.5.1 Proposed alternates or equals to the stated Specifications may only be accepted pursuant to the following requirements:
- 1.5.1.1 If the Bidder proposes to use an article, device, material, equipment, form of construction, fixture or other item other than those Specifications named, the Bidder shall certify that the item is equal in quality, and all aspects of performance and appearance, to the Specifications specified.
- 1.5.1.2 If the Owner/Operator/Architect/Construction Manager approves the proposed alternate or equal as a Specification, the Owner/Architect/Construction Manager shall, no later than 72 hours prior to the bid opening, excluding Saturdays, Sundays and legal holidays, issue an Addendum to all Bidders.
- 1.5.1.3 If the Owner/Operator/Architect/Construction Manager finds the proposed alternate or equal is not acceptable, the Owner/Architect/Construction Manager shall respond to the Bidder in writing, no later than 72 hours prior to the bid opening, excluding Saturdays, Sundays and legal holidays, stating the reason for the rejection, which decision shall be

final. The Owner/Architect/Construction Manager shall have the discretion to reject a proposed alternate or equal for the reason that the Bidder failed to provide sufficient information to enable the Owner/Architect/Construction Manager to evaluate the proposed alternate or equal without delay in the scheduled bid opening.

1.5.1.4 No consideration shall be given to any proposed alternate or equal unless submitted to the Owner/Architect/Project Manager no later than **OCTOBER 20, 2011 at 2:00 PM.**

1.6 BID FORM

1.6.1 Each bid shall be submitted on the Bid Form and sealed in an envelope clearly marked as a bid, indicating the Project name and number (if applicable), and the bid date, on the envelope. The wording of the Bid Form shall be used without change, alteration, or addition.

1.6.1.1 If the Bid Form is bound with other Contract Documents, it must be submitted as such, and may not be removed from the bound Contract Documents.

1.6.2 Any change, alteration or addition in the wording of the Bid Form may cause the bid to be rejected.

1.6.3 Unless the Bidder withdraws the bid as provided in Article 3 hereof, the Bidder shall be required to comply with all requirements of the Contract Documents, regardless of whether the Bidder had actual knowledge of the requirements and regardless of any statement or omission made by the Bidder which might indicate a contrary opinion.

1.6.4 The Bidder shall fill in all blank spaces in the Bid Form in ink or typewritten and not in pencil.

1.6.4.1 "Not Applicable or N/A" must be used to fill spaces that are not applicable to the Bidder's Bid.

1.6.5 The Bidder shall show all bid amounts *in both figures and words.*

1.6.5.1 *In the case of a conflict between the words and figures, the amount shown in words shall govern.*

1.6.5.2 *In the case where words and figures are not identical in form or amount, the amount shown in words, where such words are not ambiguous, shall govern. When the Bidder's intention and the meaning of the words are clear, omissions or misspellings of words shall not render the words ambiguous.*

1.6.6 Any alteration or erasure of the wording and/or figures of the Bid amount on the Bid Form shall be initialed by the Bidder.

- 1.6.7 Unless specified on the Bid Form, Alternates shall be considered as unsolicited; unsolicited alternate bids will not be considered in awarding this contract, and the inclusion of any such unsolicited alternates will result in a bid being considered informal and liable to rejection.
- 1.6.8 The Lucas County Board of Commissioners reserves the right to accept or reject any or all bids on Alternates, in whole or in part.
- 1.6.8.1 If no change in the bid amount is required, indicate “No Change or \$0 Dollars”.
- 1.6.8.2 A blank entry or an entry of No Bid, N/A, or similar entry on any Alternate will cause the bid to be rejected only if that Alternate is selected.
- 1.6.8.3 In a Combined Bid, a blank entry or an entry of No Bid, N/A, or similar entry on an Alternate will cause the bid to be rejected only if that Alternate applies to the Combined Bid and that Alternate is selected.
- 1.6.9 An officer or a principal of the corporation, partnership or sole proprietorship shall print or type the legal name of the business entity on the line provided and sign the Bid Form. All signatures must be original. The same procedure shall apply to the bid of a joint venture, except that the signature and title of an officer or a principal of each member firm of the joint venture shall be required.
- 1.6.10 The Bid Form of the Bidder with whom the Board of Lucas County Commissioners executes a Contract shall be incorporated into the Contract as if fully rewritten therein.

1.7 REQUIRED SUBMITTALS WITH BID FORM

- 1.7.1 The bid shall be rejected if the Bidder fails to submit the following submittals with the Bid Form in the sealed envelope:
- 1.7.1.1 A signed Bond for the full amount of the Bid, meeting the requirements of Section 153.54 to 153.57, Ohio Revised Code, OR a certified check payable to Lucas County Treasurer for ten (10%) percent of the full amount of the Bid;
- 1.7.1.2 Power of Attorney of the agent signing for the Surety.
- 1.7.1.3 Affidavits from SECTION A
- 1.7.1.4 Contractor Qualification Forms, restrictions, Certification and Submittals as per specification.

1.8 UNIT PRICES

- 1.8.1 When Unit Prices are requested on the Bid Form, the scheduled quantities listed are to be considered as approximate and are to be used for the comparison of bids only.

1.8.2 Unless otherwise specified in the Contract Documents, the Unit Prices set forth shall include all materials, equipment, labor, delivery, installation, overhead, profit and any other cost or expense, in connection with or incidental to, the performance of that portion of the Work to which the Unit Prices apply.

1.8.3 Where there is a conflict between the Unit Price and the extension thereof made by the Bidder, the Unit Price shall govern and the County is authorized to make a correct extension of such Unit Price shall be made and such corrected extension shall be used in comparing bids.

1.8.4 It is understood that the scheduled quantities of Work to be done and materials to be furnished may increase, decrease or be deleted entirely after execution of the Contract.

1.9 SUPPLEMENTAL UNIT PRICES

If specified in the Bid Documents, The Bidder shall furnish supplemental unit prices at the time of submitting the Bid; however, these supplemental unit prices shall not be included in the Bid amount.

1.10 RETURN OF BIDDING DOCUMENTS

1.10.1 The apparent lowest and best Bidder with whom the Board of Lucas County Commissioners intends to execute a contract may retain the Drawings and Specifications.

1.11 COPIES OF THE DRAWINGS AND SPECIFICATIONS

1.11.1 After award of the contract The County's Project Representative shall furnish to the Contractor, free of charge, the general bidding documents and one (1) complete set of Drawings and Specifications to maintain at the Project Site.

1.11.2 The Contractor may obtain additional copies or sepias of the Drawings and Specifications from the County's Project Representative, upon request, at the cost of reproduction, if any.

ARTICLE 2 - BID OPENING AND CONSIDERATION OF BIDS

2.1 DELIVERY OF BIDS

2.1.1 It is the responsibility of the Bidder to submit the bid to the Clerk of the Board of Lucas County Commissioners (Fourth Floor) or his/her designee prior to the time scheduled for the bid opening, at the address specified in the "Invitation to Bid".

- 2.1.2 No bid shall be considered if it arrives after the time set for the bid opening, as determined by the Clerk of the Board of Lucas County Commissioners (Fourth Floor) or his/her designee.
- 2.1.3 If the bid envelope is enclosed in another envelope for the purpose of delivery, the exterior envelope shall be clearly marked as a bid with the Project Name and number (if applicable) and the bid date.

2.2 BID OPENING

- 2.2.1 Sealed bids will be received at the office designated in the Invitation to Bid until the time stated when all bids will be opened and read.
- 2.2.2 The public opening and reading of bids is for informational purposes only and is not to be construed as an acceptance or rejection of any bid submitted.
- 2.2.3 The contents of the bid envelope shall be a public record and open for inspection, upon receipt of a request, at any time scheduled after the bid opening.

2.3 BID OPENING EXTENSION

If any Addendum is issued within 72 hours prior to the published time for the bid opening, excluding Saturdays, Sundays and legal holidays, the bid opening shall automatically be extended one (1) week, with no further advertising required, pursuant to Section 153.12 of the Ohio Revised Code.

2.4 BID EVALUATION CRITERIA AND PROCEDURE

Please reference the Best Bid Criteria included within this Invitation to Bid.

2.5 REJECTION OF BID BY THE COUNTY

- 2.5.1 The County may reject any or all bids, in whole or in part, on any basis and without disclosure of a reason, and waive all informalities and technicalities. The failure to make such a disclosure shall not result in accrual of any right, claim, or cause of action by any unsuccessful Bidder against the County.
- 2.5.2 The Bid of any Bidder who engages in collusive bidding shall be rejected. The County may reject the bid of any Bidder who has engaged in collusive bidding at any future bid opening.
- 2.5.4 If, in the opinion of the County, the award of the Contract to the lowest Bidder is not in the best interest of the County, the County may accept, in its discretion, another bid so opened or reject all bids, and advertise for other bids, pursuant to Section 153.09 of the Ohio Revised Code. Such advertisement will be for such time, in such form, and in such publications as may be directed by the County.

2.6 NOTICE OF AWARD

- 2.6.1 The County shall notify the apparent successful Bidder that upon satisfactory compliance with all conditions precedent for Contract execution (Article 5.4), within the time specified, the Bidder will be awarded a Contract.
- 2.6.2 The County reserves the right to rescind any Notice of Award if the County determines the Notice of Award was issued in error.
- 2.6.3 The Base Bid cost estimate for this Bid Package is **\$353,200**. No contract to which this section applies shall be entered into if the price of the contract, or, if the project involves multiple contracts where the total price of all contracts for the project, is in excess of ten percent above the entire estimate thereof, nor shall the entire cost of construction, reconstruction, repair, painting, decorating, improvement, alteration, addition, or installation including changes and estimates for architects or engineers, exceed in the aggregate the amount authorized by law.

Bid Package Base Bid Items Break-down:

HVAC Work (including allowance) \$353,200

Bid Package Alternate Cost:

**Alternate No. M-1: Modification of Existing Carrier Moduline Units and
Modulating Duct Control Dampers & Controls
\$ 18,000**

**Alternate No. M-2: BACnet/LAN Control Wiring (including Alternate M-2
allowance)
\$ 67,000**

**Alternate No. M-3: Split-System Cooling Unit for Second Floor Computer
Room
\$ 10,250**

ARTICLE 3 - WITHDRAWAL OF BID

3.1 WITHDRAWAL PRIOR TO BID OPENING

A Bidder may withdraw a bid after the bid has been received by the County, provided the Bidder makes a request in writing and the request is received by the County prior to the time of the bid opening, as determined by the employee of the County designated to open the bids.

3.2 WITHDRAWAL AFTER BID OPENING

3.2.1 In accordance with Section 9.31 of the Ohio Revised Code, a Bidder may withdraw a bid from consideration after the bid opening if the bid amount was substantially lower than the amounts of other bids, providing the bid was submitted in good faith, and the reason for the bid amount being substantially lower was a clerical mistake, as opposed to a judgment mistake, and was actually due to an unintentional and substantial arithmetic error or an unintentional omission of a substantial quantity of Work, labor or materials made directly in the compilation of the bid amount.

3.2.2 Notice of a request to withdraw such a bid must be made in writing and filed with the County within two (2) business days after the bid opening.

3.2.3 If a bid is withdrawn under authority of paragraph 3.2.1, the County may award the Contract to the Bidder who submitted the next lowest and best Bid or reject all bids and advertise for other bids. In the event the County advertises for other bids, the withdrawing Bidder shall pay the costs, in connection with the rebidding, of printing new Contract Documents, required advertising and printing and mailing notices to prospective Bidders, if the County finds that such costs would not have been incurred but for such withdrawal.

3.3 REFUSAL BY BIDDER TO PERFORM

In the event the County denies the claim for withdrawal and the Bidder elects to appeal or otherwise refuses to perform the Contract, the County may reject all bids or award the Contract to the next lowest and best Bidder, pursuant to Section 9.31 of the Ohio Revised Code.

3.4 PENALTY FOR WITHDRAWAL

3.4.1 No Bidder who is permitted by these General Conditions to withdraw a bid shall for compensation supply any material or labor to, or perform any subcontract or other work agreement for, the person to whom the Contract is awarded or otherwise benefit, directly or indirectly, from the performance of the Project for which the withdrawn bid was submitted, without the written approval of the County, pursuant to Section 9.31 of the Ohio Revised Code.

- 3.4.2 Pursuant to Section 9.31 of the Ohio Revised Code, the person to whom the Contract was awarded and the withdrawing Bidder are jointly liable to the County in an amount equal to any compensation paid to or for the benefit of the withdrawing Bidder without such approval, in addition to the penalty provided for in Section 2913.31 of the Ohio Revised Code.

ARTICLE 4 - BID GUARANTEE AND CONTRACT BOND

4.1 BID BOND

- 4.1.1 The Bidder must file with the bid a Bond, payable to Lucas County, in the form of either a signed Bond in the amount equal to 100% of the Bid; or a certified check, cashier's check or money order equal to ten (10) percent of the Bid.
- 4.1.1.1 If chosen, the certified check, cashier's check or money order must be drawn on a solvent bank or savings and loan association.
- 4.1.2 The Bond shall serve as an assurance that the Bidder will, upon acceptance of the bid, comply with all conditions precedent for Contract execution, within the time specified by the County.
- 4.1.3 If the blank line on the Bond form is not filled in, the penal sum will be the full amount of the Base Bid plus added Alternates. If the blank line is filled in, the amount must be stated in dollars.
- 4.1.4 The Bond must be signed by an authorized agent, with Power of Attorney, from a Surety. The Bond must be issued by a Surety authorized by the Department of Insurance to transact business in Ohio.
- 4.1.5 The requirements of Section 3905.41 of the Ohio Revised Code may be applicable to require the Bond to be countersigned by an Ohio residual agent. The Bidder shall determine the applicability of this provision.
- 4.1.6 In every case where a Bond is required, should any Surety thereon, in the opinion of the County, become unacceptable as a Surety at any time prior to the completion of the Project and acceptance of the Work, the Contractor shall promptly furnish a replacement Surety that is acceptable to the County.
- 4.1.7 Bonds or checks will be returned to all unsuccessful Bidders upon execution of the Contract or within thirty (30) days after the bid opening, whichever is soonest.

4.2 BOND FORFEITURE

- 4.2.1 If for any reason other than as authorized in paragraph 3.2.1 the Bidder fails to enter into a Contract, and the County awards the Contract to the next lowest and best Bidder, the Bidder who failed to enter into a Contract shall be liable to the County for a penal sum

not to exceed ten (10) percent of the bid guaranty and contract bond, or the full amount of the certified check, cashier's check, or money order.

4.2.2 If the County then awards a Contract to such next lowest and best Bidder and such Bidder also fails or refuses to enter into a contract, the liability of such next lowest and best Bidder shall be the amount of the difference between the bid amounts of such next lowest and best Bidder and the third lowest and best Bidder, but not in excess of the liability specified in paragraph 3.2.3. Liability on account of an award to any lowest and best Bidder beyond the third lowest and best Bidder shall be determined in like manner, pursuant to Section 153.54 of the Ohio Revised Code.

4.2.3 If the County does not award the contract to the next lowest and best Bidder but resubmits the Project for bidding, the Bidder failing to enter into the contract shall be liable to the County for a penal sum not to exceed ten (10) percent of such Bidder's bid amount or the costs in connection with the resubmission, of printing new Contract Documents, required advertising and printing and mailing notices to prospective Bidders, whichever is less, pursuant to Section 153.54 of the Ohio Revised Code.

4.3 PERFORMANCE BOND

4.3.1 If the Bidder enters into a contract, and had previously provided either a money order, cashier's check, or certified check with their Bid, then at the time of signing the Contract the Bidder shall be required to provide a Bond meeting the requirements of Section 153.54(C) of the Ohio Revised Code. Upon receipt of the Bond, the County shall return the check or money order to the Bidder.

4.3.2 The Bond shall be in the full amount of the contract to indemnify the County against all direct and consequential damages suffered by failure of the Contractor to perform according to the provisions of the contract and in accordance with the plans, details, specifications and bills of material therefore and to pay all lawful claims of Subcontractors, Material Suppliers, and laborers for labor performed or materials furnished in carrying forward, performing or completing the contract.

ARTICLE 5 - CONTRACT AWARD AND EXECUTION

5.1 The award and execution of the contract is based upon the expectation that the lowest and best Bidder will comply with all conditions precedent for contract execution within ten (10) days of the date of the Notice of Award.

5.2 Noncompliance with the conditions precedent for contract execution within ten (10) days of the date of the Notice of Award shall be cause for the County to cancel the Notice of Award and award the contract to the next lowest the time for submitting the conditions precedent for contract execution for good cause shown. No extension shall operate as a waiver of the conditions precedent for contract execution.

- 5.3 Pursuant to Section 153.12 of the Ohio Revised Code, the failure to award and execute the contract within sixty (60) days of the bid opening invalidates the entire bid process and all bids submitted, unless the time is extended by written consent of the Bidder whose bid the County has accepted, and concurrence of the County with such extension.
- 5.3.1 If the contract is awarded within sixty (60) days of the bid opening, any increases in material, labor and subcontract costs shall be borne by the Bidder without alteration of the amount of the bid.
- 5.3.2 If the cause of the failure to execute the contract within sixty (60) days of the bid opening is due to matters for which the County is solely responsible, the Contractor shall be entitled to a Change Order authorizing payment of verifiable increased costs in materials, labor or subcontracts.
- 5.3.3 If the cause of the failure to execute the contract within sixty (60) days of the bid opening is due to matters for which the Contractor is responsible, no request for increased costs will be granted.
- 5.4 CONDITIONS PRECEDENT FOR EXECUTION OF CONTRACT
- 5.4.1 Performance Bond; to support the Bond, a Certificate of Compliance issued by the Department of Insurance, showing the Surety is licensed to do business in Ohio;
- 5.4.2 Current Ohio Workers Compensation Certificate;
- 5.4.3 Certificate of Compliance with Affirmative Action Programs, issued pursuant to Section 9.47 of the Ohio Revised Code;
- 5.4.4 Certificate of Insurance (ACORD form is acceptable) and copy of additional insured endorsement.
- 5.4.4.1 The County reserves the right to request a certified copy of the Contractor's insurance policies.
- 5.4.5 If the Bidder is a foreign corporation, i.e., not incorporated under the laws of the State of Ohio, a Certificate of Good Standing from the Secretary of State showing the right of the Bidder to do business in the State of Ohio
- 5.4.6 A copy of the Bidder's site specific safety plan addressing any of the following that are applicable to the Project:
- 5.4.6.1 Confined Space Entry
- 5.4.6.2 Trenching and/or Excavating
- 5.4.6.3 Traffic Control

5.4.6.4 Hazard Communication / Material Safety Data Sheets

5.4.6.5 Lockout / Tagout

5.4.6.6 Fire Prevention Plan for "Hot Work" such as welding, cutting or torching

5.4.6.7 Fall Protection Plan and/or Scaffolding safety Plan

5.4.6.8 The County assumes no responsibility for either the completeness or the effectiveness of the Contractor's written safety plans.

- 5.5 The County shall issue the Contractor a Notice of Commencement which shall establish the date for commencement of the Project time. The Contractor shall, within ten (10) days of the date of the Notice of Commencement unless they have been previously submitted with the Bid, furnish the County's Project Representative with the following submittals;

Schedule of work;

Preliminary schedule of Shop Drawings and Submittals;

Subcontractor Declaration and Qualifications;

Manufacturer Declaration;

Outline of Qualifications of Proposed Superintendent and Foreman Registrations and Certifications for tradesmen.

- 5.6 The Contractor shall, within ten (10) days of the date of the Notice of Commencement, provide the County's Prevailing Wage Coordinator with a schedule of dates during the term of the contract on which wages will be paid to employees for the Project.

SECTION C
GENERAL CONDITIONS OF THE CONTRACT
FOR CONSTRUCTION

GENERAL CONDITIONS OF THE CONTRACT FOR CONSTRUCTION FOR THE SOURCE
HVAC UPGRADES

GENERAL CONDITIONS 00700-1

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GENERAL CONDITIONS OF THE CONTRACT FOR CONSTRUCTION

ARTICLE 1

DEFINITIONS AND CONTRACT DOCUMENTS

1.1 DEFINITIONS

1.1.1 Definitions. In addition to other terms defined throughout these General Conditions, as used in these General Conditions, the following terms shall have the meanings indicated below:

"Addenda" shall mean written or graphic instruments issued by Architect that modify or interpret the Contract Documents by addition, deletion, clarification or correction.

"Adjacent Properties" shall mean all lands adjoining and surrounding the Site, including streets, sidewalks, bridges and buildings adjoining the Site.

"Agreement" shall mean the executed trade contract agreement between Owner and Contractor relating to the Work, as the same may be amended from time to time pursuant to the terms thereof.

"Allowances" shall mean items of Work, if any, that Owner agrees are not detailed enough for Contractor to provide a definitive price.

"Applicable Laws" shall mean any applicable law, enactment, statute, code, ordinance, charter, resolution, order, rule, regulation, guideline, authorization, or other direction or requirement of any Governmental Authority enacted, adopted, promulgated, entered or issued (including the requirements of the ADA relating to the Project).

"Application for Payment" shall mean certified request for payment for completed portions of the Work in the form required by the Contract Documents.

"Architect" shall mean The Collaborative, Inc., or any successor entity designated in writing by Owner to act as architect for the Project.

"As-Built Drawings" shall mean the Drawings revised to show the "as-built" condition of the Project and other changes made during the construction process.

"Change Order" shall mean a written instrument signed by Owner or Owner's authorized agent, Architect, Contractor and Construction Manager issued after the execution of the Contract Documents authorizing a change in the scope of the Work, the Contract Sum or the Construction Schedule.

"Claim" shall mean any claim, demand or assertion as a matter of right for a change in the Contract Sum, extension of time or other relief with respect to any of the terms of the Contract Documents.

"Construction Schedule" shall mean the construction schedule prepared by Construction Manager and included in the Contract Documents.

"Contract Documents" or "Contract" shall mean: (a) the Agreement, (b) these General Conditions of the Contract, (c) the Drawings, (d) the Specifications, (e) the Construction Schedule, (f) all Addenda issued prior to execution of the Contract and (g) all Modifications issued after execution of the Contract. The Contract Documents do not include Bidding Documents such as the Advertisement or Invitation to Bid, the Instructions to Bidders, sample forms, Contractor's Bid or portions of Addenda relating to any of these, or any other documents unless specifically enumerated in the Agreement.

"Contract Time" shall mean the period of time, including authorized adjustments, allotted in the Contract Documents for Substantial Completion of the Work.

"Construction Manager" shall mean The Lathrop Company, Inc. or any successor entity designated in writing by Owner to act as construction manager for the Project.

"Contractor" shall mean any entity performing Work pursuant to its Agreement with Owner.

"Defective Work" shall mean any Work that does not comply with the requirements of the Contract Documents.

"Deficiency List" shall mean, at any time, the list of incomplete Work and Work requiring repair or replacement prepared by Architect, and approved by Owner, upon written notification from Construction Manager to Owner and Architect that a particular Contractor's Work is completed.

"Drawings" shall mean 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.

"Final Completion" or "finally complete" shall mean the stage in the progress of the Work when the Work is completed in accordance with the terms of the Contract Documents and Construction Manager and each Contractor has satisfied all of its obligations under the Contract Documents, including (i) all Governmental Authorities have given final, written approval of the entire Project, (ii) a final unconditional certificate of occupancy has been granted and issued to Owner by the appropriate Governmental Authorities, and (iii) all Punch List items have been completed or corrected.

"Force Majeure" mean an act of God, fire, tornado, lightning, hurricane, flood, earthquake, explosion, war (whether declared or undeclared), terrorism, embargoes, quarantines, epidemics, civil disturbance, unavoidable casualties, unusual delays in deliveries, region-wide shortage of materials, named storms, unusually severe weather that is abnormal for the time of year or (not Project-specific) labor strikes or disturbances. Inability by a Party to make a payment as required by the Contract Documents shall not be an event of Force Majeure even if the underlying cause would otherwise qualify as Force Majeure.

"General Conditions" shall mean these General Conditions of the Contract for Construction.

"Governmental Authority" shall mean any federal, state, county, municipal or other governmental department, entity, authority, commission, board, bureau, court agency, or any instrumentality of any of them having jurisdiction with respect to the Work, the Project or the Site.

"Hazardous Materials" shall mean any hazardous waste, toxic substance, asbestos containing material, petroleum product, or related materials including substances defined as "hazardous substances" or "toxic substances" in the Comprehensive Environmental Response, Compensation and Liability Act of 1980, as amended, 42 U.S.C. Sec. 9061 *et seq.*; Hazardous Materials Transportation Act, as amended, 49 U.S.C. Sec. 1802 *et seq.*; the Resource Conservation and Recovery Act, as amended, 42 U.S.C. Sec. 6901 *et seq.*; and the corresponding regulations (as amended) issued pursuant to these acts.

"Modification" shall mean (a) a written amendment to the Agreement signed by Owner and Contractor, (b) a Change Order or (c) a written order for a minor change in the Work issued by Construction Manager pursuant to Article 12: Changes in Work hereof.

"Owner" shall mean Lucas County Board of Commissioners.

"Product Data" shall mean illustrations, standard schedules, performance charts, instructions, brochures, diagrams and other information furnished by Contractor to illustrate a material, product or system for some portion of the Work.

"Project" shall mean the total construction of the new Port Lawrence Bus Shelter as described in the Contract Documents, for which the Work performed under the Contract Documents may be the whole or a part.

"Punch List" shall mean the list initially prepared by Contractor (as approved by Architect, Construction Manager and Owner) containing minor items of incomplete Work not impacting Substantial Completion and to be completed and/or corrected after Substantial Completion.

"Samples" means natural materials, fabricated items, equipment, devices, appliances or parts specified in the Contract Documents, and any other Samples as may be required by Architect to determine whether the kind, quality, construction, workmanship, finish, color and other characteristics of the materials, etc. proposed by Contractor conform to the required characteristics of the various portions of the Work.

"Schedule of Values" shall mean the statement furnished by Contractor, and approved by Construction manager, reflecting the portions of the Contract Sum allocated to the various portions of the Work and, when approved by the Team and Architect, used as the basis for reviewing Applications for Payment.

"Shop Drawings" shall mean drawings, diagrams, illustrations, schedules, performance charts, and other data specifically prepared for the Project by Contractor or any Subcontractor, manufacturer, Supplier or distributor, and then reviewed by Construction Manager for completeness and correctness, which illustrate how specific portions of the Work shall be fabricated and/or installed.

"Site" shall mean the property located in Toledo, Ohio bounded by St. Clair Street on the east; Jefferson Avenue on the south; an existing service drive on the west; and an existing parking structure on the north.

"Specifications" shall mean 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.

"Subcontract" shall mean any contract or agreement between Contractor and a Subcontractor for performance of a portion of the Work.

"Subcontractor" shall mean a person or entity who has a direct contract with Contractor to perform any of the Work (including, equipment leases and material purchase agreements). The term Subcontractor includes Suppliers and Materialmen.

"Submittal Schedule" shall mean a schedule for submitting Shop Drawings, Project Data, and Samples agreed upon by Owner and Construction Manager.

"Substantial Completion" or "substantially complete" shall mean the entire Work (or separable units or phases as provided in the Contract Documents) is essentially and satisfactorily complete in accordance with the Contract Documents, such that the entire Work is ready for opening to the general public and occupancy or use by Owner, excluding completion of the Excluded Scope and all items or elements of Work that depend for their completion upon the completion by Owner of the Excluded Scope. A minor amount of Work, such as completion of items not materially affecting the foregoing, installation of minor accessories or items, a minor amount of painting, minor replacement of Defective Work, minor adjustment of controls or sound systems, or completion or correction of exterior work that cannot be completed due to weather conditions, will not delay determination of Substantial Completion. For purposes of Substantial Completion, specified areas of the entire Work or Project may be individually judged as substantially complete. In no event shall Substantial Completion be deemed to have occurred unless (i) a temporary Certificate of Occupancy has been issued by the appropriate Governmental Authorities, unless it is withheld for reasons not the fault of Contractor, and (ii) all Work shall have been approved and accepted by Architect (including any Work contained on a Deficiency List previously issued), subject only to the Punch List items.

"Substitution" shall mean any substitute product or process other than that specified in the Contract Documents that completely fulfills the requirements of the Contract Documents and for which exceptions are agreed to in writing by Owner.

"Supplier" or "Materialman" shall mean a person or entity who has an agreement with Contractor or its Subcontractors or Sub-subcontractors to supply by sale or lease, directly or indirectly, any materials or equipment for the Work.

"Work" shall mean the furnishing of all materials, labor, detailing, layout, equipment, supplies, plants, tools, scaffolding, transportation, temporary construction, superintendence, demolition, and all other services, facilities and items, reasonably necessary for the full and proper performance and completion of the construction requirements set forth in the Contract Documents, and items reasonably inferable therefrom, whether provided or to be provided by Contractor or a Subcontractor, or any other entity for whom Contractor is responsible, and whether or not performed or located on or off of the Site.

1.1.2 As the context of these General Conditions may require, terms in the singular shall include the plural (and vice versa) and the use of feminine, masculine or neuter genders shall include each other. Wherever the word "including" or any variation thereof, is used herein, it shall mean "including, without limitation," and shall be construed as a term of illustration, not a term of limitation. Wherever the word "or" is used herein, it shall mean "and/or".

1.2 EXECUTION, CORRELATION AND INTENT

1.2.1 Execution of the Contract by Contractor is a representation that Contractor has visited the Site, become familiar with the local conditions under which the Work is to be performed, and has correlated personal observations with the requirements of the Contract Documents.

1.2.2 The intent of the Contract Documents is to include all items necessary for the proper execution and completion of the Work. The Contract Documents are complementary, and what is required by any one shall be as binding as if required by all. The Work shall include not only work that is expressly set forth in the Contract Documents, but also any work that is consistent therewith and is reasonably inferable therefrom as being necessary to produce the intended results. Words and abbreviations that have well-known technical or trade meanings are used in the Contract Documents in accordance with such recognized meanings.

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

1.2.4 No responsibility is assumed by Owner, Construction Manager or Architect for defining the limits of any Contractor's work or the work of any trade by reason of the arrangement of the Specifications and/or the Drawings.

1.2.5 If there is any inconsistency in the quality or quantity of work required under the Contract Documents, Contractor shall (1) immediately bring such inconsistency to the attention of Construction Manager (as soon as Contractor discovers the inconsistency) and (2) provide the better quality or greater quantity of work or materials, unless otherwise ordered in writing by Architect or Owner through Construction Manager.

ARTICLE 2 ADMINISTRATION OF THE CONTRACT

2.1 ARCHITECT

2.1.1 All communications, directives, instructions, interpretations and actions required of Architect shall be issued or taken only by or through the individual identified as Architect in the Contract or Architect's authorized representative. Copies of all inquiries of Architect and the responses thereto shall be provided to Construction Manager by Architect and by Contractor.

2.1.2 The authorized representative of Architect may be one or more representatives designated in writing by Architect and authorized to perform the duties and carry out the responsibilities of Architect at the Site.

2.2 CONSTRUCTION MANAGER

2.2.1 The authorized representative of Construction Manager may be one or more representatives designated in writing by Construction Manager and authorized to perform the duties and carry out the responsibilities of Construction Manager at the Site.

2.3 ADMINISTRATION OF THE CONTRACT

2.3.1 Architect and Construction Manager will provide administration of the Contract as hereinafter described.

2.3.2 Construction Manager, acting on behalf of Owner as Owner's agent, shall have the right to administer and enforce the Contract Documents and control the performance of the Work of Contractor, including the right, as appropriate, to notify Contractor's surety of any default of such Contractor and notice to the appropriate surety. Construction Manager shall have the authority to direct the Work of Contractor. All instructions to Contractor, and all communications to Owner or Architect, shall be forwarded through Construction Manager.

2.3.3 Construction Manager will endeavor to obtain satisfactory performance from each of Contractors, determine in general that the Work of Contractor is being performed in accordance with the Contract Documents, and will endeavor to guard Owner against defects and deficiencies in the Work of Contractor. Construction Manager will be Owner's day-to-day representative at the Site with whom Contractor may consult and through whom Contractor shall obtain all instructions and actions required of Owner and/or Architect by the Contract Documents. Construction Manager, with Architect, will keep Owner informed of the progress of the Work and will be Owner's advisor concerning all instructions and actions requested of Owner during the course of the Work. Construction Manager shall have the authority to require additional inspections or tests of the Work if reasonably necessary whether or not such Work is fabricated, installed or completed.

2.3.4 Architect will visit the Site at intervals appropriate to the stage of construction to become generally familiar with the progress and quality of the Work and to determine in general if the Work is proceeding in accordance with the Contract Documents. However, Architect will not be required to make exhaustive or continuous on-site inspections to check the quality or quantity of the Work. On the basis of on-site observations as an Architect, Architect will keep Owner informed of the progress of the Work and will guard Owner against defects and deficiencies in the Work of Contractor.

2.3.5 Architect and Construction Manager shall at all times have access to the Work wherever it is in preparation and progress. Contractor shall provide facilities for such access so that Architect and Construction Manager may perform their functions under the Contract Documents.

2.3.6 Construction Manager will review and approve schedules for construction to be prepared and submitted by Contractor in accordance with the Contract Documents, and will monitor performance of the Work by Contractor so as to advise Owner as to Contractor's compliance with its schedules for performance of the Work. Construction Manager will schedule and coordinate the Work of separate contractors on the Project, including their use of the Site, and Contractor shall cooperate with Construction Manager in connection with such scheduling and coordination.

2.3.7 Construction Manager will review all Applications for Payment by Contractor, including final payment, and will assemble them with similar applications from other contractors on the Project into a combined Project Application for Payment. Construction Manager will then make recommendations to Owner for payment. No payment will be made to any Contractor without the prior written approval of the Construction Manager.

2.3.8 Based on Architect's observations, the recommendations of Construction Manager and an

evaluation of the Project Application for Payment, Architect will determine the amount owing to Contractor and make recommendations for payment as provided in Paragraph 9.4 hereof.

2.3.9 Architect will be the interpreter of the requirements of the Contract Documents. Either party to the Agreement may make written request to Architect through Construction Manager for interpretations necessary for the proper execution or progress of the Work. All requests for information by Contractor shall be submitted in good faith and shall contain Contractor's proposed solution to the request.

2.3.10 All interpretations of Architect shall be consistent with the intent of and reasonably inferable from the Contract Documents and will be in writing or in graphic form.

2.3.11 Architect will have authority to reject Work that does not conform to the Contract Documents, and to require special inspection or testing, but will take such action only after consultation with Construction Manager. Construction Manager will have the authority to reject Work that does not conform to the Contract Documents. Neither Architect's nor Construction Manager's authority to act under this Subparagraph 2.3.11 hereof, nor any decision made by them in good faith either to exercise or not to exercise such authority, shall give rise to any duty or responsibility of Architect or Construction Manager to Contractor, any Subcontractor, any of their agents or employees, or any other person performing any of the Work.

2.3.12 Construction Manager will receive from Contractor and review all Shop Drawings, Product Data and Samples, coordinate them with information contained in related documents, and transmit to Architect those recommended for approval.

2.3.13 Architect will review and approve or take other appropriate action upon Contractor's submittals such as Shop Drawings, Product Data and Samples, but only for conformance with the design concept of the Work and the information given in the Contract Documents. Such action shall be taken with reasonable promptness so as to cause no delay. Architect's approval of a specific item shall not indicate approval of an assembly of which the item is a component.

2.3.14 Following consultation with Construction Manager, Architect will take appropriate action on Change Orders in accordance with Article 12 hereof, and will have authority to order minor changes in the Work as provided in Subparagraph 12.3.1 hereof.

2.3.15 Construction Manager will assist Architect in conducting inspections to determine the dates of Substantial Completion and Final Completion, and will receive and forward to Owner for Owner's review written warranties and related documents required by the Contract Documents and assembled by Contractor. In connection with certifying completion of the Work, it is anticipated that Architect shall make an initial visit and one re-inspection. If, after making such re-inspection, Architect, after consultation with Construction Manager, determines that the Work is not substantially complete or finally complete (as the case may be) or that previously scheduled punch list work has not been completed, then Contractor shall pay (without reimbursement from Owner) for any costs and expenses incurred in connection with such additional inspections, including, without limitation, compensating Architect for additional services rendered in connection with the performance of such additional inspections.

2.3.16 The duties, responsibilities and limitations of authority of Architect and Construction Manager as Owner's representatives during construction as set forth in the Contract Documents, will not be modified or extended without written consent of Owner, Architect and Construction Manager.

2.3.17 In no event shall any act or omission on the part of Construction Manager or Architect relieve Contractor from its obligation to perform the Work in full compliance with the Contract Documents.

ARTICLE 3

OWNER

3.1 DEFINITION

3.1.1 Owner is the person or entity identified as such in the Agreement. The term Owner means Owner or Owner's Project Rep.

3.2 INFORMATION AND SERVICES REQUIRED OF OWNER

3.2.1 Upon request of Contractor, Owner shall furnish all surveys describing the physical characteristics, legal limitations and utility locations for the Site, and a legal description of the Site, all to the extent necessary for proper performance of the Work. Contractor shall review all such materials submitted by Owner and notify Construction Manager within seventy-two (72) hours of any inaccuracies or inconsistencies which Contractor should discover with the exercise of due care. Contractor waives any right to recover damages from any such inaccuracy or inconsistency if it fails to notify Construction Manager as and when required.

3.2.2 Owner shall secure and pay for necessary easements required for the construction.

3.2.3 Upon request of Contractor, information or services under Owner's control, and reasonably required for proper performance of the Work, shall be furnished by Owner with reasonable promptness to avoid delay in the orderly progress of the Work.

3.2.4 Owner shall forward all instructions to Contractor through Construction Manager, with simultaneous notification to Architect.

3.3 OWNER'S RIGHT TO STOP THE WORK

3.3.1 If Contractor fails to correct defective Work as required by Paragraph 13.2, fails to carry out the Work in accordance with the Contract Documents or fails to comply with the Contract Documents in any respect, Owner or Construction Manager may order Contractor to stop the Work, or any portion thereof, until the cause for such order has been eliminated; however, this right of Owner or Construction Manager to stop the Work shall not give rise to any duty on the part of Owner or Construction Manager to exercise this right for the benefit of Contractor or any other person or entity. Owner's or Construction Manager's exercise of its right to stop the Work shall not relieve Contractor of any of its responsibilities and obligations under or pursuant to the Contract Documents.

3.4 OWNER'S RIGHT TO CARRY OUT THE WORK

3.4.1 If Contractor defaults or neglects to carry out the Work in accordance with the Contract Documents, and fails, within forty-eight (48) hours after receipt of written notice from Owner or Construction Manager, to commence and continue correction of such default or neglect with diligence and promptness, Owner or Construction Manager may, after such forty-eight (48) hour period, and without prejudice to any other remedy Owner may have, make good such deficiencies. In such case, an appropriate Change Order shall be issued deducting from the payments then or thereafter due Contractor the cost of correcting such deficiencies, including compensation for Architect's and Construction Manager's additional services made necessary by such default, neglect or failure. If the payments then or thereafter due Contractor are not sufficient to cover such amount, Contractor shall pay the difference to Owner.

3.5 ADDITIONAL RIGHTS

3.5.1 The rights stated in Article 3 shall be in addition to and not in limitation of any other rights of Owner granted in the Contract Documents or at law or in equity.

ARTICLE 4

CONTRACTOR

4.1 DEFINITION

4.1.1 Contractor is the person or entity identified as such in the Agreement. The term Contractor means Contractor or Contractor's authorized representative.

4.2 REVIEW OF THE CONTRACT DOCUMENTS

4.2.1 Contractor shall carefully study and compare the Contract Documents and shall at once report to Architect and Construction Manager any error, inconsistency or omission or any variance from Applicable Laws that may be discovered.

4.2.2 In event of errors, inconsistencies or omissions in the Contract Documents, Contractor shall not proceed with the affected portions of the Work until Contractor has requested and received written interpretation with respect thereto from Architect. Requests for interpretation shall not become a reason for an extension of time. In the event Contractor proceeds with Work involving an error, inconsistency or omission in the Contract Documents prior to receipt of a clarification thereof requested from Architect, or knowing that an error, inconsistency or omission exists, nonetheless, proceeds with Work without requesting such interpretation, Contractor shall, at no additional cost to Owner, correct Work performed, and/or furnish and install Work that may be required in accordance with the Contract Documents as determined by Architect.

4.3 SUPERVISION AND CONSTRUCTION PROCEDURES

4.3.1 Contractor shall supervise and direct the Work, using Contractor's best skill and attention. Contractor shall be solely responsible for all construction means, methods, techniques, sequences and procedures; and shall coordinate all portions of the Work under the Contract, subject to the overall coordination of Construction Manager.

4.3.2 Contractor shall be responsible to Owner and Construction Manager for the acts and omissions of Contractor's employees, Subcontractors and their agents and employees, and any other persons performing any of the Work under a contract with Contractor, or claiming by, through or under Contractor, for all damages, losses, costs and expenses resulting from such acts or omissions.

4.3.3 Contractor shall not be relieved from Contractor's obligations to perform the Work in accordance with the Contract Documents either by the activities or duties of Construction Manager or Architect in their administration of the Contract, or by inspections, tests or approvals required or performed by persons other than Contractor.

4.4 LABOR AND MATERIALS

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

4.4.2 Contractor shall use good faith efforts to encourage participation in the Project by small business, minority business and female business enterprises.

4.4.3 Contractor shall at all times enforce strict discipline and good order among Contractor's employees and shall not employ on the Work any unfit person (including, without limitation, any employee who reports for work under the influence of alcoholic beverages or drugs, who drinks alcoholic beverages or uses drugs on the Site) or anyone not skilled in the task assigned them.

4.4.4 Contractor shall promptly provide a list of all products proposed for installation, including the name of the manufacturer of each, for approval by Architect and Construction Manager. The list shall be tabulated by, and be complete for, each Specification section, and shall show the names of Subcontractors providing or installing such products. If the above information is requested prior to commencement of the Work, then (a) Owner may delay issuing its notice to proceed with the Work, or (b) Contractor shall not commence with the Work, until the information is provided in accordance with the above, and Contractor shall bear all costs and expenses associated with such delay. If the above information is requested by Owner after commencement of the Work, then Architect shall not approve Contractor's Certificate of Payment until the information is provided in accordance with the above.

4.4.5 The materials, products and equipment described in the Contract Documents establish a standard, required function, size, type, appearance and/or quality to be met by any proposed substitution. Should Contractor wish to substitute a product by another manufacturer, Contractor shall submit a written request to Construction Manager and follow the procedures set forth in the Contract Documents.

4.5 WARRANTY

4.5.1 Contractor warrants to Owner, Architect and Construction Manager that all materials and equipment furnished under the Contract will be new unless otherwise specified, and that all Work will be of first quality, free from faults and defects and in conformance with the Contract Documents. All Work not conforming to these requirements, including substitutions not properly approved and authorized, shall be deemed defective. If required by Owner, Architect or Construction Manager, Contractor shall furnish satisfactory evidence as to the kind and quality of materials and equipment. This warranty is not limited by the provisions of Paragraph

4.6 TAXES

4.6.1 Equipment and materials incorporated into the Project are exempt from sales, use and manufacturers' excise taxes. Tax exemption certificates shall be furnished to Contractor by Owner. The Contract Sum shall be exclusive of all exempt taxes.

4.7 PERMITS, FEES AND NOTICES

4.7.1 Unless otherwise provided in the Contract Documents, Owner, by or through Architect or Construction Manager, shall secure and pay for the general building permit and Contractor shall secure and pay for all other permits and governmental fees, licenses and inspections necessary for the proper execution and completion of the Work that are customarily secured after execution of the Contract and that are legally required, or should reasonably have been anticipated, at the commencement of the Work.

4.7.2 Contractor shall give all notices and comply with all Applicable Laws bearing on the performance of the Work. If Contractor observes that any of the Contract Documents are at variance therewith in any respect, Contractor shall promptly notify Architect and Construction Manager in writing, and any necessary changes shall be accomplished by appropriate Modification.

4.7.3 If Contractor performs any Work that it knows or reasonably should have known to be contrary to any Applicable Laws, and without prompt notice to Architect and Construction Manager, Contractor shall assume full responsibility therefore and shall bear all costs attributable thereto.

4.8 ALLOWANCES

4.8.1 Contractor shall include in the Contract Sum all Allowances stated in the Contract Documents. Items covered by these Allowances shall be supplied for such amounts and by such persons as Construction Manager may direct, but Contractor will not be required to employ persons against whom Contractor makes a reasonable objection.

4.8.2 Unless otherwise provided in the Contract Documents:

(1) these Allowances shall cover the cost to Contractor, less any applicable trade discount, of the materials and equipment required by the Allowance, delivered at the Site, and all applicable taxes;

(2) Contractor's costs for unloading and handling on the Site, labor, installation costs, overhead, profit and other expenses contemplated for the original Allowance shall be included in the Contract Sum and not in the Allowance; and

(3) whenever the cost is more or less than the Allowance, the Contract Sum shall be adjusted accordingly by Change Order, the amount of which will recognize changes, if any, in handling costs on the Site, labor, installation costs, overhead, profit and other expenses.

4.9 SUPERINTENDENT

4.9.1 Contractor shall employ a competent superintendent and necessary assistants who shall be in attendance at the Site during the progress of the Work. The superintendent shall be satisfactory to Construction Manager. Contractor shall not replace the superintendent without the prior written consent of Construction Manager, unless the superintendent ceases to be in its employ. The superintendent shall

represent Contractor and all communications given to the superintendent shall be as binding as if given to Contractor. Important communications shall be confirmed in writing. Other communications shall be so confirmed on written request in each case.

4.10 CONTRACTOR'S CONSTRUCTION SCHEDULE

4.10.1 At the times and in the manner required by the Contract Documents, Contractor shall prepare and submit for the approval of Construction Manager and Architect all schedules required by the Contract Documents. Contractor's Construction Schedule shall be revised only as permitted by the Contract Documents.

4.11 DOCUMENTS AND SAMPLES AT THE SITE

4.11.1 Contractor shall maintain at the Site, on a current basis, one record copy of all Drawings, Specifications, Addenda, Change Orders and other Modifications, in good order and marked currently to record all changes made during construction, and approved Shop Drawings, Product Data and Samples. These shall be available to Architect and Construction Manager. Contractor shall advise Construction Manager on a current basis of all changes in the Work made during construction.

4.12 SHOP DRAWINGS, PRODUCT DATA AND SAMPLES

4.12.1 Shop Drawings shall establish the actual detail of all manufactured or fabricated items; indicate proper relation to adjoining work; amplify design details in proper relation to physical spaces in the structure; and incorporate minor changes of design or construction to suit actual conditions. The term "manufactured" applies to standard units usually mass produced, and the term "fabricated" applies to items specifically assembled or made out of selected materials to meet individual design requirements.

4.12.2 Contractor shall promptly submit all Shop Drawings and Samples as to cause no delay in the Work. Contractor shall submit all Shop Drawings and Samples through Construction Manager for Architect's review. Review by Architect shall not relieve Contractor from its responsibility in preparing and submitting adequate and accurate Shop Drawings and Samples. By submitting Shop Drawings and Samples, Contractor represents and warrants that it has determined and verified all materials, field measurements, and field construction criteria pertaining thereto, and has checked and coordinated this information with the Work and the Contract Documents. Any submission which, in Architect's opinion is incomplete, contains numerous errors or has not been checked or only checked superficially, will be returned unreviewed by Architect for resubmission by Contractor.

4.12.3 In reviewing Shop Drawings, Architect need not verify dimensions and field conditions. Architect will review Shop Drawings and Samples only for conformance with the design concept of the Work and for general detailing. Architect's review shall not be construed as a complete check nor shall it relieve Contractor from responsibility for any deficiency that may exist or from any departures or deviations from the requirements of the Contract Documents, unless Contractor has, in writing, specifically called Architect's attention to each specific deviation at the time of submission. Nor shall Architect's review relieve Contractor from responsibility for errors in Shop Drawings or for proper fitting of the Work.

4.12.4 Shop Drawings must be properly identified with the name of the Project and dated. Submission must be accompanied by a letter of transmittal referring to the name of the Project and to the Specification section number for identification of each item, and stating qualifications, departures or deviations, if any,

from the Contract Documents. Shop drawings, for each portion of the Work, shall be numbered consecutively and the numbering system shall be retained throughout all revisions. Each drawing shall have a clear space for the stamp of Architect.

4.12.5 Contractor shall submit prints of each shop drawing as requested by Construction Manager, and such other drawings as required under the various sections of the Specifications until final approval by Architect is obtained. Contractor shall submit copies in number as requested by Construction Manager of manufacturers' descriptive data, drawings, and literature for materials, equipment and fixtures, including catalog sheets, showing dimensions, performance characteristics and capacities; wiring diagrams and controls; schedules; and other pertinent information as required or requested.

4.12.6 Contractor shall make any corrections required by Architect and shall resubmit corrected Shop Drawings or new Samples until approved. Contractor shall direct specific attention in writing to revisions other than the corrections requested by Architect.

4.12.7 No portion of the Work requiring a shop drawing or sample submission shall be commenced until the submission has been approved in writing by Architect. All such portions of the Work shall be in accordance with Architect's approved Shop Drawings and Samples.

4.12.8 If a considerable range of color, graining texture or other characteristic may be anticipated in finished products, a sufficient number of Samples of the specified materials shall be furnished by Contractor to indicate the full range of such characteristics which will be present in the finished products; and such products delivered or erected without submittal and approval of full range Samples shall be subject to rejection. Except for range Samples, and unless otherwise called for in the Specifications, Samples shall be submitted in duplicate. All Samples shall be marked, tagged or otherwise properly identified with the name of Contractor, the name of the Project, the purpose for which the Samples are submitted and the date, and shall be accompanied by a letter of transmittal containing similar information, together with the Specification section number or drawing number for which the sample is submitted.

4.13 USE OF SITE

4.13.1 Contractor shall confine operations at the Site to areas permitted by law, ordinances, permits and the Contract Documents, and as directed by Owner or Construction Manager so as to avoid unreasonably encumbering the Site with materials and equipment and so as to avoid unreasonably interfering with the conduct of business on and within Adjacent Properties.

4.13.2 Contractor shall coordinate all of Contractor's operations with, and secure approval from, Construction Manager before using any portion of the Site.

4.13.3 All Work required by the Contract Documents shall be conducted in such manner as to cause as little interference with the continuous conduct of business on and within Adjacent Properties as is possible, and in such manner as will reduce to a minimum any inconvenience to those occupying such Adjacent Properties, their patrons, employees and other invitees.

4.13.4 Contractor shall be wholly responsible for all storage and safekeeping of its tools, equipment and materials at all times.

4.13.5 Contractor shall carefully examine the Site and shall be presumed to be familiar with all general and local conditions of the Site that may in any way affect the Work.

4.13.6 Signs, placards, posters, or other advertising material will not be allowed on any part of the Site without the prior written permission of Owner.

4.14 CUTTING AND PATCHING OF WORK

4.14.1 Contractor shall be responsible for all cutting, fitting or patching necessary for installation of the Work or to make its parts fit together properly.

4.14.2 Contractor shall not damage or endanger any portion of the Work, the existing improvements, or the work of Owner or any separate contractors by cutting, patching or otherwise altering any work, or by excavation. Contractor shall not cut or otherwise alter the work of Owner or any separate contractor except with the written consent of Owner and of such separate contractor. Contractor shall not unreasonably withhold from Owner or any separate contractor consent to cutting or otherwise altering the Work.

4.15 CLEANING UP

4.15.1 Contractor shall at all times keep all areas affected by the Work free from accumulation of waste materials or rubbish caused by Contractor's operations. Contractor shall thoroughly wash and clean all glass and mirror surfaces, and shall leave the Work neat and broom clean. Contractor shall clean up after its operation daily by removing rubbish, including old and surplus materials. Contractor shall use its best efforts to prevent dust. Contractor shall be responsible for the overall cleanliness and neatness of Work.

4.15.2 If Contractor fails to maintain or clean up at the completion of the Work as specified, Construction Manager may do so after two (2) days' notice to Contractor, with the cost paid by Contractor.

4.16 ROYALTIES AND PATENTS

4.16.1 Contractor shall pay all royalties and license fees, shall defend all suits or claims for infringement of any patent rights and shall save Owner and Construction Manager harmless from loss on account thereof, except that Owner, or Construction Manager, as the case may be, shall be responsible for all such loss when a particular design, process or the product of a particular manufacturer or manufacturers is selected by such person or such person's agent. If Contractor, or a Subcontractor, as the case may be, has reason to believe that the design, process or product selected is an infringement of a patent, that party shall be responsible for such loss unless such information is promptly given to the others and also to Architect.

4.17 INDEMNIFICATION

4.17.1 To the fullest extent permitted by law, Contractor shall indemnify and hold harmless Owner, Architect, Construction Manager and the principals, lenders, officers, directors, agents and employees of each of them from and against all claims, damages, losses and expenses (including, but not limited to, attorneys' fees and costs for defending any action) to the extent arising out of or resulting from: the performance of the Work; the failure of Contractor to perform its obligations or undertakings as stated in the Contract Documents; the inaccuracy of any representation or warranty of Contractor contained in the Contract Documents; failure of Contractor or those acting under Contractor to conduct the Work in accordance with Applicable Laws; any intentional or negligent act or omission of Contractor, any

Subcontractor, anyone directly or indirectly employed by any of them or anyone for whose acts any of them may be liable, regardless of whether or not it is caused in part by a party indemnified hereunder. Such obligation shall not be construed to negate, abridge or otherwise reduce any other right or obligations of indemnity which would otherwise exist as to any party or person described in this Paragraph 4.17, nor shall the foregoing be deemed in any way to be released, waived or modified in any respect by reason of any insurance or bond provided by Contractor pursuant to the Contract Documents.

4.17.2 In any and all claims against Owner, Architect, Construction Manager or any of their agents or employees by any employee of Contractor, any Subcontractor, anyone directly or indirectly employed by any of them or anyone for whose acts any of them may be liable, the indemnification obligation under this Paragraph 4.17 shall not be limited in any way by any limitation on the amount or type of damages, compensation or benefits payable by or for Contractor or any Subcontractor under workers' or workmen's compensation acts, disability benefit acts or other employee benefit acts.

4.17.3 In the event that any party is requested but refuses to honor its indemnity obligations hereunder, then the party refusing to honor such request shall, in addition to other obligations, pay the cost of bringing such action to enforce indemnity obligations, including, but not limited to, attorneys' fees and costs for prosecuting any action, to the party requesting indemnity.

4.18 JOB RECORDS

4.18.1 At all times pertinent, Contractor shall maintain job estimates, payment records, payroll records, job meeting minutes, daily report logs, diaries, subcontracts, and payments thereunder, all of which shall be available to Owner upon reasonable request for Owner's review.

ARTICLE 5

SUBCONTRACTORS

5.1 DEFINITION

5.1.1 The term Subcontractor means a Subcontractor or a Subcontractor's authorized representative.

5.1.2 A Sub-subcontractor is a person or entity who has a direct or indirect contract with a Subcontractor to perform any of the Work at the Site. The term Sub-subcontractor means a Sub-subcontractor or an authorized representative thereof.

5.1.3 Nothing contained in the Contract Documents shall create any contractual relation between Owner or Architect and any Subcontractor or Sub-subcontractor.

5.2 AWARDS OF SUBCONTRACTS AND OTHER CONTRACTS FOR PORTIONS OF THE WORK

5.2.1 Unless otherwise required by the Contract Documents or the Bidding Documents, Contractor, as soon as practicable after the award of the Contract, shall furnish to Construction Manager in writing for review by Owner, Architect and Construction Manager, the names of the persons or entities (including those who are to furnish materials or equipment fabricated to a special design) proposed for each of the principal portions of the Work. Construction Manager will promptly reply to Contractor in writing stating whether or

not Owner, Architect or Construction Manager, after due investigation, has reasonable objection to any such proposed person or entity. Failure of Construction Manager to reply to Contractor within five (5) business days after a second request by Contractor for approval or disapproval of such proposed persons or entities shall constitute approval of such proposed names.

5.2.2 Contractor shall not contract with any such proposed person or entity to whom Owner, Architect or Construction Manager has made reasonable objection under the provisions of Subparagraph 5.2.1. Contractor shall not be required to contract with anyone to whom Contractor has a reasonable objection.

5.2.3 If Owner, Architect or Construction Manager has reasonable objection to any such proposed person or entity, Contractor shall submit a substitute to whom Owner, Architect and Construction Manager have no reasonable objection.

5.2.4 Contractor shall make no substitution for any Subcontractor, person or entity previously selected prior to notice of the proposed substitution to Construction Manager, or thereafter if Owner, Architect or Construction Manager makes reasonable objection to such substitution.

5.2.5 If Owner, Architect or Construction Manager requires a change of any proposed Subcontractor, Sub-subcontractor or person or organization previously accepted by them, the Contract Sum shall be increased or decreased by the difference in cost occasioned by such change and an appropriate amendment shall be issued. No increase in the Contract Sum will be allowed where the change is a result of subsequent evidence that such Subcontractor is not qualified for the work proposed.

5.2.6 All subcontracts shall require the Subcontractor to maintain adequate liability insurance and shall otherwise be on the subcontract form approved by Construction Manager; any material variations therefrom must be approved in writing and in advance by Construction Manager. Contractor shall supply Construction Manager and Owner with copies of all executed subcontracts.

5.3 SUBCONTRACTUAL RELATIONS

5.3.1 By an appropriate written agreement, Contractor shall require each Subcontractor, to the extent of the Work to be performed by the Subcontractor, to be bound to Contractor by the terms of the Contract Documents, and to assume toward Contractor all the obligations and responsibilities which Contractor, by these Documents, assumes toward Owner, Architect and Construction Manager. Said agreement shall preserve and protect the rights of Owner, Architect and Construction Manager under the Contract Documents with respect to the Work to be performed by the Subcontractor so that the subcontracting thereof will not prejudice such rights, and shall allow to the Subcontractor, unless specifically provided otherwise in Contractor-Subcontractor Agreement, the benefit of all rights, remedies and redress against Contractor that Contractor, by these Documents, has against Owner. Where appropriate, Contractor shall require each Subcontractor to enter into similar agreements with their Sub-subcontractors. Contractor shall make available to each proposed Subcontractor, prior to the execution of the Subcontract, copies of the Contract Documents to which the Subcontractor will be bound by this Paragraph 5.3, and identify to the Subcontractor any terms and conditions of the proposed Subcontract which may be at variance with the Contract Documents. Each Subcontractor shall similarly make copies of such Documents available to their Sub-subcontractors. Contractor shall deliver to Construction Manager copies of all such agreements.

5.3.2 The written agreement required by Subparagraph 5.3.1 shall also require each Subcontractor to agree that, upon the request of Owner after termination of Contractor's employment in accordance with Paragraph 14.2 hereof, such Subcontractor shall continue the Work directly for Owner or for the substitute Contractor selected by Owner under terms and conditions substantially similar to the terms of the subcontract. Contractor shall require each Subcontractor to enter into similar agreements with any Sub-subcontractors. Contractor shall deliver to Construction Manager copies of all such agreements of Subcontractor and Sub-subcontractors.

ARTICLE 6

WORK BY OWNER OR BY SEPARATE CONTRACTORS

6.1 OWNER'S RIGHT TO PERFORM WORK AND TO AWARD SEPARATE CONTRACTS

6.1.1 Owner reserves the right to perform work related to the Project with Owner's own forces, and to award separate contracts in connection with other portions of the Project or other work on the Site under these or similar Conditions of the Contract. All labor utilized by the Owner shall be of a standing or affiliation that will permit the work to be carried on harmoniously and without delay to the Project and that will in no case cause any labor disturbance or interference.

6.1.2 When separate contracts are awarded for different portions of the Project or other work on the Site, the term Contractor in the Contract Documents in each case shall mean Contractor who executes each separate Agreement.

6.2 MUTUAL RESPONSIBILITY

6.2.1 Contractor shall afford Owner, Construction Manager and separate contractors reasonable opportunity for the introduction and storage of their materials and equipment and the execution of their work, and shall connect and coordinate the Work with theirs as required by the Contract Documents.

6.2.2 If any part of Contractor's Work depends for proper execution or results upon the work of Owner or any separate contractor, Contractor shall, prior to proceeding with the Work, promptly report to Construction Manager any apparent discrepancies or defects in such other work that render it unsuitable for such proper execution and results. Failure of Contractor so to report shall constitute an acceptance of Owner's or separate contractor's work as fit and proper to receive the Work, except as to defects that may subsequently become apparent in such work by others.

6.2.3 Any costs caused by defective or ill-timed work shall be borne by the party responsible therefor.

6.2.4 Should Contractor cause damage to the work or property of Owner, or to other work or property on the Site, Contractor shall promptly remedy such damage.

6.2.5 Should Contractor delay or cause damage to the work or property of any separate contractor, Contractor shall, upon due notice, promptly attempt to settle with such other contractor by agreement, or otherwise to resolve the dispute. If such separate contractor sues or initiates a court proceeding against

Owner on account of any delay or damage alleged to have been caused by Contractor, Owner shall notify Contractor who shall defend such proceedings at Contractor's expense, and if any judgment or award against Owner arises therefrom, Contractor shall pay or satisfy it and shall reimburse Owner for all attorneys' fees and costs for defending any action and court or arbitration costs which Owner has incurred.

6.3 OWNER'S RIGHT TO CLEAN UP

6.3.1 If a dispute arises between Contractor and separate contractors as to their responsibility for cleaning up as required by Paragraph 4.15, Owner or Construction Manager may clean up and charge the cost thereof to all Contractors responsible therefore as Construction Manager shall determine to be just.

ARTICLE 7

MISCELLANEOUS PROVISIONS

7.1 GOVERNING LAW

7.1.1 The Contract shall be governed by the law of the place where the Project is located.

7.2 SUCCESSORS AND ASSIGNS

7.2.1 Owner and Contractor, respectively, bind themselves, their partners, successors, assigns and legal representatives to the other party hereto and to the partners, successors, assigns and legal representatives of such other party with respect to all covenants, agreements and obligations contained in the Contract Documents. Neither party to the Contract shall assign the Contract or sublet it as a whole without the written consent of the other, nor shall Contractor assign the Contract, in part, or assign any monies due to or to become due to Contractor thereunder, without the previous written consent of Owner. However, in the event of termination of Contractor by Owner, Contractor shall assign, or cause to be assigned to Owner, to the extent directed by Owner, all of Contractor's right, title and interest in any subcontracts and purchase orders theretofore placed. The Subcontractor or material supplier hereby consents to such assignment.

7.2.2 The Contract and the remaining Contract Documents may be assigned by Owner to any construction lender for the Project without the prior written consent of Contractor, and Contractor agrees to execute any and all documents reasonably required by Owner to acknowledge and consent to such assignment, provided Owner remains responsible for its obligations under the Contract Documents prior to such assignment. If Owner unconditionally assigns the Contract Documents to its construction lender, the construction lender shall, upon Contractor's request, assume Owner's obligations under the Contract Documents only as to Work commenced subsequent to the date of such assignment.

7.3 WRITTEN NOTICE

7.3.1 Notices required by the Contract Documents shall be in writing and shall be deemed to have been given when delivered in person to the individual or member or officer of the entity for whom intended, or when delivered by United States Mail, sent registered or certified mail, return receipt requested, or by overnight mail or courier, addressed to the party for whom intended at the address set forth with such party's name in the Contract, or to such other address as such party may designate for itself by notice to all other parties to the Contract.

7.3.2 Notwithstanding the foregoing, notices other than those given pursuant to Article 14 may be given by email or fax provided that the sending party can prove that the notice was sent to a fax number or an email address provided by the recipient.

7.4 PERFORMANCE BOND AND LABOR AND MATERIAL PAYMENT BOND

7.4.1 At the time of the execution of the Agreement, Contractor shall furnish a Performance and Payment Bond in the full amount of the Contract Sum, signed by Contractor and a corporate surety. The bonds shall name the Owner and the Construction Manager as dual obligees thereunder. The bonds will be in the form required by the Bidding Documents and shall be written through a surety company (a) authorized to do business in the State of Ohio, (b) having a rating of not less than "A-" in the latest version of Best's Insurance Guide, published by A.M. Best & Company, and (c) is listed by the United States Treasury Department as acceptable for bonding Federal projects and that the bond amount is within the limit set by the Treasury Department as the net limit on any single risk. There shall be no affiliation between Contractor and the bonding agent or agency. The performance bonds shall cover all warranties and guarantees.

7.4.2 Final acceptance of the Work shall not relieve Contractor or the surety from their obligations under the Contract, including guarantees of materials, equipment, installation or service.

7.5 RIGHTS AND REMEDIES

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

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

7.5.3 The invalidity, partial invalidity or unenforceability of any provision of the Contract Documents shall not impair or affect the validity, enforceability or effect of any other provision of the Contract Documents.

7.6 TESTS

7.6.1 Owner may, but shall not be obligated to, retain the services of testing laboratories, agencies, and/or professional engineers to perform the tests (including control balancing and adjusting) and make the required inspections and reports specified in the Contract Documents or deemed necessary by Owner in case of questioned items. Such testing laboratories, agencies and/or professional engineers shall conduct and interpret the tests. A copy of each test report deemed necessary by Owner in case of questioned items shall, at Owner's option, be made available to Contractor.

7.6.2 At Owner's option, Contractor shall furnish Samples of all materials and component parts to be used as test specimens. Contractor shall furnish labor and facilities at the Site as necessary in connection with testing and inspection services.

7.6.3 Except as otherwise specified in other Contract Documents, Contractor shall pay for all laboratory services, tests, testing laboratories, agencies, professional engineers, engineering inspections and reports required by the Contract Documents, Architect, Owner or Construction Manager. Testing laboratories and professional engineers shall be subject to Owner's approval.

7.6.4 Without limiting the provisions of this Paragraph 7.6, the cost of testing laboratories, agencies, and/or engineers for the convenience of Contractor in its scheduling and performance of the Work, or related to remedial operations or possible deficiencies shall be borne by Contractor.

7.6.5 The nature and scope of testing services, agencies and/or inspections performed by laboratories and engineers retained by or on behalf of Owner or Contractor shall be in accordance with Applicable Laws or as otherwise specified in the Contract Documents and shall be consistent with recognized good standards of engineering practice.

7.6.6 If, in the performance of any testing, control, balancing, adjusting or similar work to be performed by or on behalf of Contractor, it is the opinion of Owner, Construction Manager or Architect that Contractor has failed to substantiate the ability to perform such Work, Contractor shall, at its expense, retain the services of a testing laboratory, agency or service organization that is satisfactory to Owner, Construction Manager and Architect for the performance of such Work.

7.6.7 Owner may instruct Construction Manager to order special inspection, testing or approval, as Owner deems necessary. If such special inspection or testing reveals a failure of the Work to comply (a) with the requirements of the Contract Documents, or (b) with Applicable Laws, Contractor shall bear all costs of such Owner-directed special inspection, special testing and correction.

7.6.8 The observations of or participation by Owner, Architect, or Construction Manager in inspections or tests by persons other than Contractor, shall not relieve Contractor from its obligations to perform the Work in accordance with the Contract Documents.

7.6.9 If the Specifications or Applicable Laws require any portion of the Work to be specifically tested or reviewed, Contractor shall give Construction Manager timely written notice of such test or review, shall secure all required certificates and shall promptly deliver them to Construction Manager and Architect.

ARTICLE 8

TIME

8.1 DEFINITIONS

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

8.1.2 The date of commencement of the Work is the date established in a notice to proceed. If there is no notice to proceed, it shall be such other date as may be established in the Agreement or elsewhere in the Contract Documents.

8.1.3 The date of Substantial Completion of any designated portion of the Work is the date certified by Architect as the date when construction of the designated Work is sufficiently complete, in accordance with the Contract Documents, so that at least the following conditions are satisfied:

(1) Owner, or any separate contractor, is able to occupy or utilize the Work or designated portion thereof for the use for which it is intended and so that such occupancy will not hinder Contractor's final completion of the Work nor will Contractor's final completion activities impede Owner's use of, and operation within, the designated spaces. The premises will be clean, free of debris, and Contractor's remaining materials and equipment will be suitably organized and stored.

(2) All equipment (except equipment to be provided by Owner and not yet delivered) shall be in place, completely installed in accordance with the requirements of the Contract Documents; site work that is the responsibility of Contractor under the Contract Documents, including without limitation provisions for vehicular traffic and parking, pedestrian traffic, landscaping and signage, shall be completed; and all Work in common areas shall be completed, including building shell construction with a weather-tight and secure enclosure, unobstructed circulation and exit paths (elevators, stairs, corridors), lobbies, toilet rooms and utility rooms; and all elevators shall be in operation and properly licensed.

(3) Basic plumbing, mechanical and electrical systems in common usage areas shall be operational and balanced and appropriate related service to tenant areas shall be ready for connection, all as defined by the requirements of the Contract Documents.

(4) All systems subject to warranty coverage as of the date of Substantial Completion shall be sufficiently and satisfactorily completed so that any subsequent completion of the Work shall not affect their satisfactory operation or the validity or enforceability of the warranties.

(5) Either (a) Contractor shall have caused to be delivered to Owner a satisfactory Certificate of Occupancy for the Project issued by the appropriate governmental authority or (b) in the event that the nature of the Work is such that a Certificate of Occupancy is not available upon completion of all of the Work, Contractor shall have caused to be delivered to Owner the best available evidence that all governmental requirements shall have been satisfied in completing the Work; provided that this requirement shall be deemed satisfied if Owner determines that any required Certificate of Occupancy or similar approval is withheld by the governmental authority for any reason other than the failure of Contractor, any Subcontractor, or any direct or indirect employee or agent thereof to complete the Work in accordance with the Contract Documents.

(6) At the request of Owner or Construction Manager from time to time, Contractor and Architect shall each provide a written statement for the benefit of Owner setting forth the date on which each believes Substantial Completion of the Work can be accomplished. No such statement shall relieve Contractor of its obligations to complete the Work within the Contract Time.

8.2 PROGRESS AND COMPLETION

8.2.1 All time limits stated in the Contract Documents are of the essence of the Contract.

8.2.2 Contractor shall begin the Work on the date of commencement as defined in Subparagraph 8.1.2. Contractor shall carry the Work forward expeditiously with adequate forces and shall achieve Substantial Completion of the Work within the Contract Time.

8.3 DELAYS AND EXTENSIONS OF TIME

8.3.1 Any Claim for extension of time shall be made in writing to Construction Manager not more than five (5) days after the commencement of the delay; otherwise it shall be waived. Such written notice shall state in detail the cause of the delay and the expected impact on Contractor's schedule. In the case of a continuing delay only one Claim is necessary. Contractor shall provide an estimate of the probable effect of such delay on the progress of the Work.

8.3.2 Should Contractor be delayed, obstructed, hindered or interfered with in commencement, prosecution or completion of the Work by an event of Force Majeure, or any act, omission, neglect or default of Owner, or any employee, agent or consultant of Owner, or because of events beyond the reasonable control of Contractor, then Contractor shall be entitled to an extension of the Contract Time. Such extension of time shall be limited to a period equivalent to the time lost by reason of any or all of the aforesaid causes as determined by Construction Manager and Owner. In the event of a dispute by Contractor, the matter shall be resolved pursuant to the dispute resolution provisions contained in Article 15 hereof. Notwithstanding the foregoing, no extension of time shall be granted for delays on account of, or resulting from, weather conditions except for the severe, adverse weather conditions that are abnormal for the period of time and could not have been reasonably anticipated; nor shall Contractor be granted any time extension due to Contractor's financial inability to perform or the inability of its Subcontractor to perform. No extension of time shall be granted to Contractor unless the delay affects the critical path of the Project and then only to the extent that the delay affects the critical path. No extension of time shall be granted to Contractor to the extent that, notwithstanding the existence of any such circumstance beyond Contractor's control, delay would have resulted in any event because of a concurrent unexcused delay by Contractor.

8.3.3 Except to the extent prohibited by law, Contractor agrees that whether or not any delay shall be the basis for an extension of time, it shall have no Claim against Owner for any increase in the Contract Sum, nor a Claim against Owner for payment or allowance of any kind of damage, loss or expense resulting from delays, hindrances, obstructions or interferences with the Work. The only remedy available to Contractor will be an extension of time as permitted pursuant to the Contract. Nothing contained in the foregoing paragraph shall be deemed or construed as waiving or precluding liability for, or otherwise waiving any remedy for, delay during the course of the Work when the cause of the delay is a proximate result of Owner's act or failure to act. Contractor shall assure that a similar "no damage for delay" clause is contained in its Subcontracts.

8.3.4 It shall be recognized by Contractor that it may reasonably anticipate that as a job progresses, Construction Manager will be making changes in and updating the Construction Schedule pursuant to the authority vested in Construction Manager. Therefore, no Claim for an increase in the Contract Sum for either acceleration or delay will be allowed for extensions of time pursuant to this Paragraph 8.3 or for other changes in the Construction Schedule that are of the type ordinarily experienced in projects of similar size and complexity. Contractor also acknowledges that certain portions of the Work may be completed on a "fast-track" basis, and that staged drawings may be submitted for portions of the Work. Contractor will make no Claim for acceleration or delay resulting from the receipt of staged drawings or for out-of-sequence work occasioned by receipt of staged drawings or rescheduling, provided that such out-of-sequence work is of the type ordinarily experienced in projects of similar size and complexity.

8.3.5 Contractor expressly agrees that in the event Contractor fails to perform and/or complete its Work in accordance with the Construction Schedule, Contractor shall be liable to the County for and shall pay the liquidated damages specified in its Agreement. All amounts set forth constitute a fair and reasonable estimate of probable damage to the County due to delay and are not a penalty. The liquidated damages are intended to cover only damages suffered by the County as a result of delay and shall not be deemed to cover additional costs of completion of the Work including, without limitation extended general conditions and construction management costs and costs or damages resulting from defective Work. Contractor and the Owner agree that the Construction Manager is an intended third party beneficiary hereof.

ARTICLE 9

PAYMENTS AND COMPLETION

9.1 CONTRACT SUM

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

9.2 SCHEDULE OF VALUES

9.2.1 Before the first Application for Payment, Contractor shall submit to Construction Manager a Schedule of Values allocated to the various portions of the Work, prepared in such form and supported by such data to substantiate its accuracy as Architect or Construction Manager may require. This schedule, unless objected to by Construction Manager or Architect, shall be used only as a basis for Contractor's Applications for Payment.

9.2.2 The Schedule of Values shall be prepared in such a manner that each major item of Work and each subcontracted item of Work is shown as a single line item. Contractor will provide a listing of the Work items and the code costing items to be shown on Contractor's Schedule of Values, which listing shall meet the approval and shall be subject to revision by Construction Manager.

9.3 APPLICATIONS FOR PAYMENT

9.3.1 For each payment period established in the Contract, Contractor shall submit to Construction Manager, in triplicate, an itemized and notarized Application for Payment (on a form approved by Construction Manager), together with such supporting documentation verifying the amounts claimed due as Construction Manager may require, and reflecting the retainage specified in the Agreement. No Application for Payment shall be complete for processing unless it includes all supporting documentation required by the Agreement and the Specifications. Any incomplete Application for Payment may be returned to Contractor.

9.3.2 Unless otherwise provided in the Contract Documents, payments will be made on account of materials or equipment not incorporated in the Work but delivered and suitably stored at the Site and, if approved in advance by Owner, payments may similarly be made for materials or equipment suitably stored at some other location agreed upon in writing. Payments for materials or equipment stored on or off the Site shall be conditioned upon submission by Contractor of bills of sale or such other procedures satisfactory to Owner to establish Owner's title to such materials or equipment or otherwise protect Owner's interest,

including applicable insurance and transportation to the Site for those materials and equipment stored off the Site. Contractor waives and releases any Claims it may have against Owner, either directly or through Contractor's insurer by subrogation to the rights of Contractor, for damage to, destruction or loss of equipment or materials not stored at the Site.

9.3.3 Contractor warrants that title to all Work, materials and equipment covered by an Application for Payment will pass to Owner either by incorporation in the construction or upon receipt of payment by Contractor, whichever occurs first, free and clear of all the liens, claims, security interests or encumbrances, hereinafter referred to in this Article 9 as "liens"; and that no Work, materials or equipment covered by an Application for Payment will have been acquired by Contractor, or by any other person performing Work at the Site or furnishing materials and equipment for the Project, subject to an agreement under which an interest therein or an encumbrance thereon is retained by the seller or otherwise imposed by Contractor or such other person. The provisions of this paragraph regarding ownership of the Work by Owner upon payment shall not constitute an acceptance of the Work for which payment is made, except as and when provided in the Contract Documents.

9.4 CERTIFICATES FOR PAYMENT

9.4.1 Construction Manager shall receive all Applications for Payment from each Contractor and shall, once a month, prepare a summary of and deliver the same to Architect. Construction Manager may, by written notice to Contractor, approve or reject all or any portion of a Contractor's Application for Payment for any of the reasons set forth in Subparagraph 9.6.1. Architect will, within seven (7) days after the receipt of the Project Application for Payment with the recommendations of Construction Manager, review the Project Application for Payment and either issue a Project Certificate for Payment to Owner with a copy to Construction Manager for distribution to Contractor for such amounts as Architect determines are properly due, or notify Construction Manager in writing of the reasons for withholding a Certificate as provided in Subparagraph 9.6.1. Such notification will be forwarded to Contractor by Construction Manager.

9.4.2 The issuance of a Project Certificate for Payment will constitute a representation by Architect to Owner that, based on Architect's observations at the Site as provided in Subparagraph 2.3.4 and the data comprising the Project Application for Payment, the Work has progressed to the point indicated; that, to the best of Architect's knowledge, information and belief, the quality of the Work is in accordance with the Contract Documents (subject to an evaluation of the Work for conformance with the Contract Documents upon Substantial Completion of the Work, to the results of any subsequent tests required by or performed under the Contract Documents, to minor deviations from the Contract Documents correctable prior to completion, and to any specific qualifications stated in the Certificate); and that Contractor is entitled to payment in the amount certified. However, by issuing a Project Certificate for Payment, Architect shall not thereby be deemed to represent that Architect has made exhaustive or continuous on-site inspections to check the quality or quantity of the Work, has reviewed the construction means, methods, techniques, sequences or procedures, or has made any examination to ascertain how or for what purpose Contractor has used the monies previously paid on account of the Contract Sum.

9.4.3 The Owner shall make no payments to Contractors without the prior written approval of the Construction Manager.

9.5 PROGRESS PAYMENTS

9.5.1 After Construction Manager has approved all or any portion of an Application for Payment and provided no liens related to the Work have been filed against the Project and provided further that neither Architect nor any governmental authorities have raised any objections to the Work, Owner shall make payment in the manner and within the time provided in **Exhibit A** attached hereto.

9.5.2 Contractor shall promptly pay each Subcontractor upon receipt of payment from Owner, out of the amount paid to Contractor on account of such Subcontractor's Work, the amount to which said Subcontractor is entitled, reflecting the percentage actually retained, if any, from payments to Contractor on account of such Subcontractor's Work. Contractor shall, by an appropriate agreement with each Subcontractor, require each Subcontractor to make payments to their Sub-subcontractors in similar manner.

9.5.3 Architect may, on request and at Architect's discretion, furnish to any Subcontractor, if practicable, information regarding the percentages of completion or the amounts applied for by Contractor and the action taken thereon by Architect on account of Work done by such Subcontractor.

9.5.4 Neither Owner, Architect nor Construction Manager shall have any obligation to pay or to see to the payment of any monies to any Subcontractor except as may otherwise be required by law.

9.5.5 No certification of a progress payment, any progress payment, or any partial or entire use or occupancy of the Project by Owner, shall constitute an acceptance of any Work not in accordance with the Contract Documents.

9.6 PAYMENTS

9.6.1 Payments may be withheld in whole or in part to the extent necessary, in the judgment of the Construction Manager, to reasonably protect Owner if any of the following conditions exist:

- (1) defective Work not remedied;
- (2) third party claims filed or reasonable evidence indicating probable filing of such claims;
- (3) failure of Contractor to make payment 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 Owner or another contractor;
- (6) reasonable evidence that the Work is not progressing in accordance with the Construction Schedule or will not be completed within the Contract Time;
- (7) unsatisfactory prosecution of the Work by Contractor;
- (8) failure of Contractor to properly document Applications for Payment as required by the Contract Documents or to include the lien waivers required thereby; or
- (9) to the extent not otherwise expressly stated above, any default by Contractor under the Contract Documents or any Claim by Owner against Contractor pursuant to any provisions of the Contract Documents.

9.6.2 When the grounds in Subparagraph 9.6.1 above are removed, payment shall be made for amounts withheld because of them.

9.7 SUBSTANTIAL COMPLETION

9.7.1 When Contractor determines that it has achieved Substantial Completion, Contractor shall prepare the Punch List and deliver copies thereof to Construction Manager and Architect. Construction Manager or Architect may add items to the Punch List, but the failure to include any items on such list does not alter the responsibility of Contractor to complete all Work in accordance with the Contract Documents. When Architect, on the basis of inspection and consultation with Construction Manager, determines that the Work has achieved Substantial Completion, Architect will then prepare a Certificate of Substantial Completion that shall establish the date of Substantial Completion of the Work, shall state the responsibilities of Owner and Contractor for security, maintenance, heat, utilities, damage to the Work and insurance, and shall fix the time within which Contractor shall complete the items listed therein. The Certificate of Substantial Completion of the Work shall be submitted to Owner, Construction Manager and Contractor for their written acceptance of the responsibilities assigned to them in such Certificate.

9.7.2 Upon Substantial Completion of the Work or designated portion thereof, and upon application by Contractor and certification by Architect, Owner shall make payment, reflecting adjustment in retainage, if any, for such Work or portion thereof as provided in the Contract Documents. Owner shall not release retainage to Contractor to the extent that any such release will result in Owner holding total retainage that is less than twice the amount that Architect determines to be necessary to complete and correct items on Contractor's list referred to in Subparagraph 9.7.1.

9.7.3 Warranties required by the Contract Documents shall commence on the date of Substantial Completion of the Project or designated portion thereof unless otherwise provided in Architect's Certificate of Substantial Completion.

9.8 FINAL COMPLETION AND FINAL PAYMENT

9.8.1 Following Architect's issuance of the Certificate of Substantial Completion of the Work or designated portion thereof, and Contractor's completion of the Work, Contractor shall forward to Construction Manager a written notice that the Work is ready for final inspection and acceptance, and shall also forward to Construction Manager a final Application for Payment. Upon receipt, Construction Manager will make the necessary evaluations and forward recommendations to Architect who will promptly make such inspection. When Architect finds the Work acceptable under the Contract Documents and the Contract fully performed, Architect will issue a Certificate for Payment that will approve the final payment due Contractor. This approval will constitute a representation that, to the best of Architect's knowledge, information and belief, and on the basis of observations and inspections, the Work has been completed in accordance with the terms and conditions of the Contract Documents and that the entire balance found to be due Contractor, and noted in said Certificate, is due and payable. Architect's approval of said Certificate for Payment will constitute a further representation that the conditions precedent to Contractor's being entitled to final payment as set forth in Subparagraph 9.9.2 have been fulfilled.

9.8.2 Neither the final payment nor the remaining retainage shall become due until Contractor submits to Architect, through Construction Manager (1) an affidavit that all payrolls, bills for materials and equipment, and other indebtedness connected with the Work for which Owner or Owner's property might in any way be

responsible, have been paid or otherwise satisfied, (2) consent of surety, if any, to final payment, (3) if required by Owner, other data establishing payment or satisfaction of all such obligations, such as receipts, releases and waivers of liens arising out of the Contract, to the extent and in such form as may be designated by Owner, (4) a certificate evidencing that the 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 thirty (30) days' prior written notice has been given to Owner, (5) a written statement that Contractor knows of no reason that the insurance will not be renewable to cover the period required by the Contract Documents, (6) Contractor shall have furnished Construction Manager with all operating and maintenance manuals, as-built drawings, manufacturers' guaranties and warranties, releases of all claims required by the Contract Documents and any other documents required by the Contract Documents and (7) Construction Manager has approved the making of such final payment in writing. If any Subcontractor refuses to furnish a release or waiver required by Owner, Contractor may furnish a bond satisfactory to Owner to indemnify Owner against any such lien. If any such lien remains unsatisfied after all payments are made, Contractor shall refund to Owner all monies that the latter may be compelled to pay in discharging such lien, including all costs and reasonable attorneys' fees.

9.8.3 If, after Substantial Completion of the Work, final completion thereof is materially delayed through no fault of Contractor or by the issuance of Change Orders affecting final completion, and Construction Manager so confirms, Owner shall, upon application by Contractor and certification by 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 the retainage stipulated in the Contract Documents, and if bonds have been furnished, the written consent of the surety to the payment of the balance due for that portion of the Work fully completed and accepted shall be submitted by Contractor to Construction Manager prior to certification of such payment. Such payment shall be made under the terms and conditions governing final payments, except that it shall not constitute a waiver of claims.

9.8.4 The acceptance of final payment shall constitute a waiver of all claims by Contractor except those previously made in writing and identified by Contractor as unsettled at the time of the final Application for Payment.

9.8.5 All provisions of the Contract Documents, including, without limitation, those establishing obligations and procedures, shall remain in full force and effect notwithstanding the making or acceptance of final payment prior to the date of Substantial Completion of the Project.

9.8.6 When any Subcontractor has finally completed performance of its subcontract, as determined by Contractor, Construction Manager and Architect, and such Subcontractor has completed all Punch List items, delivered all waivers and satisfied all other prerequisites for final payment under its subcontract and the Contract Documents, and if Contractor has made proper Application for Payment, then Owner shall release that portion of Contractor's retainage which relates to the retainage being applied against payments due to such Subcontractor. Contractor shall then forward the retainage to such Subcontractor.

ARTICLE 10

PROTECTION OF PERSONS AND PROPERTY

10.1 SAFETY PRECAUTIONS AND PROGRAMS

10.1.1 Contractor shall be responsible for initiating, maintaining and supervising all safety precautions and programs in connection with the Work. In the event Contractor encounters on the Site material reasonably believed to be friable asbestos, polychlorinated biphenyl (PCB) or any Hazardous Materials, Contractor shall immediately stop Work in the area affected and report the condition to Owner and Construction Manager in writing. In such event, Owner shall determine or engage a consultant to determine whether the material is in fact friable asbestos, PCB or any Hazardous Materials. If no friable asbestos, PCB or any Hazardous Materials is identified, Owner or Construction Manager shall so notify Contractor, who shall immediately resume the Work in the suspect area. If friable asbestos, PCB or any Hazardous Materials is identified, Contractor shall not resume Work in the affected area unless and until the friable asbestos has been encased, encapsulated, enclosed or removed, or the PCB or Hazardous Materials has been removed. Owner or Construction Manager shall notify Contractor in writing when the friable asbestos, PCB or any Hazardous Materials has been so encased, encapsulated, enclosed or removed, and Contractor shall then immediately resume the Work in the affected area.

10.2 EMERGENCIES

10.2.1 In any emergency affecting the safety of persons or property Contractor shall act, at Contractor's discretion, to prevent threatened damage, injury or loss and shall immediately notify Construction Manager. Any additional compensation or extension of time claimed by Contractor on account of emergency work shall be determined as provided in Article 12 for Changes in the Work.

ARTICLE 11

INSURANCE

11.1 CONTRACTOR'S INSURANCE

11.1.1 **Exhibit B** describes the insurance coverage required of Contractor. Contractors shall provide the coverages described on Exhibit B at all times until Final Completion. In addition to the coverages required in Exhibit B, Contractor shall carry \$2,000,000 in Excess Liability coverage.

11.2 PROPERTY INSURANCE

11.2.1 Owner agrees to place and maintain, at its expense, "all risk" or "special form" builder's risk or equivalent insurance to the full replacement value of all real and personal property that is intended to become part of the completed Project. The policy will cover such materials, supplies and equipment intended to become part of the construction or permanent improvements, if incorporated or while stored on Site. Owner, Construction Manager, Contractors and Subcontractor shall be named as additional insureds to the extent of their insurable interests. The builder's risk or equivalent policy will not cover temporary structures, forms, scaffolding, trailers, protective fencing, tools and equipment or personal belongings that are owned or leased by Construction Manager, Contractor, Subcontractors or their employees. Owner's property insurance

contains a deductible of not more than \$10,000 per claim, which is the responsibility of Contractor (without reimbursement from Owner). In addition, Contractor shall be solely responsible to cover the costs of all property losses or damages sustained that arise out of vandalism to, or theft of, any materials or supplies relating to the Work or the Project and that are not covered because of Owner's deductible amount.

11.2.2 Any loss insured under Subparagraph 11.2.1 is to be adjusted with Owner and made payable to Owner as trustee for the insureds, as their interests may appear, subject to the requirements of any applicable mortgagee clause. Contractor shall pay each Subcontractor a just share of any insurance monies received by Contractor, and by appropriate agreement, written where legally required for validity, shall require each Subcontractor to make payments to their Sub-subcontractors in similar manner.

11.2.3 Owner and Contractor waive all rights against (1) each other and the Subcontractors, Sub-subcontractors, agents and employees of each other, and (2) Architect, Construction Manager and separate contractors, if any, and their subcontractors, sub-subcontractors, agents and employees, for damages caused by fire or other perils to the extent covered by insurance obtained pursuant to this Paragraph 11.2 or any other property insurance applicable to the Work, except such rights as they may have to the proceeds of such insurance held by Owner as trustee. Owner or Contractor, as appropriate, shall require Architect, Construction Manager, separate Contractors, Subcontractors and Sub-subcontractors by appropriate agreements, written where legally required for validity, similar waivers each in favor of all other parties enumerated in this Subparagraph 11.2.3. Where required, consent to such waivers by the subject insurer shall be obtained by the waiving party.

11.2.4 Owner, as trustee, shall have power to adjust and settle any loss with the insurers and all interested parties shall fully cooperate with Owner in achieving settlement with the insurer.

11.3 RISK OF LOSS OF OFF-SITE STORAGE

11.3.1 Contractor accepts and shall bear the risk of loss for property, material, or equipment that is to be incorporated as part of the Work and that is stored off-site until such property, material or equipment is delivered to the Site for incorporation into the Work.

ARTICLE 12

CHANGES IN THE WORK

12.1 CHANGE ORDERS

12.1.1 The Contract Sum and the Contract Time may be changed only by Change Order. A Change Order signed by Contractor indicates Contractor's agreement therewith, including the adjustment in, or failure to adjust, the Contract Sum or the Contract Time.

12.1.2 Construction Manager or Owner, without invalidating the Contract, may order changes in the Work within the general scope of the Contract consisting of additions, deletions or other revisions, the Contract Sum and the Contract Time being adjusted accordingly. All such changes in the Work shall be authorized by Change Order, and shall be performed under the applicable conditions of the Contract Documents.

12.1.3 The cost or credit to Owner resulting from a change in the Work will be determined as set forth in **Exhibit C**.

12.2 CLAIMS FOR ADDITIONAL COST

12.2.1 If Contractor wishes to make a Claim for an increase in the Contract Sum, Contractor shall give Architect and Construction Manager written notice thereof within ten (10) days after the occurrence of the event giving rise to such Claim. No Claim for any increase in the Contract Sum shall be valid unless such notice is given and unless (except in the event of an emergency endangering life or property per Paragraph 10.2) prior to the commencement of such work, either Owner or Construction Manager execute a Change Order authorizing the change in the work. If Owner and Contractor cannot agree on the amount of the adjustment in the Contract Sum, the Work shall, nonetheless, be performed by Contractor and the undisputed portion of the adjustment in the Contract Sum shall be paid by Owner pending determination of the remaining portion pursuant to Subparagraph 12.1.3. Any change in the Contract Sum resulting from such Claim shall be authorized by Change Order.

12.3 MINOR CHANGES IN THE WORK

12.3.1 Architect will have authority to order minor changes in the Work not involving an adjustment in the Contract Sum or extension of the Contract Time and not inconsistent with the intent of the Contract Documents. Such changes shall be effected by written order issued through Construction Manager, and shall be binding on Owner and Contractor. Contractor shall carry out such written orders promptly.

ARTICLE 13

UNCOVERING AND CORRECTION OF WORK

13.1 UNCOVERING OF WORK

13.1.1 If any portion of the Work should be covered contrary to the request of Owner, any Governmental Authority, Architect or Construction Manager, or to requirements specifically expressed in the Contract Documents, it must, if required in writing by either, be uncovered for their observation and shall be replaced at Contractor's expense.

13.1.2 If any other portion of the Work has been covered that Owner, Governmental Authority, Architect or the Construction has not specifically requested to observe prior to its being covered, any of them may request to see such Work and it shall be uncovered by Contractor. If such Work is found in accordance with the Contract Documents, the cost of uncovering and replacement shall, by appropriate Change Order, be charged to Owner. If such Work is not found in accordance with the Contract Documents, Contractor shall pay such costs unless it is found that this condition was caused by Owner or a separate contractor as provided in Article 6, in which event Owner shall be responsible for the payment of such costs.

13.2 CORRECTION OF WORK

13.2.1 Contractor shall promptly correct all Work rejected by Owner, any Governmental Authority, Architect or Construction Manager as defective or as failing to conform to the Contract Documents whether observed before or after Substantial Completion of the Project and whether or not fabricated, installed or completed. Contractor shall bear all costs of correcting such rejected Work, including compensation for Architect's and Construction Manager's additional services made necessary thereby and all fees for test of such Work; provided that Owner shall bear the cost of correcting any Work that is rejected by a Governmental Authority for any reason other than the failure of Contractor or any Subcontractor to complete the Work in accordance with the Contract Documents.

13.2.2 If, within one (1) year after the date of Substantial Completion of the Project or designated portion thereof, or within one (1) year after acceptance by Owner of designated equipment, or within such longer period of time as may be prescribed by law or by the terms of any applicable special warranty required by the Contract Documents, any of the Work is found to be defective or not in accordance with the Contract Documents, Contractor shall correct it promptly after receipt of a written notice from Owner or Construction Manager to do so unless Owner has previously given Contractor a written acceptance of such condition. This obligation shall survive both final payment for the Work or a designated portion thereof and termination of the Contract. Owner shall give such notice promptly after discovery of the condition.

13.2.3 Contractor shall remove from the Site all portions of the Work that are defective or nonconforming and that have not been corrected under Subparagraphs 4.5.1, 13.2.1 and 13.2.2, unless removal is waived by Owner.

13.2.4 If Contractor fails to correct defective or non-conforming Work as provided in Subparagraphs 4.5.1, 13.2.1 and 13.2.2, Owner may correct it in accordance with Paragraph 3.4.

13.2.5 If Contractor does not proceed with the correction of such defective or nonconforming Work within a reasonable time fixed by written notice from Owner issued through Construction Manager, Owner may remove it and may store the materials or equipment at the expense of Contractor. If Contractor does not pay the cost of such removal and storage within ten (10) days thereafter, Owner may, upon ten (10) additional days' written notice, sell such Work at auction or at private sale and shall account for the net proceeds thereof, after deducting all the costs that should have been borne by Contractor, including compensation for Architect's and Construction Manager's additional services made necessary thereby. If such proceeds of sale do not cover all costs that Contractor should have borne, the difference shall be charged to Contractor and an appropriate Change Order shall be issued. If the payments then or thereafter due Contractor are not sufficient to cover such amount, Contractor shall pay the difference to Owner.

13.2.6 Contractor shall bear the cost of making good all work of Owner or separate contractors destroyed or damaged by such correction or removal.

13.2.7 Nothing contained in this Paragraph 13.2 shall be construed to establish a period of limitation with respect to any other obligation that Contractor might have under the Contract Documents, including Paragraph 4.5 hereof. The establishment of the time periods noted in Subparagraph 13.2.2, or such longer period of time as may be prescribed by law or by the terms of any warranty required by the Contract Documents, relates only to the specific obligation of Contractor to correct the Work, and has no relationship to the time within which Contractor's 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 Contractor's liability with respect to Contractor's obligations other than specifically to correct the Work.

13.2.8 The expiration of any guarantee or correction of Work shall not relieve Contractor of the obligation to correct, at its own expense, any latent defect in the Work or deficiencies which are not readily ascertained, including, but not limited to, defective materials and workmanship, defects attributable to unauthorized substitutions for specified materials, and substandard performance of any of the Work otherwise not in compliance with the Contract Documents. Such latent defects or deficiencies shall be corrected as provided in this Paragraph 13.2. Following the correction or replacement of any of the Work, as specified in Paragraph 13.2, Contractor shall correct any defects or deficiencies in the corrected or replaced materials and workmanship which are found within one (1) year after the date of correction or replacement.

13.3 ACCEPTANCE OF DEFECTIVE OR NONCONFORMING WORK

13.3.1 If Owner prefers to accept defective or nonconforming Work, Owner may do so instead of requiring its removal and correction, in which case a Change Order will be issued to reflect a reduction in the Contract Sum where appropriate and equitable. Such adjustment shall be affected whether or not final payment has been made.

ARTICLE 14

TERMINATION OF THE CONTRACT

14.1 TERMINATION BY CONTRACTOR

14.1.1 If the Work is stopped for a period of thirty (30) consecutive days under an order of any court or other Governmental Authority having jurisdiction, or as a result of an act of government such as a declaration of a national emergency making materials unavailable, through no act or fault of Contractor or a Subcontractor or their agents or employees or any other persons performing any of the Work under a contract with Contractor, or if the Work should be stopped for a period of thirty (30) consecutive days because Owner has not made payment as provided in Paragraph 9.7, then Contractor may, upon ten (10) additional days' written notice to Owner, Architect and Construction Manager, terminate the Contract and recover from Owner payment for all Work executed and for any proven loss sustained upon any materials, equipment, tools, construction equipment and machinery.

14.2 TERMINATION OF CONTRACTOR

14.2.1 Should the Contractor at any time refuse or neglect to supply a sufficiency of skilled workers or materials of the proper quality and quantity, or fail in any respect to prosecute the Work with promptness and diligence, or cause by any act or omission the stoppage, impede, obstruct, hinder or delay of or interference with or damage to the work of any other contractors or subcontractors on the Project, or fail in the performance of any of the terms and provisions of this Agreement or of the other Contract Documents, or should the Architect determine that the Work or any portion thereof is not being performed in accordance with the Contract Documents, or should there be filed by or against the Contractor a petition in bankruptcy or for an arrangement or reorganization, or should the Contractor become insolvent or be adjudicated a bankrupt or go into liquidation or dissolution, either voluntarily or involuntarily or under a court order, or make a general assignment for the benefit of creditors, or otherwise acknowledge insolvency, then in any of such events, each of which shall constitute a default hereunder on the Contractor's part, then Owner or Construction Manager shall have the right, in addition to any other rights and remedies provided by this Agreement and the other Contract Documents or by law, after three (3) days written notice to the Contractor mailed or delivered to the last known address of the latter, (a) to perform and furnish through itself or through others any such labor or materials for the Work and to deduct the cost thereof from any monies due or to become due to the Contractor under this Agreement, and/or (b) to terminate the employment of the Contractor for all or any portion of the Work, enter upon the premises and take possession, for the purpose of completing the Work, of all materials, equipment, scaffolds, tools, appliances and other items thereon, all of which the Contractor hereby transfers, assigns and sets over to the Owner for such purpose, and to employ any person or persons to complete the Work and provide all the labor, services, materials, equipment and other items required therefor. In case of such termination of the employment of the Contractor, the Contractor shall not be entitled to receive any further payment under this Agreement until the Work shall be wholly completed

to the satisfaction of the Architect, the Owner and Construction Manager and shall have been accepted by them, at which time, if the unpaid balance of the amount to be paid under this Agreement shall exceed the cost and expense incurred by the Owner in completing the Work, such excess shall be paid by the Owner to the Contractor; but if such cost and expense shall exceed such unpaid balance, then the Contractor or its surety shall pay the difference to the Owner. Such cost and expense shall include, not only the cost of completing the Work to the satisfaction of the Owner, Construction Manager and the Architect and of performing and furnishing all labor, services, materials, equipment, and other items required therefor, but also all losses, damages, costs and expenses, (including legal fees and disbursements incurred by the Owner, Architect and/or Construction Manager in connection with procurement, in defending claims arising from such default and in seeking recovery of all such cost and expense from the Contractor and/or its surety), and disbursements sustained, incurred or suffered by reason of or resulting from the Contractor's default.

14.2.2 It is recognized that if the Contractor institutes or has instituted against it a case under Title 11 of the United States Code (Bankruptcy Code), such event could impair or frustrate the Contractor's performance of this Agreement. Accordingly, it is agreed that upon the occurrence of any such event, the Owner shall be entitled to request of Contractor or its trustee or other successor adequate assurances of future performance. Failure to comply with such request within ten (10) days of delivery of the request shall entitle the Owner in addition to any other rights and remedies provided by this Agreement or by law, to terminate this Agreement. Pending receipt of adequate assurances of performance and actual performance in accordance herewith, the Owner shall be entitled to perform and furnish through itself or through others any such labor, materials or equipment for the Work as may be necessary to maintain the progress of the Work and to deduct the cost thereof from any monies due or to become due to the Contractor under this Agreement. In the event of such bankruptcy proceedings, this Agreement shall terminate if the Contractor rejects this Agreement or if there has been a default and the Contractor is unable to give adequate assurance that it will perform as provided in this Agreement or otherwise is unable to comply with the requirements for assuming this Agreement under the applicable provisions of the Bankruptcy Code.

14.2.3 For any termination of this Agreement, any Project wide insurance that may have been provided by Construction Manager shall likewise be terminated

14.2.4 In the event Owner shall have terminated Contractor's employment pursuant to paragraph 14.2.1, then, and notwithstanding any dispute by Contractor regarding the validity of such termination or the dispute resolution method to be used, and anything to the contrary notwithstanding, unless otherwise specified in writing by Owner in the termination notice to Contractor, Contractor shall withdraw its employees from the Site in an orderly manner, and the dispute resolution method shall be used solely with regard to the determination of damages.

14.3 SUSPENSION BY OWNER FOR CONVENIENCE

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

14.3.2 Any Claim for adjustment in the Contract Sum caused by suspension, delay or interruption under this paragraph shall be made pursuant to Article 12 and Paragraph 8.3. No adjustment shall be made to the extent that:

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

14.4 TERMINATION BY OWNER FOR CONVENIENCE

14.4.1 Owner, through Construction Manager, may, at any time upon written notice to Contractor, terminate the Contract without cause so long as Owner pays Contractor for the Work performed by Contractor to the date of termination, plus a proportionate amount of Contractor's Fee based upon the percentage of the completion of the Work. Owner shall, upon Contractor executing such confirmatory assignments as Owner shall request, accept and assume all of Contractor's obligations under all subcontracts and purchase orders for services and materials executed in accordance with the terms of the Contract Documents which may accrue after the date of such termination and which Contractor has incurred in good faith in connection with the Work. Contractor shall not be entitled to anticipated profits on Work unperformed or on materials or equipment unperformed or on materials or equipment unfurnished.

ARTICLE 15

DISPUTE RESOLUTION

15.1 DISPUTE RESOLUTION

15.1.1 In the event of any dispute arising by or between Owner and Contractor, each party shall continue to perform as required under the Contract Documents, notwithstanding the existence of such dispute. In the event of such a dispute, Owner shall continue to pay Contractor as provided in the Contract Documents, except only such amount as may be disputed.

15.1.2 If any Claim has not been settled or resolved within thirty (30) days after written notice thereof to the other party hereto, within twenty-one (21) days after receipt or delivery (as the case may be) of such notice, Owner shall send written notice to Contractor specifying whether any unresolved Claim shall be resolved by litigation in a court of competent jurisdiction located within Lucas County, Ohio. Either party may then commence litigation in Lucas County, Ohio.

15.1.3 Owner may implement from time to time non-binding alternate dispute resolution procedures as a condition to litigation and Contractor agrees to abide by such procedures.

ARTICLE 16

ADDITIONAL PROVISIONS

16.1 PREVAILING WAGE

16.1.1 Ohio's prevailing wage laws apply to all public improvements financed in whole or in part by public funds when the total overall project cost is fairly estimated to be more than \$78,258.00 for new construction or \$23,447.00 for reconstruction, enlargement, alteration, repair, remodeling, renovation, or painting.

All contractors and subcontractors performing any work on any project that meets the above requirements are responsible for paying prevailing wage rates to their workers. Prime contractors are solely responsible for informing their subcontractors of these requirements. For more information relating to Ohio's prevailing wage laws, please visit <http://wagehour.bes.state.oh.us>.

A copy of the most current Ohio Prevailing Wage document is available for inspection at the Lucas County Support Service Office, One Government Center, Suite 480, Toledo OH 43604. Office hours are 8:30 to 4:30 Monday through Friday with the exception of legal holidays.

All prevailing wage related questions or concerns should be directed to:

Kelleigh Decker
Lucas County Prevailing Wage Coordinator
Office of Management & Budget
Lucas County Commissioners
One Government Center, Suite 800
Toledo, OH 43604
419 213-4649
419 213-2601 FAX

16.1.2 Every Contractor and/or Subcontractor, as soon as Work begins under its contract, shall furnish to the Project's prevailing wage coordinator a schedule of dates during the life of the contract on which wages will be paid to employees performing Work. Contractor shall also deliver to the Project's prevailing wage coordinator one (1) certified copy of the payroll of the Project within two (2) weeks after the initial pay date. Supplemental reports shall be made biweekly thereafter and shall be attached to each monthly payment request.

16.1.3 Each monthly report shall state the period covered and exhibit for each employee paid on the Project, his/her name, current address, Social Security number, number of hours worked each day on the Project during the reporting period, the total hours worked each week on the Project, as well as the total work on other projects, the hourly rate of pay, the job classification, fringe payments, all deductions from wages and net pay.

16.1.4 Each report shall also have a certification executed by Contractor, Subcontractor or duly appointed agent thereof. It shall recite that the payroll is correct and complete and that the wage rates shown are not less than those required by the Davis Bacon Act. It shall also state the name of the union or plan to which the withheld or unpaid fringes are to be paid. The first report shall also list each fringe and state if it is paid as cash to the employee or to a named plan.

16.1.5 Contractor shall be responsible for the submission of copies of payrolls of all Subcontractors.

EXHIBIT A

PROGRESS PAYMENTS

1 Partial payment to Contractor for labor performed under with a unit or lump sum price contract shall be made at the rate of ninety-two percent (92%) of the estimates prepared by Contractor and approved by Architect and Construction Manager. All labor performed after the job is fifty percent (50%) completed shall be paid for at the rate of one hundred percent (100%) of the estimates submitted by Contractor and approved by Architect and Construction Manager. In addition to all other payments on account of work performed, there shall be allowed by Owner and paid to Contractor a sum a rate of ninety-two percent (92%) of the invoice costs, not to exceed the bid price in a unit price contractor, for materials delivered on the Site; provided, that, such materials have been inspected and found to meet the Specifications. The balance of such invoiced value shall be paid when such materials are incorporated into and becomes a part of such building, construction, addition, improvement, alteration or installation unless Contractor does not prosecute the Work with diligence as set forth in the Contract Documents.

2 From the date the Work is fifty percent (50%) completed, the 8% of the contract amount that is held back for the faithful performance of work shall be kept by the Owner until the Construction Manager has signed off that the work is completed satisfactorily. After the contract is fifty percent (50%) complete no further funds shall be retained. Payment based on any certified payment application will be made within thirty (30) days following receipt of the certified application by Owner and Construction Manager. The time to process and certify the application by Construction Manager and Architect will not count towards the thirty (30) day payment period.

3 By submitting any Application for Payment, Contractor attests to the accuracy of the amounts requested, represents that the Work has been satisfactory executed in compliance with the Contract Documents and that Contractor is entitled to the amount shown. By submitting the second or any subsequent Application for Payment, Contractor attests that it has paid all just claims for labor, materials, equipment, subcontracts or other expenses represented by all previous Applications for Payment.

4 Concurrent with the submittal of each Application for Payment completed by Contractor, Subcontractors and suppliers during the period, Contractor shall furnish Affidavit and Waivers of Lien evidencing that all wages for labor and all invoices for materials or services for work performed by Contractor's own work forces included in the previous partial payment have been paid in full. Furnishing of Affidavits and Waivers of Lien, in forms as approved and when required by Construction Manager, shall be a prerequisite to the issuance of all Certificates of Payment.

5 Full or partial payment on the Contract Sum or in reducing the retained amount (percentage) shall not relieve Contractor or its surety from fulfilling all obligations of this Contract, including guarantee of the work. Under the conditions of the Contract, Contractor and its surety agree that they waive any actual or alleged rights of subrogation or action against Owner, Construction Manager and Architect as a result of such payments being made. The surety may at any time examine the status of Work and may request the Owner and/or Construction Manager withhold additional sums as they consider appropriate to protect their interests.

EXHIBIT B

COUNTY OF LUCAS CONTRACTOR INSURANCE

21 INSURANCE

21.1 The CONTRACTOR shall purchase and maintain such insurance as will protect him from claims set forth below which may arise out of or result from the CONTRACTOR'S execution of the WORK, whether such execution be by himself or by any SUBCONTRACTOR or by anyone directly employed by any of them, or by any one for whose acts any of them may be liable:

21.1.1 Claims under workmen's compensation, disability, benefit and other similar employee benefit acts;

21.1.2 Claims for damages because of bodily injury, sickness or disease or death of his employees;

21.1.3 Claims for damages because of bodily injury, sickness or disease or death of any person other than his employees;

21.1.4 Claims for damages insured by usual personal injury liability coverage which are sustained (1) by any person as a result of an offense directly or indirectly related to the employment of such person by the CONTRACTOR, or (2) by any other person; and

21.1.5 Claims for damages because of injury to or destruction of tangible property, including loss of use resulting there from.

21.2 Certificate of Insurance acceptable to the OWNER shall be filed with the OWNER prior to commencement of the WORK naming OWNER as additional insured. These Certificates shall contain a provision that coverages afforded under the policies will not be canceled unless at least thirty (30) days prior WRITTEN NOTICE has been given to the OWNER.

21.3 The CONTRACTOR shall procure and maintain, at his own expense, during the CONTRACT TIME, liability insurance as hereinafter specified;

21.3.1 Comprehensive General Liability and Property Damage, Contractor's Protective Liability, Contractual Liability, Completed Operations-Products, Automobile Bodily Injury and Property Damage, owned and non-owned and hired vehicles and Owner's Protective Liability. The latter policy shall name as the insured the OWNER. If excluded from CONTRACTOR'S standard coverages, the following shall be deleted for policies provided under the CONTRACT DOCUMENT EXCLUSIONS: (1) "Underground Operations" (2) "Third Party Beneficiary" and (3) "Collapse" - where exposure is determined. Bodily Injury Liability and Property Damage Insurance shall cover the use of "Explosives" if used in performance of the CONTRACT. Insurance should be placed with a carrier with an AM Best Rating of at least an A-.

The types and **minimum** limits of insurance shall be as follows:

Commercial General Liability Insurance - General Aggregate Limit - \$2,000,000

Products-Completed Operations-Aggregate Limit - \$2,000,000

Personal and Advertising Injury Limit-\$1,000,000 Each Occurrence Limit-\$1,000,000

Comprehensive Automobile Liability Bodily Injury & Property Damage Liability Limit
Each Occurrence - \$1,000,000

The above minimum coverages may be obtained through the primary insurance or any combination of primary and umbrella insurance. In addition, the General Aggregate Limit shall be required on a per project basis.

21.3.2 The CONTRACTOR shall acquire and maintain, if applicable, Fire and Extended Coverage Insurance upon the PROJECT to the full insurable value thereof for the benefit of the OWNER, the CONTRACTOR, and SUBCONTRACTORS as their interest may appear. This provision shall in no way release the CONTRACTOR or CONTRACTOR'S surety from obligations under the CONTRACT DOCUMENTS to fully complete the PROJECT.

21.4 The CONTRACTOR shall procure and maintain at his own expense, during the CONTRACT TIME, in accordance with the provisions of the laws of the state in which the work is performed, Workmen's Compensation Insurance, including occupational disease provisions, for all of his employees at the site of the PROJECT and in case any work is sublet, the CONTRACTOR shall require such SUBCONTRACTOR similarly to provide Workmen's Compensation Insurance, including occupational disease provisions for all of the latter's employees unless such employees are covered by the protection afforded by the CONTRACTOR. In case any class of employees engaged in hazardous work under this contract at the site of the PROJECT is not protected under Workmen's Compensation statute, the CONTRACTOR shall provide, and shall cause such SUBCONTRACTOR to provide, adequate and suitable insurance for the protection of his employees not otherwise protected.

21.5 The CONTRACTOR shall secure, if applicable, "All Risk" type Builder's Risk Insurance for Work to be performed. Unless specifically authorized by the OWNER, the amount of such insurance shall not be less than the CONTRACT PRICE totaled in the BID. The policy shall cover not less than the losses due to fire, explosion, hail, lightning, vandalism, malicious mischief, wind, collapse, riot, aircraft and smoke during the CONTRACT TIME, and until the WORK is accepted by the OWNER. The policy shall name as the insured the CONTRACTOR, and the OWNER.

22. INDEMNITY

22.1 PROFESSIONAL LIABILITY

Relative to any and all claims, losses, damages, liability and costs, the CONTRACTOR agrees to indemnify and save the County of Lucas, its officials and employees (herein after "County") harmless from and against any and all suits, actions or claims for property losses, damages or personal injury claimed to arise from a negligent act, error or omission by the CONTRACTOR or its employees.

22.2 NON-PROFESSIONAL LIABILITY

To the fullest extent permitted by law, the CONTRACTOR shall indemnify and hold harmless the County of Lucas, its officers, officials and employees (hereinafter "County"), or any of them from and against claims, damages, losses and expenses, including but not limited to attorneys' fees arising out of the acts or omissions of the CONTRACTOR, provided that such claim, damage, loss or expense is attributable to bodily injury, sickness, disease or death, or to injury to or destruction of property (other than the Work itself) including loss of use resulting there from, but only to the extent caused in whole or in part by the acts or omissions of the CONTRACTOR, any subCONTRACTOR(s) of the CONTRACTOR, its agents, or anyone directly employed by them or anyone whose acts they may deem 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 which would otherwise exist as to a party or person described in this paragraph 22.2. It is understood and agreed that this indemnification obligation is enforceable to the full extent permitted by Ohio Revised Code Section 2305.31.

22.3 It is expressly understood and 'agreed that these indemnification obligations are enforceable to the full extent permitted by Ohio Revised Code Section 2305.31. In any and all claims against the County by any employee of the CONTRACTOR, and any subCONTRACTOR(s) of the CONTRACTOR, agent or anyone directly or indirectly employed by any of them or anyone for whose acts any of them may be liable. CONTRACTOR hereby expressly waives the immunity provided to CONTRACTOR by Article II, Section 35, of the Ohio Constitution and Ohio Revised Code Section 4123.74 and 4123.741, all regarding worker's compensation immunity, so that this indemnification obligation may be enforced by the County of Lucas against CONTRACTOR in those instances.

22.4 If the CONTRACTOR subcontracts with the County, the CONTRACTOR shall require its subCONTRACTORS to indemnify the County of Lucas in accord with Article 22.

22.5 CONTRACTOR Responsible - The CONTRACTOR expressly understands that the insurance requirements as outlined above are minimum requirements to be met under the contract and does not in any manner represent that the limits, coverage or policy forms are sufficient or adequate to protect the interest or liability of the CONTRACTOR and/or its SUBCONTRACTORS.

THE FOLLOWING MUST BE INCLUDED (IN THE SPECIFIED AREAS) ON ALL INSURANCE CERTIFICATES:

- DESCRIPTION OF THE PROJECT AND LOCATION:** you may use a generalized listing of the duties to be performed under this certificate of insurance. Example: "Projects Executed for the Board of Lucas County Commissioners."
- CERTIFICATE HOLDER:** Board of Lucas County Commissioners, One Government Center, Suite 800, Toledo, Ohio 43604-2247.

EXHIBIT C

CHANGE ORDER PRICING

1. The increase or decrease in the Contract Sum shall be determined in one of the following ways and, unless otherwise approved or directed by Owner, in the precedence of the order listed:
 - (a) by an accepted unit price included in the Agreement;
 - (b) by a lump sum cost acceptable to Owner and Construction Manager, based on Contractor's detailed, itemized breakdown of the actual basic costs, with allowance for Contractor's profit and overhead, as provided for under Subparagraph 3 below.
 - (c) by mutually agreeable unit prices for the Work, with allowance for Contractor's profit and overhead, computed in a similar manner as provided for in Subparagraph 3 below.
 - (d) on the actual Cost of the Work, as determined by payroll records and paid receipts, plus allowances for profit and overhead, as provided for in Subparagraph 2 through 11 below, subject to the predetermined maximum amount.
2. Except for unit prices included in the Agreement, and unless otherwise approved by Owner and Construction Manager, for proposed changes in the Work Contractor shall submit an itemized list of quantities with the applicable unit cost and extended price for each, in such form and detail as required by Owner. Unit prices set forth in the Agreement are not subject to further profit or overhead adjustments, nor the conditions of Subparagraphs 2 through 11 below. The Contract Sum will be adjusted by the direct extension of the number of units and the unit cost price.
3. The maximum that will be allowed for overhead, profit or commission shall be as follows, expressed as a percentage of the actual basic cost of the change. The percentages for profit, overhead and commission allowed by Owner may be less, depending on the nature, extent or complexity of the change, where the percentage is not commensurate with the responsibility and administration involved (such as Contractor

	Overhead/Profit
(a) To Contractor for Work performed with its own forces	8%
(b) To Contractor for Work performed by other than its own forces	5%

merely processing a Change Order to a Subcontractor), but in no event shall they exceed the following, as applied to labor and materials:

4. Material costs shall be at the actual costs to Contractor. Upon request, Contractor shall submit evidence to Construction Manager to substantiate the costs. Materials shall be quoted at trade discount prices, with quantity discounts also applied where the quantities warrant. In any proposal with material credits, the credit shall be based on the actual contract cost for the materials (including trade and quantity discounts) less any charge actually incurred for handling or returning a material that has been delivered.

5. The percentages allowed for overhead and profit under Subparagraph 3 above shall be deemed to include: (1) field and office supervision and administration, including the field superintendent and administrative foremen; (2) general insurance, except that listed as the labor burden; (3) use of small tools; (4) shop burden; (5) equipment rental (other than required additional hoisting equipment or required equipment necessary solely as a result of the change); (6) estimating and administrative costs; (7) indirect costs related to the Work, including impact costs resulting from the performance of cumulative Change Orders; and (8) any other costs resulting from the change not expressly enumerated as a cost of the work.
5. Except for changes based on unit prices included in the Agreement, costs changes shall be computed by determining the actual cost of the work to which the overhead and profit figures may be added
6. Subcontractors shall compute their costs in the same way and are subject to the maximum percentage for overhead and profit, which they may divide among the various tiers as they agree upon. No more than three (3) stated percentages for overhead, profit and commission will be allowed.
7. For changes involving extra cost by Contractor and Subcontractor, the overhead and profit, shall be applied only to the net difference where the extra exceeds the credit.
8. For changes involving both extra and credit amounts, the overhead and profit, or commission, shall be applied only to the net difference where the extra exceeds the credit.
9. For changes resulting in a net credit in the basic costs, an allowance for overhead, profit or commission shall be credited to Owner, as determined by Construction Manager.
10. On changes where the value or extent of Work cannot be reasonable predetermined or agreed upon, Owner, through Construction Manager, may authorize Work to proceed on an agreed upon cost plus basis, not to exceed a predetermined maximum amount authorized by Owner and Construction Manager. In such cases, the basic costs and mark-up for overhead, profit and commission will be in accordance with this Exhibit.

SECTION D

BID GUARANTEE & CONTRACT BOND

BID GUARANTEE & CONTRACT BOND

(Section 153.571 Ohio Revised Code)

KNOW ALL MEN BY THESE PRESENTS, that we, the undersigned

(Name and Address)

as Principal and _____

(Name of Surety)

as Surety, are hereby held and firmly bound unto the Board of Lucas County Commissioners, hereinafter called the Obligee, in the penal sum of the dollar amount of the bid submitted by the Principal to the Obligee on _____ to undertake the project known as:

Project Number, Project Name, Township

The penal sum referred to herein shall be the dollar amount of the Principal's bid to the Obligee, incorporating any additive or deductive alternate proposals made by the Principal on the date referred to above to the Obligee, which are accepted by the Obligee. In no case shall the penal

sum exceed the amount of _____

Dollars (\$ _____). If the foregoing blank is not filled in, the penal sum will be the full amount of the principal's bid, including alternates. Alternatively, if the blank is filled in, the amount stated must not be less than the full amount of the bid including alternates, in dollars and cents. For the payment of the penal sum well and truly to be made, we hereby jointly and severally bind ourselves, our heirs, executors, administrators, successors, and assigns.

THE CONDITION OF THE ABOVE OBLIGATION IS SUCH, that whereas the above named Principal has submitted a bid on the above referred to project;

NOW, THEREFORE, if the obligee accepts the bid of the Principal and the Principal fails to enter into a proper contract in accordance with the bid, plans, details, specifications, and bills of material; and in the event the Principal pays to the Obligee the difference not to exceed ten percent of the penalty hereof between the amount specified in the bid and such larger amount for which the Obligee may in good faith contract with the next lowest bidder to perform the work covered by the bid; or in the event the Obligee does not award the contract to the next lowest bidder and resubmits the project for bidding, the Principal will pay the Obligee the difference not to exceed ten percent of the penalty hereof between the amount specified in the bid, or the costs, in connection with the resubmission, of printing new contract documents, required advertising and printing and mailing notices to prospective bidders, whichever is less, then this obligation shall be void, otherwise to remain in full force and effect. If the Obligee accepts the bid of the Principal and the Principal within ten days after the awarding of the contract, enters into a proper contract in accordance with the bid, plans, details, specifications, and bills of material, which said contract is made a part of this bond the same as though set forth herein; and

IF THE SAID Principal shall well and faithfully perform each and every conditions of such Contract; and indemnify the Obligee against all damage suffered by failure to perform such contract according to the provisions thereof and in accordance with the plans, details, specifications, and bills of material therefore; and shall pay all lawful claims of subcontractors, therefore in, and laborers, for labor performed and materials furnished in the carrying forward performing, or completing of said contract; we agreeing and assenting that this undertaking shall be for the benefit of any material man or laborer having a just claim, as well as for the Obligee herein; then this obligation shall be void; otherwise the same shall remain in full force and effect; it being expressly understood and agreed that the liability of the Survey for any and all claims hereunder shall in no event exceed the penal amount of this obligation as herein stated.

The above Surety hereby certifies that it is authorized by the superintendent of insurance, State of Ohio to execute the above bond and that the liability incurred is within the limits proscribed by Section 3929.02 of the Ohio Revised Code.

THE SAID Surety hereby stipulates and agrees that no modification, omissions, or additions, in or to the terms of said contract or in or to the plans and specifications therefore shall in any wise affect the obligation of said Surety on this bond, and it does hereby waive notice of any such modifications, omissions or additions to the terms of the contract or to the work or to the specifications.

SIGNED AND SEALED This _____ day of _____, 2010.

PRINCIPAL:

By _____

Title: _____

SURETY:

SURETY COMPANY ADDRESS:

By: _____ Attorney-in-Fact _____ City _____ State _____ Zip

SURETY AGENT'S ADDRESS:

Agency Name

Street _____ State _____ Zip

City

Rev. 11/98

SECTION E
SCOPE, SPECIFICATIONS, AND DRAWINGS
(SEE TABLE OF CONTENTS)

SCOPE OF WORK

THE SOURCE HVAC UPGRADES

BID DUE DATE: OCTOBER 27, 2011 @ 2:00 PM LOCAL TIME
LUCAS COUNTY SUPPORT SERVICES, PURCHASING DIVISION
ONE GOVERNMENT CENTER, SUITE 480, FOURTH FLOOR
TOLEDO, OHIO 43604

MANDATORY PRE-BID CONFERENCE DATE: OCTOBER 13, 2011
@ 9:00 AM LOCAL TIME
THE SOURCE NORTHWEST OHIO 1301 MONROE STREET
TOLEDO, OHIO 43604

1.0 **GENERAL:**

This Contractor shall provide all supervision, labor, material, accessories, equipment, tools, scaffolding, taxes, labor burdens, overhead, profit, fringe benefits, insurance, etc. necessary to complete all work associated with the ***The Source HVAC Upgrades***.

- 1.1 Trade permits and or licenses required to perform this type of work at this location, complete with inspections, associated fees.
- 1.2 Construction materials testing shall be provided and paid for by the Owner.
- 1.3 The General Building permit shall be provided and paid for by the Owner.
- 1.4 Compliance with requirements of all applicable Federal, State and Local codes, ordinances and agencies, including Owner's, and Construction Manager's program and guidelines.
- 1.5 Comply with Project Safety and Fire Protection Program included within this packet.
- 1.6 Notification of public agencies as required for testing and inspections.
- 1.7 The cost of materials incorporated into the construction is exempt from State of Ohio sales tax.
- 1.8 The importance of a site visit during the bid is emphasized in order to become familiar with the existing conditions and their affect on the performance of the work of this contract. No allowances shall be made for any conditions which could have been determined by a site visit. **The site visit will occur during the Mandatory Prebid Meeting.**
- 1.9 Coordinate new work with existing utilities and the work of other trades in the area of construction.
- 1.10 The Contractor shall be responsible for and repair and make good, at its own expense, all damage to landscaping, building façade, streets, sidewalks (not scheduled to be removed as part of this project), utility lines, adjoining premises or any other public or private property, by

whomsoever owned and wherever located, resulting from or in connection with the performance of the Work.

- 1.11 Street Obstructions: All streets, sidewalks, or passageways outside of the site fence are to be kept clear and open to vehicular traffic and pedestrians at all times. When it is necessary to restrict traffic or close a street or portion of a street or sidewalk due to construction activities, this Contractor shall:
- a. Notify the Construction Manager of such requirements one (1) week in advance.
 - b. Notify the appropriate authorities including the City of Toledo Department of Transportation and the Police Department obtain their approval and comply with their requirements for street obstructions.
 - c. Provide barricades, signage and flagmen as necessary, to redirect traffic and pedestrians.
 - d. Perform off-hours work if required to meet the requirements of the City/Authority Having Jurisdiction and/or the Construction Manager.
- 1.12 Public restrooms are available on site for contractor use.
- 1.13 A material/personal hoist will not be provided for the project. All hoisting shall be provided by the Contractor requiring hoisting.
- 1.14 Temporary power and water shall be paid for and provided by each Contractor.
- 1.15 Contractors will not be permitted to have a Project Trailer onsite.
- Contractors are permitted to have no more than one (1) weeks supply of material onsite. Any off-site storage of materials is the sole responsibility of the Contractors.
- 1.16 Limited parking is available adjacent to the site.
- Contractors will not be permitted to have any employee vehicles onsite.
- 1.17 Engineering, layout and control work as required to complete the respective work items included in this bid package.
- 1.18 Each Contractor shall be responsible for receiving, off-loading, loading and proper storage and protection of their materials and equipment into the building. All deliveries are to be coordinated with the Construction Manager prior to shipping of the material. Laydown area on the site will be limited, see the Site Logistics Plan for location. Contractor shall provide 10-day notice to Construction Manager before storing materials in laydown area.
- 1.19 Each Contractor shall be responsible for daily clean up of trade related and identifiable debris.
- 1.20 Due to the limited amount of space on site. Materials shall be delivered and installed as required; no more than five working days.
- 1.21 All Trade Contractors shall compile product data and prepare shop drawings and submit (1) one electronic set in PDF format to The Lathrop Company for review within 7 calendar days of award. Shop drawing review period shall be 14 days and subsequent resubmittal review period shall be 7 days.

**** The apparent low bidder(s) shall be prepared to meet with the Construction Manager and other members of the Project Team. The meeting will include a discussion on the bidder's project approach, estimate, schedule, etc.**

2. HVAC Mechanical:

Provide all work in this scope per the specifications listed below and the related sections thereof:

<u>Spec. Number</u>	<u>Description</u>		<u>Spec. Number</u>	<u>Description</u>
00300	Information to Bidders		09 9123	Interior Painting
Div. 01	(All sections)		15 0000	Mechanical Specification
09 9113	Exterior Painting		15 9000	HVAC Instrumentation and Controls

2.1 The Work is based upon **SCOPE DOCUMENTS**. As scope documents, the drawings, details and specifications do not necessarily indicate nor describe all Work required for the full performance and completion of the requirements of the Contract Documents. On the basis of the general scope indicated, the Contractor shall use all reasonable care to include those items necessary and/or implied, but not necessarily detailed, on the The Source HVAC Upgrades Contract Documents.

The following items are excerpted from the Contract Documents for emphasis and clarity; these items are not intended to limit the scope of work required by the Contractor; these items are as follows:

- 2.2 Furnish and install all of the items listed in this scope of work to make a complete working system unless otherwise noted.
- 2.3 Trade Contractor is responsible for all trade permits and licenses; general building permit by others.
- 2.4 All Mechanical HVAC demolition as shown and specified in the contract documents.
- 2.5 Mechanical HVAC Contractor shall be responsible for removal and reinstallation of ceilings required to access their work.
- 2.6 Mechanical HVAC Contractor shall be responsible for gas line work including support systems and painting.
- 2.7 Mechanical HVAC Contractor shall provide all miscellaneous steel and hardware, prime painted, as required to support, hang, and secure all equipment installed.
- 2.8 Furnish and install and/or relocate diffusers, dampers, and controls as shown and specified in the contract documents.

- 2.9 Furnish and install and/or relocate ductwork as shown and specified in the contract documents.
- 2.10 Replace all existing thermostats with BACnet communication capabilities.
- 2.10 Mechanical HVAC Contractor is responsible for any subcontract work (i.e. electrical, painting, roofing penetrations etc.) as required to perform their work.
- 2.11 Furnish and install new HVAC rooftop unit as shown and specified in the contract documents.
- 2.12 This Contractor shall be responsible for and is to provide protection for any and all existing/new construction throughout the building and on the jobsite which may be damaged as a consequence of their work. This includes maintaining the protection means and methods in good working order until the operations of this scope of work are complete, at which time this Contractor shall be responsible for the removal of all protection materials in contact with their work and disposal of protection materials in the appropriate project dumpster.
- 2.13 Provide test and balance reports.
- 2.11 See Summary Section 011000.

SCOPE OF WORK – HVAC CONTRACTOR ALLOWANCES:

- 2.12 The Contractor shall include an allowance of \$30,000 to be used as directed by the Construction Manager. At closeout of Contract, funds remaining in Contingency Allowance will be credited to the Owner.

3. ALTERNATE INSTRUCTIONS:

- 3.1 Bidders shall submit Alternates with the Bid Proposal stating the total price of the Alternate Work complete.
- 3.2 The Alternate Work price shall include all omissions and adjustments as may be necessary.
- 3.3 Price for alternates shall be submitted on Pricing Sheet, Section F.
- 3.4 Voluntary Alternates are NOT PERMITTED.

4. ALTERNATE DESCRIPTIONS:

- 4.1 Alternate No. M-1: Modification of Existing Carrier Moduline Units and Modulating Duct Control Dampers and Controls
- 4.2 Alternate No. M-2: BACnet/LAN Control Wiring (**include ceiling tile allowance of \$12,000**)
- 4.3 Alternate No. M-3: Split-System Cooling Unit for Second Floor Computer Room

5. SCHEDULE AND HOURS OF WORK:

- 5.1 Starting times shall be based on local time in effect.
- 5.2 The terms of any collective bargaining agreement to the contrary notwithstanding, all trades shall observe the starting times established by the Construction Manager.
- a. The Construction Manager reserves the right to advance or delay scheduled changes in starting time to respond to changes in the effective date of Daylight Saving Time and Standard Time.
- 5.3 If the Contractor is directed by the Construction Manager to perform certain portions of other items of work on a premium time basis, the Contractor's charges for such work shall be based on the actual premium wages paid for such overtime, over and above cost of straight time wages, plus payroll charges applicable thereto, plus the cost of direct additional expenses relating to the overtime work. No allowance shall be added for Contractor profit and overhead.
- 5.4 It is further understood and agreed, however, that overtime work made necessary by Contractor's failure to meet or anticipate dates previously agreed upon in the Contract or Construction Schedules, shall be at the sole cost and expense of the Contractor.
- 5.5 Work is to be performed to minimize disruption of building operations. Work in the Owens Community College area will be performed after 10:00 p.m. and be complete by 6:00 a.m. Work in the balance of the building will be performed after 6:00 p.m. and be complete by 6:00 a.m. There will be no storing of tools or materials in corridor areas.**
- 5.6 Project Schedule:**
- November 3, 2011: Letter of Intent issued to successful bidder by Lucas County.
 - November 14, 2011: HVAC upgrade and improvement work commences.
 - January 20, 2012: HVAC upgrade and improvements punchlist.
 - February 17, 2012: Project closeout.

**** PLEASE NOTE THAT THE MANDATORY PRE-BID CONFERENCE WILL BEGIN AT 9:00 AM ON OCTOBER 13, 2011 AT THE SOURCE NORTHWEST OHIO, LOCATION OF THE ROOM WILL BE POSTED INSIDE THE SOURCE IN THE MAIN LOBBY ON THE DAY OF THE MEETING.****

SECTION F
PRICING SHEET

PRICING SHEET

THE SOURCE ROOF REPLACEMENT

Company Name _____

Street Address _____

City, State, Zip _____

Mailing Address _____
(If Different)

Contact Name _____

Phone No. _____

Fax No. _____

Email Address _____

DUE: October 27, 2011 @ 2:00 PM LOCAL TIME

TO: Lucas County Support Services, Purchasing Division
One Government Center, Suite 480
Toledo OH 43604-2247

We, the undersigned, having carefully examined the Bid Documents agree to perform all work required by these documents heretofore submitted to bidder, as modified by any addenda listed herein.

1.0 **BASE BID**

Provide all necessary labor, material, supervision, taxes, insurance, cartage, storage, temporary protection, tools, equipment, layout, field engineering, and all things necessary or incidental to furnish, deliver and install complete in every detail the Work as defined by the drawings and specifications for the lump sum price of:

BID ITEM:

1. **The Source HVAC Upgrades:**

Base Bid Amount: _____

_____ Dollars \$: _____

1.1 **The Source HVAC Upgrades – Modification of Existing Carrier Moduline Units and Modulating Duct Control Dampers and Controls (Alternate #M-1):**

Alternate Bid Amount: _____
 _____ Dollars \$: _____

1.2 **The Source HVAC Upgrades – Backnet/LAN Control Wiring, including allowance (Alternate #M-2):**

Alternate Bid Amount: _____
 _____ Dollars \$: _____

1.3 **The Source HVAC Upgrades – Split-System Cooling Unit for Second Floor Computer Room (Alternate #M-3):**

Alternate Bid Amount: _____
 _____ Dollars \$: _____

2. TAXES

Project is tax exempt.

3. UNIT PRICES

1. Unit prices will be used to determine the cost for work that is not inclusive or a part of the base bid for unknown items which may be incorporated into the Contract Price by way of a Change Order as determined by the Owner's Representative.
2. Unit prices will be used to determine the amount to be added to, or deducted from, the bid price for minor adjustments to the specified scope of work.
3. Unit prices shall be provided in accordance with the materials and procedures specified (including labor, material, overhead, profit and taxes) to remove/dispose of existing materials and provide the following:

Trade Classification	Wage	Burden	Total

NOTE: RATES DO NOT INCLUDE OVERHEAD AND PROFIT

4. CONTRACTOR'S FEE

After the signing of the contracts for the work included for this project, in the event it becomes necessary to authorize changes to the Scope of Work included in the Base Bid, the following "fees" shall apply.

- a. For additional work performed by your own forces, a fee of eight percent (8) of the approved cost of the work.
- b. For additional work performed by Subcontractors, a fee of five percent (5) of Subcontractor's approved cost of the work.

The "fee" stated above shall be the total amount to be added to the "approved cost" of the extra work and shall include "Profit and Overhead".

Cost shall be limited to the following: Cost of materials, including applicable tax and cost of delivery, cost of labor and applicable fringe benefits including Social Security, and Unemployment Insurance (labor cost may include a pro rata share of foreman's time; Workmen's Compensation and other applicable insurance); rental value of power tools and equipment.

Profit and Overhead shall include the following: travel, supervision, wages of timekeepers, watchmen and clerks, small tools, incidentals, general office expense and all other expenses not included in "Cost". The cost as used herein shall include all items of labor, materials, and equipment.

Fee shall include all profit and overhead and shall include the following: Travel other than required by Labor Agreement for trades directly involved in the work, supervision, wages of timekeepers, field engineers and clerks, small tools, incidentals, general field and main office expense and all other expenses not included in "Cost".

5. ADDENDA

In the event that addenda have been received during the bidding period covering changes to the bid documents, the undersigned bidder subscribes to the following statement:

The work described in the following addenda is included in this proposal:

Addendum No. _____, Dated _____ Addendum No. _____, Dated _____

Addendum No. _____, Dated _____ Addendum No. _____, Dated _____

6. TIME OF COMPLETION

The undersigned bidder agrees to complete the work in accordance with the project schedule, as outlined in the Bid Documents.

7. REJECTION OF BIDS

The undersigned bidder acknowledges that the Owner reserves the right to reject any or all proposals and to award the work to other than the low bidder.

All bids will be opened publicly.

8. SITE INSPECTION

The undersigned bidder acknowledges that bidder has been afforded the opportunity to inspect the jobsite to arrive at a clear understanding of the conditions under which the work is to be done; to compare the site with the drawings and specifications; to satisfy bidder as to the condition of the premises; existing obstructions; condition, location, and size and configuration of buildings and areas allocated for construction purposes; location and availability of roads; location and availability of utilities, including the electrical characteristics of the available power; proximity and nature of Owner's existing operations; and any other conditions affecting the performance of the work.

No allowances or extra consideration on behalf of the undersigned bidder will be allowed by Owner by reason of additional costs, damages or other difficulties incurred by the undersigned bidder that could have been avoided had an adequate site inspection been undertaken by him.

9. EEO

The undersigned bidder agrees to comply with all applicable local, state, and federal EEO.

10. PRICE GUARANTEE

The undersigned bidder agrees that this proposal will remain firm for a period of not less than sixty (60) days and a maximum of _____ days.

11. LEGAL STATUS AND SIGNATURE OF BIDDER

Check one of the following:

- a. Bidder is an individual _____.
- b. Bidder is a corporation _____.
- c. Bidder is a partnership _____.

- 1) If Corporation -
State of Corporation _____

States in which qualified to do business -

- 2) If partnership, list names of all partners.

Name of Contractor

By (Signature)

Title

Address of Bidder

SECTION G
STANDARD CONTRACT

AGREEMENT

THIS AGREEMENT, made this _____ day of _____ by and between Lucas County, Ohio, hereinafter called "COUNTY", and _____ hereinafter called "CONTRACTOR"

WITNESSETH: That for an in consideration of the payments and agreements hereinafter mentioned:

Section 1. The CONTRACTOR shall provide the work in accordance with The Specifications for (name of project) dated _____ and CONTRACTOR'S response to said specifications submitted (date of bid)

Section 2 The CONTRACTOR shall furnish all of the materials, supplies, tools, equipment, labor and other services necessary for the performance of the Work.

Section 3. The parties agree that the actual work shall not commence prior to (Same as Contract date) and shall be completed on or before _____.

Section 4 The CONTRACTOR agrees to perform all of the work described in the contract documents and to comply with the terms therein for the sum of (In words and figures)

Section 5 Payments by the COUNTY to the CONTRACTOR shall be made according to the following schedule: on an as-completed basis billed monthly.

Section 6. All payments shall be payable to the CONTRACTOR in U.S. dollars at the CONTRACTOR'S address as the CONTRACTOR directs in writing.

Section 7. The term "Contract Documents" means and includes the following:

A) Agreement with Attachments

B) Specifications for _____ dated _____.

C) Bid and Proposal submitted by (Contractor awarded project) in response to the Specifications for Request as previously mentioned.

D) Notice to Bidders

- E) "Best Bid" Criteria Form
- F) Notice of Award
- G) Instructions to Bidders
- H) Definitions
- I) Bid Guarantee and Contract Bond
- J) Performance Bond (to be used only if Bid Guarantee and Contract Bond are not used)
- K) Delinquent Personal Property Tax Statement
- L) Wage Determination, Lucas County and Prevailing Wage Instructions
- M) Certificate of Drug-Free Workplace Compliance
- N) General Conditions
- O) Notice of Commencement / Notice to Proceed
- P) Construction Contract Exemption Certificate
- Q) Power of Attorney
- R) Additional Terms and Conditions

Section 8. This Agreement in no way precludes, prevents, or restricts the CONTRACTOR from obtaining and working under an additional contractual arrangement with other parties aside from the COUNTY, assuming that the contractual work in no way impedes the CONTRACTOR'S ability to perform the services required under this Agreement. The CONTRACTOR warrants and represents that at the time of entering into the Agreement it has no interest in nor shall it acquire any interest, direct or indirect, in any agreement which will conflict with or impede its ability to perform the required services under this Agreement.

Section 9. This Agreement shall be binding upon all parties hereto and their respective heirs, executors, administrators, successors, and assigns. IN WITNESS WHEREOF, the parties hereto have executed, or caused to be executed by their duly authorized officials, this Agreement in three (3) copies, each of which shall be deemed an original on the date first above written.

CONTRACTOR:

Please report your Employer Identification Number in the place provided.

Emp. I.D. No.: _____

Name: _____

Address: _____

Phone Number: _____

By: _____

Title: _____

**BOARD OF LUCAS COUNTY COMMISSIONERS
LUCAS COUNTY, OHIO**

APPROVED AS TO FORM:
Julia R. Bates, Prosecuting Attorney

Pete Gerken, President

Tina Skeldon Wozniak, Commissioner

Carol Contrada, Commissioner

IMPORTANT NOTE

Due to heightened security at One Government Center, if your bid is to be delivered to the bid-opening site by other than US Mail, UPS or Federal Express, **you must complete, print and attach this label to the front of the container holding your document. Note: Upon entering One Government Center, you will be required to show a photo ID.**

Formal bid to: Lucas County Support Services
One Government Center, Suite 480
Toledo OH 43604-2247

Item for bid _____

Invitation to Bid No. or Request for Proposal No. _____

Date of Bid Opening _____

Bid Opening Time _____

Vendor Name _____

SECTION 011000 - SUMMARY

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

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

1.2 SUMMARY

- A. Section Includes:
 - 1. Project information.
 - 2. Work covered by Contract Documents.
 - 3. Work under separate contracts.
 - 4. Access to site.
 - 5. Coordination with occupants.
 - 6. Work restrictions.
 - 7. Specification and drawing conventions.

1.3 PROJECT INFORMATION

- A. Project Identification: The Source HVAC Upgrade, Project #106045.
 - 1. Project Location: 1301 Monroe Street, Toledo, Ohio 43604-5813.
- B. Owner: Lucas County Board of Commissioners.
 - 1. Owner's Representative: Kelly C. Roberts, Director, Office of Management and Budget.
- C. Architect: The Collaborative Inc., 500 Madison Avenue, Toledo, Ohio 43604. Telephone: (419) 242-7405. Audie R. Bates, AIA, LEED® AP BD+C, Email: abates@thecollaborativeinc.com
- D. Architect's Consultants: The Architect has retained the following design professionals who have prepared designated portions of the Contract Documents:
 - 1. Mechanical: Mechanical Design Associates, Inc., 1415 Holland Road, Maumee, Ohio 43537. Telephone: (419) 893-3141. Jim Henry, Mechanical Engineer.
- E. Construction Manager: The Lathrop Company, 460 West Dussel Drive, Maumee, Ohio 43537. Telephone: (419) 893-7000. SPD Project Engineer: Oliva Beebe, LEED® AP BD+C.
 - 1. Construction Manager has been engaged for this Project to serve as an advisor to Owner and to provide assistance in administering the Contract for Construction between Owner and Contractor, according to a separate contract between Owner and Construction Manager.

1.4 WORK COVERED BY CONTRACT DOCUMENTS

- A. The Work of Project is defined by the Contract Documents and consists of the following:
1. Upgrade to existing HVAC systems including removal and replacement of one(1) existing roof-top packaged unit, new natural gas piping, upgrades to controls of existing roof-top packaged units and upgrades to ductwork, diffusers and related controls. Work includes, but is not limited to:
 - a. Verify and report to engineer the condition and operation of VAV units.
 - b. Removal and disposal of existing roof-top packaged HVAC unit.
 - c. Provide new roof-top packaged HVAC unit and adapter curb assembly.
 - d. Removal and reinstallation of existing suspended ceiling grid and panels in areas of work as necessary.
 - e. Relocation of existing diffusers in existing suspended grid ceiling system.
 - f. Removal of designated diffusers.
 - g. Provide new diffusers (linear-style) in designated locations.
 - h. Verification of VAV operation and controls.
 - i. Replacement of flex duct to designated VAV boxes and duct work.
 - j. Adding new duct work to existing duct work runs.
 - k. Capping abandoned supply locations (flex and hard ductwork).
 - l. Providing new manual balancing dampers.
 - m. Provide new controls, wiring and related items to each roof-top unit, VAV and related device as indicated on drawings.
- B. Type of Contract:
1. Project will be constructed under a single prime contract.

1.5 WORK UNDER SEPARATE CONTRACTS

- A. General: Cooperate fully with separate contractors so work on those contracts may be carried out smoothly, without interfering with or delaying work under this Contract or other contracts. Coordinate the Work of this Contract with work performed under separate contracts.
- B. Preceding Work: Owner has awarded separate contract(s) for the following construction operations at Project site. Those operations are scheduled to be substantially complete before work under this Contract begins.
1. Roof Replacement: To M. J. Weis Roofing for removal and replacement of the existing roof system, fascia systems and roof insulation including penetrations. Roof work related to installation of new roof-top packaged unit and natural gas supply lines must be coordinated with roofing contractor.

1.6 ACCESS TO SITE

- A. General: Contractor shall have limited use of Project site for construction operations as indicated on Drawings by the Contract limits and as indicated by requirements of this Section.
- B. Use of Site: Limit use of Project site to work in areas indicated. Do not disturb portions of Project site beyond areas in which the Work is indicated.
1. Limits: Confine construction operations to areas required to execute work shown in the Contract Documents and coordinated in a manner to limit inconvenience and disruption to the Owner's

ongoing operations. Contractor shall coordinate with Construction Manager on areas of work on at least a weekly basis.

- C. Condition of Existing Building: Maintain portions of existing building affected by construction operations in a weathertight condition throughout construction period. Repair damage caused by construction operations.

1.7 COORDINATION WITH OCCUPANTS

- A. Full Owner Occupancy: Owner will occupy site and existing building(s) during entire construction period. Cooperate with Owner during construction operations to minimize conflicts and facilitate Owner usage. Perform the Work so as not to interfere with Owner's day-to-day operations. Maintain existing exits unless otherwise indicated.
 - 1. Maintain access to existing walkways, corridors, and other adjacent occupied or used facilities. Do not close or obstruct walkways, corridors, or other occupied or used facilities without written permission from Owner and approval of authorities having jurisdiction.
 - 2. Notify Owner not less than 72 hours in advance of activities that will affect Owner's operations.

1.8 WORK RESTRICTIONS

- A. Work Restrictions, General: Comply with restrictions on construction operations.
 - 1. Comply with limitations on use of public streets and with other requirements of authorities having jurisdiction.
- B. Existing Utility Interruptions: Do not interrupt utilities serving facilities occupied by Owner or others unless permitted under the following conditions and then only after providing temporary utility services according to requirements indicated:
 - 1. Notify Construction Manager not less than three days in advance of proposed utility interruptions.
 - 2. Obtain Construction Manager's written permission before proceeding with utility interruptions.
- C. Noise, Vibration, and Odors: Coordinate operations that may result in high levels of noise and vibration, odors, or other disruption to Owner occupancy with Owner.
 - 1. Notify Construction Manager not less than three days in advance of proposed disruptive operations.
 - 2. Obtain Construction Manager's written permission before proceeding with disruptive operations.
- D. Nonsmoking Building: Smoking is not permitted within the building or within **25 feet (8 m)** of entrances, operable windows, or outdoor-air intakes.
- E. Controlled Substances: Use of tobacco products and other controlled substances within the existing building or on Project site is not permitted.
- F. Employee Identification: Provide identification tags for Contractor personnel working on Project site. Require personnel to use identification tags at all times.

1.9 SPECIFICATION AND DRAWING CONVENTIONS

- A. Specification Content: The Specifications use certain conventions for the style of language and the intended meaning of certain terms, words, and phrases when used in particular situations. These conventions are as follows:
1. Imperative mood and streamlined language are generally used in the Specifications. The words "shall," "shall be," or "shall comply with," depending on the context, are implied where a colon (:) is used within a sentence or phrase.
 2. Specification requirements are to be performed by Contractor unless specifically stated otherwise.
- B. Division 01 General Requirements: Requirements of Sections in Division 01 apply to the Work of all Sections in the Specifications.
- C. Drawing Coordination: Requirements for materials and products identified on Drawings are described in detail in the Specifications. One or more of the following are used on Drawings to identify materials and products:
1. Terminology: Materials and products are identified by the typical generic terms used in the individual Specifications Sections.
 2. Keynoting: Materials and products are identified by reference keynotes referencing Specification Section numbers found in this Project Manual.

PART 2 - PRODUCTS (Not Used)

PART 3 - EXECUTION (Not Used)

END OF SECTION 011000

SECTION 012300 - ALTERNATES

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

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

1.2 SUMMARY

- A. Section includes administrative and procedural requirements for alternates.

1.3 DEFINITIONS

- A. Alternate: An amount proposed by bidders and stated on the Bid Form for certain work defined in the bidding requirements that may be added to or deducted from the base bid amount if Owner decides to accept a corresponding change either in the amount of construction to be completed or in the products, materials, equipment, systems, or installation methods described in the Contract Documents.
 - 1. Alternates described in this Section are part of the Work only if enumerated in the Agreement.
 - 2. The cost or credit for each alternate is the net addition to or deduction from the Contract Sum to incorporate alternate into the Work. No other adjustments are made to the Contract Sum.

1.4 PROCEDURES

- A. Coordination: Revise or adjust affected adjacent work as necessary to completely integrate work of the alternate into Project.
 - 1. Include as part of each alternate, miscellaneous devices, accessory objects, and similar items incidental to or required for a complete installation whether or not indicated as part of alternate.
- B. Notification: Immediately following award of the Contract, notify each party involved, in writing, of the status of each alternate. Indicate if alternates have been accepted, rejected, or deferred for later consideration. Include a complete description of negotiated revisions to alternates.
- C. Execute accepted alternates under the same conditions as other work of the Contract.
- D. Schedule: A schedule of alternates is included at the end of this Section. Specification Sections referenced in schedule contain requirements for materials necessary to achieve the work described under each alternate.

PART 2 - PRODUCTS (Not Used)

PART 3 - EXECUTION

3.1 SCHEDULE OF ALTERNATES

- A. Alternate No. M-1: Modification of existing Carrier Moduline Units and Modulating Duct Control Dampers and Controls.
1. Base Bid: Existing Carrier Moduline Units in Zone 2 to remain as indicated on Sheet M1.0 “First Floor Mechanical HVAC”.
 2. Alternate: Modify the existing Carrier Moduline Units and related controls in Zone 2. Modification includes removal of air bladders, controls, to convert existing units into diffusers. Provide two (2) new thermostatically controlled modulating air dampers in existing ductwork as indicated. Refer to Sheet M1.0 and M-2 Mechanical HVAC plans and as specified in the mechanical specifications for full scope of work included in this alternate.
- B. Alternate No. M-2: BACnet/LAN Control Wiring.
1. Base Bid: Existing control modifications as shown on sheets M1.0 and M-2 Mechanical HVAC plans and specified for individual units.
 2. Alternate: Provide BACnet/LAN control wiring from Rooftop Units and VAV dampers including all front end graphics back to the two (2) existing JACE panels indicated on sheet M1.0 “First Floor Mechanical HVAC”. BACnet/LAN wiring shall be separated by tenant areas served: one (1) JACE for Owens Community College area devices and one (1) for “The Source” area devices. Refer to sheet M1.0 “First Floor Mechanical HVAC” and as specified in the mechanical specifications for full scope of work included in this alternate.
- C. Alternate No. M-3: Split-System Cooling Unit for Second Floor Computer Room.
1. Base Bid: Provide modifications to existing ductwork within the Second Floor Computer Room as indicated on sheet M1.0 “First Floor Mechanical HVAC”.
 2. Alternate: Provide new split-system cooling unit with wall mounted evaporator/fan box and roof-top mounted condensing unit for Second Floor Computer Room located in Zone 11 and of cooling capacity scheduled. Contractor shall secure services of a qualified and licensed electrician to provide required electrical power to the evaporator/fan box and roof-top condenser unit. Refer to Sheet M1.0 “First Floor Mechanical HVAC” and as specified in the mechanical specifications for full scope of work included in this alternate.

END OF SECTION 012300

SECTION 013100 - PROJECT MANAGEMENT AND COORDINATION

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

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

1.2 SUMMARY

- A. Section includes administrative provisions for coordinating construction operations on Project including, but not limited to, the following:
 - 1. Project meetings.
- B. Each contractor shall participate in coordination requirements. Certain areas of responsibility are assigned to a specific contractor.

1.3 INFORMATIONAL SUBMITTALS

- A. Key Personnel Names: Within 15 days of starting construction operations, submit a list of key personnel assignments, including superintendent and other personnel in attendance at Project site. Identify individuals and their duties and responsibilities; list addresses and telephone numbers, including home, office, and cellular telephone numbers and e-mail addresses. Provide names, addresses, and telephone numbers of individuals assigned as alternates in the absence of individuals assigned to Project.
 - 1. Post copies of list in project meeting room, in temporary field office, and by each temporary telephone. Keep list current at all times.

1.4 PROJECT MEETINGS

- A. General: Construction Manager will schedule and conduct meetings and conferences at Project site unless otherwise indicated.
 - 1. Attendees: Inform participants and others involved, and individuals whose presence is required, of date and time of each meeting. Notify Owner and Architect of scheduled meeting dates and times.
 - 2. Agenda: Prepare the meeting agenda. Distribute the agenda to all invited attendees.
 - 3. Minutes: Entity responsible for conducting meeting will record significant discussions and agreements achieved. Distribute the meeting minutes to everyone concerned, including Owner, Construction Manager, and Architect, within three days of the meeting.
- B. Preconstruction Conference: Construction Manager will schedule and conduct a preconstruction conference before starting construction, at a time convenient to Owner and Architect, but no later than 15 days after execution of the Agreement.
 - 1. Conduct the conference to review responsibilities and personnel assignments.

2. Attendees: Authorized representatives of Owner , Construction Manager, Architect, and their consultants; Contractor and its superintendent; major subcontractors; suppliers; and other concerned parties shall attend the conference. Participants at the conference shall be familiar with Project and authorized to conclude matters relating to the Work.
 3. Agenda: Discuss items of significance that could affect progress, including the following:
 - a. Tentative construction schedule.
 - b. Critical work sequencing and long-lead items.
 - c. Designation of key personnel and their duties.
 - d. Lines of communications.
 - e. Procedures for processing field decisions and Change Orders.
 - f. Procedures for processing Applications for Payment.
 - g. Distribution of the Contract Documents.
 - h. Submittal procedures.
 - i. Preparation of record documents.
 - j. Use of the premises and existing building.
 - k. Work restrictions.
 - l. Working hours.
 - m. Owner's occupancy requirements.
 - n. Procedures for disruptions and shutdowns.
 - o. Construction waste management and recycling.
 - p. Parking availability.
 - q. Equipment deliveries and priorities.
 - r. Security.
 - s. Progress cleaning.
 4. Minutes: Entity responsible for conducting meeting will record and distribute meeting minutes.
- C. Project Closeout Conference: Construction Manager will schedule and conduct a project closeout conference, at a time convenient to Owner and Architect, but no later than 30 days prior to the scheduled date of Substantial Completion.
1. Conduct the conference to review requirements and responsibilities related to Project closeout.
 2. Attendees: Authorized representatives of Owner, Construction Manager, Architect, and their consultants; Contractor and its superintendent; major subcontractors; suppliers; and other concerned parties shall attend the meeting. Participants at the meeting shall be familiar with Project and authorized to conclude matters relating to the Work.
 3. Agenda: Discuss items of significance that could affect or delay Project closeout, including the following:
 - a. Preparation of record documents.
 - b. Procedures required prior to inspection for Substantial Completion and for final inspection for acceptance.
 - c. Submittal of written warranties.
 - d. Requirements for preparing operations and maintenance data.
 - e. Requirements for delivery of material samples, attic stock, and spare parts.
 - f. Requirements for demonstration and training.
 - g. Preparation of Contractor's punch list.
 - h. Procedures for processing Applications for Payment at Substantial Completion and for final payment.
 4. Minutes: Entity conducting meeting will record and distribute meeting minutes.
- D. Progress Meetings: Construction Manager will conduct progress meetings at regular intervals.

1. Coordinate dates of meetings with preparation of payment requests.
2. Attendees: In addition to representatives of Owner , Construction Manager, and Architect, each contractor, subcontractor, supplier, and other entity concerned with current progress or involved in planning, coordination, or performance of future activities shall be represented at these meetings. All participants at the meeting shall be familiar with Project and authorized to conclude matters relating to the Work.
3. Agenda: Review and correct or approve minutes of previous progress meeting. Review other items of significance that could affect progress. Include topics for discussion as appropriate to status of Project.
 - a. Contractor's Construction Schedule: Review progress since the last meeting. Determine whether each activity is on time, ahead of schedule, or behind schedule, in relation to Contractor's construction schedule. Determine how construction behind schedule will be expedited; secure commitments from parties involved to do so. Discuss whether schedule revisions are required to ensure that current and subsequent activities will be completed within the Contract Time.
 - 1) Review schedule for next period.
 - b. Review present and future needs of each entity present, including the following:
 - 1) Status of submittals.
 - 2) Deliveries.
 - 3) Off-site fabrication.
 - 4) Access.
 - 5) Site utilization.
 - 6) Temporary facilities and controls.
 - 7) Progress cleaning.
 - 8) Quality and work standards.
 - 9) Status of correction of deficient items.
 - 10) Field observations.
 - 11) Status of proposal requests.
 - 12) Pending changes.
 - 13) Status of Change Orders.
4. Minutes: Entity responsible for conducting the meeting will record and distribute the meeting minutes to each party present and to parties requiring information.
 - a. Schedule Updating: Revise Contractor's construction schedule after each progress meeting where revisions to the schedule have been made or recognized. Issue revised schedule concurrently with the report of each meeting.

PART 2 - PRODUCTS (Not Used)

PART 3 - EXECUTION (Not Used)

END OF SECTION 013100

SECTION 013300 - SUBMITTAL PROCEDURES

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

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

1.2 SUMMARY

- A. Section includes requirements for the submittal schedule and administrative and procedural requirements for submitting Shop Drawings, Product Data, Samples, and other submittals.
- B. Related Requirements:
 - 1. Section 017823 "Operation and Maintenance Data" for submitting operation and maintenance manuals.
 - 2. Section 017839 "Project Record Documents" for submitting record Drawings, record Specifications, and record Product Data.

1.3 DEFINITIONS

- A. Action Submittals: Written and graphic information and physical samples that require Architect's and Construction Manager's responsive action. Action submittals are those submittals indicated in individual Specification Sections as "action submittals."
- B. Informational Submittals: Written and graphic information and physical samples that do not require Architect's and Construction Manager's responsive action. Submittals may be rejected for not complying with requirements. Informational submittals are those submittals indicated in individual Specification Sections as "informational submittals."
- C. Portable Document Format (PDF): An open standard file format licensed by Adobe Systems used for representing documents in a device-independent and display resolution-independent fixed-layout document format.

1.4 ACTION SUBMITTALS

- A. Submittal Schedule: Submit a schedule of submittals, arranged in chronological order by dates required by construction schedule. Include time required for review, ordering, manufacturing, fabrication, and delivery when establishing dates. Include additional time required for making corrections or revisions to submittals noted by Architect and Construction Manager and additional time for handling and reviewing submittals required by those corrections.
 - 1. Coordinate submittal schedule with list of subcontracts, the schedule of values, and Contractor's construction schedule.
 - 2. Initial Submittal: Submit concurrently with startup construction schedule. Include submittals required during the first 60 days of construction. List those submittals required to maintain

orderly progress of the Work and those required early because of long lead time for manufacture or fabrication.

3. Final Submittal: Submit concurrently with the first complete submittal of Contractor's construction schedule.
 - a. Submit revised submittal schedule to reflect changes in current status and timing for submittals.
4. Format: Arrange the following information in a tabular format:
 - a. Scheduled date for first submittal.
 - b. Specification Section number and title.
 - c. Submittal category: Action; informational.
 - d. Name of subcontractor.
 - e. Description of the Work covered.
 - f. Scheduled date for Architect's and Construction Manager's final release or approval.
 - g. Scheduled date of fabrication.
 - h. Scheduled dates for purchasing.
 - i. Scheduled dates for installation.
 - j. Activity or event number.

1.5 SUBMITTAL ADMINISTRATIVE REQUIREMENTS

- A. Architect's Digital Data Files: Electronic digital data files of the Contract Drawings will not be provided by Architect for Contractor's use in preparing submittals.
- B. Coordination: Coordinate preparation and processing of submittals with performance of construction activities.
 1. Coordinate each submittal with fabrication, purchasing, testing, delivery, other submittals, and related activities that require sequential activity.
 2. Submit all submittal items required for each Specification Section concurrently unless partial submittals for portions of the Work are indicated on approved submittal schedule.
 3. Submit action submittals and informational submittals required by the same Specification Section as separate packages under separate transmittals.
 4. Coordinate transmittal of different types of submittals for related parts of the Work so processing will not be delayed because of need to review submittals concurrently for coordination.
 - a. Architect and Construction Manager reserve the right to withhold action on a submittal requiring coordination with other submittals until related submittals are received.
- C. Processing Time: Allow time for submittal review, including time for resubmittals, as follows. Time for review shall commence on Construction Manager's receipt of submittal. No extension of the Contract Time will be authorized because of failure to transmit submittals enough in advance of the Work to permit processing, including resubmittals.
 1. Initial Review: Allow 10 days for initial review of each submittal. Allow additional time if coordination with subsequent submittals is required. Construction Manager will advise Contractor when a submittal being processed must be delayed for coordination.
 2. Intermediate Review: If intermediate submittal is necessary, process it in same manner as initial submittal.
 3. Resubmittal Review: Allow 10 days for review of each resubmittal.
 4. Sequential Review: Where sequential review of submittals by Architect's consultants, Owner, or other parties is indicated, allow 15 days for initial review of each submittal.

- D. Electronic Submittals: Identify and incorporate information in each electronic submittal file as follows:
1. Assemble complete submittal package into a single indexed file incorporating submittal requirements of a single Specification Section and transmittal form with links enabling navigation to each item.
 2. Name file with submittal number or other unique identifier, including revision identifier.
 - a. File name shall use project identifier and Specification Section number followed by a decimal point and then a sequential number (e.g., LNHS-061000.01). Resubmittals shall include an alphabetic suffix after another decimal point (e.g., LNHS-061000.01.A).
 3. Provide means for insertion to permanently record Contractor's review and approval markings and action taken by Architect and Construction Manager.
 4. Transmittal Form for Electronic Submittals: Use electronic form acceptable to Owner, containing the following information:
 - a. Project name.
 - b. Date.
 - c. Name and address of Architect.
 - d. Name of Construction Manager.
 - e. Name of Contractor.
 - f. Name of firm or entity that prepared submittal.
 - g. Names of subcontractor, manufacturer, and supplier.
 - h. Category and type of submittal.
 - i. Submittal purpose and description.
 - j. Specification Section number and title.
 - k. Specification paragraph number or drawing designation and generic name for each of multiple items.
 - l. Drawing number and detail references, as appropriate.
 - m. Location(s) where product is to be installed, as appropriate.
 - n. Related physical samples submitted directly.
 - o. Indication of full or partial submittal.
 - p. Transmittal number, numbered consecutively.
 - q. Submittal and transmittal distribution record.
 - r. Other necessary identification.
 - s. Remarks.
- E. Options: Identify options requiring selection by Architect.
- F. Deviations and Additional Information: On an attached separate sheet, prepared on Contractor's letterhead, record relevant information, requests for data, revisions other than those requested by Architect and Construction Manager on previous submittals, and deviations from requirements in the Contract Documents, including minor variations and limitations. Include same identification information as related submittal.
- G. Resubmittals: Make resubmittals in same form and number of copies as initial submittal.
1. Note date and content of previous submittal.
 2. Note date and content of revision in label or title block and clearly indicate extent of revision.
 3. Resubmit submittals until they are marked with approval notation from Architect's and Construction Manager's action stamp.
- H. Distribution: Furnish copies of final submittals to manufacturers, subcontractors, suppliers, fabricators, installers, authorities having jurisdiction, and others as necessary for performance of construction activities. Show distribution on transmittal forms.

- I. Use for Construction: Retain complete copies of submittals on Project site. Use only final action submittals that are marked with approval notation from Architect's and Construction Manager's action stamp.

PART 2 - PRODUCTS

2.1 SUBMITTAL PROCEDURES

- A. General Submittal Procedure Requirements: Prepare and submit submittals required by individual Specification Sections. Types of submittals are indicated in individual Specification Sections.
 1. Submit electronic submittals via email as PDF electronic files to Construction Manager.
 - a. Architect, through Construction Manager, will return annotated file. Annotate and retain one copy of file as an electronic Project record document file.
 2. Action Submittals: Submit three paper copies of each submittal unless otherwise indicated. Architect, through Construction Manager, will return two copies.
 3. Informational Submittals: Submit two paper copies of each submittal unless otherwise indicated. Architect and Construction Manager will not return copies.
 4. Certificates and Certifications Submittals: Provide a statement that includes signature of entity responsible for preparing certification. Certificates and certifications shall be signed by an officer or other individual authorized to sign documents on behalf of that entity.
 - a. Provide a digital signature with digital certificate on electronically submitted certificates and certifications where indicated.
 - b. Provide a notarized statement on original paper copy certificates and certifications where indicated.
- B. Product Data: Collect information into a single submittal for each element of construction and type of product or equipment.
 1. If information must be specially prepared for submittal because standard published data are not suitable for use, submit as Shop Drawings, not as Product Data.
 2. Mark each copy of each submittal to show which products and options are applicable.
 3. Include the following information, as applicable:
 - a. Manufacturer's catalog cuts.
 - b. Standard color charts.
 - c. Statement of compliance with specified referenced standards.
 - d. Notation of coordination requirements.
 4. For equipment, include the following in addition to the above, as applicable:
 - a. Wiring diagrams showing factory-installed wiring.
 - b. Printed performance curves.
 - c. Operational range diagrams.
 - d. Clearances required to other construction, if not indicated on accompanying Shop Drawings.
 5. Submit Product Data before or concurrent with Samples.
 6. Submit Product Data in the following format:

- a. PDF electronic file.
 - b. Three paper copies of Product Data unless otherwise indicated. Architect, through Construction Manager, will return two copies.
- C. Shop Drawings: Prepare Project-specific information, drawn accurately to scale. Do not base Shop Drawings on reproductions of the Contract Documents or standard printed data.
1. Preparation: Fully illustrate requirements in the Contract Documents. Include the following information, as applicable:
 - a. Identification of products.
 - b. Schedules.
 - c. Compliance with specified standards.
 - d. Notation of coordination requirements.
 - e. Notation of dimensions established by field measurement.
 - f. Relationship and attachment to adjoining construction clearly indicated.
 2. Sheet Size: Except for templates, patterns, and similar full-size drawings, submit Shop Drawings on sheets at least **8-1/2 by 11 inches (215 by 280 mm)**, but no larger than **30 by 42 inches (750 by 1067 mm)**.
 3. Submit Shop Drawings in the following format:
 - a. PDF electronic file.
 - b. Two opaque (bond) copies of each submittal. Architect, through Construction Manager, will return one copy(ies).
- D. Product Schedule: As required in individual Specification Sections, prepare a written summary indicating types of products required for the Work and their intended location. Include the following information in tabular form:
1. Type of product. Include unique identifier for each product indicated in the Contract Documents or assigned by Contractor if none is indicated.
 2. Manufacturer and product name, and model number if applicable.
 3. Number and name of room or space.
 4. Location within room or space.
 5. Submit product schedule in the following format:
 - a. PDF electronic file.
 - b. Three paper copies of product schedule or list unless otherwise indicated. Architect, through Construction Manager, will return two copies.
- E. Maintenance Data: Comply with requirements specified in Section 017823 "Operation and Maintenance Data."
- F. Design Data: Prepare and submit written and graphic information, including, but not limited to, performance and design criteria, list of applicable codes and regulations, and calculations. Include list of assumptions and other performance and design criteria and a summary of loads. Include load diagrams if applicable. Provide name and version of software, if any, used for calculations. Include page numbers.

PART 3 - EXECUTION

3.1 CONTRACTOR'S REVIEW

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

3.2 ARCHITECT'S AND CONSTRUCTION MANAGER'S ACTION

- A. Action Submittals: Architect and Construction Manager will review each submittal, make marks to indicate corrections or revisions required, and return it. Architect and Construction Manager will stamp each submittal with an action stamp and will mark stamp appropriately to indicate action.
- B. Informational Submittals: Architect and Construction Manager will review each submittal and will not return it, or will return it if it does not comply with requirements. Architect and Construction Manager will forward each submittal to appropriate party.
- C. Partial submittals prepared for a portion of the Work will be reviewed when use of partial submittals has received prior approval from Architect and Construction Manager.
- D. Incomplete submittals are unacceptable, will be considered nonresponsive, and will be returned for resubmittal without review.
- E. Submittals not required by the Contract Documents may be returned by the Architect without action.

END OF SECTION 013300

SECTION 016000 - PRODUCT REQUIREMENTS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

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

1.2 SUMMARY

- A. Section includes administrative and procedural requirements for selection of products for use in Project; product delivery, storage, and handling; manufacturers' standard warranties on products; special warranties; and comparable products.
- B. Related Requirements:
 - 1. Section 012100 "Allowances" for products selected under an allowance.
 - 2. Section 012300 "Alternates" for products selected under an alternate.

1.3 DEFINITIONS

- A. Products: Items obtained for incorporating into the Work, whether purchased for Project or taken from previously purchased stock. The term "product" includes the terms "material," "equipment," "system," and terms of similar intent.
 - 1. Named Products: Items identified by manufacturer's product name, including make or model number or other designation shown or listed in manufacturer's published product literature, that is current as of date of the Contract Documents.
 - 2. New Products: Items that have not previously been incorporated into another project or facility. Products salvaged or recycled from other projects are not considered new products.
 - 3. Comparable Product: Product that is demonstrated and approved through submittal process to have the indicated qualities related to type, function, dimension, in-service performance, physical properties, appearance, and other characteristics that equal or exceed those of specified product.
- B. Basis-of-Design Product Specification: A specification in which a specific manufacturer's product is named and accompanied by the words "basis-of-design product," including make or model number or other designation, to establish the significant qualities related to type, function, dimension, in-service performance, physical properties, appearance, and other characteristics for purposes of evaluating comparable products of additional manufacturers named in the specification.

1.4 ACTION SUBMITTALS

- A. Comparable Product Requests: Submit request for consideration of each comparable product. Identify product or fabrication or installation method to be replaced. Include Specification Section number and title and Drawing numbers and titles.

1. Include data to indicate compliance with the requirements specified in "Comparable Products" Article.
2. Architect's Action: If necessary, Architect will request additional information or documentation for evaluation within one week of receipt of a comparable product request. Architect will notify Contractor through Construction Manager of approval or rejection of proposed comparable product request within 15 days of receipt of request, or seven days of receipt of additional information or documentation, whichever is later.
 - a. Form of Approval: As specified in Section 013300 "Submittal Procedures."
 - b. Use product specified if Architect does not issue a decision on use of a comparable product request within time allocated.

- B. Basis-of-Design Product Specification Submittal: Comply with requirements in Section 013300 "Submittal Procedures." Show compliance with requirements.

1.5 QUALITY ASSURANCE

- A. Compatibility of Options: If Contractor is given option of selecting between two or more products for use on Project, select product compatible with products previously selected, even if previously selected products were also options.

1.6 PRODUCT DELIVERY, STORAGE, AND HANDLING

- A. Deliver, store, and handle products using means and methods that will prevent damage, deterioration, and loss, including theft and vandalism. Comply with manufacturer's written instructions.

- B. Delivery and Handling:

1. Schedule delivery to minimize long-term storage at Project site and to prevent overcrowding of construction spaces.
2. Coordinate delivery with installation time to ensure minimum holding time for items that are flammable, hazardous, easily damaged, or sensitive to deterioration, theft, and other losses.
3. Deliver products to Project site in an undamaged condition in manufacturer's original sealed container or other packaging system, complete with labels and instructions for handling, storing, unpacking, protecting, and installing.
4. Inspect products on delivery to determine compliance with the Contract Documents and to determine that products are undamaged and properly protected.

- C. Storage:

1. Store materials in a manner that will not endanger Project structure.
2. Store products that are subject to damage by the elements, under cover in a weathertight enclosure above ground, with ventilation adequate to prevent condensation.
3. Comply with product manufacturer's written instructions for temperature, humidity, ventilation, and weather-protection requirements for storage.
4. Protect stored products from damage and liquids from freezing.

1.7 PRODUCT WARRANTIES

- A. Warranties specified in other Sections shall be in addition to, and run concurrent with, other warranties required by the Contract Documents. Manufacturer's disclaimers and limitations on product warranties do not relieve Contractor of obligations under requirements of the Contract Documents.
 - 1. Manufacturer's Warranty: Written warranty furnished by individual manufacturer for a particular product and specifically endorsed by manufacturer to Owner.
 - 2. Special Warranty: Written warranty required by the Contract Documents to provide specific rights for Owner.
- B. Special Warranties: Prepare a written document that contains appropriate terms and identification, ready for execution.
 - 1. Manufacturer's Standard Form: Modified to include Project-specific information and properly executed.
 - 2. See other Sections for specific content requirements and particular requirements for submitting special warranties.
- C. Submittal Time: Comply with requirements in Section 017700 "Closeout Procedures."

PART 2 - PRODUCTS

2.1 PRODUCT SELECTION PROCEDURES

- A. General Product Requirements: Provide products that comply with the Contract Documents, are undamaged and, unless otherwise indicated, are new at time of installation.
 - 1. Provide products complete with accessories, trim, finish, fasteners, and other items needed for a complete installation and indicated use and effect.
 - 2. Standard Products: If available, and unless custom products or nonstandard options are specified, provide standard products of types that have been produced and used successfully in similar situations on other projects.
 - 3. Owner reserves the right to limit selection to products with warranties not in conflict with requirements of the Contract Documents.
 - 4. Where products are accompanied by the term "as selected," Architect will make selection.
 - 5. Descriptive, performance, and reference standard requirements in the Specifications establish salient characteristics of products.
 - 6. Or Equal: For products specified by name and accompanied by the term "or equal," or "or approved equal," or "or approved," comply with requirements in "Comparable Products" Article to obtain approval for use of an unnamed product.
- B. Product Selection Procedures:
 - 1. Product: Where Specifications name a single manufacturer and product, provide the named product that complies with requirements. Comparable products or substitutions for Contractor's convenience will not be considered.
 - 2. Manufacturer/Source: Where Specifications name a single manufacturer or source, provide a product by the named manufacturer or source that complies with requirements. Comparable products or substitutions for Contractor's convenience will not be considered.
 - 3. Products:
 - a. Restricted List: Where Specifications include a list of names of both manufacturers and products, provide one of the products listed that complies with requirements. Comparable

products or substitutions for Contractor's convenience will not be considered unless otherwise indicated.

4. Manufacturers:
 - a. Restricted List: Where Specifications include a list of manufacturers' names, provide a product by one of the manufacturers listed that complies with requirements. Comparable products or substitutions for Contractor's convenience will not be considered unless otherwise indicated.
5. Basis-of-Design Product: Where Specifications name a product, or refer to a product indicated on Drawings, and include a list of manufacturers, provide the specified or indicated product or a comparable product by one of the other named manufacturers. Drawings and Specifications indicate sizes, profiles, dimensions, and other characteristics that are based on the product named. Comply with requirements in "Comparable Products" Article for consideration of an unnamed product by one of the other named manufacturers.

2.2 COMPARABLE PRODUCTS

- A. Conditions for Consideration: Architect will consider Contractor's request for comparable product when the following conditions are satisfied. If the following conditions are not satisfied, Architect may return requests without action, except to record noncompliance with these requirements:
 1. Evidence that the proposed product does not require revisions to the Contract Documents, that it is consistent with the Contract Documents and will produce the indicated results, and that it is compatible with other portions of the Work.
 2. Detailed comparison of significant qualities of proposed product with those named in the Specifications. Significant qualities include attributes such as performance, weight, size, durability, visual effect, and specific features and requirements indicated.
 3. Evidence that proposed product provides specified warranty.
 4. List of similar installations for completed projects with project names and addresses and names and addresses of architects and owners, if requested.
 5. Samples, if requested.

PART 3 - EXECUTION (Not Used)

END OF SECTION 016000

SECTION 017700 - CLOSEOUT PROCEDURES

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

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

1.2 SUMMARY

- A. Section includes administrative and procedural requirements for contract closeout, including, but not limited to, the following:
 - 1. Substantial Completion procedures.
 - 2. Final completion procedures.
 - 3. Warranties.
 - 4. Final cleaning.
 - 5. Repair of the Work.
- B. Related Requirements:
 - 1. Section 017823 "Operation and Maintenance Data" for operation and maintenance manual requirements.

1.3 ACTION SUBMITTALS

- A. Product Data: For cleaning agents.
- B. Contractor's List of Incomplete Items: Initial submittal at Substantial Completion.
- C. Certified List of Incomplete Items: Final submittal at Final Completion.

1.4 MAINTENANCE MATERIAL SUBMITTALS

- A. Schedule of Maintenance Material Items: For maintenance material submittal items specified in other Sections.

1.5 SUBSTANTIAL COMPLETION PROCEDURES

- A. Contractor's List of Incomplete Items: Prepare and submit a list of items to be completed and corrected (Contractor's punch list), indicating the value of each item on the list and reasons why the Work is incomplete.
- B. Submittals Prior to Substantial Completion: Complete the following a minimum of 10 days prior to requesting inspection for determining date of Substantial Completion. List items below that are incomplete at time of request.

1. Submit closeout submittals specified in other Division 01 Sections, including project record documents, operation and maintenance manuals, final completion construction photographic documentation, damage or settlement surveys, property surveys, and similar final record information.
 2. Submit closeout submittals specified in individual Sections, including specific warranties, workmanship bonds, maintenance service agreements, final certifications, and similar documents.
 3. Submit maintenance material submittals specified in individual Sections, including tools, spare parts, extra materials, and similar items, and deliver to location designated by Construction Manager. Label with manufacturer's name and model number where applicable.
 - a. Schedule of Maintenance Material Items: Prepare and submit schedule of maintenance material submittal items, including name and quantity of each item and name and number of related Specification Section. Obtain Construction Manager's signature for receipt of submittals.
 4. Submit test/adjust/balance records.
- C. Procedures Prior to Substantial Completion: Complete the following a minimum of 10 days prior to requesting inspection for determining date of Substantial Completion. List items below that are incomplete at time of request.
1. Complete startup and testing of systems and equipment.
 2. Perform preventive maintenance on equipment used prior to Substantial Completion.
 3. Instruct Owner's personnel in operation, adjustment, and maintenance of products, equipment, and systems.
 4. Terminate and remove temporary facilities from Project site, along with construction tools, and similar elements.
 5. Complete final cleaning requirements, including touchup painting.
 6. Touch up and otherwise repair and restore marred exposed finishes to eliminate visual defects.
- D. Inspection: Submit a written request for inspection to determine Substantial Completion a minimum of 10 days prior to date the work will be completed and ready for final inspection and tests. On receipt of request, Architect and Construction Manager will either proceed with inspection or notify Contractor of unfulfilled requirements. Architect will prepare the Certificate of Substantial Completion after inspection or will notify Contractor of items, either on Contractor's list or additional items identified by Architect, that must be completed or corrected before certificate will be issued.
1. Reinspection: Request reinspection when the Work identified in previous inspections as incomplete is completed or corrected.
 2. Results of completed inspection will form the basis of requirements for final completion.
- 1.6 FINAL COMPLETION PROCEDURES
- A. Submittals Prior to Final Completion: Before requesting final inspection for determining final completion, complete the following:
1. Submit a final Application for Payment according to Section 012900 "Payment Procedures."
 2. Certified List of Incomplete Items: Submit certified copy of Architect's Substantial Completion inspection list of items to be completed or corrected (punch list), endorsed and dated by Architect. Certified copy of the list shall state that each item has been completed or otherwise resolved for acceptance.
- B. Inspection: Submit a written request for final inspection to determine acceptance a minimum of 10 days prior to date the work will be completed and ready for final inspection and tests. On receipt of request,

Architect and Construction Manager will either proceed with inspection or notify Contractor of unfulfilled requirements. Architect will prepare a final Certificate for Payment after inspection or will notify Contractor of construction that must be completed or corrected before certificate will be issued.

1. Reinspection: Request reinspection when the Work identified in previous inspections as incomplete is completed or corrected.

1.7 LIST OF INCOMPLETE ITEMS (PUNCH LIST)

- A. Organization of List: Include name and identification of each space and area affected by construction operations for incomplete items and items needing correction including, if necessary, areas disturbed by Contractor that are outside the limits of construction.
 1. Organize list of spaces in sequential order, starting with exterior areas first and proceeding from lowest floor to highest floor.
 2. Organize items applying to each space by major element, including categories for ceiling, individual walls, floors, equipment, and building systems.
 3. Include the following information at the top of each page:
 - a. Project name.
 - b. Date.
 - c. Name of Architect and Construction Manager.
 - d. Name of Contractor.
 - e. Page number.
 4. Submit list of incomplete items in the following format:
 - a. MS Excel electronic file. Architect, through Construction Manager, will return annotated file.

1.8 SUBMITTAL OF PROJECT WARRANTIES

- A. Time of Submittal: Submit written warranties on request of Architect for designated portions of the Work where commencement of warranties other than date of Substantial Completion is indicated, or when delay in submittal of warranties might limit Owner's rights under warranty.
- B. Partial Occupancy: Submit properly executed warranties within 15 days of completion of designated portions of the Work that are completed and occupied or used by Owner during construction period by separate agreement with Contractor.
- C. Organize warranty documents into an orderly sequence based on the table of contents of Project Manual.
 1. Bind warranties and bonds in heavy-duty, three-ring, vinyl-covered, loose-leaf binders, thickness as necessary to accommodate contents, and sized to receive 8-1/2-by-11-inch (215-by-280-mm) paper.
 2. Provide heavy paper dividers with plastic-covered tabs for each separate warranty. Mark tab to identify the product or installation. Provide a typed description of the product or installation, including the name of the product and the name, address, and telephone number of Installer.
 3. Identify each binder on the front and spine with the typed or printed title "WARRANTIES," Project name, and name of Contractor.

4. Warranty Electronic File: Scan warranties and bonds and assemble complete warranty and bond submittal package into a single indexed electronic PDF file with links enabling navigation to each item. Provide bookmarked table of contents at beginning of document.
- D. Provide additional copies of each warranty to include in operation and maintenance manuals.

PART 2 - PRODUCTS

2.1 MATERIALS

- A. Cleaning Agents: Use cleaning materials and agents recommended by manufacturer or fabricator of the surface to be cleaned. Do not use cleaning agents that are potentially hazardous to health or property or that might damage finished surfaces.

PART 3 - EXECUTION

3.1 FINAL CLEANING

- A. General: Perform final cleaning. Conduct cleaning and waste-removal operations to comply with local laws and ordinances and Federal and local environmental and antipollution regulations.
- B. Cleaning: Employ experienced workers or professional cleaners for final cleaning. Clean each surface or unit to condition expected in an average commercial building cleaning and maintenance program. Comply with manufacturer's written instructions.
1. Complete the following cleaning operations before requesting inspection for certification of Substantial Completion for entire Project or for a designated portion of Project:
 - a. Remove tools, construction equipment, machinery, and surplus material from Project site.
 - b. Remove debris and surface dust from limited access spaces, including roofs, plenums, shafts, trenches, equipment vaults, manholes, attics, and similar spaces.
 - c. Remove labels that are not permanent.
 - d. Wipe surfaces of mechanical and electrical equipment and similar equipment. Remove excess lubrication, paint and mortar droppings, and other foreign substances.
- C. Construction Waste Disposal: Comply with waste disposal requirements listed in the Contract Documents.

3.2 REPAIR OF THE WORK

- A. Complete repair and restoration operations before requesting inspection for determination of Substantial Completion.
- B. Repair or remove and replace defective construction. Repairing includes replacing defective parts, refinishing damaged surfaces, touching up with matching materials, and properly adjusting operating equipment. Where damaged or worn items cannot be repaired or restored, provide replacements. Remove and replace operating components that cannot be repaired. Restore damaged construction and permanent facilities used during construction to specified condition.

1. Remove and replace chipped, scratched, and broken glass, reflective surfaces, and other damaged transparent materials.
2. Touch up and otherwise repair and restore marred or exposed finishes and surfaces. Replace finishes and surfaces that that already show evidence of repair or restoration.
 - a. Do not paint over "UL" and other required labels and identification, including mechanical and electrical nameplates. Remove paint applied to required labels and identification.
3. Replace parts subject to operating conditions during construction that may impede operation or reduce longevity.
4. Replace burned-out bulbs, bulbs noticeably dimmed by hours of use, and defective and noisy starters in fluorescent and mercury vapor fixtures to comply with requirements for new fixtures.

END OF SECTION 017700

SECTION 017823 - OPERATION AND MAINTENANCE DATA

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

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

1.2 SUMMARY

- A. Section includes administrative and procedural requirements for preparing operation and maintenance manuals, including the following:
 - 1. Operation and maintenance documentation directory.
 - 2. Product maintenance manuals.
 - 3. Systems and equipment maintenance manuals.
- B. Related Requirements:
 - 1. Section 013300 "Submittal Procedures" for submitting copies of submittals for operation and maintenance manuals.

1.3 DEFINITIONS

- A. System: An organized collection of parts, equipment, or subsystems united by regular interaction.
- B. Subsystem: A portion of a system with characteristics similar to a system.

1.4 CLOSEOUT SUBMITTALS

- A. Manual Content: Operations and maintenance manual content is specified in individual Specification Sections to be reviewed at the time of Section submittals. Submit reviewed manual content formatted and organized as required by this Section.
 - 1. Architect will comment on whether content of operations and maintenance submittals are acceptable.
 - 2. Where applicable, clarify and update reviewed manual content to correspond to revisions and field conditions.
- B. Format: Submit operations and maintenance manuals in the following format:
 - 1. PDF electronic file. Assemble each manual into a composite electronically indexed file. Submit on digital media acceptable to Architect.
 - a. Name each indexed document file in composite electronic index with applicable item name. Include a complete electronically linked operation and maintenance directory.
 - b. Enable inserted reviewer Comments on draft submittals.

2. Three paper copies. Include a complete operation and maintenance directory. Enclose title pages and directories in clear plastic sleeves. Architect, through Construction Manager, will return two copies.
- C. Initial Manual Submittal: Submit draft copy of each manual at least 30 days before commencing demonstration and training. Architect will comment on whether general scope and content of manual are acceptable.
- D. Final Manual Submittal: Submit each manual in final form prior to requesting inspection for Substantial Completion and at least 15 days before commencing demonstration and training. Architect will return copy with comments.
1. Correct or revise each manual to comply with Architect's comments. Submit copies of each corrected manual within 15 days of receipt of Architect's comments and prior to commencing demonstration and training.

PART 2 - PRODUCTS

2.1 OPERATION AND MAINTENANCE DOCUMENTATION DIRECTORY

- A. Directory: Prepare a single, comprehensive directory of emergency, operation, and maintenance data and materials, listing items and their location to facilitate ready access to desired information. Include a section in the directory for each of the following:
1. List of documents.
 2. List of systems.
 3. List of equipment.
 4. Table of contents.
- B. List of Systems and Subsystems: List systems alphabetically. Include references to operation and maintenance manuals that contain information about each system.
- C. List of Equipment: List equipment for each system, organized alphabetically by system. For pieces of equipment not part of system, list alphabetically in separate list.
- D. Tables of Contents: Include a table of contents for each emergency, operation, and maintenance manual.
- E. Identification: In the documentation directory and in each operation and maintenance manual, identify each system, subsystem, and piece of equipment with same designation used in the Contract Documents. If no designation exists, assign a designation according to ASHRAE Guideline 4, "Preparation of Operating and Maintenance Documentation for Building Systems."

2.2 REQUIREMENTS FOR EMERGENCY, OPERATION, AND MAINTENANCE MANUALS

- A. Organization: Unless otherwise indicated, organize each manual into a separate section for each system and subsystem, and a separate section for each piece of equipment not part of a system. Each manual shall contain the following materials, in the order listed:
1. Title page.
 2. Table of contents.
 3. Manual contents.

- B. Title Page: Include the following information:
1. Name and address of Project.
 2. Name and address of Owner.
 3. Date of submittal.
 4. Name and contact information for Contractor.
 5. Cross-reference to related systems in other operation and maintenance manuals.
- C. Table of Contents: List each product included in manual, identified by product name, indexed to the content of the volume, and cross-referenced to Specification Section number in Project Manual.
1. If operation or maintenance documentation requires more than one volume to accommodate data, include comprehensive table of contents for all volumes in each volume of the set.
- D. Manual Contents: Organize into sets of manageable size. Arrange contents alphabetically by system, subsystem, and equipment. If possible, assemble instructions for subsystems, equipment, and components of one system into a single binder.
- E. Manuals, Electronic Files: Submit manuals in the form of a multiple file composite electronic PDF file for each manual type required.
1. Electronic Files: Use electronic files prepared by manufacturer where available. Where scanning of paper documents is required, configure scanned file for minimum readable file size.
 2. File Names and Bookmarks: Enable bookmarking of individual documents based on file names. Name document files to correspond to system, subsystem, and equipment names used in manual directory and table of contents. Group documents for each system and subsystem into individual composite bookmarked files, then create composite manual, so that resulting bookmarks reflect the system, subsystem, and equipment names in a readily navigated file tree. Configure electronic manual to display bookmark panel on opening file.
- F. Manuals, Paper Copy: Submit manuals in the form of hard copy, bound and labeled volumes.
1. Binders: Heavy-duty, three-ring, vinyl-covered, loose-leaf binders, in thickness necessary to accommodate contents, sized to hold 8-1/2-by-11-inch (215-by-280-mm) paper; with clear plastic sleeve on spine to hold label describing contents and with pockets inside covers to hold folded oversize sheets.
 - a. If two or more binders are necessary to accommodate data of a system, organize data in each binder into groupings by subsystem and related components. Cross-reference other binders if necessary to provide essential information for proper operation or maintenance of equipment or system.
 - b. Identify each binder on front and spine, with printed title "OPERATION AND MAINTENANCE MANUAL," Project title or name, and subject matter of contents. Indicate volume number for multiple-volume sets.
 2. Dividers: Heavy-paper dividers with plastic-covered tabs for each section of the manual. Mark each tab to indicate contents. Include typed list of products and major components of equipment included in the section on each divider, cross-referenced to Specification Section number and title of Project Manual.
 3. Protective Plastic Sleeves: Transparent plastic sleeves designed to enclose diagnostic software storage media for computerized electronic equipment.
 4. Supplementary Text: Prepared on 8-1/2-by-11-inch (215-by-280-mm) white bond paper.
 5. Drawings: Attach reinforced, punched binder tabs on drawings and bind with text.

- a. If oversize drawings are necessary, fold drawings to same size as text pages and use as foldouts.
- b. If drawings are too large to be used as foldouts, fold and place drawings in labeled envelopes and bind envelopes in rear of manual. At appropriate locations in manual, insert typewritten pages indicating drawing titles, descriptions of contents, and drawing locations.

2.3 PRODUCT MAINTENANCE MANUALS

- A. Content: Organize manual into a separate section for each product, material, and finish. Include source information, product information, maintenance procedures, repair materials and sources, and warranties and bonds, as described below.
- B. Source Information: List each product included in manual, identified by product name and arranged to match manual's table of contents. For each product, list name, address, and telephone number of Installer or supplier and maintenance service agent, and cross-reference Specification Section number and title in Project Manual and drawing or schedule designation or identifier where applicable.
- C. Product Information: Include the following, as applicable:
 1. Product name and model number.
 2. Manufacturer's name.
 3. Color, pattern, and texture.
 4. Material and chemical composition.
 5. Reordering information for specially manufactured products.
- D. Maintenance Procedures: Include manufacturer's written recommendations and the following:
 1. Inspection procedures.
 2. Types of cleaning agents to be used and methods of cleaning.
 3. Schedule for routine cleaning and maintenance.
 4. Repair instructions.
- E. Repair Materials and Sources: Include lists of materials and local sources of materials and related services.
- F. Warranties and Bonds: Include copies of warranties and bonds and lists of circumstances and conditions that would affect validity of warranties or bonds.
 1. Include procedures to follow and required notifications for warranty claims.

2.4 SYSTEMS AND EQUIPMENT MAINTENANCE MANUALS

- A. Content: For each system, subsystem, and piece of equipment not part of a system, include source information, manufacturers' maintenance documentation, maintenance procedures, maintenance and service schedules, spare parts list and source information, maintenance service contracts, and warranty and bond information, as described below.
- B. Source Information: List each system, subsystem, and piece of equipment included in manual, identified by product name and arranged to match manual's table of contents. For each product, list name, address, and telephone number of Installer or supplier and maintenance service agent, and cross-reference Specification Section number and title in Project Manual and drawing or schedule designation or identifier where applicable.

- C. Manufacturers' Maintenance Documentation: Manufacturers' maintenance documentation including the following information for each component part or piece of equipment:
 - 1. Standard maintenance instructions and bulletins.
 - 2. Drawings, diagrams, and instructions required for maintenance, including disassembly and component removal, replacement, and assembly.
 - 3. Identification and nomenclature of parts and components.
 - 4. List of items recommended to be stocked as spare parts.

- D. Maintenance Procedures: Include the following information and items that detail essential maintenance procedures:
 - 1. Test and inspection instructions.
 - 2. Troubleshooting guide.
 - 3. Precautions against improper maintenance.
 - 4. Disassembly; component removal, repair, and replacement; and reassembly instructions.
 - 5. Aligning, adjusting, and checking instructions.

- E. Maintenance and Service Schedules: Include service and lubrication requirements, list of required lubricants for equipment, and separate schedules for preventive and routine maintenance and service with standard time allotment.
 - 1. Scheduled Maintenance and Service: Tabulate actions for daily, weekly, monthly, quarterly, semiannual, and annual frequencies.
 - 2. Maintenance and Service Record: Include manufacturers' forms for recording maintenance.

- F. Spare Parts List and Source Information: Include lists of replacement and repair parts, with parts identified and cross-referenced to manufacturers' maintenance documentation and local sources of maintenance materials and related services.

- G. Warranties and Bonds: Include copies of warranties and bonds and lists of circumstances and conditions that would affect validity of warranties or bonds.
 - 1. Include procedures to follow and required notifications for warranty claims.

PART 3 - EXECUTION

3.1 MANUAL PREPARATION

- A. Operation and Maintenance Documentation Directory: Prepare a separate manual that provides an organized reference to emergency, operation, and maintenance manuals.

- B. Product Maintenance Manual: Assemble a complete set of maintenance data indicating care and maintenance of each product, material, and finish incorporated into the Work.

- C. Operation and Maintenance Manuals: Assemble a complete set of operation and maintenance data indicating operation and maintenance of each system, subsystem, and piece of equipment not part of a system.
 - 1. Engage a factory-authorized service representative to assemble and prepare information for each system, subsystem, and piece of equipment not part of a system.

2. Prepare a separate manual for each system and subsystem, in the form of an instructional manual for use by Owner's operating personnel.
- D. Manufacturers' Data: Where manuals contain manufacturers' standard printed data, include only sheets pertinent to product or component installed. Mark each sheet to identify each product or component incorporated into the Work. If data include more than one item in a tabular format, identify each item using appropriate references from the Contract Documents. Identify data applicable to the Work and delete references to information not applicable.
1. Prepare supplementary text if manufacturers' standard printed data are not available and where the information is necessary for proper operation and maintenance of equipment or systems.
- E. Drawings: Prepare drawings supplementing manufacturers' printed data to illustrate the relationship of component parts of equipment and systems and to illustrate control sequence and flow diagrams. Coordinate these drawings with information contained in record Drawings to ensure correct illustration of completed installation.
1. Do not use original project record documents as part of operation and maintenance manuals.
 2. Comply with requirements of newly prepared record Drawings in Section 017839 "Project Record Documents."
- F. Comply with Section 017700 "Closeout Procedures" for schedule for submitting operation and maintenance documentation.

END OF SECTION 017823

SECTION 099113 - EXTERIOR PAINTING

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

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

1.2 SUMMARY

- A. Section includes surface preparation and the application of paint systems on exterior substrates.
 - 1. Steel.
 - 2. Galvanized metal.
- B. Related Requirements:
 - 1. Section 099123 "Interior Painting" for surface preparation and the application of paint systems on interior substrates.

1.3 DEFINITIONS

- A. Gloss Level 1: Not more than 5 units at 60 degrees and 10 units at 85 degrees, according to ASTM D 523.
- B. Gloss Level 3: 10 to 25 units at 60 degrees and 10 to 35 units at 85 degrees, according to ASTM D 523.
- C. Gloss Level 4: 20 to 35 units at 60 degrees and not less than 35 units at 85 degrees, according to ASTM D 523.
- D. Gloss Level 5: 35 to 70 units at 60 degrees, according to ASTM D 523.
- E. Gloss Level 6: 70 to 85 units at 60 degrees, according to ASTM D 523.
- F. Gloss Level 7: More than 85 units at 60 degrees, according to ASTM D 523.

1.4 ACTION SUBMITTALS

- A. Product Data: For each type of product. Include preparation requirements and application instructions.
- B. Samples for Verification: For each type of paint system and each color and gloss of topcoat.
 - 1. Submit Samples on rigid backing, 8 inches (200 mm) square.
 - 2. Step coats on Samples to show each coat required for system.
 - 3. Label each coat of each Sample.
 - 4. Label each Sample for location and application area.

- C. Product List: For each product indicated, include the following:
1. Cross-reference to paint system and locations of application areas. Use same designations indicated on Drawings and in schedules.
 2. Printout of current "MPI Approved Products List" for each product category specified, with the proposed product highlighted.
 3. VOC content.

1.5 DELIVERY, STORAGE, AND HANDLING

- A. Store materials not in use in tightly covered containers in well-ventilated areas with ambient temperatures continuously maintained at not less than 45 deg F (7 deg C).
1. Maintain containers in clean condition, free of foreign materials and residue.
 2. Remove rags and waste from storage areas daily.

1.6 FIELD CONDITIONS

- A. Apply paints only when temperature of surfaces to be painted and ambient air temperatures are between 50 and 95 deg F (10 and 35 deg C).
- B. Do not apply paints in snow, rain, fog, or mist; when relative humidity exceeds 85 percent; at temperatures less than 5 deg F (3 deg C) above the dew point; or to damp or wet surfaces.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

- A. Manufacturers: Subject to compliance with requirements, available manufacturers offering products that may be incorporated into the Work include, but are not limited to, the following:
1. Benjamin Moore & Co.
 2. ICI Paints.
 3. PPG Architectural Finishes, Inc.
 4. Sherwin-Williams Company (The).
- B. Products: Subject to compliance with requirements, available products that may be incorporated into the Work include, but are not limited to products listed in other Part 2 articles for the paint category indicated.

2.2 PAINT, GENERAL

- A. MPI Standards: Provide products that comply with MPI standards indicated and that are listed in its "MPI Approved Products List."
- B. Material Compatibility:

1. Provide materials for use within each paint system that are compatible with one another and substrates indicated, under conditions of service and application as demonstrated by manufacturer, based on testing and field experience.
 2. For each coat in a paint system, provide products recommended in writing by manufacturers of topcoat for use in paint system and on substrate indicated.
- C. VOC Content: Provide materials that comply with VOC limits of authorities having jurisdiction.
- D. Colors: Match Architect's samples.

2.3 METAL PRIMERS

- A. Primer, Acrylic, Anti-Corrosive for Metal:
1. Sherwin-Williams; Pro-Cryl Universal Primer, B66W310.
- B. Primer, Galvanized, Water Based:
1. Sherwin-Williams; Pro-Cryl Universal Primer, B66W310.

2.4 WATER-BASED PAINTS

- A. Light Industrial Coating, Exterior, Water Based (Gloss Level 3):
1. Sherwin-Williams, Pro Industrial Zero VOC Acrylic, Egg-shell.

2.5 SOURCE QUALITY CONTROL

- A. Testing of Paint Materials: Owner reserves the right to invoke the following procedure:
1. Owner will engage the services of a qualified testing agency to sample paint materials. Contractor will be notified in advance and may be present when samples are taken. If paint materials have already been delivered to Project site, samples may be taken at Project site. Samples will be identified, sealed, and certified by testing agency.
 2. Testing agency will perform tests for compliance with product requirements.
 3. Owner may direct Contractor to stop applying paints if test results show materials being used do not comply with product requirements. Contractor shall remove noncomplying paint materials from Project site, pay for testing, and repaint surfaces painted with rejected materials. Contractor will be required to remove rejected materials from previously painted surfaces if, on repainting with complying materials, the two paints are incompatible.

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Examine substrates and conditions, with Applicator present, for compliance with requirements for maximum moisture content and other conditions affecting performance of the Work.

- B. Verify suitability of substrates, including surface conditions and compatibility with existing finishes and primers.
- C. Proceed with coating application only after unsatisfactory conditions have been corrected.
 - 1. Application of coating indicates acceptance of surfaces and conditions.

3.2 PREPARATION

- A. Comply with manufacturer's written instructions and recommendations in "MPI Manual" applicable to substrates and paint systems indicated.
- B. Remove hardware, covers, plates, and similar items already in place that are removable and are not to be painted. If removal is impractical or impossible because of size or weight of item, provide surface-applied protection before surface preparation and painting.
 - 1. After completing painting operations, use workers skilled in the trades involved to reinstall items that were removed. Remove surface-applied protection.
- C. Clean substrates of substances that could impair bond of paints, including dust, dirt, oil, grease, and incompatible paints and encapsulants.
 - 1. Remove incompatible primers and reprime substrate with compatible primers or apply tie coat as required to produce paint systems indicated.
- D. Steel Substrates: Remove rust, loose mill scale, and shop primer if any. Clean using methods recommended in writing by paint manufacturer. but not less than the following:
 - 1. SSPC-SP 3, "Power Tool Cleaning."
- E. Shop-Primed Steel Substrates: Clean field welds, bolted connections, and abraded areas of shop paint, and paint exposed areas with the same material as used for shop priming to comply with SSPC-PA 1 for touching up shop-primed surfaces.
- F. Galvanized-Metal Substrates: Remove grease and oil residue from galvanized sheet metal by mechanical methods to produce clean, lightly etched surfaces that promote adhesion of subsequently applied paints.

3.3 APPLICATION

- A. Apply paints according to manufacturer's written instructions and recommendations in "MPI Manual."
 - 1. Use applicators and techniques suited for paint and substrate indicated.
 - 2. Paint surfaces behind movable items same as similar exposed surfaces. Before final installation, paint surfaces behind permanently fixed items with prime coat only.
 - 3. Paint both sides and edges of exterior doors and entire exposed surface of exterior door frames.
 - 4. Paint entire exposed surface of window frames and sashes.
 - 5. Do not paint over labels of independent testing agencies or equipment name, identification, performance rating, or nomenclature plates.
 - 6. Primers specified in painting schedules may be omitted on items that are factory primed or factory finished if acceptable to topcoat manufacturers.

- B. Tint undercoats same color as topcoat, but tint each undercoat a lighter shade to facilitate identification of each coat if multiple coats of same material are to be applied. Provide sufficient difference in shade of undercoats to distinguish each separate coat.
- C. If undercoats or other conditions show through topcoat, apply additional coats until cured film has a uniform paint finish, color, and appearance.
- D. Apply paints to produce surface films without cloudiness, spotting, holidays, laps, brush marks, roller tracking, runs, sags, ropiness, or other surface imperfections. Cut in sharp lines and color breaks.
- E. Painting Plumbing, HVAC, and Electrical:
 - 1. Paint the following work where exposed to view:
 - a. Uninsulated metal piping.
 - b. Pipe hangers and supports.
 - c. Metal conduit.

3.4 FIELD QUALITY CONTROL

- A. Dry Film Thickness Testing: Owner may engage the services of a qualified testing and inspecting agency to inspect and test paint for dry film thickness.
 - 1. Contractor shall touch up and restore painted surfaces damaged by testing.
 - 2. If test results show that dry film thickness of applied paint does not comply with paint manufacturer's written recommendations, Contractor shall pay for testing and apply additional coats as needed to provide dry film thickness that complies with paint manufacturer's written recommendations.

3.5 CLEANING AND PROTECTION

- A. At end of each workday, remove rubbish, empty cans, rags, and other discarded materials from Project site.
- B. After completing paint application, clean spattered surfaces. Remove spattered paints by washing, scraping, or other methods. Do not scratch or damage adjacent finished surfaces.
- C. Protect work of other trades against damage from paint application. Correct damage to work of other trades by cleaning, repairing, replacing, and refinishing, as approved by Architect, and leave in an undamaged condition.
- D. At completion of construction activities of other trades, touch up and restore damaged or defaced painted surfaces.

3.6 EXTERIOR PAINTING SCHEDULE

- A. Steel Substrates:
 - 1. Water-Based Light Industrial Coating System:
 - a. Prime Coat: Primer, alkyd, anti-corrosive for metal.

- b. Intermediate Coat: Light industrial coating, exterior, water based, matching topcoat.
- c. Topcoat: Light industrial coating, exterior, water based (Gloss Level 3).

B. Galvanized-Metal Substrates:

1. Water-Based Light Industrial Coating System:

- a. Prime Coat: Primer, galvanized, water based.
- b. Intermediate Coat: Light industrial coating, exterior, water based, matching topcoat.
- c. Topcoat: Light industrial coating, exterior, water based (Gloss Level 3).

END OF SECTION 099113

SECTION 099123 - INTERIOR PAINTING

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

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

1.2 SUMMARY

- A. Section includes surface preparation and the application of paint systems on the following interior substrates:
 - 1. Steel.
 - 2. Galvanized metal.
 - 3. Gypsum board.
- B. Related Requirements:
 - 1. Section 099113 "Exterior Painting" for surface preparation and the application of paint systems on exterior substrates.

1.3 DEFINITIONS

- A. Gloss Level 1: Not more than 5 units at 60 degrees and 10 units at 85 degrees, according to ASTM D 523.
- B. Gloss Level 2: Not more than 10 units at 60 degrees and 10 to 35 units at 85 degrees, according to ASTM D 523.
- C. Gloss Level 3: 10 to 25 units at 60 degrees and 10 to 35 units at 85 degrees, according to ASTM D 523.
- D. Gloss Level 4: 20 to 35 units at 60 degrees and not less than 35 units at 85 degrees, according to ASTM D 523.
- E. Gloss Level 5: 35 to 70 units at 60 degrees, according to ASTM D 523.
- F. Gloss Level 6: 70 to 85 units at 60 degrees, according to ASTM D 523.
- G. Gloss Level 7: More than 85 units at 60 degrees, according to ASTM D 523.

1.4 ACTION SUBMITTALS

- A. Product Data: For each type of product. Include preparation requirements and application instructions.
- B. Samples for Verification: For each type of paint system and in each color and gloss of topcoat.

1. Submit Samples on rigid backing, 8 inches (200 mm) square.
2. Step coats on Samples to show each coat required for system.
3. Label each coat of each Sample.
4. Label each Sample for location and application area.

C. Product List: For each product indicated, include the following:

1. Cross-reference to paint system and locations of application areas. Use same designations indicated on Drawings and in schedules.
2. Printout of current "MPI Approved Products List" for each product category specified in Part 2, with the proposed product highlighted.
3. VOC content.

1.5 DELIVERY, STORAGE, AND HANDLING

- A. Store materials not in use in tightly covered containers in well-ventilated areas with ambient temperatures continuously maintained at not less than 45 deg F (7 deg C).
1. Maintain containers in clean condition, free of foreign materials and residue.
 2. Remove rags and waste from storage areas daily.

1.6 FIELD CONDITIONS

- A. Apply paints only when temperature of surfaces to be painted and ambient air temperatures are between 50 and 95 deg F (10 and 35 deg C).
- B. Do not apply paints when relative humidity exceeds 85 percent; at temperatures less than 5 deg F (3 deg C) above the dew point; or to damp or wet surfaces.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

- A. Manufacturers: Subject to compliance with requirements, available manufacturers offering products that may be incorporated into the Work include, but are not limited to, the following:
1. Benjamin Moore & Co.
 2. ICI Paints.
 3. PPG Architectural Finishes, Inc.
 4. Sherwin-Williams Company (The).
- B. Products: Subject to compliance with requirements, available products that may be incorporated into the Work include, but are not limited to products listed in other Part 2 articles for the paint category indicated.

2.2 PAINT, GENERAL

- A. MPI Standards: Provide products that comply with MPI standards indicated and that are listed in its "MPI Approved Products List."

B. Material Compatibility:

1. Provide materials for use within each paint system that are compatible with one another and substrates indicated, under conditions of service and application as demonstrated by manufacturer, based on testing and field experience.
2. For each coat in a paint system, provide products recommended in writing by manufacturers of topcoat for use in paint system and on substrate indicated.

C. Colors: Match Architect's samples based on existing paint color of surfaces.

2.3 PRIMERS/SEALERS

A. Primer Sealer, Latex, Interior:

1. Sherwin-Williams, ProGreen® 200 Low Odor Interior Latex Primer.

2.4 METAL PRIMERS

A. Primer, Alkyd, Anti-Corrosive, for Metal:

1. Sherwin-Williams, All Surface Enamel Latex Primer.

2.5 WATER-BASED PAINTS

A. Latex, Interior, Flat, (Gloss Level 1):

1. Sherwin-Williams, ProGreen® 200 Low VOC Interior Latex.

B. Latex, Interior, (Gloss Level 2):

1. Sherwin-Williams, ProGreen® 200 Low VOC Interior Latex.

C. Latex, Interior, (Gloss Level 3):

1. Sherwin-Williams, ProGreen® 200 Low VOC Interior Latex.

D. Latex, Interior, (Gloss Level 4):

1. Sherwin-Williams, ProGreen® 200 Low VOC Interior Latex.

E. Latex, Interior, Semi-Gloss, (Gloss Level 5):

1. Sherwin-Williams, ProGreen® 200 Low VOC Interior Latex.

2.6 SOURCE QUALITY CONTROL

A. Testing of Paint Materials: Owner reserves the right to invoke the following procedure:

1. Owner will engage the services of a qualified testing agency to sample paint materials. Contractor will be notified in advance and may be present when samples are taken. If paint materials have

already been delivered to Project site, samples may be taken at Project site. Samples will be identified, sealed, and certified by testing agency.

2. Testing agency will perform tests for compliance with product requirements.
3. Owner may direct Contractor to stop applying coatings if test results show materials being used do not comply with product requirements. Contractor shall remove noncomplying paint materials from Project site, pay for testing, and repaint surfaces painted with rejected materials. Contractor will be required to remove rejected materials from previously painted surfaces if, on repainting with complying materials, the two paints are incompatible.

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Examine substrates and conditions, with Applicator present, for compliance with requirements for maximum moisture content and other conditions affecting performance of the Work.
- B. Maximum Moisture Content of Substrates: When measured with an electronic moisture meter as follows:
 1. Concrete: 12 percent.
 2. Masonry (Clay and CMU): 12 percent.
 3. Wood: 15 percent.
 4. Gypsum Board: 12 percent.
 5. Plaster: 12 percent.
- C. Gypsum Board Substrates: Verify that finishing compound is sanded smooth.
- D. Plaster Substrates: Verify that plaster is fully cured.
- E. Verify suitability of substrates, including surface conditions and compatibility with existing finishes and primers.
- F. Proceed with coating application only after unsatisfactory conditions have been corrected.
 1. Application of coating indicates acceptance of surfaces and conditions.

3.2 PREPARATION

- A. Comply with manufacturer's written instructions and recommendations in "MPI Manual" applicable to substrates indicated.
- B. Remove hardware, covers, plates, and similar items already in place that are removable and are not to be painted. If removal is impractical or impossible because of size or weight of item, provide surface-applied protection before surface preparation and painting.
 1. After completing painting operations, use workers skilled in the trades involved to reinstall items that were removed. Remove surface-applied protection if any.
- C. Clean substrates of substances that could impair bond of paints, including dust, dirt, oil, grease, and incompatible paints and encapsulants.

1. Remove incompatible primers and reprime substrate with compatible primers or apply tie coat as required to produce paint systems indicated.
- D. Steel Substrates: Remove rust, loose mill scale, and shop primer, if any. Clean using methods recommended in writing by paint manufacturer. but not less than the following:
1. SSPC-SP 3, "Power Tool Cleaning."
- E. Shop-Primed Steel Substrates: Clean field welds, bolted connections, and abraded areas of shop paint, and paint exposed areas with the same material as used for shop priming to comply with SSPC-PA 1 for touching up shop-primed surfaces.
- F. Galvanized-Metal Substrates: Remove grease and oil residue from galvanized sheet metal fabricated from coil stock by mechanical methods to produce clean, lightly etched surfaces that promote adhesion of subsequently applied paints.

3.3 APPLICATION

- A. Apply paints according to manufacturer's written instructions and to recommendations in "MPI Manual."
1. Use applicators and techniques suited for paint and substrate indicated.
 2. Paint surfaces behind movable equipment and furniture same as similar exposed surfaces. Before final installation, paint surfaces behind permanently fixed equipment or furniture with prime coat only.
 3. Paint front and backsides of access panels, removable or hinged covers, and similar hinged items to match exposed surfaces.
 4. Do not paint over labels of independent testing agencies or equipment name, identification, performance rating, or nomenclature plates.
 5. Primers specified in painting schedules may be omitted on items that are factory primed or factory finished if acceptable to topcoat manufacturers.
- B. Tint each undercoat a lighter shade to facilitate identification of each coat if multiple coats of same material are to be applied. Tint undercoats to match color of topcoat, but provide sufficient difference in shade of undercoats to distinguish each separate coat.
- C. If undercoats or other conditions show through topcoat, apply additional coats until cured film has a uniform paint finish, color, and appearance.
- D. Apply paints to produce surface films without cloudiness, spotting, holidays, laps, brush marks, roller tracking, runs, sags, ropiness, or other surface imperfections. Cut in sharp lines and color breaks.
- E. Painting Fire Suppression, Plumbing, HVAC, Electrical, Communication, and Electronic Safety and Security Work:
1. Paint the following work where exposed in equipment rooms:
 - a. Equipment, including panelboards.
 - b. Uninsulated metal piping.
 - c. Pipe hangers and supports.
 - d. Duct, equipment, and pipe insulation having cotton or canvas insulation covering or other paintable jacket material.
 - e. Exposed control units, lever arms, damper controls and similar exposed operators.

2. Paint the following work where exposed in occupied spaces:
 - a. Uninsulated metal piping.
 - b. Pipe hangers and supports.
 - c. Duct, equipment, and pipe insulation having cotton or canvas insulation covering or other paintable jacket material.
 - d. Other items as directed by Architect.
 - e. Exposed control units, lever arms, damper controls and similar exposed operators.
3. Paint portions of internal surfaces of metal ducts, without liner, behind air inlets and outlets that are visible from occupied spaces.

3.4 FIELD QUALITY CONTROL

- A. Dry Film Thickness Testing: Owner may engage the services of a qualified testing and inspecting agency to inspect and test paint for dry film thickness.
 1. Contractor shall touch up and restore painted surfaces damaged by testing.
 2. If test results show that dry film thickness of applied paint does not comply with paint manufacturer's written recommendations, Contractor shall pay for testing and apply additional coats as needed to provide dry film thickness that complies with paint manufacturer's written recommendations.

3.5 CLEANING AND PROTECTION

- A. At end of each workday, remove rubbish, empty cans, rags, and other discarded materials from Project site.
- B. After completing paint application, clean spattered surfaces. Remove spattered paints by washing, scraping, or other methods. Do not scratch or damage adjacent finished surfaces.
- C. Protect work of other trades against damage from paint application. Correct damage to work of other trades by cleaning, repairing, replacing, and refinishing, as approved by Architect, and leave in an undamaged condition.
- D. At completion of construction activities of other trades, touch up and restore damaged or defaced painted surfaces.

3.6 INTERIOR PAINTING SCHEDULE

- A. Steel Substrates:
 1. Latex over Alkyd Primer System:
 - a. Prime Coat: Primer, alkyd, anti-corrosive, for metal.
 - b. Intermediate Coat: Latex, interior, matching topcoat.
 - c. Topcoat: Latex, interior, Gloss level to match the existing adjacent surfaces.
- B. Galvanized-Metal Substrates:
 1. Latex over Waterborne Primer System:

- a. Prime Coat: Primer, galvanized, water based.
- b. Intermediate Coat: Latex, interior, matching topcoat.
- c. Topcoat: Latex, interior, Gloss level to match the existing adjacent surfaces.

C. Gypsum Board Substrates:

1. Latex System:

- a. Prime Coat: Primer sealer, latex, interior.
- b. Prime Coat: Latex, interior, matching topcoat.
- c. Intermediate Coat: Latex, interior, matching topcoat.
- d. Topcoat: Latex, interior, Gloss level to match the existing adjacent surfaces.

END OF SECTION 099123

Section 15000 - Mechanical Specification

1.00 General

1.01 General Scope

- A. The work required under this specification shall consist of all labor, materials, tools, equipment, power, transportation, hoisting implements, etc., of every description necessary for the entire completion of the mechanical work of the contract, all as specified herein, shown on the drawings or reasonably implied by either, complete in every respect unless specifically excluded herein. The work included in this contract shall consist of the installation, test and guarantee of all work herein specified.

1.02 Inspection of Existing and General Conditions:

- A. The Contractor will be held to have personally inspected the site of the proposed work to arrive at a clear understanding of the conditions under which the work is to be performed, the extent of other contractor's activities in the area, and to become fully acquainted with the receiving and storage spaces available. The Contractor shall be held to have compared the premises and site with the drawings and specifications, and shall be satisfied as to the conditions of the premises, the actual elevations, and any other conditions affecting the carrying out of the work, before the delivery of this proposal.
- B. No allowances or extra consideration on behalf of the Contractor will subsequently be allowed by reason of the Contractor's failure to have become familiar with site conditions, error or oversight on the part of the Contractor or due to interference's by the Owner's or other Contractor's activities.
- C. Items specified on mechanical equipment schedules and plans are the basis of design. Equality of other equipment shall be determined by the Owner and Engineer. Any modification to these documented methods that is made necessary by alternate equipment is the responsibility of the supplier of the alternate equipment.
- D. Contractor is directed to include all necessary overtime and premium time (Saturday, Sunday, Holidays) required for the completion of the intended work to meet specified schedules.
- E. Do not scale mechanical drawings. For exact dimensions, use dimensioned drawings or actual field conditions.

1.03 Codes, Permits and Compliance:

- A. Contractor shall obtain and pay for all permits, licenses and inspections required by laws of governing bodies. Comply with all applicable codes and ordinances and all legal requirements. No extra compensation will be allowed for any changes necessary for code compliance regardless of the method of installation shown on the drawings or specified.

- B. All work shall comply with current editions of all applicable state and local codes and ordinances.
 - C. All equipment, devices and materials shall be the latest products of manufacturer and shall conform to the requirements noted on plans.
- 1.04 Workmanship:
- A. Workmanship shall be of the highest quality conforming to the best mechanical installation practice. Any work or material which is rejected must be removed immediately and replaced. No sub-standard work will be accepted.
 - B. The brevity of this specification shall not be construed as relieving the Contractor of his responsibility to perform all work in a first class workman like manner.
- 1.05 Submittals and Record Drawings:
- A. Submit shop drawings and catalog data for approval for all equipment and materials specified for this project prior to ordering or manufacture of such. Shop drawings not stamped with Contractor approval will be rejected.
 - B. The Contractor shall keep an accurate record of all deviations from the approved design documents and specifications which may occur in the work as actually constructed, and shall submit same to the Engineer or Owner's representative at completion of the job.
 - C. Submittals shall be coordinated through the Architect.
- 1.06 Tests and Guarantees:
- A. All tests for various systems shall be performed as required, consistent with good general practice and in compliance with codes and authorities.
 - B. As a condition precedent to the final payment, the Contractor shall execute to the Owner a guarantee in a form approved by the Owner. Guarantee shall warrant that all work included in this division of the specifications will remain in serviceable and perfect condition (ordinary wear and tear, abuse and causes beyond the control of the Contractor excluded) for a period of one year from date of final completion and acceptance of work and that the Contractor will make good at his own expense, without cost to the Owner, any imperfections in whole or in part which may develop in this work during the period above specified, including any damage to other work caused by such imperfections or repairing of same.
 - C. All mechanical systems, devices and related items shall be tested. Replace any and all defective device items or systems before completion of the project.
- 1.07 Coordination:

- A. Field verify exact location of all new equipment with existing conditions and coordinate with the General and other Contractors prior to rough-in and/or installing any of this work.
 - B. Field verify all clearances and conditions prior to the start of any piping, ductwork, etc., verify locations of all piping, ductwork, equipment, devices, etc., with existing conditions prior to rough-in. Report any discrepancies to the engineer prior to proceeding with work.
 - C. All interruptions of services to existing or operable facilities shall be scheduled with the Owner a minimum two (2) weeks in advance. The Contractor shall not interrupt or restore services without prior consent of the Owner. The interruption shall be only for the specific scheduled time. The Owner or Electrical Contractor will be responsible for shutdown and start-up of electrical or process systems.
 - D. Coordinate all power wiring, safety disconnect means, motor control and control wiring for mechanical equipment with the Electrical Contractor.
 - E. Refer to electrical drawings for work involving electrical power supply wiring from power source to unit connection points.
 - F. Locate and install all required devices in accordance with American Disabilities Act Guidelines.
- 1.08 Identification:
- A. Install snap-on plastic or adhesive pipe markers with system identification and direction of flow on all piping systems.
 - B. Paint all piping with Owner's system identification color codes.
 - C. Install engraved plastic laminate sign or equipment marker on or near each major item of mechanical equipment.
 - D. Update all electrical panel directories indicating new circuits in all existing panel board affected by this installation.
 - E. Install valve tag on valves and control devices in piping systems, except check valves, valves within factory-fabricated equipment units, shut-off valves, and HVAC terminal devices and similar roughing-in connections of end-use fixtures and units. List tagged valves in valve schedule mounted in each major equipment room.
- 1.09 Demolition, Removals, Clean-Up, Protection and Touch-Up:
- A. Remove all existing piping, ductwork, equipment, devices, etc., scheduled for removal or not required to remain in service. Contractor shall coordinate removal with Owner and all other trades on the project. All piping, ductwork, etc., shall be removed back to the point of service. Provide additional piping, ductwork, etc., to maintain functional systems.

- B. This Contractor shall dispose of all materials generated from removal and installation of this work. Debris shall be removed from the project site weekly. This Contractor shall provide to the Owner any salvageable materials as directed by the Owner or Engineer.
- C. Upon completion of work, this Contractor shall thoroughly clean all apparatus furnished by this Contract.
- D. All equipment, items, devices and appurtenances shall be protected from debris and damage while stored at the site and during and after installation.
- E. Scarred factory-finished mechanical equipment shall be touched up with factory furnished paint. Rusted or marred surfaces of mechanical equipment shall be cleaned and primed before painting.
- F. Patch finished surfaces and building components using new materials matching existing materials and experienced installers.
- G. All cutting and patching of roof, walls, floors, and slabs, etc. is the responsibility of this contractor unless specifically stated otherwise on the drawings.

1.10 Maintenance Manuals

- A. Prepare maintenance manuals. Provide a minimum of four copies with a single copy sent to the Engineer for approval. Include the following information for equipment items:
 - 1. Complete information on project equipment and services as was submitted during the course of the project. This information is solely intended to provide the Owner with accurate, usable information on how to care for his facility.
 - 2. Description of function, normal operating characteristics and limitations, performance curves, engineering data and tests, and complete nomenclature and commercial numbers of replacement parts.
 - 3. Manufacturer's printed operating procedures to include start-up, break-in and routing and normal operating instructions; regulation, control, stopping, shutdown and emergency instructions; and summer and winter operating instructions.
 - 4. Maintenance procedures for routine preventative maintenance and troubleshooting; disassembly, repair and re-assemble; aligning and adjusting instructions.
 - 5. Servicing instructions and lubrication charts and schedules.
 - 6. MSDS for each chemical compound used in mechanical systems.

1.11 Use of Premises

- A. Use of Site: Limit use of premises to work in areas indicated. Do not disturb portions of site beyond areas in which the work is indicated.
- B. Contractor to perform daily clean-up of areas where work has been performed and secure all tools, equipment, and materials in areas designated by Owner. In areas where work is not complete at end of work day, all ceiling openings, wall openings, etc. shall be secured in such a way that tools are required to access work. Verify with Owner acceptable methods for securing area of work.

1.12 Equipment and Systems Demonstration

- A. Each contractor is responsible for verifying the complete operation of the equipment and systems installed as a part of the work. After the contractor is satisfied, the work meets the specified intents and sequences of operation, the contractor shall schedule, through the Owner, a session during which all aspects of the work are explained to the Owner's personnel and/or representatives.
- B. This explanation session shall cover:
 - 1. Items in the Maintenance Manuals.
 - 2. Condition of the record drawings.
 - 3. Location of equipment both exposed and concealed.
 - 4. Location of system control centers.
 - 5. General overview of systems operation.
 - 6. Items in need of specific attention.
 - 7. Emergency shutdown procedures.
- C. Factory-authorized demonstrations (during this session) are required from:
 - 1. Electrical meter manufacturer.
- D. The general overview of systems operation shall include:
 - 1. Mechanical Maintenance Procedures.
 - 2. Comments on system accessibility.
 - 3. Special warranties and procedures.
- E. The intention of this specified item is for the Contractor to help the Owner understand the systems in the facility. Those present shall include:
 - 1. Project Manager.
 - 2. Project Superintendent.
 - 3. Representative of each major subcontractor.
 - 4. Factory-authorized personnel from the manufacturers of equipment/systems noted above.

1.13 Work Sequence

- A. The Work will be conducted with coordination of the Owner to provide the least possible interference to the activities of the Owner's personnel and to permit an orderly transfer of personnel and equipment to the facility.
- B. The Work will be conducted under supervision of the contractor with observation by the Owner's Representative. The schedule of work will be determined by collaboration between the Contractor, the Engineer and Owner.
- C. The work will be conducted in a timely fashion to assure minimal disruption to the Owner.
- D. Make connections to utilities and systems so as not to interfere with the Owner's operations.

1.14 Alternate Descriptions

- A. See Section 012300

2.00 Basic Materials and Methods

2.01 Duct Insulation:

- A. Fire-Test-Response Characteristics: As determined by testing materials identical to those specified in this section according to ASTM E 84, by a testing and inspecting agency acceptable to authorities having jurisdiction. Factory label insulation and jacket materials and sealer and cement material containers with appropriate markings of applicable testing and inspecting agency.
 - 1. Insulation Installed Indoors: Flame-Spread rating of 25 or less, and smoke-developed rating of 50 or less.
 - 2. Insulation Installed Outdoors: Flame-Spread rating of 75 or less, and smoke-developed rating of 150 or less.
- B. Insulation Materials
 - 1. Mineral-Fiber Board Thermal Insulation: Glass fibers bonded with a thermosetting resin. Comply with ASTM C 612, Type 1B, without facing and with all-service jacket manufactured from Kraft paper, reinforcing scrim, aluminum foil and vinyl film.
 - 2. Mineral-Fiber Blanket Thermal Insulation: Glass fibers bonded with a thermosetting resin. Comply with ASTM C 553, Type II, without facing and with all-service jacket manufactured from Kraft paper, reinforcing scrim, aluminum foil and vinyl film.
- C. Field-Applied Jackets

1. Aluminum Jacket: Deep corrugated sheets manufactured from aluminum alloy complying with ASTM B 209 (ASTM B 209m) and having an integrally bonded moisture barrier over entire surface in contact with insulation.
- D. Apply insulation materials, accessories and finishes according to the manufacturer's written instructions; with smooth, straight, and even surfaces; and free of voids throughout the length of ducts and fittings.
- E. Indoor Duct Application Schedule:
1. Service: supply-air ducts, concealed: install mineral-fiber blanket insulation, 1 1/2 inches thick, single layer with foil and paper jacket and vapor retarder.
 2. Service: supply-air and return-air ducts: install mineral-fiber board insulation, 2 inches thick, single layer with aluminum jacket and vapor retarder.
- 2.02 Pipe and Equipment Insulation
- A. Fire-Test-Response Characteristics: As determined by testing materials identical to those specified in this section according to ASTM E 84, by a testing and inspecting agency acceptable to authorities having jurisdiction. Factory label insulation and jacket materials and sealer and cement material containers with appropriate markings of applicable testing and inspecting agency.
1. Insulation Installed Indoors: Flame-spread rating of 25 or less, and smoke-developed rating of 50 or less.
- B. Insulation Materials
1. Mineral-Fiber Insulation: Glass fibers bonded with a thermosetting resin complying with the following:
 - a. Pre-formed Pipe Insulation: Comply with ASTM C 547, Type I, with factory-applied, all purpose, vapor-retarder jacket.
 2. Prefabricated Thermal Insulating Fitting Covers: Comply with ASTM C 450 for dimensions used in pre-forming insulation to cover valves, elbows, tees, and flanges.
- C. Apply insulation materials, accessories, and finishes according to the manufacturer's written instructions; with smooth, straight, and even surfaces; free of voids throughout the length of piping and equipment, including fittings, valves and specialties.
- D. Hangers and Anchors: Where vapor retarder is required, seal penetrations in insulation at hangers, supports, anchors and other projections with vapor-retarder mastic to prevent condensation on all surfaces.
1. Apply insulation continuously through hangers and around anchor attachments.

2. For insulation application where vapor retarders are indicated, extend insulation of anchor legs at least 12 inches (300 mm) from point of attachment to pipe and taper insulation ends. Seal tapered ends with a compound recommended by the insulation material manufacturer to maintain vapor retarder.
3. Install high density insulation insert materials between pipe and protection shields at hangers and supports and apply insulation to tightly join the insert. Seal insulation to insulation inserts with adhesive or sealing compound recommended by the insulation material manufacturer.
4. Cover inserts with jacket material matching adjacent pipe insulation. Install minimum 12 inch long, galvanized steel, shields over jacket, arranged to protect the jacket from tear or puncture by the hanger, support, and shield.

E. Insulation Application Schedule

1. These application schedules are for above ground insulation of piping and equipment systems inside the building.
2. Service: Hot-Water Heating Supply And Return, 100 To 200 Deg F.

Hot-Water Heating Supply And Return (100 To 200 Deg F)				
Pipe Sizes (NPS)	Materials	Thickness In Inches	Vapor Barrier Req'd	Field-Applied Jacket
1/2 To 1-1/4	Glass Fiber	1	No	None
1-1/2 To 4	Glass Fiber	1	No	None

2.03 Natural Gas Valves

- A. Gas Valves, 2-inch NPS and Smaller: 125 psig WOG minimum, equivalent to ASME B16.33, lubricated, straightaway pattern, cast-iron or ductile-iron body. Include tapered plug, o-ring seals, square or flat head, and threaded ends conforming to ASME b1.20.1.
- B. Gas Valves, 2-1/2-inch NPS and Larger: MSS SP-78, Class 125 or Class 175 WOG, lubricated-plug type, semi-steel body, wrench operated, with flanged ends.
- C. Gas Valves, 3-inch NPS and Smaller: MSS SP-110, 150 psig WOG, ASTM B 584 bronze body, chrome plated brass ball, standard port, 2 piece with threaded ends conforming to ASME B1.20.1.

2.04 Piping

- A. Regulatory Requirements: Comply with the provisions of the following:
 1. ASME B 31.9 “Building Services Piping” for materials, products and installation.
 2. Safety valves and pressure vessels shall bear the appropriate ASME label.

3. ASME “Boiler and Pressure Vessel Code”, Section IX, “Welding and Brazing Qualification” for qualifications for welding processes and operators.
4. Ohio Plumbing Code.

B. Provide components and installation capable of producing piping systems with the following minimum working pressure ratings, except where indicated otherwise:

1. Natural gas systems, above grade: 150 psig.

C. Natural Gas

1. General: Flanges, unions, transition and special fittings, and valves with pressure ratings same as or higher than system pressure rating may be used in applications below, except where otherwise indicated.
2. Low-Pressure, 0.5 psig or less, Natural Gas Systems: Use the following:
 - A. 2-inch NPS and Smaller; Black steel pipe, ASTM A53, Seamless Grade B, Schedule 40, malleable-iron threaded fittings, and threaded joints.
 - B. 2-1/2 to 4-inch NPS Black steel pipe, butt-welding fittings, and welded joints.
3. Gas Service, Natural Gas Piping at Gas Meters and Regulators: Steel pipe, butt-welding fittings, and welded joints.
4. Exterior steel natural gas piping shall be painted per local gas utility standards.
 - A. Apply two coats of rust inhibitor paint.
5. Inspect, test and purge piping according to NFPA 54, Part 4 “Gas Piping Inspection, Testing and Purging” and requirements of authorities having jurisdiction.

2.05 Ductwork and Duct Accessories

- A. Construct rectangular ductwork to meet all functional criteria defined in Section VII of the SMACNA “HVAC Duct Construction Standards Metal and Flexible”, 1985 Edition. All ductwork must comply with all local, state and federal code requirements.
- B. Fabricate rectangular ducts with galvanized sheet steel, in accordance with SMACNA “HVAC Duct Construction Standards,” Tables 1-3 through 1-19, including their associated details. Conform to the requirements in the referenced standard for metal thickness, reinforcing types and intervals, tie rod applications, and joint types and intervals.
- C. Static Pressure Classifications: Unless otherwise indicated, construct ducts to the following:

1. Low Pressure Supply Ducts Including Down Stream of Air Terminals: 2-inch wg (500 pa).
 2. Return Ducts: 2-inch wg (500 pa), negative pressure.
- D. Fabricate round ducts with spiral lockseam construction. Comply with SMACNA “HVAC Duct Construction Standards,” Table 3-2 for galvanized steel gages.
- E. Provide 1 inch thick, 3 pound density, internal liner on all return air ductwork, complete with all appropriate adhesives and other materials. All duct sizes indicated are net free areas.
- F. Seal duct joints and seams with duct sealant, tape or mastics.
1. Pressure Classification 2-inch wg (500 pa): Transverse joints.
- G. Where indicated, provide factory-fabricated, insulated, round flexible duct, with an outer jacket enclosing 1-1/2 inch thick, glass fiber insulation around a continuous inner liner, steel-wire helix reinforcement encapsulated in the inner liner, and polyethylene film inner and outer jacket. Maximum length: 5 feet.
- H. Provide standard galvanized volume control and automated control dampers, multiple (for dampers 12 inches in height and greater) or single-blade (for dampers under 12 inches in height) opposed blade design, standard leakage rating, with linkage outside of air stream, and suitable for horizontal or vertical applications. Furnish with locking quadrants.
- I. Provide balancing dampers at all branch take-offs in all supply air, return air and exhaust air systems and where required to facilitate proper balancing of air systems.
- J. Construct all rectangular elbows with turning vanes. Comply with SMACNA’s “HVAC Duct Construction Standards – Metal and Flexible” for vanes and vane runners. Vane runners shall automatically align vanes.
- 2.06 Fastening and Supports
- A. All conduits and equipment shall be adequately supported, either suspended from the construction above or by means of struts to the construction below. Conduit, tray, fixtures, etc. shall not span flexible connections or air handling equipment, etc., shall not be supported from ductwork or other trades’ supports.
- 2.07 Raceways
- A. All power and building automation system/control conductors shall be installed in raceway unless specifically noted otherwise.
 - B. Unless otherwise noted, conduit shall be Electrical Metallic Tubing (EMT) with steel compression or set screw fittings 3/4 inch trade size minimum. Cast metal fittings are not acceptable. Rigid Galvanized Steel (R.G.S.) conduit shall be used in exposed applications where exposed to damage with threaded and cast fittings.

- C. All conduit and wiring in finished areas shall be concealed in the construction where practicable.
 - D. All raceways shall be touted within structural steel and furred spaced utilizing factory made elbows as good practice and workmanship allows. Install sleeves through structural concrete where penetrating structural floor decks.
 - E. Raceways shall be capped until conductors are installed. Empty raceways shall each be tagged and include pull wire.
 - F. Raceways shall be secured with one hole malleable straps or wall brackets. Trapeze supports shall be used for groups of parallel raceways with each secured to trapeze with proper clamps. Individual runs of raceway shall be supported with malleable iron hangers. Where surface conduits are installed, use of “Mineralacs” for supports are prohibited.
 - G. Install fire stopping where required by the building construction.
- 2.08 Outlet and Junction Boxes:
- A. Outlet and Devices Boxes for use with R.G.S. conduit shall be Cast FS/FD type with galvanized, stamped steel cover plates.
 - B. Outlet and Devices Boxes for use with E.M.T. conduit or flush mounted outlet device boxes and unction boxes in concealed or protected spaces shall be galvanized pressed steel.
- 2.09 Conductors (600V and below):
- A. All conductors shall be protected in accordance with NEC ART 240.4 and ampacity shall be in accordance with NEC 310.15 based on 60 degrees C rating for sizes #2 and smaller and 75 degrees C for sized #1 AWG and larger.
- 2.10 Control Conductors:
- A. BACNET network cable shall be plenum rated, shielded, twisted pair equal to cable and Belden 3106A.
 - B. Control conductors to be of size and type as recommended by the control system.
 - C. All control / B.A.S. conductors to have a purple jacket.
- 2.11 Grounding:
- A. Install insulated equipment grounding conductor in raceways with conductors for all feeder and branch circuits.
- 2.12 Wiring Devices:

- A. All wiring devices shall be specification grade, heavy duty for side and back wiring convenience.
 - B. Convenience receptacles shall be 20 Ampere, 125 volt, NEMA 5-20R, Heavy duty, and specification grade, Hubbell #HBL 5362 or equal.
 - C. All wiring devices shall have gray (verify with Architect) body unless otherwise specified to match décor, etc.
 - D. Cover plates to be stamped, galvanized, sheet metal.
- 3.00 Products and Execution
- 3.01 Firestopping
- A. Apply firestopping to cable and raceway penetrations of fire-rated floor and wall assemblies to achieve fire-resistance rating of the assembly.
 - B. Penetrations through all floors, fire walls or rated ceilings shall be sealed to prevent spread of fire and smoke and ingress of moisture. Seals shall be properly closed using U.L. listed products to match the penetration firestop system designation. Materials shall be free of asbestos, dangerous solvent, non-halogenated and shall not produce toxic fumes or smoke during exposure to fire. Fire stop shall be designed and installed to equal or exceed the fire resistance rating of the wall or floor.
 - C. Fill areas around conduits or sleeves with a dielectric, non-hardening putty or expanding caulk materials.
 - D. Seal large openings in floors or masonry walls using light weight, low density expanding mortar.
 - E. Identify firestop system with preprinted metal or plastic labels. Attach labels to surfaces adjacent and within 6 inches of edge of firestop system.
- 3.02 Raceways for Telecommunication Cabling:
- A. Conduit shall be 1 inch diameter minimum and shall be sized for 28% maximum fill per BICSI and EIA/TIA standards.
 - B. Outlet boxes shall be 4 inch square, 2 1/8 inch deep galvanized pressed steel with 1 gang plaster ring and blank finished cover plate.
 - C. Include a pull string in all empty raceways to facilitate future cabling by others.
- 3.03 Telecommunication Cabling and Terminations:
- A. All cabling, receptacles, and associated termination equipment shall be furnished, terminated, tested and certified by the Contractor.

- B. Data Cables: Individual solid copper 4 pair U.T.P. Category 6 certified cable from the receptacle jack/equipment to the indicated IDF/MDF and terminated as indicated.
- C. All data cables (Cat 6 and fiber) to have a purple jacket.
- D. Install cabling in raceway per EIA/TIA and BICSI recommended practice. Route all fiber optic cables in inner duct. All cabling and inner duct in air handling plenum spaces shall be listed and labeled for the application.
- E. U.T.P. copper cables and terminations shall be tested and certified to meet appropriate Category 6 levels per TIA/EIA standards. Final reports to be submitted with close out documents before final payments will be authorized.
- F. Verify Category 6 wiring pattern T568A or T568B with Owner prior to termination.
- G. Bond all equipment racks and metallic raceways associated with this system to the building grounding electrode system per EIA/TIA standards.

3.04 Rooftop Units

- A. Manufacturers: Subject to compliance with requirements, provide products by one of the following: AAON, McQuay, Trane, York.
- B. Descriptions: Factory assembled and tested; designed for roof or slab installation; and consisting of compressors, condensers, evaporator coils, condenser and evaporator fans, refrigeration and temperature controls, filters, and dampers.
- C. Thermostat: 24 VAC, solid-state, programmable, microprocessor-based, wall mounting unit with automatic switching from heating to cooling, preferential rate control, multiple temperature presets selectable by day and time, and battery back-up protection of program settings against power failure.
- D. Accessories:
 - 1. Five Year Compressor Warranty.
 - 2. 2 sets of 2 inch thick pleated filters.
 - 3. Economizer with 100 percent barometric relief.
 - 4. Insulated roof curb adaptor
 - 5. Hail guards
- E. Install units according to manufacturer's written instructions.

3.05 Control Dampers

- A. Manufacturers: Subject to compliance with requirements, provide products by one of the following: Johnson Controls, Nailor, Titus, Trane, Price.
- B. Variable Volume Supply Air Control Terminal:

1. VAV terminal units shall be networked to a central controller, which based on the multiple zones temperature requirements, provides a staged heat or cool decision to be used by the building air conditioning unit.
2. Controls shall be a dedicated microprocessor control system with multi-level distributed micro processing. System controls shall be designed for used exclusive to zone temperature and changeover/bypass control. General purpose or generic controls are acceptable.
3. Controls to have touch screen interface and BACNET Communications.

C. Fabrication:

1. Casings: Units shall be completely factory-assembled, manufactured of rolled and seam welded 18 gauge galvanized steel. Discharge end shall be crimped to fit standard ductwork.

D. Volume Damper:

1. Damper blade shall be constructed of 22 gauge galvanized steel.
2. Damper blade shall modulate a full 90 degrees from open to close.

E. Controls: Provide manufacturer's standard devices. Ensure compatibility of devices with equipment and communication network.

1. Provide the following:
 - a. Damper actuator.
 - b. VAV controller.
 - c. Enclosure for VAV controller (NEMA 250, Type 1).
2. Electric Controls: 24-V damper actuator with wall-mounting programmable thermostat and appropriate mounting hardware.
3. Install air terminal units level and plumb. Maintain sufficient clearance for normal service and maintenance.

F. Install air rotation units where shown, in accordance with equipment manufacturer's written instructions, and with recognized industry practices, to ensure that units comply with requirements and serve intended purposes.

G. Training: Arrange and pay for the services of a factory-authorized service representative to demonstrate adjustment, operation and maintenance of packaged air rotation units and to train Owner's personnel.

3.06 Air Inlets and Outlets

A. Manufacturer: Subject to compliance with requirements, provide air outlets and inlets of one of the following:

1. Diffusers, Registers and Grilles: Anemostat Products, Carnes, Krueger, Metal Aire, Price, Titus Products and Tuttle & Bailey.
 - B. Except as otherwise indicated, provide manufacturer's standard grilles, register and diffusers where shown; of size, shape, capacity and type indicated; constructed of materials and components as indicated, and as required for complete installation.
 1. Finishes:
 - a. Grilles, Registers and Diffusers: Off-white, unless otherwise indicated.
 - C. Install air outlets and inlets in accordance with manufacturer's written instructions and in accordance with recognized industry practices to insure that products serve intended function.
- 3.07 Control Equipment and Systems
- A. Control system consists of sensors, indicators, actuators, final control elements, interface equipment, other apparatus and accessories connected to controllers to operate mechanical systems according to sequences of operation indicated or specified, and to provide complete, functional systems.
 - B. Codes and Standards: Comply with the following: NFPA 90A, National Electric Code, Underwriters Laboratories, NEMA Federal Communications Commission, Electronics Industries Association Std. RS-232, IEEE, ANSI.
 - C. Control Components:
 1. Electric Damper Actuator: 24 VAC with end switches to eliminate actuator motor stall conditions.
 2. Zone Sensor:
 - a. Zone sensor shall have a night setback override and cancel buttons, and a communications jack. Sensor shall be tamper-proof.
 - The zone sensor shall have the capability of manually overriding the unit controller to the continuous unoccupied mode.
 - The zone sensor shall have the capability of manually overriding the unit controller to the maximum flow position.
 3. Variable Air Volume (VAV) Terminal Unit Controller:
 - a. The VAV terminal unit controller shall be microprocessor based, controller and shall contain the control logic required to modulate the flow of primary air through the terminal unit in response to the difference between zone temperature and the appropriate setpoint. The control algorithm shall be proportional-integral.

- b. All VAV terminal unit controller setpoints and operating parameters shall be stored in non-volatile electronic memory. Battery back-up is not acceptable.
 - c. The VAV terminal unit controller shall be field or factory configurable to function as an auto-changeover device.
 - The auto-changeover terminal unit controller shall control damper position, and therefore primary air flow, in response to the difference between zone temperature and the appropriate set point. The terminal unit controller shall be capable of operating as a cool supply air controller.
4. Central Controller:
- a. The central controller shall exchange information with each terminal unit controller. The information shall be electronically encoded and serially transmitted on single twisted pair communication link.
 - b. The central controller shall send the setpoints and override instructions to the terminal unit controller. The terminal unit controller shall send operating status and configuration information to the central controller.
 - c. The central controller shall be capable of communicating and operating with any configuration of manufacturer's VAV terminal unit product.
 - d. The central controller shall communicate with up to 16 terminal unit controllers.
 - e. The central controller shall scan their terminal unit controllers to determine deviations from temperature setpoint, time of deviation, time from last changeover and number of terminal unit controllers requiring heating or cooling. Based upon this information, the system heat/cool mode and stage of capacity shall be determined.
 - f. The central controller shall be capable of excluding a zones request for cooling or heating if that zone remains more than 3 degrees from setpoint for a period of 60 minutes.
 - g. The central controller shall modulate the bypass damper based on a supply air duct pressure input. Supply fan speed and setpoints shall be available for monitoring and editing at the central controller.
 - h. All central controller setpoints and operating parameters shall be stored in non-volatile electronic memory with the central controller or transmitted to each terminal unit controller for in non-volatile electronic memory. Battery back-up is not acceptable.

- i. The central controller shall be capable of accepting time clock input to determine occupied or unoccupied setpoint mode of operation.
- j. The central controller shall be capable of local or remote interface via RS-232 port for an electronic display and keyboard terminal shall allow monitoring and editing of all central controller setpoint and operating parameters and terminal unit controller setpoint and operating parameters.
- k. The central controller shall not require electronic display and keyboard terminal for system start-up and normal operation.
- l. The central controller shall be capable of issuing override commands to the terminal unit controller. Override commands shall be used by the terminal unit controller to change the criteria by which the actuator and the terminal unit heat outputs are controlled. The central controller shall be capable of issuing the following override commands:
 - Drive terminal unit damper to maximum position.
 - Drive terminal unit damper to minimum position.
 - Drive terminal unit damper to fully closed.
 - Drive terminal unit damper to fully open.
 - Disable terminal unit remote heat.
- m. The central controller shall be capable of resetting the terminal unit minimum position setpoint for purposes of increasing ventilation to the space whenever the HVAC unit has no heating or cooling stages energized.
- n. The central controller shall be capable of assigning terminal unit controllers into groups. Grouping shall allow for acquiring group status information and executing override commands to all unit controllers within a group at one time.
- o. The central controller shall be capable of monitoring and editing the following setpoints which reside in the terminal unit controller:
 - Occupied cooling setpoint.
 - Occupied heating setpoint.
 - Unoccupied cooling setpoint.
 - Unoccupied heating setpoint.
 - Minimum position setpoint.
 - Maximum position setpoint.
 - Minimum heating position setpoint.
- p. The central controller shall be capable of reporting the following terminal unit controller status information:
 - Active cooling temperature setpoint.

- Active heating temperature setpoint.
 - Current terminal unit damper position.
 - Current zone temperature.
 - Terminal unit remote heat status.
 - Occupied/unoccupied mode.
- q. The central controller shall be capable of monitoring and editing the following terminal unit controller configuration information:
- Unit identification.
 - Zone thermostat setpoint.
 - Enable/disable zone request for heating or cooling.
 - Calibration (-10 to +10 degrees) of zone thermostat temperature sensor, and auxiliary temperature inputs.
- r. The central controller shall be capable of reporting the following system status information:
- System type (air conditioning unit or heat pump).
 - Mode of operation (occupied or unoccupied).
 - Operating Status (heat or cool).
 - Supply air temperature.
 - Supply air duct static pressure in inches w.c.
 - Position of bypass damper.
 - System fan status (on or off).
 - Stages of cooling (on or off).
 - Stages of heating (on or off).
- s. The central controller shall be capable of monitoring and editing the following system configuration information:
- System identification.
 - Supply air high temperature limit.
 - Supply air low temperature limit.
 - Supply air minimum flow or static pressure setpoint.
 - Required heat/cool calls required for changeover.
 - Energy saver mode of operation.
 - Ventilation mode of operation.
 - Unoccupied terminal unit damper position.
- t. Central controller shall be capable of interface via serial communications link with higher end building automation system.
5. Failure Modes of Operation:
- a. The central controller shall accommodate the following failure conditions:

- System identification.
 - Supply air high temperature limit.
 - Supply air low temperature limit.
 - Supply air minimum flow or static pressure setpoint.
 - Required heat/cool calls required for changeover.
 - Energy saver mode of operation.
 - Ventilation mode of operation.
 - Unoccupied terminal unit damper position.
- b. The central controller shall have the capability of directly controlling the operation a packaged rooftop unit with a factory installed microprocessor control board. The central controller and the rooftop control board shall be capable of sharing data and control modes over a single pair of wires via a communications board mounted in the unit. The central controller shall automatically recognize and communicate with the rooftop unit on the communications link.
- D. Install control equipment and systems as required, in accordance with system manufacturer’s written instructions, and with recognized industry practices, and ensure that equipment complies with requirements. Comply with requirements of NEC, and applicable portions of NECA’s “Standard of Installation” pertaining to general electrical installation practices.
- E. Install all raceway and wiring in accordance with all requirements of electrical specifications.

3.08 Sequences of Operation

A. Rooftop Units (Standard)

1. Provide seven-day programmable thermostat as located on the drawings.
2. Occupied Cooling Control: Unit shall operate off its packaged controls to maintain a 75 deg. F set point with the outside air damper at its minimum position. Below 60 deg. F outdoor temperature the unit shall operate off its packaged economizer control. Fan operation shall be continuous.
3. Unoccupied Cooling Control: Unit shall operate off its packaged controls to maintain an 85 deg. F set point with the outside air damper closed. Fan shall cycle on/off on a call for cooling.
4. Occupied Heating Control: Unit shall operate off its packaged controls to maintain a 72 deg. F set point with outside air damper at its minimum position. Fan operation shall be continuous.
5. Unoccupied Heating Control: Unit shall operate off its packaged controls to maintain a 68 deg. F set point with the outside air damper closed. Fan shall cycle on/off on call for heat.
6. Provide 24 V A.C. solid-state, programmable, microprocessor-based wall mounting thermostat with automatic switching from heating to cooling, preferential rate control, multiple temperature presets selectable by day and time, and battery backup protection of program settings against power failure.

7. Duct mounted smoke detectors (by EC) where required shall de-energize unit fans upon detection of smoke in the unit.

B. Rooftop Units (VVT)

1. Occupied Cooling Control: Unit shall operate off its packaged controls to maintain a 75 deg. F set point with the outside air damper at its minimum position. Below 60 deg. F outdoor temperature the unit shall operate off its packaged economizer control. Fan operation shall be continuous.
2. Occupied Cooling Control: Unit shall operate off its packaged controls to maintain an 85 deg. F set point with the outside air damper closed. Fan shall cycle on/off on a call for cooling.
3. Occupied Heating Control: Unit shall operate off its packaged controls to maintain a 72 deg. F set point with outside air damper at its minimum position. Fan operation shall be continuous.
4. Unoccupied Heating Control: Unit shall operate off its packaged controls to maintain a 68 deg. F set point with the outside air damper closed.
5. Duct mounted smoke detectors (by EC) where required shall de-energize unit fans upon detection of smoke in the unit.
6. Changeover System Control: A master-stat shall perform the following functions of coordinating changeover system operation:
 - a. Communication: The master room stat and zone thermostats shall all interface. The master-stat shall communicate with each zone thermostat a minimum of once every 20 seconds to collect zone demand information from each zone stat. The master-stat shall be capable of communication with up to 4 zone thermostats.
 - b. Zone Demand: The master-stat shall access demand for heating cooling from each zone thermostat and use this information to control the rooftop unit based on demand from each zone. When the room temperature at any zone thermostat rises 1.5 deg. F above zone cooling set point the thermostat shall be considered a caller for cooling. When room temperature at any zone thermostat fall 1.5 deg. F below zone heating setpoint the thermostat shall be considered a caller for hating.
 - c. System Demand: The master-stat shall have field adjustable demand which determines number of zone thermostats that must be calling for heating or cooling before the rooftop unit is energized. The master-stat shall be field adjustable for automatic changeover or manual changeover between modes and for continuous fan operation or automatic fan operation.
 - d. Control of Rooftop Unit: The master-stat shall interface to the rooftop unit through a relay-pack (sub-base) which interfaces to the zone damper controlled by the monitor-stat. The relay-pack shall be mounted within the rooftop unit.

- e. Control of Zone Dampers: The changeover system shall control supply air to each zone with a zone damper. The system shall be demand-oriented and responsive. When a zone-stat has a heating or cooling demand of 1.5 deg. F or greater, that stat is a “caller”. The zone-stat with the greatest demand shall be chosen by the master-stat as a reference. The reference shall determine the operation of the appropriate amount of heating or cooling, and shall remain a “caller” unit is within 05. Deg. F of set point. If there is simultaneous demand for heating and cooling, system shall choose the mode with the greatest number of “callers”, therefore majority rules. If there is an equal number of “callers”, the system shall choose the zone of the greatest demand to break the tie.
- f. Control of Bypass Damper: The bypass damper shall modulate to maintain a constant supply air system pressure.

C. Hot Water Boilers – with primary/secondary pumps

1. The boiler re-circulating pump and secondary pumps run continuously whenever the outside air sensor allows them to start (below 60 deg. F. adj.).
2. Placing a pump selector switch in the HAND position will start the hot water circulating pump and operate it continuously. Once the pump is started, flow will be proven through each boiler separately with a water flow switch.
3. The motorized control damper serving the combustion air damper shall open and the boiler shall be enabled after the damper is proven open by damper end switches. Boilers operate to maintain hot water heating setpoint temperature. Provide automatic lead/lag control to reverse firing order of boilers. All boilers operate identical to the primary boiler.
4. Placing the selector switch in the AUTO position allows the primary hot water circulating pump and secondary pumps to be started whenever the outside air temperature sensor allows it to start. Once the pump is started, hot water control proceeds as stated above.
5. Provide controls to utilize the full range of the boiler burner step control capability.
6. During the warm-up period (as determined by the Temperature Control System), the hot water supply temperature shall be design setpoint, regardless of outdoor temperature.
7. Hot water supply temperature shall be linearly reset with outdoor air temperature.
8. Hot water circulating pumps are primary and standby are not to run simultaneously. Start the standby pump if the primary pump fails. Provide automatic lead/lag control to reverse order of pump operation.
9. The Temperature Control Contractor is responsible for installing any wiring necessary between the Building Automation System master control panel and the boiler control panels, and any necessary wiring from unit control panels to input or controlled devices (flow switches, temperature sensors, pumps, etc.).

10. Secondary loop control valve shall modulate to maintain secondary supply water temperature setpoint.
11. Alarms shall include:
 - a. Pump/Flow Failure (each pump).
 - b. High Water Supply Temperature.
 - c. Low Water Return Temperature.
- D. Unit Heater Control: Unit-mounted temperature sensor (where shown) cycles fan motor to maintain constant space temperature. Water flow is balanced, but unrestricted.

3.09 Testing, Adjusting and Balancing

- A. Employ the services of an Independent Testing, Adjusting and Balancing Agency certified by the Associated Air Balance Council to test and balance the indicated systems. Submit six (6) copies of the report to the engineer for review.
- B. Obtain approval from engineer for adjustment of fan speed higher or lower than indicated speed. Make required adjustments to pulley sizes, belts, etc., to accommodate fan speed changes.
- C. Provide the services of one of the following Test and Balance Contractors:
 1. Aerodynamics.
 2. Airdronics.
 3. Dunbar Mechanical, Inc.
 4. Enviro-Aire, Inc.
 5. R.H. Cochrane.
 6. International Test and Balance.
 7. Fluid Dynamics.
 8. Engineer Approved Equal.
- D. Test, adjust, and balance the following Mechanical systems:
 1. Supply air systems;
 2. Return air systems;
 3. Verify temperature control system operation.

3.10 Split-system air-conditioning units (Alternate M3)

- A. Manufacturers: subject to compliance with requirements, provide products by one of the following:
 1. Daikin
 2. LG products
 3. Mitsubishi electric & electronics USA, inc.; HVAC advanced products division.
 4. Sanyo North America Corporation; Sanyo Fisher Company.

3.11 Indoor units (5 tons or less)

A. Wall-mounted, evaporator-fan components:

1. Cabinet: enameled steel with removable panels on front and ends in color selected by architect, and discharge drain pans with drain connection.
2. Refrigerant coil: copper tube, with mechanical bonded aluminum fins and thermal-expansion valve. Comply with ARI 210/240.
3. Fan: direct drive, centrifugal.
4. Fan motors:
 - A. Comply with Nema designation, temperature rating, service factor, enclosure type, and efficiency requirements specified in section 15055 “motors.”
 - B. Multi-tapped, multi-speed with internal thermal protection and permanent lubrication.
 - C. Enclosure type: totally enclosed, fan cooled.
 - D. Nema premium™ efficient motors as defined in nema mg 1.
 - E. Conrollers, electrical devices, and wiring: comply with requirements for electrical devices and connections specified in electrical sections.
5. Airstream surfaces: surfaces in contact with the airstream shall comply with requirements in ASHRAE 62.1.
6. Condensate drain pans:
 - A. Fabricated with one percent slope in at least two planes to collect condensate from cooling coils (including coil piping connections, coil headers, and return bends), and to direct water toward drain connection.
 1. Length: extend drain pan downstream from leaving face to comply with ASHRAE 62.1.
 2. Depth: minimum of 1 inch deep.
 - B. Double-wall, galvanized-steel sheet with space between walls filled with foam insulation and moisture-tight seal.
 - C. Drain connection: located at lowest point of pan and sized to prevent overflow. Terminate with threaded nipple on one end of pan.
 - A. Minimum connection size: nps 3/4"

3.12 Outdoor units (5 tons or less)

A. Air-cooled, compressor-condenser components:

1. Casing: steel, finished with baked enamel, with removable panels for access to controls, weep holes for water drainage, and mounting holes in base. Provide brass service valves, fittings, and gage ports on exterior of casing.
2. Compressor: hermetically sealed with crankcase heater and mounted on vibration isolation device. Compressor motor shall have thermal-and current-sensitive overload devices, start capacitor, relay, and contactor.
 - A. Compressor type: variable speed, rotary.
 - B. Refrigerant charge: r-410a.
 - C. Refrigerant coil: copper tube, with mechanically bonded aluminum fins and liquid subcooler. Comply with ARI 210/240.
3. Fan: aluminum-propeller type directly connected to motor.
4. Motor: permanently lubricated, with integral thermal-overload protection.
5. Hard start kit.
6. Anti-short cycle timer.

3.13 Accessories

- A. Thermostat: wireless remote control.
- B. Automatic-reset timer to prevent rapid cycling of compressor.
- C. Refrigerant line kits: soft-annealed copper suction and liquid lines factory cleaned, dried, pressurized, and sealed; factory-insulated suction line with flared fittings at both ends.

SECTION 15900 - HVAC INSTRUMENTATION AND CONTROLS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions, apply to this Section.

1.2 SUMMARY

- A. This Section includes control equipment for HVAC systems and components, including control components for terminal heating and cooling units.

1.3 DEFINITIONS

- A. DDC: Direct-digital controls.
- B. LAN: Local area network.
- C. MS/TP: Master-slave/token-passing.
- D. PICS: Protocol Implementation Conformance Statement.
- E. PID: Proportional Plus Integral Plus Derivative.
- F. BACNET: An open communication protocol utilizing ANSI/ASHRAE Standard 135-1995, Level 3 (read and write), or higher. The BACNET device shall comply to BTL listed with BACnet MSTP as a device server. The points in the list must be exposed as standard BACnet objects (non-proprietary).

1.4 SYSTEM DESCRIPTION

- A. Work under this section includes a building automation system which includes, but is not limited to, the following:
 - 1. A complete and operating building automation system utilizing field applied panels.
 - 2. Design and installation of control data bases to achieve compliance with sequences of operation.
 - 3. Training of the owner's personnel.
 - 4. Demonstration of the building automation system.
- B. Control systems consists of sensors, indicators, actuators, final control elements, interface equipment, other apparatus, and accessories connected to controllers to operate mechanical systems according to sequences of operation indicated or specified.
- C. The entire Temperature Control System shall be comprised of a network of interoperable, stand-alone digital controllers communicating via BACnet communication protocol to an existing Tridium controller.

- D. All controls to use BACNET interface utilizing non-proprietary standard objects. All database values (i.e., point, software variables, custom program variables) of all building controllers shall be readable by any controller on the network. Provide the Owner with a list of all database addresses.
- E. Control system includes all necessary control components and/or wiring interlock for equipment utilizing stand alone controls including the following:
 - 1. VAV Terminals
 - 2. Control Air Dampers
 - 3. Rooftop Units
 - 4. Unit Heater
 - 5. Boilers
 - 6. Pumps

1.5 SYSTEM PERFORMANCE

- A. Comply with the following performance requirements:
 - 1. Object Command: Reaction time of less than two seconds between operator command of a binary object and device reaction.
 - 2. Object Scan: Transmit change of state and change of analog values to control units within six seconds.
 - 3. Program Execution Frequency: Run capability of applications as often as five seconds, but selected consistent with mechanical process under control.
 - 4. Performance: Programmable controllers shall execute DDC PID control loops, and scan and update process values and outputs at least once per second.
 - 5. Reporting Accuracy and Stability of Control: Report values and maintain measured variables within tolerances as follows:
 - a. Space Temperature: Plus or minus 1 deg F (0.5 deg C).
 - b. Airflow (Terminal): Plus or minus 10 percent of full scale.

1.6 SUBMITTALS

- A. ASHRAE BACnet Statement: PICS for each DDC system component using Bacnet interface (panel, zone controller and field devices) proposed.
- B. Software and Firmware Operational Documentation: Include the following:
 - 1. Software operating and upgrade manuals.
 - 2. Program Software Backup: On a magnetic media or compact disc, complete with data files.
 - 3. Device address list.
 - 4. Printout of software application and graphic screens.
 - 5. Software license required by and installed for DDC workstations and control systems.
- C. Software Upgrade Kit: For Owner to use in modifying software to suit future power system revisions or monitoring and control revisions.
- D. Field Test Reports: Indicate and interpret test results for compliance with performance requirements.
- E. Qualification Data: For firms and persons specified in "Quality Assurance" Article.

- F. General: Submit each item in this Article according to the Conditions of the Contract.
- G. Product Data for each type of product utilized. Include manufacturer's technical Product Data for each control device furnished, indicating dimensions, capacities, performance characteristics, electrical characteristics, finishes of materials, installation instructions, and startup instructions.
- H. Shop Drawings from manufacturer detailing equipment assemblies and indicating dimensions, weights, loadings, required clearances, method of field assembly, components, and location and size of each field connection.
- I. Shop Drawings containing the following information for each control system:
1. Bill and materials of equipment indicating quantity, manufacturer, and model number.
 2. Schematic flow diagram showing fans, pumps, coils, dampers, valves, and control devices.
 3. Each control device labeled with setting or adjustable range of control.
 4. Diagrams for all required electrical wiring. Clearly differentiate between factory-installed and field-installed wiring.
 5. Trunk cable schematic showing programmable control unit locations and trunk data conductors.
 6. Listing of connected data points, including connected control unit and input device.
 7. Data (connected and calculated) point addresses, and operator notations.
 8. System configuration showing peripheral devices, batteries, power supplies, diagrams, modems, and interconnections.
 9. Software description and sequence of operation.
 10. Logic diagrams.
 11. Distributed control architecture diagram.
 12. A statement addressing vendor's position on "Guaranteed Response Time" to service calls.
 13. A localized structure chart of vendor personnel, with names and functions. Note key personnel to this project along with phone numbers where they can be reached.
 14. Programming manuals.
- J. Operational Descriptions: Provide a complete written operational sequence of operation description of all controlled systems and equipment. Provide sequences that are coordinated with the installation diagrams, and those that are easily understandable by the Owner's operating personnel.
1. Clearly note deviations in details from the specified sequences of operation on the sequence portion of the submittal.
- K. Point Lists: Provide a complete listing of Control System control points, real and virtual, with consistent control device notations and identified type of point (analog/digital, input/output). Provide lists that directly correspond to the submitted schematic diagrams.
- L. Wiring diagrams detailing wiring for power, signal, and control systems and differentiating clearly between manufacturer-installed and field-installed wiring.
- M. Maintenance data for control systems equipment to include in the operation and maintenance manual. Include the following:
1. Maintenance instructions and spare parts lists for each type of control device.
 2. Interconnection wiring diagrams with identified and numbered system components and devices.
 3. Step-by-step procedures indexed for each operator function.
 4. Inspection period, cleaning methods, cleaning materials recommended, and calibration tolerances.
 5. Calibration records and list of set points.

- N. Project Record Documents: Record actual locations of control components, including control units, thermostats, and sensors. Revise Shop Drawings to reflect actual installation and operating sequences.
- O. The Owner shall be named license holder of all software associated with any and all incremental work on the project. In addition the Owner shall receive the use of all job specific configuration documentation, data files, and application level software developed for the project. This shall include all custom job specific software code and documentation for all configuration and programming that is generated for the project and/or configured for use with LAN/WAN/Intranet and Internet connected routers and devices. Any and all required IDS and passwords for access to any component or software program shall be provided to the Owner.

1.7 QUALITY ASSURANCE

- A. Manufacturer Qualifications: A firm experienced in manufacturing automatic temperature-control systems similar to those indicated for this Project and with a record of successful in-service performance.
- B. Coordinate work with Owner's Agent. Demonstrate that all components of the HVAC system and controls function in all modes of operation, in accordance with the approved sequence of operations and the design engineer's intent.
- C. Electrical Components, Devices, and Accessories: Listed and labeled as defined in NFPA 70, Article 100, by a testing agency acceptable to authorities having jurisdiction, and marked for intended use.
- D. Comply with NFPA 90A, "Installation of Air Conditioning and Ventilation Systems."
- E. Comply with ASHRAE 135 for DDC system control components.
- F. Each manufacturer/installer of control equipment and systems must be approved for bidding by the engineer prior to the published bid due date. To accomplish this, all bidders must provide the engineer a pre-review submittal no less than two weeks prior to the published bid due date. This submittal shall include:
 - 1. Qualification data for firm and installing personnel.
 - 2. Product data for products to be utilized on the project.
 - 3. Provide a list of currently working installations of similar size, to that specified and proposed for this project. Limit the installation list to those within a fifty (50) mile radius of Toledo, Ohio. From this list, the engineer/owner may select a location or locations where a field visit would be made and the working system would be observed.
- G. Upon review of this submittal, the engineer shall publish, through official addendum, the names of those manufacturers/installers of control equipment and systems which are approved for bidding. Only those manufacturers and installers who have been reviewed and approved for bidding by the Engineer prior to the bid date shall be able to bid.
- H. Installer Qualifications: Automatic Control System manufacturer's authorized representative who is trained and approved for installation of system components required for this project.
- I. NEC Compliance: Comply with applicable requirements of NEC pertaining to installation of energy monitoring and control systems, including, but not limited to, remote-control, signaling and power-limited circuits.

- J. UL Compliance: Provide Building Automation System components and ancillary equipment which are UL-listed and labeled under UL 916 Energy Management Systems.
- K. NEMA Compliance: Comply with NEMA's Pub. NO. 250, and STDS ICS 1, 2, 3, and 6 pertaining to enclosures and controls for energy monitoring and control systems.
- L. FCC Compliance: Comply with the emissions requirements of Subpart J of Part 15, Federal Communications Commission Rules, pertaining to Class A radiation and computing devices and low power communication equipment operating in commercial-type environment.
- M. FCC Compliance: Comply with Part 68, Federal Communication Commission Rules, pertaining to labeling of telephone equipment, including data sets and modems, indicating FCC registration and numbering.
- N. EIA Compliance: Comply with Electronic Industries Association's Std RS-232 pertaining to interfacing requirements for connecting data terminals and communication equipment.
- O. IEEE Compliance: Comply with Electronic Industries Association's Std RS-232 pertaining to interfacing requirements for connecting data terminals and communication equipment.
- P. ANSI Compliance: Comply with ANSI X3.4, " Code of Information Interchange" requirements for interfacing computer data processing with communication terminal equipment.

1.8 DELIVERY, STORAGE, AND HANDLING

- A. Store equipment and materials inside and protected from weather in Owner designated area.
- B. System software: Update to latest version of software at project completion.
- C. Deliver wire and cable according to NEMA WC-26.

1.9 COORDINATION

- A. Coordinate location of sensors and other exposed control devices with plans and Owner before installation.
- B. Coordinate supply of conditioned electrical circuits for control units and VAV terminals.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

- A. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
 - 1. Control Valves and Damper Actuators
 - a. Schneider Electric

- b. Belimo
- c. Honeywell
- d. Johnson Controls

2.2 GENERAL

- A. Provide a Building Automation System that includes, but is not limited to the following components:
 - 1. Interface consisting of hardware and software that allows full user monitoring and adjustment of system parameters.
 - 2. System Application Control Units that manage the Energy and Building Management capabilities of the automation system as well as facilitate central monitoring. System application control units shall communicate to other building automation system components using Bacnet.
 - 3. Application Specific Control Units that provide distributed, pre-engineered control, specific to the mechanical equipment specified. Application specific control units shall communicate to other building automation system components using Bacnet.
 - 4. Custom Application Control Units with distributed custom programming capability that provide control for nonstandard control sequences. Custom application control units shall communicate to other building automation system components using Bacnet.
 - 5. Data Communications capability that allows data to be shared between the various control units in the architecture.
 - 6. System software that includes provisions for global application functions, application software for distributed control units and operator interface software. All software shall be written and operated with the owner in first priority.
 - 7. Control devices such as sensors, actuators, dampers, valves relays, and other control devices required to execute the specified sequences of operation.
- B. Provide a system where the failure of any single component does not interrupt the control strategies of other operational devices. System expansion is accomplished through the addition of control devices, controllers, and other devices described in this specification, without the need for system software changeout.

2.3 DDC EQUIPMENT

- A. Application Software: Include the following:
 - 1. Input/output capability from operator interface panel.
 - 2. Operator system access levels via software password.
 - 3. Database creation and support.
 - 4. Alarm processing.
 - 5. Event processing.
 - 6. Automatic restart of field equipment on restoration of power.
 - 7. Data collection and reporting.
 - 8. Maintenance management.

- B. Control Units: Modular, comprising processor board with programmable, nonvolatile, random-access memory; local operator access and display panel; integral interface equipment; and backup power source.
- C. Provide building automation field panels capable of stand-alone operation and utilizing distributed processing, not dependent upon any supervisory computer. Provide panels that are field programmable by the owner's personnel and are capable of being networked into the automation system via communication data lines.
 - 1. Units monitor or control each input/output point; process information; execute commands from other control units, devices, and operator stations; and download from or upload to operator station.
 - 2. Stand-alone mode control functions operate regardless of network status. Functions include the following:
 - a. Global communications.
 - b. Discrete/digital, analog, and pulse input/output.
 - c. Monitoring, controlling, or addressing data points.
 - d. Testing and developing control algorithms without disrupting field hardware and controlled environment.
 - 3. Local operator interface provides for download from or upload to mobile operator station.
 - 4. BACnet Conformance: Reside on BACnet LAN in Ethernet IEEE 802.3, Class 3, minimum, with routers between LAN and other panels, with at least one communication port, and have minimum capabilities defined in PICS for the following areas:
 - a. Network.
 - b. Functional groups.
 - c. Standard application services supported.
 - d. Standard objects supported.
- D. Local Control Units: Modular, comprising processor board with electronically programmable, nonvolatile, read-only memory; and backup power source.
 - 1. Units monitor or control each input/output point; process information; and download from or upload to operator station.
 - 2. Stand-alone mode control functions operate regardless of network status. Functions include the following:
 - a. Global communications.
 - b. Discrete/digital, analog, and pulse input/output.
 - c. Monitoring, controlling, or addressing data points.
 - 3. Local operator interface provides for download from or upload to mobile operator station.
 - 4. BACnet Conformance: Reside on BACnet LAN using MS/TP, Class 2, minimum, with at least one communication port, and have minimum capabilities defined in PICS for the following areas:
 - a. Network.
 - b. Functional groups.
 - c. Standard application services supported.
 - d. Standard objects supported.
- E. LANs: Capacity for a minimum of 10 workstations connected to multiuser, multitasking environment with concurrent capability to access DDC network or control units utilizing Bacnet.

1. Media: Ethernet, peer-to-peer CMA/CD, operating at 10 MBps.

F. Software: Update to latest version of software at Project completion. Include and implement the following capabilities from the control units:

1. Units of Measure: Inch-pound and SI (metric).
2. Load Control Programs: Demand limiting, duty cycling, automatic time scheduling, start/stop time optimization, night setback/setup, DDC with fine tuning, and trend logging.
3. Programming Application Features: Include trend point, alarm messages, weekly scheduling, and interlocking.

2.4 SENSORS

A. Electronic Sensors: Vibration and corrosion resistant; for wall or ceiling mounting as required.

1. Thermistor temperature sensors as follows:

- a. Accuracy: Plus or minus 0.36 deg F (0.2 deg C) at calibration point.
- b. Wire: Twisted, shielded-pair cable.
- c. Temperature Sensors (secured areas only): Provide lockable steel cover.

1. Set Point Adjustment: Push button.
2. Set point indication: Backlit LCD.
3. Orientation: Vertical.
4. Unoccupied Schedule Override Push Button.
5. BACNET Communication.

2. Resistance Temperature Detectors: Platinum.

- a. Accuracy: Plus or minus 0.2 percent at calibration point.
- b. Wire: Twisted, shielded-pair cable.
- c. Insertion Elements for Liquids: Brass socket with minimum insertion length of 2-1/2 inches.
- d. Outside-Air Sensors: Watertight inlet fitting, shielded from direct sunlight.

B. Equipment operation sensors as follows:

1. Status Inputs for Electric Motors: Current-sensing relay with current transformers, adjustable and set to 175 percent of rated motor current.

C. Electronic Valve/Damper Position Indication: Visual scale indicating percent of travel and 2- to 10-V dc, feedback signal.

D. Water-Flow Switches: Pressure-flow switches of bellows-actuated mercury or snap-acting type, with appropriate scale range and differential adjustment, with stainless-steel or bronze paddle. For chilled-water applications, provide vaporproof type.

2.5 ACTUATORS

A. Electronic Actuators: Direct-coupled type designed for minimum 60,000 full-stroke cycles at rated torque.

1. Valves: Size for torque required for valve close-off at maximum pump differential pressure.
2. Dampers: Size for running torque required for damper closure at maximum fan differential pressure.
3. Coupling: V-bolt and V-shaped, toothed cradle.
4. Overload Protection: Electronic overload or digital rotation-sensing circuitry.
5. Fail-Safe Operation: Mechanical, spring-return mechanism.
6. Power Requirements (Modulating): Maximum 10 VA at 24-V ac or 8 W at 24-V dc.
7. Proportional Signal: 2- to 10-V dc or 4 to 20 mA, and 2- to 10-V dc position feedback signal.
8. Temperature Rating: Minus 22 to plus 122 deg F (minus 30 to plus 50 deg C).
9. Run Time: 12 seconds open, 5 seconds closed.

2.6 CONTROL VALVES

- A. Control Valves: Factory fabricated, of type, body material, and pressure class based on maximum pressure and temperature rating of piping system, unless otherwise indicated.
- B. Terminal Unit Control Valves: Bronze body, bronze trim, two- port as indicated, replaceable plugs and seats, union and threaded ends.
 1. Rating: Class 125 for service at 125 psig (862 kPa) and 250 deg F (121 deg C) operating conditions.
 2. Sizing: 3-psig (21-kPa) maximum pressure drop at design flow rate, to close against pump shutoff head.
 3. Flow Characteristics: Two-way valves shall have equal percentage characteristics.

2.7 CONTROL CABLE

- A. General: Provide conductors of type and quantity as required to achieve the sequences of operation specified.
- B. Class 1 Control Circuits: Type THHN/THWN, copper conductor in raceway, color coded.
- C. Electrical metallic tubing (EMT) and fittings: ANSI C80.3;
 1. EMT shall be U.L. approved galvanized thin wall conduit. Couplings and connectors shall be compression type with hexnut, expansion-gland, zinc or chromium-plated, or set screw type fittings.
- D. Flexible Metal Conduit: Aluminum or zinc-coated steel.
- E. Fittings: NEMA FB 1, compatible with conduit/tubing materials.
- F. Cast Metal Boxes: NEMA FB 1, cast aluminum with gasketed cover.
- G. Plenum Cable: All cabling not installed in a raceway shall be listed and labeled for plenum application.

2.8 TRANSFORMERS AND POWER SUPPLIES

- A. Control Transformers shall be UL Listed, Class 2 Current-Limiting Type, or shall be furnished with over-current protection in both primary and secondary circuits for Class 2 service.
- B. Unit output shall match the required output current and voltage requirements. Current output shall allow for 50% safety factor. Output ripple shall be 70.0 mV maximum peak-to-peak. Regulation shall be 5% line and load combined, with 50 microsecond response time for 50% load changes. Unit shall have built-in over-voltage protection.
- C. Unit shall operate between 0 C and 50 C.
- D. Unit shall be UL recognized.

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Verify that conditioned power supply is available to control units and VAV terminals.

3.2 INSTALLATION, GENERAL

- A. Install equipment level and plumb.
- B. Verify location of control sensors with plans and Owner before installation.
- C. Install guards on sensors where indicated.

3.3 INSTALLATION OF BUILDING AUTOMATION SYSTEM:

- A. Install Building Automation System as required, in accordance with system manufacturer's written instructions, and with recognized industry practices, and ensure that equipment complies with requirements. Comply with requirements of NEC, and applicable portions of NECA's "Standard of Installation" pertaining to general electrical installation practices.
- B. Coordinate with existing conditions, including power distribution and equipment, as necessary to interface installation of Building Automation System work with existing equipment.
- C. Install software in control units. Implement all features of programs to specified requirements and appropriate to sequence of operation.
- D. Connect and configure equipment and software to achieve the sequence of operation specified.

3.4 INSTALLATION OF BUILDING AUTOMATION FIELD PANELS:

- A. Install automation field panels as required, in accordance with system manufacturer's written instructions, and with recognized industry practices, and ensure that equipment complies with requirements. Comply with requirements of NEC, and applicable portions of NECA's "Standard of Installation" pertaining to general electrical installation practices.

- B. Coordinate with existing conditions, including power distribution and equipment, as necessary to interface installation of automation work with existing equipment.

3.5 ELECTRICAL WIRING AND CONNECTIONS

- A. Coordinate layout and installation of raceway and boxes with other construction elements to ensure adequate headroom working clearance, and access.
- B. Run raceways to avoid trapping wherever possible. Provide necessary inserts in poured concrete areas, and furnish and install sleeves through walls, floors and roofs for passage of raceways. Where necessary to cut holes through existing walls, etc., for raceways, the work shall be neat and the Contractor shall make necessary repairs to the building structure using material in no way inferior to that originally installed and using labor skilled in the trades involved.
- C. Fire Stop conduit through fire resistance rated walls using approved methods to maintain the fire resistance rating.
- D. Examine surfaces to receive raceways, boxes, enclosures, and cabinets for compliance with installation tolerances and other conditions affecting performance of the raceway system. Do not proceed with installation until unsatisfactory conditions have been corrected.
- E. All Cables:
 - 1. Exposed: Electrical metallic tubing, minimum 1/2" c.
 - 2. Concealed: Electrical metallic tubing, minimum 1/2" c.
 - 3. Connection to Vibrating Equipment including transformers and electric solenoid or motor-driven equipment with flexible metal.
 - 4. Exposed conduit above the bottom chord of the bar joist may be electrical metallic tubing, minimum 3/4" c. Junction boxes above the bottom chord may be 4" square pressed steel with blank cover.
 - 5. Boxes and Enclosures: NEMA Type 1.
 - 6. Device outlet boxes for exposed conduit work shall be galvanized stamped steel unless otherwise indicated on the drawings with matching galvanized steel cover plates.
 - 7. Device outlet and junction boxes for flush devices with concealed conduit shall be pressed steel with appropriate sized plaster ring.
 - 8. Bundle and harness multiconductor instrument cable in place of single cables where a number of cables follow a common path.
 - 9. Fasten flexible conductors, bridging cabinets and doors, neatly along hinge side; protect against abrasion. Tie and support conductors neatly.
 - 10. Number-code or color-code conductors, except local individual room controls, for future identifications and servicing of control system.
- F. Install wires and cables as indicated, according to manufacturer's written instructions and the NECA "Standard of Installation."
- G. Install raceways free of debris, moisture, grease, etc. prior to pulling of conductors. Exercise extreme care when pulling conductor so as not to damage conductor insulation.
- H. Pull conductors into raceway simultaneously where more than one is being installed in same raceway.
 - 1. Use pulling compound or lubricant where necessary; compound used must not deteriorate conductor or insulation.

2. Use pulling means, including fish tape, cable, rope, and basket-weave wire/cable grips that will not damage cables or raceway.
 - I. Connect electrical components to wiring systems and to ground as indicated and instructed by manufacturer. Tighten connectors and terminals, including screws and bolts, according to equipment manufacturer's published torque-tightening values for equipment connectors. Where manufacturer's torquing requirements are not indicated, tighten connectors and terminals according to tightening requirements specified in UL 486A.

3.6 CONNECTIONS

- A. Ground equipment.
 1. Tighten electrical connectors and terminals according to manufacturer's published torque-tightening values. If manufacturer's torque values are not indicated, use those specified in UL 486A and UL 486B.

3.7 IDENTIFICATION

- A. Label wiring and cabling, including that within factory-fabricated panels, with control system address or termination number at each end within 5 cm (2 in.) in termination.
- B. Permanently label or code each point of field terminal strips to show instrument or item served.
- C. Label control panels with minimum 1 cm (1/2 in.) letters on laminated plastic nameplates.
- D. Label each control component with a permanent label. Label plug-in components such that label remains stationary during component replacement.
- E. Label 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. Label identifiers shall match documents.
- H. Update electrical panel schedule identifying new power circuit.

3.8 FIELD QUALITY CONTROL

- A. Manufacturer's Field Service: Engage a factory-authorized service representative to inspect field-assembled components and equipment installation, including piping and electrical connections. Report results in writing.
 1. Leak Test: After installation, charge system and test for leaks. Repair leaks and retest until no leaks exist.
 2. Operational Test: After electrical circuitry has been energized, start units to confirm proper unit operation. Remove malfunctioning units, replace with new units, and retest.
 3. Test and adjust controls and safeties. Replace damaged and malfunctioning controls and equipment, and retest.
 4. Calibration test electronic controllers by disconnecting input sensors and stimulating operation with compatible signal generator.

- B. Replace damaged or malfunctioning controls and equipment.
 - 1. Start, test, and adjust control systems.
 - 2. Demonstrate compliance with requirements, including calibration and testing, and control sequences.
 - 3. Adjust, calibrate, and fine tune circuits and equipment to achieve sequence of operation specified.
- C. Verify DDC as follows:
 - 1. Verify software including automatic restart, control sequences, scheduling, reset controls, and occupied/unoccupied cycles.
 - 2. Verify local control units including self-diagnostics.

3.9 DEMONSTRATION

- A. Manufacturer's Field Services: Provide the services of a factory-authorized service representative to demonstrate for Owner's maintenance personnel as specified below.
 - 1. Demonstrate Owner's maintenance personnel on procedures and schedules related to startup and shutdown, troubleshooting, servicing, and preventive maintenance.
 - 2. Schedule demonstration with Owner with at least 7 days' notice.

3.10 ADJUSTING

- A. Calibrating and Adjusting:
 - 1. Calibrate instruments.
 - 2. Make three-point calibration test for both linearity and accuracy for each analog instrument.
 - 3. Calibrate equipment and procedures using manufacturer's written recommendations and instruction manuals. Use test equipment with accuracy at least double that of instrument being calibrated.
 - 4. Control System Inputs and Outputs:
 - a. Check analog inputs at 0, 50, and 100 percent of span.
 - b. Check analog outputs using milliampere meter at 0, 50, and 100 percent output.
 - c. Check digital inputs using jumper wire.
 - d. Check digital outputs using ohmmeter to test for contact making or breaking.
 - e. Check resistance temperature inputs at 0, 50, and 100 percent of span using a precision-resistant source.
 - 5. Temperature:
 - a. Calibrate resistance temperature transmitters at 0, 50, and 100 percent of span using a precision-resistance source.
 - 6. Stroke and adjust control valves, following the manufacturer's recommended procedure, so that valve or damper is 100 percent open and closed.
 - 7. Provide diagnostic and test instruments for calibration and adjustment of system.
- B. Adjust initial temperature set points.

3.11 OWNER TRAINING (UPON PROJECT COMPLETION)

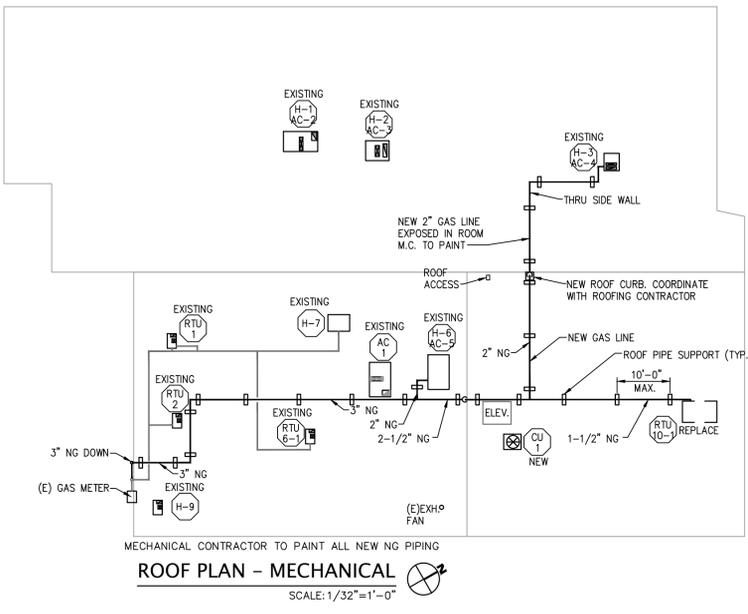
- A. Provide 3 copies of an operator's manual describing all operating and maintenance service procedures to be used with the temperature control and Building Automation System supplied. Instruct the owner's designated representatives in these procedures during the start-up and test period. The duration of the instruction period shall be no less than 4 hours, and shall encompass all of the following topics:
1. System Initialization
 2. Terminology
 3. System Access and Operation
 4. Reporting
 5. Alarms
 6. Programming
 7. Task Execution
 8. Maintenance and Support Services
 9. Software Identification and Instruction
 10. Hardware Identification and Instruction
- B. Acceptance Procedure: Upon completion of the start-up and testing, the BAS Contractor shall document proper operation. The BAS Contractor shall be responsible for generating all software and entering all database information necessary to perform the sequences of control and specified software routines. An acceptance test in the presence of the owner's representative and/or engineer shall be performed, with accompanying signatures stating acceptance.

3.12 ON-SITE ASSISTANCE

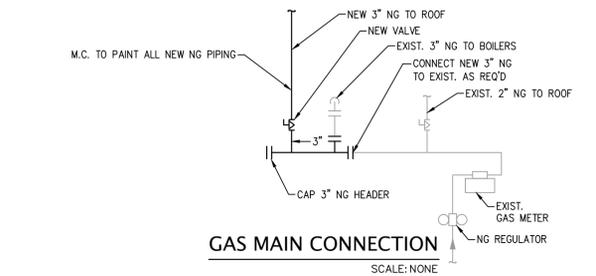
- A. Occupancy Adjustments: Within one year of date of Substantial Completion, provide up to three Project site visits, when requested by Owner, to adjust and calibrate components and to assist Owner's personnel in making program changes and in adjusting sensors and controls to suit actual conditions.

END OF SECTION 15900

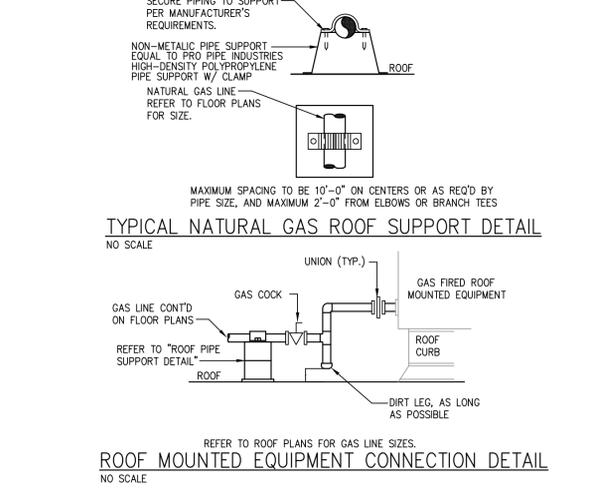
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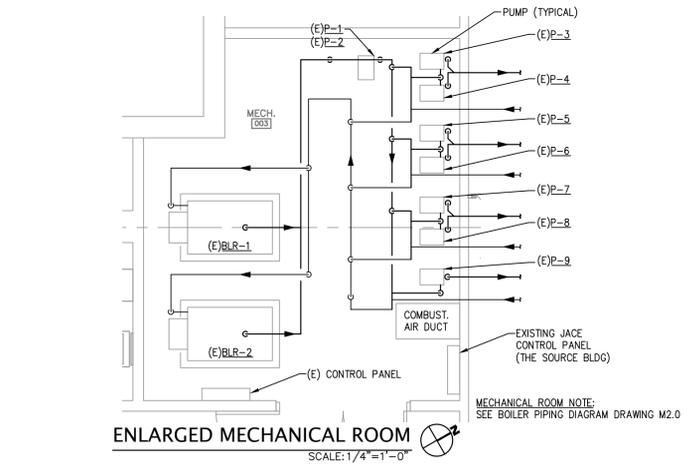
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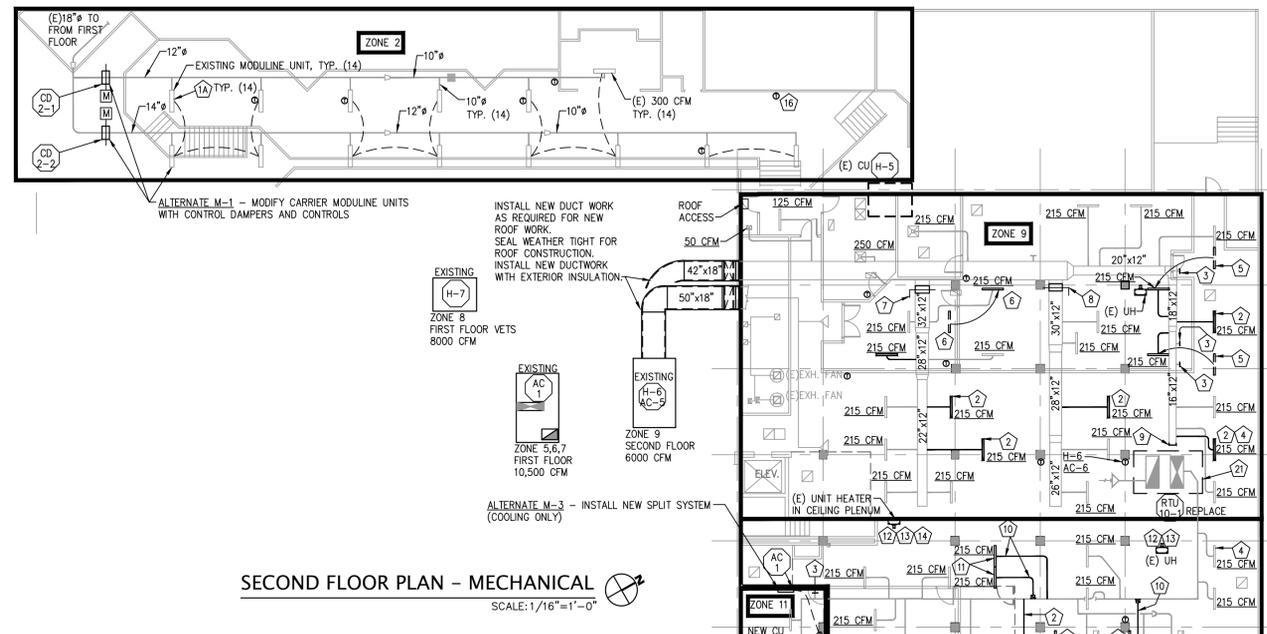
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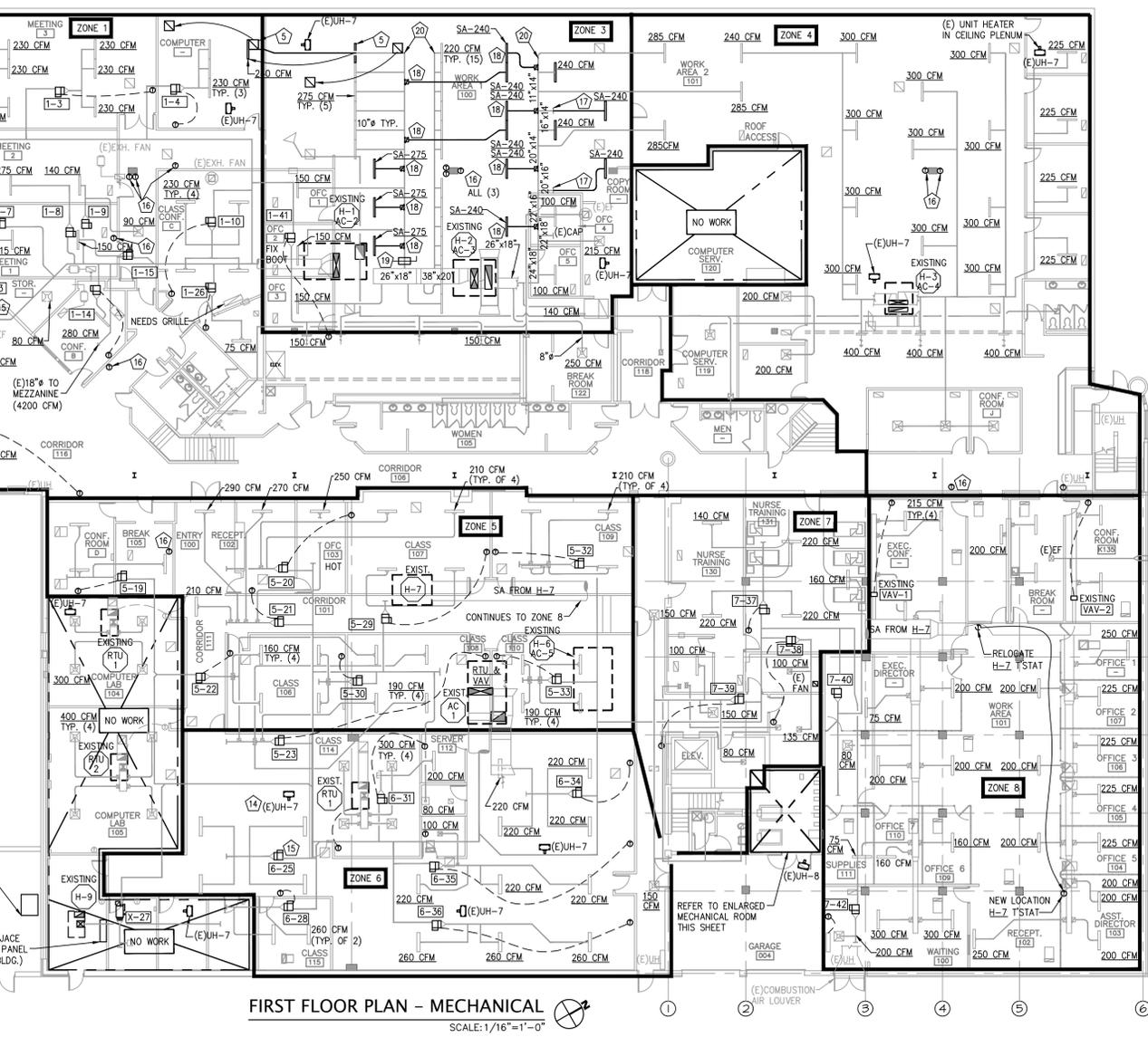
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ALTERNATE M1 KEY NOTE

- 1A EXISTING MODULE TO REMAIN AND CONVERTED TO CV DIFFUSER. (TYPICAL)
- SUPPLY AIR IN UPPER LOBBY / BREAK ROOM PROVIDED THRU EXISTING CARRIER MODULE UNITS WHICH ARE TO REMAIN. DISCONNECT ALL SYSTEM PRESSURE CONTROL TUBING BETWEEN AND INTERNAL TO MODULES AND CAP UNIT PORTS. DISCONNECT MASTER UNIT THERMOSTATS AND CAP AIR PORTS. OPEN SIDE ACCESS PANEL AND REMOVE CONTROL BLADDER AND FELT PROTECTION STRIPS. MODULES ARE TO SERVE AS CONSTANT VOLUME DIFFUSERS. BALANCE TO CFM LISTED NEAR DIFFUSERS.

GENERAL ALTERNATE DESCRIPTION

- ALTERNATE M-1 - MODIFY CARRIER MODULE UNITS WITH CONTROL DAMPERS AND CONTROLS
- ALTERNATE M-2 - INSTALL BACNET/LON FROM EXISTING JACE PANELS. (ONE IN MECHANICAL ROOM AND ONE IN ELECTRICAL ROOM) TO RTU AND VAV DAMPER TSTAT INCLUDING ALL FRONT END GRAPHICS. SEE SPECIFICATIONS FOR DESCRIPTION.
- ALTERNATE M-3 - INSTALL NEW SPLIT SYSTEM (COOLING ONLY) IN SECOND FLOOR COMPUTER ROOM. (ZONE 11) NEW CU ON ROOF.

MECHANICAL KEY NOTES:

- 1 VERIFY EXISTING VAV BOX AND DUCTWORK TO EXISTING DIFFUSER.
- 2 REPLACE WITH NEW FLEX AS REQUIRED. CONNECT DUCTWORK TO DIFFUSER AS INDICATED. SECURE FLEX DUCT AT BOTH ENDS.
- 3 REMOVE FLEX DUCT AS REQUIRED AND CAP EXISTING TAKE-OFF. FIELD VERIFY SIZE.
- 4 REMOVE TAPE FROM DIFFUSER. RECONNECT TO SYSTEM AS REQUIRED AND BALANCE CFM PER MECHANICAL FLOOR PLAN. SECURE FLEX DUCT AT BOTH ENDS.
- 5 RELOCATE DIFFUSER. CONNECT TO NEW TAKE OFF DAMPER WITH NEW FLEX.
- 6 ROUND DIFFUSER TO BE REPLACED WITH RELOCATED SLOT DIFFUSER
- 7 NEW MANUAL BALANCING DAMPER TO BE INSTALLED ON EXISTING DUCTWORK. BALANCE TO X CFM. FIELD VERIFY DUCT SIZE.
- 8 NEW MANUAL BALANCING DAMPER TO BE INSTALLED ON EXISTING DUCTWORK. BALANCE TO X CFM. FIELD VERIFY DUCT SIZE.
- 9 SUPPLY END CAPS ON DUCT AS REQUIRED. FIELD VERIFY SIZE.
- 10 ADD NEW DUCTWORK.
- 11 ADD NEW DIFFUSER TO MATCH EXISTING TYPE AND STYLE.
- 12 EXISTING UNIT HEATER AND ADD CONTROL TO TURN OFF FAN WHEN NOT IN HEATING MODE.
- 13 CONFIRM OPERATION OF UNIT HEATERS.
- 14 CONTRACTOR TO FIELD VERIFY UH CONTROL LOCATIONS. LOCATED PLENUM SPACE.
- 15 CONTRACTOR TO FIELD VERIFY TSTAT CONTROL LOCATION PER VAV BOX. REPORT ANY DISCREPANCIES OR FINDINGS TO ENGINEER.
- 16 CONTRACTOR TO CONFIRM TSTAT SERVES WHICH AREA AND REPORT TO ENGINEER. CONTRACTOR TO LABEL TSTAT AS VAV, RTU, UH TAG.
- 17 REMOVE EXISTING CAP AND ADD NEW 8" FLEX TO NEW SLOT DIFFUSER. SECURE ENDS.
- 18 ADD NEW 10" SPIN IN DAMPER, FLEX AND SLOT DIFFUSER. SECURE ENDS.
- 19 NEW MANUAL BALANCING DAMPER TO BE INSTALLED ON EXISTING DUCTWORK. BALANCE TO X CFM. FIELD VERIFY DUCT SIZE.
- 20 ALL (3) MAIN SUPPLY DUCTS IN ZONE 3 HAVE THE SAME SIZE DUCTS. SIZES SHOWN ON NOTE DUCT. FIELD VERIFY SIZE FOR WORK AREAS.
- 21 REPLACE EXISTING ROOFTOP UNIT. PROVIDE ROOF CURB ADAPTOR. ELEC. CONTRACTOR TO DISCONNECT AND RECONNECT POWER WIRING AND SMOKE DETECTOR. INTERLOCK WIRING AS REQUIRED.

D

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B

A

PROJECT TITLE
**LUCAS COUNTY
THE SOURCE
HVAC UPGRADE**

1301 MONROE ST.
TOLEDO, OHIO

CHECKED JNH
APPROVED KPL

TCI JOB NO. 106045

SHEET TITLE
**FIRST AND
SECOND FLOOR
MECHANICAL HVAC
ROOF PLAN &
BOILER PIPING**

SHEET NO.

M1.0

ROOFTOP HEATING AND AIR CONDITIONING UNIT SCHEDULE

<<ALTERNATE M-3>>

(REFER TO SPECIFICATION)

TAG	LOCATION SERVING	NOM TONS	ELECTRICAL			EVAP. FAN SECTION			COOLING SECTION				HEATING SECTION (NATURAL GAS)				FILTERS TYPE	ACCESSORIES		SMOKE DETECTOR	OPER. WT. (lbs.)	MAKE	MODEL	REFRIG.	REMARKS										
			VOLTAGE	MCA	MFA	CFM	CFM OA	HP	ESP (in.)	SEER	AMB	EAT F DB/WB	LAT F DB/WB	TOT MBH	SENS MBH	COMPRESSORS QTY		TYPE	GAS PRESS. (IN. W.C.)							EAT F	LAT F	MBH IN	MBH OUT	# STAGES					
RTU-10-1	ZONE 10 & 11	10.0	460/3ø/60	28.1	35	4200	850	2	0.50	11.1	95	80/67	55/54	120	84	2	SCROLL	7-11	65	111	180/120	144/96	2	2" THROWAWAY	NO	YES	YES	BAROMETRIC	BY T.C.C.	BY E.C.	1000	CARRIER	48TRD12A306-0A1CO	R410A	SET CU-1 ON EQUIPMENT RAILS OR EQUIVALENT

UNITARY AIR CONDITIONING UNIT SCHEDULE

TAG	LOCATION AREA	FAN SECTION (INDOOR UNIT)			EVAPORATOR COIL (INDOOR UNIT)		ELECTRICAL (INDOOR UNIT)			INDOOR UNIT				REMOTE AIR COOLED CONDENSING UNIT (OUTDOOR UNIT)				ELECTRICAL (OUTDOOR UNIT)				OUTDOOR UNIT			REMARKS
		CFM (DRY)	CFM (WET)	dBA	RATED CAPACITY (Btu/h)	CAPACITY RANGE (Btu/h)	VOLTAGE	MCA	FLA	MAKE	MODEL	WEIGHT	TAG	AREA	COMPRESSOR	REFRIG.	CFM	SEER	VOLTAGE	MCA	MOCPP	FLA	MAKE	MODEL	
AC-11-1	COMPUTER ROOM	389-639	350-576	32-42	30,700	9,800-30,700	208/1/60	1	0.36	DAIKIN	PKA-A30KAL	46 lbs.	CU-1	ROOF	DRIVEN	R-410A	1,941	15.5	208/1/60	21	25	0.93	DAIKIN	PUY-A30NHA3	163 lbs.

AC-11-1 NOTE - DRAIN PAN TO BE SUPPLIED WITH OVERFLOW DETECTION DEVICE (FACTORY MOUNTED)

CONTROL DAMPER SCHEDULE

<<ALTERNATE M-1>>

TAG	LOCATION		TYPE	CFM	INLET	OUTLET	MAKE	MODEL	REMARKS
	DWG	ROOM							
CD-2-1	M1.0	MEZZANINE	MOTORIZED	1800	12"	12"	GREENHECK	VCD	
CD-2-2	M1.0	MEZZANINE	MOTORIZED	2400	14"	14"	GREENHECK	VCD	

EXISTING UNIT SCHEDULE <<FOR REFERENCE>>

SEE PLANS FOR CFM'S

ZONE-TAG	SERVING LOCATION ROOM	EXISTING RTU TAGS
1-1	WORK AREA 1	H-1/AC-2
1-2	WORK AREA 1	H-1/AC-2
1-3	WORK AREA 1	H-1/AC-2
1-4	WORK AREA 1	H-1/AC-2
1-5	WORK AREA 1	H-1/AC-2
1-6	WORK AREA 1	H-1/AC-2
1-7	WORK AREA 1	H-1/AC-2
1-8	WORK AREA 1	H-1/AC-2
1-9	WORK AREA 1	H-1/AC-2
1-10	WORK AREA 1	H-1/AC-2
1-11	WORK AREA 1	H-1/AC-2
1-12	WORK AREA 1	H-1/AC-2
1-13	WORK AREA 1	H-1/AC-2
1-14	WORK AREA 1	H-1/AC-2
1-15	WORK AREA 1	H-1/AC-2
1-16	WORK AREA 1	H-1/AC-2
1-17	WORK AREA 1	H-1/AC-2
1-18	WORK AREA 1	H-1/AC-2
1-26	TRIANGLE SHAPED ROOM BY CONFERENCE C	H-1/AC-2
1-41	OPEN OFFICE HIGH CEILING (EAST OF ZONE 3)	H-1/AC-2
5-19	SOUTH OFFICE	AC-1
5-20	CLASS 107	AC-1
5-21	ENTRY 100/RECEPT 102/OFc. 103	AC-1
5-22	CLASS 106	AC-1
5-23	CLASS 108/ROOM EAST OF SERVER 112	AC-1
5-29	CLASS 107	AC-1
5-30	CLASS 106	AC-1
5-32	CLASS 109	AC-1
5-33	CLASS 110	AC-1
6-25	LARGE GROUP 113	AC-1
6-28	COMPUTER 115	AC-1
6-31	SERVER 112	AC-1
6-34	OPEN OFFICE AREA	AC-1
6-35	CORRIDOR	AC-1
6-36	EAST OFFICES	AC-1
7-37	NURSING TRAINING 130 AND 131	AC-1
7-38	MECH./ELEC. ROOMS NEAR BOILERS (TAPED OFF)	AC-1
7-39	ELEV. EQUIP./OFFICE 105/CORRIDOR	AC-1
7-40	CONFERENCE B 103/SUPPLIES 111	AC-1
7-42	WAITING 100	AC-1
VAV-1	VETERANS	H-7
VAV-2	VETERANS	H-7
X-24	-	AC-1
X-27	OLD ELECTRICAL ROOM 172	AC-1

UNIT TAGS-ZONE SCHEDULE <<FOR REFERENCE>>

UNIT TAG	EXISTING UNIT DESCRIPTION	CFM	ZONE	LOCATION
AC-1	EXISTING 30 TON ROOF TOP UNIT NEW VAV CONTROLS	10,500 CFM	ZONE 5 ZONE 6 ZONE 7	WEST OWENS COMMUNITY COLLEGE EAST OWENS COMMUNITY COLLEGE NORTH OWENS COMMUNITY COLLEGE
H-1/AC-2	EXISTING 30 TONS VAV ROOFTOP UNIT WITH ELEC HEAT	10,500 CFM	ZONE 1 ZONE 2	SOUTHWEST FIRST FLOOR MEZZANINE
H-2/AC-2	EXISTING 30 TONS CONSTANT VOLUME ROOFTOP UNIT WITH ELEC HEAT	10,000 CFM	ZONE 3	WEST CENTRAL FIRST FLOOR
H-3/AC-2	EXISTING 15 TONS CONSTANT VOLUME ROOFTOP UNIT WITH ELEC HEAT	6,000 CFM	ZONE 4	NORTHWEST FIRST FLOOR
H-5	NO WORK	-	-	-
H-6/AC-2	EXISTING 15 TON ROOF TOP UNIT	6,000 CFM	ZONE 9	SECOND FLOOR WEST
H-7	-	8,000 CFM	ZONE 8	VETERAN SERVICES
H-9	NO WORK	-	-	-
RTU-1	NO WORK	-	-	-
RTU-2	NO WORK	-	-	-
AC-1	NO WORK	-	-	-
RTU-10-1	SEE RTU SCHEDULE	4,000 CFM	ZONE 10 ZONE 11	SECOND FLOOR NORTH EAST SECOND FLOOR COMPUTER
AC-11-1	SEE UNITARY A/C UNIT SCHEDULE	1,900 CFM	ZONE 11	SECOND FLOOR COMPUTER (ALTERNATE M-3)

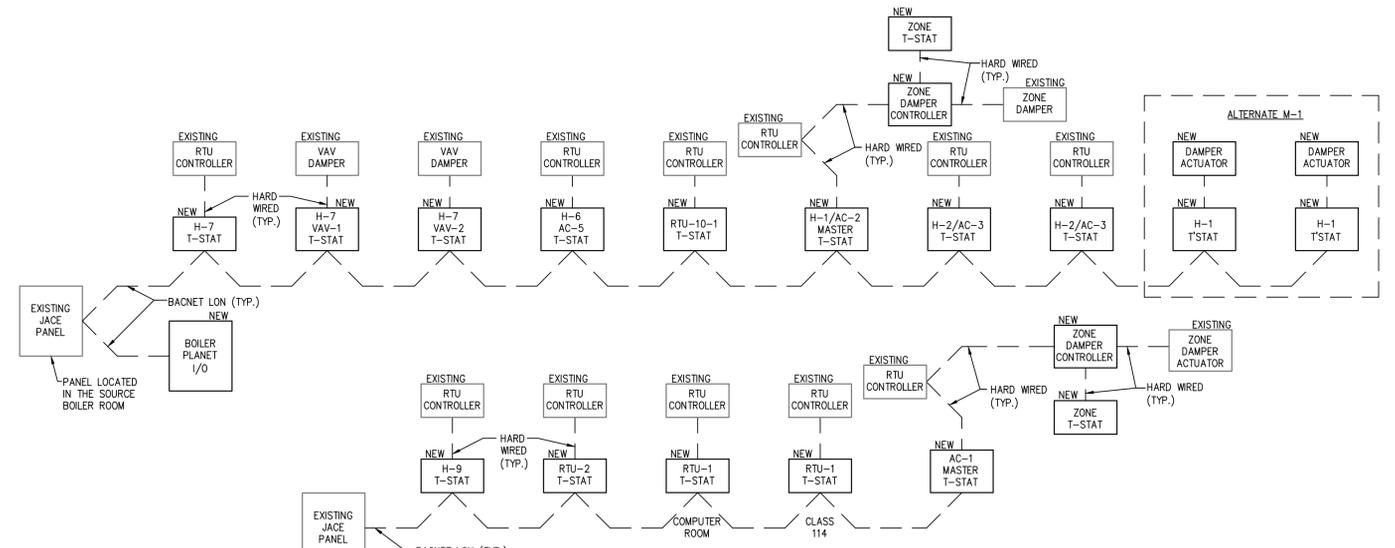
POINT DESCRIPTION	DEVICE/SYSTEM HOT WATER SYSTEM						REMARKS
	AO	AI	DO	DI	V	ALARM	
OUTSIDE TEMPERATURE		X					NEW CONTROL POINT
SUPPLY WATER TEMPERATURE		X					NEW CONTROL POINT
SUPPLY WATER TEMPERATURE SETPOINT					X		
RETURN WATER TEMPERATURE		X					NEW CONTROL POINT
BOILER ENABLE (EACH)			X			X	
BOILER STATUS (EACH)				X		X	
BOILER STAGES (EACH)				X		X	
BOILER LOW WATER CUT OFF (EACH)				X		X	
BOILER ALARM STATUS (EACH)				X		X	
BOILER RECIRC PUMP START/STOP (EACH)			X				NEW CONTROL POINT
BOILER RECIRC PUMP STATUS (EACH)				X		X	
BOILER WATER FLOW (EACH)				X		X	NEW CONTROL POINT
SYSTEM PUMP START/STOP (EACH)				X		X	NEW CONTROL POINT
SYSTEM PUMP STATUS (EACH)				X		X	NEW CONTROL POINT
SYSTEM MIXING VALVE CONTROL (EACH)	X						EXISTING VALVE
COMBUSTION AIR DAMPER CONTROL			X				EXISTING DAMPER
COMBUSTION AIR DAMPER POSITION				X			EXISTING DAMPER
ZONE SUPPLY WATER TEMPERATURE		X					NEW CONTROL POINT
ZONE SUPPLY WATER TEMP SETPOINT				X			
UNIT HEATER START/STOP				X			NEW CONTROL POINT

GENERAL (MECHANICAL) NOTES

- THE CONTRACTOR SHALL FAMILIARIZE THEMSELVES WITH ALL CONDITIONS UNDER CONTRACTOR SHALL REPORT ANY DISCREPANCIES TO THE ARCHITECT OR ENGINEER.
- CONTRACTOR SHALL FIELD VERIFY EXACT LOCATION OF ALL EXISTING CONDITIONS WHICH WORK MUST BE PERFORMED, AND CHECK ALL ELEVATIONS. THE COORDINATE PLACEMENT OF NEW ROOF EQUIPMENT.
- CONTRACTOR SHALL COORDINATE ALL WORK WITH ALL OTHER TRADES PRIOR TO AND COORDINATE WITH ALL OTHER TRADES INVOLVED WITH THIS PROJECT.
- TEMPERATURE CONTROL CONTRACTOR SHALL BE RESPONSIBLE FOR ALL FABRICATING AND/OR INSTALLING ANY OF HIS WORK.
- CONTRACTOR SHALL COORDINATE ALL ROOF PENETRATIONS WITH ROOFING CONTRACTOR. TEMPERATURE CONTROL WIRING REQUIRED FOR THIS PROJECT.
- CONTRACTOR SHALL MOUNT ALL DUCTWORK AS HIGH AS POSSIBLE TO BOTTOM OF ROOF OTHER TRADES INVOLVED IN THESE AREAS.
- LINE RETURN AIR DUCTWORK WITH 1" ACOUSTICAL (INTERIOR) DUCT LINER. STRUCTURE FRAMING. COORDINATE INSTALLATION WITH ALL
- REFER TO SPECIFICATIONS FOR EXTERIOR DUCT INSULATION.
- RELOCATE EXISTING THERMOSTATS TO LOCATIONS SHOWN. EXISTING LOCATIONS ARE PROVIDE NEW THERMOSTAT FOR NEW RTU COMPATIBLE WITH NEW CONTROLS.
- FIELD VERIFY SUPPLY AIR DIFFUSERS CFM OUTPUT AT COMPLETION OF PROJECT. SHOWN DASHED AND NEW LOCATIONS ARE SHOWN AS DARK.
- PROVIDE TEST AND BALANCE REPORT AT COMPLETION OF PROJECT.
- REPLACE ALL EXISTING TSTATS WITH BACNET COMMUNICATION CAPABILITIES.

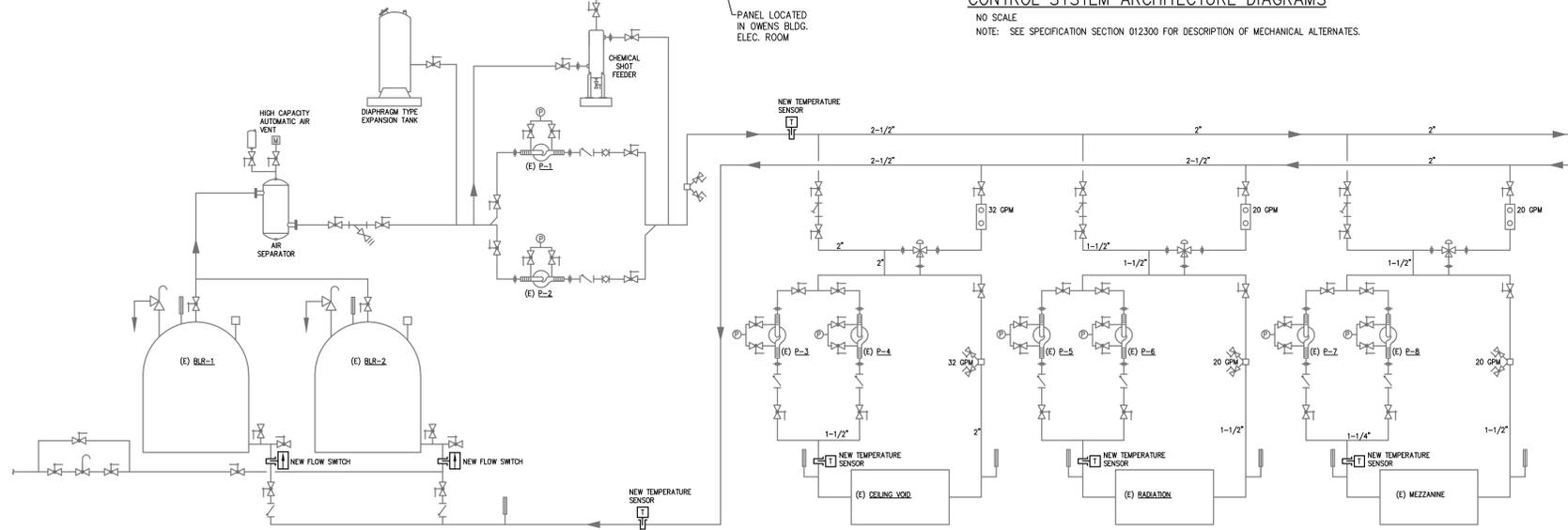
ALTERNATE (MECHANICAL) NOTES

- MECHANICAL CONTRACTOR IS RESPONSIBLE FOR ALL REMOVAL, STORAGE, REINSTALLATION REQUIRED FOR ALL WORK IN BASE BID AND ALTERNATES.
- BASE BID CONTROLS TO INCLUDE REPLACEMENT OF ALL EXISTING TSTATS, BOILER PLANT CONTROLS, UNIT HEATER CONTROLS AND VAV CONTROLS.
- SEE ALTERNATE M-1, M-2 AND M-3 DESCRIPTIONS IN MECHANICAL SPECIFICATION - SECTION 012300



CONTROL SYSTEM ARCHITECTURE DIAGRAMS

NO SCALE
NOTE: SEE SPECIFICATION SECTION 012300 FOR DESCRIPTION OF MECHANICAL ALTERNATES.



EXISTING BUILDING HEATING WATER FLOW DIAGRAM

NO SCALE

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ARCHITECTS
LANDSCAPE ARCHITECTS
INTERIOR DESIGNERS
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PROJECT TITLE
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THE SOURCE
HVAC UPGRADE**

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CHECKED JNH
APPROVED KPL

TCI JOB NO. 106045

SHEET TITLE
**MECHANICAL
SCHEDULES AND
DETAILS**

SHEET NO.

M2.0

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